

CARROLL COUNTY AMERICAN CHESTNUT CURRICULUM GRADE 7

Standard 1.0 Environmental Issues

The student will investigate and analyze environmental issues ranging from local to global perspectives and develop and implement a local action project that protects, sustains, or enhances the natural environment.

TOPIC

A. ENVIRONMENTAL ISSUE INVESTIGATION

INDICATOR	CARROLL COUNTY CURRICULUM 7 TH GRADE
1. Identify an environmental issue.	-The American Chestnut Blight destroying the American Chestnut Tree population Introduction Lesson-Brief History and Importance of the American Chestnut Story -Benefits of the American Chestnut- Including ecological importance, blight information, “It’s All Around Us” lab, and “Up, Up, and Away” Lab.
INDICATOR	
2. Develop and write research questions related to an environmental issue.	
INDICATOR	
3. Given a specific issue, communicate the issue, the stakeholders involved and the stakeholders’ beliefs and values.	-Introduction Lesson-Brief History and Importance of the American Chestnut Story -Benefits of the American Chestnut- Including ecological importance, blight information, “It’s All Around Us” lab, and “Up, Up, and Away” Lab.
INDICATOR	
4. Design and conduct the research.	-Genetic Back-crossing note-taking guide which identifies the early attempts to save the Chestnut Tree population
INDICATOR	
5. Use data and references to interpret findings to form conclusions.	-During the Chestnut Evaluation Project, students conclude which attempt at saving the Chestnuts is the most productive and promising based on their earlier research.

TOPIC

B. ACTION COMPONENT

INDICATOR	
1. Use recommendation(s) to develop and implement an environmental action plan.	-Chestnut Orchard- Construction/Implementation
INDICATOR	
2. Communicate, evaluate and justify personal views on environmental issue and alternate ways to address them.	
INDICATOR	
3. Analyze the effectiveness of the action plan in terms of achieving the desired outcomes.	-Chestnut Orchard- Construction/Implementation

ENVIRONMENTAL LITERACY CURRICULUM DRAFT

Standard 2: Interactions of Earth's Systems

The student will analyze and apply the properties of systems thinking and modeling to the study of Earth's systems.

TOPIC

A. EARTH SYSTEMS

INDICATOR	
1. Analyze and explain the interactions of earth's systems.	

TOPIC

B. SYSTEMS THINKING

INDICATOR	
1. Analyze, explain and apply the properties of systems thinking to earth systems interactions.	

INDICATOR **	
2. Modeling: Use models and computer simulations to extent his/her understanding of scientific concepts.	-Bean There Done That Lab activity models the genetic back-crossing process for the students. -How Old is Charlie Activity- using rings to identify how old a tree is.

**See Science State Curriculum Skills and Processes

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Standard 3: Flow of Matter and Energy

The student will analyze and explain the movement of matter and energy through interactions of earth's systems (*biosphere, geosphere, hydrosphere, atmosphere, and cryosphere*) and the influence of this movement on weather patterns, climatic zones, and the distribution of life.

TOPIC

A. CONSERVATION OF MATTER WITHIN EARTH SYSTEMS

INDICATOR	
1. Demonstrate that matter cycles through and between living systems and the physical environment, constantly being recombined in different ways.	

TOPIC

B. ENERGY DISTRIBUTION THROUGH EARTH SYSTEMS

INDICATOR	
1. Analyze how the position and movement of the Earth in space determine distribution of heat and light.	
INDICATOR	
2. Explain that transfer of thermal energy between the atmosphere and the land or oceans produces temperature and density gradients in the atmosphere and the oceans.	
INDICATOR	
3. Explain that transfer of thermal energy between the atmosphere and the land or oceans influences climate patterns.	

TOPIC

C. INTERACTION OF PHYSICAL SYSTEMS AND THE BIOSPHERE

INDICATOR	
1. Analyze and explain the movement of matter and energy through earth's systems and the influence of this movement on the distribution of life.	

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Standard 4: Populations, Communities and Ecosystems

The student will use physical, chemical, biological, and ecological concepts to analyze and explain the interdependence of humans and organisms in populations, communities and ecosystems.

TOPIC

A. CYCLING OF MATTER AND ENERGY

INDICATOR	
1. Explain how organisms are linked by the transfer and transformation of matter and energy at the ecosystem level.	-Benefits of the American Chestnut- Including ecological importance, blight information, “It’s All Around Us” lab, and “Up, Up, and Away” Lab.

TOPIC

B. POPULATION DYNAMICS

INDICATOR	
1. Analyze the growth or decline of populations and identify a variety of responsible factors.	-Benefits of the American Chestnut- Including ecological importance, blight information, “It’s All Around Us” lab, and “Up, Up, and Away” Lab. -Chestnut Evaluation Project requires that students reflect on what caused the American Chestnut population to decline and also to reflect on the effects of introducing a non-native species to an area.

TOPIC

C. COMMUNITY AND ECOSYSTEM DYNAMICS

INDICATOR	
1. Explain how the interrelationships and interdependencies of organisms and populations contribute to the dynamics of communities and ecosystems.	-Chestnut Evaluation Project requires that students reflect on the benefits of the American Chestnut Tree to both humans and wildlife within an ecosystem.

TOPIC

D. STABILITY IN POPULATIONS, COMMUNITIES AND ECOSYSTEMS

INDICATOR	
1. Use models and provide examples to show how the interaction and interdependence of populations contribute to the stability of populations, communities and ecosystems.	-Benefits of the American Chestnut- Including ecological importance, blight information, “It’s All Around Us” lab, and “Up, Up, and Away” Lab.
INDICATOR	
2. Use models and provide examples to show how species’ interactions may generate ecosystems that are stable for hundreds or thousands of years.	-Benefits of the American Chestnut- Including ecological importance, blight information, “It’s All Around Us” lab, and “Up, Up, and Away” Lab.

TOPIC

E. DIVERSITY

INDICATOR	
1. Provide examples and evidence to show that a greater diversity of genes, species and/or environments increases the chance that at least some living things will survive in the face of large changes in the environment.	-Genetic Backcrossing note-taking and Lab activities demonstrate how a diversity of genes will increase the likelihood of Chestnut survival, thus increasing the diversity in an area.

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Standard 5: Humans and Natural Resources

The student will use concepts from chemistry, physics, biology, and ecology to analyze and interpret both positive and negative impacts of human activities on earth's natural systems and resources.

TOPIC

A. HUMAN IMPACT ON NATURAL PROCESSES

INDICATOR	
1. Analyze the effects of human activities on earth's natural processes.	-Genetic Back-crossing Note-taking guide demonstrates how humans have tried to help stop the natural spread of the blight and what humans are doing to help nature fix the problem.
INDICATOR	
2. Analyze the effects of human activities that deliberately or inadvertently alter the equilibrium of natural processes.	-Bean There Done That Lab demonstrates how humans are manipulating tree pollination in order to select for specific genes, altering the natural process of tree pollination.

TOPIC

B. HUMAN IMPACT ON NATURAL RESOURCES

INDICATOR	
1. Analyze, from local to global levels, the relationship between human activities and the earth's resources.	-Benefits of the American Chestnut- Including ecological importance, blight information, "It's All Around Us" lab, and "Up, Up, and Away" Lab. -Chestnut Evaluation Project requires that students reflect on the relationship between humans and the American Chestnut through history.

Standard 6: Environment and Health

The student will use concepts from science, social studies and health to analyze and interpret both positive and negative impacts of natural events and human activities on human health.

TOPIC

A. NATURAL CHANGES AND HUMAN HEALTH

INDICATOR	
1. Identify and describe natural changes in the environment that may affect the health of human populations and individuals.	

TOPIC

B. HUMAN-INDUCED CHANGES AND HUMAN HEALTH

INDICATOR	
1. Describe and explain that many changes in the environment designed by humans bring benefits to society as well as cause risks.	

TOPIC

C. HAZARDS AND RISK ANALYSIS

INDICATOR	
1. Analyze and explain that human activities, products, processes, technologies and inventions can involve some level of risk to human health.	

ENVIRONMENTAL LITERACY CURRICULUM DRAFT

Standard 7: Environment & Society

The student will analyze how the interactions of heredity, experience, learning and culture influence social decisions and social change.

TOPIC

A. ENVIRONMENTAL QUALITY

INDICATOR	
1. Investigate factors that influence environmental quality.	-Genetic back-crossing note-taking guide demonstrates how humans have tried to improve environmental quality. -Chestnut Evaluation Project requires that students reflect on what caused the American Chestnut population to decline and also to reflect on the effects of introducing a non-native species to an area.

TOPIC

B. INDIVIDUAL AND GROUP ACTIONS AND THE ENVIRONMENT

INDICATOR	
1. Examine the influence of individual and group actions on the environment and explain how groups and individuals can work to promote and balance interests.	-Back-cross note-taking guide outlines how humans have tried to help the American Chestnut Tree population. Further, it outlines how the American Chestnut Foundation has pioneered genetic backcrossing to help the issue.

TOPIC

C. CULTURAL PERSPECTIVES AND THE ENVIRONMENT

INDICATOR	
1. Investigate cultural perspectives and dynamics and apply their understanding in context	

TOPIC

D. POLITICAL SYSTEMS AND THE ENVIRONMENT

INDICATOR	
1. Understand how different political systems account for, manage, and affect natural resources and environmental quality.	

TOPIC

E. ECONOMICS AND ENVIRONMENT

INDICATOR	
1. Analyze and explain global economic and environmental connections.	-Chestnut Evaluation Project requires that students reflect on human's economic reliance on the American Chestnut.

TOPIC

F. TECHNOLOGY AND ENVIRONMENT

INDICATOR	
1. Investigate and examine the social and environmental impacts of various technologies and technological systems on the environment.	-Genetic Back-cross note-taking guide and the Bean There Done That lab activity define genetic backcrossing as a technology used to impact the environment by bringing back the American Chestnut Tree.