



# GOLDFISH

*Carassius auratus*



Photo by  
Jon Sullivan,  
biolib.cz, Encyclopedia of Life

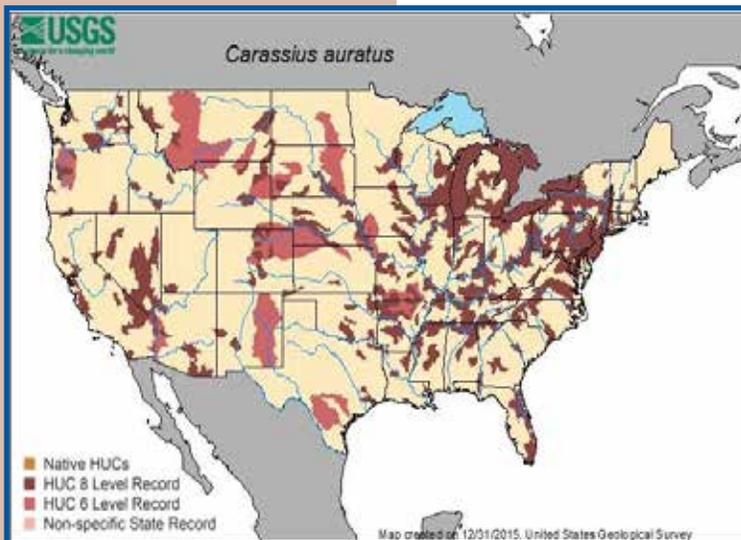
*The goldfish is a member of the carp and minnow family. It was one of the first aquatic invasive species to reach North America, arriving in the 1600s as an ornamental fish for aquariums and water gardens. It is now one of the world's most widespread invasive species.*

## SPECIES DESCRIPTION

Goldfish have elongated, stout bodies which are typically 10-20 cm (4-8 in) in length and weigh 100-300 g (3.5-10.5 oz), although they can reach a maximum length of 59 cm (23 in) and a maximum weight of 6.6 lbs. They have a long dorsal fin with 15-24 rays, and a hard serrate spine at the origin of both the dorsal and anal fins. They typically have 26-32 scales on the lateral line. The mouth is small, lacks barbels and is situated in the middle of the head with both jaws the same length. While goldfish were mostly golden in color one thousand years ago, they now come in a variety of colors, including orange, yellow, white, black, silver, olive-green, or greenish-brown and combinations of these colors. When found in nature, goldfish are most often a shade of green, brown or gray.

## NATIVE & INTRODUCED RANGES

Native to eastern Asia, goldfish have been reported invasive in the United States by every state except for Alaska. They are established in all of the Great Lakes, and in Erie, Northampton, and Philadelphia counties in Pennsylvania. Individual specimens have also been collected in several drainages throughout Pennsylvania; however, it is unknown whether these represent established populations.



National Range Map:  
USGS NAS Database

## BIOLOGY & SPREAD

Goldfish have been intentionally introduced for ornamental purposes to ponds, fountains, and small lakes from which they may disperse through connecting waters. Many introductions of goldfish were also due to their use as live bait. In addition, goldfish are often released into the wild by pet owners not realizing the environmental repercussions of setting the fish free.

Photo courtesy of Pennsylvania Sea Grant



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Miroslav Fiala, Biolib.cz

## HABITAT

While goldfish prefer a habitat with a muddy bottom and thick vegetation, they can tolerate pollution, temperature fluctuations, and high levels of turbidity. They naturally live in freshwater ponds and slow-moving or still waters in depths of up to 19 m (65 ft) and prefer temperatures of 4-41°C (40-106°F), although they can not live for long at high temperatures.

## IMPACTS

### *Threat to biodiversity*

Goldfish are believed to be responsible for population declines in many native fish, invertebrate, and plant species. They feed on snails, small insects, fish eggs, and young fish, making it a competitor with and a predator of native fish. They also stir up mud and other matter when they feed, increasing the cloudiness of the water and uprooting native plants. They are also very prolific and can produce very large populations.

### *Health risks*

Goldfish have the potential to carry diseases such as koi herpesvirus that can harm local fish populations.

## PREVENTION & CONTROL

Preventing the introduction and spread of this species into water bodies is the best and most cost-effective way to control goldfish. Never release unwanted aquarium pets and plants into the wild. Instead look for alternatives, such as contacting a retailer for proper-handling advice or for possible returns. Give or trade with another aquarist, pond owner, or water gardener, or donate to a local aquarium society, school, or aquatic business. Disposal of live organisms should be considered a last resort; however, if this is an option be sure to contact a veterinarian or pet retailer for guidance about humane disposal of animals.

If prevention efforts fail and goldfish are introduced to a new location, know how to identify and report them. Always check for and remove any plants, mud, and debris from boats, trailers, clothing, and equipment before leaving a water body. Clean gear and equipment with either hot water (104°F or 40°C) or salt water and let dry thoroughly for five days before entering a new water body. Since young goldfish can resemble baitfish, it is important to drain water from bait buckets, bilges, and live wells before transporting to new areas.



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*Pennsylvania Sea Grant* is a partnership of  
The Pennsylvania State University,  
The Commonwealth of Pennsylvania,  
and NOAA.

Penn State is an affirmative action, equal  
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Great Lakes  
RESTORATION

Funded in part by PA DEP Coastal Resources  
Management Program, The U.S. Fish and Wildlife  
Service, and the Great Lakes Restoration Initiative

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