

Socio-Economic Impacts of Prussian Carp

Prussian carp is an aquatic invasive fish that appears similar to goldfish. While new to North America (first found in Alberta in 2006), it has the highest ecological and economic impacts of all invasive fish species in Europe (Van der Veer & Nentwig, 2015). It is currently established in Alberta and Saskatchewan.



University of Alberta Fisheries & Aquatic Conservation Lab



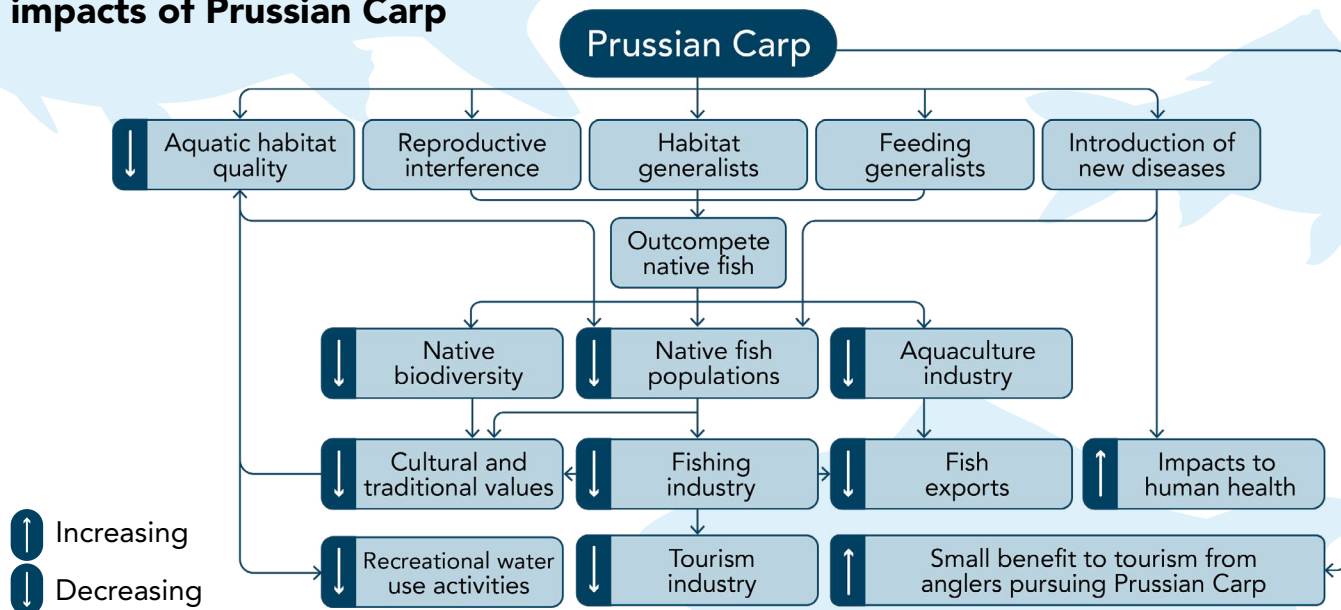
There are several potential negative socio-economic impacts in the Canadian Prairies from Prussian Carp establishment and spread:

Irrigation | Prussian Carp directly threatens the \$3.6 billion irrigation industry in the Prairies as it reduces water quality. The value of this industry is anticipated to grow significantly in the future as the Westside Irrigation Project moves forward in Saskatchewan, adding \$40 to \$80 billion over the next 50 years. Prussian carp have been found in higher abundances in irrigation infrastructure than in natural waterways, making this infrastructure an important vector of spread (Elgin et al., 2014).

Tourism | The tourism industry in the Prairies is valued at over \$13 billion per year. Most is reliant on visitor interaction with the natural environment. Prussian carp can reduce water quality and disrupt populations of native species in aquatic ecosystems. This poses harm to recreational activities such as boating, swimming, camping, hunting, and fishing.

Fishing | Sport and commercial fishing industries in the Prairies are valued at \$597 million per year, with additional personal value to over 670,000 anglers. Prussian carp can alter water quality and out compete native aquatic species, thereby posing a threat to the diversity and abundance of fish species that anglers pursue. Prussian Carp invasion has been associated with a decline of native fish species by 75% in certain areas of Alberta (Ruppert et al. 2017).

Ecological and socio-economic impacts of Prussian Carp



Ecological impacts

Prussian Carp is a prolific invader with many traits that allow it to outcompete native fish species (Docherty et al., 2017).

- threatens species at risk
- reproductive traits allows it to increase in population size and spread very quickly
- a single female fish can sustain a population of Prussian Carp
- interferes with reproduction of native fish species
- feeding generalist
- wide tolerance of environmental conditions and habitat generalist
- changes abiotic environments

Docherty, C., Ruppert, J., Rudolfson, T., Hamann, A., & Poesch, M. S. (2017). Assessing the spread and potential impact of Prussian Carp *Carassius gibelio* (Bloch, 1782) to freshwater fishes in western North America. *BioInvasions Records*, 6(3), 291–296.

Elgin, E. L., Tunna, H. R., & Jackson, L. J. (2014). First confirmed records of Prussian carp, *Carassius gibelio* (Bloch, 1782) in open waters of North America. *BioInvasions Records*, 3(4), 275–282. doi.org/10.3391/bir.2014.3.4.09

Ruppert, J. L. W., Docherty, C., Neufeld, K., Hamilton, K., MacPherson, L., & Poesch, M. S. (2017). Native freshwater species get out of the way: Prussian carp (*carassius gibelio*) impacts both fish and benthic invertebrate communities in North America. *Royal Society Open Science*, 4(10). doi.org/10.1098/rsos.170400

van der Veer, G., & Nentwig, W. (2015). Environmental and economic impact assessment of alien and invasive fish species in Europe using the generic impact scoring system. *Ecology of Freshwater Fish*, 24(4), 646–656. doi.org/10.1111/eff.12181

Prevent further spread of Prussian Carp:

Clean, Drain, and Dry
your watercraft and equipment every time



Don't Let it Loose
Never release aquarium pets, water garden plants, live food, or live bait into any water body or storm sewer



Report any sightings
to provincial reporting platforms such as EDDMapS or provincial hot lines

Know Before You Go

Know the laws in your jurisdiction and those you are travelling to:
invasivespeciescentre.ca/know-before-you-go