



SeaWorld/Busch Gardens Animal Adaptations

9-10 Classroom Activity

Animal Advise Column

OBJECTIVE

The student will research various animal adaptations, explain them in detail, and present the information to the class.

PREPARATION

Cut each question from the *Animal Adaptation Question* funsheet. Fold the papers and place in a large bowl for students to draw from. There should be enough questions for each student to draw one adaptation, or the students may work in groups of two.

ACTION

1. Explain that the students will be acting as journalists for a newspaper. They are in charge of an animal information column where children write in questions about animals. Their job is to answer the questions in a clear, detailed manner.
2. Instruct each student (or student pair) to draw a question from the bowl. This is the question they will research and write back to the child. The students must write their responses in an appropriate business correspondence format. State the question and a detailed answer. See letter format example.
3. The students will then present their question and how they chose to answer it to the class. Additionally, the students should document the resources used to answer the question in APA format (all websites, magazines, newspapers, etc.).
Suggested Sources <www.buschgardens.org> Utah Education Network:
<www.uen.org/utahlink/activities/view_activity.cgi?activity_id=4750>

DEEPER DEPTHS

Divide class into student groups and ask groups to create a 20-question animal adaptation funsheet of their own. Switch quizzes among groups. Stage a contest with a set time limit. The group with the highest number of correct answers wins.

MATERIALS

Per class:

- one *Animal Adaptation Question* funsheet
- one *Animal Adaptation Teacher's Guide*
- Internet or library access
- one letter format example
- one bowl

Sample letter format

November 19, 2002

Michael Smith
104 Sun Place
Daisy, ID 7612

Dear Michael;

Thank you for writing to Sun Tribune !

Extinction of a certain species can be for several reasons: poaching (hunting animals illegally for their fur, bone, or meat), habitat destruction (destroying land to build homes, clearing forests for paper, or using land for farming), loss of an animals' niche (for example, if insects disappeared then thousands of other animals would have nothing to eat), or pollution (from pesticides, garbage, or other pollutants).

Currently, there are a few organizations that classify animals and their endangered status: the U.S Fish and Wildlife Service, CITES, and IUCN. Each organization has criteria for identifying endangered species.

There are several hundred animals on the brink of extinction today and each of those organizations has a list of the species in danger. Laws pertaining to threatened or endangered species are always changing and can be easily found through the 107th Congress; however, some major laws that have helped key species in the past are: the Migratory Bird Act, Marine Mammal Protection Act, Bald Eagle Protection Act, etc.

We hope this information has helped.

Sincerely,

My Name
Animal Information Column
Sun Tribune

Animal Adaptation Questions

1. Why are Peacocks (*Polyplectron emphanum*) more brightly colored than peahens?
2. Why does an addax antelope (*Addax nasomaculatus*) change fur color from winter to summer?
3. Why do polar bears (*Ursus maritimes*) have translucent (clear) hair?
4. How are the Round Island Day Gecko's feet (*Phelsuma quentheri*) adapted to where they live?
5. What unusual method does the Round Island Day Gecko (*Phelsuma quentheri*) have for defending itself?
6. How are the feet of a snow leopard (*Panthera uncia*) adapted for traveling and hunting on snowy and icy ground?
7. Why do domestic goats (*Capra hircus*) have horizontal pupils?
8. Why do squirrel monkeys (*Saimiri sciureus*) live in groups?
9. How does a crocodile (*Crocodylus niloticus*) see underwater?
10. What special adaptation does the Pacific walrus (*Odobenus rosmarus*) have that allows them to float on top of the water?
11. How is a platypus (*Ornithorhynchus*) adapted for the time they spend in the water?

12. How is the alligator snapping turtle (*Macrolemys temminckii*) adapted for luring prey?
13. Why aren't manatees (*Trichechus manatus*) usually found in cold water?
14. How are koalas (*Phascolarctidae*) adapted for life in the trees?
15. How are camels (*Camelus bactrianus*) adapted for life in the desert?
16. Why do African hedgehogs (*Erinaceus albiventris*) have loose skin under their spines and powerful back muscles?
17. Why does a male lion (*Panthera leo krugeri*) have a mane?
18. Why do lions (*Panthera leo krugeri*) and other cats have rough tongues?
19. Why does a fennec (*Vulpes zerda*) fox's long ears help them survive in the desert?
20. How is the mouth of a Burmese python (*Python molurus bivittatus*) adapted to finding and swallowing large prey?
21. How are beavers (*Castor canadensis*) adapted for underwater work?
22. Why is a giraffe's neck (*Giraffa camelopardalis reticulata*) long?
23. Why are giraffes (*Giraffa camelopardalis reticulata*) able to survive for extended periods of time without water?
24. Why do vultures (*Torgos tracheliotus*) and other birds of prey defecate on their legs?
25. How can a male platypus (*Ornithorhynchus*) defend itself?

Animal Adaptation Answers

1. Why are Peacocks (*Polyplectron emphanum*) more brightly colored than peahens?
Males (peacocks) are brightly colored to attract females (peahens). Males will often pose, showing off all the ocelli (eyes) on his tail. Females are not brightly colored as to help conceal them while incubating their eggs and brooding their young.
2. Why does an addax antelope (*Addax nasomaculatus*) change fur color from winter to summer?
These desert antelope change their coat color from dark grayish-brown in winter to white in the summer. It is an efficient method of maintaining body temperatures because in the summer the white coloration reflects heat from the sun (keeping the animal cooler). Additionally, the darker coloration present in the winter helps absorb heat from the sun (keeping the animal warmer).
3. Why do polar bears (*Ursus maritimus*) have translucent (clear) hair?
The skin of a polar bear is black and its fur is translucent. Sunlight hitting the hollow hair passes through it to the black skin, creating warmth. Similar to a bundle of transparent straws, the mass of translucent hairs appears white, allowing for efficient camouflage.
4. How are the Round Island Day gecko's feet (*Phelsuma quentheri*) adapted to where they live?
Geckos have unique feet that help them climb on various surfaces (including smooth surfaces). The toes are flattened and have elongated scales on them. Under a microscope, a gecko's feet have thousands of tiny, hooked bristles that can stick to any surface. This adaptation allows geckos to climb trees and hide under leaves.
5. What unusual method does the Round Island Day gecko have for defending itself?
Geckos and many other lizards are able to disconnect or break off their tail when confronted by a predator. This hopefully, will give the gecko enough time to escape. The gecko will eventually heal and even grow a new tail. Although its new tail is never as long and colorful as the original one.
6. How are the feet of a snow leopard (*Panthera uncia*) adapted for traveling and hunting on snowy and icy ground?
The feet of a snow leopard are adapted for traveling and hunting on icy ground because they are very furry. Their furry feet not only keep them warm and dry but also provide greater surface area (like snow shoes) to trek across the tundra.
7. Why do domestic goats (*Capra hircus*) have horizontal pupils?
Horizontal pupils allow the goat to increase their vision peripherally. Better peripheral vision allows them to detect predators easier.
8. Why do squirrel monkeys (*Saimiri sciureus*) live in groups?
There is always safety in numbers. The more eyes and ears there are to hear an approaching predator the better. Additionally, large numbers make it difficult for a predator to single out one animal and harder for larger monkeys to push them out of a

avored tree.

9. How does a crocodile (*Crocodylus niloticus*) see underwater?
Crocodiles have a transparent eyelid. This eyelid closes while diving to keep water out of its eyes and still allows the crocodile to see underwater.
10. What special adaptation does the Pacific walrus (*Odobenus rosmarus*) have that allows them to float on top of the water?
Walruses have air sacs located under their throats that they can fill like floatation bubbles. These air sacs allow the walrus to bob vertically in the water and sleep.
11. How is a platypus (*Ornithorhynchus*) adapted for the time they spend in the water?
Platypuses are able to close their eyes and ears underwater. Additionally, platypuses locate their food underwater with their amazingly touch sensitive beak that is made out of flexible cartilage. The platypus has two layers of hair. The first layer is a warm, water-resistant, short and dense. The second layer is the layer that actually gets wet. Lastly their flat furry tails allow them to store fat for life in the cold waters.
12. How is the alligator snapping turtle (*Macrolemys temminckii*) adapted for luring prey?
The alligator snapping turtle sits very still on the floor of a pond or river for up to 45 minutes. It patiently waits holding its mouth open and wiggling the small, pink, worm-looking structure on its tongue to lure passing fish.
13. Why aren't manatees (*Trichechus manatus*) usually found in cold water?
Manatees have very little body fat despite their size. This may account for why manatees are not found in cold water. Additionally, because manatees are herbivores, their metabolic rate is lower than other aquatic mammals. A low metabolic rate makes it difficult for an animal to survive in cold temperatures.
14. How are koalas (*Phascolarctidae*) adapted for life in the trees?
A koala's hands have a large gap between the first and second fingers and its big toe is set at a wide angle to the foot. This arrangement allows the koala to have a vice-like grip on branches. Koalas also have thickly padded tails, which allows them to sit comfortably in a tree for long periods of time.
15. How are camels (*Camelus bactrianus*) adapted for life in the desert?
Camels have long eyelashes and ears lined with hair to aid in protection against blowing sand. Additionally, they are able to close their nostrils to keep out sand. They have large feet that prevent them from sinking in the sand because the body weight rests on the sole pads with only the front ends of the hooves touching the ground. Camels' knees are thick and calloused to protect the joints when the animal lies down. Their thick fur and underwool provide warmth during the cold desert nights and insulation against daytime heat. Finally, the fat stored in the hump, helps the camel to survive for long periods of time without food.
16. Why do African hedgehogs (*Erinaceus albiventris*) have loose skin under their spines and powerful back muscles?
The loose skin acts as a cushion and the powerful back muscles protect the animal

are able to endure the pressure exerted by a fall from a tree. awkward sentence

Additionally, their powerful back muscles enable them to curl up (outwardly exposing their spines) for protection.

17. Why does a male lion (*Panthera leo krugeri*) have a mane?
A thick mane makes a male lion look bigger (more threatening) and protects his throat against other predators or the thrashes of prey.
18. Why do lions (*Panthera leo krugeri*) and other cats have rough tongues?
The rough tongue of cats is designed to peel skin off prey and flesh from bone.
19. Why does a fennec (*Vulpes zerda*) fox's long ears help them survive in the desert?
Fennec foxes have extraordinary hearing to locate prey that may be underground. Their large ears, which are usually 4-6 inches long, help to dissipate excess body heat on hot days in the desert.
20. How is the mouth of a Burmese python (*Python molurus bivittatus*) adapted to finding and swallowing large prey?
Burmese pythons have heat-sensing pits on their upper lip that detect body heat from warm-blooded prey. Additionally, these and other snakes have loosely hinged jaws that can be stretched apart. This enables the snake to swallow animals with bodies much larger than their head.
21. How are beavers (*Castor canadensis*) adapted for underwater work?
Beavers have valves in their nose and ears that close when they go underwater. Additionally, beavers have large front teeth that project protrude in front of their lips. This enables them to cut and chew wood underwater without getting water in their mouths. The broad tail of the beaver acts as a rudder and helps them maneuver large logs to their lodges and dams.
22. Why is a giraffe's neck (*Giraffa camelopardalis reticulata*) long?
The giraffe's tall neck allows them to feed at high levels in the treetops as well as keep track of predators.
23. Why are giraffes able to survive for extended periods of time without water?
Giraffes can go weeks without any water because they rely on the morning dew and water content of their food.
24. Why do vultures (*Torgos tracheliotus*) and other birds of prey defecate on their legs?
The urates in defecation help burn off any bacteria that may be on their legs from the dead animal matter. This process keeps them clean. Additionally, the defecation help keep them cool.
25. How can a male platypus (*Ornithorhynchus* sp.) defend itself?
Male platypuses have spurs on their hind feet that deliver poisonous venom with a swift kick. The venom is powerful enough to make humans very ill and even kill a dog.