

Climate: Location, Location, Location Tour, Cedar Bog

Description and Curriculum Resources

Tour: Climate: Location , Location, Location

Availability: Wednesday, Thursday, and Friday
September, October, April, May, June
9:30 a.m. – 2:30 p.m.

Time Allowance: 1½ hours on site

Coat: \$3.00 admission fee per student

Grades: Adaptable to all grades
Maximum of 100 students

Tour Description:

Why do trees grow well in Ohio but not well in western prairies? Do landforms make a difference in climate? Does weather play a role? Why did prairies invade Ohio? How much rain makes a rainforest and was Ohio ever part of a temperate rainforest? Does distance from the equator or the arctic circle make a difference? All these questions and more are covered by this tour. We discuss bodies of water, landforms, vegetation, the water cycle, and historical climates in Ohio.

The bog is accessible by a mulch path and boardwalks; wheelchairs will need assistance. Please ask for parent volunteers to help with students on the trail. The students need to understand that field trips are an extension of classroom learning. Classroom rules still apply. Cedar Bog staff cannot conduct a tour and discipline the students as well.

Tours will occur regardless of the weather, except in the event of severe storms with high winds, thunder and lightening. Boardwalks may be slippery at any time of the year.

Science Academic Content Standards Addressed:

Earth and Space Science (Earth Systems)

1st. Identify that resources are things that we get from the living (e.g., forests) and nonliving (e.g., minerals, water) environment and that resources are necessary to meet the needs and wants of a population.

2nd. Observe and describe that some weather changes occur throughout the day and some changes occur in a repeating seasonal pattern.

2nd. Describe weather by measurable quantities such as temperature and precipitation.

4th. Identify how water exists in the air in different forms (e.g., In clouds, fog, rain, snow and hail).

4th. Investigate how water changes from one state to another (e.g., freezing, melting, condensation and evaporation).

4th. Describe weather by measurable quantities such as temperature, wind

direction, wind speed, precipitation and barometric pressure.

4th. Trace how weather patterns generally move from west to east in the United States.

7th. Explain that Earth's capacity to absorb and recycle materials naturally (e.g., smoke, smog and sewage) can change the environmental quality depending on the length of time involved (e.g. global warming).

7th. Describe the water cycle and explain the transfer of energy between the atmosphere and hydrosphere.

7th. Analyze data on the availability of fresh water that is essential for life and for most industrial and agricultural processes. Describe how rivers, lakes and groundwater can be depleted or polluted becoming less hospitable to life and even becoming unavailable or unsuitable for life.

7th. Describe how temperature and precipitation determine climatic zones (biomes) (e.g., desert, grasslands, forests, tundra and alpine).

10th. Summarize the relationship between the climatic zone and the resultant biomes. (This includes explaining the nature of the rainfall and temperature of the mid-latitude climatic zone that supports the deciduous forest.)

10th. Explain climate and weather patterns associated with certain geographic locations and features (e.g., tornado alley, tropical hurricanes and lake effect snow).

Life Sciences (Historical Perspectives and Scientific Revolutions)

10th. Describe advances and issues in Earth and space science that have important long-lasting effects on science and society (e.g., geologic time scales, global warming, depletion of resources and exponential population growth).

Life Sciences (Characteristics and Structure of Life)

1st. Explore that organisms, including people, have basic needs which include air, water, food, living space and shelter.

1st. Explain that food comes from sources other than grocery stores (e.g., farm crops, farm animals, oceans, lakes and forests).

2nd. Identify that there are many distinct environments that support different kinds of organisms.

Life Science (Diversity and Interdependence of Life)

1st. Recognize that seasonal changes can influence the health, survival or activities of organisms.

2nd. Compare the habitats of many different kinds of Ohio plants and animals and some of the ways animals depend on plants and each other.

2nd. Investigate the different structures of plants and animals that help them live in different environments (e.g., lungs, gills, leaves and roots).

2nd. Compare the habitats of many different kinds of Ohio plants and animals and some of the ways animals depend on plants and each other.

3rd. Relate animal structures to their specific survival functions (e.g., obtaining food, escaping or hiding from enemies).

3rd. Describe how changes in an organism's habitat are sometimes beneficial and sometimes harmful

5th. Summarize that organisms can survive only in ecosystems in which their needs can be met (e.g., food, water, shelter, air, carrying capacity and waste

disposal). The world has different ecosystems and distinct ecosystems support the lives of different types of organisms.

5th. Support how an organism's patterns of behavior are related to the nature of that organism's ecosystem, including the kinds and numbers of other organisms present, the availability of food and resources, and the changing physical characteristics of the ecosystem.

7th. Explain how the number of organisms an ecosystem can support depends on adequate biotic (living) resources (e.g., plants, animals) and abiotic (non-living) resources (e.g., light, water and soil).

10th. Explain that the variation of organisms within a species increases the likelihood that at least some members of a species will survive under gradually changing environmental conditions.

10th. Explain how living things interact with biotic and abiotic components of the environment (e.g., predation, competition, natural disasters and weather).

10th. Conclude that ecosystems tend to have cyclic fluctuations around a state of approximate equilibrium that can change when climate changes, when one or more new species appear as a result of immigration or when one or more species disappear.

Physical Sciences (Nature of Energy)

1st. Recognize that the sun is an energy source that warms the land, air, and water.

5th. Define temperature as the measure of thermal energy and describe the way it is measured.

5th. Trace how thermal energy can transfer from one object to another by conduction.

Physical Sciences (Nature of Matter)

4th. Explain that matter has different states (e.g., solid, liquid and gas) and that each state has distinct physical properties.

Scientific Inquiry (Doing Scientific Inquiry)

1st. Ask "what happens when" questions.

1st. Explore and pursue student-generated "what happens when" questions.

2nd. Ask "how do you know" questions (not "why" questions) in appropriate situations and attempt to give reasonable answers when others ask questions.

4th. Analyze a series of events and/or simple daily or seasonal cycles, describe the patterns and infer the next likely occurrence.

Social Studies Academic Content Standards Addressed:

History (Chronology)

3rd. Define and measure time by years, decades, and centuries.

History (Settlement)

5th. Explain why European countries explored and colonized North America.

People in Societies (Interaction)

4th. Explain the reasons people came to Ohio including: Opportunities in agriculture, mining and manufacturing; family ties; freedom from political and religious oppression.

Geography (Location)

- 2nd. Name and locate the continents and oceans.
- 3rd. Identify the location of the equator, Arctic Circle, Antarctic Circle, North Pole, South Pole, Prime Meridian, the tropics and the hemispheres on maps and globes.
- 4th. Use cardinal and intermediate directions to describe the relative location of places.
- 4th. Describe the location of Ohio relative to other states and countries.
- 4th. Use maps to identify the location of major physical and human features of Ohio including: Lake Erie; Rivers; Plains; The Appalachian Plateau; Bordering states; the capital city; Other major cities.
- 5th. Use maps to identify the location of: The three largest countries of North America; The 50 states of the United States; The Rocky and Appalachian mountain systems; The Mississippi, Rio Grande and St. Lawrence rivers; The Great Lakes.
- 6th. Place countries, cities, deserts, mountain ranges and bodies of water on the continents on which they are located.
- 6th. Use coordinates of latitude and longitude to locate points on a world map.

Geography (Places and Regions)

- 1st. Identify and describe the physical features (lake, river, hill, mountain, forest) and human features (town, city, farm, park, playground, house, traffic signs/signals) of places in the community.
- 2nd. Describe and locate landforms (plateaus, islands, hills, mountains, valleys) and bodies of water (creeks, ponds, lakes, oceans) in photographs, maps and 3-D models.
- 3rd. Identify and describe the landforms and climate, vegetation, population and economic characteristics of the local community.
- 4th. Describe and compare the landforms, climates, population, vegetation and economic characteristics of places and regions in Ohio.
- 5th. Describe and compare the landforms, climates, population, culture and economic characteristics of places and regions in North America.
- 5th. Explain how climate is influenced by: Earth-sun relationships; Landforms; Vegetation.
- 6th. Describe ways human settlements and activities are influenced by environmental factors and processes in different places and regions including: Bodies of water; Landforms; Climates; Vegetation; Weathering; Seismic activity.

Geography (Human Environmental Interaction)

- 3rd. Identify ways that physical characteristics of the environment (i.e., landforms, bodies of water, climate and vegetation) affect and have been modified by the local community.
- 5th. Explain how the characteristics of different physical environments affect human activities in North America.

Social Studies Skills and Methods (Thinking and Organizing)

- 1st. Sequence information.
- 3rd. Identify possible cause and effect relationships.

Climate Glossary:

abiotic. Non-living.

acceleration. The rate of change of velocity with respect to time.

acid. A substance that dissolves in water with the formation of hydrogen ions and reacts with a base to form a salt and water. It neutralizes alkalis, dissolves some metals, and turns litmus red; typically, a corrosive and sour-tasting liquid.

adaptation. Adjustment to environmental conditions, modifications of an organism or its parts that makes it more fit for existence under the conditions of its environment.

anemometer. An instrument for measuring and indicating the force or speed of the wind.

atmosphere. The gaseous envelope surrounding the earth; consists of oxygen, nitrogen, and other gases, extends to a height of about 40,744 km (22,000 miles), and rotates the Earth.

atmospheric pressure. The pressure exerted by the atmosphere at the surface of the Earth due to the weight of the air.

barometer. An instrument for determining the pressure of the atmosphere.

base. A substance that dissolves in water with the formation of hydroxyl ions and reacts with an acid to form a salt and water; turns litmus paper blue.

biotic. Relating to life.

capacity. The maximum amount or number that can be contained or accommodated.

characteristic. A distinguishing trait, feature, quality, or property.

circular motion. Motion of an object that follows the circumference of a circle.

classification. Systematic arrangement in groups or categories according to established criteria.

climate. The average course or condition of the weather at a place usually over a period of years as exhibited by temperature, wind velocity, and precipitation.

community. Interacting populations that live in a defined habitat.

conservation. A careful preservation and protection of something; especially planned management of a natural resource to prevent exploitation, destruction, or neglect.

current. Continuous flow as of air, water, or electric charge.

cycle. An interval of time during which a sequence of a recurring succession of events or phenomena is completed.

diversity. A great deal of variety.

ecological. The interactions and relationships between organisms and their environment.

ecosystem. The complex of a community of organisms and its environment functioning as an ecological unit.

endothermic. Characterized by or formed with absorption of heat.

energy. The capacity for doing work, can be in various forms such as nuclear, sound, thermal, and light.

entropy. A thermodynamic quantity representing the unavailability of a system's thermal energy for conversion into mechanical work, often interpreted as the degree of disorder or randomness in the system.

environment. The complex of physical, chemical, and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival.

evaporation. To convert into vapor.

evidence. Facts or observations on which a conclusion can be based.

evolution (biological). Changes in the genetic composition of a population through successive generations.

extinct. A species of organisms that no longer exists.

glaciation. To subject to glacial action in which a large body of ice moves slowly down a slope or valley, or spreads outward on a land surface.

habitability. Suitable for a dwelling place.

habitat. The place or environment where a plant or animal naturally or normally lives and grows.

humidity. The amount of moisture in the atmosphere.

hydrosphere. The aqueous envelope of the Earth including bodies of water and aqueous vapor in the atmosphere.

hypothesis. A formula derived by inference from scientific data that explains a principle operating in nature.

landform. A natural feature of a land surface.

life. An organism that has the capacity for metabolism, growth, reaction to stimuli, and reproduction.

life cycle. The series of stages in form and functional activity through which an organism passes from fertilized ovum to the fertilized ovum or the next generation.

liquid. A fluid (such as water) that has no independent shape by has a definite volume, does not expand indefinitely and that is only slightly compressible.

lithosphere. The solid part of a celestial body (such as Earth), specifically, the outer part of the solid Earth composed of rock essentially like that exposed at the surface and usually considered to be about 80 km (50 miles) in thickness.

method. A systematic procedure, technique or mode of inquiry employed by or proper to a particular discipline or art.

natural. Existing in, or produced by nature.

organic. Compounds containing carbon and chiefly or ultimately of biological origin.

pH scale. A numerical measure of the acidity or alkalinity of a chemical solution.

physical change. A change in a substance that does not alter its chemical makeup.

physical properties. A property of a material that can be observed without changing the chemical makeup of the material.

pollution. A substance that, when added to the environment causes the environment to be harmful or unfit for living things.

population. All the plants or animals of the same kind found in a given area.

precipitation. A deposit on Earth of hail, mist, rain, sleet, or snow.

property. A quality or trait belonging to an individual or thing.

recycle. To process (as liquid body waste, glass, or cans) in order to regain material for human use.

resource. Industrial materials and capacities (as mineral deposits and waterpower) supplied by nature (earth science) and substances used by an organism for survival (biology).

respiration. The physical and chemical processes by which an organism supplies its cells and tissues with the oxygen needed for metabolism and relieves them of the carbon dioxide formed in energy-producing reactions.

sediment. Material deposited by water, wind, or glaciers.

species. A group or organisms consisting of similar individuals capable of exchanging genes or interbreeding.

system. 1. A group of body organs that together perform one or more vital functions. 2. An organized group of devices, parts or factors that together perform a function or drive a process (weather systems, mechanical systems).

technology. Human innovation in action that involves the generation of knowledge and processes to develop systems that solve problems and extend human capabilities. The innovation, change, or modification of the natural environment to satisfy perceived human needs and wants.

theory. A supposition or a system of ideas intended to explain something, especially one based on general principles independent of the thing to be explained.

tides. The alternate rising and falling of the surface of the ocean and water bodies (such as gulfs and bays) connected with the ocean that occurs usually twice a day, and is caused by the gravitational attraction of the sun and moon occurring unequally on different parts of the Earth.

tool. A device that aids in accomplishing a task, a form of technology.

water cycle. The sequence of conditions through which water passes from vapor in the atmosphere through precipitation upon land or water surfaces and ultimately back into the atmosphere as a result of evaporation and transpiration.

wave. A disturbance or a variation that transfers energy progressively from point to point in a medium and that may take the form of an elastic deformation or of a variation of pressure, electric, or magnetic intensity, electric potential, or temperature.

weather. The state of the atmosphere with respect to heat or cold, wetness or dryness, calm or storm, clearness or cloudiness.

weathering. To subject to the action of the elements.

Cedar Bog is operated by the Ohio Historical Society, a nonprofit organization that serves as the state's partner in preserving and interpreting Ohio's history, archaeology, and natural history.