Using the National Ecological Observatory Network (NEON)
Biorepository collections, samples, and data

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Introduction

- The National Ecological Observatory Network (NEON) is a continental-scale, 30-year project conducted at 47 terrestrial and 34 aquatic field sites
- In addition to 180+ ecological, climatological, and genomic data products, each year 100,000+ physical samples and specimens are collected and archived at the NEON Biorepository at Arizona State University
- NEON aims to keep data and samples open and accessible – the Biorepository team works with researchers to find samples that fit their needs and fulfill loan requests related to projects spanning ecology and evolutionary biology
- Since the NEON Biorepository collections stem from a long-term ecological research project, they include samples often not available in natural history collections, such as environmental samples, DNA extracts, feces, tissues, etc.
- Physical samples are archived using best practices to maximize their research potential and allow for use in the future when new questions are asked

Occurrence records

- Use our portal to...
  - search for, download, and map available samples
  - publish research outputs
  - request samples
  - see usage policies
  - create species checklists
  - connect to NEON data products

Example Collections

(A) ethanol-preserved pitfall trap samples (B) pinned carabids (C) liquid nitrogen collections (D) prepared mammal vouchers (E) herbarium specimens (F) canopy foliage samples

Research Opportunities

- Several NEON sites are co-located with Long-Term Ecological Research (LTER) sites, creating additional opportunities for connections with existing datasets
- The NEON Biorepository data portal offers opportunities to openly publish new sample-associated datasets, which highlight new insights gained from the samples, are citable, and can be used by other researchers to extend the impact of individual studies
- Projects that use these samples cover a wide variety of topics, including phylogenomics, systematics, host-pathogen interactions, microbiome evolution, population genetics, trait evolution, metagenomics, and eDNA method development

https://biorepo.neonscience.org
Contact: biorepo@asu.edu

Sample types and sample use

- 65+ sample classes/types
- >323,000 samples
- 47 active/completed projects
- Science outputs on component sample use
  - 2019: 35%
  - 2020: 40%
  - 2021: 45%
  - 2022: 50%
  - 2023: 55%