# 2014 MSHCP
# Annual Project Progress Report Symposium

## Desert Tortoise Occupancy Sampling on the Boulder City Conservation Easement

## 2013 & 2014 Results


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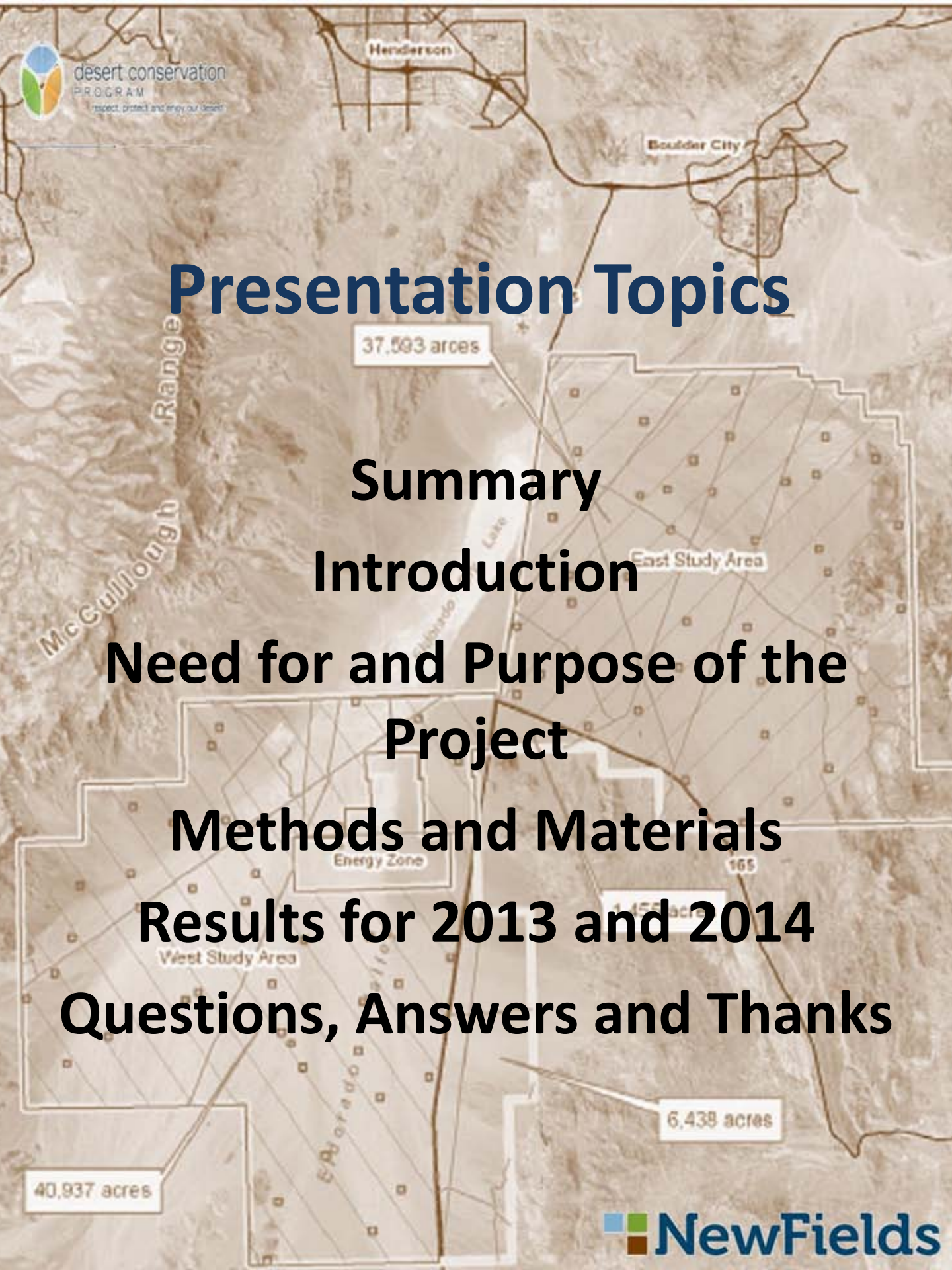
**This project completed with support from the Clark County Desert Conservation Program and funding by Southern Nevada Public Land Management Act as project #2007-NEWFIELDS-1012B**




# Presentation Topics

**Summary**

**Introduction**

**Need for and Purpose of the Project**

**Methods and Materials**

**Results for 2013 and 2014**

**Questions, Answers and Thanks**

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# Summary

- **Clark County Desert Conservation Program (DCP) multi-year pilot study to test the use of occupancy sampling to detect status and trends of Mojave desert tortoise (*Gopherus agassizii*)**
- **Study Takes place on the BCCE**

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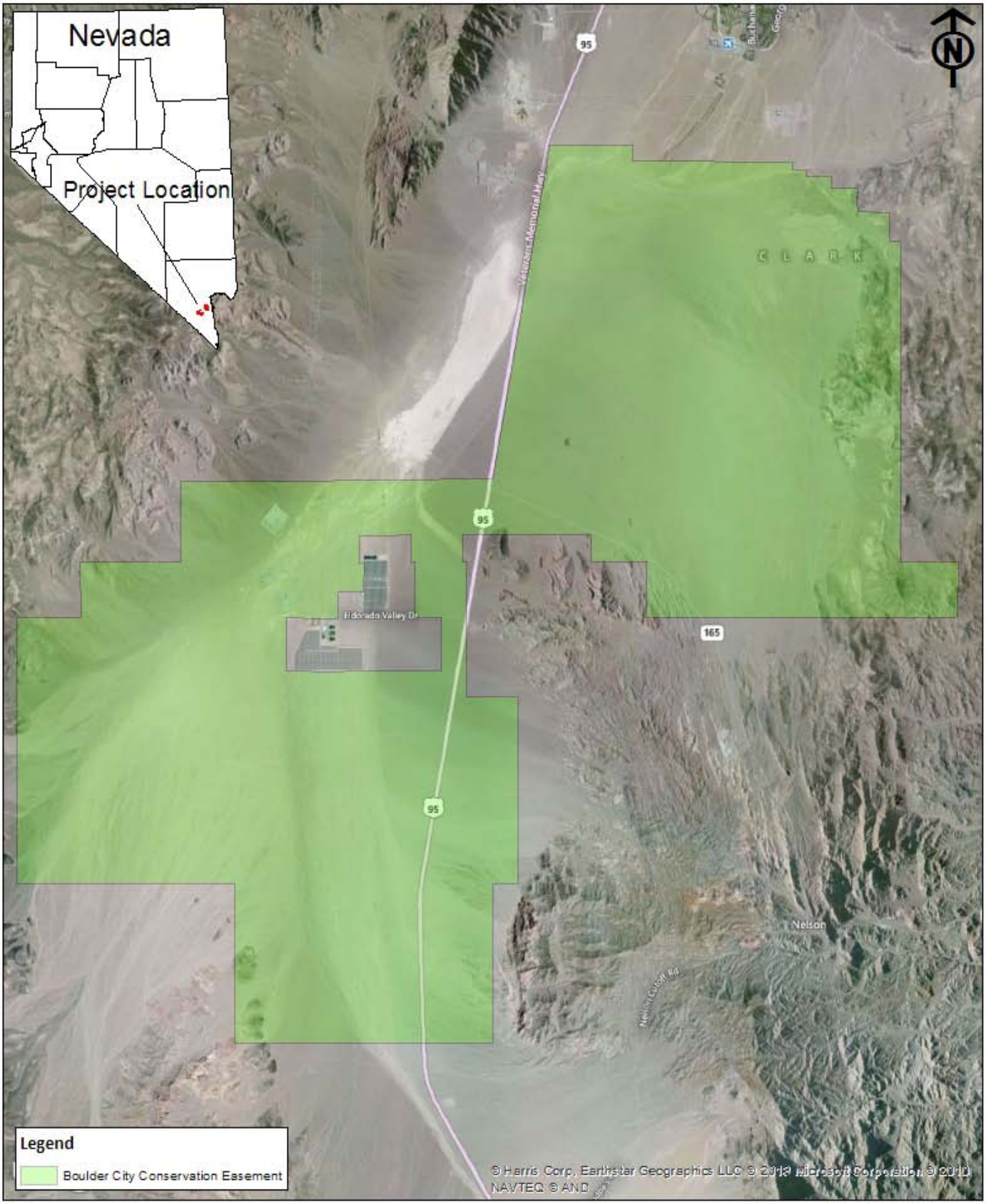
# Summary

**Study follows "Testing the Use of Occupancy Sampling to Detect Status and Trends of Mojave Desert Tortoise (*Gopherus Agassizii*) in the BCCE"**

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0 1 2 4 6 Kilometers

0 1 2 4 6 Miles

# Project Location

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# Introduction

## What is Occupancy Sampling?

**Determining the proportion of habitat within an area that contains evidence of a targeted species**

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# Introduction

## How It's Implemented

**It uses a sampling design to select sample units, with each sample unit visited two or more times per sample period to incorporate a measure of detectability**

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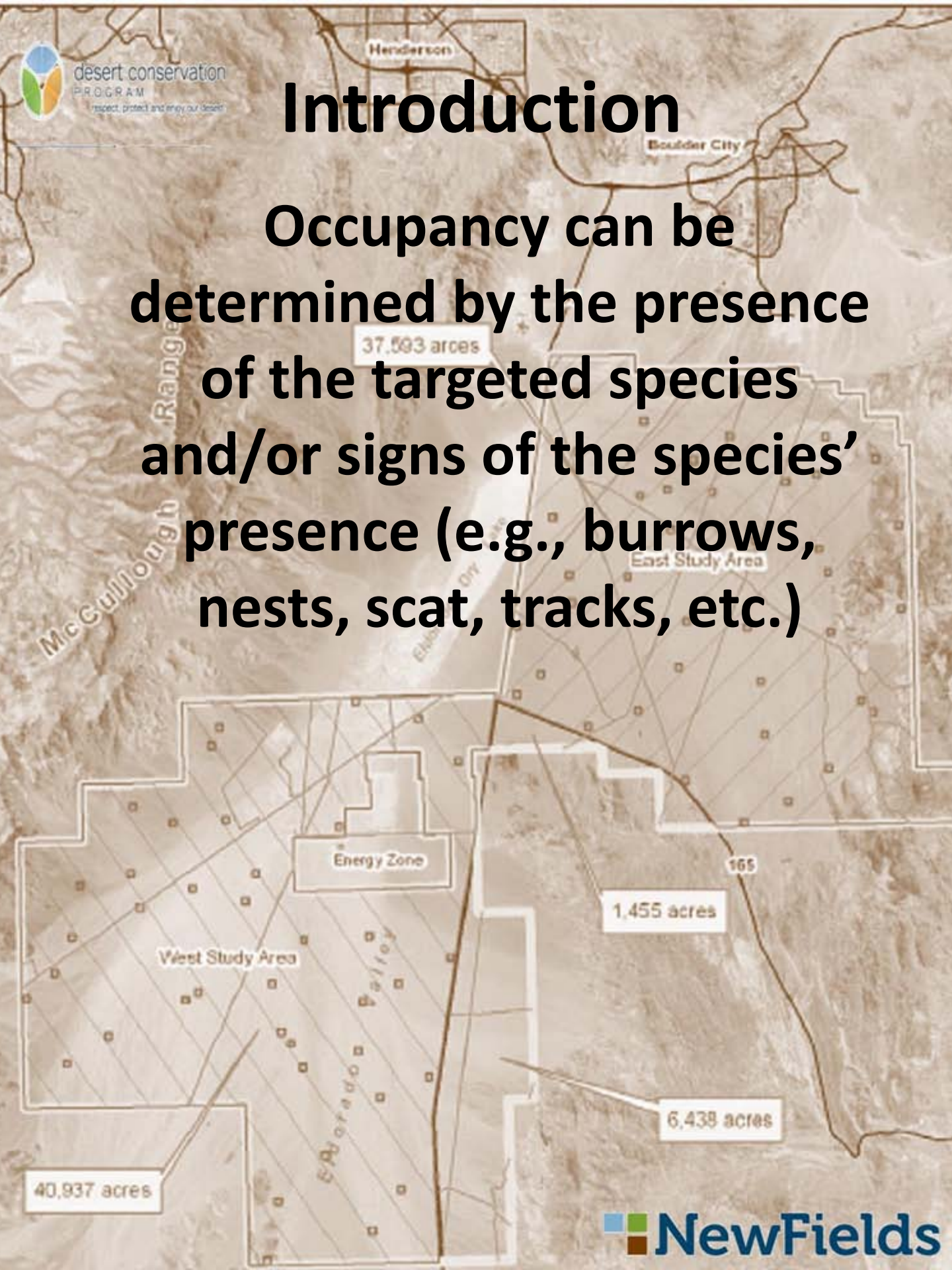


# Introduction

**Occupancy can be determined by the presence of the targeted species and/or signs of the species' presence (e.g., burrows, nests, scat, tracks, etc.)**

# Introduction

**Occupancy sampling may provide spatial distribution of tortoise occupancy in sampling units as assessed by two indicators; presence of live tortoises and presence of active burrows**

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# Introduction

## What is an Active Burrow?

**For this project, defined as a burrow containing a live tortoise, fresh scat, or fresh tracks**

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# Need for the Project

## The MSHCP requires tracking the status and trends of covered species, including Mojave desert tortoise

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# Purpose of the Project

**Occupancy Sampling may provide information regarding changes in presence/absence of tortoises or their sign in each sampling unit and changes in the proportion of area**

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# Purpose of the Project

## Results provide:

- Invaluable management input
- Assessment of species responses to changes in habitat quality, threats, and management activities

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# Methodology

# Initial training session with DCP staff and NewFields field and management team

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# Methodology

- Eighty 4-hectare plots were surveyed 3 times with each plot being surveyed at least once first in the morning
- 2 field teams (north and south)

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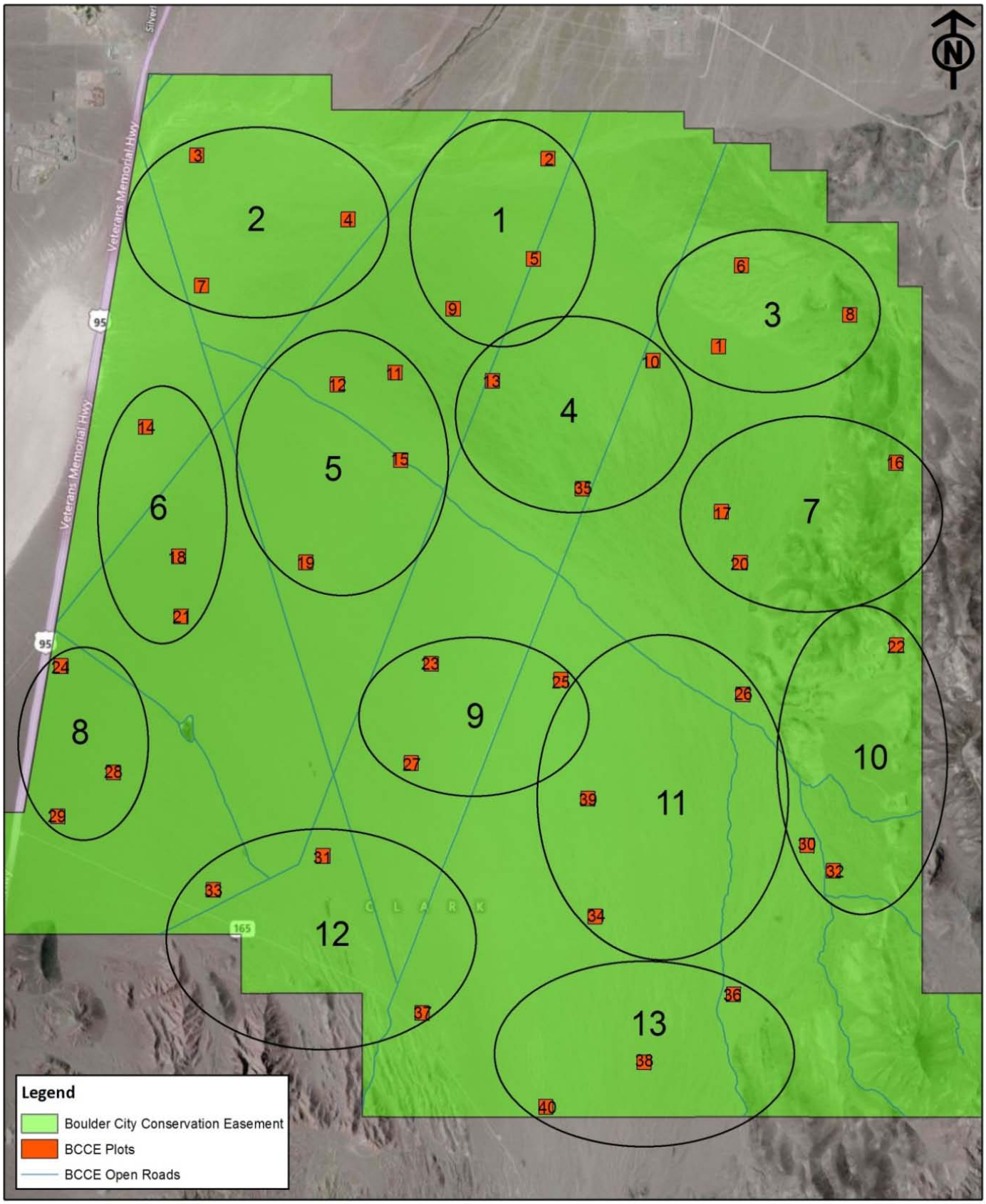
# Methodology

## A Data Manager was responsible for implementing established protocols for data collection, entry and verification

Data Manager and Authorized Biologist: Justin Romanowitz




# Team A-Plot Survey Order

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0 0.5 1 2 3 Kilometers

0 0.5 1 2 3 Miles

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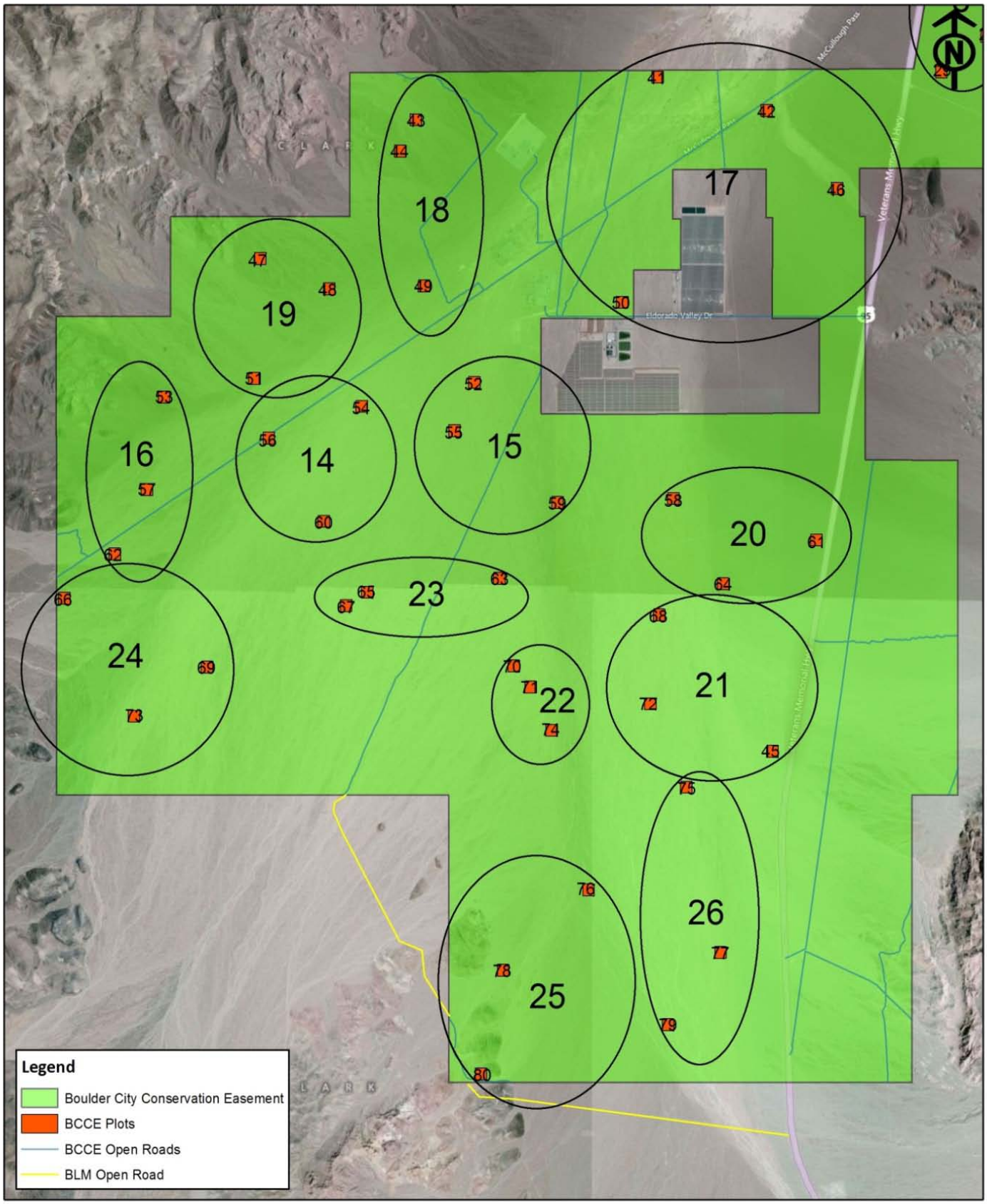


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# Team B-Plot Survey Order

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# Methodology

## Field Kit Contents


# Methodology

- Trimble dataloggers used
- Backup data collected on a smart phone application
- Tracks were recorded on GPS

# Methodology

- Quality Assurance (QA) reviews took place at the end of each datum collection, end of each plot, and end of day
- Pedestrian surveys
  - Parallel transects at 10-meter intervals
  - Began at NW corner of each plot

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# Methodology

**One team member:**

**-Monitored movement**

**-Operated smart phone app**

**-Ensured surveys remained within the plot boundaries**

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# Methodology

## Other team member:

- Recorded tortoise and biological data on Trimble® datalogger
- Team members moved off the center line to inspect tortoise sign
- 100% coverage was achieved as defined by USFWS

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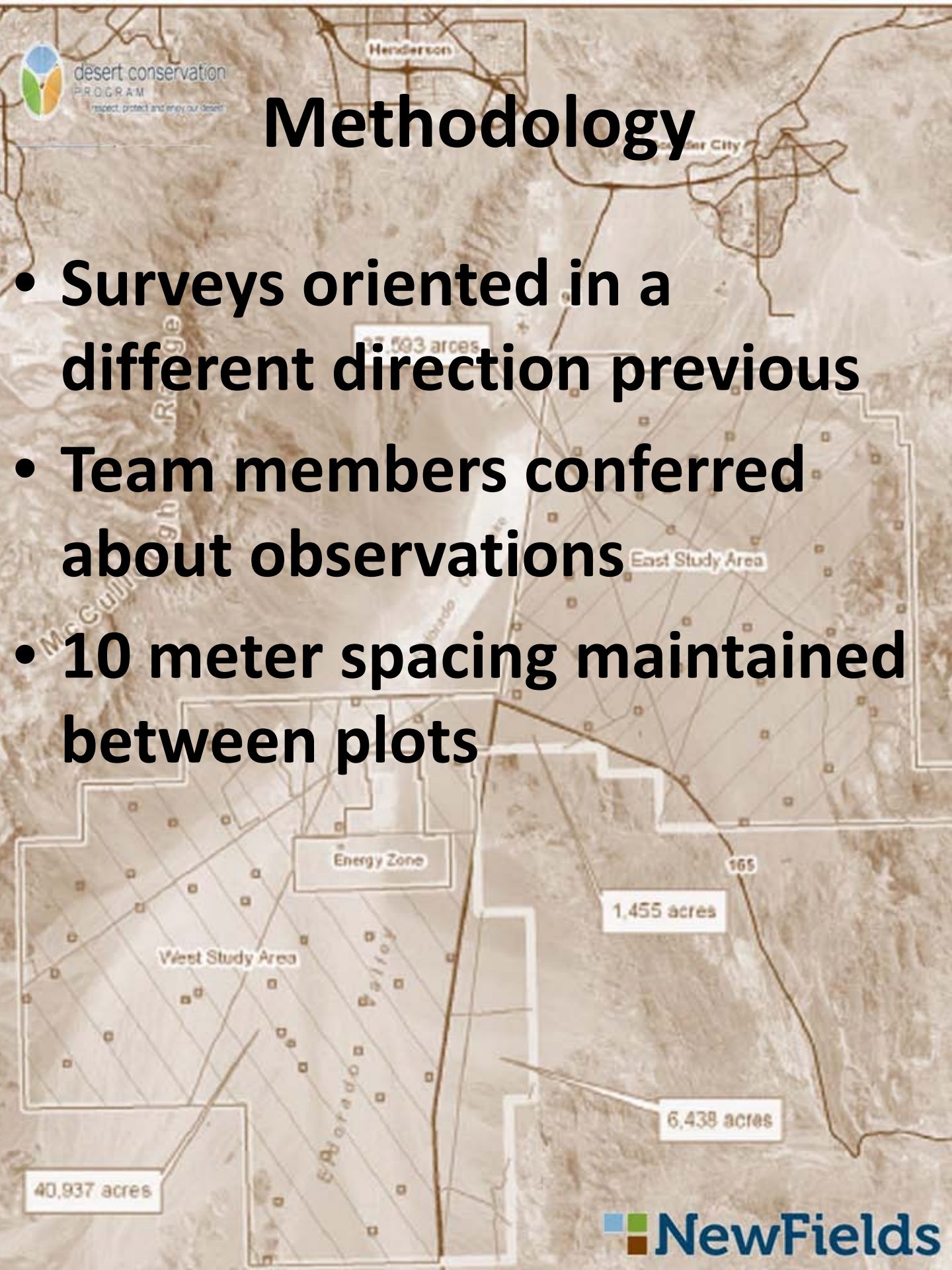


# Methodology

- Surveys oriented in a different direction previous
- Team members conferred about observations
- 10 meter spacing maintained between plots

# Methodology

- Open roads were used for travel
- Field crews utilized the same data entry fields for recording incidental observations

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# Methodology

## Data Collection

- Live adult tortoises with an MCL of at least 180 mm were measured, sexed, and tagged whenever feasible
- Tortoises were not removed from burrows

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# Methodology

**DCP-supplied identification tags were affixed to the fourth right or left costal scute to increase tag readability for tortoises in burrows**

# Methodology

## Data Collection

- Tortoise burrows were recorded and defined as active or inactive
- Although a tortoise carcass would not count towards occupancy, carcasses and condition were recorded

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# Methodology

## Quality Control

QC was verified at the end of each plot and day by Occupancy Assistants, Authorized Biologists, and the Data Manager

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# Methodology

## Quality Control

QC included reviewing data collected for completeness and logic, datum by datum by the observer, recorder and the Data Manager

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# Results – Come See Our Poster for a Better Look

## 2013

| Data Type Collected | Numerical Value |
|---|---|
| Hand entered data entries | 27,182 |
| Electronic data sheets recorded | 886 |
| Occupied plots | 7 |
| Tortoise observations | 19 |
| Adult tortoises observed | 15 |
| Juvenile tortoises observed | 4 |
| Active burrows observed | 27 |
| Both tortoise and active burrow | 6 |
| Tortoises observed in plots | 11 |
| Tortoises observed outside of plots | 8 |
| Tagged tortoises | 8 |
| Tagged tortoises by NewFields | 8 |
| Tagged tortoises found in repeat visits | 1 |
| Tortoises observed with preexisting tag/marking | 1 |
| Tortoise found mating | 2 |
| Burrows observed | 171 |
| Carcasses observed | 132 |

## 2014

| Data Type Collected | Numerical Value |
|---|---|
| Hand entered data entries | 28,534 |
| Electronic data sheets recorded | 834 |
| Occupied plots | 6 |
| Tortoise observations | 21 |
| Adult tortoises observed | 15 |
| Juvenile tortoises observed | 6 |
| Plots with tortoises and active burrows | 4 |
| Tortoises observed inside of plots | 6 |
| Tortoises observed outside of plots | 15 |
| Tagged tortoises by NewFields | 11 |
| Tagged tortoises found in 2014 repeat visits | 1 |
| Burrows observed | 100 |
| Active burrows observed outside of plots | 11 |
| Active burrows observed outside of plots occupied by live tortoise | 4 |
| Active burrows observed in plots | 5 |
| Active burrows observed in plots occupied by live tortoise | 4 |
| Inactive burrows observed | 84 |
| Carcasses observed | 147 |
| Intact carcasses observed | 66 |
| Disarticulated carcasses observed | 81 |

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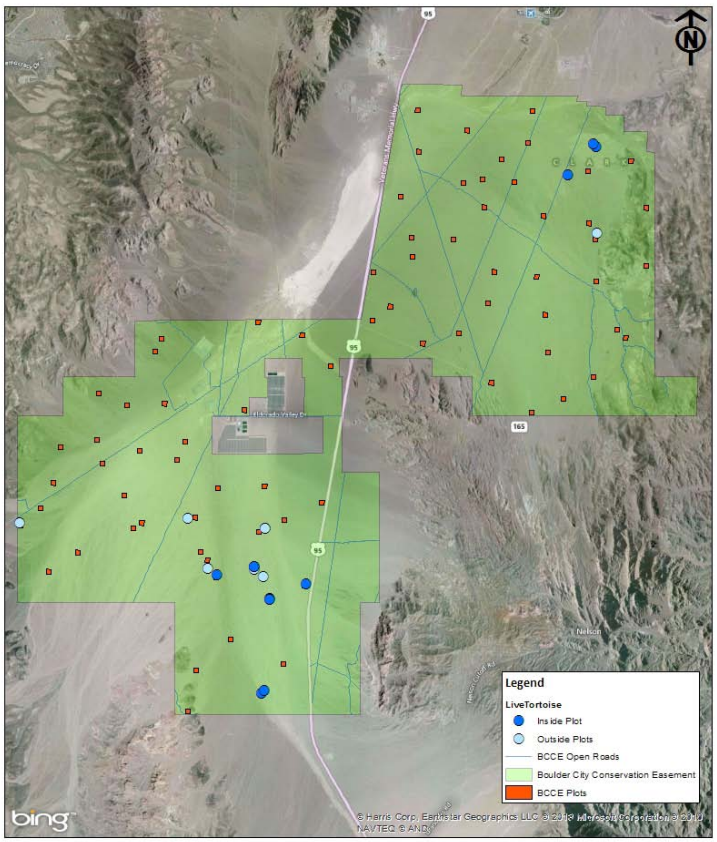
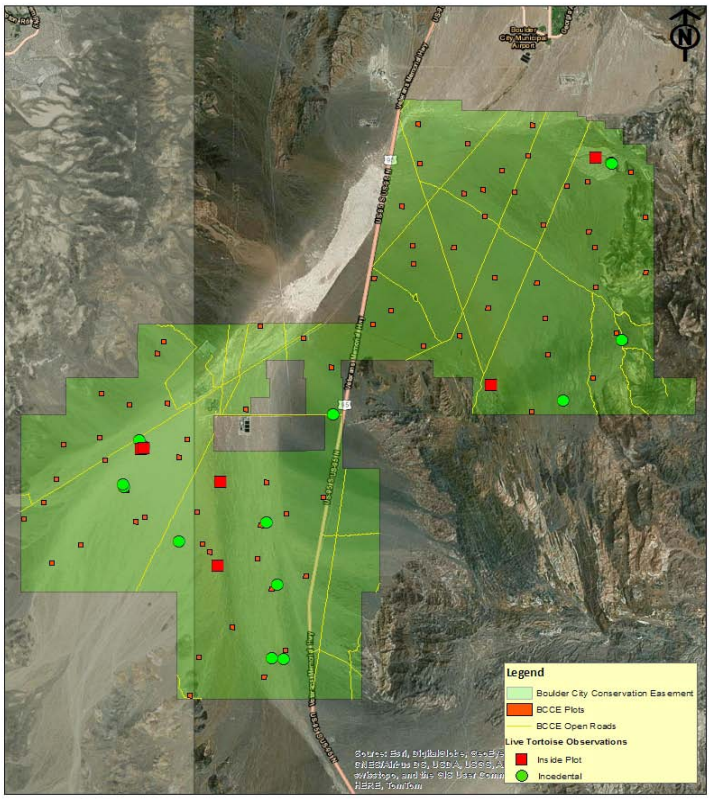
# Results

## 2013 Live Tortoise Observations

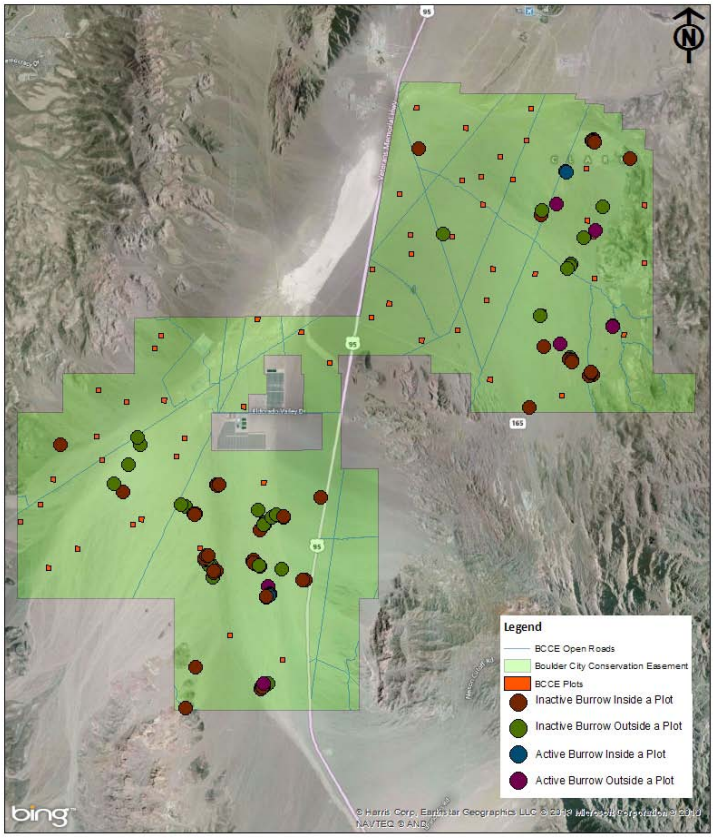



## 2014 Live Tortoise Observations

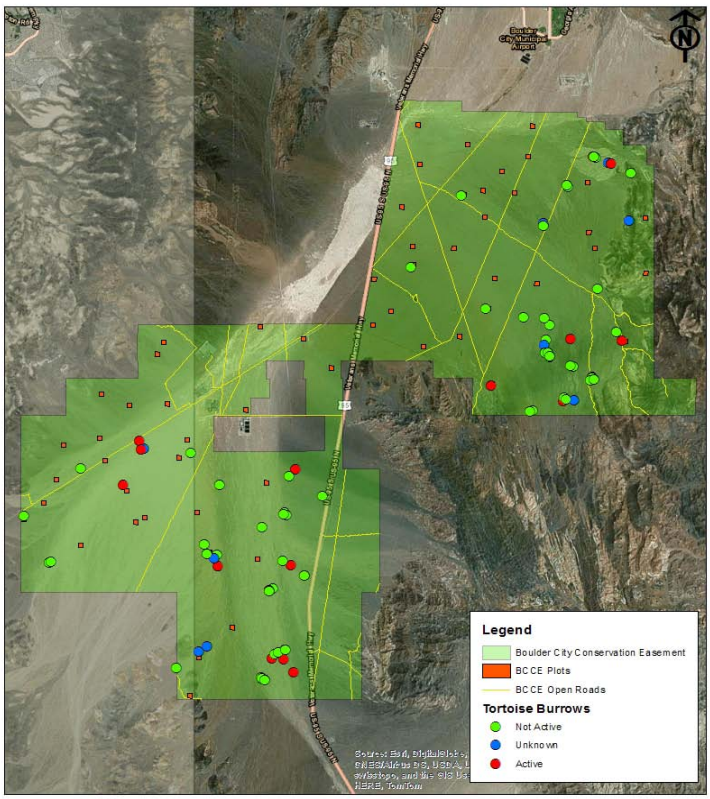


# Results

## 2013 Burrow Observations

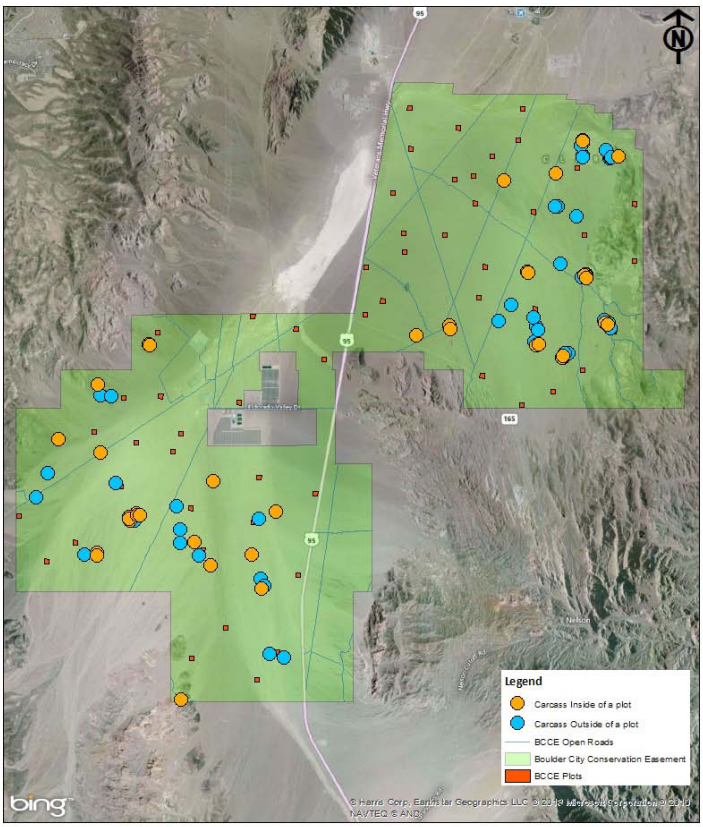



## 2014 Burrow Observations

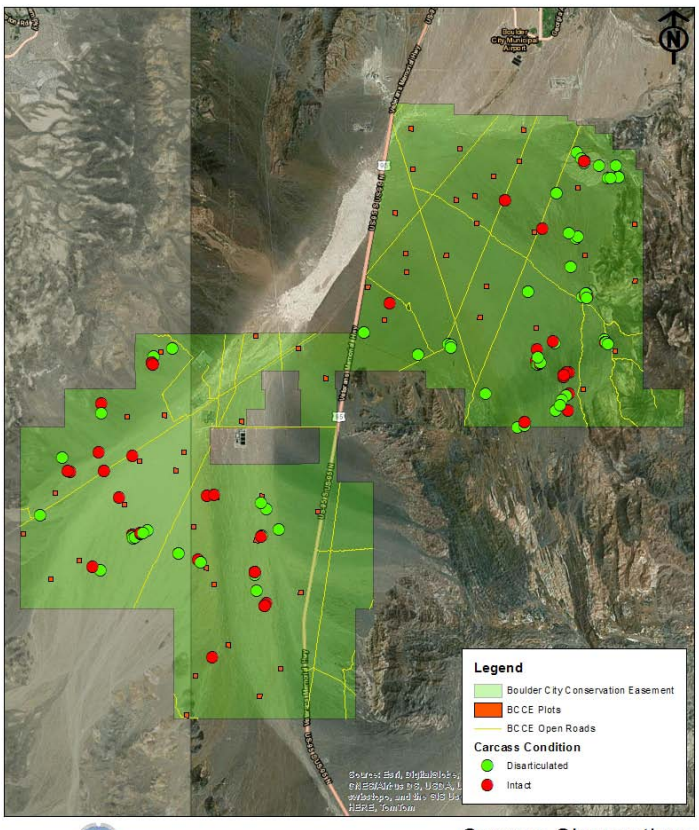


# Results

## 2013 Carcass Observations




## 2014 Carcass Observations



# Acknowledgments

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## Desert Conservation Program


**Thanks to Liz Bickmore, Scott Cambrin, and the rest of the DCP Staff!**

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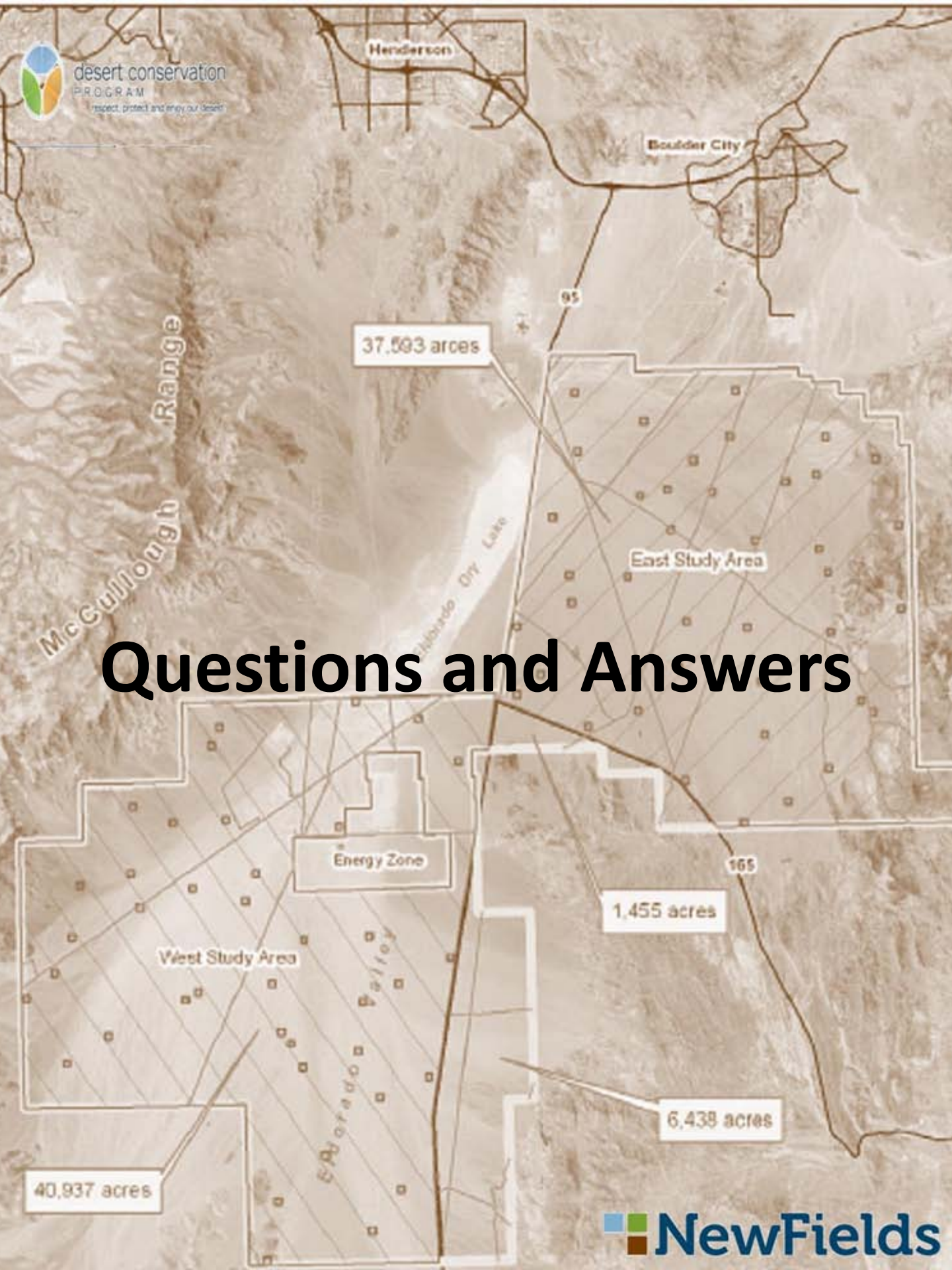


# Questions and Answers