

EFFECTS OF INVASIVE PLANT TYPHA X GLAUCA ON WETLAND DENITRIFICATION AND EMISSION OF NITROUS OXIDE

Denitrification (DN), a critical wetland ecosystem function requires specific soil conditions: anoxia, and the availability of nitrate (NO_3^-) and organic carbon. The invasive plant *Typha x glauca* has been associated with increased soil NO_3^- , organic matter and also with greater soil aeration, which may result in incomplete reduction of NO_3^- to N_2 and increased flux of N_2O , a potent green house gas. To test these interactions, two experiments were conducted: 1) DN activity of soil cores collected along a gradient of *Typha* densities from Lake Michigan coastal wetlands was analyzed using acetylene inhibition and helium assays; and 2) $^{15}\text{NO}_3^-$ was traced through the DN process in controlled microcosms with wetland soils at a range of redox levels. Results from the acetylene inhibition assay were inconclusive as to whether *Typha* affected DN quality, likely resulting from uneven distribution of site specific water levels. Helium assay samples are currently being analyzed. Results from the ^{15}N study revealed a strong positive relationship between soil aeration and relative N_2O emissions. This suggests, *Typha* mediated increases in soil aeration, may result in increased N_2O emissions.