



Prussian Carp

Carassius gibelio (Bloch, 1782) syn. *Carassius auratus gibelio* (aka Giebel, Gibel carp, edible goldfish)

Provincial Designation:
Undesignated



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Overview:

Prussian carp is a ray-finned fish of the Minnow Family. It is considered native to central Europe, Siberia, and Northeast Asia. However, the original distribution is hard to confirm due to multiple introductions, confusion with other carp (*Cyprinid*) species, and complex modes of reproduction.² Prussian carp used to be regarded as a sub-species of goldfish, but is now considered a species in its own right.⁴

Introductions of Prussian carp across Europe have been associated with declines of native fish species, benthic invertebrates and plankton. The impacts on some commercial fisheries have been significant¹. Prussian carp can also affect water quality by increasing turbidity during foraging activities.⁶

Prussian carp were captured in the Bow, Red Deer, and South Saskatchewan river basins during annual fish sampling of shallow lakes between 2006 and 2012. The fish were identified by both physical characteristics and DNA. This is the first confirmed occurrence of Prussian carp in open waters of North America.⁵ Additional reports and surveys conducted

more recently have confirmed continued expansion within these river basins. It is possible they are present in other waters, but have been misidentified.

Habitat:

Prussian carp inhabit a wide variety of still water bodies and lowland, slow-flowing rivers with submerged vegetation or regular flooding. They prefer warmer, shallow, eutrophic (rich in nutrients and minerals) waters with dense, submerged vegetation. Prussian carp are tolerant of low oxygen and pollution.²

Identification:

Prussian carp are deep bodied and plump, similar to goldfish. The adults are silvery-colour. The last simple anal and dorsal rays are strongly serrated, there are 37-52 gill rakers, 29-33 total lateral line scales, and the free edge of the dorsal fin is concave or straight. The anal rays have 5 1/2 branches, and the peritoneum (membrane lining the body cavity) is black. They grow up to 35 cm in length.³

Ecology:

Prussian carp are known to be omnivorous and feed on plankton, zooplankton, benthic invertebrates, plant material, and detritus.² Larvae and juveniles feed in complex habitats such as reed belts.³

In Europe, Prussian carp spawning age is associated with latitude; carp spawn at 3-4 years in the north and 1-2 years in the south.³ The males move to spawning sites (shallow, warm shores with submerged vegetation) before the females. The females spawn up to 3 times per season and their sticky eggs are attached to water plants or submerged objects.³

Some populations consist of only diploid individuals, others of diploid and tetraploid individuals together with triploid females, and some populations are all triploid females, which reproduce by gynogenesis.³ Triploid females use the sperm of other *Cyprinid* species to activate their eggs but not fertilize them, therefore all offspring are clonal females.³ In the winter, lake-dwelling individuals are known to move into river mouths in winter to avoid low oxygen levels.¹ Their life span is up to 10 years.

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Prussian Carp (Continued)

Economic Impacts:

The presence of Prussian carp can affect the overall range, distribution and abundance of commercially and recreationally valuable fish.⁴ In aquaculture systems, Prussian carp is a costly competitor. In Europe, Prussian carp is harvested for commercial sale, but the market is limited.¹

Environmental Impacts:

Prussian carp grow rapidly, reproduce efficiently, and compete with native fish species for food and space.⁴ These traits can result in changes to the overall fish community structure and food chains, resulting in Prussian carp becoming the dominant species.¹

Sociological Impacts:

Loss of native fish species and transformation of fish communities results in the intrinsic loss of natural capital and enjoyment of natural areas.

Prevention:

Accidental and intentional releases are responsible for Prussian carp introduction and spread. Range expansion may also occur if introduced carp move into and colonize other rivers and lakes. Never, ever empty your aquarium into natural water bodies.

Control:

Currently, there are no established control options for Prussian carp in Alberta other than recreational fishing and capture, which are not feasible for eradication. Some of the control methods employed by the US Fish & Wildlife Service are: commercial fishing, blocking access to spawning habitat, and capturing with seine netting.

REFERENCES

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- 3 Kottelat, M. & Freyhof, J. 2007. Handbook of European Freshwater Fishes. Kottelat, Cornol and Freyhof, Berlin, Fishes. pp 145-147.
- 4 Prussian carp (Carassius gibelio). http://www.frammandearter.se/0/2english/pdf/Carassius_gibelio.pdf. Accessed: February 2015.
- 5 Erick L. Elgin*, Haley R. Tunna and Leland J. Jackson. First confirmed records of Prussian carp, Carassius gibelio (Bloch, 1782) in open waters of North America. *BioInvasions Records* (2014) Volume 3, Issue 4: 275–282. http://www.reabic.net/journals/bir/2014/4/BIR_2014_Cavraro_etal.pdf. Accessed: February 2015.
- 6 Carassius gibelio Ecological Risk Screening Summary. U.S. Fish and Wildlife Service. Web Version 8/14/2012. Accessed: February 2015.

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