

## Science on the Gulf

### Correlation of NOAA Beach Seine to Next Generation Sunshine State Standards

#### **Grade 2**

##### *Big Idea 1 The Practice of Science*

- SC.2.N.1.1: Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations.
- SC.2.N.1.3: Ask "how do you know?" in appropriate situations and attempt reasonable answers when asked the same question by others.
- SC.2.N.1.5: Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think).

##### *Big Idea 17 Interdependence*

- SC.2.L.17.1: Compare and contrast the basic needs that all living things, including humans, have for survival.
- SC.2.L.17.2: Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs.

#### **Grade 3**

##### *Big Idea 1 The Practice of Science*

- SC.3.N.1.1: Raise questions about the natural world, investigate them individually and in teams through free exploration and systematic investigations, and generate appropriate explanations based on those explorations.
- SC.3.N.1.6: Infer based on observation.
- SC.3.N.1.7: Explain that empirical evidence is information, such as observations or measurements, that is used to help validate explanations of natural phenomena.

##### *Big Idea 14 Organization and Development of Living Organisms*

- SC.3.L.14.1: Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.

##### *Big Idea 15 Diversity and Evolution of Living Organisms*

- SC.3.L.15.1: Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.

### *Big Idea 17 Interdependence*

- SC.3.L.17.1: Describe how animals and plants respond to changing seasons.
- SC.3.L.17.2: Recognize that plants use energy from the Sun, air, and water to make their own food.

## **Grade 4**

### *Big Idea 1: The Practice of Science*

- SC.4.N.1.1 Raise questions about the natural world, use appropriate reference materials that support understanding to obtain information (identifying the source), conduct both individual and team investigations through gree exploration and systematic investigations, and generate appropriate explanations based on those explorations.
- SC.4.N.1.3 Explain that science does not always follow a rigidly defined method (“the scientific method”) but that science does involved the use of observations and empirical evidence.
- SC.4.N.1.7 Recognize and explain that scientists base their explanations on evidence.

### *Big Idea 17: Interdependence*

- SC.4.L.17.2- Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.
- SC.4.L.17.3 - Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.
- SC.4.L.17.4-Recognize ways plants and animals, including humans, can impact the environment.

## **Grade 5**

### *Big Idea 1: The Practice of Science*

- SC.5.N.1.1 Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
- SC.5.N.1.2 Explain the difference between an experiment and other types of investigation.

### *Big Idea 2:*

- SC.5.N.2.1 Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.

- SC.5.N.2.2 Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others.

*Big Idea 14: Organization and Development of Living Organisms*

- SC.5.L.14.2 Compare and contrast the function of organs and other physical structures of plants and animals, including humans.

*Big Idea 15: Diversity and Evolution of Living Organisms*

- SC.5.L.15.1 Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.

*Big Idea 17: Interdependence*

- SC.5.L.17.1 Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.

**Grade 6**

*Big Idea 1: The Practice of Science*

- SC.6.N.1.1: Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
- SC.6.N.1.3: Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.
- SC.6.N.1.5: Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.

*Big Idea 6: Earth Structures*

- SC.6.E.6.2 Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida

*Big Idea 15: Diversity and Evolution of Living Organisms*

- SC.6.L.15.1 Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.

**Grade 7**

*Big Idea 1: The Practice of Science*

- SC.7.N.1.1: Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
- SC.7.N.1.2: Differentiate replication (by others) from repetition (multiple trials).
- SC.7.N.1.3: Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.
- SC.7.N.1.4: Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.
- SC.7.N.1.5: Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.
- SC.7.N.1.6: Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.
- SC.7.N.1.7: Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.

*Big Idea 6: Earth Structures*

- SC.7.E.6.6 Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.

*Big Idea 17: Interdependence*

- SC.7.L.17.1 Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.
- SC.7.L.17.2 Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.
- SC.7.L.17.3 Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.

**Grade 8**

*Big Idea 1: The Practice of Science*

- SC.8.N.1.1: Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
- SC.8.N.1.6: Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of

imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.

*Big Idea 18: Matter and Energy Transformations*

- SC.8.L.18.1 Describe and investigate the process of photosynthesis, such as the roles of light, carbon dioxide, water and chlorophyll; production of food; release of oxygen.

**Grade 9-12**

*Big Idea 1 The Practice of Science*

- SC.912.N.1.1: Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:
  1. pose questions about the natural world,
  2. conduct systematic observations,
  3. examine books and other sources of information to see what is already known,
  4. review what is known in light of empirical evidence,
  5. plan investigations,
  6. use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),
  7. pose answers, explanations, or descriptions of events,
  8. generate explanations that explicate or describe natural phenomena (inferences),
  9. use appropriate evidence and reasoning to justify these explanations to others,
  10. communicate results of scientific investigations, and
  11. evaluate the merits of the explanations produced by others.
- SC.912.N.1.2: Describe and explain what characterizes science and its methods.
- SC.912.N.1.6: Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.

*Big Idea 6: Earth Structures*

- SC.912.E.6.4: Analyze how specific geologic processes and features are expressed in Florida and elsewhere.
- SC.912.E.6.5: Describe the geologic development of the present day oceans and identify commonly found features.

*Big Idea 15: Diversity and Evolution of Living Organisms*

- SC.912.L.15.4: Describe how and why organisms are hierarchically classified and based on evolutionary relationships.

- SC.912.L.15.6: Discuss distinguishing characteristics of the domains and kingdoms of living organisms.
- SC.912.L.15.7: Discuss distinguishing characteristics of vertebrate and representative invertebrate phyla, and chordate classes using typical examples.

*Big Idea 17: Interdependence*

- SC.912.L.17.1: Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution.
- SC.912.L.17.2: Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.
- SC.912.L.17.3: Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms.
- SC.912.L.17.4: Describe changes in ecosystems resulting from seasonal variations, climate change and succession.
- SC.912.L.17.6: Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.
- SC.912.L.17.7: Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.
- SC.912.L.17.8: Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.
- SC.912.L.17.9: Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.
- SC.912.L.17.11: Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.
- SC.912.L.17.12: Discuss the political, social, and environmental consequences of sustainable use of land.
- SC.912.L.17.13: Discuss the need for adequate monitoring of environmental parameters when making policy decisions.
- SC.912.L.17.16: Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.
- SC.912.L.17.17: Assess the effectiveness of innovative methods of protecting the environment.
- SC.912.L.17.18: Describe how human population size and resource use relate to environmental quality.
- SC.912.L.17.19: Describe how different natural resources are produced and how their rates of use and renewal limit availability.
- SC.912.L.17.20: Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability.