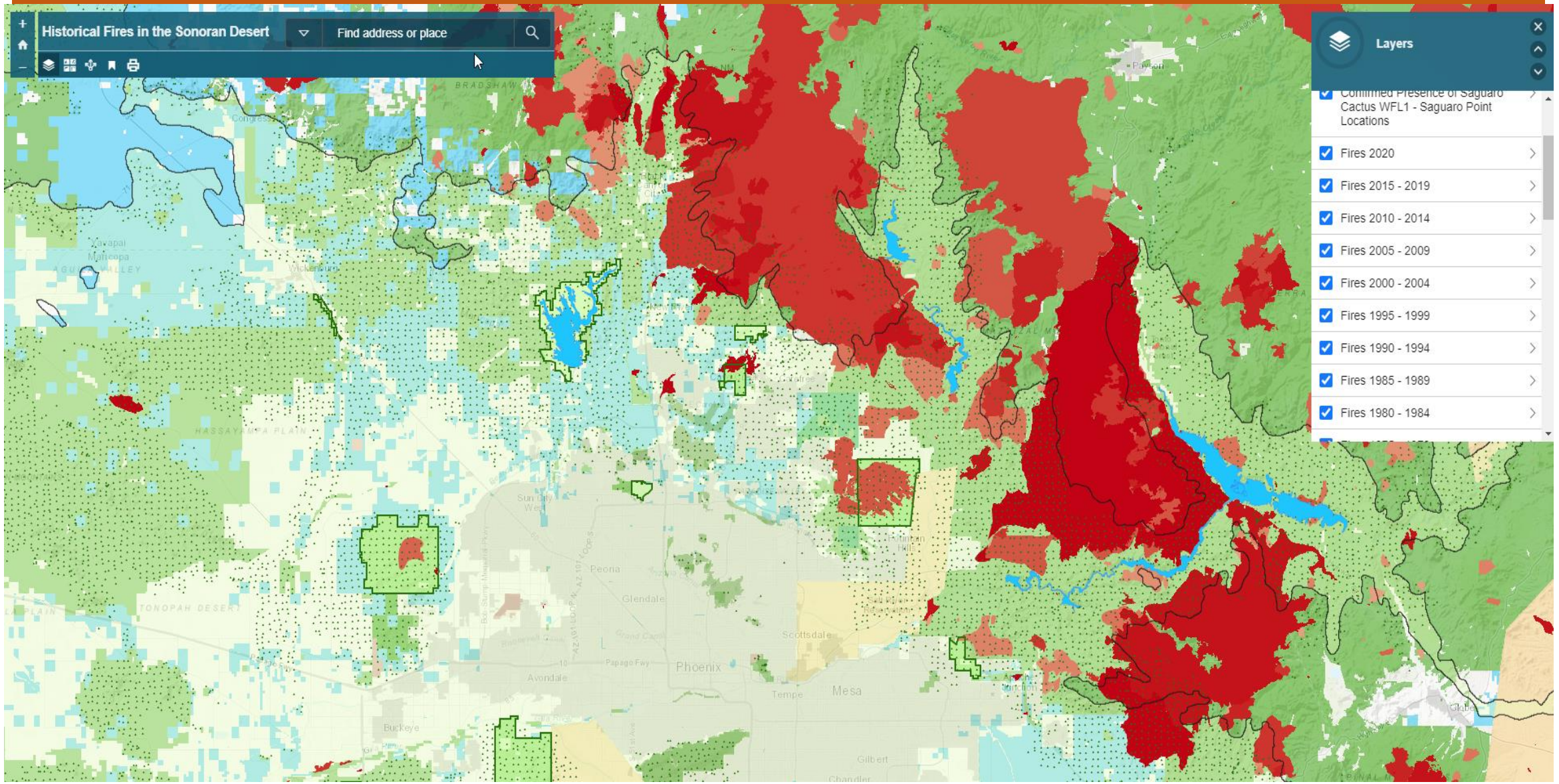
# Post Fire Assessment at
## Cave Creek and White Tank Regional Parks

Assessing fire damage in our high quality natural areas, parks and open space.

Maricopa County
Parks and Recreation

# History of Wild Fires within the region 1910-2020



# Wildfires: More frequent and burning more acreage

## Why?

- Changing Climate-Weather patterns
  - Wet Winter cycles
  - Increased fine fuel biomass
  - Increase invasive species

- Population Growth
  - Unfamiliar with desert landscapes
  - Human caused wildfires
  - Encroaching development

# What effect are these wildfires having on the parks ecosystem?

The upland desert landscape dominated by Saguaro and Palo Verde did not evolve with wildfires and these species are not fire adapted

Questions?

What?

And

Why? How?

# What can we do  to better understand and mitigate wildfire impacts

Manage Invasive Species

Reduce Fire Fuel Load

Research

Collect/Plant

Education & Outreach

## Step 1 : Research, Develop Post Fire Assessments specific to the upland desert.

Monitoring Protocols

- Random Sampling Plots
- Burn Severity
- Saguaro Long-term Monitoring

## Step 2 Monitor Vegetation Mortality based on Percent scorch

Sampled 7 plots

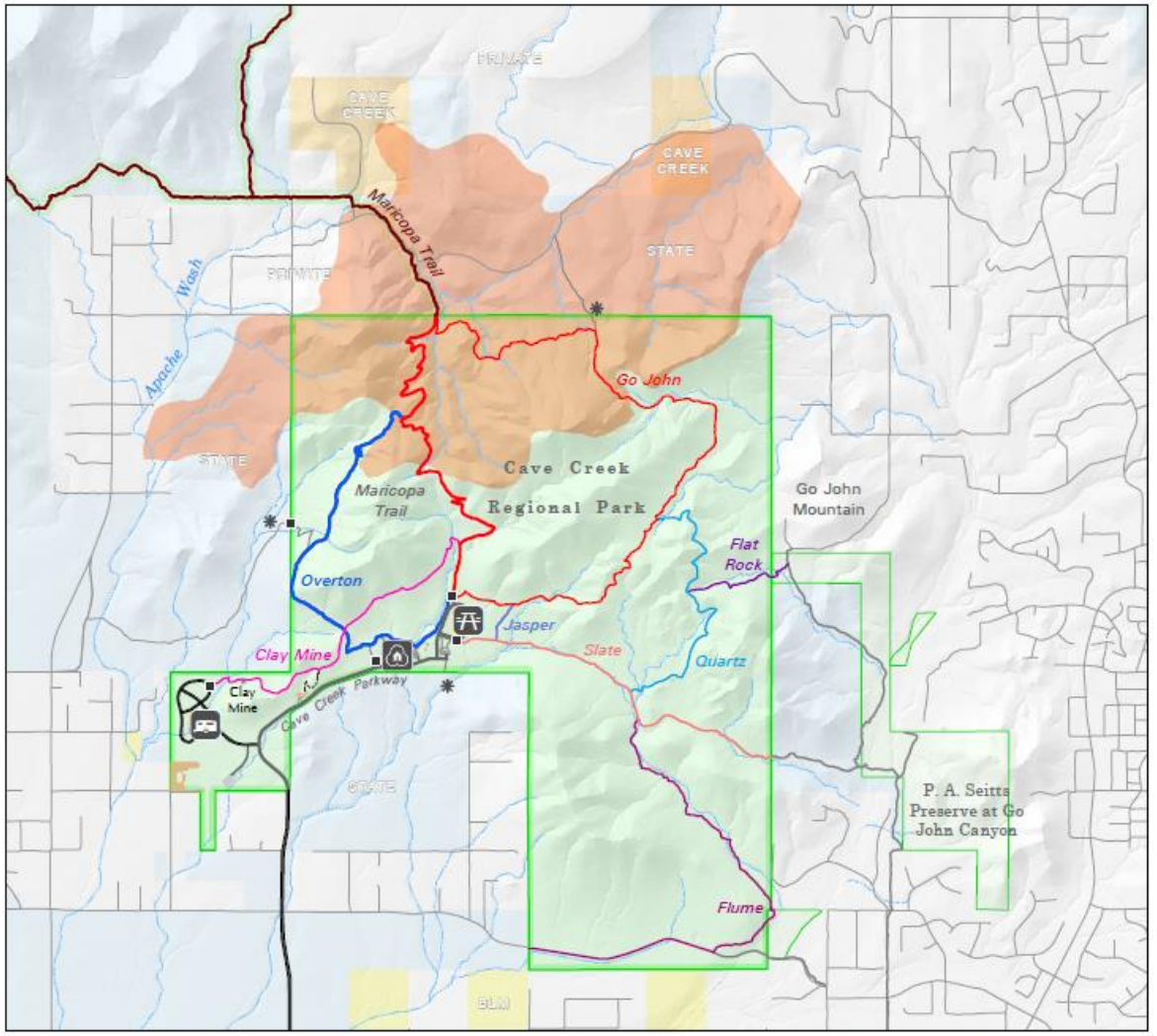
Vegetation was assessed by Class and % Scorch Categories

# Burn Severity

Burn Severity: Visual inspection using principal cues.

- Fuels Types
- Ash
- Scorched Earth
- Soil Exposure
- Re-sprouts

# East Desert Fire




| Trail | Length Mi | Length Km | Use | Rating | Elev Diff Ft | Elev Diff M |
|---|---|---|---|---|---|---|
| Clay Mine | 1.5 | 2.4 | M,H/B* | Easy | 300 | 91 |
| Flat Rock | 0.5 | 0.8 | M | Easy | 152 | 46 |
| Flume | 2.3 | 3.7 | M | Moderate | 180 | 55 |
| Go John | 5.8* | 9.3* | M | Moderate - Difficult | 411 | 125 |
| Jasper | 0.2 | 0.3 | M | Easy | 64 | 20 |
| Overton | 2.1 | 3.3 | M | Moderate | 408 | 124 |
| Quartz | 1.4 | 2.3 | M | Moderate | 300 | 91 |
| Slate | 1.6 | 2.5 | M | Easy | 88 | 27 |

M = Multiple Use *(all non-motorized access allowed)*
H/B = Hike/Bike Only

- Lengths shown are one-way unless indicated by * for round trip distance.
- Elev is difference in elevation between low and high points, which *may or may not* match end points of trail. Gross change may be greater.
- †CM trail west of mine is Hike/Bike Only.

## East Desert Fire

May 17, 2020

### Cave Creek Regional Park

N

1:32,000

1000 0 1000 2000 3000 4000 Feet

250 0 250 500 750 1000 Meters

- Maricopa Trail*
- Park Trail*
- Trail Outside Park
- Trailhead
- Permit required for trust land

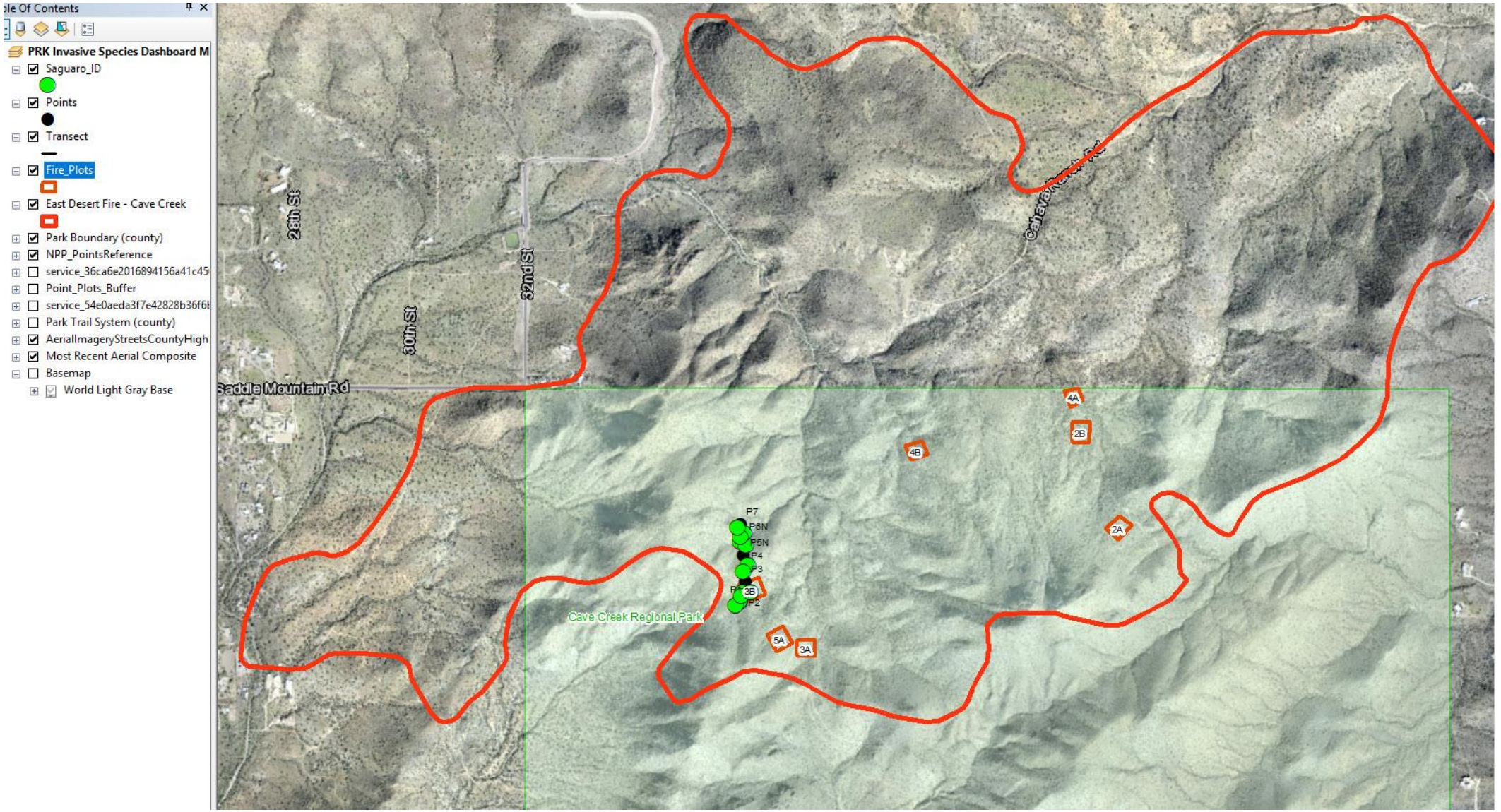
*Trail color varies by name.

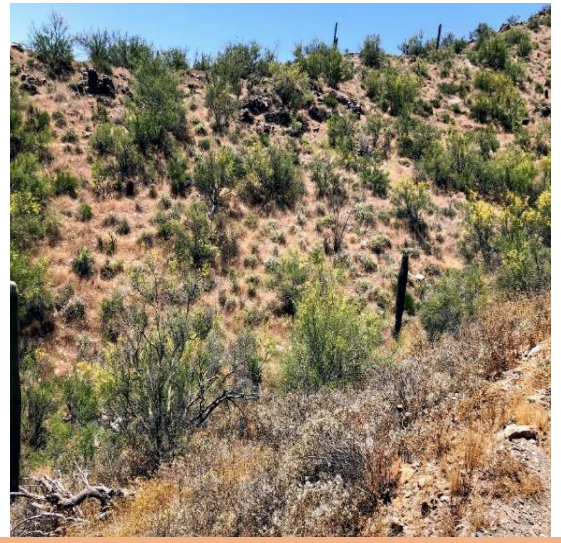
- Nature Center
- Picnic Area
- Campground

DISCLAIMER: This map is a graphical representation designed for general reference purposes only. Maricopa County agrees to indemnify, defend and hold harmless Maricopa County, its officers, departments, employees and agents from and against any and all suits, actions, legal or administrative proceedings, claims, demands or damages of any kind or nature arising out of the use of this map, or the data contained herein, to the actual or alleged fullest.

5/29/2020

# Monitoring Map

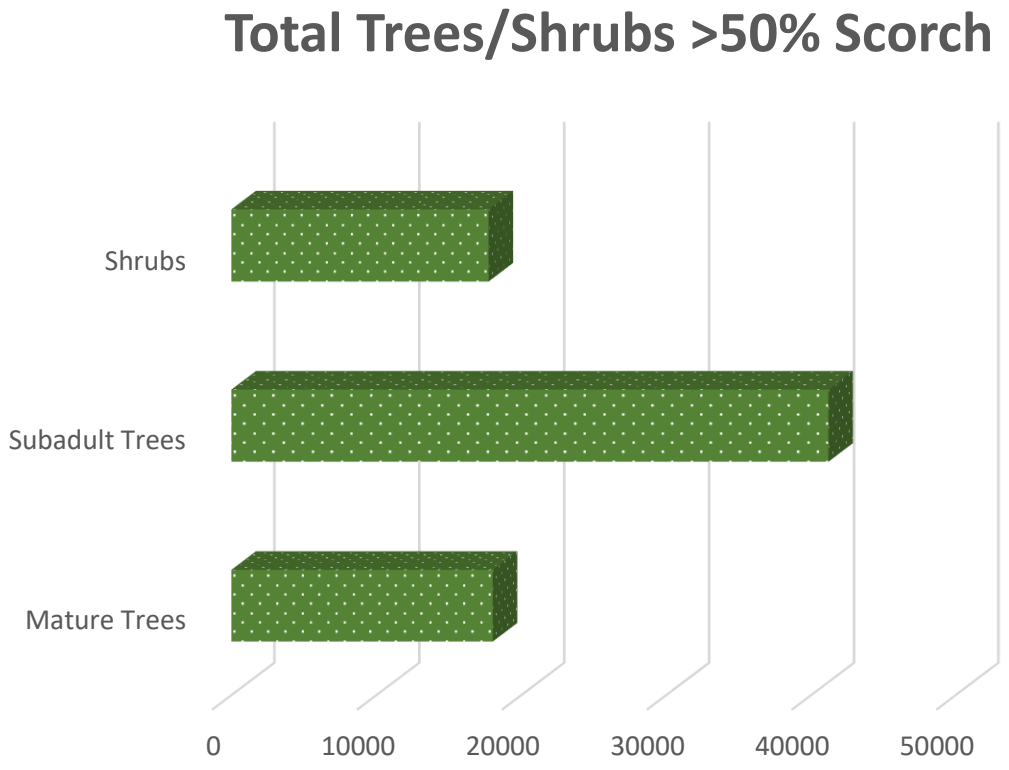


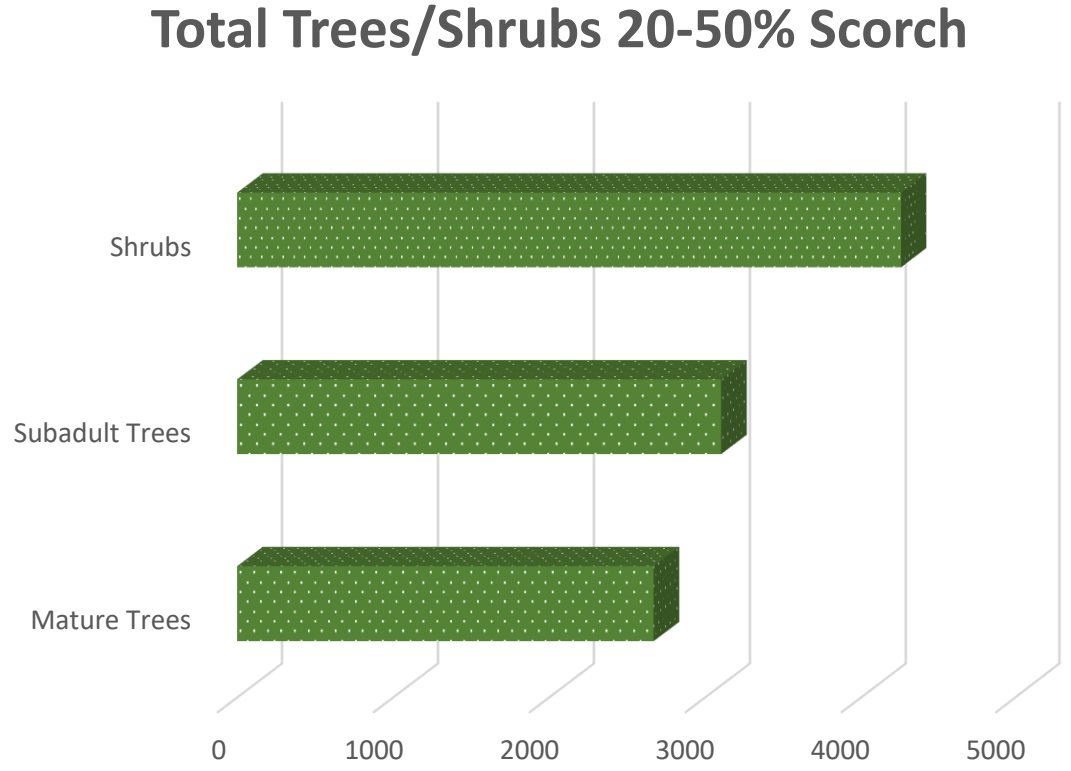


# East Desert Fire- Cave Creek Regional Park

# CC Plot Monitoring Estimates By Class

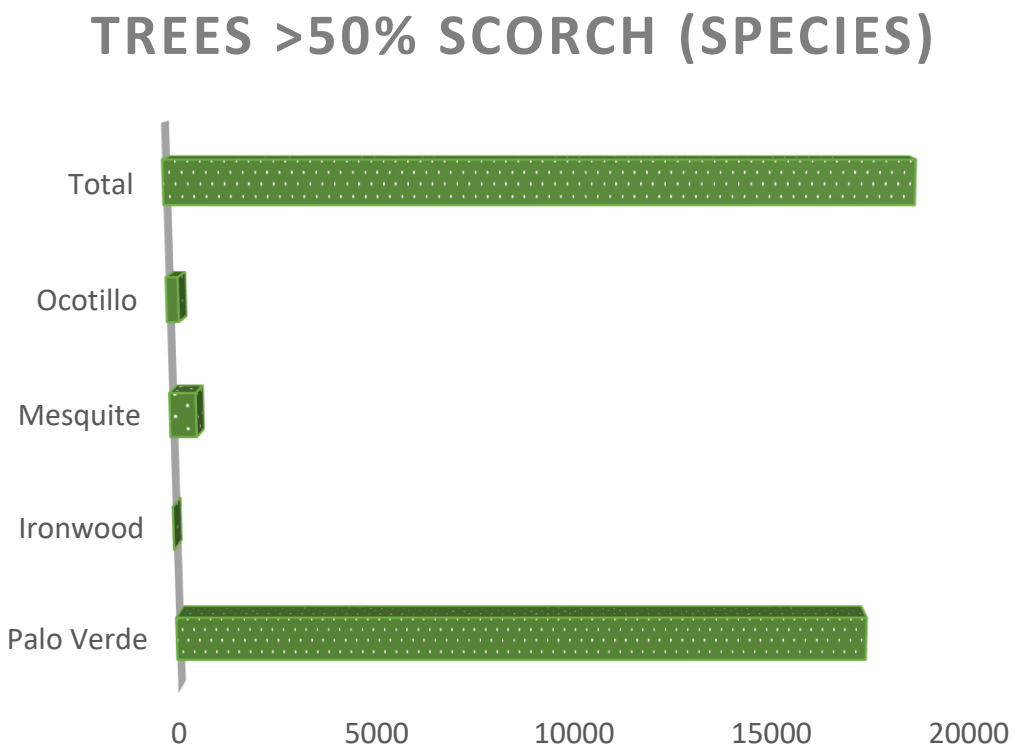
The estimated number of trees and shrubs with >50% scorch within the project area (555 acre) Total of **76,985** (include mature and sub-adult trees and shrubs), trees with over 50% scorch are assumed as dead or likely to dye.

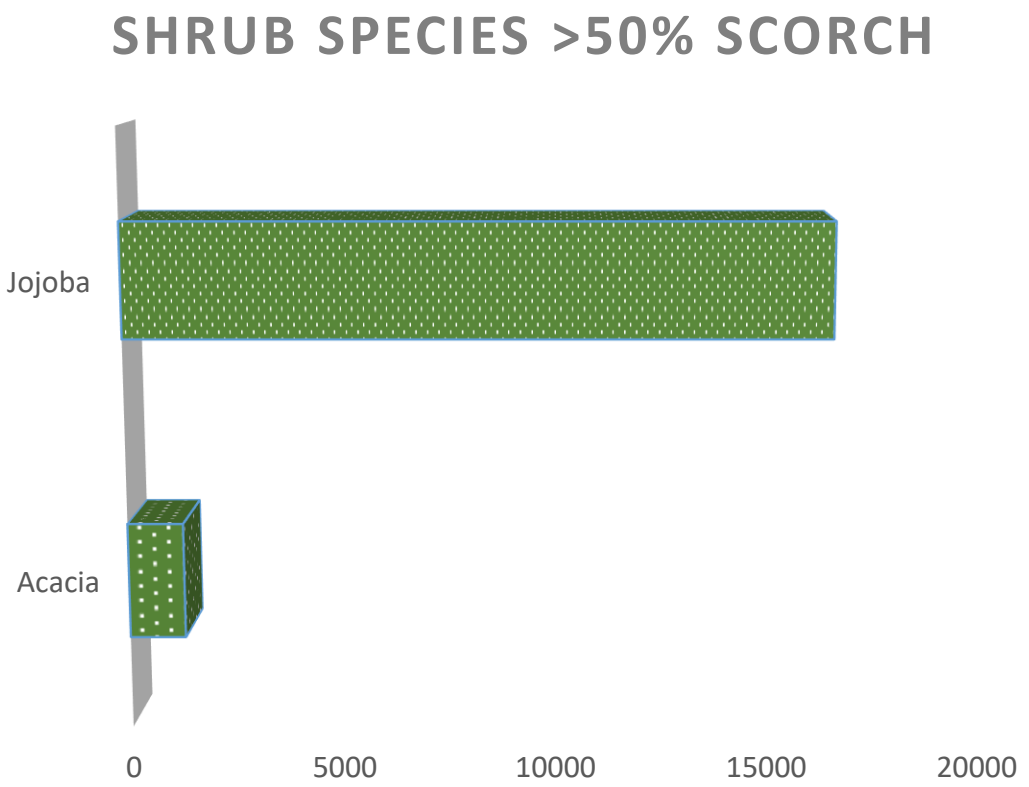


# CC Plot Monitoring Estimates by Species

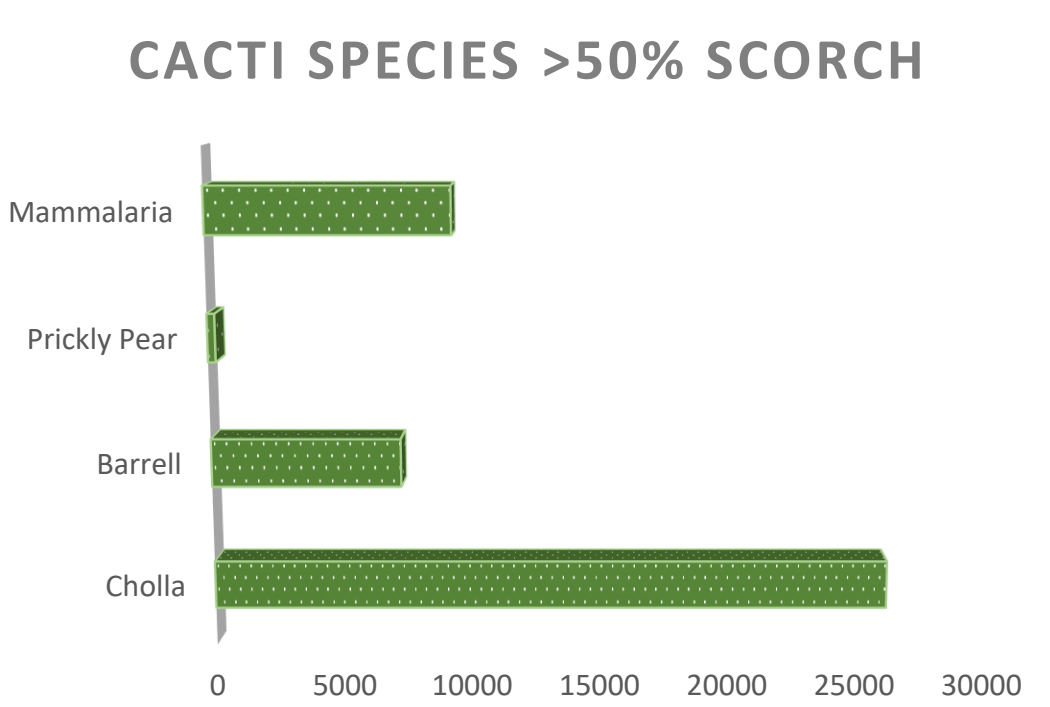
The estimated species of tree and shrub that were most effected by the fire include Palo Verde 17,388 with >50% scorch and Jojoba 16,450 and were mostly charred.

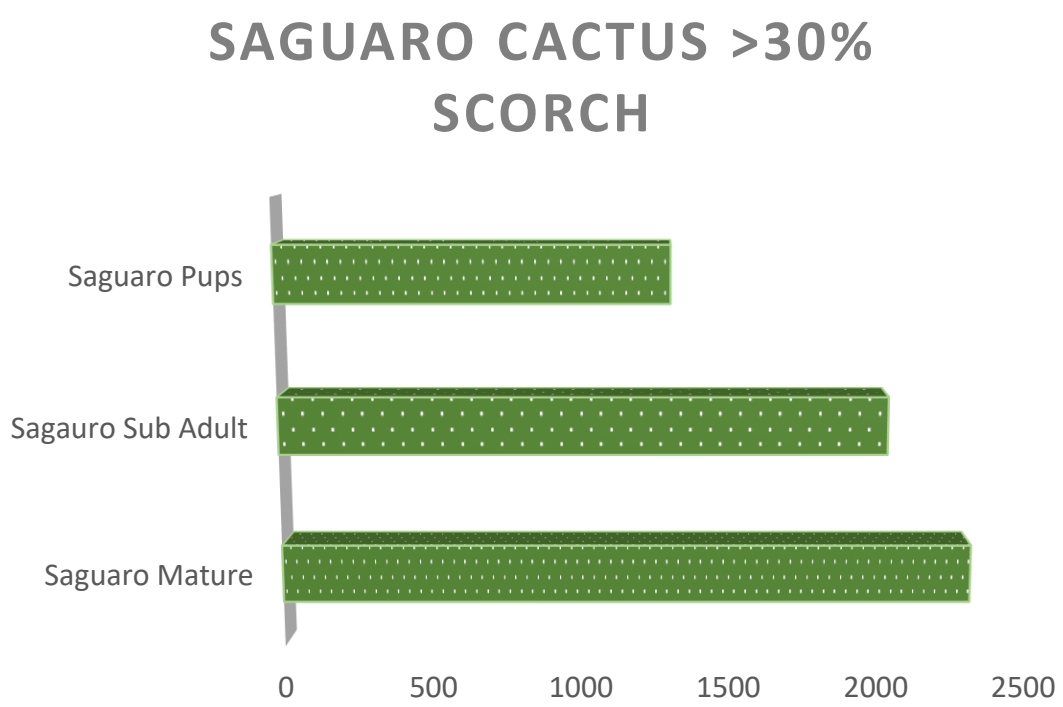


# CC Plot Monitoring Estimates-Cacti Species

The estimated species of cacti that were effected by the fire with >50% Scorch include Cholla spp. **26,118** Mammalaria spp. **9,325** and Saguaro **5,628** total with >30% scorch. Saguaro cactus with >30% scorch are highly susceptible to mortality within the next few years. Staff will be monitoring a handful of these Saguaro for years to confirm this information.



# Cave Creek Results-- Random Plot Estimates

| Plot Monitoring Estimates:Tree, Shrub and Cacti Scorch Data | | | |
|---|---|---|---|
| **Total Trees (>50% Scorch)** | | **Total Trees (20-50%)** | |
| Mature Trees | 18038 | Mature Trees | 2670 |
| Subadult Trees | 41198 | Subadult Trees | 3103 |
| Shrubs | 17749 | Shrubs | 4257 |
| **Total** | **76985** | **Total** | **10030** |
| | | | |
| **Trees >50% Scorch (Species)** | | **Shrub Species (> 50 % scorch)** | |
| Palo Verde | 17388 | Acacia | 1299 |
| Ironwood | 0 | Jojoba | 16450 |
| Mesquite | 649 | **Total** | **17749** |
| Ocotillo | 289 | | |
| **Total** | **18326** | | |
| | | | |
| **Cactus (>50% Scorch)** | | **Saguaro>30% Scorch** | |
| Cholla | 26118 | Saguaro Mature | 2309 |
| Barrell | 7287 | Sagauro Sub Adult | 2020 |
| Prickly Pear | 289 | Saguaro Pups | 1299 |
| Mammalaria | 9325 | **Total** | **5628** |
| **Total** | **43019** | | |

# Long Term- Saguaro Monitoring

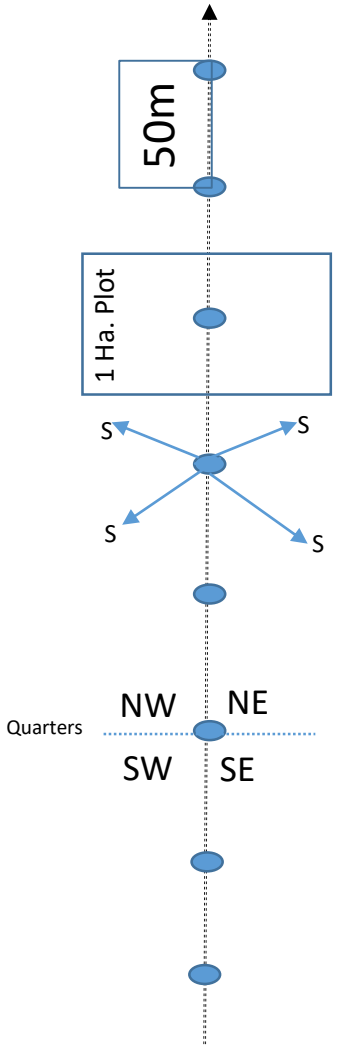
Using Point Quarter transects  Seven  (1 ha plots) monitoring four Saguaro's per point/plot using the cardinal directions.

Point-Quarter Transect

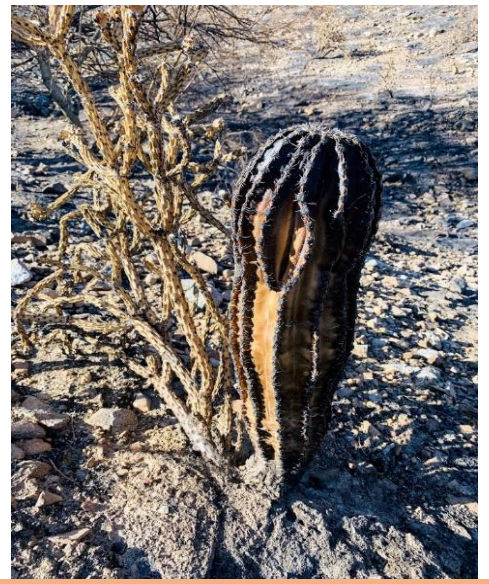
=Sample Point

S= Nearest Saguaro

Measured Saguaro Height, percent scorch damage, No of arms, percent scorch bottom half and top half , nearest nursery tree and notes.

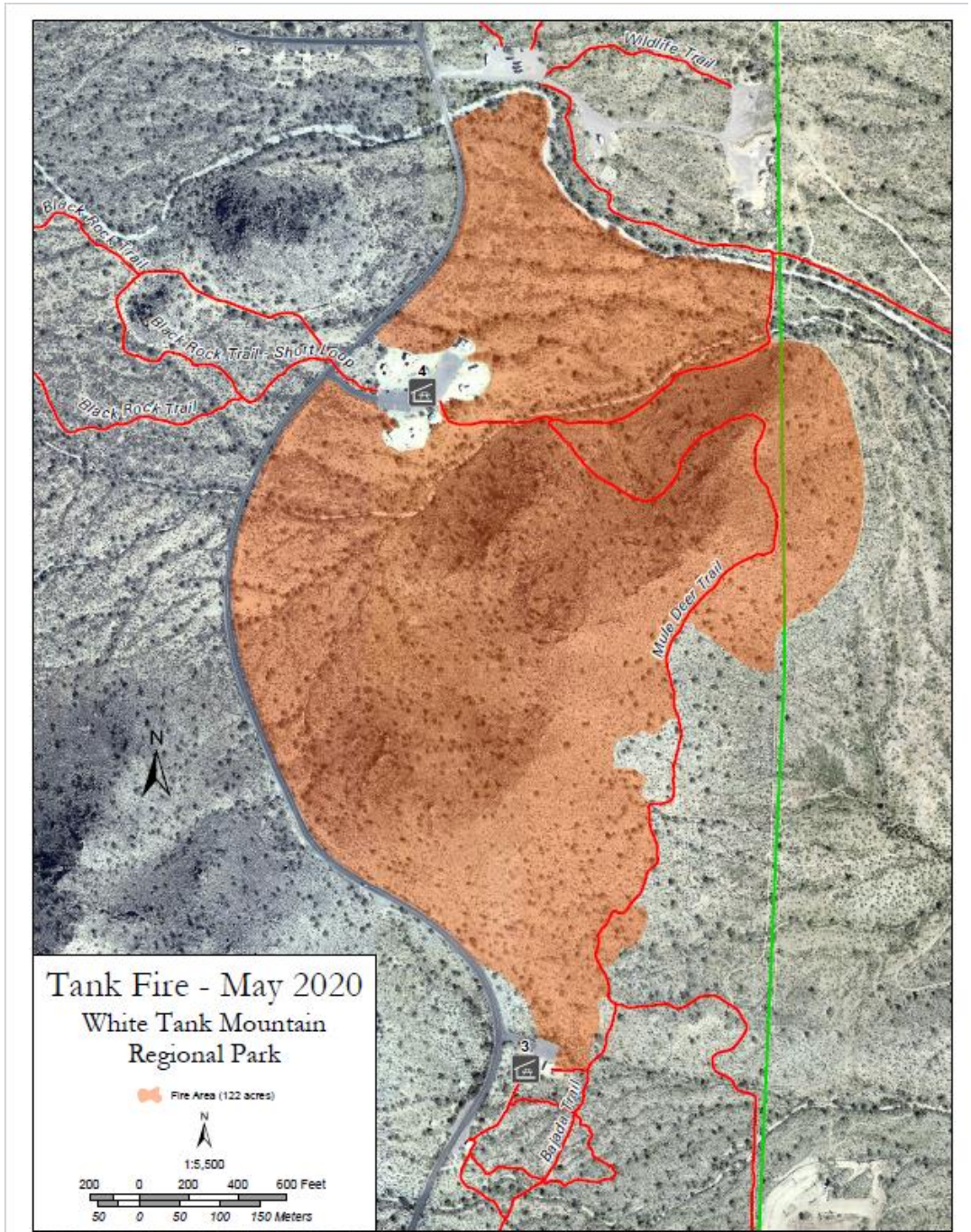


# Species Recovery



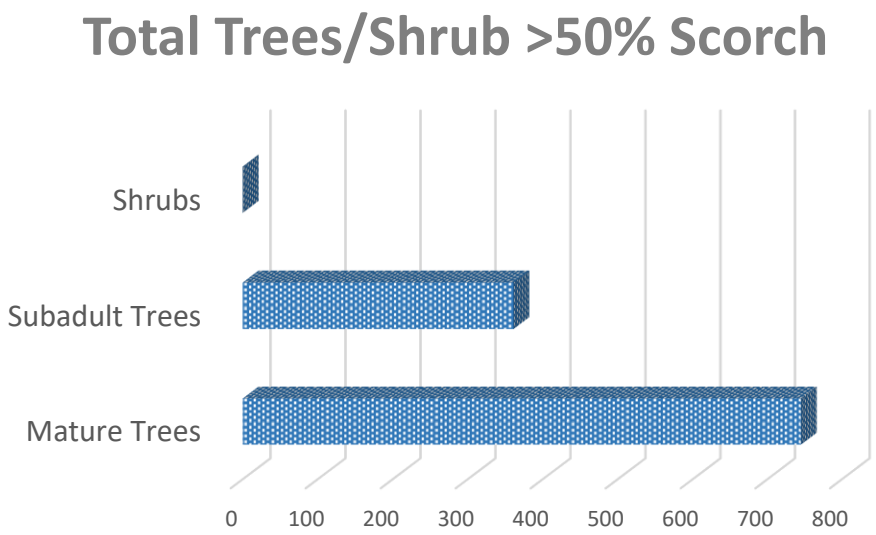
# Wildfire White Tank Regional Park

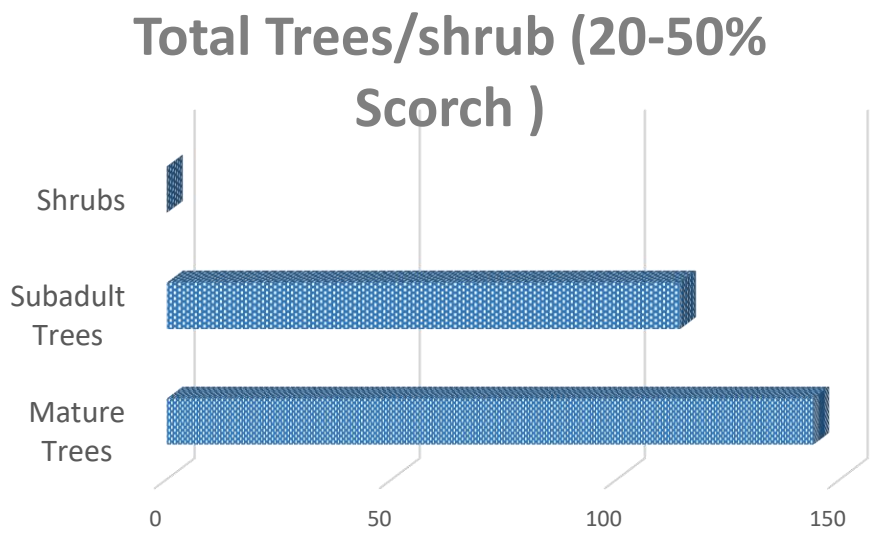
# White Tank Mountain Wild Fire



# WT Plot Monitoring Estimates By Class

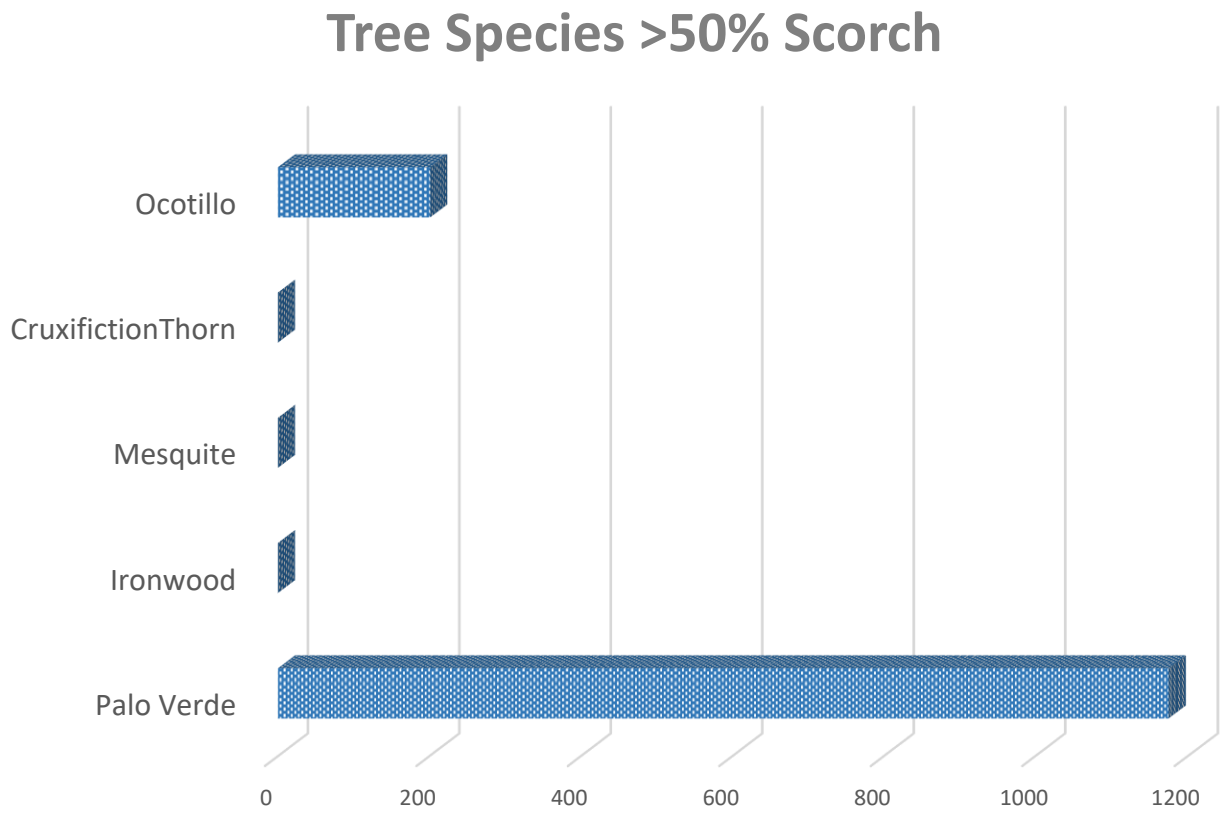
The estimated number of trees and shrubs with >50% scorch within the project area (126 acre) Total of **1106** (include mature and sub-adult trees and shrubs), trees with over 50% scorch are assumed as dead or dying .



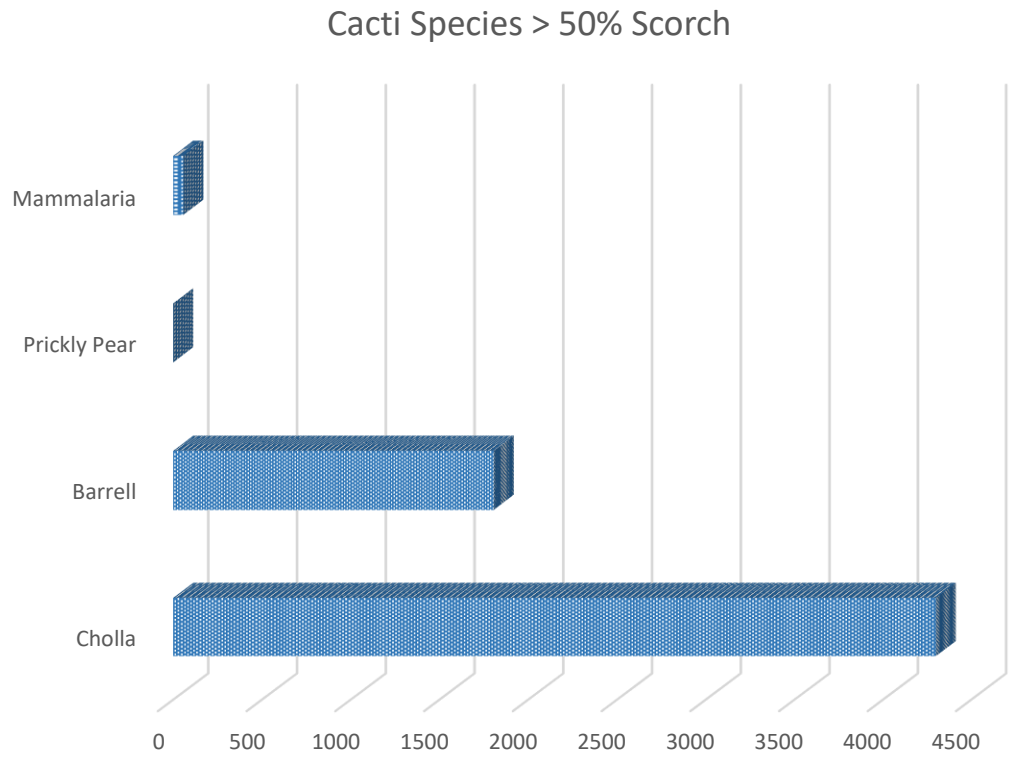
# WT Plot Monitoring Estimates By Species

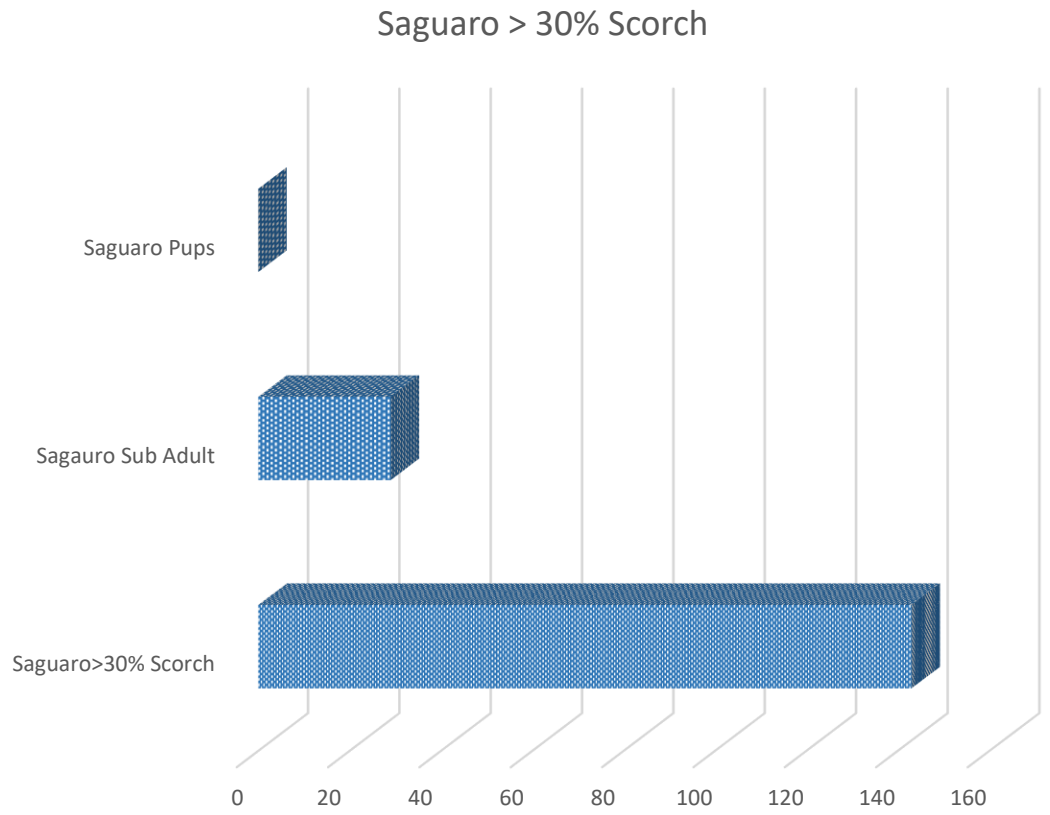
The estimated species of tree and shrub that were most effected by the fire include Palo Verde **1,175** with >50% Ocotillo **201**



# WT Plot Monitoring Estimates Cacti

The estimated species of cacti that were effected by the fire with >50% Scorch total of 6335 Cacti include Cholla spp. 4300 Mammalaria spp. 57 and Saguaro 172 total with >30% scorch. Saguaro cactus with >30% scorch are highly susceptible to mortality within the next few years. Staff will be monitoring a handful of these Saguaro for years to confirm this information.



# White Tank Mountain RP-- Random Plot Estimates

| Plot Monitoring Estimates: Tree, Shrub and Cacti Scorch Data- WTRP | | | |
|---|---|---|---|
| **Total Trees (>50% Scorch)** | | **Total Trees (20-50%)** | |
| Mature Trees | 745 | Mature Trees | 144 |
| Subadult Trees | 361 | Subadult Trees | 114 |
| Shrubs | 0 | Shrubs | 0 |
| **Total** | **1106** | **Total** | **258** |
| | | | |
| **Trees >50% Scorch (Species)** | | | |
| Palo Verde | 1175 | **Shrub Species (> 50 % scorch)** | |
| Ironwood | 0 | Acacia | 0 |
| Mesquite | 0 | Jojoba | 0 |
| Ocotillo | 201 | **Total** | **0** |
| **Total** | **1376** | | |
| | | | |
| **Cactus (>50% Scorch)** | | **Saguaro >30% Scorch** | |
| Cholla | 4300 | Saguaro Adult | 143 |
| Barrell | 1806 | Sagauro Sub Adult | 29 |
| Prickly Pear | 0 | Saguaro Pups | 0 |
| Mammalaria | 57 | **Total** | **172** |
| **Total** | **6163** | | |

# Seed Collection--Monsoon Season Planting

# Waking up before sunrise to get the job done!