

LETHAL SALINITY CONCENTRATION VARIES AMONG *VALLISNERIA AMERICANA* ECOTYPES

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Increased salinity can severely affect vegetation in freshwater ecosystems. Salinity of a waterbody can increase as a result of saltwater intrusion or by runoff/leaching from de-icing salts. Habitats that are deteriorating as a result of increased salinity can be restored with freshwater ecotypes (locally adapted populations) that tolerate above-normal salinity. These salt-tolerant ecotypes can be used to stabilize and revegetate marshes and wetlands. *Vallisneria americana* is a prominent species in many freshwater ecosystems and is commonly used in restoration efforts. Ecotypes of this species respond differently to other abiotic conditions such as light and fertility, so in this study we evaluated the effects of salt stress on 26 ecotypes of *V. americana*. Instant Ocean aquarium salt was used to create saline solutions [0.2, 2.0, 4.0, 10.0, 15.0 and 20.0 parts per thousand (ppt)], then plants were abruptly exposed to these solutions and maintained in these concentrations for 5 weeks before being visually assessed for quality and destructively harvested. Analysis of variance and non-linear regression were used to calculate LC₅₀ values – the lethal concentration of salt that reduced plant biomass and quality by 50% compared to control treatment. Growth rate and visual quality varied significantly among ecotypes, and ecotypes that were most and least sensitive to salt had 50% biomass reductions at 0.8 and 9.1 ppt, respectively. Quality and growth of all ecotypes were negatively affected at 4.0 ppt, but all ecotypes survived salinity concentrations as high as 10.0 ppt. No ecotype survived 20.0 ppt, which suggests the maximum salinity concentration tolerated by these ecotypes is between 15.0 and 20.0 ppt.

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