

# Identification of areas with a potential risk of zebra mussel (*Dreissena polymorpha*) colonisation using GIS data

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## **Abstract**

Zebra mussels arrived in North America in 1987, transported in ballast waters from Eurasia to Lake St-Clair. Twelve years later, they are present in two Canadian provinces and at least 20 American states, in densities as high as 700,000 individuals per meter square. Predicting the possible extent of occurrence of this nuisance species is an important task that can be useful to conservation biologists as well as engineers and industries. Using data from the United States Geological Survey (USGS) on factors that are known to affect zebra mussel survivorship, population growth, and rate of colonisation, coupled with the use of a geographic information system (GIS), allowed the identification of areas of concern with regard to the colonisation by the dreissenids in Northeastern United States. An index of colonisation likelihood was built with reference to existing data in the scientific literature as well as the field conditions where the zebra mussels were actually found. It appeared that half (52.7%) of the Northeastern United States surface waters are in areas which were labelled as “likely” to “very likely” in terms of zebra mussel colonisation, the states of Ohio, New York, West Virginia, and Delaware being of most concern. These findings bear possible dramatic consequences for Northeastern United States aquatic ecosystems.