

Environmental Science

Expectation	<i>Module, PLT activity</i>
Science as Inquiry	
The Abilities to Do Scientific Inquiry	
1. Write a testable question or hypothesis when given a topic (SI-H-A1)	<i>Forest Ecology, Adopt a Forest Forest Ecology, Cast of Thousands Forest Ecology, The Nature of Plants Municipal Solid Waste, Composting</i>
2. Describe how investigations can be observation, description, literature survey, classification, or experimentation (SI-H-A2)	
3. Plan and record step-by-step procedures for a valid investigation, select equipment and materials, and identify variables and controls (SI-H-A2)	<i>Forest Ecology, Adopt a Forest Forest Ecology, Cast of Thousands Forest Ecology, The Nature of Plants Municipal Solid Waste, Composting</i>
4. Conduct an investigation that includes multiple trials and record, organize, and display data appropriately (SI-H-A2)	<i>Forest Ecology, Adopt a Forest Forest Ecology, Cast of Thousands Forest Ecology, The Nature of Plants Municipal Solid Waste, Composting</i>
5. Utilize mathematics, organizational tools, and graphing skills to solve problems (SI-H-A3)	<i>Forest Ecology, Adopt a Forest Forest Ecology, Cast of Thousands Forest Ecology, The Nature of Plants Municipal Solid Waste, Composting</i>
6. Use technology when appropriate to enhance laboratory investigations and presentations of findings (SI-H-A3)	<i>Forest Ecology, Adopt a Forest Forest Ecology, Cast of Thousands Forest Ecology, The Nature of Plants Municipal Solid Waste, Composting</i>
7. Choose appropriate models to explain scientific knowledge or experimental results (e.g., objects, mathematical relationships, plans, schemes, examples, role-playing, computer simulations) (SI-H-A4)	<i>Forest Ecology, Adopt a Forest Forest Ecology, Cast of Thousands Forest Ecology, The Nature of Plants Municipal Solid Waste, Composting</i>
8. Give an example of how new scientific data can cause an existing scientific explanation to be supported, revised, or rejected (SI-H-A5)	<i>Forest Ecology, Adopt a Forest Forest Ecology, Cast of Thousands Forest Ecology, The Nature of Plants Municipal Solid Waste, Composting</i>
9. Write and defend a conclusion based on logical analysis of experimental data (SI-H-A6) (SI-H-A2)	<i>Forest Ecology, Adopt a Forest Forest Ecology, Cast of Thousands Forest Ecology, The Nature of Plants Municipal Solid Waste, Composting</i>
10. Given a description of an experiment, identify appropriate safety measures (SI-H-A7)	
Understanding Scientific Inquiry	
11. Evaluate selected theories based on supporting scientific evidence (SI-H-B1)	<i>Focus on Forests, Old-Growth Forests Focus on Forests, Tough Choices Focus on Forests, Squirrels vs. Scopes Forest Ecology, Home Sweet Home Forest Ecology, Saga of the Gypsy Moth Forest Ecology, Fire Management Municipal Solid Waste, Waste-to-Energy Municipal Solid Waste, Landfills Places We Live, Green Space Places We Live, Far-Reaching Decisions Places We Live, Regional Community Issues Focus on Risk, Electromagnetic Fields Focus on Risk, Chlorine: Looking at Tradeoffs Focus on Risk, Plastics</i>
12. Cite evidence that scientific investigations are	<i>Focus on Forests, Old-Growth Forests</i>

<p>conducted for many different reasons (SI-H-B2)</p>	<p><i>Focus on Forests, Tough Choices</i> <i>Focus on Forests, Squirrels vs. Scopes</i> <i>Forest Ecology, Home Sweet Home</i> <i>Forest Ecology, Saga of the Gypsy Moth</i> <i>Forest Ecology, Fire Management</i> <i>Municipal Solid Waste, Waste-to-Energy</i> <i>Municipal Solid Waste, Landfills</i> <i>Places We Live, Green Space</i> <i>Places We Live, Far-Reaching Decisions</i> <i>Places We Live, Regional Community Issues</i> <i>Focus on Risk, Electromagnetic Fields</i> <i>Focus on Risk, Chlorine: Looking at Tradeoffs</i> <i>Focus on Risk, Plastics</i></p>
<p>13. Identify scientific evidence that has caused modifications in previously accepted theories (SI-H-B2)</p>	<p><i>Focus on Forests, Old-Growth Forests</i> <i>Focus on Forests, Tough Choices</i> <i>Focus on Forests, Squirrels vs. Scopes</i> <i>Forest Ecology, Home Sweet Home</i> <i>Forest Ecology, Saga of the Gypsy Moth</i> <i>Forest Ecology, Fire Management</i> <i>Municipal Solid Waste, Waste-to-Energy</i> <i>Municipal Solid Waste, Landfills</i> <i>Places We Live, Green Space</i> <i>Places We Live, Far-Reaching Decisions</i> <i>Places We Live, Regional Community Issues</i> <i>Focus on Risk, Electromagnetic Fields</i> <i>Focus on Risk, Chlorine: Looking at Tradeoffs</i> <i>Focus on Risk, Plastics</i></p>
<p>14. Cite examples of scientific advances and emerging technologies and how they affect society (e.g., MRI, DNA in forensics) (SI-H-B3)</p>	<p><i>Focus on Forests, Tough Choices</i> <i>Forest Ecology, Saga of the Gypsy Moth</i> <i>Forest Ecology, Fire Management</i> <i>Municipal Solid Waste, Recycling and Economics</i> <i>Municipal Solid Waste, Waste-to-Energy</i> <i>Municipal Solid Waste, Landfills</i> <i>Municipal Solid Waste, Where Does Your Garbage Go?</i> <i>Forests of the World, Understanding the Effects of Forest Uses</i> <i>Forests of the World, Seeking Sustainability</i> <i>Places We Live, Mapping Your Community Through Time</i> <i>Places We Live, Neighborhood Design</i> <i>Focus on Risk, Communicating Risk</i> <i>Focus on Risk, Electromagnetic Fields</i> <i>Focus on Risk, Chlorine: Looking at Tradeoffs</i> <i>Focus on Risk, Plastics</i></p>
<p>15. Analyze the conclusion from an investigation by using data to determine its validity (SI-H-B4)</p>	<p><i>Focus on Forests, Old Growth Forests</i> <i>Focus on Forests, Squirrels vs. Scopes</i> <i>Forest Ecology, Understanding Fire</i> <i>Forests of the World, Seeking Sustainability</i> <i>Focus on Risk, Communicating Risk</i> <i>Focus on Risk, Weighing Options</i> <i>Focus on Risk, Decision Making</i> <i>Focus on Risk, Electromagnetic Fields</i> <i>Focus on Risk, Chlorine-Looking at Tradeoffs</i> <i>Focus on Risk, Plastics</i></p>
<p>16. Use the following rules of evidence to examine experimental results:</p> <p>(a) Can an expert's technique or theory be tested, has it been tested, or is it simply a subjective, conclusive approach that cannot be reasonably assessed for reliability?</p> <p>(b) Has the technique or theory been subjected to peer review and publication?</p> <p>(c) What is the known or potential rate of error of the</p>	<p><i>Focus on Forests, Old Growth Forests</i> <i>Focus on Forests, Squirrels vs. Scopes</i> <i>Forest Ecology, Understanding Fire</i> <i>Forests of the World, Seeking Sustainability</i> <i>Focus on Risk, Risk Assessment: Tools of the Trade</i> <i>Focus on Risk, Communicating Risk</i> <i>Focus on Risk, Weighing Options</i> <i>Focus on Risk, Decision Making</i> <i>Focus on Risk, Electromagnetic Fields</i></p>

<p>technique or theory when applied? (d) Were standards and controls applied and maintained? (e) Has the technique or theory been generally accepted in the scientific community? (SI-H-B5) (SI-H-B1) (SI-H-B4)</p>	<p><i>Focus on Risk</i>, Chlorine-Looking at Tradeoffs <i>Focus on Risk</i>, Plastics</p>
<p>Science and the Environment Ecological Systems and Interactions</p>	
<p>1. Describe the abiotic and biotic factors that distinguish Earth's major ecological systems (SE-H-A1)</p>	<p><i>Focus on Forests</i>, Old-Growth Forests <i>Forest Ecology</i>, Adopt a Forest <i>Forest Ecology</i>, Cast of Thousands <i>Forest Ecology</i>, Story of Succession <i>Forests of the World</i>, Mapping the World's Forests <i>Forests of the World</i>, Analyzing Patterns of Forest Change <i>Forests of the World</i>, Researching Forests Around the World <i>Places We Live</i>, Far-Reaching Decisions <i>Focus on Risk</i>, Decision Making</p>
<p>2. Describe the characteristics of major biomes on Earth (SE-H-A1)</p>	<p><i>Focus on Forests</i>, Old-Growth Forests <i>Forests of the World</i>, Mapping the World's Forests <i>Forests of the World</i>, Researching Forests Around the World</p>
<p>3. Use the 10% rule and data analysis to measure the flow of energy as represented by biomass in a system (SE-H-A2)</p>	<p><i>Forest Ecology</i>, Adopt a Forest <i>Forest Ecology</i>, Cast of Thousands <i>Forest Ecology</i>, Story of Succession <i>Forests of the World</i>, Mapping the World's Forests <i>Forests of the World</i>, Researching Forests Around the World</p>
<p>4. Determine the effects of limiting factors on a population and describe the concept of carrying capacity (SE-H-A3)</p>	<p><i>Focus on Forests</i>, Old-Growth Forests <i>Forest Ecology</i>, Adopt a Forest <i>Forest Ecology</i>, Cast of Thousands <i>Forest Ecology</i>, Story of Succession <i>Forests of the World</i>, Researching Forests Around the World <i>Places We Live</i>, Far-Reaching Decisions <i>Focus on Risk</i>, Decision Making</p>
<p>5. Examine and discuss the major stages of succession, describing the generalized sequential order of the types of plant species (SE-H-A4)</p>	<p><i>Focus on Forests</i>, Old-Growth Forests <i>Forest Ecology</i>, Adopt a Forest <i>Forest Ecology</i>, Story of Succession <i>Forests of the World</i>, Mapping the World's Forests <i>Forests of the World</i>, Analyzing Patterns of Forest Change <i>Forests of the World</i>, Researching Forests Around the World</p>
<p>6. Analyze the consequences of changes in selected divisions of the biosphere (e.g., ozone depletion, global warming, acid rain) (SE-H-A5) (SE-H-A7)</p>	<p><i>Focus on Forests</i>, Old-Growth Forests <i>Forest Ecology</i>, Story of Succession <i>Forests of the World</i>, Mapping the World's Forests <i>Forests of the World</i>, Analyzing Patterns of Forest Change <i>Forests of the World</i>, Researching Forests Around the World <i>Places We Live</i>, Far-Reaching Decisions <i>Focus on Risk</i>, Decision Making</p>
<p>7. Illustrate the flow of carbon, water, oxygen, nitrogen, and phosphorus through an ecosystem (SE-H-A6) (LS-H-D1)</p>	<p><i>Focus on Forests</i>, Old-Growth Forests <i>Forest Ecology</i>, Adopt a Forest <i>Forest Ecology</i>, Cast of Thousands <i>Forest Ecology</i>, Story of Succession <i>Forests of the World</i>, Mapping the World's Forests <i>Forests of the World</i>, Analyzing Patterns of Forest Change <i>Forests of the World</i>, Researching Forests Around the World <i>Places We Live</i>, Far-Reaching Decisions <i>Focus on Risk</i>, Decision Making</p>
<p>8. Explain how species in an ecosystem interact and</p>	<p><i>Focus on Forests</i>, Old-Growth Forests</p>

link in a complex web (SE-H-A7) (SE-H-A10)	<i>Forest Ecology</i> , Adopt a Forest <i>Forest Ecology</i> , Cast of Thousands <i>Forest Ecology</i> , Story of Succession <i>Forests of the World</i> , Mapping the World's Forests <i>Forests of the World</i> , Analyzing Patterns of Forest Change <i>Forests of the World</i> , Researching Forests Around the World <i>Places We Live</i> , Far-Reaching Decisions <i>Focus on Risk</i> , Decision Making
9.Cite and explain examples of organisms' adaptations to environmental pressures over time (SE-H-A8)	<i>Focus on Forests</i> , Squirrels vs. Scopes <i>Forest Ecology</i> , Story of Succession <i>Forest Ecology</i> , Home Sweet Home <i>Forest Ecology</i> , Saga of the Gypsy Moth <i>Forest Ecology</i> , Understanding Fire <i>Forest Ecology</i> , Fire Management
10.Analyze the effect of an invasive species on the biodiversity within ecosystems (SE-H-A9)	<i>Forest Ecology</i> , Home Sweet Home <i>Forest Ecology</i> , Saga of the Gypsy Moth
11.Explain why biodiversity is essential to the survival of organisms (SE-H-A9)	<i>Focus on Forests</i> , Old-Growth Forests <i>Forest Ecology</i> , Adopt a Forest <i>Forest Ecology</i> , Cast of Thousands <i>Forest Ecology</i> , Story of Succession <i>Forests of the World</i> , Mapping the World's Forests <i>Forests of the World</i> , Analyzing Patterns of Forest Change <i>Forests of the World</i> , Researching Forests Around the World <i>Places We Live</i> , Far-Reaching Decisions <i>Focus on Risk</i> , Decision Making
12.Give examples and describe the effect of pollutants on selected populations (SE-H-A11)	<i>Focus on Forests</i> , Old-Growth Forests <i>Focus on Forest</i> , Tough Choices <i>Forest Ecology</i> , Cast of Thousands <i>Forest Ecology</i> , Story of Succession <i>Municipal Solid Waste</i> , The Waste Stream <i>Municipal Solid Waste</i> , Composting <i>Municipal Solid Waste</i> , Landfills <i>Forests of the World</i> , Analyzing Patterns of Forest Change <i>Forests of the World</i> , Researching Forests Around the World <i>Places We Live</i> , Far-Reaching Decisions <i>Focus on Risk</i> , Decision Making <i>Focus on Risk</i> , Chlorine: Looking at Tradeoffs <i>Focus on Risk</i> , Plastics
Resources and Resource Management	
13.Evaluate whether a resource is renewable by analyzing its relative regeneration time (SE-H-B1)	<i>Focus on Forests</i> , What's a Forest to You? <i>Municipal Solid Waste</i> , Source Reduction <i>Municipal Solid Waste</i> , Recycling and Economics <i>Forests of the World</i> , Making Global Connections <i>Forests of the World</i> , Understanding the Effects of Forest Use <i>Forests of the World</i> , Seeking Sustainability: A Global Response <i>Forests of the World</i> , Exploring the World Marketplace <i>Places We Live</i> , Regional Community Issues: The Ogallala Aquifer
14.Analyze data to determine the effect of preservation practices compared to conservation practices for a sample species (SE-H-B2)	
15.Identify the factors that cause the inequitable distribution of Earth's resources (e.g., politics, economics, climate) (SE-H-B3)	<i>Forests of the World</i> , Mapping the World's Forests <i>Forests of the World</i> , Analyzing Patterns of Forest Change <i>Forests of the World</i> , Researching Forests Around the World <i>Forests of the World</i> , Exploring the World Marketplace

16. Evaluate the effectiveness of natural resource management in Louisiana (SE-H-B4) (SE-H-B5)	<i>Forest Ecology</i> , Adopt a Forest <i>Forest Ecology</i> , Cast of Thousands
17. Analyze data to determine when reuse, recycling, and recovery are applicable (SE-H-B5)	<i>Municipal Solid Waste</i> , The Waste Stream <i>Municipal Solid Waste</i> , Source Reduction <i>Municipal Solid Waste</i> , Recycling and Economics <i>Municipal Solid Waste</i> , Waste-to-Energy <i>Forests of the World</i> , Making Consumer Choices <i>Focus on Risk</i> , Weighing Options
18. Identify the factors that affect sustainable development (SE-H-B6)	<i>Focus on Forests</i> , Who Owns America's Forests <i>Municipal Solid Waste</i> , Landfills <i>Forests of the World</i> , Seeking Sustainability: A Global Response
Environmental Awareness and Protection	
19. Determine the interrelationships of clean water, land, and air to the success of organisms in a given population (SE-H-C1)	<i>Focus on Forests</i> , Balancing America's Forests <i>Focus on Forests</i> , Squirrels vs. Scopes <i>Forest Ecology</i> , Adopt a Forest <i>Forest Ecology</i> , Cast of Thousands <i>Municipal Solid Waste</i> , Landfills <i>Forests of the World</i> , Understanding the Effects of Forest Uses <i>Places We Live</i> , Far-Reaching Decisions <i>Places We Live</i> , Regional Community Issues: The Ogallala Aquifer <i>Focus on Risk</i> , Decision Making <i>Focus on Risk</i> , Chlorine: Looking at Tradeoffs
20. Relate environmental quality to quality of life (SE-H-C2)	<i>Focus on Forests</i> , Tough Choices <i>Municipal Solid Waste</i> , Landfills <i>Municipal Solid Waste</i> , Where Does Your Garbage Go? <i>Forests of the World</i> , Making Global Connections <i>Forests of the World</i> , Analyzing Patterns of Change <i>Forests of the World</i> , Understanding the Effects of Forest Uses <i>Places We Live</i> , Neighborhood Design <i>Places We Live</i> , Green Space <i>Places We Live</i> , A Vision for the Future <i>Focus on Risk</i> , Risk Assessment: Tools of the Trade <i>Focus on Risk</i> , Communicating Risk <i>Focus on Risk</i> , Electromagnetic Fields <i>Focus on Risk</i> , Chlorine: Looking at Tradeoffs <i>Focus on Risk</i> , Plastics
21. Analyze the effect of common social, economic, technological, and political considerations on environmental policy (SE-H-C3)	<i>Focus on Forests</i> , Tough Choices <i>Municipal Solid Waste</i> , Landfills <i>Municipal Solid Waste</i> , Where Does Your Garbage Go? <i>Forests of the World</i> , Making Global Connections <i>Forests of the World</i> , Analyzing Patterns of Change <i>Forests of the World</i> , Understanding the Effects of Forest Uses <i>Places We Live</i> , Neighborhood Design <i>Places We Live</i> , Green Space <i>Places We Live</i> , A Vision for the Future <i>Focus on Risk</i> , Risk Assessment: Tools of the Trade <i>Focus on Risk</i> , Communicating Risk <i>Focus on Risk</i> , Electromagnetic Fields <i>Focus on Risk</i> , Chlorine: Looking at Tradeoffs <i>Focus on Risk</i> , Plastics
22. Analyze the risk-benefit ratio for selected environmental situations (SE-H-C4)	<i>Focus on Forests</i> , Tough Choices <i>Municipal Solid Waste</i> , Landfills <i>Forests of the World</i> , Understanding the Effects of Forest Uses

	<i>Places We Live, Neighborhood Design</i> <i>Places We Live, Green Space</i> <i>Places We Live, A Vision for the Future</i> <i>Focus on Risk, Risk Assessment: Tools of the Trade</i> <i>Focus on Risk, Communicating Risk</i> <i>Focus on Risk, Electromagnetic Fields</i> <i>Focus on Risk, Chlorine: Looking at Tradeoffs</i> <i>Focus on Risk, Plastics</i>
23. Describe the relationship between public support and the enforcement of environmental policies (SE-H-C5)	
Personal Choices and Responsible Actions	
24. Identify the advantages and disadvantages of using disposable items versus reusable items (SE-H-D1)	<i>Municipal Solid Waste, Source Reduction</i> <i>Municipal Solid Waste, Recycling and Economics</i> <i>Forests of the World, Making Consumer Choices</i>
25. Discuss how education and collaboration can affect the prevention and control of a selected pollutant (SE-H-D2) (SE-H-D3)	<i>Focus on Forests, Tough Choices</i> <i>Municipal Solid Waste, Source Reduction</i> <i>Municipal Solid Waste, Recycling and Economics</i> <i>Forests of the World, Understanding the Effects of Forest Uses</i> <i>Forests of the World, Making Consumer Choices</i> <i>Focus on Risk, Weighing Options</i> <i>Focus on Risk, Decision Making</i> <i>Focus on Risk, Chlorine: Looking at Tradeoffs</i> <i>Focus on Risk, Plastics</i>
26. Determine local actions that can affect the global environment (SE-H-D4)	<i>Focus on Forests, Take Action</i> <i>Municipal Solid Waste, Where Does Your Garbage Go?</i> <i>Municipal Solid Waste, Success Stories and Personal Choices</i> <i>Forests of the World, Making Consumer Choices</i> <i>Places We Live, Far-Reaching Decisions</i> <i>Focus on Risk, Taking Action</i>
27. Describe how accountability toward the environment affects sustainability (SE-H-D5)	<i>Focus on Forests, Tough Choices</i> <i>Focus on Forests, Balancing America's Forests</i> <i>Forest Ecology, Fire Management</i> <i>Municipal Solid Waste, Where Does Your Garbage Go?</i> <i>Forests of the World, Exploring the World Marketplace</i> <i>Forests of the World, Making Consumer Choices</i> <i>Places We Live, Far-Reaching Decisions</i>
28. Discuss the reduction of combustible engines needed to significantly decrease CO ₂ in the troposphere (SE-H-D6)	