

POWER PUFF GIRLS

Principles of Biology, Sec13 – EMPACTS,
Spring 2024, Dr. Casey Brewster

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Curriculum

- Describe the characteristics of life and the significance of biodiversity.
- Demonstrate college-level knowledge of basic biological principles including: the chemistry of life, cell structure and function, the inheritance of genetic traits, changes in species over time, and the interdependence of organisms and their environment.

Adult learners work together in teams to apply course content as we investigate the learning outcomes for this course.

INTRODUCTION

Biodiversity

- Variety of living organisms present in a specific ecosystem
- Species, habitats, genetic variations

Importance

- High Biodiversity:
Increases ecosystem stability & more resistant to disturbances



INTRODUCTION

Fungi - Mushrooms

- Various forms, ecological roles, uses (medical/culinary)
- Crucial role in ecosystem: Decomposers
- Recycle nutrients & minerals back into the soil

Why?

- Explore ecological significance & interactions
- Understand diversity & distribution
- Investigate Arkansas Fungus Population

INTRODUCTION

Primary Question

- What causes one species to have more diversity than other fungi in the Outdoor Living Laboratory? (OLL)



Our Study

- Search for fungi/mushrooms in Outdoor Living Laboratory
- Identify fungi/mushrooms
- Determine patterns

METHODS

Plan

- Systematic approach
- Observe/Search for types of fungi & mushrooms in the OLL
- Trees, stumps, logs, grass

Identification

- Field guides
- iNaturalist

iNaturalist



METHODS

Documentation

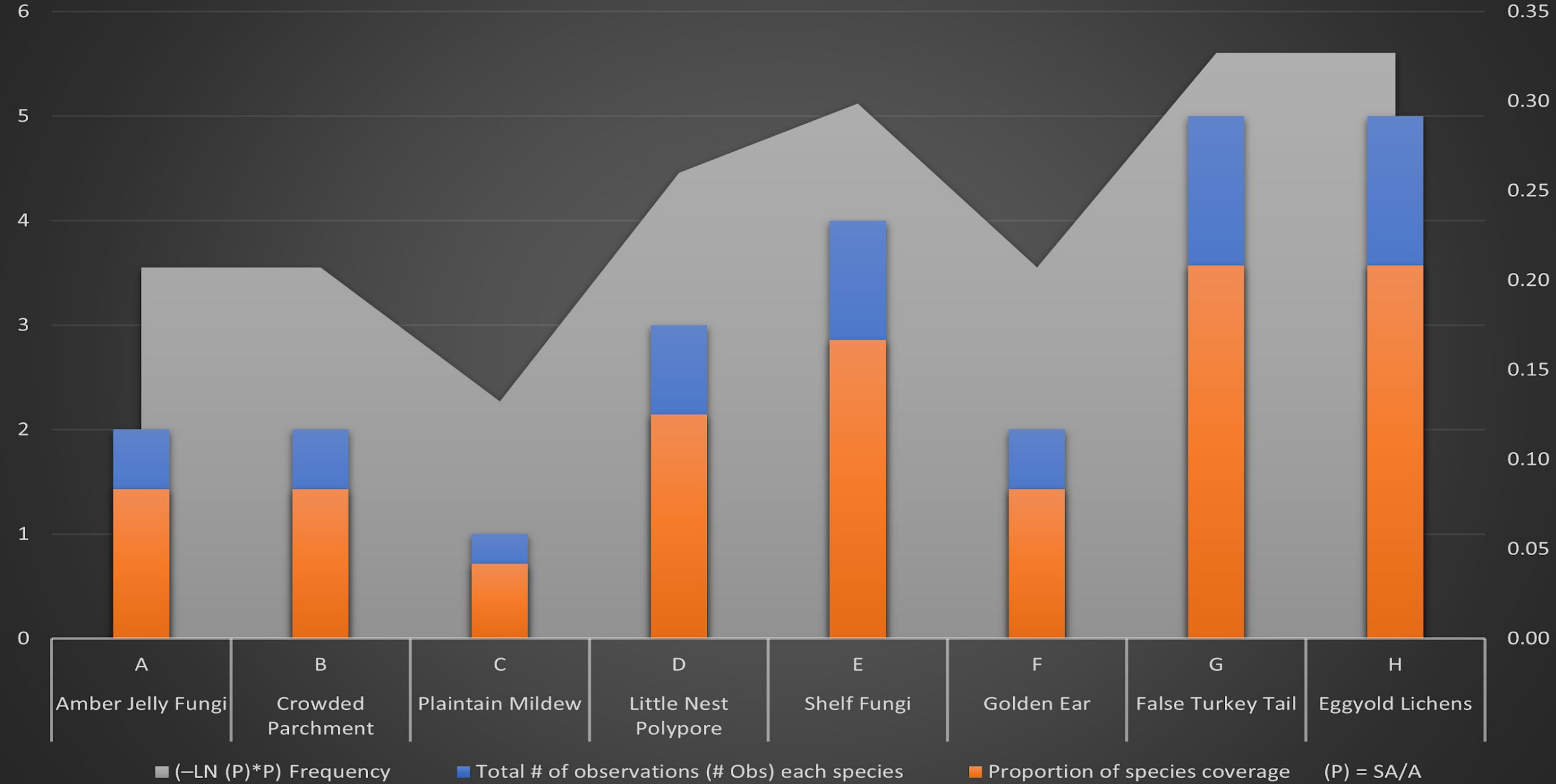
- Soil types
- Vegetation cover
- Moisture levels

Analyze

- Determine species abundance
- Identify distribution patterns
- Compare findings with other studies

	Species	Native (y/n)	Total # of observations
A	Amber Jelly Fungi	y	2
B	Crowded Parchment	y	2
C	Plantain Mildew	y	1
D	Little Nest Polypore	y	3
E	Shelf Fungi	y	4
F	Golden Ear	y	2
G	False Turkey Tail	y	5
H	Egg yolk Lichens	y	5

Fun-Guy Chart



RESULTS

Findings

- Expected an abundance of data
- Area studied was low in species richness
- Mushroom season: Spring/Fall

Mushroom Types

- 8 native species of mushrooms
- Various forms: shell like, wavy-textured, different colors & patterns.
- All were native to Arkansas.

RESULTS

**False Turkey
Tail**



- 5 observed
- Wood decay fungus
- Anti-fungal/bacterial properties

Lichen



- 5 observed
- Found on tree bark & rocks

RESULTS



Shelf Fungi



- 4 clusters observed
- Wood decay fungus
- Polypore
- Significant tool in nutrient cycling +CO₂ absorption

RESULTS



Amber Jelly Fungi



- 2 observed
- Common in North America
- Wood-rotting species
- Edible

RESULTS



Crowded Parchment



- 2 observed
- Wood decay fungus
- Commonly found in Eastern/Central North America
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DISCUSSION

- Many Wood-decaying species
- OLL is primarily a wooded grassland ecosystem
- Significant role in decomposing/nutrient cycling for the OLL



- Investigated Arkansas's native fungal diversity
- False Turkey Tail & Shelf Fungi most common in Arkansas
- Importance of preserving & protecting fungi

LITERATURE BIBLIOGRAPHY & OTHER

Alanbagi, R. A., Alshuwaili, F. E., & Stephenson, S. L. (2019). Fungi associated with forest floor litter in northwest Arkansas. *Current Research in Environmental & Applied Mycology (Journal of Fungal Biology)*, 9(1), 25–35.

Alshammari, N. I., Veettil, V. N., Sulieman, A. M. E., & Stephenson, S. L. (2020). Impact of Field and Laboratory Environmental Conditions on the Diversity of Wood-Decay Fungi in the Forests of Northwest Arkansas. *J. Pure Appl. Microbiol*, 14, 1801–1808.

Al Aanbagi, R. A. A. (2020). A comparative taxonomic and diversity study of litter-associated fungi in Northwest Arkansas forests. University of Arkansas.

Fungi wallpapers - top free fungi backgrounds - wallpaperaccess. (n.d.-b). <https://wallpaperaccess.com/fungi>

iNaturalist. iNaturalist. (n.d.). <https://www.inaturalist.org/>

Dube, H. C. (2013). An introduction to fungi. Scientific Publishers. Stephenson, S. (2022). The kingdom fungi. *Mycoagroecology*, 35–49.

Swartz, D. (1933). Studies of Arkansas Fungi. I. Basidiomycetes. *American Midland Naturalist*, 14(6), 714–719. Kendig, S. R. (1996). Studies on two soilborne fungi of agronomic importance in Arkansas, *Macrophomina phaseolina* of soybean and *Thielaviopsis basicola* of cotton. University of Arkansas.