A Case Study: Creating and Using a Vegetation Map for Management of a Department Wildlife Area

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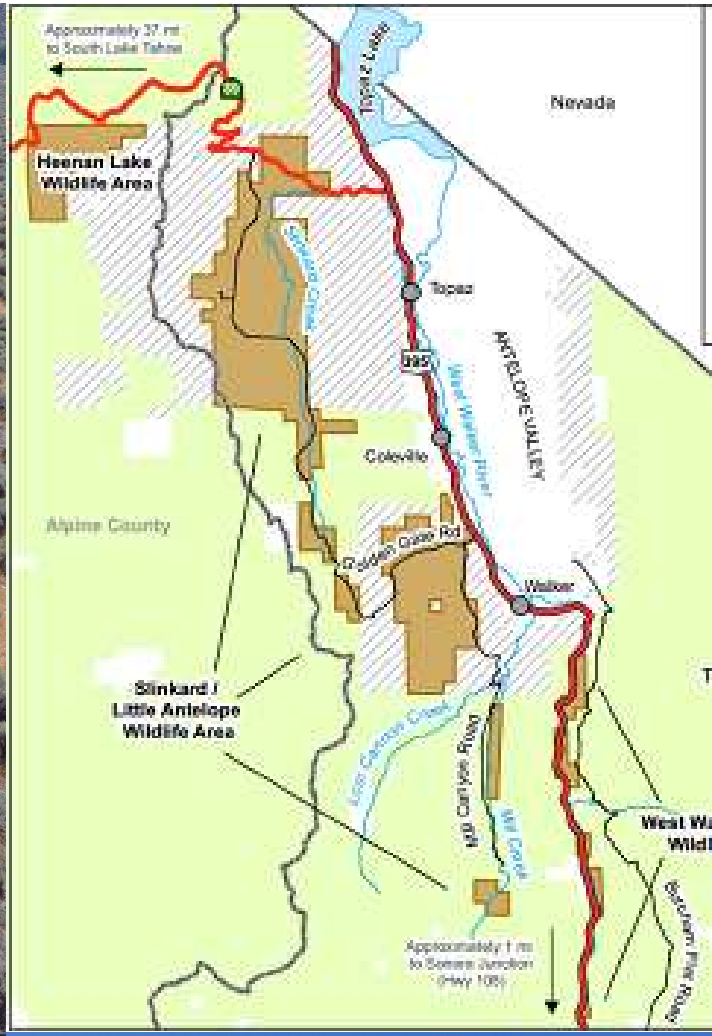


Slinkard / Little Antelope Wildlife Area

The Vegetation Classification and Mapping Program

Purpose

- Develop and maintain California's Vegetation Classification System

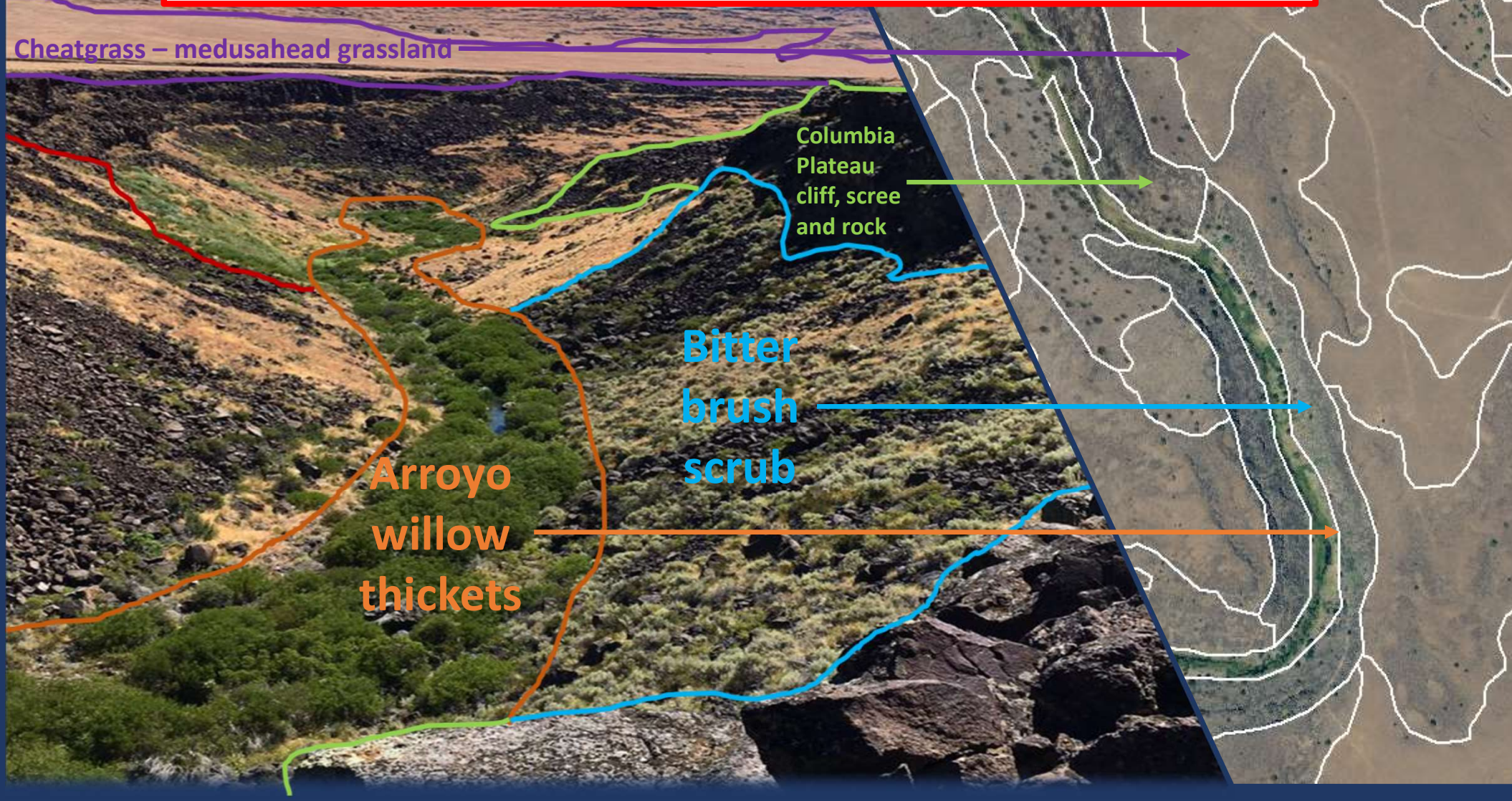
- Set best practices for
  - field assessment
  - classification of vegetation data
  - fine-scale vegetation mapping

Goal

❖Complete a fine-scale, state-wide vegetation classification and map

What Is Vegetation?

A spatially continuous unit of vegetation with uniform composition, structure, and environmental conditions



Field Sampling

Field Sampling

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)
SPECIES SHEET

Database #: _____

% NonVasc cover:____ **Total % Vasc Veg cover:**_____

% Cover - Conifer tree / Hardwood tree: Regenerating Tree: Shrub: Herbaceous:
Height Class Conifer tree / Hardwood tree: Regenerating Tree: Shrub: Herbaceous:
Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

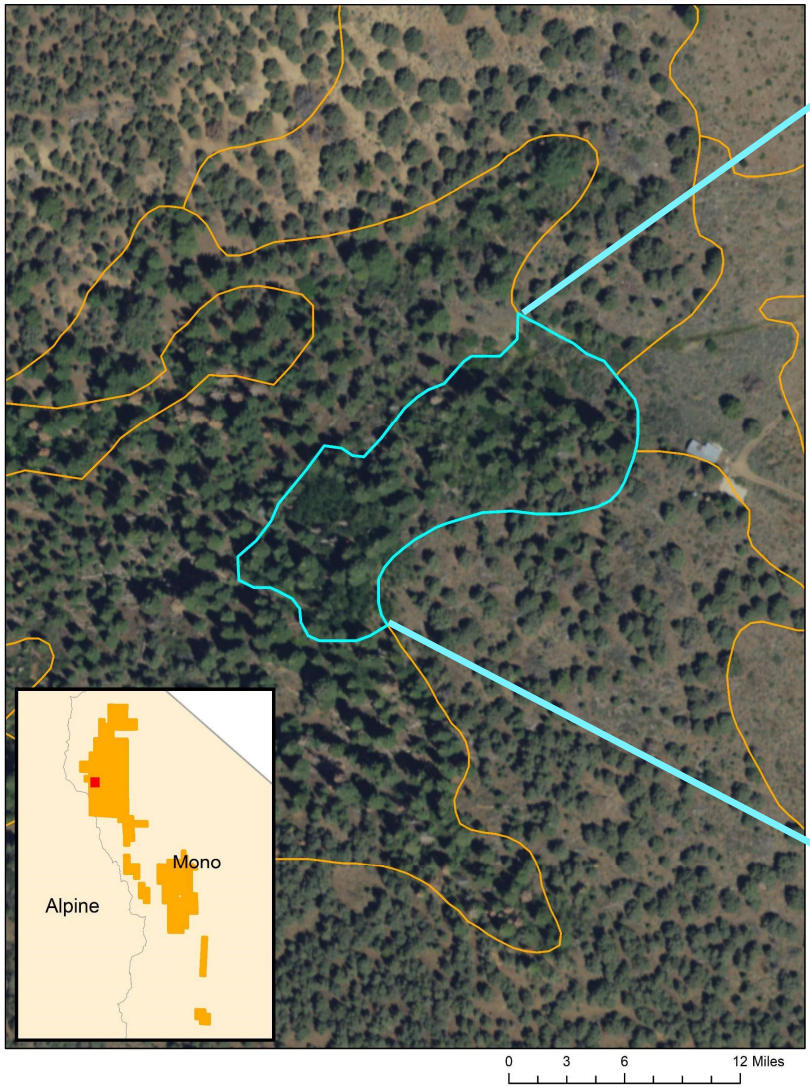
Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular
% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination

Strata heights and covers

Species and % covers

Vegetation Map



Field	Value
CaCode	61.111.00
NVCSAllian	Populus tremuloides
NVCSGroup	Rocky Mountain mesic subalpine forest and woodland
NVCSMG	Rocky Mountain Subalpine and High Montane Conifer Forest
ConifCover	8
HdwdCover	9
TreeCover	15
ShrubCover	12
HerbCover	3
CWHRtree	4
HtClass	6
ExoticCove	0
Clearing	0
Roadedness	0
Developmen	0
CWHRType	Aspen
CalVegName	Quaking aspen
GlobalRank	G5
StateRank	S3
Rare	Y

Vegetation Type

Strata Covers

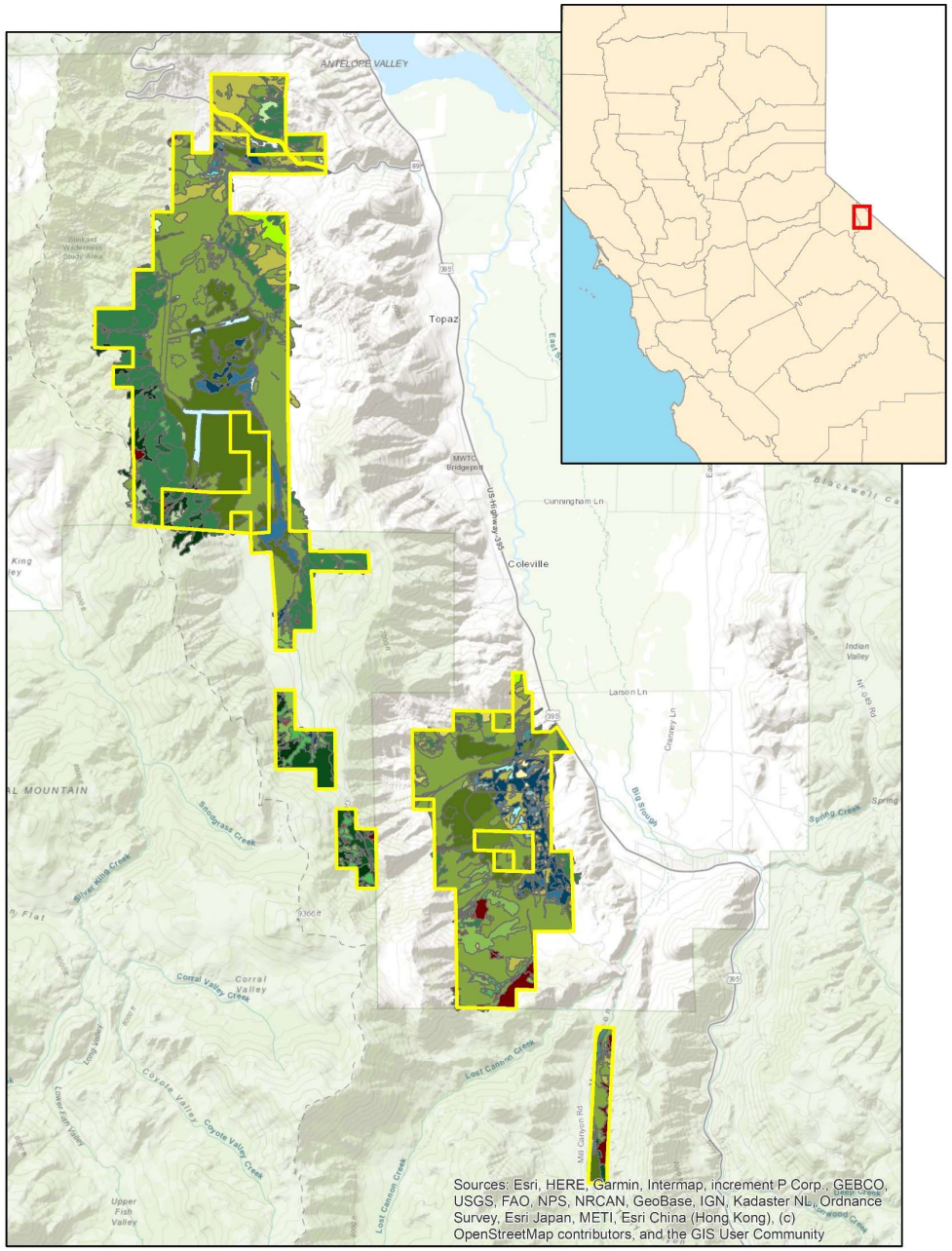
Height and Size

Disturbances

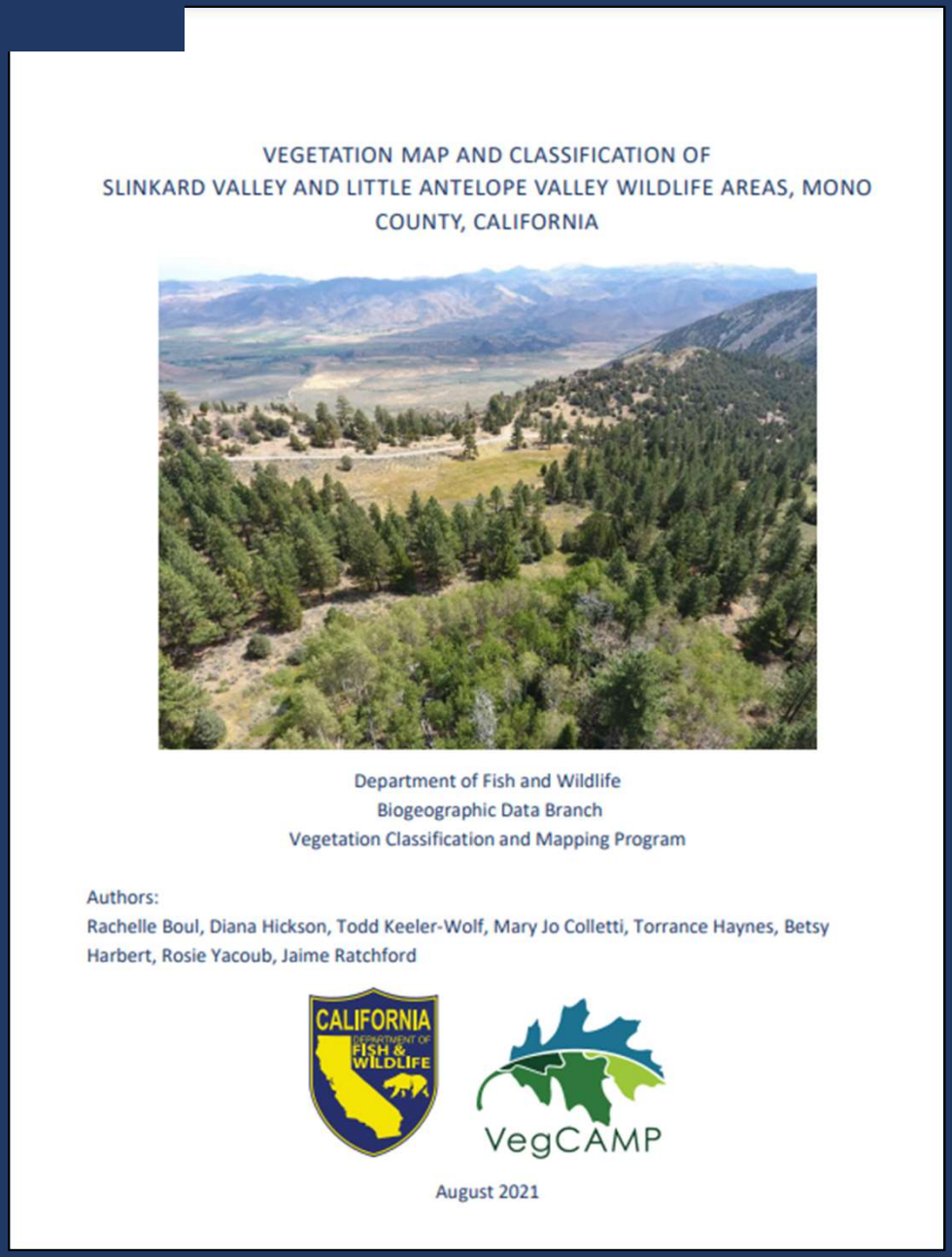
Crosswalks

Rarity

Vegetation Map



https://apps.wildlife.ca.gov/bios/



VEGETATION MAP AND CLASSIFICATION OF SLINKARD VALLEY AND LITTLE ANTELOPE VALLEY WILDLIFE AREAS, MONO COUNTY, CALIFORNIA

Department of Fish and Wildlife
Biogeographic Data Branch
Vegetation Classification and Mapping Program

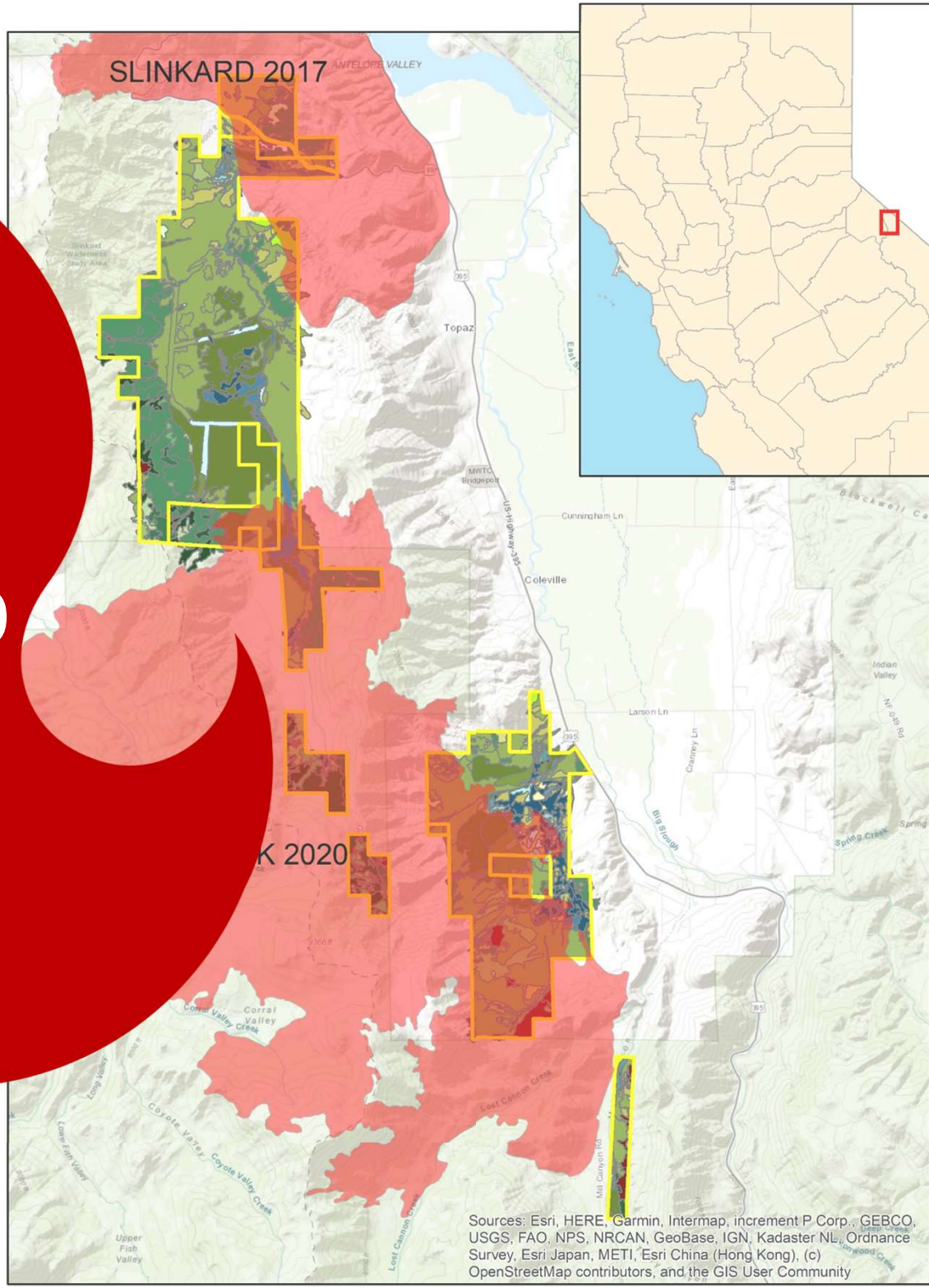
Authors:
Rachelle Boul, Diana Hickson, Todd Keeler-Wolf, Mary Jo Colletti, Torrance Haynes, Betsy Harbert, Rosie Yacoub, Jaime Ratchford

August 2021

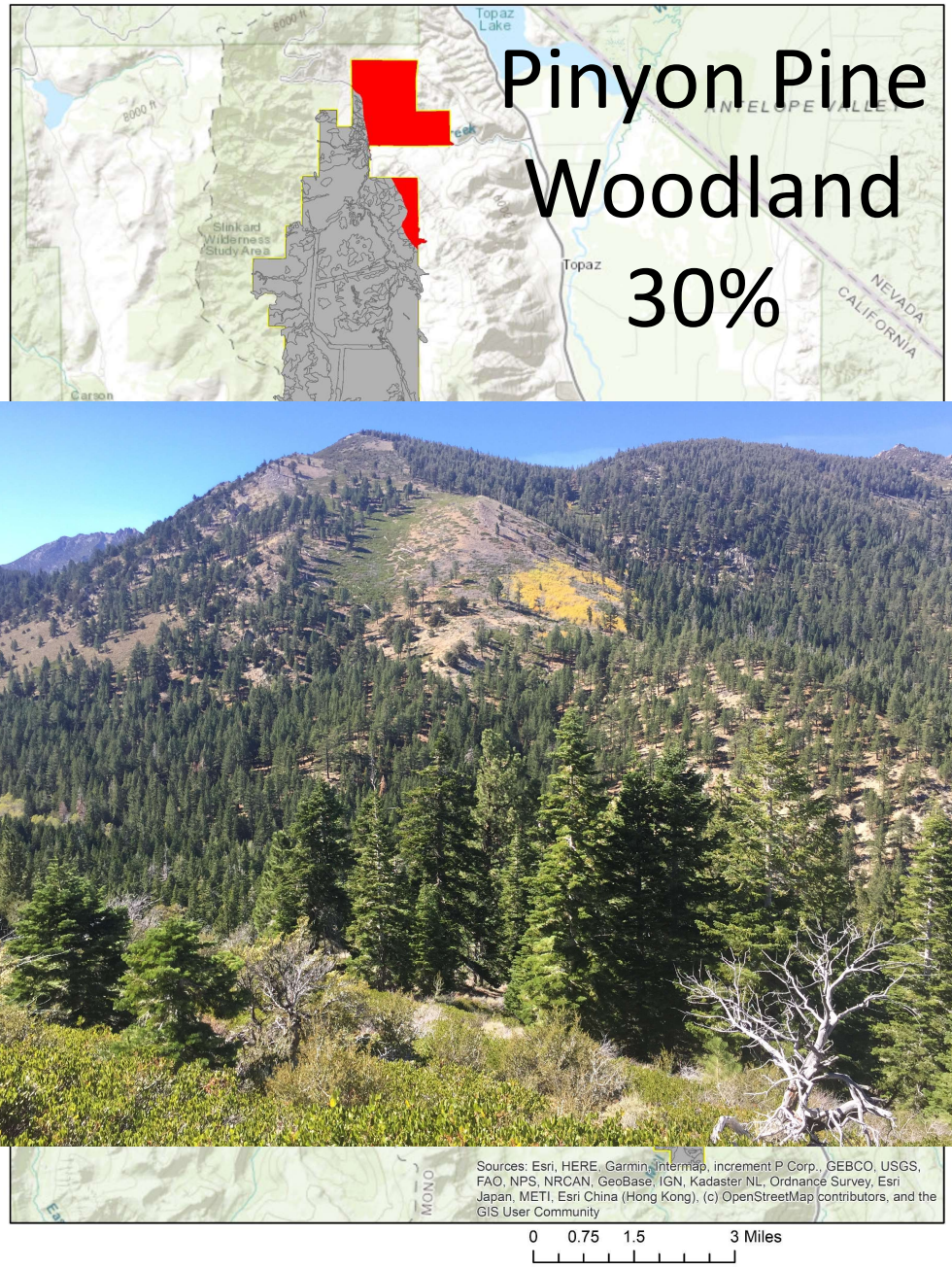
https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=165535&inline

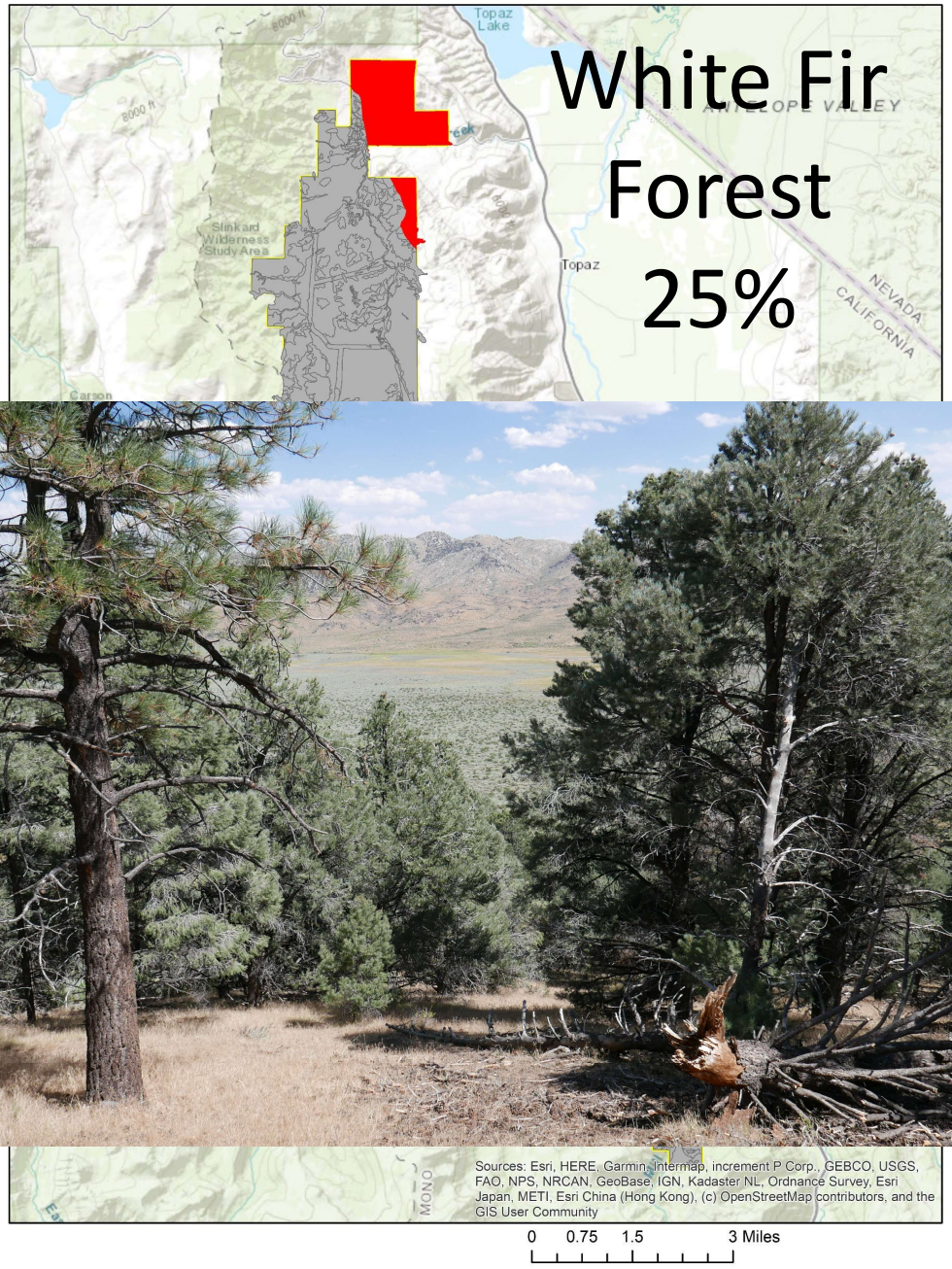
Fire

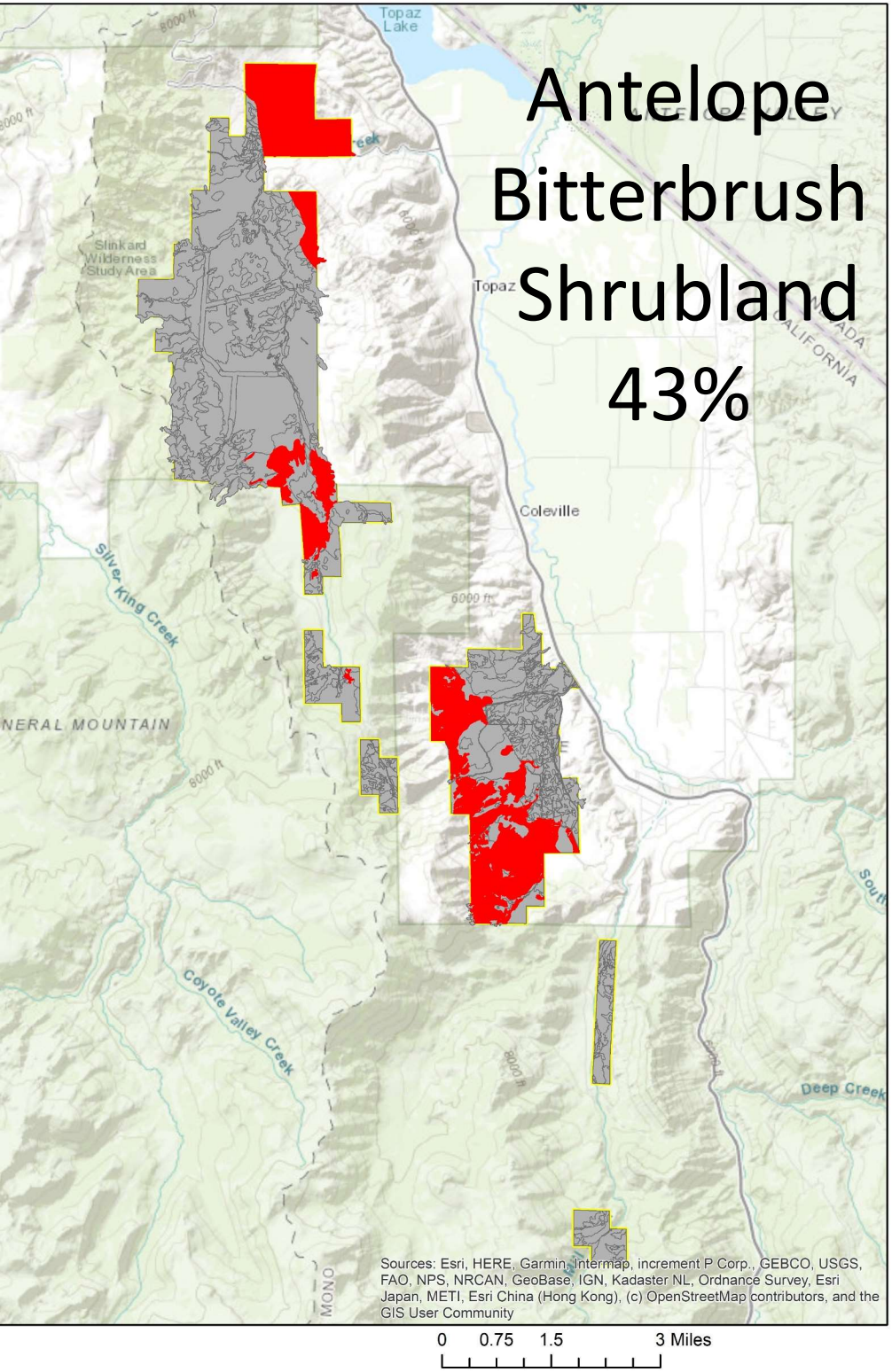
40%


SLINKARD 2017
K 2020
Topaz
Coleville
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Post-fire


Pinyon Pine
Woodland
30%
Topaz Lake
Topaz
Stinkard Wilderness Study Area
NEVADA
CALIFORNIA
Carson
MONO
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
0 0.75 1.5 3 Miles


White Fir
Forest
25%
Topaz Lake
Topaz
Stinkard Wilderness Study Area
NEVADA
CALIFORNIA
Carson
MONO
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
0 0.75 1.5 3 Miles

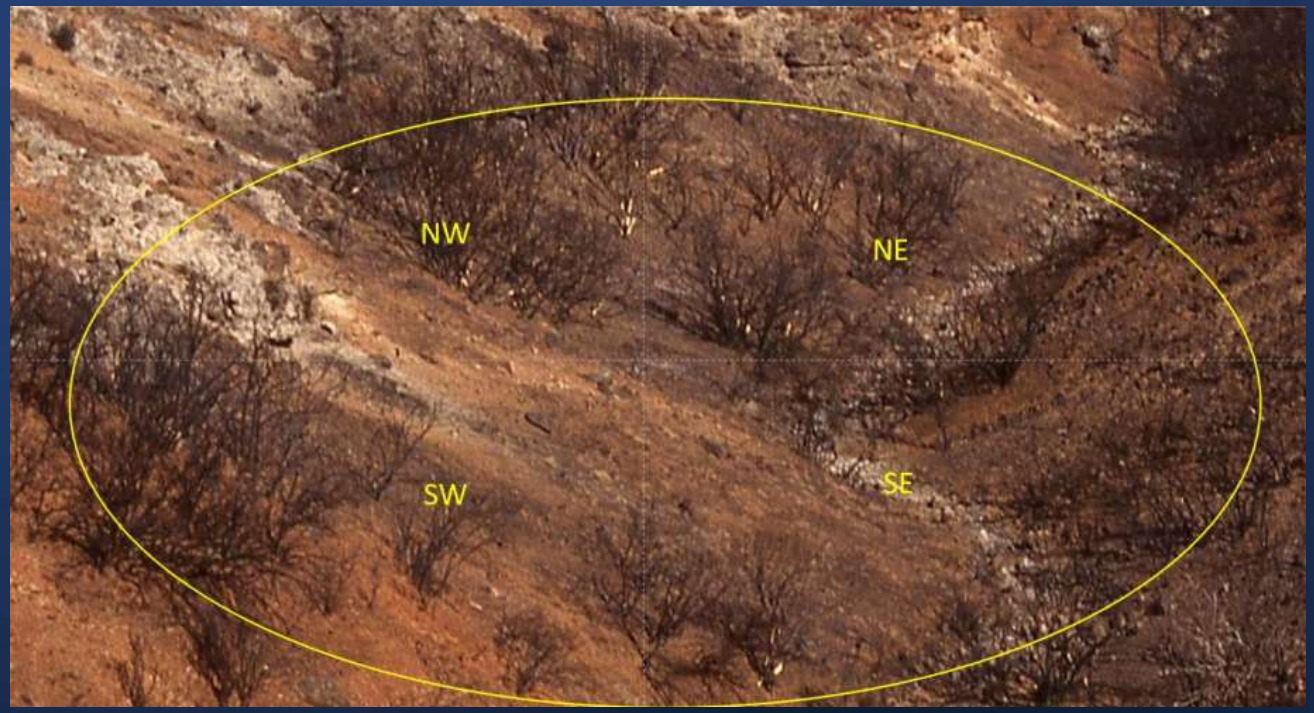

Antelope Bitterbrush Shrubland 43%
Topaz Lake
Topaz
Coleville
Silver King Creek
Coyote Valley Creek
Deep Creek
Slinkard Wilderness Study Area
NERAL MOUNTAIN
CALIFORNIA
MONO
8000 ft
6000 ft
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
0 0.75 1.5 3 Miles

Using the Map for post-fire management

Post Fire Monitoring Protocol

Combines VegCAMP survey methods with post-fire burn severity assessment on vegetation and substrate

- Indented to capture transient conditions immediately following a wildfire
- Taken at survey locations previously surveyed by VegCAMP



Goals of Post-Fire Monitoring

Identify:

- Burn severity condition to vegetation and substrate
- Presence of new invasive species
- Areas at risk of large shifts in species composition

Target areas for restoration efforts

Establish long-term monitoring sites

Post-fire monitoring

2018 (pre-fire)

2021 (post-fire)

Post-fire monitoring

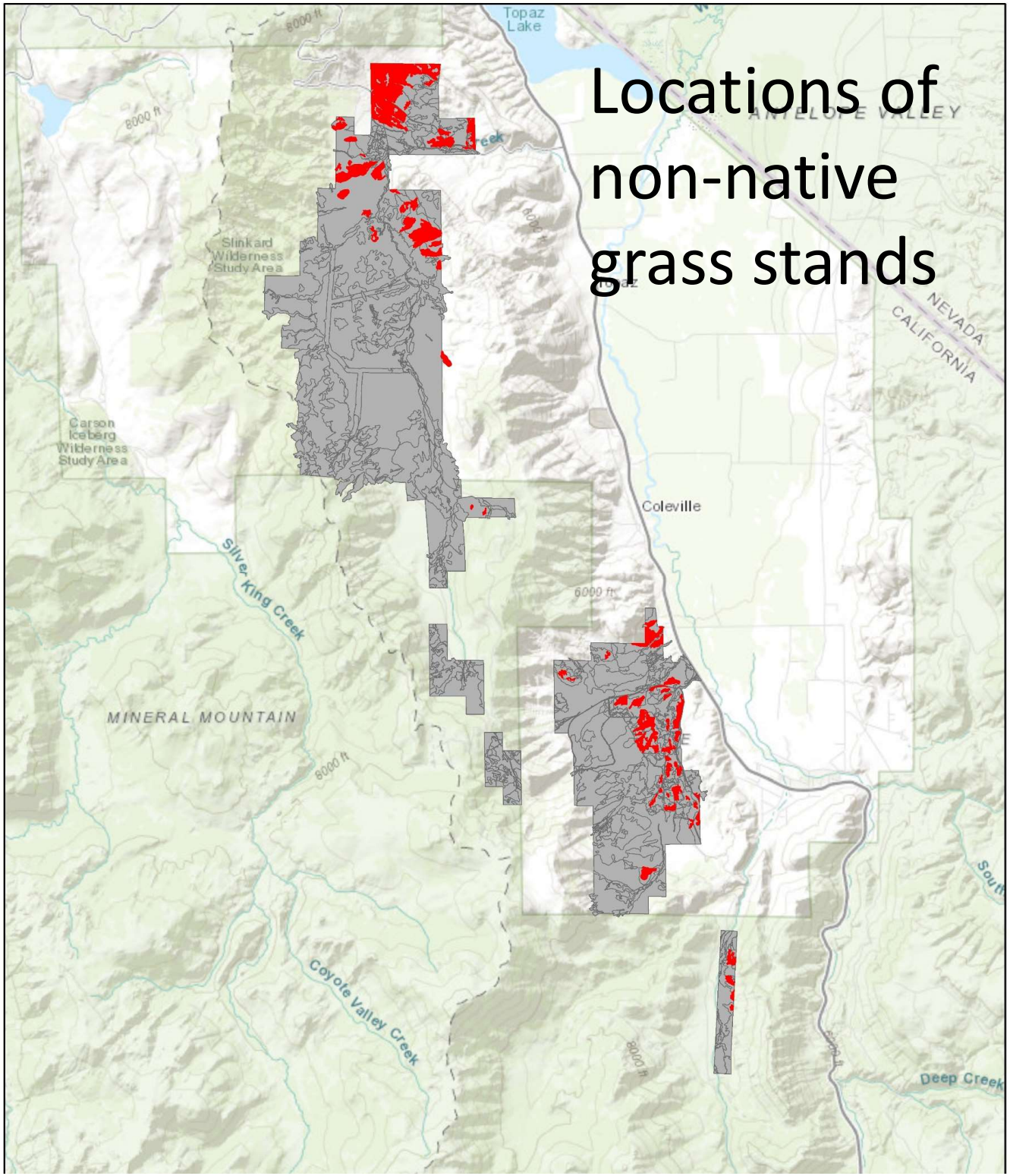
2018 (pre-fire) Mill Creek

2021 (post-fire) Mill Creek

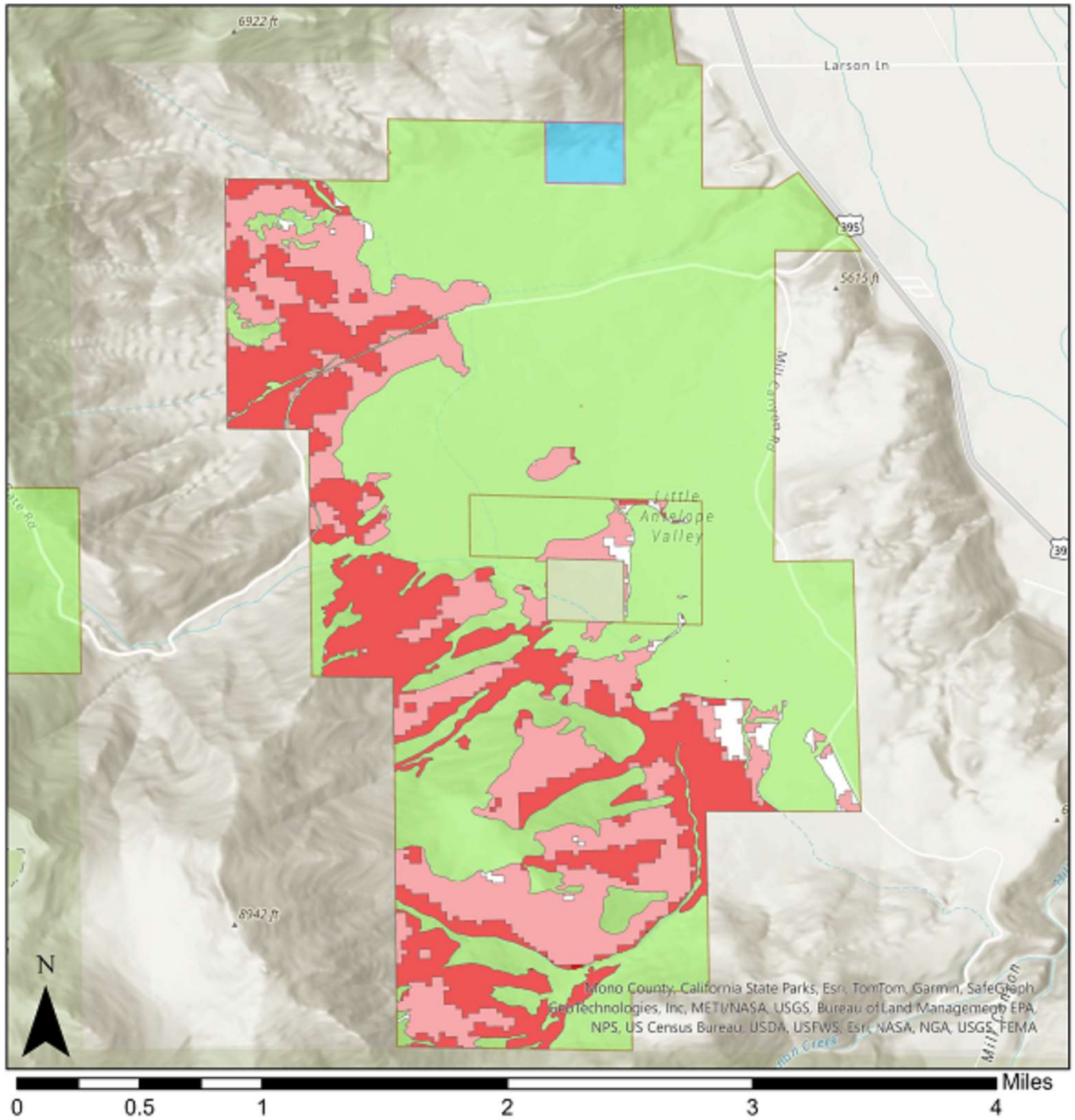
Post-fire monitoring: *Populus tremuloides* Alliance

Species List pre-fire	Species List post-fire	Post-Fire Vegetation Changes
Populus tremuloides	Populus tremuloides	Resprout
Pinus monophylla	----------	**No Live Individuals**
Abies concolor	----------	**No Live Individuals**
Salix exigua	Salix exigua	Resprout
Salix lasiandra	Salix lasiandra	Resprout
Ribes cereum	Ribes cereum	Resprout
Rosa woodsii	Rosa woodsii	Resprout
Artemisia tridentata ssp. vaseyana	Artemisia tridentata ssp. vaseyana	Seedlings
Frangula california	Frangula californica	Resprout
Elymus glaucus	----------	**No Live Individuals**
Melilotus albus	Melilotus albus	Invasive
----------	Epilobium ciliatus	New Species
----------	Chenopodium sp.	New Species

Invasive species control



Preventing type conversion to cheatgrass



Bitterbrush Burn Intensity

- 1 Unburned/Undetectable
- 2 Low

Seeding Prescription

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)
SPECIES SHEET

Database #: _____

IV. VEGETATION DESCRIPTION

% NonVasc cover:____ **Total % Vasc Veg cover:**____

% Cover - **Conifer tree / Hardwood tree:** ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** ____
Height Class **- Conifer tree / Hardwood tree:** ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** ____
Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

Stratum	Species	% cover	C	Final species determination

Species and % covers

Sources: Esri, HERE, Garmin, Intermap, increment P Corp
FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnan
Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap
GIS User Community

0 0.75 1.5 3 Miles

Drill Seeding with Irrigation

More to do

- More restoration (seeding/planting)
- Invasive species control
- Post-fire monitoring
- Remapping for change detection

Change Detection

Restoration Monitoring

Thank you!

Aaron Johnson
Adam Hoeft
Aicha Ougzin
Alden Schmidt
Alisa Ellsworth
Anne Klein
Betsy Harbert
Catherine Curley
Colton Johnson
Daydre Roser
Diana Hickson
Graham Meese
Jaime Ratchford
Jon Mann
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