

<b>Lessoning Loosestrife Essential Understandings</b>	<b>Building Blocks (vocabulary)</b>	<b>Guiding Questions</b>	<b>Enabling Activities/Materials on Disk</b>	<b>Frameworks connections</b>
A. Wetlands have important functions that humans protect	Wetland Wetland Protection Act, Wetland Functions Historical impacts to wetlands Threats to wetlands	What is a Wetland? What is the Wetland Protection Act? What are functions of wetlands that the WPA protects? Why do wetlands need protection? What threatens wetlands? What are historical impacts to wetlands? How do people protect wetlands?	Inquiry activity: Where does the wetland begin? Wetland Metaphors Wetland Observations Understanding the Wetlands Protection Act Conservation Commission Questions	Inquiry (All grades)  Earth and Space 5 (Gr. 3-5) 1 (Gr. 6-8)
B. Invasive species are a threat to some of the wetland functions.	Invasive species	What threats to ecosystems do invasive species pose?	Performance Task Assessment Assignment. Loosestrife impact PowerPoint, Loosestrife impact worksheet	Life Science 7, 9,10,(Gr. 3-5), 13, 17 (Gr. 6-8), 6.2 (H.S.)
C. Humans are working to protect and restore wetlands	Restoration Stewardship Biocontrol Galerucella Beetles	How can people help wetlands? How can we help?	Purple Loosestrife Biocontrol Intro PowerPoint, Loosestrife Life Cycle PowerPoint	Life Science 3, 9,10 (Gr. 3-5), 17 (Gr. 6-8), 6.2 (H.S.)
D. Raising and releasing beetles is a way that students and teachers can contribute to wetland health.	Plant and beetle life cycles.	How can we help support wetland health?	Beetle rearing Checklists & Instructions, Beetle Rearing Guide, Beetle Life Cycle, "How Many Beetles?" Worksheet, Raising Beetles PowerPoint	Life Science 3, 9,10 (Gr. 3-5), 13, 17 (Gr. 6-8), 6.2 (H.S.)
E. Monitoring wetlands is a way to check how successful restoration efforts have been.	Monitoring protocols Percent Cover Plant Parts Plant identification Plant and Beetle Life Cycles Data analysis	How can we study whether the beetles are having an impact?	Plant observation activity. Percent cover activity. Monitoring preparation. Plant Identification Activity, Monitoring Protocols.	Inquiry Life Science 1, 9 (Gr. 3-5), 13, 17 (Gr. 6-8), 6.2 (H.S.)
F. Mapping invasive species and beetle damage is a way to assess how widespread the problem is, and to begin to plan how to best approach the problem.	Mapping methods.	How can mapping loosestrife and beetle damage help to develop a plan for purple loosestrife control?	Mapping loosestrife and beetle damage.	Earth and Space 1 (Gr. 6-8)
G. Background Materials 	Frameworks, Timelines, Safety, Vocabulary, Scientific Articles	How do we prepare for field trips? What have scientists learned already about purple loosestrife and biocontrol? How long does this take? What does that word mean? Additional resources?	CZM Protocols in detail, Frameworks connections, Research on Impact of Purple Loosestrife, Safety Checklist and Chaperone Letter, Suggested Resources, Vocabulary, Materials Cost List	

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MA Science Frameworks Connecti

Grades 3-5	Grades 6-8	High School
<b>Earth And Space Science</b>		
<p><b>Soil:</b> 5. Recognize and discuss the different properties of soil, including color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants.</p>	<p><b>Mapping the Earth:</b> 1. Recognize, interpret, and be able to create models of the earth’s common physical features in various mapping representations, including contour maps.</p>	
<b>Life Science (Biology)</b>		
<p><b>Characteristics of Plants and Animals:</b> 1. Classify plants and animals according to the physical characteristics that they share.</p>	<p><b>Living things and their environment:</b> 13. Give examples of ways in which organisms interact and have different functions within an ecosystem that enable the ecosystem to survive.</p>	<p><b>Ecology:</b> Central Concept: Ecology is the interaction among and between organisms and between organisms and their environment.</p>
<p><b>Structures and Functions:</b> 2. Identify the structures in plants (leaves, roots, flowers, stem, bark, wood) that are responsible for food production, support, water transport, reproduction, growth, and protection.</p>	<p><b>Changes in Ecosystems Over Time:</b> 17 Identify ways in which ecosystems have changed throughout geologic time in response to physical conditions, interactions among organisms, and the actions of humans. Describe how changes may be catastrophes such as volcanic eruptions or ice storms.</p>	<p><b>Ecology</b> 6.2 Analyze changes in population size and biodiversity (speciation and extinction) that result from the following: natural causes, changes in climate, human activity, and the introduction of invasive, non-native species.</p>
<b>Grades 3-5 Life Science (Biology) Continued</b>		
<p><b>Structures and Functions:</b> 3. Recognize that plants and animals go through predictable life cycles that include birth, growth, development, reproduction, and death.</p>		
<p><b>Adaptations of Living Things:</b> 7. Give examples of how changes in the environment (drought, cold) have caused some plants and animals to die or move to new locations (migration).</p>		
<p><b>Adaptations of Living Things:</b> 9. Recognize plant behaviors, such as the way seedlings’ stems grow toward light and their roots grow downward in response to gravity. Recognize that many plants and animals can survive harsh environments because of seasonal behaviors, e.g., in winter, some animals hibernate, and other animals migrate.</p>		
<p><b>Adaptations of Living Things:</b> 10. Give examples of how organisms can cause changes in their environment to ensure survival. Explain how some of these changes may affect the ecosystem.</p>		