

Whirling Disease – Spinning in circles for much needed action

Canada's whirling disease "baptism" came on August 25, 2016. That was the day the Canadian Food Inspection Agency (CFIA) confirmed the presence of whirling disease in fish in Johnson Lake in Banff National Park. I remember quite vividly an off-the-cuff remark by a fisheries scientist then that if fish are infected in the Park, it's likely the entire Bow is infected as well. I wonder if he knew just how prophetic those words would be. Last month, on February 10th, the CFIA declared the entire Bow River watershed to be infected with whirling disease. This means that all streams, creeks, lakes, and rivers that feed into the Bow River, including the Elbow River, have been infected.

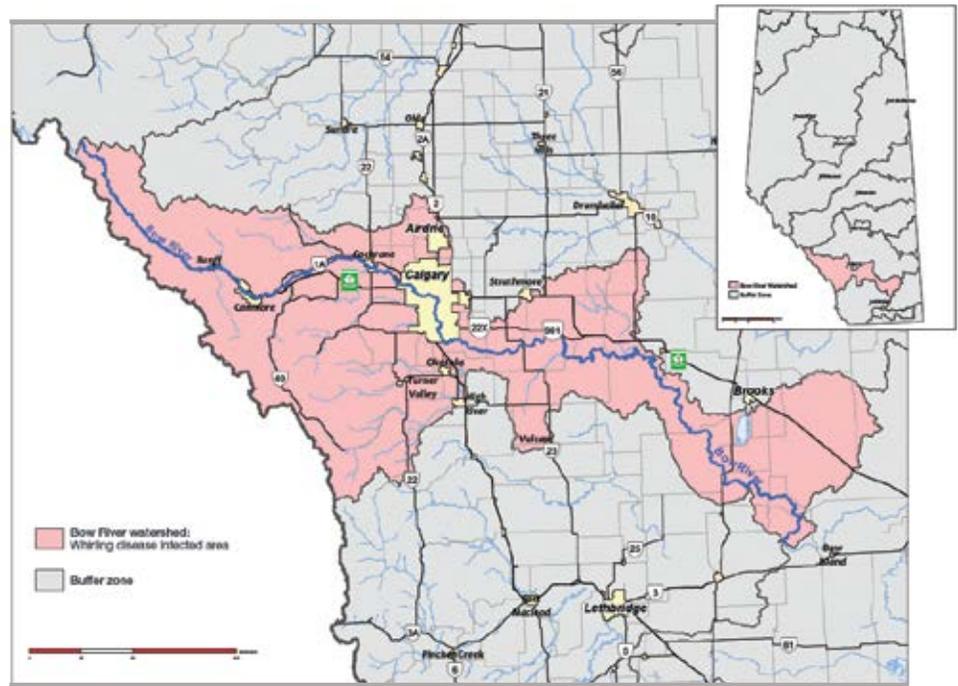
Whirling disease is caused by *Myxobolus cerebralis*, a microscopic parasite. This parasite has a complicated lifecycle which begins in spores found in soil at the bottom of water bodies. These spores are taken up by tubifex worms in the soil. In the worms the spores develop into the triactinomyxon, the parasite form, which is released into the water and infects salmonid fishes (trout, salmon, whitefish) through the skin. Obviously this leaves many opportunities for the disease to spread: water, soil, or fish contaminated with whirling disease all are potential carri-

ers and hosts of the disease.

Whirling disease originated in Europe as a parasite in brown trout. Since the disease co-evolved with brown trout, it wasn't detected until Europeans brought over rainbow trout to Europe from North America and noticed die-offs and swirling swimming patterns in fish behaviour. The completely commonplace practice of bringing over fish eggs and live fish a century or more ago meant that in the early 20th Century whirling disease had spread to the United States. Initially de-

tected only in fish hatcheries, it wasn't until the massive declines of native fish species in Colorado and Montana in the mid 1990s when the potential and dramatic effects of this disease on native fish species dawned on anglers and conservationists alike.

The disease's mortality rate depends on a number of factors. The most significant one is the size of the fish when it is exposed to the parasite. The height of summer and early fall are the peaks times for the presence of the parasite in the water which means that the



Map of the whirling disease infected area in Alberta. SOURCE: GOVERNMENT OF ALBERTA

life history of fish species plays a large role in which populations are more vulnerable. Species such as bull trout – which spawn in the fall and hatch in the winter or early spring – are much larger when they first encounter the parasite. This improves their resistance to the disease. On the other hand, westslope cutthroat trout spawn in the early summer and their eggs hatch in mid-summer. Therefore, the fry are at a high risk of developing whirling disease. Our already threatened westslope cutthroat trout, which exist only in isolated pockets within the Bow and Oldman River drainages, are being placed under even greater mortal risk with this additional threat to their persistence in our waterways. However, don't think that we don't have reason to be concerned about bull trout: with warmer water temperatures, infection rates of the parasite increase dramatically. This is a double whammy for bull

trout, a species which needs cold, clear water to survive and is already struggling with our increasingly warmer planet.

What can we do? Unfortunately, it seems that the ongoing spread of whirling disease is more a question of when, not if. Mandatory cleaning protocols are necessary: much of the spread of whirling disease in the United States was exacerbated by researchers not cleaning off their waders as they traveled from infected to non-infected lakes and streams! The clean, drain, and dry campaign is likely insufficient since mud is an important vector of the disease. Hot water can kill the parasite but it will not kill the spores present in mud. A chemical disinfectant, such as chlorine, is effective at killing all stages of the disease. So it would be vital for the government to adopt a mandatory standard suite of cleaning protocols for everybody that are effective at killing all life

stages of the disease.

Right now it is of paramount importance to protect the remaining bull trout and westslope cutthroat populations not yet affected by the disease. This will mean that some watersheds will need to be closed to all non-emergency work, angling, and recreational OHV use. Eventually, fish will develop a resistance to whirling disease and this resistance is passed onto the offspring of survivors. For now, however, there is an even greater need to protect and restore the remaining populations of bull trout and westslope cutthroat trout within the Oldman drainage. The new Castle Parks provide an opportunity to not only protect but to recover these species. It might be one of the last remaining footholds for them in this brave new world.

- Joanna Skrajny
