

TROUT-PERCH

Percopsis omiscomaycus Walbaum 1792
(Percopsidae)

Global rank G5 (20Sep1996)
State rank S3 (20Sep1996, reviewed
02May2006)

State rank reasons

Distribution restricted to mainstream Yukon River; range extension from Porcupine River relatively new. Considered rare; population trend unknown. Habitat is mostly pristine; threats are minimal and include water pollution and diversion.

Taxonomic comments

The family Percopsidae, found only in North America, contains two species: the trout-perch, *Percopsis omiscomaycus* and the sand roller, *P. transmontana*.

General description

A small thick bodied fish with a large head, long snout and small mouth. Generally silvery to transparent in color. Five distinct rows of dark spots along the sides and back. Dorsal and anal fins have weak spines. Teeth are small and in brush-like bands (Scott and Crossman 1973).

Diagnostic characteristics

Trout-perch share characteristics with both trout and perch families. Individuals have an adipose fin like trout; however they have spines in some fins and superficially resemble members of the perch family. Distinguished from all other Alaskan fish by the combination of ctenoid scales, weak spines in the dorsal and anal fins, long pectoral fins, and presence of an adipose fin. Alaskan fish are rarely more than 8 cm in length (Morrow 1980, Mecklenburg et al. 2002).

Length (cm) 7.5 to 10.0

Weight (g) 3-7

Reproduction

Usually spawns in spring, but spawning may extend into late summer in some lakes. Most spawners are age I or II (Scott and Crossman 1973, Becker 1983). Spawning generally takes place at night, near the water surface, and near the edge of slow streams or along lake beaches. Several males cluster around and press close to the sides of the female. Eggs and milt are released simultaneously. A single female can lay up to 700 eggs. Eggs are adhesive and hatch in about 6 days at 20 to 23°C (Magnuson and Smith



Photo credit: Ohio Dept. of Natural Resources

1963). Large females and most males die after spawning, but some individuals live to spawn twice. Males begin to mature their second summer and can live to be three years; females mature a year later and live up to four years (Magnuson and Smith 1963, McPhail and Lindsey 1970, Scott and Crossman 1973, Muth 1975, Morrow 1980).

Ecology

An important prey item for lake trout (*Salvelinus namaycush*), walleye (*Stizostedion vitreum*), northern pike (*Esox lucius*), sauger (*Sander canadensis*), yellow perch (*Perca flavescens*) and others. Important nutrient transporters in thermally stratified lakes due to their habit of feeding at night in the shallows and moving to deeper waters during the day where they are eaten by larger fishes confined to cooler depths. This species hosts a wide variety of parasites (forty-two species reported), including trematodes, cestodes, nematodes, acanthocephalans, and crustaceans; it is the most important second intermediate host of the cestode, *Triaenophorus stizostedionis* (McPhail and Lindsey 1970, Scott and Crossman 1973, Morrow 1980, Nelson and Dick 2002).

The only percopsid found in Alaska. This species likely invaded the Yukon River relatively recently via the Peel and Porcupine rivers.

Migration

Moves from deep to shallow water to spawn (Morrow 1980); lake populations often spawn in streams in spring and return to lake after spawning (Scott and Crossman 1973).

Food

Young feed on zooplankton to a greater extent than adults, which feed on insects, crustaceans, and other invertebrates, which are mainly benthic

species. Larger individuals may feed on fishes in winter (Scott and Crossman 1973, Becker 1983).

Habitat

Typically occurs in lakes but also found in deep flowing pools of creeks and small to large rivers; usually over sand substrate (Page and Burr 1991). Normally in deep waters by day, moves into shallows at night (Becker 1983). Spawns in shallow rocky or gravelly streams or over sand, gravel bars, or rocks in lakes. Often spawns in streams in spring and returns to lake after spawning.

In Alaska, key habitats are slow moving portions of the mainstream Yukon River (ADFG 2005).

Global range

Atlantic and Arctic basins throughout most of Canada from Quebec to Yukon and British Columbia and south to the Potomac River drainage, Virginia; Yukon River drainage, Yukon and Alaska; Great Lakes and Mississippi River basins south to West Virginia, eastern Kentucky, southern Illinois, central Missouri, North Dakota, and northern Montana; locally common in lakes, uncommon throughout most of range (Page and Burr 1991).

State range

Mainstream Yukon River from the mouths of the Tatonduk, Kandik, and Charlie Rivers downstream at Circle and Nulato, at the mouth of the Andeafsky River, and at the outer edge of the Yukon Delta at the mouths of Apoon Pass, Elongozhik Pass, and Bugomowik Pass. Also occurs in the Porcupine River, just upstream from the Canadian border (Morrow 1965, McPhail and Lindsey 1970, Scott and Crossman 1973, Morrow 1980, Mecklenburg et al. 2002).

Global abundance

Relatively abundant within its range in Canada and the lower 48 states (Mecklenburg et al. 2002). In Heming Lake, Manitoba, the adult fish population was estimated at 2,929 to 3,636 fish per hectare (Morrow 1980).

State abundance

Rare; captured intermittently (Morrow 1980, 1965, Mecklenburg et al. 2002). This species is probably still expanding its range in the Yukon River system (McPhail and Lindsey 1970).

Global trends

Unknown.

State trends

Unknown.

Global protection

Unknown. However, species is too small to be prized by anglers; therefore, generally managed as a non-game species. Yellow listed in B.C. due to restricted distribution, although not considered at risk (Trout-perch 1999).

State protection

Habitat receives protection where species occurs within Arctic, Nowitna, Koyukuk, Innoko, and Yukon Delta National Wildlife Refuges and in Yukon-Charlie Rivers National Preserve (USFWS 1994, USFWS 2004 a, b, USFWS 2005a, b, c).

Global threats

Trout-perch are especially sensitive to aquatic pollution and sedimentation associated with row crop agriculture and channelization (Pflieger 1997). Fish exposed to pulp mill effluent on the Kapuskasing River, Ontario, showed a change in age structure that was likely driven by an increase in mortality (Gibbons et al. 1998). May also be temperature sensitive; summer die-offs in Minnesota lakes have been attributed to higher than average temperatures (Eddy and Underhill 1974). A marked decline in the Red Deer River, Alberta trout-perch population was attributed to the impacts of a dam built there (Nelson pers. comm. in Bramblett 2005).

State threats

Habitat within Alaska is generally in good condition, but water diversion, impoundment and pollution are potential threats within the Yukon River drainage. May also be sensitive to rising water temperatures as a result of climate change; summer die-offs in Minnesota have been attributed to higher than average water temperatures (Eddy and Underhill 1974). Conversely, trout-perch could also be positively affected by climate change and warming temperatures since this species currently thrives in milder climates.

State research needs

Information needed on basic life history including reproductive biology, population age structure and habitat preferences. Migration patterns not well understood, needs study (ADFG 2005).

State inventory needs

Distribution information is likely incomplete. Monitor local populations at index sites to provide

information on population trends. Map current distribution and other similar habitats for future investigation (ADFG 2005).

State conservation and management needs

Develop a network of biologists to establish unified protocols for sampling trout-perch and other fish species with similar habitat needs (ADFG 2005).

LITERATURE CITED

Alaska Department of Fish and Game (ADFG). 2005. Trout-perch. In: Our wealth maintained: a strategy for conserving Alaska's diverse wildlife and fish resources, a Comprehensive Wildlife Conservation Strategy emphasizing Alaska's nongame species. Anchorage, AK.

Becker, G. C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1,052 pp.

Bramblett, R.G. 2005. Trout-perch. Montana's fish species of special concern. American Fisheries Montana Chapter. Available online at: <http://www.fisheries.org/AFSmontana/SSCpages/Trout-perch.htm>. Accessed 9/23/05.

Eddy, S., and J. C. Underhill. 1974. Northern fishes. University of Minnesota Press, Minneapolis, MN.

Gibbons, W. N., K. R. Munkittrick, M. E. McMaster, and W. D. Taylor. 1998. Monitoring aquatic environments receiving industrial effluents using small fish species 2: comparison between responses of trout-perch (*Percopsis omiscomaycus*) and white sucker (*Catostomus commersoni*) downstream of a pulp mill. Environmental Toxicology and Chemistry 17: 2238-2245.

Magnuson, J. J. and L. L. Smith. 1963. Some phases of the life history of the trout-perch. Ecology 44: 83-95.

McPhail, J. D. and C. C. Lindsey. 1970. Freshwater fishes of northwestern Canada and Alaska. Fisheries Research Board of Canada. Bulletin 173.

Mecklenburg, C.W., T.A. Mecklenburg and L.K. Thorsteinson. 2002. Fishes of Alaska.

American Fisheries Society. Bethesda, MD. 1,037 pp.

Morrow, J. E. 1965. First record of the trout-perch, *Percopsis omiscomaycus*, from Alaska. Copeia 1965 No. 2, p.232.

Morrow, J. E. 1980. Freshwater fishes of Alaska. Alaska Northwest Publishing Company, Anchorage, AK.

Muth, S. E. 1975. Reproductive biology of the Trout Perch, *Percopsis omiscomaycus* (Walbaum), in Beech Fork of Twelvepole Creek, Wayne County, West Virginia. American Midland Naturalist 93: 434-439.

Nelson, P. A. and T. A. Dick. 2002. Factors shaping the parasite communities of trout-perch, *Percopsis omiscomaycus* Walbaum (Osteichthyes:Percopsidae), and the importance of scale. Can J. Zool. 80: 1986-1999.

Page, L. M., and B. M. Burr. 1991. A field guide to freshwater fishes: North America north of Mexico. Houghton Mifflin Company, Boston, MA. 432 pp.

Pflieger, W. L. 1997. The fishes of Missouri. Missouri Department of Conservation, Jefferson City, MO.

Scott, W. B., and E. J. Crossman. 1973. Freshwater fishes of Canada. Fisheries Res. Bd. Canada, Bull. 184. 966 pp.

Trout-perch. 1999. B.C. Fish Facts. Conserv. Sect., Fish. Manage. Branch, B.C. Minist. Fish. 2 pp.

U. S. Fish and Wildlife Service (USFWS). 1994. Fisheries investigations on the Kandik, Charley, Nation, and Tatonduk Rivers, Yukon-Charley Rivers National Preserve, 1987 and 1988. Alaska Fisheries Technical Report Number 23.

U. S. Fish and Wildlife Service (USFWS). 2004a. Fishes of the Arctic National Wildlife Refuge. Available online at: <http://alaska.fws.gov/nwr/arctic/fishlist.htm>. Accessed 12 July 2005.

- U. S. Fish and Wildlife Service (USFWS). 2004b. Fishes of the Yukon Delta National Wildlife Refuge. Available online at: <http://alaska.fws.gov/nwr/yukondelta/fishlist.htm>. Accessed 12 July 2005.
- U. S. Fish and Wildlife Service (USFWS). 2005a. Fishes of the Nowitna National Wildlife Refuge. Available online at: <http://alaska.fws.gov/nwr/nowitna/fishlist.htm>. Accessed 12 July 2005.
- U. S. Fish and Wildlife Service (USFWS). 2005b. Fishes of the Koyukuk National Wildlife Refuge. Available online at: <http://alaska.fws.gov/nwr/koyukuk/fishlist.htm>. Accessed 12 July 2005.
- U. S. Fish and Wildlife Service (USFWS). 2005c. Fishes of the Innoko National Wildlife Refuge. Available online at: <http://alaska.fws.gov/nwr/innoko/fishlist.htm>. Accessed 12 July 2005.

Acknowledgments

State Conservation Status, Element Ecology & Life History

Author(s): A. Jansen and T.A. Gotthardt, Alaska Natural Heritage Program, Environment and Natural Resources Institute, University of Alaska Anchorage, 707 A Street, Anchorage, AK, <http://aknhp.uaa.alaska.edu>.

State Conservation Status, Element Ecology & Life History Edition Date: 02May2006

Life history and Global level information were obtained from the on-line database, NatureServe Explorer (www.natureserve.org/explorer). In many cases, life history and Global information were updated for this species account by Alaska Natural Heritage Program zoologist, Tracey Gotthardt. All Global level modifications will be sent to NatureServe to update the on-line version.

Global Element Ecology & Life History Edition Date: 14Sep1993

Global Element Ecology & Life History

Author(s): Hammerson, G.

Copyright Notice: Copyright © 2005 NatureServe, 1101 Wilson Boulevard, 15th Floor, Arlington Virginia 22209, U.S.A. All Rights Reserved. Each document delivered from this server or web site may contain other proprietary notices and copyright information relating to that document.

Photo credit: Ohio Department of Natural Resources, obtained online at:

<http://www.dnr.state.oh.us/dnap/rivfish/troutperch.html>

