

FISH

Status: Common Native Game Species

WALLEYE

(*Stizostedion vitreum*)

State Fish of South Dakota

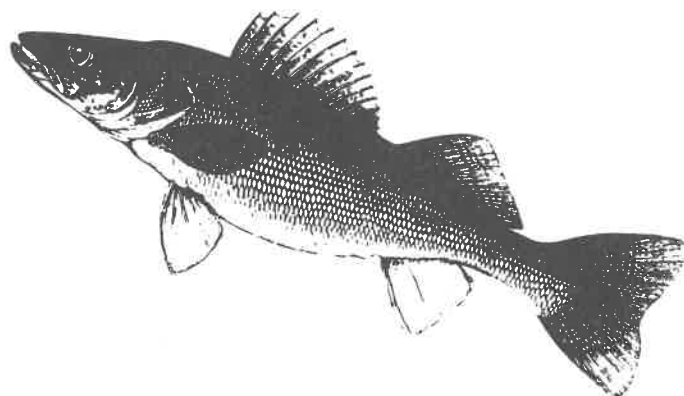
Description

The walleye is a member of the perch family of fishes, and has the characteristic *spiny dorsal fin* as well as the *soft dorsal fin*. Other common names for the species include pickerel, walleyed pike, marble-eye and walleyed pike perch. The names stem largely from the walleye's glassy, silvery eyes. The walleye's skin color can vary with water clarity, but usually appears olive green-brown on the back and upper sides fading to white on the bottom. Some walleyes, particularly younger ones, will have dark vertical bands on their back extending down their sides. The *dorsal fin* is generally dusty or clear with the last few membranes being black. The bottom lobe of the tail fin has a characteristic white tip.

In South Dakota, walleye can grow to exceed 30 inches (76.2 cm) and 12 pounds (5.45 kg). The average length is 14 inches (35.6 cm) and the state record is 15 pounds 3 ounces (6.9 kg), caught April 7, 1979 in Lake Sharpe. Walleyes can live longer than 10 years, although most walleyes average about 3 years in age.

Distribution

The native range of walleye is the Midwestern United States and most of Canada. Walleye have been introduced



outside that range and can be found as far east as New England and as far south as Texas.

Walleyes are found throughout South Dakota. However, because walleye require a "cool-water" habitat, they occur primarily in the eastern glacial lakes and in the Missouri River reservoirs. In Western South Dakota, walleye are found in large irrigation reservoirs like Shadehill, Angostura, and Orman. Eastern lakes with notable walleye fisheries include Kampeska, Poinsett, Enemy Swim, and Thompson. All the Missouri River reservoirs are well known for their walleye fisheries. There are many other lakes throughout South Dakota that have

walleye fisheries, some of which vary from year to year.

Natural History

In many lakes, walleye are the predominate predator species. Walleye can comprise up to fifty percent of the *fish community* by number. Walleyes are spring spawners with *spawning* taking place when water temperatures reach 42° to 52° F (5.5 to 11.1° C). In South Dakota this is usually late April. *Spawning* occurs over gravel beaches or *shoals* in lakes. Walleyes will sometimes make *spawning* migrations up rivers. In South Dakota, walleyes in Lake Oahe congregate in the western *tributaries* for *spawning*. *Spawning* takes place at night.

Walleyes are not territorial, and no nest is built. Each egg is only about one-sixteenth of an inch (1.6 mm) in diameter and females can lay as many as 400,000 eggs. The eggs are sticky and cling to the bottom, hatching in about two weeks. Most eggs do not hatch successfully. Even in a hatchery setting where there are no predators and environmental conditions are stable, hatching success may only average thirty percent. Walleye fry (newly hatched fish) are as small as one-fourth of an inch (6.4 mm) in length. Walleye fry feed on *zooplankton* and mostly drift in the open water. Most walleye fry are eaten by predators or starve. Those that do survive grow fast, reaching 5 to 6 inches (12.7 to 15.2 cm) by fall.

Male walleyes become mature at about two years of age and females by age three or four. Adult walleyes feed on other fishes, such as minnow species, yellow perch, and rainbow smelt. Walleyes prefer cool water which will not exceed seventy degrees Fahrenheit (21.1° C). They also prefer water with low transparency because of their light-sensitive eyes. Walleyes will often move to deeper water during the hot summer months and will often occur in loose *schools*.

Significance

The walleye is the official state fish of South Dakota, and is a very popular sport fish species, ranking number one in preference by anglers. The walleye is deemed prized table food and on the Missouri River reservoirs alone, anglers spend over 1.3 million hours each year fishing for walleye. Walleye fishing is a major recreational pastime for many South Dakotans and generates significant economic activity in the state.

Based on limited archeological investigations it appears that walleye was not an important dietary component for American Indians inhabiting the South Dakota area.

Conservation Measures

Because of the popularity of walleye among anglers, walleye populations are intensively managed in South Dakota by the State Game, Fish and Parks Department. Every spring, over one-hundred million eggs are collected to supply the state hatchery system. Walleye stocking is an important management tool available to biologists. However, stocking cannot increase the walleye population of a lake beyond the natural *carrying capacity* of the habitat. Stocking can help compensate for natural reproduction which is often variable.

It is difficult to know exactly how many walleyes are caught each year in South Dakota, although the harvest assuredly exceeds one million annually. Harvest from the Missouri River reservoirs often exceeds 1/2 million annually! Biologists use *creel surveys* to estimate fishing use and harvest on lakes and reservoirs.

Other important management techniques are less obvious than fish stocking. In reservoirs, water levels can often be manipulated to create conditions favorable to good reproduction. Key walleye populations are closely monitored around the state by biologists through annual netting surveys. These surveys collect specimens to measure abundance, growth

rates, and population size structure. Biologists use harvest regulations such as daily *creel limits* and fish length limits to control the walleye harvest.

Anglers typically catch walleyes in the one to three pound (0.45 to 1.36 kg) size range, when the fish are three to six

years of age. Because of the popularity of walleye and the large number of anglers state wide, careful management is necessary to protect the resource and prevent over-harvest. Anglers can contribute to the conservation of the state's limited walleye resources by practicing catch and release fishing.

Glossary

Carrying capacity - the maximum number of individuals of a species that can be supported over a long period in a specific habitat.

Creel limits - the number of fish of each species that an angler is allowed to keep at any one time.

Creel surveys - counts conducted by wildlife managers of the fish caught and kept by anglers.

Dorsal fin - the unpaired fin or fins on the midline of the top side of fish. Those with sharp, stiff, cartilage rays for support are referred to as spiny; those lacking the stiff spines are called soft.

Fish community - all the combined fish species found in any lake.

School - a group of fish of the same species that swim together.

Shoals - any place in a sea, ocean, lake, or river where the water is shallow.

Spawning - fish reproduction, the release of eggs and milt (liquid containing sperm).

Tributaries - small streams that flow into larger ones.

Zooplankton - extremely small animals that drift or swim weakly in the water.

References

Colby, P.J., R.E. McNicol, and R.A. Ryder, 1979. Synopsis of Biological Data on the Walleye. Synopsis No. 119, Food and Agriculture Organization of the United States.

Scott, W.B. and E.J. Crossman, 1973. Freshwater Fishes of Canada. Fisheries Research Board of Canada, Bulletin 184, Ottawa.

Tomellers, Joseph R. and Mark E. Ederle, 1990. Fisheries of the Central United States. University Press of Kansas.

Selected Resources for Teachers

Sport Fishing and Aquatic Resources Handbook, Instruction and Activities. Minnesota Department of Natural Resources, 1991. Grades 4-12.

Fishes of the Dakotas, poster/mobile/fact sheet set, available for free from Education Services, Division of Wildlife, Dept. of Game, Fish and Parks, 523 E. Capitol, Pierre, S.D. 57501.

Understanding Walleye, a 60 minute video that covers basic biology as well as fishing tips. Available from S.D. State Library, order #VC2234.

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Publication of the *Walleye* fact sheet was funded by the South Dakota Department of Game, Fish and Parks, Division of Wildlife, Pierre, SD.