

# Identifying Priority Conservation Areas in the U.S.- Mexico Border Region for America's Neotropical Cats, the Jaguar, Jaguarundi and Ocelot: An International Effort

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Jaguar -Arturo Caso



Ocelot -Arturo Caso



Jaguarundi -Arturo Caso

# Background

## The Bordercats Working Group (BWG)

- **Founded in 1998** to promote recovery and conservation of jaguars, ocelots and jaguarundis in the border region.
- **BWG is a cooperative** concerned about the status of these three felids in the northern portion of their range.
- BWG believes that:
  1. Cats as top predators are a fundamental component of border ecosystems
  2. Current Bordercat research and conservation efforts are insufficient
  3. Previous recovery efforts are inadequate for cat recovery
  4. Threats to cat survival are persistent.
- BWG objectives include:
  1. **Research**
  2. **Education** regarding the importance of cats and other carnivores for school children and private land owners
  3. **Facilitation** amongst groups and individuals involved in border region conservation

# The Importance of Bordercats

- Sit at the top of the food chain and act to maintain ecosystem integrity via **top down regulation**
- Additionally, recent studies have demonstrated that when species become endangered, they **persist in the periphery of their historic geographical ranges** (Channell and Lomolino, 2000).
- This pattern is contrary to conventional wisdom that range contractions accompany species decline such that populations persist in core portions of their historic geographical ranges. This recent insight suggests that periphery populations of neotropical cats in the border region may in fact be more persistent than populations closer to the center of their distribution, in parts of Central and South America.



Ocelot -Arturo Caso

# The Problem

- A detailed understanding of cat distribution is an essential building block for conservation and educational activities. However, **little is known about Bordercat distribution and status.**
- They are **difficult to observe** due to their low densities.
- **They currently face numerous threats** including: poaching, land development and conversion, and construction of highways and international bridges
- Without a detailed understanding of their distribution and habitat requirements in this portion of their range, **adequate conservation and educational activities are not possible.**



Jaguarundi -Arturo Caso

# Study Area



# **Our Solution**

## **Conducted Field Surveys 1998-00**

1. Rio Grande river adjacent to Big Bend National Park in Texas
2. Northeastern Mexico just south of border in the states of Coahuila, Nuevo León, and Tamaulipas.
3. The Peloncillo and Chiricahua Mts of southeastern AZ.

## **Began Developing a Sightings Database**

Compiling sightings for all three species in the border region from the early 1900's to present

## **Hold an Expert Workshop**

To recover endangered populations and ensure their long-term survival, it is imperative that the U.S. and Mexico work together to identify current cat distribution and status in the northern periphery of their range.

# Final Sightings Gathered for each Species

## by Class

	I	II	III	Total
<b>OCELOT</b>				
Arizona	3	5	7	15
Texas	121	97	74	292
Tamaulipas	7	0	0	7
Sonora	30	2	1	33
<b>Total</b>	<b>161</b>	<b>104</b>	<b>82</b>	<b>347</b>
<b>JAGUARUNDI</b>				
Arizona	0	26	25	51
New Mexico	0	0	1	1
Texas	22	130	143	295
Coahuila	0	0	1	1
Durango	1	0	0	1
Sonora	0	1	0	1
Tamaulipas	2	0	0	2
<b>Total</b>	<b>25</b>	<b>157</b>	<b>170</b>	<b>352</b>
<b>JAGUAR</b>				
Arizona	20	13	49	82
New Mexico	8	2	1	11
Texas	7	2	0	9
San Luis Potas	1	0	0	1
Sonora	56	0	0	56
Tamaulipas	5	1	0	6
<b>Total</b>	<b>97</b>	<b>18</b>	<b>50</b>	<b>165</b>

A total of 864 sightings with latitude and longitude were gathered during the study

# Expert Workshop

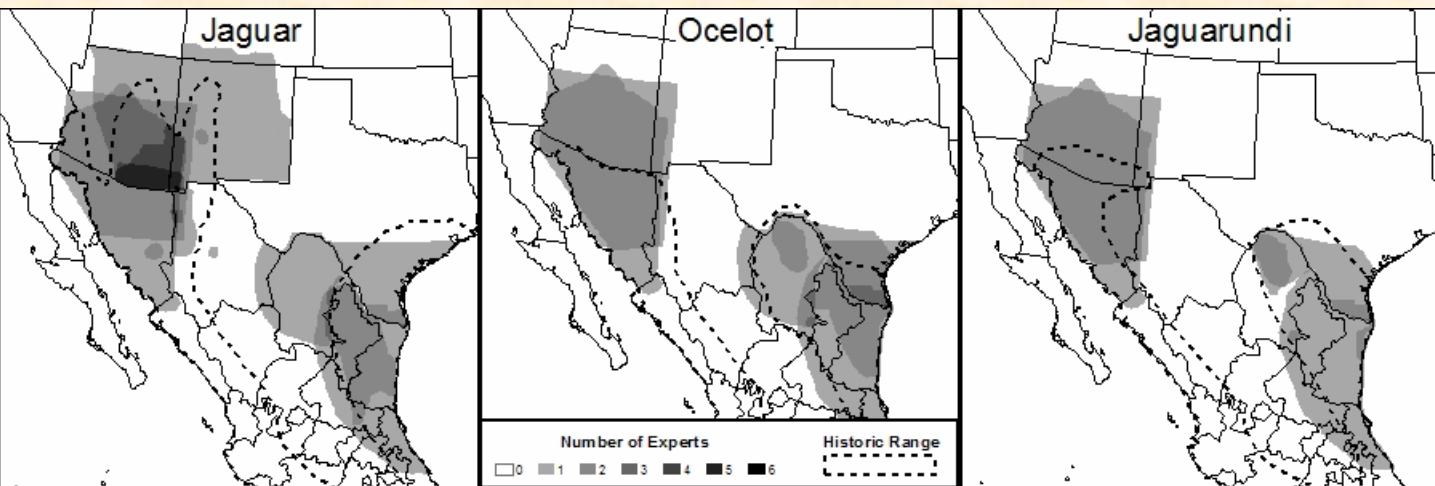


In December 2003, 29 experts from seven U.S. states and four Mexican states were invited to attend a GIS based habitat mapping workshop.

Experts were asked to:

- Identify important Cat Conservation Units (CCU's)
- Identify Cat Conservation Corridors (CCC's)
- Identify needed or existing underpasses
- Characterize the CCU's and CCC's
- Give additional sighting information not identified previously
- Identify areas needing additional study

# Coverage of Study Area by Experts



- Each expert was asked to delineate his or her area of knowledge for each species onto maps of the border region.
- Historic ranges of all three species were well covered with some small exceptions
- More experts for Jaguar (14) than Ocelot (9) or Jaguarundi (8)
- SE Arizona represented the most expertise

# Weighting Scheme for CCU's and CCC's

- Each expert ranked these factors in terms of their relative importance for the survival of the species. These values were summed and used to derive the percentage weight for each factor.
- This provided a measure of importance of each factor for each species.

<b>CCU's</b>	<b>JAGUAR</b>	<b>OCELOT</b>	<b>JAGUARUNDI</b>
CCU Connectivity	17.2	15.4	17
Habitat Quality	18.1	22.5	21.5
CCU Size	17.8	17.6	13.4
Cat Hunting by Humans	11.1	6.1	8
Prey Hunting by Humans	4.1	1	2.8
Cat Population Status	10.5	13.6	13.9
Road Threats	1.4	8	7.3
Effectiveness of Protection	5.3	2.5	4.3
Human Density	14.5	13.3	11.8
TOTAL	100.00%	100.00%	100.00%
<b>CCC's</b>	<b>JAGUAR</b>	<b>OCELOT</b>	<b>JAGUARUNDI</b>
CCC Connectivity	18.9	15.7	18.3
Habitat Quality	12.5	13.9	13.9
CCC Width	7.6	7.8	7.8
CCC Length	10.5	7.3	7.6
Cat Hunting by Humans	7.9	4.3	5.4
Prey Hunting by Humans	3.9	1.1	1.6
Corridor Gaps	10.3	12.1	9.5
Road Threats	2.2	11.3	6.7
Effectiveness of Protection	4.5	4.8	7.6
Human Density	14.6	11.6	12.1
Value of Core Areas	7.1	10.1	9.5
TOTAL	100.00%	100.00%	100.00%

# Weighting Scheme Applied to CCU's and CCC's

- The authoring expert for each CCU and CCC was asked to fill out a data sheet for the area.
- The author ranked each factor as good for cats, bad for cats or somewhere in the middle for each unit.
- These ranks were assigned a value of three, zero or one, respectively and multiplied by the weighting scheme.
- These data allowed us to rank units and corridors in terms of relative importance to the survival of the species.

❖ Very High

❖ High

❖ Moderate

# Protected Status

CCU's and CCC's were intersected with protected areas from the International Union for Conservation of Nature and Natural Resources (IUCN - <http://www.iucn.org/> )

- I. Wilderness Area: protected area managed mainly for wilderness protection
- II. National Park: protected area managed mainly for ecosystem protection and recreation
- III. Natural Monument: protected area managed mainly for conservation of specific natural features
- IV. Habitat/Species Management Area: protected area managed mainly for conservation through management intervention
- V. Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation
- VI. Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

# Cat Conservation Units (CCU's)

CCU's	Total (km2)	IUCN Protected Status (km2)						Protected (km2)	% Protected
		I	II	III	IV	V	VI		
Ocelot East	45,387	0	6	0	161	0	924	1,091	2.4
Ocelot West	31,535	0	0	0	0	0	601	601	1.9
Jaguar East	17,931	0	317	0	0	0	0	317	1.8
Jaguar West	102,530	5,908	0	26	0	18	14,297	20,249	19.8
Jaguarundi East	68,407	168	1,100	60	0	0	0	1,328	1.9
<b>Total (km2)</b>	<b>265,790</b>	<b>6,076</b>	<b>1,423</b>	<b>86</b>	<b>161</b>	<b>18</b>	<b>15,822</b>	<b>23,586</b>	<b>8.9</b>

- 21 CCU's were identified totaling 265,790 km<sup>2</sup>
- 67% are on the Mexican side of the border and 52% are for the ocelot.
- Twelve study areas were identified, eight being within 50km of the international border.
- On average only 8.9% of the units currently have some level of protection.
- Most of this protected land (86%) is represented by jaguar units on the U.S. side of the border in the western bioregion.
- 67% of the area currently protected within CCU's are only class VI, the lowest level of protection identified by the IUCN.

# Cat Conservation Corridors (CCC's)

CCC's	Total (km2)	IUCN Protected Status (km2)						Protected (km2)	% Protected
		I	II	III	IV	V	VI		
Ocelot East	5,421	0	0	0	0	0	0	0	0
Ocelot West	0	0	0	0	0	0	0	0	0
Jaguar East	2,712	0	128	0	0	0	0	128	4.7
Jaguar West	3,320	0	0	0	0	0	0	0	0
Jaguarundi East	0	0	0	0	0	0	0	0	0
<b>Total (km2)</b>	<b>11,453</b>	<b>0</b>	<b>128</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>128</b>	<b>1.1</b>

- Seven CCC's were identified totaling 11,453km<sup>2</sup>.
- None of these connect CCU's on opposite sides of the international border.
- Twelve study areas were also identified, 50% of which connect areas across the international border.
- There were no CCC's identified for jaguarundi.
- Only one CCC in the study currently has protection.

# Jaguar East



## Legend

- ▲ Jaguar Class 1 Sightings
- Historic Jaguar Range
- US - Mexico Border
- Roads

### CCU's by Priority

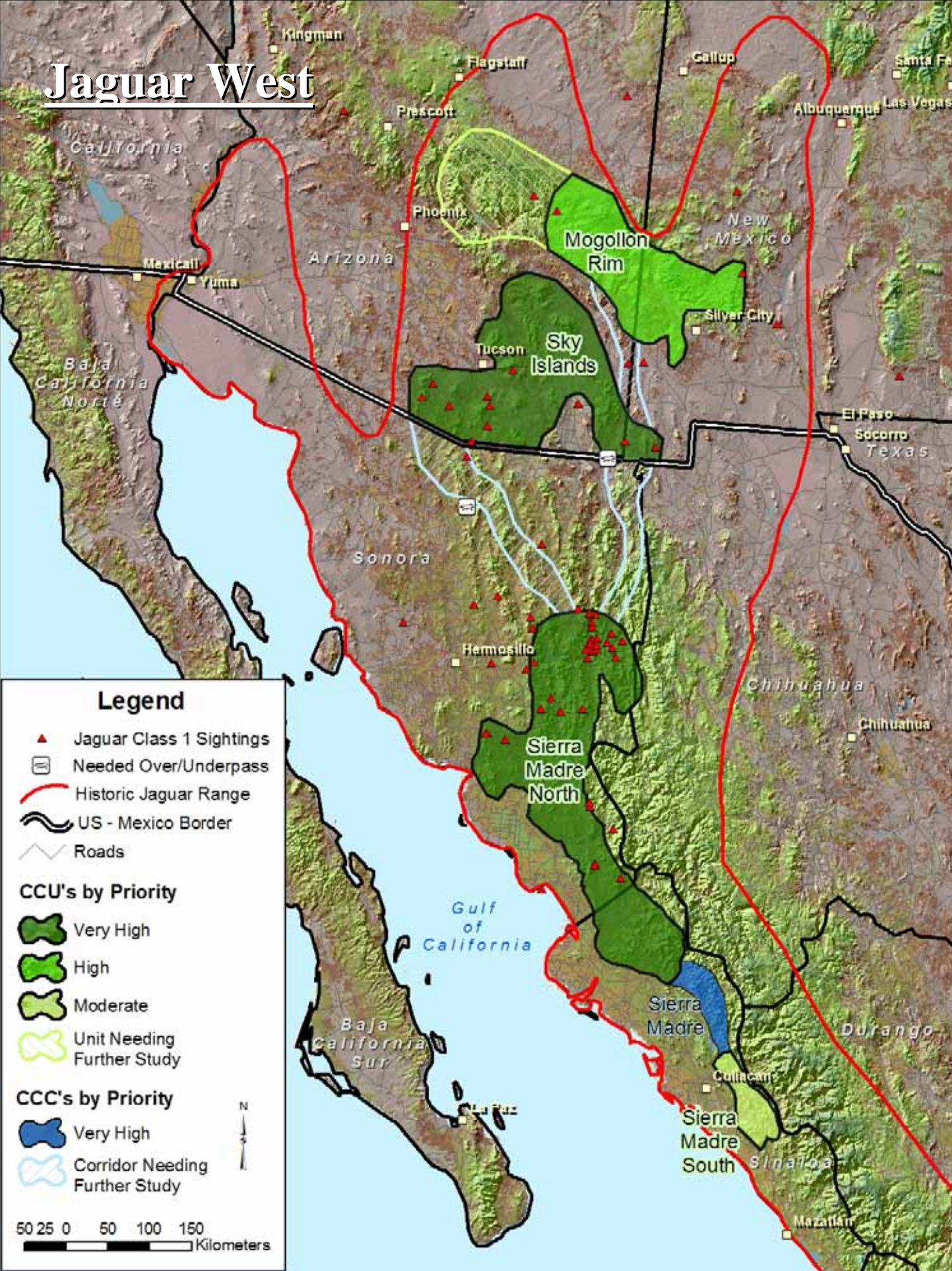
- Very High
- High
- Moderate

### CCC's by Priority

- High
- Moderate

25 12.5 0 25 50 Kilometers

# Jaguar West



## Legend

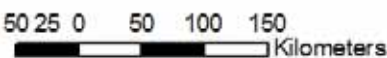
- ▲ Jaguar Class 1 Sightings
- ☒ Needed Over/Underpass
- Historic Jaguar Range
- US - Mexico Border
- Roads

## CCU's by Priority

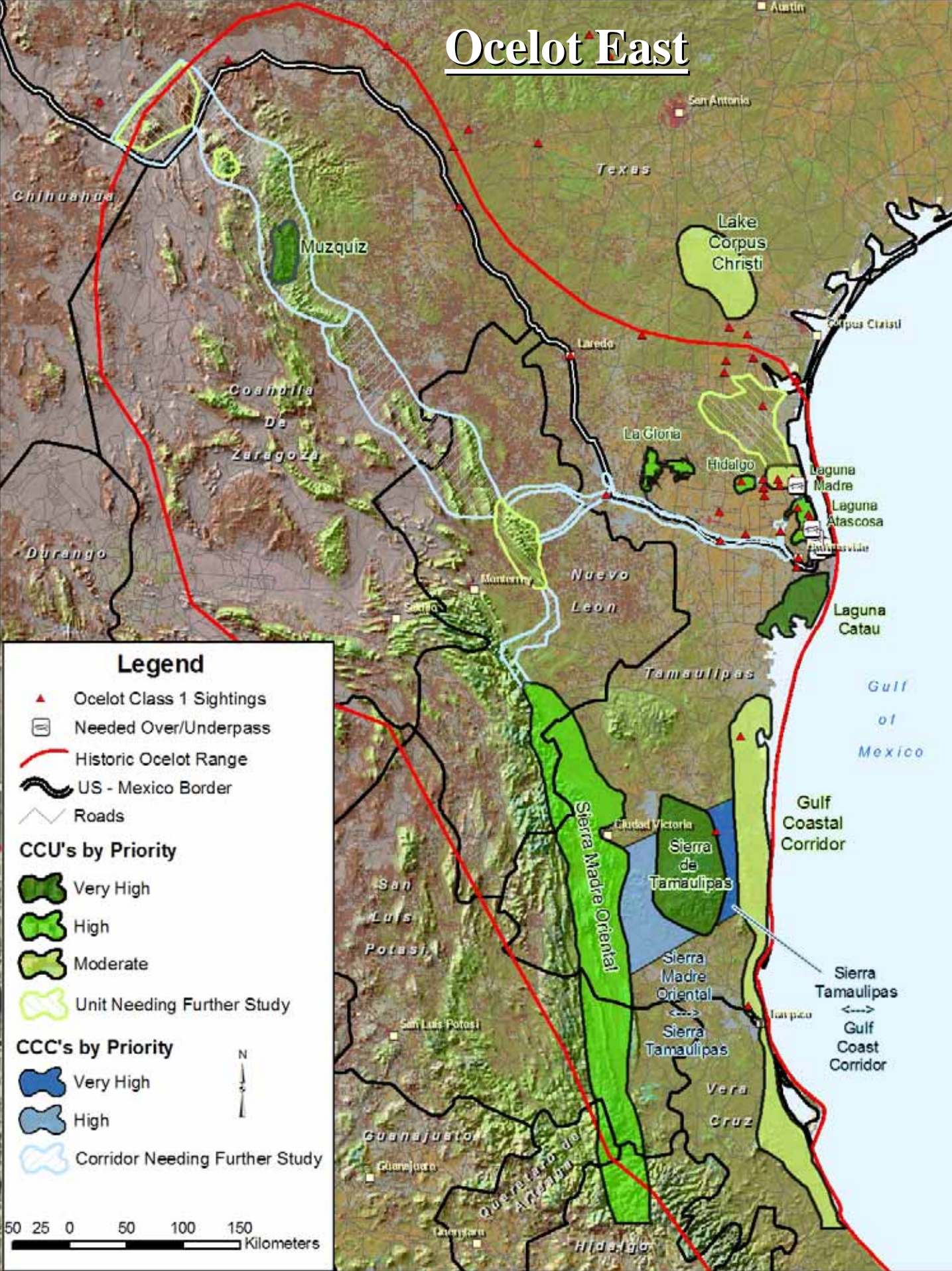
- Very High
- High
- Moderate
- Unit Needing Further Study

## CCC's by Priority

- Very High
- Corridor Needing Further Study



# Ocelot East



## Legend

- ▲ Ocelot Class 1 Sightings
  - Needed Over/Underpass
  - Historic Ocelot Range
  - US - Mexico Border
  - Roads
- CCU's by Priority**
- Very High
  - High
  - Moderate
  - Unit Needing Further Study
- CCC's by Priority**
- Very High
  - High
  - Corridor Needing Further Study



# Ocelot East Border Area



## Legend

- ▲ Ocelot Class 1 Sightings
- Needed Over/Underpasses
- Historic Ocelot Range
- US - Mexico Border
- Roads

## CCU's by Priority

- Very High
- High
- Moderate
- Unit Needing Further Study

## CCC's by Priority

- Very High
- High
- Corridor Needing Further Study



# Ocelot West



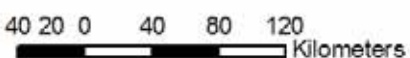
## Legend

- ▲ Ocelot Class 1 Sightings
- Historic Ocelot Range
- ~ US - Mexico Border
- Roads
  
**CCU's by Priority**

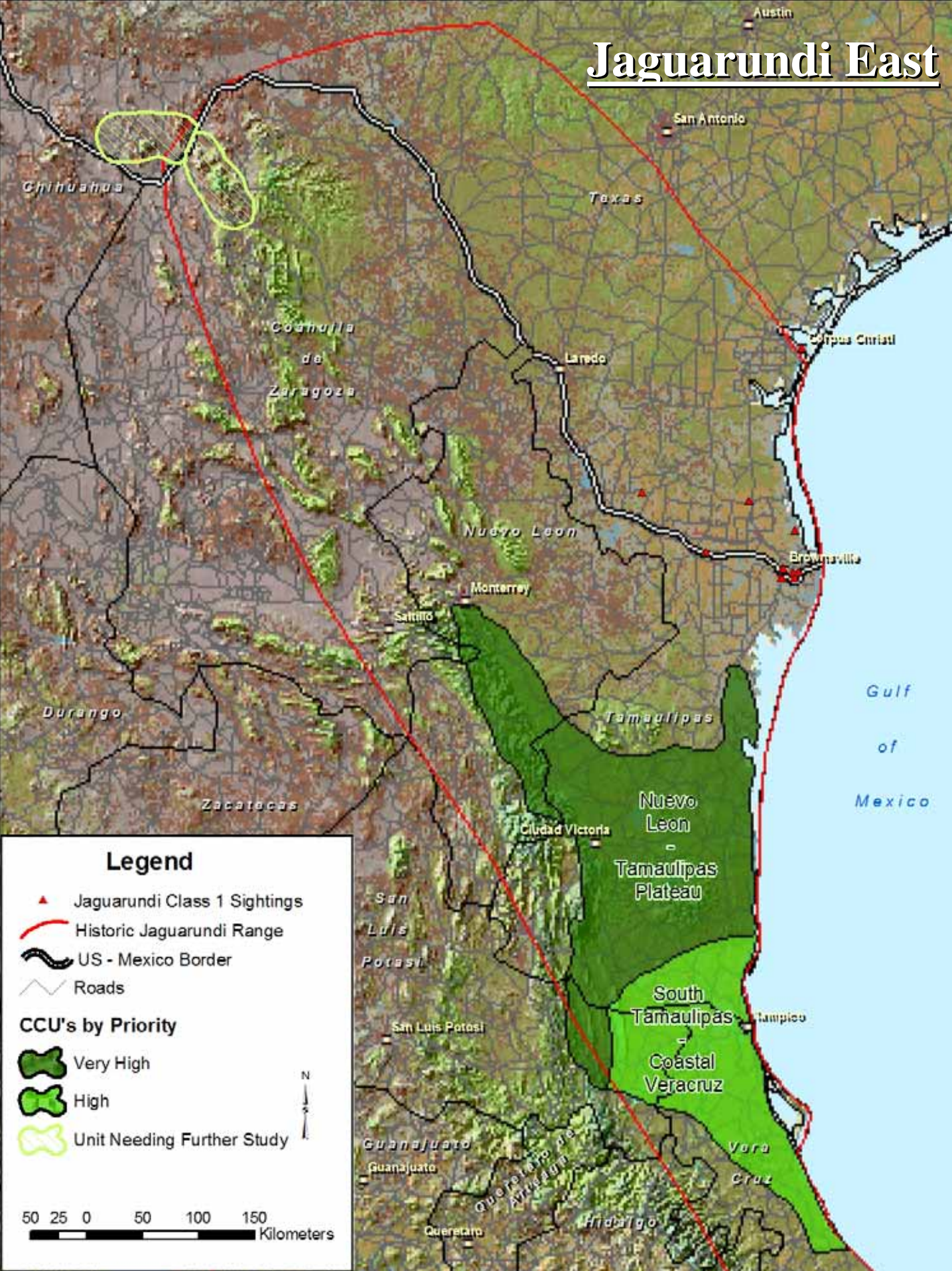
  - Very High
  - Unit Needing Further Study

  
**CCC's by Priority**

  - Corridor Needing Further Study



# Jaguarundi East



Chihuahua

Coahuila  
de  
Zaragoza

Durango

Zacatecas

Texas

Nuevo Leon

Tamaulipas

Nuevo Leon

Tamaulipas  
Plateau

San  
Luis  
Potosi

South  
Tamaulipas

Coastal  
Veracruz

Guajuato  
Guajuato

Queretaro de  
Arzobispo

Veracruz

Gulf  
of  
Mexico

## Legend

▲ Jaguarundi Class 1 Sightings

Historic Jaguarundi Range

US - Mexico Border

Roads

### CCU's by Priority

Very High

High

Unit Needing Further Study



50 25 0 50 100 150 Kilometers

# Conclusions

- Lack of current protection is alarming
- There is a lack of understanding of all three species along the border itself
- More research is needed, especially in the study areas identified, to increase our understanding of neotropical cat status and their ecological requirements
- The two main benefits from this study were:
  1. The identification of focal areas for future research and habitat conservation measures
  2. The formation of an international network of concerned scientists and conservationists.