
Eco-Games

Thicket/Camouflage

One student volunteers to be a hungry **predator**, while the others hide within boundaries as various **prey**. The predator hides its eyes, and the prey items have 45 seconds to walk to a hiding place. After that, the predator must remain in one spot and "capture" prey by seeing it. If the predator cannot see any prey, it must hide its eyes, while the prey items have 15 seconds to get at least one body length closer. The goal is to get as close to the predator as possible without being seen/eaten. The story is often switched around: One person is in the middle blindfolded. That person is a rabbit. Everyone else is a hungry coyote. The coyotes hide, or **camouflage**, while the blindfolded bunny counts to 20. The bunny removes the blindfold and tries to find predators by pointing in the direction they see things and naming whatever they can see – clothing, hair, etc. A counselor moves so they can better see if someone is hiding behind the indicated object and has folks come to the 'I saw you pile' at the bunny's feet if they were found. The bunny cannot move while looking for people, only rotate and bend down or jump up – no stepping. Once the bunny can find no more coyotes, they put the blindfold on and count to 15. Again they try to find more coyotes. Then they put the blindfold on and yell silent round. The predators must **stalk**. They walk up quietly and try to tag the bunny on the shoulder. The bunny points at noises that they hear and folks who were pointed at have to sit down. The first to tag the bunny wins, but if they are all pointed out, the closest predator wins. The coyotes shouldn't hide too far or they won't be able to sneak up fast enough.

Protect the Cache

One student volunteers to be an animal that is protecting a food **cache**. The rest of the students are animals that want the food. Place a bandana between the feet of the first student, while the others form a circle around him/her. At the signal, the circled students try to get the cache. If the protector tags them, they go hungry, and must leave the circle.

Habitat Tag

Have the group form a large circle. Have them get into partners with the person next to them by just joining elbows. Each pair represents an island, or fragment of suitable **habitat**. Their island has enough habitat to support two critters. If a third critter tries to join that island, it becomes overpopulated, causing one critter to be bumped off. If a student is bumped from an island of habitat, they must go in search of another island. This is represented in the game by having each pair physically attach to each other (linking elbows, holding hands, etc...). When another critter wants to join that island, they too must physically connect to one person on that island. The person they DID NOT grab must leave. The person without an island of habitat is susceptible to predation. To begin, spread out your islands in a designated playing area. Select one pair to begin as the **predator** and **prey**. The predator's job is to try and tag the prey. The only way for the prey to escape is to grab onto an island. If the predator tags the prey, the roles reverse. The instructor can yell, "Switch!" anytime they notice someone getting overtired. To avoid confusion, you can have the students yell out the name of the person they are bumping. This signifies that they are in fact attached, and who is now the prey. You can also add other rules as necessary; speed-walking only, they must stay inside the circle, tag only on the shoulder, etc.

Squirrel Olympics

The best place for this activity is a wooded area with little ground cover or a clearing with obvious landmarks. The students will be role-playing squirrels **catching** food for the winter. Each squirrel selects a “tree”. The tree can be any obvious landmark bigger than their head. The goal is for each squirrel to gather enough food to survive the winter. This is accomplished by making several trips to the food pile, a centrally located area where you have dumped the Cheerios, washers or something to represent nuts. The students can only take one nut at a time from the food pile, and they must carry it between their thumb and first finger. Because squirrels are opportunistic, they may take nuts from other nests, but only when that squirrel is away. Stop the game after a few minutes, and tell them what each squirrel needed to gather to survive. For example, “If you gathered 8 nuts, you made it!” Return all nuts to the pile, and have each squirrel find a new tree. *Round Two:* Play the same way, but by now the group will have developed some strategies. Stop, tally, and find a new tree. *Round Three:* Add a ground dwelling **predator**. The predator cannot guard the food pile, nor can they tag squirrels if they are touching their tree. Distinguish the predators by having them wear a blindfold on their head or sleeve. If a squirrel gets tagged, have them come to you, the “**decomposer.**” You can release them as newborn squirrels seeking territory. Stop, tally, and find a new tree. *Round Four:* Continue to add predators. A cat, for example, can hunt squirrels in trees. A hunter or rotten kid with a slingshot can hunt squirrels and cats in trees! Give the humans a ball to throw, rather than having them touch tag. Discuss results.

Fence Tag

To begin, pick two volunteers to be the predator and prey (or specifically a wolf and a sheep). Make a circle around the sheep, holding hands at first, and back up until arms are outstretched. Drop hands and say, “go,” opening the gates. There are many ways to play this game, so pick the version that works well for your group, or try different rules for each pair of players. *One:* Whenever the clever wolf passes between two people, they grasp hands and close that fence. The sheep in this version just tries to avoid being tagged and stuck inside the fence or outside the fence with the wolf. No one can pass under a fence after it has been closed. *Two:* The wolf and the sheep both have the power to close fences, whenever they pass between two people. If the wolf tags the sheep, they reverse roles immediately. *Three:* The sheep is the only one who can close the gates and the wolf cannot pass through, but the sheep can pass through even a closed gate. The wolf is trying to tag the sheep. Discuss strategies and play again if you have time.

Decompose Me!

The players:

Producers – have about 4 students and 2 adults who spread out and form roots to their spot. Their arms are blowing in the breeze and performing **photosynthesis**. If they are eaten the remains of their plant bodies sit on the ground and say “decompose me!” until two **decomposers** come around to turn them into fertile soil. The producer then does a re-growth dance and starts again with the photosynthesis.

Primary consumers – have about 3 students act as the herbivores that go around munching the producers and run from predators. If they are eaten by a predator they sit down and their bones say, “decompose me!” until the FBI come around to perform the magic. (They will also perish if there are no more producers.) They are then reborn.

Secondary consumers – have about 2 students as the carnivores who chase the primary consumers for food. If they don’t catch any food they fall down and their bodies say, “decompose me!” and they wait for the FBI.

Decomposers – have about 4 students working together to be the FBI. (Fungus Bacteria and Invertebrates/Insects) In order to survive they need to eat decaying matter. There have to be two FBI to decompose the animals, and only one for the producers. In order to resurrect the animals, they hold hands around them (like London Bridges) and say “back to the earth, regrowth, rebirth!” or something like that, the students can come up with it. For the plants, they just have to touch their head and say something like “you are decomposed.”

Play a round with just producers doing their thing; so every knows who is a plant. (It helps if each player is recognizable with a colored bandana or maybe they all have the same color shirt.) Then play a round with just the primary consumers and the producers. Then add the secondary consumers and/or have them predict what would happen. The FBI could be introduced in the second round or at the end, but it should be obvious that without them, there would just be a lot of dead matter, no life and no game.

Hawk Squirrel Mushroom

Play this game after discussing **trophic levels** and the **food web**. This is an active, 3-dimensional version of “Rock-Paper-Scissors.” Divide the group in half and have them form two lines, shoulder to shoulder, facing each other. Each side must *collectively* choose a critter to represent. Hawks put their arms up like wings and try making sounds like a hawk. Squirrels make munching noises with their paws holding a nut near their faces and bent knees. Mushrooms put their hands over their heads like a mushroom cap and squat near the ground. Hawks eat squirrels, squirrels eat mushrooms, and mushrooms decompose the hawk. Give each side a safety zone about 50 feet from the middle. That is where the group decides what animal they will be for each round. All students on the team must be the *same critter!* When both sides are ready, line them up facing each other in the middle. Backpacks work great as boundaries. Count to three for them to declare (make their sound and symbol). The predators chase the prey to the safety zone and tag as many as they can. All predators that “ate” take the prey back with them to their side. (*optional*: Any predator that “starves” becomes a member of the prey side.) If both sides select the same critter, have them jump up and down and make silly whooping sounds, or smile, shake hands and say, “How do you do!?”(Just for fun) Make a graph of how many students are on each side for each round. The graph will illustrate **dynamic equilibrium** - how nature is in constant flux, trying to create a balance. After a few rounds, discuss the results.

Nature Bingo

Materials:

Bingo Cards

Sticky dots or stars

Nature Bingo helps the students learn to observe the area around them and helps them feel involved in the learning process.

Pass out a BINGO card to each student. Each card lists common plant and animal signs in a BINGO card set up. The instructor carries a package of sticky dots or sticky stars. When a student correctly identifies one of the items listed on the BINGO card, the instructor issues one sticky dot for the student to place on the card in the appropriate spot. Use each correct field identification as a natural history lesson. The students may not be able to identify all of the listings on their own; the instructor should identify many of the listings during the course of the ecology hike. When one student makes a correct field identification, pass out sticky dots to all students who have that listing on their BINGO card. Otherwise, the game takes too much time and becomes too chaotic. When a student completes a BINGO, the instructor collects the card. Continue the game until all students have completed a BINGO.

Food Chain Tag (Mini Pred-Prey)

Before hand, many pieces of green "grass" (posterboard) are cut, with 10% of them marked on one side. These are spread on the ground in a certain area. The students are divided up into many grasshoppers, a lot of lizards and mice, a few snakes, a couple hawks, and identified with armbands. At the signal, the students are released to feed. The grasshoppers eat grass, mice eat grass seeds, the lizards eat grasshoppers, the snakes eat lizards and mice, while the hawk eats lizards, mice, and snakes. Each time an animal higher on the **food chain** eats another by tagging it, it receives the lesser's grass, and the lesser animal must sit out when they are out of "grass" or food energy. In the end, the hawks should be left. The one with the most pieces of grass is the healthiest. But Wait! Any hawk with half its grass marked on the back with "**pesticide**" dies. Also, talk about why this doesn't happen in the real world. (reproduction and death)

Energy Distribution

Similar to above game, except one adult is the sun, and student "grass" is added to the melee. At the signal, the grass receives bean "energy" from the sun. Other student organisms eat grass and each other, all the while passing the bean energy to each other. The twist comes in the form of one adult circulating as "disease" and maybe another as "habitat destruction". When these two strike, the organisms' energy goes back to the sun. With very large groups, add "earth" and other destructive factors. After a given time, action is stopped, live organisms saved, and the energy counted.

Oh Deer! (Project Wild)

Organisms require certain **resources** in order to survive. Those resources (**limiting factors**) may only be available in limited amounts in a habitat and may restrict the number of individuals that can survive in that habitat (**carrying capacity**). Individuals will compete for those limiting factors. Those individuals with more successful adaptations will survive to pass their successful **adaptations** to their offspring (natural selection). Divide the group into two teams. The teams

stand in two lines, about twenty feet apart, facing each other. One side is deer and the other side is limiting factors. Teams turnaround with their backs to each other. Members of the limiting factors team decide which limiting factor they want to be (food - hold stomach; water - drink with hand near mouth; shelter - hold hands over head in teepee fashion; space - hold hands outstretched). Members of the deer team decide which factor they need. At the signal, the teams turn around and face each other. Deer team members run over to the limiting factors and grab a factor that meets their need. Used factors return with deer to the deer team side – illustrating a healthy deer reproducing. Deer unable to find appropriate factors move to the limiting factor team – they have died without their needs met and their bodies have decomposed, passing energy to the resources. Play several rounds to illustrate population cycles. You may also add other things, like hunters, or cougars who tag deer as they run and make them into resources, or increase the predator’s population, etc. Debrief with full discussions of adaptations, population cycles, **competition**, and limiting factors.

Who Am I?

Write up enough words for everyone to have a name on their back. You can focus on animals or make an ecosystem by including the sun, a body of water, air and soil. If you use a roll of masking tape it is quick and easy, but you need to make sure to retrieve the tape and throw it away or watch them put it on their notebook. If you use tape, make sure you have given directions about where to put it or it will be dropped on the trail. Have everyone turn around or close their eyes while you put a piece of tape on their back with the name of a specific plant, animal or part of the ecosystem. Explain that each person must figure out what is written on their backs by only asking yes or no questions. Everyone can say, yes, no, I don’t know or maybe, without giving clues. After they guess “who they are” they either put it on their nametag, field notebook or hand it in, so as not to accidentally drop it as litter. Give as many names to everyone as you have time for. This game can help people pass the time on a hike. You can add more rules; students can only ask the same person three questions, the person must act out what they think they in order to finish, if someone says theirs out loud by accident they get a new one, everyone gets to choose between easy, medium and hard difficulty, etc. (Beaver, coyote, great horned owl, earthworm, snake, rye grass, killdeer, sedimentary rock, lake, human, goat, skink, and racoon are some examples for the game)

Build a Tree

Trees, like all plants, are **producers**. What does it mean to be a producer? Discuss tree anatomy. As the students name a particular tree part, have them describe its function and location. Have one or more student act out that part of the tree, using sounds and movements. Each time you say a part name; the students assigned that part make the appropriate sound and motion. Roots lie down and make slurping sound to imitate water and nutrient collection. You may specify **Taproot** and **Lateral Root** for older groups. **Xylem**, also known as Sapwood, and **Phloem** are the “veins” of the tree, responsible for nutrient and water transport. They will stand in a circle “above” the roots. Xylem touch their toes to gather water and nutrients from the roots and shoot them up over their head saying, “Xylem!” The phloem grabs food in the form of sugar from the leaves and shoots it down to the rest of the tree while saying, “Phloem!” **Heartwood** is the old xylem that holds up the tree from the inside. Put these students in the middle, making a deep and sturdy “lub-dub” heart sound. The old phloem forms the protective covering, or **Bark**.

Place the bark around the xylem and phloem to protect the tree with a fierce barking noise. Cambium can also be added for older groups. **Cambium** is found between the xylem and phloem, and its job is to make new cells. **Leaves** act as food factories photosynthesizing sunlight, water, carbon dioxide and nutrients into food (sugar) and oxygen. Have the leaves bask and sway in the sunlight singing a sunny song. As you add new parts, review each of the others for emphasis. When all parts have been assigned, explained and acted out say, “this is a tree!” at which point all the parts go together, symbolizing the interconnectedness. A set of cards illustrating each component may be helpful.

Each One Teach One

This activity gives each students an opportunity to teach one interesting fact or concept to the rest of the class. Can be a very long activity or short, depending on how much time you have. This could be a good ongoing, week to week activity, so that all students will have a turn to teach the group.

1. Begin with Student A to find an interesting plant or animal sign. Explain to Student A what you wish Student A to teach the rest of the students. Student A writes down what they are supposed to teach to the group only if they need to look at it. During the wildlife exploration time, students know that they can stop by this student’s spot and learn something from them. An adult should be there to help. This option ensures that student teacher gives accurate information.

Variation two: Have students teach in pairs. After Pair #1 has taught the entire group, they move through each group, never having more than two people teaching and two people learning. A chaperone should be there with Pair #2 after Pair #1 has listened to them and moved on, they should wait with this last pair a few minutes. This can be time consuming and it is best to have an ongoing game or assignment to work on during the waiting time.

Safety in Numbers

This activity illustrates the advantages of grouping behavior in animals. Start by assembling a playing area. The area should have two lines marking safety zones about fifty feet apart. Have all students line up behind one of these lines. Select one fast student to be the **predator**, and place him or her between the safety zones. At your command, have one student at a time try to run to the other safety zone without being tagged by the predator. When all students have run, pick a new predator. Round Two: Have four students at a time try to cross. Now, because there is more **prey**, that means more eyes and a faster warning system. Have the predator move farther back from the middle to symbolize its diminished ability to sneak up on a large group. Round Three: Pick a new predator and send all students at once. This time the predator is moved further back than before. Discuss predator woes, and tactics for **adapting**.

Sensory Games

Unnatural Trail

The unnatural trail in a good way to reinforce the concept of **camouflage**. Set out about 15 unnatural objects along the trail so some are difficult to see and others are easy to find. Remember how many items you have placed, so as not to leave any behind. Have the students

walk through one at a time. Remind them not to point or make any indication when they see something, for it will ruin it for the people behind them. After everyone has walked through the trail, discuss how shape and color help camouflage an animal. With younger groups, also discuss why camouflage is important. Discuss what they found, and if time allows, have them walk it again to see if their observation skills have improved.

Hug a Tree

Students work in buddies (or truddies), gently and safely guiding one blindfolded student towards a tree, rock, stump or sagebrush and letting them feel it until they think they are well acquainted. Then the blindfolded student is led back to their starting place by a different way and the blindfold is removed. Each student goes through this process and then has to try to find their tree or plant without the blindfold.

Rock Pass

You need to have an exact number of small rocks for the number of students in the group, have them sit in a circle and close their eyes. Pass one rock to each person for him or her to feel until they have it memorized. Collect the rocks and, while everyone is still blindfolded, pass every rock around the circle until everyone thinks they have their rock back. Have them open their eyes to see their rock. Discuss the experience.

Camera

Students work in partners, with one student as the photographer and one student as the camera. The photographer leads the camera to different photographic opportunities. The camera keeps her/his eyes (lens) closed. The photographer positions the camera for a variety of shots (close-ups, panoramas, etc). The photographer signals the camera to open and close its lens by tapping the camera on the shoulder. Camera and photographer switch roles after five photos. Debrief with discussions and sharing.

Bat and Moth

Discuss **nocturnal** adaptations and some bat and moth facts. Explain how **echolocation** works and that this game is illustrating that. One student volunteers to be a bat, while another volunteers to be a moth. The bat is blindfolded. The rest of the students form a protective circle around the players, holding their hands up in front of themselves if the bat gets too close. The bat must find the moth by echolocation. When s/he says "bat", the moth replies "moth". The moth is eaten when the bat tags it. To make it more realistic, try having the circle members reply things like "tree" or "rock" after the bat has spoken.

Silent Hunters

One student volunteers to be a **prey** item, while the rest of the group are predators and form a large circle around it. The prey item is blindfolded, and must protect itself from predation by using its sense of hearing. Three predators at a time are chosen to creep up on the prey item. If it hears a predator and points at it, that predator was spotted and the prey would have gotten away. The prey is eaten when a **predator** can tap it on the shoulder.

Animal Mates

Have each student find a partner and line up in two lines, facing their partners. Each pair should come up with an animal for their group. Go down the line, and share to be sure there are no duplicates. The goal is for the pair to be able to find each other again, blindfolded, by making the animal sound. As groups find each other, have them remove their blindfolds, stand still and stay quiet so the rest of the groups can find each other. Option 2: You may choose to make a set of word cards for this activity, rather than allowing groups to pick their own. Have a pair that goes together like (juniper and berry, bunch and grass, predator and prey, john and day, etc.) Do not tell the students what or who their partner is. Play again, but have the students select matching hand signals. This time they cannot use their eyes *or* ears, but must rely on touch to reunite them. They should use one hand to feel for a match, and one hand to make the symbol for others to feel. For the last round have all groups use the same word with varying intonation. For example, all groups say “Moo!” but one group sings it, one group says it with a deep voice and one group says it slowly. Discuss results.

Peepers

Select five or so of the loudest students, and have them sit a few feet apart in a given area. Form a line about 50 feet opposite the squatters, and blindfold the rest of the students. Do not tell the group what they are role-playing. On your command, instruct the seated players to make lots of noise. The blind line is to move toward the loudest noise. The seated players tag the blindfolded players, as they move toward the sound. The tagged people sit next to the squatter. When everyone has been tagged, remove blindfolds and discuss results. Ask the students if they can guess what behavior they were demonstrating (Mating calls of Pacific Tree frogs, for example). If they are not too “grossed out” by the concept, reverse rolls and play again.

Good Wrap-Up Games

Web of Life

This is not so much a game as a hands-on illustration of the **interconnected** nature of nature. Students connect plants, animals, and non-living components of the **ecosystem** into a viable, interconnected web. It works well to use the *Who Am I?* game before this, so everyone is already a specific part of the ecosystem (especially when you give the names: SUN, RIVER, SOIL, GRASS, AIR and HUMAN). You will need either string or a long loop of strong rope. If you are doing the *Web of Life Lift*, you need the strong rope. Use a double fisherman’s knot to tie the ends of the rope together. The longer the rope is the better.

Start the web with the energy source of all life, the student who was the SUN. Hand the SUN the rope, telling her not to let go, and ask everyone, “Who is something that needs the SUN to survive?” Pass some rope from the SUN (preferably to someone across the circle from her) to APPLE TREE and then maybe to a RAVEN, and then find who is something that a RAVEN needs or something that needs a RAVEN to survive (everything does, since without scavengers, there would be decaying stuff everywhere). After everyone is connected at least once, (maybe the GRASS is connected to the ROCK because it needs something to grow on) adjust the rope so there is no slack. It should look like a big messy web, with everyone in the circle holding on to a piece. After the food web is connected, ask one student to tug on their piece, demonstrating they are in danger. Everyone that feels the tug will also be affected. To do the Web of Life Lift, start

by having everyone put their feet together, pull tight on the rope and lean back on the count of three. See if everyone is supported by the web. If they do well, challenge the group to try to lean and squat, then stand back up. If the group is being trustworthy, let a volunteer sit on top of the web and be lifted by the group on the count of three. Make sure they follow your count and directions, since no one should get dropped! It is fun to lay on the web and swing back and forth, but use extra caution not to drop anyone.

This activity can include a conversation about **symbiotic** relationships. Each time the string or rope is passed, have the students say what type of relationship the two animals have. This will work better if you set up the game before hand with species that represent a variety of symbiotic or interspecific relationships. (fungus & algae, yeast and juniper, wasps and spiders, ticks and deer, bees and humans, butterflies and wildflowers, bats and fruit trees, moss and trees, etc.)

Around the World

Have one volunteer start by standing next to another student. Ask this pair a question about something they learned during the hike. Whoever raises their hand first gets to answer the question first. If that student answers correctly, they move on to the next student nearby and those two answer a different question. The game ends when each student has had a chance to answer a question and many folks have traveled, or one person has ruled the game and traveled all “around the world.”

Team Quiz

Split the group in half. Choose a team to go first. Each team has a spokesperson, the only one who can say the answer. On their turn, Team #1 has 30 seconds to huddle with their spokesperson. That person has to answer before 30 seconds is up. If they answer incorrectly, the other team has the opportunity to answer, start their 30 seconds immediately. If neither team gets it, there will be a clue given. After the clue Team #1 gets their second chance to answer and so on until each question is answered correctly.

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