

# 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

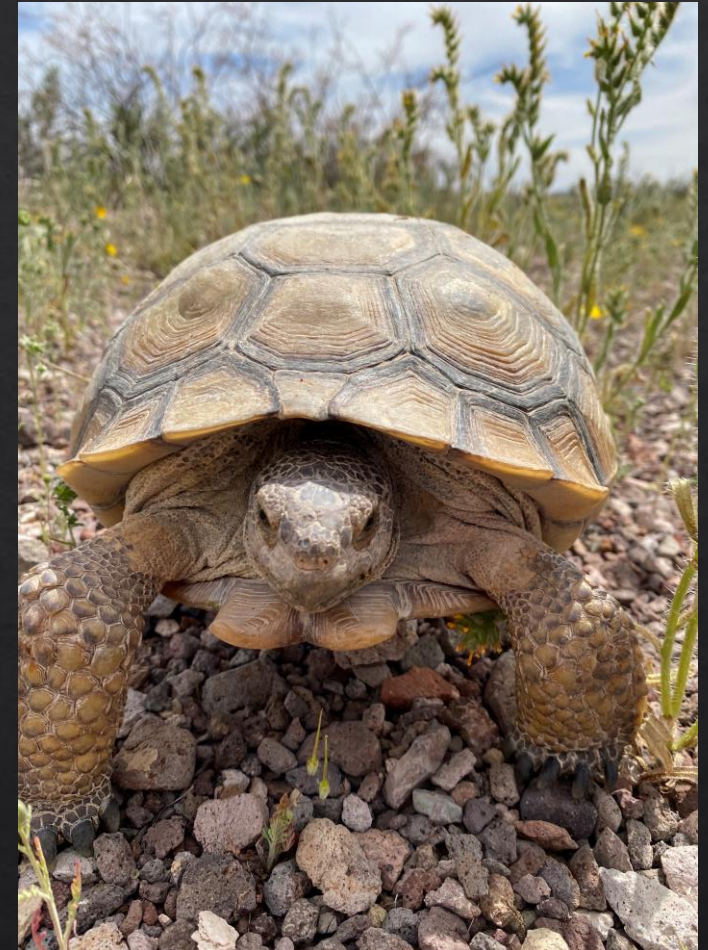


**togetherforbetter**



# 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.



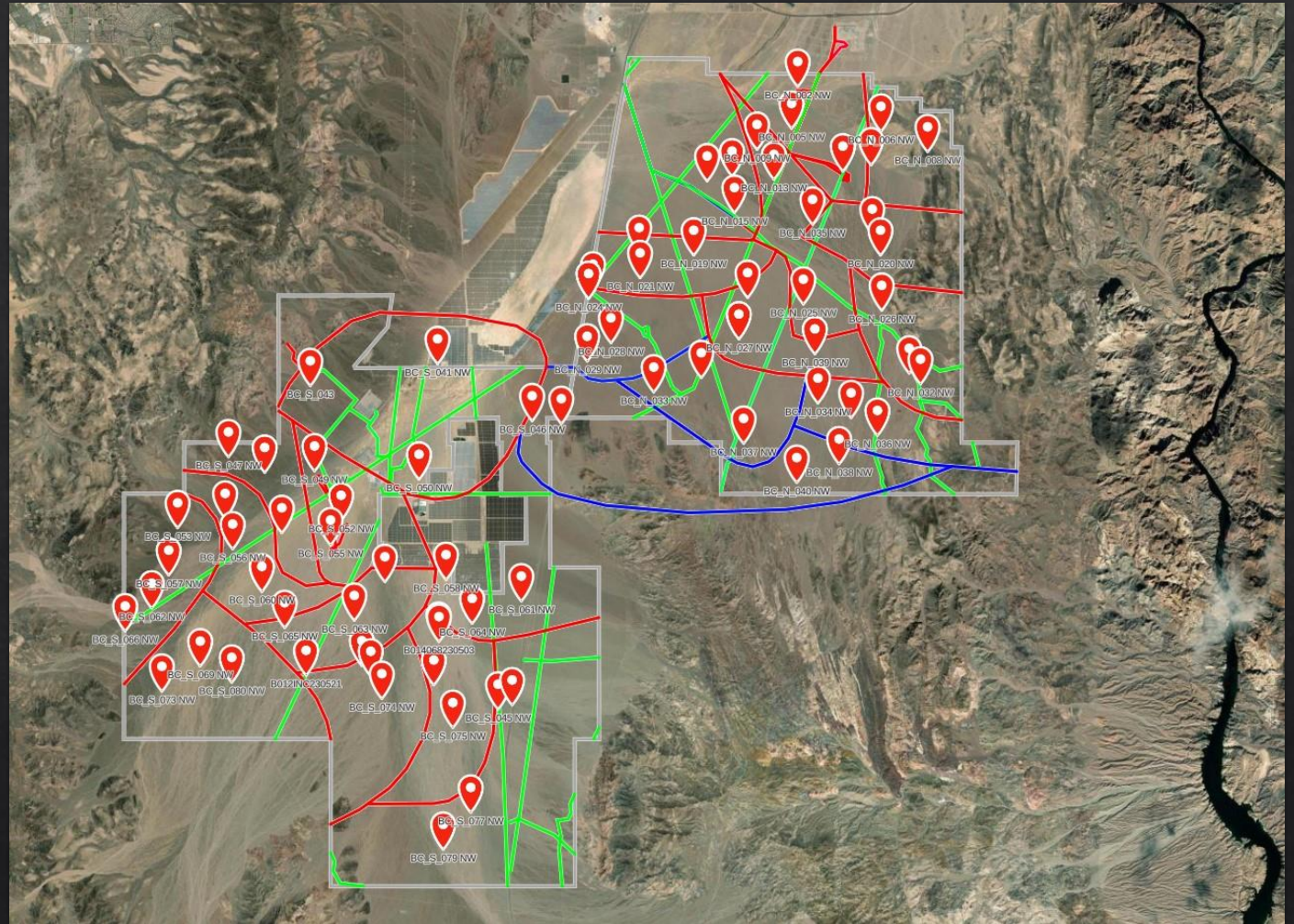
# Methodology

- Work Plan
  - 3 plots (1 group) per team per day. Two teams per day.
  - Additional weekend team for 2023 due to delayed start.
- Fieldwork Timeline
  - Started April 8, 2023
  - Completed May 24, 2023
- Issues
  - Very cold spring
  - Terrain and access
  - Onboarding additional staff



# Methods - Site

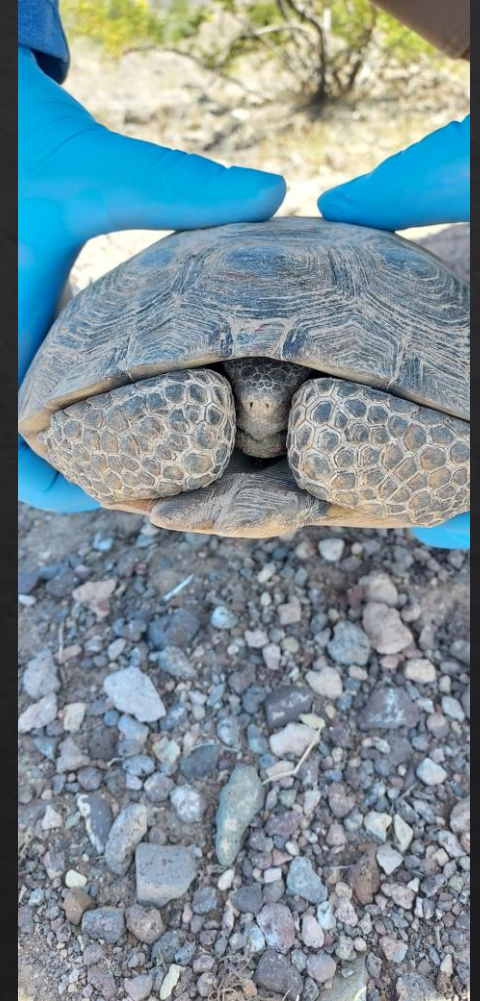
- 70 200M x 200M plots
- 23 plot groups
- 3 plots per day per team
- 3 rounds
  - N/S, E/W, N/S
  - All start at NW corner
- 210 plot surveys total
- Incidental observations between plots captured.



# Methods - Crew



- One Authorized Desert Tortoise Biologist
- One Survey Biologist
- Survey tracks
- Duplicate Data Collection
  - Digital data collected via Wildnote
  - Paper data collected by hand





# Methods – Data

- Live Tortoise

- Measured, tagged, hydrated if needed



- Active Burrow

- Must have tortoise sign, measured



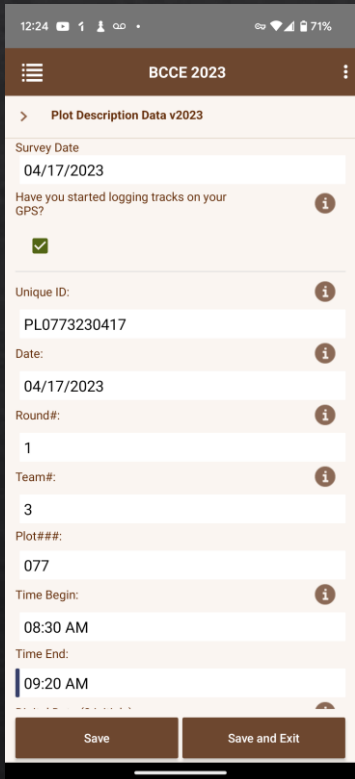
# Methods – Data

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

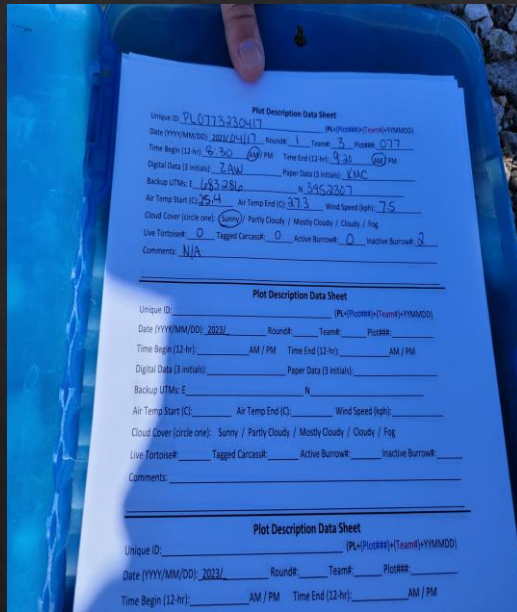


# Methods – Samples

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



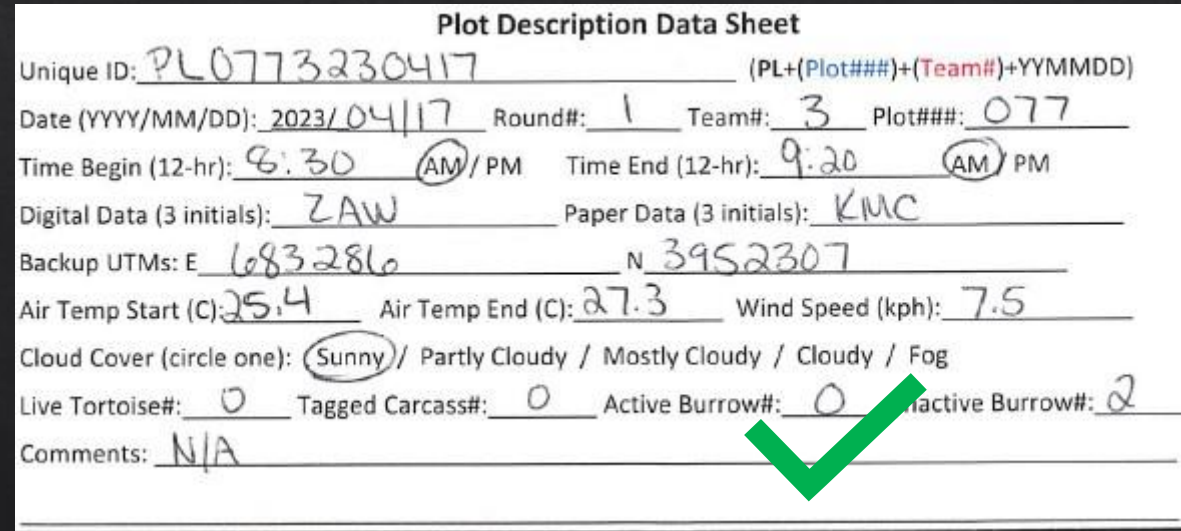
Wildnote



Data sheet

	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



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 2023

	<b>Total Observations</b>	<b>In Plot</b>	<b>Incidental</b>	<b>Photos Collected</b>
<b>Active Burrow</b>	25	12	13	32
<b>Live Tortoise</b>	38	15	23	80
<b>Reptile Observation</b>	26	14	12	33
<b>Tagged Carcass</b>	2	0	2	3

# Data Summary

## Active Burrow Data Comparison 2020 - 2023

	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

# Data Summary

## Live Tortoise Data 2023

	<b>Live Torts</b>	<b>Max MCL</b>	<b>Min MCL</b>	<b>Avg MCL</b>	<b>Has Tag</b>	<b>New Tag</b>	<b>No Tag</b>
<b>Male</b>	8	300	192	242	6	2	0
<b>Female</b>	13	257	184	223	4	9	0
<b>Unknown</b>	17	168	106	143	4	4	9
<b>Totals</b>	38	300	106	211	14	15	9
<b>New Tags</b>	15	257	106	203	N/A	N/A	N/A

# Data Summary

## Live Tortoise Data Comparison 2020 - 2023

	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



# Data Summary

## Reptile Data 2023

	Coachwhip	Mojave Rattlesnake	Sidewinder	Western Patch- nosed Snake	Desert Collared Lizard	Desert Horned Lizard	Desert Iguana	Long-Nosed Leopard Lizard
Incidental	0	1	4	0	0	1	4	2
Plot	1	0	1	1	1	2	4	4
Total	1	1	5	1	1	3	8	6

# Data Summary

## Reptile Data Comparison 2020 - 2023

	Coachwhip	Mojave Rattlesnake	Sidewinder	Western Patch- nosed Snake	Desert Collared Lizard	Desert Horned Lizard	Desert Iguana	Long-Nosed Leopard Lizard
2020	2	1	4	2	0	6	2	10
2021	1	0	3	1	0	1	3	2
2022	0	1	0	0	0	2	1	3
2023	1	1	5	1	1	3	8	6

# Data Summary

## Tagged Tortoise Carcass Data Comparison 2020 – 2023

	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

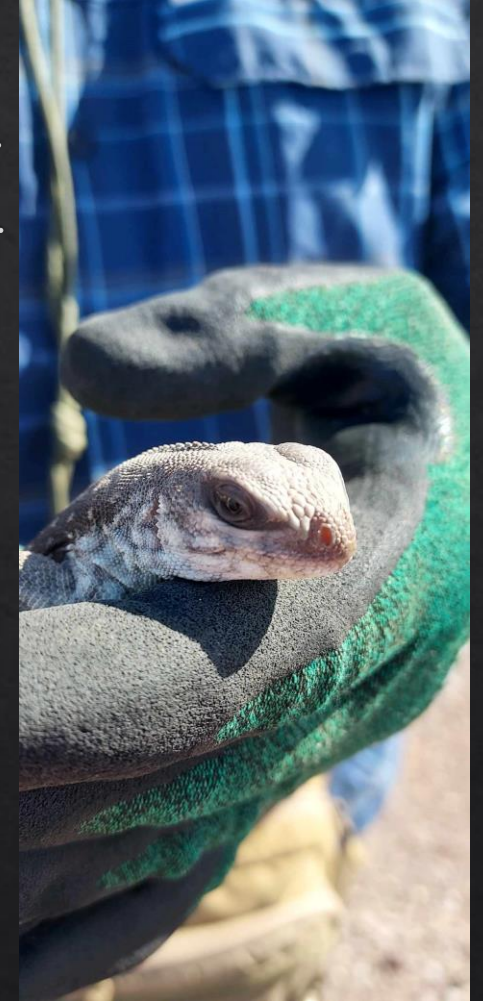
\*untagged but noted due to fresh condition

# Summary & Year Review



- Work Plan
  - 3 plots (1 group) per team per day. Two teams per day.
  - 2024, we'd like more field teams while temps are mild.

- Data Plan
  - Revisit Unique ID algorithm
  - Simplify Wildnote survey data entry further



# Conclusion

Thank you for joining!



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# Acknowledgements

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