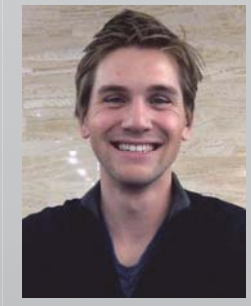

IMPACT OF CATTLE GRAXING ON GREAT SALT LAKE WETLAND ECOSYSTEMS INVADED BY PHRAGMITES AUSTRALIS

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Phragmites australis (phragmites) is a highly invasive, resilient plant that has made its home in many parts of the United States. It has an ability to grow under a variety of conditions and can reproduce sexually (through pollination and dispersal of seed) and vegetatively (through propagation of rhizomes). In wetland areas, these plants thrive off of the abundance of water and nutrients, often outcompeting native plant species that are important to the native animals of that area. Management of these plants is very important, though there have been few successful methods of controlling them through herbicides, burning, mowing or trampling. Grazing, however, has a good potential for eradicating these plants with possible recovery of native plants, especially on Utah's Great Salt Lake wetland area where fires are not a possibility and herbicides could pose a threat by being applied in an ecosystem where they could accumulate in water.

In this study, cattle were placed onto experimentally grazed one-acre plots, which were located in proximity to the ungrazed control plots at three areas: Farmington Bay, Harold Crane Water Management Area (WMA; 2 sites), and Howard Slough Waterfowl Management Area (two sites).

We asked three questions: 1) What is the effect of grazing on phragmites growth? And how will grazing affect the cover of Phragmites and their size? 2) Is there a clear chemical signature of grazing? 3) What is the effect of grazing on nitrogen (N) concentrations in water?

We measured plant cover and stem height at all study sites. We collected manure, soil, phragmites leaves, and water samples within grazed and ungrazed wetland plots at a subset of sites to determine isotopic composition (^{13}C, ^{15}N), with the expectation that manure would be enriched in ^{15}N ($\delta^{15}N \sim 15$). We measured NO_3-N and NH_4-N concentrations in three water sources (well, flood, and pond water) at Farmington Bay. Pond water was the source of flood water inundating sites.

Preliminary results show that grazing may be effective at controlling phragmites growth. However, we did not see a clear chemical signature of grazing. Water chemistry results were mixed. We saw no effect of grazing on flood water inorganic N content, but elevated NH_4-N concentrations in well water at grazed sites after cattle have been introduced.