The effect of anecic and epi/endogeic earthworms (*Lumbricus terrestris* and *Amynthas agrestis)* on soil biogeochemistry and nematodes

During the last glaciation, much of the Northern half of the United States was covered by ice, exterminating the native earthworm populations. Earthworms were reintroduced to North America by European settlers. Recently, the desire for ornamental landscape plants has increased the occurrence of invasive, exotic flora and fauna. A recent invasive earthworm species - *Amynthas agrestis*, or crazy snake worm – was introduced from Asia. This research aims to assess the chemical, physical, biological and geophysical effects of *Lumbricus terrestris* (the common night crawler) and *Amynthas agrestis* on Vermont forest soils. Soil from the UVM horticulture farm, near to the area where the *A. agrestis* were discovered, was used to construct mesocosms. Mesocosms are kept in a stable greenhouse environment simulating light and temperatures conditions typical of Vermont late spring, with treatments applied in a random block design with 6 replicates. Treatments include control (C), *Lumbricus terrestris* (LT), *Amynthas agrestis* (AA), and a combination of the two non-controls (LTAA). Deionized water is applied to the mesocosms to maintain a moisture level around field capacity and to assess differences in evaporation and leaching. Every two weeks, leachate water samples are collected from each mesocosm and analyzed by inductively coupled plasma-atomic emission spectroscopy (ICP-AES) for select minerals and metals. Nematode diversity and abundance will be examined at the end of the experiment. Soil compaction, texture and pH will be measured at the end of the experiment. Survivorship of applied earthworms will be taken into consideration and reported as well. I will test the hypothesis that *A. agrestis* and *L. terrestris* affect soil biogeochemistry and the retention of N and base cations in soils.