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COOPERATIVE EXTENSION
Gila County

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# Vegetation Assessment in the Salt River Horse Management Area, April 2025

Vegetation assessments were conducted at 10 sites within the Salt River Horse Management Area on April 15 and 16, 2025. This effort aimed to inventory current resources, as no data on forage production or species composition had been collected since 2018. Additionally, three new control sites (SRH 12–14) were established in areas inaccessible to horses, providing comparative data on vegetation unaffected by grazing pressure.

## Species Composition

Species composition was assessed using the dry-weight rank method. Species composition refers to the relative abundance, diversity, or proportion of different plant or animal species within a defined area or community. It provides insight into the ecological structure of the area by highlighting which species dominate, which are rare, and the overall biodiversity. Across all surveyed sites, annual forbs dominated the species composition (Table 1). Detailed species composition for each site is provided in Appendix A. According to the latest U.S. Drought Monitor, the region is classified as D3 (Extreme Drought). Under such conditions the majority of annual forbs are expected to desiccate and disperse off-site. Even if retained on site, these annual forbs are likely to lack the nutritional quality necessary to maintain horse body condition, particularly for lactating mares.

| Site | Annual Forb Composition |
|---|---|
| SRH 3 | 93% |
| SRH 4 | 99% |
| SRH 5 | 86% |
| SRH 6 | 65% |
| SRH 9 | 95% |
| SRH 10 | 69% |
| SRH 12 | 79% |
| SRH 13 | 77% |
| SRH 14 | 73% |

## Forage Production

Forage production was estimated using the comparative yield method, yielding an average of 54.6 pounds per acre across all sites. This estimate includes both perennial and annual vegetation. A 1,000 pound horse will consume on average 2% of their body weight. Given that a typical horse requires approximately 720 - 975 pounds of dry matter forage per month, current production levels are insufficient to sustain the existing horse population without supplemental feeding.

| Site | Pounds/Acre |
|---|---|
| SRH 3 | 75 |
| SRH 4 | 58 |
| SRH 5 | 62 |
| SRH 6 | 30 |
| SRH 9 | 46 |
| SRH 10 | 57 |
| SRH 11 | 54 |
| SRH 12 | 51 |
| SRH 13 | 45 |
| SRH 14 | 68 |

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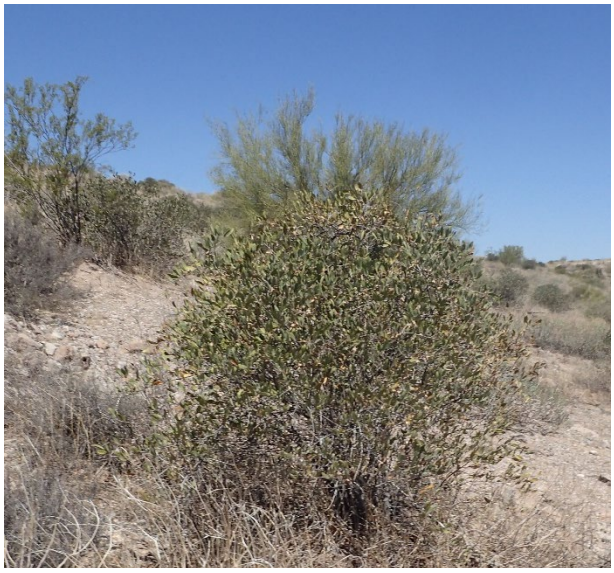
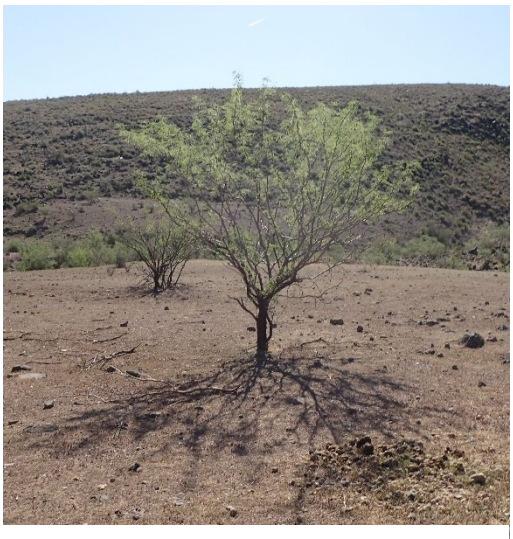
**Landscape Appearance and Plant Health**

Evidence of hedging, ranging from minor to substantial, was observed for jojoba **(***Simmondsia chinensis***)**, mesquite (*Prosopis* spp.), and wolfberry (*Lycium* spp.) across multiple sites. Notably, a distinct difference in jojoba height was evident between SRH 14 (ungrazed) and SRH 3 (accessible to horses). The effects of continuous grazing on perennial vegetation are likely to influence plant vigor adversely, particularly under the ongoing D3 drought conditions, which may compound the stress already experienced by these plants. Additionally, bark stripping was observed at some sites and along the routes to these locations, although no photographic evidence was documented.

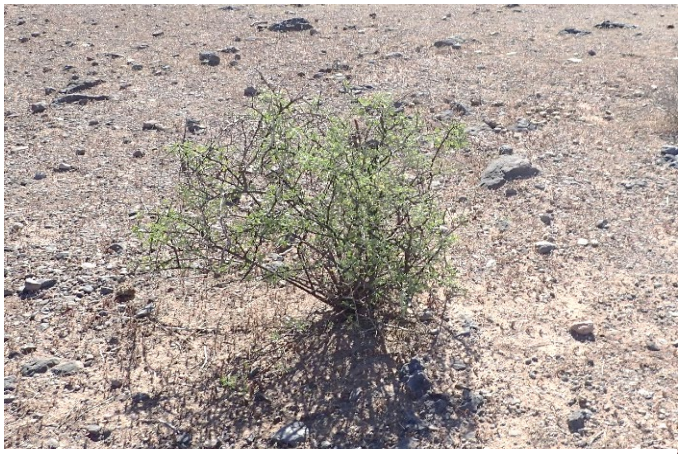


SRH 14 – Typical vegetation structure of mature, non-grazed jojoba. Approximate height 6.5ft

SRH 3 – Mature, grazed jojoba approximate height 1.5ft



SRH 4 – Grazed mesquite tree line



SHR 4 – Hedged wolfberry. Approximate height 1ft. Typical mature plant height up to 9ft

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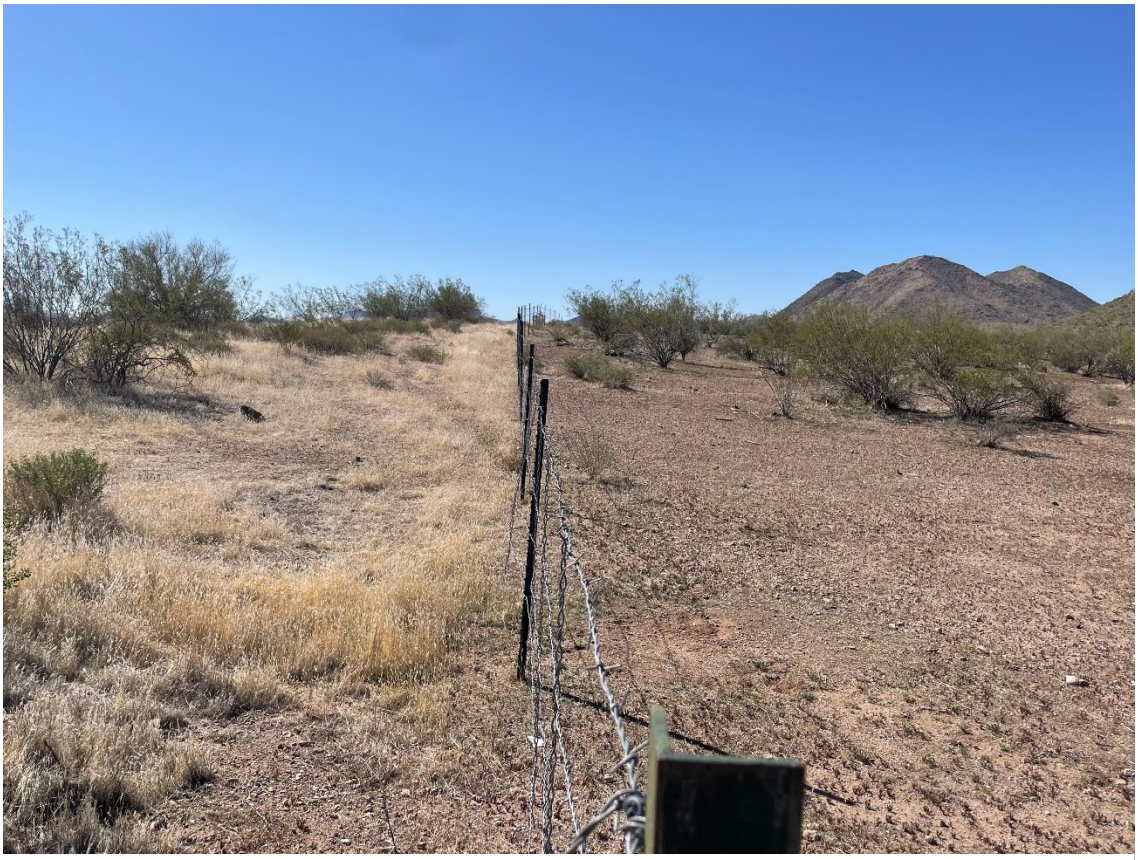
**Vegetation Nutritional Content**

Research conducted on the Arizona Strip indicated that the crude protein content of four-wing saltbush (*Atriplex canescens*) decreased with higher levels of utilization (Meen, 2000). Although specific studies on the effects of utilization rates on the forage quality of wolfberry or jojoba are lacking, it is plausible that grazing could elicit comparable reductions in forage quality for these species. Such changes could potentially reduce the availability of crude protein required by horses, increasing the likelihood that available forage is below their nutritional requirements. Additionally, drought conditions are known to affect critical soil chemical, physical, and biological processes necessary for maintaining plant and soil health. These impacts may hinder nutrient uptake by perennial vegetation, further limiting the quality and availability of forage.



Fence-line contrast of available forage. Left side of fence horses are excluded.

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## Appendix A. Species Composition

SRH 3

| Dry-Weight-Rank Composition | | | | | Sample Size = ? |
|---|---|---|---|---|---|
| Species | Rank (#Hits) | | | Wtd. Sum | % Composition* |
| | 1 | 2 | 3 | | |
| **Woody Species** | | | | | |
| whitethorn acacia | 1 | 1 | | 9 | 0.48 |
| brittlebush | 9 | 8 | 1 | 80 | 4.27 |
| creosote bush | 1 | 1 | | 9 | 0.48 |
| jojoba | 1 | | | 7 | 0.37 |
| **Annuals** | | | | | |
| Forb | 174 | 178 | 184 | 1758 | 93.76 |
| Grass | | | 12 | 12 | 0.64 |
| **Weighted Sums:** | 1302 | 376 | 197 | 1875 | 100.00 |

SRH 4

| Dry-Weight-Rank Composition | | | | | Sample Size = ? |
|---|---|---|---|---|---|
| Species | Rank (#Hits) | | | Wtd. Sum | % Composition* |
| | 1 | 2 | 3 | | |
| **Woody Species** | | | | | |
| wolfberry | 1 | | | 7 | 0.36 |
| velvet mesquite | 1 | 1 | | 9 | 0.47 |
| **Forbs - Perennial/Biennial** | | | | | |
| desert globemallow | | | 1 | 1 | 0.05 |
| **Annuals** | | | | | |
| Forb | 190 | 192 | 190 | 1904 | 99.01 |
| Grass | | | 2 | 2 | 0.10 |
| **Weighted Sums:** | 1344 | 386 | 193 | 1923 | 99.99 |

SRH 5

| Dry-Weight-Rank Composition | | | | | Sample Size = ? |
|---|---|---|---|---|---|
| Species | Rank (#Hits) | | | Wtd. Sum | % Composition* |
| | 1 | 2 | 3 | | |
| **Woody Species** | | | | | |
| creosote bush | 1 | 1 | | 9 | 0.58 |
| mesquite mistletoe | | 1 | | 2 | 0.13 |
| velvet mesquite | 19 | 14 | 4 | 165 | 10.55 |
| **Annuals** | | | | | |
| Forb | 134 | 132 | 146 | 1348 | 86.19 |
| Grass | | 10 | 20 | 40 | 2.56 |
| **Weighted Sums:** | 1078 | 316 | 170 | 1564 | 100.01 |

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SRH 6

| Dry-Weight-Rank Composition | | | | | Sample Size = ? |
|---|---|---|---|---|---|
| Species | Rank (#Hits) | | | Wtd. Sum | % Composition* |
| | 1 | 2 | 3 | | |
| **Woody Species** | | | | | |
| triangleleaf bursage | 4 | 5 | 5 | 43 | 4.33 |
| staghorn cholla | 18 | 18 | 16 | 178 | 17.93 |
| pincushion cactus | | | 1 | 1 | 0.10 |
| yellow paloverde | 5 | 4 | 2 | 45 | 4.53 |
| **Annuals** | | | | | |
| Forb | 66 | 64 | 62 | 652 | 65.66 |
| Grass | 6 | 8 | 16 | 74 | 7.45 |
| **Weighted Sums:** | 693 | 198 | 102 | 993 | 100.00 |

SRH 9

| Dry-Weight-Rank Composition | | | | | Sample Size = ? |
|---|---|---|---|---|---|
| Species | Rank (#Hits) | | | Wtd. Sum | % Composition* |
| | 1 | 2 | 3 | | |
| **Woody Species** | | | | | |
| creosote bush | 3 | 2 | 2 | 27 | 1.74 |
| blue paloverde | 1 | 1 | | 9 | 0.58 |
| **Forbs - Perennial/Biennial** | | | | | |
| desert marigold | 1 | | 1 | 8 | 0.51 |
| **Annuals** | | | | | |
| Forb | 148 | 152 | 148 | 1488 | 95.63 |
| Grass | 2 | 2 | 6 | 24 | 1.54 |
| **Weighted Sums:** | 1085 | 314 | 157 | 1556 | 100.00 |

SRH 10

| Dry-Weight-Rank Composition | | | | | Sample Size = ? |
|---|---|---|---|---|---|
| Species | Rank (#Hits) | | | Wtd. Sum | % Composition* |
| | 1 | 2 | 3 | | |
| **Woody Species** | | | | | |
| wolfberry | 1 | 3 | | 13 | 1.17 |
| velvet mesquite | 25 | 22 | 14 | 233 | 20.92 |
| **Annuals** | | | | | |
| Forb | 76 | 76 | 90 | 774 | 69.48 |
| Grass | 8 | 10 | 18 | 94 | 8.44 |
| **Weighted Sums:** | 770 | 222 | 122 | 1114 | 100.01 |

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SRH 11

| Dry-Weight-Rank Composition | | | | | Sample Size = ? |
|---|---|---|---|---|---|
| Species | Rank (#Hits) | | | Wtd. Sum | % Composition* |
| | 1 | 2 | 3 | | |
| **Woody Species** | | | | | |
| triangleleaf bursage | 12 | 12 | 7 | 115 | 11.07 |
| staghorn cholla | 4 | 4 | 4 | 40 | 3.85 |
| creosote bush | 29 | 26 | 21 | 276 | 26.56 |
| wolfberry | 3 | 3 | 3 | 30 | 2.89 |
| velvet mesquite | 4 | 4 | 4 | 40 | 3.85 |
| **Annuals** | | | | | |
| Forb | 46 | 40 | 66 | 468 | 45.04 |
| Grass | 4 | 16 | 10 | 70 | 6.74 |
| **Weighted Sums:** | 714 | 210 | 115 | 1039 | 100.00 |

SRH 12

| Dry-Weight-Rank Composition | | | | | Sample Size = ? |
|---|---|---|---|---|---|
| Species | Rank (#Hits) | | | Wtd. Sum | % Composition* |
| | 1 | 2 | 3 | | |
| **Woody Species** | | | | | |
| catclaw acacia | 2 | 2 | 2 | 20 | 1.59 |
| triangleleaf bursage | 14 | 13 | 12 | 136 | 10.80 |
| buck-horn cholla | 2 | 2 | 2 | 20 | 1.59 |
| creosote bush | 6 | 5 | 3 | 55 | 4.37 |
| **Forbs - Perennial/Biennial** | | | | | |
| desert globemallow | 1 | 1 | 1 | 10 | 0.79 |
| **Annuals** | | | | | |
| Forb | 98 | 104 | 104 | 998 | 79.27 |
| Grass | 2 | | 6 | 20 | 1.59 |
| **Weighted Sums:** | 875 | 254 | 130 | 1259 | 100.00 |

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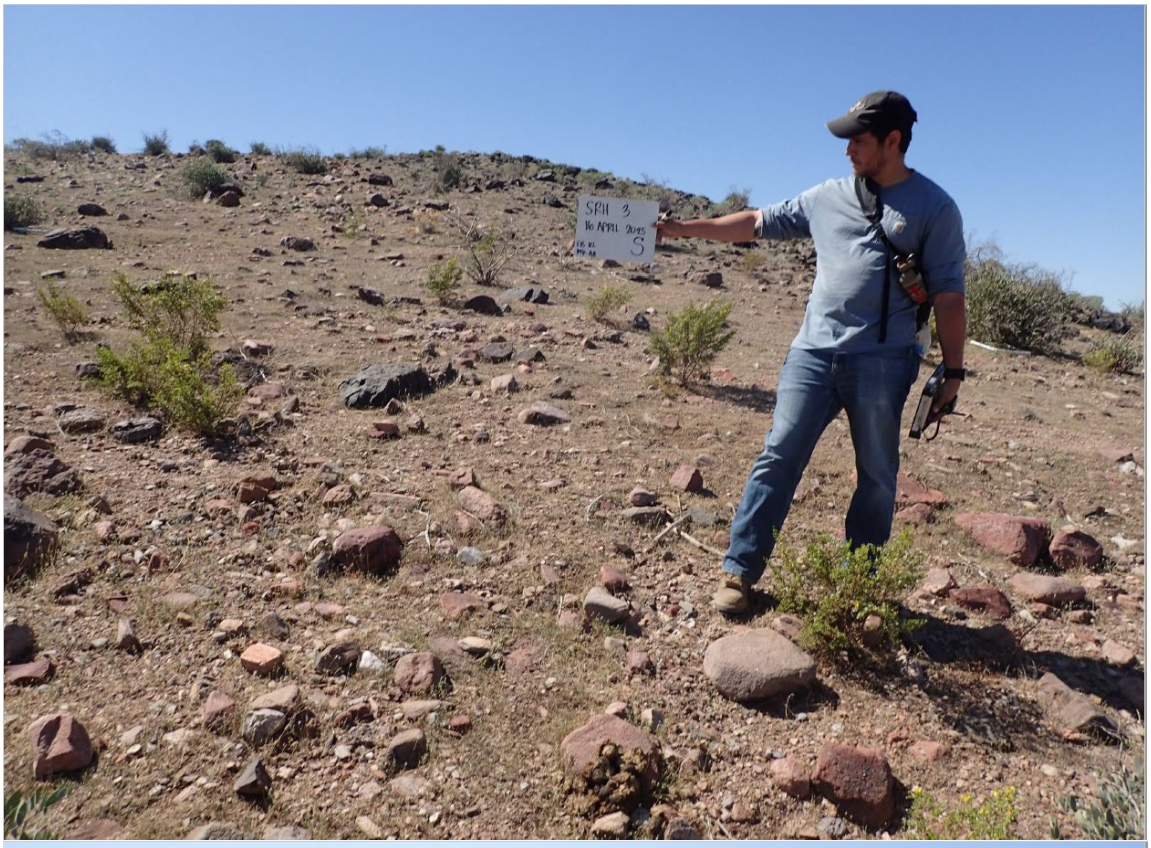
SRH 13

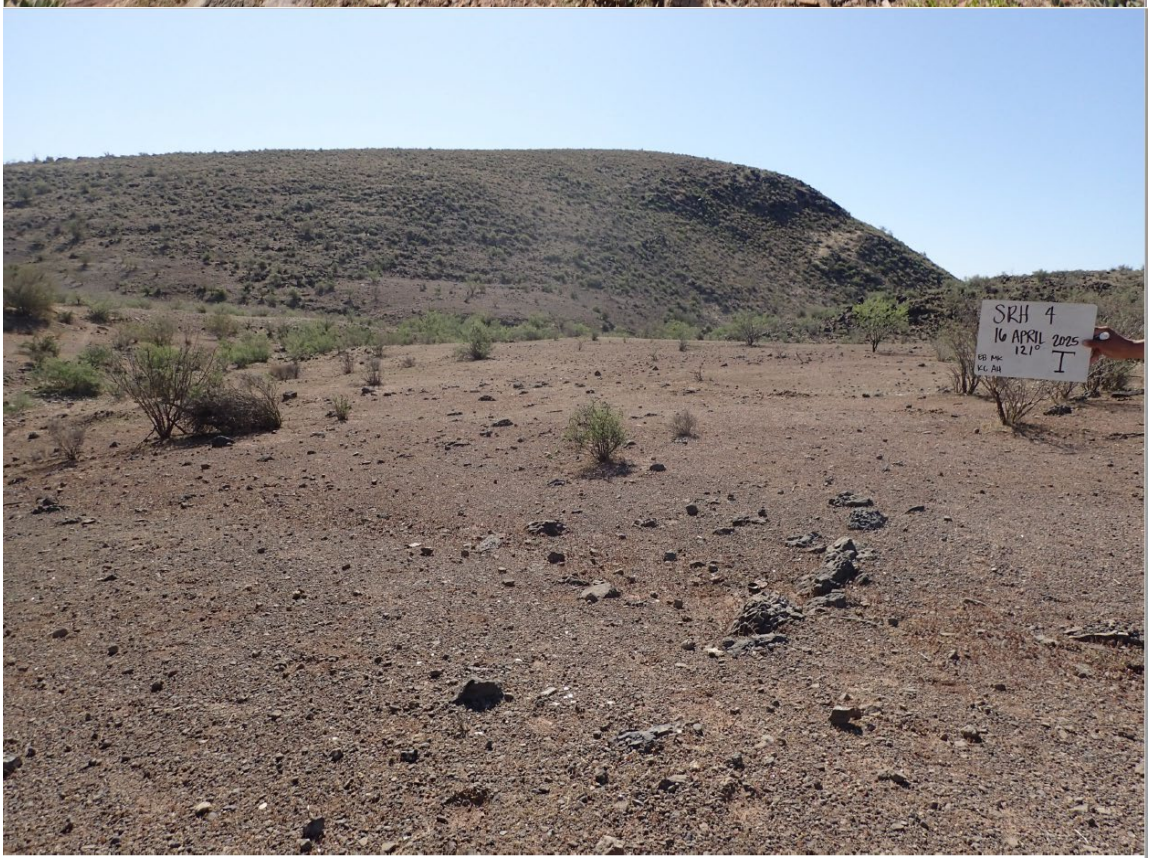
| Dry-Weight-Rank Composition | | | | | Sample Size = ? |
|---|---|---|---|---|---|
| Species | Rank (#Hits) | | | Wtd. Sum | % Composition* |
| | 1 | 2 | 3 | | |
| **Woody Species** | | | | | |
| catclaw acacia | 1 | | | 7 | 0.50 |
| triangleleaf bursage | 20 | 19 | 11 | 189 | 13.56 |
| blue paloverde | 3 | 2 | | 25 | 1.79 |
| buck-horn cholla | 3 | 2 | | 25 | 1.79 |
| **Annuals** | | | | | |
| Forb | 104 | 112 | 122 | 1074 | 77.04 |
| Grass | 6 | 6 | 20 | 74 | 5.31 |
| **Weighted Sums:** | 959 | 282 | 153 | 1394 | 99.99 |

SRH 14

| Dry-Weight-Rank Composition | | | | | Sample Size = ? |
|---|---|---|---|---|---|
| Species | Rank (#Hits) | | | Wtd. Sum | % Composition* |
| | 1 | 2 | 3 | | |
| **Woody Species** | | | | | |
| prairie clover | 1 | 1 | | 9 | 0.65 |
| brittlebush | 14 | 15 | 4 | 132 | 9.48 |
| range ratany | 2 | 2 | 1 | 19 | 1.36 |
| creosote bush | 2 | 2 | | 18 | 1.29 |
| jojoba | 12 | 11 | 4 | 110 | 7.90 |
| **Annuals** | | | | | |
| Forb | 98 | 98 | 138 | 1020 | 73.28 |
| Grass | 8 | 8 | 12 | 84 | 6.03 |
| **Weighted Sums:** | 959 | 274 | 159 | 1392 | 99.99 |

Not all sites from the 2017/2018 inventory were revisited. For example, Sites 1 through 4 were closely situated next to each other and 2 sites (SRH 1 and 2) were omitted because of site similarities. Sites SRH 07 and SRH 08 were also omitted back in 2017/2018 due to access challenges posed by current Salt River water levels.


SRH 3
16 APRIL 2025
S


SRH 4
16 APRIL 2025
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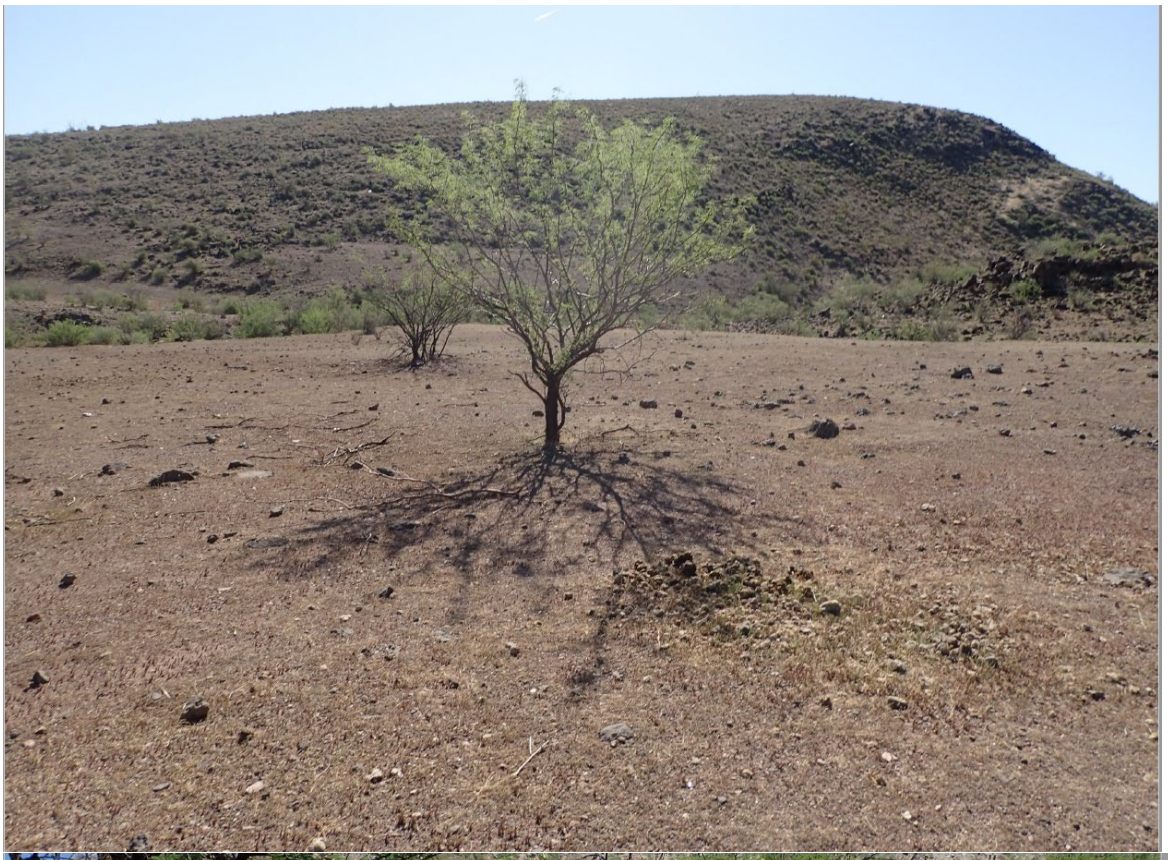


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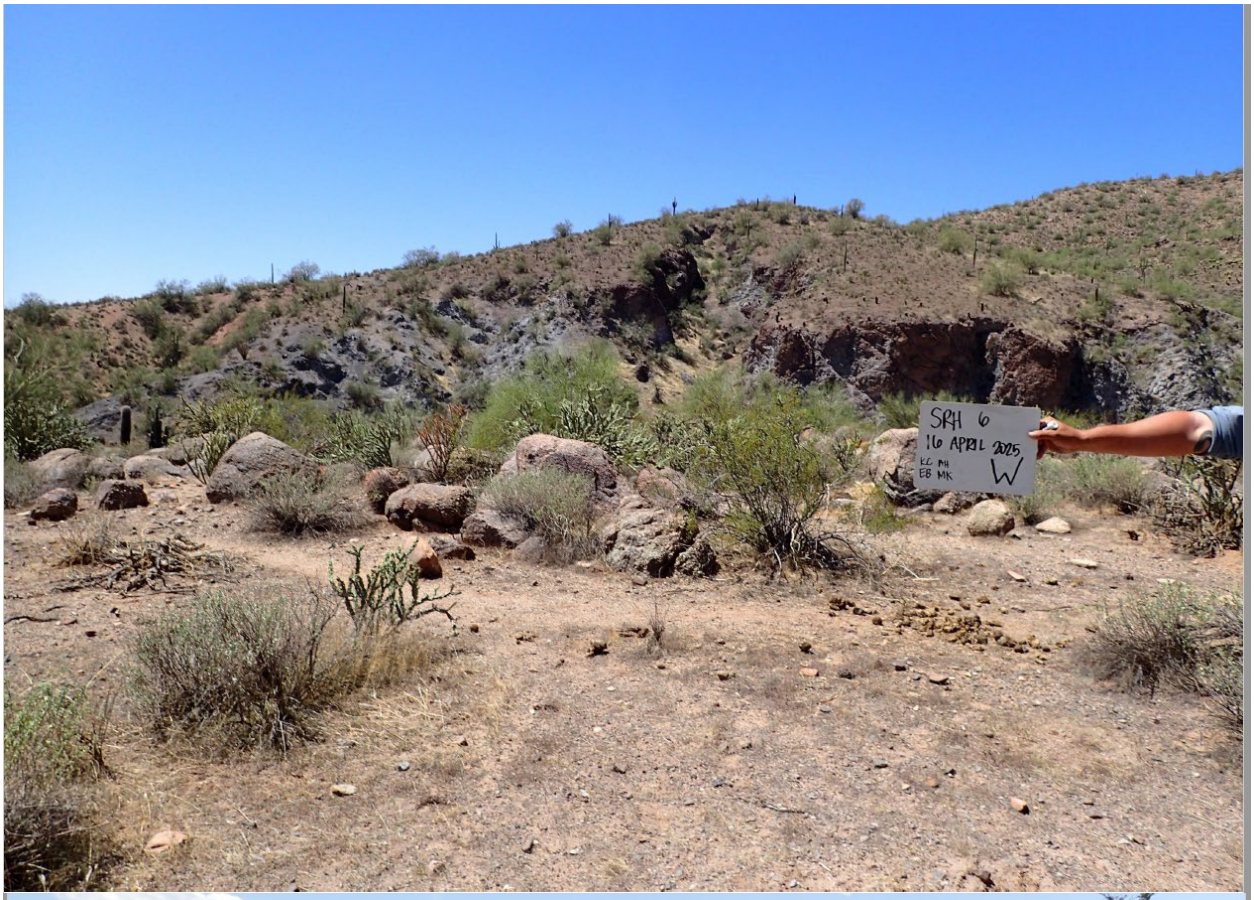
SRH 6
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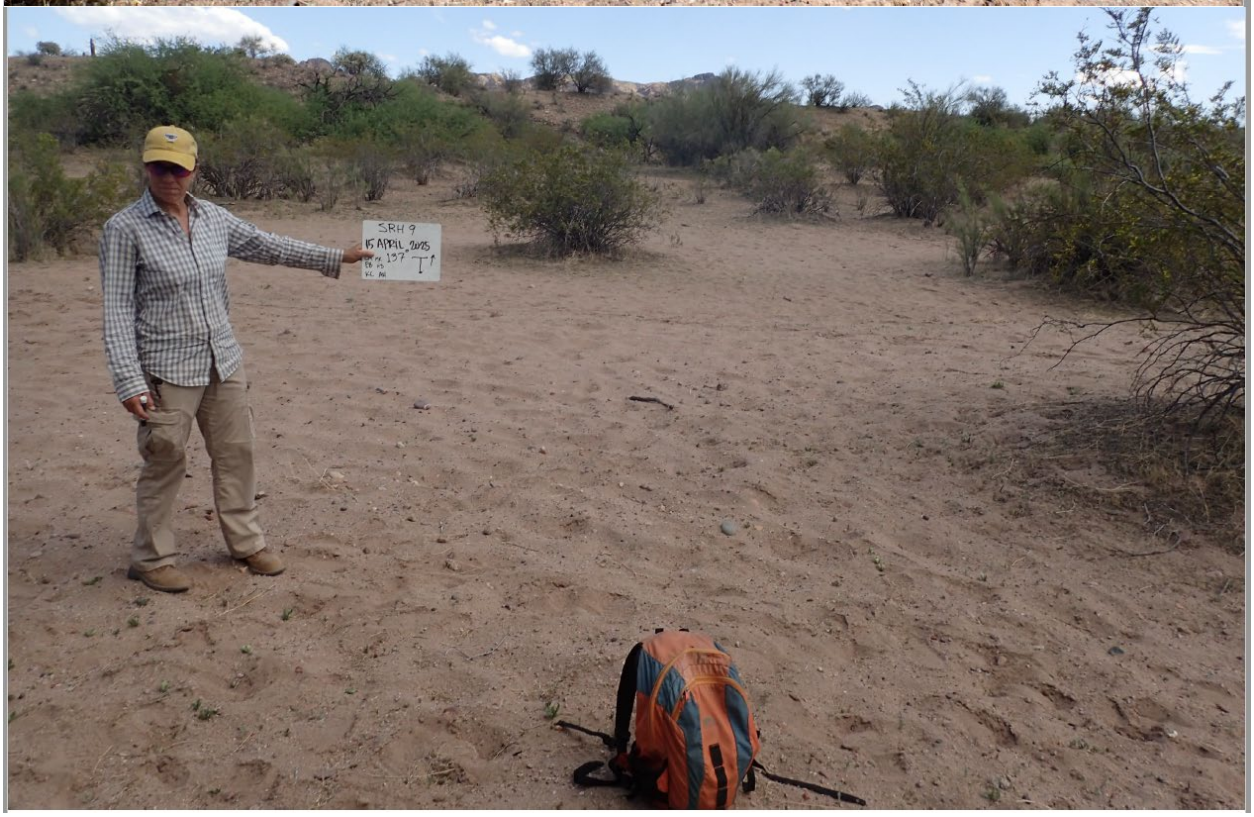
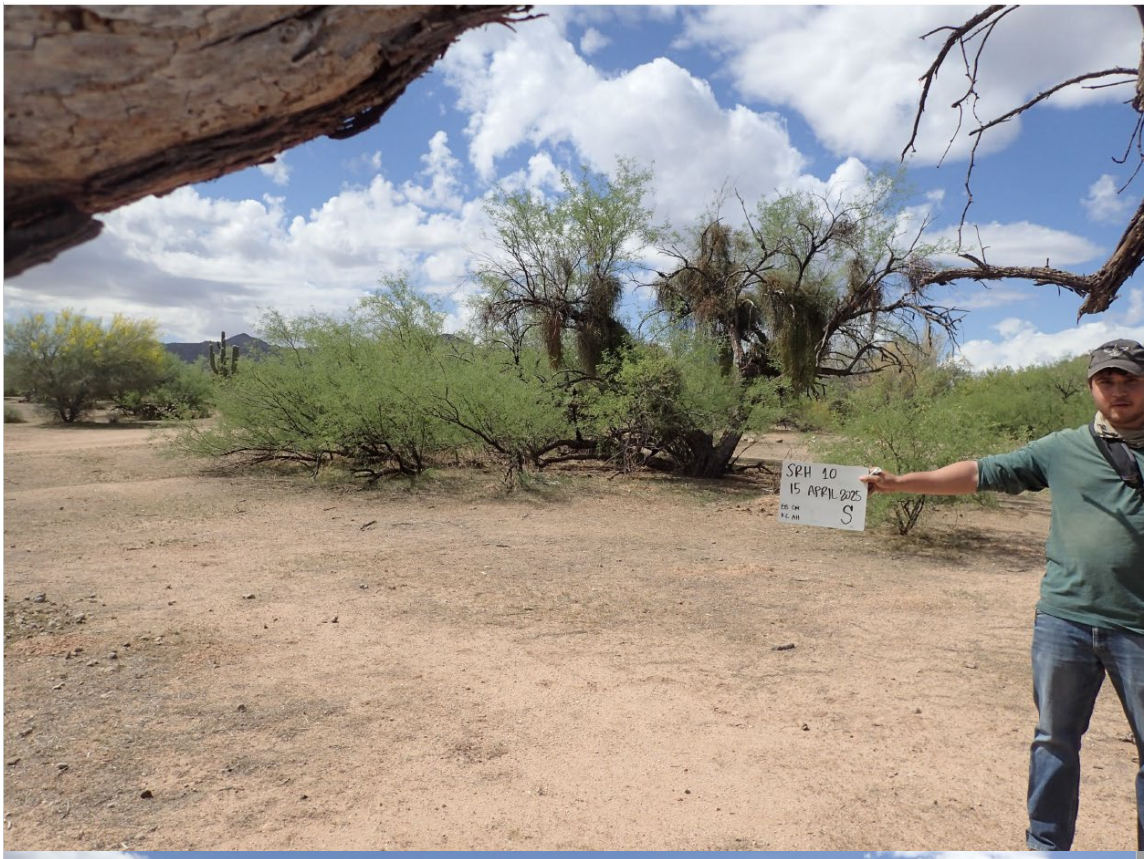

SRH 9
15 APRIL 2025


SRH 10
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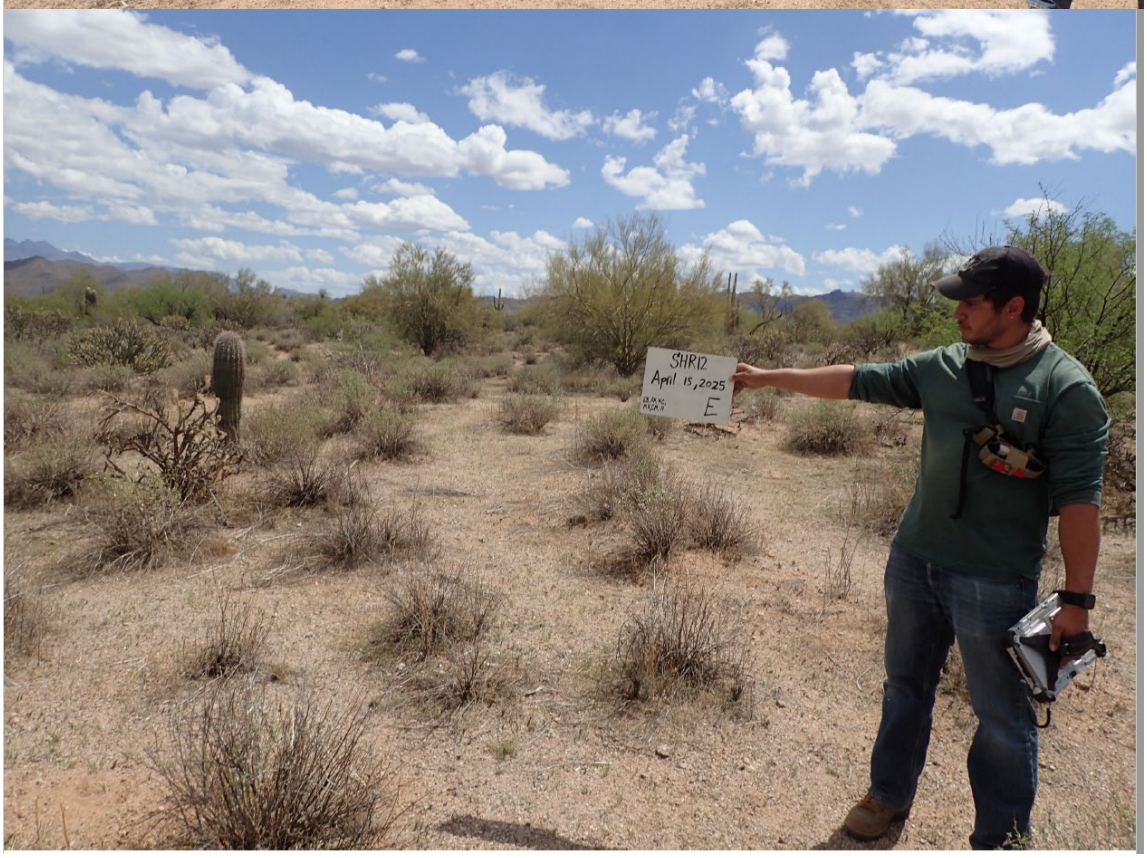
SHR12
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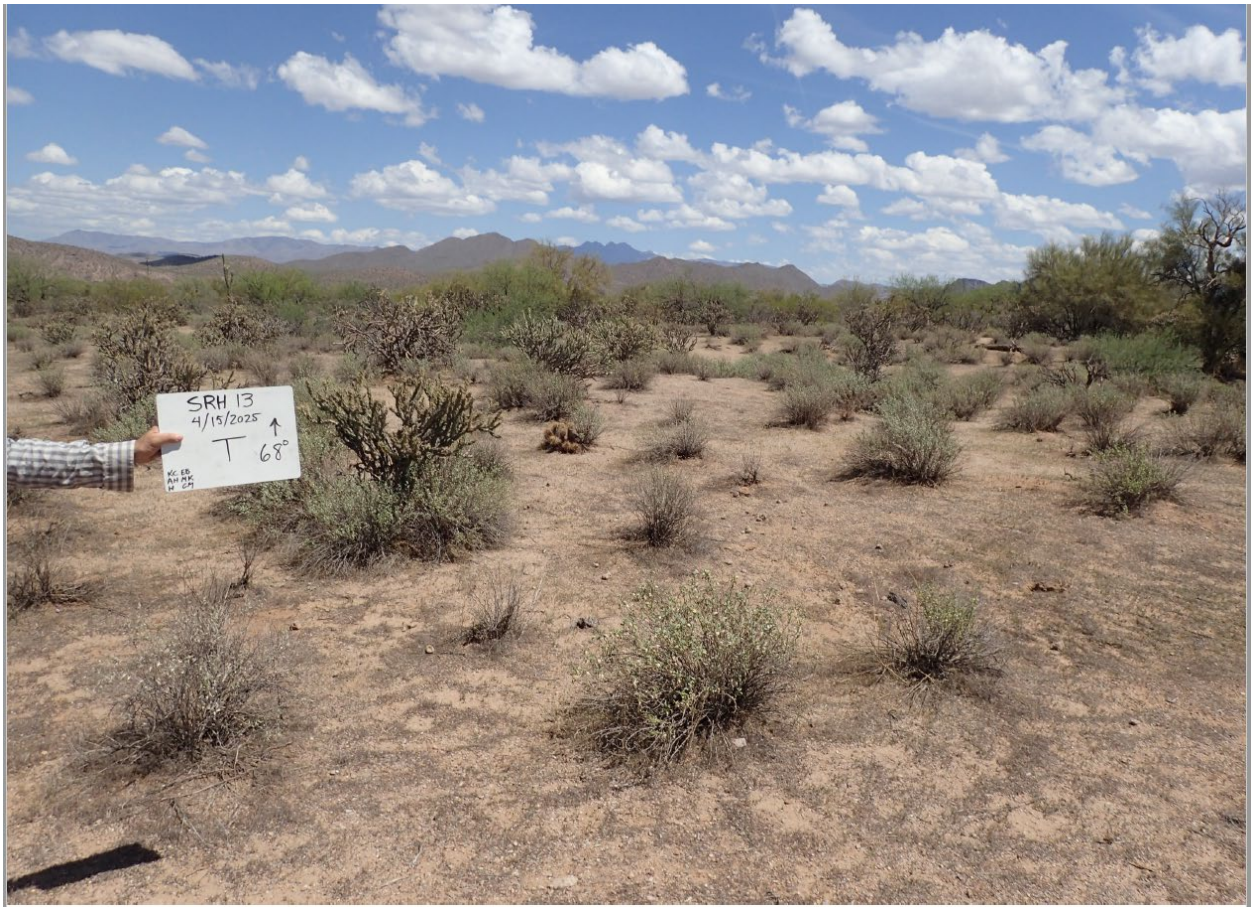
SRH 13
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