

# Rainbow Smelt

(*Osmerus mordax*)

The rainbow smelt is a predatory fish native to the north Atlantic coastal regions of North America and a few lakes in the Ottawa Valley in the St. Lawrence River watershed. Deliberate stocking in Michigan in the early 1900s led to established rainbow smelt populations in lakes Erie, Michigan, Huron and Superior. The fish likely invaded Lake Ontario from Atlantic coastal areas through the Erie Canal. More recently people have illegally introduced rainbow smelt to inland lakes.

In their native habitat, rainbow smelt spend most of their lives at sea and migrate into fresh water to spawn. Rainbow smelt that have invaded Ontario waters cannot return to the sea, but they still follow old behaviour patterns. In the spring they move in large schools from lakes into streams and along shorelines to spawn. Rainbow smelt eat plankton – small animals and plants found in the water – as well as the young of native fish species.

## Range

Outside its native range, the rainbow smelt can be found in the St. Lawrence River watershed, the Great Lakes, other lakes such as Simcoe, Nipissing and Nipigon, and many smaller inland lakes. The fish has also been introduced to the Hudson Bay watershed, lakes in northwestern Ontario and Manitoba, including Lake Winnipeg, and many American states.

## Impacts of Rainbow Smelt

By competing with other fish for food and eating the young of other species, rainbow smelt have had a serious impact on native species that eat plankton, as well as those that eat other fish.

- The rainbow smelt's eating habits may disrupt food webs and lead to declines of the small animals known as zooplankton that are eaten by other fish.
- The introduction of rainbow smelt has led to reduced populations of native fish species such as yellow perch (*Perca flavescens*), walleye (*Sander vitreus*), lake herring (*Coregonus artedii*), whitefish (*C. clupeaformis*) and lake trout (*Salvelinus namaycush*).
- Rainbow smelt eat the young of other species and may then be eaten by other adult fish, resulting in higher concentrations of contaminants in native fish that may be a human health risk.



Rainbow smelt have long, slim bodies.

Photo: Great Lakes Fish Company

## How to Identify Rainbow Smelt

- Adult rainbow smelt have long, slim bodies averaging 19 centimetres in length.
- Bodies are olive green on the back, with purple, pink and blue iridescence on the sides and a silvery belly.
- The mouth is large, with a protruding lower jaw and large canine teeth on the roof of the mouth and the tongue.
- Fins include a single dorsal fin in the middle of the back and a small fleshy fin near the tail, known as an adipose fin.
- Scales are small and easily detached.

Rainbow smelt look similar to fish in the minnow family (*Cyprinidae* sp.), and to lake whitefish (*Coregonus clupeaformis*) and cisco (*C. artedii*). Fish in the minnow family don't have an adipose fin or large teeth. Lake whitefish and cisco are silvery fish with an adipose fin, but their bodies are deeper than rainbow smelt and they don't have teeth on the tongue and roof of the mouth



Rainbow smelt mouth with a protruding lower jaw and large canine teeth. Photo: John Lyons, Department of Natural Resources



Rainbow smelt. Photo: John Lyons, Wisconsin Department of Natural Resources

## What You Can Do

- Learn how to identify rainbow smelt and how to prevent the spread of this unwanted species.
- Never buy or use live rainbow smelt as bait; it's against the law. Dead rainbow smelt may be used as bait in Ontario except in **Fisheries Management Zones 2, 4 and 5** (see [ontario.ca/fishing](http://ontario.ca/fishing)), where it is illegal to use them or possess them as bait.
- Don't put any live fish into Ontario lakes, rivers or streams.
- When cleaning rainbow smelt, be careful not to dump entrails into a lake or river. Fertilized rainbow smelt eggs can easily invade new waters.
- If you have any information about the illegal importing, distribution or sale of rainbow smelt, report it immediately to the Ministry of Natural Resources TIPS line at 1-877-TIPS-MNR (847-7667) toll-free any time, or contact your local Ministry of Natural Resources office ([ontario.ca/mnroffices](http://ontario.ca/mnroffices)) during regular business hours. You can also call Crime Stoppers anonymously at 1-800-222-TIPS (8477).
- If you've seen a rainbow smelt or other invasive species in the wild, please contact the toll-free Invading Species Hotline at 1-800-563-7711 or visit [www.invadingspecies.com](http://www.invadingspecies.com) to report a sighting.

## Other Resources:

[www.invasivespeciescentre.ca](http://www.invasivespeciescentre.ca)  
[ontario.ca/invasivespecies](http://ontario.ca/invasivespecies)  
[www.invadingspecies.com](http://www.invadingspecies.com)

## For More Information:

Please contact the  
Invading Species Hotline at  
1-800-563-7711.



Rainbow smelt. Photo: Erling Holm, Royal Ontario Museum