

# Teaching Skins & Skulls

*An Insider's Perspective*

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Photos courtesy of CONSERVATION LEGACY



**T**oday, everybody is going to have a chance to become a wildlife biologist!

*Behind me are pictures of each animal we will talk about today. On the table are the pelts and skulls of a deer, coyote, bobcat, raccoon, skunk, opossum, gray fox and rabbit. We also have skulls of a beaver, porcupine and wild turkey...*

This is how I begin every presentation of "Skins & Skulls." After fielding the usual questions asking if I hunted or trapped these animals, which I did not,

we jump into the lesson.

*Has anybody ever heard the word "steward?"*

I explain a steward is simply somebody who takes care of something.

*In the next 45 minutes, my hope is that you all will learn something about natural resources which will allow you to take better care, or be better stewards, of these resources.* During a quick review of natural resources and how we use them every day; connections are made by tying sunlight to energy, trees to paper,

cotton to clothing, sand to glass, ore to metal, petroleum to plastic and so on. As students realize the importance of these resources, we emphasize the need to take care of the land and how land stewardship ultimately impacts our water, wildlife and everything else.

*How does a plant get food?*

We quickly discuss photosynthesis and how a plant uses carbon dioxide, water and sunlight to make sugars, or glucose, and how this feeds the entire planet via food chains or food webs. This leads to a



conversation about the interdependence between everything on this planet and how all living organisms have basic needs of food, air, water and shelter.

*What is the difference between predator and prey? Can an animal be both?*

Predators eat prey—and absolutely, an animal can be both. For example, a raccoon might eat a frog or a rat but then it may become prey to a larger predator.

*What is an adaptation?*

It is a trait or skill that helps an organism survive in its habitat. Traits are physical or structural, while skills are behavioral. As I hold up a “mystery” pelt, I ask the students...

*What does this fur do for this animal?*

Keeping the animal warm is typically

the first answer, while camouflage is a close second. I ask why an organism would want to camouflage, or blend in, with its environment. The coloration of this pelt allows predators to blend in with the rocks, vegetation and soil so they can sneak up on their prey, while the prey animals might use their camouflage to remain unseen by predators.

As soon as I lay that pelt down, I hold up a skunk pelt and ask the students to raise their hand if they have ever smelled one of these animals. You can probably hear the gasps and giggles as you read this. While holding up the skunk skin, I ask if this is camouflage or not. Many times, there are mixed answers but somebody will mention it is a warning. The color of the

skunk is not camouflage but a warning coloration that tells predators to back off, because if they do not, they will get that smelly spray!

Another organism with a similar physical adaptation is the Monarch butterfly, whose larvae eat the leaves of the poisonous milkweed plant. The butterfly’s bright orange coloration warns predators not to eat the Monarch, because they will get a tummy ache or worse. Furthermore, some butterflies that are not poisonous will copy the color and pattern of the Monarch to fool predators into thinking they are poisonous. We call this physical adaptation “mimicry.”

*What might a deer do when it smells, sees or hears something nearby?*

Students typically respond with a resounding “RUN!” which is true, and as I hold up the deer pelt we talk about how before they run they might stick their white tail straight behind them, or directly up in the air and flick it back and forth to warn other deer of the threat. These are examples of instincts or behavioral adaptations. I then hold up a female deer skull.

*Is this a boy or a girl deer? Why?*

After explaining male deer have antlers while females do not, we briefly talk about the difference between antlers and horns. Antlers fall off, or shed, every year and as long as the male deer, or buck, is healthy and good at finding food, the antlers will grow back bigger and better every year. These antlers are used to fight other bucks to see who is stronger or dominant and ultimately to get a mate. We talk about how these superior genetic traits are passed from the parents to offspring, and that baby deer are called fawns.

We break down the dietary choices of animals and talk about the differences between herbivores, omnivores and carnivores. At this point, I hold up a predator skull and ask the students to notice the difference in the teeth.

Next, I introduce the attributes of skulls that will help them identify their own mystery skulls:

Teeth: Canines, or long, sharp, pointed teeth in the front corners of the mouth, indicate a predator. The shape of the molars will differentiate between



carnivores, who only have sharp molars, and omnivores who have both sharp and flat molars in the back of their mouths.

**Snout:** The length of the snout is an indicator about the shape of the animal's face and typically a longer nasal cavity means more scent receptors, or a better sense of smell.

**Eyes:** Predators have eyes facing the front, called binocular vision that allows the animal to focus or tell distance, which helps when hunting or chasing prey. Prey animals have eyes facing to the side, which allow them to see all the way in front, and almost all the way behind them while remaining completely still. We use the rhyme "Eyes to the front, born to hunt. Eyes to the side, run and hide" to help students remember this concept.

**Auditory Bullae:** These bulbs, underneath the brain cavity, contain the eardrums and other hearing organs. We can make inferences about the size and placement of the ears by looking at the auditory bullae and noting where the ear canal exits the skull.

*Have you all ever heard of the Chihuahuan Desert? Where is it?*

As I am the L.A.N.D.S. Educator in West Texas, I try to make as many connections as possible to our local ecosystems. I explain that if we are not in the Chihuahuan Desert, we are on the outskirts of it and that it stretches from New Mexico down through West Texas into the country of Mexico.

*Imagine, we are walking around the Chihuahuan Desert and we find this skull (as I hold up the mystery skull from earlier)...this is how a wildlife biologist would identify it...*

*Wow, look at the length of this snout. It is about half the length of this animal's skull.*

*It has eyes to the front, definitely a predator.*

*It has canines with some sharp molars and some flatter ones too, it looks like an omnivore.*

*Plus, it has these pretty large auditory bullae; I bet it had some big ears.*

*Gosh, Mr. Phil, I think this animal is a ...*

I demonstrate this process using a coyote skull. The students usually are able to figure this out and their enthusiasm



and confidence is through the roof at this point! At this time I divide the students into groups and pass out "mystery skulls." Students use a worksheet to record the skull size, placement and size of the eyes, length of the snout, size of the auditory bullae, and the types of teeth or diet.

Once students have finished characterizing these traits, I remind them that their choices are displayed on the board (*deer, coyote, bobcat, raccoon, skunk, opossum, fox, rabbit, beaver, porcupine and wild turkey*) and that scientists use books, or field guides, to help them answer questions.

Students use the "Critters of Texas Pocket Guide" to see if the diet of the suspected animal matches the teeth of their "mystery skull," and there are other clues as well. For example, the Virginia opossum has 50 teeth, the most of any land mammal in North America. It is always an awesome feeling when students find that fact on their own and proclaim they have an opossum, because their skull has 50 teeth, or the opposite, that they suspected they had an opossum, but counted the teeth and realized there were not 50.

The clues gleaned from the Critter Guides help the groups identify the skulls they have. Once they have the correct answer, the corresponding pelt will be handed to the group, and they will give a brief explanation to their fellow classmates about how they identified their skull.

If you have not tried to identify a skull by looking at the placement of the eyes, the length of the snout, types of teeth and the auditory bullae, it might seem a bit overwhelming—but with a little knowledge and visualization, it is actually quite simple.

We wrap up this presentation by revisiting the word "steward" and the importance of the knowledge gained today. With this knowledge about how organisms and ecosystems interact, these students can help teach others how to live within nature's rules and how to observe and respect rather than destroy and violate.

We are educating the next generation how to enjoy and protect this heritage, because the world and its future belong to all living things, not just to one species. 🌱



## WILDLIFE BY DESIGN AT TYHP HUNT

In mid-January, 25 youth including many first-time hunters received the opportunity to hunt for deer at the TYHP Harper WMA Hunt in Memory of Jacob Krebs. They were educated by and interacted with game wardens, biologists, the state's wildlife veterinarian and a TWA educator.

TWA Conservation Legacy Educator Jo Picken shared what she normally teaches in a Houston-area classroom: a lesson on gauging an animal's senses and using that information to identify an animal by its skull. While Picken's weekdays are often spent with these resources in urban spaces, this weekend brought together all of the components needed to build a true appreciation for wildlife in a new generation of Texans. Being able to learn and then spend time in habitat experiencing what it takes to keep multiple species healthy on the same property made a lasting impression that could translate into conservation action.

Those youth who were fortunate enough to harvest an animal put nutritious venison in their coolers. Those less fortunate afield did not return home empty-handed. They walked away with a goodie bag, meaningful memories and an understanding that sometimes hunting means choosing not to pull the trigger.

All of this begs the question: how did this particular hunt reach such a level of success? The answer lies in the inspiration behind it. Will and Mary Krebs are humble, hardworking individuals who lead by example and have inspired others to action, including the eight landowners and about 60 volunteers who made the weekend possible.

Their son, Jacob, followed in their footsteps as well. He was an unusually focused young man with a great respect for wildlife. In his quest to become a Navy Seal, he suffered a fatal accident in April 2013; however, his service to others did not end there.



"Jacob saved five lives—and he is improving the lives of 40 others still today," explained his mother, as she described his organ and tissue donations. His legacy motivates his family and so many others in the greater Harper area who are still helping others develop a greater appreciation for wildlife.

*Jo Picken is the Conservation Legacy L.A.N.D.S. Educator serving Brazoria, Chambers, Galveston, Liberty and Eastern Harris County ISDs. Her family has participated in the Texas Youth Hunting Program for the last four years, first as hunters, later in the role of volunteers and currently as trained Huntmasters. Their introduction to the program came through the Krebs family, who initially served as the kids' Hunter Education Instructors.*



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