

Tortoise Occupancy on the BCCE

Project: 2021-BIO-2020D

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Funding & Agency Partners:

- Southern Nevada Public Land Management Act (SNPLMA)
- Agreement #L08AC13225 (Clark County & BLM)
- Land Sales Through SNPLMA Fund Multiple Species Habitat Conservation Plan (MSHCP)



desert conservation
PROGRAM



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Objectives & Assumptions

- Demographics
 - Size & sex
- Occupancy
 - Analyze status & change
- Change
 - Variations in observations due to weather, etc.
- Habitat
 - Correlations with patterns
 - Overlapping data from other projects in BCCE



Purpose

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.



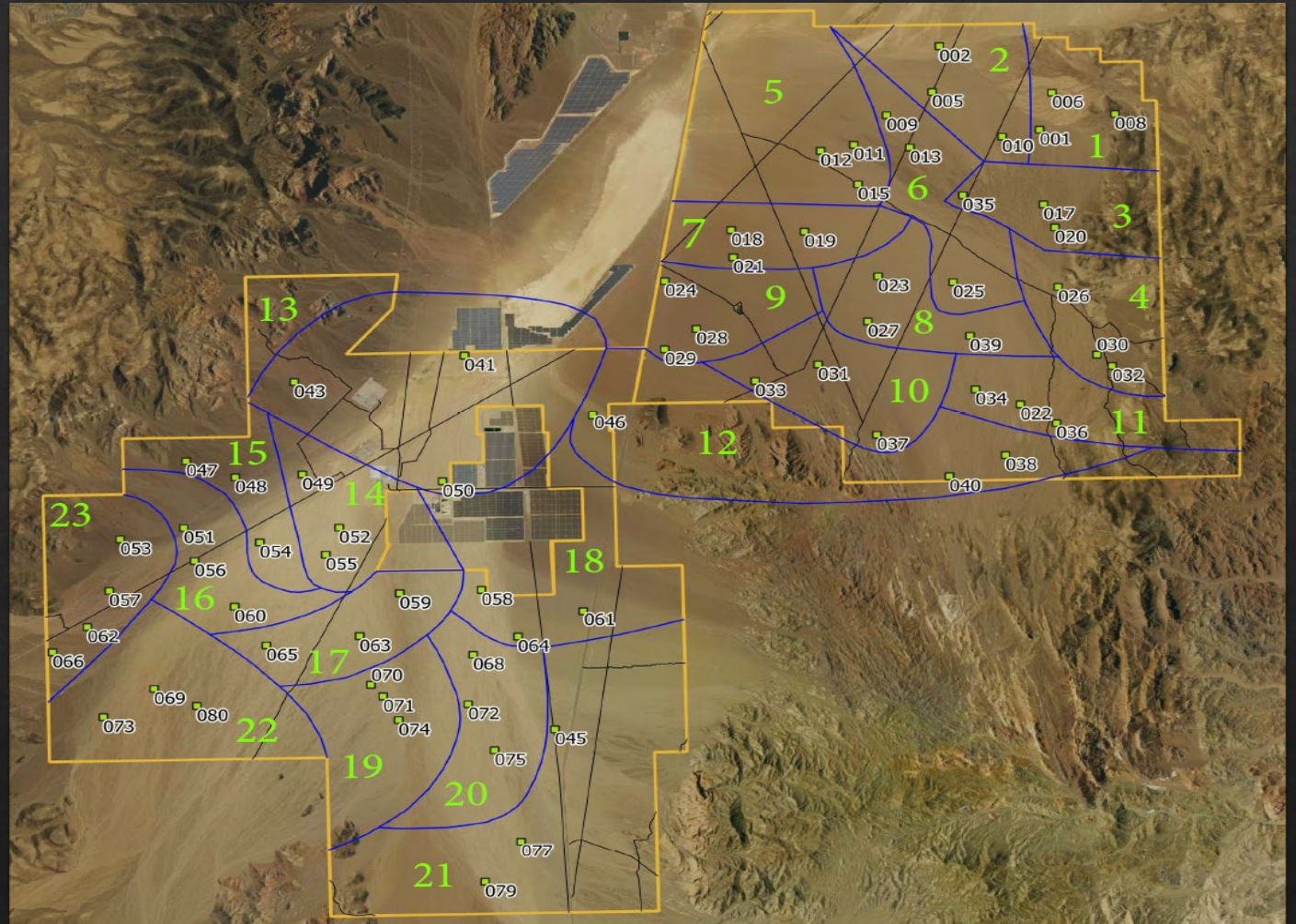
Methodology

- Work Plan
 - 3 plots (1 group) per team per day. Two teams per day.
 - Occasional 1 team day or 3 team days due to schedule.
- Fieldwork Timeline
 - Started April 1, 2024
 - Completed May 15, 2024
- Issues
 - Coordination of aerial & ground crews
 - Terrain and access
 - Minimal staff issues this year



Methods - Site

- 70 200M x 200M plots
- Full coverage transects
- 23 plot groups
- 3 plots per day per team
- 3 rounds
 - N - S, E - W, N - S
 - Start at NW corner
- 210 plot surveys total
- Incidental observations between plots captured.



Methods - Crew



- Survey Crew
 - One Authorized Desert Tortoise Biologist
 - One Occupancy Assistant
- Aerial Crew
 - One Drone Operator
- Duplicate Data Collection
 - Digital data collected via Wildnote
 - Paper data collected by hand
 - Survey tracks via Garmin
 - Aerial photo data via DJI Mavic 3E



Methods – Data

- Live Tortoise

- Measured, tagged, hydrated if needed



- Active Burrow

- Measured, must have tortoise sign



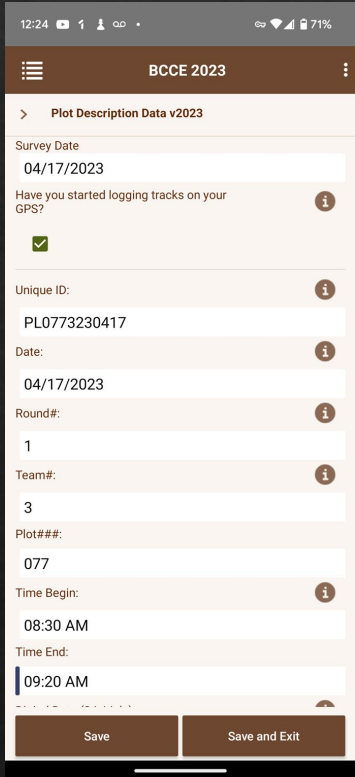
Methods – Data

- Reptiles
 - Only recording a subset of snakes, lizards
- Tagged Carcass
 - Must be intact to measure



Methods – Samples

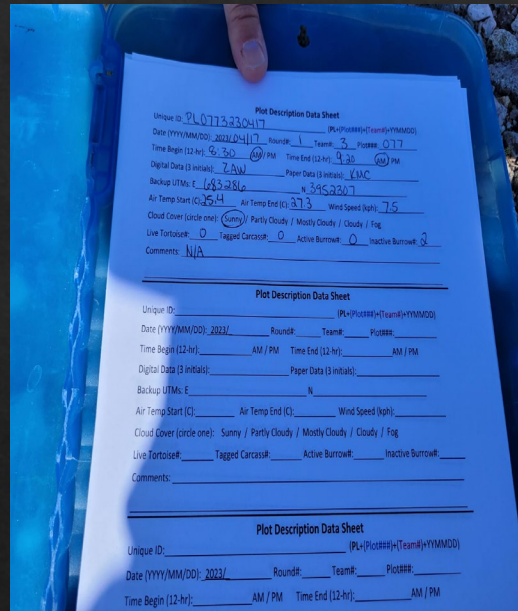
- Methods & Checks
 - Data sheets, data software & export, QA / QC, error tracking are all crucial to data quality



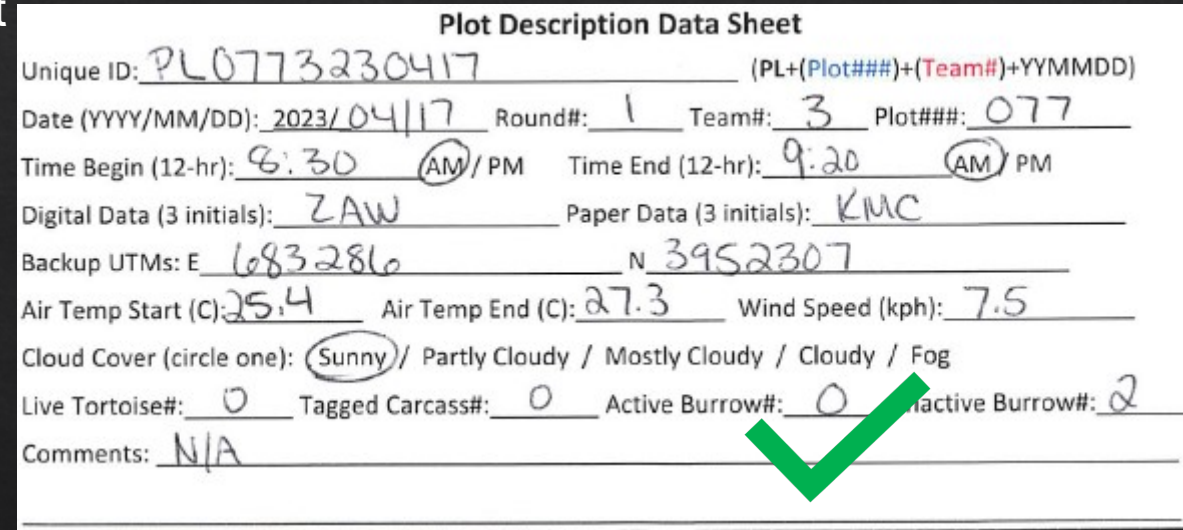
Wildnote

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	
1	Survey ID	Unique ID:	Date:	Round#:	Team#:	Plot###:	Time Begin:	Time End:	Digital Data	Paper Data:	Air Temp Start (°C):	Air Temp End (°C):	Wind Speed (kph):	Cloud Cover:	Live Tortoise#:	Tagged Carcass#:	Untagged Carcass#:	Active Burrow#:	Inactive Burrow#:	Comments:	
2	331945	PL0773230417	4/17/2023	1	3	077	08:30 AM	09:20 AM	ZAW	KMC	25.4	27.3	7.5	Sunny	0	0	0	0	0	2	N/A
3	332049	PL0793230417	4/17/2023	1	3	079	10:29 AM	11:30 AM	ZAW	KMC	30.6	34.3	5.6	Sunny	0	0	0	0	0	2	N/A
4	332093	PL0453230417	4/17/2023	1	3	045	12:39 PM	01:42 PM	ZAW	KMC	34.7	34.5	7.5	Sunny	1	0	0	0	0	0	N/A

Excel export



Data sheet



Scanned data sheet

Data Protocol

- Field Data
 - Redundant data collection
- End of Day Summary
 - Field check that plot descriptions are summed correctly
- QA / QC
 - Check of all data points manually

Data Summary

Data Collection 2024

	Total Observations	In Plot	Incidental	Photos Collected
Active Burrow	22	10	12	28
Live Tortoise	41	21	20	88
Reptile Observation	79	48	31	73
Tagged Carcass	1	0	1	2

Data Summary

Active Burrow Data Comparison 2020 - 2024

	Total	Occupied	Unoccupied	Avg Height	Avg Width	In Plot	Incidental
2020	9	6	3	N/A	N/A	5	4
2021	25	22	3	N/A	N/A	13	12
2022	41	22	19	13	40	20	21
2023	25	19	6	13	27	12	13
2024	22	13	9	14.5	28	10	12

Data Summary

Live Tortoise Data 2024

	Live Torts	Max MCL	Min MCL	Avg MCL	Has Tag	New Tag	No / Unk Tag
Male	8	293	183	252	5	1	2
Female	20	247	188 (2)	215	7	13	0
Unknown	13	173	114	157	1	7	5
Totals	41	293	114	208	13	21	7
New Tags	21	243	135	196	N/A	N/A	N/A

Data Summary

Live Tortoise Data Comparison 2020 - 2024

	Live Torts	Male	Female	Unk	Max MCL	Min MCL	Avg MCL	Has Tag	New Tag	No Tag
2020	44	10	16	18	270	65	193	10	22	12
2021	30	11	10	9	294	115	197	10	17	3
2022	29	7	5	17	238	119	189	2	13	14
2023	38	8	13	17	300	106	211	14	15	9
2024	41	8	20	13	293	114	208	13	21	7

Data Summary

Reptile Data 2024

	In Plot	Incidental	Totals
Coachwhip	1	1	2
Mojave Rattlesnake	0	0	0
Sidewinder	8	7	15
Western Patch-nosed snake	1	0	1
Desert Collared Lizard	0	0	0
Desert Horned Lizard	8	23	31
Desert Iguana	6	5	11
Long-Nosed Leopard Lizard	7	12	19
Totals	31	48	78

Data Summary

Reptile Data 2020 - 2024

	2020	2021	2022	2023	2024
Coachwhip	2	1	0	1	2
Mojave Rattlesnake	1	0	1	1	0
Sidewinder	4	3	0	5	15
Western Patch-nosed snake	2	1	0	1	1
Desert Collared Lizard	0	0	0	1	0
Desert Horned Lizard	6	1	2	3	31
Desert Iguana	2	3	1	8	11
Long-Nosed Leopard Lizard	10	2	3	6	19
Totals	27	11	7	26	79

Data Summary

Tagged Tortoise Carcass Data Comparison 2020 – 2024

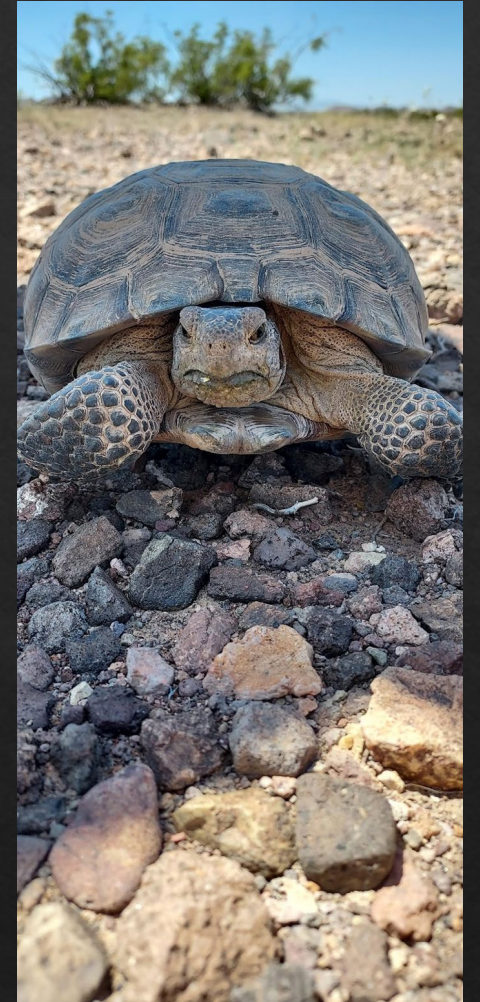
	Male	Female	Unk	MCL	Tag(s)
2020	0	0	0	0	N/A
2021	0	0	1	50	N/A*
2022	1	0	0	N/A	CC0808
2023-1	1	0	0	257	CC0125
2023-2	1	0	0	216	EV3963
2024	1	0	0	226	C



*untagged but noted due to fresh condition

Summary & Year Review

- Work Plan
 - 3 plots (1 group) per team per day. Two teams per day.
 - 2 teams for the two weeks, then 3 teams for the next two weeks would be the most ideal approach based on when we are seeing tortoises.
- Data Plan
 - Unique ID algorithm
 - Simplify Wildnote survey data entry further
 - Error tracking cut from 126 in 2022 down to 46 in 2024.



Conclusion

Thank you for joining!



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Acknowledgements

- Clark County Logo. Digital image. N.p., n.d.Web. Aug 2023.
<https://en.wikipedia.org/wiki/File:Seal_of_Clark_County,_Nevada.svg>.
- Desert Conservation Program Logo. Digital image. N.p., n.d.Web. Aug 2022.
<https://mojavemax.com/wp-content/uploads/2016/12/DCP_Logo_Small.jpg>.
- Desert Tortoise Occupancy Sampling at the Boulder City Conservation Easement; D25 Year 3, Annual Project Report. June 15, 2022. PN 2021-BIO-2020D , Bio Logical.
- MSHCP
https://www.clarkcountynv.gov/government/departments/environment_and_sustainability/desert_conservation_program/current_mshcp.php. Web, Aug 2022

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