



Biology @ Acadia

USE OF RESTRICTION FRAGMENT LENGTH POLYMORPHISMS TO DETERMINE THE PRESENCE OF *SOREX MARITIMENSIS* AND *SOREX ALBIBARBIS* DNA FROM FECAL SAMPLES FROM ACROSS NOVA SCOTIA AND PARTS OF NEW BRUNSWICK

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Little-known and often misunderstood, shrews occupy a variety of ecological niches and habitats in Nova Scotia. There are seven different species in the province, including a diver (*Sorex albibarbis*, the North American water shrew), an endemic species (*Sorex maritimensis*, the maritime shrew) and one with a venomous saliva (*Blarina brevicauda*, the North American short-tailed shrew).



Shrews have an exceptionally high metabolic rate, a low body mass, are easily frightened and are most active at night, making them notoriously difficult to work with. Live trapping requires almost constant monitoring, and any shrews safely captured could easily die of fear or stress once found. Species in Nova Scotia must usually be identified by studying their teeth under a microscope, or using genetic techniques. In 2004, a group in the United Kingdom used a low-tech survey to determine the location of their water shrews, which inspired Operation Shrew Poo. We worked with volunteers to put out and monitor feeding stations, which are simple pieces of PVC piping closed and baited at one end. Shrews may enter, eat, turn and leave freely, often depositing a scat sample inside. The UK team was able to match samples to species based on size, shape and contents, however we have too many species with similar sizes and diets to do this. Instead, DNA is extracted and purified from the feces. A short segment of the mitochondrial cytochrome b gene is amplified using PCR and primers that match the genomes of all seven species. After amplification, two restriction enzymes are used to test for the presence of either maritime shrew or water shrew DNA. In addition to helping educate the public about the role of these insectivorous mammals in the ecosystem, this study will provide critical baseline data on habitat use and abundance for wildlife and conservation agencies.

Alyssa Mitchell graduated from Park View Education Centre in Bridgewater, Nova Scotia in 2007 with an IB Diploma. She began her post-secondary studies at Université Sainte-Anne, completing the French as Second Language program in her first year. Next, she moved on to an integrated B.Sc./B.Ed program, completing all the requirements for her B.Ed. in secondary education and half of the requirements for a B.Sc., all in French. In January 2012 she arrived at Acadia on a mission to complete half a degree with honours by April 2013. She has received excellence scholarships from Université Sainte-Anne and Scholarship America. She enjoys art, sewing, baking, hiking, snowshoeing, backcountry camping, and other people's pets. After graduation, she will begin an M.Sc. in Biology at Université de Montréal *en français*. She hopes to one day live off the grid.

