



UNIT 3

INTERDEPENDENT RELATIONSHIPS IN ECOSYSTEMS



## Unit 3: Interdependent Relationships in Ecosystems

**9 weeks**

In this unit, students focus on understanding how plants and animals rely on their environment and when that environment changes, plants and animals must respond and adapt to those changes. Changes to an environment can affect the physical characteristics, temperature, or availability of resources within that habitat. Thus, organisms will adapt to or survive in the transformed environment; they will migrate or move to new locations; or they will not be able to survive in the environment and die. The health of an environment depends on the variety or different number of species in the environment. Students will analyze what happens to habitats when changes affect its interactions. Students will understand why animals need social interactions and often form groups to obtain food, provide defense for survival, and/or provide support during times of change.

Students will investigate and understand needs, characteristics, and interactions of the organisms within habitats. Throughout this unit of study, students will use evidence to construct arguments regarding why some animals form groups for survival, and why some organisms survive in particular habitats, while others may struggle or not survive at all. They will also investigate solutions to problems caused when an environment changes and evaluate the merit of these solutions.

Students will also use evidence and data from fossils to understand organisms, and their environments, from long ago. They will look at how fossils give us history of life long ago and will compare this evidence to today's plants, animals, and environments. Students will use this evidence to construct arguments about survival within habitats and what happens to organisms when their environment changes.

### Unit 3 Performance Expectations

- ❖ **3-LS2-1 Construct an argument that some animals form groups that help members survive.**  
**AR Clarification Statement:** Examples could include ant colonies, herds of bison, or hives of bees.
- ❖ **3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.**  
**Clarification Statement:** Examples of data could include type, size, and distributions of fossilized organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.  
**Assessment Boundary:** Assessment does not include identification of specific fossils or living plants and animals. Assessment is limited to major fossil types and relative ages.
- ❖ **3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.**  
**AR Clarification Statement:** Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other for survival.
- ❖ **3-LS4-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.\***  
**Clarification Statement:** Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.  
**Assessment Boundary:** Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.



**In Unit 3, students will understand...**

- ❖ Some animals form groups to help members survive (ex: ant colonies, herds of bison, hives of bees)
- ❖ Organisms react differently to changes in their environmental settings. Some survive and reproduce. Some move to new locations or into the changed environment. Some will die.
- ❖ Being part of a group helps animals obtain food, defend themselves, and cope with changes.
- ❖ Animal groups may serve different functions and vary in size.
- ❖ Some types of plants and animals that once lived on Earth are no longer found anywhere.
- ❖ Fossils provide evidence about organisms that lived long ago.
- ❖ Fossils provide evidence about the nature of the environments long ago.
- ❖ Organisms and their habitats make up a system in which the parts depend on each other for survival. (ecosystem)
- ❖ For any particular habitat, some organisms survive well, some don't survive well, and some cannot survive at all.
- ❖ Populations live in a variety of habitats, and changes in those habitats affect the organisms living there.

**Unit 3 Essential Questions:**

- ❖ What happens to organisms when their environment changes?
- ❖ How does being part of a group affect an animal?
- ❖ How are plants, animals, and environments of the past similar or different from current plants, animals, and environments?

**Foundational Knowledge:**

Prior to 3<sup>rd</sup> grade, students should have knowledge, understanding of, and experiences with the following ideas:

- ❖ All animals need food in order to live and grow.
- ❖ Animals obtain their food from plants or from other animals.
- ❖ Plants need water and light to live and grow.
- ❖ Plants and animals can change their environment.
- ❖ Living things need water, air, and resources from the land, and they live in places that have the things they need.
- ❖ There are many different kinds of living things in any area.
- ❖ Living things exist in different places on land and in water.
- ❖ Things that people do to live comfortably can affect the world around them. However, they can make choices to reduce their impacts on the land, water, air, and other living things.

*With the implementation of new standards, students may not have had opportunities to engage in these foundational understandings and ideas before 3<sup>rd</sup> grade. You may need to provide opportunities for students to experience these ideas as you move forward.*



**Unit Vocabulary:**

environment  
ecosystem  
species  
survive/survival  
system

adaptation  
disruption  
fossils  
evidence  
extinct

habitat  
organism  
characteristics  
diversity  
interactions

**Additional Content Connections:**

\*These connections provide opportunities to score to other content standards with focused instruction.

**ELA:**

- ❖ Speaking and Listening
  - SL.3.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
  - SL.3.2 Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
- ❖ Reading Informational
  - RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
- ❖ Writing
  - W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.
  - W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.



**Interdependent Relationships in Ecosystems**

Students who demonstrate understanding can:

**3-LS2-1 Construct an argument that some animals form groups that help members survive.**

**AR Clarification Statement:** Examples could include ant colonies, herds of bison, or hives of bees.

**3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.** Clarification Statement: Examples of data could include type, size, and distributions of fossilized organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms. Assessment Boundary: Assessment does not include identification of specific fossils or living plants and animals.

Assessment is limited to major fossil types and relative ages.

**3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.** AR Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other for survival.

**3-LS4-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.\*** Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms. Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p><b>Analyzing and Interpreting Data</b> Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.</p> <ul style="list-style-type: none"> <li>Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS4-1)</li> </ul> <p><b>Engaging in Argument from Evidence</b> Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds.</p> <ul style="list-style-type: none"> <li>Construct an argument with evidence, data, and/or a model. (3-LS2-1)</li> <li>Construct an argument with evidence. (3-LS4-3)</li> <li>Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3-LS4-4)</li> </ul>	<p><b>LS2.C: Ecosystem Dynamics, Functioning, and Resilience</b></p> <ul style="list-style-type: none"> <li>When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (3-LS4-4)</li> </ul> <p><b>LS2.D: Social Interactions and Group Behavior</b></p> <ul style="list-style-type: none"> <li>Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. (3-LS2-1)</li> </ul> <p><b>LS4.A: Evidence of Common Ancestry and Diversity</b></p> <ul style="list-style-type: none"> <li>Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (3-LS4-1)</li> <li>Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (3-LS4-1)</li> </ul> <p><b>LS4.C: Adaptation</b></p> <ul style="list-style-type: none"> <li>For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)</li> </ul> <p><b>LS4.D: Biodiversity and Humans</b></p> <ul style="list-style-type: none"> <li>Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)</li> </ul>	<p><b>Cause and Effect</b></p> <ul style="list-style-type: none"> <li>Cause and effect relationships are routinely identified and used to explain change. (3-LS2-1, 3-LS4-3)</li> </ul> <p><b>Scale, Proportion, and Quantity</b></p> <ul style="list-style-type: none"> <li>Observable phenomena exist from very short to very long time periods. (3-LS4-1)</li> </ul> <p><b>Systems and System Models</b></p> <ul style="list-style-type: none"> <li>A system can be described in terms of its components and their interactions. (3-LS4-4)</li> </ul> <p>-----</p> <p><b>Connections to Engineering, Technology, and Applications of Science</b></p> <p><b>Interdependence of Science, Engineering, and Technology</b></p> <ul style="list-style-type: none"> <li>Knowledge of relevant scientific concepts and research findings is important in engineering. (3-LS4-4)</li> </ul> <p>-----</p> <p><b>Connections to Nature of Science</b></p> <p><b>Scientific Knowledge Assumes an Order and Consistency in Natural Systems</b></p> <ul style="list-style-type: none"> <li>Science assumes consistent patterns in natural systems. (3-LS4-1)</li> </ul>

