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# Boulder City Conservation Easement Desert Tortoise Predation Study

August 21, 2014

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2009-BOARMAN-802H



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## Desert Tortoise Predation: Presentation Overview

- Presentation Overview
  - Background
  - Project Review
  - Future Work



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## Desert Tortoise Predation: Background

### LEAD AGENCY:

Conservation Science Research &  
Consulting

### FUNDING AMOUNT:

\$24,274.00

### CONTRACT TERM:

September 15, 2013 - March 31, 2014

### FUNDING SOURCE:

Section 10



### Project Description

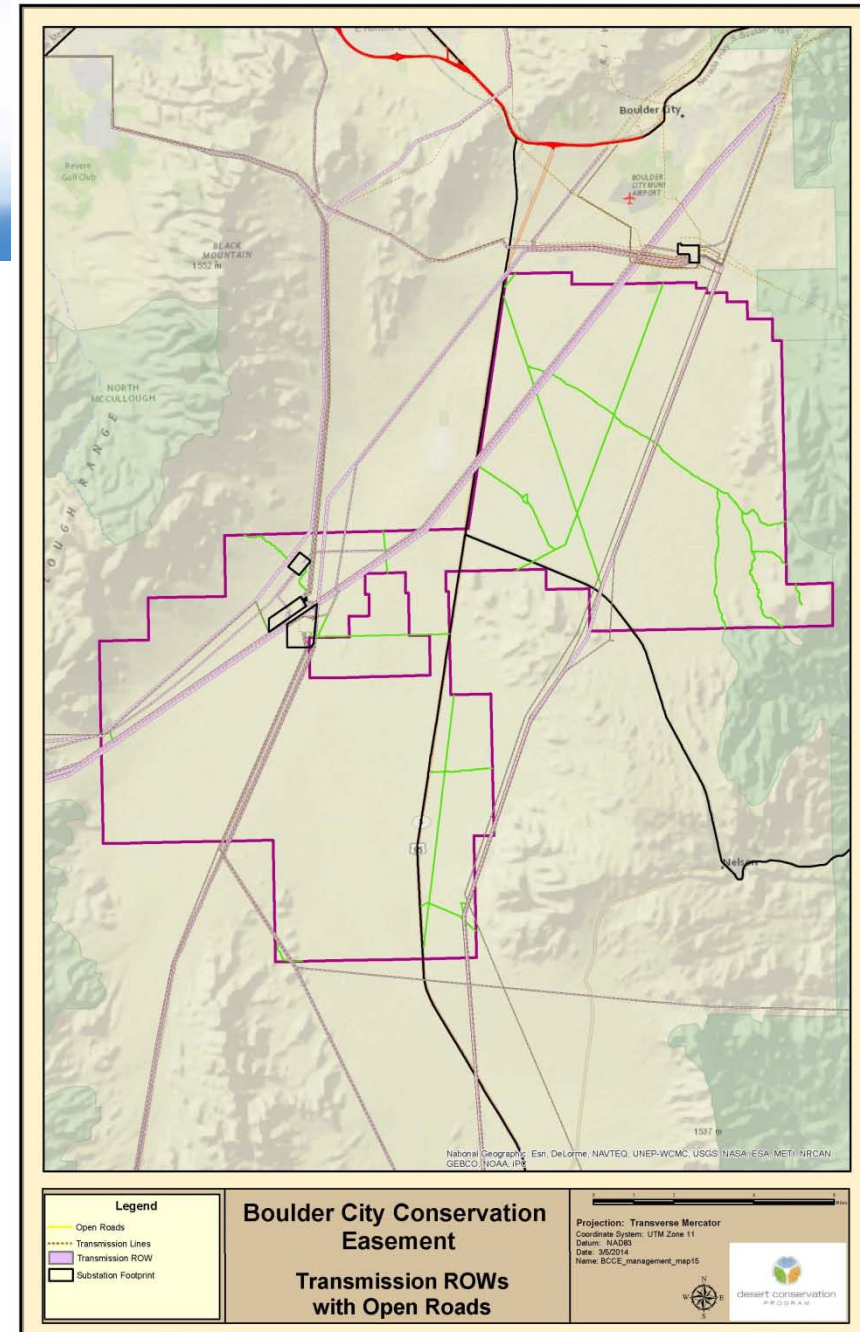
- Provides information that helps with the determination of the effect ravens and coyotes have on tortoise populations at the Boulder City Conservation Easement (BCCE).
- Provides a baseline to ascertain the effectiveness of any mitigation measures that may be implemented to reduce the effects of predation.
- Provides recommendations on how the county should proceed with tortoise predation studies at the BCCE.



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## Project location map:

The BCCE is located south southwest of Boulder City.





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## Desert Tortoise Predation: Background

Predation is an identified problem in the management of and recovery of the desert tortoise.

Predation on adults is usually attributed to larger canids and common ravens.



Photo: W. Boarman



There is a fair amount of scientific literature addressing the problem of desert tortoise predation.

Boarman, William I. 2003. **Managing a subsidized predator population: reducing common raven predation on desert tortoises.** Environmental Management. 32:205-217.

Todd C. Esque, et al., 2010. **Effects of subsidized predators, resource variability, and human population density on desert tortoise populations in the Mojave Desert, USA.** Endangered Species Research 12:167-177.



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## Desert Tortoise Predation: Background

Subsidized predators, predatory animals whose populations benefit from human-provided food, and refugia, are increasing in frequency.







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## Desert Tortoise Predation: Background

Coyote  
(*Canis latrans*)



Photo: W. Bearman

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## Desert Tortoise Predation: Background

Common raven  
(*Corvus corax*)



Photo: W. Boarman



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## Desert Tortoise Predation: Project Review

### Project Objectives:

- Identify possible study sites
- Determine ease of access for surveys
- Collect preliminary data
- Evaluate the need for further studies and make recommendations on how to proceed



## Monitoring methods and materials:

Four site visits were made to the BCCE:

**Raven monitoring-** Monitoring was performed while driving roads on and around the BCCE. Visits were made to the BCCE to survey for ravens and their nests, and locate potential future survey sites. Two visits: 9/13-16/2013 and 11/10-12/2013.

**Coyote monitoring-** Monitoring was performed using three cameras. Two additional visits were made to check the cameras: 11/30-12/2/2013 and 1/11/2014.



## Cuddeback Attack IR Camera

- 5-megapixel infrared camera day and night video/ stills
- Infrared LEDs provide a 60-foot flash range
- 1/4-second trigger speed/ motion detector
- Cameras were placed on stakes and were positioned above the ground.
- A lure was used to entice animals to the cameras.





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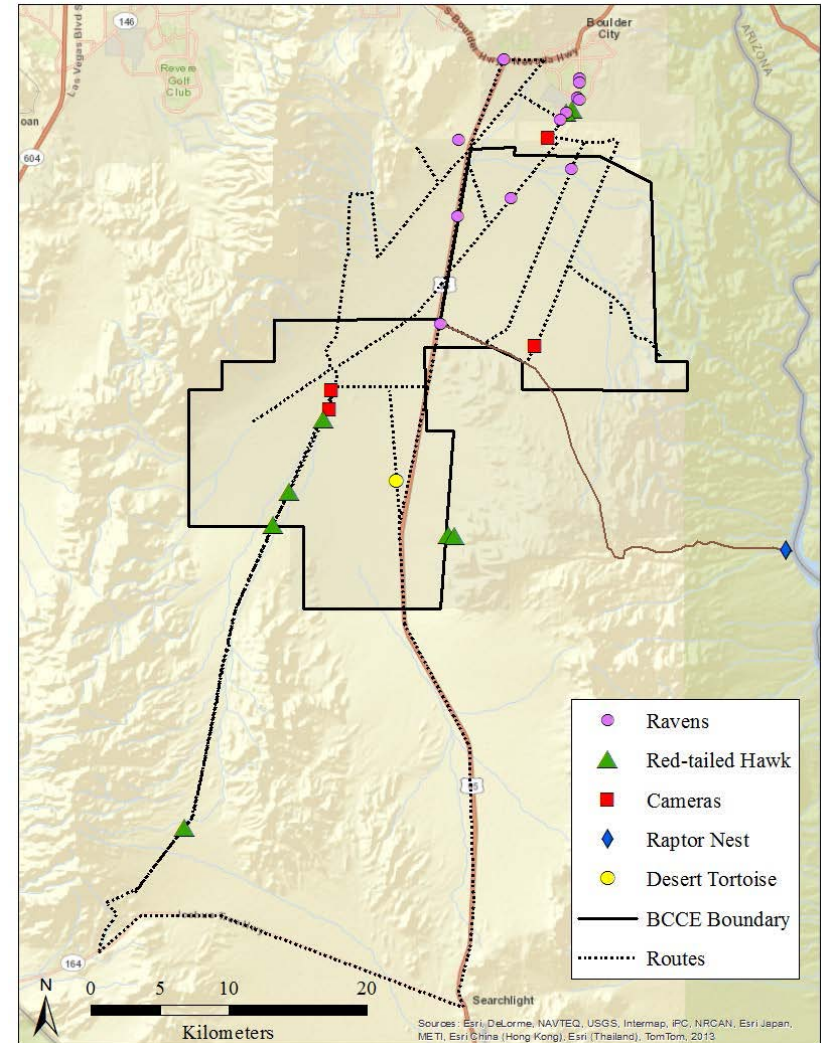
## Desert Tortoise Predation: Project Review





## Boulder City Conservation Easement:

- Routes driven
- Coyote camera locations
- Observations of animals/nests





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## Desert Tortoise Predation: Project Review



Photo: W. Boarman\*\*





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## Desert Tortoise Predation: Project Review



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## Project Accomplishments:

- Identified possible study sites for future work
- Determined ease of access for surveys
- Produced a report on the results of the field work, evaluated the need for further studies, and gave recommendations on how to proceed





## Project Accomplishments:

- Fifty-three ravens observations on 17 occasions.
- A total of 275 photographs of coyotes were taken, with 95% being from the camera placed near the Boulder City.
- The cameras were unmolested during the study.





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## Desert Tortoise Predation: Future Work

The Desert Conservation Program staff is currently reviewing recommendations given in the report to help determine the next appropriate steps to be taken.





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## Questions?





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**Cuddeback**  
Digital



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Trivia Question:  
What does one call a group of ravens?



Photo: W. Boarman



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Trivia Question:  
What does one call a group of ravens?

Answer:  
An “UNKINDNESS” of ravens



Photo: W. Boarman