

Salinity, not genetic incompatibilities, limits the establishment of the invasive hybrid cattail *Typha* × *glauca* in coastal wetlands

Joanna Freeland¹, Marcel Dorken¹, and Kathryn Tisshaw¹

¹Trent University

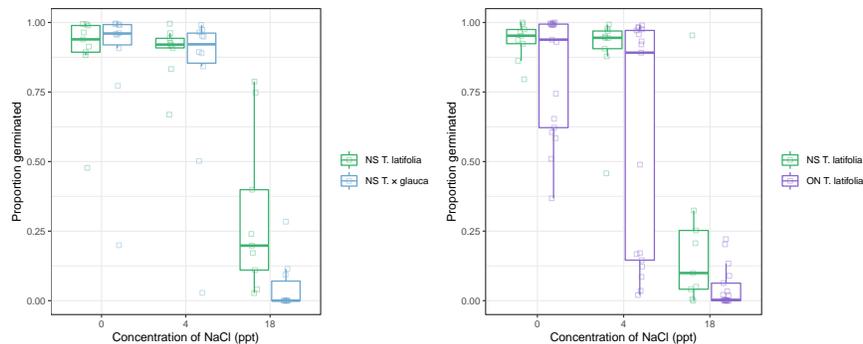
July 9, 2020

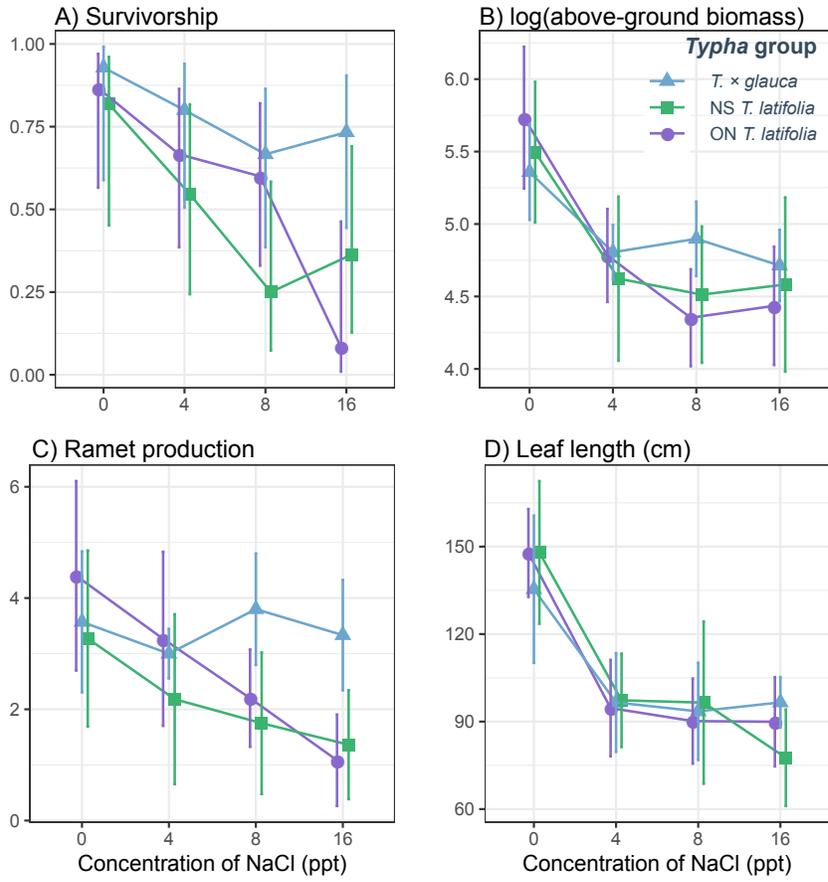
Abstract

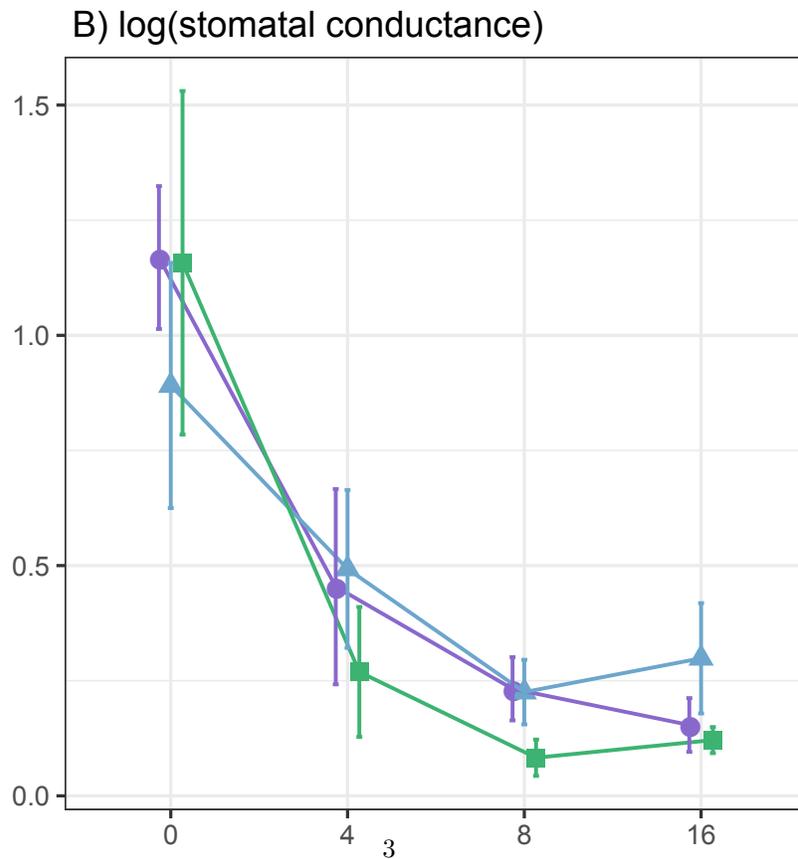
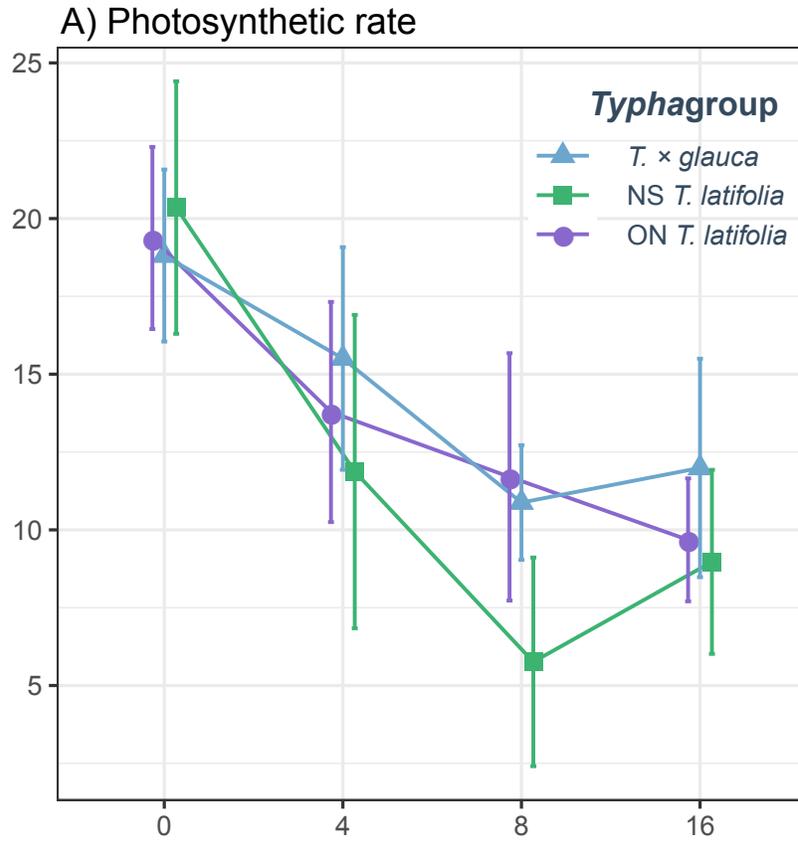
Interspecific hybrid frequencies can vary considerably across contact zones of a single pair of progenitor species. The reasons for this are not well understood, but could help explain processes such as species diversification or the range expansion of invasive hybrids. The widespread cattails *Typha latifolia* and *T. angustifolia* seldom hybridize in some parts of their range, but in other areas produce the dominant hybrid *T. × glauca*. We used a combination of field and greenhouse experiments to investigate why *T. × glauca* has invaded wetlands in the Laurentian Great Lakes region of southern Ontario, Canada, but is much less common in the coastal wetlands of Nova Scotia in eastern Canada. One potentially important environmental difference between these two regions is salinity. We therefore tested three hypotheses: 1) *T. latifolia* and *T. angustifolia* in Nova Scotia are genetically incompatible; 2) the germination or growth of *T. × glauca* is reduced by salinity; and 3) *T. latifolia*, a main competitor of *T. × glauca*, is locally adapted to saline conditions in Nova Scotia. Our experiments showed that Nova Scotia *T. latifolia* and *T. angustifolia* are genetically compatible, and that saline conditions do not impede growth of hybrid plants. However, we also found that under conditions of high salinity, germination rates of hybrid seeds were substantially lower than those of Nova Scotia *T. latifolia*. In addition, germination rates of Nova Scotia *T. latifolia* were higher than those of Ontario *T. latifolia*, suggesting local adaptation to salinity in coastal wetlands. This study adds to the growing body of literature which identifies the important roles that local habitat and adaptation can play in the distributions and characteristics of hybrid zones.

Hosted file

manuscript.docx available at <https://authorea.com/users/341391/articles/468335-salinity-not-genetic-incompatibilities-limits-the-establishment-of-the-invasive-hybrid-cattail-typha-glauca-in-coastal-wetlands>







C) log(water-use efficiency)

