

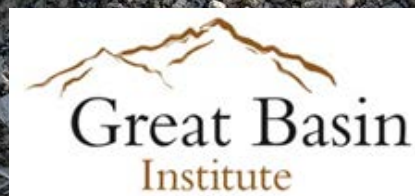
DESERT TORTOISE MONITORING

BCCE TELEMETRY – PROJECT #: 2017-GBI-1740A

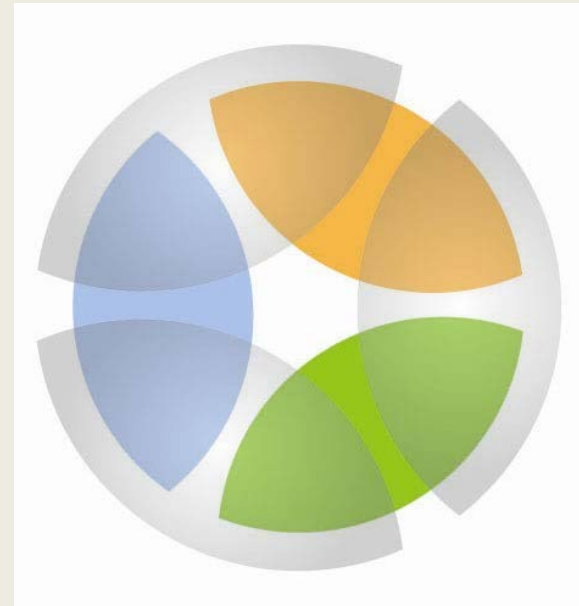
BCCE TELEMETRY and HEALTH ASSESSMENTS

PROJECT #: 2013-GBI-1412D

RANGE-WIDE MONITORING – PROJECT #: 2015-GBI-1541B



AGENCY PARTICIPANTS



This work was supported by the Clark County Desert Conservation Program and Southern Nevada Public Land Management Act as project to further implement or develop the Clark County Multiple Species Habitat Conservation Plan



Boulder City Conservation Easement Desert Tortoise Telemetry



PROJECT #: 2017-GBI-1740A

PROJECT #: 2013-GBI-1412D

PROJECT OVERVIEW



- Part of a larger population augmentation study
- Determine survivorship and movement patterns of translocated and resident desert tortoise
- Monitor for 4 years post translocation
- Continue with monitoring for an additional 5 years
- Repeat health assessments

Translocation - September 2017



- **Visual health assessments of all translocated tortoises (38)**
- **Transmitted 16 tortoises**
- **Daily observations until movement settled**

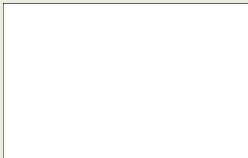
BCCE OBSERVATIONS OCT 2014 – JUNE 2019

Translocated Tortoises September 2017

Observations by Resident Status



Observations by Living Status



PROJECT SUMMARY



- **Following:**
 - **47 tortoises tracked (18 resident, 29 translocated)**
 - **Monthly observations Nov-Feb**
 - **Weekly observations Mar-Oct**

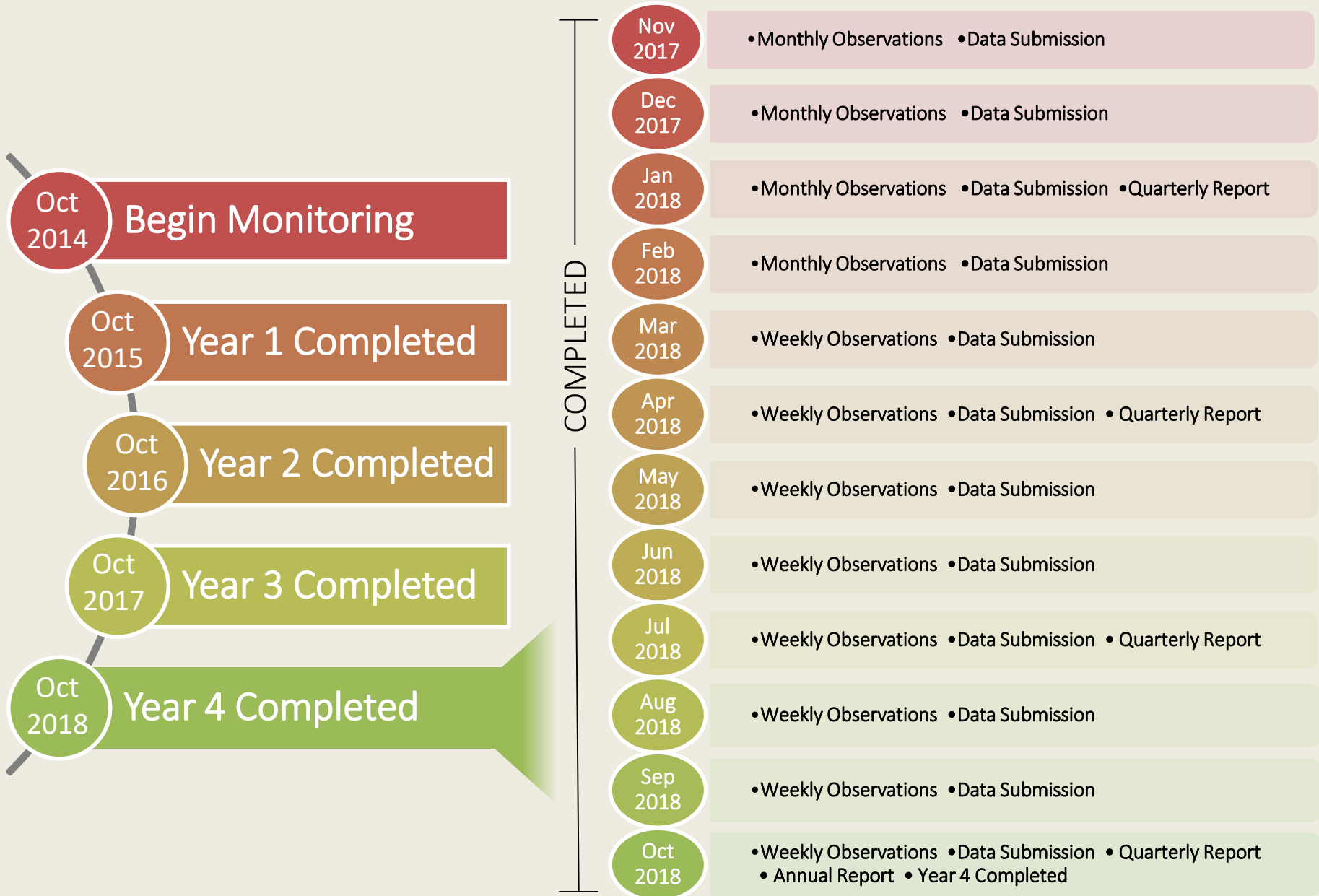
WHERE DID HE GO???



EV4184



TIMELINE OF DELIVERABLES



Next 5 years



Range-Wide Desert Tortoise Monitoring Year 4



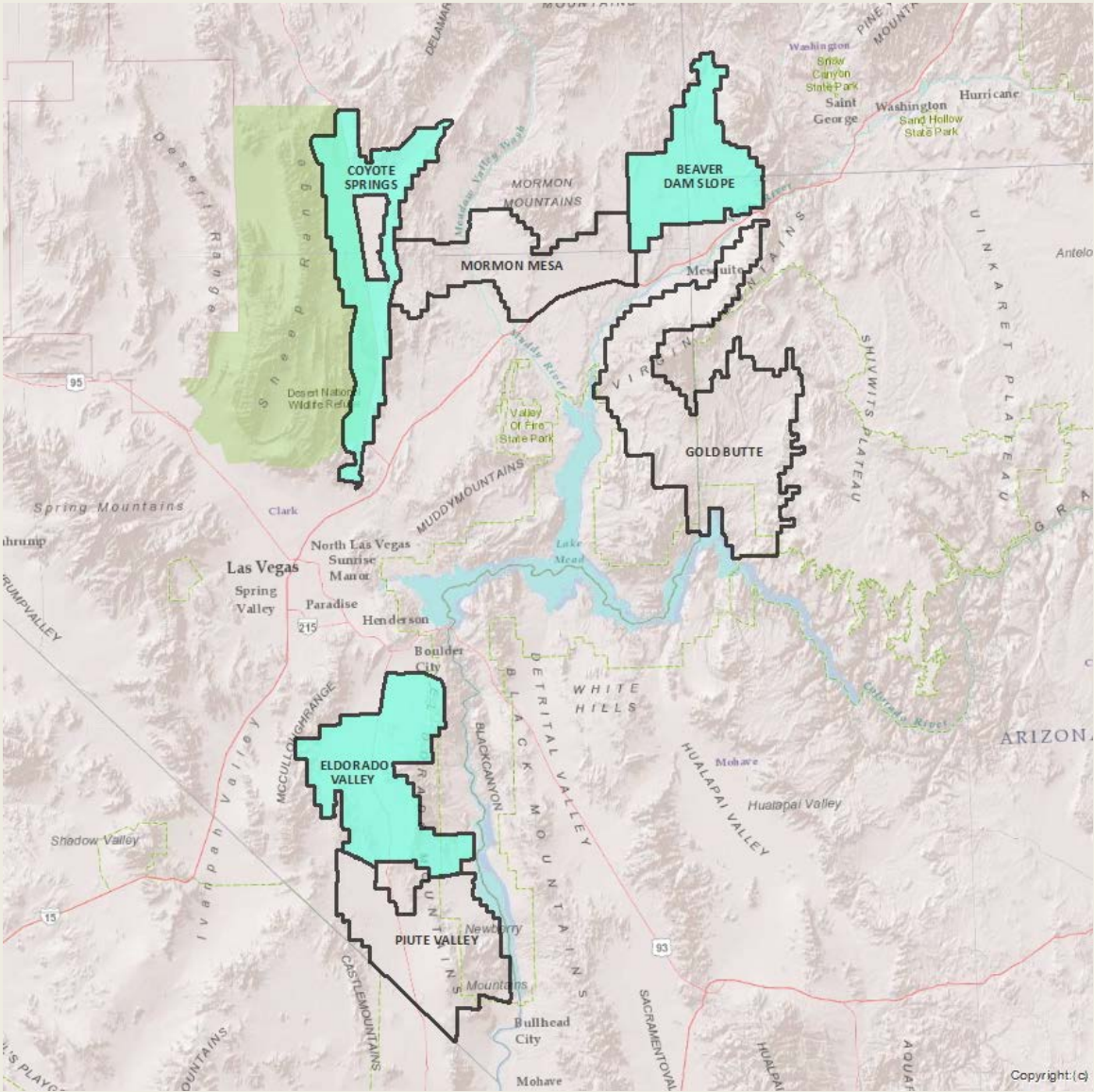
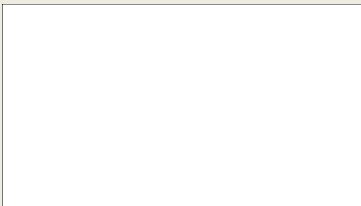
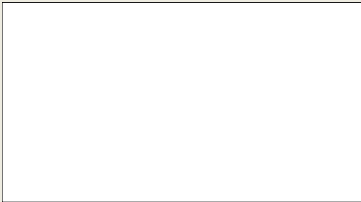
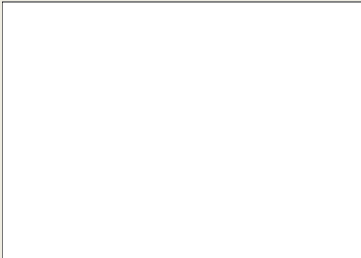
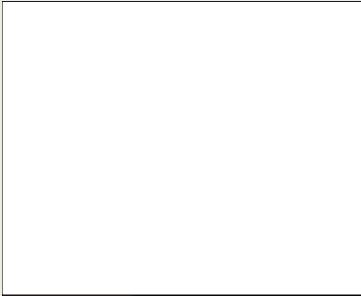
PROJECT #: 2015-GBI-1541B

PROJECT OVERVIEW



- **Generate three yearly estimates of population density for each TCA (6) over a five year period.**
- **Support recovery program efforts for the desert tortoise through range-wide monitoring using Line Distance Sampling**
- **Monitored Year 1: 5 TCA, Year 2: 4 TCA, Year 3: 3 TCA, Year 4: 3 TCA**

SURVEY STRATA



PRESEASON



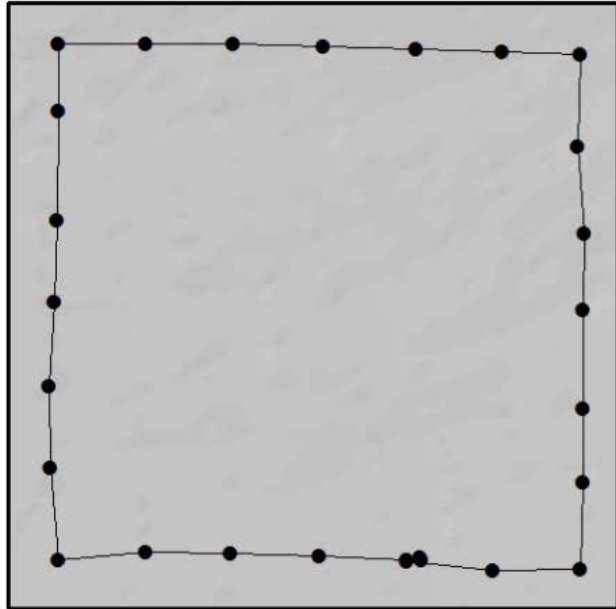
TRANSECTS



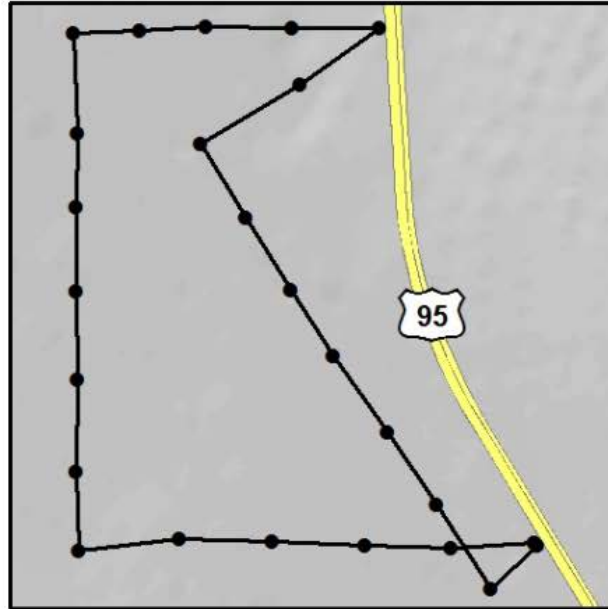
- **12 km square transects, teams of 2 (25 meters apart)**
- **Randomly assigned walk order**

TRANSECTS

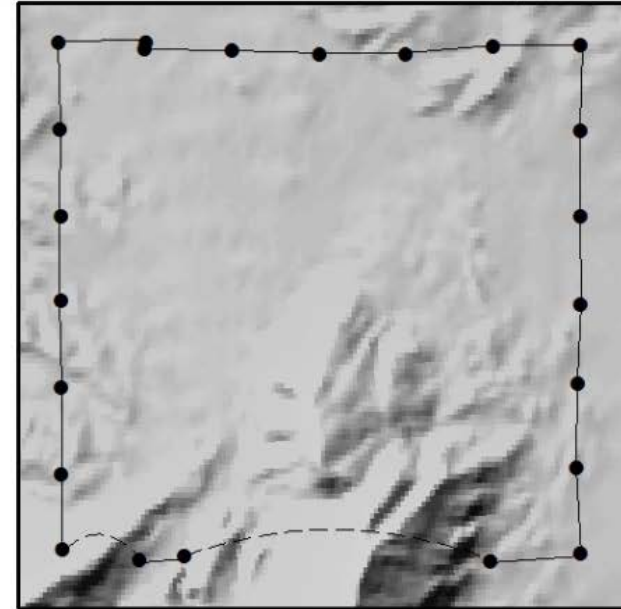
Standard Transect



Non-Standard Transect: Reflected



Non-Standard Transect: Interrupted



0 0.5 1 2 3 km

• Waypoint — Transect Path --- Interrupted Path

- Transects are not perfect squares
- Reflected for stratum boundaries and man-made obstacles
- Interrupted for non surveyed terrain

LIVE OBSERVATIONS



- Tortoise data collected - location, sex, MCL, BCS and tags
- Unmarked tortoises were tagged when possible
- Minimum handling

CARCASSES



CARCASSES



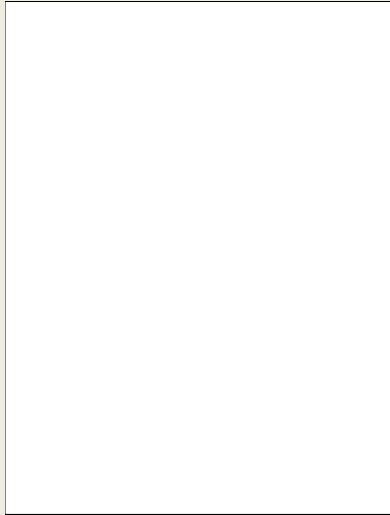
- **Carcass data collected**
 - Intact or disarticulated
 - ID
 - sex and MCL when possible

2019



- **Transects walked 2 April – 15 May 2019**
- **222 transects walked, 3 strata**
- **115 Total live tortoises found**
 - **92 transect live tortoise observations**
 - **23 opportunistic tortoise observations**
- **55 Total carcasses found**
 - **49 transect carcass observations**
 - **6 opportunistic carcass observations**

TRANSECTS: ELDORADO VALLEY



By the Numbers

Transects

Standard: 34

Non-Standard: 46

Est. Distance Walked (km): 890

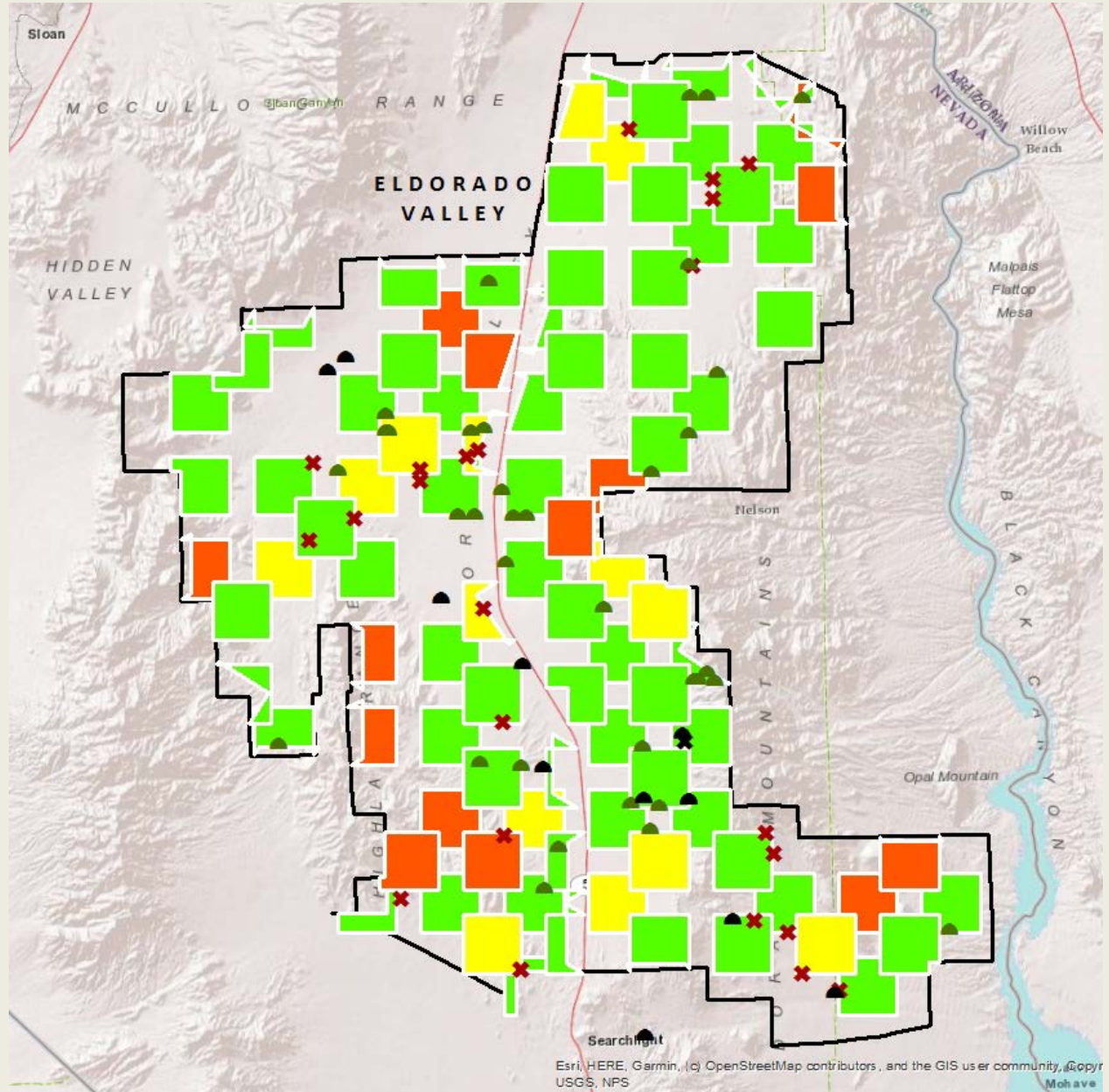
Waypoints

Total: 2,074

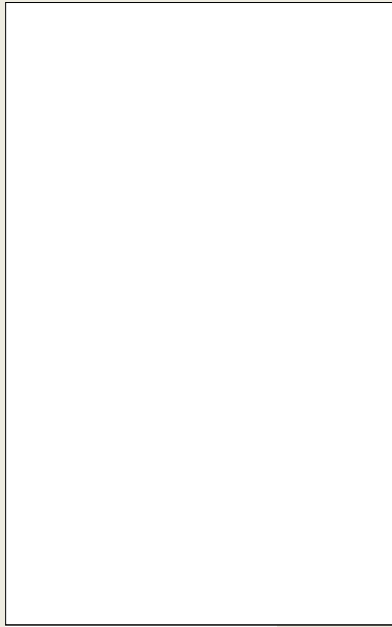
Lowest Elevation (m): 247

Highest Elevation (m): 1,405

Average Elevation (m): 839



TRANSECTS: COYOTE SPRINGS



By the Numbers

Transects

Standard: 28

Non-Standard: 44

Est. Distance Walked (km): 769

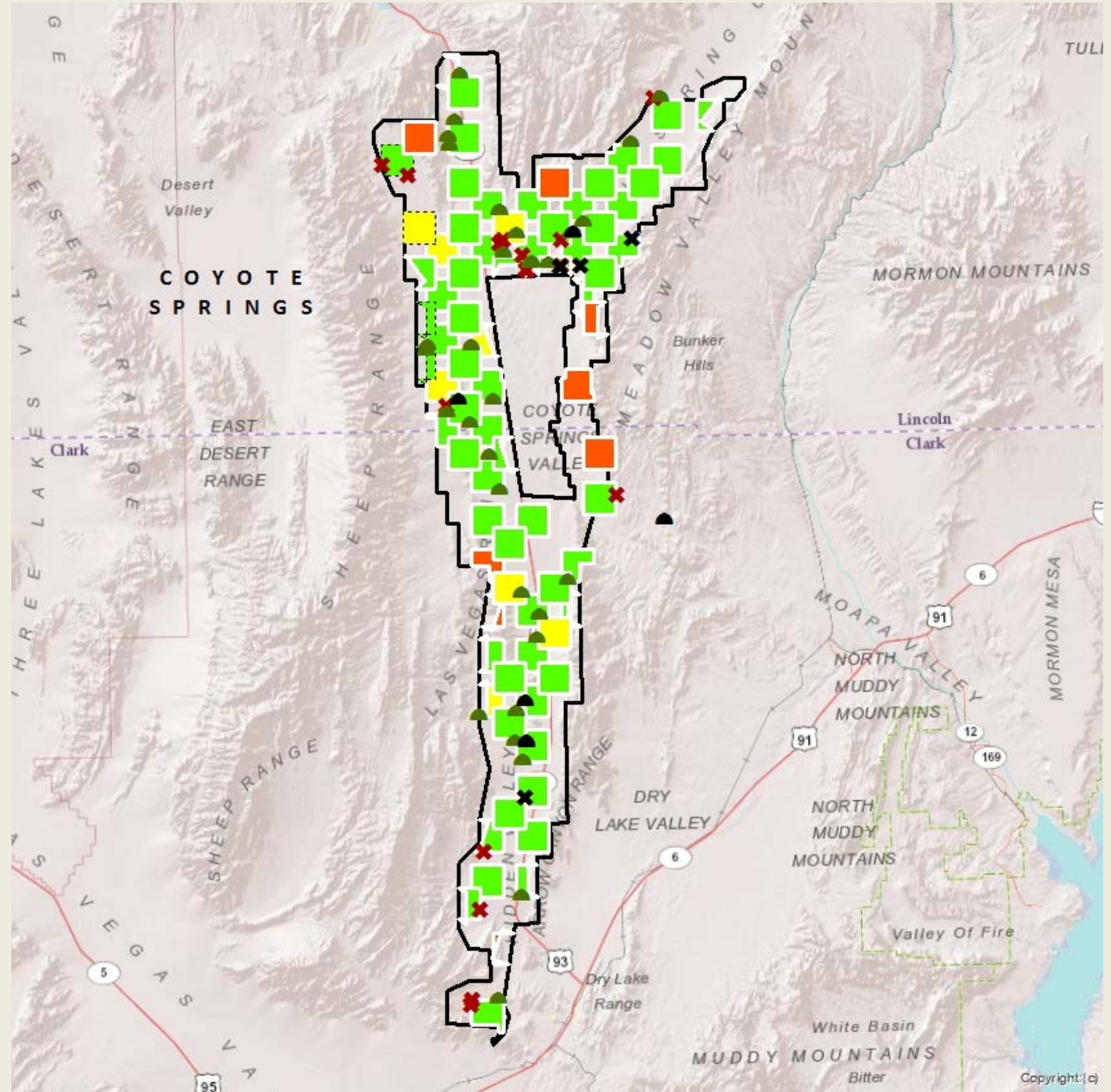
Waypoints

Total: 1,827

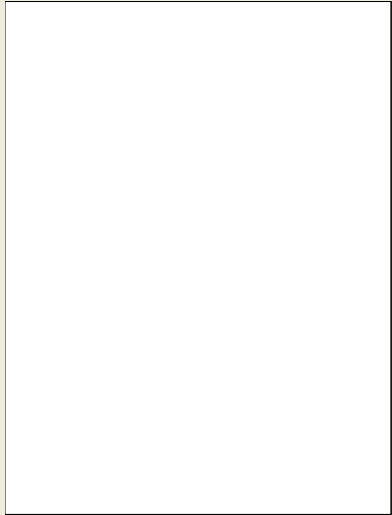
Lowest Elevation (m): 652

Highest Elevation (m): 1,218

Average Elevation (m): 891



TRANSECTS: BEAVER DAM SLOPE



By the Numbers

Transects

Standard: 34

Non-Standard: 36

Est. Distance Walked (km): 780

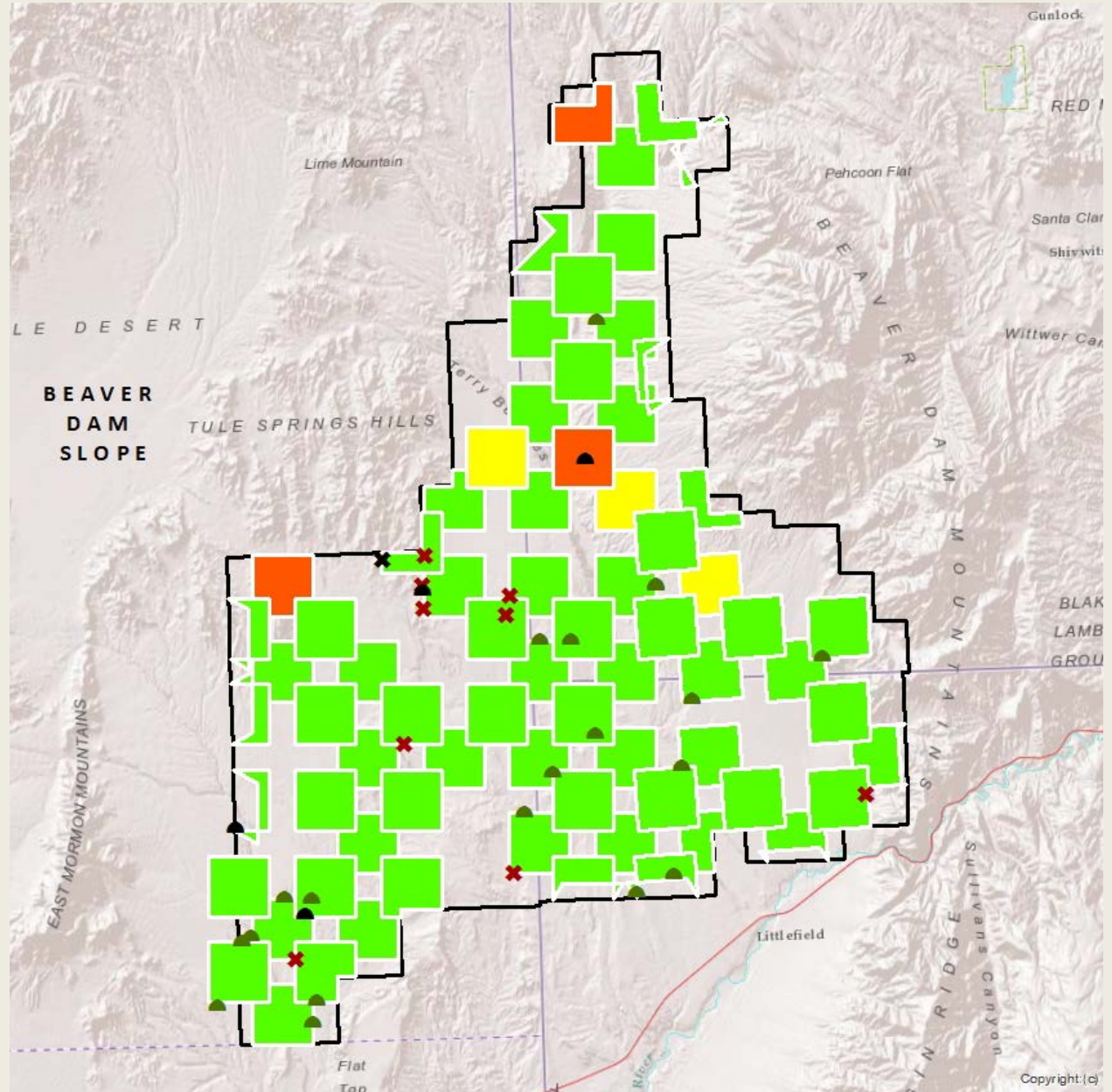
Waypoints

Total: 1,851

Lowest Elevation (m): 573

Highest Elevation (m): 1,122

Average Elevation (m): 816



TELEMETRY

- Conducted telemetry at Piute-Mid and Halfway Wash sites
- To estimate the proportion of tortoises active or visible during transect surveys
- Data was used to calibrate the results of transect surveys
- Monitoring took place 29 March – 15 May 2019



TELEMETRY

Stratum	Transmitter Equipped Tortoises	Days Surveyed	Observations	Average Observations per Day
Piute-Mid	16	11	506	46
Halfway Wash	9	17	606	36
Total	25	28	1,112	40



SUMMARY OF PROJECT TO DATE



- Crew members were provided training prior to the season
- Practice transect conducted to ensure adherence to protocols
- Surveys completed, data and reports have been submitted to DCP for Years 1 to 4
- Post season telemetry monitoring June 2019 – March 2020

TIMELINE OF DELIVERABLES

























QUESTIONS?



(Permission to use photographs provided by The Great Basin Institute)