

Whirling disease

Whirling disease in Alberta: Misunderstandings debunked

Whirling disease in Alberta

Whirling disease (WD) is caused by a microscopic parasite, *Myxobolus cerebralis*, which affects salmonid fish such as trout, salmon and whitefish. This parasite has a complex lifecycle that requires a salmonid fish and an aquatic worm, *Tubifex tubifex*, as hosts.

Unfortunately, this disease was found in Alberta in 2016 in Johnson Lake in Banff National Park. Since then Alberta Environment and Parks (AEP) has implemented a three point action plan to address whirling disease (WD) in Alberta. This plan focuses on monitoring, mitigation and education. AEP, as well as partners such as, Trout Unlimited Canada, University of Alberta, and Colorado Parks and Wildlife, work together to develop the most current and effective tools to understand and mitigate WD impacts while monitoring the distribution in Alberta.

Although, the Clean, Drain, Dry campaign has been a large focus for education on WD, questions and misunderstandings still arise. Here we address a general overview of WD and debunk the most common confusions.

Whirling disease overview:

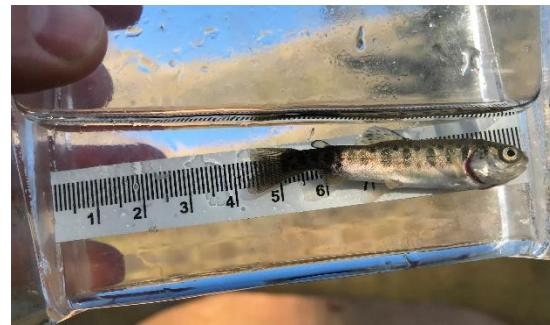
Susceptible species

The most vulnerable species to WD are rainbow trout, cutthroat trout, brook trout and mountain whitefish. Other species such as bull trout and brown trout can be impacted by WD but much less severely.

Signs of infection

Species infected by WD may show the following clinical signs:

- A 'whirling' or 'tail-chasing' swimming behaviour
- Tail or body may appear dark or even black
- Bent or crooked spines
- Sloped head
- Shortened operculum (gill cover)
- Bulging eyes



Rainbow trout collected in Crowsnest River, Alberta, exhibiting signs of whirling disease.

However, symptoms of WD are most likely to be observed in fish that are too small to catch by angling and therefore are often missed by anglers.

Distribution and spread in Alberta

Four major watersheds in Alberta have been declared as positive for WD: Bow River, Oldman River, North Saskatchewan River and Red Deer River. While WD is present in these watersheds, it does not imply that the parasite is found in all waterways in these systems.

Since 2016, samples from across the province have been collected and are currently, being tested for the presence of WD. If new detections of WD are found,

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it does not definitively indicate that the parasite is spreading.

Impacts of whirling disease in Alberta

Currently, evidence suggests that WD is causing declines in rainbow trout populations in the Crowsnest River. In 2019, AEP conducted a comprehensive study on the Crowsnest River and found high levels of the WD parasite, observable clinical signs of WD in wild trout as well as elevated mortality in young-of-the-year rainbow trout due to WD. This study will help AEP inform broader implications to rainbow trout populations on the Crowsnest.



Whirling disease and Clean, Drain, Dry signage found in the Crowsnest River where the parasite has been confirmed.

Impacts or declines in wild trout populations within other waterbodies are currently unknown and have not been completely assessed. The two biggest challenges to assessing WD impacts provincially is the large scope of the problem and understanding what to look for. Anglers target fish sizes where WD is not obvious, and many biologists are untrained in identifying clinical signs. Fortunately, AEP is refining methods to better assess WD impact and will be able to better understand if impacts are occurring in other watersheds of concern going forward.

Misunderstandings debunked:

Whirling disease started in Johnson Lake in Banff and spread from there.

It is unknown where the parasite first established in Alberta and is very difficult to definitively determine.

The movement of diseased fish across the landscape (live fish from hatcheries but also fish parts) and high recreational traffic (anglers and boaters) are considered the most likely ways to spread WD. WD spread into waterbodies such as the Bow River and Crowsnest River were likely the result of one or both of these contributing factors.

The entire watershed is infected.

This is untrue. The majority of waterbodies in Alberta have not had any positive detections of WD to date. WD is a federally reportable disease and the Canadian Food Inspection Agency manages the disease on a Canada-wide scale. The province of Alberta manages the disease at a finer scale as there is opportunity to mitigate impacts. Within each major watershed, there are many more negative test results than positive and all recreational water users can continue to help prevent the spread of the parasite. For an up to date list of positive waterbodies, please see the 2020 Fishing Regulations and the Whirling Disease Program website.

Time and money is wasted since there is no cure for whirling disease.

Many management strategies can reduce the overall severity and impact of WD in Alberta. One of those being the Clean, Drain, Dry campaign with the action to reduce the spread of WD to areas where it is not currently having an impact by following these three steps. Additionally, other jurisdictions with WD have used strategies such as, stocking WD resistant strains of trout into WD impacted areas, restoring riparian habitat to reduce the amount of available habitat for the worm host, and installing and maintaining fish barriers separating infected populations from important species at risk.

AEP is working diligently to assess WD risk to vulnerable fish populations and when more thoroughly understood, AEP will consider implementing mitigation measures following consultation and engagement sessions with interested and invested parties.

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Whirling disease has been in Alberta for over 30 to 40 years and we are passed any point of concern.

This is highly unlikely. A large-scale WD monitoring program was conducted throughout the province from 1997 to 2001. During this monitoring, the parasite was not detected in any of our major drainages including the Bow River, Oldman River, and Red Deer River drainages. Additionally, a sentinel cage study was conducted in 2003 on the Crowsnest River and Bow River and there was no evidence of the WD parasite in these two major watersheds. This indicates that establishment of the parasite in Alberta likely occurred at some point between 2003 and 2016. Any previous reports or suggestions that WD was present 30 to 40 years ago lack sufficient evidence, particularly in the form of molecular testing, which is required to confirm the parasite. Furthermore, the discovery of WD and the decline in rainbow trout in the Crowsnest River confirms that we are only beginning to see measurable impacts and need to spend more effort assessing the potential risk to other watersheds and fish populations in Alberta.

Whirling disease is not an immediate threat to species at risk, including Westslope cutthroat and Athabasca rainbow trout.

WD should be considered an immediate threat to native Westslope cutthroat trout populations due to their susceptibility and proximity to known positive waterbodies. Many populations of Westslope cutthroat trout occupy habitat directly adjacent to or connected to the Crowsnest River, which is experiencing declines in rainbow trout populations.

Every effort must be made to assess the current state of WD in these populations and ensure the parasite is not introduced to these sensitive habitats. WD has not yet established in the Athabasca watershed, however, it is imperative to prevent the spread of the parasite into the Athabasca River drainage basin as Athabasca rainbow trout are thought to be highly susceptible to WD.

Most hatcheries are infected with whirling disease.

All facilities have been tested for WD. Any hatchery that was tested positive has been quarantined and is

now either free of the parasite or has ceased operations due to an inability to remove the parasite from their facility. All Alberta Provincial publically funded fish hatcheries and brood stations have consistently tested negative for WD. Annual testing of fish from hatcheries is now a requirement for stocking.

Always remember to **clean, drain and dry** your watercraft, gear and equipment between waterbodies:

- **Clean** your watercraft and equipment that has been in contact with water.
- **Drain** all water onto dry land before leaving the shore – it is **illegal** to transport a watercraft with the drain plug still in place.
- **Dry** your watercraft and equipment completely between trips.

If you have additional questions, misconceptions or you suspect you witnessed a fish with whirling disease, please email aep.whirl@gov.ab.ca.



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