Columbus County Schools
8th Grade Science Curriculum Guide

SUBJECT: Science	**GRADE LEVEL:** 8th	**GRADING PERIOD:** 1st – 2nd nine weeks
Module(s): D: Ecology and the Environment	Time Frame: 23 days **Dates: Oct.7th- Nov.8th**	**Unit: 2 Ecology and the Environment**

Essential Standard:

8. L.3: Understand how organisms interact with and respond to the biotic and abiotic components of their environment.

8. L.5: Understand the composition of various substances as it relates to their ability to serve as a source of energy and building materials for growth and repair of organisms.

Lessons:	Technology and Literacy Standards and Tasks	Academic Vocabulary:	Assessment(s):	Additional Resources:
Lesson Name: **Ecosystems and Interactions Within** **Clarifying Objective:** **8. L.3.1:** Explain how factors such as food, water, shelter and space affect populations in an ecosystem. **8.L.3.2:** Summarize the relationships among producers, consumers and decomposers including the positive and negative consequences of such interactions including: ✯ Coexistence and cooperation ✯ Competition(predator/prey) ✯ Parasitism ✯ Mutualism Time Frame: **10 days** Dates:**Oct.7th-Oct. 18th**	CCSS.ELA-Literacy.RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts. CCSS.ELA-Literacy.RST.6-8.2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. CCSS.ELA-Literacy.RST.6-8.5 Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic. CCSS.ELA-Literacy.RST.6-8.6	✯ population ✯ producer ✯ consumer ✯ decomposer ✯ coexistence ✯ cooperation ✯ competition ✯ predator ✯ prey ✯ parasitism ✯ mutualism ✯ oxidize ✯ thermal ✯ habitat ✯ matter ✯ energy ✯ niche ✯ biotic ✯ abiotic ✯ internal ✯ external ✯ structure ✯ fertile	**Formative:** ✯ Quizzes ✯ Cooperative Activities ✯ Labs, Science Notebook ✯ Foldables ✯ Word Maps (graphic organizers) ✯ Bell Ringer/Exit Tickets **Science Formative Assessment 75 practical strategies** ✯ Card sorts p.56 ✯ Annotated student drawings p.53 ✯ First word/last word p. 89-91 ✯ K/W/L variations p.128	✯ Science Fusion: D Ecology and the environment-Unit 1, lesson 1-4, pages 12-68. ✯ North Carolina End of Grade Coach (2013): Chapter 5 ✯ Passing the North Carolina EOG Science American Book Company: Chapter 8 ✯ McDougal Littell Science Grade 8: Unit B: Chapter 3 ✯ McDougal Littell Science Grade 6: Unit D: Chapter 2 ✯ NCDPI Curriculum Unit Grade 6 "Population Dynamics" ✯ Project Learning Tree Manual: Activity 7, 22, 23, 24, 26, 29 **Project Wild Aquatic:** ✯ "Water We Eating" p. 83 ✯ "Marsh Munchers" p. 35 ✯ Project Wild:

Essential Question: ✯ How do specific factors affect populations in an ecosystem? ✯ ✯ What are the relationships that can occur between and among organisms in an ecosystem? ✯ ✯ Explain and evaluate the positive and negative relationships between organisms within an ecosystem. **STUDENT "I CAN" STATEMENTS** ✯ I can differentiate between biotic and abiotic factors. ✯ I can identify factors that influence organisms. ✯ I can identify producers, consumers, and decomposers in a food chain or web. ✯ I can explain how organisms are affected by symbiotic relationships. ✯ I can give examples of symbiotic relationships. ✯ I can illustrate how energy flows from the sun to producers to consumers to decomposers.	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text. 8. SI.1: Research relevant topics, use graphic organizers, and evaluate the validity of non-fiction science resources both online and in text. **Activity: Write to Learn** **Science 6 6.1 How are organisms on Earth connected?** **Science 5 5.1 What is an ecosystem?**	✯ scavenger ✯ terrestrial ✯ aquatic/marine ✯ fresh water ✯ salt water ✯ food webs ✯ symbiotic ✯ commensalism ✯ ecosystem ✯ nutrients	**Uncovering student ideas in science. Vol. 1 (Keeley)** ✯ Is it living? p.123 **Uncovering student ideas in science. Vol. 3 (Keeley)** ✯ Is it a plant? P.93 ✯ Needs of seeds. P.102 ✯ Is it food for plants? P.113 **Summative:** ✯ Projects (with rubrics: Powerpoint/Flipchart, Animoto, Prezi, brochures, WebQuests, internet based research assignments ✯ ClassScape: Classroom based and County Benchmark ✯ Chapter and Unit tests(Science fusion Test bank)	✯ "Habitat Rummy" p.14 ✯ "How Many Bears Can Live in this Forest" p. 23 ✯ "Oh Deer" p.36 ✯ "Carrying Capacity" p. 46 ✯ "Habitat Lap Sit" p.61 ✯ "Good Buddies" p.91 ✯ "Muskox Maneuvers" p. 130 ✯ "Ecosystem Facelift" p. 166 ✯ "Shrinking Habitats" p. 310 ✯ "Hazardous Links, Possible Solutions" p. 326

Lesson Name: **The Web of Life** **Clarifying Objective:** **8. L.3.3:** Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide and oxygen). **8. L.5.1**: Summarize how food provides the energy and the molecules required for building materials, growth and survival of all organisms to include plants. Time Frame:**14 days** Dates: **Oct. 21st-Nov.8th** Essential Question: ✯ How is the flow of energy connected to the cycling of matter within an ecosystem? ✯ How are structure and function of cells related? ✯ How does food provide the energy needed to ensure growth and survival of all organisms?	L.2: Summarizing activities and identify processes that lead to a logical conclusion. L.6: Use of articles, journals, and leveled readers from various authors that focus on nonfiction science texts. L.7: Translate text evidence into graphic organizers. 8. SI.1: Research relevant topics, use graphic organizers, and evaluate the validity of non-fiction science resources both online and in text. **Activity: Write to Learn** **Science 5 5.1 What is an ecosystem?**	✯ condensation ✯ transpiration ✯ evaporation ✯ precipitation ✯ food chain ✯ cycle ✯ convert ✯ accumulate ✯ fertilizer ✯ herbivore ✯ carnivore ✯ omnivore ✯ photosynthesis ✯ ecologist ✯ autotrophic ✯ heterotrophic ✯ cell ✯ thermal energy ✯ unicellular ✯ multicellular ✯ mitosis ✯ meiosis ✯ cell membrane ✯ permeable ✯ prokaryotic ✯ eukaryotic ✯ organelles	**Formative:** ✯ Quizzes ✯ Cooperative Activities ✯ Labs, Science Notebook, Foldables ✯ Word Maps (graphic organizers) ✯ Bell Ringer/Exit Tickets **Uncovering student ideas in science. Vol. 3 (Keeley)** ✯ Is it a plant? P.93 ✯ Needs of seeds. P.102 ✯ Is it food for plants? P.113 **Summative:** ✯ Projects (with rubrics: Powerpoint/Flipchart, Animoto, Prezi, brochures, WebQuests, internet based research assignments ✯ ClassScape: Classroom based and County Benchmark	✯ Science Fusion: D Ecology and the environment- ✯ McDougal Littell Science Grade 8: ✯ Unit E: Chapter 2 ✯ McDougal Littell Science Grade 8: ✯ Unit E: Chapter 3 ✯ McDougal Littell Science Grade 8: ✯ Unit E: Chapter 1 ✯ Unit D: Chapter 5 ✯ NCDPI Curriculum Unit Grade 6 “Ecosystem Interactions” ✯ Passing the North Carolina EOG Science (American Book Company): Chapters 21, 23, 24 ✯ North Carolina End of Grade Coach (2013): Chapter 3, 5 ✯ Project Learning Tree: Activity 45 ✯ Project Wild Aquatic: ✯ “Water We Eating” p. 83 ✯ “Marsh Munchers” p. 35

STUDENT "I CAN" STATEMENTS ✯ I can explain how an aquatic food chain and a terrestrial food chain can be interconnected. ✯ I can illustrate a food chain. ✯ I can differentiate between a food web and a food chain. ✯ I can explain the processes involved in the nitrogen cycle. ✯ I can illustrate the carbon cycle. ✯ I can summarize how food provides energy to organisms. ✯ I can describe how glucose is used for building cellular structures. ✯ I can match major cellular structures with their functions. ✯ I can identify organic compounds and their use for growth and survival.			✯ Chapter and Unit tests(Science fusion Test bank)	

Day 1 **Lesson: Ecosystems and Interactions Within** **Essential Question:** How are different parts of the environment connected?	**Day 2** **Lesson: Ecosystems and Interactions Within** **Essential Question:** How are different parts of the environment connected?	**Day 3** **Lesson: Ecosystems and Interactions Within** **Essential Question:** How are different parts of the environment connected?	**Day 4** **Lesson: Ecosystems and Interactions Within** **Essential Question:** How are different parts of the environment connected?	**Day 5** **Lesson: Ecosystems and Interactions Within** **Essential Question:** How are different parts of the environment connected?
Clarifying Objective: **8. L.3.1:** Explain how factors such as food, water, shelter and space affect populations in an ecosystem. **Academic Vocabulary:** ecology population ecosystem niche biotic factor abiotic factor species community habitat	**Clarifying Objective:** **8. L.3.1:** Explain how factors such as food, water, shelter and space affect populations in an ecosystem. **Academic Vocabulary:** ecology population ecosystem niche biotic factor abiotic factor species community habitat	**Clarifying Objective:** **8. L.3.1:** Explain how factors such as food, water, shelter and space affect populations in an ecosystem. **Academic Vocabulary:** ecology population ecosystem niche biotic factor abiotic factor species community habitat	**Clarifying Objective:** **8. L.3.1:** Explain how factors such as food, water, shelter and space affect populations in an ecosystem. **Academic Vocabulary:** ecology population ecosystem niche biotic factor abiotic factor species community habitat	**Clarifying Objective:** **8. L.3.1:** Explain how factors such as food, water, shelter and space affect populations in an ecosystem. **Academic Vocabulary:** ecology population ecosystem niche biotic factor abiotic factor species community habitat
Bell Ringer: First Word: Ecosystems. Students will fill in the acrostic to tell what they know about ecosystems. **Instructional Tasks:** Use Science Fusion (Module D- Ecology and the Environment)	**Bell Ringer:** Recognizing Relationships: Think Pair Share TE pg. 14 **Instructional Tasks:** -Continue/finish day 1 lesson -Vocabulary activity on	**Bell Ringer:** Vocabulary Matching: picture, definition and term! **Instructional Tasks:** Options: -Virtual Lab: Classifying Biomes (Individual or as a group)	**Bell Ringer:** Building Reading Skills: Suffixes (pg. 27 TE) **Instructional Tasks:** (Group or Pairs) Project on Ecosystems…3 choices- use TE pg. 26	**Bell Ringer:** Visual Summary pg.25 TE Answer questions #19-22 **Instructional Tasks:** Finish Project on Ecosystems TE pg. 26 (People in Science:

Pg. 20-25 Options: -Read Lesson 1 pg. 4-14 -Text Walk with skeletal notes -Digital Lesson with skeletal notes **Summarizer:** Compare and contrast the terms biotic and abiotic factors.	Intro to Ecology (use any strategy you like: ex- Frayer model, word triangle) **Summarizer:** Why might an organism's habitat change at different stages of its life? Give an example to support your answer.	Teachers may make a worksheet that displays each question from the digital lesson. Then review answers together as a group! **Summarizer:** 3-2-1 on Virtual Lab -3 things you liked, 2 new ideas you learned, 1 question you have.	(People in Science: Differentiated Instruction options- basic, advanced, ELL) Burmese Pythons, Invasive Species, Snakes **Summarizer:** none	Differentiated Instruction options- basic, advanced, ELL) **Summarizer:** What new information about ecosystems and/or invasive species did you learn from completing this project?
Assessment: Observation	**Assessment:** Observation	**Assessment:** Graded Assignment	**Assessment:** Observation and Participation	**Assessment:** Project Product

Day 6	Day 7	Day 8	Day 9	Day 10
Lesson: Ecosystems and Interactions Within **Essential Question:** How does energy flow through an ecosystem?	**Lesson: Ecosystems and Interactions Within**	**Lesson: Ecosystems and Interactions Within**	**Lesson: Ecosystems and Interactions Within**	**Lesson: Ecosystems and Interactions Within**
Clarifying Objective: **8. L.3.1:** Explain how factors such as food, water, shelter and space affect populations in an ecosystem. **Academic Vocabulary:** ecology population ecosystem niche biotic factor abiotic factor species community habitat	**Clarifying Objective:** **8.L.3.2:** Summarize the relationships among producers, consumers and decomposers including the positive and negative consequences of such interactions including: • Coexistence and cooperation • Competition • (predator/prey) • Parasitism • Mutualism 8.L.3.3 Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide, and oxygen). **Academic Vocabulary:** Producer, consumer, carnivore, omnivore, herbivore, decomposer, food chain, food, web	**Clarifying Objective:** **8.L.3.2:** Summarize the relationships among producers, consumers and decomposers including the positive and negative consequences of such interactions including: • Coexistence and cooperation • Competition • (predator/prey) • Parasitism • Mutualism 8.L.3.3 Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide, and oxygen). **Academic Vocabulary:** Producer, consumer, carnivore, omnivore, herbivore, decomposer, food chain, food, web	**Clarifying Objective:** **8.L.3.2:** Summarize the relationships among producers, consumers and decomposers including the positive and negative consequences of such interactions including: • Coexistence and cooperation • Competition • (predator/prey) • Parasitism • Mutualism 8.L.3.3 Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide, and oxygen). **Academic Vocabulary:** Producer, consumer, carnivore, omnivore, herbivore, decomposer, food chain, food, web	**Clarifying Objective:** **8.L.3.2:** Summarize the relationships among producers, consumers and decomposers including the positive and negative consequences of such interactions including: • Coexistence and cooperation • Competition • (predator/prey) • Parasitism • Mutualism 8.L.3.3 Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide, and oxygen). **Academic Vocabulary:** Producer, consumer, carnivore, omnivore, herbivore, decomposer, food chain, food, web

Bell Ringer: Reteach- Pg 19 Module D This is the opportunity to reteach a concept the students did not grasp. **Instructional Tasks:** Use Science Fusion (Module D- Ecology and the Environment) Pg. 30-41 Options: -Quiz/ Test -Project Wild- Habitat Rummy pg 14. This activity helps understand the interdependence of shelter, water, and food. `Project Wild- My Kingdom for a Shelter pg 28. -Project Wild- Habitat Lap Sit pg 61 **-WTL**-Science 6 6.1 How are organisms on Earth connected? -WTL- Science 4 10-2 How are resources used for energy? -WTL- Science 4 4.1 How do ecosystems balance? All of these options, except for the quiz, will take up to two days to complete. **Summarizer:** The summarizer will depend on the choice of activity. If a Project Wild activity is chosen, the book has optional summarizers	**Bell Ringer:** How do plants and animals differ in the ways they interact with biotic and abiotic factors to meet the basic need of food? (Plants rely on abiotic factors for their food because plants make their food through photosynthesis, which requires sunlight, carbon dioxide, and water. Animals rely on biotic factors such as predation and other feeding relationships between living organisms for their food.) **Instructional Tasks:** -Continue/finish day 1 lesson of choice. The summarizer will depend on the choice of activity. If a Project Wild activity is chosen, the book has optional summarizers for each activity. **Summarizer:** The summarizer will depend on the choice of activity. If a Project Wild activity is chosen, the book has optional summarizers for each activity.	**Bell Ringer:** Write down as many abiotic and biotic factors you can think of in our environment. Option 2- Quick Lab- Energy Role Game Pg 31 Module D Unit 1 Lesson 2 **Instructional Tasks:** Use Science Fusion (Module D- Ecology and the Environment) Pg. 31-41 Options: -Read Lesson 2 pg. 18-29 (students edition) -Text Walk with skeletal notes and matching powerpoint -Digital Lesson with skeletal notes **Summarizer:** Students will use a triple Venn diagram to compare and contrast consumer, producer, and decomposer. ****Take it home Homework sheet can be found under student resources.**	**Bell Ringer:** How does the environment determine where an organism can survive? Explain your answer. (an organism lives there because it can survive under the temperature and precipitation in that environment) Option 2- Classifying Organisms by Feeding Habitats Science Fusion pg 33 **Instructional Tasks:** **-**Continue/finish day 1 lesson -Vocabulary activity on Roles in Energy Transfer (use any strategy you like: ex- Frayer model, word triangle, foldable) Card Sort- Found in teacher resources- vocabulary strategies. Word Splash- Found in teacher resources- vocabulary strategies. **Summarizer:** First Word: Ecosystems. Students will fill in the acrostic to tell what they know about ecosystems. Review Take it home homework.	**Bell Ringer:** How do organisms get the energy they need for growth and other activities? (through respiration, organisms break down food to release energy) Option 2- Daily Demo- Let it Rot pg 31 Module D Unit 1 Lesson 2 **Instructional Tasks:** Options: -Students can take a "book walk" through the lesson. Each page of the student book has questions they will answer after reading each section. If using laptops, the program will read to the student. If laptops are not available, you can make a class set of the lesson for students to use. -Digital Lesson with skeletal notes **Summarizer:** Think-Pair- Share the answers to their book walk. Move and Shake it line- students will face each other in a conga line. Students will face each other. The person they are facing will be the person they share their first answer with. They will receive 1 minute to discuss

for each activity.				their answers and any differences they may have had with each other's answers. Once the minute is up, a student from one side of the line can conga down the middle until they reach the end of the line. Now students will share the answer to the next question with the person they are facing. *Make sure only one side of the line dances through the middle or the students will keep lining up on front of the same person.
Assessment: Observation/ WTL	**Assessment:** Observation, WTL	**Assessment:** Observation	**Assessment:** summarizer, observation	**Assessment:** summarizer, observation

Day 11	Day 12	Day 13	Day 14	Day 15
Lesson: **Population Dynamics** **Essential Question:** What determines a population's size?	**Lesson:** **Population Dynamics** **Essential Question:** What determines a population's size?	**Lesson:** **Population Dynamics** **Essential Question:** What determines a population's size?	**Lesson: Population Dynamics** **Essential Question:** What determines a population's size?	**Lesson: Population Dynamics** **Essential Question:** What determines a population's size?
Clarifying Objective: **8.L.3.2:** Summarize the relationships among producers, consumers and decomposers including the positive and negative consequences of such interactions including: • Coexistence and cooperation • Competition • (predator/prey) • Parasitism • Mutualism 8.L.3.3 Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide, and oxygen). **Academic Vocabulary:** Producer, consumer, carnivore, omnivore, herbivore, decomposer, food chain, food, web	**Clarifying Objective:** **8.L.3.2:** Summarize the relationships among producers, consumers and decomposers including the positive and negative consequences of such interactions including: • Coexistence and cooperation • Competition • (predator/prey) • Parasitism • Mutualism 8.L.3.3 Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide, and oxygen). **Academic Vocabulary:** Carrying capacity, limiting factor, immigration, competition, emigration, cooperation	**Clarifying Objective:** **8.L.3.2:** Summarize the relationships among producers, consumers and decomposers including the positive and negative consequences of such interactions including: • Coexistence and cooperation • Competition • (predator/prey) • Parasitism • Mutualism 8.L.3.3 Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide, and oxygen). **Academic Vocabulary:** Carrying capacity, limiting factor, immigration, competition, emigration, cooperation	**Clarifying Objective:** **8.L.3.2:** Summarize the relationships among producers, consumers and decomposers including the positive and negative consequences of such interactions including: • Coexistence and cooperation • Competition • (predator/prey) • Parasitism • Mutualism 8.L.3.3 Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide, and oxygen). **Academic Vocabulary:** Carrying capacity, limiting factor, immigration, competition, emigration, cooperation	**Clarifying Objective:** **8.L.3.2:** Summarize the relationships among producers, consumers and decomposers including the positive and negative consequences of such interactions including: • Coexistence and cooperation • Competition • (predator/prey) • Parasitism • Mutualism 8.L.3.3 Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide, and oxygen). **Academic Vocabulary:** Carrying capacity, limiting factor, immigration, competition, emigration, cooperation
Bell Ringer: What is the relationship between food chains and food webs? (food chains	**Bell Ringer:** Probing questions- The Local Population pg 44. These three questions will	**Bell Ringer:** Quick Lab- Investigate an Abiotic Limiting Factor pg 45 Science Fusion	**Bell Ringer:** What factors can increase or decrease the size of a population? (Births, deaths,	**Bell Ringer:** Quick Lab- What Factors Influence a Population Change? Pg 45 Science

show the transfer of energy from one organism to the other. Food webs show the transfer of energy through an overlapping food chain. **Instructional Tasks:** **One Day Options-** **-**Lesson Review pg 29 Module D -Quiz/ Test -Project Wild-Career Critters pg 371 Bill Nye Video- Food Webs found on youtube Two day options- -Project Wild- Move Over Rover pg 144 Holiday Option for Thanksgiving- Project Wild- Let's Talk Turkey pg 248 **Summarizer:** The summarizer will depend on the choice of activity. If a Project Wild activity is chosen, the book has optional summarizers for each activity.	be great for an activation activity. **Instructional Tasks:** Use Science Fusion (Module D- Ecology and the Environment) Pg. 44-55 Options: -Read Lesson 3- Population Dynamics pg. 30-40 (students edition) -Powerpoint with skeletal notes -Digital Lesson with skeletal notes **Summarizer:** 3-2-1 on Virtual Lab -3 things you liked, 2 new ideas you learned, 1 question you have.	Option 2- Daily Demo- When the Going Gets Tough pg 45 Science Fusion **Instructional Tasks:** -Continue/finish day 1 lesson -Vocabulary activity on Population Dynamics Magnet Word- pg 47 Card Sort- Found in teacher resources- vocabulary strategies. Word Splash- Found in teacher resources- vocabulary strategies. (use any strategy you like: ex- Frayer model, word triangle, foldable) Science Fusion **Summarizer:** Card Sort and Word Splash can be used as summarizer.	immigration, emigration, food availability, temperature, predation, disease, natural disasters, and weather conditions.) **Instructional Tasks:** Options: -Students can take a "book walk" through the lesson. Each page of the student book has questions they will answer after reading each section. If using laptops, the program will read to the student. If laptops are not available, you can make a class set of the lesson for students to use. -Digital Lesson with skeletal notes **Summarizer:** What is the difference between immigration and emigration?	Fusion **Instructional Tasks:** Options- Exploration Lab- How Do Populations Interact? Pg 45. Worksheet that accompanies this lesson can be found on Lesson Inquiry Resources Unit 1 Lesson 3. Or choose an option from the previous three days that has not been completed. **Summarizer:** Think-Pair- Share the answers to their exploration lab. Move and Shake it line- students will face each other in a conga line. Students will face each other. The person they are facing will be the person they share their first answer with. They will receive 1 minute to discuss their answers and any differences they may have had with each other's answers. Once the minute is up, a student from one side of the line can conga down the middle until they reach the end of the line. Now students will share the answer to the next

				question with the person they are facing. *Make sure only one side of the line dances through the middle or the students will keep lining up on front of the same person.
Assessment: Observation/ Lesson Review/ summarizer	**Assessment:** Observation	**Assessment:** summarizer, observation	**Assessment:** summarizer, observation	**Assessment:** Exploration Lab