Eastern Mojave Conservation Collaborative

Together
we can solve problems that are too big for any one organization to solve alone

Eastern Mojave Conservation Collaborative

(who) The Eastern Mojave Conservation Collaborative is comprised of federal, state, and local partners

(what) promoting long-term conservation through collaboration and pooling of resources to achieve common goals

(where) in the Eastern Mojave Recovery Unit of the Desert Tortoise Recovery Plan & overlapping Amargosa River watershed

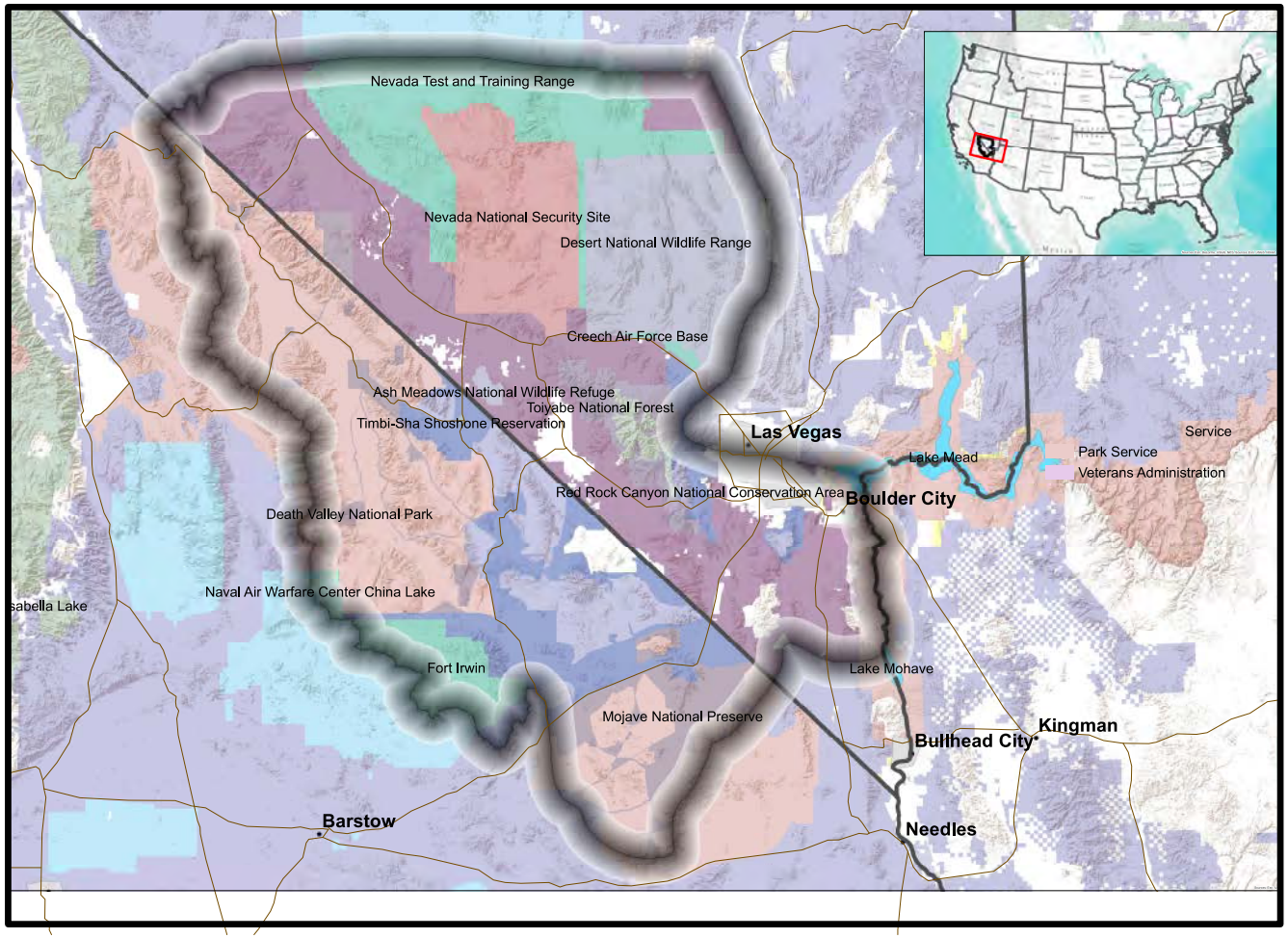
(how) through landscape conservation design.

Eastern Mojave Conservation Collaborative

Eastern Mojave Coordinating Team

Brian Croft – West Mojave Desert Division, USFWS
Roy Averill-Murray – Desert Tortoise Recovery, USFWS
Jennifer Wilkening – Southern Nevada, USFWS
Flo Gardipee – Southern Nevada, USFWS
Rose Banks – California Department of Fish and Wildlife
Jenn Newmark – Nevada Department of Wildlife
Sandra Brewer – Bureau of Land Management
Heidi Calvert – California Department of Fish and Wildlife
James Hurja – US Forest Service
Josh Hoines – National Park Service
Kevin Wilson – National Park Service
Gerry Hillier – Quadstate Local Governments Authority
Bill Lamb – Quadstate Local Governments Authority
Lara Kobelt - Bureau of Land Management
Boris Poff - Bureau of Land Management
Genevieve Johnson – Bureau of Reclamation
Matt Grabau – US Fish and Wildlife Service
Colleen Whitaker – Southwest Decision Resources

Eastern Mojave
Landscape Conservation Design Area

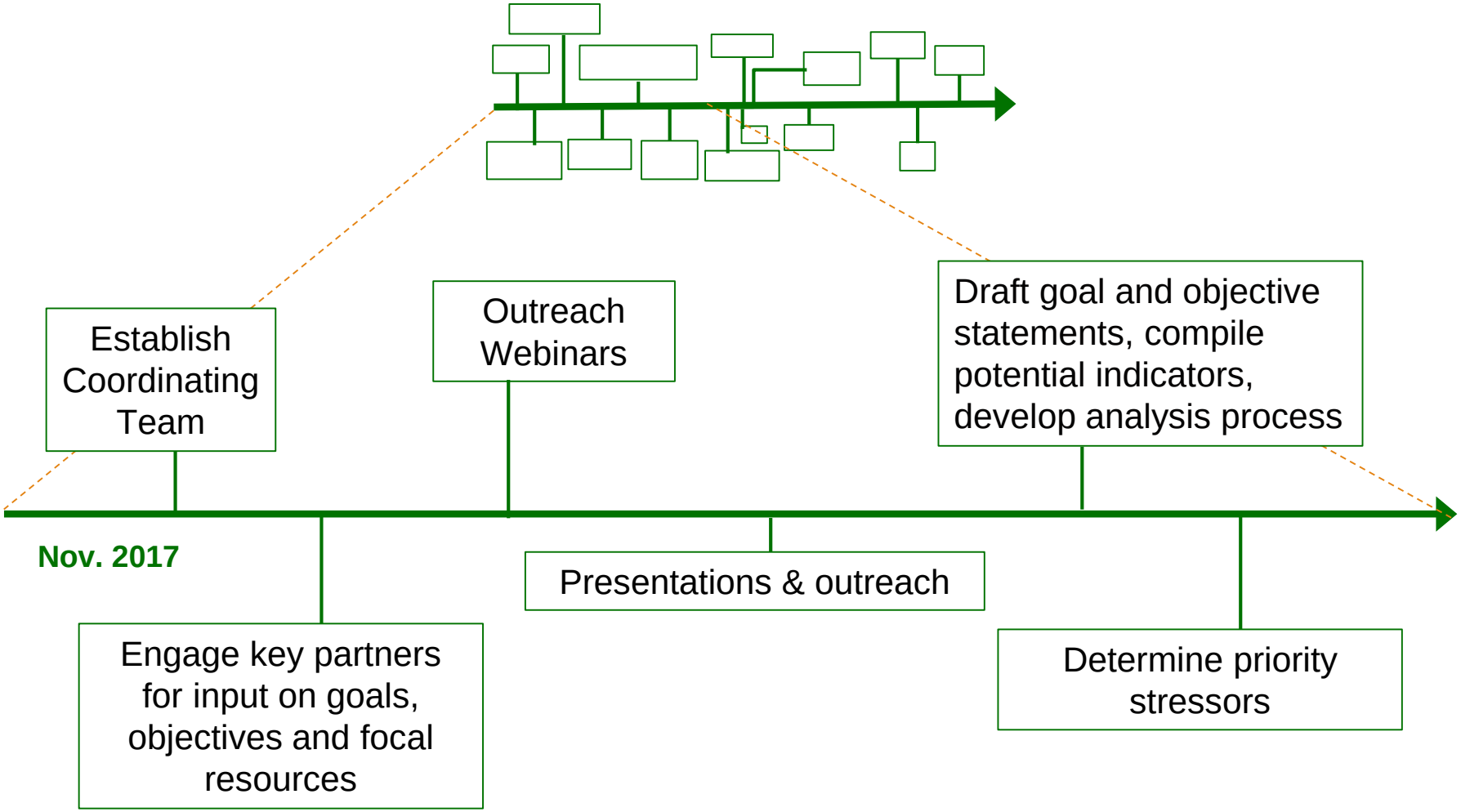


1 of 5 recovery units for the Mojave Desert Tortoise

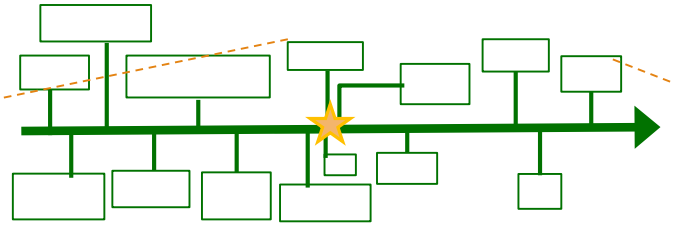
2 areas of high endemism and T&E species: Amargosa River Basin and Spring Mountains

Seeps, springs, streams in unique desert area

Eastern Mojave Timeline



Eastern Mojave Timeline



Develop and finalize ecosystem integrity indicators

Refine biodiversity and connectivity goals

Scenario Plan Development with SW CASC

Conservation Blueprint 1.0

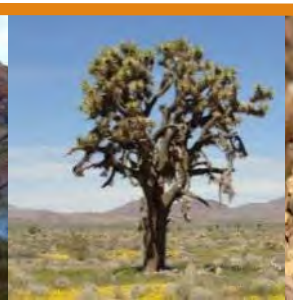
Apr. 2018

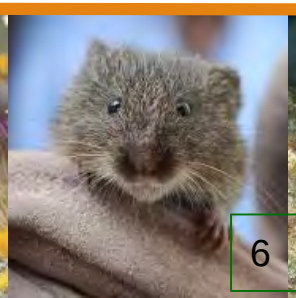
Work with UA spatial analysis team

Develop Spatial Prioritization Tool

Discuss social, cultural and economic aspects of LCD

Ongoing: Develop CCAST Management Toolbox


Key points for Eastern Mojave Conservation Collaborative

Key Issues

- Habitat Connectivity
- Invasive Species
- Urbanization
- Groundwater
- Management Effectiveness

Land Use Plan Implementation

- Integrate plan implementation across the state line
- Site-specific management actions to step plans down to local level
- Link priorities to identify areas of consistency and synergy
- Work for shared leadership and the development of shared funding

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#1 - Overarching LCD Goal, along with biodiversity, ecosystem integrity, and socio-economics

#2 - Priority stressors affecting management goals and included in scenario planning for determine where best to implement actions

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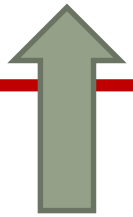
#3 - CCAST and landscape-level monitoring framework; informed by spatial analysis and design



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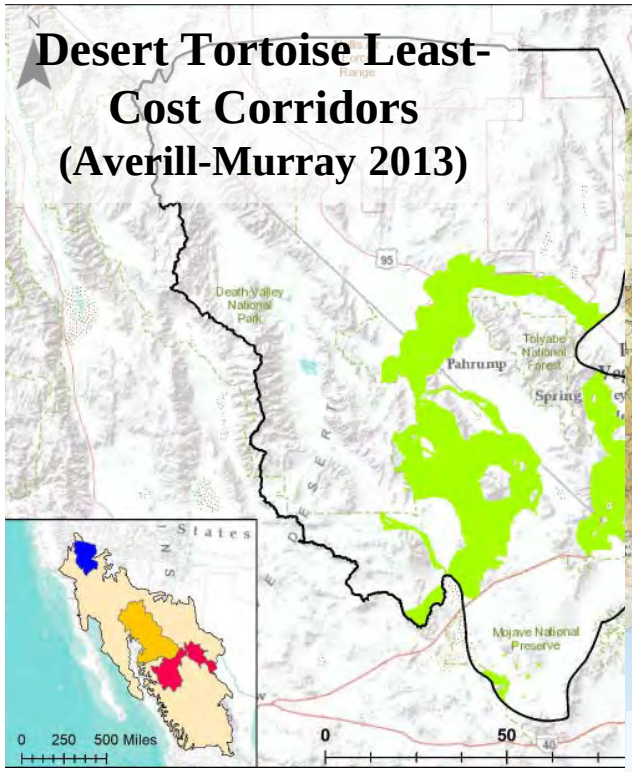
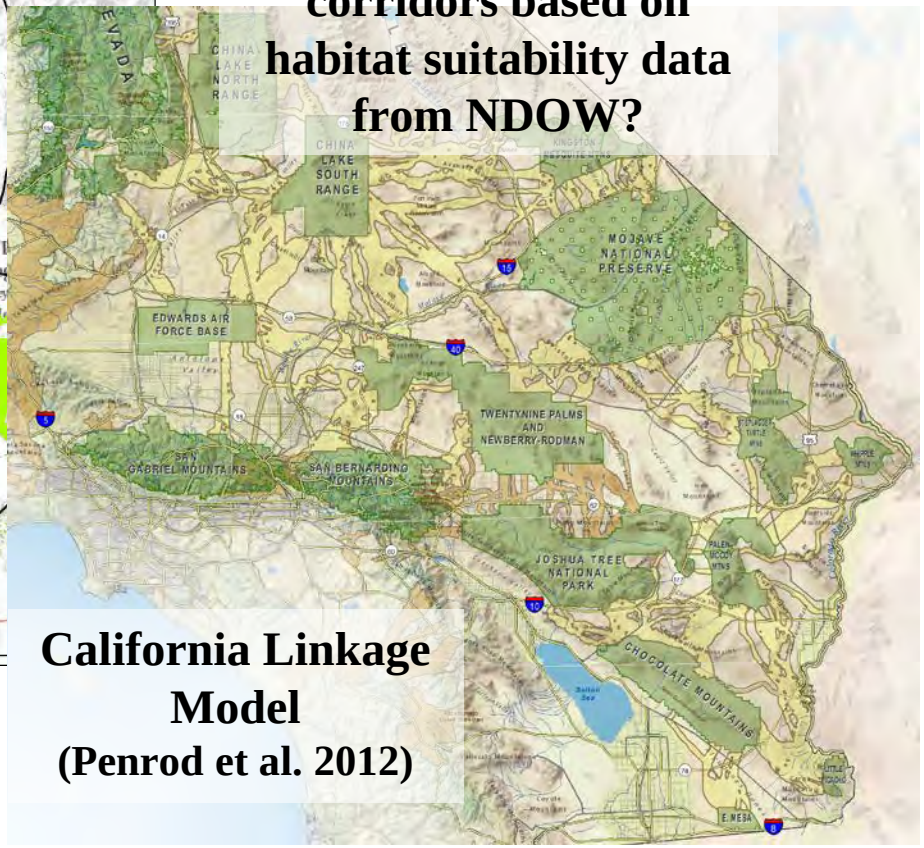
Habitat Connectivity

GOAL: *Maximize structural and functional connectivity of the landscape for the movements of genes, propagules (pollen and seeds), individuals, and populations to meet requirements of the organisms that live within it and move through it.*

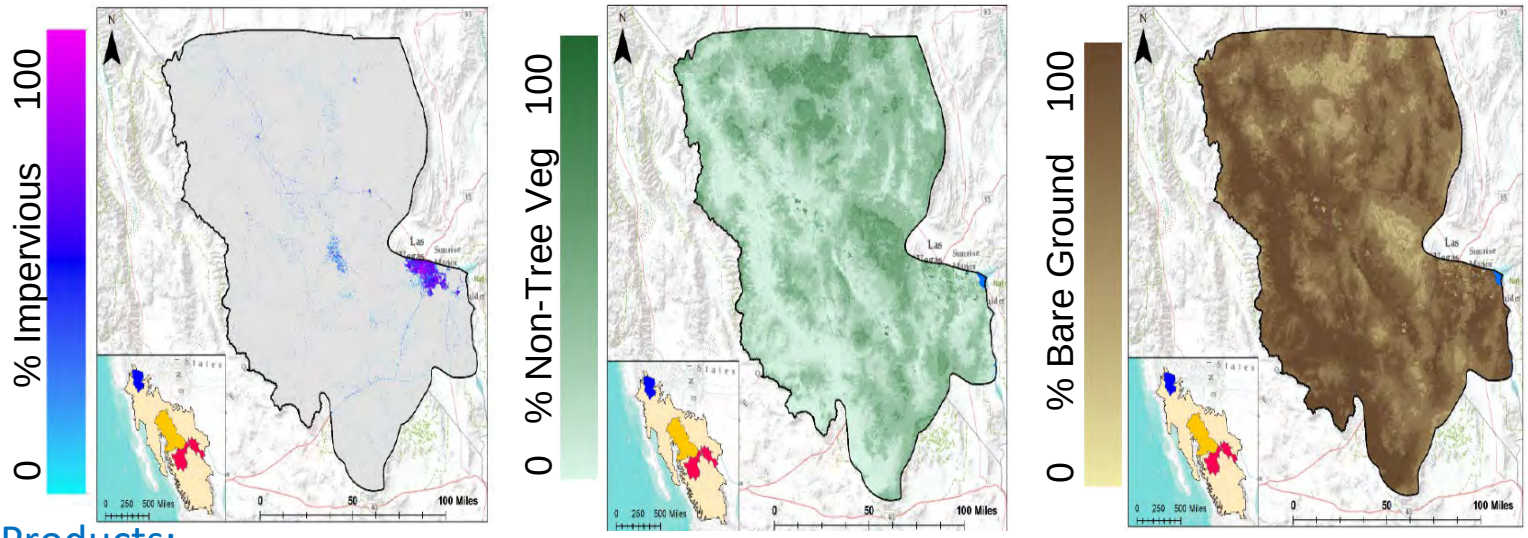
Connectivity: Building on Current Models and Available Data





Ecosystem Integrity

Ecosystem Integrity - *Maximize the integrity of ecological systems that characterize the diverse landscape, including both conservation areas and working landscapes.*



Products:

- Spatial analysis/synthesis to assess extent, condition, and where possible trend, of priority ecological indicators
- State of the Mojave Report
- Feeds into landscape-scale monitoring framework

Biodiversity

- Biodiversity “hotspots”
- Areas critical for species of concern

Priority Stressors: Urbanization

Priority Stressors: Invasive Species

82% of plots contained at least one non-native plant species.

Most frequent species included:

- Bromus rubens (60% of plots)
- redstem filaree (39%)
- Schismus spp. (28%)
- Bromus tectorum (13%)
- prickly Russian thistle (4%)
- Sahara mustard (4%)
- saltcedar (3%)

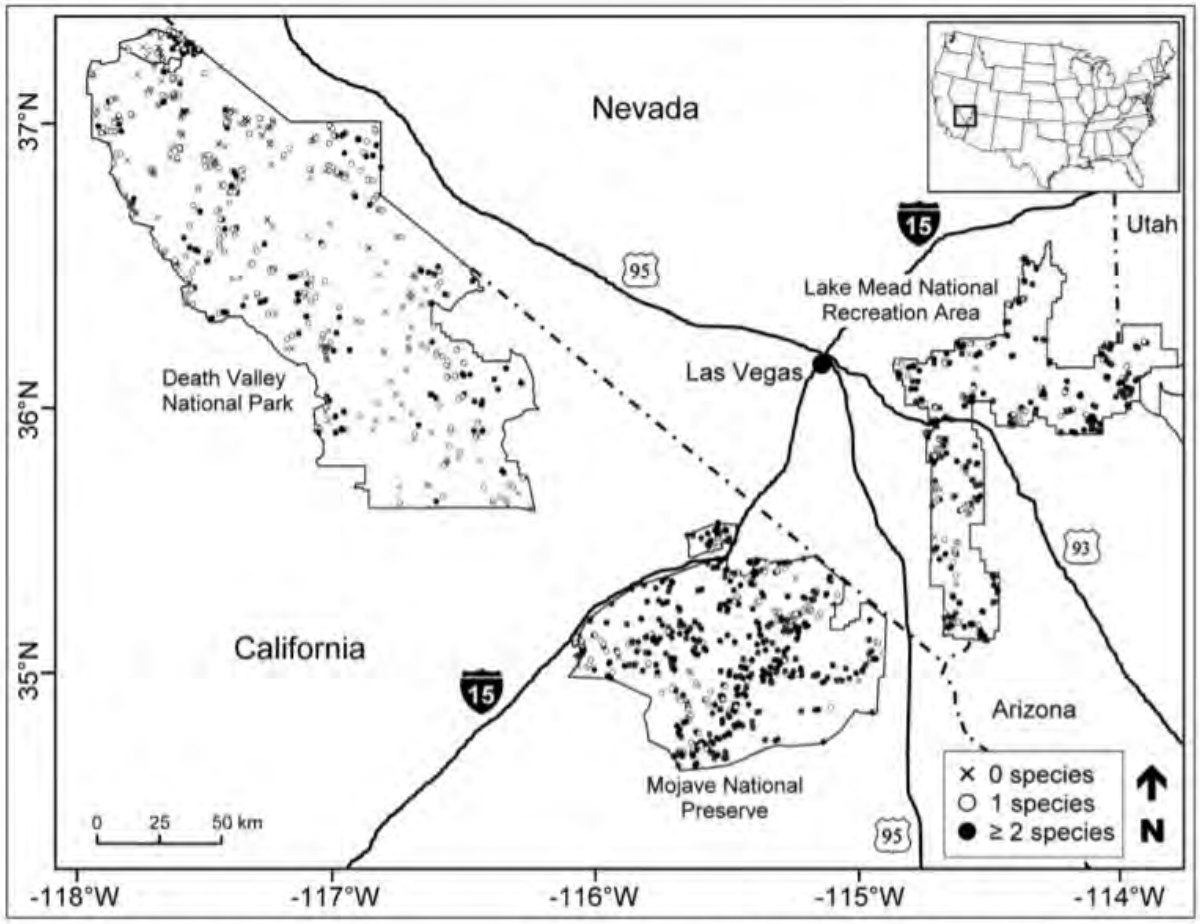
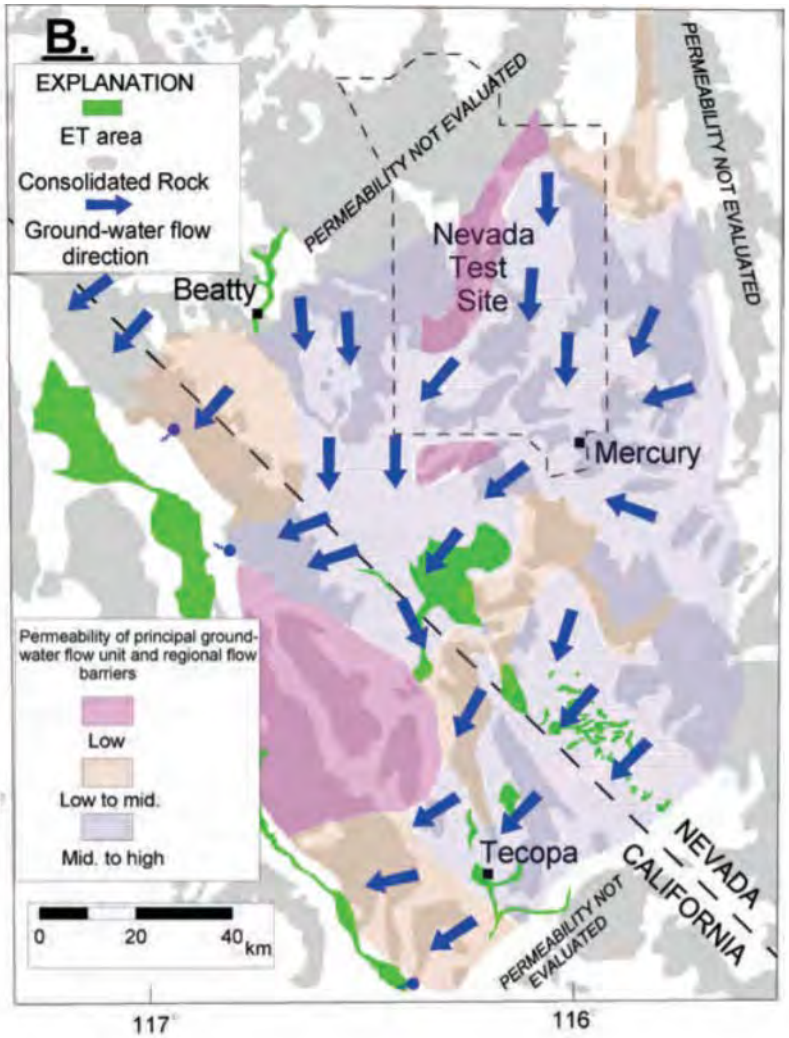


Figure 1. Location of three parks managed by the National Park Service in which we measured non-native plant species on 1,662 plots, Mojave Desert, southwestern USA.

Priority Stressors: Groundwater pumping



Schematic showing relative permeability of principal groundwater flow unit, direction of groundwater flow, and ultimate discharge area. (NPS)

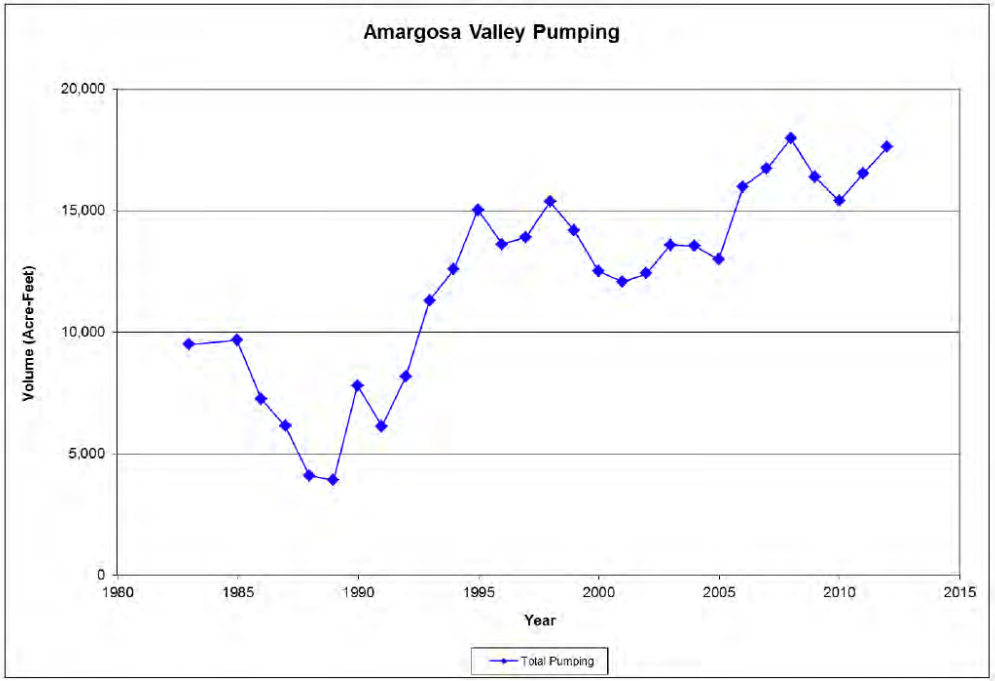
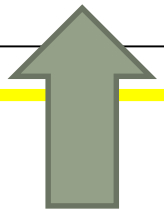


Figure 3-9. Pumping vs. Time, Amargosa Desert Area, Nevada

ANDY ZDON & ASSOCIATES, INC.

Key points for Eastern Mojave Conservation Collaborative

Identify lessons learned from practitioners across the Southwest and begin spatial analysis to determine where best to implement actions



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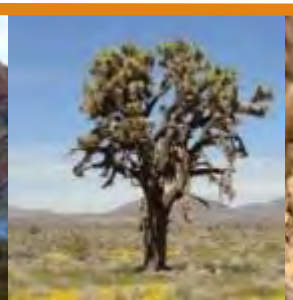
Management Effectiveness: Specific Strategies

1. Identify Management Strategies

- What are land managers already doing?
- What management strategies should be coordinated across the collaborative to maximize impacts?
- What are the no-regrets strategies for now and probable future conditions?

Share lessons learned across geographies

Developing a Regional Conservation Toolbox: desertlcc.org/resource/CCAST



Components of CCAST

- An online portal for sharing management case studies.
  - Online case study pages.
  - Interactive maps.
  - 2-page handouts for contributing partners.
  - Thematic case study narratives.

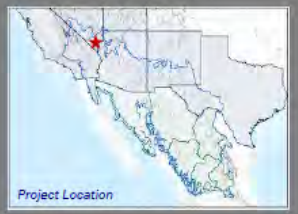
➢ Contact us if you would like to contribute to case studies or serve on the technical review team!

Actionable Science

Desert Tortoise Habitat Restoration Methods for the Eastern Mojave

UNLV

The Bureau of Land Management oversees 10,600 hectares (26,000 acres) of Eastern Mojave desert near Las Vegas, Nevada, as a special area to receive desert tortoise translocations. This site is characterized by valleys of desert scrub and mountain ranges that extend through southern Nevada and southeastern California. Translocated Mojave desert tortoises (Gopherus agassizii) are released at this protected site in an effort to increase tortoise populations. Both winter and summer precipitation are critical for the survival and establishment numerous annual and perennial plants that provide forage and cover for this threatened species.




Monitoring Treatment Plots/E. Cayenne Engel

KEY ISSUES ADDRESSED

The Bureau of Land Management oversees 10,600 hectares (26,000 acres) of Eastern Mojave desert near Las Vegas, Nevada, as a special area to receive desert tortoise translocations. This site is characterized by valleys of desert scrub and mountain ranges that extend through southern Nevada and southeastern California.

Translocated Mojave desert tortoises (Gopherus agassizii) are released at this protected site in an effort to increase tortoise populations. Both winter and summer precipitation are critical for the survival and establishment numerous annual and perennial plants that provide forage and cover for this threatened species.

PROJECT GOALS

- Increase perennial and annual plant density to improve desert tortoise habitat and forage quality
- Use a controlled field experiment to test watering, seeding, and herbivore exclusion treatments on native plant density
- Identify active revegetation strategies that improve habitat quality


Artificial Watering/E. Cayenne Engel

MICROHABITAT CREATION

Plant litter and soil nutrients accumulate below perennial plants, creating 'Fertile Islands' that enhance recruitment of annual plants and provide thermal refugia for tortoises.

PROJECT HIGHLIGHTS

Baseline Analysis: Pre-experimental vegetation surveys characterized the plant community composition and density of native perennial and annual plant species in tortoise habitat.

Multifactor Experiment: A 14-hectare split-split plot experiment was established in 2013 to test the effect of whole plot watering (present or absent), subplot seeding (no seeding, bare, and pelletized seeds), and sub-subplot fencing (present or absent) on the establishment of perennial and annual species.

Native Plant Seeding: Seeded Subplots were sown with bare seeds (non-pelletized) or pelletized seeds coated in Gro-Coat ®. Perennial cheesebush and winterfat shrubs were seeded at densities of 5,000 and 1,700 seeds per m^2 in attempt to increase plant cover. Desert globemallow and the desert plantain were seeded at a density of 13,000 and 5,300 seeds per m^2, respectively, to increase forage.

Vegetation Monitoring: Plant density, frequency and cover measurements were collected at 3, 10, 12 and 20-months post-treatment.

Collaborators

- US Bureau of Land Management
- Natural Resource Conservation LLC

Funding Partners

- US Bureau of Land Management
- University of Nevada-Las Vegas

Case study support provided by US Fish and Wildlife Service, US Bureau of Reclamation, US Forest Service, and Cross Watershed Network.

LESSONS LEARNED

Pre-treatment plant communities were characterized by two herbaceous species (non-native Arabian schismus and native desert plantain) and two shrub species (creosote bush and white bursage). Post-treatment, the density of non-seeded native annual plants increased in seeded and fenced plots. Annual plant species increased, improving forage quality.

Results show irrigation can increase native plant species richness and plantain density. Pelletized seeds and fencing treatments also increase desert plantain density. Treatments were unable to establish winterfat seedlings on plots. Seeding with bare cheesebush seeds and pelletized globemallow seeds resulted in highest inital plant densities. However, cheesebush and globemallow were absent 20-months post-treatment. Treatments did not impact the density of invasive Arabian schismus.

NEXT STEPS

- Monitor desert tortoise population size after active habitat restoration
- Test for the effects of improved forage quality on desert tortoise population size at the patch, home range, and landscape level
- Identify an irrigation regime that stimulates germination
- Identify techniques that lead to successful perennial shrub establishment

PROJECT RESOURCES

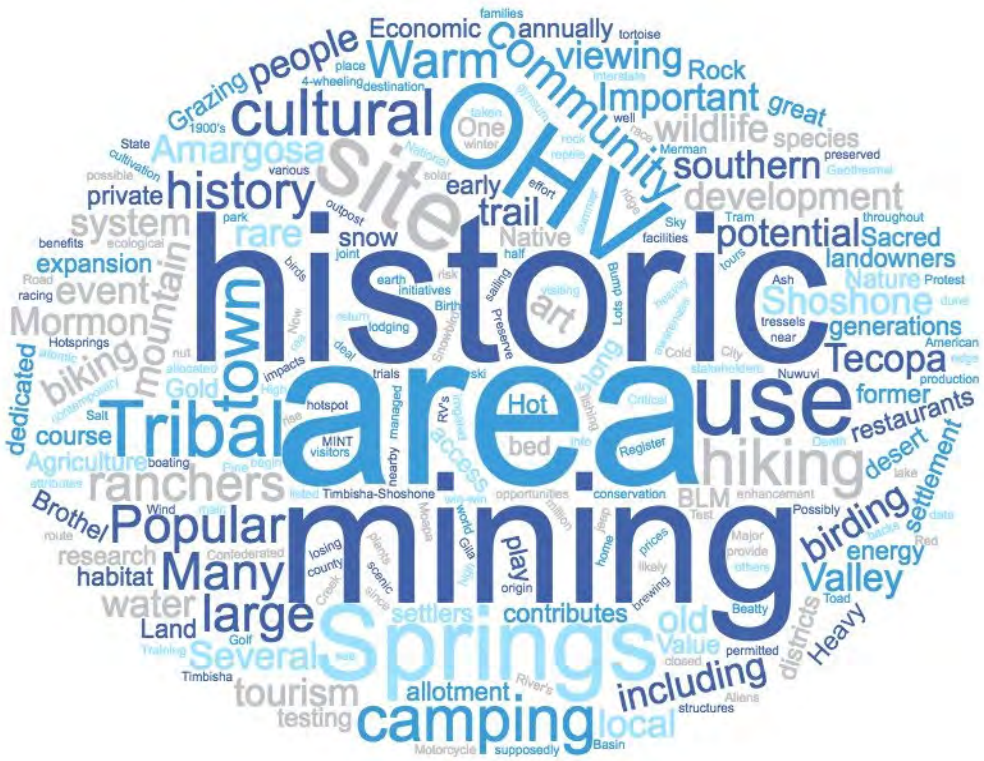
For more information on this project, contact Scott Abella: scott.abella@unlv.edu

For additional project resources and case studies, visit the Collaborative Conservation and Adaptation Strategy Toolbox : WWW.DESERTLCC.ORG/RESOURCE/CCAST


Mojave Desert Tortoise/Scott R. Abella

Next step: Socio-economics

- Identify social, cultural, and economic values that are closely tied to integrity of ecosystems and landscapes
- Integrate into the ecosystem integrity indicator framework



Next Step: scenario planning

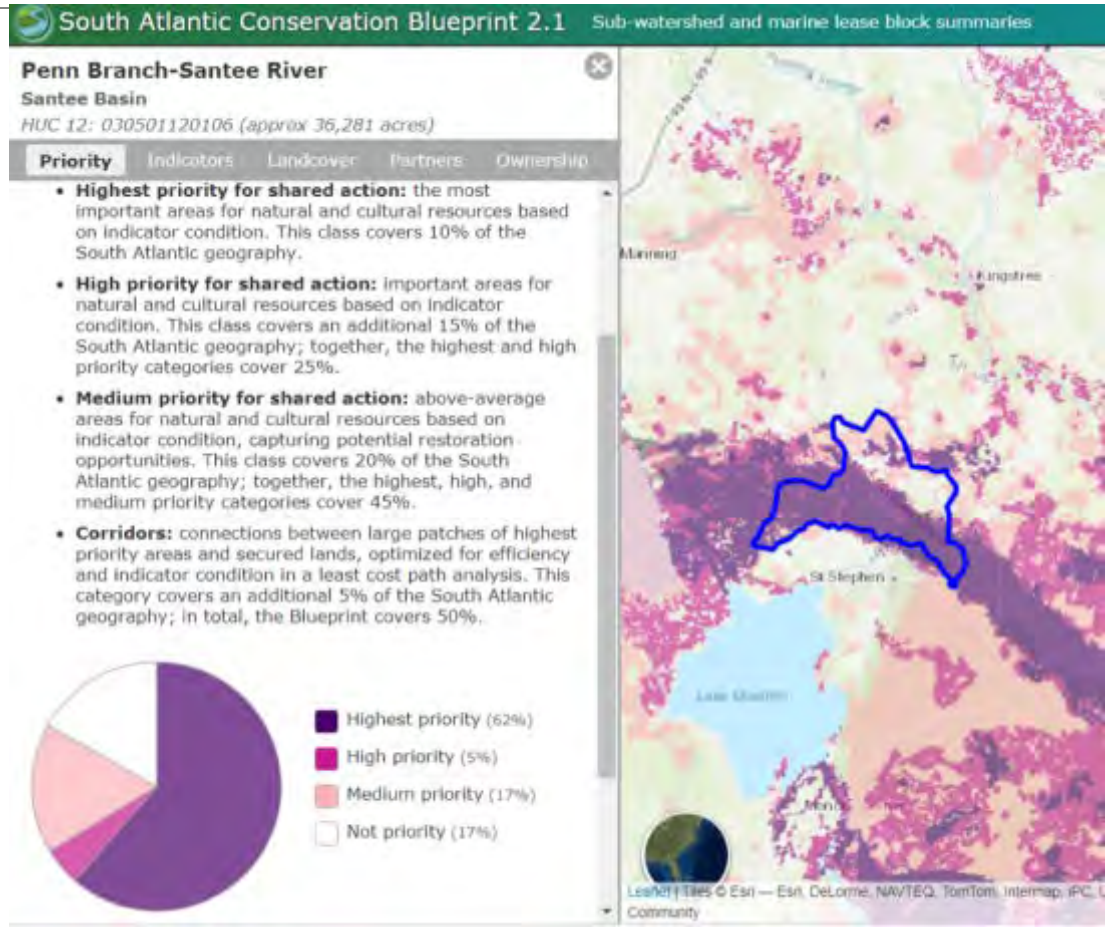
- Working with Southwest Climate Adaptation Science Center
- Identify plausible future challenges
- Integrate human response to these stressors
- Use this information to inform spatial prioritization of management actions.

Next Step: stakeholder input

- Plausible Future Pressures/Stressors and Potential Impacts
- Land Management: How do managers track change and adapt to risk?
- Land Management Strategies: Existing and novel approaches to adapt to change.

Next Step: where to implement management actions

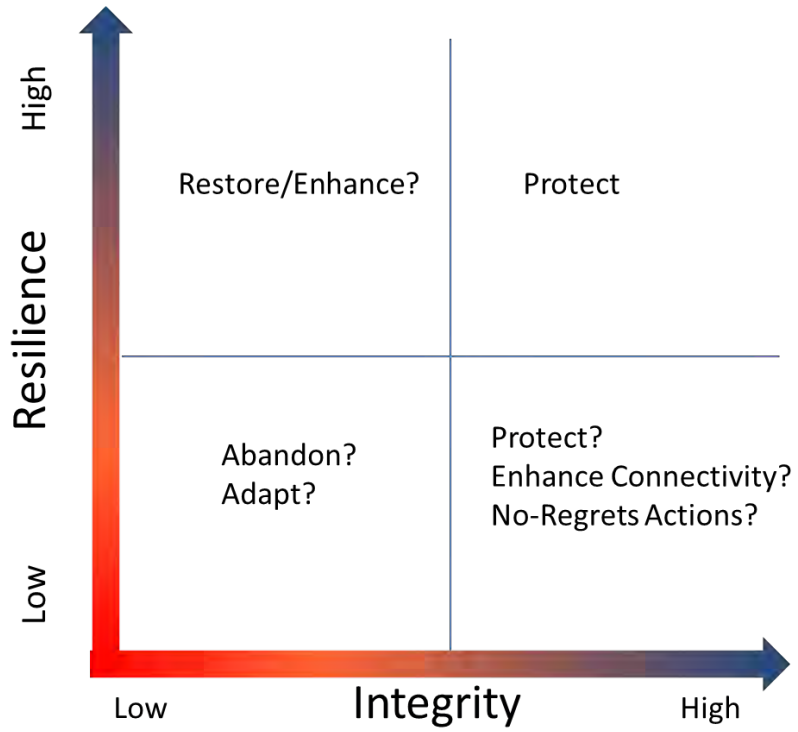
- South Atlantic Conservation Blueprint
  - http://southatlanticlcc.org
  - Prioritization Factors:
    - Ecosystem indicator level
    - Location relative to priority corridors



Next Step: Decision Support Tool

- What considerations should be used to determine *where* to take action?
  - Current conservation status/jurisdiction?
  - Areas currently in excellent condition?
  - Areas that help maintain high biodiversity?
  - Areas with high social and/or cultural values?

Example Decision Matrix



- Value Considerations (to Be Developed with Partners):
  - Cultural Resources
  - Ecosystem Services
  - Socioeconomics

Next steps: landscape-scale monitoring framework

Monitor & Revise

- Based on identified goals and objectives
- Informed by common understanding of current and future conditions
- Uses indicator framework developed through LCD
- Supported by broad partnership

Thank you

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