David L Nieland

Subject: Funded MS position - restoration potential of Ohio's peat bogs

PRO Peat Bog: indicators for assessing the Potential for Restoration of Ohio's peat bogs

DEADLINE FOR APPLICATIONS MARCH 9TH

PRO Peat Bog aims to understand the current status of Ohio's peat bog ecosystems, and to identify straightforward indicators of their condition and restoration potential. Peat bogs play diverse and important roles in our natural environment. In addition to providing specialized habitat for a variety of unique and rare plants and animals (such as carnivorous pitcher plants or prothonotary warblers), peat bogs provide a range of "ecosystem services" that benefit the State. Although they now cover relatively little of Ohio's land area (Figure 1), their services are disproportionate to their size. They clean water, help control flooding during high rainfall events, and they store a large amount of below-ground carbon in their peat deposits.
This carbon can be lost to the atmosphere as greenhouse gases when the bogs are degraded (for example due drainage, fire or agricultural conversion).
Adding their carbon to the atmosphere could help accelerate climate change potentially threatening these ecosystems even further. Our project will study variation in the plant and microbial (e.g. bacteria) communities of Ohio's bogs in relation to the extent of historic degradation. We will relate the composition of these communities to the rate at which they are producing or storing greenhouse gases (Figure 2). Outcomes of this study will include: i) updated status of historically-known Ohio peat bogs; ii) an understanding of how plants and microbes influence interact to influence carbon storage in bogs; and iii) description of indicators of their restoration potential that could be used by managers assessing new sites.

Desired qualifications

Two years of funding are available to support an MS student through the Environmental Science Graduate Program. Interested applicants should meet the following requirements:
• GRE score above 311 on the new GRE test or 1200 on the old test, combined verbal and quantitative, and 3.5 on analytical writing.
• An undergraduate degree from an accredited college or university with a major/degree in natural, physical or social sciences.
• Evidence of courses in calculus and/or statistics; physical sciences; and biological sciences.

Successful applicants should also ideally have:
• Experience monitoring vegetation
• Good botanical skills
• A basic understanding of peatland ecosystems • Competent computer skills, with demonstrated capability in the use of word processing, spreadsheet, statistical, database management, and GIS software.
• Excellent organizational, communication, and presentation skills.
• Ability and willingness to conduct field work in a variety of conditions, including frequent travel, often for extended periods of time, and sometimes in primitive conditions.

Specific Duties
• Assist mapping vegetation zones across a range of bog sites • Analyze bog vegetation community structure in relation to biotic and abiotic variables and disturbance history • Characterize variation in peat characteristics across sites with varying disturbance histories • Run lab incubations to assess CO_2 and CH_4 production potentials from representative peat soils.
• Participate in a field crew collecting vegetation cover data using established methodologies.
• Establish permanent vegetation monitoring plots and photopoints.
• Present research results to interested parties via field tours, scientific presentations, written reports, and publications in peer-reviewed journals.
• Contribute to project website and social media.

Further information on post-graduate study in the ESGP can be found here:
https://esgp.osu.edu/home

CONTACT:
Interested individuals should send a CV, brief statement of qualifications, and contact information for three references to:

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