

# EVALUATING THE IMPACTS OF MOUNTAIN LION ON PREY IN A MULTI-PREY SYSTEM

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## INTRODUCTION

- Commercial hunting leases are one of the primary economic resources in southern Texas.
- White-tailed deer, feral hogs, and javelina occur sympatrically with mountain lion in southern Texas.
- The effects of mountain lion predation on large prey in southern Texas are unknown.
- We created a model to evaluate the impacts mountain lion have on large prey populations in southern Texas.

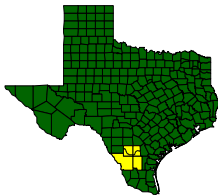


Figure 1. Location of LaSalle, McMullen, Duval, and Webb counties in southern Texas.

## METHODS

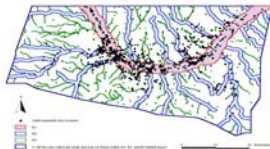
- We created a habitat map using TIGER files and a GIS. Buffers were created at 1,500 m for River, 500 m for Creek, and 25 m for Drainage habitats (Figure 2).
- A habitat selection index was calculated for each habitat based on availability and use.
- We used demographic, prey, and habitat data collected from mountain lions in southern Texas from 1994-2002 as input variables in our model (Table 1).
- Mountain lion occurrence (number of mountain lion-days/year) was calculated as (habitat area) x (mountain lion density) x (habitat selection index) x (365 days).
- Total annual prey loss to mountain lion predation was calculated for males and females as (number of mountain lion days/year) x (kill rate).
- Prey loss to mountain lion predation was calculated as (total annual prey loss) x (proportion of prey in diet).

Table 1. Input variables for mountain lion-habitat-prey model in southern Texas.

Variable	Value	Source
<b>Mountain lion</b>		
Density (#/km <sup>2</sup> )	0.005	Harveson 1997
Sex ratio (M:F)	1:1.5	
Age composition (A-J)	1:1	
<b>Habitat Availability (km<sup>2</sup>)</b>		
Riparian-River	252 (9%)	Adams 2003
Riparian-Creeks	421 (16%)	
Riparian-Drainages	38 (1%)	
Upland-Mixed brush	1,971 (74%)	
<b>Habitat Selection Index</b>		
Riparian-River	5.28	Adams 2003
Riparian-Creeks	0.97	
Riparian-Drainages	1.17	
Upland-Mixed brush	0.46	
<b>Prey Availability (#/km<sup>2</sup>)</b>		
White-tailed deer	7.7	Harveson et al. 2000
Feral hog	6.2	
Javelina	4.9	
<b>Prey Use (% of diet)</b>		
White-tailed deer	28	Harveson et al. 2000
Feral hog	28	
Javelina	12	
Small game	32	
<b>Kill Rate (kill/days)</b>		
Male	1.9	Adams 2003
Female	1.6	

## RESULTS

- 13.5 mountain lions occur on the study site and account for 4,910 mountain lion-days.
- Male mountain lions kill 218 prey annually and female mountain lions kill 491 prey annually for a total annual large prey loss of 709.
- 199 white-tailed deer, 199 feral hogs, 85 javelina, and 5,785 rabbits and rodents (25.5 rabbit-rodent/large prey) are lost annually.



## DISCUSSION

- At present densities, mountain lions kill 1% of the white-tailed deer population, 1.2% of the feral hog population, and 0.6% of the javelina population.
- Mountain lions will have a greater impact on prey populations during drought when prey populations are low.
- The impacts mountain lions have on large prey species in southern Texas are largely inconsequential.

## MANAGEMENT IMPLICATIONS

- Wildlife biologists and land owners in southern Texas should adjust white-tailed deer harvest rates accordingly and manage for alternative prey sources (javelina, feral hogs, rabbits-rodents).