EPSD Curriculum and HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE

GRADE 7

EPSD Unit 7: Interdependent Relationships in Ecosystems (part I)
Fourth Marking Period

<table>
<tr><td rowspan="4">Overview: Students build on their understandings of the transfer of matter and energy as they study patterns of interactions among organisms within an ecosystem. They consider biotic and abiotic factors in an ecosystem and the effects these factors have on a population. They construct explanations for the interactions in ecosystems and the scientific, economic, political, and social justifications used in making decisions about maintaining biodiversity in ecosystems. The crosscutting concept of stability and change provide a framework for understanding the disciplinary core ideas.

This unit includes a two-stage engineering design process. Students first evaluate different engineering ideas that have been proposed using a systematic method, such as a tradeoff matrix, to determine which solutions are most promising. They then test different solutions and combine the best ideas into a new solution that may be better than any of the preliminary ideas. Students demonstrate grade appropriate proficiency in asking questions, designing solutions, engaging in argument from evidence, developing and using models, and designing solutions. Students are</td><td colspan="3">HMH Science Dimensions Program Resources Module C</td></tr>
<tr><td colspan="3">Unit 2: Relationships in Ecosystems
Unit Video (coyote walking through the desert); Why it Matters p. 66; Unit Starter p. 67; Unit Project p. 67I; Unit Review pp 121-124; Vocabulary p. 67G; Unit Connections p. 120; Unit Performance Task pp. 125-126</td></tr>
<tr><td colspan="3">Standard for all Units: (D) Interactive Multilingual Glossary; (D/P) Unit Pretest; (D) Lesson Quizzes; (D/P) Unit Test

Note: Refer to the Curriculum Alignment Common Language (CACL) Guide to decipher acronyms.</td></tr>
<tr><td>Lesson 1: Parts of an Ecosystem pp. 68-73

D/P- WIM Questions p.66

D/P- CYEI (digital picture) How is your schoolyard similar to this tundra ecosystem? p. 69

P- ENB (prompt) Gather evidence to explain how</td><td>Lesson 2: Resources Availability in Ecosystems pp. 84-101

D/P- WIM Questions p.66

D/P- CYEI (video) How does a wildfire affect resources and populations in a forest? p. 85</td><td>Lesson 3: Patterns of Interaction pp. 102-119

D/P- WIM Questions p.66

D/P- CYEI (digital pictures) How could a devastating drought lead to a population increase in coyotes? p. 103</td></tr>
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also expected to use these practices to demonstrate understanding of the core ideas.		your schoolyard is similar to a tundra ecosystem. p. 69 P- CER Students record in their journals (and discuss) how a growing chick relies upon living and nonliving parts of an ecosystem for survival. Students use evidence to support claims. p. 70 P- ENB (prompt) Explain whether or not your schoolyard is an ecosystem. p. 46 P- LS Identify Relationships: Create a flow chart that shows the interactions among the living and nonliving factors related to prairie dogs. p. 72 P- ENB (prompt) How do the levels of organization in the tundra ecosystem relate to the levels of organization in your schoolyard? p. 75	P- ENB (prompt) Gather evidence to help explain how a wildfire affects resources and populations in a forest ecosystem. p. 85 D/P- Relating Resource Availability to Growth (Students go online to record observations for plant images and identify the amounts of water that best describes the current state of plants.) p. 86 D/P- Population Size and Resource Availability (Students go online to explore the relationship between resource availability and population size on a graph.) p. 87 P- ENB (prompt) Think about organisms that live in a forest. What resources do they need for survival? Students record evidence in their ENB. p. 89 D/P- ENGIT Control Population Growth	P- ENB (prompt) Gather evidence to help explain how a severe drought could cause an increase in a coyote population. p. 103 D/P- Analyzing Feeding Relationships (Students take a closer look online and examine animal behavior and learn more about animals' feeding relationships.) pp. 104-104 D/P- HOL Activity Simulate Feeding Relationships (Students use graphical evidence from a simulation to analyze patterns of change in three populations due to seasonal change and unexpected events.) pp. 106-107 P- ENB (prompt) What does a population of coyotes need in order to increase in size? How might a drought help fulfill the need? Students record evidence. p. 108
Standards: (MS-LS2-4) Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. (MS-LS2-5) Evaluate competing design solutions for maintaining biodiversity and ecosystem services. (MS-ETS1-1) Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. (MS-ETS1-3) Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	**Instructional Days:** 30-35			

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Objectives: Students will: Construct an argument to support or refute an explanation for the changes to populations in an ecosystem caused by disruptions to a physical or biological component of that ecosystem. Create design criteria for design solutions for maintaining biodiversity and ecosystem services. **Topics:** Renewable Resources; Environmental Issues; Biodiversity; and Twenty-First Century Themes and Skills (TFCTS) to include: The Four C's, Life and Career Skills, Information and Media literacy, Global Awareness, and Environmental Literacy **Essential Questions**: What happens to ecosystems when the environment changes? How can a single change to an ecosystem disrupt the whole system? What limits the number and variety of living things in an ecosystem?	D/P- HOL Activity Investigate Your Schoolyard p. 77 P- ENB (prompt) What factors did you observe in your schoolyard that might be similar to factors in the tundra ecosystem? p. 77 D/P- DTM Analyze Population Density: how leaf liter impacts the poison dart frog population p. 78 D/P- ENGIT Propose a solution for how the ecosystem might be restored. p. 78 D/P- TIF (enrich) People in Science: Dr. Kenneth Krysko, Wildlife Ecologist pp. 79-80 D- Hands-On Labs; Biome Guided Research; Propose Your Own Path D/P- Lesson Self Check pp. 81-83 D- Lesson Quiz D-Make Your Own Study Guide	(Students identify ways to decrease the mosquito population to prevent the spread of a variety of diseases.) p. 89 D/P- Predicting Effects of Limited Resources (Students watch video of turtles competing for a sunny spot on a rock and explore online to learn more about the effects of limited resources.) p. 90 D/P- HOL Activity Investigate Effects of Limited Resources (Students plan and carry out an investigation to test a self-generated hypothesis about the relationship between limiting factors and plant growth.) p. 91 D/P- Limited Abiotic Resources (Students use drawing tools to examine how a limitation in abiotic resources, such as light, can be a limiting factor in an ecosystem.) p. 92 D/P- Limited Biotic Resources (Students go online to complete the	D/P- DTM Analyze Relationships (Students analyze a graph of a predator/prey interaction over time in an ecosystem.) p. 108 D/P- Symbiotic Relationships (Students explore online examples of symbiosis to discover how organisms are affected by different relationships.) pp. 109-110 D/P- Parasitism: Act (Students work in pairs to act out a symbiotic relationship while their classmates guess the type of interaction; students then record a brief description of the different symbiotic interactions presented. Student partners also explain how their presentation modeled a pattern of symbiosis.) p. 111 D/P- Predicting Effects of Competitive Interactions (Students work with a partner to brainstorm a list of resources that

	P- DI (ELL/RTI) p. 67G P- Extension p. 67H P- COLLAB p. 67H P- Connections to Other Disciplines p. 67H D-Science Safety HB D- CCC-HB D- ELA-HB D-M-HB D- SEP-HB D-ScienceSaurus Reference HB D- VBP The Producers of Florida Bay (video investigates ecosystems in Florida Bay)	digital matching activity that consists of matching each change in resource availability with its effect.) p. 93 P- ENB (prompt) Students think about the abiotic and biotic resources that may become limited after a wildfire and identify how individual organisms and populations would be affected. Student record evidence in their ENB. p. 93 D/P- Predicting Effects of Abundant Resources: Algal Bloom Caused by Nutrient Abundance (Students explore online the aerial photographs of a body of water that shows a typical state and an algal bloom and discuss factors that might limit the population growth of algae in an algal bloom.) p. 94 D/P- DTM Analyze Population Growth Data (Students analyze graphical data to develop arguments for why the deer population increased	populations might compete for in an ecosystem and choose one resource from their list to consider what evidence might they gather to determine whether two populations would compete for the resource.) p. 111 D/P- Competition for Resources (Students use what they have learned about competition to complete the cause-and-effect table.) p. 113 D/P- LS Explain Evidence of Competition (Students read text and observe the anoles below to answer questions related to the text.) p. 113 P- ENB (prompt) Explain how a drought might change a coyote's normal feeding habits What effect could the change have on competition? Students record evidence in their ENB. p. 114 D/P- ENGIT Use Competition to Control Population Size (Students

		or decreased during a time period.) p. 95 D/P- LS Analyze an Abundant Resource (Students use terms in the box to label the cause-and-effect diagram.) p. 96 D/P- TIF (enrich) Analyzing Types of Population Growth pp. 97-98 D- Hands-On Labs; Monarch Butterfly Survival; Propose Your Own Path D/P- Lesson Self Check pp. 99-101 D- Lesson Quiz D-Make Your Own Study Guide P- DI (ELL/RTI) p. 67G P- Extension p. 67H P- COLLAB p. 67H P- Connections to Other Disciplines p. 67H D-Science Safety HB D- CCC-HB D- ELA-HB D-M-HB D-SEP-HB	use their knowledge of competition to predict which solution will allow native species to outcompete Asian carp.) p. 114 D/P- TIF (enrich) Environmental Changes and Interactions pp. 115-116 D- Hands-On Labs; Cleaning Symbiosis; Propose Your Own Path D/P- Lesson Self Check pp. 117-119 D- Lesson Quiz D-Make Your Own Study Guide P- DI (ELL/RTI) p. 67G P- Extension p. 67H P- COLLAB p. 67H P- Connections to Other Disciplines p. 67H D-Science Safety HB D- CCC-HB D- ELA-HB D-M-HB D- SEP-HB

		D-ScienceSaurus Reference HB D- VL Changes in Ecosystem D- VL Competing for Resources (Students investigate how various species in an ecosystem interact with each other when competing for the same resources.)	D-ScienceSaurus Reference HB D- VBP The Producers of Florida Bay (video investigates ecosystems in Florida Bay)

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Curriculum Alignment Common Language (CACL) Guide 6-8		
Acronym	**Word/Phrase**	**Description**
CER	Claims Evidence Reasoning	Students make a claim and gather evidence along the way (during EXPLORATORY activities) to support claim.
CCC-HB	Crosscutting Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
CYEI	Can You Explain It	Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson.
CYSI	Can You Solve It	Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson.
D	Digital	Program resources and features in interactive digital form.
DI (ELL/RTI) **Extension** **COLLAB** **Connections to Other Disciplines**	Differentiated Instruction (English Language Learner/Response to Intervention) Collaboration Connections to Other Disciplines	A page that lists all learning activities used to differentiate learning, engage students in collaborative activities and connect learning to other subjects.
DTM	Do the Math	Integrated subject learning.
ENB	Evidence Notebook	Student notebook or journal used to gather evidence during EXPLORATORY learning activities to support their claims.
ENGIT	Engineer It	Integrated subject learning.
ELA-HB	English Language Arts Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
HOL	Hands-On Lab	Activities or experiments that enable students to demonstrate scientific procedures and analysis.
LS	Language SmArts	Integrated subject learning.

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M-HB	Math Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
P	Print	Program resources and features in print form.
SEP-HB	Science and Engineer Practices Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
TIF	Take It Further (enrich)	Enrichment activities for students in digital or print.
VBP	Video Based Project	Real life videos related to science and/or engineering that enable students to demonstrate mastery of performance expectations.
VL	Virtual Lab	Fully interactive simulations in which students perform experiments, collect data and answer questions.
WIM	Why It Matters	Questions related to lessons within each unit that asks students to consider how science affects the world around them.
YSI	You Solve It (Simulation)	Open-ended simulation-based learning with multiple answer options.