Tom and Bruce Shinn Grant Research Report

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Title:

Systematics, molecular evolution, and functional trait variation in the *Sphagnum magellanicum* (Sphagnaceae) species complex

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Article:

I am currently a graduate student at Duke University and my dissertation research focuses on the evolution of *Sphagnum* (Sphagnaceae) peatmosses. Recent work has demonstrated that one globally-distributed and ecologically-important species, *S. magellanicum* Brid., is actually a complex of at least three reproductively-isolated species. These plants also occur throughout North Carolina from the mountains to the coastal plain. In collaboration with an NSF-funded effort, part of my research seeks to (1) identify which species in this complex occur in North America and resolve their evolutionary relationships, (2) identify patterns of molecular evolution, and (3) quantify functional trait variation within and between species.

Funding from the Tom & Bruce Shinn grant has allowed me to collect specimens from across the southeastern United States and begin gathering additional data. Samples from over 100 North American specimens have been prepared for full-genome sequencing. Field

experiments designed to quantify functional trait variation using these specimens began this fall. Preliminary genetic and morphological data suggest that areas in southeastern United States harbor an undescribed species within this complex. Morphological characters that are used to reliably distinguish described species among European populations are not consistent for North American populations for which genetic composition is known.

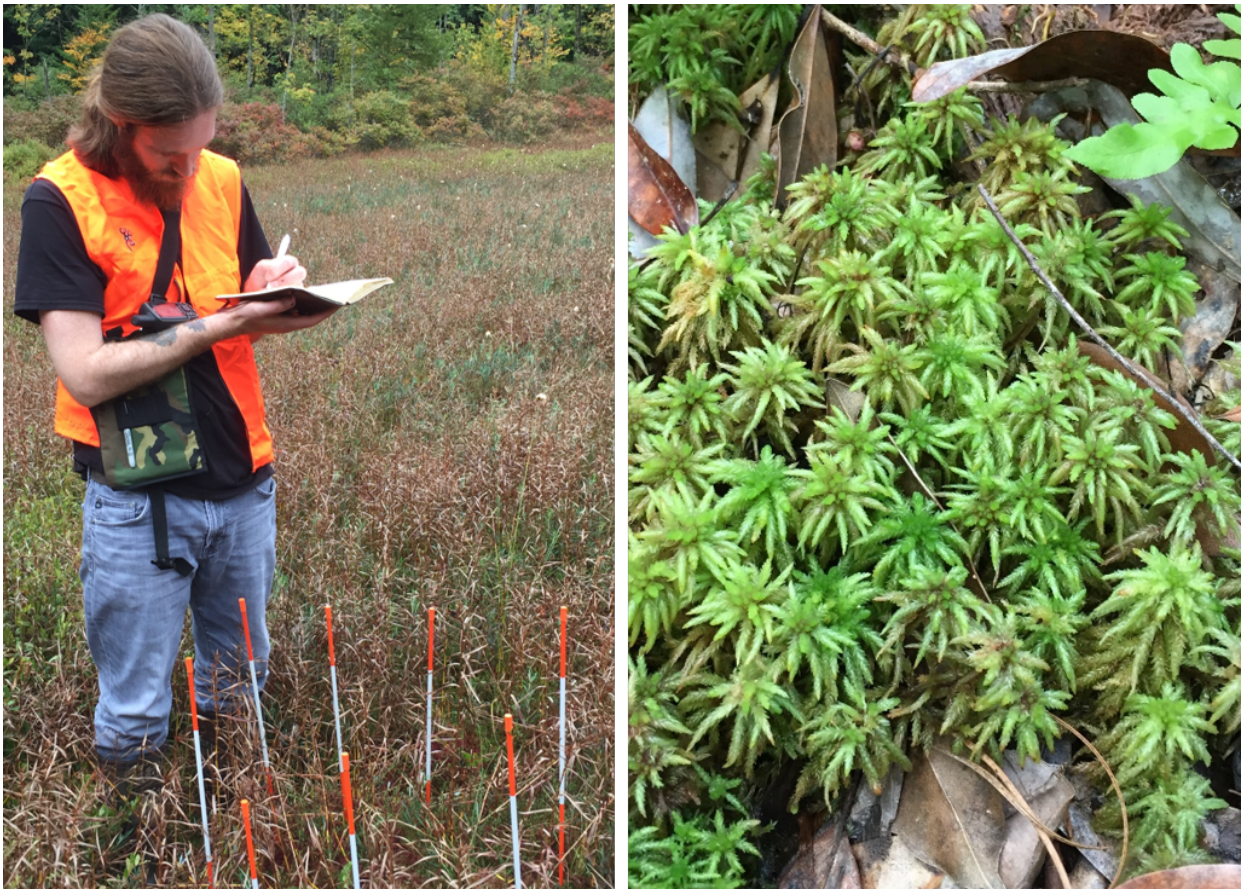

Figure 1: The recipient setting up a field experiment designed to quantify functional trait variation (left). A population of *Sphagnum* cf. *magellanicum* from the southeastern U.S. (right).