

Desert Tortoise Occupancy Sampling

Project Number 2007-KLA-1012D

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Project Overview and Background

Funding and Agency Involvement

- Southern Nevada Public Land Management Act (SNPLMA)
- Agreement #LO8AC13225 between Clark County and the U.S. Bureau of Land Management
- Funds from land sales through SNPLMA used for Multiple Species Habitat Conservation Plan (MSHCP)



Project Overview and Background



Tortoise in burrow with new tag

Desert Tortoise Occupancy Sampling

- Document the presence or absence of desert tortoise indicators in sampling units
 - Live Adult Desert Tortoises
 - Classification of Desert Tortoise Burrows
- Types of data collected
 - Measurement and Tagging of Live Desert Tortoises
 - Recordation and Mapping of Desert Tortoise Burrows
 - Carcasses
 - Reptiles of Interest

Project Objectives

The data from this project can be used to develop a statistical model to understand and predict the occurrence of desert tortoises in similar landscapes and supports conservation of the species as required by the MSHCP.



Juvenile tortoise too small to tag

Project Objectives

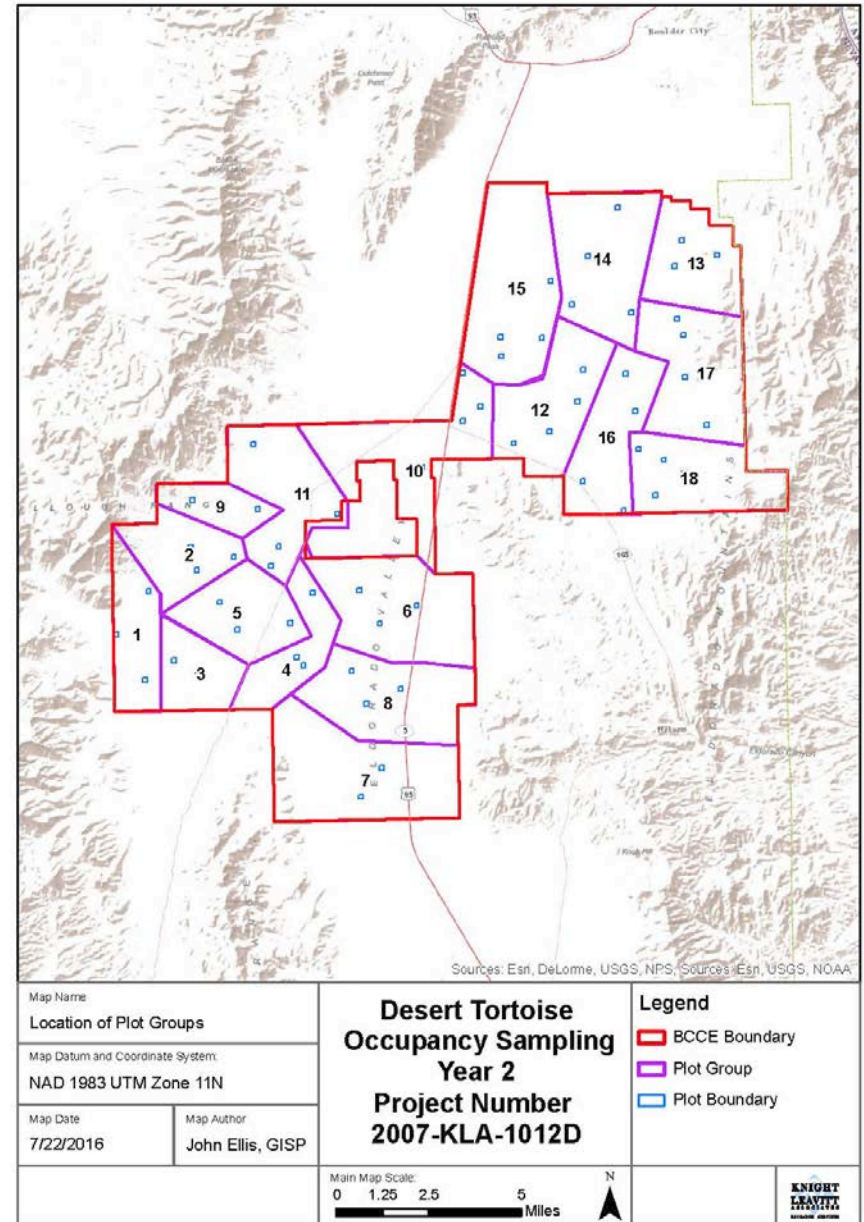
- Analyze the status and change over time in occupancy/use of tortoise habitat using the indicators of live tortoises and active burrows.



- Correlate the pattern and change in occupancy/use with habitat, habitat alteration, and management practices (covariates).
- Anecdotally assess the demographic condition of the population from tortoise size classes and gender.

Project Methods

- BCCE 60 plots, four hectares each, 7 survey rounds (total of 420 plot surveys).
- Crews of 2 biologists, 1 AB and 1 DTOA.
- 10 meter wide belt transects for 100% coverage, cardinal direction varying each round.



Project Methods



Desert tortoise post rehydration

- Navigate and record:
 - 1) live tortoises
 - 2) burrows
 - 3) carcasses
 - 4) reptiles
 - 5) incidentals
- Tag live tortoises using County identification numbers.
- Data sheets and data QA/QC.

Data Collection

- Data was collected in the field.
- Data was verified at the end of the day.
- Data was then entered into an excel table.
- Data was verified after entry to ensure data was accurate and complete.



Coachwhip (*Masticophis flagellum*)

Data Summary

Year of Survey	2015	2016
Number of DT observations	63	52
Males	15	18
Females	23	13
Indeterminate sex	25	21
Number of tortoises \geq 180 mm	37	29
Number of tortoises $<$ 180 mm	17	16
Number of tortoise unable to measure	9	7

Data Summary

Carcasses	MCL 2015	MCL 2016
Average	220 mm	220 mm
Average male	238 mm	238 mm
Average female	207 mm	207 mm
Largest	271 mm	274 mm
Smallest	146 mm	88 mm
Total carcasses observed measured (not unique)	86	73

Data Summary

Carcasses	2015	2016
Intact	95	78
Disarticulated	128	132
Total Carcasses (not unique)	223	210



Data Summary

Burrow	2015	2016
Occupied burrow observations	14	15
Not occupied burrow observations	249	334
Unknown occupancy burrow observations	46	0
Total Burrow Observations	309	349
Unique Burrows*	212	244
Average width	25cm	26cm
Average height	13cm	13cm

* based on a 1m buffer grouping estimate of GPS location accuracy

Photographs



Burrow photograph with ruler



Preparing to tag and measure a tortoise

Photographs



Data Summary

Snake Observations	2015	2016
Coachwhip (<i>Masticophis flagellum</i>)	3	4
Glossy snake (<i>Arizona elegans</i>)	2	1
Sidewinder (<i>Crotalus cerastes</i>)	4	8
Speckled rattlesnake (<i>Crotalus mitchellii</i>)	1	0
Western patch-nosed snake (<i>Salvadora hexalepis</i>)	3	4
Striped Whipsnake (<i>Masticophis taeniatus</i>)	0	2
Total snakes	13	19

Data Summary

Lizard Observations	2015	2016
Desert horned lizard (<i>Phrynosoma platyrhinos</i>)	74	94
Desert iguana (<i>Dipsosaurus dorsalis</i>)	24	46
Leopard lizard (<i>Gambelia wislizenii</i>)	19	25
Great Basin Collared Lizard (<i>Crotaphytus insularis</i>)	0	1
Total lizards	117	166

Photographs



Desert horned lizard
(*Phrynosoma platyrhinos*)



Sidewinder
(*Crotalus cerastes*)

Photographs



Leopard lizard (*Gambelia wislizenii*)

Photographs



Striped Whipsnake (*Masticophis taeniatus*)



Glossy snake (*Arizona elegans*)

Project Status

- 2016 data collection was completed from March through June. This is the 4th year of data collection to date and the project is also planned for 2017.
- The data will contribute to tracking the status and trends of the desert tortoise in accordance with the MSHCP and may be useful as a monitoring approach.
- The data will also be correlated with other environmental variables (covariates) that are hypothesized to be related to the annual presence of desert tortoises and will aid in the interpretation of the occupancy sampling data.

Project Timeline

- Each crew that was sent out was able to complete 2-4 plots per day sometimes including 1-2 contingency plots.
 - A crew consisted of one AB and one assistant, crew of 3 at times to increase efficiency
- The project was broken into groups using GIS and a work plan was developed based on:
 - Plot locations in relation to other plots
 - Crew work assignments in relation to the other crews
- Due to limited roads in the area, some days required several miles of walking to reach the assigned plots.
- Fieldwork Start and End
 - Started March 22, 2016
 - Completed June 11, 2016

Conclusion



- The project was a success:
 - Data was successfully collected
 - A multi-step QA/QC process was completed
 - 2-4 plots per day was an acceptable rate for the amount of data collected.
- Why is this important?
 - This data will be included in a larger model to assess the status and detect long-term spatial trends for the desert tortoise in the BCCE.

Questions



This work was supported by the Clark County Desert Conservation Program and funded by Southern Nevada Public Land Management Act as project #2007-KLA-1012D, to further implement or develop the Clark County Multiple Species Habitat Conservation Plan