



2x Fully Funded Masters Positions in Environmental Studies, associated with the Sable Island Institute, Saint Mary's University, and the School for Resource and Environmental Studies, Dalhousie University

We are seeking several students to undertake their Masters programs and research associated with examining both qualitative and quantitative measures of coastal vulnerability on Sable Island National Park Reserve, in Nova Scotia, Canada, starting in September 2024. This research is associated with the Fences in the Sand project, in collaboration with Parks Canada and the Geological Survey of Canada.

Sable Island: Sable Island National Park Reserve (Sable Island NPR) is an example of a coastal ecosystem that is highly influenced by environmental change and subsequent variability in weather extremes. Storm-surge activity and erosion has led to large-scale change in the surface hydrology, vegetation, and geomorphology of Sable Island NPR. This includes the loss of vegetation, freshwater ponds, and associated habitats that sustain populations of horses, birds, and many species of rare plants and invertebrates. Ultimately, the sustainability Sable Island's ecosystems is not known, highlighting the need to not only understand the trajectory of these systems through time, but monitor their ecological integrity.

Project Description: Horses were introduced to the island before the 18th century, and management of their population ceased in the 1960s, such that the population of 200-300 individuals in the 1930s increased to 450-550 in 2022. The horses have become iconic, but their extensive grazing and trampling can significantly impact geomorphological processes, nutrient cycling, ecosystem productivity, and community composition. Indeed, plant communities inside areas that are fenced in for human use are strikingly different from those in unfenced areas, mainly in displaying the denser, more speciose communities that rely on stable, consolidated terrain. How trampling and grazing by horses affects dune morphodynamics, water quality, soil compaction, and subsequent resource availability is not clearly understood. To address these knowledge gaps, the Sable Island Institute, in collaboration with Parks Canada, has

deployed large (0.5-1.3 ha) exclosures to test how coastal dune ecosystems recover.

Candidate profiles: We are seeking multiple graduate positions. The ideal candidates would have a background and interest in one or more of the following areas: vegetation, soil, or freshwater ecology, and/or isotopic and biological indicators of water quality. Successful candidates will be expected to develop a thesis, major paper or major project in one of these areas, and to work with collaborators at the Geological Survey of Canada, Parks Canada, and one or more of the principle investigators of the project. Candidates are expected to participate in field-based research on Sable Island, and integrate their research with other students.

Funding:

We are offering a comprehensive research funding package with a Research Assistantship of \$15,000 per year on top of additional graduate funding from either Dalhousie University or Saint Mary's University in the form of potential scholarships and/or teaching assistantships depending on the candidates GPA and application package. Exact remuneration will depend on qualifications, experience, and any additional support the student may receive upon entry to the graduate program. Details of the master's programs can be found at: <https://www.dal.ca/faculty/management/sres/programs.html> and/or <https://www.smu.ca/academics/msc-in-applied-science.html>

For information on the Project and instructions on how to apply, interested applicants should contact:

Dr. Andrew S. Medeiros

Assistant Professor

School for Resource and Environmental Studies, Dalhousie University

Email: [andrew.medeiros \(AT\) dal.ca](mailto:andrew.medeiros@dal.ca)