

Project Learning Tree
Exploring Environmental Issues: Focus on Forests
Secondary Environmental Education Module
Arkansas Curriculum Frameworks Correlations

- This secondary module is designed for grades 9-12 and can easily be adapted for formal and non-formal settings. With some modification it is well suited for middle school and adult audiences as well. It is correlated here to Arkansas' Education Frameworks for grades 9-12.
- A student learning expectation is included if the concept is introduced or if it provides students an opportunity to practice the concept.

Correlated to the following frameworks for grades 9-12:

Subject	ADE Revision Date	Correlation Date
Biology	2005	August 2011
Environmental Science	2005	August 2011
Fine Arts/Visual Arts	2008	August 2011
Language Arts Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects (Grades 9-12)	2011	August 2011
Math Common Core State Standards for Mathematics (Grades 9-12)	2011	August 2011
Skilled and Technical Sciences (Career and Technical Education) Vocational Agriculture	2007	August 2011
Social Studies American Government	2006	August 2011
Social Studies American History	2006	August 2011
Social Studies Arkansas History	2006	
Social Studies Contemporary US History	2006	August 2011
Social Studies Economics	2006	August 2011
Social Studies Sociology	2006	August 2011
Social Studies World Geography	2006	August 2011
Social Studies World History	2006	August 2011

Lesson 1: Monitoring Forest Health

Biology	Environmental Science	Fine Arts	Language Arts	Math	Skilled and Technical Sciences	Social Studies American Government	Social Studies American History	Social Studies Arkansas History	Social Studies Contemporary US History	Social Studies Economics	Social Studies Sociology	Social Studies World Geography	Social Studies World History
CDL.7.B.4 CDL.7.B.5 EBR.9.B.1 EBR.9.B.2 NS.11.B.4 NS.11.B.5 NS.11.B.6. NS.13.B.1 NS.13.B.2 NS.14.B.3	SP3.ES.9 SP.3.ES.10 NS.4.ES.1 NS.4.ES.2 NS.5.ES.3	NA	W.9-10.2 W.9-10.4 W.9-10.6 W.9-10.7 W.9-10.8 W.9-10.10 W.11-12.2 W.11.12.4 W.11-12.6 W.11-12.7 W.11-12.8 W.11-12.10 SL.9-10.1 SL.9-10.3 SL.9.10 4 SL.11-12.1 SL.11-12.3. SL.11-12.4 L.9-10.4 L.9-10.6 L.11-12.4 L.11-12.6 RST.9-10.3 RST.9-10.4 RST.9-10.10 RST.11-12.3 RST.11-12.7 RST.11-12.8 RST.11-12.9 RST.11-12.10 WHST.9-10.2 WHST.9-10.4 WHST.9-10.6 WHST.9-10 7 WHST.9-10.8 WHST.9-10.9 WHST.9-10.10	G.CO.12 G.SRT.5 G.MG.1 G.MG.2	*See table below.	NA	NA	NA	NA	NA	NA	SG.1.WG.4 SG.1.WG.9 ES.7.WG.1 ES.7.WG.3	NA

			WHST.11-12.2 WHST.11-12.4 WHST.11-12.6 WHST.11-12.7 WHST.11-12.8 WHST.11-12.9 WHST.11-12.10										
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Lesson 2: Story of Succession

Biology	Environmental Science	Fine Arts	Language Arts	Math	Skilled and Technical Sciences	Social Studies American Government	Social Studies American History	Social Studies Arkansas History	Social Studies Contemporary US History	Social Studies Economics	Social Studies Sociology	Social Studies World Geography	Social Studies World History
EBR. 8.B.1 EBR.8.B.2 EBR.8.B.7 NS.11.B.4 NS.11.B.5 NS.11.B.6 NS.13.B.3 NS.15.B.1	BD.2.ES.1 BD.2.ES.3 BD.2.ES.9 SP.3.ES.1 NS.4.ES.1 NS.4.ES.3 NS.6.ES.1	CP.4.AI.3 CP.4.AI.13 CP.1.AII.3 CP.4.AII.14 CP.4.AII.16 CP.1.AIII.3 CP.1.AIII.14 CP.1.AIII.16	RI.9-10.1 RI.9-10.4 RI.9-10.10 RI.11-12.1 RI.11-12.4 RI.11-12.10 W.9-10.2 W.9-10.3 W.9-10.4 W.9-10.6 W.9-10.7 W.9-10.10 W.11-12.2 W.11-12.3 W.11-12.4 W.11-12.6 W.11-12.7 W.11-12.10 SL.9-10.1 SL.9-10.2 SL.9-10.4 SL.9-10.5 SL.9-10.6 SL.11.12.1 SL.11-12.2 SL.11.12.4 SL.11-12.5 SL.11-12.6 L.9-10.4	NA	*See table below.	NA	NA	NA	E.7.CH.2	NA	NA	SG.1.WG.9 PS.3.WG.5 ES.7.WG.2	NA

			L.9-10.6 RST.9-10.1 RST.9-10.2 RST.9-10.3 RST.9-10.4 RST.9-10.7 RST.9-10.9 RST.9-10.10 RST.11-12.1 RST.11-12.2 RST.11-12.3 RST.11-12.4 RST.11-12.7 RST.11-12.9 RST.11-12.10 WHST.9-10.2 WHST.9-10.4 WHST.9-10.6 WHST.9-10.7 WHST.9-10.9 WHST.9-10.10 WHST.11-12.2 WHST.11-12.4 WHST.11-12.6 WHST.11-12.7 WHST.11-12.9 WHST.11-12.10										
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Lesson 3: Who Owns America's Forests?

Biology	Environmental Science	Fine Arts	Language Arts	Math	Skilled and Technical Sciences	Social Studies American Government	Social Studies American History	Social Studies Arkansas History	Social Studies Contemporary US History	Social Studies Economics	Social Studies Sociology	Social Studies World Geography	Social Studies World History
EBR.9.B.1 NS.14.B.3	PD.1.ES.9 SP.3.ES.2 SP.3.ES.9 SP.3.ES.10	CP.1.AI.16 CP.1.AIII.16	W.9-10.7 W.9-10.8 W.9-10.10 W.11-12.7 W.11-12.8 W.11-2.10 SL.9-10.1 SL.9-10.2 SL.9-10.3	The math used in this activity is based on concepts taught in grades 4-8.	*See table below.	NA	NA	NA	E.7.CH.3	NA	NA	SG.1.WG.4 SG.1.WG.9 PR.2.WG.2 PR.2.WG.4 PR.2.WG.5 ES.7.WG.6	

			SL.9.10.4 SL.11-12.1 SL.11-12.2 SL.11-12.3 SL.11-12.4 RST.9.10.1 RST.9-10.7 RST.9-10.10 RST.11-12.1 RST.11-12.7 RST.11-12.10 WHST.9-10.2 WHST.9-10.4 WHST.9-10.6 WHST.9-10.7 WHST.9-10.8 WHST.9-10.9 WHST.9-10.10 WHST.11-12.2 WHST.11-12.4 WHST.11-12.6 WHST.11-12.7 WHST.11-12.8 WHST.11-12.9 WHST.11-12.10										
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Lesson 4: Tough Choices

Biology	Environmental Science	Fine Arts	Language Arts	Math	Skilled and Technical Sciences	Social Studies American Government	Social Studies American History	Social Studies Arkansas History	Social Studies Contemporary US History	Social Studies Economics	Social Studies Sociology	Social Studies World Geography	Social Studies World History
EBR.9.B.1 EBR.9.B.2 NS.14.B.3	SP.3.ES.5 SP.3.ES.6 SP.3.ES.9 SP.3.ES.10 SP.3.ES.11	NA	RI.9-10.1 RI.9-10.4 RI.9-10.10 RI.11-12.1 RI.11-12.4 RI.11-12.7 RI.11-12.10 W.9-10.1 W.9-10.4 W.9-10.7 W.9-10.8	NA	*See table below.	NA	IN.7.AH.5	NA	E.7.CH.3	EF.1.E.1 EF.1.E.2 EF.1.E.3 EF.1.E.5	G.5.S.4	ES.7.WG.3 ES.7.WG.6 AG.8.WG.2	

			W.9-10.10 W.11-12.1 W.11-12.4 W.11-12.7 W.11-12.8 W.11-12.10 SL.9-10.1 SL.9-10.2 SL.9-10.3 SL.9-10.4 SL.11-12.1 SL.11-12.2 SL.11-12.3 SL.11-12.4 RH.9-10.1 RH.9-10.2 RH.9.10.8 RH.9-10.10 RH.11-12.1 RH.11-12.2 RH.11-12.8 RH.11-12.9 RH.11-12.10 WHST.9-10.1 WHST.9-10.4 WHST.9-10.7 WHST.9-10.8 WHST.9-10.10 WHST.11-12.1 WHST.11-12.4 WHST.11-12.7 WHST.11-12.8 WHST.11-12.10										
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Lesson 5: The Nature of Fire

Biology	Environmental Science	Fine Arts	Language Arts	Math	Skilled and Technical Sciences	Social Studies American Government	Social Studies American History	Social Studies Arkansas History	Social Studies Contemporary US History	Social Studies Economics	Social Studies Sociology	Social Studies World Geography	Social Studies World History
EBR.9.B.1 EBR.9.B.2 EBR.9.B.3	SP.3.ES.5 SP.3.ES.6 SP.3.ES.9	CP.4.AI.10 CP.4.AI.13 CP.1.AII.11	RI.9-10.1 RI.9-10.2 RI.9-10.4	NA	*See table below.	NA	IN.7.AH.5	G.1.AH.9-12.5	E.7.CH.3	EF.1.E.3	NA	SG.1.WG.4 ES.7.WG.1 ES.7.WG.1	

NS.13.B.3 NS.14.B.4	SP.3.ES.10 SP.3.ES.11 NS.4.ES.3	CP.1.AII.14 CP.1.AII.16 CP.1.AIII.14 CP.1.AIII.16	RI.9-10.8 RI.9-10.10 RI.11-12.1 RI.11-12.4 RI.11-12.7 RI.11.12.10 W.9-10.1 W.9-10.2 W.9-10.4 W.9-10.6 W.9-10.7 W.9-10.8 W.9-10.10 W.11-12.1 W.11-12.2 W.11-12.4 W.11-12.6 W.11-12.7 W.11-12.8 W.11-12.10 SL.9-10.1 SL.9-10.2 SL.9-10.3 SL.9-10.4 SL.9-10.5 SL.11-12.1 SL.11-12.2 SL.11-12.3 SL.11-12.4 SL.11-12.5 L.9-10.4 L.9-10.6 L.11-12.4 L.11-12.6 RST.9-10.1 RST.9-10.2 RST.9-10.4 RST.9-10.6 RST.9-10.7 RST.9-10.8 RST.9-10.9 RST.9-10.10 RST.11-12.1									ES.7.WG.3 ES.7.WG.4 ES.7.WG.6	
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			RST.11-12.2 RST.11-12.4 RST.11-12.6 RST.11-12.7 RST.11-12.8 RST.11-12.9 RST.11-12.10 WHST.9-10.1 WHST.9-10.2 WHST.9-10.4 WHST.9-10.6 WHST.9-10.7 WHST.9-10.8 WHST.9-10.9 WHST.9-10.10 WHST.11-12.1 WHST.11-12.2 WHST.11-12.4 WHST.11-12.6 WHST.11-12.7 WHST.11-12.8 WHST.11-12.9 WHST.11-12.10										
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Lesson 6: Forest to Faucet

Biology	Environmental Science	Fine Arts	Language Arts	Math	Skilled and Technical Sciences	Social Studies American Government	Social Studies American History	Social Studies Arkansas History	Social Studies Contemporary US History	Social Studies Economics	Social Studies Sociology	Social Studies World Geography	Social Studies World History
EBR.9.B.1 EBR.9.B.2 EBR.9.B.3 NS.13.B.1	SP.3.ES.2 SP.3.ES.3 SP.3.ES.4 SP.3.ES.5 SP.3.ES.7 SP.3.ES.9 SP.3.ES.10 SP.3.ES.11 NS.4.ES.1 NS.6.ES.1	NA	RI.9-10.1 RI.9-10.4 RI.9-10.10 RI.11-12.1 RI.11-12.4 RI.11-12.7 RI.11-12.10 W.9-10.7 W.9-10.8 W.11-12.7 W.11-12.8 SL.9-10.1 SL.11-12.1	F.LE.1.b	*See table below.	NA	IN.7.AH.5	NA	E.7.CH.3	EF.1.E.1 EF.1.E.3 EF.1.E.5	NA	SG.1.WG.4 SG.1.WG.5 SG.1.WG.9 PR.2.WG.1 ES.7.WG.3 ES.7.WG.6 AG.8.WG.3	

			RST.9-10.7 RST.9-10.8 RST.9-10.10 RST.11-12.7 RST.11-12.8 RST.11-12.10										
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Lesson 7: Forest Invaders

Biology	Environmental Science	Fine Arts	Language Arts	Math	Skilled and Technical Sciences	Social Studies American Government	Social Studies American History	Social Studies Arkansas History	Social Studies Contemporary US History	Social Studies Economics	Social Studies Sociology	Social Studies World Geography	Social Studies World History
EBR.8.B.5 EBR.9.B.1 EBR.9.B.3 NS.13.B.1	SP.3.ES.10 NS.4.ES.1	CP.4.AI.10 CP.4.AI.13 CP.1.AII.11 CP1.AII.14 CP.1.AII.16 CP.1.AIII.14 CP.1.AIII.16	RI.9-10.1 RI.9-10.2 RI.9-10.4 RI.9-10.8 RI.9-10.10 RI.11-12.1 RI.11-12.4 RI.11-12.7 RI.11-12.10 W.9-10.7 W.9-10.8 W.9-10.9 W.11-12.7 W.11-12.8 W.11-12.9 SL.9-10.1 SL.9-10.2 SL.9-10.3 SL.9-10.4 SL.9-10.5 SL.11-12.1 SL.11-12.2 SL.11-12.3 SL.11.12.4 SL.11.12.5 RST.9-10.1 RST.9-10.2 RST.9-10.3 RST.9-10.4 RST.9-10.6	NA	*See table below.	NA	NA	NA	E.7.CH.3	NA	NA	ES.7.WG.3 ES.7.WG.4 AG.8.WG.6	NA

			RST.9-10.9 RST.9-10.10 RST.11-12.1 RST.11-12.2 RST.11-12.3 RST.11-12.4 RST.11-12.6 RST.11-12.7 RST.11-12.8 RST.11-12.10 WHST.9-10.7 WHST.9-10.8 WHST.9-10.10 WHST.11-12.7 WHST.11-12.8 WHST.11-12.10										
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Lesson 8: Climate Change and Forests

Biology	Environmental Science	Fine Arts	Language Arts	Math	Skilled and Technical Sciences	Social Studies American Government	Social Studies American History	Social Studies Arkansas History	Social Studies Contemporary US History	Social Studies Economics	Social Studies Sociology	Social Studies World Geography	Social Studies World History
EBR.9.B.1 EBR.9.B.2 EBR.9.B.3 NS.12.B.1 NS.12.B.2 NS.13.B.1	SP.3.ES.2 SP.3.ES.9 SP.3.ES.10 SP.3.ES.11 NS.4.ES.1	NA	RI.9-10.1 RI.9-10.2 RI.9-10.3 RI.9-10.4 RI.9-10.6 RI.9-10.8 RI.9-10.10 RI.11-12.1 RI.11-12.4 RI.11-12.5 RI.11-12.6 RI.11-12.7 RI.11-12.10 W.9-10.1 W.9-10.2 W.9-10.4 W.9-10.6 W.9-10.7 W.9-10.8 W.9-10.10	G.SRT.5 G.MG.1 G.MG.2	*See table below.	NA	NA	NA	E.7.CH.3	NA	NA	ES.7.WG.3 ES.7.WG.4 ES.7.WG.6 AG.8.WG.6	

			W.11-12.1 W.11-12.2 W.11-12.4 W.11-12.6 W.11-12.7 W.11-12.8 W.11-12.10 SL.9-10.1 SL.9-10.2 SL.9-10.3 SL.9-10.4 SL.9-10.5 SL.9-10.6 SL.11-12.1 SL.11-12.2 SL.11-12.3 SL.11-12.4 SL.11-12.5 SL.11-12.6 RST.9-10.1 RST.9-10.2 RST.9-10.3 RST.9-10.4 RST.9-10.7 RST.9-10.8 RST.9-10.9 RST.9-10.10 RST.11-12.1 RST.11-12.2 RST.11-12.3 RST.11-12.4 RST.11-12.7 RST.11-12.10 WHST.9-10.2 WHST.9-10.4 WHST.9-10.7 WHST.9-10.8 WHST.9-10.10 WHST.11-12.2 WHST.11-12.4 WHST.11-12.7 WHST.11-12.8 WHST.11-12.10									
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Lesson 9: Words to Live By

Biology	Environmental Science	Fine Arts	Language Arts	Math	Skilled and Technical Sciences	Social Studies American Government	Social Studies American History	Social Studies Arkansas History	Social Studies Contemporary US History	Social Studies Economics	Social Studies Sociology	Social Studies World Geography	Social Studies World History
NA	NA	CP.4.AI.13 CP.1.AII.14 CP.1.AII.16 CP.1.AIII.14 CP.1.AIII.16 CP.1.AIV.2	RI.9-10.1 RI.9-10.2 RI.9-10.3 RI.9-10.4 RI.9-10.5 RI.9-10.6 RI.9-10.7 RI.9-10.8 RI.9-10.10 RI.11-12.1 RI.11-12.2 RI.11-12.3 RI.11-12.4 RI.11-12.5 RI.11-12.6 RI.11-12.7 RI.11-12.10 W.9-10.1 W.9-10.2 W.9-10.7 W.9.10.8 W.9-10.10 W.11-12.1 W.11-12.2 W.11-12.7 W.11-12.8 W.11-12.10 SL.9-10.1 SL.9-10.2 SL.9-10.5 SL.11-12.1 SL.11-12.2 SL.11-12.5	NA	NA	NA	NA	NA	NA	NA	NA	SG.1.WG.7 ES.7.WG.1	

***Skilled and Technical Sciences: Agriculture Correlation Table**

Activity 1: Monitoring Forest Health

Agricultural Science

Unit 6: Forestry and Natural Resources

- 6.1 Define terms
- 6.2 List natural resources and describe their importance
- 6.4 Discuss the importance of forestry

Agricultural Science and Technology

Unit 6: Forestry and Natural Resources

- 6.1 Define terms
- 6.2 List natural resources and describe their importance
- 6.4 Discuss the importance of forestry

Forestry

Unit 1: Overview of Forestry

- 1.1 Define terms
- 1.5 Discuss environmental issues concerning forestry
- 1.6 Identify beneficial aspects of forestry (e.g., economics, recreation, products)

Unit 4: Dendrology – The Identification of Trees

- 4.1 Define terms
- 4.3 Describe the most important characteristics to use in identifying trees (e.g., bark, leaves, twigs, growth habit, fruit)
- 4.4 Identify local trees

Unit 5: Measuring Land and Forest Products

- 5.1 Define terms
- 5.3 Summarize methods of measuring horizontal distance
- 5.4 Summarize the processes for obtaining diameter and merchantable height of trees
- 5.7 Describe how age and growth rate of trees can be determined using an increment borer

Unit 6: Silvicultural Practices

- 6.1 Define terms
- 6.6 Describe conditions or agents affecting forest health

Unit 7: Reforestation Methods

- 7.2 Discuss methods of artificial reforestation
- 7.5 Describe the process of natural reforestation

Managing Our Natural Resources

Unit 7: Forestry Management

- 7.1 Define terms
- 7.4 List practices used to manage forests
- 7.5 Identify forest disorders and their control
- 7.6 Identify and discuss environmental concerns associated with forestry
- 7.7 Identify tools and equipment used in forestry

Activity 2: Story of Succession

Forestry

- Unit 1: Overview of Forestry
 - 1.1 Define terms
 - 1.2 Discuss career opportunities relating to forestry
- Unit 7 Reforestation Methods
 - 7.5 Describe the process of natural reforestation

Activity 3: Who Owns America's Forests?

Managing Our Natural Resources

- Unit 7: Forestry Management
 - 7.2 Determine the percentage of forest land in Arkansas and the different types of ownership

Activity 4: Tough Choices

Forestry

- Unit 1: Overview of Forestry
 - 1.1 Define terms
 - 1.5 Discuss environmental issues concerning forestry
 - 1.6 Identify beneficial aspects of forestry (e.g., economics, recreation, products)

Managing Our Natural Resources

- Unit 7: Forestry Management
 - 7.6 Identify and discuss environmental concerns associated with forestry

Activity 5: The Nature of Fire

Forestry

- Unit 1: Overview of Forestry
 - 1.5 Discuss environmental issues concerning forestry

Managing Our Natural Resources

- Unit 7: Forestry Management
 - 7.4 List practices used to manage forests
 - 7.6 Identify and discuss environmental concerns associated with forestry

Activity 6: Forest to Faucet

Agricultural Science

- Unit 6: Forestry and Natural Resources
 - 6.1 Define terms
 - 6.2 List natural resources and describe their importance
 - 6.4 Discuss the importance of forestry

Agricultural Science and Technology

- Unit 6: Forestry and Natural Resources
 - 6.1 Define terms
 - 6.2 List natural resources and describe their importance
 - 6.4 Discuss the importance of forestry

Forestry

- Unit 1: Overview of Forestry
 - 1.1 Define terms

- 1.2 Discuss career opportunities relating to forestry
- 1.5 Discuss environmental issues concerning forestry
- 1.6 Identify beneficial aspects of forestry (e.g., economics, recreation, products)

Managing Our Natural Resources

Unit 1: Introduction to Natural Resources

- 1.2 List natural resources and how they are utilized by humans
- 1.3 Identify careers in natural resources

Unit 4: Water Management

- 4.1 Define terms
- 4.2 Identify and discuss the users of water (e.g., agricultural, municipalities, industry)
- 4.3 List the types of water pollutants (e.g., pesticides, animal waste, sewage, sediment)
- 4.4 Discuss the procedures for treating water for use

Unit 9: Planning for the Future

- 9.1 Define terms
- 9.2 Identify concerns about the future availability of natural resources
- 9.4 Discuss current issues regarding the use of natural resources
- 9.5 Explain the role of government agencies in planning for natural resource management (e.g., NRCS/County Soil and Water Districts, EPA, ADEQ)

Activity 7: Forest Invaders

Forestry

Unit 1: Overview of Forestry

- 1.1 Define terms.
- 1.5 Discuss environmental issues concerning forestry

Managing Our Natural Resources

Unit 7: Forestry Management

- 7.6 Identify and discuss environmental concerns associated with forestry

Unit: Planning for the Future

- 9.6 Determine ways students can be involved in planning for natural resource management

Activity 8: Climate Change and Forests

Forestry

Unit 1: Overview of Forestry

- 1.5 Discuss environmental issues concerning forestry

Managing Our Natural Resources

Unit 7: Forestry Management

- 7.6 Identify and discuss environmental concerns associated with forestry