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**The invasion risk of invertebrate species associated with Japanese Tsunami Marine Debris in North America and Hawaii**

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**Abstract**

Marine debris from the 2011 Great Japan Tsunami represents a novel transport vector for Japanese species to reach Pacific North America and Hawaii. Over 650 debris items attributed to the tsunami have been intercepted and over 380 species of algae, invertebrates and fish have been identified associated with this Japanese Tsunami Marine Debris (JTMD). Most of the species encountered are native to Japan, not currently present in North America or Hawaii, and their invasion risk is unknown. Thus, it is important to characterize the risk their introduction may pose to North American and Hawaiian ecosystems. Here we characterize the risk of individual invertebrate species associated with JTMD using an established screening-level risk assessment tool – the Canadian Marine Invasive Screening Tool (CMIST). This tool scores both the probability and consequences (impacts) of an invasion for receiving ecosystems to generate an overall risk score that encompasses assessor uncertainty. Although there were some ecoregional differences, well-known global invaders, such as the mussel *Mytilus galloprovincialis* and the ascidian *Didemnum vexillum* were higher risk for most ecoregions, while those that have yet to invade many (or any) of the assessed ecoregions like the sea star *Asterias amurensis* and the shore crab *Hemigrapsus sanguineus* were also higher risk. However, most of the invertebrate species assessed were considered relatively low to moderate risk, due perhaps in part to a lack of reported invasion history and impacts elsewhere.

**Keywords:** invasive species, risk assessment, Pacific Ocean, marine debris, non-indigenous

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