

Unit of Study
Cindy Brainard and James Cox
Southwestern High School, Pulaski County, KY

Unit Title: Trail Adventure

Length of Unit: 10 days

Organizer: Why classify? Which tree is which?

Essential Questions: (3-5)

1. What is the purpose of classification and why is it necessary for the study of organisms?
2. What are the different elements in a forest ecosystem and how do they interact to support its life and health?
3. How do my personal activities and attitudes affect forest ecosystems in my community and in the world?

Standards:

➤ ➤ **Academic Expectations –**

- 2.1 Students understand scientific ways of thinking and working and use those methods to solve real-life problems
- 2.2 Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.
- 2.3 Students identify and analyze systems and the ways their components work together or affect each other.
- 2.5 Students understand that under certain conditions nature tends to remain the same or move toward a balance
- 2.6 Students understand how living and nonliving things change over time and the factors that influence the changes

➤ ➤ **Program of Studies-**

S-HS-LS-6

Students will examine diversity of organisms and biological classification.

S-HS-LS-9

Students will examine interrelationships and interdependencies of organisms in ecosystems and the factors that influence the interactions between organisms.

S-HS-LS-10

Students will explore how human activities alter ecosystems.

S-HS-LS-13

Students will analyze the flow of matter and energy through and between living systems and environments.

➤ **Core Content-**

3.2.3 – The broad patterns of behavior exhibited by organisms have changed over time through natural selection to ensure reproductive success. Organisms often live in unpredictable environments, so their behavioral responses must be flexible enough to deal with uncertainty and change.

3.2.4 - Biological classifications are based on how organisms are related. Organisms are classified into a hierarchy of groups and subgroups based on similarities that reflect their relationships. Species is the most fundamental unit of classification. Different species are classified by the comparison and analysis of their internal and external structures and the similarity of their chemical processes.

3.2.5 - Living organisms have the capacity to produce populations of infinite size. However, behaviors, environments, and resources influence the size of populations. Models can be used to make predictions about changes in the size or rate of growth of a population.

3.2.6 - Human beings live within the world’s ecosystems. Human activities can deliberately or inadvertently alter the dynamics in ecosystems. These activities can threaten current and future global stability and, if not addressed, ecosystems can be irreversibly affected.

➤ ➤ **National Standards-**

NSS12_3.14

Biological classifications are based on how organisms are related. Organisms are classified into a hierarchy of groups and subgroups based on similarities which reflect their evolutionary relationships. Species is the most fundamental unit of classification.

NSS12_3.17

Organisms both cooperate and compete in ecosystems. The interrelationships and interdependencies of these organisms may generate ecosystems that are stable for hundreds or thousands of years.

NSS12_3.18

Living organisms have the capacity to produce populations of infinite size, but environments and resources are finite. This fundamental tension has profound effects on the interactions between organisms.

NSS12_3.19

Human beings live within the world's ecosystems. Increasingly, humans modify ecosystems as a result of population growth, technology, and consumption. Human destruction of habitats through direct harvesting, pollution, atmospheric changes, and other factors is threatening current global stability, and if not addressed, ecosystems will be irreversibly affected.

NSS12_3.25

As matter and energy flows through different levels of organization of living systems--cells, organs, organisms, communities--and between living systems and the physical environment, chemical elements are recombined in different ways. Each recombination results in storage and dissipation of energy into the environment as heat. Matter and energy are conserved in each change.

Curriculum Web: (how unit integrated with other content areas)

Culminating Performance:

The final product will be an interactive trail activity accompanied by the production of all materials to assist the activity. Also produced will be a web page on our conservation club site that will be both informational and interactive.

1. Along the trail specific trees of various species will be numbered by wooden, staked signs.
2. At the beginning of the trail, visitors will pick up a paper brochure and a laminated key with an attached pencil.
3. As they walk the trail, they will refer to the key to determine the name of the tree for each numbered specimen.
4. At the end of the trail, there will be an answer key for checking their answers and a depository for the laminated identification key cards.
5. On the paper brochure, there will also be information about our website. This information will include the tree identification information as well as an interactive tree ID activity.

Culminating Performance Rubric:

Southwestern High School
Forest Ecosystem Project



Name: _____

Teacher: Brainard/Cox

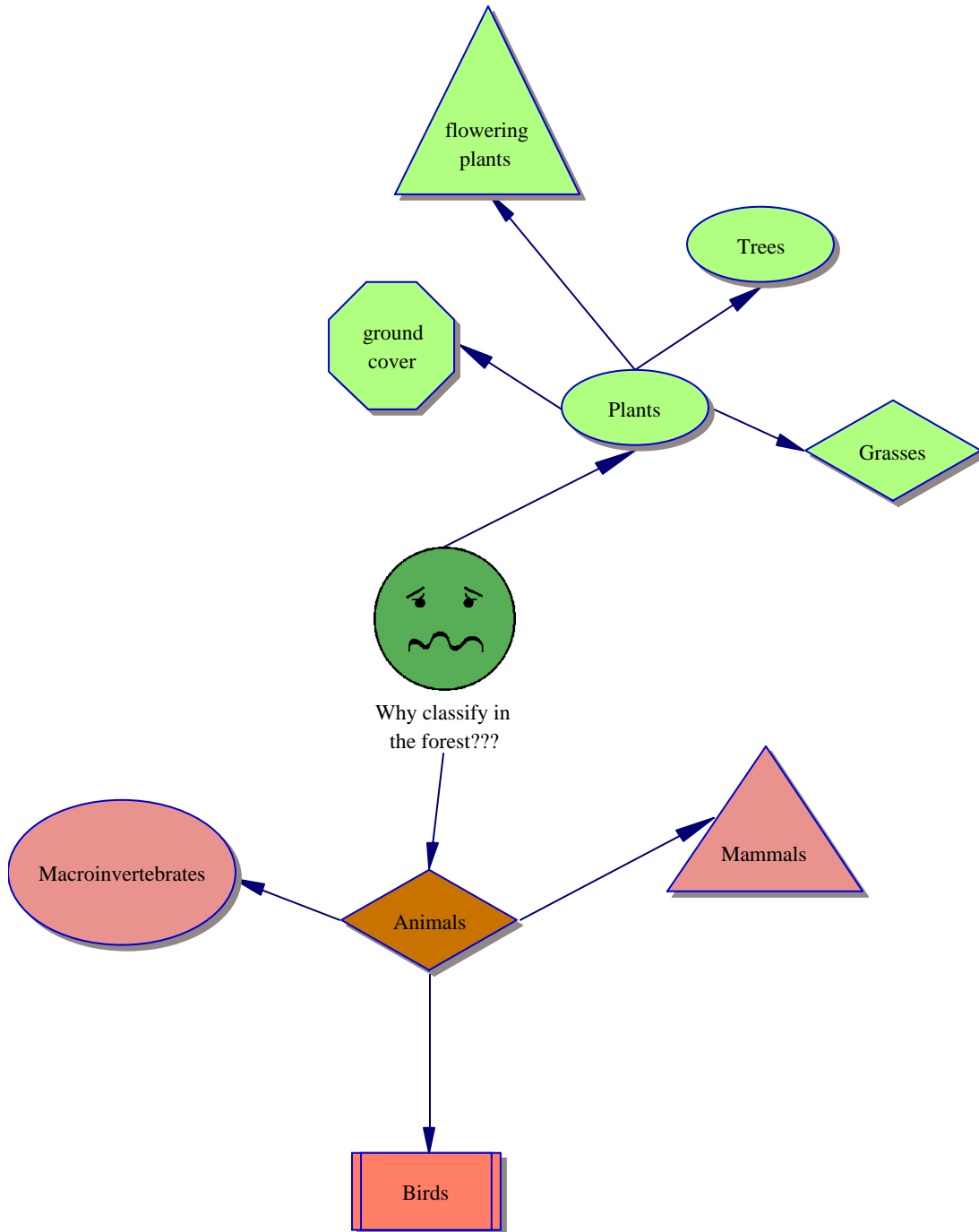
Date : _____

Title of Work: _____

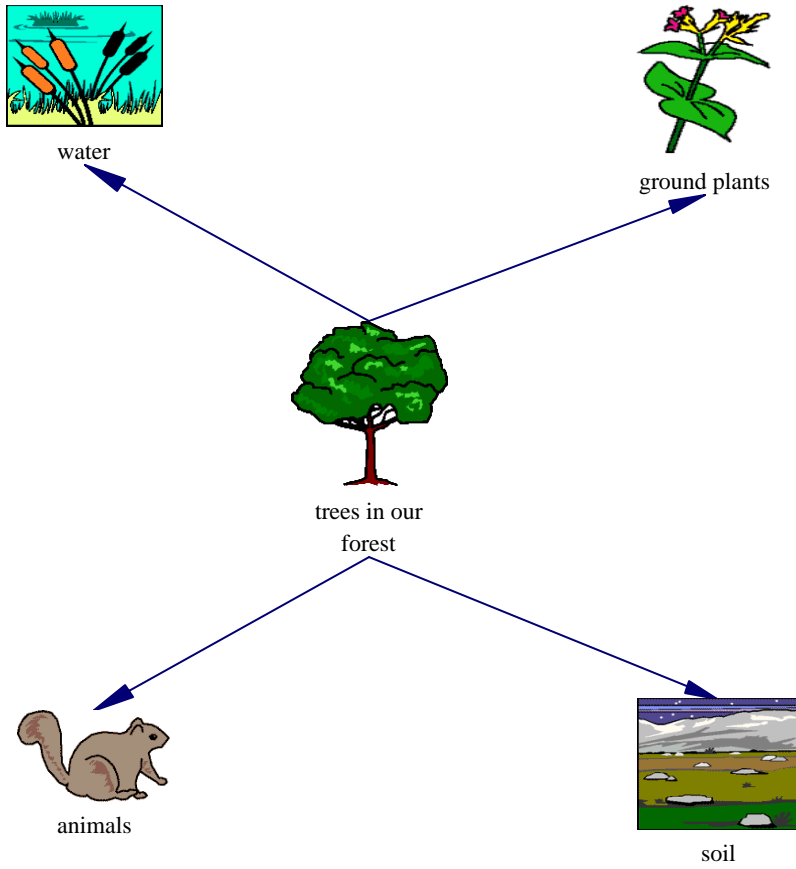
Criteria					Points
	1	2	3	4	100 possible
Completion of accurate and functional interactive trail activity brochure	Student produces product with minimal level of accuracy and/or little guest interaction	Student produces product that demonstrates basic understanding and invites some guest interaction with some reference materials for guest consultation.	Student produces product that demonstrates a broad knowledge base as well as high requirement of guest interaction accompanied by necessary reference materials for engagement.	Student produces well-written, extensive product that invites involved guest participation accompanied by clear and complete reference materials for consultation.	—
(or) Completion of web page tree ID guide and interactive identification activity	Student produces minimal informational web page	Student produces web page with basic identification keys	Student produces web page with broad base of tree identification information as well as some interactive activity	Student will produce an eye-catching extensive tree identification key along with a challenging interactive activity.	—
					—
					—
					—
				Total---->	—

Teacher comments:

Appendix I



Appendix II



Appendix III

