

Ohio Science Standards and Model Curriculum Content Statement - Kindergarten



	Earth and Space Science (ESS)	Physical Science (PS)	Life Science (LS)
Program	<ul style="list-style-type: none"> Weather changes are long-term and short-term. The moon, sun, and stars are visible at different times of the day. 	<ul style="list-style-type: none"> Objects and materials can be sorted and described by their properties. Some objects and materials can be made to vibrate to produce sound. 	<ul style="list-style-type: none"> Living things are different from nonliving things. Living things have physical traits and behaviors, which influence their survival.
Investigating Bat Adaptations <i>NWF Night Friends</i>			X
How Do I Compare to a Bat? <i>EduBat</i>			X
Mama Bat, Baby Bat <i>Natural Bridge Caverns</i>			X

Ohio Science Standards and Model Curriculum Content Statement - Grade 1



	Earth and Space Science (ESS)	Physical Science (PS)	Life Science (LS)
Program	<ul style="list-style-type: none"> The sun is the principal source of energy. The physical properties of water change. 	<ul style="list-style-type: none"> Properties of objects and materials can change. Objects can be moved in a variety of ways, such as straight, zigzag, circular and back and forth. 	<ul style="list-style-type: none"> Living things have basic needs, which are met by obtaining materials from the physical environment. Living things survive only in environments that meet their needs.
Little Brown Bat- What's Your Habitat? <i>EduBat</i>			X
Investigating Bat Adaptations <i>NWF Night Friends</i>	X		X
Neighborhood Bats <i>EduBat</i>			X

Ohio Science Standards and Model Curriculum Content Statement - Grade 2



	Earth and Space Science (ESS)	Physical Science (PS)	Life Science (LS)
Program	<ul style="list-style-type: none"> • The atmosphere is made up of air. • Water is present in the air. • Long and short-term weather changes occur due to changes in energy. 	<ul style="list-style-type: none"> • Forces change the motion of an object. 	<ul style="list-style-type: none"> • Living things cause changes on Earth. • Some kinds of individuals that once lived on Earth have completely disappeared, although they were something like others that are alive today.
Bats: Maligned or Malicious? <i>NWF Night Friends</i>			X
Bats Need a Cave <i>Natural Bridge Caverns</i>			X

Ohio Science Standards and Model Curriculum Content Statement - Grade 3



	Earth and Space Science (ESS)	Physical Science (PS)	Life Science (LS)
Program	<ul style="list-style-type: none"> • Earth’s nonliving resources have specific properties (3.ESS.1) • Earth’s resources can be used for energy (3.ESS.2) • Some of Earth’s resources are limited (3.ESS.3) 	<ul style="list-style-type: none"> • All objects and substances in the natural world are composed of matter (3.PS.1) • Matter exists in different states, each of which has different properties (3.PS.2) • Heat, electrical energy, light, sound, and magnetic energy are forms of energy (3.PS.3) 	<ul style="list-style-type: none"> • Offspring resemble their parents (3.LS.1) • Individuals of the same kind differ in their traits and sometimes the differences give individuals an advantage in surviving and reproducing (3.LS.2) • Plants and animals have life cycles that are part of their adaptations for survival in their natural environments (3.LS.3)
Bat Blitz <i>Project WILD</i>	X	X	X
Echo, Echo, Location <i>EduBat</i>	X	X	
Investigating Bat Adaptations <i>NWF Night Friends</i>			X
Mama Bat, Baby Bat <i>Natural Bridge Caverns</i>			X

Ohio Science Standards and Model Curriculum Content Statement - Grade 4



	Earth and Space Science (ESS)	Physical Science (PS)	Life Science (LS)
Program	<ul style="list-style-type: none"> • Earth's surface has specific characteristics and landforms that can be indentified. • The surface of Earth changes due to weathering. • The surface of Earth changes due to erosion and deposition. 	<ul style="list-style-type: none"> • The total amount of matter is conserved when it undergoes a change. • Energy can be transformed from one form to another or can be transferred from one location to another. 	<ul style="list-style-type: none"> • Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful. • Fossils can be compared to one another and to present day organisms according to their similarities and differences.
Bats: Maligned or Malicious? <i>NWF Night Friends</i>			X
Bat Blitz <i>Project WILD</i>			X
Last Bat Standing <i>EduBat</i>	X		X
Land Use Journey <i>EduBat</i>			X

Ohio Science Standards and Model Curriculum Content Statement - Grade 5



	Earth and Space Science (ESS)	Physical Science (PS)	Life Science (LS)
Program	<ul style="list-style-type: none"> The solar system includes the sun and all celestial bodies that orbit the sun. Each planet in the solar system has unique characteristics. The sun is one of many stars that exist in the universe. 	<ul style="list-style-type: none"> The amount of change in movement of an object is based on the mass of the object and the amount of force exerted. Light and sound are forms of energy that behave in predictable ways. 	<ul style="list-style-type: none"> Organisms perform a variety of roles in an ecosystem. All of the processes that take place within organisms require energy.
There's a Fungus Among Us <i>EduBat</i>			X
Calculate the Value of Bats <i>EduBat</i>			X
Echo, Echo, Location <i>EduBat</i>			X
Investigating Bat Adaptations <i>NWF Night Friends</i>			X

Ohio Science Standards and Model Curriculum Content Statement - Grade 6



	Earth and Space Science (ESS)	Physical Science (PS)	Life Science (LS)
Program	<ul style="list-style-type: none"> • Minerals have specific, quantifiable properties. • Igneous, metamorphic, and sedimentary rocks have unique characteristics that can be used for identification/classification. • Soil is unconsolidated material that contains nutrient matter and weathered rock. • Rocks, minerals, and soils have common and practical uses. 	<ul style="list-style-type: none"> • All matter is made up of small particles called atoms. • Changes of state are explained by a model of matter composed of atoms and/or molecules that are in motion. • There are two categories of energy; kinetic and potential. • An object's motion can be described by speed and direction. 	<ul style="list-style-type: none"> • Cells are the fundamental unit of life. • All cells come from pre-existing cells. • Cells carry on specific functions that sustain life. • Living systems at all levels of organization demonstrate the complementary nature of structure and function.
There's a Fungus Among Us <i>EduBat</i>			X
Echo, Echo, Location <i>EduBat</i>			X

Ohio Science Standards and Model Curriculum Content Statement - Grade 7



	Earth and Space Science (ESS)	Physical Science (PS)	Life Science (LS)
Program	<ul style="list-style-type: none"> • The hydrologic cycle illustrates the changing states of water as it moves through the lithosphere, biosphere, hydrosphere, and atmosphere. • Thermal-energy transfers in the ocean and the atmosphere contribute to the formation of currents, which influence global climate patterns. • The atmosphere has different properties at different elevations and contains a mixture of gases that cycle through the lithosphere, biosphere, hydrosphere, and atmosphere. 	<ul style="list-style-type: none"> • The properties of matter are determined by the arrangement of atoms. • Energy can be transformed or transferred but is never lost. • Energy can be transferred through a variety of ways. 	<ul style="list-style-type: none"> • Matter is transferred continuously between one organism to another and between organisms and their physical environments. • In any particular biome, the number, growth, and survival of organisms and populations depend on biotic and abiotic factors.
Last Bat Standing <i>EduBat</i>			X
Bat Blitz <i>Project WILD</i>			X

Ohio Science Standards and Model Curriculum Content Statement - Grade 8



	Earth and Space Science (ESS)	Physical Science (PS)	Life Science (LS)
Program	<ul style="list-style-type: none"> • The composition and properties of Earth’s interior are identified by behavior of seismic waves. • Earth’s crust consists of major and minor tectonic plates that move relative to each other. • A combination of constructive and destructive geological processes formed Earth’s surface. • Evidence of the dynamic changes of Earth’s surface through time is found in the geological record. 	<ul style="list-style-type: none"> • Forces between objects act when the objects are in direct contact or when they are not touching. • Forces have magnitude and direction. • There are different types of potential energy. 	<ul style="list-style-type: none"> • Diversity of species occurs through gradual processes over many generations. Fossil records provide evidence that changes have occurred in number and types of species. • Reproduction is necessary for the continuation of every species. • The characteristics of an organism are a result of inherited traits received from the parent(s).
Last Bat Standing <i>EduBat</i>			X
Echo, Echo, Location <i>EduBat</i>			X

Ohio Science Standards and Model Curriculum Content Statement - High School



	Environmental Science	Physical Geology	Biology
	<ul style="list-style-type: none"> • Earth Systems: Interconnected spheres of Earth • Earth's Resources • Global environmental problems and issues 	<ul style="list-style-type: none"> • Minerals • Igneous, metamorphic, and sedimentary rocks • Earth's history • Glacial geology 	<ul style="list-style-type: none"> • Heredity • Evolution • Diversity and interdependence on life • Cells

Ohio Bat Working Group Bat Curriculum Resource Page

Ohio Department of Education Science Learning Standards

<https://education.ohio.gov/Topics/Learning-in-Ohio/Science/Ohios-Learning-Standards-and-MC>

Bat Curriculum featured:

Project EduBat – BatsLive www.batslive.pwnet.org/edubat

-Project EduBat Educational Trunk: Educational trunks designed to help educators explore the wonders of bats with students of all ages through fun, hands-on activities. Contact one of the EduBat Hosts to borrow a bat trunk.

-Contact for Project EduBat Educational Trunk in Ohio:

Katrina Schultes
Wayne National Forest Service
Supervisor's Office
13700 U.S. Highway 33
Nelsonville, OH 45764
740-753-0901
kschultes@fs.fed.us

Night Friends –

Bats of the Americas <https://www.nwf.org/~media/PDFs/Be%20Out%20There/Schoolyard%20Habitats/Night-Friends.pdf>

Natural Bridge Caverns <https://naturalbridgecaverns.com/resources/>

Project WILD <https://www.fishwildlife.org/projectwild>

<https://sites.google.com/projectwild.org/learninglab/bat-blitz>

<https://www.fishwildlife.org/projectwild/wild-about-bats>

-Project WILD provides wildlife-based conservation and environmental education that fosters responsible actions toward wildlife and related natural resources. All curriculum materials are backed by sound educational practices and theory, and represent the work of many professionals within the fields of education and natural resource management from across the country.

**To gain access to full lessons and curriculum, training workshops are offered for educators. You can find a workshop by contacting the state coordinator:

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Project WILD Coordinator
ODNR -Division of Wildlife
2045 Morse Road, Bldg. G
Columbus, OH 43229
Tel: (614) 265-6316
jen.dennison@dnr.ohio.gov
Web: Ohio [Project WILD](#); Ohio [Growing Up WILD](#)

Additional Bat Curriculum Resources:

-Bat math activities <http://mathwire.com/themes/themebat.html>

-Building and installing a bat house <https://www.batcon.org/about-bats/bat-gardens-houses/>

-Project Underground <https://saveyourcaves.org/projectunderground.html>