



# Joys and Hardships in the Field

**Grade Level:** Middle and High School

**Concept/Strand:** Ecology is the study of the relationships and interactions between organisms and their environment. Dr. E. Lucy Braun focused her life's work on plant ecology and ardently pursued the protection of biologically important areas.

**Subjects:** Science, English Language Arts, Social Studies, Geography, Math

**Objectives:**

Students will be able to:

- Summarize the kinds of research the Drs. Braun conducted,
- Discuss the different methods E. Lucy used to document her field research,
- Describe the various ways in which Dr. Braun shared her research with others,
- Identify and document plants from specific local habitats.

**Teacher's Notes:**

- To help students understand the rich scientific detail Dr. Braun worked in, it is important to share some of her publications, notes and herbarium specimens. See the Reference section for selected publications by E. Lucy Braun.
- Students may not be able to relate to the tools and equipment that Dr. Braun would have used in the lab and field. Pictures, replicas, or antiques displayed in the classroom can enhance students' understanding of this aspect of E. Lucy's work.

**Background:** E. Lucy Braun's ecological work was among the first of its kind. Her attention to detail and thorough evaluation of her study sites is extremely accurate and produced high quality assessments of each site she visited. Her field work was unparalleled and her publications numerous. As a result, Dr. Braun's work has become a model for ecological research to this day and remains relevant and valid to all ecologists, botanists and the like that have come after her.

**Discussion Questions:**

1. What types of research did Dr. Braun conduct?
  - a. What types of research did E. Lucy's sister, Annette, conduct?
  - b. How was E. Lucy's research unique for her time?
  - c. What other kinds of research are there in the natural sciences?
2. How is research conducted today in the natural sciences?
  - a. What aspects are the same or similar to Dr. Braun's time?
  - b. What aspects of the research are different?
3. What scientific tools and materials did E. Lucy and her sister use while in the field or lab?
4. How did Dr. Braun document her findings (i.e. collections, pressing plants, photography, note taking, journaling, sketching and sampling)?
  - a. What is the importance of proper storage of collected specimens?
  - b. Where are E. Lucy's documentation and research stored currently?
5. How did Dr. Braun summarize her research?
  - a. How was she able to share her results?
  - b. How did her research influence other scientists, local/national policy and conservation?
  - c. What is the timeline of Dr. Braun's major publications?

**Research Topics:**

1. Pick a local plant species and research its historical uses, roles in the ecosystem and local culture and/or economy.
2. Profile other scientists who were conducting field research during E. Lucy's time.



3. Document the ways land/habitat is categorized in your area and how it has changed. For example, what ecoregion are you in and what habitats make up your area? Have those habitats always been there? How has human activity changed them over time?

## Student Projects:

1. Choose a specific type of habitat. Identify and document the species and locations of the plants found there. Generate a written report and/or oral presentation along with photos, charts, graphs and maps of the area studied.

2. Compare at least two different types of habitats. Identify and document the species and locations of the plants found there. Generate a written report and/or oral presentation along with photos, charts, graphs and maps of the area studied.

3. Identify one type of habitat such as a hardwood forest, hayfield or pond that is being used by humans. Compare it to another of the same type of habitat in a different location with a different use by identifying and documenting the plants found there. Or students can choose the second location in a protected area. Generate a written report and/or oral presentation along with photos, charts, graphs and maps of the area studied.

4. Create an herbarium for your school using the plants found on school grounds. Instructions for the creation of an herbarium can be found here: <https://askabiologist.asu.edu/activities/create-your-own-herbarium>

## Resources:

### Books:

*E. Lucy Braun (1889-1971): Ohio's Foremost Woman Botanist, Her Studies of Prairies and Their Phytogeographical Relationships* Compiled by Ronald L. Stuckey

*Sisters in the Science Wing: The Doctors Braun*, by Carolyn V. Platt, *TIMELINE: A Publication of the Ohio Historical Society* May / June 2002: Volume 19 / Number 3

*Woman Botanists of Ohio Born Before 1900* by Ronald L. Stuckey

*Life Connections, Pioneers in Ecology* by Linda Leuzzi (for upper elementary and middle school)

### Web links:

See associated links on CMC's E. Lucy Braun web page: [cincymuseum.org/dr-e-lucy-braun](http://cincymuseum.org/dr-e-lucy-braun)

Access the herbarium specimens housed at the Smithsonian collected by both Braun sisters  
<https://naturalhistory.si.edu/research/botany>

View digitized field notes of E. Lucy Braun [http://huntbot.org/findingaids/0181/0181\\_braun\\_fa.html](http://huntbot.org/findingaids/0181/0181_braun_fa.html)

Information on ecology careers on the Ecological Society of America's website <https://www.esa.org/esa/careers-and-certification/explore-ecology-as-a-career/>

### Works by E. Lucy Braun:

*The Physiographic Ecology of the Cincinnati Region*

*The Vegetation of the Mineral Springs Region of Adams County, Ohio*

*An Ecological Survey of the Vegetation of Fort Hill State Memorial, Highland County, Ohio*

*The Woody Plants of Ohio*

*Deciduous Forests of Eastern North America*

*The Vegetation of Pine Mountain, Kentucky*

