

Sweetbriar Nature Center's
Treasures of the Tropical Rain Forest

NYS Science Core Curriculum Alignment

Elementary Core Curriculum Science (Grades K-4)

Standard 4—The Living Environment

Key Idea 1: Living things are both similar to and different from each other and from nonliving things.

Performance Indicator 1.1

Living things are both similar to and different from each other and from nonliving things.

1.1a Animals need air, water, and food in order to live and thrive.

1.1b Plants require air, water, nutrients, and light in order to live and thrive.

Performance Indicator 1.2

1.2a Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die

Key Idea 2: Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.

Performance Indicator 2.1

Recognize that traits of living things are both inherited and acquired or learned.

2.1a Some traits of living things have been inherited (e.g., color of flowers and number of limbs of animals).

Performance Indicator 2.2

Recognize that for humans and other living things there is genetic continuity between generations.

2.2a Plants and animals closely resemble their parents and other individuals in their species

Key Idea 3: Individual organisms and species change over time.

Performance Indicator 3.1

Describe how the structures of plants and animals complement the environment of the plant or animal.

Understandings:

3.1a Each animal has different structures that serve different functions in growth, survival, and reproduction.

- wings, legs, or fins enable some animals to seek shelter and escape predators

- the mouth, including teeth, jaws, and tongue, enables some animals to eat and drink
- eyes, nose, ears, tongue, and skin of some animals enable the animals to sense their surroundings
- claws, shells, spines, feathers, fur, scales, and color of body covering enable some animals to protect themselves from predators and other environmental conditions, or enable them to obtain food
- some animals have parts that are used to produce sounds and smells to help the animal meet its needs
- the characteristics of some animals change as seasonal conditions change (e.g., fur grows and is shed to help regulate body heat; body fat is a form of stored energy and it changes as the seasons change)

3.1b Each plant has different structures that serve different functions in growth, survival, and reproduction.

- roots help support the plant and take in water and nutrients
- leaves help plants utilize sunlight to make food for the plant
- stems, stalks, trunks, and other similar structures provide support for the plant
- some plants have flowers
- flowers are reproductive structures of plants that produce fruit which contains seeds
- seeds contain stored food that aids in germination and the growth of young plants

3.1c In order to survive in their environment, plants and animals must be adapted to that environment.

- seeds disperse by a plant's own mechanism and/or in a variety of ways that can include wind, water, and animals
- leaf, flower, stem, and root adaptations may include variations in size, shape, thickness, color, smell, and texture
- animal adaptations include coloration for warning or attraction, camouflage, defense mechanisms, movement, hibernation, and migration

Performance Indicator 3.2

Observe that differences within a species may give individuals an advantage in surviving and reproducing.

3.2a Individuals within a species may compete with each other for food, mates, space, water, and shelter in their environment.

3.2b All individuals have variations, and because of these variations, individuals of a species may have an advantage in surviving and reproducing.

Key Idea 5: *Organisms maintain a dynamic equilibrium that sustains life.*

Performance Indicator 5.1

Describe basic life functions of common living specimens (e.g., guppies, mealworms, gerbils)

5.1a All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.

5.1b An organism's external physical features can enable it to carry out life functions in its particular environment.

Performance Indicator 5.2

Describe some survival behaviors of common living specimens.

5.2a Plants respond to changes in their environment. For example, the leaves of some green plants change position as the direction of light changes; the parts of some plants undergo seasonal changes that enable the plant to grow; seeds germinate, and leaves form and grow.

5.2b Animals respond to change in their environment, (e.g., perspiration, heart rate, breathing rate, eye blinking, shivering, and salivating).

5.2c Senses can provide essential information (regarding danger, food, mates, etc.) to animals about their environment.

5.2d Some animals, including humans, move from place to place to meet their needs.

5.2e Particular animal characteristics are influenced by changing environmental conditions including: fat storage in winter, coat thickness in winter, camouflage, shedding of fur.

5.2f Some animal behaviors are influenced by environmental conditions. These behaviors may include nest building, hibernating, hunting, migrating and communicating.

5.2g The health, growth and development of organisms are affected by environmental conditions such as the availability of food, air, water, space, shelter, heat and sunlight.

Key Idea 6: Plants and animals depend on each other and their physical environment.

Performance Indicator 6.1

Describe how plants and animals, including humans, depend upon each other and the nonliving environment.

6.1b All animals depend on plants. Some animals (predators) eat other animals (prey).

6.1c Animals that eat plants for food may in turn become food for other animals. This sequence is called a food chain.

6.1d Decomposers are living things that play a vital role in recycling nutrients.

6.1e An organism's pattern of behavior is related to the nature of that organism's environment, including the kinds and numbers of other organisms present, the availability of food and other resources, and the physical characteristics of the environment.

6.1f When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.

Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environments.

Performance Indicator 7.1 Identify ways in which humans have changed their environment and the effects of those changes.

7.1c Humans, as individuals or communities, change environments in ways that can be either helpful or harmful for themselves and other organisms.

Standard 6—Interconnectedness: Common Themes

Systems Thinking—Key Idea 1

Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.

- observe and describe interactions among components of simple systems
- identify common things that can be considered to be systems (e.g., a plant, a transportation system, human beings)

Models—Key Idea 2

Models are simplified representations of objects, structures, or systems, used in analysis, explanation, or design.

- analyze, construct, and operate models in order to discover attributes of the real thing
- discover that a model of something is different from the real thing but can be used to study the real thing
- use different types of models, such as graphs, sketches, diagrams, and maps, to represent various aspects of the real world

Equilibrium and Stability—Key Idea 4

Equilibrium is a state of stability due either to a lack of changes (static equilibrium) or a balance between opposing forces (dynamic equilibrium).

- observe that things change in some ways and stay the same in some ways
- recognize that things can change in different ways such as size, weight, color, and movement. Some small changes can be detected by taking measurements.

Intermediate Level Science (Grades 5-8)

Standard 4—The Living Environment

Key Idea 1: Living things are both similar to and different from each other and from nonliving things.

Performance Indicator 1.1 Compare and contrast the parts of plants, animals, and one-celled organisms.

- 1.1h Living things are classified by shared characteristics on the cellular and organism level. In classifying organisms, biologists consider details of internal and external structures. Biological classification systems are arranged from general (kingdom) to specific (species).

Key Idea 3: Individual organisms and species change over time.

Performance Indicator 3.1 Describe sources of variation in organisms and their structures and relate the variations to survival.

- 3.1b Changes in environmental conditions can affect the survival of individual organisms with a particular trait. Small differences between parents and offspring can accumulate in successive generations so that descendants are very different from their ancestors.

Individual organisms with certain traits are more likely to survive and have offspring than individuals without those traits.

Performance Indicator 3.2 Describe factors responsible for competition within species and the significance of that competition.

3.2a In all environments, organisms with similar needs may compete with one another for resources

Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.

Performance Indicator 5.1 Compare the way a variety of living specimens carry out basic life functions and maintain dynamic equilibrium.

5.1a Animals and plants have a great variety of body plans and internal structures that contribute to their ability to maintain a balanced condition.

5.1b An organism's overall body plan and its environment determine the way that the organism carries out the life processes.

5.1d The methods for obtaining nutrients vary among organisms. Producers, such as green plants, use light energy to make their food. Consumers, such as animals, take in energy-rich foods.

5.1e Herbivores obtain energy from plants. Carnivores obtain energy from animals. Omnivores obtain energy from both plants and animals. Decomposers, such as bacteria and fungi, obtain energy by consuming wastes and/or dead organisms.

5.1g The survival of an organism depends on its ability to sense and respond to its external environment.

Key Idea 6: Plants and animals depend on each other and their physical environment

Performance Indicator 6.2 Provide evidence that green plants make food and explain the significance of this process to other organisms.

6.2c Green plants are the producers of food which is used directly or indirectly by consumers.

Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environment.

Performance Indicator 7.1 Describe how living things, including humans, depend upon the living and nonliving environment for their survival.

7.1a A population consists of all individuals of a species that are found together at a given place and time. Populations living in one place form a community. The community and the physical factors with which it interacts compose an ecosystem.

7.1b Given adequate resources and no disease or predators, populations (including humans) increase. Lack of resources, habitat destruction and other factors such as predation and climate limit the growth of certain populations in the ecosystem.

7.1c In all environments, organisms interact with one another in many ways. Relationships among organisms may be competitive, harmful, or beneficial. Some species have adapted to be dependent upon each other with the result that neither could survive without the other.

Performance Indicator 7.2 Describe the effects of environmental changes on humans and other populations.

7.2a In ecosystems, balance is the result of interactions between community members and their environment.

7.2c Overpopulation by any species impacts the environment due to the increased use of resources. Human activities can bring about environmental degradation through resource acquisition, urban growth, land-use decisions, waste disposal, etc.

7.2d Since the Industrial Revolution, human activities have resulted in major pollution of air, water, and soil. Pollution has cumulative ecological effects such as acid rain, global warming, or ozone depletion. The survival of living things on our planet depends on the conservation and protection of Earth's resources.