

日本南極地域観測隊の新しい輸送システムにおける外来種持ち込みの危険性

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The risk of transporting non-native species to Antarctica under the new transportation system of JARE

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Antarctic terrestrial ecosystems are not immune to the threat of biological invasions, and the urgent need for implementation of effective mitigation measures to minimize the risk of these occurring has been highlighted. Recently, the transportation and logistic support system of the Japanese Antarctic Research Expedition (JARE), operated by the National Institute of Polar Research (NIPR), has undergone drastic changes after the relocation of NIPR's cargo handling facility and the commissioning of a new icebreaker in 2009. The potential risk of introducing non-native species into Antarctica through the newly adopted JARE cargo transportation system in comparison with the previously existing system was determined by quantifying both changes in the form of cargo transported and the frequency of propagule attachment on different types of cargo item. We obtained 1022 propagules of at least 26 species including species known to have resistance to the stresses of cold environments. Larger numbers of propagules, and a greater proportion of affected cargo items, were encountered in the newly adopted transportation system than in its predecessor. In particular, the increased risks in the new system were identified as being associated with the major transportation medium and the cargo storage location. Based upon those findings, we propose appropriate preventative measures for adoption into the JARE transportation operation in order to minimize the risk of transfer of alien biota into Antarctica through the activities of this major logistic operator.