# Asian clam

***Corbicula fluminea***

(basket clam, Asiatic clam, golden clam, good luck clam)

Source: Risk assessment [J:\2 SCIENCE - Invasives\SPECIES\2\_Risk Assessments\BC\Asian Clam\risk\_assessment\_asian clam\_risk\_rating\_recommendations\_28-10-2021.docx](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\2_Risk%20Assessments\BC\Asian%20Clam\risk_assessment_asian%20clam_risk_rating_recommendations_28-10-2021.docx)

Promotion of algal blooms

May impact native bivalves that are already stressed, impact is not high for established stable native bivalve populations

Filter feeding – can remove large amounts of food particles from the water column – effect on native filter feeders – excretion of waste – increase in N and P – can result in algal blooms and reduction in dissolved oxygen

Toxic byproducts from die off of Asian clam could potentially impact fish populations.

***Medium =2 (Uncertainty high=3)***

Source: [basket clam (Corbicula fluminea) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=92)

A study of a New Hampshire river showed that the Asian Clam did not have any impact on local invertebrate density or biodiversity.

# Chinese Mystery Snail

***Cipangopaludina chinensis***

Source: [J:\2 SCIENCE - Invasives\SPECIES\2\_Risk Assessments\BC\Chinese Mystery Snail\chinese mystery snail\_risk\_scoring\_summaries\_2020\_01\_14.docx](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\2_Risk%20Assessments\BC\Chinese%20Mystery%20Snail\chinese%20mystery%20snail_risk_scoring_summaries_2020_01_14.docx)

Considered benign compared to other molluscs.

Recommended rating: **impact = 2 (uncertainty = 3)**

Source: [Chinese mysterysnail (Cipangopaludina chinensis) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=1044)

Parasite risk to humans – what about fish – has a parasite that could infect Unionid mussels.

Can impact feeding behaviour of native snails

# Rosy Redhead Fathead Minnow

***Pimephales promelas***

Source: [J:\2 SCIENCE - Invasives\SPECIES\2\_Risk Assessments\BC\Fathead Minnow (Rosy Red Minnow)\Fathead Minnow BC Invasive Species Risk Assessment August 2022.docx](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\2_Risk%20Assessments\BC\Fathead%20Minnow%20(Rosy%20Red%20Minnow)\Fathead%20Minnow%20BC%20Invasive%20Species%20Risk%20Assessment%20August%202022.docx)

They would be in direct competition with native species for food, and may outcompete other small fishes and could impact waterfowl. They have impacted fish in the US. This hasn’t been documented in BC as of yet, but could occur here too.

It introduced a disease (redmouth) to Europe, and in Canada, which has been isolated from many salmonid and non-salmonid species. – could be a disease vector

Source: [Fathead Minnow (Pimephales promelas) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=621)

Information is largely repeated. More detail: “Fathead Minnow has a similar diet composition to juvenile Bluehead (*Catostomus discobolus*) and Flannelmouth (*Catostomus latipinnis*) Suckers, indicating the potential for competition over food resources (Zahn Seegert et al. 2014).”

# Goldfish

**Carassius auratus**

Source: [J:\2 SCIENCE - Invasives\SPECIES\2\_Risk Assessments\BC\Goldfish\Goldfish\_Carassius\_auratus\_BC\_Risk Assessment\_Heise\_Nov\_2019\_draft1.docx](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\2_Risk%20Assessments\BC\Goldfish\Goldfish_Carassius_auratus_BC_Risk%20Assessment_Heise_Nov_2019_draft1.docx)

Has been noted to have an impact on other fishes, but not sure as to exactly how (predation, competition etc.)

Clear overlap for diet with rainbow trout.

They increase turbidity of waterbodies if the bottom is soft

Have negative impact on amphibians – consume eggs and larvae

Have 23 parasites – one contributed to high mortalities of sockeye salmon

Source: [Goldfish (Carassius auratus) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=508)

Outcompete many native species

Decrease vegetation due to foraging behaviour

# Oriental Weatherloach

***Misgurnus anguillicaudatus***

Pond loach, Dojo, Dojo Loach, Weather Loach, Japanese Weatherfish, Amur Weatherfish

Source: [J:\2 SCIENCE - Invasives\SPECIES\2\_Risk Assessments\BC\Oriental Weatherloach\risk\_assessment\_oriental\_weatherloach\_rating\_recommendation\_Oct 2024.docx](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\2_Risk%20Assessments\BC\Oriental%20Weatherloach\risk_assessment_oriental_weatherloach_rating_recommendation_Oct%202024.docx)

Increase water turbidity

*M. anguillicaudatus* is not listed as a “Susceptible Species of Aquatic Animals”, suggesting they do not pose a risk to native species in Canada.

Have been present in Canadian waterbodies for nearly 20 years, with no reported negative impact

High uncertainty around parasite and disease transmission to native spp.

***Risk: HIGH (3)***

***Uncertainty: HIGH (3)***

Source: [Pond Loach (Misgurnus anguillicaudatus) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=498)

May impact insects, increase water turbidity, increase N levels, might compete with other fish species such as the Eastern Mudminnow in the US. Has an impact on macroinvertebrate abundance.

# Virile Crayfish

***Faxonius virilis***

Source: [J:\2 SCIENCE - Invasives\SPECIES\2\_Risk Assessments\BC\Virile Crayfish\corr.FINAL . Virilis RAss\_Premek-Hamr\_2024-03-20.docx](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\2_Risk%20Assessments\BC\Virile%20Crayfish\corr.FINAL%20.%20Virilis%20RAss_Premek-Hamr_2024-03-20.docx)

Affect density of aquatic vegetation and algae.

The build burrows when rocky cover is not available – could destabilize river banks

Introduction of F. virilis can potentially cause decline or local extirpation of native crayfish (such as *Pacifastacus*, see above) and threaten freshwater biodiversity and macroinvertebrate community abundance and structure.

Feed on amphibians, reptiles, fish eggs, macroinvertebrates.

They increase water turbidity.

May be a vector for pathogens.

Source: [Virile Crayfish (Faxonius virilis) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=215)

Could impact native crayfish populations.

# Black bullhead

***Ameiurus melas***

Similar to the brown bullhead and yellow bullhead

Source: [J:\2 SCIENCE - Invasives\SPECIES\1\_Factsheets & Web Content\2. Active Alert Sheets\Bullhead (Black Bullhead, Brown Bullhead, Yellow Bullhead)\Bullheads\_Alert\_2021.docx](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\1_Factsheets%20&%20Web%20Content\2.%20Active%20Alert%20Sheets\Bullhead%20(Black%20Bullhead,%20Brown%20Bullhead,%20Yellow%20Bullhead)\Bullheads_Alert_2021.docx)

Prey and compete with native fish species for food and habitat space

Their foraging behavior increases water turbidity, affecting native visual predator fishes ability to locate prey

Have “red-spot disease”, which could be transferred and harmful to native fish species

Source: [Black Bullhead (Ameiurus melas) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=730), [Yellow Bullhead (Ameiurus natalis) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=733), [Brown Bullhead (Ameiurus nebulosus) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=734)

Voracious predators of newly hatched game fish.

Source: [The role of North American bullhead catfish as parasite reservoirs in central European fishing grounds - ScienceDirect](https://www.sciencedirect.com/science/article/abs/pii/S004484862401562X)

Parasite risk to native fish in native range (Europe) is low

Source: [ADW: Ameiurus nebulosus: INFORMATION](https://animaldiversity.org/accounts/Ameiurus_nebulosus/#food_habits)

Juveniles eat zooplankton, including chironomids, cladocerans, ostracods, and amphipods, insects, including mayfly larvae and caddisfly larvae, and plants. Adults feed on insects, small fish, fish eggs, mollusks, plants, leeches, worms, and crayfish.

# Channel Catfish

***Ictalurus punctatus***

Source: [J:\2 SCIENCE - Invasives\SPECIES\1\_Factsheets & Web Content\2. Active Alert Sheets\Channel Catfish\ChannelCatfish\_Alert\_2021.docx](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\1_Factsheets%20&%20Web%20Content\2.%20Active%20Alert%20Sheets\Channel%20Catfish\ChannelCatfish_Alert_2021.docx)

Predate on native fish and amphibians – opportunistic feeders

Source: [J:\2 SCIENCE - Invasives\SPECIES\1\_Factsheets & Web Content\2. Active Alert Sheets\Channel Catfish\factsheet\_channel catfish\_2015-09-22.docx](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\1_Factsheets%20&%20Web%20Content\2.%20Active%20Alert%20Sheets\Channel%20Catfish\factsheet_channel%20catfish_2015-09-22.docx)

Virus - haemorrhagic septicaemia, infects multiple fish species

Carry red spot disease – infects fish

Prey on juvenile salmon

Prey on crayfish

Source: [Channel Catfish (Ictalurus punctatus) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=2341)

Major negative effect on populations of various endangered species.

# Common Carp

*Cyprinus carpio*

Source: [J:\2 SCIENCE - Invasives\SPECIES\1\_Factsheets & Web Content\2. Active Alert Sheets\Common Carp - Koi\CommonCarp\_Alert\_2024.pdf](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\1_Factsheets%20&%20Web%20Content\2.%20Active%20Alert%20Sheets\Common%20Carp%20-%20Koi\CommonCarp_Alert_2024.pdf)

Increase water turbidity, disturb aquatic plants, alter food webs, can displace native fish

Source: [Common Carp (Cyprinus carpio) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=4)

Cause decrease in water quality

# Largemouth Bass

*Micropterus salmoides*

Ecological effects on native species and on ecosystems.

Feed on native prey species (fish and amphibians), feed on juvenile salmon

Parasites that could affect native fish species

Source: [Largemouth Bass (Micropterus salmoides) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=401)

Large note on the number of fish species they prey upon, including salmonids.

# Pumpkinseed

*Lepomis gibbosus*

Source: [J:\2 SCIENCE - Invasives\SPECIES\1\_Factsheets & Web Content\2. Active Alert Sheets\Pumpkinseed\Pumpkinseed\_Alert\_2024.pdf](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\1_Factsheets%20&%20Web%20Content\2.%20Active%20Alert%20Sheets\Pumpkinseed\Pumpkinseed_Alert_2024.pdf)

They compete and feed upon native fish species

Prefer clean, warm waters.

Source: [J:\2 SCIENCE - Invasives\SPECIES\1\_Factsheets & Web Content\2. Active Alert Sheets\Pumpkinseed\species\_page\_pumpkinseed\_2016-01-29.docx](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\1_Factsheets%20&%20Web%20Content\2.%20Active%20Alert%20Sheets\Pumpkinseed\species_page_pumpkinseed_2016-01-29.docx)

Feed on amphibians, invertebrates and small fish

# Tench

*Tinca tinca*

Source: [J:\2 SCIENCE - Invasives\SPECIES\1\_Factsheets & Web Content\2. Active Alert Sheets\Tench\species\_page\_tench\_2016-00-23.docx](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\1_Factsheets%20&%20Web%20Content\2.%20Active%20Alert%20Sheets\Tench\species_page_tench_2016-00-23.docx)

Could compete with native sport fish and minnow species for food

Carry parasites that are harmful to native species

Increase turbidity due to their feeding behaviour

Source: [Tench (Tinca tinca) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=652)

Feed on insect larvae and molluscs

# Smallmouth Bass

*Micropterus dolomieu*

Source: [J:\2 SCIENCE - Invasives\SPECIES\2\_Risk Assessments\External\Fish\Tovey et al. 2008. Risk assessment for smallmouth bass and largemouth bass in bC.pdf](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\2_Risk%20Assessments\External\Fish\Tovey%20et%20al.%202008.%20Risk%20assessment%20for%20smallmouth%20bass%20and%20largemouth%20bass%20in%20bC.pdf)

Indirect evidence of local extinction of native prey species when smallmouth bass is introduced.

Prey on salmonids – 95% of their diet in the in the Columbia River near Richland was Chinook salmon

Feed on salmonid smolts

No information about if parasites of smallmouth bass could be transferred to native species. Impact is believed to be low, with high uncertainty around this.

Source: [Smallmouth Bass (Micropterus dolomieu) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=396)

May feed on crayfish

# Yellow Perch

*Perca flavescens*

Source: [J:\2 SCIENCE - Invasives\SPECIES\2\_Risk Assessments\External\Fish\Bradford et al. 2008. Biological risk assessment for yellow perch in BC.pdf](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\2_Risk%20Assessments\External\Fish\Bradford%20et%20al.%202008.%20Biological%20risk%20assessment%20for%20yellow%20perch%20in%20BC.pdf)

Uncertain, as little information about them as an invasive species, work done based on their native range.

Compete with salmonids.

# Walleye

Source: [J:\2 SCIENCE - Invasives\SPECIES\2\_Risk Assessments\External\Fish\2009. Hartman. Biological synopsis of Walleye.pdf](file:///J:\2%20SCIENCE%20-%20Invasives\SPECIES\2_Risk%20Assessments\External\Fish\2009.%20Hartman.%20Biological%20synopsis%20of%20Walleye.pdf)

May compete and predate on native fish. It is known to feed on salmonids. They are generalist predators, and will feed on most fish.

Source: [Walleye (Sander vitreus) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=831)

Effects of its introduction are considered complex and varied. Prey on Pacific salmon smolts – account for 1/3 of predation of salmon smolts in the Columbia river.

# Northen Pike

Source: [Northern Pike (Esox lucius) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=676)

Reduce prey density and cause large scale changes to fish communities, including elimination. Affect species through predation or causing changes in fish behaviour. “Northern Pike may be responsible for declines of native westslope cutthroat trout *Oncorhynchus clarki lewisi* and bull trout *Salvelinus confluentus* in the Stillwater lakes in Montana (McMahon and Bennett 1996)”

# American Shad

Source: [American Shad (Alosa sapidissima) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=491)

Carry a parasitic nematode – could pose a risk to native wildlife

Compete with native salmonids in the Columbia river – no studies to quantify this effect.

Compete with native fish for food.

# Bluegill Sunfish

Source: [Bluegill (Lepomis macrochirus) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=385)

Outcompete native Sacramento perch.

Linked to decline of native frogs and salamanders in California, and a leopard frog in Arizona.

# Black Crappie

Source: [Black Crappie (Pomoxis nigromaculatus) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=409)

Prey on juvenile salmonids in the Northwest US. Though habitat modification, could contribute to salmonid decline, but extent of impact is unknown.

Feed on prey species.

# Grass Carp

Source: [Grass Carp (Ctenopharyngodon idella) - Species Profile](https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=514)

“Shireman and Smith (1983) concluded that the effects of Grass Carp introduction on a water body are complex and apparently depend on the stocking rate, macrophyte abundance, and community structure of the ecosystem”

Compete for food with invertebrates such as crayfish and other fishes.

Affect other species by modifying habitat.

May prey or predate on other species when plant matter is scarce.

They have large impacts on fish communities due to habitat modification.

Grass Carp can consume up to 27.6 kg of vegetation per kg of fish per year

Increases in phytoplankton populations is a secondary effect of Grass Carp presence. A single Grass Carp can digest only about half of the approximately 45 kg of plant material that it consumes each day. The remaining material is expelled into the water, enriching it and promoting algal blooms (Rose 1972)

Have parasites that are transmissible to native fish

Wittmann et al. (2014) performed a meta-analysis of ecological effects of Grass Carp, finding an overall negative impact to biota (primarly through negative effects on macrophytes, with mixed results in other taxonomic groups) and an alteration of water quality (primarily change in conductivity and salinity) in stocked areas.