

Recent Past and Near Future of the MSHCP

Scott Cambrin, 08/15/2022



MOJAVEMAX.COM



desert conservation
PROGRAM

Overview



- Recent Past

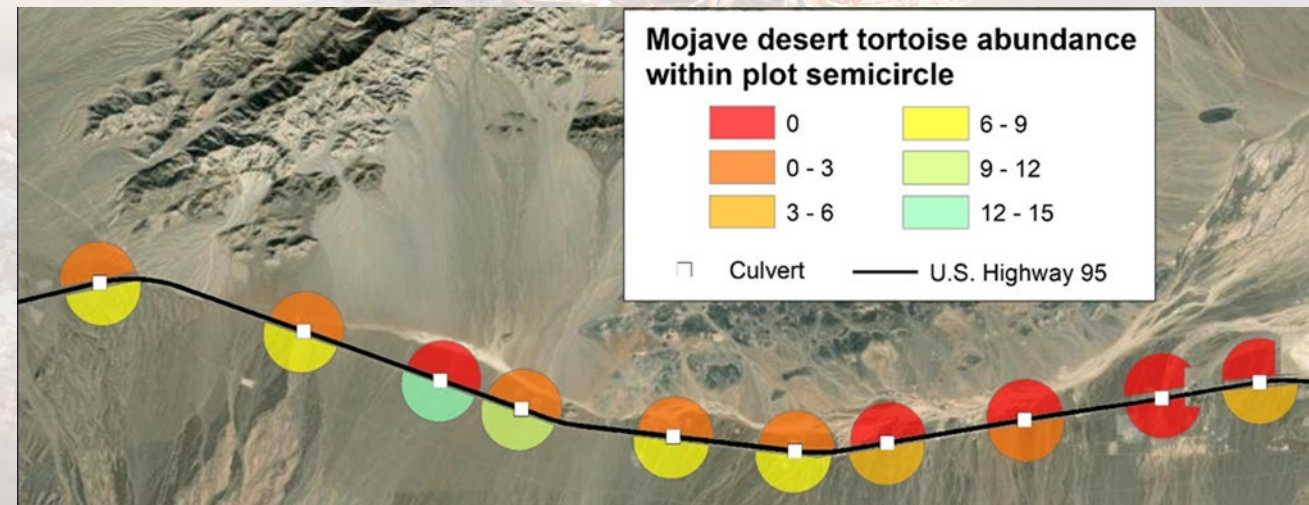
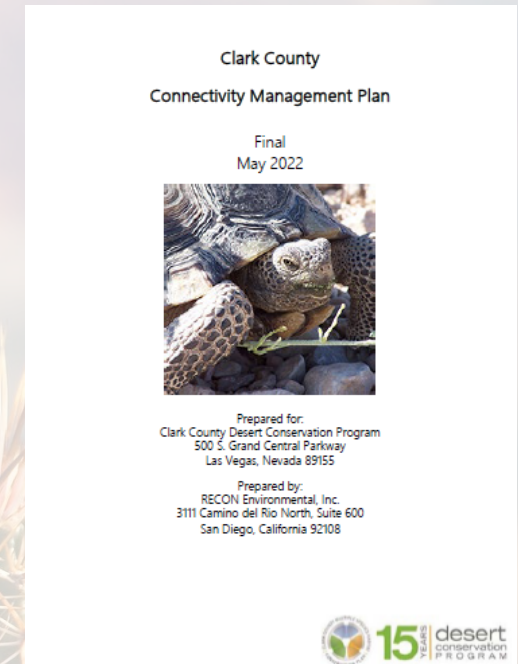
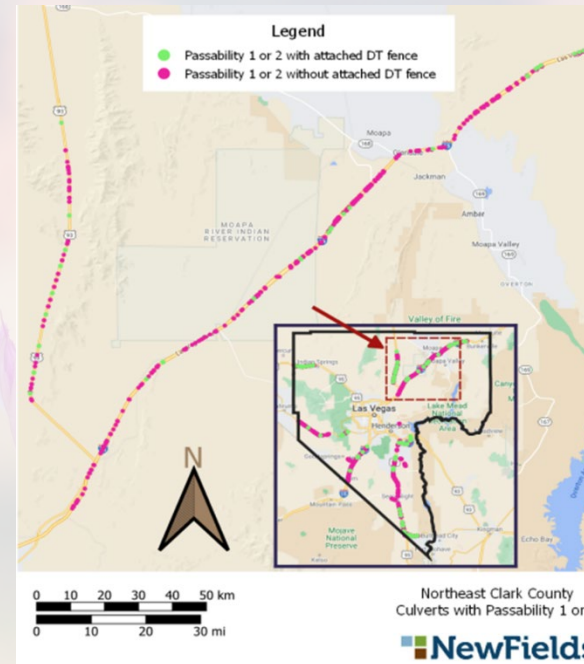
- Tortoise Connectivity
- K-2 Restoration on the BCCE
- Desert Tortoise Nesting Study
- Road Warriors
- Understanding Threats to Gila Monsters in Nevada
- Species Habitat Modeling
- Desert Tortoise Restoration Workshop

- Near Future

- Research on Desert Tortoise Habitat Restoration Techniques
- Population Augmentation Research
- Route Restoration in the Eldorado Valley
- Tortoise Demography Plots
- Fencing US 95 N along Tule Springs

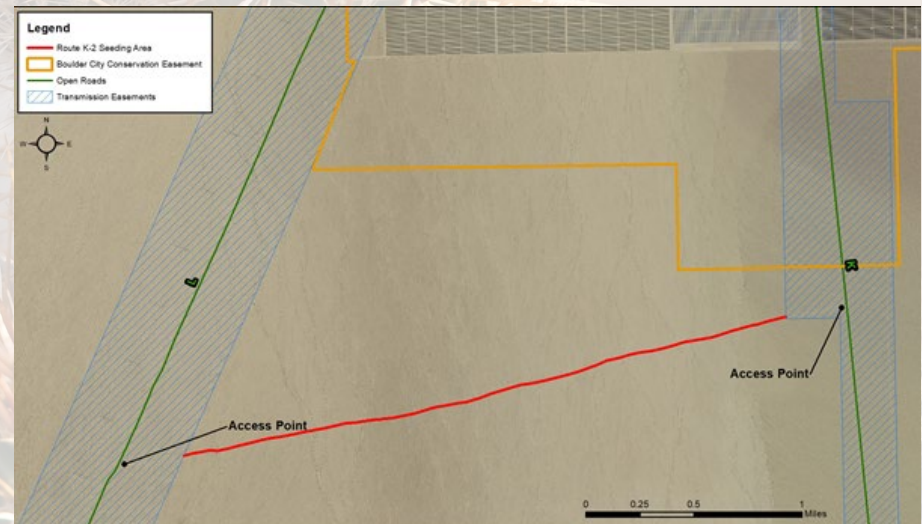
Tortoise Connectivity

- A statistical model, that predicts the effect of various landscape disturbances on Mojave desert tortoise connectivity.
- A report detailing the methods used to build the statistical model and describing the precision of the model and any limitations of the model.
- A GIS shapefile of catalogued linear disturbance crossings within Clark County
- A report that describes desert tortoise use of existing linear disturbance crossings within Clark County and relates such use to population density estimates.
- A management plan describing and prioritizing potential mitigation actions that can be implemented to improve habitat connectivity and/or mitigate impacts to connectivity.



K-2 Restoration

- Restored 4.5 km of an old race route
- Decompacted the entire route
- Applied 2.6 acres of Broadcast seeding and 2.9 acres of pelletized seeding
- Road access was camouflaged with plantings, rocks, and vertical mulch
- Salvaged plants were watered for 6 months



Desert Tortoise Nesting Study

- Tracked 14 translocated and 7 resident tortoises
- Two translocated and one resident tortoise produced follicles
- Two translocated tortoise produced shelled eggs
 - One nest with 6 eggs 4 of which hatched
 - One nest with 1 egg which did not hatch



Road Warriors



Citizen science to locate and repair minor breaches in tortoise fencing along roads and located and report major breaches and any mortality and tortoise sign data

- Phase 1: 39 miles along both sides of road focused on road mortality
 - 1 tortoise carcass
 - 2 tortoise burrows
 - 6 other carcasses (coyote, bird, rabbit, and snake)
- Phase 2: 27.65 miles along both sides of the road focused on fence inspection
 - US95 (Indian Springs) 32 incidents of fence damage
 - SR 160 (Blue Diamond) 28 incidents of fence damage
 - I=15 (Mormon Mesa) 70 incidents of fence damage
- Phase 3: 13miles along both sides of road focused on road mortality
 - 1 partial tortoise carcass
 - 2 other carcasses

Understanding Gila Monster Threats in NV

Gila monster spatial ecology and habitat use

- Spatial Ecology, home range, and movements
- Body size variation among populations
- Seasonal differences in shelter selection
- Thermally mediated refuge site selection
- Observation of long-term shelter use

Assessing genetic diversity of Gila monsters in NV

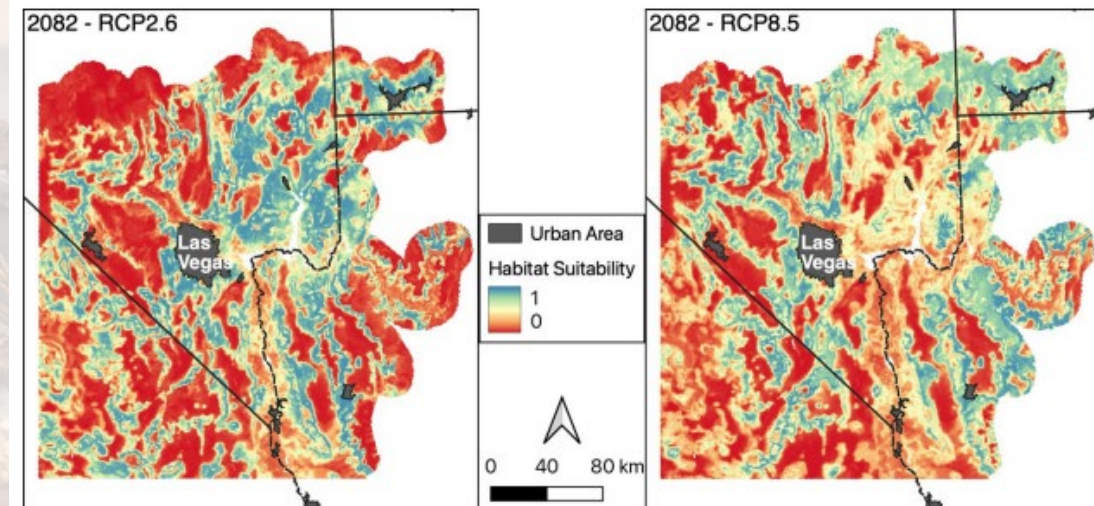
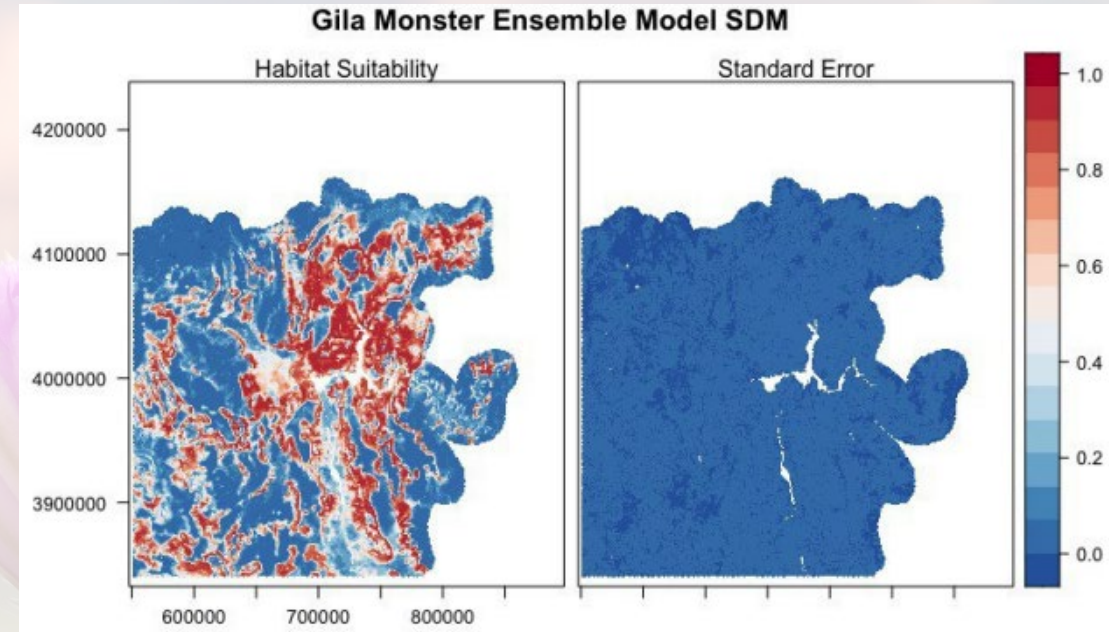
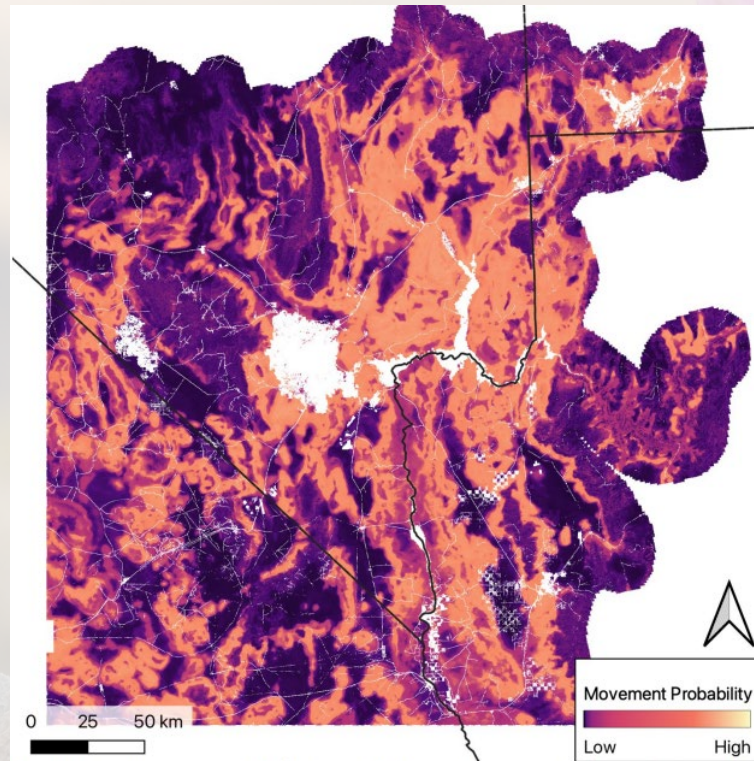
- Three regional clusters
- Genetic differentiation is associated with
 - Habitat suitability
 - Habitat fragmentation
 - Minimum temp & average annual temp

Gila Monster Habitat Modeling



Gila Monster Habitat Modeling

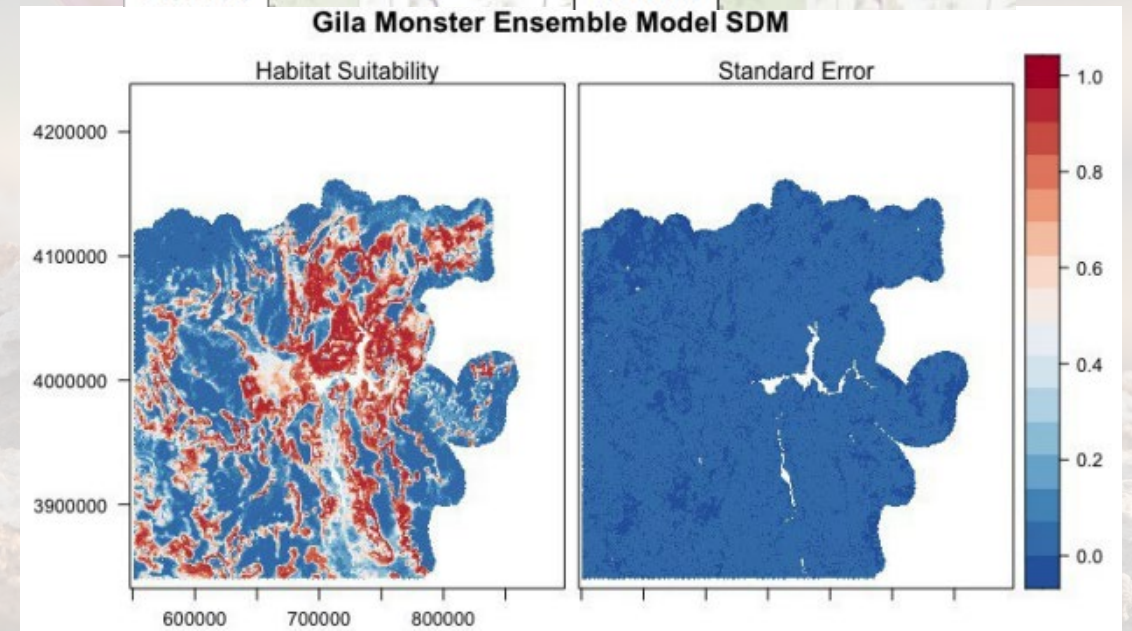
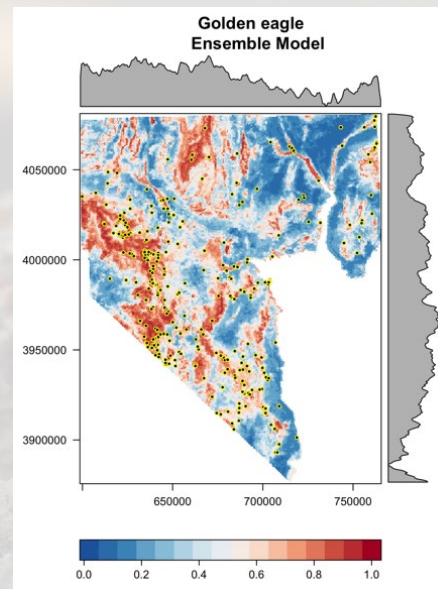
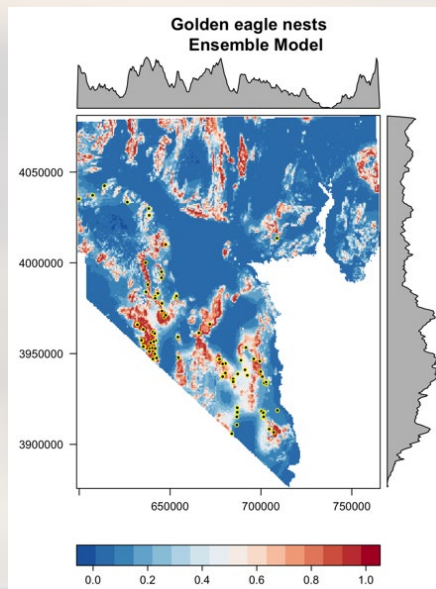
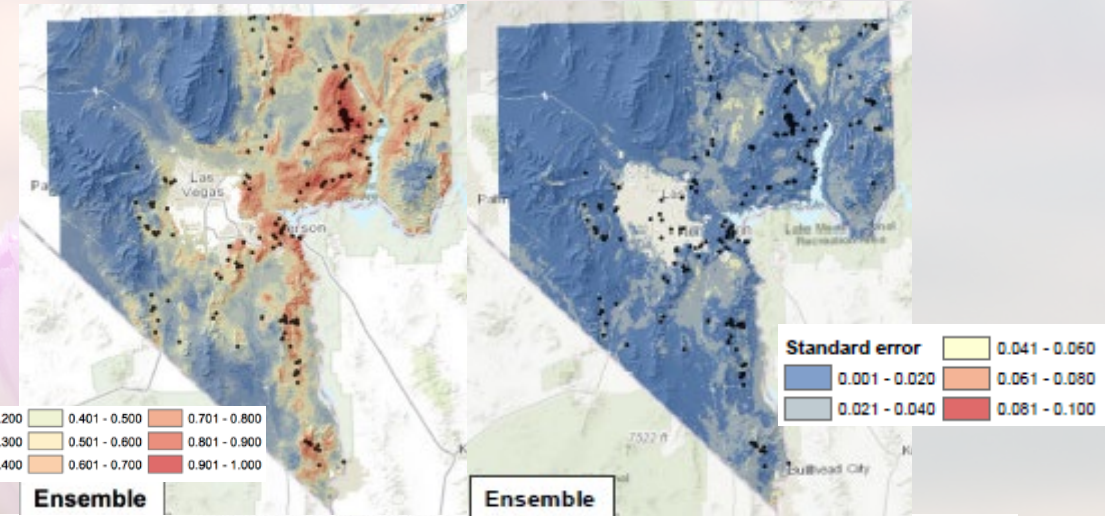
- Updated existing habitat suitability models
- Projected habitat Suitability out 60 years with different climate change scenarios
- Modeled movement probability for the species



Species Habitat Suitability Modeling

Initial HSM -> species surveys -> updated HSM

- 31 potential covered species under permit amendment
- 26 have first Habitat Suitability model finished and have completed or are in the process of competing ground truth surveys
- 2 have updated models (Desert Tortoise & Gila Monster)



Desert Tortoise Habitat Restoration Workshop



- Literature review created for workshop
- Virtual workshop held January 24-26 2022
- Developed a list of 6 main research and adaptive management needs related to habitat restoration
- We have begun planning to begin some of this research under the same SNPLMA grant over the next 3 years.
- Workshop panels, literature review, and summary/synthesis available on the website



Native shrubs, such as creosote bush, offer tortoises protection and shaded resting sites.



Native forbs, such as desert plantain and many others, are key forage plants for tortoises.

Project title:

DESERT TORTOISE HABITAT RESTORATION LITERATURE REVIEW

This report was generated through project no. 2017-NRC-1760A via contract between Clark County, Nevada and Natural Resource Conservation LLC.

Submitted to: Desert Conservation Program, Clark County

Submitted by: Scott R. Abella, Ph.D., Founder and Ecologist, Natural Resource Conservation LLC.

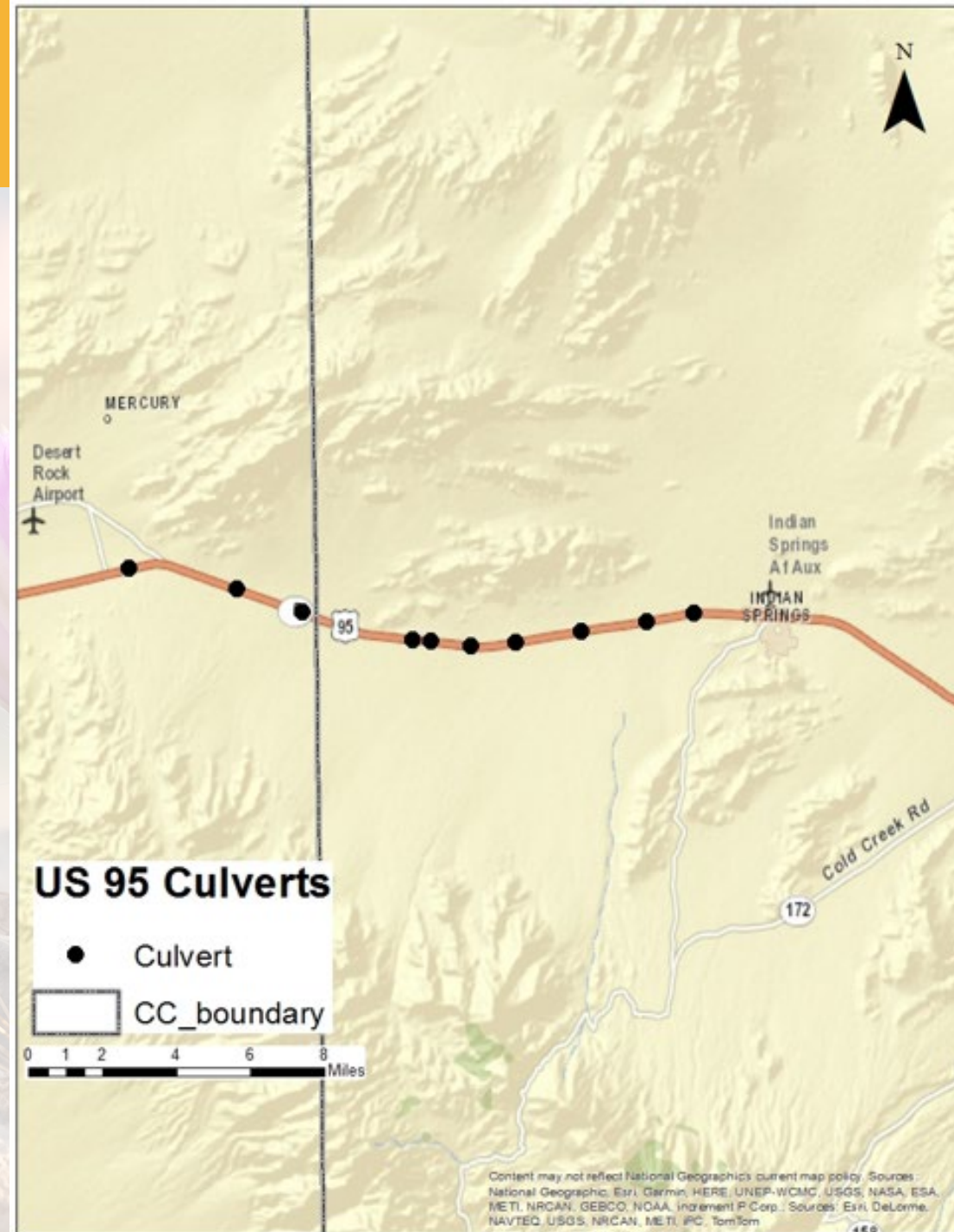
Report date: November 10, 2021.

Contact information: Natural Resource Conservation LLC, 1400 Colorado Street, Boulder City, NV 89005
Phone: (928) 600-4625, Email: abellaNRC@gmail.com
Web: <https://sites.google.com/site/naturalresourceconservationllc>

Natural Resource Conservation LLC provides knowledge services and innovations for effective natural resource management, habitat and species conservation, and ecological restoration. Our company develops adaptive management and scientifically rigorous experiments and monitoring, scientific publications, syntheses of knowledge supporting conservation, and management and conservation plans. We have skills and expertise in vegetation inventories and plant ecology, habitat analysis, fire management, ecological restoration, and monitoring design and analysis.

Population Augmentation Research

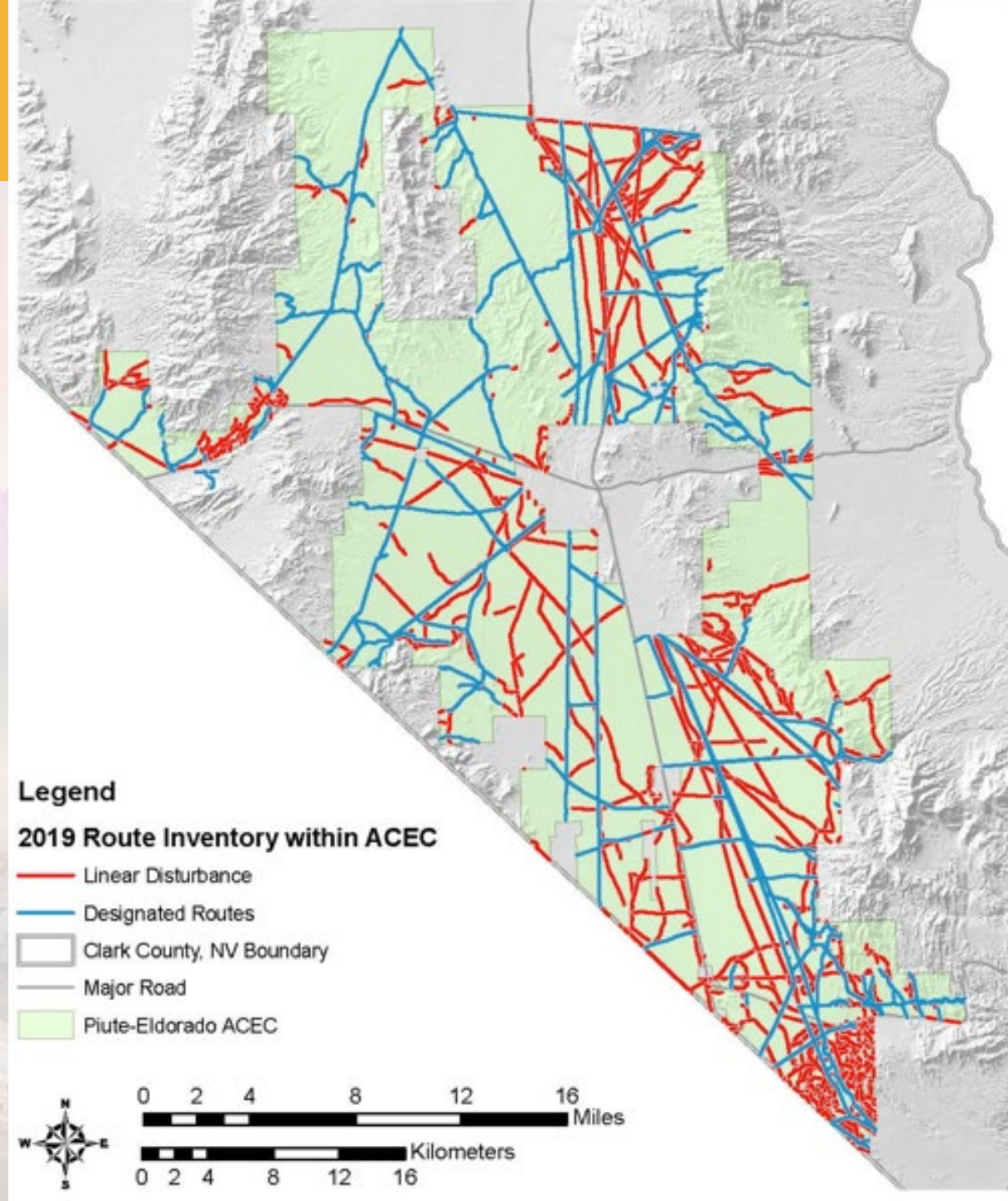
- Will translocated tortoises use culverts more often than residents if released near roads?
- Will translocated tortoises settle in higher elevation areas (4500-5000ft) or will they move downslope?



Route Restoration in the Eldorado Valley

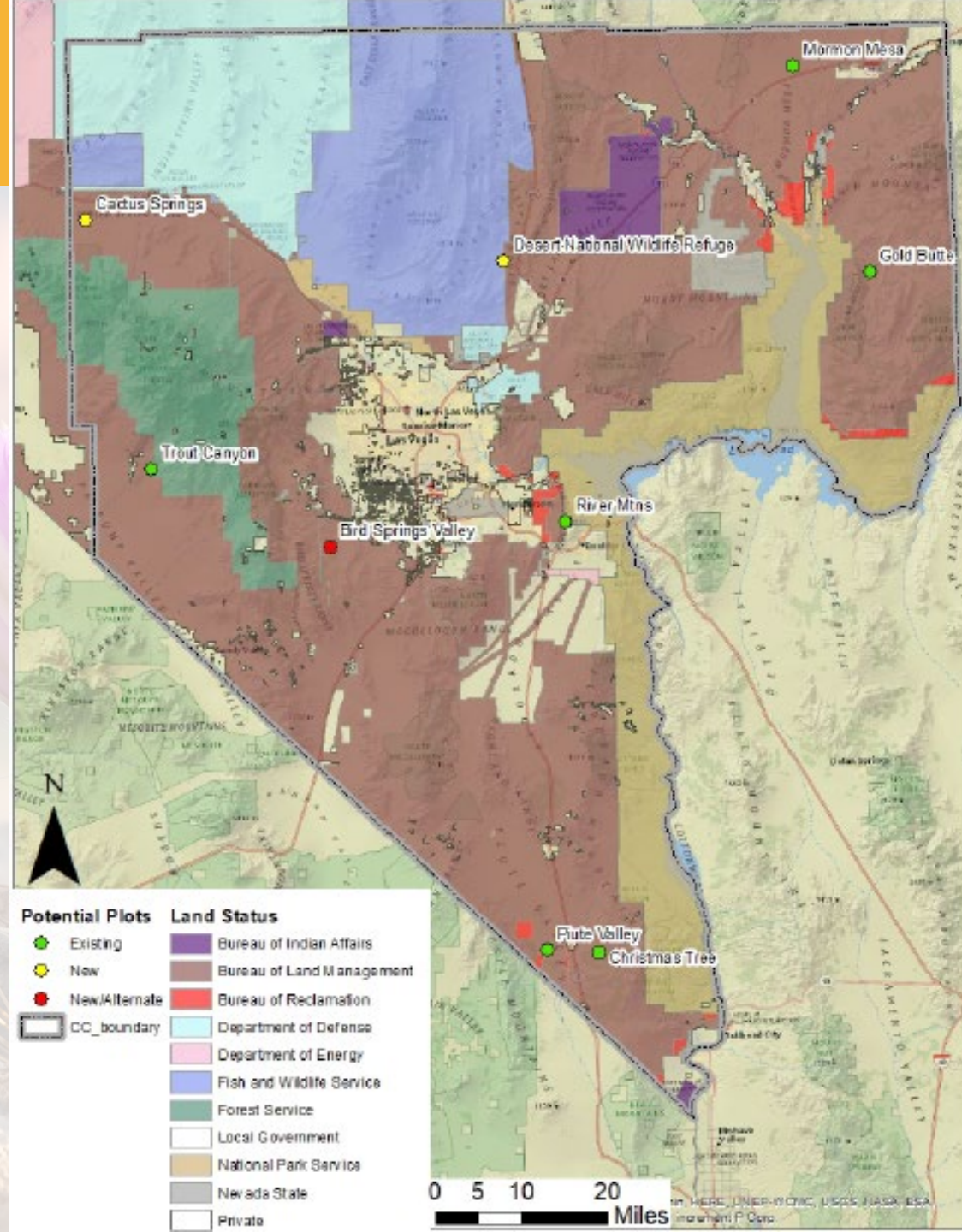
Primary Goals

- Create a restoration plan
- SHPO Consultation
- Install OHV deterrents to close up to 725 linear disturbance segments
- Conduct intensive restoration treatments on areas of high use or areas that contain important habitat features
- Install interpretive kiosks
- Post-restoration monitoring



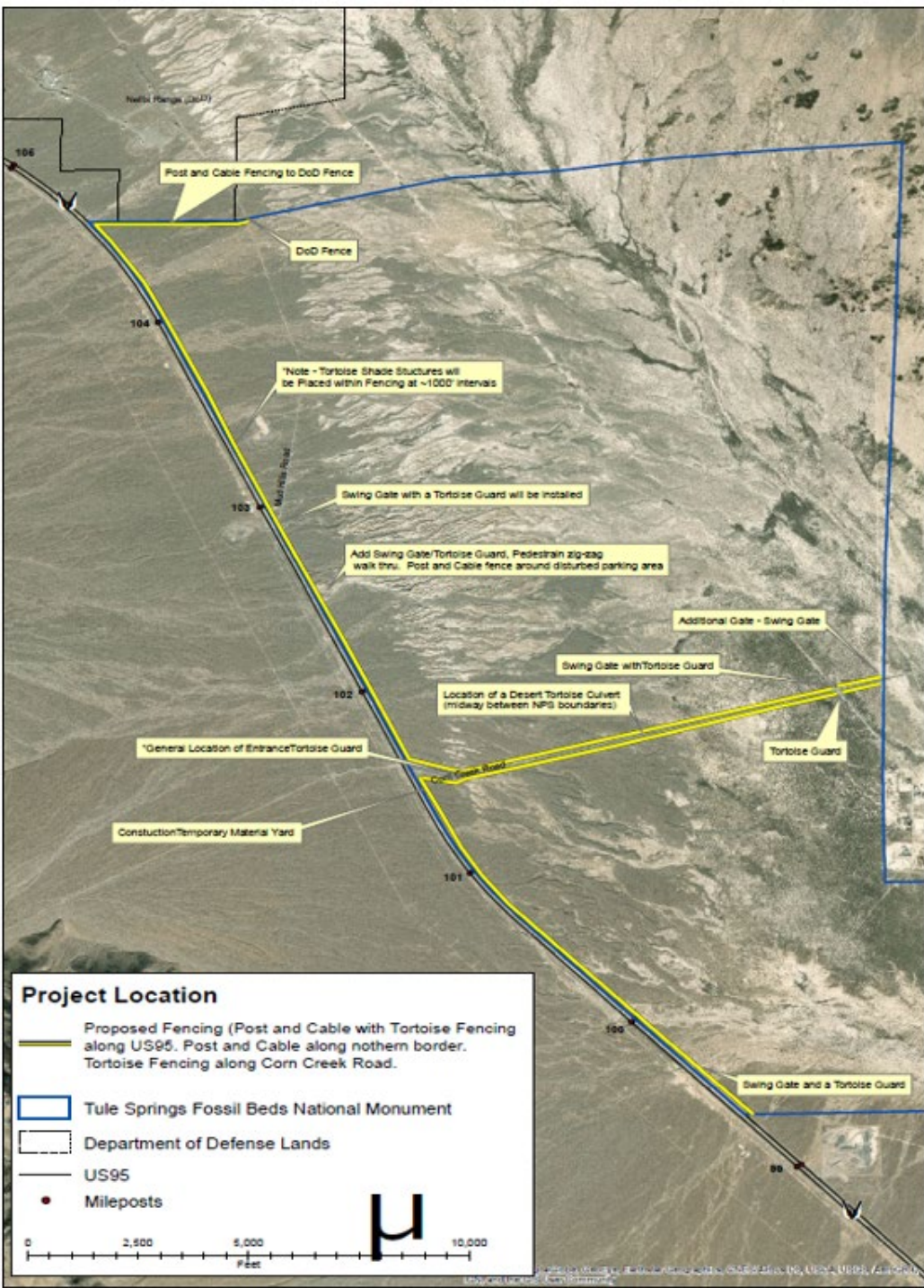
Tortoise Demography Plots

- Project will conduct mark-recapture surveys on 8 permanent demography plot sites
- Six sites are carried over from previous work in the 80's & 90's
- Two new sites



Fence Installation along Tule Springs NM

- 5 miles of Post and cable with tortoise fencing
- 3,600 ft of post and cable
- 4 tortoise guards
- Every 1,000 ft install desert tortoise shade structures





MOJAVEMAX.COM



desert conservation
PROGRAM

THANK YOU TO THE PERMITEES



Questions? Or Memes?



me: what are they in for
zookeeper: this isn't a prison
me: so they can leave
zookeeper: well no
me: [pointing to penguin] i bet that one killed somebody
zookeeper: he is not a murderer. he is just a penguin.
penguin: [grins, makes the throat slitting gesture]

The Rest of the World : We use the Metric System
The United States:



IFLSCIENCE.COM
"Potentially Hazardous" Asteroid The Width Of 2,000 Ferrets To Whizz Past Earth Tomorrow

My friend: "look at this nice picture of Wales"
Me: "actually those are sheep"



why does the goats financial status matter

Nature is Scary @NatureisScary
Komodo Dragon attacks poor goat

