

"A HOME IN THE BRUSH"

Classroom Activity About The OCELOT AND ITS HABITAT



This classroom activity for grades three to six is best used after students have already become familiar with the Ocelot's natural history (see other activities).

HABITAT is defined as the locality in which a plant or animal lives. In other words, it is the arrangement of food, water, shelter or cover, and space suitable to a species needs. Examples of what's included are places to find food throughout the year, places to rest and hide from predators, and places to find a mate and raise young.

WHAT IS YOUR PERSONAL HABITAT? Ask students to define their own personal habitat by identifying what they need to live from day to day. This includes a home, clean water to drink, place to buy food, school, places for entertainment, and medical and dental offices. (The teacher may want to help students draw boundaries of a few habitats on a city or county map).

DISTRIBUTION RANGE is defined as the geographic area in which all members of a species and their habitat are found. The amount of space is highly variable from a few inches (in the case of a bacterium) to most of the land on the planet (the human being).

WHAT IS THE DISTRIBUTION RANGE FOR YOUR SPECIES? All people belong to the species *Homo sapiens* (our scientific name). How many individuals of your species are there in the world? (5.5 billion is the estimated world population). Even though people are often of different sizes and colors, we all belong to the same species. What is the distribution range of your species? Look at a world map and identify where the human species lives. In what areas don't humans live?

An **ENDANGERED SPECIES**, is an animal or plant that is in danger of becoming extinct. The loss of its habitat (living space) is often the reason why there aren't many individuals left.

The **OCELOT** has the scientific name *Felis pardalis*. The Texas population is estimated to be only about 80 to 120 cats. (Write and compare the numbers of humans and Ocelots on the chalk board.) The Ocelot's habitat (where it lives) is **DENSE MIXED BRUSH**. The Ocelot was once found throughout south Texas, the southern Edwards Plateau, and along the Coastal Plain. This was its **HISTORIC DISTRIBUTION RANGE** in Texas, or where it used to be found. Ocelots are also found in Mexico. Today, Ocelots are found in Texas only in the South Texas Brush Country (See diagram of historic and present ranges). Using the diagram, have a student go to the large

classroom world and state maps and outline to the class the Ocelot's historic and present ranges in Texas. How does its present distribution range compare to that of the human species?

Within the South Texas Brush Country region, what are the Ocelot's **HABITAT NEEDS**? Based on what you already know about the life history of the Ocelot, what specifically does this endangered species need to survive? Ask students to make a list. The list should include: dense brush in which to hide and prepare a den for their kittens, places to hunt where small mammals are available, and native brush country free from human disturbance.

LOSS OF HABITAT is the most severe threat to the survival of the Ocelot. What are some of the reasons habitat is gone? Ask students to think about what kinds of human activities alter natural areas. The following are the most important threats for this species. **LOSS OF NATIVE RANGELAND HABITAT** due to land clearing for production of vegetables, citrus, sugarcane, cotton and other crops.

URBANIZATION, or the growth of towns and cities, has replaced habitat with buildings and roads. A very important problem for the Ocelot, and for most Texas endangered species, is **LACK OF AWARENESS** about their natural history and habitat needs. Many people have never heard of the Ocelot.

PROBLEM SOLVING ACTIVITY

(This exercise should be done after students have become familiar with the Ocelot by completing other activities.)

Instructions to the Students: Now that you have completed several activities in this unit you are now ready to be an **OCELOT BIOLOGIST**. You understand a great deal about the natural history of these cats and what they need to survive. As a biologist, you must now **MAKE RECOMMENDATIONS** to city, county, state, and federal officials about how to save this endangered species. Let's do an exercise to come up with some ideas.

Instructions to the Teacher: Break the class into groups and instruct them to spend fifteen minutes **BRAINSTORMING** ideas about how to help the Ocelot. Appoint a recorder for each group to list the five best ideas the group has. When time is up, reassemble the class and share ideas. As the teacher, you may want to lead the student's suggestions toward the following management practices that are being used today to keep the Ocelot from disappearing from Texas.

PROTECT EXISTING HABITAT

So much of the Ocelot's habitat has been lost that each remaining area is very important to the survival of the species. A large area of important habitat is protected within the Laguna Atascosa National Wildlife Refuge near Rio Hondo. About 30 to 35 Ocelots live in the chaparral remaining at or near the refuge. Other areas with Ocelot habitat include the Santa Ana National Wildlife Refuge near Alamo, Bentsen-Rio Grande Valley

State Park near Mission, Las Palomas Wildlife Management Area near Edinburg, and Audubon's Sabal Palm Grove Sanctuary near Brownsville.

HABITAT MANAGEMENT AND RESTORATION--WORKING WITH FEDERAL, STATE, AND PRIVATE LANDOWNERS

Some Texas landowners are doing a good job of protecting Ocelot habitat. Recently, Texas Parks and Wildlife Department, The Nature Conservancy of Texas, and local landowners have joined in a cooperative effort to restore habitat for the Ocelot, Jaguarundi, migratory songbirds, and other rare species in the Lower Rio Grande Valley. The project involves planting trees, shrubs and other native plants to create new habitat. The new habitats will create corridors that connect areas of existing habitat. The brush corridors will help Ocelots travel more easily between scattered areas of dense brush.

RESEARCH PROGRAMS

Biologists are studying Ocelots to learn more about how they reproduce and raise their young, and how they move within and between habitats. Since Ocelots are so difficult to observe in the wild, biologists attach to the cats special collars that emit sounds. These sounds can be heard with special instruments. By following these sounds, biologists can track the movements of Ocelots wearing these collars. Biologists also use night vision cameras to take pictures of Ocelots moving around in the dark.

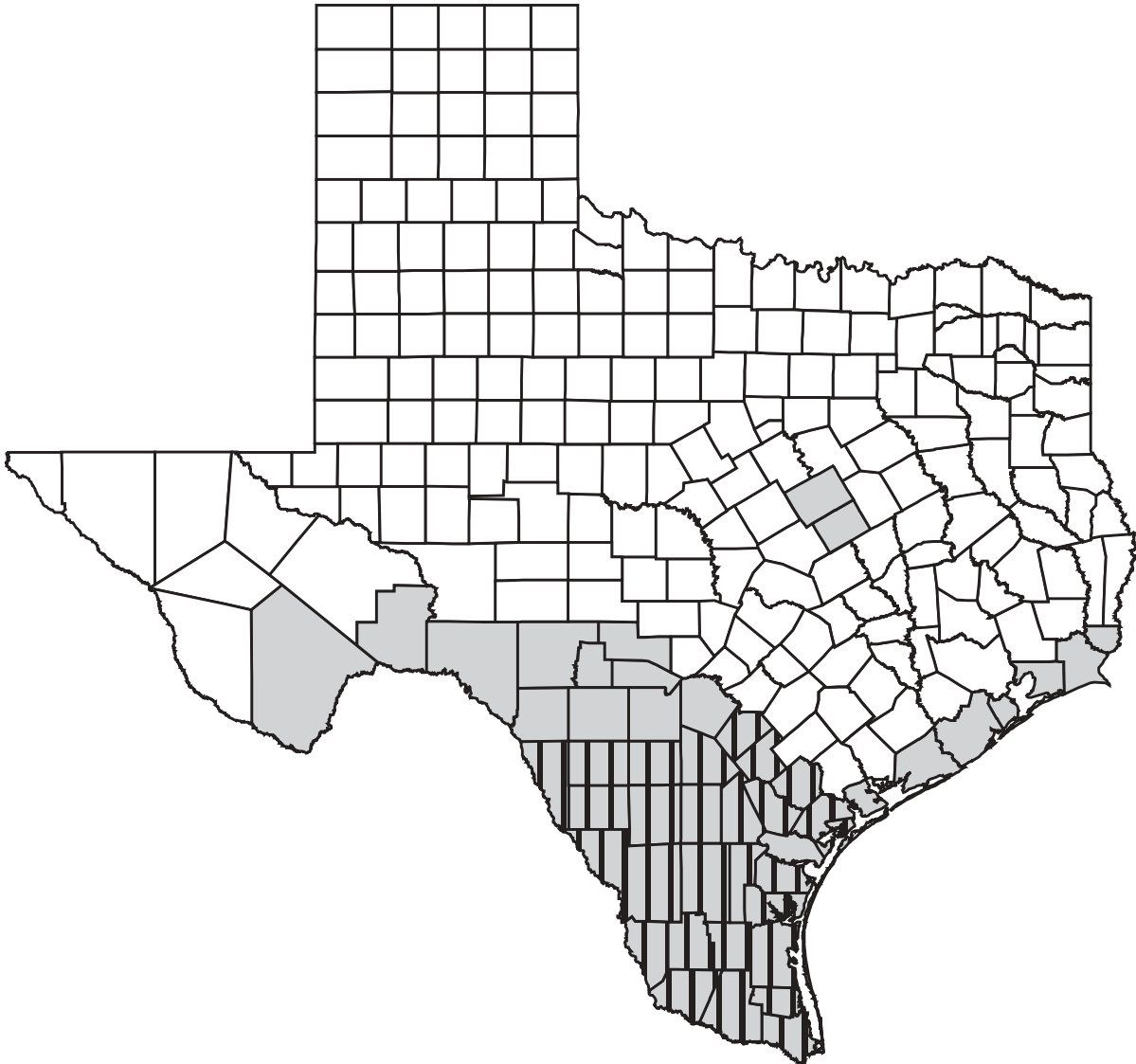
ENVIRONMENTAL EDUCATION

Everyone can help Ocelots by learning about their natural history and conservation needs and sharing this information with others. Well informed students can teach their parents, brothers and sisters, and friends all about these beautiful cats. Understanding the life history of the Ocelot will help build support for efforts to help this endangered animal survive.

Following the presentation of ideas and subsequent discussion, you may want to have the students **TAKE ACTION** and write to government officials or write a letter to the editor of the newspaper expressing their concerns for the Ocelot, along with the recommendations they have for saving this endangered species.

*Prepared by Texas Parks and Wildlife Department
Endangered Resources Branch*

OCELOT DISTRIBUTION IN TEXAS



Present Range



Historic Range (based on known county records)

Map only shows Texas range

The Thicket Game

Objectives:

Students will: 1. become familiar with the habitat requirements of the Ocelot and Jaguarundi, two endangered south Texas cats, and 2. understand how adaptations such as camouflage contribute to the survival of an animal.

Method:

Students "become" a Jaguarundi, an Ocelot, or an animal eaten by these cats (prey) in a version of hide and seek.

Background:

Animals are adapted to their environments in order to survive. Historically, the South Texas Plains supported grassland or savannah type vegetation with dense mixed brush along dry washes and flood plains of the Rio Grande. These shrublands of the lower Rio Grande Valley provide habitat for the Jaguarundi and Ocelot. These cats depend on areas of dense brush for shelter and escape cover. Ocelots and Jaguarundis hunt rabbits, small rodents, and birds.

Materials:

Blindfolds

Outdoor area like a thicket or other vegetated area, free of poisonous plants and other hazards, where students can safely hide.

Procedure:

1. Take the class to a "thicket."
2. Blindfold one student who will be the "prey." The other students are "Ocelots" and "Jaguarundis". The prey slowly counts to 20 while the Jaguarundis and Ocelots hide. The hiding cats must be able to see some part of the prey at all times.
3. After counting, the prey removes the blindfold and looks for predators. The prey can turn around, squat and stand on tip-toe, but not walk or change location. The prey should see how many cats he or she can find, identify them out loud, and describe where they are. When identified, the cats come to the prey's location and wait until the next round, when they will become prey. They are not to tell the original prey where anyone else is hiding.
4. When the prey cannot see any more cats, a new round starts. All of the prey put on blindfolds. Prey should be in close proximity to each other. Each prey has the same motion restriction that the original prey had. The original prey again counts aloud to 20. All of the remaining Ocelots or Jaguarundis must move at least ten feet closer to the prey. Those remaining cats still try to remain hidden. All the prey remove their blindfolds and take turns naming the students they can see.

5. Play as many rounds as necessary until only one or two students are left hidden. At that time, have the remaining cats stand up and identify themselves. It may be surprising how close the cats got to the prey without being detected.

6. Do the activity one or two more times.

7. Discuss what made the Ocelot and Jaguarundi successful in getting close to the prey. Talk about how important the brush cover is for concealment. What would happen to the cats if the dense brushland was cleared for farmland or cities? Be sure the students understand that the endangered cats of south Texas are dependent on their habitats for survival.

Note: Follow this activity with the *Shrinking Habitat* activity to further explore the cat's loss of habitat.

Shrinking Habitat

Objectives:

Students will be able to: 1. describe some effects of land alteration by humans on plants and animals previously living in the area, 2. evaluate the importance of suitable habitat for wildlife, 3. recognize that loss of habitat is the greatest threat to the Ocelot and Jaguarundi in south Texas.

Method:

Students simulate a process of shrubland development in a physically involving activity.

Background:

All around us, and all over the planet, wildlife habitat is being lost. Whenever an area of land is paved for a shopping center, divided and excavated for homes for people, and sometimes when it is plowed to grow a crop, animals lose their homes and their sources of food and water. Students can observe this phenomenon near their homes and schools or at least in their region. This process is happening in large and small ecosystems and small all over the earth. When their habitat is lost, some animals can move to find suitable habitat elsewhere, others cannot.

Historically in Texas, the South Texas Plains supported grassland or savanna type vegetation with dense mixed brush along dry washes and flood plains of the Rio Grande. The most fertile of these soils grow the thickest brush, which provides habitat for the Ocelot and the Jaguarundi, two rare south Texas cats. Over the past 60 years, the fertile soils of the lower Rio Grande Valley have been plowed for production of vegetable, citrus, sugar cane, cotton, and other crops. Habitat has also been lost to urban and industrial development. Today, less than 5% of the original vegetation that the Ocelot and Jaguarundi depend on remains.

The major objective of this activity is for students to simulate some of the potential impacts of land development on the habitat of the endangered south Texas cats, to recognize that this process is one that is taking place in areas all over the planet, and to understand that loss of habitat is generally considered to be the most critical problem facing wildlife today.

Materials:

Green and blue construction paper

Classroom desks, tables or chairs

Five or six large bed sheets or blankets for a student group of about 25.

Procedure:

1. Review with the students the elements comprising habitat (**food, water, shelter and space arranged suitably for the particular animal**). After some discussion to make sure that the elements of habitat are clearly in mind, tell the students that in this activity they will "become" an Ocelot (and/or a Jaguarundi) in its habitat.

2. Divide the students into three groups: Ocelot, vegetation (dense brush), and people who will be land developers. Plan for three times as much vegetation as Ocelots, with a small number of developers in proportion to the other groups. An example would be: two developers, four Ocelots, and 12 students to represent the dense brushland.

3. Establish a large area (either in the classroom with tables, chairs, and desks moved away, or outside) that can be used to simulate the Ocelots' habitat before development. The "land developers" are to stay on the sidelines at this time, simply observing the undeveloped land and its inhabitants - or meeting on their own, nearby, to make plans for development.

4. Provide each Ocelot with:

- ~ three students portraying vegetation for the dense cover the Ocelot needs
- ~ one desk or chair to use as a "den" (or string or hula hoops)
- ~ three pieces green construction paper to represent the Ocelot's food (rabbits, birds, and small rodents)
- ~one piece of blue construction paper to represent water

5. Ask the "vegetation" to arrange themselves in the habitat area. Have the Ocelot move in and establish their dens. The Ocelot should spread their food (green paper) and water source (blue paper) around the habitat area.

6. Once all the animals are established in their habitats, it is time for the developers to enter the picture. These developers have been given the opportunity to create a housing and shopping area in this region of the Rio Grande Valley. The developers have three to seven minutes to complete construction, using the sheets and blankets to build the housing and shopping areas. They may remove the vegetation, the Ocelots' dens (represented by the desks), or the food and/or water, but they can only disturb one third of the habitat area. When the development is complete, the developers may explain what they did and why.

7. Once they have constructed their development, engage all of the students in discussion of what happened. What actions took place? With what consequences? Would or did any animals die? From what causes? Could they have developed several scattered small areas instead of one large area, or vice versa, with what effects? Would it have reduced negative consequences for wildlife if they put the development in a different area of the habitat? Rather than negative consequences, were there any positive consequences? If so, what were they? How were they achieved?

Ask the students to consider and discuss what seemed realistic about the activity and what did not. For example, sometimes development can take place that enhances the area for some kinds of wildlife. Often, however, it will not be the same kinds of wildlife that were in the area before development. Planners and developers can sometimes add to the vegetation in an area, creating additional shelter and food for some kinds of wildlife, and make water sources available under some conditions, if there is insufficient water in the area.

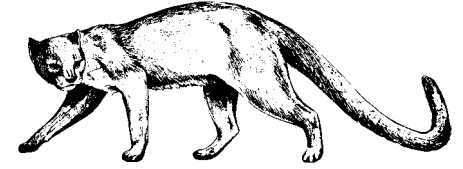
8. Ask the students to summarize some of the possible impacts on wildlife from human activities like development of land areas. How are the endangered cats of south Texas affected by development in or near their habitat? What choices, if any, are there to build in previously underdeveloped areas? What tradeoffs are involved, for example, in developing vacant areas within communities rather than undeveloped area outside of the community? Discuss loss of habitat as something that is affecting wildlife all over the planet. What are some local examples students can think of?

Ask the students to summarize the importance of suitable habitat for the survival of the Ocelot, Jaguarundi and other wildlife. Discuss the students' concerns and recommendations. Make the point that for the Ocelot and Jaguarundi, recovery efforts focus on maintenance and creation of suitable habitat. Tracts of at least 100 acres of isolated dense brush, or 75 acres of brush interconnected with other habitat tracts by brush corridors, are very important for the survival of these cats. Even tracts as small as five acres, when adjacent to larger areas of habitat may be used by the cats. Conservation of remaining habitat as well as maintenance or creation of brush corridors connecting these habitats are necessary for the survival of the Ocelot and Jaguarundi in Texas.

A Rare Cat in South Texas



WORDFIND



Directions: Read the following story to learn about the Jaguarundi. The words in black capital letters are hidden in the wordfind. Can you find them? Good luck!

The **JAGUARUNDI**, who makes its home in the **CHAPARRAL** of **SOUTH TEXAS**, is considered the rarest cat in the state. It is about as big as a large house cat with a long tail, short legs, small flat head, and round ears. The Jaguarundi's **COAT** is all one color and is either **GRAY** or **REDDISH-BROWN**.

The Jaguarundi **HUNTS** among the tangled **BRUSH** of the **RIO GRANDE VALLEY** in search of **PREY**. It moves in a quick **WEASEL-LIKE** manner. Of all the cats, the Jaguarundi excels in ability to jump, and reportedly springs off the ground into the air when attempting to **CAPTURE** low-flying **BIRDS**. In addition to being an agile **CLIMBER**, the unusual Jaguarundi **SWIMS** to feed on **FISH, FROGS, and CRAYFISH**.

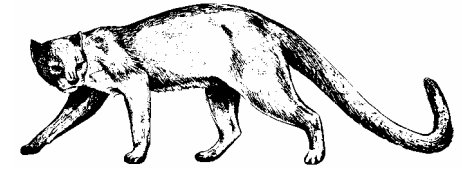
The Jaguarundi is **ENDANGERED** because much of its dense brush habitat has been cleared for **CROPLAND** and **CITIES**. **BIOLOGISTS** and **LANDOWNERS** are working together to **CONSERVE** the native brushlands that remain, and to replant woody plants to provide safe travel **CORRIDORS** between larger areas of **HABITAT**.

W O C L I M B E R E L T H
P E C R A S I B N I E T O
A N S M V O R E B Y C H S I J A M U N I A P X O U F
F I E G S T D C O T A G O R F A N K E D Q U R L N G
E H D Y R U S L L J A G U A R U N D I R V E C I S H
R C R A Y F I S H E Y S T C R R I O B T N E I T A A
I F R O W M U R E F I S H H A E C H O J K L T U Z B
O L W E B I D S G I N O T U S M L I P R E Y I P D I
G E W D G A I N R E O Y E Y X E T A W D N A E L B T
R B E N D A N G E R E D X C H A V S W I M S S F I A
A C A F I E E T S L I N A X M E J T U R L D E S O T
N Y S E N R I G R O A C S T Y C I L C N D A O V L W
D K E D U G R A Y S T O H C I R E J E F R T S B O E
E U L T S C O N E P Y R A T S O A L N T E C A R G I
V A L E Z M I C K D A R H U L P S T V E N O S A I Y
A G I H C A V H W E K I L S Y L A N D O W N E R S Y
L O K B X E R A T L O D A S T A H N D E F S A I T A
L Y E D A U K P L S C O A T I N F E R V U E R L S B
E Z S P R A T A M N E R K I B D A I G H T R E P W R
Y A C A P T U R E I C S O Y R D I N U A C V F O K U
W I H B I O D R S U A Y R T T I Y W E N G E M L A S
E F R O G S L A R E D D I S H B R O W N A Y U G I H
T S A W E X I L R V E A S H L Y O U F L O H U N T S

A Rare Cat in South Texas



WORDFIND



Directions: Read the following story to learn about the Jaguarundi. The words in black capital letters are hidden in the wordfind. Can you find them? Good luck!

The **JAGUARUNDI**, who makes its home in the **CHAPARRAL** of **SOUTH TEXAS**, is considered the rarest cat in the state. It is about as big as a large house cat with a long tail, short legs, small flat head, and round ears. The Jaguarundi's **COAT** is all one color and is either **GRAY** or **REDDISH-BROWN**.

The Jaguarundi **HUNTS** among the tangled **BRUSH** of the **RIO GRANDE VALLEY** in search of **PREY**. It moves in a quick **WEASEL-LIKE** manner. Of all the cats, the Jaguarundi excels in ability to jump, and reportedly springs off the ground into the air when attempting to **CAPTURE** low-flying **BIRDS**. In addition to being an agile **CLIMBER**, the unusual Jaguarundi **SWIMS** to feed on **FISH, FROGS, and CRAYFISH**.

The Jaguarundi is **ENDANGERED** because much of its dense brush habitat has been cleared for **CROPLAND** and **CITIES**. **BIOLOGISTS** and **LANDOWNERS** are working together to **CONSERVE** the native brushlands that remain, and to replant woody plants to provide safe travel **CORRIDORS** between larger areas of **HABITAT**.

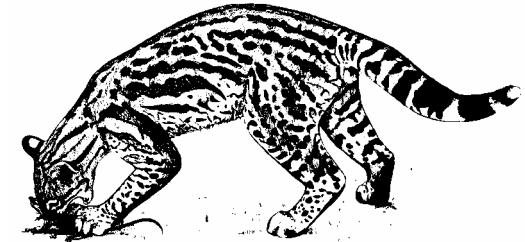
C	L	I	M	B	E	R																	
		I																					
		R						S															
		D						O															
			S		J	A	G	U	A	R	U	N	D	I		C		H					
R	C	R	A	Y	F	I	S	H		T					I		A						
I							F	I	S	H					T		B						
O								T			P	R	E	Y	I		I						
G	W							E						E		B	T						
R	E	N	D	A	N	G	E	R	E	D	X		S	W	I	M	S	S	I	A			
A	A							A										O	T				
N	S							C	S		C							L					
D	E		G	R	A	Y		O		R								O					
E	L							R		O					C		G						
V	L			C			R		P					O		I							
A	I		H				I			L	A	N	D	O	W	N	E	R	S				
L	K		A				D		A					S		T							
L	E		P			C	O	A	T		N			E		S	B						
E			A				R		D					R		R							
Y	C	A	P	T	U	R	E		S					V		U							
							R								E		S						
	F	R	O	G	S		A	R	E	D	D	I	S	H	B	R	O	W	N	H			
							L												H	U	N	T	S

Endangered Cats Math Activity

1. You are a biologist studying ocelots in South Texas. In 1994, you estimated that there were about 30 ocelots living on or near the Laguna Atascosa National Wildlife Refuge. During 1995, you learn that:

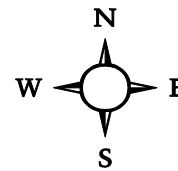
- 1 ocelot was killed crossing a busy road,
- 2 ocelots moved onto the refuge from habitats far away,
- 10 kittens were born but only 4 survived to be adults.

How many ocelots do you now estimate are living on or near the refuge?



2. Biologists studying ocelots sometimes put special collars on them. These collars send an electronic signal that can be read by special instruments. Biologists can follow the movements of these cats by listening to the signals sent by the collars. As a biologist, you have been tracking one particular cat for the last three nights. You have recorded the following data:

- Night 1 - ocelot moved 3 miles NE
- Night 2 - ocelot moved 4 miles S
- Night 3 - ocelot moved 3 miles NW



Draw a "birds eye view" map showing the ocelot's movements each night. Label your drawing to show the direction and distance the cat moved each night. Draw your map using a ruler (1 inch = 1 mile).

3. A mother ocelot has to hunt each day to feed herself and her two kittens. If the ocelot and her kittens need 2 rabbits and 4 mice each day to survive, how many rabbits and mice would the mother have to kill to feed herself and her kittens for 7 days.

4. Pretent you are an ocelot. Your favorite hunting area is about 2 miles away from your den site. Last night you discovered that your favorite spot had been plowed and the mice and rabbits are gone. Instead of going back to your den, you decide to look for better habitat. You walk 2 more miles before you find dense cover and a place to rest. Early the next morning you walk 1 mile to the south, but it leads you to a busy highway. You decide not to cross the highway and walk 3 miles in another direction before you finally find a good hunting area. You are very tired, weak, and hungry. How many total miles did you walk looking for suitable habitat and a place to hunt?

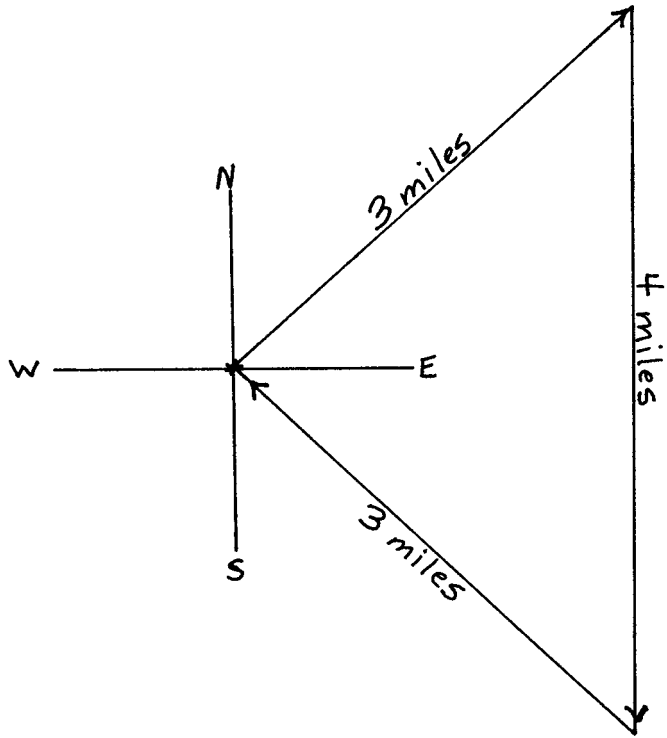
Suggested for Grades 4 - 6

Endangered Cats Math Activity

Answers:

1. 35 ocelots (30 - 1 killed on road + 2 moved onto refuge + 4 kittens)

2.



3. 14 rabbits and 28 mice would be needed to feed the ocelot family for 7 days.

4. The ocelot traveled 8 miles (2+2+1+3)

Math Activity for Endangered Cats

Situation:

You are a landowner whose property lies between two areas of ocelot habitat. To provide a safe travel lane between these two larger habitat areas, you have agreed to replant native brush plants on part of your property. The area you want to replant is an old farm field. You don't want to farm it anymore and are happy to restore native brush habitat for the ocelot, jaguarundi, and other wildlife. Several government agencies and conservation groups are going to help you pay for and plant the shrubs. As the landowner, you are in charge of this cooperative restoration effort. To complete the project, you will need to:



1. Determine how many acres are in the portion of land you wish to replant. To do this you walk the length and width of the field. Your pace (every two steps) is about 6 feet. You decide the field is about 800 feet long and 550 feet wide. How many acres (round to the nearest acre) are in your field? (Hint: an acre is 43,560 square feet)
2. To restore the habitat, biologists have suggested planting about 1225 seedling shrubs per acre. How many seedlings will you need?
3. If the seedling shrubs cost \$0.50 each, how much money will you need to pay for the shrubs?
4. You want to rent a planting machine designed to make the shrub planting faster and easier, and improve seedling survival. The machine rents for \$30 per hour. You estimate it will take two, 8-hour days to plant the entire field. How much money will you need for the planting machine?

Challenge Question:

5. Your plan is to plant the seedlings so that they are evenly spaced throughout the field. The planting crew needs to know how far apart to plant the seedlings. If they plant the seedlings too close together, there won't be enough plants to cover the field. If they plant them too far apart, it will take extra time to go back and fill in the gaps. You know that you need to plant 1225 seedlings per acre. How far apart should the seedlings be planted? (Hint: an acre is about 208.7 feet by 208.7 feet).

Suggested for Grades 7-10

Math Activity for Endangered Cats

Answers:

1. **10 acres** $(800 \text{ ft.} \times 550 \text{ ft.}) / 43,560 \text{ sq. ft. in an acre}$
2. **12,250 seedlings** $1225 \text{ seedlings} \times 10 \text{ acres}$
3. **\$6,125** $12,250 \text{ seedlings} \times \0.50
4. **\$480** $2 \text{ days} \times 8 \text{ hours per day} \times \30 per hour
5. **about 6 feet apart** $1225 \text{ seedlings} / 208.7 \text{ feet}$

