

NITRATE RELEASE BY SALT MARSH PLANTS: AN OVERLOOKED NUTRIENT FLUX MECHANISM

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Salt marshes provide water purification as an important ecosystem service in part by storing, transforming and releasing nutrients. This service can be quantified by measuring nutrient fluxes between marshes and surface waters. Many processes drive these fluxes, including photosynthetic uptake by vascular plants. Nutrient flux experiments in Oregon salt marshes indicated that certain plants may release nutrients into surface waters, particularly *Gindelia stricta*, a high marsh forb. To test this hypothesis, we measured changes in nutrient concentration for four abundant low and high marsh plants placed in seawater to simulate tidal inundation. Nitrate concentrations increased significantly in the presence of *G. stricta*, but not for the other species. Additionally, nitrate release by *G. stricta* increased over time. We speculate that this was caused by build-up of nitrate-rich exudates on the surface of the plants between tidal inundations that were then released into surface waters during the simulated tidal inundation. This overlooked mechanism of nitrate release resulted in a change in direction of nitrate flux for high marsh habitat, and should be considered in salt marshes elsewhere.