

Green Bay Walleye Tagging Surveys- 2014 Update

Steve Hogler, Rod Lange and Steve Surendonk

WDNR-Green Bay

Large annual spring spawning migrations of walleye have been documented by WDNR staff on major Green Bay tributaries for many years. These rivers along with several other spawning locations scattered around Green Bay likely sustain the large walleye population that is found in Green Bay. Some walleye populations have been studied intensively in the past such as those found in the Fox River, while walleye that utilize the Menominee, Oconto or Peshtigo Rivers have had little evaluation.

Surveys have been conducted annually on the Fox River and lower Green Bay to assess walleye populations since the late 1980's using either fyke nets fished in spring to capture spawning age walleye or in fall using nighttime electroshocking to target young of year (YOY) walleye. Walleye surveys have also been conducted in spring about every five years in the Sturgeon Bay area to assess spawning fish. In an effort to gain a more complete understanding of walleye use of the Oconto, Peshtigo and Menominee Rivers, fall nighttime electroshocking surveys have been conducted annually from 2006 through 2011 and 2013-2014 to assess walleye YOY production. However, despite the large numbers of adult walleye known to utilize these rivers during spring runs, few YOY were ever captured during these surveys. Low YOY capture rates were likely due to poor spawning success or that either that YOY walleye were upstream of our index stations or had already moved out into Green Bay before our surveys were conducted. In 2012, DNR began to assess the magnitude of spawning migrations into these rivers, by using daytime electroshocking just below the dams in Stiles (Oconto River) and Peshtigo (Peshtigo River) to capture walleye during the estimated peak of the spring spawning run. This work has continued through 2014 when we daytime electroshocked the Oconto, Peshtigo, Menominee and Fox Rivers during spring runs to assess walleye populations. To gain more insight on walleye movement throughout the bay, similar tags were provided to the Sturgeon Bay fisheries crew that in 2013 surveyed the local walleye population with fyke nets in the Sturgeon Bay and Little Sturgeon Bay area.

To capture walleye, a standard electroshocking boat with two netters was utilized at each location. During each shocking event, captured walleye were sexed and measured. A subsample of walleye were tagged with an individually numbered Floy tag and had a dorsal spine removed for age analysis. Up to ten spines per centimeter length interval were collected for ageing. One fish per ten tagged was double tagged to estimate tag loss.

Results

2012

Peshtigo River

Walleye were captured below the Peshtigo Dam on March 20 and 22 (Table 1). Surface water temperature ranged from 50°F to 52°F during the survey. During this period, 499 walleye were captured that ranged in size from 386 mm to 730 mm with an average length of 546 mm. Catch per effort (CPE) was 311.3 walleye per hour shocked on March 20. Effort was not recorded on March 22.

Most of the captured walleye (428 of 499) were judged to be male. Male walleye ranged in length from 386 mm to 652 mm and had an average length of 537 mm (Table 2). Dorsal spine samples were collected from 108 male walleye. Ages obtained from our samples ranged from age 3 through age 8 with age 5 being the dominant male age class (Table 3). It appears male walleye begin to spawn at age 3, with most walleye spawning by age 4. Growth, measured as length at age is above the state average at each age (Table 4).

Captured female walleye ranged in length from 502 mm to 730 mm with an average length of 593 mm (Table 2). Age samples were collected from 65 female walleye that had an age ranging from age 4 through age 10 (Table 5). Age 5 was the dominant female age class that we collected. Although we captured a few age 4 female walleye, it appears most females begin to spawn at age 5. Growth of female walleye was at or above state average growth (Table 4).

Oconto River

Walleye were shocked below the dam in Stiles on March 19 (Table 1). The water temperature at the time of the survey was 55°F. We captured 212 walleye in 1.85 hours of shocking for a CPE of 114.5 walleye per hour shocked. The captured walleye ranged in length from 388 mm to 688 mm with an average walleye length of 512 mm.

Male walleye accounted for 114 of the 212 fish that we captured. Male walleye ranged in length from 388 mm to 592 mm and had an average length of 459 mm (Table 6). Dorsal spines were collected from 93 male walleye. Age 3 through age 9 walleye were in the sample with age 3 the dominant age class (Table 7). Few walleye were older than age 5 in our sample. Growth was above state averages but growth was less than observed on the Peshtigo River at each age (Table 4).

The 90 female walleye that we captured ranged in length from 496 mm to 688 mm and had an average length of 580 mm (Table 6). Spines were collected from 75 female walleye. Ages ranged from age 3 to age 9 with the age 5 year class dominating the sample (Table 8). Growth of female walleye in the Oconto River was above state averages (Table 4).

Eight walleye could not be sexed. They ranged in length from 367 mm to 546 mm with an average length of 472 mm (Table 6).

2012 Angler Returns

In 2012, we tagged 289 male walleye and 71 female walleye from the Peshtigo River, and 42 walleye were double tagged to help us estimate tag loss. During calendar year 2012, anglers returned information from 16 fish (Table 9). This information equates to a return rate of 4.4%. Tags from male or female walleye were returned in equal number despite tagging 4 times as many males as females. The single recaptured double tagged walleye was returned with both tags present. Eight tagged fish were captured by anglers fishing in the Peshtigo River, seven from west shore locations on Green Bay and one tag was returned by an angler fishing on the east shore of the bay (Figure 2). An average returned tag from a male was returned 55.3 days after tagging and 22.8 days after tagging for females. In the short term, March through December of 2012, it appears that walleye movement was limited to the local area.

From the Oconto River we tagged 90 female, 112 male and 7 unknown sex walleye. As of the end of 2012, we have had information returned to us from 11 fish, five males and six females (Table 9). This is a return rate of 5.3%. The return locations have been six from west shore rivers and four from the west shore of Green Bay (Figure 3). One tag return did not provide information on the location of capture. The days at large of returned tags were similar for males and females tagged from the Oconto River at 44.8 days and 42.0 respectively. Similar to walleye tagged from the Peshtigo River, walleye tagged from the Oconto River stayed along the west side of Green Bay in 2012.

2013

Peshtigo River

Walleye were shocked and tagged below the Peshtigo Dam on April 9, 16 and 17 with the majority of fish handled on April 16. Water temperatures varied between 36°F on April 9 to 41°F on April 17. During this period, we tagged 453 walleye (305 males and 148 female) in 1.93 hours of electroshocking (Table 1). Total CPE was 234.7 walleye per hour shocked.

Male walleye ranged in length from 377 mm to 681 mm and had an average length of 519 mm (Table 10). Dorsal spine samples were collected from 210 male walleye. Ages obtained from our samples ranged from age 3 through age 10 with age 6 being the dominant male age class (Table 11). It appears male walleye begin to spawn at age 3, with most walleye spawning by age 4. Growth, measured as length at age was lower than what was estimated in 2012, but is still above the state average at each age (Table 4).

The 148 female walleye that we captured ranged in length from 463 mm to 738 mm and had an average length of 605 mm (Table 10). Spines were collected from 139 female walleye. Ages ranged from age 3 to age 11 with the age 6 year class dominating the sample (Table 12). Growth of female walleye in the Peshtigo River was similar to what was observed in 2012 and grow in both years was above the state average (Table 4).

Oconto River

Walleye were sampled below the Stiles Dam on the Oconto River on April 22 and 23, 2013. The water temperature each day was 39°F. Over the course of the two sampling days, 532 walleye (401 male and 131 female) were tagged (Table 1). Effort was not recorded.

The 401 male walleye we captured ranged in length from 356 mm to 655 mm and had an average length of 478 mm (Table 13). Spines were collected from 100 male walleye. Age 3 through age 10 and age 12 fish were noted in the sampled fish (Table 14). Age 4 and age 6 were the most common aged walleye in our sample. Age 10 (2003 year class) male walleye were also notably present in our sample. In 2013 length at age was less than what was measured in 2012, but walleye captured in each year displayed above state average length at each age (Table 4).

131 female walleye were captured during electroshocking. These walleye ranged in length from 478 mm to 688 mm and had an average length of 579 mm (Table 1). We took a spine from 82 female walleye yielding ages 4 through 10 from the sample (Table 15). Age 6 was the most commonly aged female walleye but ages 4, 5 and 7 were also common. Similar to males, age 10 female walleye were also notable in the age sample.

Menominee River

Fisheries staff electroshocked for walleye below the Hattie Street dam on the Menominee River on April 8, 15 and 23 with a total effort of 4.1 hours. A total of 455 walleye (204 male and 250 female) were captured with a CPE of 111.0 walleye per hour shocked (Table 1). Water temperature throughout the period ranged from 36°F to 41°F.

A total of 205 male walleye were captured during electroshocking. These walleye ranged in length from 395 mm to 665 mm and had an average length of 507 mm (Table 16). Spines were collected and aged from 161 male walleye. Age 3 through age 15+ were in our sample (Table 17). Age 3 through age 7 occurred in similar number with older age fish much less abundant. Although not as strongly pronounced as in the Oconto River sample, age 10 walleye were also notable in this sample. Length at age for male walleye collected from the Menominee River was above state averages at each age (Table 4).

Staff captured 250 female walleye from the Menominee River during sampling events (Table 1). Female walleye ranged in length from 441 mm to 742 mm and had an average length of 606 mm (Table 16). The 185 spines that were collected for age analysis ranged in age from age 4 through age 15+ (Table 18). Age 6 females were the most common, but age 4 to age 5 and age 7 through age 10 female walleye were also commonly captured. Growth was above state average length at age values (Table 4).

Fox River

The Fox River below the DePere Dam was electroshocked to capture walleye on April 3 and 4, 2013. A total of 484 walleye (422 male and 62 female) were captured during sampling (Table 1). Water temperature on both days was 38°F. Effort was not recorded.

The 422 male walleye that were handled ranged in length from 385 mm to 644 mm and had an average length of 422 mm (Table 19). A spine was collected for aging from 199 male walleye. Age ranged from age 3 through age 11 (Table 20). Age 5 was the most common aged male walleye, but age 4 fish were also very common. Similar to other rivers, age 10 males were notable in their abundance in our aged sample of walleye. Length at age was above state averages at all ages (Table 4).

A total of 62 female walleye were captured during shocking. Female walleye ranged in length from 428 mm to 746 mm and had an average length of 613 mm (Table 19). Age was determined for 59 female walleye. Ages ranged from age 4 through age 12 with age 10 and age 5 the most commonly aged female walleye in our sample (Table 21). Similar to male walleye, length at age for female walleye was above state averages (Table 4).

2013 Angler Returns

Walleye were tagged in the four river locations that were electroshocked and also in the Sturgeon Bay area during a spring walleye fyke net survey in 2013. Over course of 2013, we received tag return information for 68 walleye that were tagged in 2013 as well as 6 walleye tagged in 2012 (Table 9).

In 2013, we tagged 453 walleye from the Peshtigo River (Table 9). We received tag information back from 15 walleye (12 male and 3 female) for a return rate of 3.3%. Most of the returns came

from anglers fishing the Peshtigo River or from along the west shore of Green Bay north of the Pensaukee River (Figure 4). One fish was captured from the east shore near Bayshore County Park and the capture locations of six fish were unknown. The average male from which a tag was returned from was at large for 57 days (Table 9). The average female was at large for 66 days. We also received tag return information from 4 walleye that were tagged in 2012 from the Peshtigo River (Figure 2). Two of the returns were from the Peshtigo River and anglers did not provide capture information on the other two. One double tagged walleye was returned by an angler with only one tag in it. This was the only double tagged fish lacking two tags at the time of angler recapture.

During electroshocking on the Oconto River, we tagged 432 (401 male and 131 female) walleye (Table 9). We received recapture information from 20 walleye (11 male and 9 female) for a return rate of 4.6%. Recapture information indicated that for males the tags were at large for an average of 55.3 days and 45.8 days for female walleye. Anglers returned tags from around the southern bay with the most returns from the Oconto River and off of the Pensaukee River (Figure 5). We also received recapture information from two fish that were tagged from the Oconto River in 2012. These fish were recaptured from between Geano Beach and the Oconto River (Figure 3).

We tagged 454 (204 male and 250 female) walleye that were captured from the Menominee River during spring 2013 electroshocking (Table 9). From those walleye, we received recapture information from 16 (8 male and 8 female) fish which is a recapture rate of 3.5%. Return information indicates that the average time from the tagging date to angler capture date for males was 38.2 days and 53.6 days for female walleye. Most of the angler returns came from the Menominee River or just outside the river in Green Bay (Figure 6). A few walleye were also captured from along the west and east shores of Green Bay.

A total of 484 (422 male and 62 female) walleye were tagged below the DePere Dam on the Fox River (Table 9). Anglers returned tags from seven (5 male and 2 female) of these marked fish during 2013 for a return rate of 1.5%. The average time between tagging and angler capture was 82.4 days and 45.0 days for male and female walleye respectively. Most of the angler returns were from the southern bay with one tag returned from Sturgeon Bay and two that did not specify capture location (Table 7).

During fyke netting, Sturgeon Bay fisheries staff tagged 638 (354 male and 284 female) walleye (Table 9). In 2013, we received angler recapture on 10 fish (4 male and 6 female) for a return rate of 1.6%. The average time between tagging and angler recapture was 49.3 days for male walleye and 18.8 days for female walleye. Walleye that were tagged in the Sturgeon Bay area did not appear to move around much with all the tag returns from the east shore of Green Bay between Chadoirs Dock and the City of Sturgeon Bay (Figure 8). One walleye return did not specify the recapture location.

2014

Peshtigo River

Walleye were captured and tagged below the Peshtigo Dam on April 17 and 21, 2014 with the majority of fish handled on April 21. Water temperature was steady at 36°F during both days of shocking. During this period, we tagged 428 walleye that included 295 males and 133 females (Table 1). Effort was not recorded.

Male walleye ranged in length from 401 mm to 679 mm and had an average length of 527 mm (Table 22). Dorsal spine samples were collected from 120 male walleye. Ages obtained from our samples ranged from age 3 through age 11 with age 7 being the dominant male age class (Table 23). It appears male walleye begin to spawn at age 3, with most males spawning by age 4. Growth, measured as length at age was lower than what was estimated in 2012, but is still above the state average at each age (Table 4).

The 133 female walleye that we captured ranged in length from 461 mm to 756 mm and had an average length of 592 mm (Table 22). Spines were collected from 106 female walleye. Ages ranged from age 3 to age 12 with the age 4 year class the most common in the sample (Table 24). Growth of female walleye in the Peshtigo River was similar to what was observed in 2012 and 2013 and was above the state average all three years of this survey (Table 4).

Oconto River

Walleye were sampled below the Stiles Dam on the Oconto River on April 10 and 16, 2014. The water temperature was 32°F on April 10 and 34°F on April 16. During electroshocking we captured 449 walleye (272 male and 177 female) (Table 1). Effort was not recorded.

The 272 male walleye that we captured ranged in length from 400 mm to 663 mm and had an average length of 477 mm (Table 25). Spines were collected from 93 male walleye. Age 2 through age 10 fish were noted in the sampled fish (Table 26). Age 4 were the most common aged walleye in our sample. In 2014, length at age was less than what was measured in 2012 but similar to lengths at age in 2013. However, growth in all 3 sample years were above state average length at each age (Table 4).

177 female walleye were captured during the two days of electroshocking (Table 1). These walleye ranged in length from 454 mm to 663 mm and had an average length of 551 mm (Table 25). We removed a spine from 96 female walleye yielding ages 3 through 11 in the collected sample (Table 27). Age 4 was the most commonly aged female walleye but ages 5 and 7 were also common. Length at age in 2014 was similar to the previous years and was above state average length at age data (Table 4).

Menominee River

Fisheries staff collected walleye below the Hattie Street dam on the Menominee River on April 23 and 24, 2014. A total of 495 walleye (258 male, 256 female and 1 unknown sex) were captured during shocking (Table 1). Water temperature throughout the period ranged from 40°F to 42°F. Effort was not recorded.

A total of 258 male walleye were captured during electroshocking. These walleye ranged in length from 404 mm to 661 mm and had an average length of 507 mm (Table 28). Spines were collected and aged from 107 male walleye. Age 3 through age 15 walleye were in our sample (Table 29). Age 7 and age 4 walleye were the most common ages in our sample with older age fish much less abundant. Age 11 (Year Class 2003) walleye were notable in this sample. Length at age for male walleye collected from the Menominee River was above state averages at each age (Table 4).

Electroshocking captured 256 female walleye from the Menominee River during the sampling events (Table 1). Female walleye ranged in length from 443 mm to 775 mm and had an average

length of 589 mm (Table 28). The 107 spines that were collected for age analysis ranged in age from age 4 through age 15 (Table 30). Age 7 females were the most common, but age 4 female walleye were also commonly captured. Growth was above state average length at age values (Table 4).

Fox River

The Fox River below the DePere Dam was electroshocked to capture walleye on April 8 and 9, 2014. A total of 516 walleye (201 male and 315 female) were captured during sampling (Table 1). Water temperature on both days was 42°F. Effort was not recorded.

The 201 male walleye that were handled ranged in length from 366 mm to 610 mm and had an average length of 480 mm (Table 31). A spine was collected for aging from 95 male walleye. Age ranged from age 2 through age 11 (Table 32). Age 4 was the most common aged male walleye, but age 5 fish were also very common. Length at age was above state averages at all ages (Table 4).

A total of 315 female walleye were captured during shocking. Female walleye ranged in length from 450 mm to 735 mm and had an average length of 591 mm (Table 31). Age was determined for 180 female walleye. Ages ranged from age 3 through age 12 with age 6 and age 5 the most commonly aged female walleye in our sample (Table 33). Similar to male walleye, length at age for female walleye was above state averages (Table 4).

2014 Returns

Angler Returns

Walleye have been tagged in the four river locations as well as in the Sturgeon Bay area since 2012. During calendar year 2014, we received angler tag return information for 90 walleye that were tagged during this project (Table 9). This included return information on two walleye tagged in 2012, 35 walleye tagged in 2013 and 53 walleye tagged in 2014 (Table 9).

2012 Tagged Walleye

During 2012, we tagged walleye on the Oconto and Peshtigo Rivers. In 2014, we received two tags from anglers from these tagging events (Table 9). One female walleye tagged in the Oconto River was recaptured by anglers fishing off of Geano Beach which is along the westshore of Green Bay south of the Oconto River (Figure 3). This fish had been at-large 800 days since being tagged. The other 2012 tagged walleye was a male that was tagged in the Peshtigo River. This fish was at-large 767 days before being captured in the Peshtigo River (Figure 2).

2013 Tagged Walleye

During 2013, walleye were tagged in all four study rivers as well as in the Sturgeon Bay area. Eight walleye tagged in 2013 from the Peshtigo River had tag recoveries in 2014 (Table 9). This data included three males and five females that had average at-large times of 353 days and 372 days respectively. Four angler recoveries were from the Peshtigo River and four tags were returned from the Oconto River (Figure 4). Seven 2013 tagged walleye from the Oconto River were recovered in 2014 by anglers (Table 9). The five males averaged 373 days at-large while the two female walleye were at large 372 days. Anglers returned six tags from walleye caught in the Oconto River and one tag from a walleye captured off the mouth of the Suamico River (Figure 5).

Anglers returned nine tags from walleye marked in the Menominee River in 2013 (Table 9). Seven were male and two were female walleye. The male walleye averaged 382 days at-large and the females averaged 376 days at-large. Eight of nine returns were from walleye caught in the Menominee River, with the remaining fish captured in an unknown location (Figure 6). Anglers returned tags from four male walleye that were tagged in 2013 from the Fox River (Table 9). Tags from these walleye were returned an average of 365 days from the date of tagging. Two of the returns were from the Fox River and one return each from the Menominee River and off of Red River (Figure 7). Seven tags from walleye tagged in 2013 from the Sturgeon Bay were returned in 2014 (Table 9). This data included four males and three females that had been at-large 350 days and 362 days respectively. These fish were caught by anglers around the bay with four tags returned from Sturgeon Bay, one tag from the Chadoirs Dock area, one from the Fox River and one from the Menominee River (Figure 8).

2014 Tagged Walleye

During electroshocking, we tagged 428 walleye from the Peshtigo River in 2014 (Table 9). We received tag information back from 15 walleye (8 male and 7 female) for a return rate of 3.5%. Most of the returns came from anglers fishing the Peshtigo River or from other west shore rivers or off their mouths (Figure 9). One fish was captured from the east shore near Chadoirs Dock. The average male from which a tag was returned from was at-large for eight days (Table 9). The average female was at-large for 19 days.

We tagged 449 (272 male and 237 female) walleye from the Oconto River in 2014 (Table 9). We received recapture information from 18 walleye (6 male and 12 female) for a return rate of 4.0%. Recapture information indicated that tagged males were at-large for an average of 15 days and 19 days for female walleye. Most of the angler returns were from the Oconto River but several walleye were caught in the Pensaukee River and one each from the Menominee River and off of Chadoirs Dock (Figure 10).

During 2014 electroshocking on the Menominee River, we tagged 495 (258 male and 237 female) walleye (Table 9). From those walleye, we received recapture information from 15 (4 male and 11 female) fish which is a recapture rate of 3.0%. Return information indicates that the average at-large time from tagging date to angler capture for males was 14 days and 11 days for female walleye. Eleven of the angler returns came from the Menominee River, one was from the Oconto River and 2 were from unknown locations (Figure 11).

A total of 516 (201 male and 315 female) walleye were tagged below the DePere Dam on the Fox River in 2014 (Table 9). Anglers returned tags from five (1 male and 4 female) of these marked fish during calendar year 2014 for a return rate of 1.0%. The average time between tagging and angler capture was 44 days and 34 days for male and female walleye respectively. Most of the angler returns were from the east shore of the southern bay with one tag returned from off the Suamico River mouth (Table 12).

DNR Survey Returns

In 2014, during spring walleye tagging surveys or during fall young of year walleye assessment surveys, we recaptured a number of walleye that were tagged as part of this project (Table 34). During 2014 shocking surveys, we captured five walleye that were tagged from the Oconto River. Three walleye were captured in the Oconto River from the 2012 and 2013 tagging events, one was captured in the Peshtigo River that was tagged in 2012 and one tagged in 2014 was caught in the Fox River during fall walleye assessment surveys. We captured three walleye tagged in 2013

from the Peshtigo River with two caught in the Oconto River and one from the Peshtigo River. During 2014 surveys, we captured five walleye that were tagged in 2013 from the Menominee River. One walleye was captured from the Peshtigo River while the other four were captured from the Menominee River. Two walleye tagged from the Fox River were captured during DNR surveys in 2014. Both walleye were tagged from the Fox River with one walleye tagged in 2013 and one walleye tagged in the spring of 2014 and recaptured in fall 2014.

Discussion

Results from the three years of surveys indicate that adult walleye utilize the large west shore rivers as well as the Fox River and the Sturgeon Bay area in the spring for spawning. Young of year surveys conducted in fall on the Fox River and along the far southern Green Bay shoreline has documented strong walleye recruitment many times over the past 20 years (Figure 13). The strongest year classes were produced in 2013, 2003, 1993. Year classes produced in 2007 through 2011 were also above average. It is likely that walleye runs in all the surveyed areas contribute to the overall Green Bay walleye population. However, it is not clear why when we shock the Oconto and Peshtigo Rivers in fall that we see no evidence of recruitment and only modest evidence of recruitment in the Menominee River when we have documented strong spring walleye runs in these rivers.

Comparing biological data between rivers indicates that walleye returning to these rivers are fairly similar. Average length and return size range by sex are consistent between rivers although the two more northern rivers have average sizes and maximum sizes slightly larger than the two more southern rivers (Table 1). The age of return is also similar with males returning at age 3 and females returning at age 4. Analysis of year class strength for these rivers indicate that younger fish generally dominate the spring run with age 6 (year class 2008), age 5 (YC 2009) and age 4 (YC 2010) the most common ages. When compared to long term YOY index data from the Fox River and lower Green Bay, it is not surprising that age 5 are common because 2008 was a good walleye yoy year on both the river and bay (Figure 9). Also the strong representation of age 11 walleye in several rivers was not surprising because of the large 2003 year class that still exists in Green Bay. It is surprising, however, that walleye older than age 12 appear to be fairly uncommon in Green Bay. Angler harvest, high natural mortality or underestimating aging during aging may be responsible for the lack of older walleye in the population. The length at age for walleye in each river appeared to be consistent between rivers in 2014 and to previous surveys. As was found in past surveys, length at age at all ages for Green Bay walleye was greater than state wide rates for inland waters.

Tag return information has been gathered from anglers during the first three years of this project. Although low return rates have hampered our ability to track large scale movements around Green Bay with clarity, some general trends can be noted. It appears that most tagged fish stay near their tagging river in the short term. Walleye tagged from west shore rivers seem to stay along the west shore, walleye tagged in the Sturgeon Bay area stay near Sturgeon Bay and fish tagged in the Fox River stay in the river or southern bay. The exceptions of this information were walleye that were tagged in the Oconto River 2013 or the Peshtigo River in 2014. It is not clear why those walleye, following marking, moved around southern Green Bay rather than staying near their tagging river. However, since tag return numbers have been modest this result should be viewed with caution. In addition DNR survey recaptures also show that in general fish tagged in a river will be most likely be recaptured from that river in following years. Subsequent annual spring movement patterns will likely provide the greatest amount of information about site fidelity.

Many questions remain regarding the walleye population in Green Bay including those regarding stream/ river use, site fidelity, contributions to the sport fishery from unique spawning locations and the need for supplemental stocking in some locations. Further detailed survey work and cooperative studies will be necessary to answer these and other questions regarding walleye management in Wisconsin waters of Green Bay.

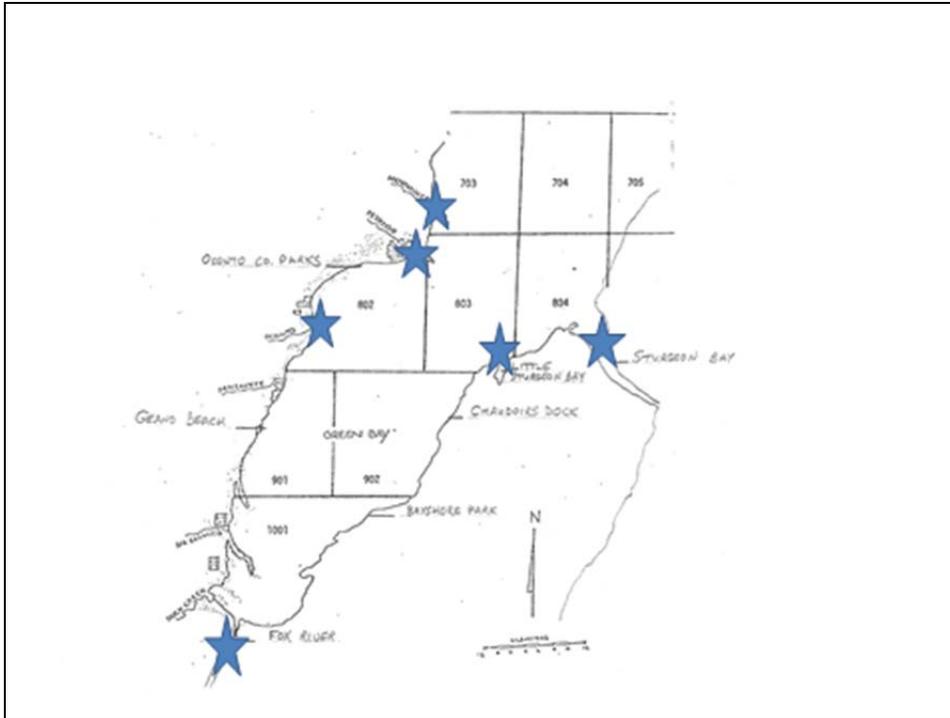


Figure 1. The tagging locations for walleye in Green Bay and the Fox River, 2012-2014. Walleye from the Oconto and Peshtigo Rivers were tagged in 2012 through 2014, while walleye from the Fox River, Menominee River were tagged in 2013 and 2014 Walleye from the Sturgeon Bay area were tagged in 2013 only.

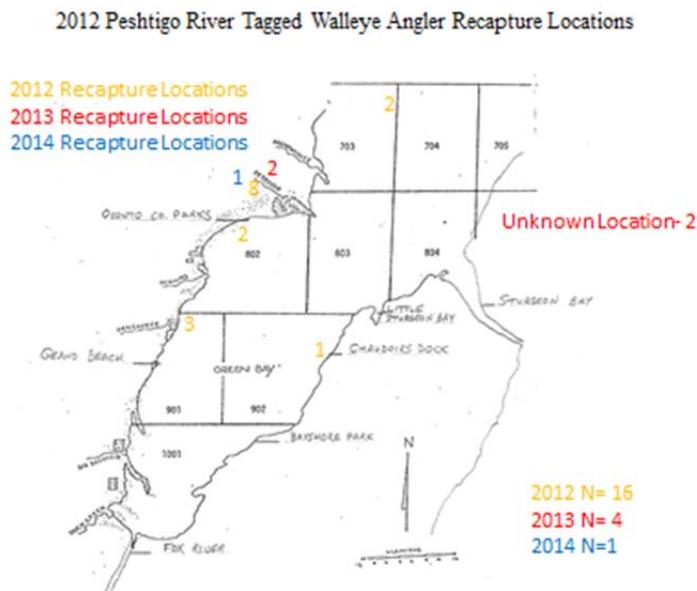


Figure 2. Angler recapture location of walleye tagged in the Peshtigo River in 2012. Returns from calendar year 2012 are in gold, returns from 2012 tagged fish from 2013 are in red and 2014 returns are in blue. The number indicates how many recaptures were from that location.

2012 Oconto River Tagged Walleye Angler Recapture Locations

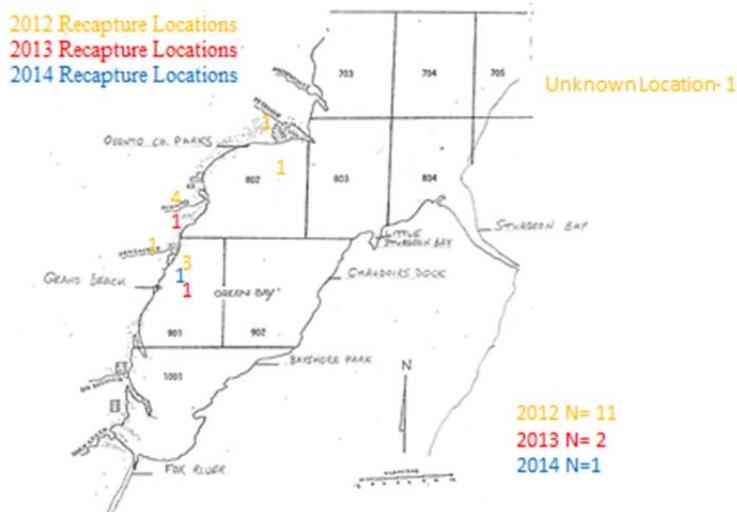


Figure 3. Angler recapture location of walleye tagged in the Oconto River in 2012. Returns from calendar year 2012 are in gold, returns from 2012 tagged fish from 2013 are in red and 2014 returns are in blue. The number indicates how many recaptures were from that location.

2013 Peshtigo River Tagged Walleye Angler Recapture Locations

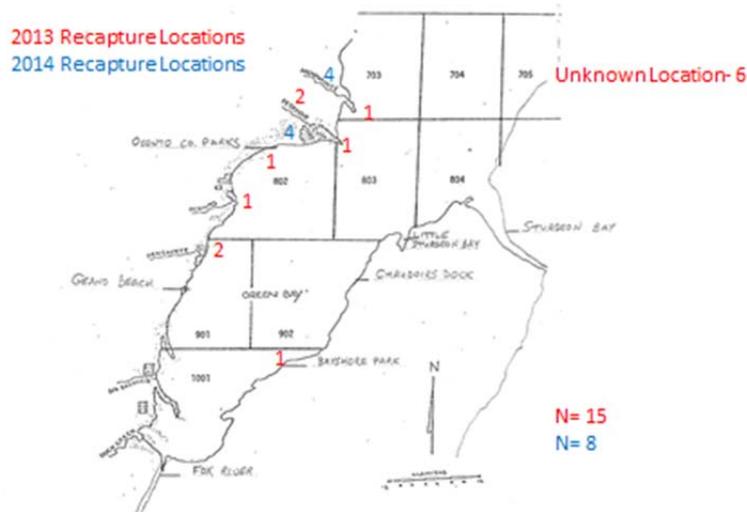


Figure 4. Angler recapture location of walleye tagged in the Peshtigo River in 2013. Returns from calendar year 2013 are in red and returns from 2014 are in blue. The number indicates how many recaptures were from that location.

2013 Oconto River Tagged Walleye Angler Recapture Locations

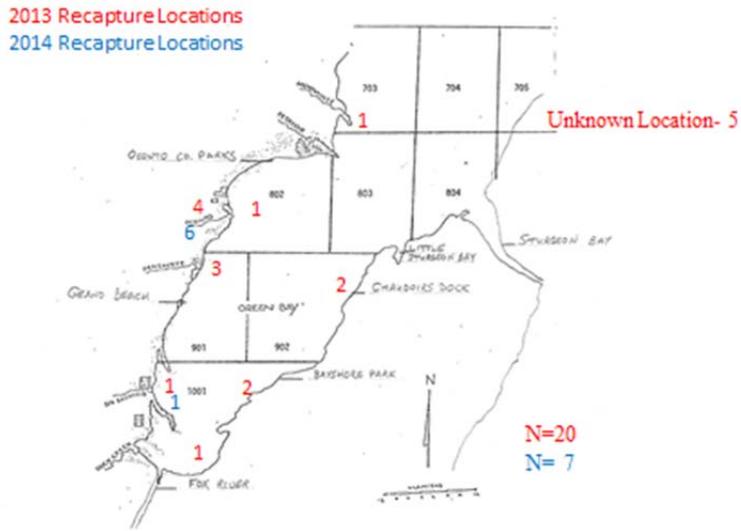


Figure 5. Angler recapture location of walleye tagged in the Oconto River in 2013. Returns from calendar year 2013 are in red and returns from 2014 are in blue. The number indicates how many recaptures were from that location.

2013 Menominee River Tagged Walleye Angler Recapture Locations

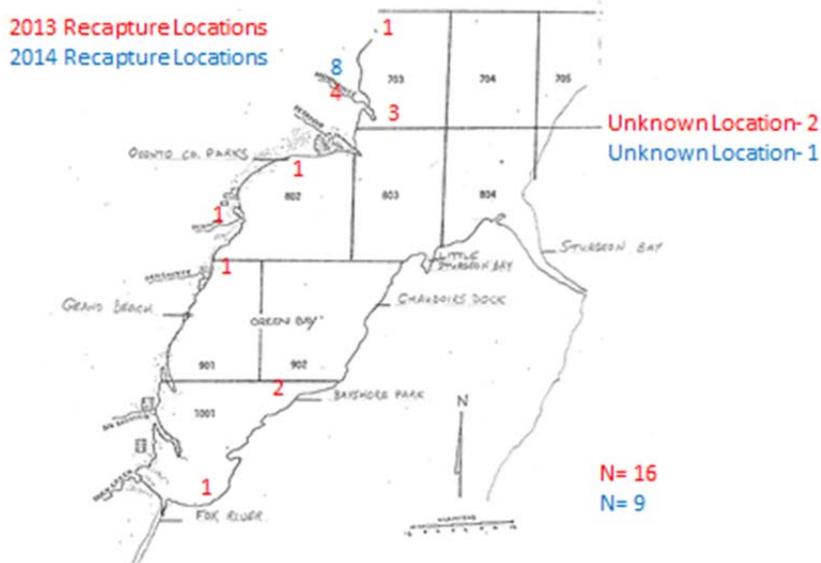


Figure 6. Angler recapture location of walleye tagged in the Menominee River in 2013. Returns from calendar year 2013 are in red and returns from 2014 are in blue. The number indicates how many recaptures were from that location.

2013 Fox River Tagged Walleye Angler Recapture Locations

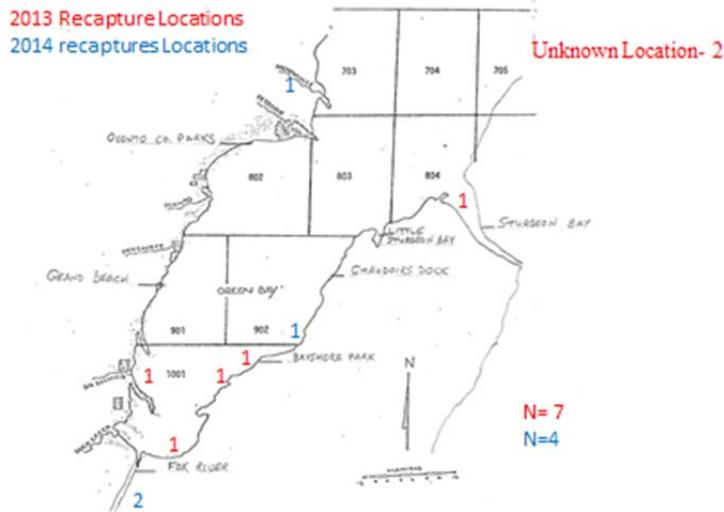


Figure 7. Angler recapture location of walleye tagged in the Fox River in 2013. Returns from calendar year 2013 are in red and returns from 2014 are in blue. The number indicates how many recaptures were from that location.

2013 Sturgeon Bay Area Tagged Walleye Angler Recapture Locations

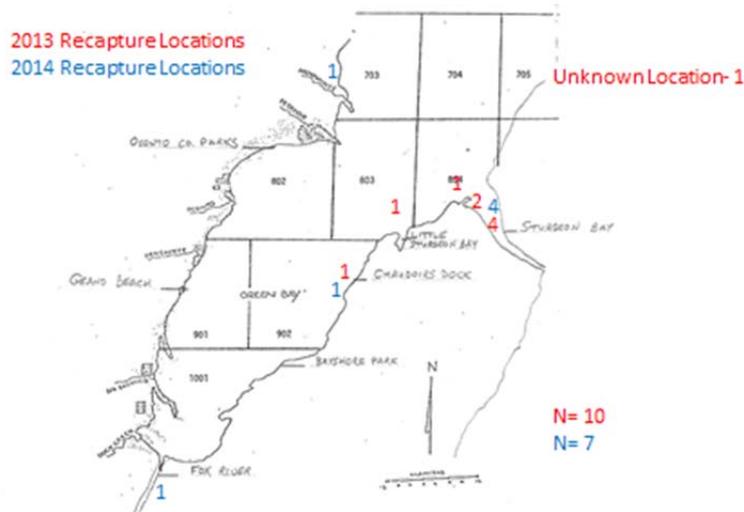


Figure 8. Angler recapture location of walleye tagged in the Sturgeon Bay area in 2013. Returns from calendar year 2013 are in red and returns from 2014 are in blue. The number indicates how many recaptures were from that location.

2014 Peshtigo River Tagged Walleye Recapture Locations

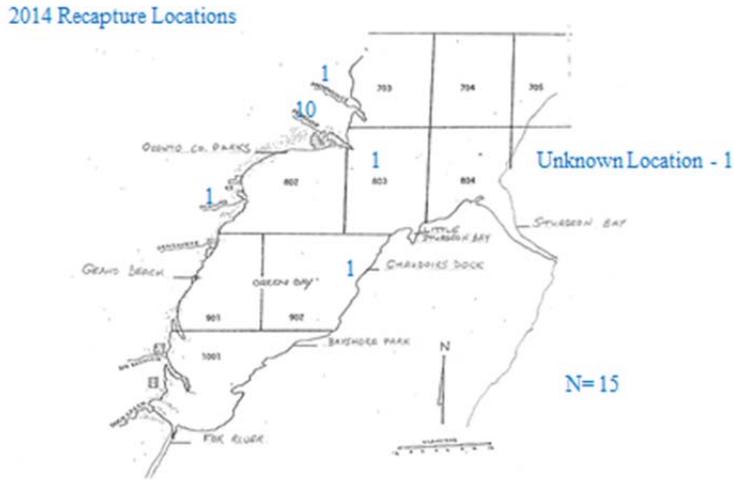


Figure 9. Angler recapture location of walleye tagged in the Peshtigo River in 2014. Returns from calendar year 2014 are in blue. The number indicates how many recaptures were from that location.

2014 Oconto River Tagged Walleye Angler Recapture Locations

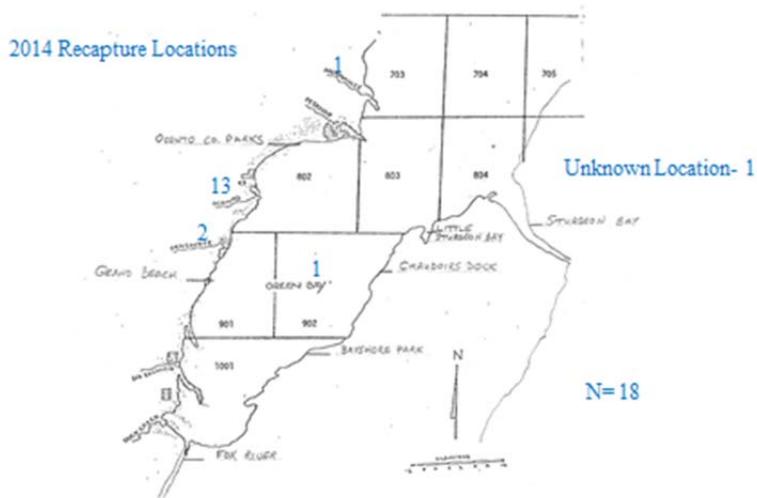


Figure 10. Angler recapture location of walleye tagged in the Oconto River in 2014. Returns from calendar year 2014 are in blue. The number indicates how many recaptures were from that location.

2014 Menominee River Tagged Walleye Angler Recapture Locations



Figure 11. Angler recapture location of walleye tagged in the Menominee River in 2014. Returns from calendar year 2014 are in blue. The number indicates how many recaptures were from that location.

2014 Fox River Tagged Walleye Angler Recapture Locations

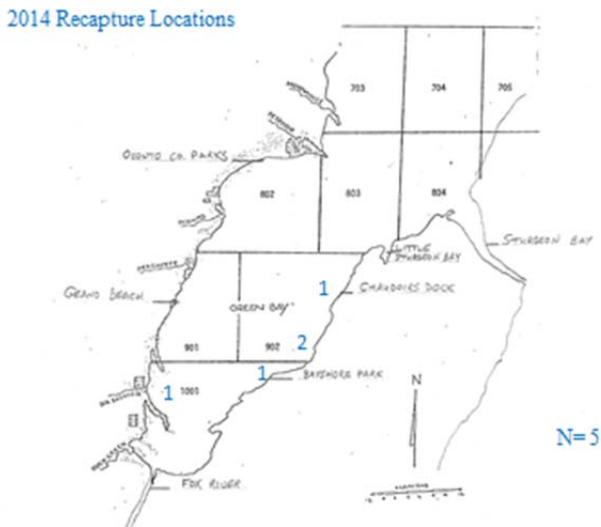


Figure 12. Angler recapture location of walleye tagged in the Fox River in 2014. Returns from calendar year 2014 are in blue. The number indicates how many recaptures were from that location.

2014 Fox River/ lower Green Bay Walleye YOY Assessment

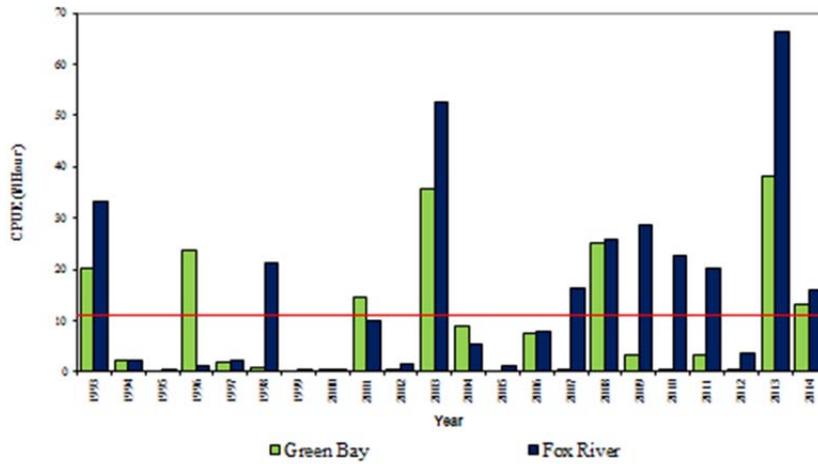


Figure 13. Walleye young of year CPUE from the Fox River and lower Green Bay from 1993 through 2014. YOY data is collected during annual fall index surveys conducted during nighttime hours. The red line indicates the average 1993-2014 YOY CPE.

Table 1. Spring walleye capture summary from electroshocking surveys below Peshtigo dam, Peshtigo River, Marinette County, Wisconsin, below Stiles dam, Oconto River, Oconto County Wisconsin, below Hattie Street Dam, Menominee River, Marinette County and the DePere Dam, Fox River, Brown County during 2012, 2013 and 2014.

Year		Peshtigo River			Oconto River			Menominee River			Fox River		
		Captured	Tagged	Ave. Length	Captured	Tagged	Ave. Length	Captured	Tagged	Ave. Length	Captured	Tagged	Ave. Length
2012													
	Male	428	289	537 mm	114	112	459 mm						
	Female	71	71	593 mm	90	90	580 mm						
	Unknown	0	0		8	7	472 mm						
	Total	499	360		212	209							
2013													
	Male	305	305	519 mm	401	401	478 mm	205	204	507 mm	422	422	472 mm
	Female	148	148	606 mm	131	131	579 mm	250	250	606 mm	62	62	613 mm
	Unknown	0	0		0	0		0	0		0	0	
	Total	453	453		532	532		455	454		484	484	
2014													
	Male	295	295	527 mm	272	272	477 mm	258	258	507 mm	201	201	480
	Female	133	133	592 mm	177	177	551 mm	236	236	589 mm	315	315	591
	Unknown	0	0		0	0		1	1		0	0	
	Total	428	428		449	449		495	495		516	516	

Table 2. The length frequency of male and female walleye captured during electroshocking below Peshtigo dam, Peshtigo River, Marinette County, Wisconsin. March 20 and March 22, 2012.

Length (mm)	Female	Male
380		1
90		
400		
10		4
20		2
30		2
40		6
50		5
60		6
70		13
80		14
90		24
500	2	37
10	2	49
20	2	34
30	3	36
40	4	30
50	4	33
60	5	23
70	5	28
80	3	18
90	6	23
600	9	19
10	2	8
20	2	6
30	4	4
40	2	2
50	4	1
60	1	
70	3	
80	1	
90	3	
700		
10	1	
20	2	
30	1	
Total	71	428
Ave. Length	603	537
S.D.	56.0	45.3

Table 3. The 2012 age distribution of male walleye captured from the Peshtigo River, Marinette County, Wisconsin. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Age					
	3	4	5	6	7	8
380	1					
90						
400						
10	3	1				
20	2					
30		2				
40	4		2			
50	3	2				
60	1	3	2			
70		8	5			
80		8	3	3		
90		12	12			
500		9	28			
10		10	39			
20			27	7		
30		7	29			
40			12	12		6
50			7	13	13	
60			8	3	12	
70				5	14	9
80					11	7
90				5		18
600					6	13
10				2		6
20					1	5
30					3	1
40						2
50						1
Total	14	62	174	50	60	68
Ave. Length	434	494	520	553	577	594
S.D.	21.2	25.5	22.2	28.4	20.9	23.7

Table 4. A comparison of average length at age of walleye captured during spring electroshocking surveys on the Peshtigo, Oconto, Menominee and Fox River in 2012 through 2014 to statewide averages. All measurements are in millimeters.

Location	Year/Sex	AGE												
		0	1	2	3	4	5	6	7	8	9	10	11	12
State Average		162	206	250	356	371	420	460	494	524	553	551	594	622
Peshtigo River	2012													
	Male				434	494	520	553	577	594				
	Female					525	567	595	605	631	681	655		
	2013													
	Male				430	466	494	540	544	576	605	622		
	Female				465	524	533	604	591	631	670	681	700	
	2014													
	Male				461	449	504	516	548	541	597	586	571	
Female				460	516	545	558	623	603	632	672	691	651	
Oconto River	2012													
	Male				419	465	500	539	555	550				
	Female				495	515	572	573	605	619	648			
	2013													
	Male				423	458	476	517	513	500-	545	543		655
	Female					518	540	593	594	611	615	639	640	
	2014													
	Male				434	458	479	511	516	557	542	605		
Female				505	510	539	572	608	565	605	678	659		
Menominee River	2013													
	Male				433	469	492	535	530	537	588	571	555	640
	Female					519	553	596	615	633	620	656	675	725
	2014													
	Male				432	457	477	521	539	528	572	576		
	Female					506	540	567	611	643	625	657	636	653
Fox River	2013													
	Male				424	458	468	499	554	550	465	542	533	
	Female					499	594	605	621	620	651	678	670	705
	2014													
	Male				365	432	460	480	491	528	578	557	585	525
	Female					455	518	548	558	628	625	650	669	665

Table 5. The 2012 age distribution of female walleye captured from the Peshtigo River, Marinette County, Wisconsin. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Age						
	4	5	6	7	8	9	10
500	1	1					
10	2						
20		2					
30		2	1				
40		4					
50		3		1			
60	1	3			1		
70		5					
80		3					
90		3			2	1	
600		4	1		4		
10					2		
20				1	1		
30				1	1	2	
40			1		1		
50					3		1
60						1	
70					3		
80					1		
90						3	
700							
10						1	
20						2	
30						1	
Total	4	30	3	3	19	11	1
Ave. Length	525	567	595	605	631	681	655
S.D.	27.1	27.1	55.7	43.6	34.1	44.6	--

Table 6. The length frequency of walleye captured during electroshocking below the Stiles Dam on the Oconto River, Oconto County, Wisconsin on March 19, 2012.

Length (mm)	Male	Female	Unknown
350	1		
360			1
370	1		
380	3		
390	1		
400	8		
410	14		
420	13		
430	9		
440	6		
450	5		1
460	7		1
470	9		1
480	5		2
490	4	1	
500	8	3	1
510	7	3	
520	4	3	
530	4	3	
540	1	5	1
550	2	8	
560		12	
570	1	8	
580		9	
590	1	7	
600		5	
610		5	
620		5	
630		2	
640		4	
650		2	
660		2	
670		2	
680		1	
690			
700			
Total	114	90	8
Ave. Length	459	580	472
S.D.	47.9	43.2	50.9

Table 7. The age distribution of male walleye captured from the Oconto River, Oconto County, Wisconsin in March 2012. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Age					
	3	4	5	6	7	8
350	1					
60						
70	1					
80	3					
90	1					
400	8					
10	14					
20	11	2				
30	8	1				
40	3	3				
50		3	2			
60	2	4	1			
70	1	5	3			
80		2	3			
90			4			
500		1	6	1		
10			6		1	
20		1	2			1
30			3	1		
40				1		
50				2		
60						
70						1
80						
90					1	
600						
10						
20						
Total	53	22	30	5	2	2
Ave. Length	419	465	500	539	555	550
S.D.	21.3	24	22.2	20.7	56.6	35.4

Table 8. The age distribution of female walleye captured from the Oconto River, Oconto County, Wisconsin in March 2012. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Age						
	3	4	5	6	7	8	9
450							
60							
70							
80							
90	1						
500		3					
10		3					
20		1	1	1			
30		1	1	1			
40			5				
50			7			1	
60			10	2			
70			3	3	2		
80			5	4			
90			3	2		2	
600			4			1	
10			2		1	1	1
20			1		1		3
30					1	1	
40						1	3
50							2
60						2	
70							2
80							1
90							
700							
Total	1	8	42	13	5	9	12
Ave. Length	495	515	572	573	605	619	648
S.D.	--	10.7	23.7	21.3	28.3	36.4	22.6

Table 9. Angler tag return locations from fish tagged from 2012-2014 on the Peshtigo, Oconto, Menominee and Fox Rivers as well as those tagged in the Sturgeon Bay area in 2013.

Tag Location	Sex	Tagged or Recaptured					
		2012	2012 in 2013	2012 in 2014	2013	2013 in 2014	2014
Fox River							
Tagged							
	Male				422		201
	Female				62		315
Recaptured							
	Male				5	4	1
	Female				2	0	4
Days at Large							
	Male				82	365	44
	Female				45	0	34
Menominee River							
Tagged							
	Male				204		258
	Female				250		237
Recaptured							
	Male				8	7	4
	Female				8	2	11
Days at Large							
	Male				38	382	14
	Female				54	376	11
Oconto River							
Tagged							
	Male	112			401		272
	Female	97			131		177
Recaptured							
	Male	5	0	0	11	5	6
	Female	6	2	1	9	2	12
Days at Large							
	Male	45	0	0	55	373	15
	Female	42	457	800	46	372	19
Peshtigo River							
Tagged							
	Male	289			305		295
	Female	71			148		133
Recaptured							
	Male	9	3	1	12	3	8
	Female	8	1	0	3	5	7
Days at Large				767			
	Male	55	408	0	57	353	8
	Female	22.8	Unk.		66	372	19
Sturgeon Bay							
Tagged							
	Male				354		
	Female				284		
Recaptured							
	Male				4	4	
	Female				6	3	
Days at Large							
	Male				49	350	
	Female				19	362	

Table 10. The length frequency of male and female walleye captured during electroshocking below Peshtigo dam, Peshtigo River, Marinette County, Wisconsin on April 9, 16 and 17, 2013.

Length (mm)	Male	Female
350		
360		
370	1	
380	1	
390	2	
400	1	
410	8	
420	13	
430	14	
440	15	
450	14	
460	13	2
470	17	1
480	9	
490	6	1
500	10	8
510	17	2
520	21	9
530	26	5
540	19	9
550	18	1
560	11	4
570	21	6
580	4	11
590	13	6
600	8	6
610	7	13
620	3	10
630	6	13
640	2	10
650		2
660	1	6
670	3	4
680	1	2
690		4
700		4
710		4
720		3
730		2
740		
750		
Total	305	148
Ave. Length	519	605
S.D.	63.5	63.2

Table 11. The 2013 age distribution of male walleye captured from the Peshtigo River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Male Total	Age							
		3	4	5	6	7	8	9	10
350									
360									
370	1	1							
380	1	1							
390	2	1		1					
400	1	1							
410	8	7	1						
420	13	12	1						
430	14	10	4						
440	15	9	5	1					
450	14	6	8						
460	13		8	4	1				
470	17		15		2				
480	9		5		3	1			
490	6			1	3	2			
500	10		1	4	4	1			
510	17		3	3	9	2			
520	21			2	14	5			
530	26				18	5	3		
540	19			2	11	4	2		
550	18				7	5	2	4	
560	11				5	5		1	
570	21				15	2	2	2	
580	4				2	1	1		
590	13				2		2	5	4
600	8				1	1	1	3	2
610	7					1	1	2	3
620	3						1	2	
630	6				1		1	1	3
640	2							1	1
650									
660	1							1	
670	3							1	2
680	1							1	
690									
700									
710									
720									
730									
740									
750									
Total	305	48	51	18	98	35	16	24	15
Ave. Length	519	430	466	494	540	544	576	605	622
S.D.	63.5	17.7	21.5	38.1	30.5	29.1	33.6	37.5	27.1

Table 12. The 2013 age distribution of female walleye captured from the Peshtigo River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length	Female Total	Age								
		3	4	5	6	7	8	9	10	11
350										
360										
370										
380										
390										
400										
410										
420										
430										
440										
450										
460	2	1	1							
470	1					1				
480										
490	1		1							
500	8		5	3						
510	2		2							
520	9		5	4						
530	5		1	2	2					
540	9		5		4					
550	1		1							
560	4		1	1	2					
570	6			2	4					
580	11				9	2				
590	6				5		1			
600	6				3	3				
610	13				11		1	1		
620	10				7	1			2	
630	13				7		1		5	
640	10				6	1	1		2	
650	2				1			1		
660	6						1	4	1	
670	4							2	2	
680	2								2	
690	4							1	3	
700	4								3	1
710	4								4	
720	3							1	2	
730	2								2	
740										
750										
Total	148	1	22	12	61	8	5	10	28	1
Ave. Length	605	465	524	533	604	591	631	670	681	700
S.D.	63.2	0	23.2	25.5	30.9	51.1	27.1	27.9	36.7	0

Table 13. The length frequency of male and female walleye captured during electroshocking below the Stiles Dam on the Oconto River on April 22 and 23, 2013.

Length (mm)	Male	Female
350	1	
360	1	
370	1	
380	1	
390	4	
400	13	
410	23	
420	26	
430	35	
440	30	
450	30	
460	21	
470	29	2
480	26	3
490	29	2
500	20	3
510	26	10
520	23	9
530	18	6
540	14	3
550	9	2
560	3	6
570	2	13
580	2	12
590	3	13
600	4	11
610	3	9
620	1	8
630	2	4
640		6
650	1	5
660		2
670		1
680		1
690		
700		
Total	401	131
Ave. Length	478	579
S.D.	50.8	48.7

Table 14. The 2013 age distribution of male walleye captured from the Oconto River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Male Number	Age									
		3	4	5	6	7	8	9	10	11	12
350	1	1									
360	1	1									
370	1	1									
380	1	1									
390	4	4									
400	13	10		3							
410	23	17		6							
420	26	13	13								
430	35	14	21								
440	30	5	15	5		5					
450	30	10	15				5				
460	21		17		4						
470	29		7	7	15						
480	26		16			5			5		
490	29		6	12	11						
500	20			8	8				4		
510	26		4	5	9	4			4		
520	23				17	6					
530	18				9	4			5		
540	14				11			3			
550	9				7				2		
560	3					3					
570	2				1				1		
580	2			1	1						
590	3				2				1		
600	4					2	1		1		
610	3						1		2		
620	1								1		
630	2								2		
640											
650	1										1
660											
670											
680											
690											
700											
Total	401	77	114	47	95	29	7	3	28	0	1
Ave. Length	478	423	458	476	517	513	500	545	543	--	655
S.D.	50.8	21.1	23.7	39.8	30.4	44.3	75.7	--	50.2	--	--

Table 15. The 2013 age distribution of female walleye captured from the Oconto River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Female Number	Age									
		3	4	5	6	7	8	9	10	11	12
350											
360											
370											
380											
390											
400											
410											
420											
430											
440											
450											
460											
470	2		2								
480	3		2		1						
490	2		2								
500	3		1	2							
510	10		6	4							
520	9		5	2	2						
530	6		2	2	1	1					
540	3		1	1			1				
550	2			2							
560	6			3		2	1				
570	13			3	5	5					
580	12				10	2					
590	13				9	2		2			
600	11				7		2		2		
610	9					5			4		
620	8				6		2				
630	4					3				1	
640	6		1		3				1	1	
650	5						1	1	3		
660	2						1		1		
670	1								1		
680	1								1		
690											
700											
Total	131	0	22	19	44	20	8	3	13	2	0
Ave. Length	579	--	518	540	593	594	611	615	639	640	--
S.D.	48.7	--	34.3	25.2	31.2	27.3	41	34.6	28.1	7.1	--

Table 16. The length frequency of male and female walleye captured during electroshocking below the Hattie Street Dam on the Menominee River on April 8, 15 and 23, 2013.

Length (mm)	Males	Females
390	1	
400	3	
410	6	
420	5	
430	4	
440	17	1
450	11	
460	12	1
470	12	
480	6	1
490	11	4
500	11	5
510	18	6
520	8	4
530	20	2
540	18	10
550	11	17
560	10	8
570	4	10
580	4	19
590	3	18
600	1	23
610		24
620	3	14
630	2	18
640	1	15
650	1	9
660	1	10
670		10
680		6
690		4
700		2
710		6
720		2
730		
740		1
750		
Total	204	250
Ave. Length	507	606
S.D.	54.2	53.6

Table 17. The 2013 age distribution of male walleye captured from the Menominee River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Male Total	Age												
		3	4	5	6	7	8	9	10	11	12	13	14	15+
390	1	1												
400	3	2		1										
410	6	5	1											
420	5	5												
430	4	4												
440	17	9	4	4										
450	11	4	7											
460	12	1	9	1	1									
470	12		3	7	2									
480	6		2	3		1								
490	11		3	2	1	5								
500	11			1	5	3	2							
510	18			2	7	5	2							
520	8		1		4	1	1		1					
530	20			6	8	6								
540	18			2	9	5							2	
550	11		1		4	2	3			1				
560	10				3	5	1	1						
570	4				1		1	1	1					
580	4				1	1		1	1					
590	3				2				1					
600	1				1									
610														
620	3							1	1				1	
630	2								1		1			
640	1										1			
650	1													1
660	1											1		
670														
680														
690														
700														
Total	204	31	31	29	49	34	10	4	8	1	2	1	3	1
Ave. Length	507	433	469	492	535	530	537	588	571	555	640	665	571	655
S.D.	54.2	17.5	25.8	36.5	29.9	26.3	26.6	26.3	48	0	7.1	0	46.2	0

Table 18. The 2013 age distribution of female walleye captured from the Menominee River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Females	Age											
		4	5	6	7	8	9	10	11	12	13	14	15+
430													
440	1	1											
450													
460	1	1											
470													
480	1	1											
490	4	3	1										
500	5	3	2										
510	6	4	2										
520	4	3	1										
530	2	1	1										
540	10	5	1	3	1								
550	17	2	6	7				2					
560	8		2	3	1	2							
570	10	1		7	1		1						
580	19		2	12		2	2	1					
590	18			12	2	2	2						
600	23		2	12	5		2	2					
610	24			12		6	6						
620	14		1	8	3	1			1				
630	18			2	2	4	4	4			2		
640	15			3	3	1	5	3					
650	9				2		1	4	2				
660	10			1		1		7	1				
670	10					2		7	1				
680	6							3	2			1	
690	4					2		2					
700	2					1				1			
710	6					1			2			1	2
720	2							2					
730													
740	1									1			
750													
Total	250	25	21	82	20	25	23	37	9	2	2	2	2
Ave. Length	606	519	553	596	615	633	620	656	675	725	635	700	715
S.D.	53.6	29.9	35.3	25.8	30.2	42.4	22.9	37.6	29.2	28.3	0	21.2	0

Table 19. The length frequency of male and female walleye captured during electroshocking below the DePere Dam on the Fox River on April 3 and 4, 2013.

Length (mm)	Male	Female
350		
360		
370		
380	2	
390	4	
400	10	
410	10	
420	37	1
430	41	
440	48	
450	49	
460	36	
470	38	
480	28	1
490	18	
500	14	3
510	12	4
520	20	1
530	14	2
540	12	2
550	6	2
560	5	3
570	4	4
580	5	
590	3	2
600	1	4
610	1	1
620	1	2
630	2	2
640	1	3
650		2
660		3
670		5
680		5
690		4
700		3
710		1
720		
730		
740		1
750		
Number	422	61
Ave. Length	472	613
SD	46.4	71.4

Table 20. The 2013 age distribution of male walleye captured from the Fox River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Male Total	Age								
		3	4	5	6	7	8	9	10	11
350										
360										
370										
380	2	1	1							
390	4	2	2							
400	10	10								
410	10	6	4							
420	37	25	6	6						
430	41	18		18				5		
440	48	5	19	19					5	
450	49		22	22	5					
460	36		14	8	14					
470	38		19	10	9					
480	28		3	21	4					
490	18		6	3	6					3
500	14		2	7	3		2			
510	12		1	5	5	1				
520	20			6	6	2	2	2	2	
530	14			3	9		1			1
540	12				3	3		1	5	
550	6				1	2	2		1	
560	5			1			2		2	
570	4				2		1		1	
580	5					2	1		2	
590	3				1				2	
600	1						1			
610	1					1				
620	1								1	
630	2								2	
640	1									1
650										
Number	422	67	99	129	68	11	12	8	23	5
Ave. Length	472	424	458	468	499	554	550	465	542	533
SD	46.4	23.3	23.7	30.1	34.4	30.2	31.5	55.5	65.3	65

Table 21. The 2013 age distribution of female walleye captured from the Fox River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Female Total	Age									
		3	4	5	6	7	8	9	10	11	12
400											
410											
420	1		1								
430											
440											
450											
460											
470											
480	1		1								
490											
500	3		2	1							
510	4		1	3							
520	1		1								
530	2		1	1							
540	2			2							
550	2			2							
560	3			2			1				
570	4			2	1	1					
580											
590	2							2			
600	4				2	1			1		
610	1				1						
620	2				1				1		
630	2					1				1	
640	3					2				1	
650	2							2			
660	3							1	2		
670	5						1		4		
680	5								5		
690	4							2	2		
700	3								1	1	1
710	1									1	
720											
730											
740	1								1		
750											
Number	61	0	7	13	5	5	2	7	17	4	1
Ave. Length	613	--	499	594	605	621	620	651	678	670	705
SD	71.4	0	36.4	24.4	18.7	30.5	77.8	41.6	30.2	46.5	0

Table 22. The length frequency of male and female walleye captured during electroshocking below Peshtigo dam, Peshtigo River, Marinette County, Wisconsin on April 17 and April 21, 2014.

Length (mm)	Male	Female
350		
360		
370		
380		
390		
400	2	
410	4	
420	3	
430	7	
440	17	
450	17	
460	5	3
470	8	1
480	8	1
490	14	3
500	16	4
510	23	8
520	22	10
530	19	8
540	26	7
550	20	8
560	17	7
570	17	5
580	12	4
590	8	5
600	9	3
610	9	5
620	3	7
630	3	7
640	2	7
650	1	6
660	1	2
670	2	3
680		3
690		4
700		7
710		2
720		1
730		
740		1
750		1
760		
770		
Number	295	133
Ave. Length	527	592
S.D.	55.9	69.9

Table 23. The 2014 age distribution of male walleye captured from the Peshtigo River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Number	Age									
		2	3	4	5	6	7	8	9	10	11
390											
400	2			2							
410	4		3	1							
420	3		1	1	1						
430	7			7							
440	17			17							
450	17		7	10							
460	5			4	1						
470	8			3	2	3					
480	8			3	4		1				
490	14				7		4	3			
500	16				4	6	3	3			
510	23				14		5				4
520	22				4	5	9				4
530	19		3				13	3			
540	26					5	16				5
550	20						8			8	4
560	17				1		7			7	2
570	17						9		7	1	
580	12						5			2	5
590	8						3		2	3	
600	9						1	2	1	3	2
610	9								1	4	4
620	3									2	1
630	3								1		2
640	2								1	1	
650	1								1		
660	1									1	
670	2							1			1
680											
Number	295	0	14	48	38	19	84	12	14	32	34
Ave. Length	527		461	449	504	516	548	541	597	586	571
S.D.	55.9		43.3	17.6	22.4	24.0	26.6	57.9	28.9	30.2	42.1

Table 24. The 2014 age distribution of female walleye captured from the Peshtigo River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Number	Age									
		3	4	5	6	7	8	9	10	11	12
440											
450											
460	3	1	2								
470	1		1								
480	1		1								
490	3		2	1							
500	4		3	1							
510	8		5	3							
520	10		8		2						
530	8		3	2	3						
540	7		4	3							
550	8			6	2						
560	7			3	3	1					
570	5			1	4						
580	4			1	2	1					
590	5					3	2				
600	3						2		1		
610	5					3	1		1		
620	7					3		2			2
630	7					5					2
640	7					4		1	1		1
650	6								2	4	
660	2					1				1	
670	3								2	1	
680	3									2	1
690	4									4	
700	7								3	3	1
710	2									2	
720	1									1	
730											
740	1									1	
750	1								1		
Number	133	1	29	21	16	21	5	3	11	19	7
Ave. Length	592	460	516	545	558	623	603	632	672	691	651
S.D.	69.9	--	22.5	23.8	20.9	24.2	8.4	11.5	43.8	25.9	31.5

Table 25. The length frequency of male and female walleye captured during electroshocking below Stiles dam, Oconto River, Oconto County, Wisconsin on April 10 and April 16, 2014.

Length (mm)	Male	Female
350		
360		
370		
380		
390		
400	3	
410	9	
420	17	
430	23	
440	24	
450	36	1
460	24	2
470	21	
480	24	12
490	17	14
500	16	13
510	13	21
520	8	17
530	10	11
540	8	9
550	5	11
560	3	9
570	3	7
580	3	7
590	2	4
600	1	7
610		9
620		3
630		3
640		6
650		3
660	1	2
670		1
680		
690		3
700		
710		1
720		
730		1
740		
750		
760		
770		
Number	272	177
Ave. Length	477	551
S.D.	42.9	56.6

Table 26. The 2014 age distribution of male walleye captured from the Oconto River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Number	Age								
		2	3	4	5	6	7	8	9	10
390										
400	3		3							
410	9		7		2					
420	17		17							
430	23		8	13		2				
440	24		5	14	5					
450	36		7	22	7					
460	24			14	10					
470	21		4	4	4		9			
480	24			10	5	5	4			
490	17			3	7	7				
500	16				6	6	4			
510	13				3	7	3			
520	8						6		2	
530	10					6	2	2		
540	8				3	2	3			
550	5					1	2	1		1
560	3						3			
570	3						1	1	1	
580	3					1	1	1		
590	2					1				1
600	1									1
610										
620										
630										
640										
650										
660	1									1
670										
Number	271	0	51	80	52	38	38	5	3	4
Ave. Length	477		434	458	479	511	516	557	542	605
S.D.	42.9		18.4	16.9	29.0	31.7	33.6	22.8	28.9	45.5

Table 27. The 2014 age distribution of female walleye captured from the Oconto River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Number	Age								
		3	4	5	6	7	8	9	10	11
440										
450	1			1						
460	2		2							
470										
480	12		12							
490	14		14							
500	13	3	10							
510	21		14	7						
520	17		11	6						
530	11		7	2	2					
540	9		2	5		2				
550	11		2	4	4	1				
560	9			6	1	1	1			
570	7		1	1	4	1				
580	7				3	4				
590	4			1	2					1
600	7					5		2		
610	9					9				
620	3				1	1				1
630	3					2			1	
640	6					4			2	
650	3					2				1
660	2									2
670	1									1
680										
690	3								1	2
700										
710	1								1	
720										
730	1								1	
740										
Number	177	3	75	33	17	32	1	2	6	8
Ave. Length	551	505	510	539	572	608	565	605	678	659
S.D.	56.6	--	21.1	26.2	22.8	30.0	--	--	42.3	34.2

Table 28. The length frequency of male and female walleye captured during electroshocking below Menominee dam, Menominee River, Marinette County, Wisconsin on April 22 and April 23, 2014.

Length (mm)	Male	Female
350		
360		
370		
380		
390		
400	4	
410	4	
420	8	
430	4	
440	19	2
450	21	2
460	18	1
470	18	3
480	14	3
490	17	7
500	9	12
510	12	13
520	10	13
530	19	7
540	14	11
550	19	12
560	15	9
570	10	5
580	9	12
590	5	15
600	1	15
610	1	14
620	2	16
630	2	11
640	2	9
650		11
660	1	6
670		8
680		5
690		4
700		
710		1
720		
730		5
740		3
750		
760		
770		1
Number	258	236
Ave. Length	507	589
S.D.	54.1	66.4

Table 29. The 2014 age distribution of male walleye captured from the Menominee River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Number	Age													
		2	3	4	5	6	7	8	9	10	11	12	13	14	15
400	4		1	3											
410	4		1	2	1										
420	8		5	3											
430	4			4											
440	19		6	10	3										
450	21			21											
460	18			12	3	3									
470	18			3	12		3								
480	14			2	3	3	6								
490	17			7	7		3								
500	9			2	2		3	2							
510	12						7	5							
520	10						6	2			2				
530	19					4	11				4				
540	14					6	6			2					
550	19						15		4						
560	15						9	3	3						
570	10						6			2	2				
580	9						1		2	2	4				
590	5					1	3		1						
600	1						1								
610	1								1						
620	2									1	1				
630	2										1				1
640	2										2				
650															
660	1										1				
670															
Number	258	0	13	69	31	17	80	12	11	7	17	0	0	0	1
Ave. Length	507		432	457	477	521	539	528	572	576	582				635
S.D.	54.1		13.8	23.1	19.5	37.9	31.5	23.4	20.1	27.3	46.7				--

Table 30. The 2014 age distribution of female walleye captured from the Menominee River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Number	Age											
		4	5	6	7	8	9	10	11	12	13	14	15
440	2		1		1								
450	2	1	1										
460	1	1											
470	3	3											
480	3	3											
490	7	7											
500	12	12											
510	13	13											
520	13	8	5										
530	7	2	3	2									
540	11		8	3									
550	12		3		6		3						
560	9		6						3				
570	5		1		3				1				
580	12			7	3			2					
590	15				12				3				
600	15				15								
610	14				8				3		3		
620	16				10				3	3			
630	11				4	3			4				
640	9				7			1	1				
650	11				3	2	2	2	2				
660	6				1		2		3				
670	8				2			4			2		
680	5				1			3			1		
690	4				1		1		1		1		
700													
710	1								1				
720													
730	5									1	1	2	1
740	3								2			1	
750													
760													
770	1												1
Number	236	50	28	12	77	5	8	12	27	4	8	3	2
Ave. Length	589	506	540	567	611	643	625	657	636	653	664	738	755
S.D.	66.4	17.5	24.3	22.9	35.9	10.9	59.3	33.9	48	55	44.5	5.8	28.3

Table 31. The length frequency of male and female walleye captured during electroshocking below DePere dam, Fox River, Brown County, Wisconsin on April 8 and April 9, 2014.

Length (mm)	Male	Female
350		
360	1	
370		
380	2	
390		
400		
410	5	
420	2	
430	11	
440	23	
450	17	2
460	30	
470	25	3
480	19	7
490	8	5
500	11	11
510	6	14
520	13	15
530	8	28
540	7	27
550	3	15
560	2	11
570	5	15
580	1	7
590	1	10
600		17
610	1	13
620		13
630		12
640		14
650		10
660		14
670		15
680		8
690		10
700		7
710		7
720		3
730		1
740		
750		
Number	201	315
Ave. Length	480	591
S.D.	41.1	66.3

Table 32. The 2014 age distribution of male walleye captured from the Fox River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Male Number Year Class	Age									
		2	3	4	5	6	7	8	9	10	11
		2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
350											
360	1	1									
370											
380	2			1		1					
390											
400											
410	5		3	1	1						
420	2			1	1						
430	11		3	8							
440	23		3	13	5	2					
450	17			11	6						
460	30			18	6	6					
470	25			11	7	7					
480	19			4	8	7					
490	8			2	2	2	2				
500	11			4	4		3				
510	6				2	2	2				
520	13				3	4	3				3
530	8				2	3	3				
540	7					2	2		3		
550	3						1	2			
560	2					1	1				
570	5				1		1		2	1	
580	1							1			
590	1									1	
600											
610	1							1			
620											
630											
640											
650											
Number	201	1	9	74	48	37	18	4	5	2	3
Ave. Length	480	365	432	460	480	491	528	578	557	585	525
S.D.	41.1	--	13.2	21.3	31.1	25.2	23.2	28.7	16.4	14.1	--

Table 33. The 2014 age distribution of female walleye captured from the Menominee River. Mean length at age was determined first by using an age length key to extrapolate length age distributions from the sub-sample of fish that were aged to the full sample length frequency, then second calculating the arithmetic mean of the length for a given age from the estimated full sample age distribution.

Length (mm)	Female Number Year Class	Age										
		2	3	4	5	6	7	8	9	10	11	12
		2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002
430												
440												
450	2		2									
460												
470	3			3								
480	7			7								
490	5			4	1							
500	11			6	5							
510	14			8	6							
520	15			7	4	4						
530	28			2	11	15						
540	27			4	9	14						
550	15				7	8						
560	11			1	6	3		1				
570	15				6	9						
580	7				4	3						
590	10				3	4		3				
600	17				1	4	1	4	4	1	1	1
610	13				1	2	3	3	1	1	1	1
620	13						5			3	5	
630	12							2	4	2	4	
640	14							7	2	5		
650	10							1		1	8	
660	14						2		4	4	2	2
670	15			2					4	5	6	2
680	8								5	3		
690	10									5	5	
700	7									3	3	
710	7							1	1		3	3
720	3									2	1	
730	1									1		
Number	314	0	2	44	64	66	11	22	21	36	39	9
Ave. Length	591		455	518	548	558	628	625	650	669	665	672
S.D.	66.3		--	40.8	27.9	25.1	19.5	29.7	32.8	32.6	32.2	40.9

Table 34. The recapture of tagged walleye during DNR surveys by year and river. The number indicates the number recaptured in that location and the year is in the parenthesis. All recaptures were made utilizing the boom shocker boat.

River Tagged	Year Tagged	Recapture River			
		Oconto River	Peshtigo River	Menominee River	Fox River
Oconto River	2012	2 -(2014)	1-(2014)		
	2013	1- (2014)			
	2014				1-(2014 Fall)
Peshtigo River	2012				
	2013	2- (2014)	1- (2014)		
	2014				
Menominee River	2013		1- (2014)	4- (2014)	
	2014				
Fox River	2013				1- (2014)
	2014				1- (2014 Fall)