Ranching with Ocelots Learning Guide
Grades 6-12

Contents

This Learning Guide supports the film, *Ranching with Ocelots*, from the H-E-B Presents: Our Texas, Our Future film series. Watch the 12-minute film for free: https://ourtexasourfuture.com/stories/ocelots/

About This Resource

It is believed that ocelots once lived throughout Arizona and Texas and into Louisiana and Arkansas. In the United States, their population has shrunk to fewer than 100 ocelots still living in the wild. The remaining population lives in South Texas and relies on ranchers who are conserving the land ocelots need to survive while also supporting economically viable cattle ranches.

Watch the *Ranching with Ocelots* video and read the learning resource included here to get to know the ocelot, explore the South Texas land they inhabit, and learn how sustainable ranching practices support ocelots and other native species.

Learning Objectives

Students will...

1. IDENTIFY at least five characteristics of a South Texas ecosystem and CLASSIFY the area as part of the Coastal Plains region.
2. COMPARE and CONTAST the region shown in the film to their environment.
3. IDENTIFY factors that caused ocelots' range in the United States to shrink.
4. SUMMARIZE current ocelot conservation strategies.
5. ANALYZE the environmental impacts of sustainable ranching practices.
6. BRAINSTORM other strategies that could be implemented to support ocelots.
7. REFLECT on the impacts of living "close to the land."
8. EXPLORE options for working with animals in their future careers.

Teaching Tips

This Learning Guide is written with grades 6-12 in mind. You can implement the full guide or select the learning objectives, standards, and discussion questions that will work best for your students.

Texas Essential Knowledge & Skills (TEKS) Science

Science TEKS, Adopted 2017	Science TEKS, Adopted 2020/21 *implementation begins fall 2024*
• **6-8(3)(A)** analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student • **6-8(3)(D)** relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content • **6(12)(F)** diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem • **7(5)(B)** diagram the flow of energy through living systems, including food chains, food webs, and energy pyramids • **7(10)(B)** describe how biodiversity contributes to the sustainability of an ecosystem • **7(12)(A)** diagram the flow of energy within trophic levels and describe how the available energy decreases in successive trophic levels in energy pyramids • **BIO(3)(D)** evaluate the impact of scientific research on society and the environment • **BIO(12)(C)** analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids • **BIO(12)(E)** describe how environmental change can impact ecosystem stability • **ENV(3)(D)** evaluate the impact of research on scientific thought, society, and the environment • **ENV(3)(E)** describe the connection between environmental science and future careers	• **6-8(1)(A)** ask questions and define problems based on observations or information from text, phenomena, models, or investigations • **6-8(3)(B)** communicate explanations and solutions individually and collaboratively in a variety of settings and formats • **6-8(4)(C)** research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers • **6(11)(B)** explain how conservation, increased efficiency, and technology can help manage air, water, soil, and energy resources • **6(12)(C)** describe the hierarchical organization of organism, population, and community within an ecosystem • **7(12)(A)** diagram the flow of energy within trophic levels and describe how the available energy decreases in successive trophic levels in energy pyramids • **8(12)(A)** explain how disruptions such as population changes, natural disasters, and human intervention impact the transfer of energy in food webs in ecosystems • **8(12)(C)** describe how biodiversity contributes to the stability and sustainability of an ecosystem and the health of the organisms within the ecosystem • **BIO&ENV(1)(A)** ask questions and define problems based on observations or information from text, phenomena, models, or investigations

• **ENV(5)(G)** predict changes that may occur in an ecosystem if genetic diversity is increased or decreased • **ENV(9)(E)** evaluate the effect of human activities, including habitat restoration projects, species preservation efforts, nature conservancy groups, hunting, fishing, ecotourism, all-terrain vehicles, and small personal watercraft, on the environment	• **BIO&ENV(3)(B)** communicate explanations and solutions individually and collaboratively in a variety of settings and formats • **BIO&ENV(4)(C)** research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers • **BIO(13)(B)** analyze how ecosystem stability is affected by disruptions to the cycling of matter and flow of energy through trophic levels using models • **BIO(13)(D)** explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability • **ENV(5)(G)** predict changes that may occur in an ecosystem if genetic diversity is increased or decreased • **ENV(11)(B)** evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature conservancy groups, game and wildlife management, and ecotourism

Texas Essential Knowledge & Skills (TEKS)
Social Studies

Social Studies TEKS, Adopted 2018	Social Studies TEKS, Adopted 2022 *implementation begins fall 2024*
• **7(8)(A)** locate and compare the Mountains and Basins, Great Plains, North Central Plains, and Coastal Plains regions • **7(9)(A)** identify ways in which Texans have adapted to and modified the environment and explain the positive and negative consequences of the modifications • **7(19)(C)** analyze the effects of various scientific discoveries and technological innovations on the development of Texas such as advancements in the agricultural, energy, medical, computer, and aerospace industries • **7(20)(A)** differentiate between, locate, and use valid primary and secondary sources such as media and news services, biographies, interviews, and artifacts to acquire information about Texas	• **7(8)(A)** locate and compare the Mountains and Basins, Great Plains, North Central Plains, and Coastal Plains regions • **7(9)(A)** identify ways in which Texans have adapted to and modified the environment and explain the positive and negative consequences of the modifications • **7(19)(C)** analyze the effects of various scientific discoveries and technological innovations on the development of Texas such as advancements in the agricultural, energy, medical, computer, and aerospace industries • **7(20)(A)** differentiate between, locate, and use valid primary and secondary sources such as media and news services, biographies, interviews, and artifacts to acquire information about Texas

Next Generation Science Standards (NGSS)

MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

The performance expectation listed above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science & Engineering Practices

Engaging in Argument from Evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s).

- Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.

Disciplinary Core Ideas

ESS3.C: Human Impacts on Earth Systems

- Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.

Crosscutting Concepts

Cause and Effect

- Cause and effect relationships may be used to predict phenomena in natural or designed systems.

HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

The performance expectation listed above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science & Engineering Practices

Constructing Explanations and Designing Solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.

- Design, evaluate, and refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.

Disciplinary Core Ideas

LS2.C: Ecosystem Dynamics, Functioning, and Resilience

- Moreover, anthropogenic changes (induced by human activity) in the environment—including habitat destruction, pollution, introduction of invasive species, overexploitation, and climate change—can disrupt an ecosystem and threaten the survival of some species.

LS4.D: Biodiversity and Humans

- Biodiversity is increased by the formation of new species (speciation) and decreased by the loss of species (extinction). (secondary)
- Humans depend on the living world for the resources and other benefits provided by biodiversity. But human activity is also having adverse impacts on biodiversity through overpopulation, overexploitation, habitat destruction, pollution, introduction of invasive species, and climate change. Thus sustaining biodiversity so that ecosystem functioning and productivity are maintained is essential to supporting and enhancing life on Earth. Sustaining biodiversity also aids humanity by preserving landscapes of recreational or inspirational value. (secondary) (Note: This Disciplinary Core Idea is also addressed by HS-LS4-6.)

ETS1.B: Developing Possible Solutions

- When evaluating solutions it is important to take into account a range of constraints including cost, safety, reliability and aesthetics and to consider social, cultural and environmental impacts. (secondary)

Crosscutting Concepts

Stability and Change

- Much of science deals with constructing explanations of how things change and how they remain stable.

Ranching with Ocelots

English Resources

Academic Vocabulary

From: lead4ward Academic Vocab https://lead4ward.com/resources/

Grade 6 Science	Grade 7 Science	Grade 8 Science
• conservation • community • ecosystem • organism • population • species	• domestic animal • ecoregion • ecosystem • energy pyramid • environment • environmental change • flow of energy • food chain • food web • genetic variation • habitat • organism • species • sustainability • trophic level	• carnivore • domestic animal • ecosystem • energy pyramid • environment • environmental change • flow of energy • food chain • food web • genetic variation • habitat • herbivore • organism • population • predator-prey relationship • species

Biology	Grade 7 Social Studies
• carnivore • competition for resources • consumer • ecosystem • energy pyramid • environmental change • flow of energy • food chain • food web • genetic variety • habitat • herbivore • impact • organism • population • predator • prey • species	• cattle industry • consequences • environment • frontier • human factors • modified the environment • modifications • modify • negative consequences • physical characteristics • positive consequences • ranching • regions

Background Reading

South Texas

This video highlights habitats in South Texas that span both the South Texas Plains and Gulf Coast Prairies and Marshes ecoregions. These ecoregions are part of the Coastal Plains physical region of Texas. This area of the state experiences warm average temperatures and recurring droughts. Summers are hot and humid. Winters are generally mild, although temperatures can dip to freezing levels.

Ranching in Texas

Photo: East Foundation 882A9552 – ©Emily McCartney

A ranch is a tract of land primarily used to raise livestock such as sheep, cattle, and goats. The history of ranching in Texas began over 450 years ago. In 1493, when Christopher Columbus made his second voyage to North America, he brought Spanish cattle with him to Santo Domingo. (Today, Santo Domingo is the capital city of the Dominican Republic.) Later, in the 1520s, the progeny (descendants) of these cattle were brought to Mexico and by the 1540s, had been introduced to Texas (Dobie, 1941).

Through the 16th and 17th centuries (the 1500s and 1600s), cattle ranching developed and spread north through Spanish Mexico and into the land that is now Texas. As land parcels were granted to individuals, they found wild cattle to be abundant in many areas. Ranching, the purposeful use of land and cattle to produce food and other products, developed from the combined use of the resources present in the area - land and cattle.

Vaqueros were the first cowhands on these early ranches. They tended to the cattle, often on horseback. Much of the equipment and practices of the vaquero ranching tradition are still used on ranches across Texas today. Lassos (derived from the Spanish word lazo, meaning “rope”) and chaps (originally called “chaparreras”) are two elements of ranching equipment that developed from the vaquero culture (Gandhi, 2023).

Today, the United States is the world’s largest beef producer and Texas is the top cattle producing state. There are an estimated 12 million total cattle in Texas. Of these, about 4.12 million are beef cows and another 4 million calves, heifers, and yearlings live on Texas ranches (USDA, 2024).

The annual sales value of Texas cattle is estimated at $12.3 billion. 1 in every 7 people who work in Texas (14%) is in an agriculture-related job. This includes cattle ranching, along with farming and raising other livestock (Texas Department of Agriculture, 2024).

Beef cattle provide food for people across the globe including steaks, hamburger beef, and ribs, as well as many other cuts of meat. Cattle ranching is a valuable part of the economy in Texas and around the world.

Sustainable Ranching

Sustainable ranching is an important goal for most ranch operators and important in food production overall. Most ranch operators and land stewards want to maintain or improve the health and productivity of their land resources so they can continue to operate and pass land to the next generation. Best management practices promote the health and well-being of cattle AND also enhance the soil, plant life, and wildlife on ranchlands. Examples of these practices include:

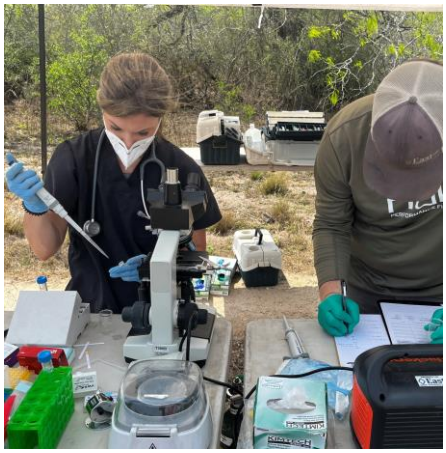
- **Seeking the appropriate balance of grazing animals and land area** for the conditions of the region/ecosystem, **so the land isn't overused or degraded.**
- **Timing cattle grazing to allow plants to recover and grow** so the plants remain healthy and vigorous. This ensures that the resource is renewable. Plants can regrow after the cattle graze and then be used again and again.
- **Balancing the grazing needs of cattle with the weather, soil, and plants** in **the ecosystem** to help improve ecosystem function over time.
- **Using supplemental feeds for grazing animals that help them better utilize the plants available and maintain their health and wellness.** ("Feed" here means food given to cattle, as opposed to food they graze for themselves.) Many of these supplemental feeds are produced from 'wastes' created in human food production. For example, the bran and germ left over when milling wheat into white flour can be used to make cattle feed. This means cattle are effective 'upcyclers' of feeds that are not well-suited for humans.
- **Grazing cattle on lands that are not well suited for growing crops.** Much of the land in the US used for ranching is too dry, too steep, or does not have soils that are well suited to other types of agriculture.
- **Using all resources efficiently**, to minimize waste and ensure long-term productivity.

Photo: East Foundation DSC03632 – ©Knox Kronenberg

Well-managed ranchlands store carbon, preserve soils, and support clean air and water. Since they work closely with the land, many ranchers are on the frontlines of balancing food production with environmental conservation. Sustainability is important to them so future generations can enjoy the same benefits provided by ranching.

East Foundation

Many ranchers and organizations support sustainable ranching practices through research, education, and implementation. These practices seek to continue the production of high-quality products while reducing environmental impacts and sustaining or improving the resources that production relies upon. One organization that supports sustainable ranching practices and environmental conservation in Texas is the East Foundation.



East Foundation Researchers
Photo: East Foundation

The East Foundation manages six separate ranches, totaling 217,000 acres in South Texas. The ranchlands were acquired by the East family over a span of 100 years and were gifted to the foundation by the family in 2007.

The ranchlands remain working cattle ranches where scientists and managers collaborate. Together they address issues that relate to wildlife management, rangeland health, and ranch productivity. (A rangeland is an area of land where the native plants are suitable for livestock grazing.) They work to ensure that sustainable ranching practices and responsible wildlife management are implemented to conserve healthy rangelands, now and into the future (East Foundation, Our Story, 2024).

Ocelot (*Leopardus pardalis*)

An ocelot is a medium-sized, wild cat with beautiful spots. Ocelots are currently found from Northern Argentina up to the southern tip of the United States, in South Texas (Recovering Texas Ocelots, About, n.d.).

Ocelot *Leopardus pardalis*
Photo: Fin & Fur Films Productions

Ocelots thrive in areas with dense vegetation that ranges in height up to 2 meters tall (Sergeyev et al., 2022). 2 meters is about 6.5 feet tall. Ocelots are nocturnal, typically hunting at night. During the day, they sleep in areas where they are hidden and can stay cool such as in bushes, on a tree branch, or in the hollow of a tree. Ocelots rely on this environment so if the vegetation is cut down in an area, they will leave to find a habitat that meets their needs (San Diego Zoo Wildlife Alliance, 2024).

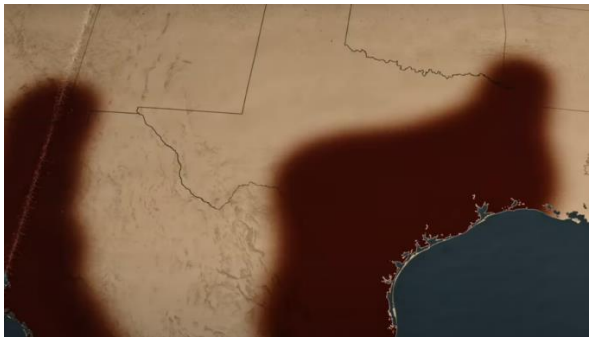
Ocelots are carnivores that hunt small animals such as rodents. They also eat fish, crustaceans, reptiles, and birds.

Ocelot kittens are the most at risk of predation. Kittens may be preyed upon by mountain lions, coyotes, American alligators, birds of prey, feral dogs, feral pigs, and some snakes (US Fish & Wildlife Service, 1990).

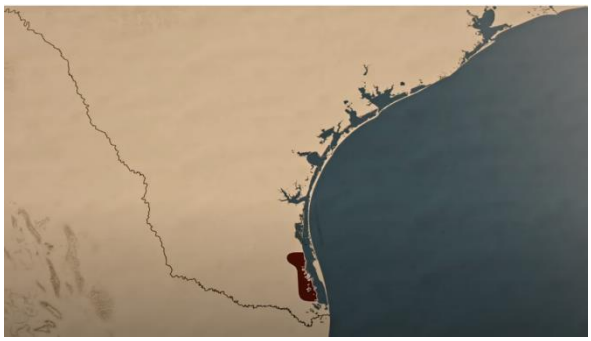
A male ocelot lives in a territory that overlaps with the territories of multiple females. However, other than to mate, the male ocelot is solitary. He marks his territory so other males know to keep out! Female ocelots live on their own or with their kitten(s). A female usually gives birth to one kitten at a time, but she can have up to four. The mother nurses her young. Kittens begin to walk around three weeks old. As the kittens grow, the mother teaches them how to hunt. Kittens can stay with their mother for up to two years before establishing their own territories (San Diego Zoo Wildlife Alliance, 2024).

It is believed that in the United States, ocelots once lived throughout Arizona and Texas and into Louisiana and Arkansas (Recovering Texas Ocelots, Reintroduction, n.d.). However, hunting has negatively impacted their population. Humans have hunted ocelots for their fur, which can be used to make coats and other articles of clothing. In 1972, it became illegal to bring ocelots or their skins into the US and other countries. This law has helped decrease the hunting of ocelots (PBS, 2022).

Habitat loss has negatively impacted the ocelot population in the US and continues to be a threat to ocelots today. As the human population in Texas grew and continues to expand, ocelots' habitat has been modified, greatly reducing the lands suitable for their survival. Their current habitat in the United States has shrunk to just a small area of South Texas. Less than 100 ocelots are estimated to live in the United States, making them a federally endangered species. The largest population of ocelots in the US lives on the El Sauz Ranch (which is part of the East Foundation) and the surrounding areas. From a study conducted from 2020-21, it is estimated that 36 ocelots live in this area (Lombardi et al., 2022).



Historic ocelot range in the United States
Image: Fin & Fur Films Productions



Current ocelot range in the United States
Image: Fin & Fur Films Productions

Ocelots in Texas are inbred and have low amounts of genetic diversity. Scientists are exploring how habitat fragmentation, caused by human-induced changes to the landscape, created small, isolated ocelot populations with reduced gene flow, increased genetic drift, and inbreeding (Janecka et al., 2014). Texas ocelots are vulnerable to the negative impacts of genetic defects, which may be caused by inbreeding and diseases (Recovering Texas Ocelots, About, n.d.).

The small, isolated Texas ocelot population is also vulnerable to changes in environmental conditions. For example, because the ocelot population in South Texas lives in low-elevation coastal areas, a single local catastrophic event, such as

a high-impact tropical storm along the Gulf Coast could severely reduce, or even wipe out the population (Recovering Texas Ocelots, About, n.d.).

Ocelot Research

El Sauz Ranch is part of the East Foundation, and the foundation is working to learn as much as they can about ocelots to make the best possible decisions for their management.

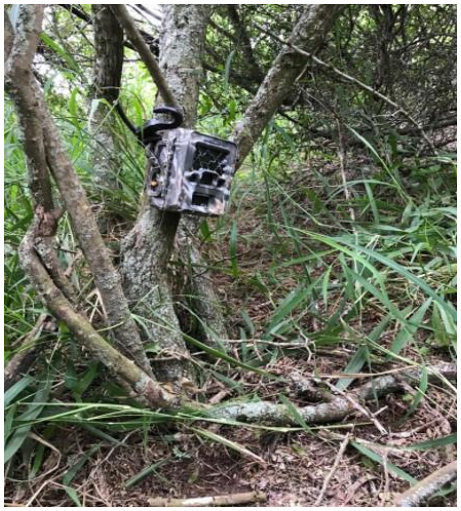
The East Foundation and their research partners collect data on ocelot population size and survival/mortality rates. They also track the movements and activity of ocelots and the prey available in their habitat. This data is collected to learn how ocelots use their habitat and how they compete with other carnivores. The information helps with the creation and implementation of recovery strategies (East Foundation, Ocelot Conservation, 2024).

The East Foundation, along with collaborating partners, have developed methods to collect genetics from wild ocelots to artificially inseminate ocelots in zoos, resulting in genetically diverse offspring that can be released into the wild.

The partners are now exploring the feasibility of reintroducing ocelots to a part of their historical range in Texas that is different from where ocelots are known to live today (Recovering Texas Ocelots, Reintroduction, n.d.).

To implement these research projects, tools used include:

- Live trapping
- Tracking collars
- Camera traps (These cameras are triggered by motion and are used to capture pictures of wildlife.)
- Small mammal prey monitoring
- Scat (dung) collection and analysis



A Camera Trap
Photo: East Foundation

In Texas, “the recovery of the ocelot population largely depends on private landowners and the stewardship of their lands. East Foundation is committed to producing reliable research aimed at making this a reality” (East Foundation, Ocelot Conservation, 2024).

STEM Careers

Two STEM professionals who work with the East Foundation are highlighted in this video.

- Dr. Ashley Reeves, DVM, PhD - Research Veterinarian, East Foundation

  As a research veterinarian, Ashley is currently exploring the use of assisted reproductive techniques (ART) in free-ranging ocelots and bobcats. She also monitors the health of wildlife on several Texas ranches.

Her long-term goals include using her DVM (Doctor of Veterinary Medicine) and PhD degrees to pursue a career in wildlife species reproduction and medicine to conserve and manage endangered species.

Dr. Ashley Reeves's education includes the following degrees:

- Bachelor of Science (BS) in Biology from Mississippi State University
- Doctor of Veterinary Medicine (DVM) from the University of Tennessee
- Doctor of Philosophy (PhD) in Wild Felid Reproduction from the University of Tennessee, where she worked in collaboration with the Caesar Kleberg Wildlife Research Institute at Texas A&M University-Kingsville and the Center for Conservation and Research of Endangered Wildlife (CREW) at the Cincinnati Zoo

- Dr. Jason Sawyer, PhD - Chief Science Officer, East Foundation

Jason leads the science mission of the East Foundation. He and his team integrate research programs within the ongoing ranching operations. The goal is to develop translatable knowledge and innovative solutions for stewards of working lands.

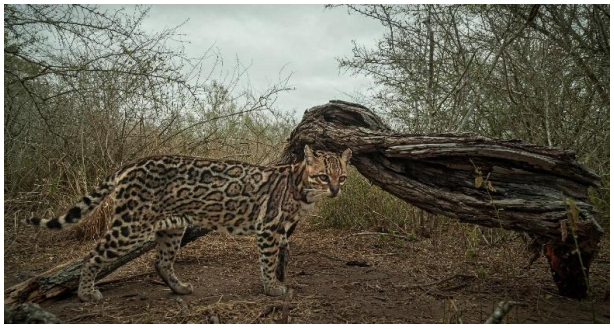
Jason has over 20 years of experience in applied research and management. This includes experience teaching, researching, and managing. He is most interested in developing strategies to enhance the sustainability of beef production, applying nutrition strategies, and establishing ways to measure the sustainability of beef production.

Dr. Jason Sawyer's education includes the following degrees:

- Bachelor of Science (BS) in Rangeland Ecology and Ranch Management from Texas A&M University
- Master of Science (MS) and Doctor of Philosophy (PhD) in Range Nutrition and Beef Cattle Management from New Mexico State University

Take Action

- To learn more about ocelots, visit Recovering Texas Ocelots.
- To learn more about the East Foundation's work, visit their website: East Foundation.
- Share what you learn with others!



Ocelot *Leopardus pardalis*
Photo: Fin & Fur Films Productions

Discussion Questions

South Texas

1. What did you notice about the environment shown in this video? List at least five characteristics of the environment.
2. In what Texas region was this video filmed? (Mountains and Basins, Great Plains, North Central Plains, or Coastal Plains)
3. How is this area of Texas similar to where you live? Or different? List at least five similarities OR five differences.

Ocelots

4. Diagram the levels of organization within the ecosystem shown in the video. Sketch one ocelot and then sketch its population, community, and ecosystem. Label your diagram.
5. Draw a food web or energy pyramid that includes an ocelot.
6. What factors caused ocelots' range in the United States to shrink?
7. What other organisms have been impacted by the reduction of the ocelot population in the United States? Hint: Refer to your responses to #4 and #5.
8. How have people's attitudes toward ocelots changed over time?
9. Why are the East Foundation and its partners working on artificial insemination techniques for ocelots?
10. What questions do you have about ocelots and the ocelot population in the United States? List at least three questions.

Ranching

11. In what ways do well-managed ranchlands benefit wildlife?
12. How do well-managed ranchlands benefit people?
13. What questions do you have about ranching after watching this video? List at least three questions.

What do you think?

14. Do you think conserving, protecting, and working to expand the ocelot population in South Texas should be a priority? Why or why not?
15. Other than the strategies the East Foundation is already implementing, what else could be done to support the ocelot population in South Texas?
16. In the video, Dr. Jason Sawyer says, "The closer that we live to the land, the more we tend to appreciate the diversity of life that surrounds us."
    a. What does this quote mean to you?
    b. Have you had an experience that caused you to appreciate the variety of other species we (humans) share this planet with? Explain.
17. Dr. Jason Sawyer also says, "In today's world, speed is valued. There's a lot of pressure to be in a hurry. Or we can take our time. We're willing to allow several days, sometimes even weeks to cover a 10,000-acre pasture."
    a. What are some benefits of taking your time?
    b. Have you had an experience when rushing caused problems? Or when going slower made things better? Explain.

STEM Careers

18. When you think about what you could do in your future career, would you like to work with animals? Why or why not?

Name _____

Ranching with Ocelots
Discussion Question Responses

Directions: After watching the film, *Ranching with Ocelots*, answer the discussion questions. For each question, first write the number of the question and then write your answer.

Answer Key - Discussion Questions

South Texas

1. Students will list characteristics of the environment they observed in the video.
2. This video takes place in the Coastal Plains region of Texas.
3. Students will list at least five ways the environment they observed in the video is similar and/or different from the environment where they live.

Ocelots

4. Students will sketch a diagram that shows the levels of organization within the ecosystem shown in the video:
    - organism = ocelot
    - population = the ocelots living in South Texas
    - community = populations of other species that share the ocelots' habitat and interact
    - ecosystem = the community plus the abiotic components the organisms interact with
5. Students will draw a food web or energy pyramid that includes an ocelot, the Sun, and organisms from the video and background reading. A few examples include grasses, shrubs, berries, trees, acorns, mice, reptiles, birds, snakes, cattle, birds of prey, feral dogs, feral pigs, mountain lions, and humans.
6. Two factors that caused ocelots' range in the United States to shrink are:
    - Ocelots have been hunted and trapped for their fur which can be used to make coats and other articles of clothing.
    - As the human population in Texas has grown, the open spaces that ocelots require have diminished.
7. Students will refer to the diagrams they drew in #4 and #5 above to identify other organisms impacted by the reduction of the ocelot population in the United States.
8. In the past, it was more common to hunt ocelots for their fur. Also, the habitat ocelots require was often not considered as humans developed land for farms, housing, and roads. Today, many people are working to conserve the land ocelots need to thrive. Since 1972 it has been illegal to bring ocelots or their skins into the US and other countries. This law has helped decrease the number of ocelots hunted.
9. Since the ocelot population in South Texas is so small, the East Foundation is exploring how they can help ocelots more successfully reproduce and increase genetic diversity through artificial insemination.
10. Students will list at least three questions they have about ocelots and the ocelot population in the United States.

Ranching

11. A few ways well-managed ranchlands benefit wildlife include:
    - Ranches are made up of large expanses of land where cattle graze. Other animals can live in this environment as well. For example, in South Texas, ranches provide the large areas of land that ocelots need.
    - As cattle walk on the landscape, their hooves create micro-disturbances in the soil where other animals can hide seeds and find seeds. These micro-disturbances help water sink into the soil which supports the growth of plants.

- Ranchers often work with scientists to manage and study the plants and animals on the land.

12. A few ways well-managed ranchlands benefit people include:
    - Ranching produces meat for people to eat.
    - Ranching provides jobs. Various roles are needed to run an efficient and effective ranch.
    - Well-managed ranchlands store carbon, preserve soils, and support clean air and water.
13. Students will list at least three questions they have about ranching.

What do you think?

14. Students will explain whether or not they think conserving, protecting, and working to expand the ocelot population in South Texas should be a priority.
15. Students will describe additional strategies that could be implemented to support the ocelot population in South Texas.
16. Students will describe what the following quote means to them. “The closer that we live to the land, the more we tend to appreciate the diversity of life that surrounds us.” -Dr. Jason Sawyer, East Foundation
17. Students will reflect on the following quote. “In today’s world, speed is valued. There’s a lot of pressure to be in a hurry. Or we can take our time. We’re willing to allow several days, sometimes even weeks to cover a 10,000-acre pasture.” -Dr. Jason Sawyer, East Foundation

STEM Careers

18. Students will explain whether or not they’d like to work with animals in their future careers.

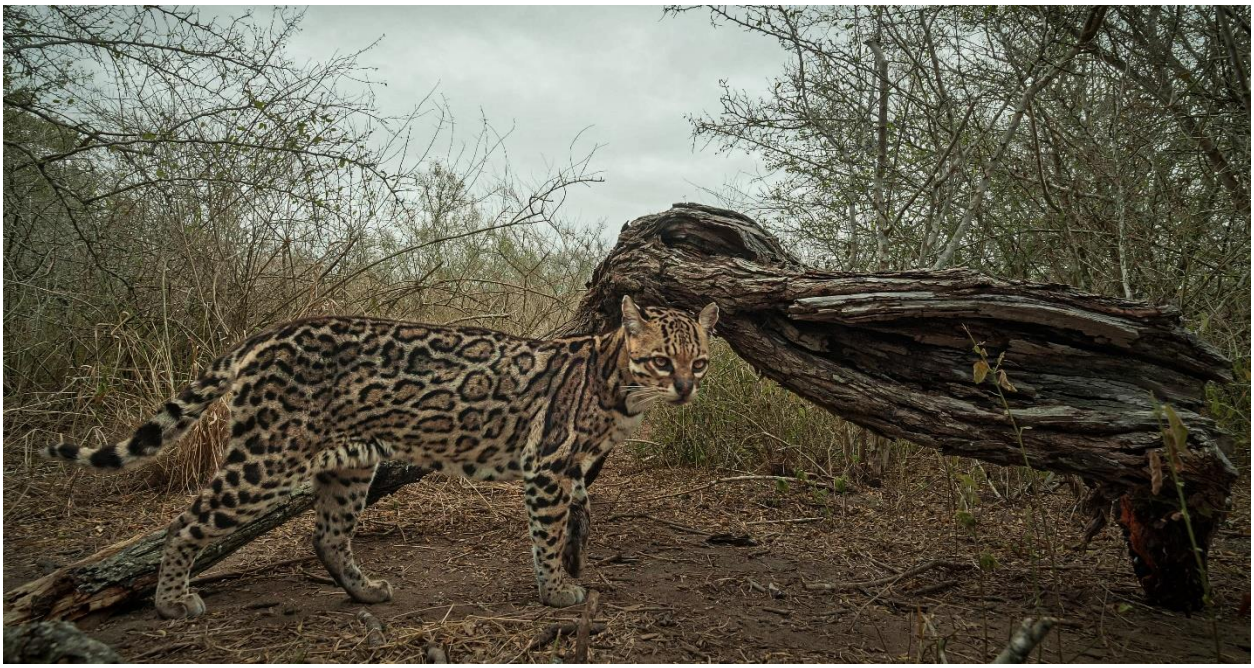
Ranching with Ocelots

Spanish Resources

Acerca de este recurso

Se cree que una vez vivieron ocelotes en todo Arizona y Texas y hasta Luisiana y Arkansas. En los Estados Unidos, su población se ha reducido a menos de 100 ocelotes todavía viviendo en la naturaleza. Esta población que aún existe vive en el sur de Texas, y depende de los rancheros que están conservando la tierra que los ocelotes necesitan para sobrevivir, al mismo tiempo que apoyan ranchos ganaderos económicamente viables.

Mira el video *La ganadería con ocelotes* y lee este recurso que lo acompaña para conocer al ocelote, un gato salvaje de tamaño mediano con bellas manchas, explorar el terreno del sur de Texas donde vive, y aprender como las prácticas ganaderas sostenibles apoyan a los ocelotes y a otras especies nativas.



Ocelote *Leopardus pardalis*
Foto: "Fin & Fur Films Productions"

Vocabulario académico

De: lead4ward Academic Vocab https://lead4ward.com/resources/

6º Grado Ciencias	7º Grado Ciencias	8º Grado Ciencias
• conservación • comunidad • ecosistema • organismo • población • especie	• animal doméstico • ecorregión • ecosistema • pirámide de energía • medio ambiente • cambio medioambiental • flujo de energía • cadena alimenticia • red alimenticia • variación genética • hábitat • organismo • especie • sostenibilidad • nivel trófico	• carnívoro • animal doméstico • ecosistema • pirámide de energía • medio ambiente • cambio medioambiental • flujo de energía • cadena alimenticia • red alimenticia • variación genética • hábitat • herbívoro • organismo • población • relación depredador-presa • especie

Biología	7º Grado Estudios Sociales
• carnívoro • competencia por recursos • consumidor • ecosistema • pirámide enérgica • cambio medioambiental • flujo de energía • cadena alimenticia • red alimenticia • variedad genética • hábitat • herbívoro • impacto • organismo • población • depredador • presa • especie	• Industria ganadera • consecuencias • medio ambiente • frontera • factores humanos • modificó el medioambiente • modificaciones • modificar • consecuencias negativas • características físicas • consecuencias positivas • ganadería • regiones

Lectura de fondo

Sur de Texas

Este video destaca los hábitats en el sur de Texas que abarcan ambas la ecorregión de las Planicies del Sur de Texas y la de las Marismas y Praderas del Golfo. Estas ecorregiones forman parte de la región física llamada las Llanuras Costeras de Texas. Esta área del estado experimenta temperaturas promedio cálidas y sequías recurrentes. Los veranos son calurosos y húmedos. Los inviernos son generalmente suaves, aunque las temperaturas pueden descender a niveles helados.

La ganadería en Texas

Foto: "East Foundation" 882A9552 – ©Emily McCartney

Un rancho es una extensión de tierra usada principalmente para criar ganado como ovejas, vacas y cabras. La historia de la ganadería en Texas empezó hace más de 450 años. En 1493, cuando Cristóbol Colón realizó su segundo viaje a Norteamérica, trajo consigo ganado español a Santo Domingo. (Hoy en día, Santo Domingo es la capital de la República Dominicana.) Luego, en la década de 1520, la progenie (los descendientes) de este ganado se llevó a México, y para la década de 1540, había llegado a Texas (Dobie, 1941).

Durante los siglos 16 y 17 (los años 1500 y 1600), la ganadería desarrollaba y se extendía al norte por México español y hasta la tierra que ahora es Texas. A medida que se concedían parcelas de tierra a particulares, descubrieron que el ganado salvaje era abundante en muchas áreas. La ganadería, el uso intencionado de tierra y ganado para producir alimentos y otros productos, desarrollaba por el uso combinado de los recursos disponibles en el área - tierra y ganado.

Los vaqueros eran los encargados a cuidar el ganado en esos primeros ranchos. Ellos atendieron el ganado, a menudo a caballo. Una gran parte del equipo y de las prácticas de la tradición ganadera vaquera todavía se usa en los ranchos en toda parte de Texas hoy. "Lassos" (una palabra derivada de la palabra en español "lazo", que significa "cuerda") y chaparreras (llamadas en inglés "chaps") son dos elementos del equipo ganadero que desarrollaron a partir de la cultura vaquera (Gandhi, 2023).

En la actualidad, Estados Unidos es el mayor productor mundial de carne de vacuno, y Texas es el mayor estado productor de ganado. Se estima que hay 12 millones de cabezas de ganado en Texas en total. Aproximadamente 4.12 millones de ellas son vacas de carne, y otros 4 millones son terneros, novillas y añojos que viven en los ranchos de Texas (USDA, 2024).

El valor anual de las ventas de ganado en Texas se estima en 12.300 millones de dólares. 1 de cada 7 personas trabajando en Texas (14%) tiene un empleo relacionado con la agricultura. Este incluye la ganadería, junto con la cría de cultivos y de otros tipos de ganado (Texas Department of Agriculture, 2024).

El ganado vacuno proporciona alimento a gente de todo el mundo, incluso bistec, hamburguesa de ternera y costillas, así como muchos otros cortes de carne. La ganadería es una parte valiosa de la economía en Texas y en todo el mundo.

Ganadería sostenible

La ganadería sostenible es un objetivo importante para la mayoría de los ganaderos, y es importante para la producción de alimentos en general. La mayoría de los ganaderos y administradores de tierra quiere mantener o mejorar la salud y productividad de sus recursos de la tierra, para que puedan seguir operando y legar la tierra a la siguiente generación. Las mejores prácticas de gestión promueven la salud y el bienestar del ganado Y también mejoran el suelo, la flora, y la fauna salvaje en los ranchos. Ejemplos de estas prácticas incluyen:

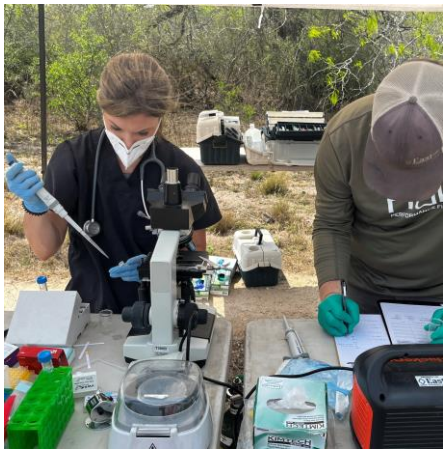
- **Buscar el equilibrio adecuado entre animales de pastoreo y superficie terrestre** de acuerdo con las condiciones de la región/ecosistema, **para no sobreexplotar ni degradar la tierra.**
- **Sincronizar el pastoreo del ganado para permitir que se recuperen y crezcan las plantas,** para que las plantas permanezcan sanas y vigorosas. Esto asegura que el recurso sea renovable. Las plantas pueden seguir creciendo después del pastoreo del ganado, y luego pueden ser usadas una y otra vez.
- **Equilibrar las necesidades de pastoreo del ganado con el clima, el suelo y las plantas del ecosistema** para mejorar la función del ecosistema con el paso del tiempo.
- **Usar alimentos suplementarios para los animales de pastoreo para ayudarles a utilizar mejor las plantas disponibles y mantener su salud y bienestar.** ("Alimentos" en este contexto significa comida dada al ganado, a diferencia de la comida que pastan ellos.) Muchos de estos alimentos suplementarios se producen de "residuos" creados durante la producción de alimentos humanos. Por ejemplo, el salvado y el germen que quedan al moler el trigo para obtener harina blanca se pueden utilizar para preparar alimento para el ganado. Esto significa que el ganado es un eficaz "reciclador" de alimentos que no son adecuados para los humanos.
- **Pastorear ganado en tierras que no son adecuadas para el cultivo.** La gran parte de la tierra en EE.UU. usada para la ganadería es demasiado seca, empinada, o no tiene suelo adecuado para otros tipos de agricultura.
- **Usar todos los recursos de manera eficiente** para minimizar el desperdicio de ellos y garantizar su productividad a largo plazo.

Foto: "East Foundation" DSC03632 – ©Knox Kronenberg

Los ranchos bien gestionados almacenan carbono, preservan suelos, y apoyan aire y agua limpios. Dado que trabajan en estrecha relación con la tierra, muchos ganaderos están en primera línea para equilibrar la producción de alimentos con la conservación del medio ambiente. La sostenibilidad les importa mucho, para que las generaciones futuras puedan disfrutar de los mismos beneficios que proporciona la ganadería.

“East Foundation”

Muchos ganaderos y organizaciones apoyan las prácticas ganaderas sostenibles mediante la investigación, la educación y la implementación. Estas prácticas pretenden seguir fabricando productos de alta calidad al mismo tiempo que se reduce el impacto ambiental y se mantienen o mejoran los recursos de los que depende la producción. Una organización que apoya las prácticas ganaderas sostenibles y la conservación medioambiental en Texas es la “East Foundation.”



Investigadores de la "East Foundation" Foto: “East Foundation”

La “East Foundation” gestiona seis ranchos distintos, con un total de 217,000 acres en el sur de Texas. Las tierras del rancho fueron adquiridas por la familia East durante un periodo de 100 años y fueron donadas a la fundación por la familia en 2007.

Las tierras siguen siendo ranchos ganaderos en funcionamiento donde colaboran los científicos y gerentes. Juntos abordan temas relacionados con la gestión de la fauna salvaje, la salud de los pastizales, y la productividad del rancho. (Un pastizal es un área en que las plantas nativas son adecuadas para el pastoreo del ganado.) Ellos trabajan para asegurar que se implementen las prácticas ganaderas sostenibles y la gestión de fauna salvaje responsable para conservar los pastizales saludables, ahora y en el futuro (East Foundation, Our Story, 2024).

Ocelote (*Leopardus pardalis*)

El ocelote es un felino salvaje de mediano tamaño con hermosas manchas. Los ocelotes se encuentran actualmente en el norte de Argentina hasta el extremo sur de los Estados Unidos, en el sur de Texas (Recovering Texas Ocelots, About, n.d.).

Ocelote *Leopardus pardalis*
Foto: “Fin & Fur Films Productions”

Los ocelotes prosperan en áreas con vegetación densa de altura variable hasta 2 metros (Sergeyev et al., 2022). 2 metros es igual a aproximadamente 6.5 pies de alto. Son nocturnos, usualmente cazando de noche. Durante el día, ellos duermen en áreas donde pueden esconderse y mantenerse frescos, como en los arbustos, en una rama de árbol, o en el hueco de un árbol. Los ocelotes dependen de este medio ambiente para que, si se tale la vegetación en una zona, pueden salir a encontrar otro hábitat que satisfaga sus necesidades (San Diego Zoo Wildlife Alliance, 2024).

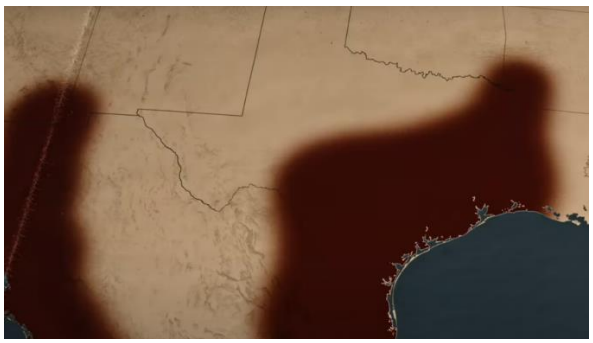
Los ocelotes son carnívoros que cazan pequeños animales como roedores. También se alimentan de peces, crustáceos, reptiles, y aves. Los gatitos de ocelote son los que corren mayor riesgo de ser depredados. Los gatitos pueden ser presa de

pumas, coyotes, caimanes americanos, aves rapaces, perros salvajes, cerdos salvajes y algunas serpientes (US Fish & Wildlife Service, 1990).

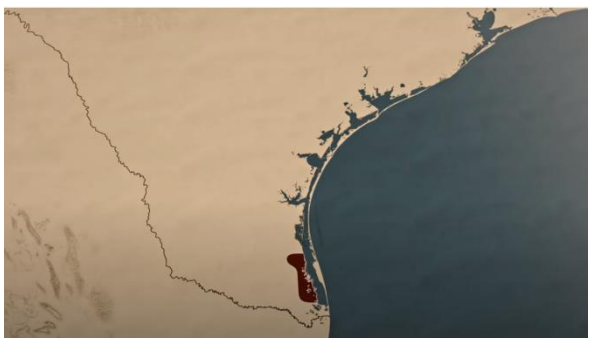
Un ocelote macho vive en un territorio que se superpone con el de varias hembras. Sin embargo, salvo para aparearse, el ocelote macho es solitario. Marca su territorio para que otros machos sepan que deben mantenerse ¡alejados! Las hembras de ocelote viven solas o con sus crías. La hembra usualmente pare de una cría a la vez, pero puede dar a luz a hasta cuatro gatitos. La hembra amamanta a sus crías. Las crías comienzan a caminar después de tres semanas. Mientras se hacen más grandes, su mamá les enseña como cazar. Los gatitos se quedarán junto a su madre durante hasta dos años antes de establecer sus propios territorios (San Diego Zoo Wildlife Alliance, 2024).

Se cree que los ocelotes en Estados Unidos una vez vivieron en todo Arizona y Texas y hasta Luisiana y Arkansas (Recovering Texas Ocelots, Reintroduction, n.d.). Sin embargo, la caza ha afectado negativamente a su población. Los humanos han cazado ocelotes por su piel, que puede usarse para hacer abrigos y otras prendas de vestir. En 1972, se volvió ilegal traer ocelotes o sus pieles a los EE.UU. y otros países. Esta ley ha ayudado a reducir la caza de ocelotes (PBS, 2022).

La pérdida de su hábitat ha impactado negativamente a la población de ocelotes en los EE.UU. y continúa representando una amenaza para los ocelotes en la actualidad. Cuando aumentó la población humana en Texas, y sigue aumentando, el hábitat del ocelote ha sido modificado, reduciendo en gran medida la tierra adecuada para su sobrevivencia. Su hábitat actual en los Estados Unidos se ha reducido a un área pequeña en el sur de Texas. Se estima que menos de 100 ocelotes viven en los Estados Unidos, haciéndolos una especie en peligro de extinción a nivel federal. La mayor población de ocelotes en los EE.UU. vive en el Rancho Sauz (el cual es parte de la “East Foundation”) y en las zonas circundantes. De un estudio realizado de 2020-21, se calcula que 36 ocelotes viven en esta zona (Lombardi et al., 2022).



Área de distribución histórica del ocelote en Estados Unidos Imagen: “Fin & Fur Films Productions”



Área de distribución actual del ocelote en Estados Unidos Imagen: “Fin & Fur Films Productions”

Los ocelotes en Texas son endogámicos y tienen poca diversidad genética. Unos científicos están estudiando cómo la fragmentación del hábitat, causada por cambios en el paisaje inducidos por los humanos, creó pequeñas poblaciones

aisladas de ocelotes con un flujo genético reducido, aumento de la deriva genética, y endogamia (Janecka et al., 2014). Los ocelotes en Texas son vulnerables a los impactos negativos de los defectos genéticos, que pueden ser causados por la endogamia y las enfermedades (Recovering Texas Ocelots, About, n.d.).

La pequeña población aislada de ocelotes en Texas también es vulnerable a los cambios en las condiciones ambientales. Por ejemplo, a causa de que la población de ocelotes en el sur de Texas vive en las zonas costeras de baja elevación, un solo evento catastrófico local, como una tormenta tropical de alto impacto a lo largo de la Costa del Golfo, podría reducir severamente, o hasta acabar con la población (Recovering Texas Ocelots, About, n.d.).

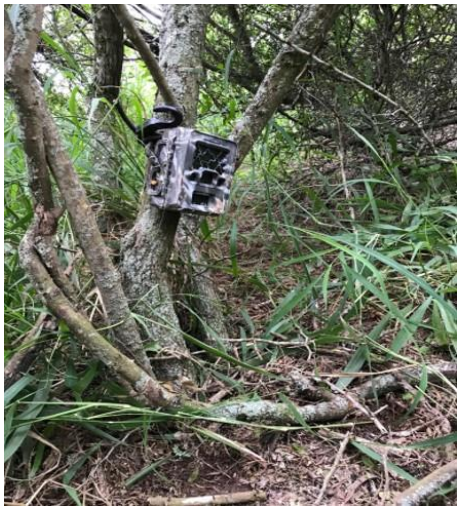
Investigación de ocelote

El Rancho Sauz forma parte de la "East Foundation", y la fundación está tratando de aprender todo lo posible sobre los ocelotes para poder tomar las mejores decisiones posibles para su gestión.

La "East Foundation" y sus socios de investigación recopilan datos sobre el tamaño de la población de ocelotes y sus índices de supervivencia/mortalidad. Además, rastrean los movimientos y la actividad de los ocelotes y las presas disponibles en su hábitat. Estos datos se recopilan para aprender cómo los ocelotes usan su hábitat y cómo ellos compiten con los otros carnívoros. La información ayuda con la creación e implementación de estrategias de recuperación (East Foundation, Ocelot Conservation, 2024).

La "East Foundation", junto con sus socios colaboradores, han desarrollado métodos para recolectar genética de ocelotes salvajes para inseminar artificialmente ocelotes en zoológicos, lo que da como resultado una descendencia genéticamente diversa que puede ser liberada en la naturaleza.

Los socios ahora están explorando la viabilidad de reintroducir ocelotes en una parte de su área de distribución histórica en Texas que es diferente de donde se sabe que viven los ocelotes actualmente (Recovering Texas Ocelots, Reintroduction, n.d.).



Una trampa cámara
Foto: "East Foundation"

Para implementar estos proyectos de investigación, las herramientas utilizadas incluyen:

- Captura viva
- Collares de rastreo
- Trampas de cámara (Estas cámaras se activan con el movimiento y se utilizan para capturar imágenes de la vida silvestre.)
- Monitoreo de pequeños mamíferos presas
- Recogida y análisis del estiércol (excrementos)

En Texas, “la recuperación de la población de ocelotes depende en gran medida de los propietarios privados y de la administración de sus tierras. La ‘East Foundation’ se compromete a producir investigaciones confiables destinadas a hacer esto una realidad” (East Foundation, Ocelot Conservation, 2024).

Carreras STEM
Dos profesionales STEM que trabajan con la “East Foundation” se destacan en este video.

- Dr. Ashley Reeves, DVM, PhD - Veterinaria de investigación, East Foundation

  Como veterinaria de investigación, Ashley está actualmente estudiando el uso de técnicas de reproducción asistida (ART) con los ocelotes y linces en libertad. Ella también monitorea la salud de la fauna salvaje en algunos ranchos tejanos.

  Sus metas a largo plaza incluyen usar su DVM (Doctorado de Medicina Veterinaria) y su PhD (Doctorado de Filosofía) para seguir una carrera en reproducción y medicina de especies silvestres para conservar y gestionar especies en peligro de extinción.

  La educación de la Dra. Ashley Reeves incluye los siguientes títulos:
  - Licenciatura (BS) en Biología de Mississippi State University
  - Doctorado de Medicina Veterinaria (DVM) de la Universidad de Tennessee
  - Doctorado de Filosofía (PhD) en Reproducción de Felinos Salvajes de la Universidad de Tennessee, donde ella trabajaba en colaboración con el Instituto de Investigación de Fauna Salvaje Caesar Kleberg en Texas A&M University-Kingsville y el Centro para la Conservación e Investigación de Fauna Salvaje en Peligro de Extinción (CREW) en el zoológico de Cincinnati

- Dr. Jason Sawyer, PhD - Director científico, East Foundation

  Jason lidera la misión científica de la “East Foundation”. Él y su equipo integran los programas de investigación con las operaciones continuas del rancho. El objetivo es de desarrollar conocimientos traducibles y soluciones innovadoras para los administradores de las tierras de labor.

  Jason tiene más de 20 años de experiencia en la investigación aplicada y la gestión. Esta experiencia incluye enseñanza, investigación, y gestión. Él está principalmente interesado en el desarrollo de estrategias para mejorar la sostenibilidad de la producción de carne, la aplicación de estrategias nutritivas, y el establecimiento de buenas maneras de medir la sostenibilidad de la producción de carne.

Continúa en la siguiente página.

La educación del Dr. Jason Sawyer incluye los siguientes títulos:
    - Licenciatura (BS) en la Ecología de Pastizales y Gestión de Ranchos de Texas A&M University
    - Maestría (MS) y Doctorado de Filosofía (PhD) en Nutrición de Pasto y Manejo del Ganado Vacuno de New Mexico State University

Tomar medidas

- Para aprender más sobre los ocelotes, visita "Recovering Texas Ocelots."
- Para aprender más sobre el trabajo de la "East Foundation", visita su sitio web: "East Foundation"
- ¡Comparte lo que aprendes con los demás!

Preguntas de discusión

Sur de Texas

1. ¿Qué notaste sobre el medio ambiente mostrado en este video? Enumera al menos cinco características del medio ambiente.
2. ¿En cuál región de Texas se filmó el video? (la Cuenca y la Cordillera, las Grandes Llanuras, las Tierras Bajas Interiores, o las Llanuras Costeras del Golfo)
3. ¿En qué se parece esta zona de Texas a su lugar de residencia? ¿O en qué se diferencia? Enumera al menos cinco similitudes O cinco diferencias.

Ocelotes

4. Diagrama los niveles de organización dentro del ecosistema mostrada en el video. Bosqueja un ocelote y luego bosqueja su población, su comunidad, y su ecosistema. Etiqueta tu diagrama.
5. Dibuja una red alimenticia o una pirámide de energía que incluya un ocelote.
6. ¿Qué factores causaron que se redujera el área de distribución de los ocelotes en los Estados Unidos?
7. ¿Cuáles otros organismos han sido impactados por la disminución de la población de ocelotes en los Estados Unidos? Pista: Consulta tus respuestas a #4 y #5.
8. ¿Cómo ha cambiado la actitud de la gente hacia los ocelotes con el tiempo?
9. ¿Por qué la "East Foundation" y sus socios están desarrollando técnicas de la inseminación artificial para ocelotes?
10. ¿Qué preguntas tienes sobre los ocelotes y su población en los Estados Unidos? Enumera al menos tres preguntas.

La ganadería

11. ¿De qué manera los ranchos bien administrados benefician a la vida silvestre?
12. ¿De qué manera los ranchos bien administrados benefician a la gente?
13. ¿Qué preguntas tienes sobre la ganadería después de ver este video? Enumera al menos tres preguntas.

¿Qué piensas?

14. ¿Crees que conservar, proteger y trabajar para expandir la población de ocelote en el sur de Texas debería ser una prioridad? ¿Por qué o por qué no?
15. Aparte de las estrategias que la "East Foundation" ya está implementando, ¿qué más se debería hacer para apoyar la población de ocelote en el sur de Texas?
16. En el video, el Dr. Jason Sawyer dice, "Cuanto más cerca de la tierra vivimos, más tendemos a apreciar la diversidad de la vida que nos rodea."
    a. ¿Qué significa para ti esta cita?
    b. ¿Has tenido alguna experiencia que te haya hecho apreciar la variedad de otras especies con las que nosotros (los humanos) compartimos este planeta? Explica.
17. Dr. Jason Sawyer también dice, "En el mundo de hoy, se valora la velocidad. Hay mucha presión para tener prisa. O podemos tomarnos nuestro tiempo. En lugar de intentar cubrir pastos de 10,000-acres en unas pocas horas, estamos dispuestos en conceder varios días, a veces hasta semanas."
    a. ¿Cuáles son algunos de los beneficios de tomarte tu tiempo?
    b. ¿Has tenido alguna experiencia en la que las prisas te causaron problemas? ¿O cuando ir más lento mejoraba las cosas? Explica.

Continúa en la siguiente página.

Carreras STEM

18. Cuando piensas en lo que podrías hacer en tu futura carrera, ¿te gustaría trabajar con animales? ¿Por qué o por qué no?

Nombre _____

La ganadería con ocelotes
Respuestas a las preguntas de discusión

Instrucciones: Después de mirar el video, *La ganadería con ocelotes*, contesta las preguntas de discusión. Para cada pregunta, primero escribe el número de la pregunta y luego escribe tu respuesta.

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