School District of Rhinelander

CAVOC

Third Grade Curriculum

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THIRD GRADE SCHEDULE

- Each teacher chooses an activity to teach to each of the third grade classes. Each group of students will visit each teacher. Begin with your homeroom, then move the students (with the help of a=a chaperone) to the next alphabetical teacher. For example: Arnott to Richter; Richter to Turgeon ; Turgeon back to Arnott.

8:30-9:00 Whole group activity. Review the 4 parts to habitat. Food, water, shelter, space.

9:00-9:45 First Rotation (all teachers begin with their homerooms)

9:45-10:30 Second Rotation

10:30-11:15 Third Rotation

11:15-11:45 Lunch

11:45-12:15 Recess (bring balls, frisbees, hula hoops, jump ropes etc./see Joe)

12:15-1:00 Fourth Rotation (if four third grade classes)

1:00-2:00 Third Grade Hike/scavenger hunt/your choice

2:00 Board Buses

Fall
PRE CAVOC VISIT - Habitat
Answer Question: "How does the environment affect organisms?"

BACKGROUND INFORMATION/ACTIVITIES

(Share one week before CAVOC experience):

List on the board the following words: food, water, shelter and space.

Ask the students to define what each of these words mean. Food and water will be easy; shelter and space more difficult. Check for understanding before proceeding.

Give each student drawing paper and coloring utensils. Have students draw where they live, including pictures of where they find food, water, shelter and space. Ask students to label the parts of their pictures.

Once the drawings are done write *arrangement and habitat* on the board.

Tell the students that when food, water, shelter and space go together in a special way, so that animals--including people--can live, we call that space habitat. These elements are in an arrangement that make it possible for animals to live.

Ask the students to write the word *habitat* at the top of their drawings. Talk about the meaning of habitat.

Give each student another piece of drawing paper. They should think of any animal they like. Ask the students to label the animal either *wild or domestic*.

Ask the students to draw a picture of their animal in a place where it lives. Tell students to include food, water, shelter and space in an arrangement that they think would make it possible for the animal to survive.

Discuss drawings and point out the habitat parts that have been included.

Have the students write *habitat* at the top of this drawing. Discuss with students how humans and other animals need the elements of habitat. The arrangement of the basic elements may be different but all have similar needs. When food water, shelter and space are arranged in a way that is suitable for an animal to survive, we call that place where these things are available a habitat.

See also: Project wild: "What's That, Habitat? Attached pdf

Watch: https://www.youtube.com/watch?v=p15IrEuhYmo

CAVOC Activity #1 The Bear Necessities

Where? - Start in front of white board, then head outside to play area - 45 minutes

(Can be conducted inside, if bad weather)

Standard 3-LS2-1 - Ecosystems: Animal Behavior

Standard 3- LS3-2 Heredity: Inheritance and variation traits.

Process

1. Start with a small group discussion about bear habitat. What they need to survive at CAVOC. What is their food, water, shelter, and how much space do they need?
    a. Black bears eat berries, nuts, tubers, roots, honey, worms, buds, leaves, fruit, twigs, grubs, fish, insects, and small mammals like rabbit, fawns, mice, squirrel, possum. In the spring, black bears even eat the inside layer of young trees. They must eat between 11 and 18 pounds of food each day to stay healthy.
    b. The home range of adult black bears can vary from an average of 15 square miles for adult females to an average of 60 square miles for adult males.
    c. Black bears need 4 gallons of water to drink a day.
    d. Black bear habitats include forests, swamps, and mountains. Within these habitats, black bears find shelter in dens under fallen trees, in hollow logs, in dense thickets of shrubs, and in caves
2. Fill in the following list with the necessary resources a black bear will find at CAVOC on the white board:

a. Food: (black and raspberries, fawns, rabbits, ants, moths,etc.)
b. Water
c. Shelter
d. Space

3. Play bear necessities game:
    a. set up a circle of cones. One cone for each player (bear). The cones represent the bears den. Also designate an area as the dead bear pit. Use popsicle sticks with these colors and points: Red=berries=10 points, Brown=small mammals=20 points, Blue=water, Yellow=insects=10 points, Green=leaves/plants=10 points
    b. No running
    c. Pick up popsicle sticks one at a time
    d. **Object:** In a three minute time frame, this represents summer and fall, get as many popsicle sticks as possible and bring back to your den. **Round 1:** This is the practice round. Have students count up their points. Add the values of the popsicle sticks. In order to have survived for the winter, each bear would have needed to gather 80 points for food and have had one water in their possession. Who would have lived? Any of those who didn't get 80 points or didn't have a water have to go to the dead bear pit. You can get out of the dead bear pit if another bear adopts you as their baby. **Round 2:** This time all should gather 80 points and a water. However, if you have a baby, you need 120 points and 2 waters. **Round 3:**If you end with 2 babies, you need 160 points and 3 waters.**Round 4:** Human intervention: logging at CAVOC. Not as much berries and fewer mammals and less leaves. Take away some sticks. How many survive? **Round 5:**

Forest fire: Take away water, Less water. Now how many survive?

4. May want to wrap up inside and review habitat and what human and non human influences can affect survival.

CAVOC Activity #2

Where? - Habitat Hunt

- 45 minutes

(Can be conducted inside, if bad weather)

Standard 3-LS2-1 - Ecosystems: Animal Behavior

Standard 3- LS3-2 Heredity: Inheritance and variation traits.

Process:In order for an animal to survive, it must be able to find an adequate habitat that provides food, water, cover, and a safe place to raise young. The amount and quality of these needs varies a great deal from species to species. For this activity, it is a good idea to have a general wildlife guide, an encyclopedia, dictionary, or some old magazines with pictures and information on each animal. Here are a few examples:

Fireflies: For food, fireflies eat soft bodied insects, snails, slugs, and mites (only in the larval stage; many don't eat anything in the adult stage). Water is from the food they eat, rain puddles, dew, or damp soil. Adult fireflies find cover in thick grass, under leaves. They lay eggs in rotting wood or damp debris on the ground, and larvae spend the winter just under the soil (this could be considered a place to raise young).

Lynx: These tufted-eared cats prey on small mammals (especially the snowshoe hare) and birds. They need a clean water source like a pond, spring, or lake. Lynx often seek cover under ledges, roots of fallen trees, or low branches, and also may lay in wait for prey up on the branches of a tree. They raise young in hollow trees or in the nooks and crannies of boulders,

Cedar Waxwing: This sleek, brown, black-masked bird eats berries starting in late summer, and insects during the warmer

months. They need a clean water source, such as puddles that return with regularity, ponds, etc. Cedar Waxwings prefer the edge of a forest, and so find cover in thick undergrowth or amongst trees that grow along the edge. They often make their nests on the branches of cedar or maple trees.

Karner Blue Butterfly: As caterpillars, Karner Blues eat a plant called the wild blue lupine. As adults, they eat the nectar of various flowers such as butterfly weed and horsemint. Adults get water from the nectar they eat and other incidental sources like rain or dew. Karner Blues need some tree cover as protection from the sun, but they need open spaces as well, since that is where the plants they feed on live. They lay eggs in the wild blue lupine, a crucial element in their life cycle.

Five Lined Skink: The preferred habitat of the five-lined skink includes steep, rocky areas with open ledge, patchy tree and shrub cover, and an abundance of rotten logs and loose rock slabs. These habitats are usually adjacent to moist deciduous forests.

Skinks are active foragers that feed on insects (crickets, flies, grasshoppers, grubs, beetles, ants) and spiders. They get their water from the dew on the grass or rain and from the insects they eat.

Although five-lined skinks spend much of their time under rocks and other shelter, they will bask in sunny spots on logs or rocks. Rock climbers often see them running along cliffs. The lizards are primarily terrestrial, but will climb dead trees to find insects.

Skinks hibernate singly or in small groups from October through mid-March in decaying logs, under large rocks, or underground, below the frost line.

1. Take a nature walk and try and find the perfect habitat for each of the 5 animals listed above or a native animal.

Indoor Habitat Hunt (if rain or time)

DIRECTIONS: You are a _____ (your choice), and in order to survive you need food, water, cover, and places to raise your young. Take a look around you. Record the following information and decide whether or not you will stay and set up home here. Good luck and have fun!

Food Source:_____

Water Source:_____

Cover:_____

Places to Raise Young:_____

Questions:

1. Will you stay and set up home here?

_____

_____

2. Why or why not?

_____

_____

3. What other habitat elements would you like to see here?

_____

_____

CAVOC Activity #3 Habitat for Sale

Where? - Inside - 45 minutes

(Can be conducted in the museum,)

Standard 2-LS4-1 - Biological Evolution: There are many different kinds of living things in any given area, and they exist in different places on land and in the water.

Standard ESS2-E - Biogeology: Plants and animals can change their environment.

Background: Animals and plants are adapted to certain climate conditions. They also depend on one another for survival. Together, climate and other aspects of the nonliving (or abiotic) environment and the living (biotic) environment dictate which plants and animals will be able to survive in a certain area. Plants and animals differ in the kinds of habitats they live in and how they find the habitat elements they need to survive. Studying local wildlife is highly recommended.

Preparation: 1. Look at the pictures of animals in their habitats to be used in this activity. 2. Study the real estate ads from a local newspaper. Write out the sample habitat ads included here on the board so students can refer to them during the activity.

Sample real estate ads:

This 2+ BR's, 1 BA "grandma" home on Hillandale has raised both children and grand children, enjoyed the introduction of cable TV, and seen the departure of rotary phones and party lines...all during one family's 50+ years of careful ownership! The main level features a kitchen & dining area w/ sliding door to the expansive back deck, a spacious and bright living room, two bedrooms, and a full bath. The lower level offers a hobby room that could be utilized as a third bedroom w/ installation of an egress window, a rec room w/ walkout to a backyard patio, and ample storage space. Additional features include a 1-car garage, paved drive, extra paved parking space, low

maintenance vinyl siding, and newer roof shingles. Located on Rhinelander's established West Side, the property's double lot provides level and private yard space to enjoy gardening, cookouts, or simply relaxing. Whether looking to relocate or making your first purchase, consider this well maintained home on Hillandale!

This gorgeous wooded lot is located just down the road from county hwy 8, and from there it's just a hop skip and a jump from Rhinelander for all your basic needs. However you wouldn't know it while you were there. The area is exceptionally quiet an off the beaten path with few neighbors greatly spaced apart. If you're looking for quiet place to build your getaway or even your daily residence, look no further. Or maybe you're on the hunt for some new stomping grounds for that elusive buck. This lot is a high point of the area with little wetland and lots of cover. If you're interested don't hesitate, this property is listed at two thirds of the assessed value and is sure to go quick!

This property was originally built in 1925 and has been well maintained since. This is a mid-block location on Brown Street in Rhinelander that has good visibility, building signage and ample street parking for customers. The property has 3 floors, the second floor acting as a mezzanine. Additionally, there is a loading dock, a functional freight elevator and a 7,200 SF usable basement.

Sample animal in habitat pictures:




Procedure 1. Review the concept of habitat. Habitats are the locations that provide food, water, cover and places to raise young. Ask students to give some examples of different environments where

plants and animals might find habitat, such as meadow, forest, grassland, desert, ocean, river or wetland. Discuss idea of the living and nonliving parts of a habitat and how animals rely on both (i.e. a tree for cover and a stream for water). 2. Explain that today students will write advertisements for specific habitats. Tell them they will need to think about both living and nonliving attributes of a habitat that an animal may use. 3. Have students read aloud the samples of real estate classified ads from the newspaper. Tell students that they will write some of their own ads today – ads in which they will describe an animal's habitat or home. Afterwards, students will play a game to match the ads with the correct animals. Use the following as further examples:

Home on the Range: Prime Nebraska prairie! Loaded with tasty grasses, this wide-open property boasts refreshing water potholes. Perfect for growing herds that love to roam. Hot in summer, cold in winter. (Answer: Bison)

Underground Castle: Easy-to dig soil in Smith family's backyard ripe for an ambitious homebuilder. Tunnel away! Home to juicy earthworms, grubs and other tasty creatures. Leaves for bedding there for the taking! No pesky cats or dogs. Available now! (Answer: Mole).

Hand out pictures of animals in their habitat and have students write for their favorite animal in one of the pictures provided or one from memory. Share their work with the class and have the class try and guess which animal belongs in that advertised habitat.

Further Enrichment

✔Repeat the activity, but focus on plants and their habitat needs.

✔Ask students to develop a plan for a butterfly garden habitat or an earthworm soil habitat that they could build at the school. What

living and nonliving things would need to be included to meet the needs of butterflies or earthworms?

More animal habitat images:

Rainy day activity

https://www.nwf.org/~/media/PDFs/Be%20Out%20There/Schoolyard%20Habitats/HabitatWeb.pdf

Summary: Participants explore the web of connections among living and non-living things. Grade Level: K-6 Time Needed: 45 minutes Learning Objectives: Participants will be able to: ◆Create a web that connects various living and non-living things within a habitat. ◆Understand how many living things are connected. ◆Observe the effect of a broken habitat web (e.g., through pesticide introduction). Materials Needed: ◆Ball of yarn ◆Large index cards or construction paper ◆String or pins	Background: All plants and animals have a particular place or area where they live called their habitat. While the term habitat generally focuses on a particular organism and its needs, the term ecosystem encompasses a whole community of living things, non-living elements, and their interrelationships. An ecosystem, on some level, can be thought of as a complex, shared habitat. Plants and animals have many important interactions within their community and depend on different factors in their environment. Animals depend on plants or other animals for food and may use different plants for cover. Many plants need insects to pollinate them and earthworms to tunnel about so they move air into the soil. Decomposers, including earthworms, fungus and bacteria, live off dead plant and animal	In this activity, participants will have an opportunity to think about many different interactions within an ecosystem. In addition, this activity illustrates the interconnections of all living things. This is an important concept to learn in order to understand more complex issues, such as the effects of drought, exotic species, pesticides and habitat loss. What to Do: 1. Explain to participants that for this activity, they will have a chance to create a web of connections between many different living and non-living things found in a habitat. 2. Have participants help prepare habitat web cards ahead of time. These cards will indicate a particular plant, animal, or non-living element and will each serve as a player's identity for each round. Cut out the cards created for the Forest Habitat (found at the

	matter. They break down this material and make nutrients more available for plants. Environmental factors such as climate, the amount of sunlight, the amount and type of water available (e.g., clean, moving, stagnant), and the type and condition of soil in the area determine how different plants and animals will fare in a given area	end of this activity) or have the group help create new ones with index cards and markers or crayons. If possible, laminate the cards. Punch a hole in the top of the finished card and attach a string so that participants can hang the cards from their necks (alternately, pin them on participants' clothing). If the group

Habitat Web

creates new cards, see Steps 3 and 4 below. Otherwise, skip to Step 5. 3. On each index card, write the name of a plant, animal, decomposer, or non-living element found in a particular ecosystem. If possible, include a picture or drawing of the element on the card. You may wish to color-code the cards for their roles as producers, consumers, decomposers, or nonliving elements. 4. You may wish to use a local field guide to create a web directly	to each participant. Run the activity in one big group or divide participants into groups of eight to ten. With small groups, help one group begin while the others watch, and then have them all try it. Make sure that with small groups all the major groups (e.g., non-living elements, plants, invertebrates, fish, birds, reptiles/amphibians, mammals, and decomposers) are represented at least once, and that there is a good mix of herbivores and carnivores (or	the yarn and throws the ball to someone else, also explaining the connection; "The tree is cover for a deer.'' Assist participants in coming up with accurate connections, while at the same time encouraging them to be creative. Each time the yarn is thrown, the person throwing it holds onto a piece of it so that eventually, the participants create a web of yarn. The connections go on until everyone has a piece of the yarn. Make sure the tension is tight enough so

related to your area. When making the cards, create a good mix of living and non-living elements. Make sure to include a good distribution of carnivorous (meat-eating), herbivorous (mainly plant-eating), and omnivorous (plant- and meat-eating) animals. Also, a set of cards should have the potential to meet the basic needs (i.e., food, water, cover, and places to raise young) of the animals. Some sample habitat webs are given below. 5. After the cards are complete, discuss the concept of habitat and the fact that animals need to find food, water, cover, and places to raise young in their habitat. If they have already done "Have to Have a Habitat" (p. 34), this is an excellent time to review the concepts. 6. Have participants sit or stand in a circle. Hand out habitat web cards	omnivores). Participants should understand what their card represents and what role they would play in their ecosystem. If necessary, have participants say a few words about their cards before beginning, have other participants help out, or review some of these concepts. If possible, have volunteers oversee small groups. 7. Any participant may start the web by holding on to one end of the ball of yarn and passing the ball to another member of the circle. Before participants pass the ball on, however, they should think about the connection between their habitat web card and that of the person to whom they are passing the yarn. When the participants pass the ball, they should explain this connection. For example, a participant who has a woodpecker card might throw the ball to a person with a tree card and say, "The woodpecker lives in a tree.'' The next person holds onto	that participants can feel the interconnectedness of all the different elements. 8. Point to one of the participants and announce that his or her organism has been wiped out. The cause can include human impacts, such as pesticides or habitat removal, and natural events, such as flooding or disease. When an organism dies, he or she should give a tug to the web, and then the next person who feels the tug should give a (small) tug back and raise his/her hand. This can continue as different people feel the tug. Point to each person who is affected by this creature. You can repeat this procedure several times with different examples. 

Habitat Web

9. This activity will be different every time, since plants and animals interact with each other and their environment in many different ways. If they wish, participants may try the activity several times. One way to do this in the same round is to have more than one ball of yarn, each a different color. When participants finish creating one web, they would then begin another one with a different color. Each color would indicate a different set of interrelationships in one ecosystem. For example, one color might involve passing food energy along a chain, and it might look like this: the sun gives energy to a blueberry bush, a mouse eats a blueberry, and a hawk eats the mouse. The next color might represent other important roles of habitat; it would reach from the sun to the hawk as the hawk warms itself, from the hawk to the bush as the hawk collects twigs for its nest, and from the bush to the	Mouse as the mouse Seeks Cover 10. Discuss different events that can affect an ecosystem. Ask the group what would happen if two organisms died out at the same time. Discuss different scenarios. Some examples of questions might include the following: What might happen if all the trees were removed? When might this happen in real life? What can we do to help? What if we just remove all the dead trees? What would happen if we kill all the mosquitoes with pesticides? As you have this discussion, have the person who was left with the ball of yarn give a tug and then pass the ball back to the person who felt the tug. As each person feels the tug, he/she can drop their arm and help to roll up the yarn. 	Questions: • What are some ways that plants, animals, and non-living things are connected? • How are we as humans connected to our own ecosystem? • What happens to an ecosystem if organisms die out or a non-living element is altered? 

Forest Habitat Web Worksheet

• Sun

• Five plants e.g., grass, wildflower, poison ivy, oak tree, pine tree

• Five insects/spiders e.g., ladybug, bumblebee, wasp, earwig, potato bug, spider, butterfly

• Three reptiles or amphibians e.g., lizard, frog, snake, turtle, salamander • Two fish e.g., trout, salmon, minnow

• Three songbirds e.g., robin, mockingbird, sparrow, warbler, finch

• Two raptors e.g., kestrel, hawk, eagle, kite, vulture

• Three small mammals e.g., mole, mouse, chipmunk, squirrel, bat, rabbit

• Two medium-sized mammals e.g., woodchuck, badger, raccoon, coyote, bobcat

• Two large mammals e.g., mountain lion, bear, deer, moose

• Three decomposers e.g., fungus, bacteria, earthworm, dung beetle

• Three non-living components e.g., water, soil (and/or rocks), air

Wetland Habitat Web Worksheet

• Sun

• Five plants e.g., skunk cabbage, swamp lily, Venus flytrap, blueberry bush, cypress tree

• Five insects/spiders e.g., black fly, dragonfly, diving beetle, fishing spider, butterfly

• Three amphibians or reptiles e.g., salamander, newt, frog, snake, turtle

• Three fish e.g., sunfish, bass, perch, eel, minnow

• Three water birds e.g., Canada goose, wood duck, blue heron

• Two raptors e.g., eagle, osprey, hawk, owl

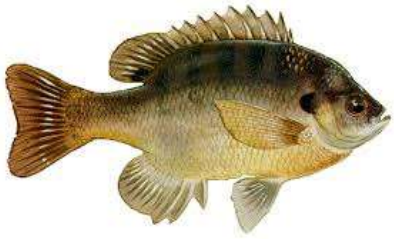
• Three small mammals e.g., mouse, shrew, muskrat, mink

• Two medium mammals e.g., beaver, otter, raccoon, bobcat

• Two large mammals e.g., deer, moose, black bear

• Three decomposers e.g., fungus, bacteria, aquatic worm, scavenger beetle

• Three non-living components of habitat web e.g., water, soil (and/or rocks), air



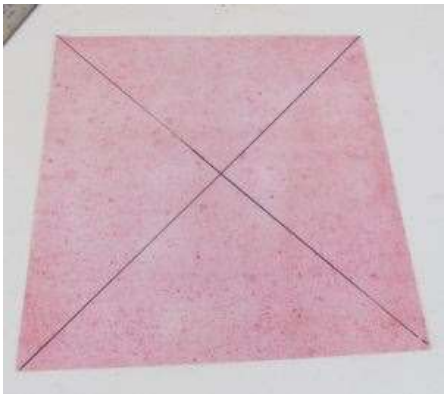
Coastal Habitat WebWorksheet

- Sun
- Five plants e.g., marshland grass, seaweed, cypress tree, beach grass, dune wildflower
- Five seashore animals e.g., crab, shrimp, jellyfish, sponge, mollusk
- Five small to medium-sized fish e.g., mackerel, herring, mullet, salmon, flounder
- Three large fish e.g., shark, ray, eel
- Three reptiles e.g., sea turtle, lizard, snake
- Three birds (non-raptors) e.g., duck, pelican, heron, gull, sandpiper
- Two raptors e.g., eagle, osprey
- Two coastal-dwelling mammals e.g., sea lion, sea otter
- Two sea-dwelling mammals e.g., whale, dolphin
- Three decomposers or filtering animals e.g., bacteria, sea worm, oyster
- Three non-living components of habitat web e.g., water, soil (and/or rocks), air

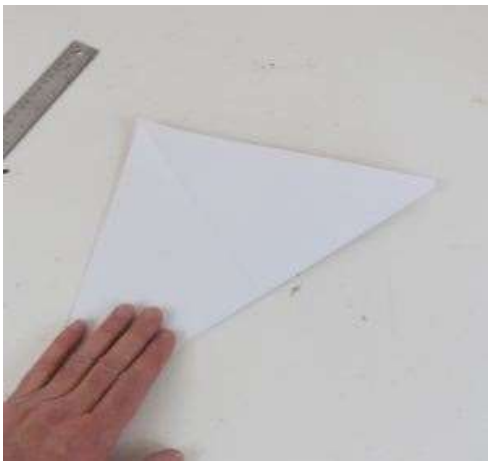
CAVOC Activity #4 STEM 3D triorama

Where? - Inside - 45 minutes

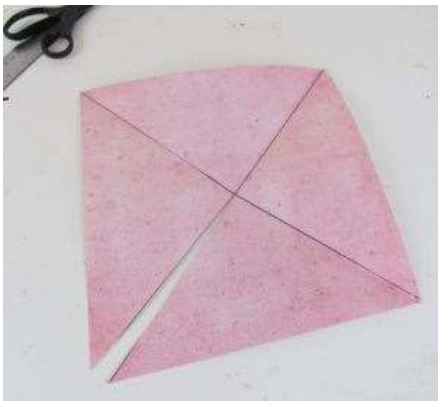
Create a triorama of a northwoods animal. Include water, shelter, food and space needed.



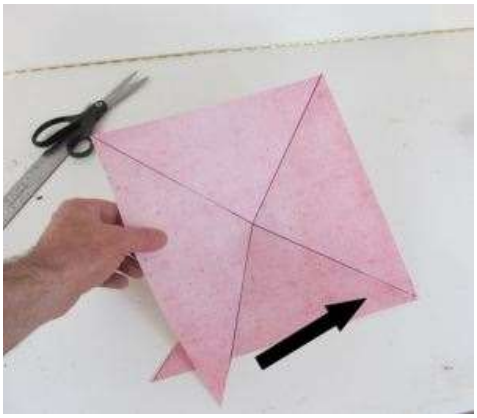
Start with a square of poster board or paper. The larger the square the larger your triarama will be.
I have marked two lines on mine. You don't have to mark yours. Just fold along each of these lines then unfold.



Fold it diagonally one way then unfold. And then fold it diagonally the other way and unfold.



Cut it with a pair of scissors from one corner to the center.



Now just grab one of those flaps and slide it all the way over the other flap. The triarama will fold right up into shape.
Now you can fill it with various things to make your habitat.

Winter
CAVOC VISIT--winter fun
Answer the question: "Why are organisms different from one another?

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. [Clarification Statement: Changes organisms go through during their life form a pattern.] [Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.] 3-LS2-1. Construct an argument that some animals form groups that help members survive. 3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. [Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than human

PreVisit--Food Web

Great video:
https://www.turtlediary.com/video/food-chain.html

Vocabulary: Producers, consumers, herbivores, carnivores, omnivores

Worksheet

Food chain video game:
http://www.sheppardsoftware.com/content/animals/kidscorner/games/foodchaingame.htm

ACTIVITY #1 SNOWSHOEING

45 Minutes

ACTIVITY #2 SLEDDING/TUBING

45 Minutes

Activity #3 Animal Charades and museum worksheet

Animal Charades

In this activity, you will have a blast imitating the animals of Wisconsin! Without making a sound, see if you can provide enough clues to help your classmates guess which animal you're imitating.

Time 10-30 minutes 

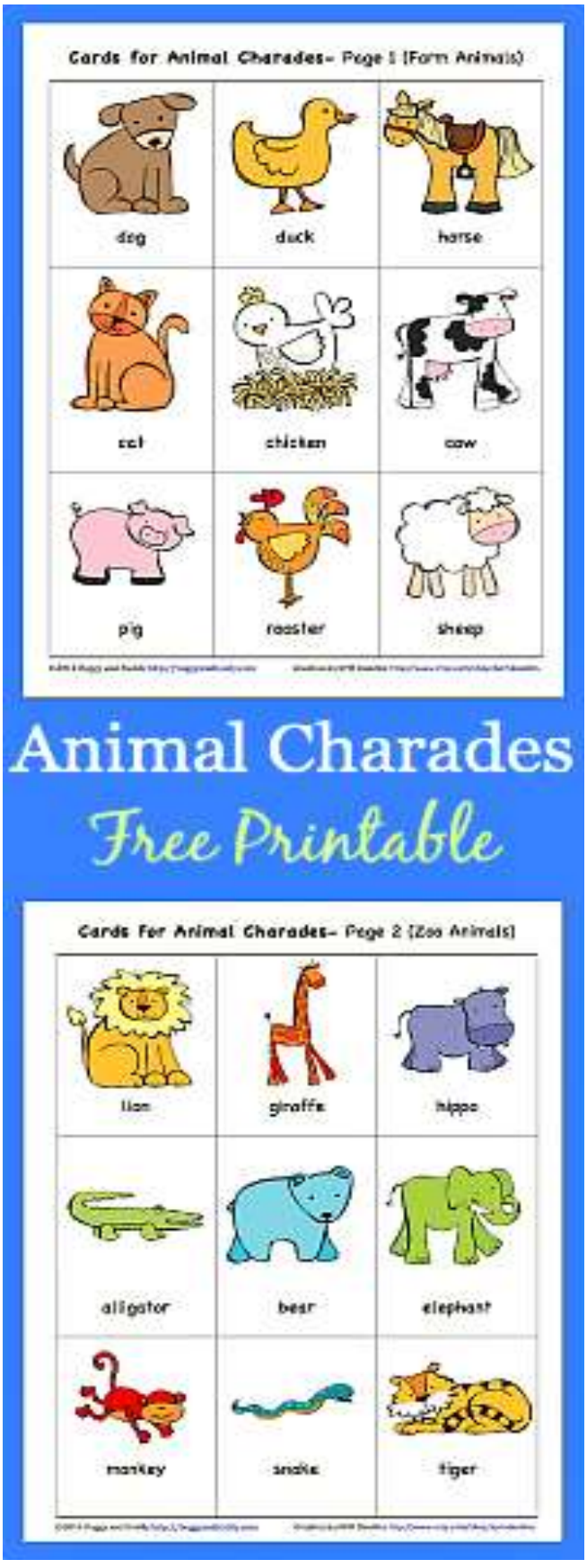
Tip: If you're having trouble thinking of clues, ask yourself the following questions:

- What does this animal look like?
- Big ears, long nose, bushy tail, etc.?
- Where does this animal live?
- In a tree, in grass, in a pond, under a rock…?
- What does this animal eat?
- How does it move?
- Fly, jump, run, slink…?

Instructions

1. Select a piece of paper from the hat or bowl. (If you need help reading it, ask your teacher for assistance.)
2. If you know the animal, try to imitate how it looks, moves, what it eats, where it lives, etc. If you don't know the animal, choose another one from the hat.

Duck	White tail deer	Earthworm	Pig
Frog	Woodpecker	Turtle	Cow
Mouse	Bat	Fish	Horse
Rabbit	Squirrel	Black bear	Chicken
Wolf	Moose	Fox	Goose
Butterfly	Snake	Raccoon	Goat
Honeybee	Spider	Porcupine	Sheep
Eagle	Badger	Wolverine	Cat


Cards for Animal Charades- Page 1 (Farm Animals)
dog
duck
horse
cat
chicken
cow
pig
rooster
sheep
Animal Charades
Free Printable
Cards for Animal Charades- Page 2 (Zoo Animals)
lion
giraffe
hippo
alligator
bear
elephant
monkey
snake
tiger

Vocabulary

Adaptation: A gradual, but continuous process of change from one generation of a species to the next.

Antlers: A bony outgrowth or horn, usually branched, on the head of various members of the deer family.

Camouflage: Concealment by disguise or protective colouring.

Carnivore: A flesh-eating animal.

Defence: Protecting oneself from harm.

Ecosystem: A community, together with its environment, functioning as a unit.

Food chain: A community of organisms where each member is eaten in turn by another member.

Herbivore: An animal that feeds mainly on plants.

Omnivore: An animal that feeds on both plants and other animals.

Predator: An animal that hunts and seizes other animals for food.

Prey: An animal that is hunted and eaten by a predator.

Scavenger: An animal that feeds on dead or decaying matter.

Stalk: To track prey in a secretive manner.

Talon: The claw of a bird of prey.

Trophic level: A group of organisms that occupies the same position in the food chain.

Museum Worksheet

Use the definitions above to help answer the questions below

1. Adaptation: Explain the adaptation of the present day Raccoon (five fingers??) from the ferocious Hyaenodon gigas of the past.

2. Antlers: How many can you count? What might these white tail deer use their antlers for?

3. Which museum animal has the greatest camouflage and why do you think that?

4. Name two carnivores you see?

Name two herbivores you see?

Name two omnivores you see?

5. Find a food chain that exists within this museum. Where does this food chain start? Can you draw a food chain using the museum animals?

6. Which museum predator is the best at getting its prey and why do you think that?

7. Who has the best talons in the museum and why are they the best?

8. Which animal has the greatest chance for survival and why do you think that?

9. What animals might share the same trophic group?

ACTIVITY #4 Food Web Tag

45 Minutes

Materials:
Food tokens (can be cardboard, plastic lids, or discs); 3 per student
Pinnies or T-shirts to mark predators
4-5 hula hoops or string to mark “camouflage” or “cover” spots
Large play area
Pencil and paper to record results
Art supplies (for extension only)

Key Vocabulary: carnivore, consumer, decomposer, ecosystem, food chain, food web, herbivore, omnivore, organism, predator, prey, producer, scavenger

Background: The woods are home to numerous plant and animal species and all of these species are connected. All organisms (in general) require food, water, shelter, a home, and space in order to survive. This relationship among organisms can be demonstrated using a food chain and/or a food web. Explain to your students that all people (and animals) need energy in order to run, jump, and play games. Ask them where they think they get energy from. It’s in the food we eat! Just like us, all living things require energy in order to live and grow. This energy flow can be demonstrated using a food chain. As you move up the food chain, the energy flow is decreased and likewise the lower you go on the chain the more energy is available. A food chain shows how each living thing gets its food. Each link in the chain shows who eats what (or who). This is a good place to introduce the concepts of predator and prey and their role in any environment. A predator is an animal that eats other animals. Prey is an animal that is eaten by another animal. Ask students if they think all living organisms eat the same thing. Explain to them that all food chains begin with the sun. Plants use energy from the sun (photosynthesis) to produce chlorophyll—it‟s what makes plants green! Plants are called producers because they use energy from the sun to make food. Animals cannot make

their own food and therefore must rely on plants and/or animals for food. Animals are called consumers and can be divided into four types based on the foods they consume. Animals that only eat plants are called herbivores or primary consumers. (western tent caterpillar, black-tailed deer, dusky-footed woodrat.) Animals that eat other animals are called carnivores or secondary consumers. (mountain lion, western fence lizard, Western Meadowlark.) Animals that eat both plant and animals are called omnivores and are also secondary consumers. (coyote, raccoon, ringtail.) Animals that feed on decaying/dead matter are called decomposers and scavengers. (Turkey Vulture, skunk, bear.) Please Note: Some animals like the bear or the skunk can be both omnivores and scavengers.

Decomposers and scavengers are one of the most important parts of the food chain. They speed up the decomposition process and return nutrients back to the soil. It can then be absorbed by plants, and the cycle starts anew. Many of the most important decomposers in our forest are not animals; different types of fungi and bacteria also play this important role. Imagine how our world would look (or smell) without this important link in the chain! The Turkey Vulture is a major scavenger in the Table Rocks environment. They breakdown decaying material and add important nutrients back into the system and allow vegetation to thrive. When vegetation is abundant, more plant food is available for animals to use (herbivores), which in turn leads to healthier animal populations that are able to reproduce more efficiently. Consequently, there are more prey animals available for predators to eat.

You may find it helpful to demonstrate a simple food chain on the board or overhead projector showing the major links. Examples: Sun miner‟s lettuce black-tailed deer mountain lion fly larvae Sun buckbrush western tent caterpillar Western Meadowlark coyote Turkey Vulture Ask students where they fit into a food chain. Note: Refer to the list at the end of this lesson for more examples. A network of many food chains is called a food web. In any food web, energy is lost each time one organism consumes another. For this reason, there have to be several more plants than plant-

eaters. There are more producers than consumers, and more herbivores than carnivores. Most animals eat a variety of foods (just like people), and there are many different types of plants and animals in the Table Rocks environment resulting in a complex food web.

Procedure: (Adapted from “Quick Frozen Critters” an activity by Project WILD)
Preparation: Review background information with students and discuss the concepts of predator, prey, and scavengers. Explain that by playing a game of freeze tag they will gain a better understanding of this relationship and how it affects the animals of the Northwoods. This activity will also show how a food chain/food web works. Using the following list, divide students into groups based on roles they will be playing. Note: Producers are not used as an active role for this activity, but are represented by the food tokens that the herbivores collect.

Prey	Predator/Prey	Predator	Scavenger
Ground squirrell	Pine Snake	Red-tailed Hawk	Turkey Vulture
8	6	2	4

Divide students into the four groups listed above and tell them they will be acting as if they were that animal. Once animals are assigned, ask students where their animal fits into the food chain (consumer, herbivore, or scavenger).

Discuss who eats who (or what) in this food web. Make sure predator, prey, and scavenger roles are clear. If you have fewer than 30 students in your class, remove one Red-tailed Hawk or a few gopher snakes. In the wild there are always more prey animals than predators. Likewise, if you have more than 30 students assign more ground squirrels. Set up play area, designating one end as the “food source” and the other end as the

“permanent shelter.” Place hula hoops (or string) randomly between the food source and permanent shelter areas. The hula hoops are considered temporary shelters where prey animals are safe from predators. Place three food tokens in the food source area for each prey animal.

Food Source 0 0 0 0	Temporary shelter Temp shelter Temp shelter Temp shelter	Per Ma N En T She L ter

To begin, make sure predators (i.e., hawks & gopher snakes) are clearly visible using gym vest or any other bright identifier. You may want to have a different color for hawks and gopher snakes as gopher snakes are prey for hawks too! Predators and scavengers may be anywhere in the play area between the food source and the permanent shelter. Both the “food source” and the “permanent shelter” zones are safe zones where prey cannot be tagged by a predator. Prey may be tagged as long as they are moving (not frozen). Use a signal of your choosing (or a whistle) to begin each round. Prey (ground squirrels) start from the permanent shelter area and must cross the play area to obtain one food token (producer) and take it back to the permanent shelter. Make sure students know they can only collect one token at a time. Prey requires three food tokens in order to survive in their habitat. This can be a dangerous journey and prey need to be aware of predators.

Prey has three ways to protect themselves from predators.
1) They may “freeze” any time a predator is near and thus cannot be harmed (students may blink but no other movement or talking is allowed)
2) Prey may warn other prey that a predator is near. The predators may feel this is “cheating” but it is a real method used by animals in the wild.

3) Prey may protect themselves by stopping inside the designated temporary shelters (students must have at least one foot inside the hula hoops or string). Here they are safe from predators.

The object of the game is to collect a least three tokens in a given time period. By doing this, the prey will have obtained enough food to survive and will be able to reproduce in their environment. For added emphasis, you may allow one prey animal to return to the game after another prey animal (one still in the game) collects three tokens. This shows that the prey animal collected enough food to reproduce. Explain to prey that they can stay "frozen" as long as they want, but if they have not collected enough tokens at the end of the time period they will starve to death. Predators must tag more than one prey in order to survive. When prey are tagged they must sit down on the field. At this point the Turkey Vultures can tag the seated prey and the prey can then go to the sideline and wait. Just like in real life, Turkey Vultures act as nature's janitors, cleaning up our environment. This illustrates the important role Turkey Vultures play in the Table Rocks ecosystem as a "recycler" of valuable nutrients.

Note: Establish a ground rule that this is a game of tag and tackling is not allowed (Students may want to mock how real predators in the wild behave). After five to seven minutes (or until food tokens run out) stop the game and see who has survived. Captured prey on the sideline may get restless if the game lasts much longer. Play a few rounds and let different students play the roll of prey, predator, and scavenger animals.

Scientific Inquiry: Grades 4-5: Have students form a hypothesis on the outcome of the game. Will there be a lot of prey or predator animals left? Have them write down their theories on a piece of paper or the blackboard. Choose one or two students to record the data during the game, taking turns after each round. Discuss with students what they observed as the game was played. Was it different than their hypothesis? Record info on the board and discuss data with students.

Live stream of hawk nest: http://cams.allaboutbirds.org/channel/16/Red-tailed_Hawks/#_ga=2.172586275.1477247510.1515979980-1938678533.1515979980

Spring
PRE CAVOC VISIT - Fossils
Answering the question: "how do we know the environment used to be different?"
BACKGROUND INFORMATION/ACTIVITIES

(Share one week before CAVOC experience):

What Is A Fossil Anyway?

What is a fossil? Simply put, a fossil is the remains or evidence of any creature or plant that once lived on the Earth. There it is simple, straightforward, and hopefully clear. It is the short form answer. No frills. Stay with us though because some explanation is in order.

Now let's look at the long answer.

There are quite a few fossil classification systems in use today, but my favorite is the one used by Peter Larson and Kristin Donnan in their book, *Bones Rock!* They group them into two categories:

Type I-the remains of the dead animal or plant or the imprint left from the remains.

Type I includes:

- **bones**
- **teeth**
- **skin impressions**
- **hair**
- **the hardened shell of an ancient invertebrate (an animal without a backbone) like a trilobite or an ammonite, or the**
- **impression of an animal or plant, even if the actual parts are missing.**

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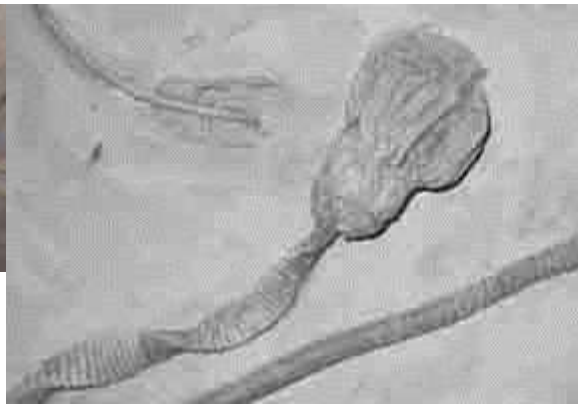

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The bones of this ichthyosaur are a type I Fossil.

These crinoids represent a type I fossil

So now you have one short and one long answer to the question: "What is a Fossil?" Let's build on that.

Type II- Something that was made by the animal while it was living that has hardened into stone. These are called trace fossils.

Type II includes:

- **footprints**
- **burrows**
- **coprolite or animal poop**

This coprolite is a type II Fossil.

Here is a dinosaur footprint also a type II fossil.

Type I fossils can be the actual thing that it once was, like a piece of bone or hair or feather. More often the bone material is replaced by different minerals contained in the liquid of the sediments that buried it. What was once bone is now some sort of crystal.

This process also takes place with shells, exoskeletons and wood. If the spaces in the bone are filled with liquid minerals which later harden it is called permineralization.

Sometimes the organic material is dissolved by the mineral-laden water. The process happens so slowly that each cell is dissolved and replaced by a particular liquid mineral before it hardens. This is called petrification. In petrification, every detail down to the cellular level is duplicated in the minerals.

Type I can also be molds or casts of the original animal or plant part. If the original organism decays, leaving an imprint and an empty space, it is called an exterior mold or simply a mold. If a space in the structure is filled with minerals and then the original animal or plant part dissolves, it is called a cast. This gastropod is a cast fossil.

The question: "What is a fossil?" has a simple answer. But as you can see it can be more complicated than that.

Watch the video Bill Nye the Science Guy:

https://www.youtube.com/watch?v=oTqWjPWeyN4

Questions following Bill Nye:

What is a fossil?

Evidence of living things turned to stone. Tell a story from long ago.

What do fossils tell us?

Things have changed. 90% of all living things that have ever lived on earth are extinct. Used to be water and jungle in places where they no longer exist.

What type of fossils are there?

Cast, mold, bone, outlines, traces, footprints, teeth

How old are the oldest fossils?

3 billion years

What can fossils tell us?

The size, weight, behavior, diet and environment of animals in the past.

How can you tell how old a fossil is?

Study the soil it was found in and date the soil.

CAVOC Activity #1 Creating Fossils

Where? - Start in front of white board, then head outside to collect materials, then return to work room - 45 minutes
(Can be conducted inside, if bad weather)

Overview

Fossils provide a valuable record of the plant and animal life and environmental conditions from millions, even billions of years ago. In this lesson, students create their own fossils, and then use multimedia resources to learn how real fossils form and what scientists can learn from them.

Objectives

- Examine how fossils are formed
- Understand how fossils provide evidence of plants and animals that lived long ago as well as the environmental conditions at that time

Materials

Internet access for each pair of students
For each student:

- paper plate
- plaster of Paris (enough to fill plate)
- natural object that can be used for making a fossil (Note: See description in Before the Lesson.)
- Plastic dinosaur or other prehistoric object (optional)
- Earth materials (optional)
- cardboard box (optional)

Before the Lesson

Tell students that they are going to make models of fossils. If students aren't familiar with the modeling process, you may want to discuss it with them prior to the lesson. They should have an understanding of how modeling is similar to and different from the actual process of fossilization.

Have students rummage around outside and bring in a few natural objects to "fossilize"; for example, twigs, leaves, shells, flower petals, or plant stems. (They will need these for Step 2 of the lesson.) You may also want to bring in some objects to keep on hand in case extras are needed.
Just before the lesson, prepare the plaster of Paris so that you can spread the wet mixture easily onto a paper plate for each student.

The Lesson

Part I: What Are Fossils?

1. On the board or on a sheet of chart paper, write the word *fossil* and ask students to define the term. Record their responses. Then have students answer the following questions to help define the term:
    a. What is a fossil?
    b. What can become a fossil?
    c. How do fossils form?

2. Tell students that they will now create their own fossils. Begin by giving each student a paper plate filled with wet plaster of Paris. Have them take the natural objects that they found outside (or that you have provided to them) and press them into the plaster. Once the impressions have been made, they can remove the objects from the plaster. Remind the students to be careful not to touch the plaster, as it will need time to harden and dry. Then ask students to write down some initial observations about their fossils. For example, they should consider which parts of the objects made very visible impressions in the plaster, and which ones are harder to see. When they are finished recording their observations, have students set aside both their fossils and their notes so they can refer to them later in the lesson.
3. (Optional Activity) Show the Becoming a Fossil QuickTime Video. It depicts how the *Australopithecus afarensis* skeleton known as Lucy could have been fossilized. Discuss the following questions:
    a. How do scientists think that Lucy may have died?
    b. What made her bones turn to stone?
    c. What natural events made it possible for her fossilized bones to be discovered?

You can re-enact the process during the discussion (or have students do so) by filling a box with Earth materials, putting a plastic dinosaur in it, covering the dinosaur with more material, and then shifting the box until the dinosaur is exposed.
4. Show the How a Dinosaur Became a Fossil Flash Interactive https://wimedialab.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.fossilintro/how-a-dinosaur-became-a-fossil/#.WY-QLlWGPIU

and the Laetoli Footprints QuickTime Videohttps://wimedialab.pbslearningmedia.org/resource/tdc02.sci.life.evo.laetolifoot/laetoli-footprints/#.WY-QlFWGPIU

Discuss with students how the fossilization of the dinosaur differs from the footprint. Which one is similar to the type of fossil created by Lucy? Which one is similar to the fossil model that they just made? Students should begin to reflect on the difference between a body part fossil and a trace fossil.

CAVOC Activity #2 What can Fossils Tell Us?

Where? - Start in front of whiteboard, - 45 minute

Part II: What Can Fossils Tell Us?

5. Now that students have explored how a fossil forms, they can begin to understand what scientists can learn from examining a fossil. Project the Fossils Flash Imagehttps://wimedialab.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.fossilcollage/fossils/#.WY-Q1FWGPIU
and discuss each image with the class. Emphasize how fossils are a record of the plants and animals that lived a long time ago. As you look at each fossil, discuss the following questions:

a. Is this a plant or an animal fossil?
b. What do you think this plant or animal looked like when it was alive?

6. Divide the class into pairs, and have them explore the Fossils: An Ancient Sea in Indiana Flash Interactive
https://wimedialab.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.bordensea/fossils-an-ancient-sea-in-indiana/
Encourage them to take their time and explore all the links and concepts. Tell them to pay particular attention to the three types of fossils: trace, soft tissue, and hard parts of plants and animals. Encourage them to take notes that they can refer to later.

7. Fossils can tell us about more than just the plants or animals that made them. Ask students to quickly brainstorm what else they think we can learn from fossils. Let them share a few of their ideas. Then pose the question, How many of you think that parts of the United States were once covered by an ocean? (It was.) How might scientists have discovered this? Show the The Grand Canyon: Evidence of Earth's Past QuickTime Video.https://wimedialab.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.nautiloid/the-grand-canyon-evidence-of-earths-past/#.WY-RLlWGPIU
Discuss how we know about changes to the environment because of the fossils found in the Grand Canyon.

8. Divide the class into pairs again and ask them to navigate the Types of Fossils Flash Interactive.
https://wimedialab.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.fossiltype/types-of-fossils/#.WY-RUlWGPIU
Again, encourage them to take their time reading the information on each page. When they are finished, ask each pair to join with another pair to form a small group. Assign each group one of the scenarios below, or develop your own, featuring different types of organisms in a particular environment.
Sample scenarios:

a. a worm living in a rainforest
b. a polar bear running across a snowfield in the Arctic
c. a fish swimming in a lake
d. a snail living in a rainforest
e. a snake crawling through a desert
f. a tree growing in a swamp
g. a deer living in a forest

Have each group present its scenario to the class. Tell them that they will need to answer the following questions:

a. Based on its characteristics and the environment in which it lives, do you think the organism has the potential to fossilize? Why or why not?
b. If so, which of the organism's characteristics do you think will be visible in the fossil?
c. If not, what do you think would need to be different about the organism's environment to make it more likely to fossilize?

9. To conclude the lesson, ask students to review their original definition of fossil and revise it, as needed, based on what they have learned. Record the new class definition on the board or chart paper.

Check for Understanding

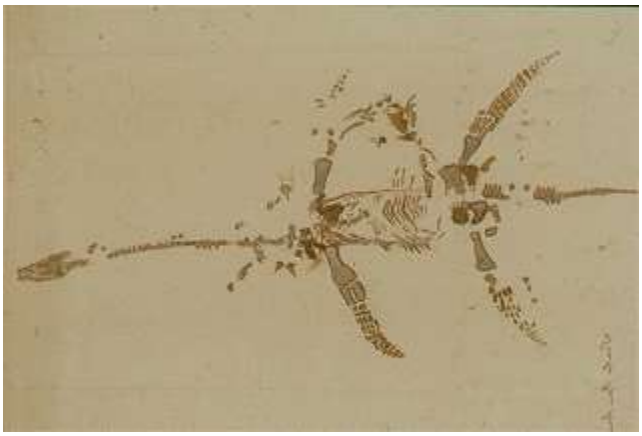
Return to each student his or her natural objects and the fossils made from it. Tell students that they will be showing their fossils to the class. As part of the presentation, they will need to classify their fossils according to the three types of fossils described in the Fossils: An Ancient Sea in Indiana Flash Interactive: trace, soft tissue, or hard parts of plants and animals. They should also look over their original list of observations and, based on what they have learned about fossils, discuss why they think the fossils came out as they did. After they have had some time to prepare, have students give their presentations to the class.

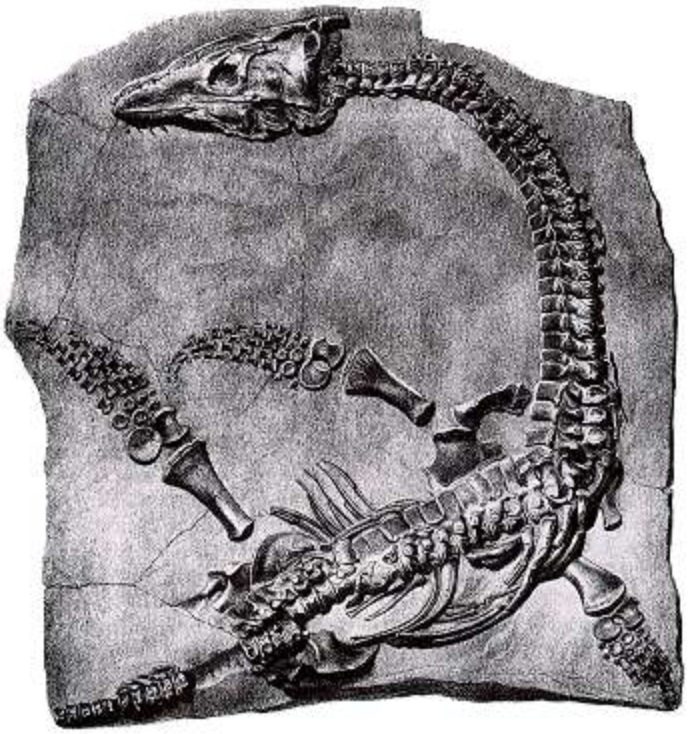
CAVOC Activity #3 Paleontologist

Where? - Start in classroom and then head to art room - 45 minute

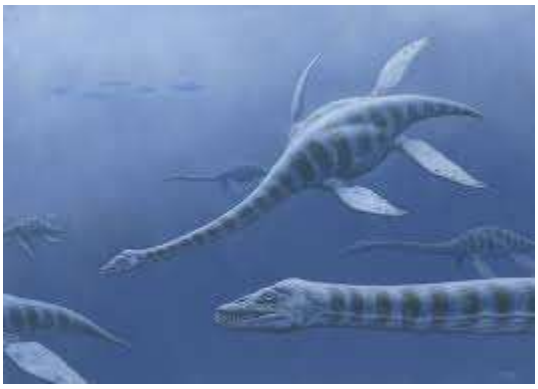
What does an archeological dig look like? How would bones be dug up? Here are some images of some fossils found by a college student named Sara.

Show examples of plesiosaurus:





As a class try and visualize, draw what this might have looked like in real life. Discuss some of its features. Then have students draw their own rendition. Finally, show what paleontologists have hypothesized what this creature may have looked like.



Get book **dinosaur worlds: new dinosaurs, new discoveries Hardcover – Import, 1996 by don lessem (Author)**

CAVOC Activity #4 From bones to dinosaur

Where? - Art/STEM room - 45 minutes

Overview: How about having students create a dinosaur using pasta? They are given a set number of pasta noodles and a clump of playdough. They are then encouraged to create a prototype of their dinosaur. Next they are to draw a picture of what it would have looked like with color, muscle and skin.

CAVOC Activity #5 End of Day: Scavenger Hunt or large group activity.

OUTDOOR
ADVENTURE HUNT

{ } Something colorful.
{ } A pinecone.
{ } An acorn.
{ } Something smooth.
{ } Something rough.
{ } Two kinds of leaves.
{ } Two kinds of sticks.
{ } Something bumpy.
{ } A flat rock.
{ } Something fuzzy.
{ } Something pretty.
{ } A chewed leaf.
{ } A flower or petal.
{ } A piece of litter.
{ } Something you think is a treasure.

I SPY NATURE!

Take photos of the following items with a camera or cell phone. See if you can find them all!

- ☐ Something fuzzy
- ☐ Something brown
- ☐ Something soft
- ☐ Something hairy
- ☐ Something alive
- ☐ A chewed-on leaf
- ☐ Two different types of leaves
- ☐ Something thin
- ☐ Something round
- ☐ Something long
- ☐ A colorful rock
- ☐ Something green
- ☐ Something yellow
- ☐ Two kinds of seeds
- ☐ Something tall
- ☐ Something little
- ☐ Something rough
- ☐ Something smooth
- ☐ A feather
- ☐ A pinecone
- ☐ Something that makes noise
- ☐ Something that has a smell
- ☐ Something bright
- ☐ Something dark
- ☐ Something beautiful
- ☐ Something ugly
- ☐ Something that you think is a treasure

Did you find them all? What was your favorite picture that you took?

_____

_____

Barnyard Hunt

Equipment: 4 objects for each team. Like 4 balls and 4 bells and 4 cups and 4 scarves. Each team hides one of each.

Teams: classroom with teacher as leaders

Description:

Hide 4 different sets of different objects in a play area (field, woods, etc), such as pennies, nickels, dimes and quarters. Use larger objects for younger children or more difficult terrain.

Make four teams and assign a team leader to each (or let the group decide). Each team is assigned a barnyard animal and must make that sound. Examples include: pig, chicken, duck, cow, etc. Each group is then assigned one object (ducks get the pennies, etc).

Start the game by sending the teams out into the play area to find their object. The players can spread out and look independently, but only the LEADER can pick up the object.

When someone from the team finds their object, they begin to make their team's sound, until the leader comes over to collect the object. It is usually helpful for players from the same team to make their sound together to ensure that the leader hears them over the other teams

The team with the most collected objects at the end of a designated time period wins!

Scavenger Hunt- *Nature Walk*

Can you find all 20?

 bird	 tree roots	 ant	 spiderweb
 green leaf	 acorn	 flower	 log
 two similar rocks	 mushroom	 squirrel	 tall grass
 stick that looks like a letter 'y'	 flying bug	 brown leaf	 cloud
 dandelion	 animal footprints	 wild berries	 pine cone