

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

## 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

<https://biorepo.neonscience.org>

Contact: [biorepo@asu.edu](mailto:biorepo@asu.edu)

Discover and access sample-based data

Samples available in the portal (Aug 2019), collected in Alaska (top left), Continental US (center), and Puerto Rico (bottom right). Colors indicate different collection types. Circle sizes indicate quantity of samples per collection in a given locality.

## 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

Unique identifiers  
Taxonomic determination information  
Collection details  
Specimen description measurements, preparations, etc.  
Specimen images  
Link to the NEON database  
Associated research publications

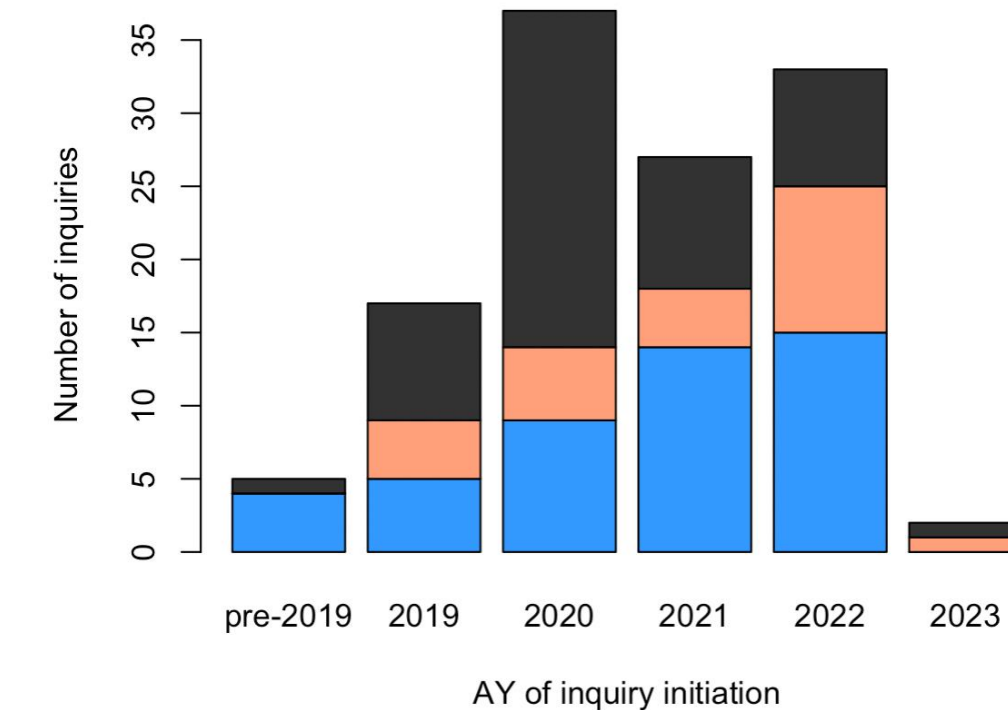
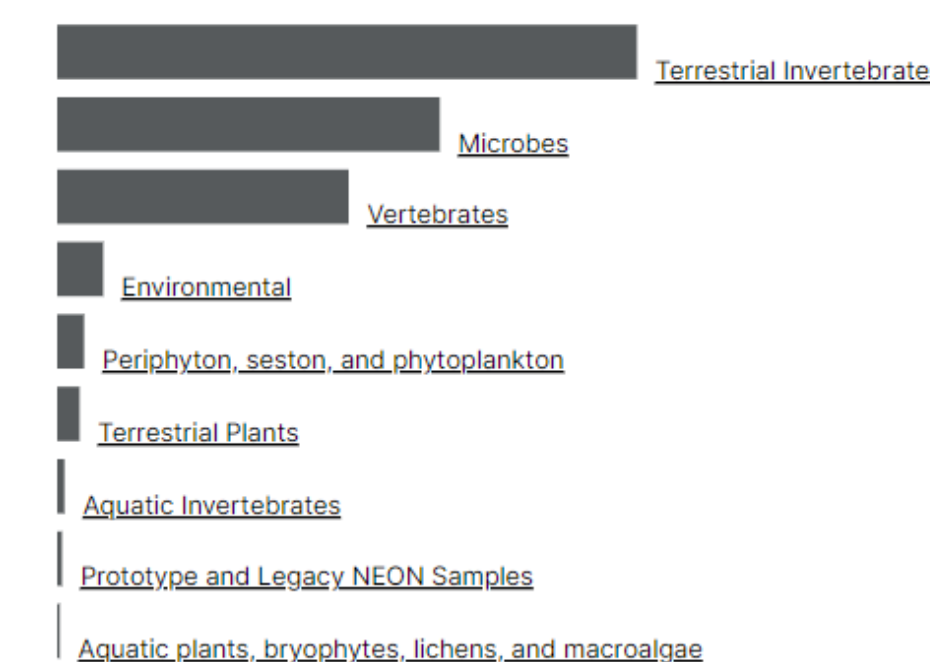
## Example Collections



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

## Sample types and sample use

- 65+ sample classes/types
- 47 active/completed projects
- >323,000 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