



**Behind the Gates at San Antonio Viejo Ranch
Learning Booklet**

This Learning Booklet Belongs To:

We promote the advancement of land stewardship
through ranching, science, and education.



@EastFoundation

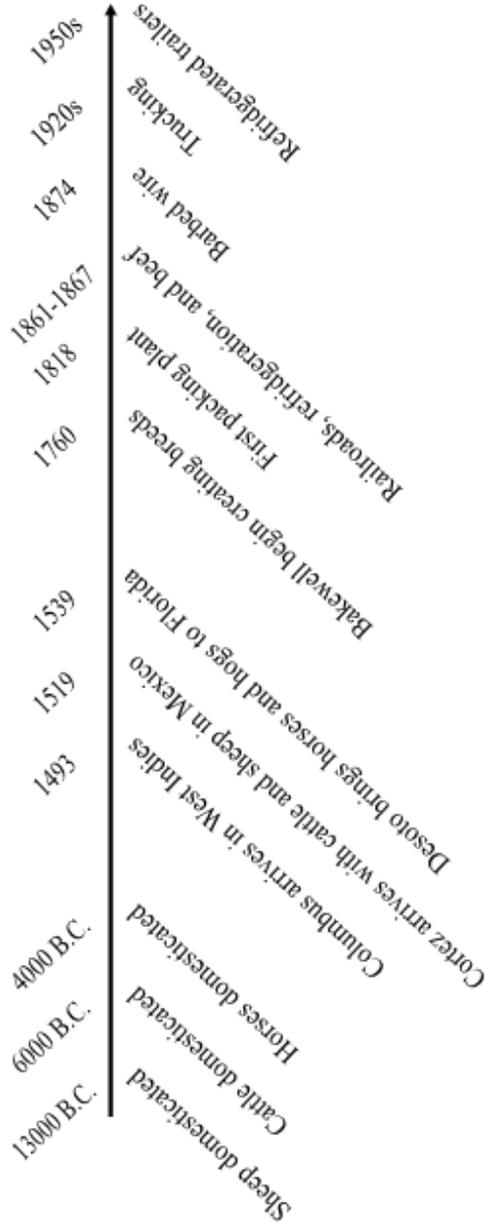


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Station 1

Cattle Ranching

History of Livestock Timeline



Station 1

Cattle Ranching

Stockmanship and Animal Husbandry

- **Stockmanship** is the knowledgeable and skillful handling of livestock in a safe, efficient, effective, and low-stress manner.
- **Animal Husbandry** is the art and science of caring for animals.

Stockmanship and Animal Husbandry are derived from a love and respect for the _____ and _____ with which we are tasked with conserving.

They require a legitimate relationship with the animals and land that requires some form of communication.

Cattle are harvested at _____ years of age and fabricated into meat and by-products.

Ranchers strive to provide the best care to the cattle and land that is possible to ensure a happy, healthy, and low-stress life.

Natural Selection is the process by which living organisms have better traits that better enable to adapt to their environment.

Factors that affect natural selection include:

_____, _____, and _____.

Variation is differences between individuals of the same species.

Overproduction is species produce far more offspring than can possibly survive. Food and resources are limited so offspring must **compete** to survive.

The purpose of livestock domestication is _____.

Station 2

Animal Traits/Adaptations

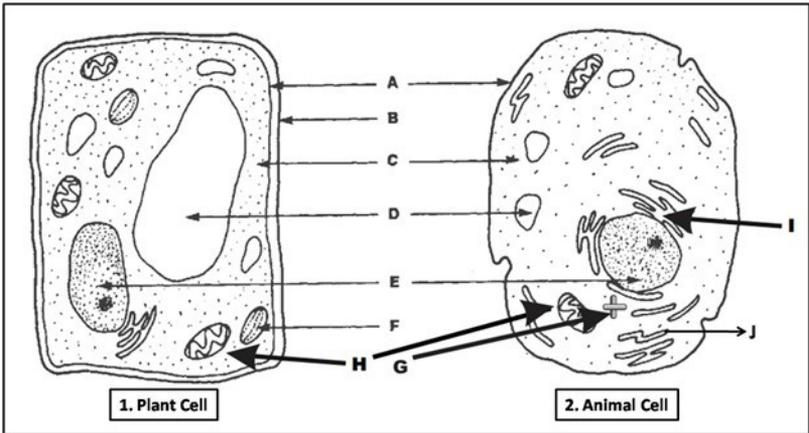
Adaptation is a characteristic or trait that enables a living organism to _____ in its environment.

Give three examples of adaptations: _____, _____, _____.

Adaptations happen when genes mutate, usually by accident.

If a mutation is beneficial, it will help organisms survive in their environment and is passed on from parent to offspring and soon becomes common in a population of organisms.

Genes are passed on from parent to offspring and are found in the nucleus of cells in chromosomes.



What letter in this diagram is pointing to the nucleus of the animal and plant cell?

Station 2

Animal Traits/Adaptations

Adaptations can be structural or behavioral.



Structural Adaptations in White-Tailed Deer

- eyes on the side
- large nose
- sharp hooves
- hair differences in summer and winter

Behavioral Adaptations in White-Tailed Deer

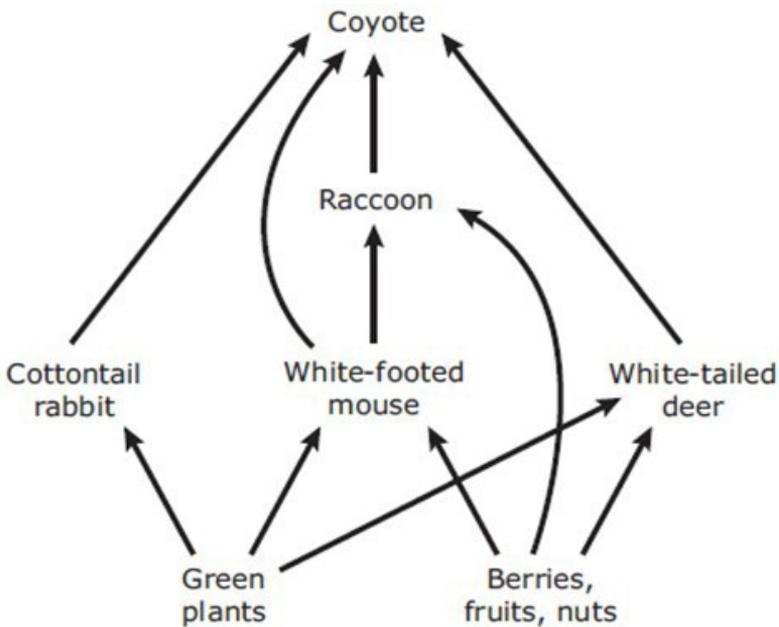
- Fawns lie still when predators approach.
- Deer lift their tail when they sense danger.
- They form bigger groups in the winter for warmth

Station 3

Predator/Prey, Hunters, and Law Enforcement

Ecosystems must maintain a delicate _____ of producers and consumers and predators and prey.

If there are too many primary consumers (animals that eat plants), competition for resources (producers) increases. When that happens, primary consumers are not as healthy, and population decreases.



Circle all the predators and make a box around the prey in the food web above. One animal is both predator and prey!

Station 3

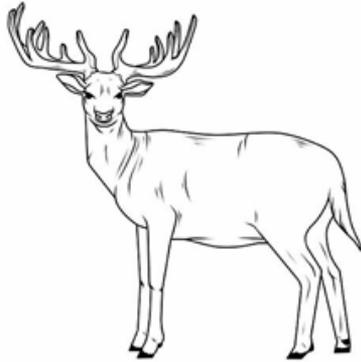
Predator/Prey, Hunters, and Law Enforcement

Predators control the population of prey species and eliminate the weaker individuals within prey populations, helping to make prey populations stronger and better adapted.

In Texas, the _____ used to be one of the biggest natural predators of the white-tailed deer. Wolves are no longer found in Texas due to changes in private land use like farming and ranching, so white-tailed deer populations have increased a lot.



Grey Wolf (Predator)



White-Tailed Deer (Prey)

There are about four million deer in Texas alone and about 800,000 people that hunt deer. Hunting helps to control the deer population.

People must follow certain safety and regulatory laws in order to hunt.

Write down three rules people must follow when they are hunting.

1. _____
2. _____
3. _____

Station 4

Endangered Species

The _____ is a wild cat that is native to Mexico and into South America. They used to be found in many parts of Texas and a few places in Arizona and Louisiana. There are less than 80 ocelots left in the entire United States!

Ocelots depend on _____ (living) factors such as very dense vegetation and plenty of prey to hunt such as rabbits, mice, rats and birds. Ocelots depend on this dense screening cover or vegetation to ambush their prey. Vegetation growth is dependent on, soil type, rainfall, and temperatures, or _____ factors.

Within the U.S., ocelots are only found in deep South Texas in areas around Cameron and Willacy counties. Caesar Kleberg Wildlife Research Institute is monitoring and studying the largest population of ocelots on East Foundation's El Sauz ranch. Private ranches are critical to the conservation of ocelots.



Station 4

Endangered Species

There are a lot of groups of people who are working hard to help the ocelot population. Some of the things that they are doing include:

- _____ native ocelot habitats on private lands,
- providing safe passages under highways for traveling ocelots, and
- _____ people about the ocelot so that they can help protect them.

95% of Texas land is _____ land, which means that it is owned by people just like us. Because we own the land, it is our responsibility to take care of it and all the natural resources found on it.

Check out our ocelot research with Cesar Kleberg Wildlife Research Institute on our website at <https://eastfoundation.net/science/research-projects/ocelot-conservation/>.

Station 5

Land Stewardship & Watersheds

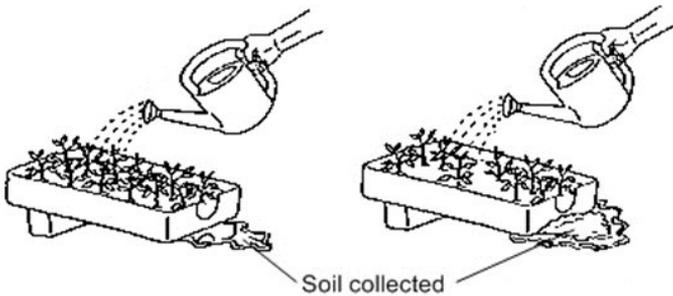
Our land gives us everything that we need to survive.

Write three things that we get from our land that we need to survive:

1. _____
2. _____
3. _____

Water is an extremely important natural resource that we must conserve.

Ranches provide clean, open land where rain can fall and be absorbed by plants and trees. The vegetation acts as a filter to purify drinking water as it makes its way into rivers and oceans.



Vegetation prevents run-off and erosion of soils.

Why do you think there was a difference in the amount of soil collected and water quality in the diagram above?

Station 5

Land Stewardship & Watersheds

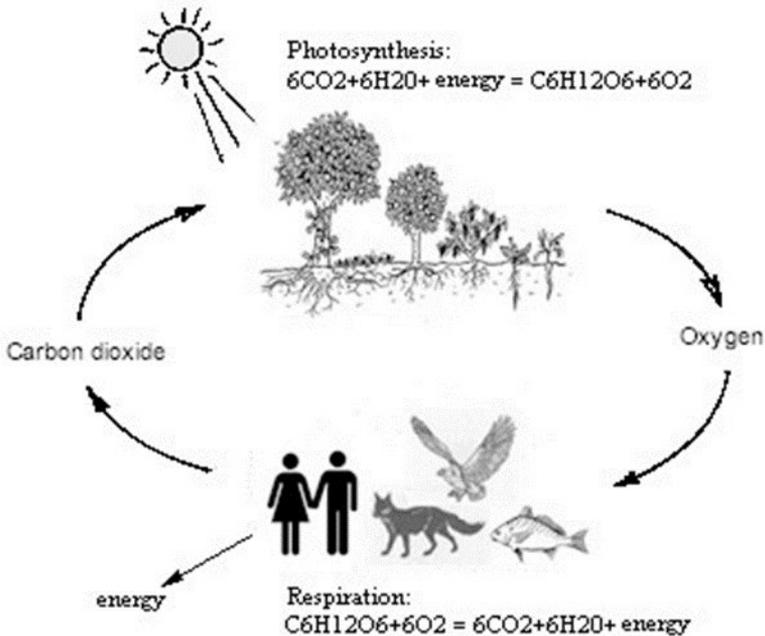
Ranches like San Antonio Viejo provide vegetation for cattle grazing. The grass gets energy from the sun, the cattle get energy from the grass, and cattle are an important food source for humans.

Ranch Food Chain

Sun → Grass → Cattle → Human

The arrows represent the flow of energy.

The carbon dioxide/oxygen cycle also happens on the ranch. Plants and trees produce oxygen for animals to breathe and in return, animals produce carbon dioxide, which is



GRAZING EXERCISE GAME

Station 6

Technology in Ranching & Wildlife Management

Global Positioning System (GPS) is a satellite-based _____ system that provides precise location and time information in all weather conditions, anywhere on the Earth where there is an _____ line of sight to four or more GPS satellites.

- GPS was originally designed for the military but is now used in everyday life in products like Google maps, and location-based services like Snapchat, Facebook, Uber, and Find My iPhone.
- Ranch managers and research students on East Foundation ranches use GPS for large mammal studies (location of populations), cattle grazing locations, to map precise locations of things like wells, fences, cattle holding pens, roads, pipelines, and for ocelot research.

Geographic _____ (GIS) is a computer system that _____ features on the Earth's surface along with characteristics about _____. It allows us to visualize, analyze and interpret data to understand relationships, patterns and trends.

- GIS in Ranch Management – We collect data through GPS and analyze it to help us with infrastructure planning, road and fence construction, and water distribution analysis. Understanding where quality water is not readily available helps us to determine where cattle can safely graze.
- GIS in Wildlife Management – In our research projects involving nilgai, cattle, and endangered species like the ocelot, GIS helps us monitor habitat preferences and human-wildlife interactions.

Station 6

Technology in Ranching & Wildlife Management

Radio Telemetry is a system that uses radio waves for transmitting information on distance, direction, and signal strength from an animal to a device that records the measurements.

It is used as an alternative or in addition to GPS technology in studying a large variety of wildlife and domestic animals.

A _____ (transmitter) is attached to an animal and it sends a signal to a receiver box. The data from the transmitter gives the researcher information about where animals are and helps monitor them.

Radio Telemetry assists in recovering animals or GPS units when they go missing and helps ranchers and researchers study a large variety of wildlife and domestic animals.



Station 7

Oh Nilgai, Deer, and Cattle!

We have three important herbivores on East Foundation lands.

White-tailed Deer

Nilgai Antelope

Cattle

Nilgai compete for forage with cattle and white-tailed deer.

East Foundation is committed to finding solutions for both wildlife conservation and livestock production.

Animal Unit Equivalent Chart

Texas Domestic Livestock, Native Wildlife, and Exotic Wildlife

Type of Animal	Body Weight in Pounds	Daily Average Intake Percent of Body Weight	Annual Forage Intake in Pounds	Animal Unit per Head	Head per Animal Unit (Rounded)
Beef Cattle (Cow)	1000	2.6	9490	1	1
White-tailed Deer	100	3.5	1278	0.13	7
Nilgai Antelope	350	3.5	4471	0.47	2

USDA NRCS



Post-Test

Now that you have participated in Behind the Gates, please use the QR code below to take the post-test. If you take a photo with your personal device, it should automatically take you to the SurveyMonkey site and your test.



Student Evaluation

We would love for students to share feedback on today's event! Your feedback helps us to plan for future students.

