

SKULL DETECTIVES



THEMES:

- Scientists use physical characteristics to identify species.
- Animal adaptations have developed in response to competition and the predator / prey relationship
- Comparative anatomy forms the basis for biological classification and evolutionary theories.
- Stories often contain observations and descriptions of behavioral and physical adaptations.

GRADE LEVEL(S):

- 8th (6th-7th overlaps)

DURATION:

- 2 class periods of 45-50 minutes (Activities 1&2, Activity 3)

SKILLS:

- Measuring
- Reading
- Problem solving
- Gathering Information
- Observation
- Investigating
- Citing Evidence
- Comparing
- Use of dichotomous key

BEST TIME FOR ACTIVITY:

- Anytime

SUMMARY

Interplay of culture and science

Analyzing Cherokee stories, students will experience the importance of culturally relevant learning through traditional ecological knowledge. Through an investigation of skulls, they will compare Indigenous cultural observations in long-told stories with scientific analysis to connect how animals have evolved to survive and interact with one another.

OBJECTIVES AND CONNECTIONS

Students will be able to...

- Investigate differences between animals and how those differences uniquely help animals adapt to survive in their ecosystem.
- Explain how changes in an ecosystem can impact the entire food chain, including humans.
- Use the skills of a scientist (through observation, record keeping, use of scientific tools, comparison to a known knowledge) to examine and understand mysteries from the world around them.
- Understand the meanings behind stories and make connections with cultures.

MATERIALS

*Materials designated with a * will be provided in the activity box.*

Presentation Materials

- Teaching PowerPoint*
- Cherokee Story: How the Possum Lost his Tail
- Pre- and Post-Assessment Quiz

Worksheet Activity Materials

- 3-D Skulls models (x3)*
- 2-D Skull models (x9)*
- Student Lab Sheet
- Animal Name Cards (x9)*
- Laminated Skull Dichotomous Key*
- Tape Measure*





NORTH CAROLINA SCIENCE CORRELATIONS

- ✓ LS.8.2 Understand how organisms interact with and respond to the biotic and abiotic components of their environment.
- ✓ LS.8.2.2 Construct an explanation to summarize the relationships among producers, consumers, and decomposers including the positive and negative consequences of such interactions including: coexistence and cooperation, competition (predator/prey), parasitism and mutualism.
- ✓ LS.8.3 Understand the evolution of organisms over time based on evidence and processes.
- ✓ LS.8.3.1 Analyze and interpret data to infer evolutionary relationships by using evidence drawn from fossils and comparative anatomy.

NORTH CAROLINA SOCIAL STUDIES CORRELATIONS

- ✓ 8.C.1 Understand how different cultures influenced North Carolina and the United States.
- ✓ 8.C.1.2 Summarize the origin of beliefs, practices and traditions that represent various groups within North Carolina and the United States.

TENNESSEE SCIENCE CORRELATIONS

- ✓ 8.LS4: Biological Change: Unity and Diversity
 - 2) Construct an explanation addressing similarities and differences of the anatomical structures and genetic information between extinct and extant organisms using evidence of common ancestry and patterns between taxa.
 - 3) Analyze evidence from geology, paleontology, and comparative anatomy to support that specific phenotypes within a population can increase the probability of survival of that species and lead to adaptation.
 - 4) Develop a scientific explanation of how natural selection plays a role in determining the survival of a species in a changing environment.

TENNESSEE SOCIAL STUDIES CORRELATIONS

- ✓ 6-8. SSP.02: Critically examine a primary or secondary source to: extract and paraphrase significant ideas and relevant information... draw inferences and conclusions.
- ✓ 6-8. SSP.05: Develop historical awareness by identifying patterns of continuity and change over time, making connections to the present.





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About this project:

The Seeking Paths in Nature (SPiN) project was developed through a partnership between Great Smoky Mountains National Park (GRSM) and the Cherokee Preservation Foundation. SPiN encompasses the focused efforts to enlighten the public, students, and GRSM employees on the history and cultural connections inherent between the Cherokee and the land, currently deemed as Great Smoky Mountains National Park, as well as surrounding communities.

Background Information:

The land of Great Smoky Mountains National Park lies on the traditional homeland of the sovereign nations of Cherokee, or Aniyuwiya*, (*pronounced “a-nee-ya-wee-ya”) meaning the Principal People. We recognize the Cherokee and their ancestors as the original and continuing stewards of this land, going back to time immemorial. The Cherokee have a deep, complex, and reliant relationship with the land. Their intimate knowledge and relationship with the land along with the seasonal availability of plants and animals has resulted in stories, medicinal remedies, foodways, arts, technologies, science, and many other practices that prioritize ecologically sustainable stewardship and partnership with the land. Many Cherokee continue these significant traditions.

Vast changes to the land came in the late 1700s when European immigrants, largely of Scotch-Irish heritage, moved to the Southern Appalachians. The massive influx of people and greediness led to disputes and conflicts between the Europeans and Cherokee, eventually resulting in the tribe being forced to sign over their lands first to Great Britain, and later to the United States. Though some found ways to remain on their traditional lands in the 1830s, most Cherokee were forced to move west. Nearly 16,000 Cherokee were forced to walk to newly appointed Cherokee lands located in present-day Oklahoma. This tragic journey is known as the “Trail of Tears” due to the deaths of approximately 4,000 Cherokee people. Since the arrival of settlers, there have been many impacts of colonization including wars, conflicts, disease, broken treaties, land resource exploitation, forced assimilation, and genocide. Despite it all, the Eastern Band of Cherokee Indians have persevered.

Today, the Cherokee live on just a small fraction of their traditional homelands known as the Qualla Boundary. They are revitalizing their culture through efforts such as language preservation, the arts, education, community building, natural resource management, and commercial enterprises. Currently, the EBCI Qualla Boundary adjoins a southern portion of Great Smoky Mountains National Park, and the Cherokee proudly proclaim: “Si O Tse Do Ha”*, (*pronounced “she oh tsay doe ha”) or “We’re Still Here!”



Acknowledgements:

Special thanks for contributions from the Cherokee Preservation Foundation, Friends of the Smokies (FOTS), Great Smoky Mountains Association (GSMA), Cherokee Central Schools, Eastern Band of Cherokee Indians (EBCI) Natural Resources, Museum of the Cherokee Indian (in particular *Dakota Brown and Dawn Arneach*), EBCI Speaker's Council [*Laura Pinnix, Roger Smoker, Bo Lossiah, Marie Junaluska, Mary Wachacha (in memoriam), and Dr. Hartwell Francis*]. For your insight, we thank *Russ Townsend*, EBCI Tribal Historic Preservation Office Program (THPO), and the many teachers who assisted in content creation and piloting [*Jessica Metz, Malia Crowe Skulski, Kaitlin Roberts, Matt Tooni, Lizzie Carver, Amanda Clapp, Nikki McCoy, Randi Neff, Max Lanning, Melissa Crisp, Judy Dulin, Michelle Whaley, and Brian Hardison*], community members *Louise & Butch Goings, Peggy Hill-Kerbow*. The National Park Service (NPS), AmeriCorps Project Conserve members, and Great Smoky Mountains National Park Education staff and interns.

Thank you to our project coordinators whose leadership and creative energy were vital to the success of this project. *Jessica Metz* led the project in 2014 – 2016, *Julie Townsend* (in memoriam) led the project from 2016-2019. For their seasonal terms as project assistants, we thank *Jessica Stump, Natrielfia Miller and Kahawis*.

We dedicate this curriculum guide in the memory of Julie Townsend; her good humor, knowledge and relationships in the community are missed daily. Julie lived her life by the Cherokee concept of Gadugi - “we learn together” and it is with this intent that we offer these activities to you.

We acknowledge that the spelling of Cherokee words included in these documents may differ slightly, as there are variations of Cherokee dialects within EBCI.



NATURAL RESOURCES
EASTERN BAND OF CHEROKEE INDIANS





VOCABULARY AND PRE-ASSESSMENT

Grade Level: 8

Subject Area: Science

Pre-Assessment

Before the beginning of the lesson give students the pre-assessment multiple choice quiz. Explain to students that this pre-quiz is not for a grade. Let them know that they will take a post-quiz as well, but their scores will not be a grade them but rather a grade for your teaching ☺.

Answer Key: 1-A, 2-A, 3-C, 4-B, 5-C

Vocabulary:

- **Abiotic factor** – non-living component of the environment
- **Adaptations** – a change or the process of change by which an organism or species becomes better suited to its environment
- **Binocular vision** – vision using two eyes with overlapping fields of view, allowing good perception of depth, as eyes are both found on the front of the head
- **Biotic factor** – living component of the environment
- **Canine teeth** – also called cuspid or eye tooth, in mammals, any of the single-cusped (pointed), usually single-rooted teeth adapted for tearing food, and occurring behind or beside the incisors (front teeth)
- **Carnivore** – an animal that only eats meats
- **Cheek Teeth** – include both molars and premolars in mammals
- **Consumer: Primary** – an organism that feeds on primary producers
- **Consumer: Secondary** – an organism that eats primary consumers
- **Consumer: Tertiary** – an organism that eats primary & secondary consumers
- **Food chain** - a hierarchical series of organisms each dependent on the next as a source of food
- **Food Web** – a system of interlocking and interdependent food chains
- **Herbivore** – an animal that feeds on plants
- **Incisors** – narrow-edged teeth at the front of the mouth, adapted for cutting
- **Molars** – grinding teeth at the back of a mammal's mouth
- **Monocular Vision** – a type of vision in which one eye of the animal moves and sees objects independently of the other eye, as eyes are found on either side of the head
- **Omnivore** – an animal or person that eats food of both plant and animal origin
- **Peripheral vision** – side vision; what is seen on the side by the eye when looking straight ahead
- **Population** – a group of organisms of the same species that live in a particular area
- **Predator** – an animal that hunts, kills, and eats other animals
- **Premolars** – a tooth situated between the canine and molar teeth
- **Prey** – an animal that is hunted and killed by another for food
- **Producer** – an organism that creates its own energy or food, such as plants



ACTIVITY 1: STORY ANALYSIS

Slideshow Introduction:

1. Begin the lesson by using the provided PowerPoint to teach students about the skull investigation.
2. The first half introduces Cherokee stories as methods of sharing knowledge, the concepts of adaptations, food webs, comparative anatomy and morphology.
3. The second half leads the students through the parts of their worksheets and dichotomous keys.
4. Students should complete Part I through Part III of their lab sheets by the end of the PowerPoint.

Cultural Significance of Stories

"The Cherokees' home in the southern Appalachian Mountains is home to many kinds of plants and animals: more species in one place than in all of Europe. Cherokees have observed the animals and plants around them very carefully, and many Cherokee stories draw your attention to the special characteristics that distinguish one animal from another – their color, or their markings, or their behavior.

Traditionally, Cherokee people showed great respect for the animals around them, including the ones that they hunted and used for food. A hunter made special preparations of fasting and praying before going hunting. When he killed an animal, he said a special prayer of thanks to its spirit, for allowing it to be used for food to keep him and his family alive. Cherokee people also honor animals by imitating their movements in dances, like the eagle dance, a very serious and beautiful dance that was originally part of ceremonies done only in wintertime. Today, some Cherokee people still perform dances like these at special events and festivals.

Still another way Cherokee people honor animals is through their stories. In these stories, animals are shown as great helpers that not only provide what people need but also connect people to the world around them." (Excerpt from The Origin of the Milky Way, Barbara Duncan)



READ: *How the Possum Lost His Tail*, attached in the lesson plan (from <https://mci.org/learn/lesson-plans>).

DISCUSSION:

Stories have been used throughout history to help pass information and traditional ecological knowledge from generation to generation.

1) *What information about animals' adaptations can you draw from the story that you just read?* (Ex: Opossum's have prehensile bare tails that stabilize them in trees, and they play dead when they are scared or surprised as a defense mechanism.) Each animals' adaptations are unique, allowing survival within its habitat.

2) For at least 14,000 years, people have been part of the southern Appalachian ecosystem. Everything they needed for food, clothing, medicine, and shelter came from the plants and animals of these mountains. As you might expect, from observations and experimentations (i.e., the scientific method), Cherokee people became extremely knowledgeable about the components of their environment. Watching animals, seeing where they lived and what they ate and how they congregated seasonally, provided essential guidance for the best survival practices. Utilizing the animals' skins (for clothing, shelter, and tools), meat (food), and tendons and bones (tools) – gave Cherokee people a level of knowledge beyond that of most people today. *Can you list historic and modern uses of animals and plants in these mountains?* (Ex: deer: hides for clothing and trading; meat dried into jerky; bones carved for tools, weapons and jewelry.)

We don't have the time to review all significance of an animal's adaptations, but can focus on one part of the animals' anatomies – the skull. By studying these animal attributes and adaptations – observing and comparing eye placement, size of the nose, and the dentition (teeth), we can tell a lot about these animals and their relationships to their environment.



ACTIVITY 2: PERIPHERAL VISION

Slideshow Question: Which type of eyesight (monocular vs. binocular) would be best for a predator species to have? For a prey species to have?

Peripheral Vision Demonstration Procedure:

1. Ask for 3 student volunteers. (Or have all students break into groups of 3 and try together.)
2. Have two students stand back to back in one place without moving. Instruct one of the students in the pair to cover their left eye and the other student their right eye.
3. Let the two student know that they are playing the role of an “animal” that has side-oriented eye sockets. Have them raise the hand not covering their eye. When the third student enters into their vision they should lower their arm.
4. Ask the third student to slowly start walking around the pair making a complete circle.
5. As the third student makes the circle, make them pause frequently and question the pair about whether they can still see them. There will be a small area of the circle in which the “animal” will not be able to see the third student.
6. Have the 3rd student stand in one place facing forward without moving. Tell the student that they are an animal with binocular vision (which is true of humans).
7. Ask one of the students from the pair making the monocular animal to walk in a circle around the new animal with binocular vision. Like before have the student walking the circle pause several times and ask the binocular animal if they can still see the student. The binocular animal’s peripheral vision should be much less than the monocular animal.
8. Discuss the vision difference with the entire class.

Judging Distance Demonstration Procedure:

1. Have the binocular animal remain where they are.
2. Crumple up a piece of paper.
3. Tell the student to try to catch the piece of paper using one hand.
4. Now have the same student cover up one eye (to simulate an animal with monocular vision) and try to catch the piece of paper again.
5. Ask the student what the difference was and which was more challenging. Discuss these demonstration with the whole class.

Slideshow: Answer Questions:

1. *Slideshow Question: Which type of eyesight would be best for a predator species to have? For a prey species to have?*
2. **Predator** need to be able to judge distance in order to stalk and catch prey successfully so binocular vision is the most advantageous adaptation for those animals (eye sockets forward facing).
3. **Prey** need to be able to see predators coming for them from any direction so monocular vision is of the greatest benefit for those animals (eye sockets on sides).





ACTIVITY 3: SKULL DETECTIVES

Grade Level: 8
Subject Area: Science

Activity time: 45-50 minutes

Materials:

- 3D Skulls (3)*
- 2D Skulls (9)*
- Worksheets
- Dichotomous Keys*
- Animal Name Cards (9)*

**provided in kit*

Lesson Set Up

Place skulls in groups according to the numbers marked on them (1, 2, 3 in a group; 4, 5, 6 in a group; 7, 8, 9 in a group) around the room.

Be sure to allow plenty of space for students to gather around the sets because these areas will act as lab stations where student will investigate the skulls.

Divide class into three groups. Direct the groups to one of the three skull stations. They will work with their immediate teammates as well as the other teams at their skull station throughout the activity.

Background:

Animals have evolved different adaptations over time to be successful as a species. Many of these unique characteristics can be easily seen in the wild as animals move, hunt, eat, hide, etc. However, sometimes scientists miss the opportunity to see an animal living in its habitat and only have access to an animal's remains after death. In this situation, scientists can still learn and figure out many important facts through investigation of an animal's skull. Below is an explanation of some of the clues that scientists can use to help solve the mystery of an unknown skull.

Clue 1: Teeth - There are 4 different types of teeth (incisors, canines, premolars, and molars) that can be found in mammals. Herbivores, omnivores, and carnivores have different quantities, placement, and size of each tooth type based on the type of food they eat. This means that investigating the teeth present in a skull of unknown identity can allow scientists to narrow the field of potential species. For example, canine teeth that are used for piercing and holding prey are large and prominent in carnivorous species.

Clue 2: Eyes - The placement of the eyes can help to determine whether a skull belongs to a predator or a prey animal. Predators have binocular vision (oriented forward, like binoculars) which allows them to focus on an object with both eyes at the same time to help determine how far away the object is. Prey species have monocular vision (oriented on the sides) allowing them greater peripheral vision for a better defense against predators. The orbital area of a skull, or eye socket, can help determine the eye size. The larger the orbit (bony eye cavity), the more the animal likely relies on vision for survival.

Slideshow & Worksheet Part I & II

The second half of the slideshow leads students through worksheets.

Part I

- Eyes: Move through the slides describing the type of vision of predator and prey species. Have student take a few minutes to determine whether the 3D skull at their lab station is a predator or prey.
- Continue through the slides explaining the teeth characteristics of the types of consumers and have students determine on their worksheets: primary and secondary consumers; carnivores, omnivores, and herbivores.

Part II

- Continue through the slideshow. Stop on the "Worksheet Part II: Time to Solve the Mystery" slide.
- Pass out the dichotomous keys.
- Set out the animal cards so that students can match the cards to their skulls. Have them discuss their results and what they might now realize after learning the identity. (Answers on next page)



Worksheet Part II: Skull ID Answers:

Once students have determined the identity of the 3-D skull at their station, reveal to them the identity of each of their models.

#1 – Bobcat (3-D & 2-D) - Carnivore	#4 – Beaver (3-D & 2-D) - Herbivore	#7 – Opossum (3-D & 2-D) - Omnivore
#2 – Skunk (2-D) - Omnivore	#5 – Bear (2-D) - Omnivore	#8 – Fox (2-D) - Omnivore
#3 – Deer (2-D) – Herbivore	#6 – Coyote (2-D) –Omnivore/ Carnivore	#9 – Squirrel (2-D) - Herbivore

Worksheet Part III:

The World of your Skulls

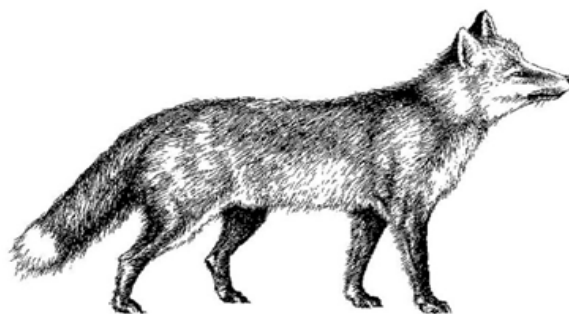
Finally, students should now be on Part III of the lab sheet. This section will help students review the concepts of a food chain, food web, population, producers, primary consumers, secondary consumers, and abiotic and biotic factors. Students will benefit most from this section if these concepts have already been taught. If you have not covered these topics with your students yet, please take some time to do so at this point in the lesson.

1. Is the 3-D skull a primary and secondary consumer?
2. Create food chains using the 3-D skull.
3. Create a food web with all three skulls.
4. Discuss the effects on species due to changes in habitat due to environmental factors such as a drought.
5. Discuss effects on species due to habitat loss due to development.
6. Further Discussions
 - How do my actions impact the food web around my home?
 - What profession would use the skills of skull identification as a part of their job?
 - How does the human skull compare to these other animal skulls?
 - How might animal skulls in groups such as reptiles, birds, or amphibians differ from the skulls of mam-mals?
 - What stories or human uses can you think of associated with the animal skulls you studied? Investigate Cherokee stories and traditional uses connected to the various animals.

Post-Assessment

Give students the post-assessment quiz. Compare students' scores to evaluate learning from this lesson. Re-teach any information that may still be confusing to students.

Answer Key: 1-B, 2-A, 3-B, 4-C, 5-C



SUPPORTING MATERIALS



Additional Background Resources:

Online

- Relationship of Cherokee and Whitetail Deer - <https://theonefeather.com/2011/11/28/traditional-relationship-of-cherokees-and-whitetail-deer/>
- Stars, Selu and Strawberries: Cherokee Stories- https://www.youtube.com/watch?v=liEHJ24_Tyg
- Why Do Plant-Eating Gorillas Have Big, Sharp Teeth? - <https://www.nationalgeographic.com/animals/article/150207-animals-gorillas-elephants-teeth-science-dentistry>
- What Happens When Something in a Food Chain Goes Extinct? - <https://sciencing.com/happens-something-food-chain-goes-extinct-18214.html>
- California Academy of Science Skulls Exhibit - <http://www.calacademy.org/exhibits/skulls/>
- Waking Up Wild - <http://wakingupwild.com/photography/guides-feathers-skulls-artifacts/animal-skull-identification-guide/>
- Skulls Unlimited - <https://www.skullsunlimited.com/blogs/educational-resources/how-to-identify-a-skull>
- Typing in Cherokee Syllabary - <https://www.transliteration.com/transliteration/en/ Cherokee/sequoyah/>
- Fox image in animal key by Unknown is licensed under CC - <https://creativecommons.org/licenses/by/3.0/>
- <https://shiyo.org/> - Cherokee language app for students

Books

- Duncan, Barbara R. *Living Stories of the Cherokee*. The University of North Carolina Press; 1998.
- Journal of Cherokee Studies, Volume XXX, 2012. Museum of Cherokee Indian.
- Elbroch, Mark. *Animal Skulls*. 1st ed. Mechanicsburg, PA: Stackpole Books, 2006.
- Kays, Roland, and Don Wilson. *Mammals of North America*. 2nd ed. United Kingdom: Princeton University Press, 2009.
- Searfoss, Glenn. *Skulls and Bones*. 1st ed. Mechanicsburg, PA: Stackpole Books, 1995.
- Duncan, Barbara et al. *The Origin of the Milky Way and Other Living Stories of the Cherokee* (Chapel Hill: University of North Carolina Press, 2008. Pp. 36-39.)

Extension activities:

Social Studies Curriculum (cultural influences)

- Select additional Cherokee stories and conduct analysis.
- Animals as tricksters: Compare American stories (Cherokee, African, European, etc.) and note the role of rabbit (or other animal) as the trickster. When is rabbit bested by other animals, and when does he trick others? What is his usual role? How might this character provide lessons to others? Does he provide lessons in morals and community? Are other animals (or people) sometimes the tricksters? Can you think of how these stories relate to us today?
- If you were to teach a story to someone younger than you, how might you go about doing it?

NC Science Curriculum

- Analyzing other Cherokee stories, can you find parallels in science that are observed within the stories? (Stories of planets, water plants, animals.)
- Are there concepts in biotic/abiotic factors? Water Cycles and Hydrospheres? Relationships? (parasitism, mutualism, etc.) Weather? Ecosystems? Geology?
- Have students select a skull and do a more in depth study on that animal's adaptations, habitat and the ecosystem it shares. Student can also research and incorporate traditional ecological knowledge associated with the animal.
- Conduct studies of uses of skins and bones historically. What contributed to extirpation or extinction in some cases?





HOW THE POSSUM LOST HIS TAIL

Adapted from story as told by Freeman Owle

Many stories were told. Many stories were teaching stories. The old story of possum was told to keep children from bragging and boasting.

The possum was a beautiful creature, but he didn't know that. And one day he was walking out beside the waters and looked into the very very still waters and saw a reflection of himself and realized that his tail was big and fluffy and beautiful and many many colors.

So he began to admire himself, and he walked by that water all day long until the wind began to blow. And then he walked away and began to boast and brag to the other animals in the forest. And early every morning he was out in the center of the forest and waking all the animals up to see how beautiful his tail was that day. Many many days passed, and they began to get tired of it— of his boasting and bragging because they knew he was beautiful. And the fox and the cricket got so tired of it that they made a plan to put an end to it. They had a contest set up in the squaregrounds of the Cherokee the next day and invited Mr. Possum to come down and participate, because it was a contest to see who had the most beautiful tail. And sure, he would do that, he knew he would win, and that would be fine. But they coaxed him into going with them that night to comb and brush his tail. And when he went into the cave of the fox, they began to brush his tail and groom it, and he began to get a little sleepy. And as he began to get sleepy, they brushed a little faster, and soon Mr. Possum was fast asleep. The cricket, being the creature that he is, began to chew. And he chewed every hair off the possum's tail. Well it was not a very pretty tail at that time, and they tied it up with a piece of deerskin and tied a beautiful bow on the end of it.

And early next morning when the possum awakened, he said, "What did you do to my tail?" being very upset. And they said, "Oh we combed and brushed it so beautifully. That we felt like we had to wrap it up so it would not get messed up." And so he was in agreement to that, and he bounced on off to the squaregrounds. And the animals began to go across the stage. And you had the skunk with his beautiful black tail with a white streak down the middle. And of course he didn't smell very good, but all the people were pleased, at a distance. And the other animals crossed the stage, the squirrel, and the red fox with his big beautiful orange tail with the black spot on the end. The possum couldn't wait any longer, and he began to get antsy. So he jumped up on the stage and he said, "It's my time, we need to get this thing settled." So he said, "Take the thing off my tail." And when they take it off, all the animals, and all the people in the audience began to roll and laugh and giggle. And he looks back at his tail, and he sees what they're laughing about.

He has the most ugly, rat-looking tail that he's ever seen in his life. And first he begins to snarl and spit and become very angry. But after a little while they laugh again, and he can't stand it any more, and he rolls over on his back, and he plays dead. The old possum boasted too much. And if you go out today and find him in your trash cans, you will see that he begins to snarl like he's going to tear you to pieces. And he'll roll over onto his back with all four feet sticking into the air. So the teaching of the Cherokee possum story is: You should let other people tell you that you're beautiful. Don't go around telling everyone else that you are. Okay?

Adapted/Edited From: *Living Stories of the Cherokee*, ed. Barbara R. Duncan (Chapel Hill: University of North Carolina Press, 1998. Pp. 212–215.)



PRE-ASSESSMENT TEST



1. Mammals' teeth can be classified using which of the following terms:
 - a. Incisors, canines, premolars, and molars
 - b. Fangs, grinders, and cutters
 - c. Baby teeth & adult teeth
 - d. None of the above

2. Monocular vision (eyes on sides of head) is found in what type of animal?
 - a. Prey species
 - b. Predator species
 - c. Nocturnal species
 - d. None of the above

3. Which pairing is correct?
 - a. Herbivores – Secondary Consumer
 - b. Carnivores – Decomposers
 - c. Omnivores & Carnivores – Secondary Consumer
 - d. Omnivores – Primary Consumers

4. Which type of animal would be the most likely to be missing canine teeth?
 - a. Herbivore
 - b. Omnivore
 - c. Carnivore
 - d. Decomposer

5. A food web is:
 - a. A special creation made by a spider to catch food
 - b. A dietary chart tracking food consumption used to determine if an individual is eating healthy
 - c. A diagram made of several interconnected food chains that shows the flow of energy through an ecosystem
 - d. A sticky substance resembling a spider's web used to celebrate special occasions in Asia



POST-ASSESSMENT TEST



1. Mammals' teeth can be classified using which of the following terms:
 - a. Incisors, canines, premolars, and molars
 - b. Fangs, grinders, and cutters
 - c. Baby teeth & adult teeth
 - d. None of the above
2. Monocular vision (eyes on sides of head) is found in what type of animal?
 - a. Prey species
 - b. Predator species
 - c. Nocturnal species
 - d. None of the above
3. Which pairing is correct?
 - a. Herbivores – Secondary Consumer
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 - c. A diagram made of several interconnected food chains that shows the flow of energy through an ecosystem
 - d. A sticky substance resembling a spider's web used to celebrate special occasions in Asia



ANSWERS - ASSESSMENT TEST



1. Mammals' teeth can be classified using which of the following terms:
 - a. **Incisors, canines, premolars, and molars**
 - b. Fangs, grinders, and cutters
 - c. Baby teeth & adult teeth
 - d. None of the above
2. Monocular vision (eyes on sides of head) is found in what type of animal?
 - a. **Prey species**
 - b. Predator species
 - c. Nocturnal species
 - d. None of the above
3. Which pairing is correct?
 - a. Herbivores – Secondary Consumer
 - b. Carnivores – Decomposers
 - c. **Omnivores & Carnivores – Secondary Consumer**
 - d. Omnivores – Primary Consumers
4. Which type of animal would be the most likely to be missing canine teeth?
 - a. **Herbivore**
 - b. Omnivore
 - c. Carnivore
 - d. *Decomposer (these are usually invertebrates, bacteria and fungi)*
5. A food web is:
 - a. A special creation made by a spider to catch food
 - b. A dietary chart tracking food consumption used to determine if an individual is eating healthy
 - c. **A diagram made of several interconnected food chains that shows the flow of energy through an ecosystem**
 - d. A sticky substance resembling a spider's web used to celebrate special occasions in Asia

