Non-Native Species & the Great Lakes

A Series of Fact Sheets Identifying Species that Pose Invasion Threats

Species: Golden Mussel *(Limnoperna fortunei)*

Introduction: The U.S. Environmental Protection Agency lists the golden mussel as a non-indigenous aquatic species with significant potential to invade the Great Lakes.[i] The vulnerability of the Great Lakes to a macrofouling species such as the golden mussel has already been demonstrated by the invasion of the zebra mussel.[ii] The golden mussel and the zebra mussel are physically similar in several ways.[iii] However, the golden mussel can survive under a broader range of ecological conditions than the zebra mussel.[iv] Therefore, if ballast water discharges introduce the golden mussel, the species is expected to invade a broader range of habitats.[v]

Description: The golden mussel can acclimate itself to many types of environments.[vi] Although a freshwater species, it tolerates a broader range of salinity than the zebra mussel and thus has the ability to live in brackish waters.[vii] Because it can inhabit both temperate and subtropical climates, it is likely capable of colonizing waters of the lower Great Lakes region.[viii] Once the golden mussel has entered a body of water, it basally attaches itself to most available substrates, and often forms colonies with densities greater than 80,000/square meter.[ix]

Ecological Effects: As an invader, the golden mussel would like have much the same impact as the zebra mussel in the Great Lakes. It clogs the intakes, pipes and filters of water treatment facilities, industrial plants, and power stations.[x] These issues lead to increased operational costs, because the facilities may need to be shut down to clean out mussels, shell material, and sediment.[xi] Further, decaying dead mussels emit a noxious odor and pollute drinking water systems, while empty shells add to the fouling problem.[xii] Its high reproductive capacity means that golden mussel populations increase rapidly to form dense beds, resulting in reduced benthic biodiversity.[xiii] Native bivalves are starved as the mussels settle on top of them and compete with them for food, while other invertebrates and aquatic plants are displaced due to habitat modification.[xiv]

Means of Introduction: One likely way that the golden mussel could be introduced into the Great Lakes is through ballast water discharged from Asian or South American oceangoing vessels.[xv]

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[i] U.S. ENVTL. PROT. AGENCY, PREDICTING FUTURE INTRODUCTIONS OF NONINDIGENOUS SPECIES TO THE GREAT LAKES B-13 (2008), *available at* ://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=190305#Download (Ex. i).

[ii] *Invasive Invertebrates: Zebra Mussel*, USGS GREAT LAKES SCIENCE CENTER, http://www.glsc.usgs.gov/main.php?content=research_invasive_zebramussel&title=Invasive Invertebrates0&menu=research_invasive_invertebrates (last modified Jan. 31, 2008) (Ex. ii).

[iii] DANIELLE M. CROSIER & DANIEL P. MOLLOY, GOLDEN MUSSEL 1, *available at* http://el.erdc.usace.army.mil/ansrp/limnoperna_fortunei.pdf (Ex. iii).

[iv] *Id.*

[v] *Id.*

[vi] *Id.* at 6.

[vii] *Id.* at 5.

[viii] *Id.* at 6.

[ix] *Id.* at 1.

[x] *Id.* at 6.

[xi] *Id.* at 7.

[xii] *Id.*
[xiii] U.S. ENVTL. PROT. AGENCY, *supra* at B-13; *see* CROSIER AND MOLLOY, *supra* at 3.
[xiv] *Ecology of Limnoperna fortunei*, GLOBAL INVASIVE SPECIES DATABASE, http://www.issg.org/database/species/ecology.asp?fr=1&si=416&sts (last modified July 3, 2005). (Ex. iv).
[xv] CROSIER AND MOLLOY, *supra* at 5.