

CAN WE EAT OUR WAY OUT OF OUR INVASIVE SPECIES PROBLEMS? THE CASE OF LAKE TROUT (*SALVELINUS NAMAYCUSH*) IN FLATHEAD LAKE MT.

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Lake trout (*Salvelinus namaycush*) are indigenous to the Great Lakes system and were used to stock many western lakes at the beginning of the twentieth century, such as Flathead Lake, MT and Pend Orielle Lake, ID. Subsequent introduction of *Mysis* shrimp to these systems in the 1980s and 1990s has resulted in an explosive growth of the lake trout populations that now threaten native species, such as bull trout (*Salvelinus confluentus*) and westslope cutthroat trout (*Oncorhynchus clarki lewisi*), as well as desirable introduced species, such as kokanee salmon (*Oncorhynchus nerka*). One management option that is being employed is large-scale, selective harvesting of lake trout and donation of fish to area food banks and other assistance programs.

Eating fish high in omega-3 oils has been shown to be beneficial for neurodevelopment in fetuses and young children. However, all fish contain some level of mercury. The form of mercury that is found in fish is almost entirely methylmercury, a very potent neurotoxin with the opposite effects of omega-3 oils. Therefore, women who are pregnant, or who may become pregnant are cautioned by the FDA to avoid species fish that have been shown to contain high levels of mercury, such as shark and swordfish, and, instead focus on eating fish that are both low in mercury and high in omega-3 fish oils, such as salmon and sardines.

Lake trout are long-lived, predatory fish and often occupy the top of the food web in these lakes. This makes them prone to mercury biomagnification. Common users of food banks in these areas tend to be women of childbearing age, often enrolled in the Women, Infants and Children (WIC) Program. This could make the donation of lake trout to food banks an environmental and public health concern. Both the State of Idaho and the State of Montana issue fish consumption advisories regarding mercury. However, with limited budgets and many bodies of water to administer, these advisories are usually based on small sample sizes and composite samples. This could lead to a large uncertainty over the level of protection afforded by these advisories.

We have begun an approach that not only looks at the total mercury in lake trout as a function of length in a much larger sample size, but also levels of omega-3 and omega-6 oils, as well as selenium, another factor that may ameliorate the adverse effects of mercury exposure. By integrating these other, possibly mitigating factors, along with the mercury data, we are trying to address the overall safety of these fish donation programs. Our studies should provide the States and Tribes with sounder science on which to base these decisions.