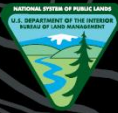


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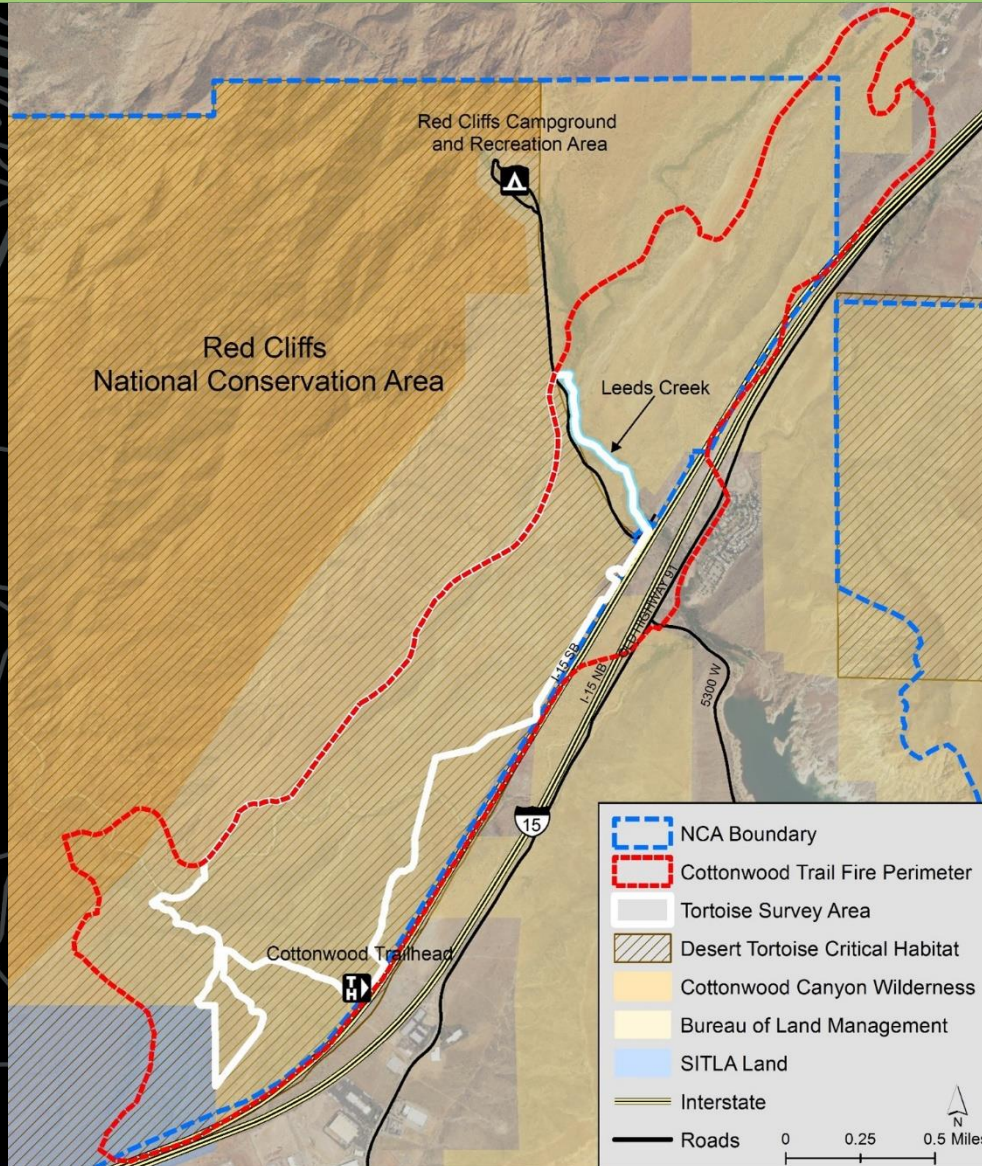
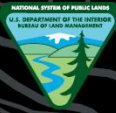
2020 Cottonwood Trail Fire RCNCA Habitat Rehabilitation Project Update



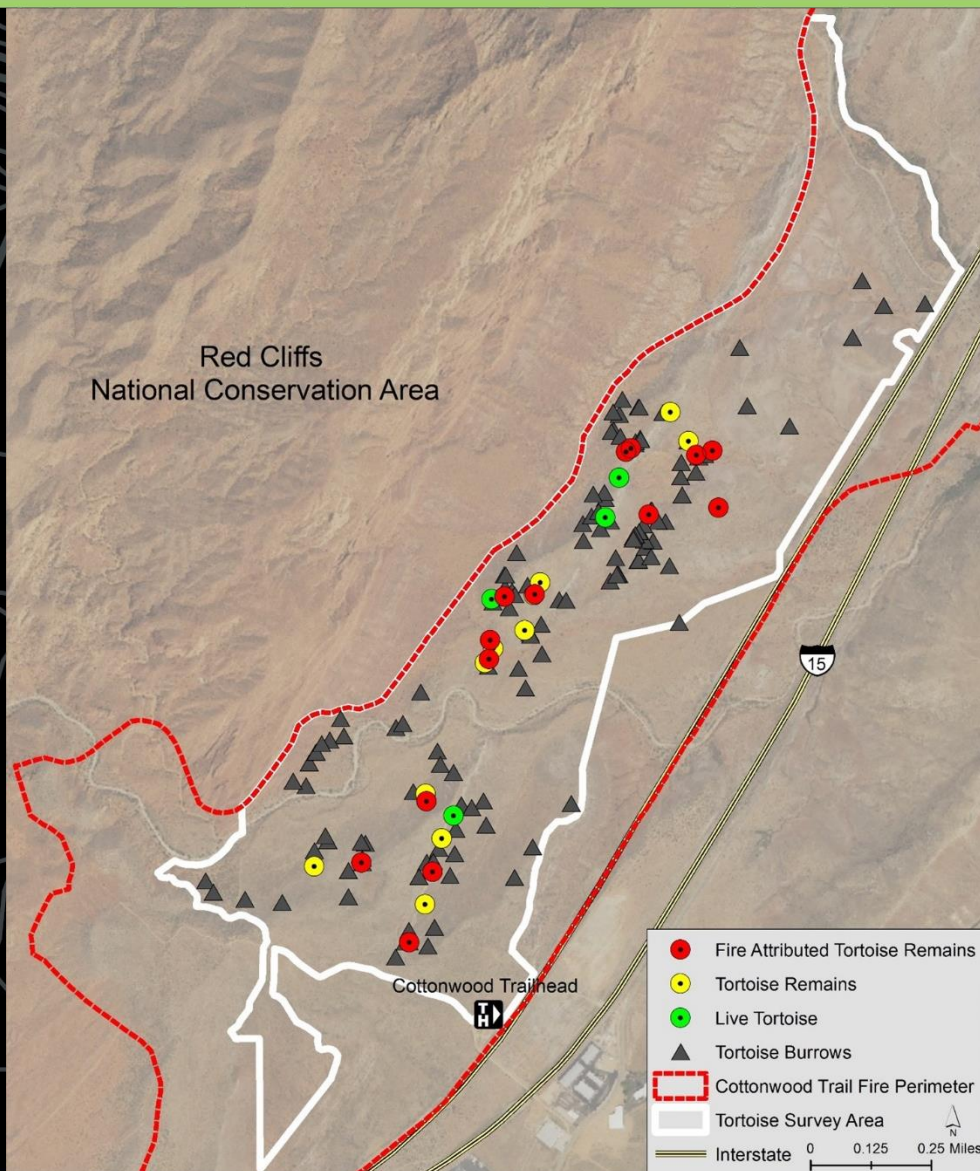
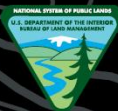


During July 2020, a 1,631-acre human-caused wildfire named the “Cottonwood Trail Fire” burned 1,414 acres of public land within the Red Cliffs NCA—including 919 acres of designated desert tortoise critical habitat.

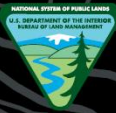




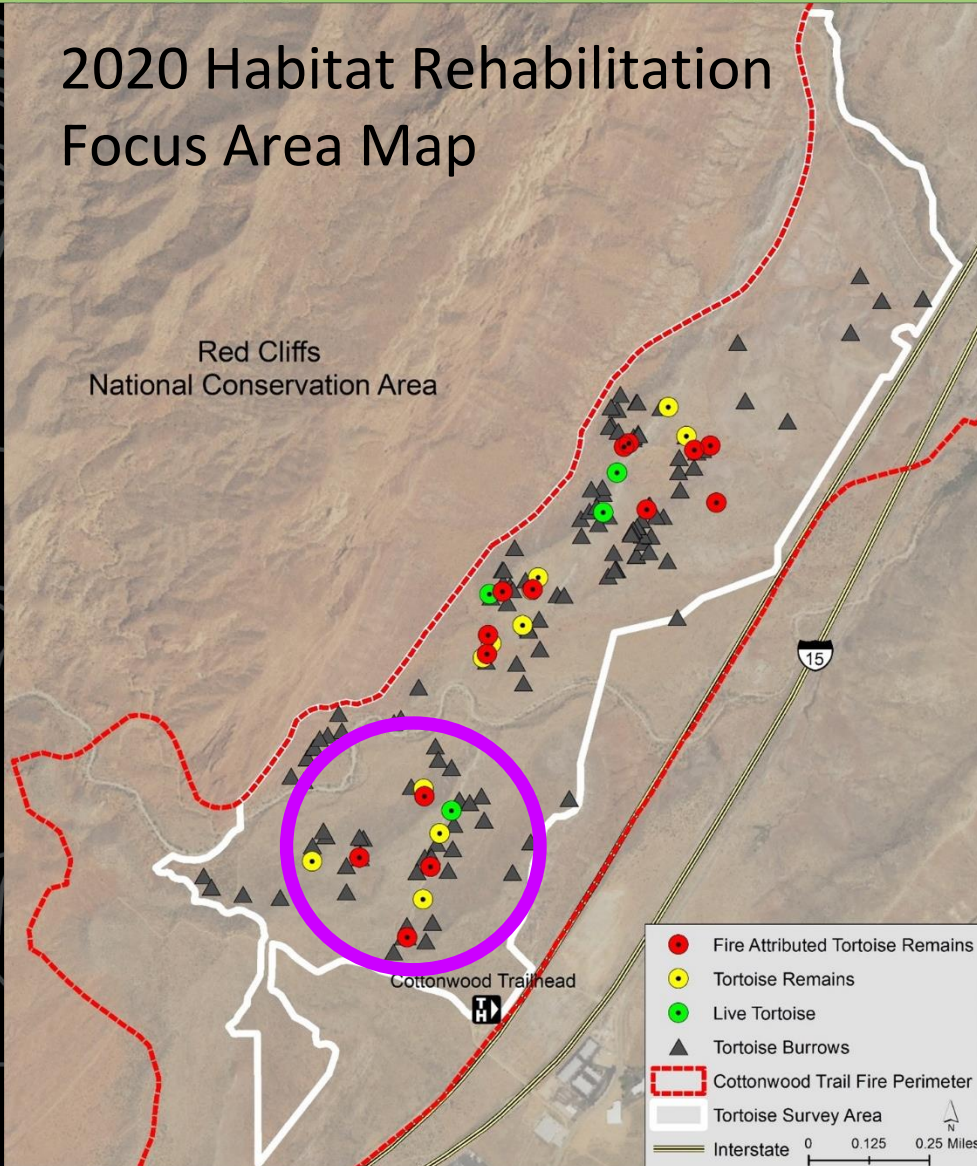
From 22 July-8 September 2020 the NCA biologist, BLM-ACE biological interns, and UDWR staff (Ann McLuckie) systematically searched for fire-killed and injured tortoises within a 618-acre area of the burned tortoise habitat on public land to determine direct tortoise mortality and injury as a result of the Cottonwood Trail Fire.



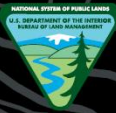
We encountered 25 tortoise remains (14 that were directly attributed to fire, including 5 adults and 9 juveniles), 4 live tortoises (including 1 fire-injured tortoise), and 133 active or good condition tortoise burrows.



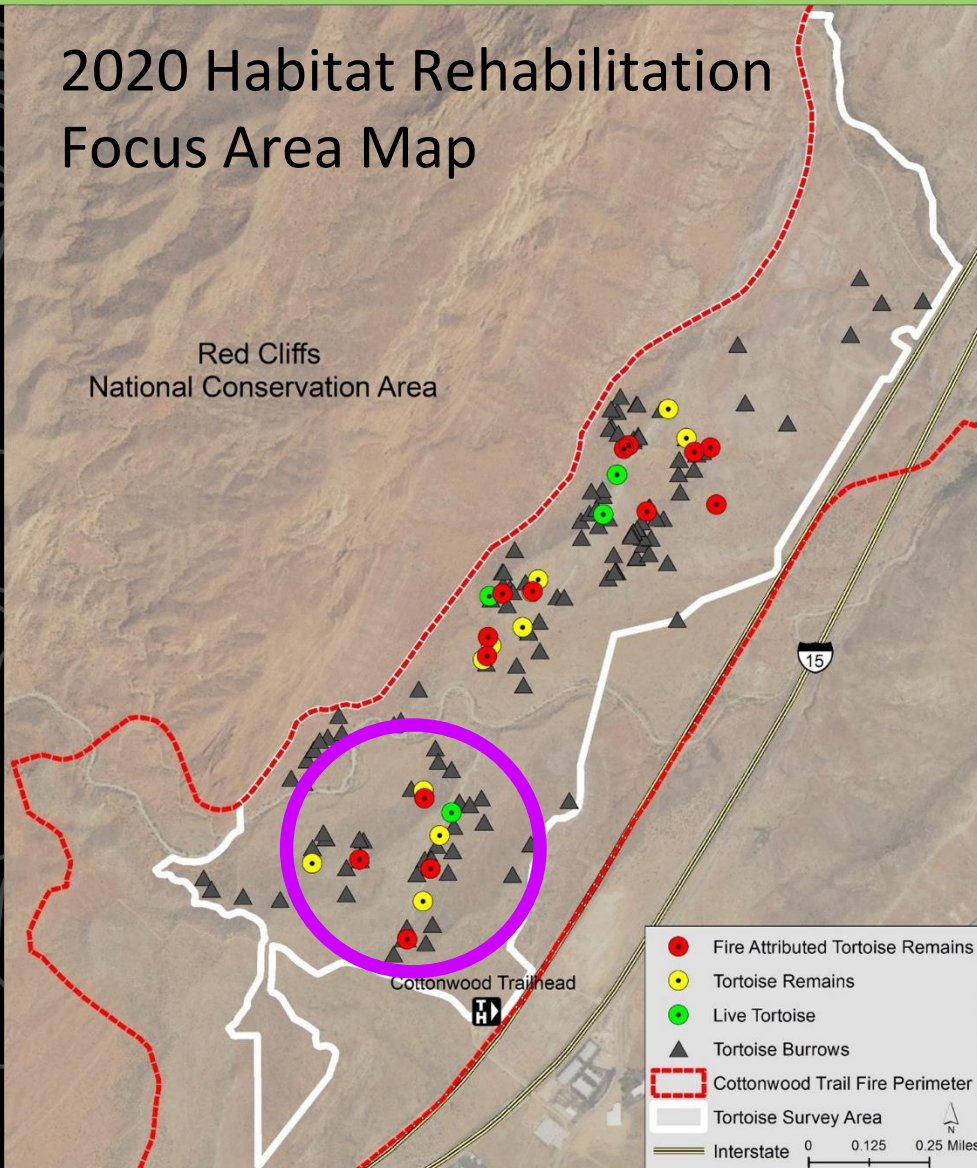
2020 Habitat Rehabilitation Focus Area Map



An approximately 150-acre
Fall 2020 habitat rehabilitation
focus area was identified
based on:

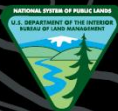


2020 Habitat Rehabilitation Focus Area Map

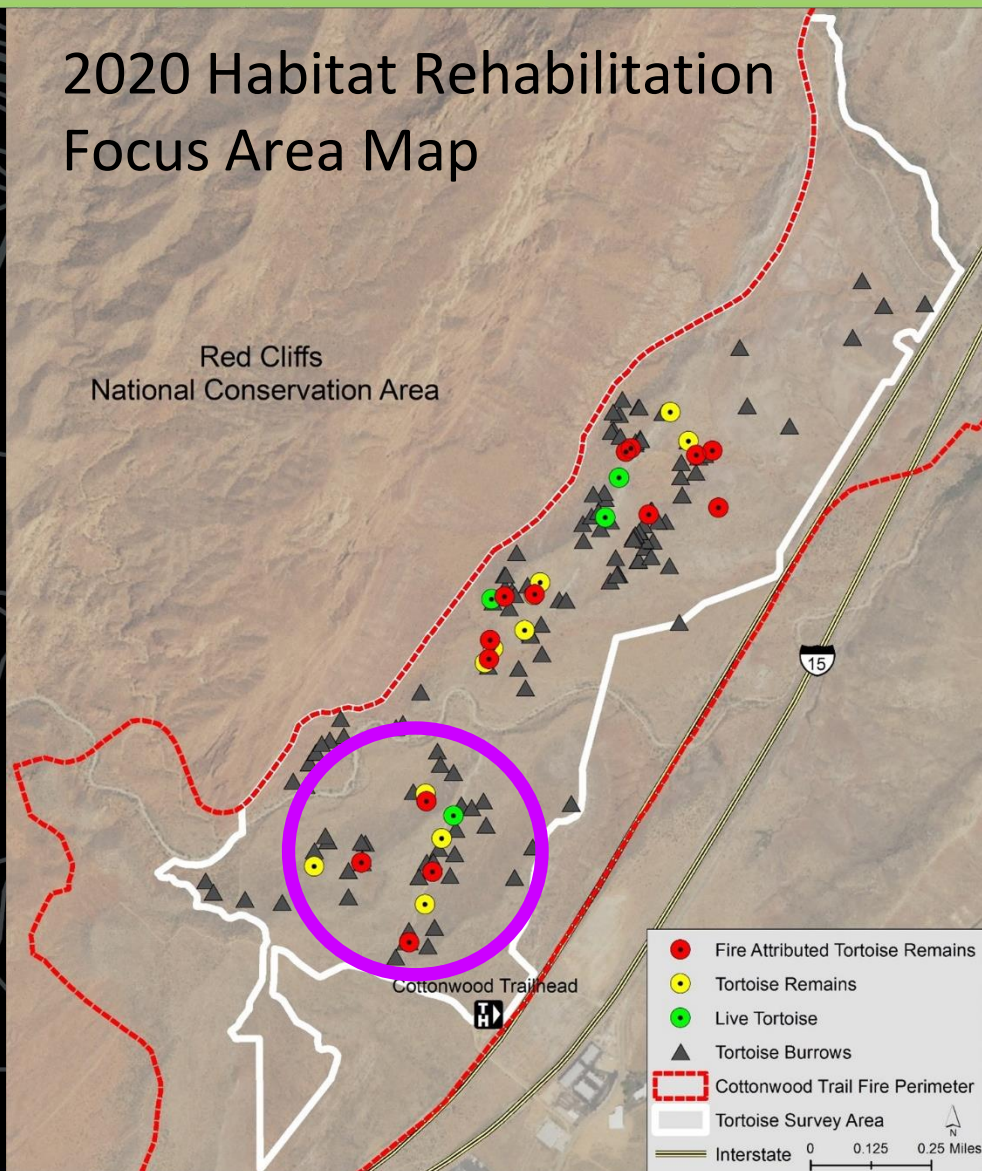


An approximately 150-acre
Fall 2020 habitat rehabilitation
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(1) the density of live tortoise,
tortoise remains, and
burrows.



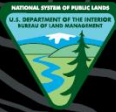
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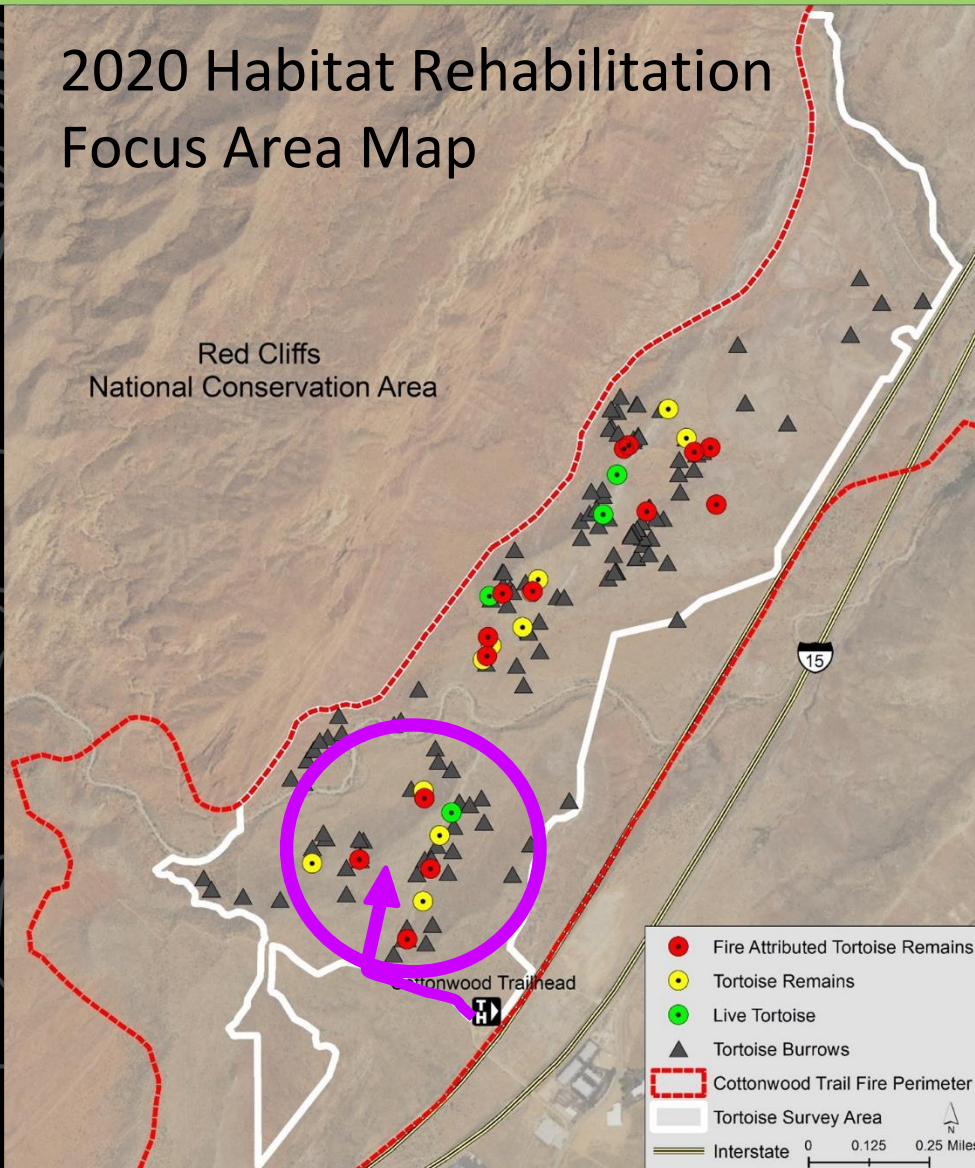
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(1) the density of live tortoise,
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(2) Friable soils, and
topographic/hydrologic
features benefitting plants.



2020 Habitat Rehabilitation Focus Area Map

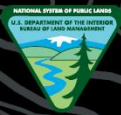


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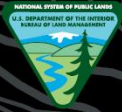
(2) Friable soils, and
topographic/hydrologic
features benefitting plants.

(3) Site access.



Project Goals: revegetate fire-affected desert tortoise critical habitat within the Red Cliffs NCA, in plots, to create "fertile" islands which will act as seed banks from which native plants can disperse.

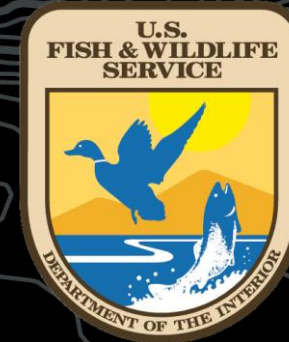


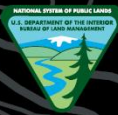


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2020 Cottonwood Trail Fire RCNCA Habitat Rehabilitation Project Partners





2020 Cottonwood Trail Fire - Red Cliffs NCA
25-Acre Habitat Rehabilitation Plot



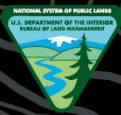
General Strategy:

2,814 plants within a 25-acre plot with 2 topographic variables (slope-base, valley floor).

3 species:

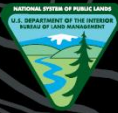
- White bursage
- Ephedra
- Creosote

Each plant has 1 double-wrapped chicken wire cage, and all received 2 L of water.



Utah-BLM SGFO has an agreement with the NPS Lake Mead National Recreation Area - Song Dog Native Plant Nursery to propagate plants from local native seed sources for use in present and future planting efforts.





Creosote

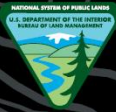


White bursage



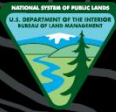
Ephedra



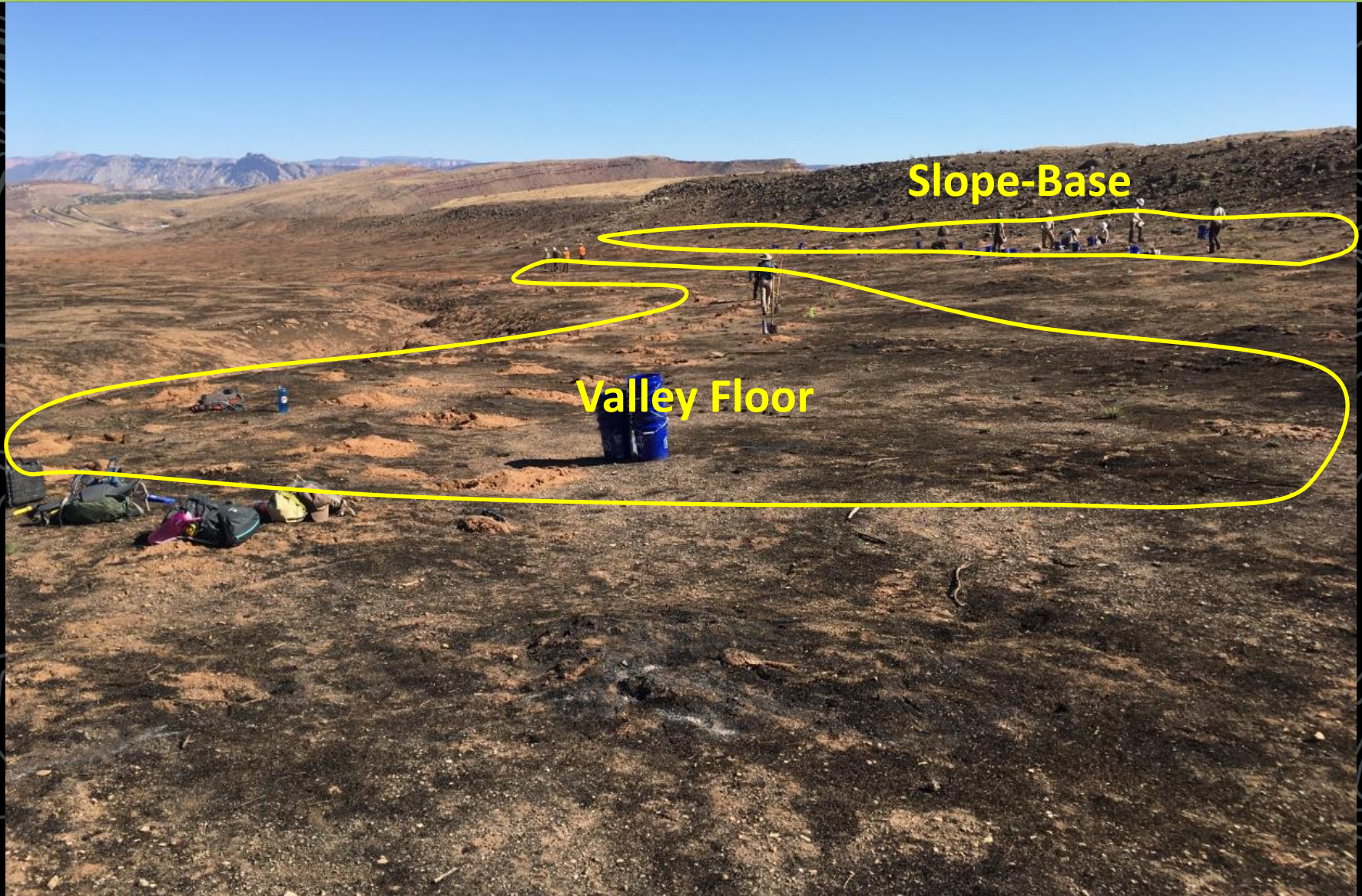
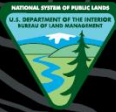


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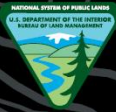


Slope-Base



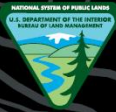
Slope-Base

Valley Floor



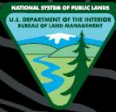
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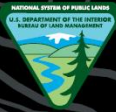
NATIONAL CONSERVATION LANDS





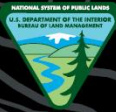
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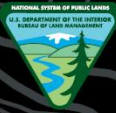
**NATIONAL
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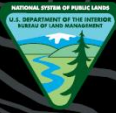




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Slope-Base

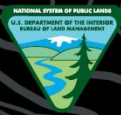




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Valley Floor

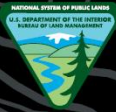




Supplemental Watering

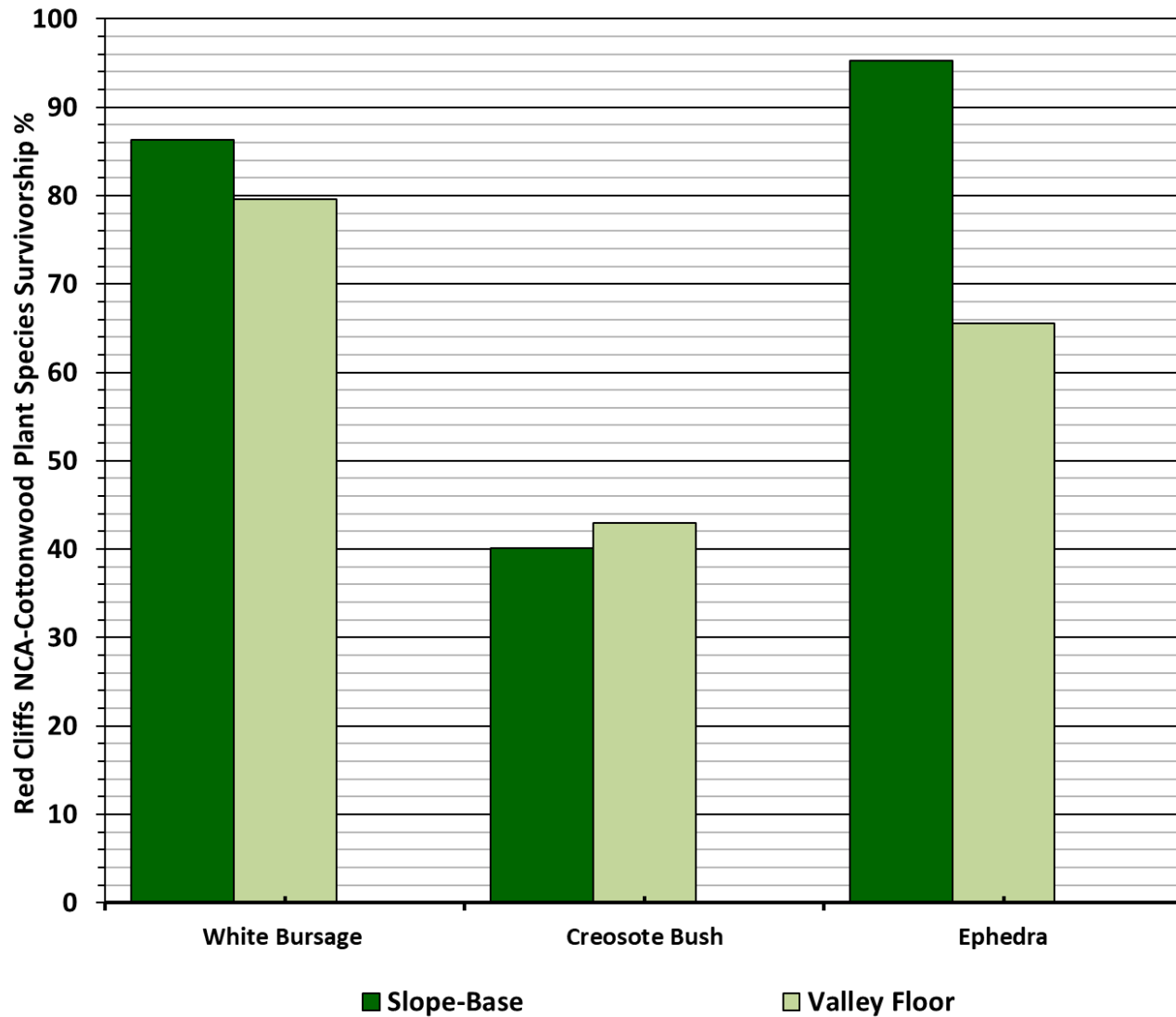
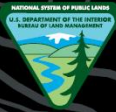
All plants received 2 liters of water on July 01, 2021.





Survivorship





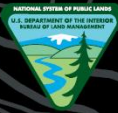
Total 8-month plant species survivorship was 72.9%



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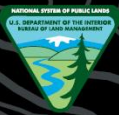


Factors Affecting Plant Survivorship



Factors Affecting Plant Survivorship

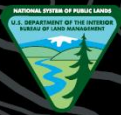
Extreme climate conditions such as extended periods of drought or high heat can severely affect the productivity and survivorship of plants.



Factors Affecting Plant Survivorship

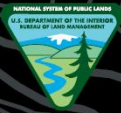
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Other BLM Actions Related To The 2020 Red Cliffs NCA Fires

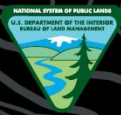
Purchased 8,000 native plants (6,500 globemallow, 1,000 brittlebush, and 500 creosote plants) from the NPS Lake Mead Song Dog Native Plant Nursery for 2021/2022 habitat rehabilitation projects in 2020 RCNCA fire burn areas.



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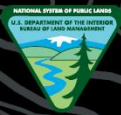


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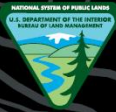
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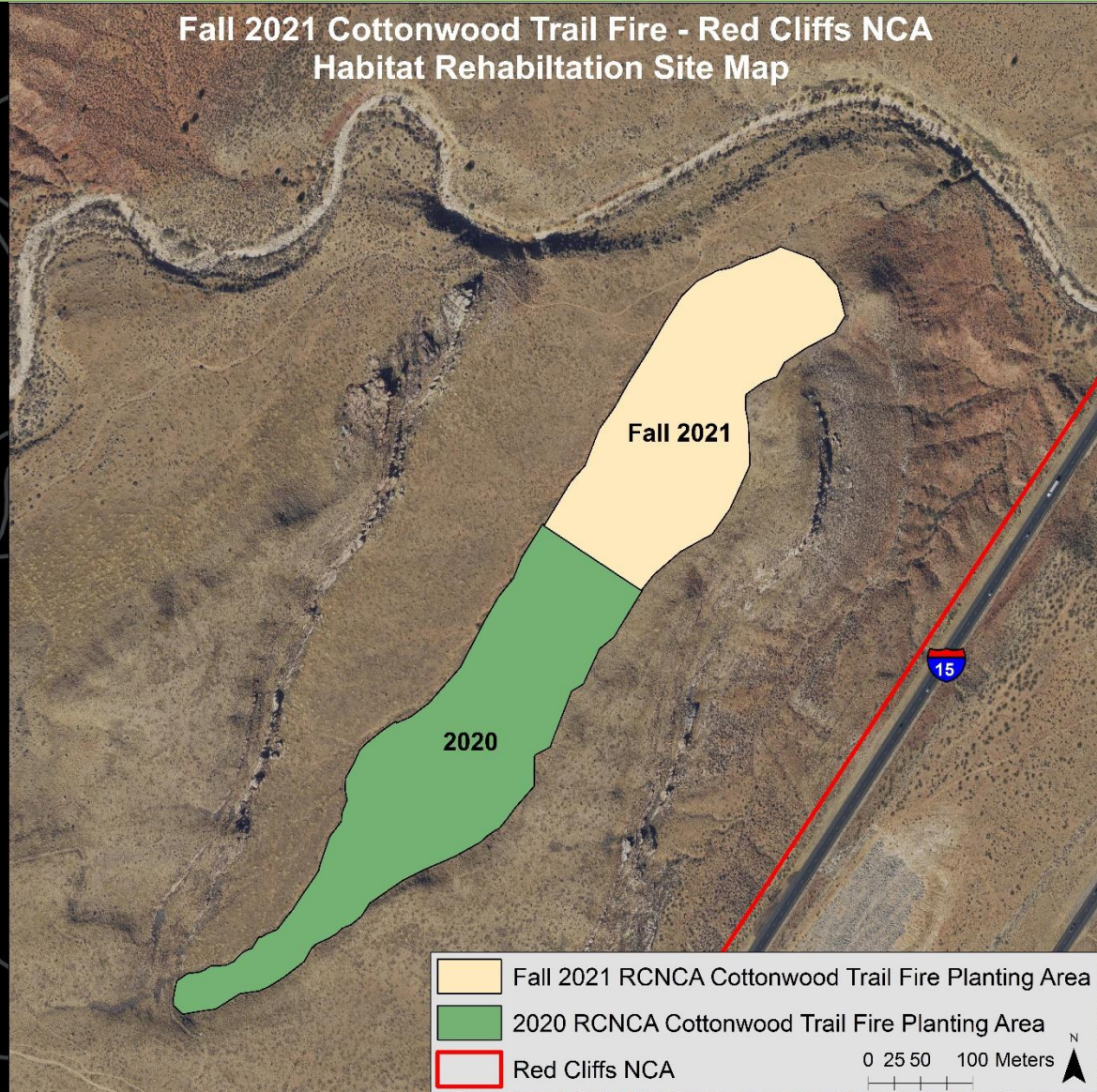
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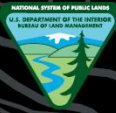
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Collected > 200 desert tortoise scats for a Southern Utah University DNA study examining the diet of tortoise in fire-damaged and unburned habitats in the RCNCA/BDWNCA.



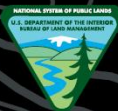
Fall 2021 Cottonwood Trail Fire - Red Cliffs NCA
Habitat Rehabilitation Site Map





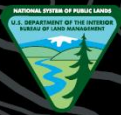
4.25-Year Beaver Dam Wash NCA Habitat Rehabilitation Project Update





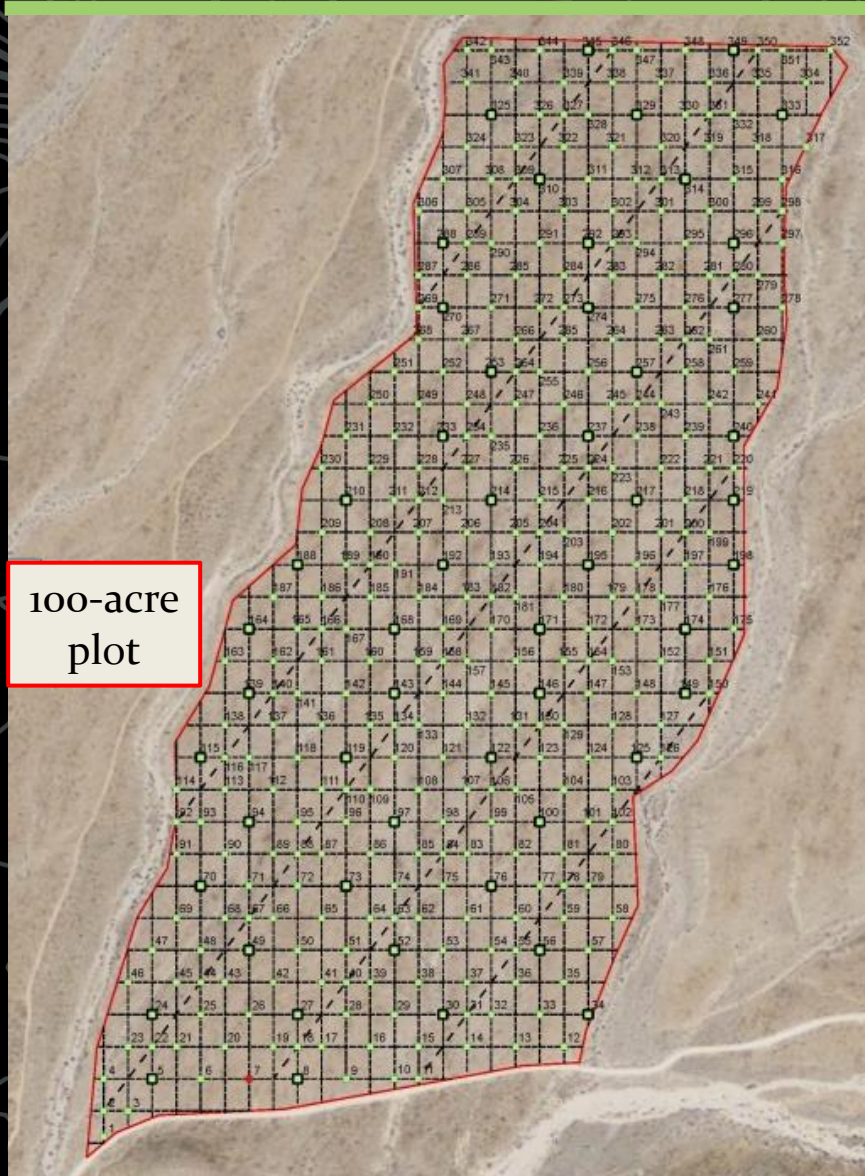
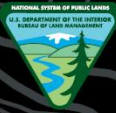
In the spring/summer of 2005/2006, wildfires burned significant portions of the Beaver Dam Wash NCA.





During the fall of 2016, 4,563 containerized plants were outplanted in fire-affected desert tortoise critical habitat within the Woodbury Desert Study Area in the BDWNCA.

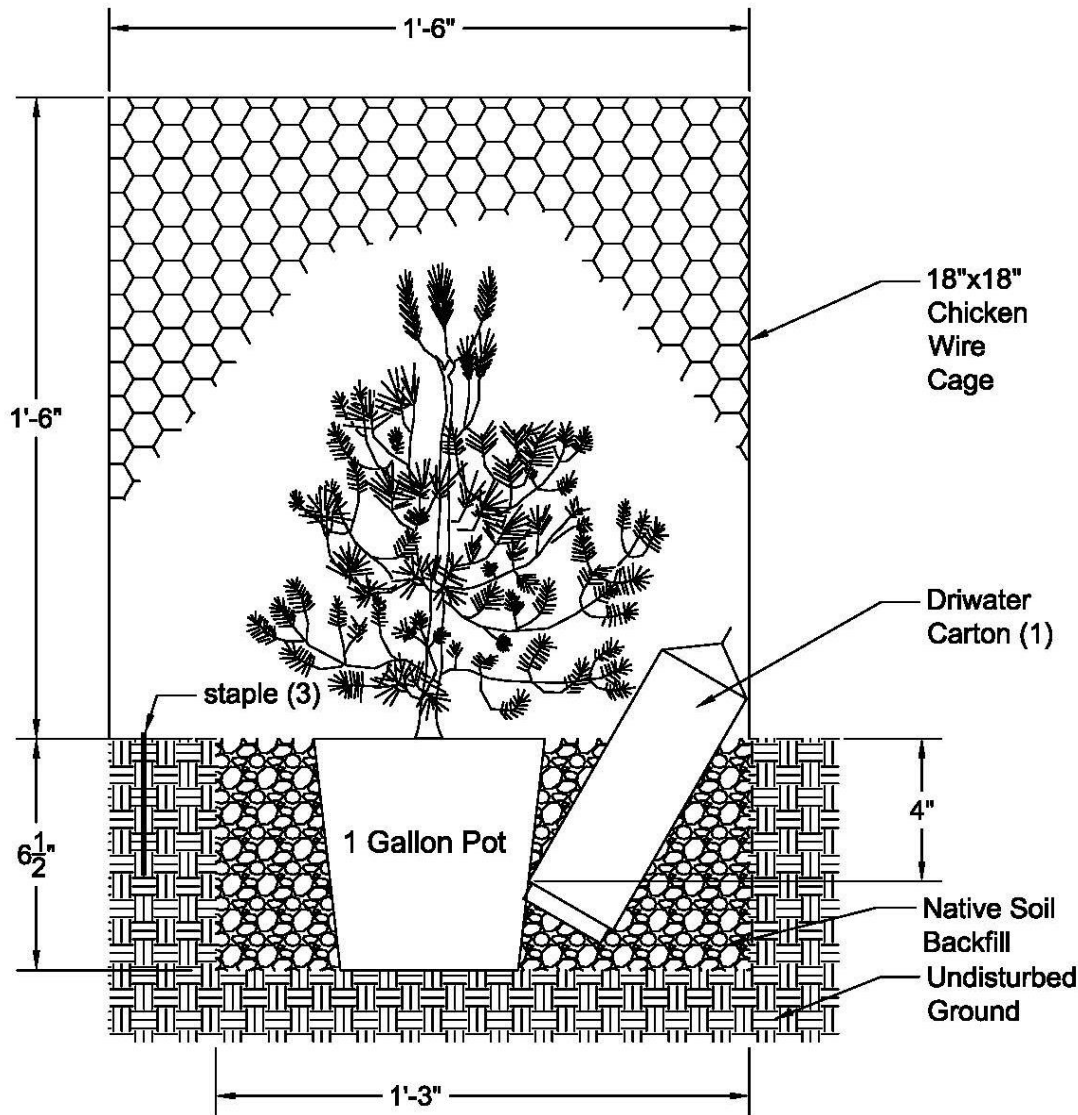
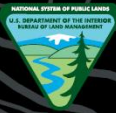
Project Partners: BLM, UDWR, USFWS, TNC, Washington County HCP, and SUNCLF.



General planting strategy for the 2016 100-acre BDWNCA habitat rehabilitation project:

- 351 sub-plots
- 13 plants per sub-plot
- 7 species
- 2 of each species
- *1 Bush Muhly per plot

Total = 4,563 plants

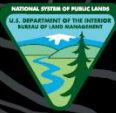


Plants were randomly planted within a 6 m radius of each sub-plot center.

Each plant has a double wrapped chicken wire cage except Creosote

Each plant received 1 L of water

Each plant received DRiWATER in every odd numbered sub-plot.



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Desert globemallow



Brittlebush



White bursage



Bush muhly



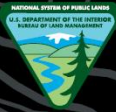
Big galleta



Milkvetch spp.

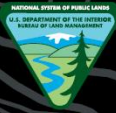


Creosote bush



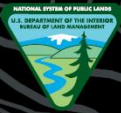
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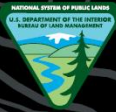


Supplemental Watering Schedule

All plants received 1-2 liters of water during the following date periods:

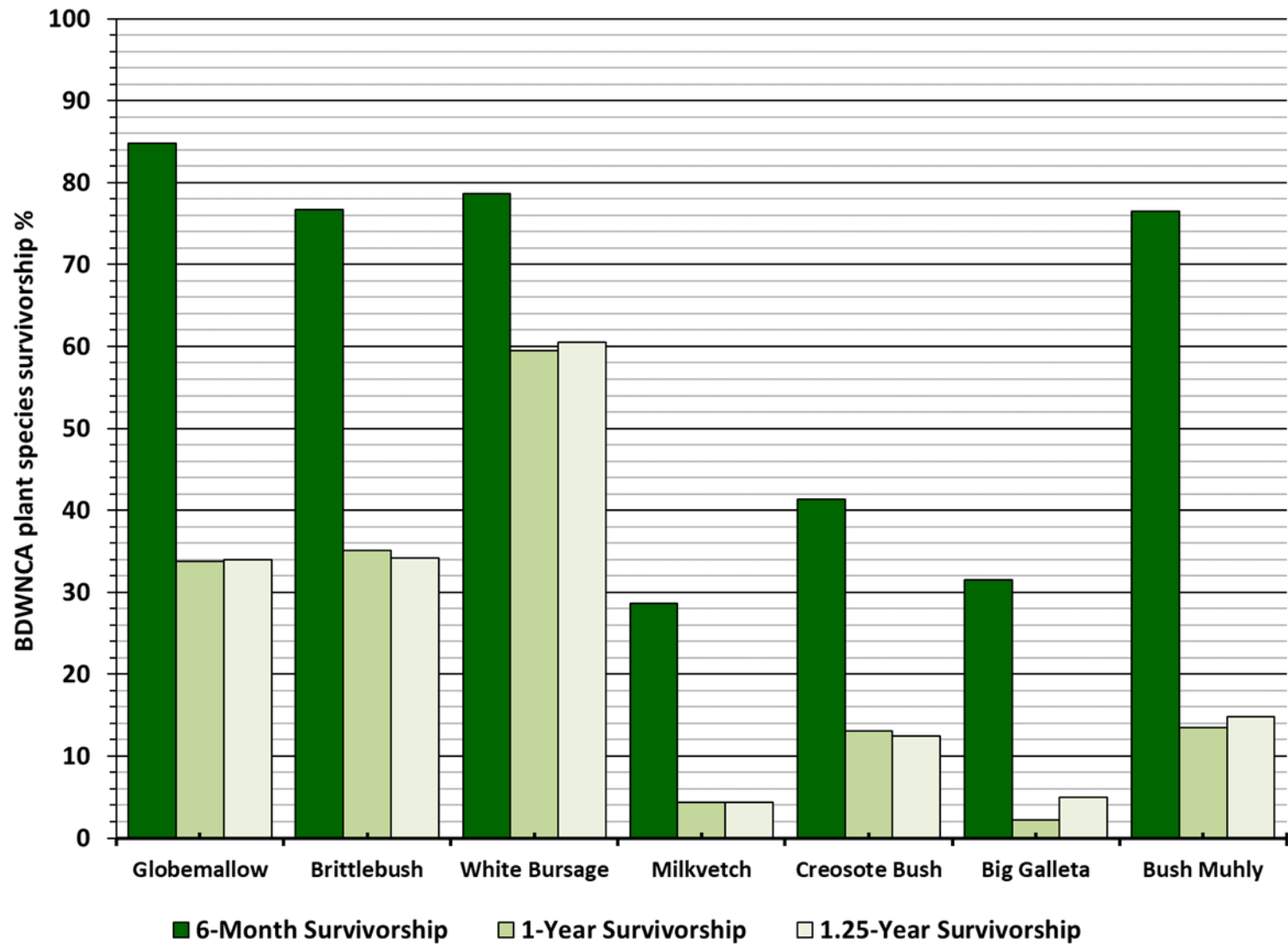
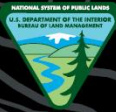
Period 1: June/July 2017

Period 2: November 2017

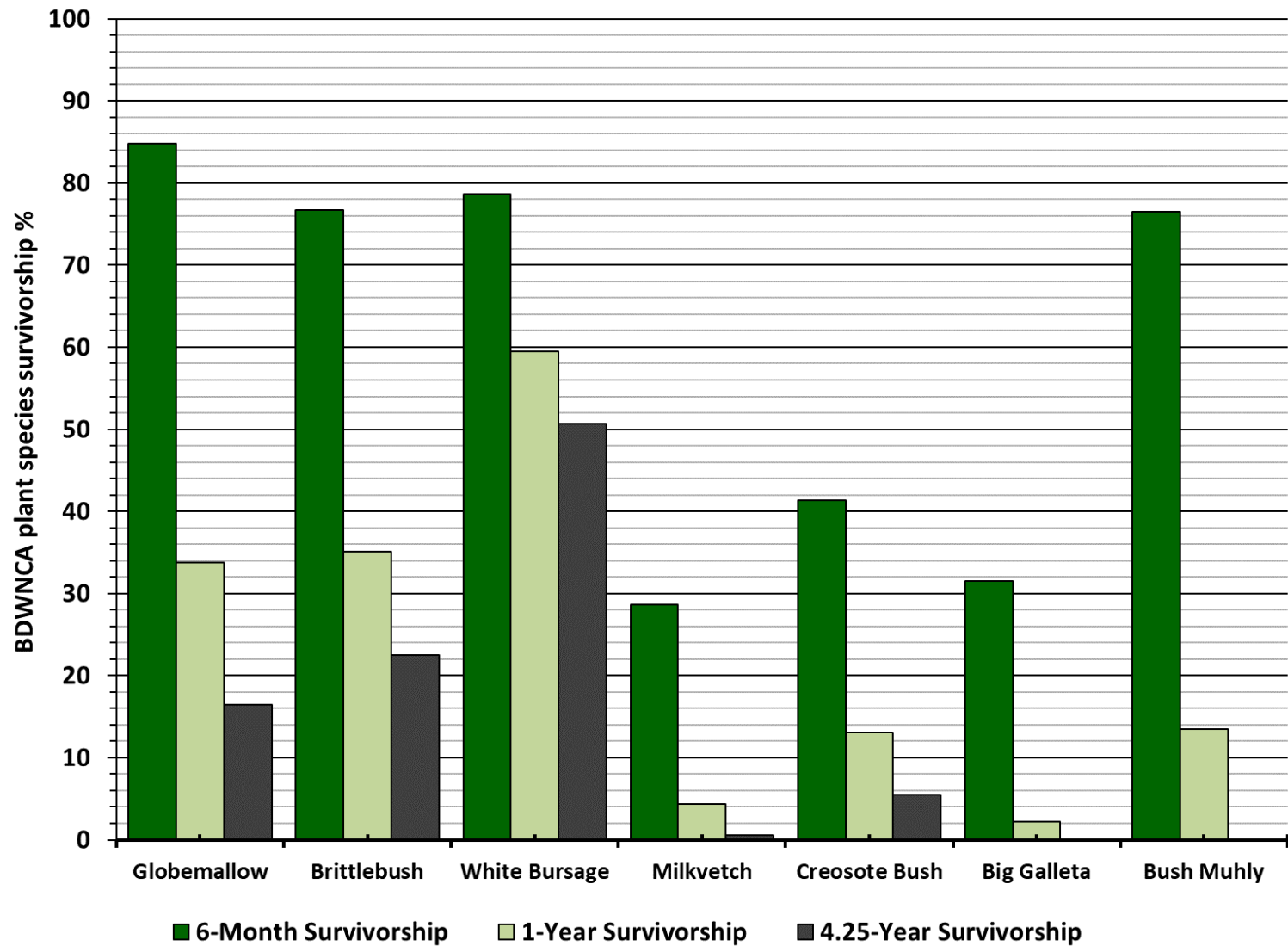
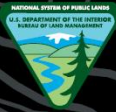


Survivorship

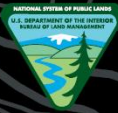




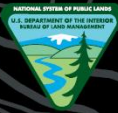
Total 1.25-year plant species survivorship was 25.0% (+ 2.9% w/DRIWATER)



Total 4.25-year plant species survivorship was 19.7%

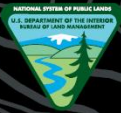


The 2016 BDWNCA plants endured persistent drought/high temperature conditions and received no supplemental water during the 3.25-year period prior to final survivorship counts.



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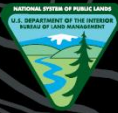
A 4.25-year survivorship of 19.7% (especially given the environmental conditions) is considered excellent when compared to other habitat rehabilitation projects in the Mojave Desert.



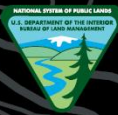
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A 4.25-year survivorship of 19.7% (especially given the environmental conditions) is considered excellent when compared to other habitat rehabilitation projects in the Mojave Desert.

The project goals were met by producing robust mature plants that create seed banks from which native plants can disperse—thereby, providing important food and shelter resources for desert tortoise and other native wildlife species in the BDWNCA.

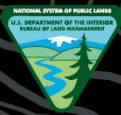


Through our ongoing plant-habitat rehabilitation research, we have learned which plant species, planting methods, and topographic/hydrologic features benefit plant survivorship.



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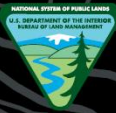
This information has been used to identify habitat rehabilitation sites in the Red Cliffs NCA which produced a 1-year survivorship rate of 74.1% for the 2018 planting effort, and an 8-month survivorship rate of 72.9% for the 2020 Cottonwood planting effort.



Through our ongoing plant-habitat rehabilitation research, we have learned which plant species, planting methods, and topographic/hydrologic features benefit plant survivorship.

This information has been used to identify habitat rehabilitation sites in the Red Cliffs NCA which produced a 1-year survivorship rate of 74.1% for the 2018 planting effort, and an 8-month survivorship rate of 72.9% for the 2020 Cottonwood planting effort.

The BLM's goal is to increase survivorship through research and expand the scale of future habitat rehabilitation efforts to mitigate the devastating impacts wildfires have on desert tortoise and other wildlife species in the NCAs.



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Questions?

