



The overall emphasis of this animal unit is survival adaptations of animals.

This learning unit contains information and activities that will assist in planning and carrying out a variety of activities and an educational field trip to the Caldwell Zoo. Included are suggested activities to do before and after the zoo visit and a summary of information to be covered during the zoo class. The Zoo's goals are to:

1. Encourage inquisitiveness about the natural world
2. Help each child find answers to his/her own questions.
3. Aid development of understanding and factual knowledge of the environment.
4. Improve each child's ability to think rationally.
5. Promote creative and productive imaginations.
6. Provide a fun learning experience.

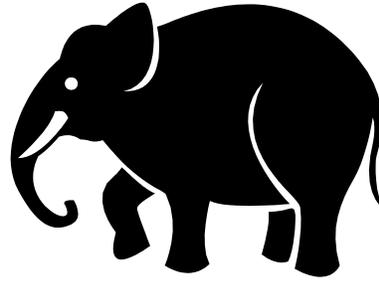
Texas Essential Knowledge and Skills ("TEKS") for science:

Third Grade 112.14b: **1 A, 9 A&C, 10 A&B**

Fourth Grade I 12.15 b: **1 A, 10 A**

Fifth Grade 112.16b: **1 A, 9 A&C, 10 A**

Additional activities may meet other TEKS.



SECRETS OF SURVIVAL

Within the world of wildlife, it is truly “survival of the fittest.” Survival of the fittest actually means survival of those able to adapt to their surroundings. To survive in a very competitive prey-predator environment, all animals must be adapted to defend themselves—and they do this in a great variety of ways.

Animals may use camouflage as a primary defense. Many camouflaged animals also use counter-shading to make it difficult for other animals to judge their size and shape and to increase the difficulty of picking out an individual. Some animals use mimicry—they resemble some part of the animal’s environment (example: a toad that looks like a fallen leaf).

Some animals’ primary defense is visible warning signs—anti-camouflage. They do not need to be camouflaged since many are poisonous or offensive in some way, so they may be brightly colored. Some animals mimic others that are poisonous thus protecting themselves (example: the monarch and viceroy butterflies or the coral and king snakes).

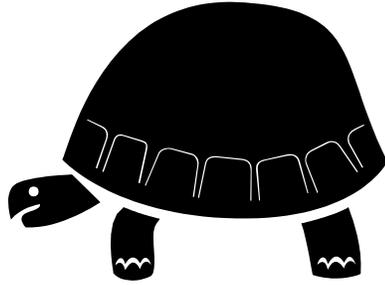
Some animals have “weapons.” A porcupine’s quills or the horns of some hoofed animals are certainly “weapons” to be used to their advantage. Please remember, an animal is least likely to defend itself by actual fighting. There is too much at stake to risk injury.

Many animals retreat when danger strikes. Fright-flight is an instinct in many species. Some animals retreat to cover, a den or nest, when threatened. Some animals freeze or play dead to protect themselves. Armadillos, turtles and others have “built-in” homes for them to retreat into.

Keen senses help animals protect themselves. Some animals use bluffs or threats to scare off a potential danger. Often animals that live in groups will give alarm calls alerting their group members.

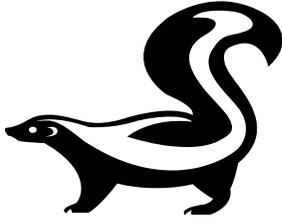
Some of the most beautiful and remarkable things about individual animals are their defense mechanisms. Remember: defense mechanisms may be instinctual or they may need to be learned.

Animals do a fantastic job protecting themselves from threats within their natural environments, but cannot develop defenses against artificial threats posed by man.



CLASSROOM ACTIVITIES

The activities on the following pages are for use before and/or after your Zoo visit.



SECRETS OF SURVIVAL

1. Make up a graphics panel, poster or mini-billboard that tells about animal secrets of survival” and display it for other classrooms to see.
2. Design a fictitious animal to live in today’s world. It should be able to be camouflaged within human surroundings, tolerate pollution and adapt to a world heavily populated with humans. Be sure to give your animal a name, definite habitat and specific diet. (This doesn’t have to be on paper. How about a 3D model?)
3. Compare animal adaptations to human inventions, i.e. camouflaged body covering for an animal and camouflage clothing for a person.
4. Write a commercial for an animal with extraordinary adaptations.
5. Write a conversation between two animals that are discussing techniques they use for survival in their environment.
6. Write a “tell me why” story about animal “secrets of survival.” Tell me why the skunk is so stinky. Tell me why the porcupine has quills.
7. Design new “clothes” for an animal. What if the leopard grew tired of his spotted coat? Could you give him a new look that would help him survive in his environment?
8. Make a list of ways we humans change or adapt. How do we change for summer? For winter? How do animals change for the seasons?
9. Help children discover how the color of an animal’s skin, fur or feathers affects body temperature. A black object absorbs more waves of energy than a white object causing the object’s temperature to rise. Obtain two thermometers. Cover the bulb on one thermometer with black paper and one with white paper. (Make sure the two papers are the same weight) Place the thermometers in direct sunlight and keep a record of their temperature readings. Which one is warmer? What is the difference in the two temperatures?

VOCABULARY TO KNOW

ADAPTATION	Modification in structure or function to enhance survival.
ANTICAMOUFLAGE	Color or pattern of skin, fur or feathers which clearly identifies the species and frightens off would-be predators.
BINOCULAR VISION	Both eyes function together when viewing an object, permitting depth perception.
CAMOUFLAGE	Color and/or pattern of animal's skin, fur or feathers which helps conceal it within the natural surroundings.
CATALEPSY	Pretending to be dead.
COUNTERSHADING	Coloration of an animal so that parts normally in shadow are light and those normally in light are darker. Effect is to make the animal appear flat and shadow-like. (Cats and hooved animals use this adaptation.)
CURSORIAL	Adapted for running.
DISRUPTIVE COLORATION	An animal's pattern of color and shading is arranged so that its size and shape appear to be different from its actual size and shape.
FOSSORIAL	Adapted for burrowing or digging.
HIBERNATION	Prolonged dormant state that enables an organism to escape the difficulties of cold weather. True hibernation greatly slows the body functions and animal cannot be aroused.
MIGRATORY	Periodic mass movement to and from feeding/water or reproductive/nesting areas.
MIMICRY	Condition where defenseless species resembles another species with some defense, aiding its survival.
PRIMARY DEFENSES	Defenses present at all times, i.e. camouflage, mimicry, visible warning signs, retreat to cover.
SECONDARY DEFENSES	Defenses developed through need and displayed only

when an enemy is actually encountered, i.e. bluffs, social living, flight.

VENOMOUS

Having poison gland. Able to inflict a poisonous wound by biting or stinging.