**PI:** Brian O’Meara, Dept of Ecology and Evolutionary Biology

**Summary Title:** Next generation biodiversity training

**Priority area to be addressed:** Other: Biodiversity training for diverse applications

**Names of core participants:** Brian O’Meara (Ecology & Evolutionary Biology), Charlie Kwit (EEB & Forestry, Wildlife, & Fisheries), John Moulton (Entomology & Plant Pathology), Meg Staton (Entomology & Plant Pathology), Susan Kalisz (EEB), Barbara Heath (external evaluator, EMEC LLC)

**Keywords**: Biodiversity, GIS, project management, conservation

**Synopsis**: For understanding emerging infectious diseases, detecting and stopping invasive species, managing natural resources, and understanding how to conserve biodiversity in the face of anthropogenic change, we need biologists trained in a wide array of skills (Tewksbury et al. 2014). However, our training efforts often result in a relative handful of researchers with deep taxonomic and evolutionary knowledge of one group but little training in how to apply it, or workers trained in details of resource management but without sufficient depth of knowledge of evolutionary or ecological contexts. Regardless of training path, many graduates lack skills in the latest technology revolutionizing fields, ranging from next generation sequencing abilities allowing detection of organisms from wisps of DNA in a stream or sequencing entire viral genomes in a day, drones allowing remote sensing of biodiversity data, and geographic information systems to allow precise mapping and correlation of abiotic factors with responses of organisms. Moreover, none of our training of potential leaders in these tools covers necessary skills such as project management.

Our strategy to remedy this is a new program that capitalizes on UT Knoxville's academic expertise while also engaging with local and national partners. The program covers four modular areas. The first three include **1)** core biology training: areas such as ecology, evolution, genetics, and especially natural history, offered through existing courses and field courses; **2)** technological training: remote sensing, genomics, GIS offered through workshops; **3)** leadership and management training; **4)** internships with our partners, which will help build their professional networks and expose them to the management of concrete issues. Throughout the life of the grant, integration with our external partners will help us tailor training to meet key needs they identify.

This grant will serve four audiences: 15 funded PhD or Masters trainees; 30-100 other UTK graduate students; external participants who would attend in person a field course or skills workshop; people remotely making use of teaching materials. External evaluation will come from East Main Evaluation and Consulting, LLC.