

# Trees as Habitats

## Lesson Guide

Suggested Student Ages: 8-9 (3<sup>rd</sup> Grade) Lesson Guide

### Getting Started

Welcome to the Missouri Botanical Garden! To start things off, look for a place to guide students where they can observe a group of trees. The English Woodland Garden would be a good option. This lesson will focus on the relationship between trees and other living things and how they depend on each other for survival. This relationship is called **mutualism**. We will focus on oak trees because oaks are known for being fantastic sources of food and habitats for a variety of species. A single oak tree can support up to 2,300 different animal and plant species.



**Suggested Program Location:** Missouri Botanical Garden-English Woodland Garden (map included, #23 on map)

**Background Knowledge:** A **habitat** is the place where a plant or animal gets all the things it needs to survive, such as food, water, shelter, and space to grow and raise offspring. A tree may serve as part of an organism’s habitat, or it may be the organism’s entire habitat. For example, an oak tree may provide food for squirrels and nest sites for birds. But moss and mushrooms might get all they need right on the tree. Sometimes, these other organisms also provide helpful benefits for the tree as well. Woodpeckers eat pests that bore into the trunks of trees. Squirrels spread the tree’s seeds around which help the seeds disperse and grow in new areas. This kind of relationship between trees and other living things is an example of **mutualism**, when two or more species benefit one another and help the other to survive. It is a relationship that many living things in nature share and is a beautiful way of seeing how living things work together.

### Objective

- Students can demonstrate their understanding of the relationships between trees and animals.

### Suggested Materials to bring

Living Things Interacting with Oak Tree Activity Sheet (one per student)	Magnifying glasses (optional)
Pencils	Binoculars (optional)
Clipboards	Ranger Rick NatureScopes “Trees are Terrific” picture (optional)
Trees as Habitats Lesson Guide (one per group)	

# **Lesson Standards**

## **Next Generation Science Standards:**

3-LS4-3

Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-4

Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.\*

## **Learning Agreements:**

1. Students will responsibly take care of the plants by walking only in the grass and paved areas while avoiding the planted and mulched beds of the Garden.
2. Students are respectful of living plants and encouraged to observe and come into contact with natural items that have naturally already fallen to the ground.

# Running the Program

## Observe Interactions with an Oak Tree







**Pre-visit option:** Prior to arrival at Missouri Botanical Garden, print or display a copy of the [Ranger Rick's NatureScapes "Trees are Terrific"](#) for students to observe oak tree interactions

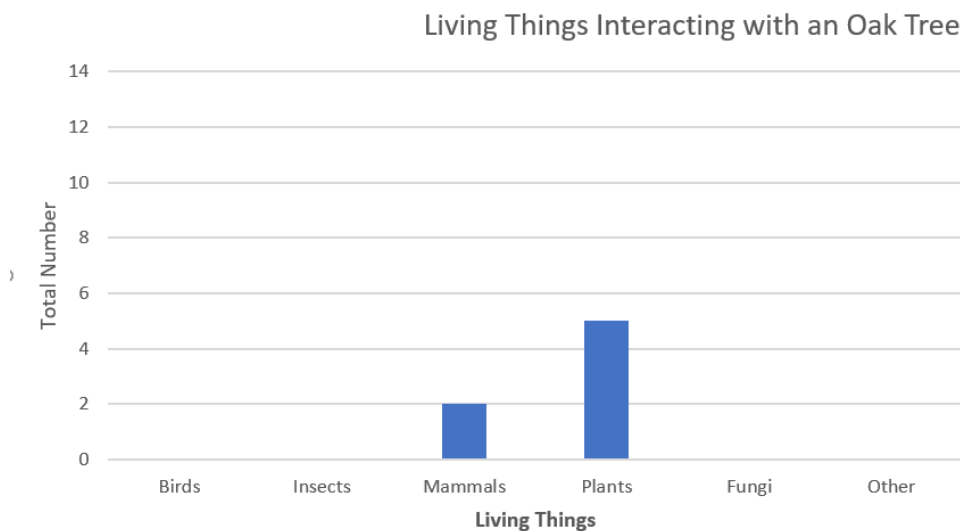
- Question to students: **How do you think that the Oak Tree helps the animals, plants, and fungi to survive? How do the animals, plants, and fungi help the Oak Tree to survive?** (This is an example of *mutualism*; two or more species benefitting from each other)
  - **Some possible answers could be:**
    - *Squirrels harvest the acorns for winter food, squirrels spread acorns around and bury them underground, often forgetting the locations, and in turn the seeds grow into new trees*
    - *Woodpeckers eat insects that can become pests on the tree*
    - *Fungi have underground systems of root-like fibers called mycelium (MY-SILLY-UM) that help transport nutrients to the roots of the tree.*
    - *Fungi can decompose old, fallen down trees which makes the soil rich and fertile for new trees*

**On-site visit Lesson:** While visiting the Missouri Botanical Garden, invite the students to observe trees located in the English Woodland Garden (#23 on Garden Map)

- Question to students: **How do you think that the trees in the English Woodland Garden help the animals, plants, and fungi to survive?** (This is an example of *mutualism*; two or more species benefitting from each other)
- Challenge students to observe and record evidence of animals, insects or plants that use the trees to survive (e.g. nuts with squirrel teeth marks, leaves chewed by insects, bird or squirrel nest)
- Invite students to use the [Living Things Interacting with an Oak Tree Activity Sheet](#) to tally interactions and then to create a graph of interactions observed
  - **Some evidence to record could be:**
    - *A squirrel carrying an acorn for food*
    - *A bird building a nest in the branches*
    - *Leaves that look as if insects have chewed on them*
- Invite students to observe and record specific traits or adaptations on the [Living Things Interacting with an Oak Tree Activity Sheet](#) of the animals and insects and explain how they help them survive in the tree
  - **Some evidence to record could be:**
    - *wings of birds to fly up into the branches for protection*
    - *strong, sharp teeth of squirrels to eat the nuts*
    - *Body shape of the walking stick insect to camouflage*
- After students conclude graphing their observations, bring the students together again and invite students to talk to a partner about what interactions they observed

Sample of student data collection could look like this:

Living Things	Tally Marks 	Total
Birds 		
Insects 		
Mammals 		2
Plants 		5
Fungi 		
Other		



### Make a Claim







- Ask students to apply what they have learned about squirrel and tree interactions to predict what habitat the squirrel would survive less well in or cannot survive at all in.
  - For example, could a squirrel survive in a habitat like Antarctica? Why or why not?
  - Encourage the students to infer through their previous observations regarding squirrel and tree interactions, along with prior knowledge of other habitats to decide if a squirrel could survive a change of its habitat.
- Ask students this question, “If a botanical garden has a problem with an overpopulation of too many squirrels, would cutting down all the oak trees and replacing them with a different species of tree fix this problem?”
  - For example, if all the oak trees were replaced by apple trees or magnolia trees, would that fix the problem of having too many squirrels?
  - How do the observations collected earlier support your reasoning?
    - Follow-up question: What would happen to the other animals, plants, and fungi if all the oak trees were cut down?
      - How do the observations collected earlier support your reasoning?

Name: \_\_\_\_\_

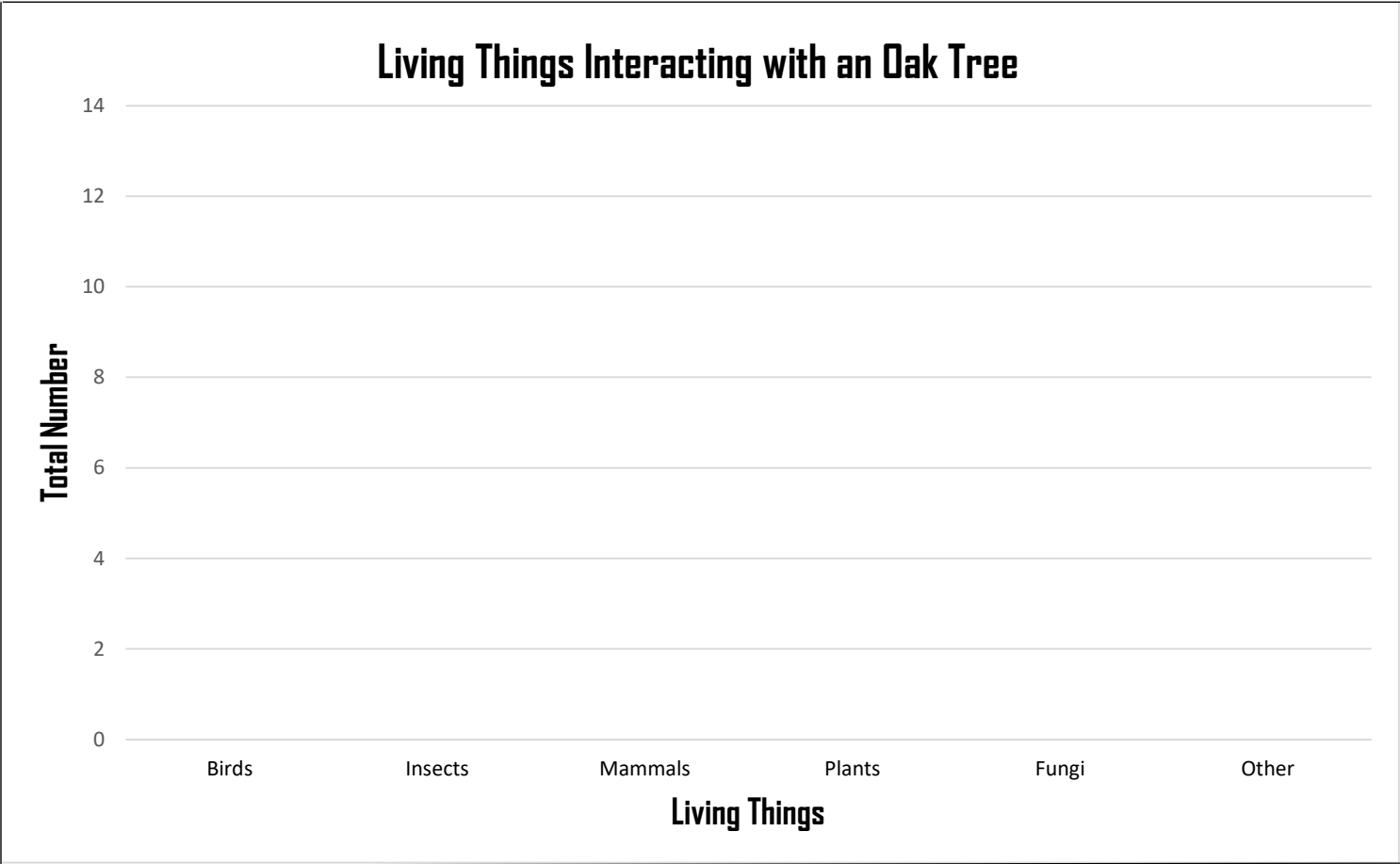
Date: \_\_\_\_\_

# Living Things Interacting with an Oak Tree Activity Sheet

Create a tally chart for all the interactions with an oak tree that you find.

Living Things	Tally Marks 	Total
Birds 		
Insects 		
Mammals 		
Plants 		
Fungi 		
Other		

Design a bar graph using the data that you collected in your tally chart.



Name: \_\_\_\_\_

Date: \_\_\_\_\_

Some adaptations of **animals** that I see are: \_\_\_\_\_

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Some adaptations of **insects** that I see are: \_\_\_\_\_

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Some adaptations of **plants** that I see are: \_\_\_\_\_

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Other things we have seen are: \_\_\_\_\_

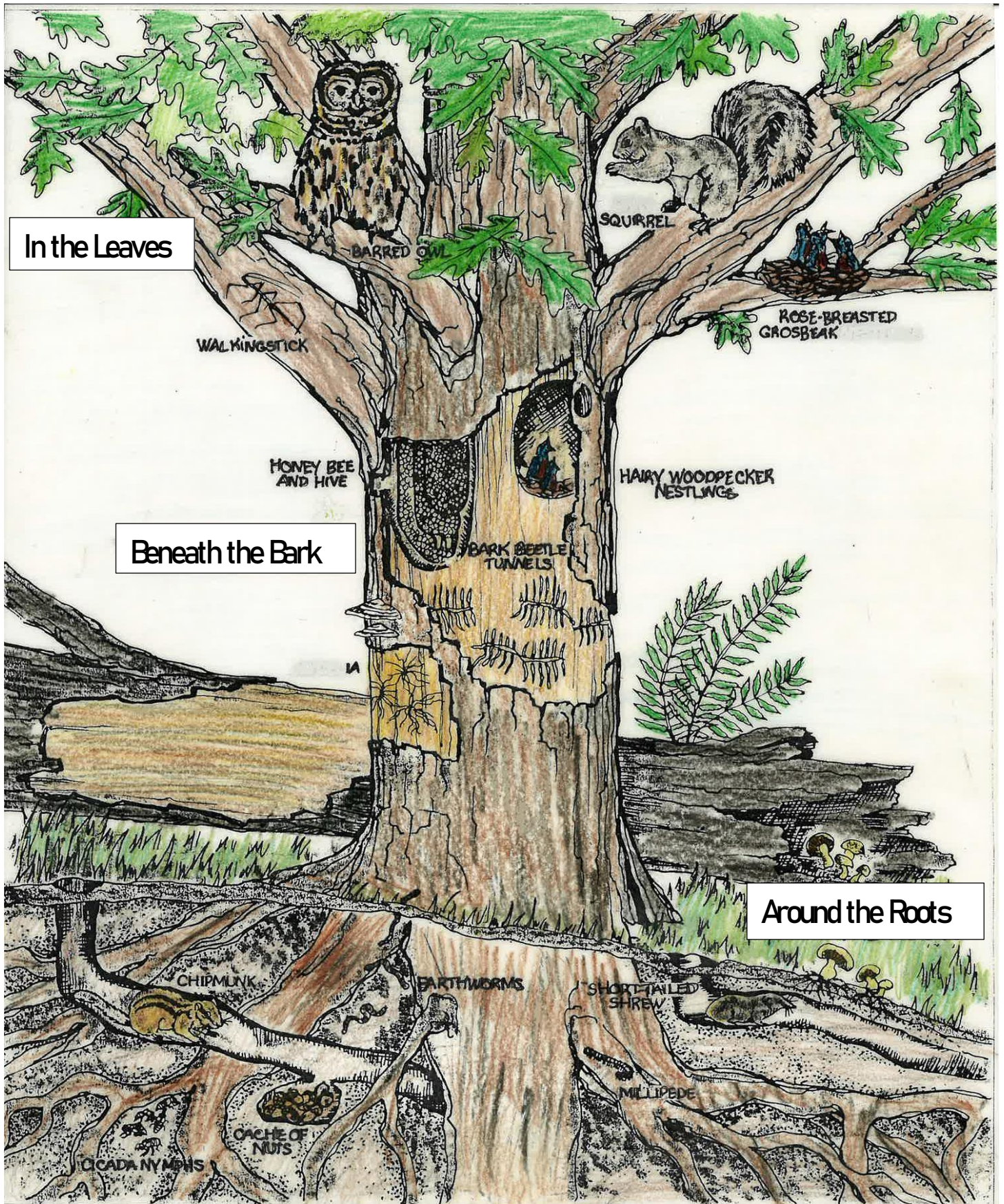
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Ranger Rick NatureScopes "Trees are Terrific"







# MISSOURI BOTANICAL GARDEN

For more information: (314) 577-5100 | [mobot.org](http://mobot.org) | Hours: Tuesday–Sunday, 9 a.m.–5 p.m.

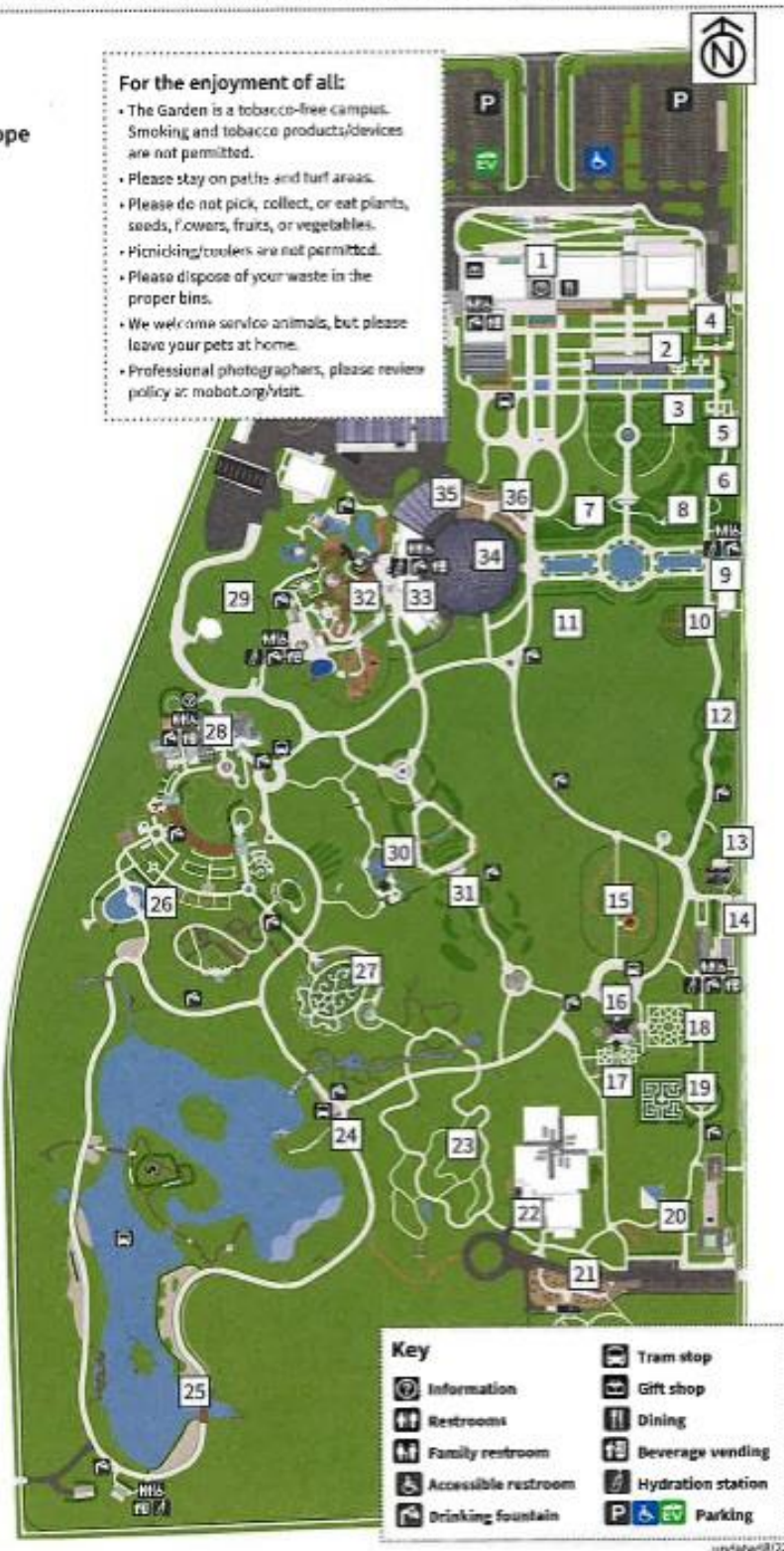
## Welcome!

Whether you're here for the day or an hour, we hope you enjoy your visit. Thank you for coming!

1. Jack C. Taylor Visitor Center
2. Linnean House
3. Gladney Rose Garden
4. Ottoman Garden
5. Sensory Garden
6. Hosta Garden
- 7–8. Bulb Gardens
9. Spink Pavilion
10. Iris Garden
11. Dry Streambed Garden
12. Daylily Garden
13. Herring House (Not Open to Public)
14. Stephen and Peter Sachs Museum  
Hours: Tuesdays–Sundays | 11:30 a.m.–4 p.m.
15. Mausoleum
16. Tower Grove House  
Hours: Wednesdays–Sundays | 11 a.m.–4 p.m.
17. Herb Garden
18. Victorian Garden
19. Observatory and Maze
20. Stumpery
21. Bavarian Garden
22. Strassenfest German Garden
23. English Woodland Garden
24. Japanese Garden
25. Koi Fish Feeding Bridge
26. Carver Garden
27. Boxwood Garden
28. William T. Kemper Center for Home Gardening
29. Cohen Amphitheater
30. Chinese Garden
31. Lehmann Rose Garden
32. Doris I. Schnuck Children's Garden  
Hours: Tuesdays–Sundays | 9 a.m.–4 p.m.
33. Brookings Exploration Center and PlantLab
34. ClimaTron
35. Shoenberg Temperate House (Closed)
36. Rock Garden

### For the enjoyment of all:

- The Garden is a tobacco-free campus. Smoking and tobacco products/devices are not permitted.
- Please stay on paths and turf areas.
- Please do not pick, collect, or eat plants, seeds, flowers, fruits, or vegetables.
- Picnicking/coolers are not permitted.
- Please dispose of your waste in the proper bins.
- We welcome service animals, but please leave your pets at home.
- Professional photographers, please review policy at: [mobot.org/visit](http://mobot.org/visit).



### Key

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|---------------------|-------------------|
| Information         | Tram stop         |
| Restrooms           | Gift shop         |
| Family restroom     | Dining            |
| Accessible restroom | Beverage vending  |
| Drinking fountain   | Hydration station |
|                     | Parking           |

updated 8/22



MISSOURI BOTANICAL GARDEN