

RUDD

Overview

The rudd (*Scardinius erythrophthalmus*), is a cyprinid fish (in the minnow family) native to Europe. Given its popularity in Europe as a food and game fish species, it is believed that the rudd was originally imported into the United States in the early 1900s for both these purposes. Since its introduction, the rudd commonly has been used in aquaculture operations and as bait, contributing to its spread.



Although the rudd prefers to live in stagnant and slow-flowing freshwater with thick vegetation, it can adapt to other environmental conditions, including poor water quality. It is an omnivorous species that lives up to 15 years, with feeding habits shifting as individuals mature; young feed on algae and small invertebrates, while adults feed on aquatic vegetation and insects. This characteristic enables rudd to compete broadly with native species for available resources. Since the rudd does not process vegetation effectively, they tend to increase the amount of nutrients in the water as the undigested organic matter is expelled.

Impacts caused by the rudd's introduction into the Great Lakes are largely unknown. Aside from general competition with native species for resources, nutrient load increases caused by its incomplete digestive processes may result in localized algal blooms and other changes in water quality. Also, the rudd is capable of breeding with the native golden shiner, resulting in hybrid offspring. It is unclear how this "genetic pollution" will impact subsequent generations of the native fish.

Photo: Brian Gratwicke

Identification

The rudd is a stocky, deep-bodied fish with a forked tail. The mouth is distinct with a steeply angled, protruding lower lip. The back of the fish is dark green to brown, and the sides are brassy yellow tapering to a white belly. Scales are robustly marked throughout. The pectoral, pelvic, and anal fins are bright reddish-orange in color, and the dorsal and tail fins are red to brown.

Size: Can grow up to 19 inches in length

Native range: Western Europe in the Caspian and Aral Sea basins

Occurrences in the Great Lakes Basin

The rudd first was detected in the Great Lakes basin in the 1950s near Ithaca, New York. It since has been found in a number of locations throughout New York including Oneida Lake in 1990, Ringneck Marsh in 1992, and the Seneca-Cayuga Canal in 2006. Established populations in Illinois are known to exist in the Fox, Illinois, and Kaskaskia drainage basins, with detections in these areas occurring in the late 1980s. Specimens also have been collected from the Indiana Dunes National Lakeshore in Porter County, Indiana (1999). Individual rudd specimens were found in Pennsylvania and Wisconsin in the mid-1980s and early 1990s, but no established populations have been reported in these states. The rudd has been found in Lake Erie (1993), and a population was detected in southwestern Lake Ontario in 1999. Several collections of rudd have occurred along the St. Lawrence River, though no established populations have been noted.

Means of Introduction and Spread: The rudd originally was introduced into the United States in the early 1900s as a European import most likely due to its popularity as a food and game fish. Since the 1980s, the interstate sale of rudd for bait has been the primary dispersal mechanism of this fish (rather than direct import). Bait bucket release is considered the vector by which rudd was introduced into the Great Lakes. Other vectors contributing to the spread of the rudd include escapes from aquaculture facilities and farm ponds. Although many introductions are thought to be accidental, it is believed that there also have been intentional releases into public waters over the past few decades.

Status: This species has been introduced into at least 21 states. Available data indicate established populations survive in Maine and New York. Recent evidence suggests it is now established in Massachusetts, Nebraska, and South Dakota. It is thought that the rudd is established in the St. Lawrence River, but this has yet to be confirmed.

Current Regulations: Possession, transport, and trade of live rudd is illegal in Illinois, Indiana, Michigan, Minnesota, Pennsylvania, Ohio, Ontario, and Wisconsin,

Distribution Maps: Geographic information on the location of aquatic invasive species sightings in the United States is made available through the U.S. Geological Survey, Nonindigenous Aquatic Species (NAS) program (<http://nas.er.usgs.gov>). The NAS distribution maps for the rudd can be found online at: <http://nas2.er.usgs.gov/viewer/omap.aspx?SpeciesID=648>.

Significant Contributions Provided by:

U.S. Geological Survey, Nonindigenous Aquatic Species Program. 2009. <http://nas.er.usgs.gov>.

References:

- Hicks, Brendan J. Biology and potential impacts of rudd (*Scardinius erythrophthalmus* L.) in New Zealand. Centre for Biodiversity and Ecology Research, Dept. of Biological Sciences.
- Ontario Federation of Anglers and Hunters. <http://www.invadingspecies.com/Invaders.cfm?A=Page&PID=6>

Studies, Assessments and Management Plans

Predicting Future Introductions of Nonindigenous Species to the Great Lakes (2008)

U.S. Environmental Protection Agency

http://www.theoec.org/PDFs/water/GLR_Report_NonIndigenous.pdf

This report maps the habitats of the Great Lakes that are most susceptible to the entry of aquatic invasive species (AIS), and identifies AIS with the potential to enter (U.S.) Great Lakes ports. Fifty-eight potential invaders, including rudd (*Scardinius erythrophthalmus*), were identified as posing high or medium risk for becoming established – and for causing ecological harm – in areas of the Great Lakes.

Biology and potential impacts of rudd (*Scardinius erythrophthalmus*) in New Zealand (2006)

Brendan J. Hicks

<http://csl.doc.govt.nz/upload/documents/science-and-technical/PF06hicks.pdf>

Hicks provides an overview of the introduction, biology and impacts of the rudd in New Zealand.

Population Assessment of Rudd (*Scardinius erythrophthalmus*) in Presque Isle Bay, Lake Erie (2005)

Pennsylvania State University

[http://www.pserie.psu.edu/seagrant/research/Population%20Assessment%20of%20Rudd%20\(Scardinius%20erythrophthalmus\)%20in%20Presque%20Isle%20Bay.%20Lake%20Erie.pdf](http://www.pserie.psu.edu/seagrant/research/Population%20Assessment%20of%20Rudd%20(Scardinius%20erythrophthalmus)%20in%20Presque%20Isle%20Bay.%20Lake%20Erie.pdf)

The purpose of this study was to provide an initial population assessment of rudd in Presque Isle Bay, Lake Erie in order to better understand the potential effects that the non-native fish has on this Lake Erie ecosystem.

Implications of Rudd (*Scardinius erythrophthalmus*) Herbivory on Submerged Macrophytes in a Shallow Eutrophic Lake (2003)

Nurminen, L., J. Horppila, J. Lappalainen, and T. Malinen

<http://www.mendeley.com/research/implications-of-rudd-scardinius-erythrophthalmus-herbivory-on-submerged-macrophytes-in-a-shallow-eutrophic-lake/> (Abstract)

The role of rudd (*Scardinius erythrophthalmus*) herbivory was studied in Kirkkojarvi, a shallow and turbid basin in Lake Hiidenvesi, Finland.

U.S. and Canadian Federal Resources

Rudd Fact Sheet

U.S. Geological Survey-Nonindigenous Aquatic Species

<http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=648>

State and Provincial Resources

Rudd Fact Sheet

Indiana Department of Natural Resources

<http://www.in.gov/dnr/files/Rudd.pdf>

List of Injurious Species

Illinois Department of Natural Resources

<http://www.dnr.illinois.gov/adrules/documents/17-805.pdf>

Prohibited and Restricted Species

Michigan Sea Grant

<http://www.miseagrant.umich.edu/downloads/ais/CBCW-handbook.pdf>

A Field Guide to Fish Invaders of the Great Lakes Region

University of Minnesota Sea Grant Program

http://files.dnr.state.mn.us/eco/invasives/fish_guide_final.pdf

Eurasian Rudd (*Scardinius erythrophthalmus*) Fact Sheet

New York Sea Grant

<http://www.seagrant.sunysb.edu/OLI/rudd.pdf>

Rudd (*Scardinius erythrophthalmus*)

Ontario Federation of Anglers and Hunters

<http://www.invadingspecies.com/Invaders.cfm?A=Page&PID=6>

Rudd Fact Sheet

Pennsylvania Sea Grant

http://www.pserie.psu.edu/seagrant/publications/fs/Rudd_12-2003.pdf

European Rudd (*Scardinius erythrophthalmus*)

University of Wisconsin Sea Grant Institute

<http://seagrant.wisc.edu/Home/Topics/InvasiveSpecies/Details.aspx?PostID=660>