

Results of the 2005 WDFW Fall Walleye Index Netting (FWIN) Surveys (Yearly Surveys to Improve Management of Washington's Walleye Populations)

Sprague Lake, Scooteney Reservoir, Moses Lake, Potholes Reservoir, Banks Lake and Lake Roosevelt

Walleye (*Sander vitreus*) have become one of the most popular sport fish in Washington and continue to grow steadily in popularity. Although they inhabit only twelve lakes in eastern Washington they also occupy the entire mainstem of the Columbia River from the Canadian border to near the mouth at the Pacific Ocean.

In general, due to favorable conditions, Washington's walleye populations grow faster and establish higher relative abundances than the average conditions in other areas of North America that walleye inhabit. Because of the walleye's importance as a renewable recreational resource, the Washington Department of Fish and Wildlife (WDFW) began the FWIN surveys in 2001 in order to manage them more efficiently and effectively. Six waters were sampled in the fall of 2005 (figure 1).

All the data collected during the fall walleye surveys are obtained by using the standardized Ontario FWIN protocol. This standardized sampling method allows valid comparisons of results between waters and from year to year. It also gives us both a short term and long term perspective on each population. During the fall, walleye are more evenly distributed throughout the lake and the water column providing the most consistently good time to obtain a representative sample of the population. Sampling begins when surface water temperature lowers to 59°F and must stop when it reaches 50°F. The walleye are collected with gillnets only. The nets are 200 feet long by six feet deep. Each net contains eight panels of increasing mesh size from one inch to six inches (stretched mesh). Each net is set in a randomly selected site for approximately 24 hours. In order to make effort comparable, the number of net sets is determined by the surface area of the water being sampled. Each walleye captured is sampled for total length, round weight, visceral fat weight, and gonad weight. Sex and sexual maturity are determined by examination of the gonads. Otoliths are taken from each fish for age and growth analysis.

The results from our 2005 surveys are shown in this report in the form of graphs followed by a brief explanation of each. The **relative abundance** graph (the average number of walleye per net) compares values from all lakes for all years sampled, on a single graph. After that, there are three individual graphs for each lake: **size distribution** (the percentage of walleye in each size group), **age distribution** (the percentage of walleye in each age group), and **species composition** (the percentage of each different species in the fish community for each lake). **Please bear in mind that since we sample**

exclusively with gill nets for the FWIN surveys, the species composition graphs may or may not accurately represent the fish communities from each lake. These graphs will only provide a general picture of the fish community make-up. Like any single capture technique, gill nets have particular biases for and against certain species and sizes of fish. They are however, the best single technique for capturing a representative sample of the walleye populations in the fall. A more detailed report comparing all FWIN sampling from 2001-2005 with a more in-depth analyses of the changing population's characteristics will be completed and posted on the WDFW website later this year.

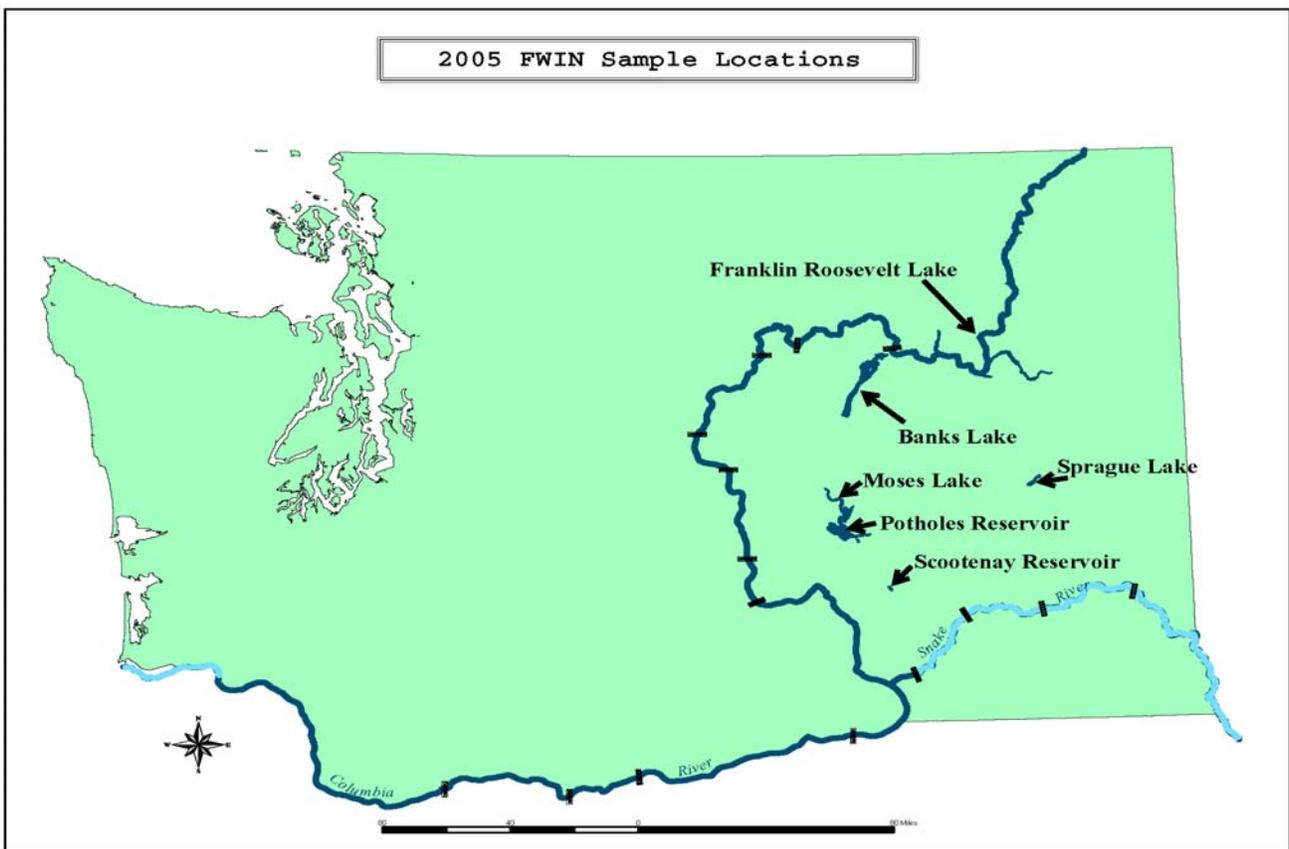
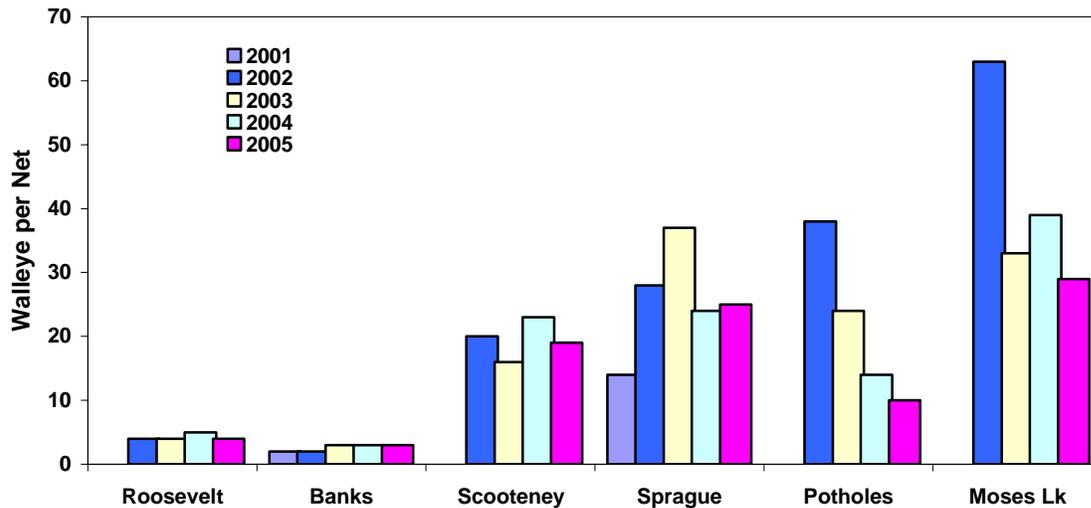


Figure 1. Locations of the six lakes sampled by WDFW for the 2005 Fall Walleye Index Netting surveys.

Relative Abundance (Fish per Net)

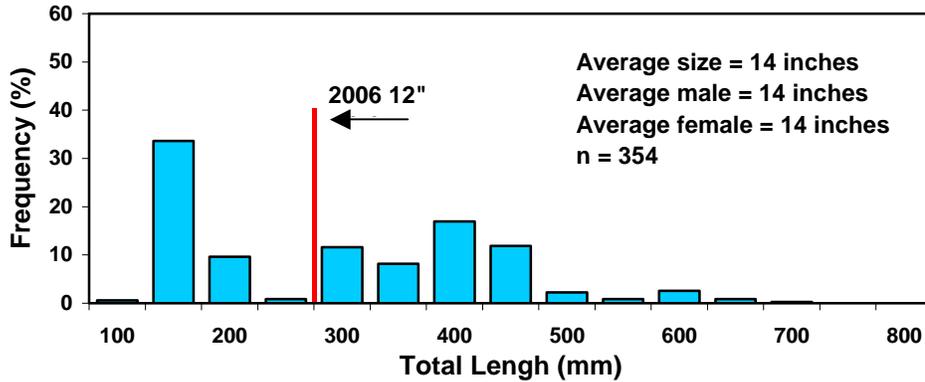


This graph simply shows the average number of walleye caught per net, regardless of size, for each lake, for each year. With the exception of Potholes Reservoir and Moses Lake, between 2002 and 2003, all the lakes have maintained relatively similar catch-per-effort values from 2001 to 2005. The drop in catch for Moses Lake between the first and second years may be explained by a slight change in the way the nets were set. Potholes Reservoir however has decreased each year since we began sampling. As with Moses Lake, some of the decrease could be attributed to the change in the way the nets were set but not for every year. The true reason remains an enigma at this time. Like other members of the perch family, walleye form very strong year classes and very weak year classes, so it is normal for their populations to cycle up and down over time. Our sampling effort is still in its initial stages compared to states in the Midwest that have been doing index surveys on their walleye waters for over 40 years. Continued monitoring in Washington will provide more and better data that will clarify the condition and trends of each of our walleye populations.

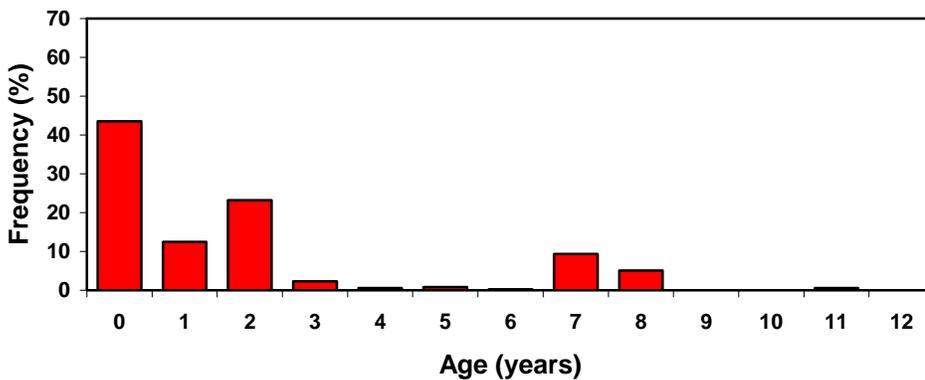
We are fortunate to have the walleye densities in Washington that are currently occurring. Compared to other places in North America where walleye live, Washington waters produce more, bigger and faster growing walleye than anywhere. An average value in the Midwest for this measured parameter would be about 6-9 fish per net. Across Canada, the average values are about 2-8 fish per net. Since we began our index surveys here in Washington, the average value for all years and all lakes combined is 19 walleye per net. Whether or not Washington waters can continue to support such high walleye densities and large-sized fish

remains to be seen. One thing is for certain though: Washington walleye anglers are enjoying some of the best walleye fishing anywhere.

**Size Distribution
Sprague Lake, 2005**

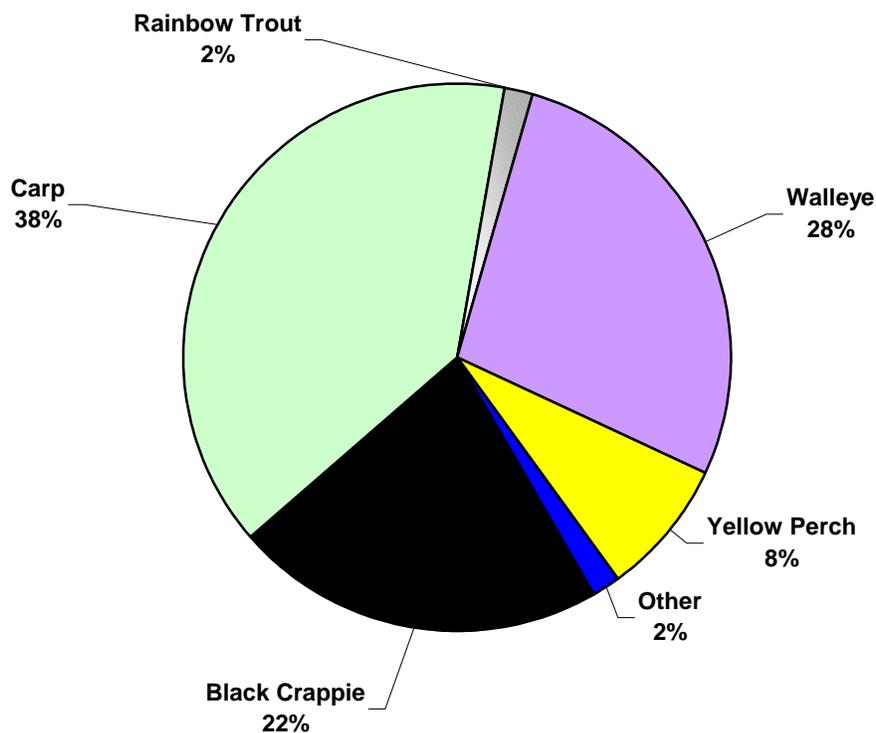


**Age Distribution
Sprague Lake, 2005**



The size distribution of walleye sampled from Sprague Lake in 2005 shows a wide range of sizes, with the majority (55%) greater than harvestable size (12 inches). The majority of harvestable sized fish (36%) were greater than 16 inches. The overall average size of walleye decreased three inches from 2004. This is due to the fact that many young-of-the-year (YOY) walleye were captured this year, reducing the average size of all fish combined. Excluding the 2005 YOY, the average size of the walleye in Sprague Lake was 17 inches; the same as last year when we did not catch any YOY. The majority of fish captured in 2005 were YOY and two-year-olds, which should insure good angling opportunities for at least the next few years. The reduction of the minimum size limit to 12 inches for 2006 will also create additional “take-home” opportunities. The very large number of YOY captured indicates natural production in Sprague Lake is quite good even though it is difficult to predict when the next strong year class will be.

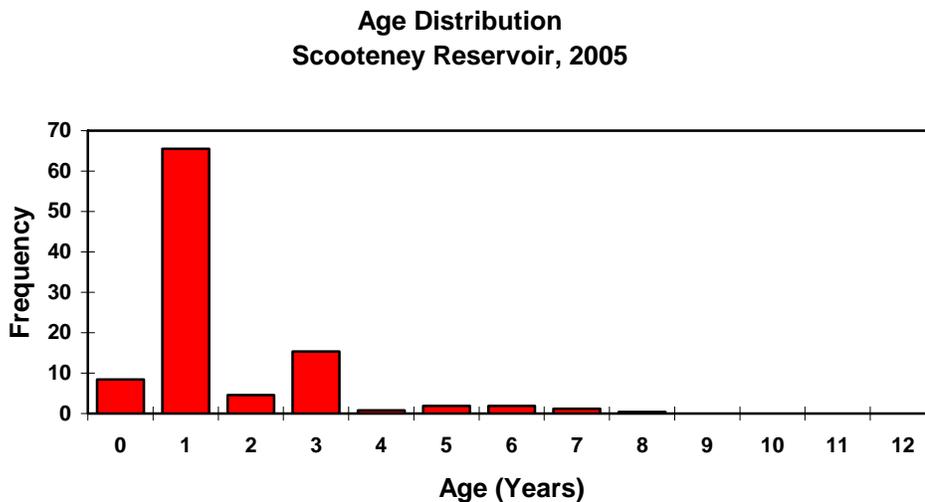
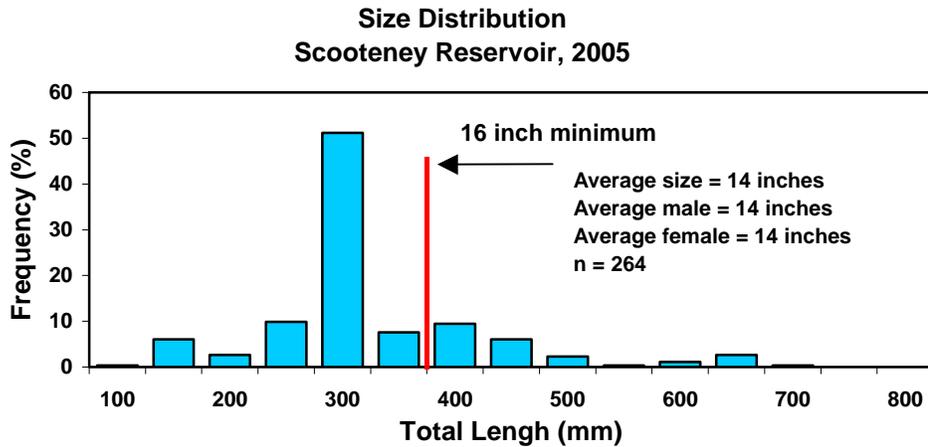
Species Composition Sprague Lake, 2005



The composition of the Sprague Lake fish community in 2005 had one major difference from 2004: an extremely large number of one-year-old common carp. Conditions were favorable for the formation of a very strong year class, which is quite unusual. Common carp are long-lived fish, and once the carrying capacity for a lake is reached, recruitment of young carp into the population is extremely slow. Carp year classes of this magnitude are extremely rare.

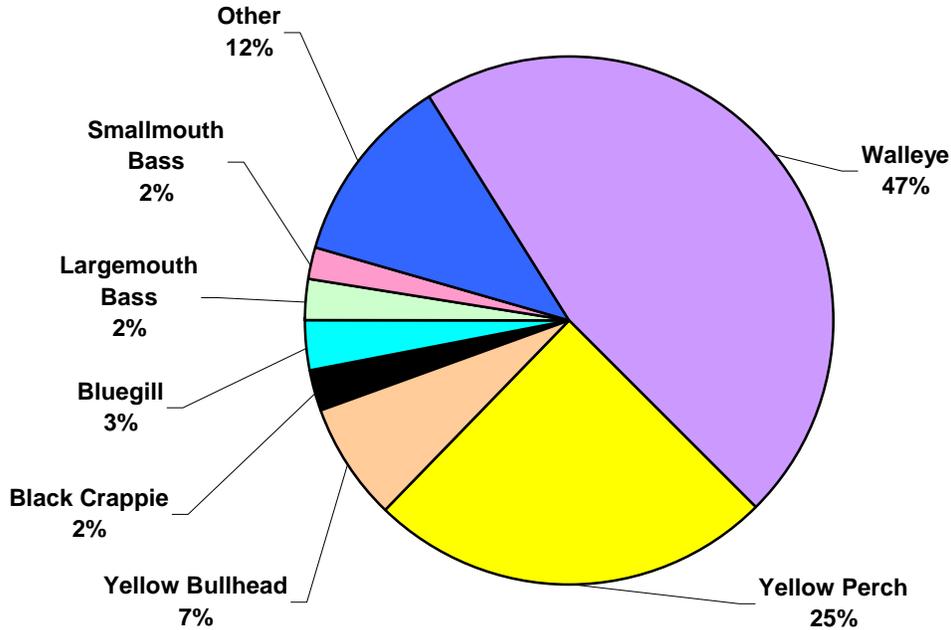
The overall relative abundance of the other species sampled in 2005 remained similar to 2004. Walleye angling opportunities are still very good, with the fish averaging 14 inches in length and 1.3 pounds in weight. Fifty-three percent of all yellow perch were of catchable-size (>5 inches), ranging in length from 7.5 to 14 inches and averaging 10 inches long. Catchable-size black crappie (>5 inches) ranged in length from 8.5 to 10 inches and averaged 9.5 inches long. Smallmouth bass averaged 13 inches and weighed 1+ pound, rainbow trout were 17 inches and weighed 3 pounds, and catchable carp (> 11 inches) averaged 24 inches and 8 pounds. Other species available included largemouth bass, brown bullhead, channel catfish and bluegill. “Catchable”-size or “stock-size” fish

in this report refers to those fish entering the fishery but not necessarily the legal minimum size. For example, a stock size walleye is ten inches in length but the legal minimum size for Sprague in 2006 is 12 inches and 16 inches in Scooteney Reservoir.



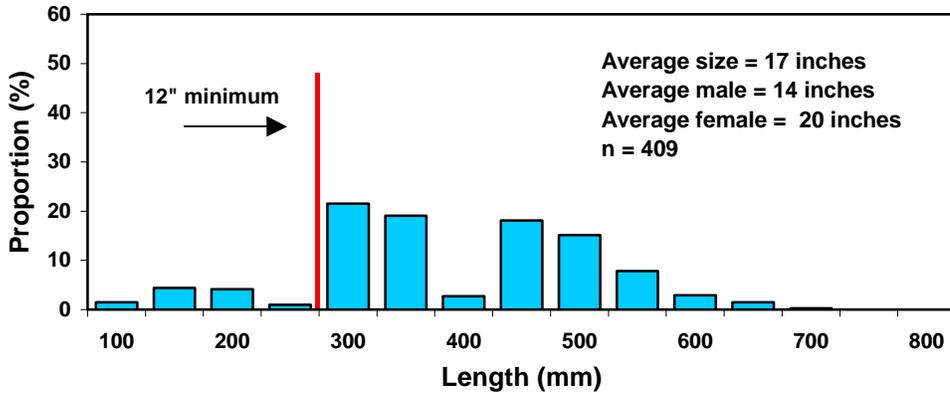
There was a wider range of sizes in Scooteney Reservoir in 2005 than 2004 but fewer of each. The very large two-year-old class of 2004 (55% of the catch) was reduced significantly to only about 15% of the catch this year. That is likely due to a combination of angler exploitation and natural mortality. Fortunately there was a strong one-year-old class in 2005 but they may not get to legal size for most of 2006. Forage and spawning opportunity in Scooteney Reservoir is not as plentiful as other Washington walleye waters but it does maintain a moderately good fishery.

Species Composition Scootenev Reservoir, 2005

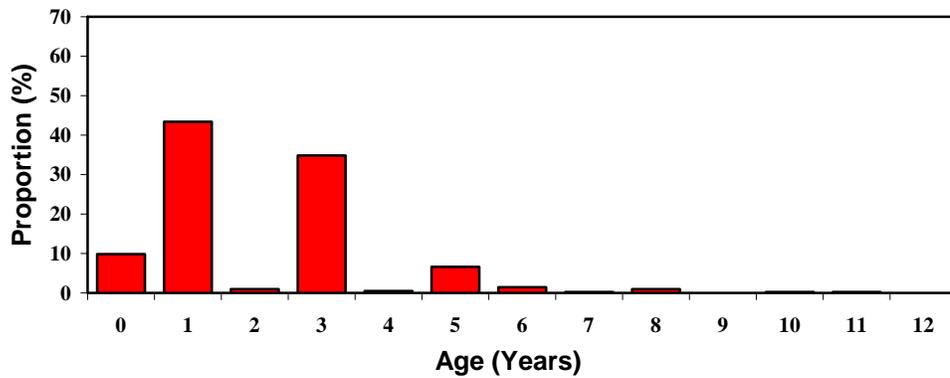


In the fall of 2005, Scootenev Reservoir catchable walleye (>10 inches) (minimum legal size is 16 inches) ranged from 10 to 28 inches and weighed up to 8 pounds. They averaged 14 inches in length, so in 2006, there should be plenty of legal-size walleye to catch. In addition to walleye, several other species were sampled including; catchable largemouth bass (>8") from 8 to 17 inches (10" average), smallmouth bass (>7") from 7.5 to 17.5 inches (11" average), black crappie (>5") from 6 to 10.5 inches (7" average), yellow perch (>5") from 6 to 13 inches (8" average), and channel catfish (>11") from 11 to 27 inches (22" average) weighing up to 8.5 pounds. Other species sampled included lake whitefish (which can be very good smoked) averaging 19 inches and weighing up to 5 pounds, suckers, pumpkinseed sunfish, yellow bullhead, and common carp.

**Size Distribution
Moses Lake, 2005**

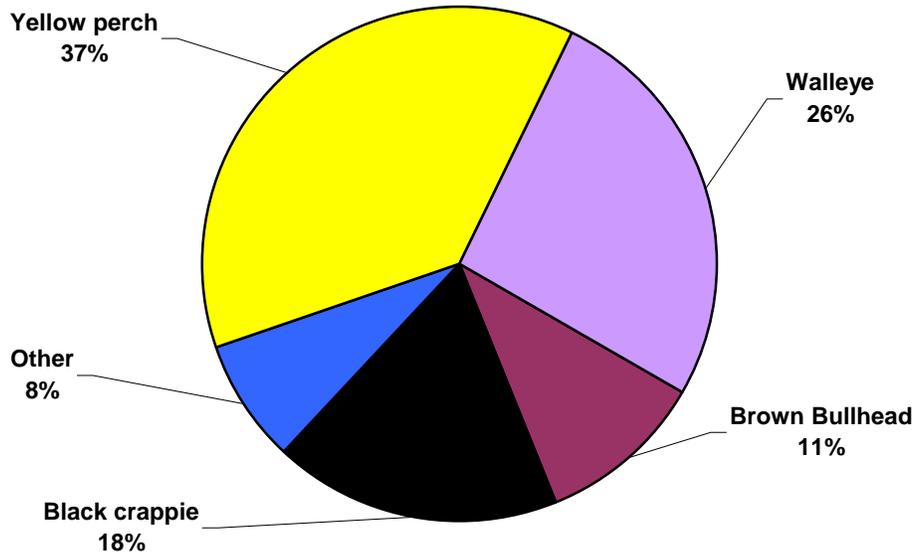


**Age Distribution
Moses Lake, 2005**



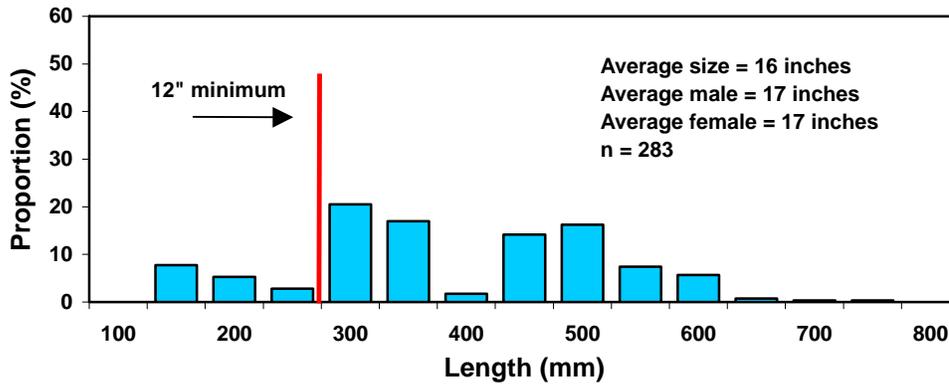
Walleye collected from Moses Lake during 2005 FWIN had a bimodal length distribution. The majority of fish were split between 12–16 inches and 18 – 25 inches, representing the strong one-year-old and three-year-old age classes respectively. With the new minimum size limit of 12 inches, all these fish are eligible for the creel this year and they should provide anglers with a wide range of sizes in 2006. The very strong one and three-year-old age classes should provide good fishing opportunities for the next few years.

Species Composition Moses Lake, 2005

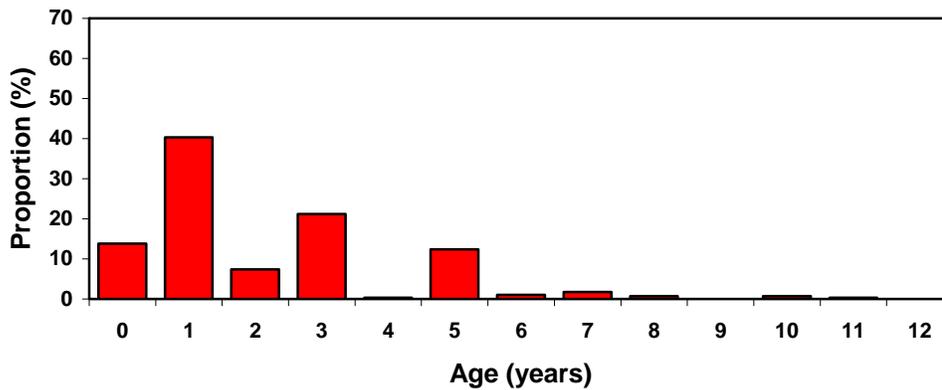


The walleye in Moses Lake ranged from five to 30 inches long, averaging 17 inches in length and two pounds in weight. There is once again, a variety of angling opportunities other than walleye. As in 2004, yellow perch far outnumber all other fish in the reservoir and have increased in average length to seven inches (ranging from 4-12 inches). Brown bullhead averaged 11 inches (ranging from 6-16 inches), black crappie averaged only 5 inches (ranging from 3-9 inches) and carp were averaging 24 inches and 7 pounds (ranging in length from 7-32 inches). Other species present in lower numbers include bluegill, lake whitefish, suckers, largemouth and smallmouth bass and rainbow trout.

**Size Distribution
Potholes Reservoir, 2005**

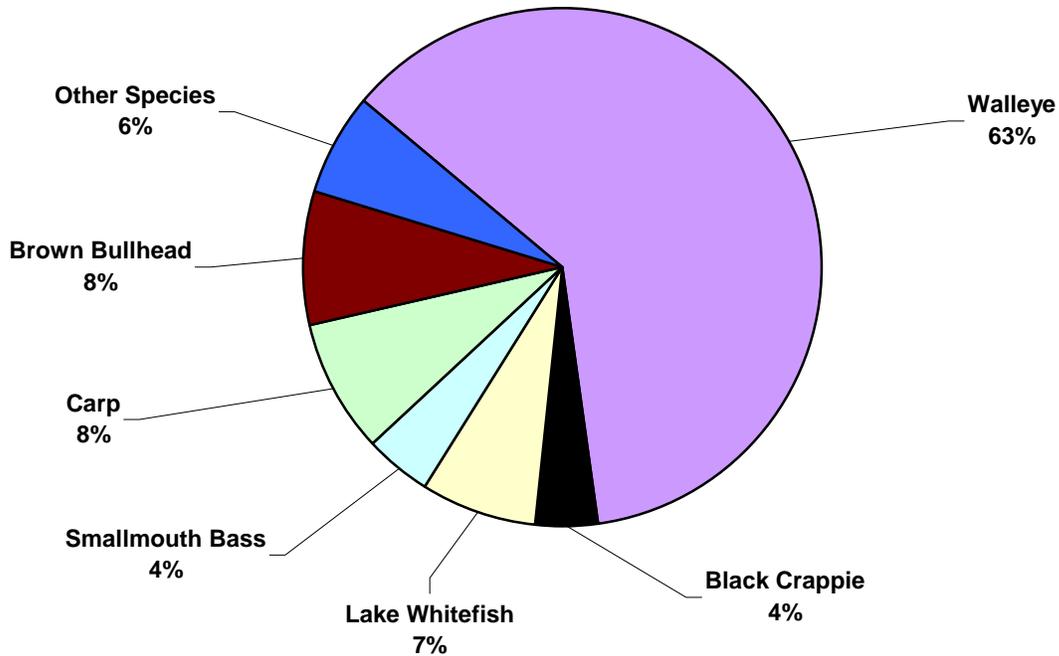


**Age Distribution
Potholes, 2005**



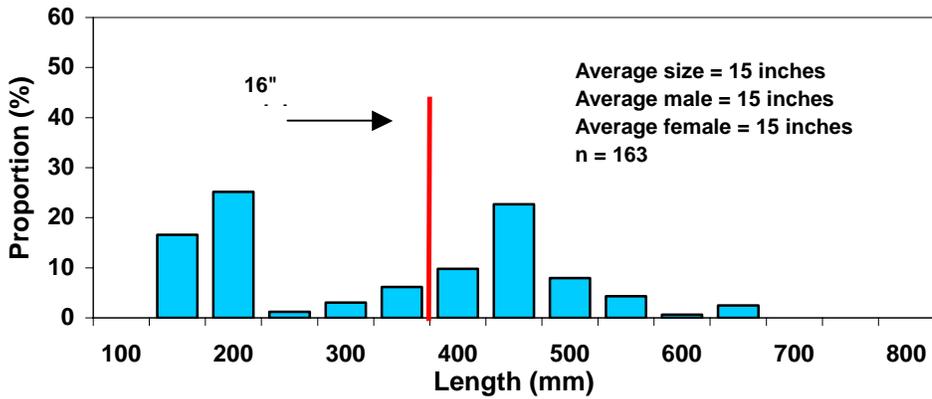
The size distribution of the walleye in Potholes Reservoir was similar to that in Moses Lake although the average size is smaller. The two major size groups are 12-16 inches and 18-22 inches. Also like Moses Lake, about 85% of the walleye captured in the 2005 FWIN were over the 12-inch minimum size limit (the overall average length is 16 inches). The strong one-year-old and relatively strong young-of-the-year and three-year-old age classes indicate there should be good fishing opportunities for the next few years.

Species Composition Potholes Reservoir, 2005

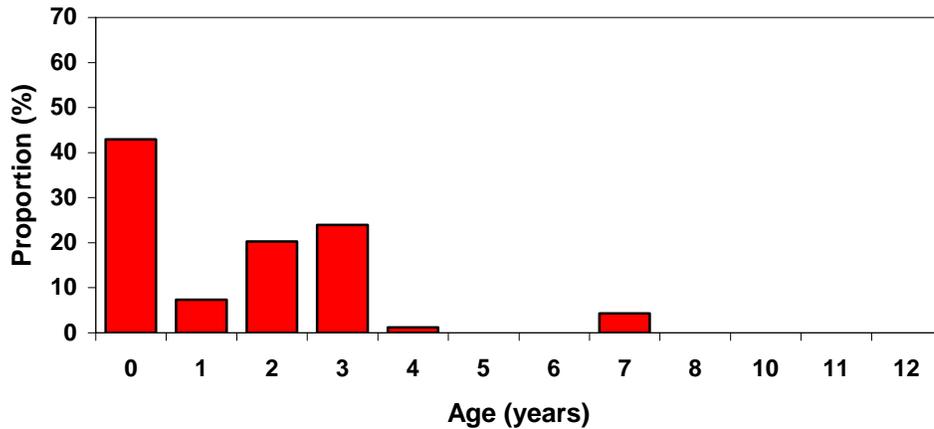


In the 2005 FWIN survey, 65% of all the fish captured in Potholes were walleye. This is far and away the highest percent of any of the lakes we surveyed. This is very good news to Potholes walleye anglers. The average size of all walleye we captured was 16 inches in length and 1.9 pounds in weight. They ranged in length from seven to 30 inches. Like other waters in the Columbia Basin, Potholes offers a large diversity of other angling opportunities. Brown bullhead averaged 12 inches (ranging from 8-15 inches) and .9 pounds, black crappie averaged seven inches (ranging from 4-13 inches), lake whitefish (very good for smoking) averaged 21 inches (ranging from 8-26 inches) and 4.4 pounds, smallmouth bass averaged 13 inches (ranging from 7-20 inches) and 1.3 pounds and common carp averaged 24 inches (ranging from 15-29 inches) and 7.4 pounds. Other fish species present in lower numbers include bluegill, burbot and rainbow trout.

**Banks Lake
Size Distribution, 2005**

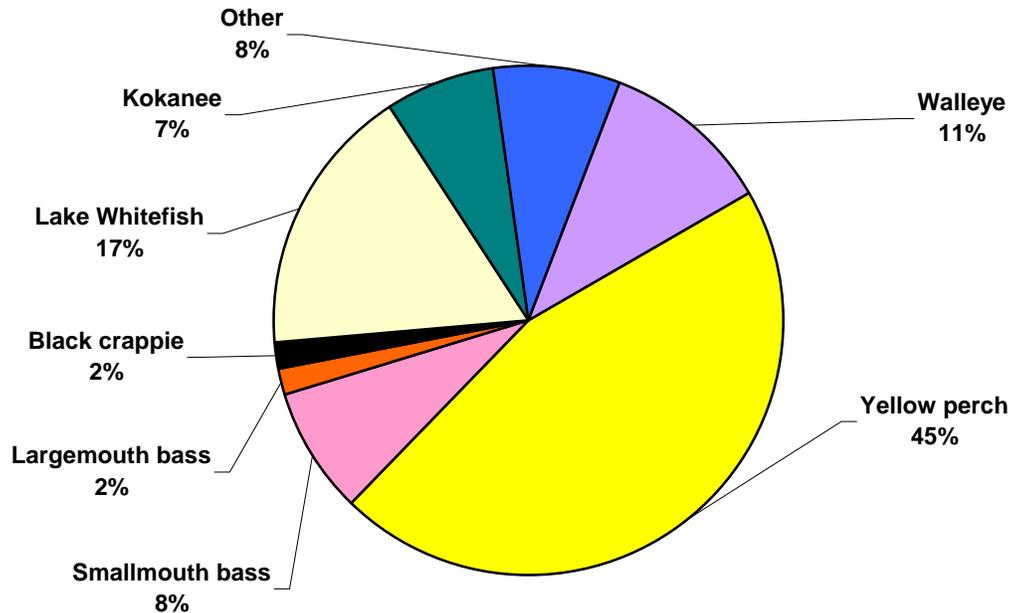


**Age Distribution
Banks Lake, 2005**



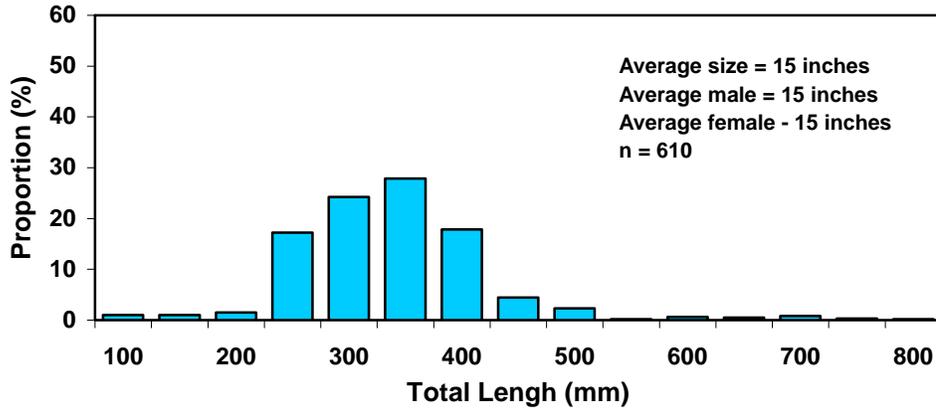
The 2005 size distribution for walleye in Banks Lake was very similar to that in 2004. There was a wide range of sizes, with 47% of the walleye population over 16 inches. Although we did not see a strong one-year-old age class as we did in most of our other walleye lakes, there is a very strong YOY class. Because of the 16-inch minimum size limit, these fish will not be available to the creel until they are two to three years old. The two and three-year-olds, which were the only two strong age classes last year, still represent about 45% of the population and the majority of the fish over 16 inches.

Species Composition Banks Lake, 2005

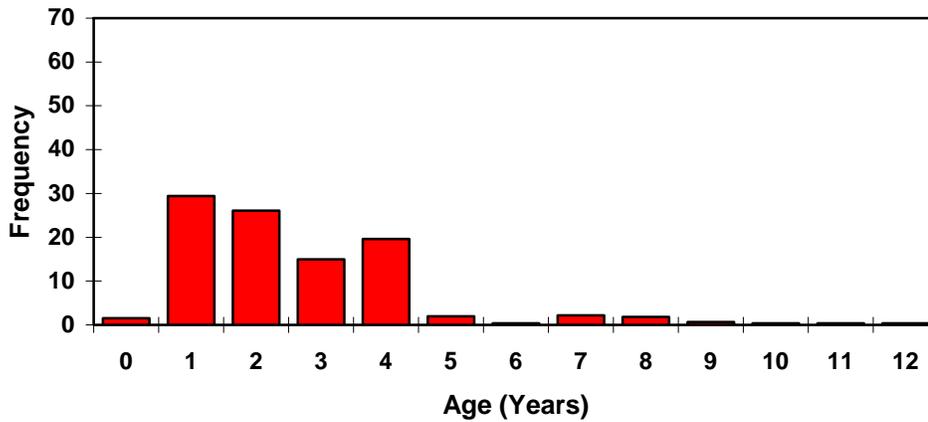


We captured 16 different species during our 2005 FWIN survey in Banks Lake. Walleye averaged almost 15 inches (ranging from 7-28 inches) in length and 1.5 pounds. Yellow perch, 45% of all the fish we caught, averaged eight inches in length (ranging from 2-13 inches), black crappie averaged nine inches (ranging from 2-12 inches), brown bullhead averaged ten inches (ranging from 5-14 inches) and .6 pounds, kokanee averaged 18 inches (ranging from 3-26 inches) and two pounds each, rainbow trout averaged 17 inches (ranging from 5-21 inches) and two pounds, smallmouth bass averaged 14 inches (ranging from 2-21 inches) and 1.4 pounds, largemouth bass averaged only ten inches (ranging from 2-19 inches), lake whitefish averaged 17 inches (ranging from 8-22 inches) and two pounds and common carp averaged 20 inches (ranging from 4-28 inches) and four pounds. Other fish present in lower numbers included burbot, suckers, pumpkinseed sunfish and tench.

**Lake Roosevelt
Size Distribution, 2005**

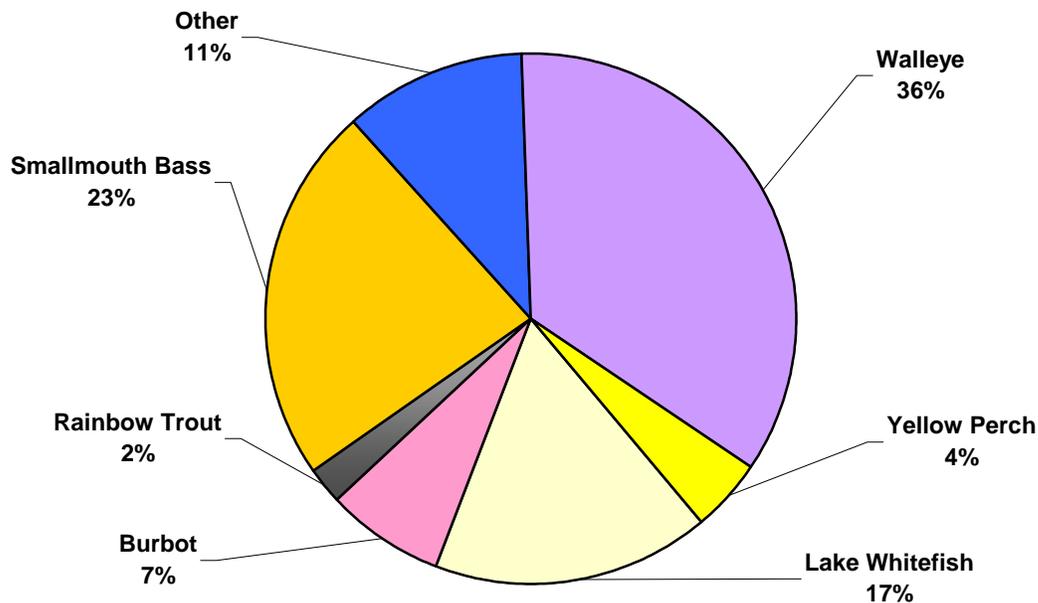


**Lake Roosevelt
Age Distribution, 2005**



We have a large sample size from Lake Roosevelt because of its large physical size. It is divided into three sections, each one sampled as an individual survey, but the results are combined. The 2005 FWIN survey from Lake Roosevelt showed four fairly strong year-classes, with little variation in the abundance of age one to age four fish. Eighty-nine percent of the walleye we captured were between 10 and 18 inches. This limited size range is due at least in part to a combination of slow growth and low mortality, at least through age five. Considering this, angling opportunities for walleye in Lake Roosevelt should remain similar to what they have been for next few years.

Species Composition Lake Roosevelt, 2005 FWIN



As mentioned above, Lake Roosevelt walleye grow slowly, and although historically there have been many large walleye angled in FDR, in the fall of 2005 FWIN captured walleye ranged in length from 10 to 31 inches and averaged 15 inches and one pound in weight (exact same as last year). There were 14 other species captured in our nets: yellow perch ranged in size from 5 to 13 inches (averaged nine inches), smallmouth bass ranged from 7 to 18 inches (averaged 12 inches and one pound), rainbow trout ranged in length from 10 to 21 inches (averaged 16 inches and 1.7 pounds), lake whitefish averaged 19 inches and 3.3 pounds and burbot (a.k.a. freshwater ling cod) averaged 19 inches. Other species present in lower numbers included brown trout, eastern brook trout, mountain whitefish, northern pikeminnow, suckers, peamouth, sturgeon and common carp.

As mentioned earlier, WDFW will be publishing a comprehensive report covering all the FWIN data collected from 2001 to 2005. It will provide more in-depth explanations of the above information, along with information on growth, physical condition, sex ratio by size, reproductive maturity by size and age and explanations of the trends we are seeing to date in our FWIN surveys. It should be published later in 2006 and will be printed as an agency research report and also placed on the WDFW internet site near the location of this report.

For questions, comments or additional information on this or other FWIN reports or surveys, please contact Bruce Bolding in the Olympia WDFW office: telephone at 360-902-8417 or email at boldibdb@dfw.wa.gov