M.L. 2017 Minnesota Aquatic Invasive Species Research Center Subproject Abstract
For the Period Ending June 30, 2020

SUBPROJECT TITLE: MAISRC Subproject 25: What's in your bucket? Quantifying AIS Introduction Risk
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M.L. 2017, Chp. 96, Sec. 2, Subd. 06a

SUBPROJECT BUDGET AMOUNT: $199,784
AMOUNT SPENT: $185,634
AMOUNT REMAINING: $14,150

Sound Bite of Project Outcomes and Results

Live baitfish are popular among Minnesota anglers, but their illegal release is a known risk factor for spreading harmful diseases to wild fish populations. Our research identified high-risk pathogens in Minnesota, estimated the number of times anglers release an infected baitfish each year, and identified opportunities for strategic management intervention.

Overall Subproject Outcome and Results

In Minnesota, the illegal release of live baitfish by anglers has been identified as a weak point in our efforts to prevent the spread of aquatic invasive species and pathogenic microbes, however the magnitude of the risk and evidence-based opportunities for intervention had not been well studied. The purpose of this project was to assess the risk of fish pathogen introduction via illegal release of live baitfish by Minnesota anglers to inform strategic management strategies to reduce that risk. First, we created a semi-quantitative framework to evaluate the threat of baitfish pathogens in Minnesota and used it to rank pathogens so managers can prioritize resources. We then conducted a statewide survey of anglers to quantify risky behaviors and used those data to parameterize a risk assessment model for high-risk pathogens to estimate the number of risky trips that occur in a given year under a variety of scenarios. Our results were variable, indicating a wide range of outcomes depending on current management strategies and pathogen prevalence. For example, with strong surveillance and controls in place for the viral hemorrhagic septicemia virus, the number of risky trips is limited in most scenarios. However, for high-risk pathogens (Ovipleistophora ovariae, Asian fish tapeworm) for which no controls are in place, the large number of anglers, frequency of illegal release, and the popularity of susceptible baitfish species, can result in hundreds of thousands of risky trips each year, even in low-prevalence scenarios. Ensuring a safe, pathogen-free bait supply and decreasing the percentage of anglers who release their baitfish can reduce pathogen introduction risk while preserving the important cultural and economic benefits of recreational angling. Our project provides evidence-based tools for prioritizing scarce resources and identifying weak points in our management strategies so we can improve them to protect our valuable fish and fishing resources.

Subproject Results Use and Dissemination

Throughout this process we have communicated and collaborated with technical experts, managers, and members of the public alike. In addition to the three manuscripts either published or in prep for this project, we have presented this material in a variety of settings. Results from this project have been shared via presentations to local (UMN Ecosystem Health Group, MAISRC Research Showcase, MNDNR AIS Working Group meetings, Minnesota Lakes and Rivers Advocates), statewide (MN Chapter of the American Fisheries Society, UMN Extension Webinars), regional (Upper Midwest Invasive Species Conference), and national (North American Invasive Species Management Association, American Fisheries Society Fish Health Seminar) audiences and hundreds of individual participants. We have also maintained close contact with DNR Fisheries and AIS staff who have periodically served as unfunded collaborators and advisers on the project, and we worked with a number of AIS Detector volunteers in implementing the survey portion of the project.