

## Presentation

Invasive Species Biology, Ecology, Impacts, and Distribution

### **Status of aquatic non-indigenous species in the Duluth-Superior harbor**

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As part of a study to develop recommendations for aquatic non-indigenous species (NIS) monitoring in Great Lakes areas at risk of invasion, we conducted comprehensive, multi-gear sampling in the Duluth, MN-Superior, WI harbor and lower St. Louis River in 2005-2007. This effort represents the most spatially and taxonomically comprehensive NIS survey of this complex, invasion-vulnerable Great Lakes subsystem to date. The objectives of this presentation are to report which NIS were detected, describe their abundance and distribution, and evaluate which sampling gears were most effective in detecting them. Our findings confirm that this major shipping port remains a NIS invasion “hotspot”. Ten of the 41 fish species and 19 of the ~240 benthic invertebrate taxa recorded were non-indigenous. Eight of the benthic invertebrates, including the New Zealand mud snail (*Potamopyrgus antipodarum*), a Eurasian-origin amphipod (*Echinogammarus ischnus*), and the quagga mussel (*Dreissena bugensis*), were first-detection records. Notably, zebra mussel [*Dreissena polymorpha*], round goby [*Neogobius melanostomus*], and Eurasian ruffe [*Gymnocephalus cernuus*] were found to be abundant and widespread in the system (“invasive”), while most NIS were uncommon and localized (“non-invasive”). A few NIS were extremely rare and required considerable sampling effort to detect. Because the sampling gear differed substantially in the habitats covered and the species composition recovered, monitoring multiple habitats with multiple gear types provided the most complete and nuanced picture of aquatic NIS status. This abstract does not necessarily reflect U.S. EPA policy.