Georgia's Amazing Coast

Teacher
Resources and Lesson Plans

Grades 3-5

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With Linda Chitty and Jennifer Cole

*Lesson plans are aligned to the new Georgia Performance Standards (Life Science)

*Lesson plans are written in the "Learning Focused" format

Grade 3

Big Idea - Habitats

3rd Grade
Enduring understanding:
Students will understand that there is a relationship between habitats and the organisms within those habitats

Habits of Mind
S3CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.
S3CS2. Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.
S3CS4. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S3CS5. Students will communicate scientific ideas and activities clearly.
S3CS6. Students will question scientific claims and arguments effectively.

The Nature of Science
S3CS8. Students will understand important features of the process of scientific inquiry.

Life Science
S3L1. Students will investigate the habitats of different organisms and the dependence of organisms on their habitat.
S3L2. Students will recognize the effects of pollution and humans on the environment

Knowledge	Skills
Habitats	Observe and Compare
Organisms	Record and Analyze Data
Plants	Use proper safety procedures
Animals	Measures
Pollution	Make sketches and models
Environment	Locate scientific information
Recycling	Communicates finding
Marsh, Swamp, Coast, Ocean	Analyzes whole number data
Similar and Different	

Performance Assessment 1

The student will create a model representing two different habitats which includes the chosen habitats' plants and animals.

The student will present the model to the class, explain the differences between the two habitats, and describe how the animals and plants thrive in each

*See "Habitat Model Rubric"

Performance Assessment 2

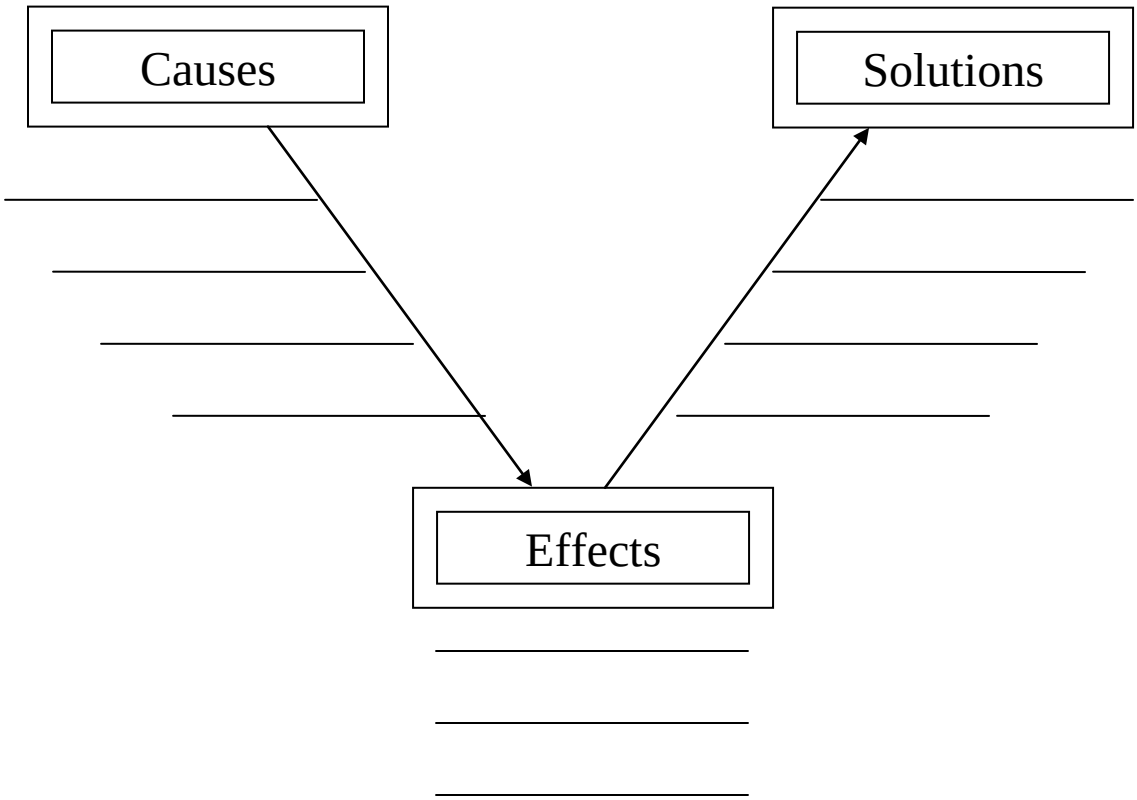
The students will complete a graphic organizer to demonstrate cause/effect relationship of humans and pollution on the environment

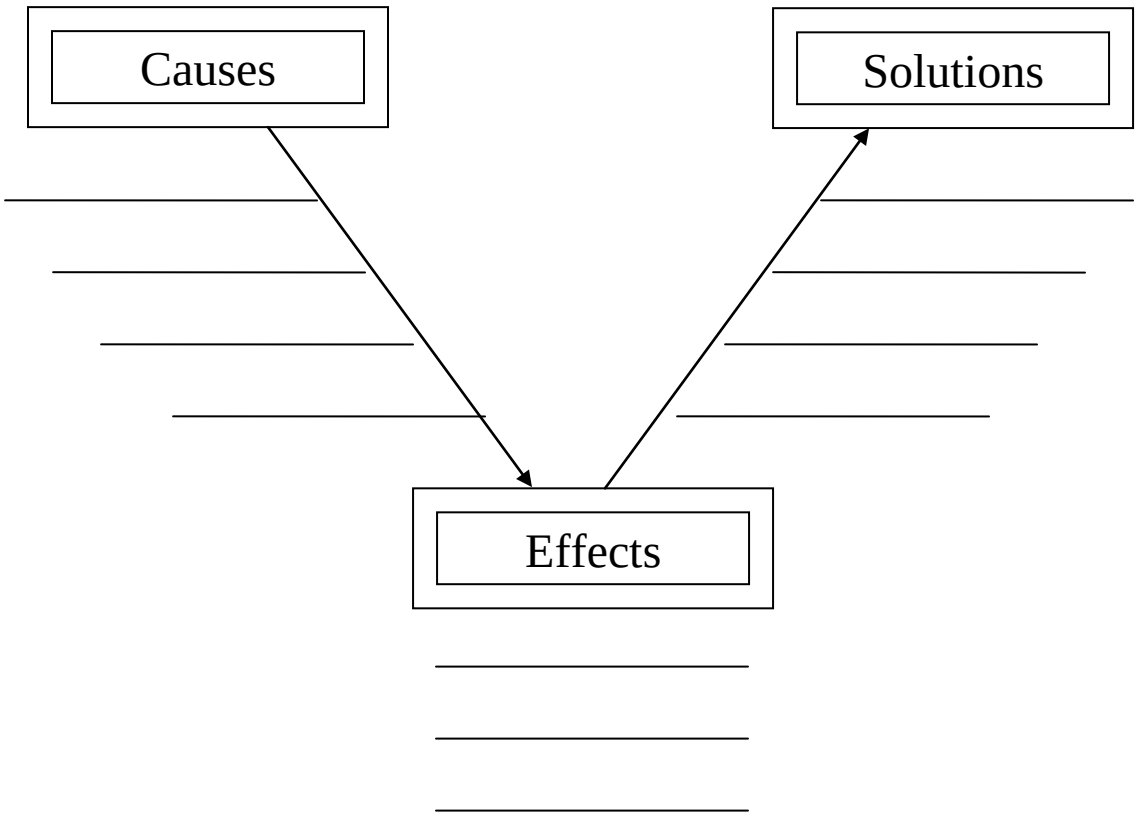
* See "Cause/Effect/Solution" graphic organizer

Habitat Model Rubric

Performance element	**Level 3**	**Level 2**	**Level 1**	**Points**
Representation of Content	Explains in great detail how the model represents two different habitats using approximate scale	Explains in some detail how the model represents two different habitats using approximate scale	Explains with minimal detail how the model represents two different habitats (no use of scale)	_____
Presentation	* Explains 4 ways the two habitats are different * Explains how plants and animals thrive in the habitats (4-5 examples)	* Explains 2-3 ways the two habitats are different * Explains how plants and animals thrive in the habitats (2-3 examples)	* Explains 0 - 1 way the two habitats are different * Explains how plants and animals thrive in the habitats (0-1 example)	_____
Creativeness	Uses a variety of media to creatively represent the habitat *3 dimensional	Uses a few different media to creatively represent the habitat *3 dimensional	Uses minimal resources to creatively represent the habitat *2 dimensions	_____
Communication	Uses the model as a tool to communicate learning. * Habitats are labeled * 12-15 different plants and animals are represented and labeled	Uses the model as a tool to communicate learning. * Habitats are labeled * 8 -12 different plants and animals are represented and labeled	Does not use the model as a tool to communicate learning or has little information about the topic. *Less than 8 different plants and animals are represented and labeled	_____
			YOUR TOTAL	
Teacher Comments:				

Scoring Key: 10-12 = A, 7-9 = B, 6-8 = C, less than 6 = F


Causes
Solutions
Effects


Causes
Solutions
Effects

Activating Strategy:

Play “Georgia’s Amazing Coast” BINGO Game (in pairs or groups)

Acquisition Lessons

EQ:

- How are the habitats (marsh, swamp, coast, and Atlantic Ocean) different?

    1. Students will work in cooperative groups to research and report attributes of one of the following habitats: marsh, swamp, coast, and Atlantic Ocean using the “What’s that Habitat?” graphic organizer.
    2. Students will present their research to classmates.
    3. Class will complete the graphic organizer “Every Habitat is Valuable!” listing the attributes of each habitat.

- How do green plants live and thrive in different habitats of GA?
- How do animals live and thrive in different habitats of GA?

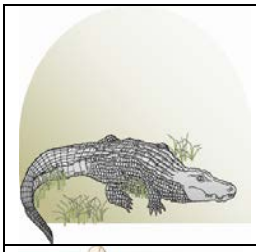
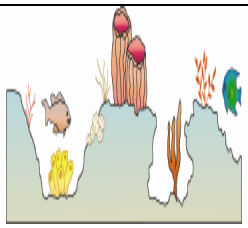
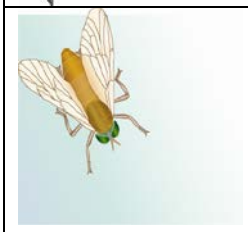
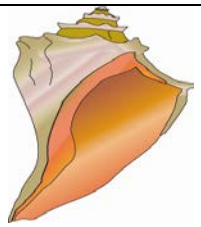
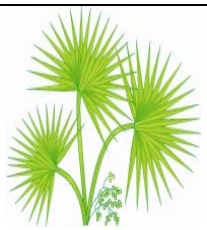
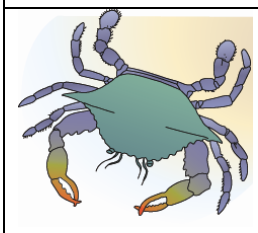
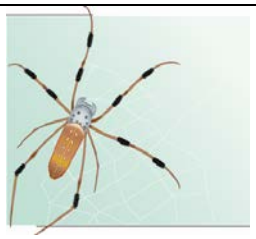
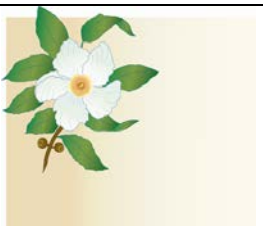
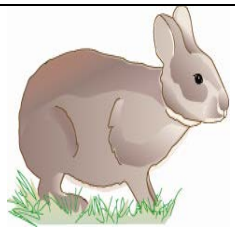
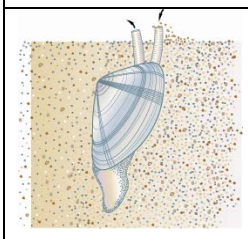
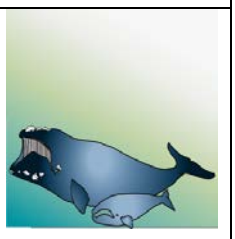
    1. Each group of students will be assigned several different pages from “Georgia’s Amazing Coast”.
    2. Students will work collaboratively to list ways that animals and plants thrive in a habitat, creating a “Four Flap Book” for selected species. ***The front flaps will include (illustrate) the species name, and its requirements for food, water, shelter, and space. The student will list examples of each under each flap.
    3. Class will complete a mural to represent each habitat.

- How do changes in a habitat affect organisms within that habitat?
- How does pollution affect the habitats of plants and animals?
- How does conserving resources protect the environment?
- How does recycling materials protect the environment?

<u>Georgia Coastal Marsh Survivor Game</u>

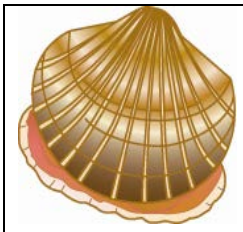
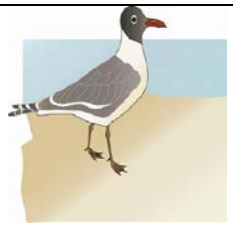
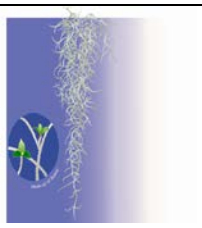
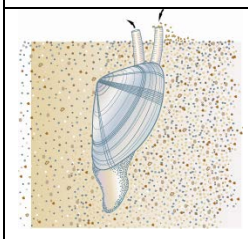
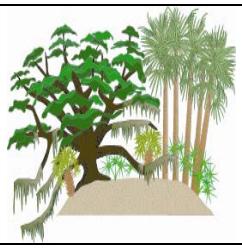
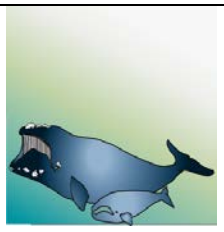
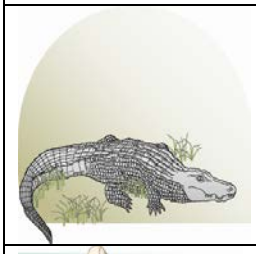
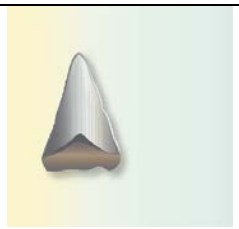
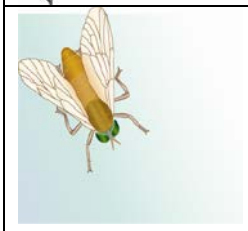
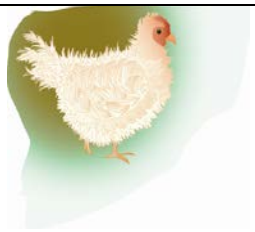
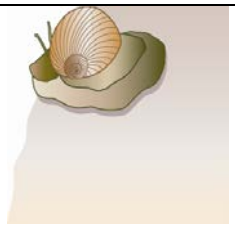
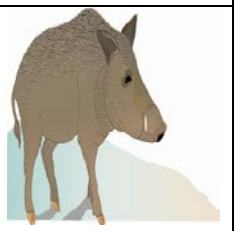
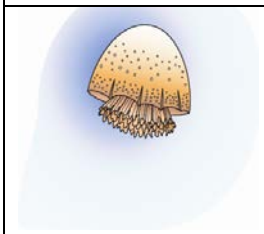
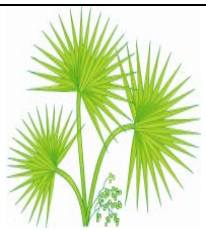
1. Students will role play organisms within a habitat
2. Students will react to various scenarios affecting the plants and animals of the habitat, including pollution, conservation, and recycling

Georgia's Amazing Coast

				
				
		Free Space		
				
				

A–D E–I J–M N–S S–Z

Georgia's Amazing Coast

				
				
		Free Space		
				
				

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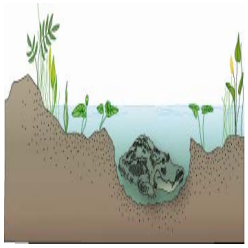
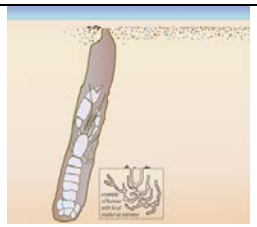
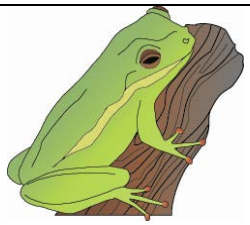
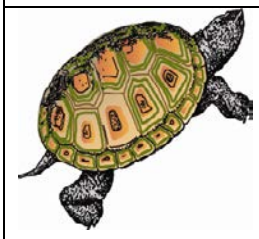
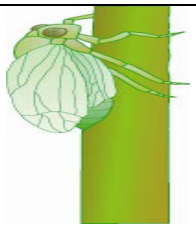
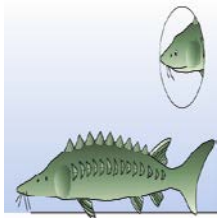
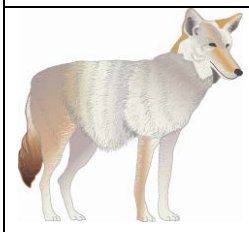
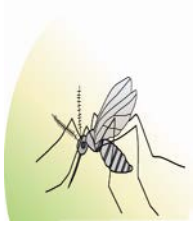
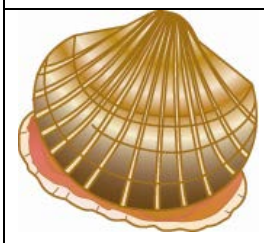
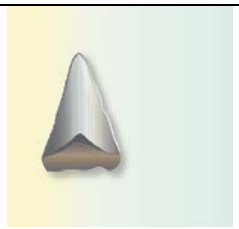
				
				
		Free Space		
				
				

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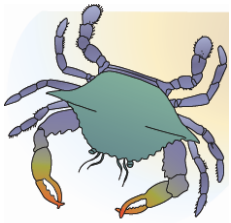
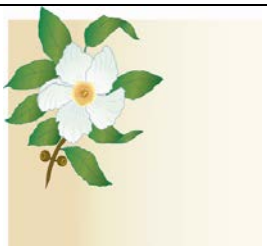
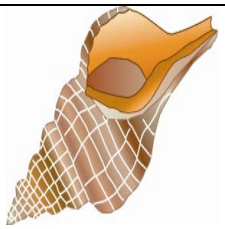
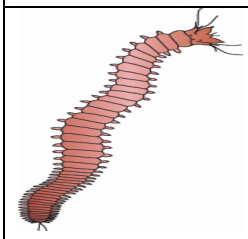
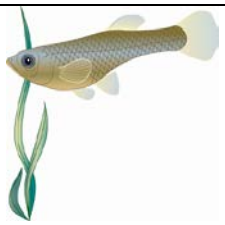
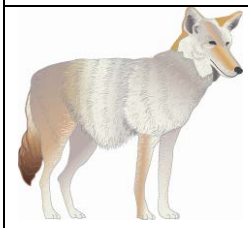
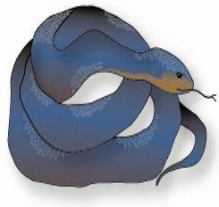
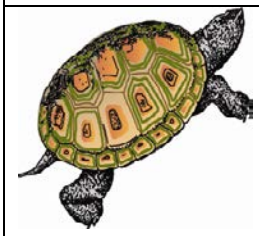
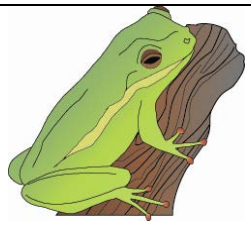
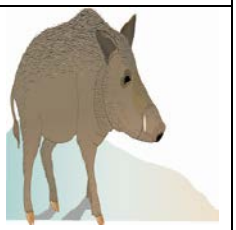
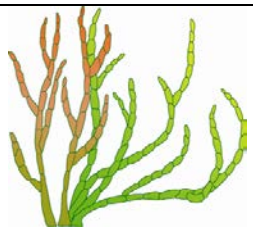
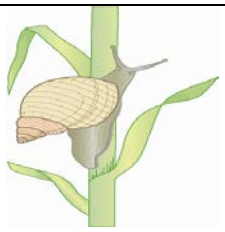
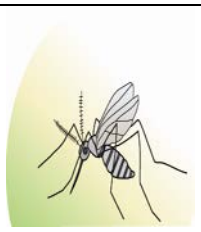
				
				
		Free Space		
				
				

Georgia's Amazing Coast

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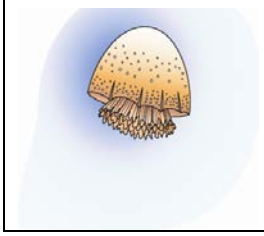
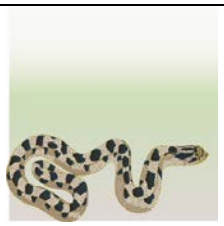
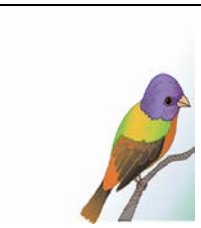
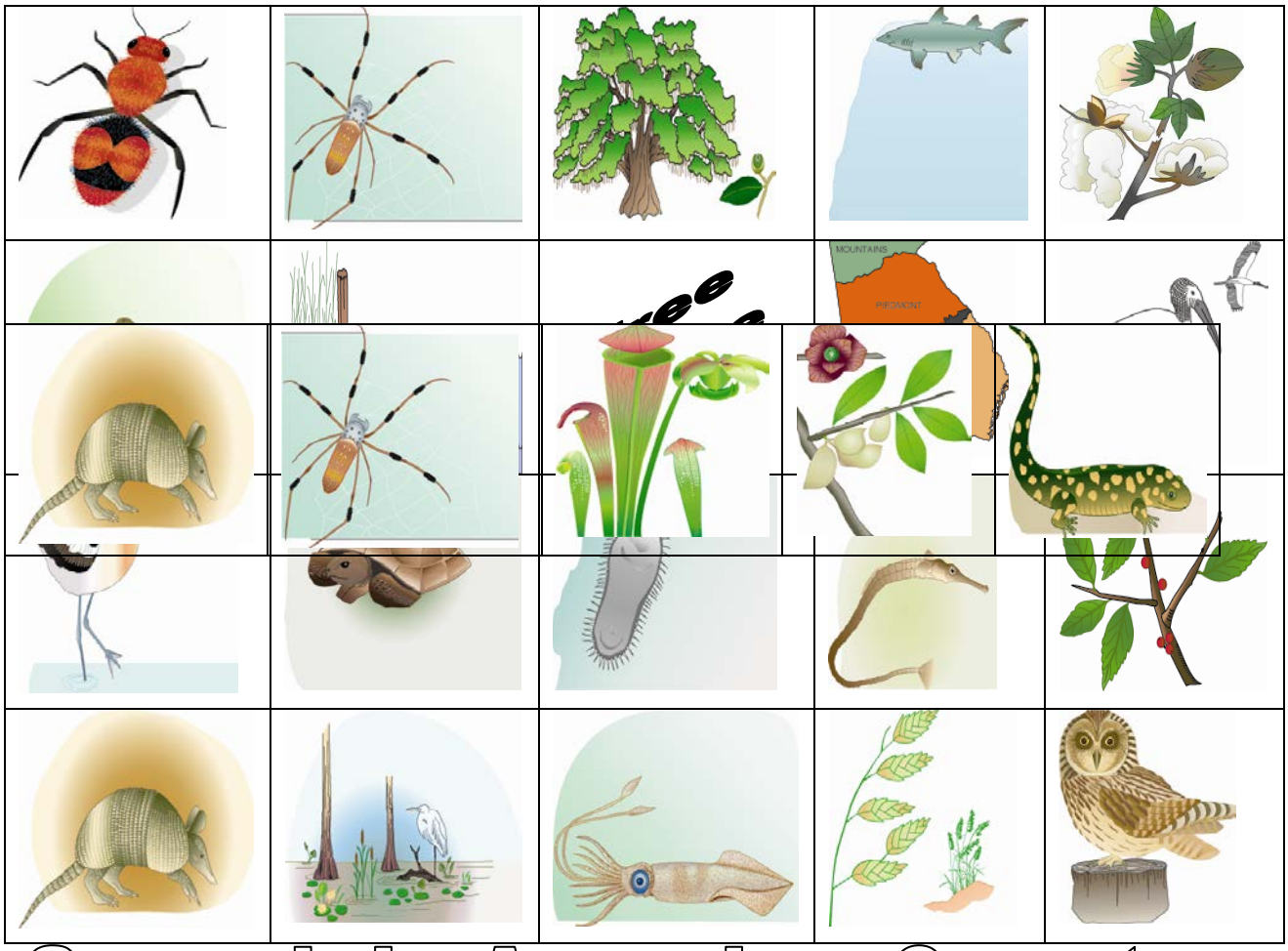
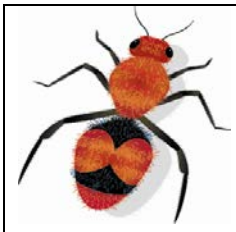
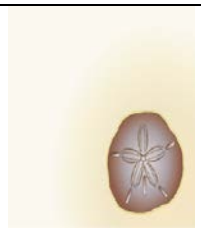
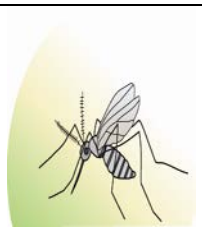
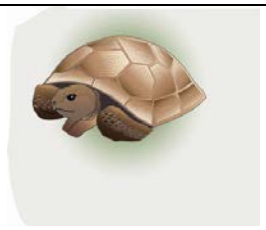
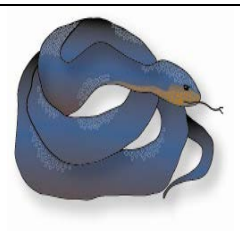
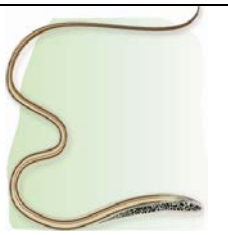
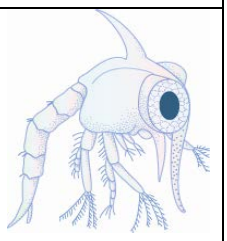
				



Georgia's Amazing Coast

A – D E – I J – M N – S S - Z

Georgia's Amazing Coast

				
		Free Space		
				
				

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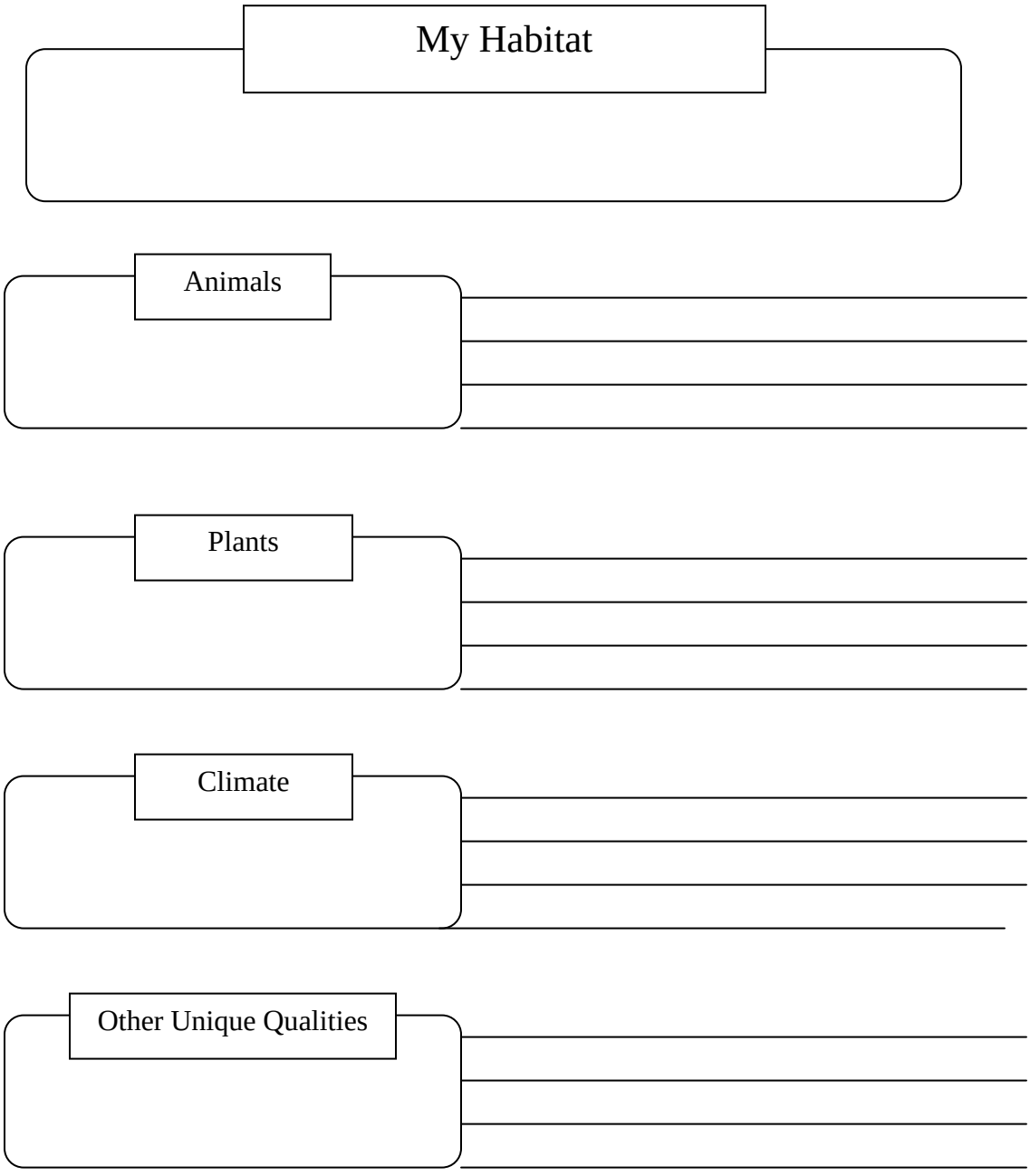
Georgia's Amazing Coast BINGO

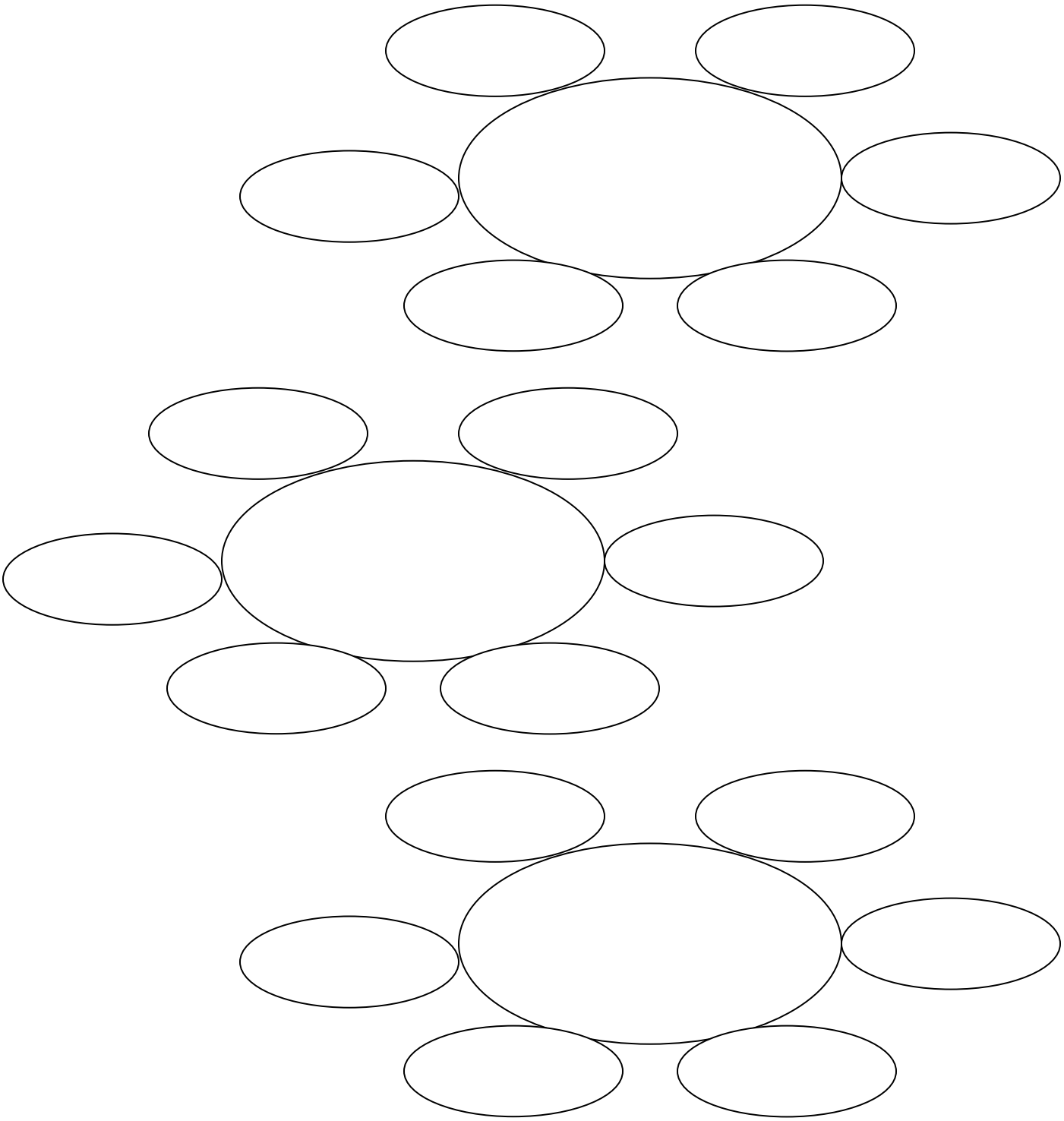
Alligator	**Alligator Hole**	**Armadillo**	**Avocet**	**Blood Ark**
Blood Worm	**Blue Crab**	**Bottlenose Dolphin**	**Cabbage Head Jelly**	**Chachalaca**
Clapper Rail	**Coquina**	**Cow Killer**	**Coyote**	**Deer Fly**
Diamondback Rattlesnake	**Diamondback Terrapin**	**Eastern Indigo Snake**	**Fiddler Crab**	**Flying Squirrel**
Fossilized Shark tooth	**Franklinia Altamaha**	**Free-Tailed Bat**	**Freshwater Slough**	**Frizzle Chicken**
Gafftopsail Catfish	**Georgia's Tides**	**Ghost Crab**	**Ghost Shrimp**	**Glasswort**
Golden Silk spider	**Gopher Tortoise**	**Gray's Reef**	**Great Blue Heron**	**Green Tree Frog**
Hognose Snake	**Hooded Pitcher Plant**	**Horse Conch**	**Horseshoe Crab**	**Island Glass Lizard**
Kingfisher	**Knobbed Whelk**	**Laughing Gull**	**Leatherback Sea Turtle**	**Live Oak Tree**
Longfin Inshore Squid	**Longleaf Pine**	**Manatee**	**Marine Bacteria**	**Marsh Hammock**
Marsh Mud	**Marsh Periwinkle**	**Marsh Rabbit**	**Marsh Rice Rat**	**Marsh Wren**
Moon Snail	**Morning Glory**	**Mosquito Fish**	**Octopus**	**Opossum**
Osprey	**Oyster**	**Painted Bunting**	**Pawpaw**	**Pig Frog**
Pipefish	**Plankton**	**Plant Hopper**	**Pipefish**	**Portuguese Man-o-War**
Resurrection Fern	**Right Whale**	**River Otter**	**Sand Gnat**	**Sand Tiger Shark**
Sand Gnat	**Sargassum**	**Saw Palmetto**	**Sea Cucumber**	**Sea Island Cotton**
Sea Oats	**Sea Squirt**	**Sea Anemone**	**Sea Horse**	**Sherman’s Fox Squirrel**
Shifting Shore	**Short-Eared Owl**	**Shrimp Life Cycle**	**Smooth Cordgrass**	**Southern Stingray**
Spanish Moss	**Sturgeon**	**Swallow Tail Kite**	**Sweetgrass**	**Tiger Salamander**
Whelk Egg Casing	**Wild Pig**	**Wood Stork**	**Yaupon Holly**	**Zoea**

What's That Habitat?



Every Habitat is Valuable!

*Large oval: Name of Habitat
*Small Ovals: Things that are valuable within that habitat



Space

Shelter

Food/Water

Species

Georgia Coastal Marsh Survivor Game

Objectives:

Students will recognize Students will consider, analyze, and discuss the following:

- What are the roles of producers and consumers in the salt marsh?
- How do changes in a habitat affect organisms within that habitat?
- How does pollution affect the habitats of plants and animals?
- How does conserving resources protect the environment?
- How does recycling materials protect the environment?
- What would happen to a population if some of the plants or animals in the community became scarce, or if there were too many?
- How do organisms become extinct?

***Preparation:** Print cards and cut each row apart. Fold each row in half on vertical line, so that each card consists of the name and picture of species on one side and descriptor on the other. If possible, laminate cards and lace onto cords to be worn by students as nametags.

Directions:

1. Explain to students that each plant or animal has a specific role in the marsh ecosystem (stated on cards) *note: the diet and range stated on cards is not meant to be an exclusive list for each species, both have been simplified for this activity.
2. Distribute cards to students (one per student) *additional cards may be made and distributed of producers, as needed for larger class sizes.
3. Ask students to imagine themselves as the species listed on their card.
4. Divide classroom or playing field into three sections: high marsh (above high tide line), mid-marsh (intertidal zone), and low marsh (under water most of the time).
5. Direct students to go to the place in the marsh where the species they represent would be found.
6. Ask students to look around and see if they have everything they would need to survive in this habitat. Students are to pantomime the movements of their plant or animal as they move around within their range of the marsh. Discuss the availability of food, water, shelter, and space.
7. Read one scenario from list below. Discuss impacts. Students leave or come back to “the marsh” as species die off or are saved. Remember: species that depend on the affected species will also be impacted and should act accordingly.

Scenarios that bring about change:

- NOTE: The following list consists of possible actions that could bring about positive or negative changes within the marsh ecosystem. Each scenario is meant to promote discussion among the students, relating to cause/effect.
- The list below is not meant to be all-inclusive of events causing change in the marsh. Please feel free to add to the list, or alter existing scenarios to bring about the changes you wish to illustrate and discuss with your students.
- This list is no particular order. It simply contains some natural occurrences and some that would be caused by humans. Some will bring about positive change; some will have negative impacts on the marsh.
- After each "change" occurs, stop and discuss how organisms will be directly (and indirectly) affected.

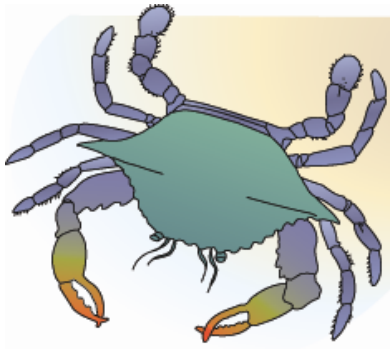
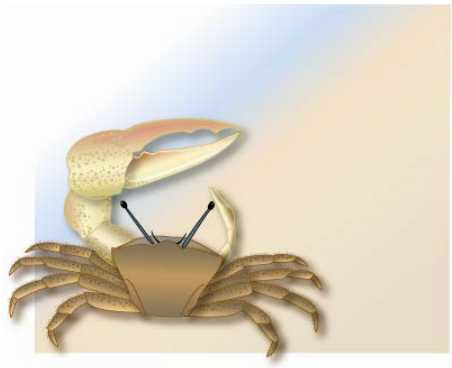
1. Excessive run-off from nearby golf course (or farm) dumps massive amounts of fertilizer and/or insecticides into the marsh.
2. Construction of large marina nearby, causing oil and fuel pollution.
3. Construction of condominiums require filling in of the high – mid marsh zones with fill dirt and numerous docks to be built.
4. Excessive rain and hurricanes
5. Drought
6. Marsh land protection act adopted by local zoning commission.
7. Local school group volunteers to conduct monthly chemical and biological monitoring of the salt marsh (Adopt-a-Wetland).
8. Local group of concerned citizens organize "Friends of the Marsh" club, dedicated to regular clean-up efforts of the area.
9. Local kayak shop organizes "Eco-tours" of the marsh.
10. Citizens organize recycling efforts of used automobile oil, plastics, and glass.

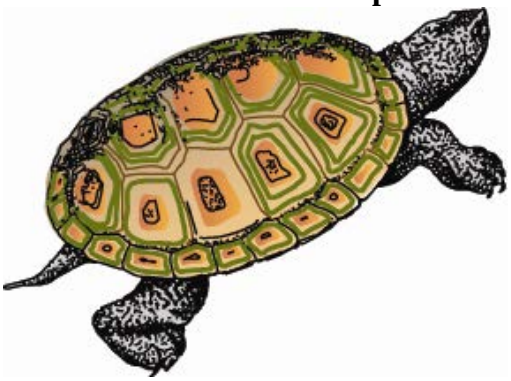
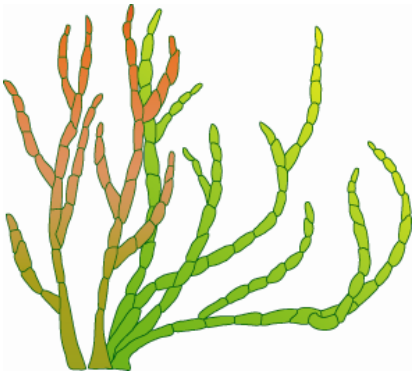
***possible effects of negative actions:**

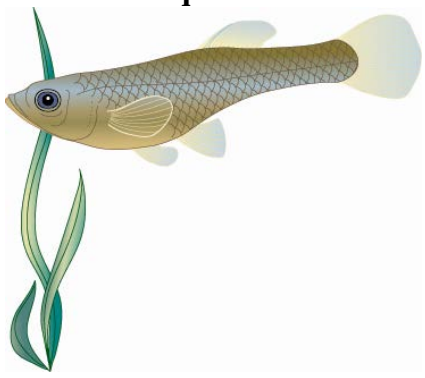
- Harmful algal bloom (from fertilizer) causes fish kills, oyster contamination
- Oil and fuel pollution cause fish and shellfish kills and contamination
- Insecticides eliminate plant hopper population
- Insecticides ingested by plant hoppers travel through the food web, eliminating consumers of plant hoppers
- Constructions of dock pilings disturb smooth cordgrass root mats, weakening stability of marsh.
- Drought causes rise in salinity, blue crab population decreases, smooth cordgrass die off
- Excessive rain causes drop in salinity, causing loss of phytoplankton population, oysters and shrimp decrease
- Loss of habitat

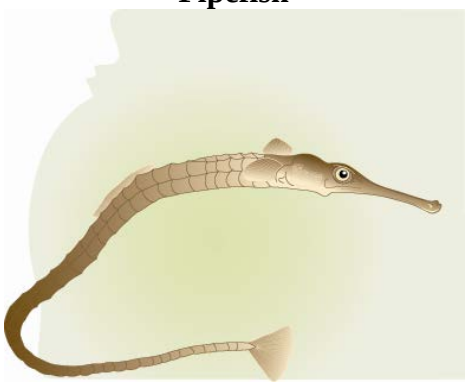
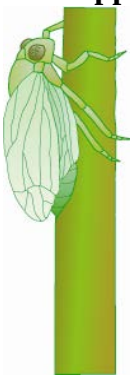
***possible effects of positive actions:**

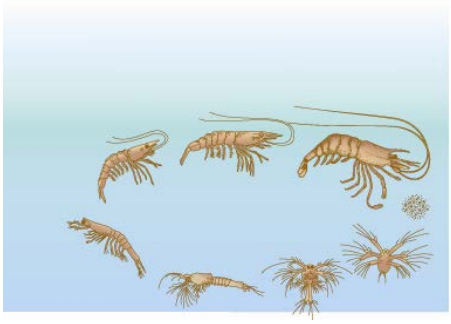
- Marsh restoration
- Populations restored to healthy levels
- Awareness and appreciation of the marsh ecosystem increases the need to protect the area for future generations.
- Regular monitoring of the marsh provides information that can be helpful in maintaining the health of the marsh.
- Cleaner water increases health of all species

Smooth Cordgrass 	**Smooth Cordgrass** **Producer** **Range:** **Mid – Low Marsh** ***Provides main component of detritus in the marsh. Root mats hold marsh together.**
Periwinkle Snail 	**Periwinkle Snail** **Consumer** • **Smooth Cordgrass** • **Range:** **Mid – Low Marsh**
Blue Crab 	**Blue Crab** **Consumer** • **Juvenile fish and shrimp** • **Periwinkle snails** • **Fiddler crabs** **Range:** **Low Marsh**
Fiddler Crab 	**Fiddler Crab** **Consumer** • **Detritus** **Range:** **Mid – Low Marsh**

Clapper Rail 	**Clapper Rail** **Consumer** • **Mosquito Fish** • **Fiddler Crabs** • **Plant Hoppers** **Range:** **High – Mid Marsh**
Diamondback Terrapin 	**Diamondback Terrapin** **Consumer** • **Periwinkle snails** • **Fiddler crabs** **Range:** **High – Mid Marsh**
Glasswort 	**Glasswort** **Producer** **Range:** **High Marsh** ***Provide cover for small animals**
Marsh Rice Rat 	**Marsh Rice Rat** **Consumer:** • **Smooth Cordgrass** • **Fiddler Crabs** • **Periwinkle Snails** **Range:** **High – Mid Marsh**

Yaupon Holly 	**Yaupon Holly** **Producer** **Range:** **High Marsh** ***Provides food, cover, and nesting habitat for birds**
Marsh Wren 	**Marsh Wren** **Consumer** • **Plant Hoppers** • **Sand Gnats** **Range:** **High Marsh**
Mosquito Fish 	**Mosquito Fish** **Consumer** • **Mosquito Larva** **Range:** **Low Marsh**
Osprey 	**Osprey** **Consumer:** • **Fish** • **Marsh Rice Rats** **Range:** **High Marsh**

Pipefish 	**Pipefish** **Consumer** • **Detritus** **Range:** **Low Marsh**
Plant Hopper 	**Plant Hopper** **Consumer** • **Smooth Cordgrass** **High – Mid Marsh**
Sand Gnat 	**Sand Gnat** **Consumer** • **Blood of mammals** **Range:** **High – Mid Marsh**
Short-Eared Owl 	**Short-Eared Owl** **Consumer** • **Marsh Rice Rats** • **Marsh Wrens** **Range:** **High – Mid Marsh**

Juvenile Shrimp 	**Juvenile Shrimp** **Consumer** • **Detritus** **Range:** **Low Marsh**
Wood Stork 	**Wood Stork** **Consumer** • **Fish** • **Shrimp** **Range:** **Mid - Low Marsh**
Plankton 	**Plankton (Phytoplankton)** **Producers** **Range:** **Low Marsh** ***Provides oxygen for all living things**
Oyster 	**Oyster** **Consumer** • **Detritus** **Range:** **Low Marsh**

Grade 4

Big Idea – Flow of Energy

4th Grade
Enduring understanding:
Students will understand that the relationship between organisms and how their ecosystem affect their ability to survive.

Habits of the Mind
S4CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.
S4CS2. Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.
S4CS4. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S4CS5. Students will communicate scientific ideas and activities clearly.
S4CS6. Students will question scientific claims and arguments effectively.

The Nature of Science
S4CS7. Students will be familiar with the character of scientific knowledge and how it is achieved.
S4CS8. Students will understand important features of the process of scientific inquiry.

Life Science
S4L1. Students will describe the roles of organisms and the flow of energy within an ecosystem.
S4L2. Students will identify factors that affect the survival or extinction of organisms such as adaptation, variation of behaviors (hibernation) and external features (camouflage and protection).

Knowledge	Skills
Producer / Consumer / Decomposer	Observe and Compare
Organism	Use tools to record data
Ecosystem	Use proper safety procedures
Flow of Energy	Create sketches, models, charts, and graphs
Food Web	Use data to answer questions
Food Chain	Locate scientific information
Population	Use oral and written communication
Survival / Extinction	Ask questions that lead to investigations
Adaptation	Conduct investigations
Behaviors (i.e. Hibernation)	Identify patterns of change
External Features (i.e. Camouflage)	Researches for information

Performance Assessment 1

The student will create poster depicting the roles of organisms and the flow of energy within an ecosystem.

See “Flow of Energy Rubric” (choice of two)

Performance Assessment 2

Students will select one plant and one animal, illustrate each, and identify factors that affect the survival or extinction of the organisms such as adaptation, variation of behaviors (hibernation) and external features (camouflage and protection).

See “Adaptations Rubric” (choice of two)

"**Flow of Energy Rubric**" Student Name:_____

CATEGORY	Weight for Each Category	4	3	2	1
Title	X1 (up to 4 pts available)	Title is informative, centered, and larger than other text.	Title is informative and larger than other text.	Title is informative and centered.	The title is incomplete.
Labels	X2 (up to 8 points available)	Every item that needs to be identified has a label. It is clear which label goes with which plant or animal.	Almost all items (90%) that need to be identified have labels. It is clear which label goes with which plant or animal.	Most items (75-89%) that need to be identified have labels. It is clear which label goes with which plant or animal.	Less than 75% of the items that need to be identified have labels OR it is not clear which label goes with each plant or animal.
Accuracy	X3 (up to 12 points available)	Every plant and animal is clearly identifiable and it's role in the habitat is described	Most of the plants and animals are identifiable and some of their roles in the habitat are described	Some of the plants and animals are identifiable. Their roles in the habitat are unclear.	Less than half of the plants and animals are accurate
Knowledge Gained	X3 (up to 12 points available)	The flow of energy is depicted clearly, with numerous examples.	The flow of energy is depicted clearly, with 2-3 examples.	The flow of energy is depicted clearly, with one example.	The flow of energy is not clear.
Spelling	X2 (up to 8 points available)	All words are spelled correctly in the title, labels and caption/description.	All common words are spelled correctly in the title, labels & description. 1-2 scientific words may be misspelled.	75% of the words are spelled correctly in the title, labels & description.	Fewer than 80% of the words are spelled correctly in the title, labels & description.

Flow of Energy Rubric

Name _____ **Date**_____

Poster is neat, both drawings and writing.

Observer **Investigator** **Expert**

Plants and animals included in poster are clearly labeled.

Observer **Investigator** **Expert**

Plants and animals are easily identifiable.

Observer **Investigator** **Expert**

The beginning of the flow of energy is clearly depicted.

Observer **Investigator** **Expert**

The flow of energy is clear throughout the poster.

Observer **Investigator** **Expert**

The role of each plant or animal is clearly illustrated.

Observer **Investigator** **Expert**

Scientific language is used in descriptions.

Observer **Investigator** **Expert**

KEY: Observer=5 pts., Investigator=10 pts., Expert-15 pts. Your total_____

Adaptation Rubric

Student's Name:_____

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Illustration of Plant	Plant is drawn with little or no details or labels	Plant is drawn clearly, with 2-3 labels and details	Plant is drawn clearly, with 4-6 labels and details	Plant is drawn clearly, with more than 6 labels and details	
Illustration of Animal	Animal is drawn with little or no details or labels	Animal is drawn clearly, with 2-3 labels and details	Animal is drawn clearly, with 4-6 labels and details	Animal is drawn clearly, with more than 6 labels and details	
Description of Plant	Plant adaptations are not listed or those listed are incorrect	One plant adaptation is listed and/or is correct	2-3 plant adaptations are listed and/or are correct	More than 3 plant adaptations are listed and are correct	
Description of Animal	Animal adaptations are not listed or those listed are incorrect	One animal adaptation is listed and/or is correct	2-3 animal adaptations are listed and/or are correct	More than 3 animal adaptations are listed and are correct	
Over quality of Assessment	Drawings and writing are messy, unorganized, and difficult to read and understand	Drawings and writing are somewhat neat and easy to read	Drawings and writing are neat, organized, and easy to read	Drawings and writing are exceptionally neat, detailed, organized, and easy to read	

TOTAL:

Teacher's Comments:

Adaptation Rubric

Name _____ **Date**_____

One plant and one animal are identified,

Observer **Investigator** **Expert**

One plant and one animal are illustrated.

Observer **Investigator** **Expert**

One plant and one animal are described

Observer **Investigator** **Expert**

Animal adaptations necessary for survival are described.

Observer **Investigator** **Expert**

Plant adaptations necessary for survival are described.

Observer **Investigator** **Expert**

Animal behaviors necessary for survival are described.

Observer **Investigator** **Expert**

External features of plants necessary for survival are described.

Observer **Investigator** **Expert**

KEY: Observer=5 pts., Investigator=10 pts., Expert-15 pts. Your total_____

Activating Strategy:

Begin K-W-L matrix for producers, consumers, and decomposers (provided)

Acquisition Lessons

EQ:

- What are the roles of producers, consumers, and decomposers in a community?

    1. Students will select one producer and one consumer from the Georgia's Amazing Coast book
    2. Students will work in collaborative groups to complete a "Frayer Model Organizer for Producers / Consumers" for each organism.
    3. Students will complete their Frayer models and place them on a bulletin board divided into sections labeled: producers, consumers, and decomposers.
    4. Class will brainstorm a list of decomposers to add to last section and discuss their roles in the ecosystem.
    5. Summarizing strategy: Complete K-W-L chart.
    6. Ticket out the Door: students name one producer, consumer, and decomposer.

- How do changes in the environment affect a community (ecosystem)?

    1. Teachers reads the book The Lorax" by Dr. Seuss.
    2. Teacher reads pages from Georgia's Amazing Coast: Longleaf Pine, Eastern Indigo Snake, and Gopher Tortoise.
    3. Complete a graphic organizer comparing the truffulla tree community to the longleaf pine community.
    4. The students will complete a cause & effect chart using the examples from "The Lorax".

- How does energy flow through a food chain / web?

- What would happen to a population if some of the plants or animals in the community became scarce, or if there were too many?

- How do organisms become extinct?

    1. Students play "Georgia Coastal Marsh Survivor Game" (included in 3rd grade section).
    2. Discuss the cause and effects of the populations after each scenario.

- How do external features of organisms help them to survive and reproduce? (e.g. camouflage, use of hibernation, protection, etc.).

1. Students choose four plants/animals from the Georgia’s Amazing Coast book.
2. Students complete Plant/Animal Survival” graphic organizer illustrating and explaining survival features.

Producers, Consumers, and Decomposers

-K- I think I know…	-W- I want to know…	-L- I learned…

The Frayer Model Organizer of producers / consumers

Description:

Characteristics:

Organism

Examples:

Drawing:

Compare / Contrast Truffulla & Longleaf

Truffulla Tree Community

Longleaf Pine Community

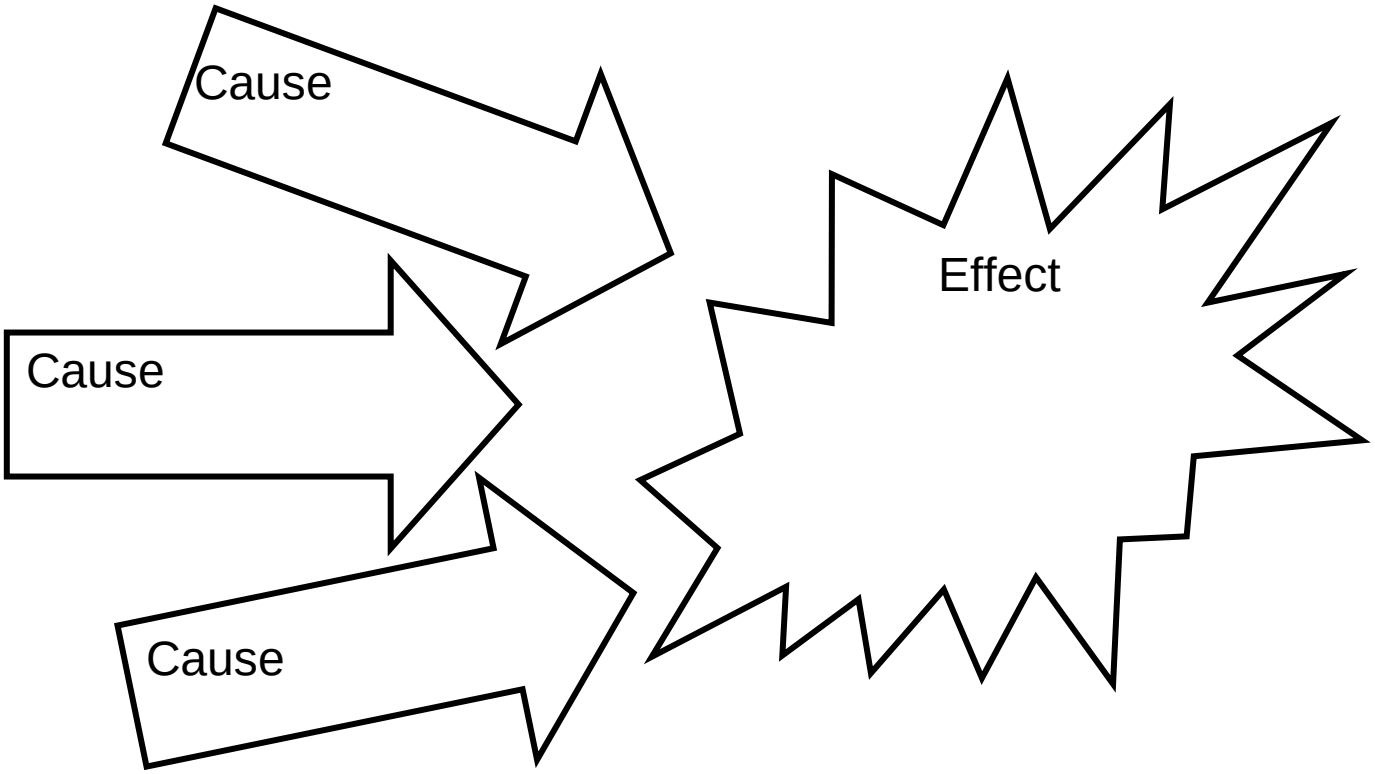
How Alike?

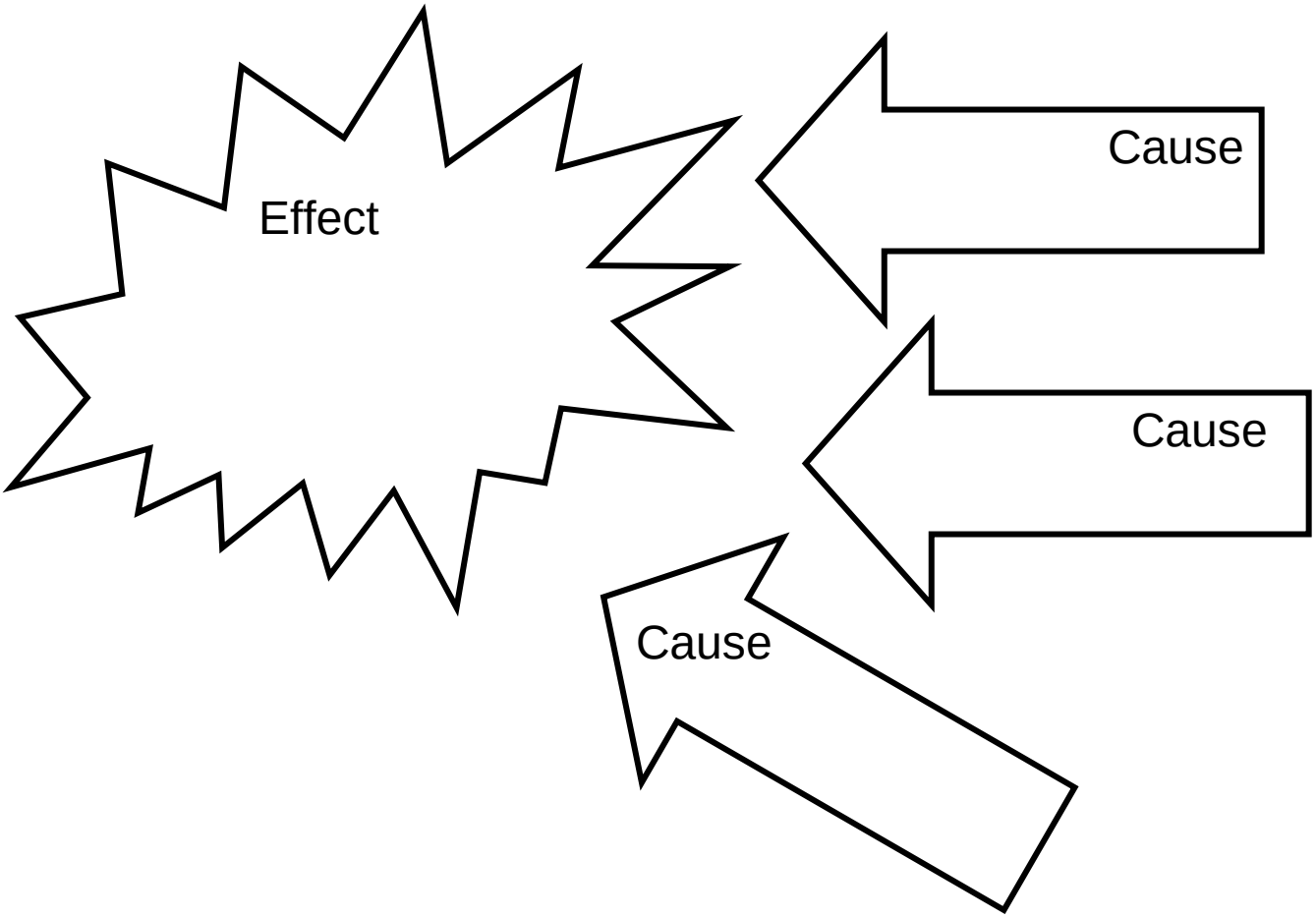
How Different?

With Regard To

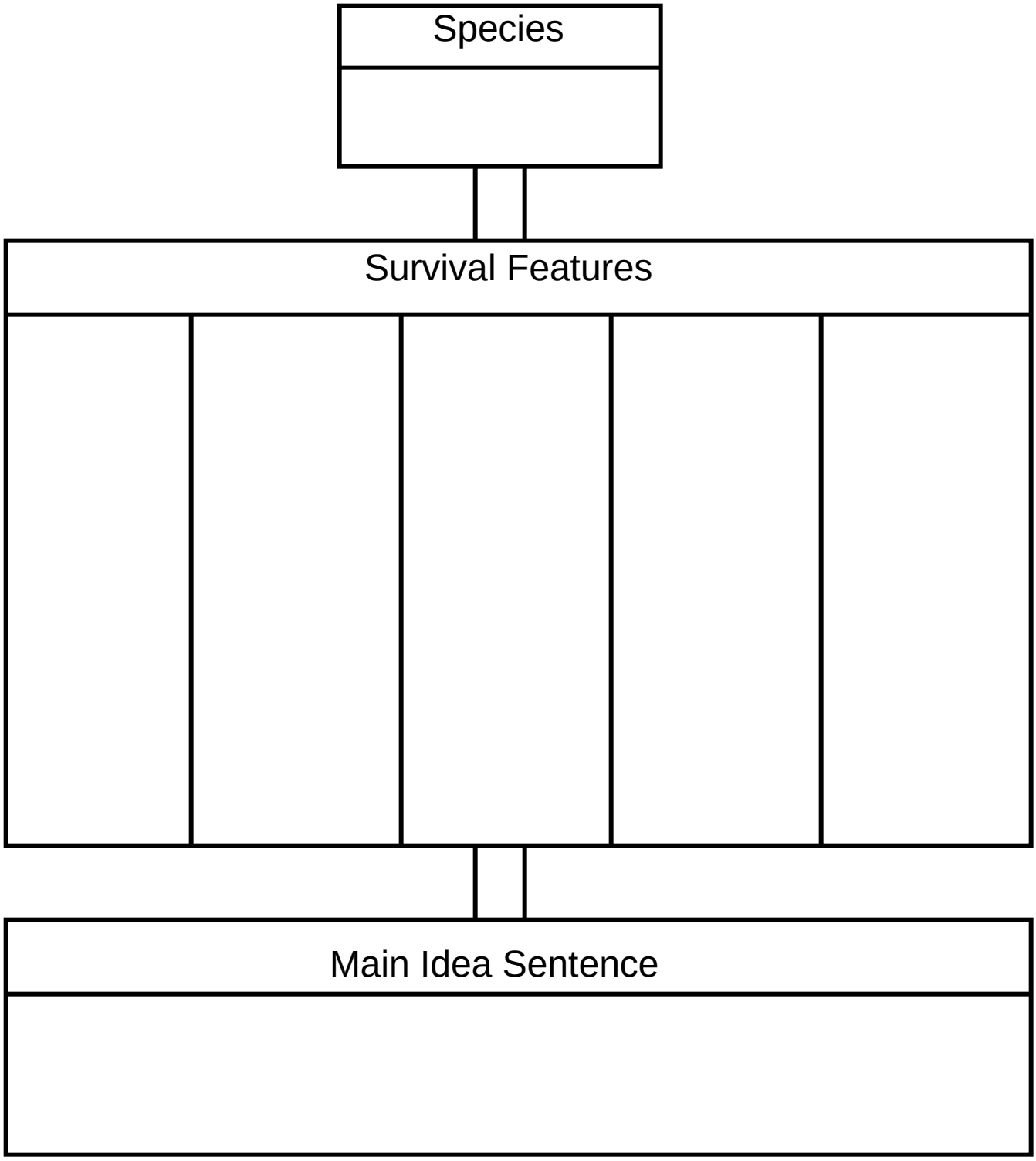
Summarize:

Lorax Community





Plant / Animal Survival



Grade 5

Big Idea – Classification
Cells & Microorganisms

5th Grade
Enduring understanding:

- Students will understand how and why organisms are classified
- Students will differentiate between learned and inherited traits
- Students will understand the living organisms are made up of cells
- Students will understand the benefits and harmful effects of microorganisms

Habits of the Mind
S5CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.
S5CS2. Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.
S5CS3. Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.
S5CS4. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S5CS5. Students will communicate scientific ideas and activities clearly.
S5CS6. Students will question scientific claims and arguments effectively.

The Nature of Science
S5CS7. Students will be familiar with the character of scientific knowledge and how it is achieved.
S5CS8. Students will understand important features of the process of scientific inquiry.

Life Science
S5L1. Students will classify organisms into groups and relate how they determined the groups with how and why scientists use classification.
S5L2. Students will recognize that offspring can resemble parents in inherited traits and learned behaviors.
S5L3. Students will diagram and label parts of various cells (plant, animal, single-celled, multi-celled).
S5L4. Students will relate how microorganisms benefit or harm larger organisms.

Knowledge	Skills
Classification	Records observations
Organism	Offers and considers reasoning
Vertebrate / Invertebrate	Quantifies data
Fish /Amphibian /Reptile /Bird /Mammal	Measures and estimates
Plants	Use scientific tools
Offspring /Inherited Traits /Learned Behaviors	Identifies parts and makes models
Gene	Describes changes
Cell Structure	Compares physical attributes
Plant Cell (membrane, wall, cytoplasm nucleus, and chloroplast)	Draws and sketches
Animal Cell (membrane, cytoplasm, nucleus)	Questions and seeks to find answers
Microorganisms (beneficial, harmful)	Researches for scientific information
	Works safely

Performance Assessment 1

- The student will complete “Classification Descriptive Organizer” to demonstrate understanding of classification (vertebrate, invertebrate, fish, amphibian, reptile, bird, and mammal).

Performance Assessment 2

- After viewing two pictures (male and female of same species) students draw four examples of what the offspring may look like on “Inherited and Learned Behaviors & Traits” graphic organizer.
- Students list details of inherited and learned behaviors and traits for each.

Performance Assessment 3

- Students will draw and label a plant and animal cell (scoring rubric provided)

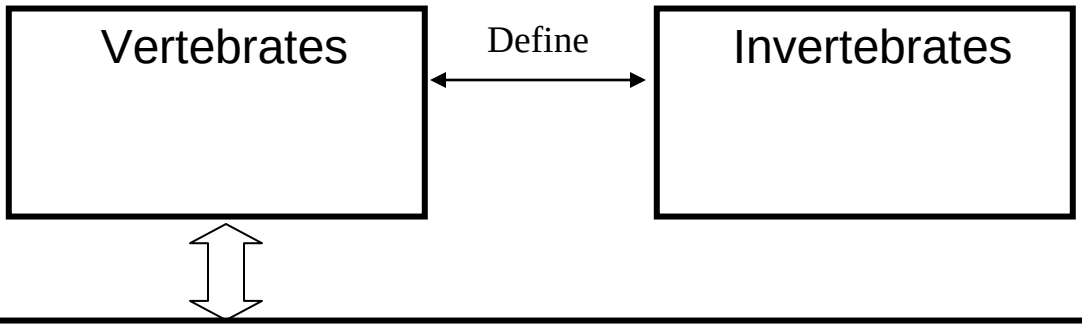
Performance Assessment 4

- Students will choose one page (marsh mud, marine bacteria, or plankton) from the Georgia’s Amazing Coast book
- Student will describe the ways in which microorganisms are “Helpful, Harmful - or Both?” on provided organizer.

Overall Assessment for Enduring Understanding

- Georgia’s Amazing Coast: “I have…Who has…?” Game

Classification Descriptive Organizer



Examples				
Fish	**Amphibians**	**Reptiles**	**Birds**	**Mammal**
Traits Specific to Each				

Inherited and Learned Behaviors & Traits Name_____

Cell Drawing Rubric Student Name: _____

CELL DRAWING RULES		PLANT CELL	ANIMAL CELL
1. Used unlined paper	1 pts		
2. All labels printed Minus 1 pt for each label not printed	5 pts		
3. First letter of label is capitalized	2 pts		
4. 1" margin on all sides	2 pts		
5. Title at top of paper	1 pt		
6. Title All Capitals	1 pt		
7. Title centered; in middle of paper	2 pts		
8. Very little erasing; neat looking paper	1 pt		
9. Name printed	1 pts		
10. Name in lower right corner	2 pt		
11. No Crossed Label Lines	4 pts		
12. All labels horizontal; straight across the paper Minus 1 pt for each crooked label	5 pts		
13. Ruler used to draw lines from label to cell part Minus 1 pt for each line not drawn with a ruler	5 pts		
CELL PARTS			
14. Cell Wall	2 pts		NONE
15. Cell Membrane	2 pts		
16. Nucleus	2 pts		
17. Endoplasmic Reticulum	2 pts		
18. Ribosomes	2 pts		
19. Mitochondria	2 pts		
20. Vaculoes	2 pts		
21. Lysosomes	2 pts	NONE	
22. Chloroplasts	2 pts		NONE
SUB TOTAL	50 pts		
Extra Credit Cell parts colored with pencils	2 pts		
Extra Credit Cell parts outlined in marker	3 pts		
FINAL TOTAL with extra credit	55 pts		

Microorganism

Helpful or Harmful?

Describe:

Georgia's Amazing Coast:
I am… Who has…? Game

Preparation:
Copy cards on card stock and laminate. Cut apart.

Directions:

1. Distribute entire set of cards to students (some students may have more than one card).
2. Game begins with any student reading the descriptive paragraph printed on their card, beginning with "Who has…"
3. The student who holds the card that names the thing described calls out "I have…" and then asks "Who has…" and reads the description on their own card.
4. Game continues until full circle is made back to first student and all cards have been read.

Alligator The larval stage of the Blue Crab, it floats from the estuary out to the sea and then back again before changing into something that resembles a blue crab.	**Armadillo** Nearly hunted to extinction by the early 1970's, this animal is once again a common sight in southern wetlands, rivers, and swamps.
Blue Crab This nearly blind, burrowing animal is found second only to the opossum as road kill in south Georgia.	**Cow Killer** Like other members of the Decapod order, it has five pairs of legs. It gets its name from its bright coloring along its frontal area.
Diamondback Rattlesnake Also called the velvet ant, it is in fact a wingless wasp. It is a shocking shade of red with two black bands at its abdomen.	**Eastern Indigo Snake** The largest and deadliest of the world's thirty-two species of rattlesnakes.
Fossilized Shark Tooth One of the largest non-venomous snakes in North America, it often lives in a gopher tortoise burrow.	**Georgia's Tides** Georgia's official state fossil, they present compelling evidence that much of Georgia was once under the sea.

Gopher Tortoise Every twelve hours, billions of gallons of seawater rush into or out of the marsh through a web of small rivers or streams.	**Marsh Mud** Considered a “keystone species” because its burrow serves as a refuge for at least 39 invertebrate and 42 vertebrate species.
Gray’s Reef A thick nutrient soup that transforms the carbon in dead plants into energy to power higher forms of life, replenishing Georgia’s coastal waters.	**Hooded Pitcher Plant** 17 miles east of Sapelo Island, this national marine sanctuary is a vast complex of underwater limestone outcroppings that rise up 10 feet off the ocean floor.
Island Glass Lizard With the promise of nectar, this plant lures ants, bees, butterflies, and other insects deep inside its tubular leaves, where they are guided to a pool of fluid & drown.	**Knobbed Whelk** A slender, legless creature that can grow to 26 inches in length, most of which is tail. It spends most of its life underground.
Live Oak Tree “Housed” in Georgia’s state seashell, it is one of the largest sea snails on the coast.	**Longleaf Pine Forest** Georgia’s state tree, it gets its name by keeping its leaves throughout the winter.

Marsh Periwinkle Home to the Gopher Tortoise & Eastern Indigo Snake. Logging, agriculture, and population change have almost done what fire and lightning couldn't – eliminate this ecosystem.	**Octopus** Not a flower, these snails can be found at the base of one of their favorite foods – the smooth cordgrass.
Oyster One of coastal Georgia's shyest underwater creatures, this cephalopod has the ability to change colors.	**Painted Bunting** We use this creature's meat as food, its pearl and shiny lining as ornament, and its shell as a building material.
Plankton One of the most colorful birds in North America, its plumage is bright blue, red, green, and yellow. They summer in Georgia and winter in the Caribbean.	**Right Whale** A wide variety of drifting plants and animals, ranging in size from a single cell to a huge sea jelly.
Sand Gnat Georgia's official "State Marine Mammal" - adults of this species reach 50 feet in length and weigh about 60 tons. Today it is close to extinction.	**Sargassum** Also known as "no-see-ums", these insects are members of a group of insects known as biting midges.

Sea Island Cotton A type of brown algae that floats freely on the ocean currents. Fish, baby sea turtles, and other sea life value it as habitat.	**Horseshoe Crab** This plant was used to make luxurious fabric for the wealthy in the first half of the 1800's.
Sea Oats Often called a living fossil, this creature dates back 250 million years in its present form. Its tail was used by Native Americans as a spear tip.	**Leatherback Sea Turtle** Often referred to as "pioneer plants" for their role in creating and stabilizing sand dunes, this hardy grass grows in clumps along the edge of the sea.
Smooth Cordgrass The world's largest sea turtle, it can reach 6-8 feet in length and weigh as much as 2,000 pounds. It eats only sea jellies.	**Wood Stork** If you've seen Georgia's salt marshes, you've seen this. Its matted roots hold the marsh together.
Yaupon Holly North America's only native stork, It frequents the beaches, marshes, and swamps of Georgia, where it can be seen fishing for food.	**Zoea** The only native American holly that contains caffeine. It grows wild along coastal dunes and stream banks. Scientific name: *Ilex vomitoria*

Activating Strategy

- Students will work in small groups to sort the "Georgia's Amazing Coast Picture Cards into categories.
- Students will present and justify their reasons for categorizing

Acquisition Lessons

EQ:

- How are animals sorted into groups (vertebrate and invertebrate)?
- How are vertebrates sorted into groups (fish, amphibian, reptile, bird, and mammal)?
- How are plants sorted into groups?

1. Teacher will distribute Georgia's Amazing Coast picture cards.
2. Teacher will designate one area of the room for plants and one for animals.
3. Students decide which group they belong to and go to that area.
4. Students will share which card they have and why they chose their category.
5. Students who have plant cards will trade their card to teacher for an animal card.
6. Teacher will designate one area of the room for vertebrate and one for invertebrates.
7. Students decide which group they belong to and go to that area.
8. Students will share which card they have and why they chose their category.
9. Students who have invertebrate cards will trade their card to teacher for a vertebrate card.
10. Teacher will instruct students to sort themselves into groups based on their skin covering.
11. Teacher leads class discussion about how students sorted themselves (coaching into further groups if necessary)
12. Class completes a wall chart with examples and descriptors for each category.
13. Teacher leads class discussion about why scientists use classification.
14. Students repeat activity using plant cards.
15. Ticket out the Door: Students choose final animal and list the ways that animal was classified.

**For extra fun – Play the "Classify this!" PowerPoint game

- What are learned behaviors?
- What are inherited traits?
- What role do genes play in the transfer of traits?

    1. Teacher reads several pages from Georgia's Amazing Coast (Alligator Hole, Blue Crab, Kingfisher, Octopus, Sand Tiger Shark, Seahorse, Tiger Salamander)
    2. After each selection class suggest particular traits or behaviors that are particular to that species and aid in its survival.
    3. Teacher leads a discussion about student findings (learned behaviors, traits, and genes), completing "Physical Traits and Behaviors" graphic organizer foe each.
    4. Students choose one animal from above list and write a creative story from the following scenarios:
        - The animal is born without the traits or behaviors
        - How one animal teaches another of the same species the behavior
        - An animal is born with, or learns, the traits of a completely different animal

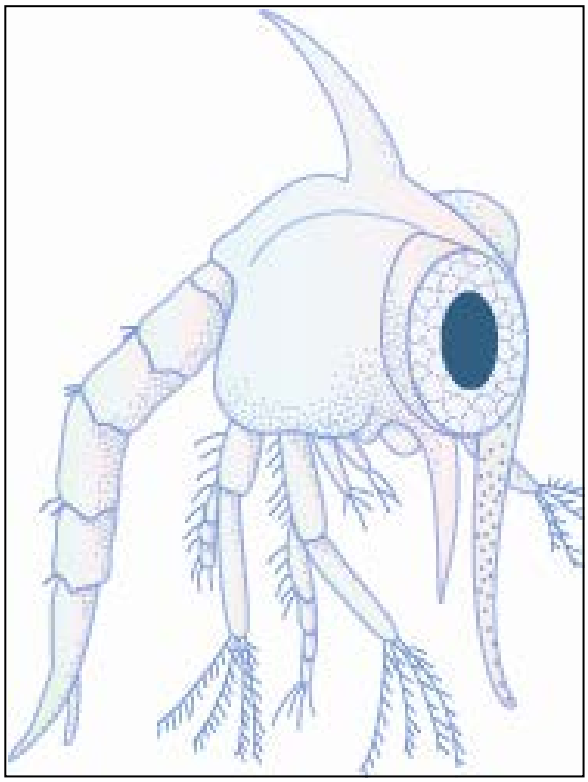
    ***Animal Traits/Behavior Story Map included for use in this activity

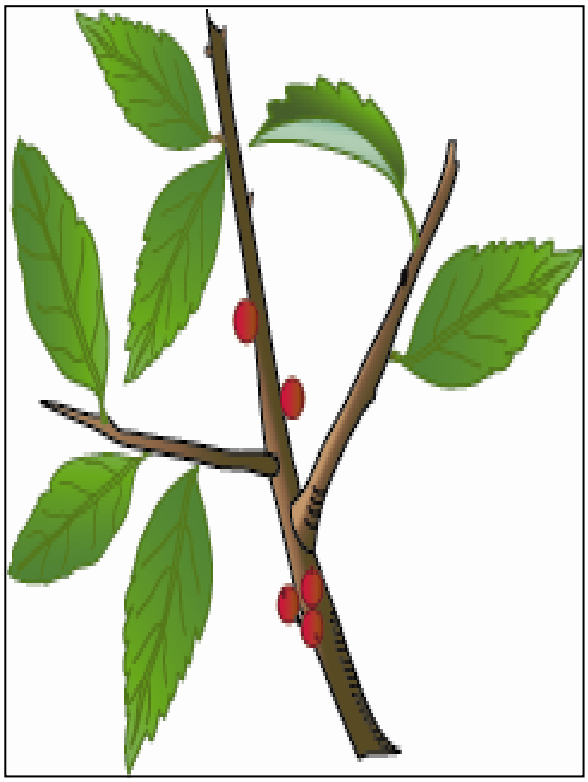
- What are the parts and function of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts)?
- What are the parts and function of an animal cell (membrane, cytoplasm, and nucleus)?

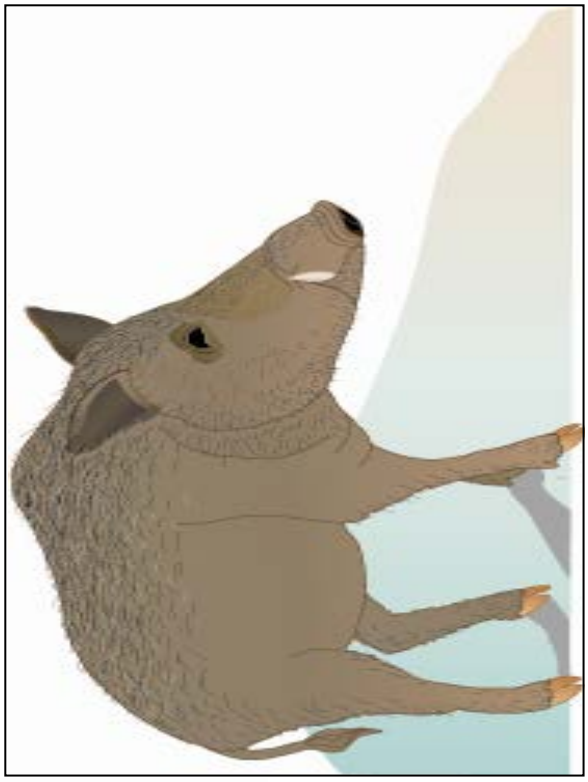
    1. Teacher leads class on a walk around campus to collect plant and animal samples
    2. Students prepare slides from samples and examine them under the microscope (or use prepared slides)
    3. Watch BrainPop movies on animal and plant cells. Take accompanying quizzes (whole group)
    4. Teacher leads class brainstorming session to complete Venn diagram on plant/animal cells.
    5. Students draw and label an example of each cell.

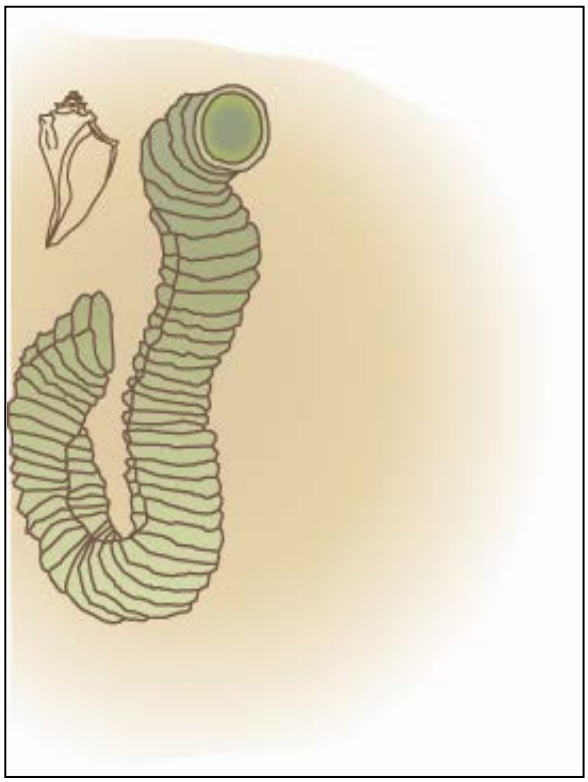
- Why are some microorganisms beneficial and some are harmful?

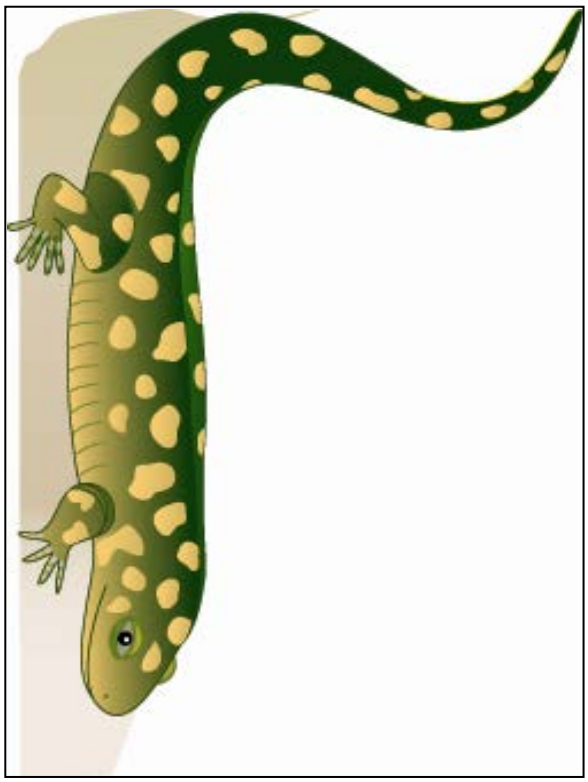
    1. Teacher introduces the Frayer model for microorganisms. Teacher instructs students to listen as the pages are being read for examples of microorganisms and their specific traits of being harmful or beneficial.
    2. Teacher reads several pages from Georgia's Amazing Coast (Ghost Shrimp, Marsh Mud, Marsh Periwinkle, Marine Bacteria, and Plankton)
    3. Class completes Frayer model.
    4. Class creates chart describing how each example from the book is helpful or harmful.
    5. Ticket out the door: Student tells teacher one trait of microorganisms.

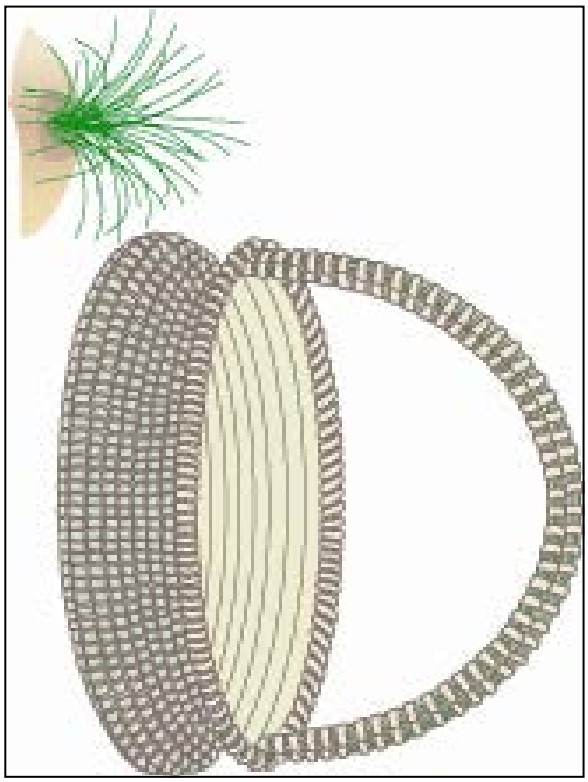


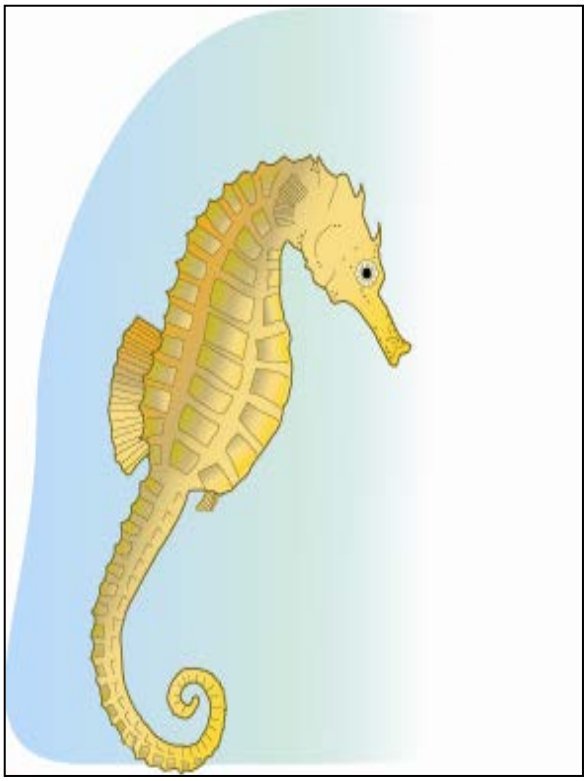


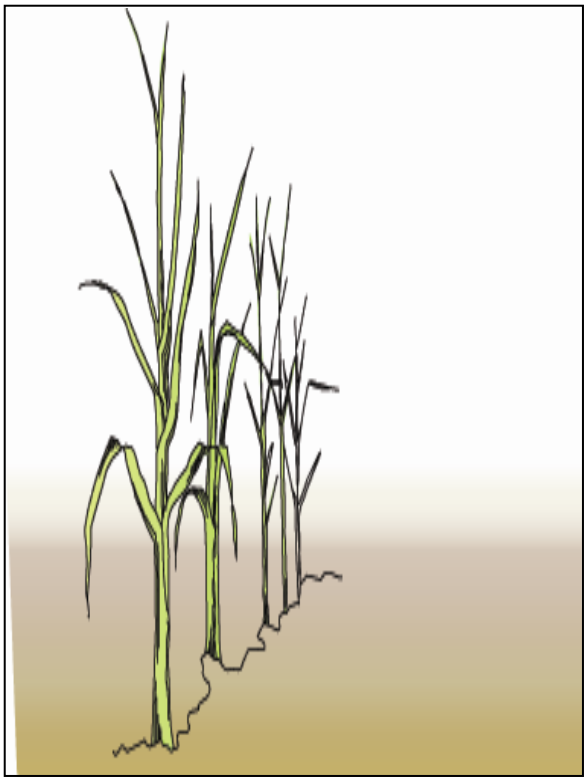


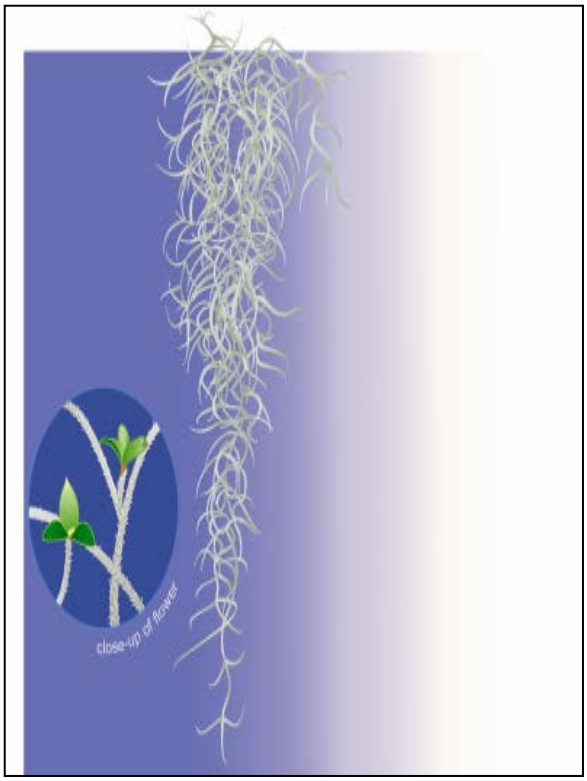


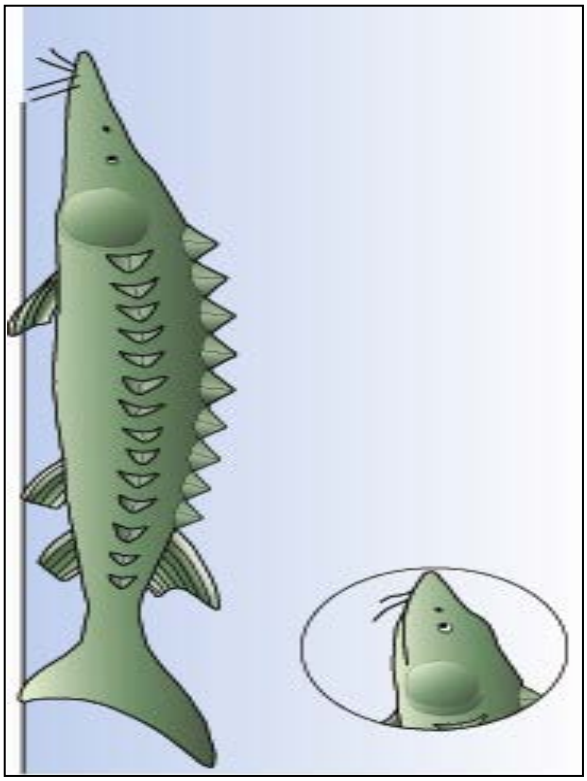


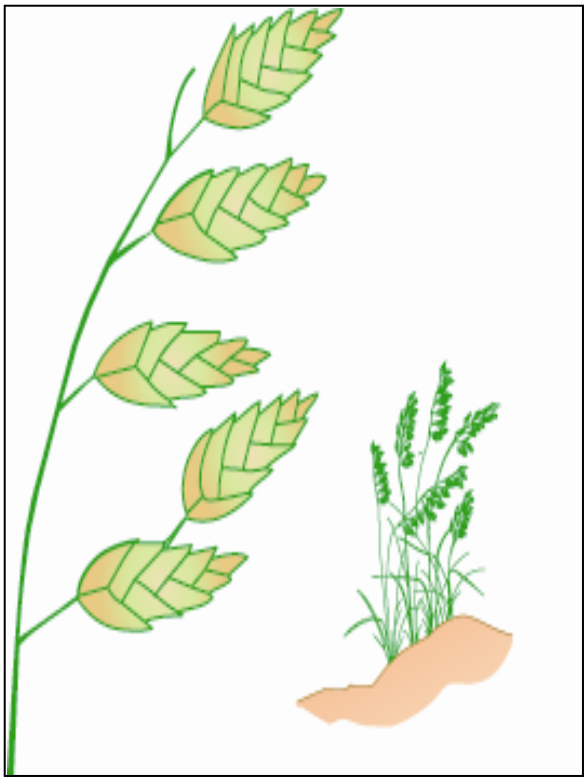


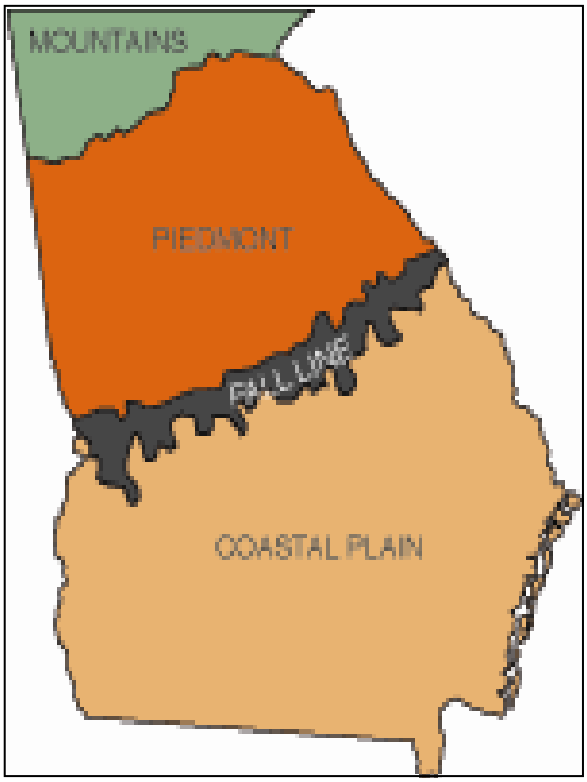


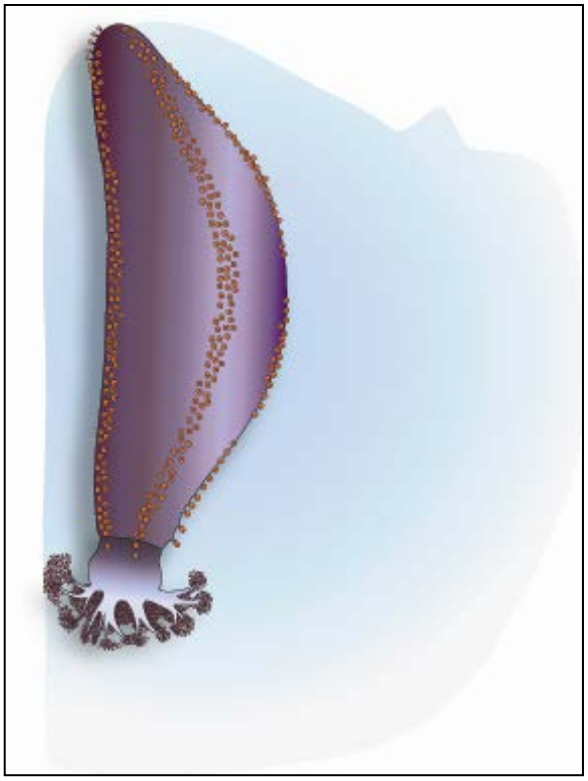


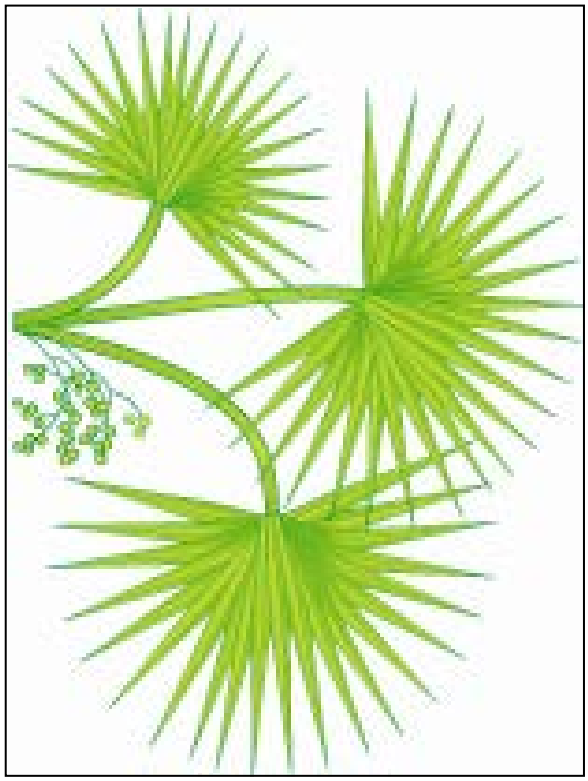

close-up of flower

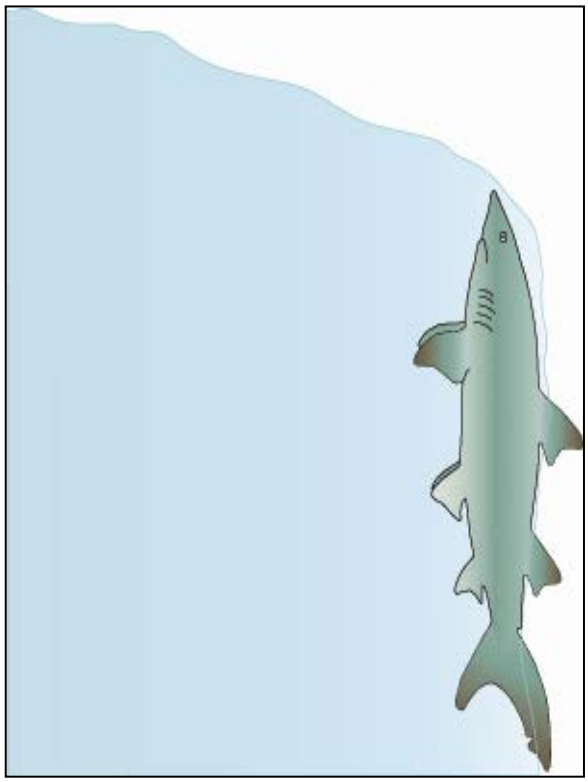


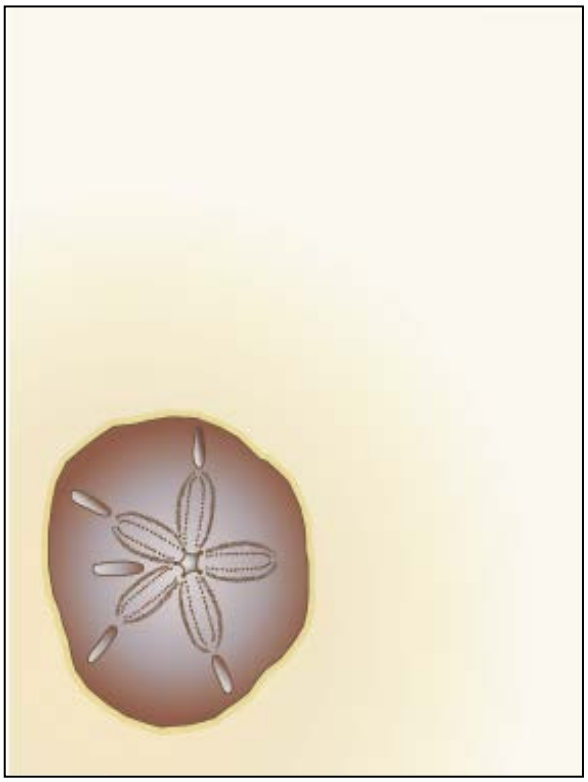


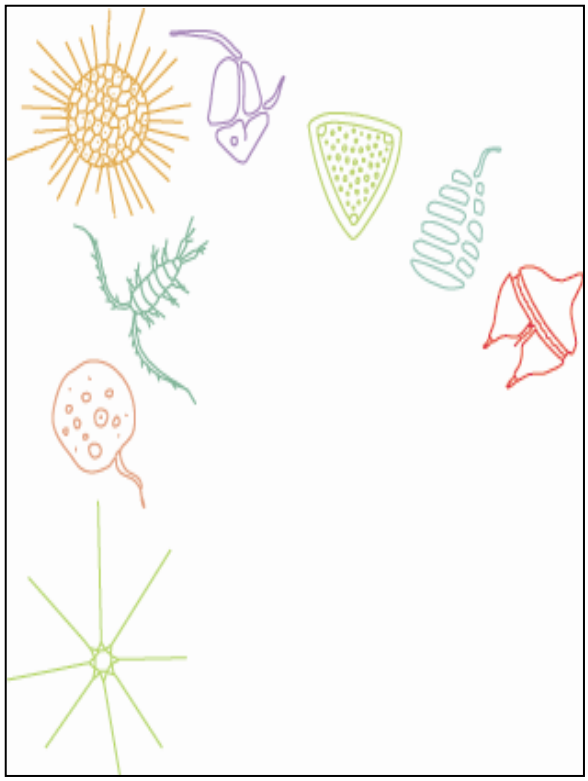

MOUNTAINS
PIEDMONT
FALL LINE
COASTAL PLAIN

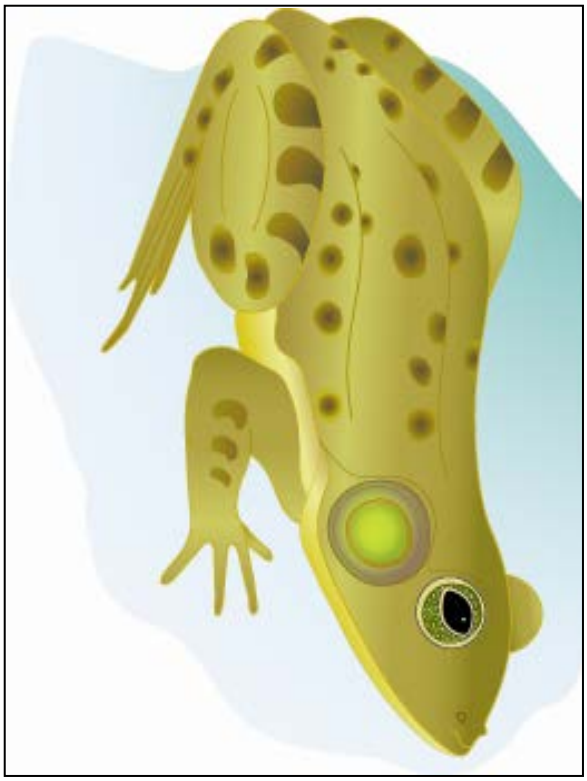


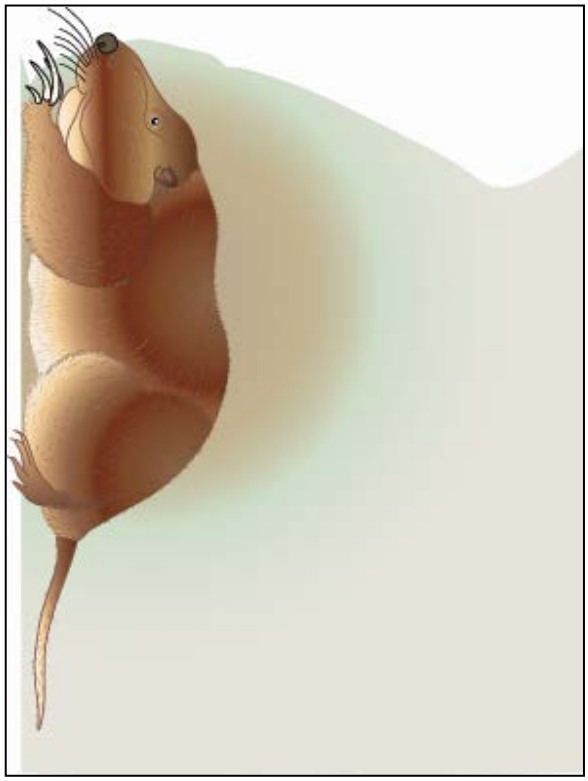


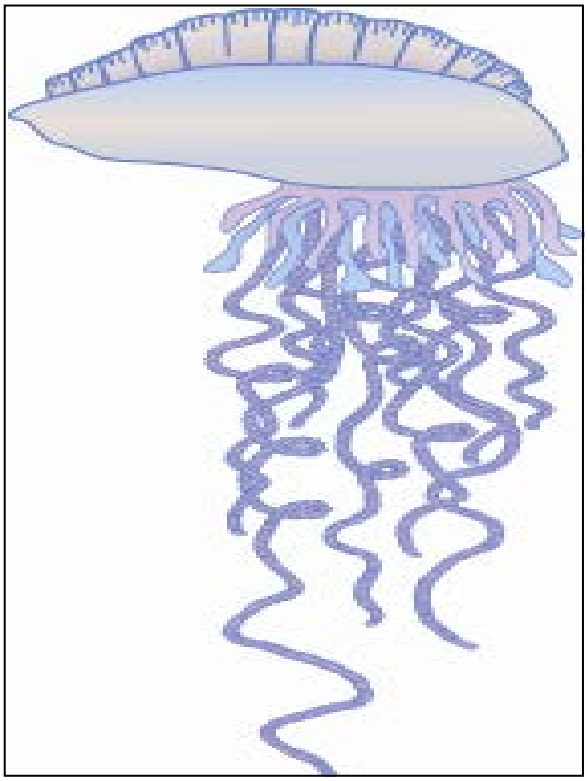


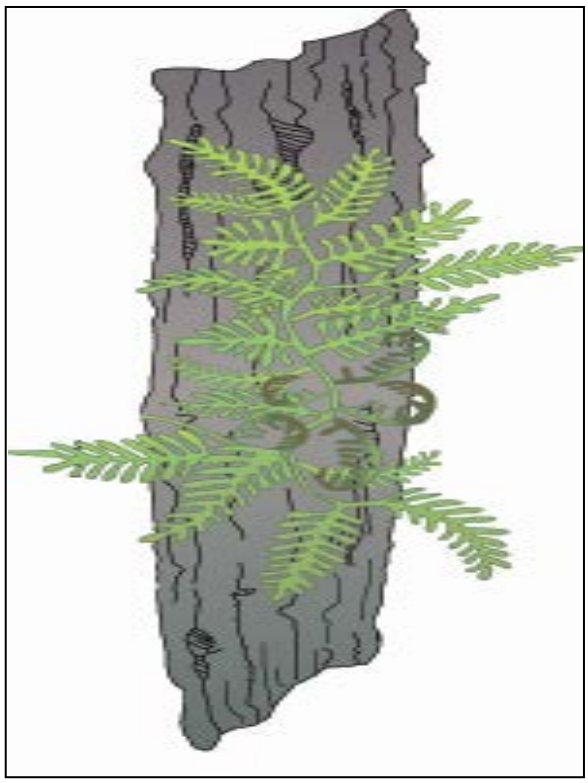


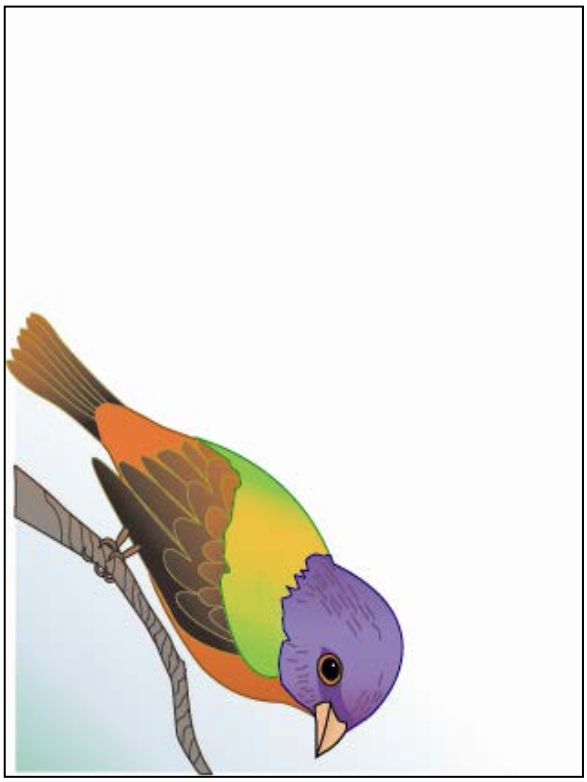


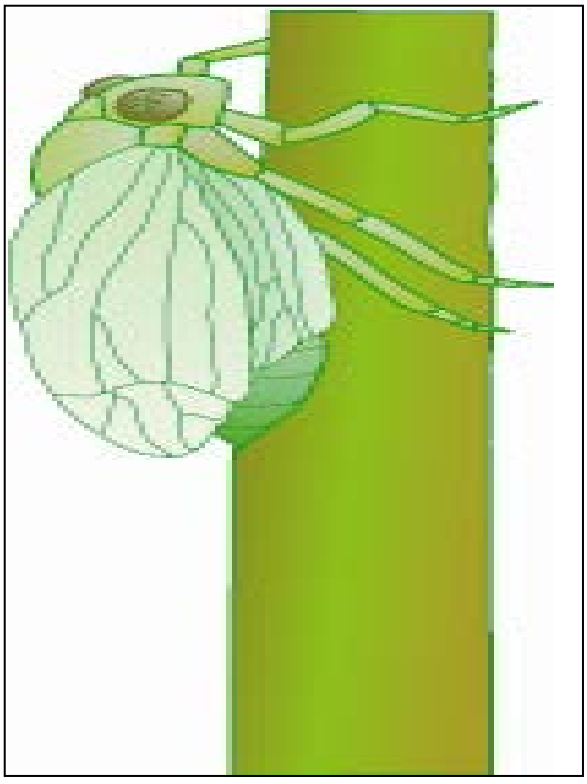


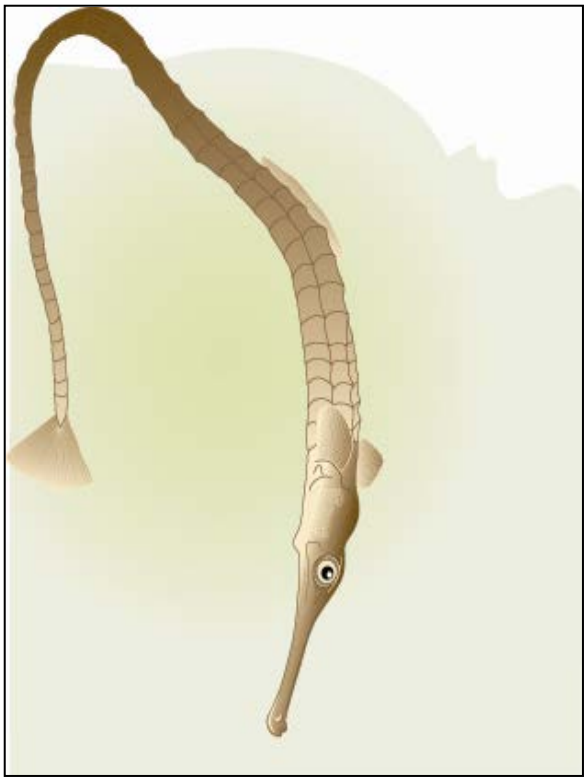


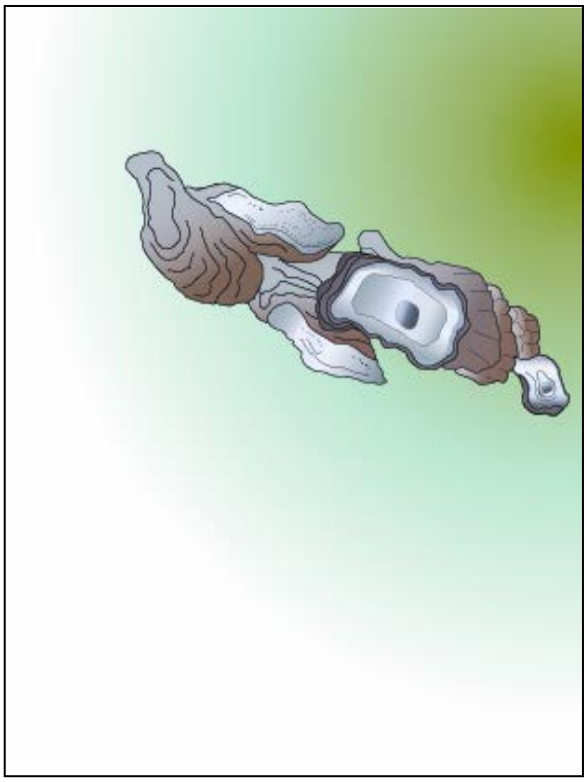


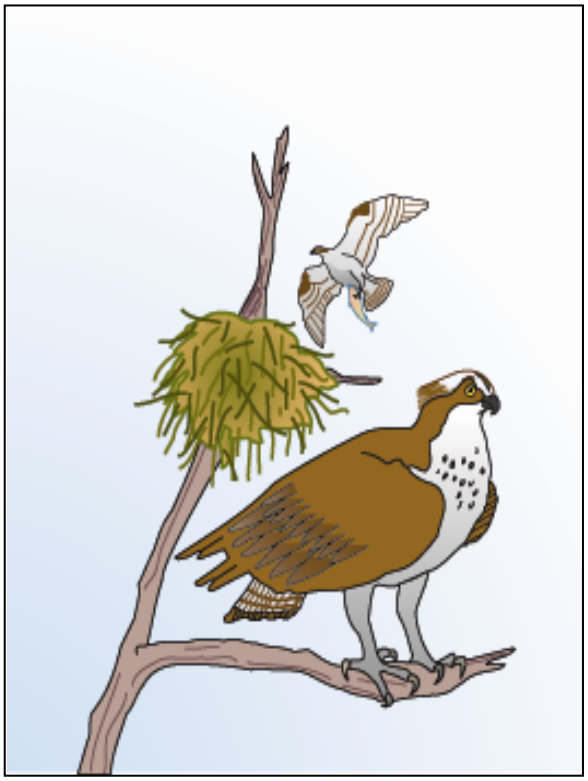


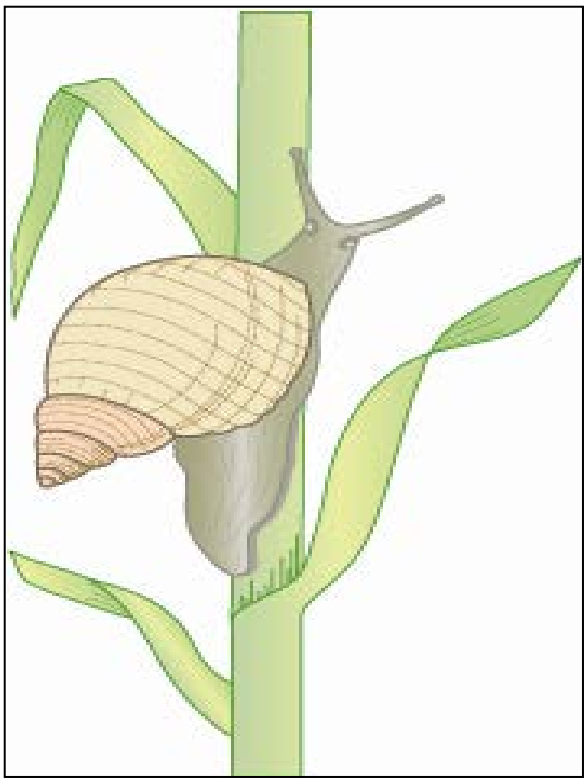


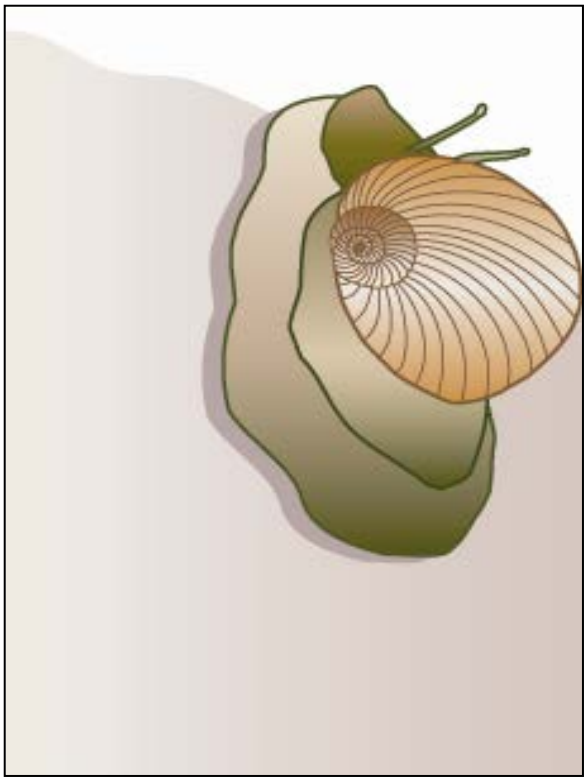


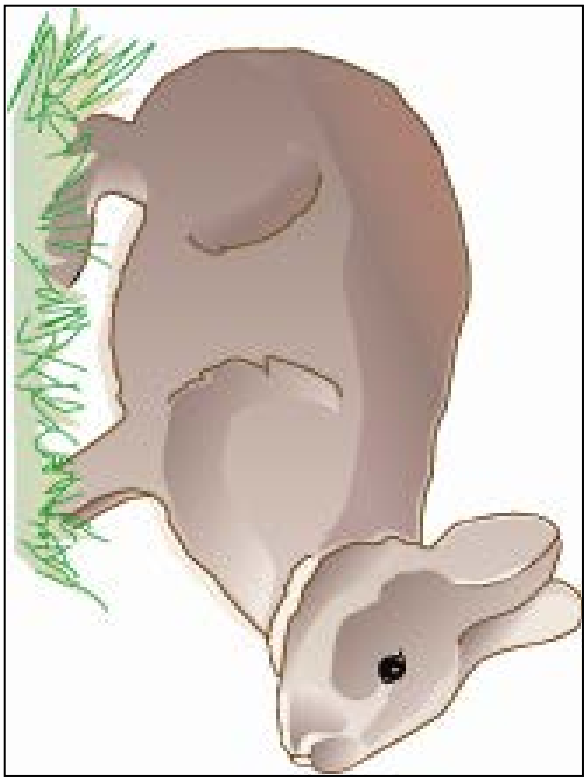


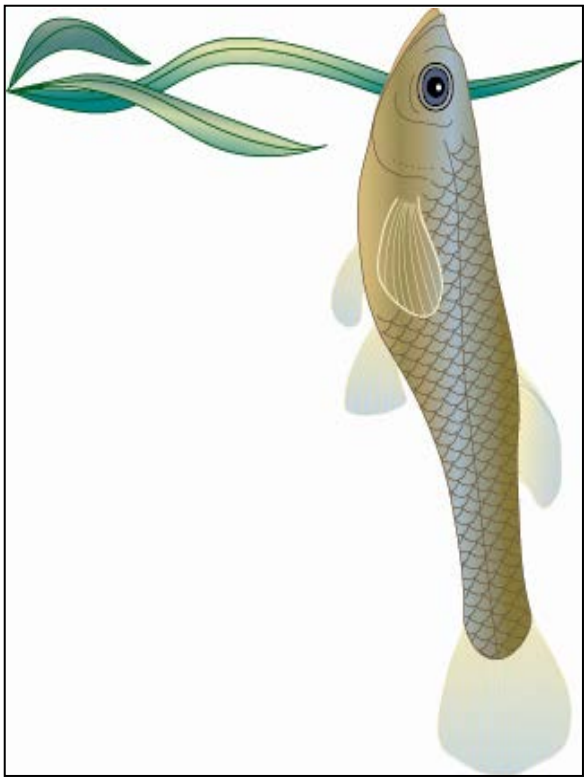


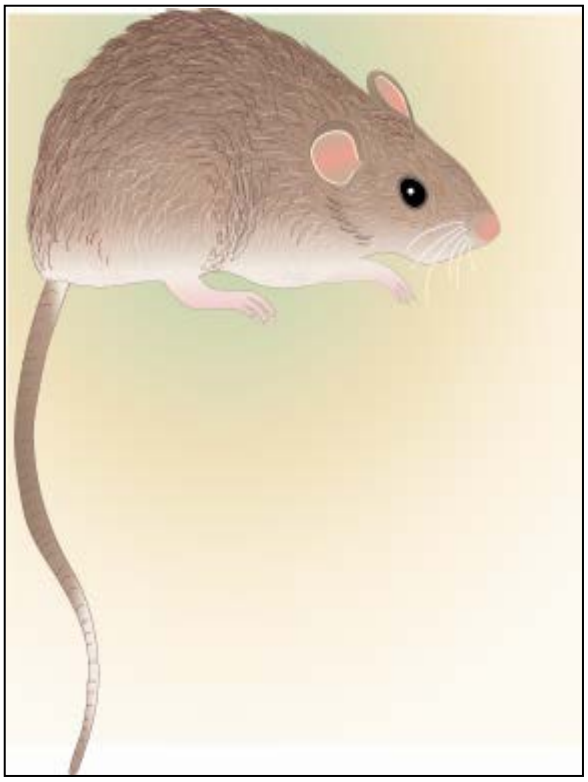


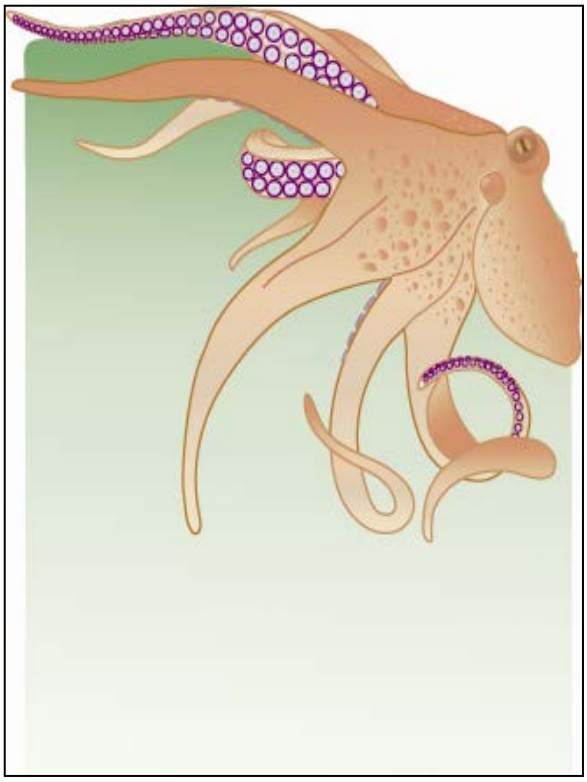


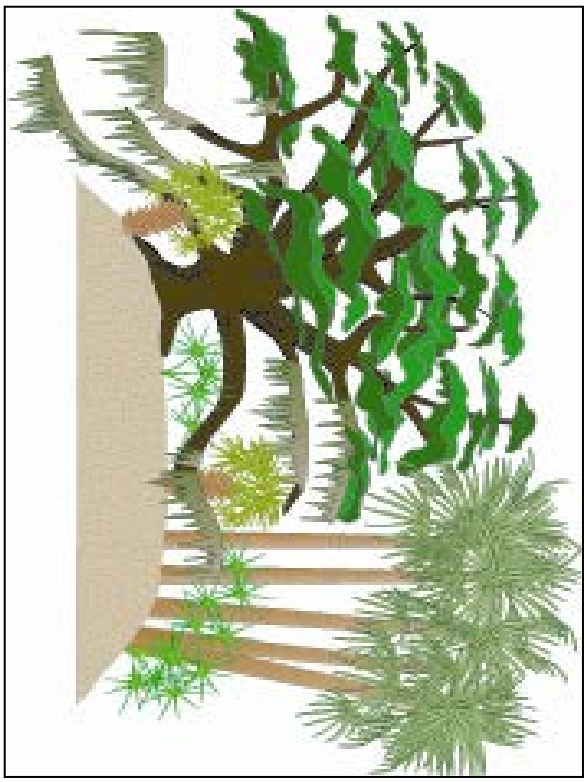


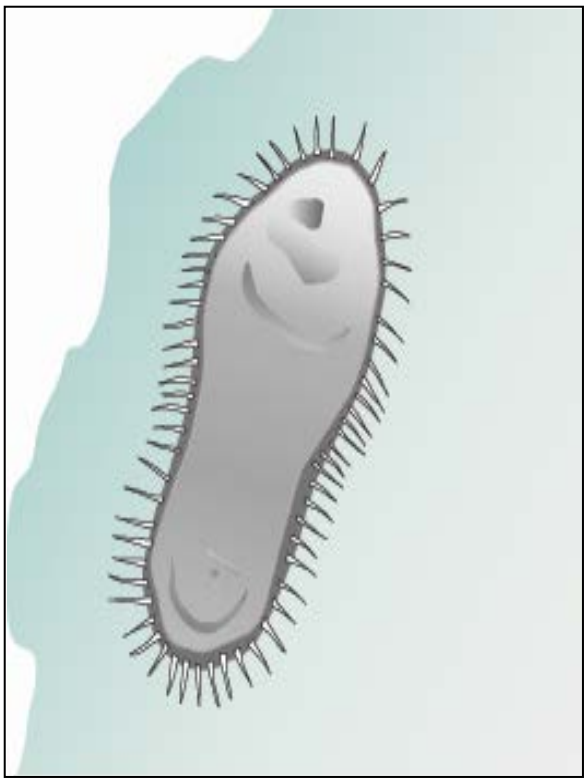


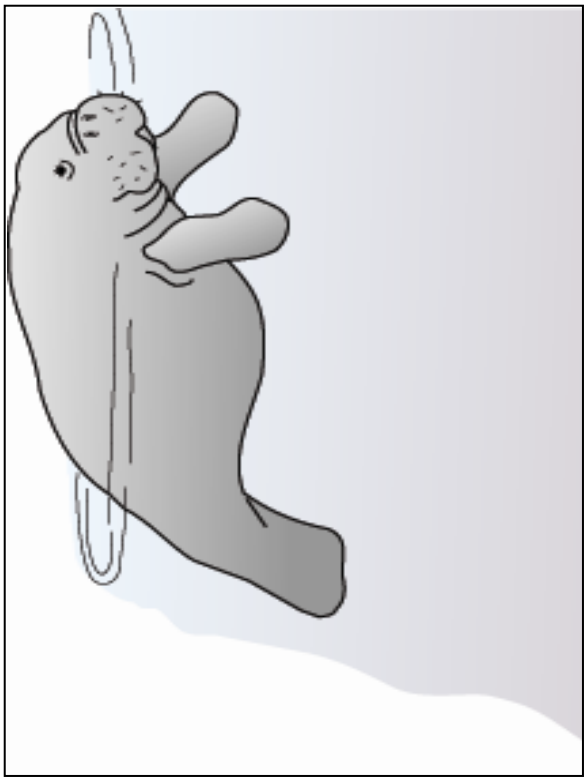


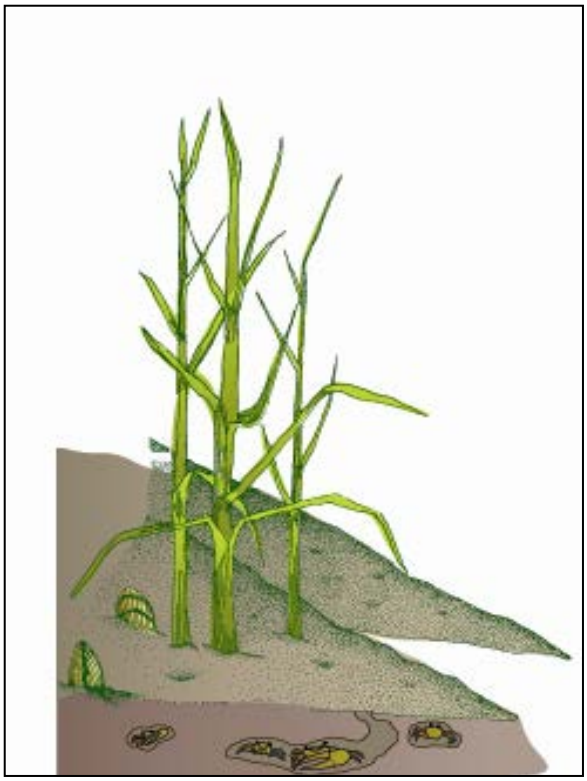


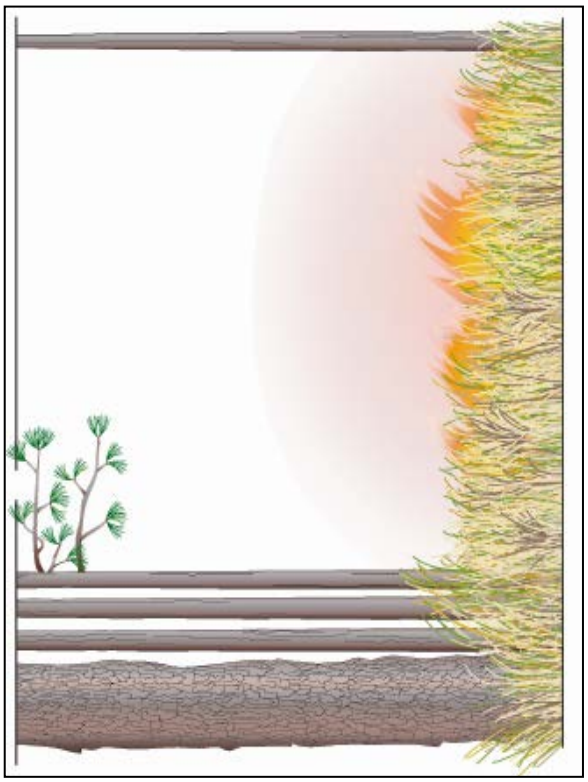


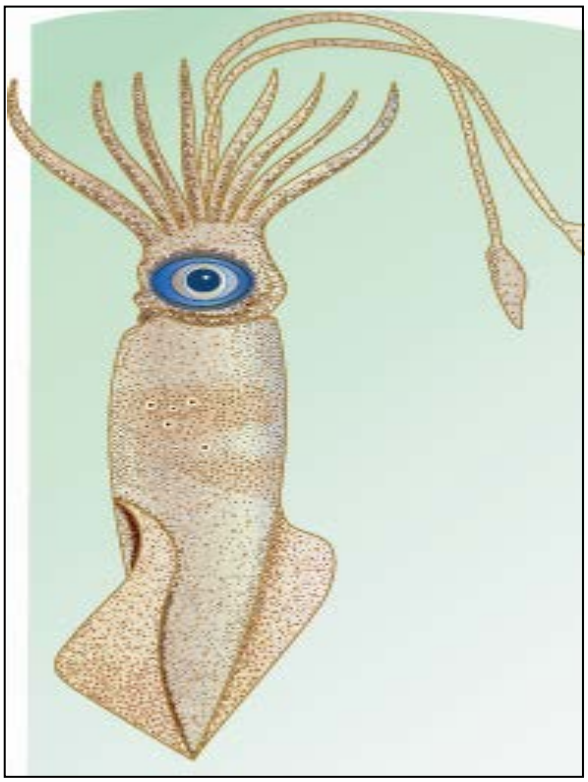


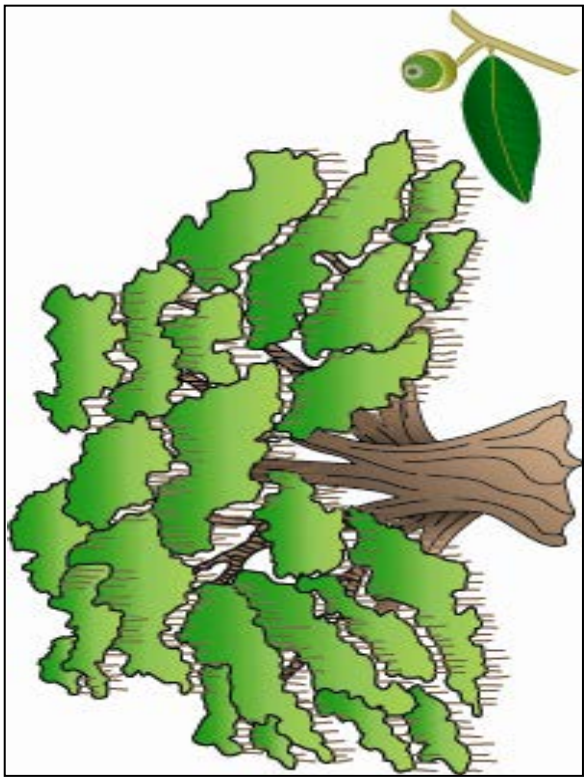


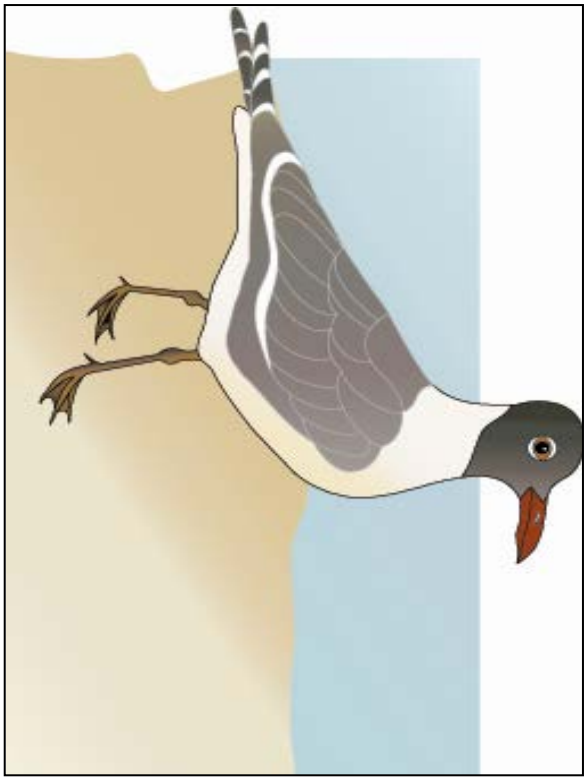


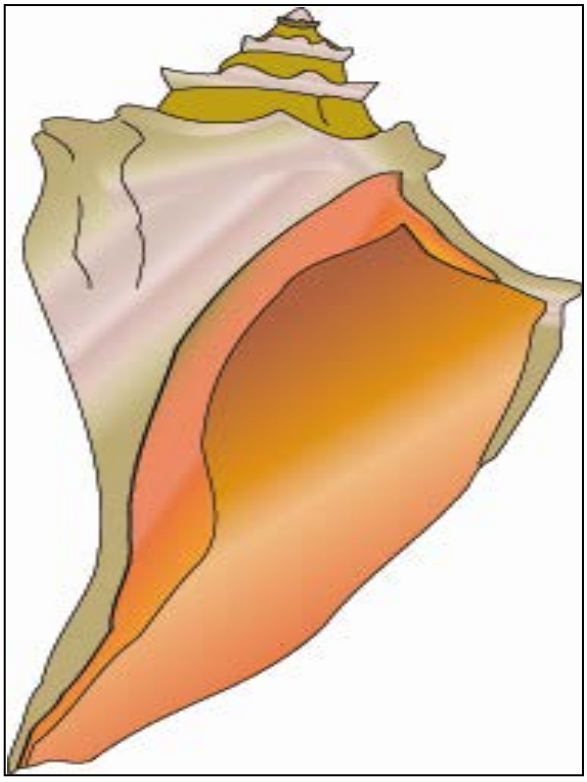


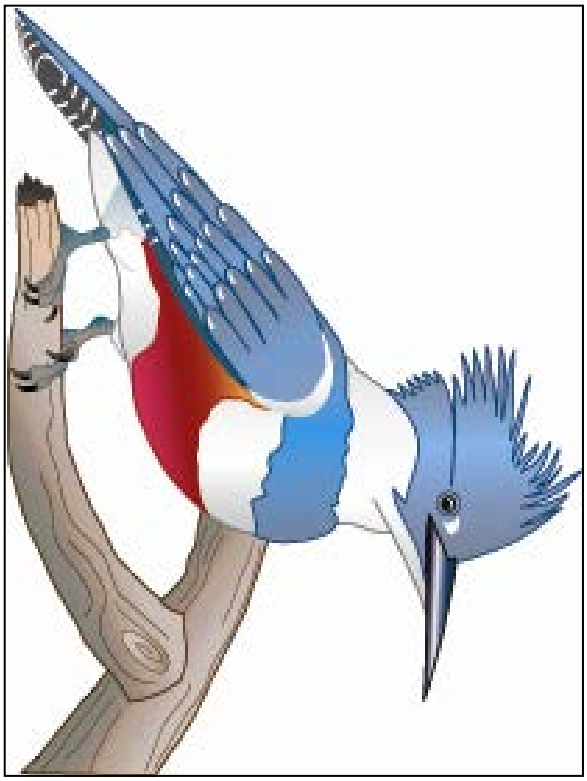


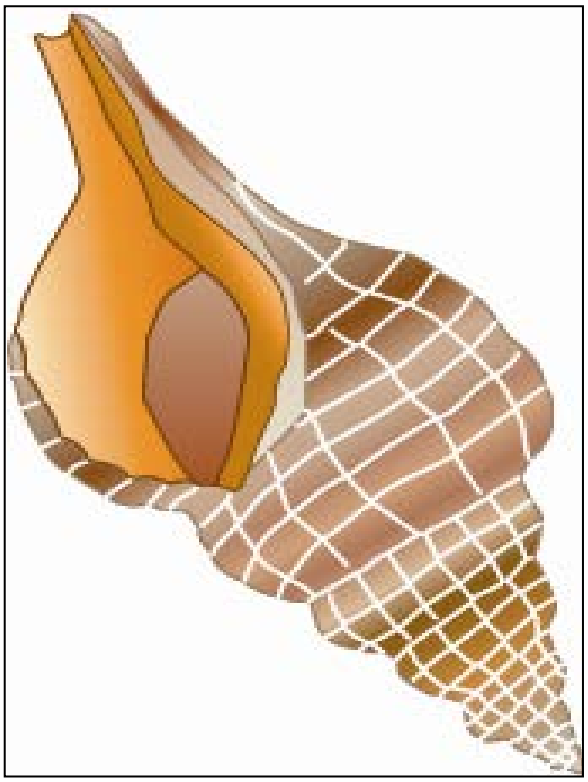


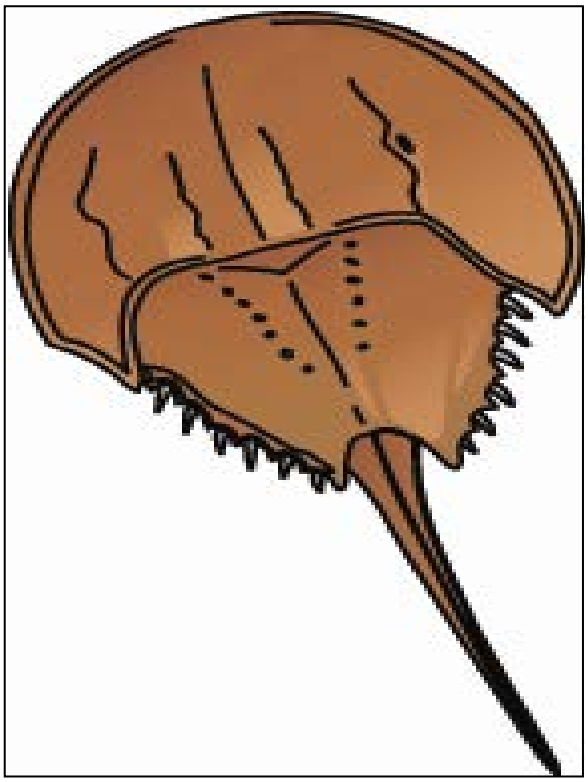


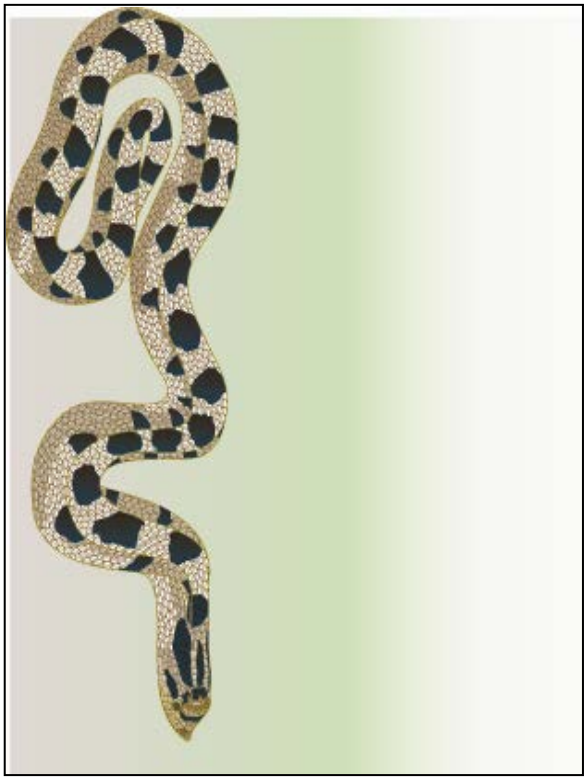


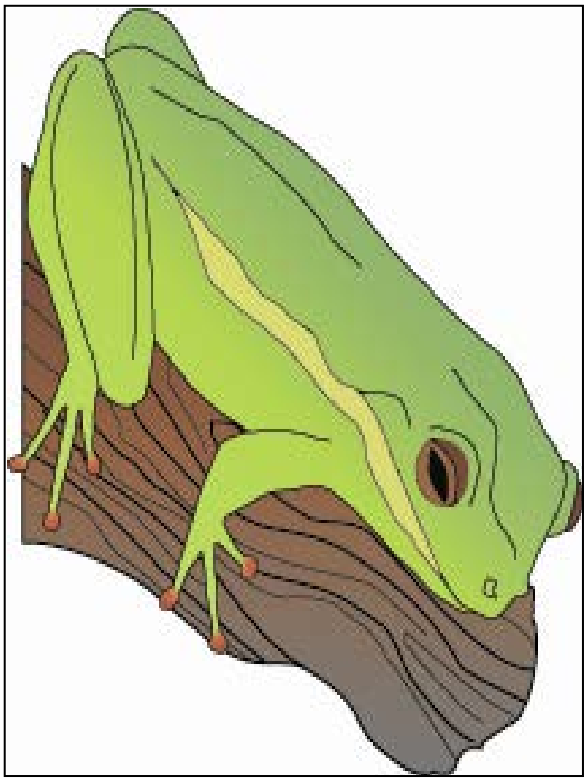


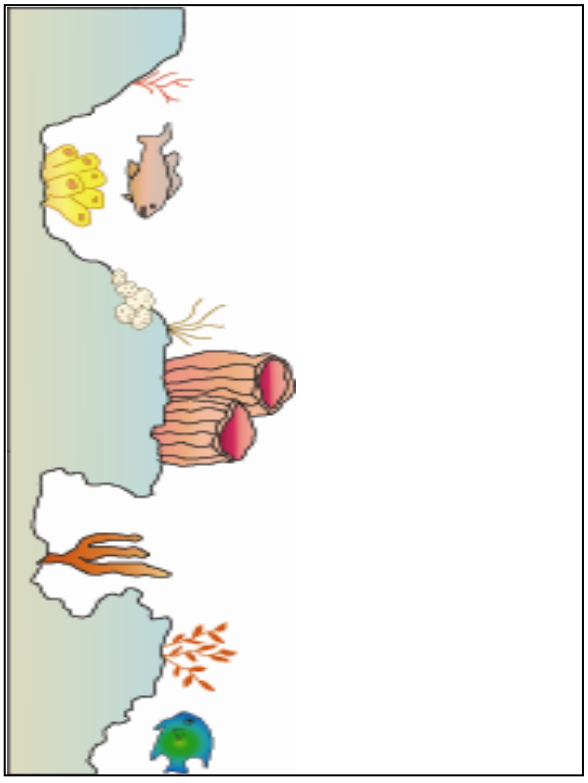


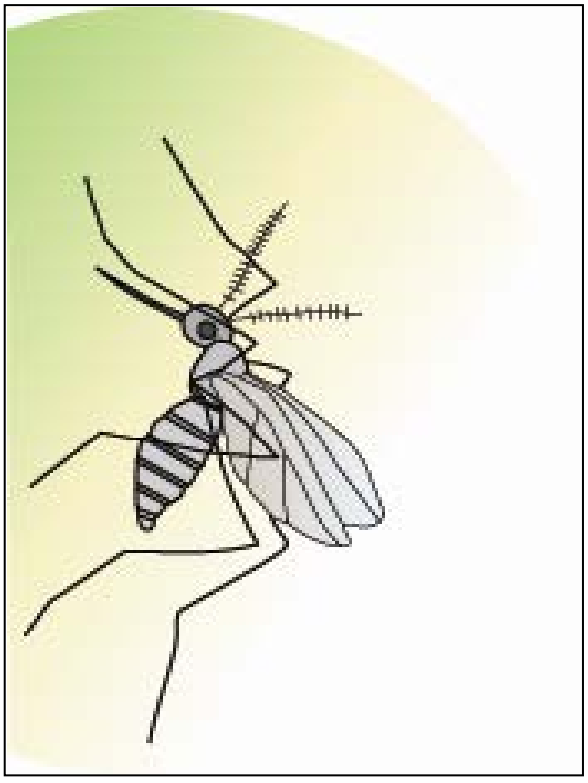


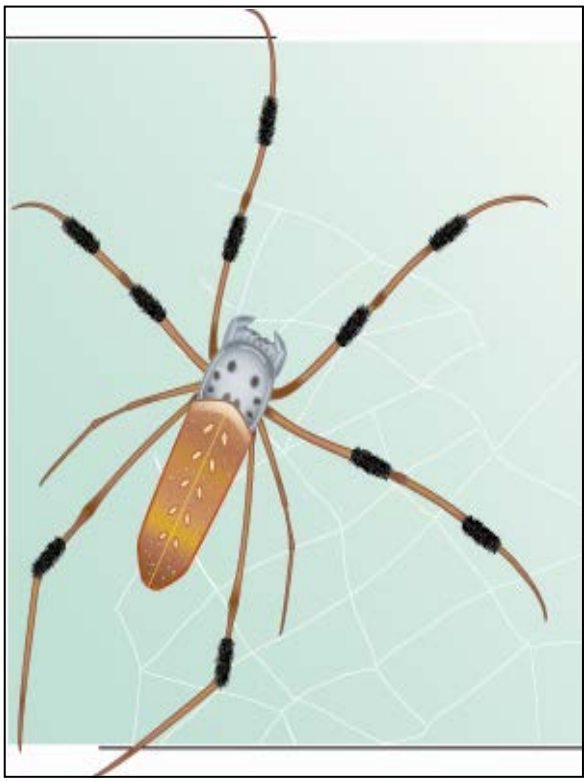


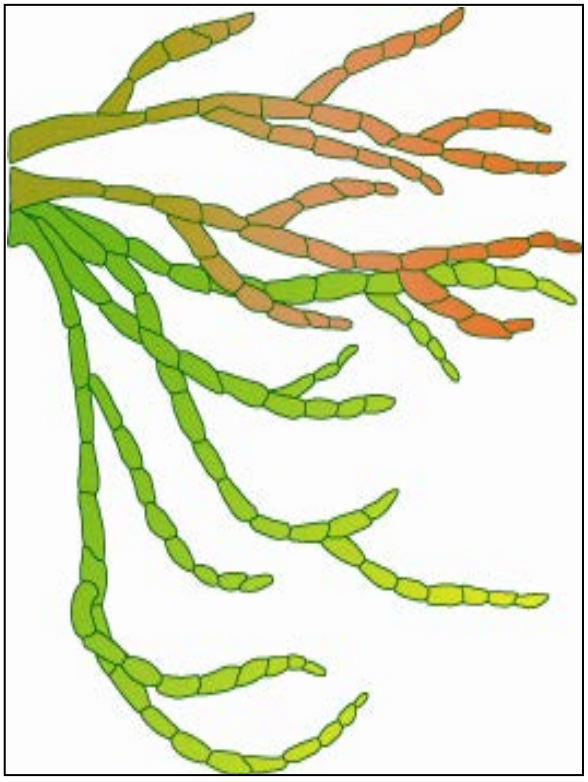


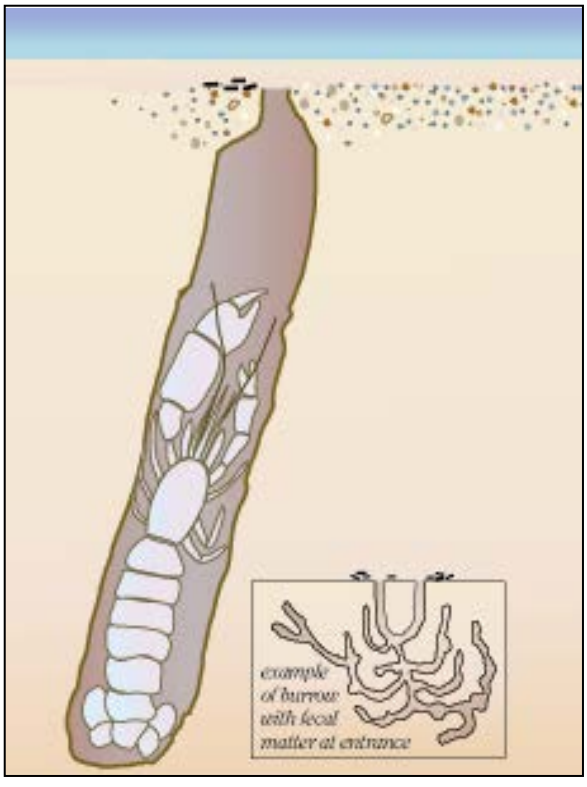


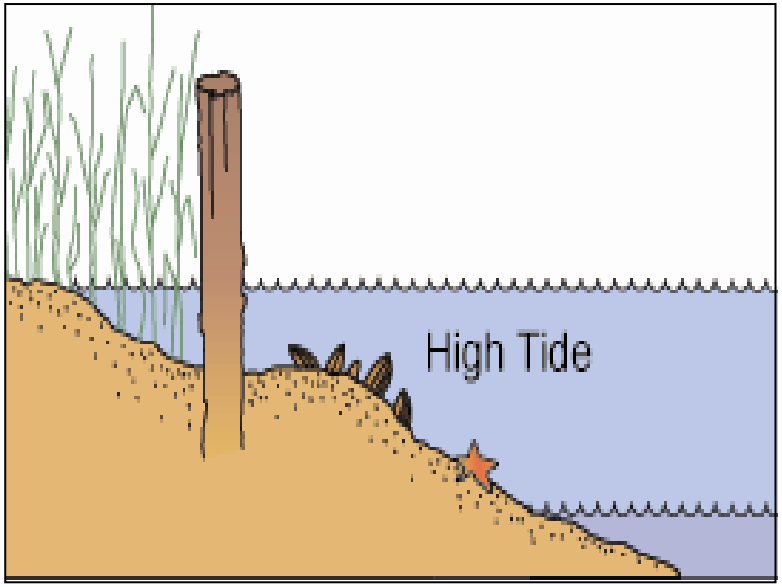


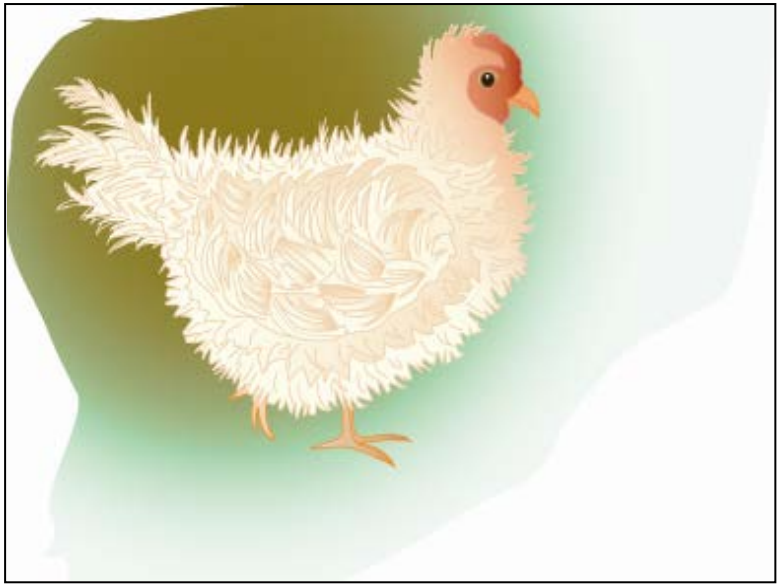


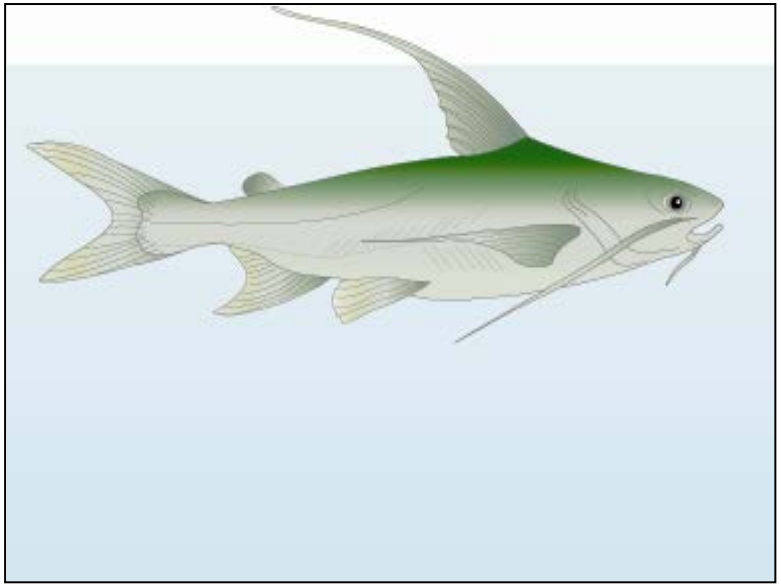


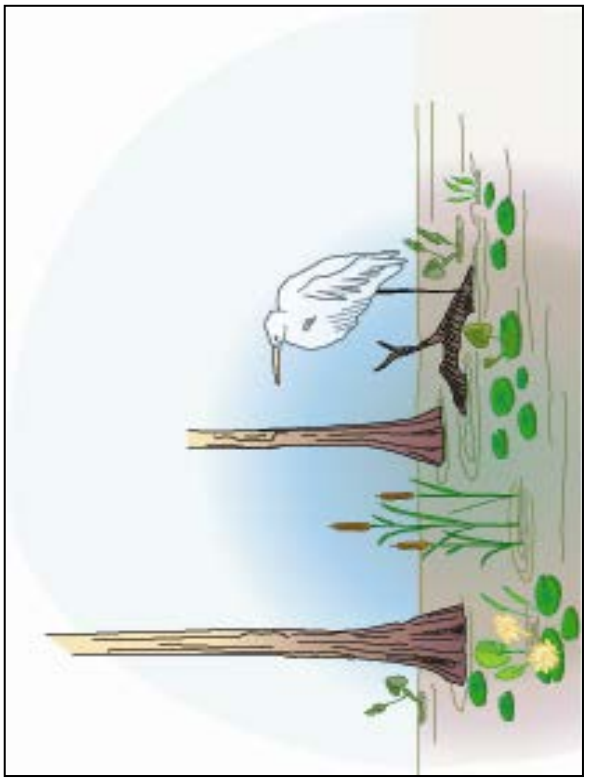


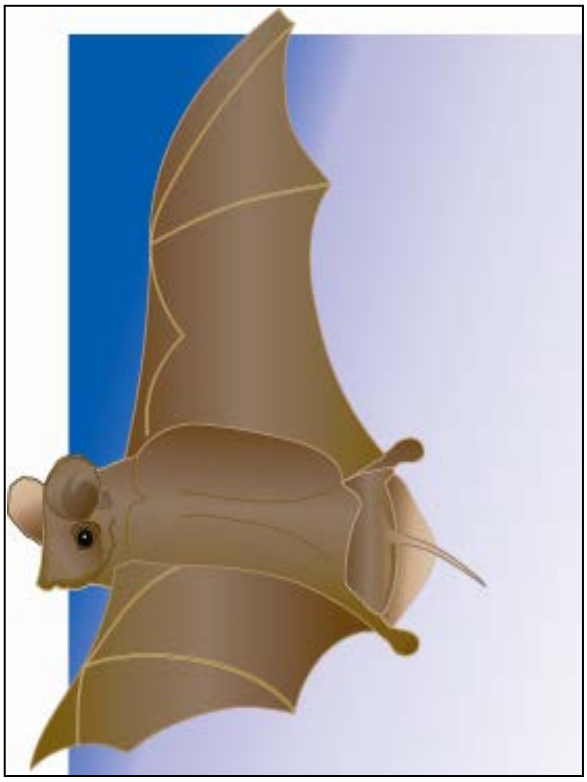

example
of burrow
with fecal
matter at entrance

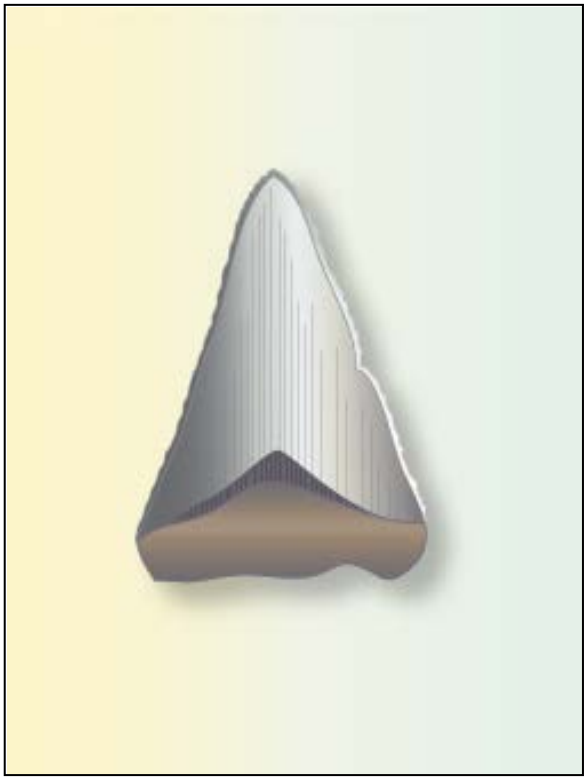

High Tide

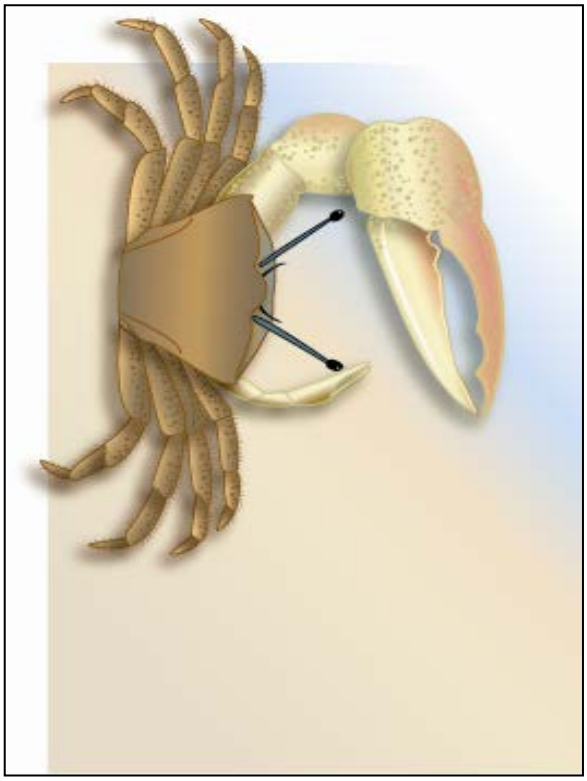


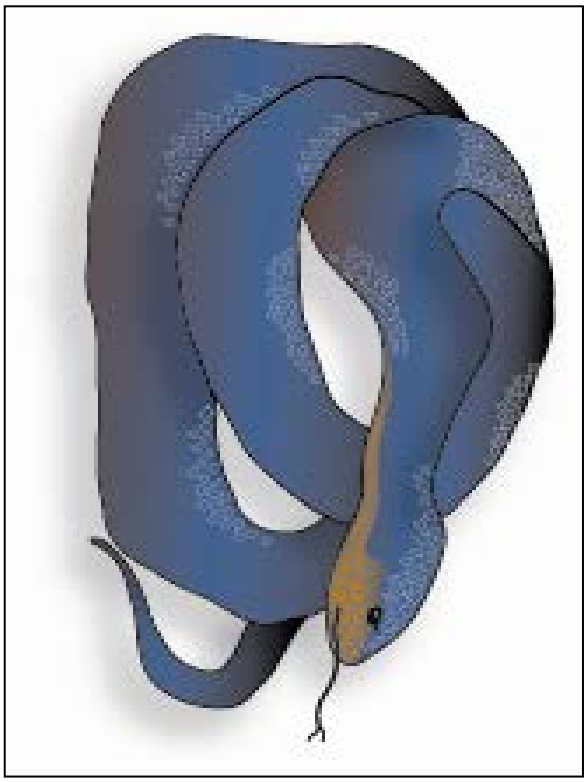


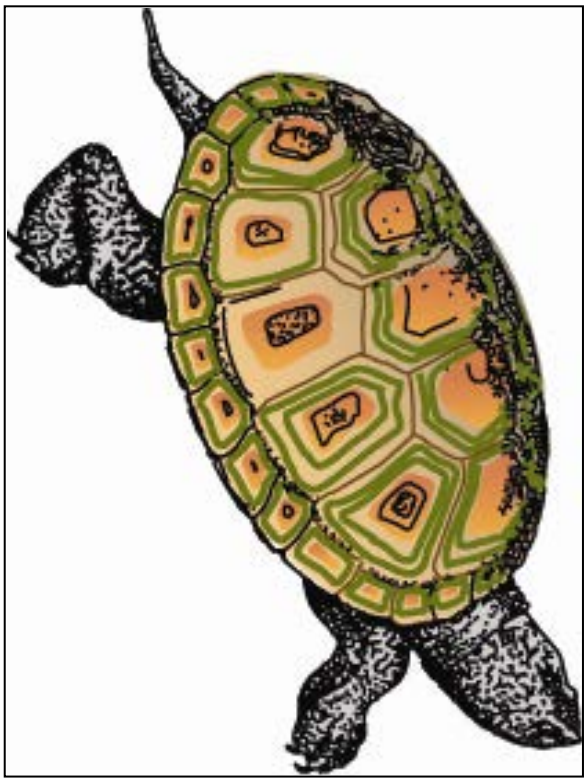


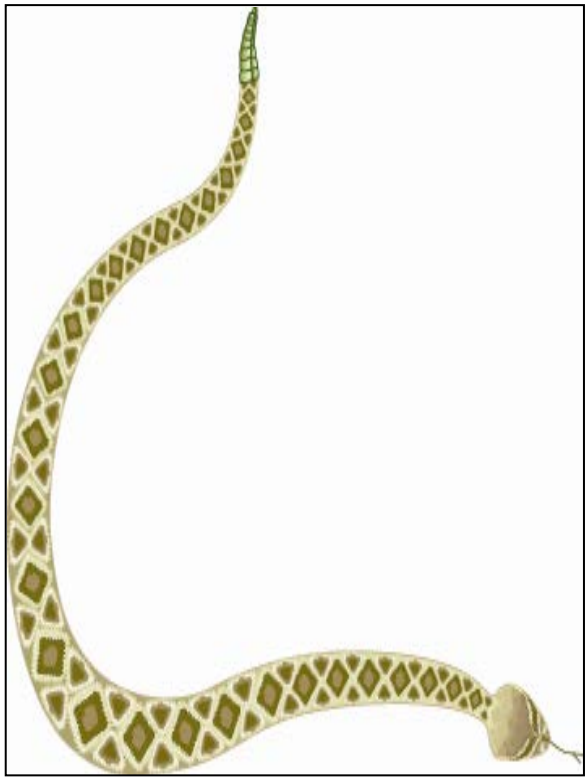


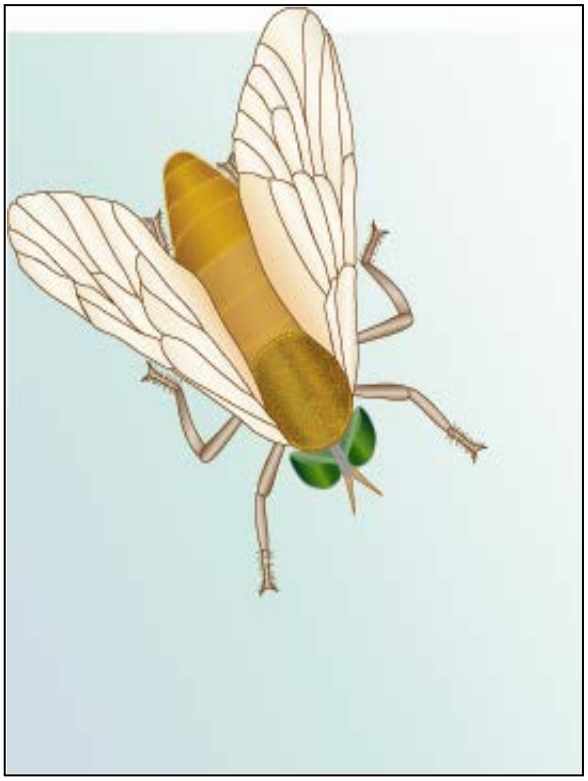


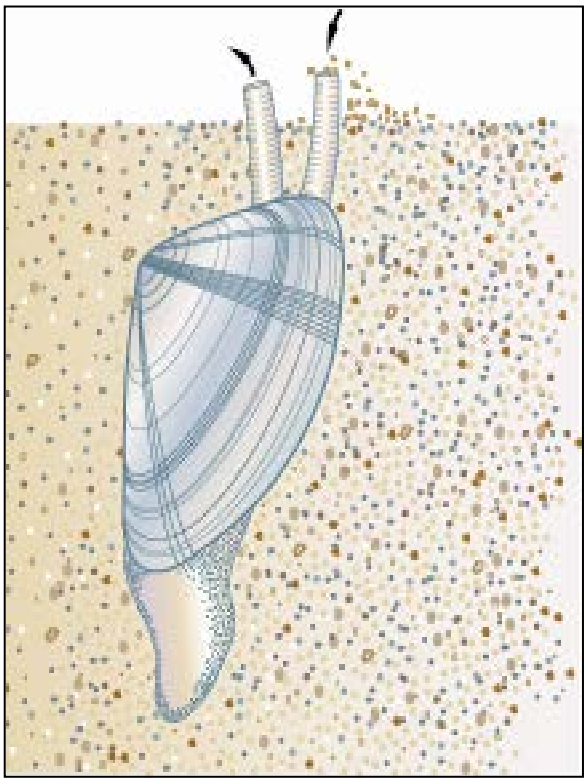


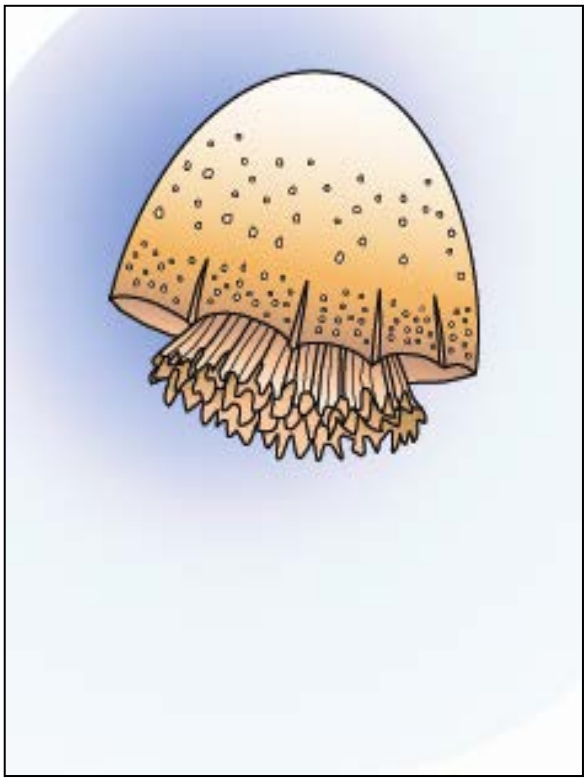


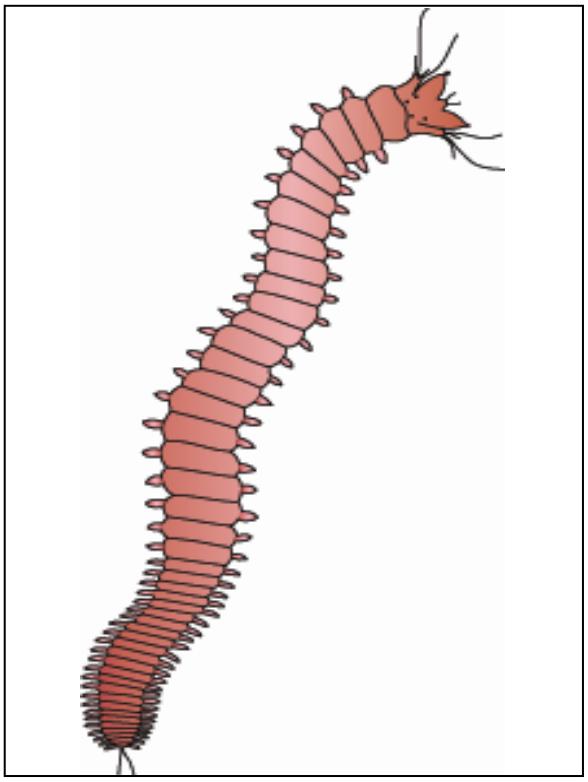


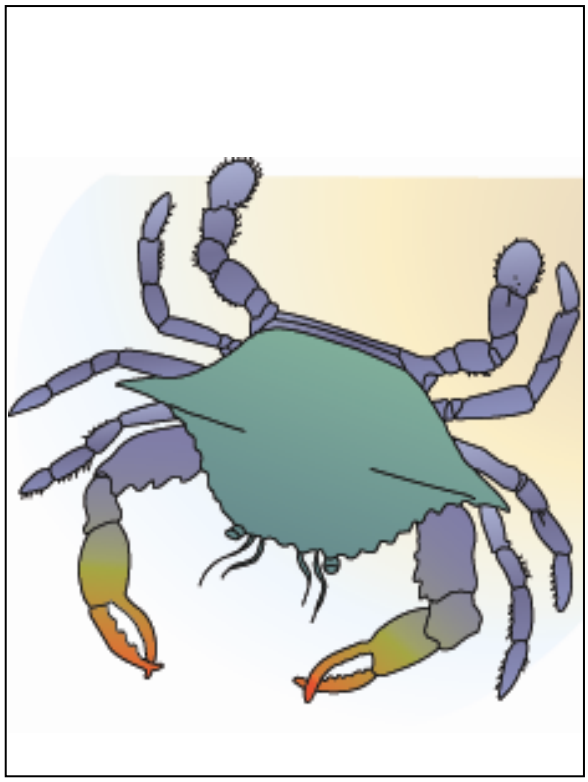


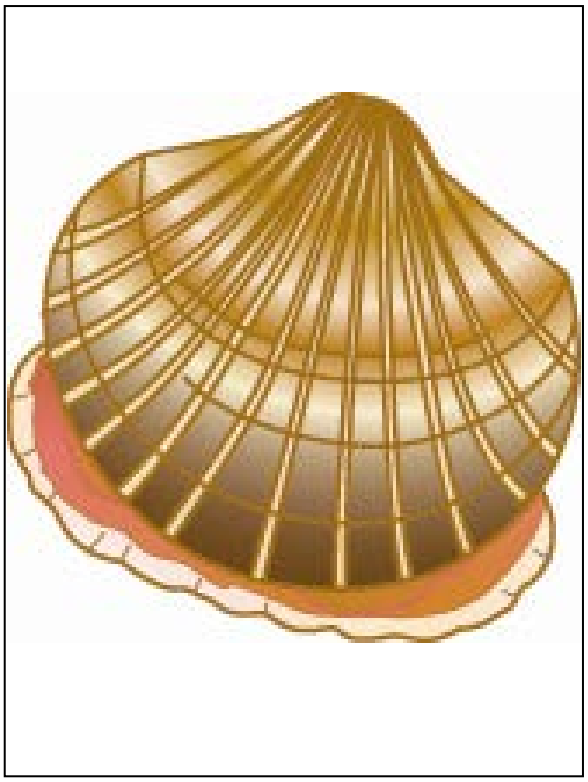


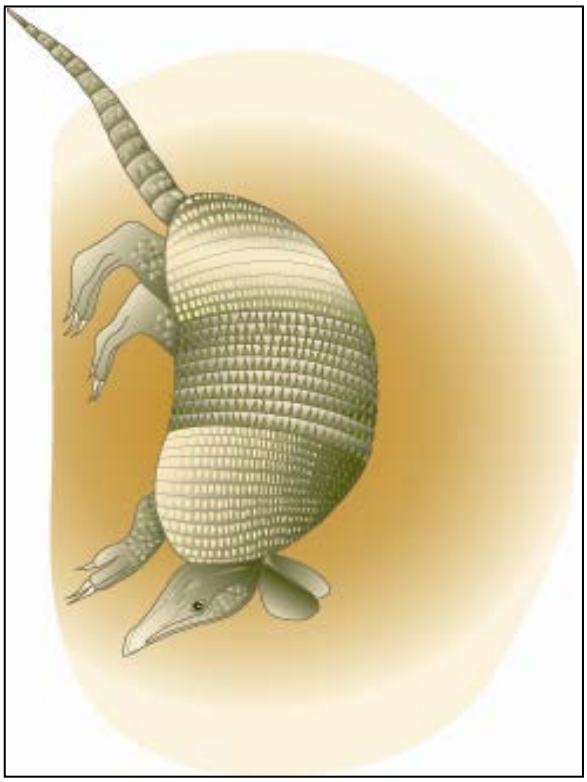


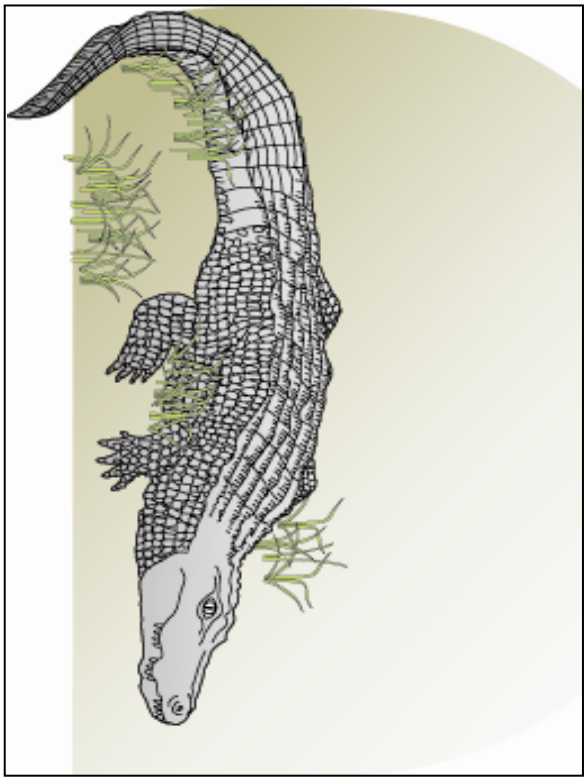


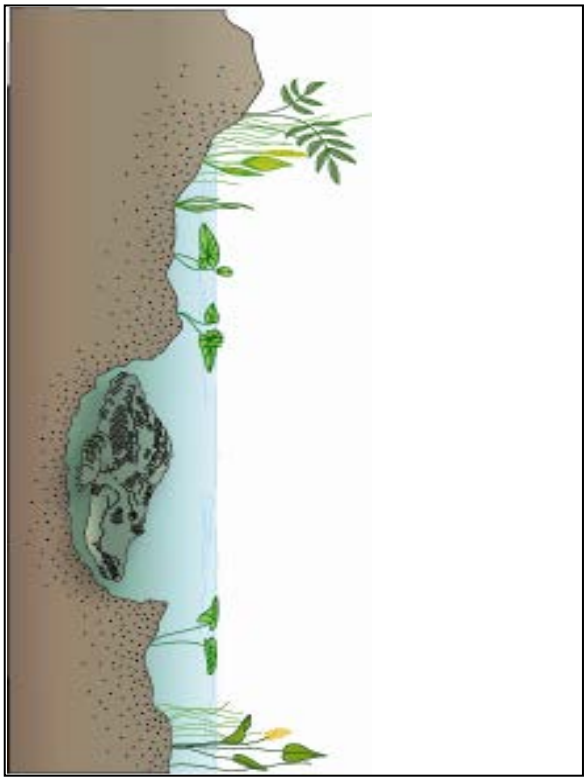






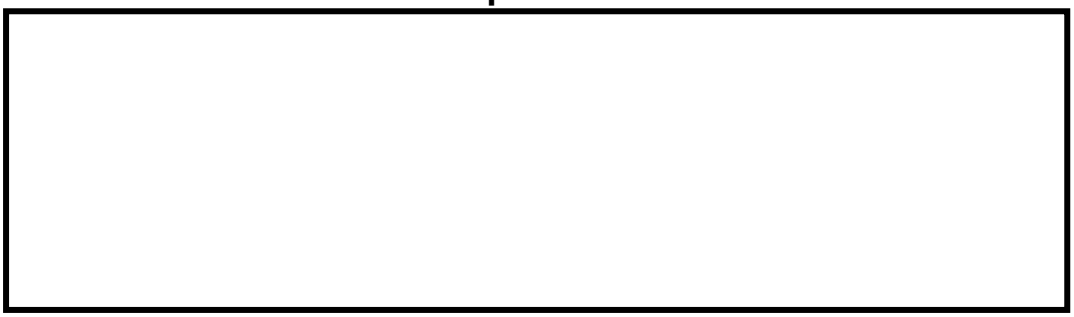




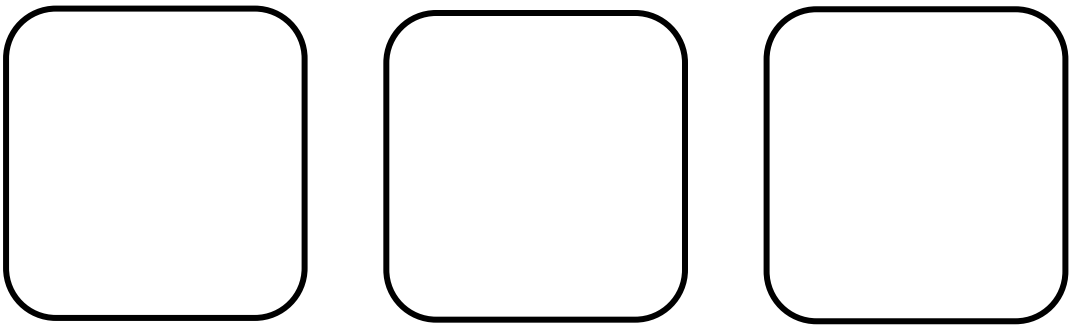


Physical Traits and Behaviors

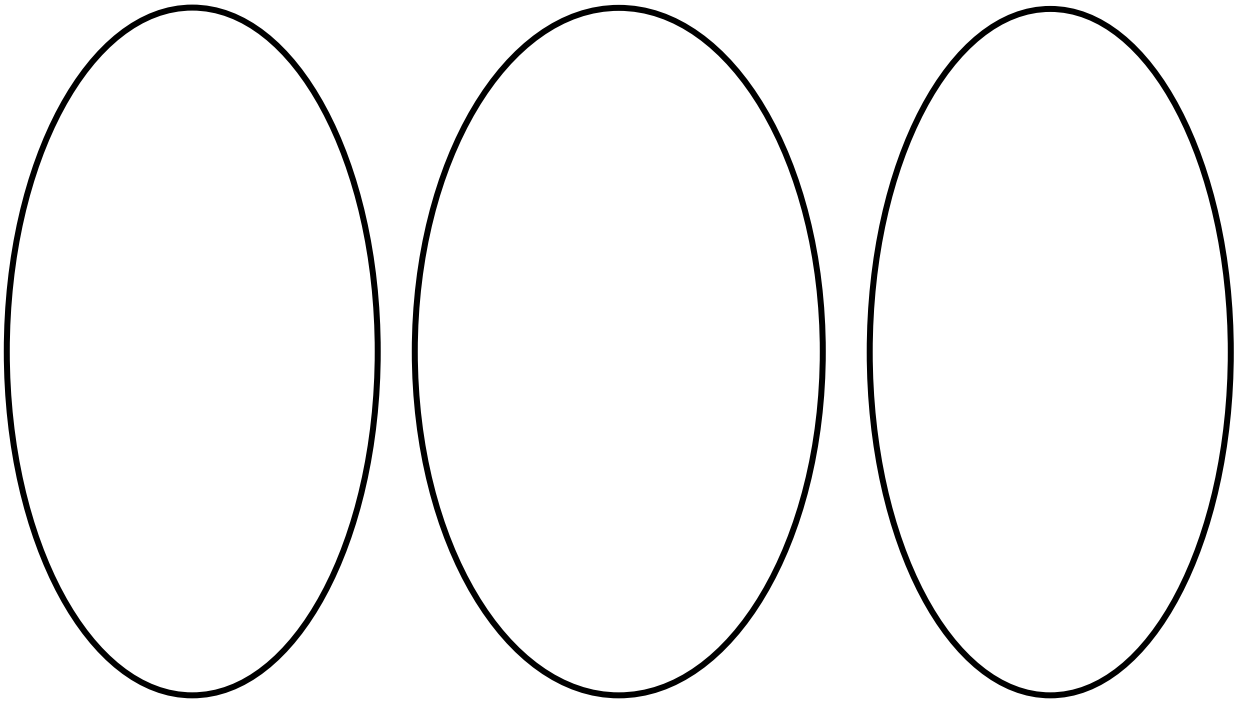
Species



Physical Traits



Behaviors



Animal Traits/Behavior Story Map

Title: _____

Setting:

Characters: _____

_____

_____

_____

Problem:

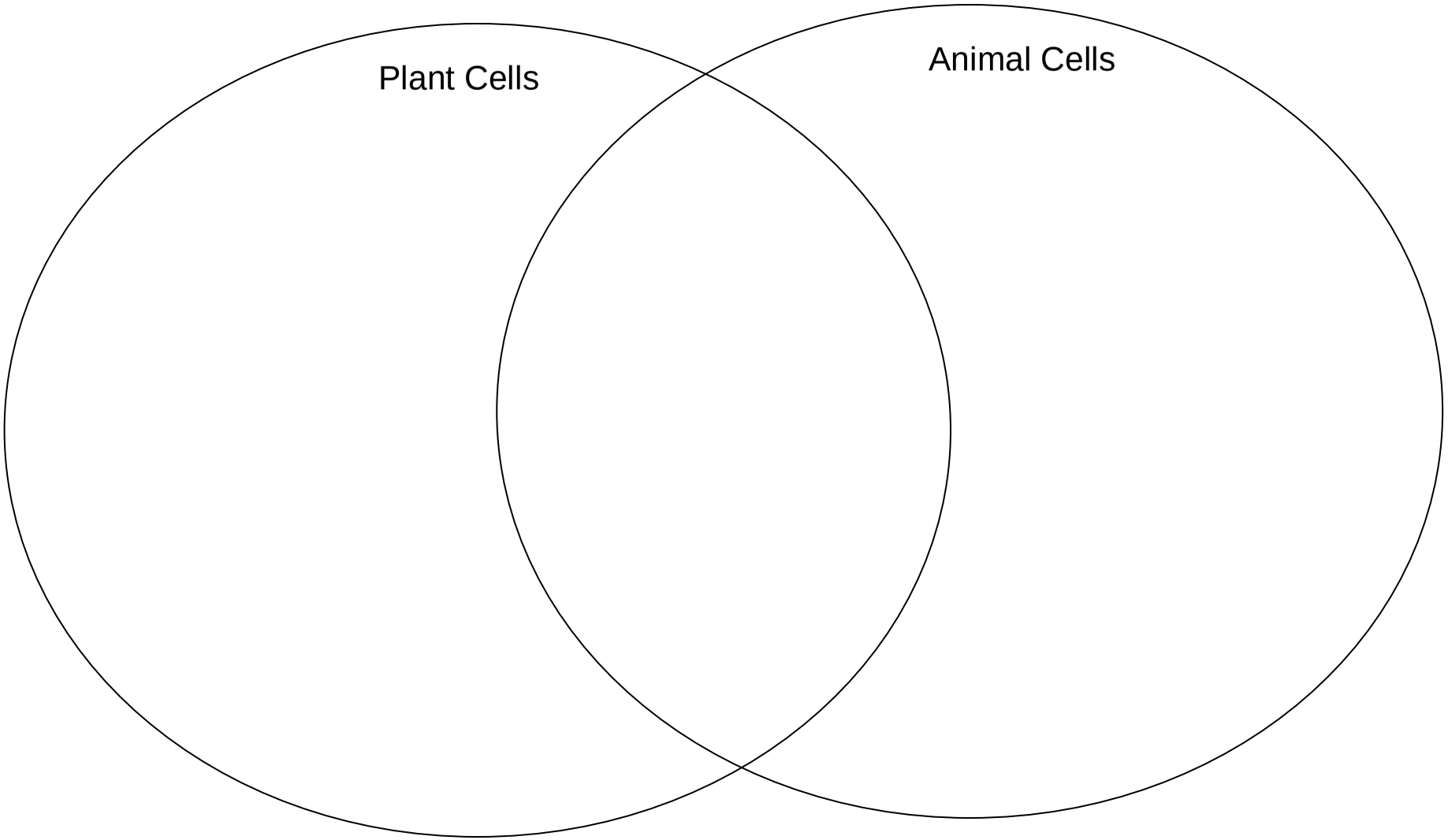
Event 1: _____

Event 2: _____

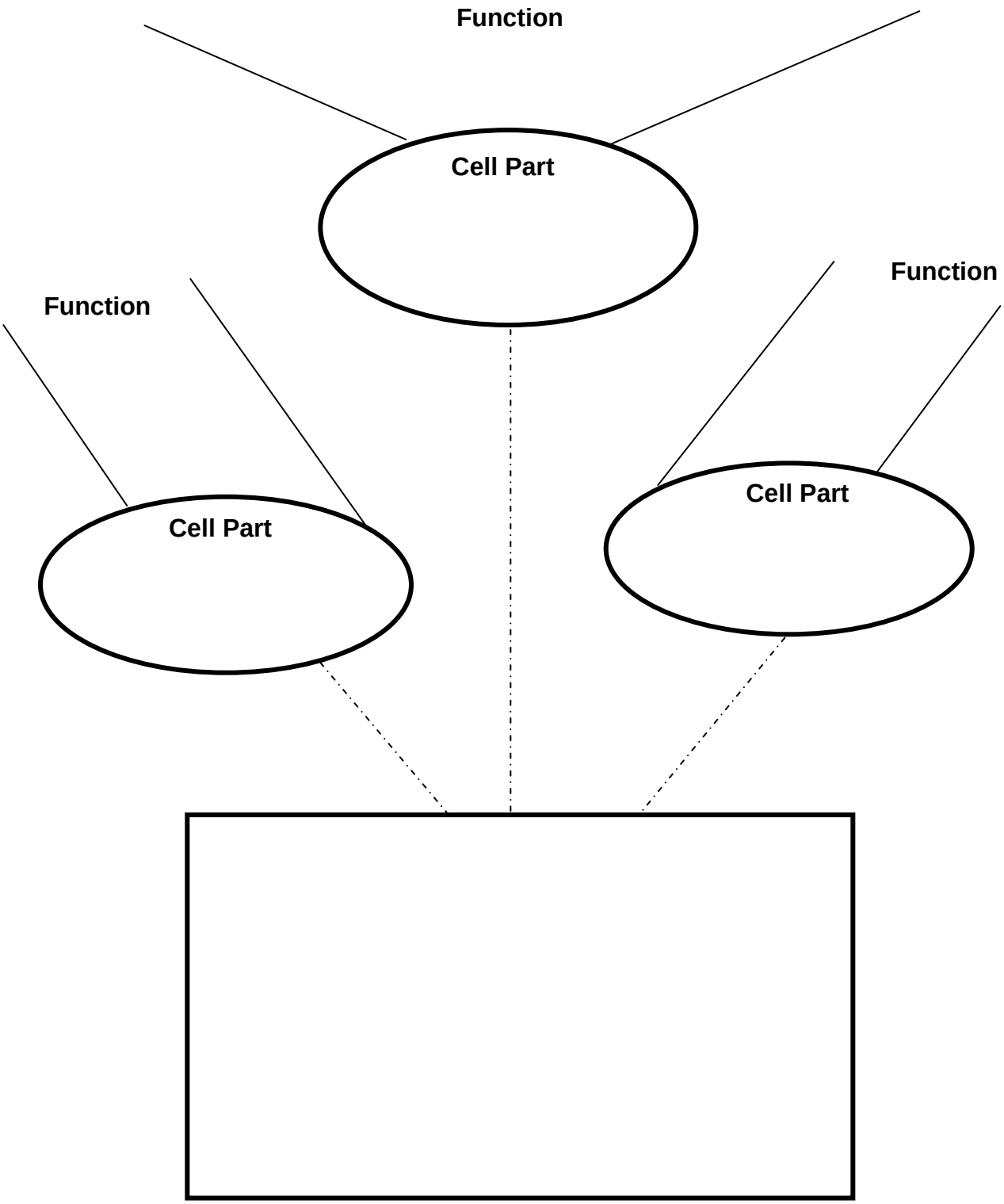
Event 3: _____

Solution:

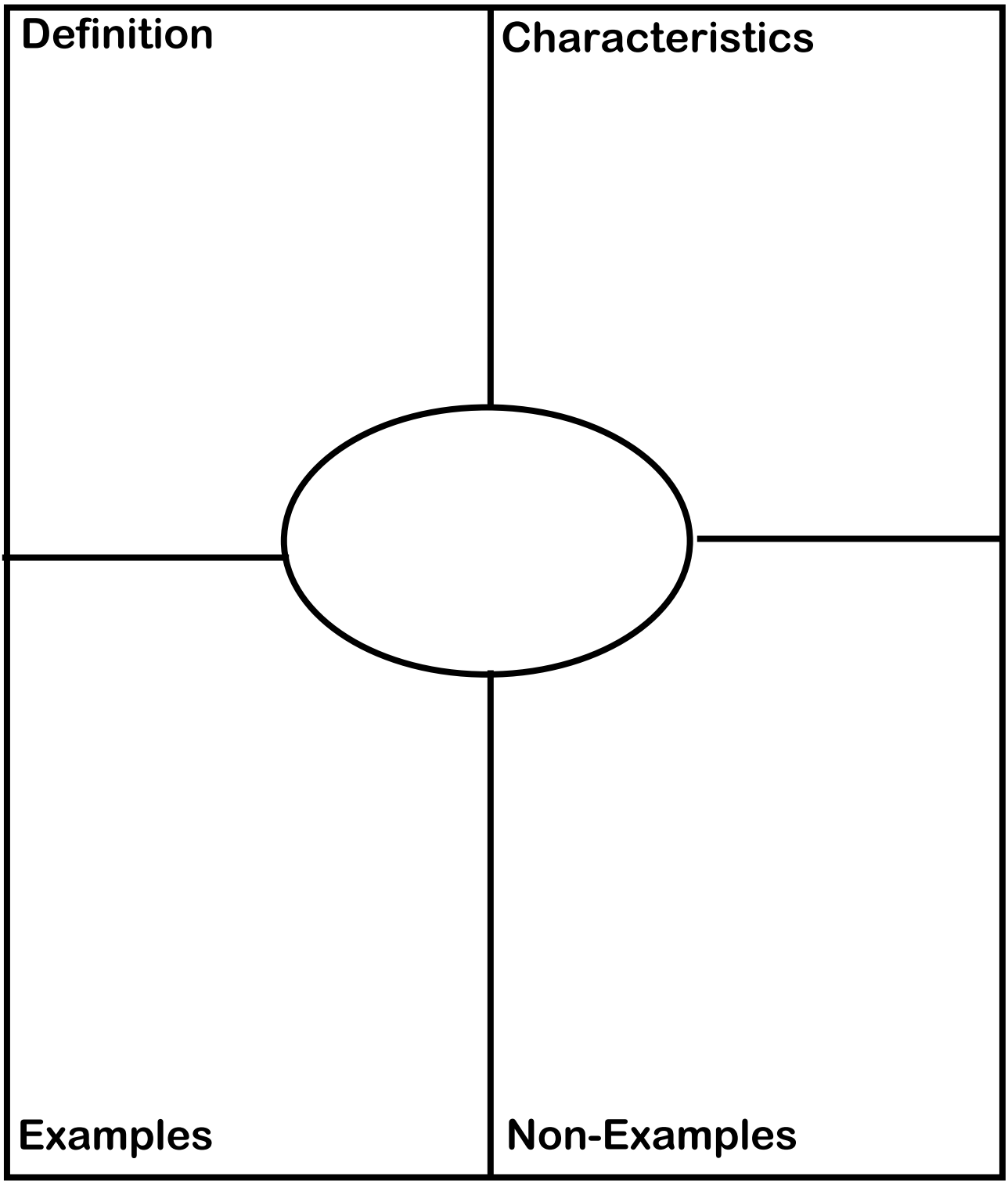
Comparing Plant and Animal Cells



Cells: Parts and their Functions



Microorganisms



Helpful, Harmful – or Both?