

NEXT GENERATION SCIENCE STANDARDS FOR GRADES 1 – 5

GRADE 1:

Students who demonstrate understanding can:

- 1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. *[bioengineering based on physical animal adaptations]*

LS1.A: Structure and Function

➤ All organisms have **external parts**. Different animals **use their body parts in different ways** to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

LS1.D: Information Processing

➤ Animals have **body parts** that capture and convey different kinds of information needed for growth and **survival**. Animals respond to these inputs with **behaviors that help them survive**. Plants also respond to some external inputs. *[connecting physical to behavioral adaptations]*

- 1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. *[ability to identify behavioral adaptations of animals that help them survive through their development; instinctual behaviors for survival]*

LS1.B: Growth and Development of Organisms

➤ Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in **behaviors that help the offspring to survive**.

- 1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. *[animals have different physical adaptations dependent on stage of development]*

LS3.B: Variation of Traits

> Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. *[physical adaptations differ based on habitat, even if same kind of organism]*

GRADE 2:

Students who demonstrate understanding can:

- 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats. *[compare and contrast adaptations of different animals and connect those with their habitat]*

LS4.D: Biodiversity and Humans

- There are many different kinds of living things in any area, and they exist in different places on land and in water.

GRADE 3:

Students who demonstrate understanding can:

- 3-LS2-1. Construct an argument that some animals form groups that help members survive. *[student will come into contact with schooling fish at the aquarium, notably the cownose stingrays, and see their behavioral adaptation of forming groups for survival].*

LS2.D: Social Interactions and Group Behavior

- 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-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment. *[different habitats and animals will be seen; students will understand that a habitat influences the adaptations needed for the animal to survive]*

LS3.A: Inheritance of Traits

- Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.

LS3.B: Variation of Traits

- The **environment also affects** the traits that an organism develops.

- 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. *[many animals*

seen can only live in the habitat we see them in; students can think critically about how well one animal would survive in the habitat of another]

LS4.C: Adaptation

➤ For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.

- 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. *[Habitat changes inhibit the survival of certain organisms already adapted to the habitat, leading to a change in the community of organisms living there; some animals may leave and some may die out locally]*

LS2.C: Ecosystem Dynamics, Functioning, and Resilience

➤ 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.

LS4.D: Biodiversity and Humans

➤ Populations live in a variety of habitats, and change in those habitats **affects the organisms living there.**

- 3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. *[student will be able to observe animals thriving in their habitats and see that not all of them may look the same or behave the same way, leading to discussion about ability to reproduce]*

LS4.B: Natural Selection

➤ Sometimes the differences in characteristics between individuals of the same species provide advantages in **surviving, finding mates, and reproducing.**

GRADE 4:

Students who can demonstrate understanding can:

- 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. *[all animals at the aquarium have observable external structures that students will be able to identify by both name and function].*

LS1.A: Structure and Function

- Plants and animals both have **internal and external structures** that serve various functions in growth, **survival, behavior**, and reproduction.

GRADE 5:

Students who can demonstrate understanding can:

- 5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. *[habitats on exhibit will have ecosystems in which students can identify the movement of matter and interaction between organisms]*

LS2.A: Interdependent Relationships in Ecosystems

- The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. **Organisms can survive only in environments in which their particular needs are met.** A healthy ecosystem is one in which **multiple species of different types** are each able to meet their needs in a relatively stable web of life. Newly introduced species can **damage the balance of an ecosystem.**