

# Forest Life

## Biodiversity Box



This sheet has been provided to give educators an idea of what each Biodiversity Box encompasses and which curriculum standards are met through these resources. The Biodiversity Box is intended for use in the classroom of middle school students and was designed with you, the teacher, in mind. For any additional questions, please contact Todd Witcher at [todd@dlia.org](mailto:todd@dlia.org), or through phone at 865-430-4757.

Biodiversity Box provides all materials needed to conduct student activities. Teacher curriculum guide is provided in the box to help guide the teacher with why activity develops students, materials needed, how to properly conduct activity, and follow up questions. To order a Biodiversity Box, please visit the teacher's resources section under education at [www.dlia.org](http://www.dlia.org) to fill out a request form.

### Activities

Forest Floor Puppet Show	Students learn about life on the forest floor via provided puppet scripts Tennessee (6.2.1 6.2.3 6.2.4) North Carolina (6.L.2.1 8.L.3.2 8.L.3.3)
The Importance of Leaf Litter	<i>Life in the Leaf Litter</i> is read and hydrologic cycle learned Tennessee (6.2.2 6.2.3 6.2.4) North Carolina (6.L.2 8.P.2 8.L.3)
Collecting Litter Critters	Class creates and uses easy litter sifters to collect critters Tennessee (6.2.3 6.2.4) North Carolina (6.L.2.3 8.P.2.1 8.P.2.2)
Observing Litter Critters	Students place little critters in the MicroAquaria and observe behavior of organisms Tennessee (6.2.2 6.2.3) North Carolina (6.L.2 8.L.3.2 8.L.3.3)
Leaf Rubbings	Rubbing plates of leaves used to create impressions of them on paper Tennessee (8.5.2 8.5.4 8.5.5) North Carolina (8.P.2)
Trees of the Smokies Scrapbooks	Students make rubbings to create tree scrapbook Tennessee (8.5.1) North Carolina (8.P.2)
Mystery Leaves (Part I)	Learning of Dichotomous Leaf Key and identification of certain leaves Tennessee(8.5.1 8.5.2 8.5.5) North Carolina (6.L.2.2 8.L.3)
Mystery Leaves (Part II)	Students use Dichotomous Key to identify 13 leaves Tennessee (8.5.1 8.5.2 8.5.5) North Carolina (6.L.2.2 8.L.3)
Forest Health Indicators	Students explore USDA National Forest Health Monitoring Program Tennessee (6.2.3 6.2.4) North Carolina (6.L.2 8.P.2)
Benefits of Urban Trees	PowerPoint presentation explains importance of trees Tennessee(8.5.3 8.5.4 8.5.5) North Carolina (6.L.2.1 6.L.2.2 8.P.2 8.L.3.3)
Assessing Tree Health	Inventory form used to gather data related to health of local trees Tennessee (6.2.1 6.2.2 8.5.3 8.5.5) North Carolina (6.L.2.3 8.P.2 8.L.3.1)

Alien Invaders	Students use reading guide to learn about invasive species in the community Tennessee (6.2.2 8.5.5) North Carolina (6.L.2 8.P.2 8.L.3)
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## Materials

Teacher's Curriculum Guide (1)	Forest Floor Puppets & Scripts Set (1)	Hydrologic Cycle (6)	Litter Sifter (1) and Brushes (30)
Measuring Tape (6) and Yard Sticks (6)	MicroAquaria (14)	Styrofoam Platforms (15)	Magnifiers on Lanyards (21)
<i>Forest Health Indicators</i> (23)	<i>Trees of Smokies Guide</i> (11)	Dichotomous Tree Key (1)	Laminated Leaves with Labels (13)
Laminated "Mystery" Leaves (13)	Dichotomous Leaf Keys (30)	Leaf Mounts (10)	Leaf Rubbing Templates (14)
<i>Life in Leaf Litter</i> (26)	CD Powerpoint (1)	<i>Hands-On Nature</i> (1)	Gardening Gloves (2)
Golf Tees for Stakes (51)	<i>Art of Measuring Trees</i> (15)	<i>How to Make a Scrapbook Page</i> (7)	<i>Alien Invaders Sheet</i> (48)

## Tennessee Science Curriculum Standards

### Sixth Grade:

#### -Embedded Inquiry

- 6.Inq.1 Design and conduct open-ended scientific investigations
- 6.Inq.2 Use tools and techniques to gather, organize, analyze, and interpret data
- 6.Inq.3 Synthesize information to determine cause and effect relationships between evidence and explanations
- 6.Inq.4 Recognize possible sources of bias and error, alternative explanations, and questions for further exploration
- 6.Inq.5 Communicate scientific understanding using descriptions and models

#### -Interactions Between Living Things and Their Environment:

##### Recognize relationships within food chains

- 6.2.1 Classify organisms as producers, consumers, and decomposers
- 6.2.2 Demonstrate interrelationships among organisms in food web

#### -Diversity and Adaptation Among Living Things

##### -Understand how organisms are adapted for surviving in particular environments

- 6.2.3 Draw conclusions from data about interactions between the biotic and abiotic elements of a particular environment.
- 6.2.4 Analyze the environments and the interdependence among organisms found in the world's major biomes

### Eight Grade:

#### -Embedded Inquiry

- 8.Inq.1 Design and conduct open-ended scientific investigations
- 8.Inq.2 Use tools and techniques to gather, organize, analyze, and interpret data
- 8.Inq.3 Synthesize information to determine cause and effect relationships between evidence and explanations
- 8.Inq.4 Recognize possible sources of bias and error, alternative explanations, and questions for further exploration
- 8.Inq.5 Communicate scientific understanding using descriptions, explanations, and models

#### -Diversity and adaptation among living things

- 8.5.1 Identify various criteria used to classify organisms into groups
- 8.5.2 Use a simple classification key to identify a specific organism

#### -Interactions between living things and their environment

- 8.5.3 Analyze how structural, behavioral, and physiological adaptations within a population enable it to survive in a given environment
- 8.5.4 Explain why variation within a population can enhance chances for group survival

#### -Earth Resources

- Investigate how human activities affect Earth's land, oceans, and atmosphere
- 8.5.5 Describe importance of maintaining the Earth's biodiversity

# North Carolina Essential Standards

## Sixth Grade:

### -Ecosystem

- 6.L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.
  - 6.L.2.1 Summarize how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within food chains and food webs (terrestrial and aquatic) from producers to consumers to decomposers.
  - 6.L.2.2 Explain how plants respond to external stimuli (including dormancy and forms of tropism) to enhance survival in an environment.
  - 6.L.2.3 Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.

## Eight Grade:

### -Energy: Conservation and Transfer

- 8.P.2 Explain the environmental implications associated with the various methods of obtaining, managing, and using energy resources.
  - 8.P.2.1 Explain the environmental consequences of the various methods of obtaining, transforming and distributing energy.
  - 8.P.2.2 Explain the implications of the depletion of renewable and nonrenewable energy resources and the importance of conservation.

### -Ecosystems

- 8.L.3 Understand how organisms interact with and respond to the biotic and abiotic components of their environment.
  - 8.L.3.1 Explain how factors such as food, water, shelter and space affect populations in an ecosystem.
  - 8.L.3.2 Summarize the relationships among producers, consumers, and decomposers including the consequences of such interactions including: coexistence, competition, parasitism, and mutualism
  - 8.L.3.3 Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide and oxygen).