DHOLE CONSERVATION FUND
PRESENTS

Adaptations

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http://www.dholes.org/education

Adaptations

Overview

All living things on the planet have specific adaptations to help it survive in its habitat. There are 3 main types of adaptations: structural (or physical, ex. fur, webbed feet), physiological (think inside the body ex. venom), and behavioral (something the animal does, ex. migration or hibernation). To survive, every living thing must gather food for growth, protect itself from danger, and reproduce. These adaptations are designed for a specific habitat to help them meet these goals. Adaptations vary; animals might hide using camouflage, have webbed feet for swimming, prehensile tails for climbing, hibernate to avoid the cold, or have an odor to repel predators. Through the activities in this unit your students will not only learn more about Dholes but will also look at a variety of animal adaptations and how they connect to different habitats around the world.

Habitats are the physical parts of an ecosystem and niches are the functional parts.

Habitat refers to the part of the environment where an organism lives and thrives with the capability of reproducing and finding food for its survival. All organisms have specific habitats. Some species are flexible and can survive in various habitats, while others need a specific one in which to live.

A niche describes an organism's role or job in its habitat. No two species can fill the same niche. They can have very similar niches, which can overlap, but there must be distinct differences between any two niches. If two species do fill the same niche, they would compete for all necessary resources and cannot coexist. One species would eventually out compete the other. In turn, the other species must adapt to a different niche or risk extinction. This is known as competitive exclusion.

A single habitat can support various types of species. Whenever an ecosystem can support multiple habitats, it is more likely to produce more niches. Habitats and niches are key for an ecosystem's survival and diversity. Habitats can exist without niches.

Adaptations

Vocabulary

Adaptation: characteristics of an animal that help it survive in its environment
Arboreal: living in trees; tree-dwelling
Behavioral Adaptation: something an animal does – how it acts – usually in response to some type of external stimulus. Examples: Migration, Hibernation, or Camouflage
Body Covering: any covering for the body or body part (hide, pelt, skin, feathers, scales, shell)
Body Part: any part or piece of an organism such as limbs, tail, feathers, horns, ears.
Camouflage: a color or structure on an animal's body that helps it blend into its environment. Carnivore: An animal that eats other animals.
Community: many different populations living together (woodland forest community ~ foxes, rabbits, deer, insects, plants, fungi)
Competition: the process of trying to get resources before others do.
Competitive exclusion: when two species compete to fill the same niche. One will eventually force the other to adapt or risk extinction.
Direct competition: when two or more animals living in the same habitat have a confrontation over resources (two bucks competing for the same female)
Ecosystem: the living and non-living parts of an area
Endangered: populations so low that they are moving toward becoming extinct.
Extinct: no longer living.
Habitat: the physical area where an organism lives or its "address"
Herbivore: An animal that eats plants.
Indirect competition: when two animals use the same resources, but do not necessarily interact with each other (cheetahs & leopards using the same watering hole)-one is diurnal, the other nocturnal)
Intraspecific competition: the competition between the same species, in a habitat going after the same resources (two lions fighting over a kill to determine who eats first)

Adaptations

Vocabulary

Interspecific competition: the competition between different species in the same habitat (woodpeckers and squirrels competing for nesting holes)
Migration: seasonal movement of animals from one region to another
Mimic: to naturally look or act like something else
Niche: the functional role or “occupation” of an organism in an ecosystem (an earthworm’s role is to decompose dead material)
Omnivore: An animal that eats both plants and other animals
Organism: an individual living thing
Physical adaption: some type of structural modification made to a part of the body (webbed feet, sharp claws, feathers, or scales)
Population: are all members of the same species in the habitat at one time.
Predator: An animal that hunts and eats other animals for food.
Prey: An animal that is taken and/or eaten by another animal (predator) for food.
Shelter: where an animal lives within their habitat
Species: a group of animals that share common characteristics and mate to produce fertile young

Adaptation

Activity 1

How Many Adaptation Can You Name?

This game is played like the game Scattergories. The object is to think of unique examples that others won't guess. Give everyone a piece of paper. Set a timer for 2 minutes. Everyone writes down as many adaptations as they can. Do not discuss when the timer goes off. Often, students think of answers that they "forgot" or "wish they said" after the timer beeps.

Reset the timer for another 2 minutes. This will give them a chance to add more of the adaptations "they forgot". Once the timer beeps again, go around the room and have 1 student at a time read the adaptations that they wrote down. Anyone that has the same answer must cross it off. The game continues as you go around the room. You will eventually find one person that has the most unusual adaptations on their list.

Variation 1: During the second round, they exchange papers with their neighbors and add adaptations to their new list where the other person left off. Play as above.

Variation 2: Arrange desks in a circle. Set the timer for 1 minute. Then they pass the papers to the left or right, your choice. Keep resetting the timer for 1 minute until everyone gets their original paperback. Play as above.

Adaptations

Activity 2

Animal Mash-up

Students will choose one animal at random out of a bag/basket/hat/bowl whatever is on hand. Have them draw a line down the center of their papers. On one side they will write Dhole. On the other side, they will add the animal that they selected. Give them time to write down as many characteristics as they can about each animal. Be sure to have them mention any adaptations that they know, their habitats, diet, and home life. Then, they will have to determine what the other would need to survive in the dhole's habitat and vice versa. They will need to draw a photo of their new "mashed up" animal.

For example, if someone pulled the card for penguin,
the student might have to add claws to the flippers, long fur to their feathers, a fluffy tail, or sharp teeth inside their beak.

Penguin
- Webbed feet/flippers
- Feathers
- Beak
- Oil on feathers to repel water
- Swim
- Eat fish
- Waddle
- Live in flocks
- Cold weather
- Black and white
- Fathers care for eggs
- Different types
- Walk slow

Dhole
- Reddish-brown fur
- Pack animals
- Bushy tail
- Warm climate
- Sharp teeth
- Claws
- Padded feet
- Run quickly
- Various colors
- Look like a fox
- Pointed ears
- 4 legs
- Swim
- Climb

Adaptations

Activity 2 - cont

Animal Mash-up

As an extension, pair up or group students and have them each pick 2 cards out of a hat (or turn over cards from two separate piles), to draw different animal mash ups. Have them make “My Animal Mash-up Cards” with clues on each animal mash-up that they create(d) on one side, and a photon the other. Each card must contain five clues that go from generalized to a more specific. The game is played similarly to “20 Questions.” After reading the first clue, the other student(s) are allowed three guesses to correctly identify the mash-up. If the animal is not guessed within the first three chances, the next clue is read. The game continues in the until the correct animal is guessed. Students can quiz each other or collect and quiz your entire class.

Adaptations

Activity 3

Leader of the Pack: Scent Trail

A dhole pack typically contains more than one breeding female. The gestational period is approximately 60 days, and the babies (called pups) nurse for about 60 days as well. They are born in large litters that usually consist of 5–10 pups but may have as many as 12 to 16. During this time, any pregnant females will share their den and their pups interact with each other as they grow. The entire pack helps feed the pups by regurgitating their food.

Unlike wolves and other canids, dhole pups grow much faster. Their growth is most like that of a coyote. By six months old, the pups accompany the pack on hunts. At eight months old, they take on active roles in the pack. After maturing, dholes are free to leave the pack and join another. There is not the competition that is common in other groups of wild canids. Females will leave to join another pack around the age of three.

Dholes rely on many unique adaptations to help them hunt. Their reddish-brown fur helps them camouflage. These amazing canids hunt in packs and communicate using a series of whistles, chirps, growls, and other sounds. They have large, round ears for great hearing and a keen sense of smell. They're able to eat a large amount of food at once (2.2 lbs. in about 4 seconds). They have a varied diet depending on where they're found, which includes hoofed mammals, but will also eat lizards, rabbits, rodents, berries, and other vegetation.

Adaptations

Activity 3 - cont

Leader of the Pack: Scent Trail

Materials

·Dixie cups

·Cotton balls

·Different scents that are distinct from each other (multiple sets): peppermint, cinnamon, lemon (or citrus), lavender, hot sauce, barbeque sauce, strawberry, lilac, rose oil, maple syrup, mashed banana, etc.

·Paper & Pens or science notebook

·Clipboard

Divide the class into teams of 5–10. You can use your entire classroom for this activity or divide it in half for each “pack”. Within each team, some students will be the new “pups” ready to go on the hunt, while others are the adults. They should decide on a noise that they will use to communicate with each other. (It should be a sound they can all make, as not everyone can whistle).

All members of the pack will be given a cup with the same scent on the bottom of it. This cup will match a prey item that they will need to locate around the room (strawberry=berries, lemon=muntjac deer, peppermint=rabbits, and so forth). You can soak the cotton balls or use them to hide what substance you put on the bottom. They are not allowed to touch or move the cotton ball or pick up the cups around the room. They cannot talk to each other either. Time them for 10 seconds. This is how long the pack will have to smell their “prey”. Once the timer goes off, they must walk around the room to locate their correct “prey” cup. Station the “prey” sources for the pack around your classroom. If a member thinks they smell a prey source, they should alert the others using the noise.

Adaptations

Activity 4

Dhole for a Day: Habitat Mix Up

Have students take out their notebooks. Have them list all the adaptations that dholes have and how these adaptations help them survive in their habitat. Then brainstorm as a class to create a master guide to dhole adaptations, areas in which they're found, and how each adaptation supports them in this habitat.

In a box, have various habitats written on index cards (have a multiple of each habitat). Sample Habitats: desert, ocean, swamp, forest, tundra, mountaintop, grasslands, lake, cave, pond. Have each student come up and pull out a new habitat card. Based on the adaptations dholes have, how would it survive in this new habitat? They should be able to present their findings briefly to the class.

Hopefully, they realize that dholes are incredibly adaptable and can be found in a diverse number of habitats. They are agile jumpers, can climb, swim, and run quickly. Use this opportunity to discuss that today, they are found throughout Eastern and Southeastern Asia. However, dholes could once be found across much of North America, Asia, and Europe. Around 12,000–18,000 years ago, they were reduced to specific regions within the Asian continent. Dholes can now be seen as far north as Siberia, as far south as some Malaysian islands, and as far west as the Indian peninsula. They can survive in a variety of habitats such as dense/scrub forests, plains, mountains, jungles. Dholes have complex dens that are typically underground with many tunnels. The entire pack will inhabit a single den and may utilize multiple entrances.

Adaptations

Activity 5

Canine Compare and Contrast

Dhole vs. Other Wild Dog Adaptations: Though they are both canids, dholes, and other members of the Canidae family have very different adaptations because they live in very different environments. Students will research more about dholes and another species that they choose (have the species already listed on index cards, so that each student gets a different species). First, they will organize the information into a graphic organizer of their choosing. They will need to create an outline to match one of the following projects: a PowerPoint presentation, model/diorama, poster display, or an essay to present to the class.

Sample wild canids:

1. Arctic wolf
2. Gray wolf
3. Red wolf
4. Maned wolf
5. Ethiopian wolf
6. Timber wolf)
7. Coyotes
8. Red fox
9. Kitfox
10. Arctic fox
11. Fennec fox
12. Grey fox
13. Swift fox
14. Bat-eared fox
15. Golden Jackal
16. Side-striped jackal
17. New Guinea singing dog
18. Dingo
19. African wild dog

For a complete listing, this website is a good resource:
https://www.activewild.com/wild-dog-species-list/

Adaptations

Writing Prompts

1. If you could live in any habitat which, would you choose? Why? What do you see there? What do you hear? What animals would you prey on? What would your shelter be?

2. Share examples of interspecies competition and how it affects the species involved.

3. Share examples of intraspecies competition and how it affects the species involved.

4. Pretend you are an animal that lives in the rainforest. You were taken from your home and brought to the Florida Everglades, (which is similar in habitat). What challenges would you face? What would you have to do to survive there?

5. What do you think the most amazing animal adaptation in the world is? Why? How does it outcompete the others?