

ESTIMATED ECONOMIC DAMAGES OF INVASIVE MUSSELS TO MONTANA

UP TO \$234 MILLION PER YEAR

In fall 2016, invasive mussel larvae were detected in Tiber Reservoir with a suspect detection in Canyon Ferry Reservoir. To date, no established adult populations have been detected. Invasive mussels are referred to as ecosystem engineers because of their profound effects on lake and river ecosystem function and structure. The potential total economic impact is in the hundreds of millions of dollars and is likely to affect agriculture, hydropower facilities, drinking water supplies, property values, and recreation.

The \$234 million per year in estimated damages reflects the direct mitigation costs and revenue lost to affected stakeholders. The indirect costs—such as ecological damages to native species, lost jobs, and the personal and cultural benefits people derive from lakes and rivers—are not included. A full-cost accounting of the direct and indirect costs would far exceed \$234 million per year.

With the imminent threat of additional invasive mussel introduction, managers and policymakers in Montana need cost estimates to inform decisions about the level of funding for prevention programs and efforts at containing existing detections. **The current level of Montana's AIS funding, approximately \$6.5 million annually, is roughly 3 percent of the estimated \$234 million annual mitigation and lost-revenue costs.**

Prevention, early detection and rapid response are considered the most cost-efficient approaches to minimizing the economic damages of invasive mussels and other aquatic invasive species. Once established, adult invasive mussels cannot be eradicated, leaving damage mitigation and control as the only feasible and more costly policy responses.



Recreation is important to Montanans' quality of life and the local economy. It's also the reason many visitors come to the state. Invasive mussels can devastate Montana's premier fisheries—impacting tourism and recreational angling—and can damage boats, motors and other recreational equipment. Additionally, infestation can make recreation difficult, as mussels can establish on docks, beachlines, boat ramps and watercraft. The direct impact of invasive mussels to recreation is estimated to be **\$122 million per year**.



Agriculture is important to Montana's economy and way of life. Montana has 2.5 million acres of irrigated land, which accounts for 96% of surface water withdrawals. Invasive mussels can infest canals and pipelines, clog irrigation pumps, screens and head gates, and reduce pumping capacity. The direct impact of invasive mussels to agriculture is estimated to be **\$5.75 per acre foot or \$61 million per year**.



Infrastructure associated with hydropower, thermoelectric power, industrial, water treatment plants, mining operations, and self-supply domestic are all susceptible to mussels. Water intake structures, such as pipes and screens, can become restricted and clogged and reduce the conveyance of water and impede or shut down operations. The direct impact of invasive mussels to infrastructure is estimated to be **\$47 million per year**.



Government Revenue, especially local government, will be negatively affected by the presence of mussels. Lakefront property owners will likely see decreases in the value of their property from decreased lake aesthetics associated with mussels on the order of **half a billion dollars**. Revenue from property taxes will decline in direct proportion to declines in property values with annual losses estimated to be **\$4 million**.



In Montana, the loss to lakeshore property values is estimated to be \$497.4 million. This figure does not include the potential loss in values to irrigated farmland.



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