DAY TRIP FOR CUBS
Theme: ECO-SYSTEMS

This event will be the culmination of the focus on Project WILD and Greenwings activities. The best site for this event will be an area that would have a large playing field, a source of water (tap or natural water feature, and an area to hike through (fields, forest, wetlands). A location to have a snack or lunch would also be useful.

Recruit some parent volunteers or Scouts to help run the activities and provide supervision. Before the event, make sure you have completed all necessary paper work, permission forms and safety considerations.

Time	***Activity***	***Person Responsible***
9:00 am	Cubs arrive at the gathering area where the event is to take place. Recap safety tips: need for hats, sunscreen, drinking water, staying with buddies, etc.	_____ _____
9:15	Amoeba Race *(See detail planning sheet)*	_____
9:35	Seed Need Hike *(See detail planning sheet)* Take drink and snack for along the way.	_____
11:00	Return to gathering area. Complete Seed Need.	_____
11:15	Ecosystem Tag *(See detail planning sheet)*	_____
11:30	Deadly Links *(See detail planning sheet)*	_____
11:50	Quick Frozen Critters *(See detail planning sheet)*	_____
12:00	Lunch break. Good time to discuss waste in packaging and protecting the environment by selecting foods with fewer packaging.	_____ _____
12:30 pm	Install song bird or wood duck nesting boxes.	_____
1:30	Water Cycle Relay *(See detail planning sheet)*	_____
2:00	Arrange for everyone to be picked up and site cleaned.	_____

* Completes World Conservation Badge requirements, #1, 2, 3, 4, 6.

Amoeba Race

READ THIS FIRST

Topics: microorganisms; cell structure

Objectives:

1. To teach Cubs about the components of a cell.
2. To introduce them to a common freshwater microorganism.

Background:

All living organisms - large and small, plant and animal - are made up of cells. All cells are quite similar to each other, having many structural features in common. It's one of the marvels of nature that the endless variety of living organisms on earth are constructed of or depend on such similar units. It's easiest to understand what a cell is if you compare a living organism to a building. The rooms of the building are like the cells of an organism. Both rooms and cells have boundaries with exits and entrances, rooms have walls, floors, ceilings, doors and windows; whereas cells have walls or membranes with pores of various sizes. Both rooms and cells come in a variety of shapes and sizes, with various contents. Each kind of room and each kind of cell has its own particular use, function or speciality. A building may consist of only one room or many rooms; organisms may be composed of many cells or only one cell.

An amoeba is a one celled, microscopic animal. It is one of the tiniest and simplest animals on earth, found in fresh and salt water. The amoeba consists of protoplasm (a jelly-like substance) which constantly changes shape as the organism moves and engulfs food. The amoeba's protoplasm - like the protoplasm of other cells - has two key parts; a nucleus (a large spherical structure which acts as the cell's control centre) and cytoplasm (everything else in the cell other than the nucleus).

Equipment:

- None

How to Play:

1. To make an amoeba, you need a lot of protoplasm, a cell wall and a nucleus. Protoplasmic Cubs are those who don't mind being close. Cubs who like to contain themselves (and others) make a good cell wall; they should surround the protoplasm Cubs, facing outward and link elbows. A Cub with good eyesight and the ability to keep on top of things should be the nucleus, seated on one of the protoplasm's shoulders (or piggy back).
2. Get the amoeba to move around and emphasize that they must move as group without pushing or shoving or else part of the amoeba can get hurt. A rhythmic chant might help to coordinated movements (what kind of sound does an amoeba make?) Make two amoeba and have a race.
3. Extension: try a little cell division. The amoeba should move to some target area, divide itself into two new amoebae (each with all the necessary components) and then race back to the finish line.

Seed Need

READ THIS FIRST

Objectives: Cubs will be able to explain how seeds are carried by animals; and evaluate the importance of wildlife in contributing to ecological systems, based on the example of seed dispersal.

Background:

Wildlife contributes to the diversity and balance of ecological systems. One compelling example is in the process of seed dispersal. Many seeds are carried by animals - whether in the coats of fur bearing animals or in seeds carried and dropped by some birds.

The major purpose of this activity is for Cubss to understand one example of wildlife as contributors to healthy ecological systems.

Equipment:

- One large fuzzy sock per Cub, or masking tape segment per Cub (optional: one shoe box filled with planting medium per Cubs, cookie sheets or trays in which to place shoe boxes used as planters.)

How to Play:

1. Ask each Cub to bring a large, old fuzzy sock from home - or try to find an inexpensive or free source to obtain a sock for each Cub. Old socks with holes in them are fine for this activity. Ask each Cub to put on a sock over one shoe. Wearing the socks over their shoes, go on a walk through a grassy area or field - particularly one that is abundant in seed-bearing plants. (Masking tape over the foot or around the leg sometimes has more sticking power!)

   Option for older Cubs: Different Cubs walk in different locations. Contrast seeds found in each location. Create an "environmental map". What ecosystem differences exist in the neighbourhood, city, etc.?

2. After walking through the area, look carefully at the socks. What has happened? Discuss briefly the seeds and other things that are attached to the socks. If the distances are not too great, the Cubs should keep their socks on their feet until they return. If the distance is too great - they may lose too many seeds along the way!

   NOTE: Wildlife drop seeds too, that's how they get dispersed!

3. The Cubs should carefully remove their socks. They've gathered their "data" - seeds and other things attached to their socks. Removing the seeds and other particles from the socks - they should examine what they've brought back. Talk with the youth about the major kinds of things they seem to have - like seeds, grass, small bits of twigs. Next, discuss the seeds in more detail, talking about the different kinds of seeds they have found: round, skinny, big, small, etc.

4. Each Cub should record - with words and small drawings - the kinds of things on the sock. Tally the number of each kind of thing on a sock as well.

5. Ask the Cubs how different animals' fur might be similar to their socks. Has anyone ever brushed seeds, stickers, and things out of a dog's or cat's fur? Talk with the Cubs about how, so often in nature, seeds are carried by animals almost like the way they carried seeds and things on their socks. Seeds may stick to an animal's fur in one location and fall off in another. Discuss why such a process is an important one. Evaluate the consequences. How does wildlife contribute to environmental diversity?

   OPTIONAL: Each Cub can plant his or her seeds in one of the shoe boxes filled with planting medium (soil or a commercial mix). Be sure the Cubs put their names on their boxes. Water and care for the shoe-box gardens regularly - and see what grows!

   NOTE: Many wild plant seeds require freezing before they will germinate. If there is a question, put some seeds in ice-cube trays and freeze them for several days. Then plant them.

Ecosystem Tag

READ THIS FIRST

Topics: Ecosystems; decomposers; producers; consumers; interdependency and interaction

Objectives:

1. To introduce the concepts of producers, consumers and decomposers and to illustrate how they are interrelated with one another.

Background:

All life is connected in delicate balances called ecosystems. Living things do one of three different jobs to maintain ecosystems - they are either producers, consumers or decomposers. Producers are green plants. They use the sun's energy to manufacture their own food from abiotic (nonliving) elements and this process is called photosynthesis. Green plants provide food and oxygen for other living things. Consumers are living things that eat other living things. Some consumers eat producers; they are herbivores, which means plant eaters. Some consumers eat other consumers making them carnivores, which means meat eaters. Decomposers break down dead plant and animal materials into abiotic elements. Decomposers are recyclers and the abiotic elements return to the soil, water and air for use again. Decomposers include bacteria, fungi, earthworms, and snails. It's important to note that decomposers can also be consumers (eg. snails and crayfish also eat plants).

Equipment:

- Beanbags, pinnies, 2 to 4 hula hoops and 4 pylons

How to Play:

1. Divide Cubs into three groups: decomposers, consumers (about twice the number of decomposers) and producers (about twice the number of consumers). To establish the groups, have the Cubs line up and count off to seven. All the ones become decomposers, the "twos" and "threes" are consumers and the rest ("fours" to "sevens") become producers. Each group wears a different colour pinnie.
2. Set up a boundary for a large playing area in which the participants must remain. Use beanbags to represent abiotic components. The number of beanbags equals the number of producers. Place beanbags in two or more piles inside the hula hoops within the playing area.
3. The game involves the basic chain of abiotic components to producer, producer eaten by consumer, and consumer broken down by decomposer to return abiotic components to the environment. The overall idea is to maintain the ecosystem, while each group fulfills its goal.
4. Producers are the only players who can take beanbags from the piles. A safety zone (one foot inside the hula hoop) around the pile protects a producer from being tagged while he or she is picking up an abject. The goal of the producers is to get all the beanbags (or as many as possible) out of the safety zone and hold onto them.
5. Consumers get beanbags by making a two handed tag on a producer holding one. The goal of consumers is to get as many beanbags as possible from producers and keep them.
6. Decomposers can only get beanbags by making a two handed tag on a consumer holding one. When decomposers get the beanbag, they return it to the safety zone. The goal of the decomposers is to get all the beanbags (or as many as possible) back to the safety zone.
7. Players can only hold one beanbag at a time. When players are tagged, they must give up their beanbag. Players can toss and pass beanbags to other members of their own group.
8. Producers start the game by running to collect beanbags. Consumers are allowed onto the playing area a few moments after producers. Decomposers enter the area last. Play continues as long as you wish (producers keep taking beanbags, decomposers keep returning them). Adjust the number of beanbags used in the game or players in each group if play is not progressing smoothly.
9. How are all the groups dependent on one another? How does each group contribute to the continuous functioning of the ecosystem? Can the ecosystem function without decomposers? Try the game without decomposers and see what happens.

Deadly Links

READ THIS FIRST

Topics: food chain; pesticides; herbicides; accumulation

Objectives:

1. To show how chemicals (pesticides and herbicides) enter food chains.
2. To show how chemicals are concentrated as you move up a food chain and to discuss the possible consequences of these chemicals.

Background:

People have developed pesticides to control organisms. Herbicides are used to control weeds, insecticides to control unwanted insects. When these pesticides involve the use of poisons, the poisons frequently end up going where they are not wanted. Many toxic chemicals have a way of persisting in the environment and often get concentrated in unexpected and undesirable places, from food and water supplies to wildlife and people too.

For example, a pesticide called DDT used to be applied regularly to crops as a means of controlling insects that were damaging the plants and trees. Then it was discovered that DDT entered the food chain with damaging results. For example, fish ate insects that were sprayed with the chemical; hawks, eagles and pelicans ate the fish.

The poisons became concentrated in the birds, sometimes weakening and killing them directly and over time resulting in side effects like eggshells so thin that the eggs would not hatch or were crushed by the parents in the nesting process. Impact on species including the bald eagle and the brown pelican has been well documented. Use of DDT has now been prohibited by law in Canada. However, it has not been prohibited worldwide and therefore still enters the food chain.

Equipment:

- Coloured cat food (Tender Vittles has three colours), 30 of these items per Cub is recommended no need to count); one plastic cup per grasshopper, pinnies of three different colours.

How to Play:

1. Tell the Cubs that this is an activity about food chains. Familiarize them with the term by getting them to think of some examples of wetland food chains.

2. Divide the Cubs into three groups - shrews, hawks and grasshoppers. Work with three times as many shrews as hawks and three times as many grasshoppers as shrews. Identify the three groups by giving each a coloured pinnie to wear. Hand each grasshopper a plastic cup which represents the stomach of whatever animal is holding it.

3. With the Cubs' eyes closed, or with their backs turned, place the food in the playing area by distributing the coloured cat food. The grasshoppers are the first to go looking for food. The hawks and shrews sit quietly on the side watching the grasshoppers; after all the hawks and shrews are predators and are watching their prey! At a given signal, the grasshoppers are allowed to enter the area to collect food and place it in the stomachs (cups). The grasshoppers have to move quickly to gather food.

4. After about 30 seconds the shrews are allowed to hunt the grasshoppers. The hawks remain on the sidelines watching quietly. Hunting time for the shrews depends on the size of the playing area. On a large playing field, 60 seconds is probably best. Each shrew should have time to catch one or more

grasshoppers. Any grasshopper tagged or touched by a shrew must give up its cup of food to the shrew and then sit on the sidelines.

5. The next time period (from 15 to 60 seconds or greater) is time for the hawks to hunt. The same rules apply. Any shrews still alive may hunt for grasshoppers, grasshoppers are hunting for food and the hawks are hunting the shrews. If a hawk catches a shrew, the hawk gets the food cup and the shrew goes to the sidelines. At the end of the designated time period, ask all the Cubs to come together and bring whatever food cups they have with them.

6. Ask the Cubs how many of the grasshoppers and shrews were eaten. Next ask the hawks to empty their stomachs and count the number of brown and yellow food pieces and the number of red food pieces. The remaining grasshoppers and shrews should do the same.

7. Inform the Cubs that there is a pesticide in the environment. This pesticide was sprayed onto the crop the grasshoppers were eating to prevent a lot of damage by the insects. This particular pesticide is one that is poisonous, accumulates in food chains and stays in the environment a long time. In this activity, the red cat food pieces represent the pesticide laden food. All of the grasshoppers that were not eaten by shrews may now be considered dead if they have any red food pieces in their stomachs. Any shrews for which half or more of their food supply was red are also dead. The one hawk with the highest number of red food pieces will not die at this time, however it has accumulated so much of the pesticide in its body that the egg shells produced during the next nesting season will be so thin that the eggs will not hatch successfully. The other hawks are not visibly affected at this time.

8. Discuss what the Cubs experienced. Ask for their observations about how the food chain seems to work and how toxic substances can enter the food chain, with a variety of results. Ask for further examples of food chains which could be affected in a similar way.

9. Extension: Discuss possible alternatives to uses of chemicals such as organic farming techniques, crop rotation, companion planting, biological control (predatory insects) and genetic approaches (releasing sterile males of the pest species).

Quick Frozen Critters

READ THIS FIRST

Topics: Predators; prey; adaptations

Objectives:

1. To introduce Cubs to common wetland predators and prey species.
2. To highlight adaptations that help prey species to avoid becoming someone else's supper and adaptations that help predators to catch their prey.

Background:

Animals display a variety of behaviours in predator/prey relationships. These are adaptations to survive. Prey behaviours include signalling to others, flight, posturing in a fighting position, scrambling for cover and even freezing on the spot to escape detection or capture by predators. The behaviour exhibited partly depends on how close the predator is when detected by the prey.

Each animal has a threshold for threat levels. If a predator is far enough away for the prey to feel some safety, the prey may signal to others that a predator is near. If the predator comes closer, the prey may try to run away. If the predator is too close to make running away feasible, the prey may attempt to scurry to a hiding place. If the predator is so close that none of these alternatives is available, the prey may freeze in place. This freezing occurs as a kind of physiological shock in the animal. Shelter or camouflage may also make them invisible to the predator when they freeze. The main purpose of this exercise is for the Cubs to recognize the importance of adaptations to both predator and prey.

Equipment:

- Food tokens (dog kibble; enough for three per Cub); pinnies to mark predators; four or five hula hoops to serve as cover markers; pylons; pencil and paper to record number of captures, if desired.

How to Play:

1. Select a pair of animals which are in a predator/prey relationship such as snake/frog; fox/mouse; mink/ muskrat; hawk/ground squirrel; American kestrel/dragonfly. Identify Cubs as either predators or prey for a version of freeze tag, with about one predator for every four to six prey. Predators should wear a coloured pinnie.
2. Mark off a playing area and identify one end of the field as the food source and the other end as shelter. Randomly place four or five hula hoops between the shelter and the food to represent additional areas of cover for the prey.
3. Food tokens (dog kibble) are placed in the food source zone on the ground. Allow three food items for each prey.
4. Use a whistle to start each round. When a round begins, prey start from their shelter. Their task is to move from the shelter to the food source, collect one food token per trip, and return to the primary shelter. To survive, prey must obtain three pieces of food. However, their travel is hazardous and they need to be alert to possible predators. If they spot a predator, they can use various appropriate prey behaviours including warning other prey that a predator is near. Prey have two ways to prevent themselves from being caught by predators; they may freeze any time a predator is within two metres of them or they may run to cover (at least one foot within one of the hula hoops). Frozen prey must have one knee and one hand touching the ground and be silent.
5. Predators start the game anywhere in the open area between ends of the field and are randomly distributed between the prey's food and primary shelter. Predators attempt to capture prey to survive, by tagging moving prey. Predators must each capture two prey in order to survive. Captured prey are taken to the sidelines by the predator who caught them. Limit the duration of each round of the game to five to seven minutes. Allow the Cubs to be both predator and prey.
6. Discuss how the prey escaped the predators? Which ways were easiest? Which were most effective? How did the predators capture their prey? Which ways were best? How did predators respond to a frozen prey? How are adaptations important to both predators and prey?

7. Variation: play the game for three or four rounds and record the number of captures each playing period. Have the Cubs that are captured become predators and each predator not getting enough food become a prey animal in the next round. This quickly leads to the concept of dynamic balance as prey and predator populations fluctuate in response to each other.

Water Cycle Relay

READ THIS FIRST

Topics: Water cycle, precipitation, evaporation, runoff

Objectives:

1. To remind Cubs that the earth's water moves in a never ending cycle.
2. To stress water conservation and responsible use of our water resources.

Background:

Every living thing on earth needs water to survive. Our earth has sometimes been called the watery planet since between two-thirds and three-quarters of its surface is covered by water. Water occurs on the earth in a variety of forms. In lakes, streams, creeks, rivers, wetlands and oceans, locked in the polar icecaps, making its way through cracks underground as groundwater, drifting across the sky as clouds or falling to the earth as rain, snow, sleet or hail. All these forms of water are part of an interconnected system called the water cycle.

About 97 per cent of the earth's water is in the oceans, around two per cent is frozen in icecaps and glaciers and the rest is in groundwater, freshwater lakes, inland seas, soil moisture, in the atmosphere and in rivers. An oversimplified explanation of the water cycle is as follows: water in the oceans (or anywhere else at the surface) evaporates, rises, cools and condenses into clouds. Clouds move and eventually drop precipitation to the earth where it becomes runoff, enters wetlands, lakes, rivers, streams, groundwater, plants and animals and eventually finds its way back to the ocean.

We humans often take water for granted. We forget that there is a limited amount of water on this earth and that it's our responsibility to conserve water, use it wisely and protect its quality. Water is important to the health of wetland habitats and the many different species of plants and animals.

Equipment:

- Large buckets; large margarine containers; small sponges

How to Play:

1. Divide the Cubs into sixes and get each team to sit down in a line behind a starting line. Ask the Cubs if they know what a water cycle is and go over a general overview of how it works. Ocean/evaporation/ clouds/ precipitation/to the earth as runoff, into lakes, wetlands, rivers and streams. And eventually back to the ocean.
2. At the front of each line you have a large bucket full of water. That's your ocean. Each bucket has a small sponge in it. They are your clouds. About 20 metres away you place an empty margarine container that represents dried up wetlands.
3. When the start signal is given the first member of each team picks up the sponge and races to the dried up wetland to get as much rain in it as possible before racing back to release the next person. The first person to overflow the wetland wins.