

Sagebrush Ecosystem Program

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STATE OF NEVADA Sagebrush Ecosystem Program

Fall 2019 Adaptive Management Trigger Summary

Summary:

Through the summer of 2019 the Sagebrush Ecosystem Technical Team worked with members of a statewide technical team to collect data necessary to assign triggers to Population Management Units (PMU) which had habitat warnings consistent with the Nevada Greater Sage Grouse Conservation Plan adaptive management process. The statewide technical team assigned triggers on August 8th, 2019. This document is intended to inform stakeholders about the process which led to assigned triggers.

Members of the statewide technical team are listed in Table 1.

Trigger Description:

The State of Nevada's sage grouse conservation plan includes an adaptive management process which includes both warnings and triggers associated with sage grouse habitat and populations. In the state adaptive management plan, habitat warnings occur with new wildfires greater than 1,000 acres, or new permitted anthropogenic disturbances. These warnings result in professional judgement of whether a trigger is warranted. The statewide technical team (table 1) is responsible for determining those triggers. Population triggers are identified and supplied by statewide U.S. Geological Survey modeling efforts. After the identification of triggers, a stakeholder driven process results which involves a causal factor analysis and the development of management recommendations to the appropriate land management agency. See attached adaptive management plan for more detailed information.

The statewide technical team assembled data relating to total male lek attendance, fire occurrence (10 years previous), habitat suitability (HSI), Resistance and Resilience, and range-wide genetic connectivity to determine a relative score for each population management unit associated with each habitat warning. This relative score was not prescriptive. Professional knowledge of impacts, recovery, and current conditions along with the score was used to come to a consensus on PMUs that warrant a trigger and potential conservation actions or management responses. These data are attached at the end of this document. Population triggers are analyzed by the U.S. Geological Survey and are updated periodically. See attached adaptive management plan for more information on the trigger analysis.

Trigger Summary:

Table 2 lists the PMUs which have either a population trigger, a habitat trigger, or both. Maps are also attached for each general area illustrating the wildfire and anthropogenic impacts.

Adaptive Management Response Team:

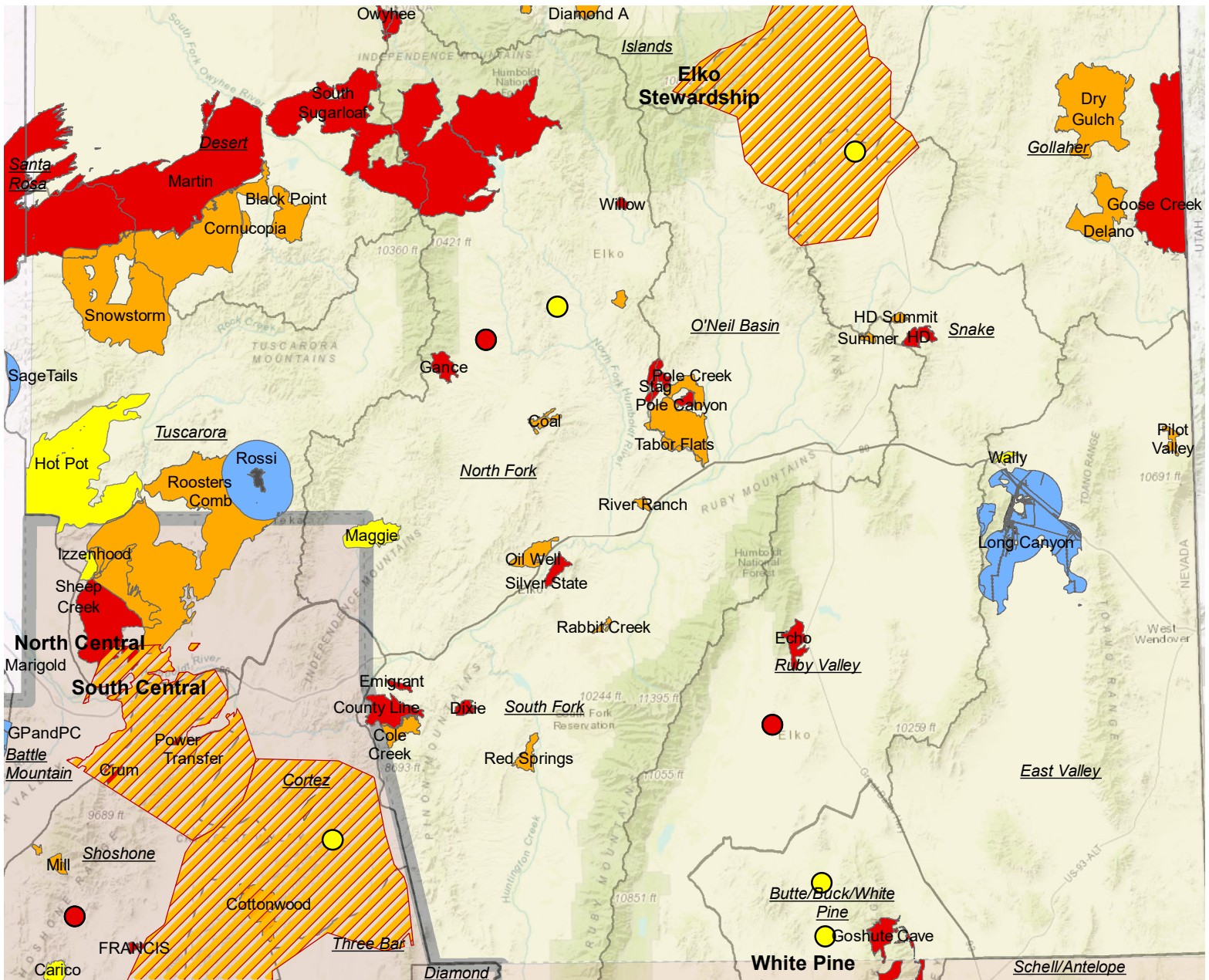
The adaptive management section contained in the Nevada Greater Sage Grouse Conservation Plan directs the Sagebrush Ecosystem Team to initiate the Adaptive Management Response Team to determine causal factors of the triggers and develop appropriate recommendations to the relevant land management agencies. This team consists of willing participants from all stakeholder groups in a defined area such as local conservation groups, grazing permittees, affected land users, and federal/state agencies (see page 9 of the attached Adaptive Management Plan). This process is intended to determine (to the best ability) the potential reasons for population and habitat declines. In the case of habitat triggers where the trigger is self-evident (fire or anthropogenic impact), determining any appropriate management response will be the main effort. These triggers may be used in the prioritizing of funding for restoration efforts and management actions (see steps 2-5 of the attached adaptive management plan).

Table 1. Members of the Statewide Technical Team.

| Organization | Position |
|--------------------------------|--|
| BLM-Nevada | Wildlife Biologist/ Sage Grouse Implementation Coordinator |
| BLM-California | Sage Grouse Implementation Coordinator |
| U.S. Forest Service | Wildlife Biologist/ Sage Grouse Coordinator |
| U.S. Fish and Wildlife Service | Biologist |
| SETT | Program Manager |
| Nevada Department of Wildlife | Upland Game Staff Specialist |
| Nevada Association of Counties | Natural Resources Specialist |
| University of Nevada-Reno | Sage Grouse Biologist |
| U.S. Geological Survey | Sage Grouse Biologist |
| Nevada Division of Forestry | Deputy Administrator of Operations |
| University of Nevada-Reno | Range Ecologist |
| BLM-Nevada | Fuels Specialist |

Table 2. Summary of Triggers in each affected PMU.

| | <i>PMU</i> | <i>Trigger</i> | <i>Conservation Planning Area</i> |
|----|-----------------------|--------------------------------|-----------------------------------|
| 1 | Butte/Buck/White Pine | Population Trigger | White Pine |
| 2 | Ruby Valley | Population Trigger | Elko Stewardship |
| 3 | Three Bar | Population Trigger | South Central |
| 4 | Toiyabe | Population Trigger | South Central |
| 5 | O'Neil Basin | Population Trigger | Elko Stewardship |
| 6 | Islands | Population Trigger | Elko Stewardship |
| 7 | Cortez | Population Trigger | South Central |
| 8 | Shoshone | Population Trigger | South Central |
| 9 | Snake | Population Trigger | Elko Stewardship |
| 10 | Diamond | Population Trigger | South Central |
| 11 | Lincoln | Population Trigger | Lincoln |
| 12 | Sheldon | Population Trigger | Washoe/Modoc |
| 13 | Gollaher | Population and Habitat Trigger | Elko Stewardship |
| 14 | Steptoe/Cave | Population Trigger | White Pine |
| 15 | Tuscarora | Population & Habitat Trigger | Elko Stewardship |
| 16 | Massacre | Population Trigger | Washoe/Modoc |
| 17 | North Fork | Population and Habitat Trigger | Elko Stewardship |
| 18 | Schell/Antelope | Population Trigger | White Pine |
| 19 | Lone Willow | Habitat Trigger | North Central |
| 20 | Virginia/Pahrah | Habitat Trigger | Washoe/Modoc |
| 21 | Desert | Habitat Trigger | Elko Stewardship |
| 22 | Santa Rosa | Habitat Trigger | North Central |



Map Elements

- Lek Hard Trigger 2016
- Lek Soft Trigger 2016
- Lek Cluster Soft Trigger 2016

CCS Analyzed Anthropogenic Disturbance

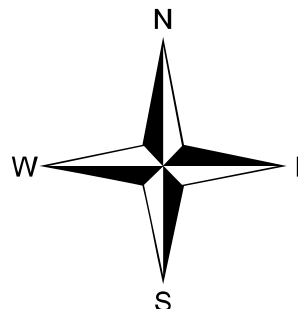
- Direct
- Indirect

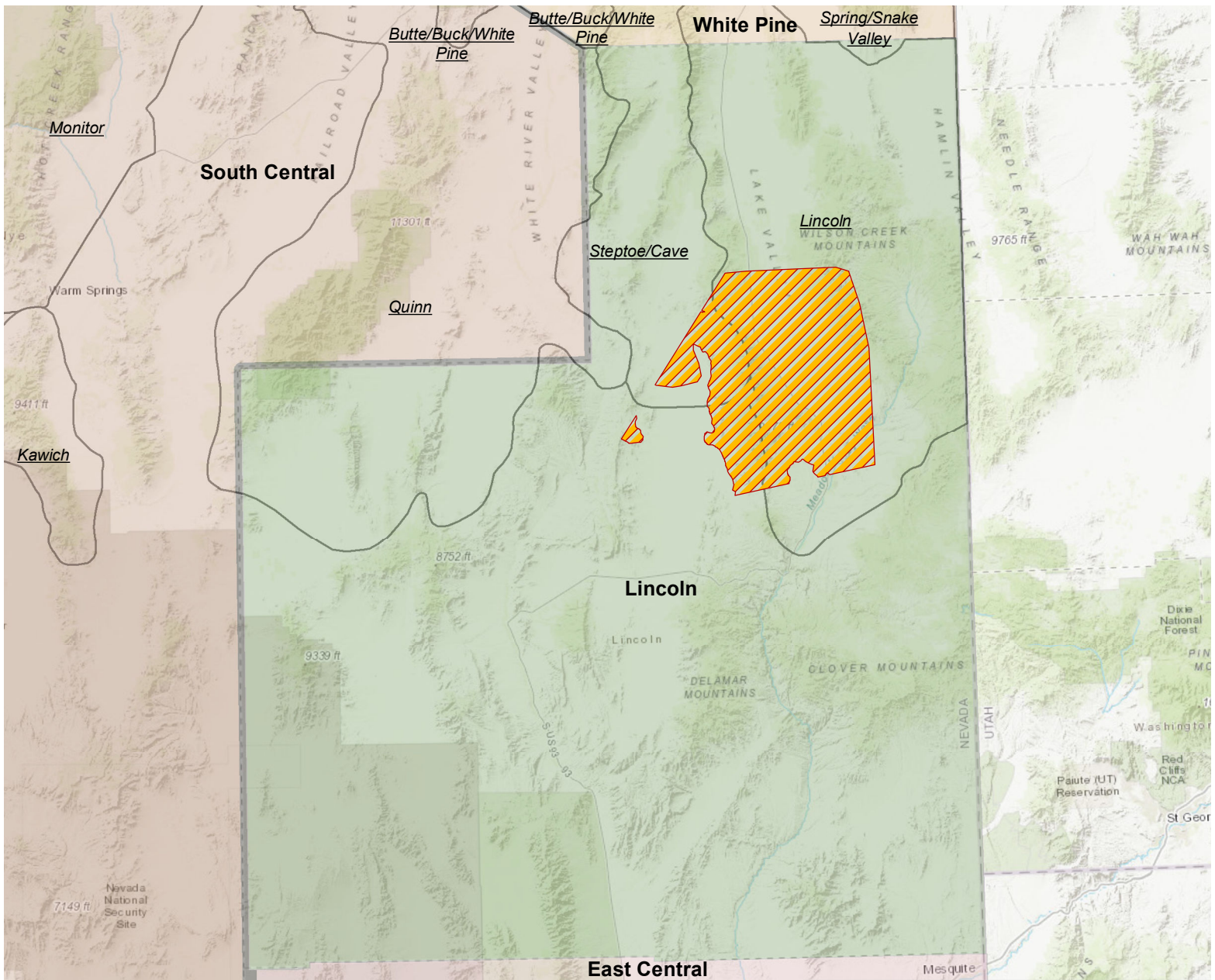
Recent Fires >1000 Acres

- 2016
- 2017
- 2018

| Elko Stewardship Group Area | |
|-----------------------------|--------------------------------|
| PMU | Trigger |
| Ruby Valley | Population Trigger |
| O'Neil Basin | Population Trigger |
| Islands | Population Trigger |
| Gollaher | Population and Habitat Trigger |
| Tuscarora | Population & Habitat Trigger |
| North Fork | Population and Habitat Trigger |
| Desert | Habitat Trigger |
| Snake | Population Trigger |

Elko Stewardship





Map Elements

- Lek Hard Trigger 2016
- Lek Soft Trigger 2016
- Lek Cluster Soft Trigger 2016

| Lincoln Group Area | |
|--------------------|--------------------|
| PMU | Trigger |
| Lincoln | Population Trigger |

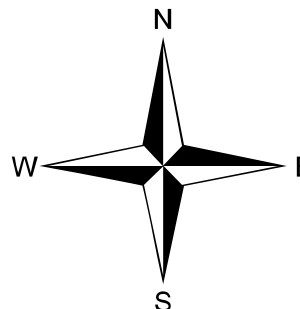
CCS Analyzed Anthropogenic Disturbance

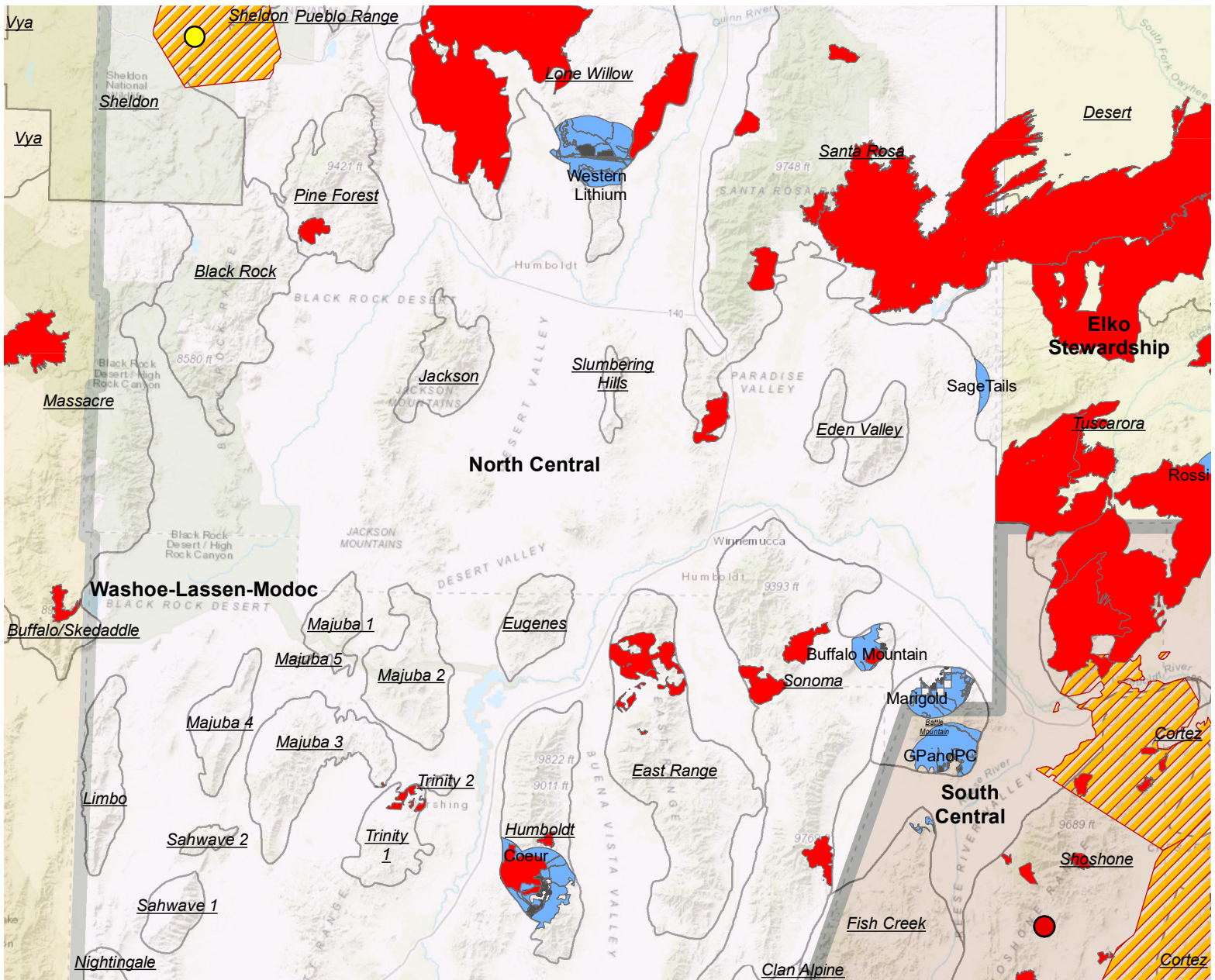
- Direct
- Indirect

Recent Fires >1000 Acres

- 2016
- 2017
- 2018

Lincoln





| North Central Group Area | |
|--------------------------|-----------------|
| PMU | Trigger |
| Lone Willow | Habitat Trigger |
| Santa Rosa | Habitat Trigger |

Map Elements

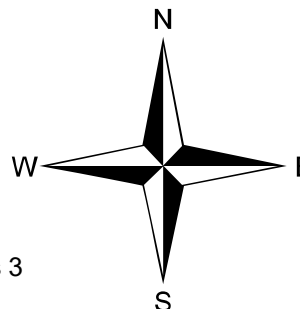
- Lek Hard Trigger 2016
- Lek Soft Trigger 2016
- 10 Year Fire Footprint
- Lek Cluster Soft Trigger 2016

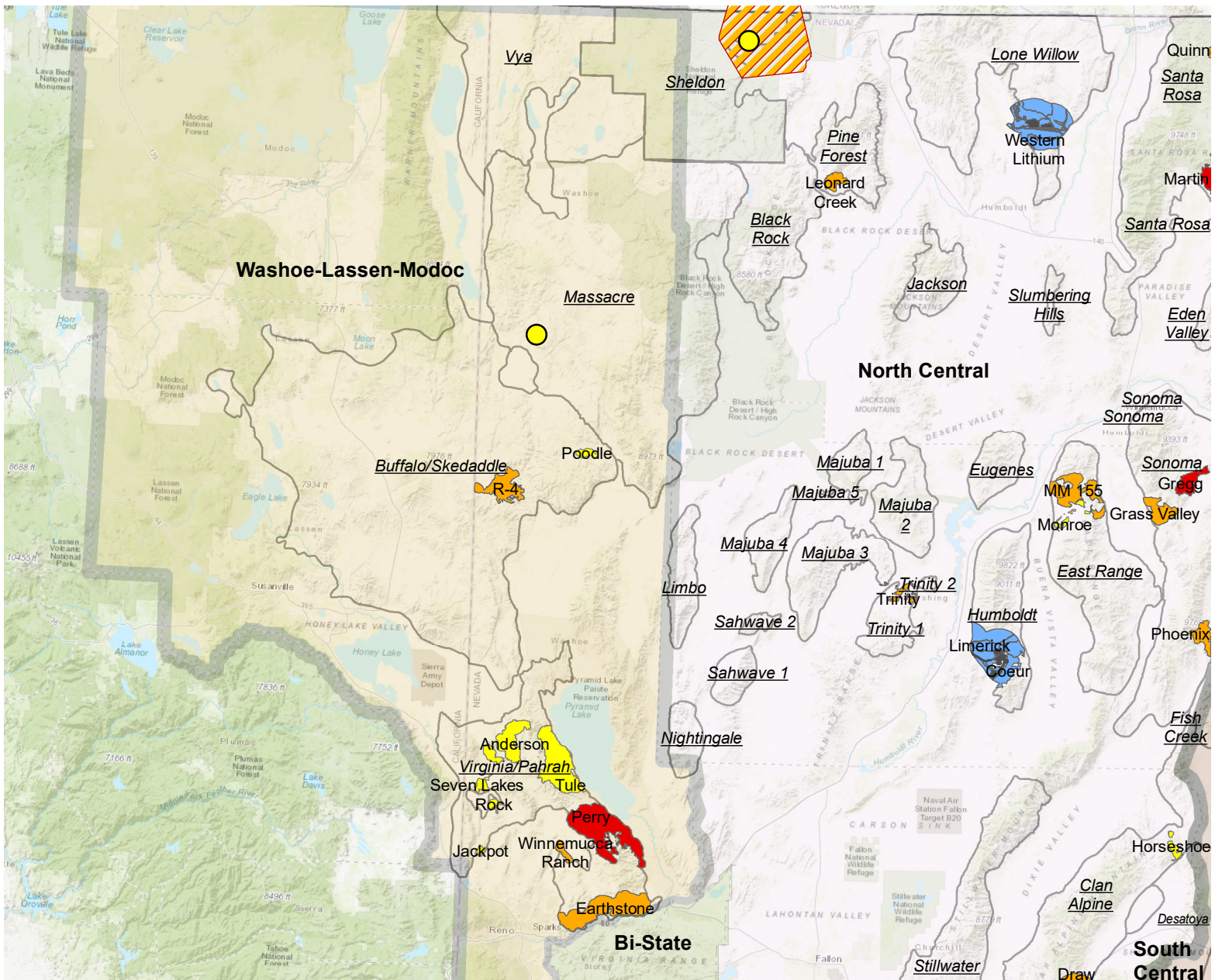
CCS Analyzed Anthropogenic Disturbance

- Direct
- Indirect

North Central

Previous 10 Year Fire History Shown instead of previous 3





Map Elements

- Lek Hard Trigger 2016
- Lek Soft Trigger 2016
- Lek Cluster Soft Trigger 2016

CCS Analyzed Anthropogenic Disturbance

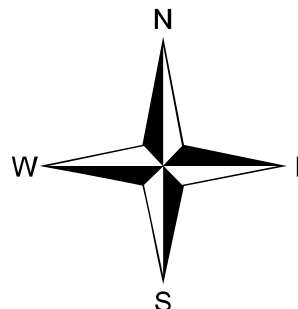
- Direct
- Indirect

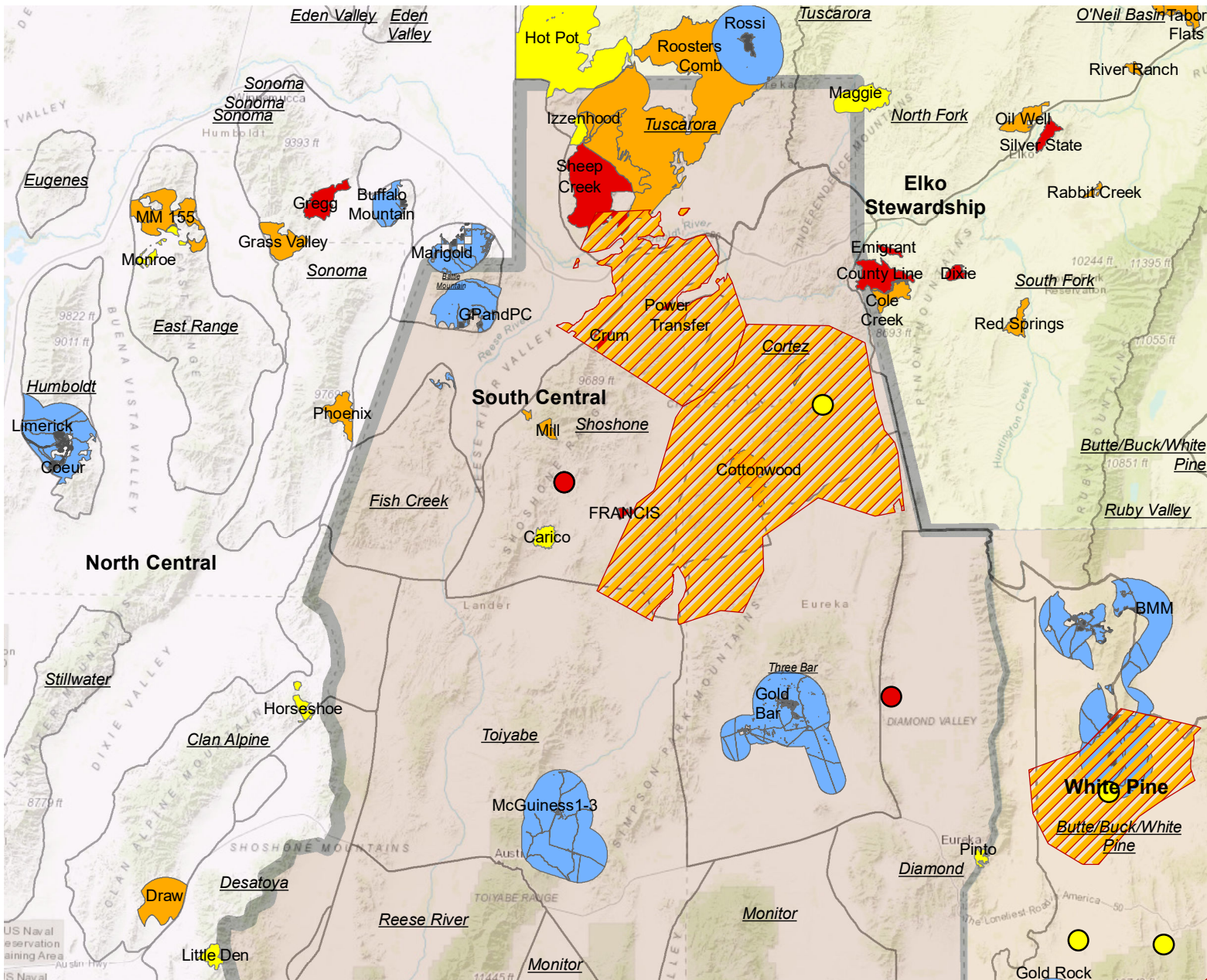
Recent Fires >1000 Acres

- 2016
- 2017
- 2018

| Washoe/Modoc Group Area | |
|-------------------------|--------------------|
| PMU | Trigger |
| Sheldon | Population Trigger |
| Massacre | Population Trigger |
| Virginia/Pahrah | Habitat Trigger |

Washoe/Modoc





Map Elements

● Lek Hard Trigger 2016

● Lek Soft Trigger 2016

▨ Lek Cluster Soft Trigger 2016

CCS Analyzed Anthropogenic Disturbance

■ Direct

■ Indirect

Recent Fires >1000 Acres

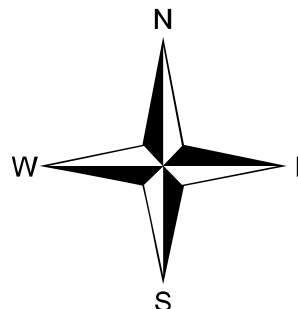
■ 2016

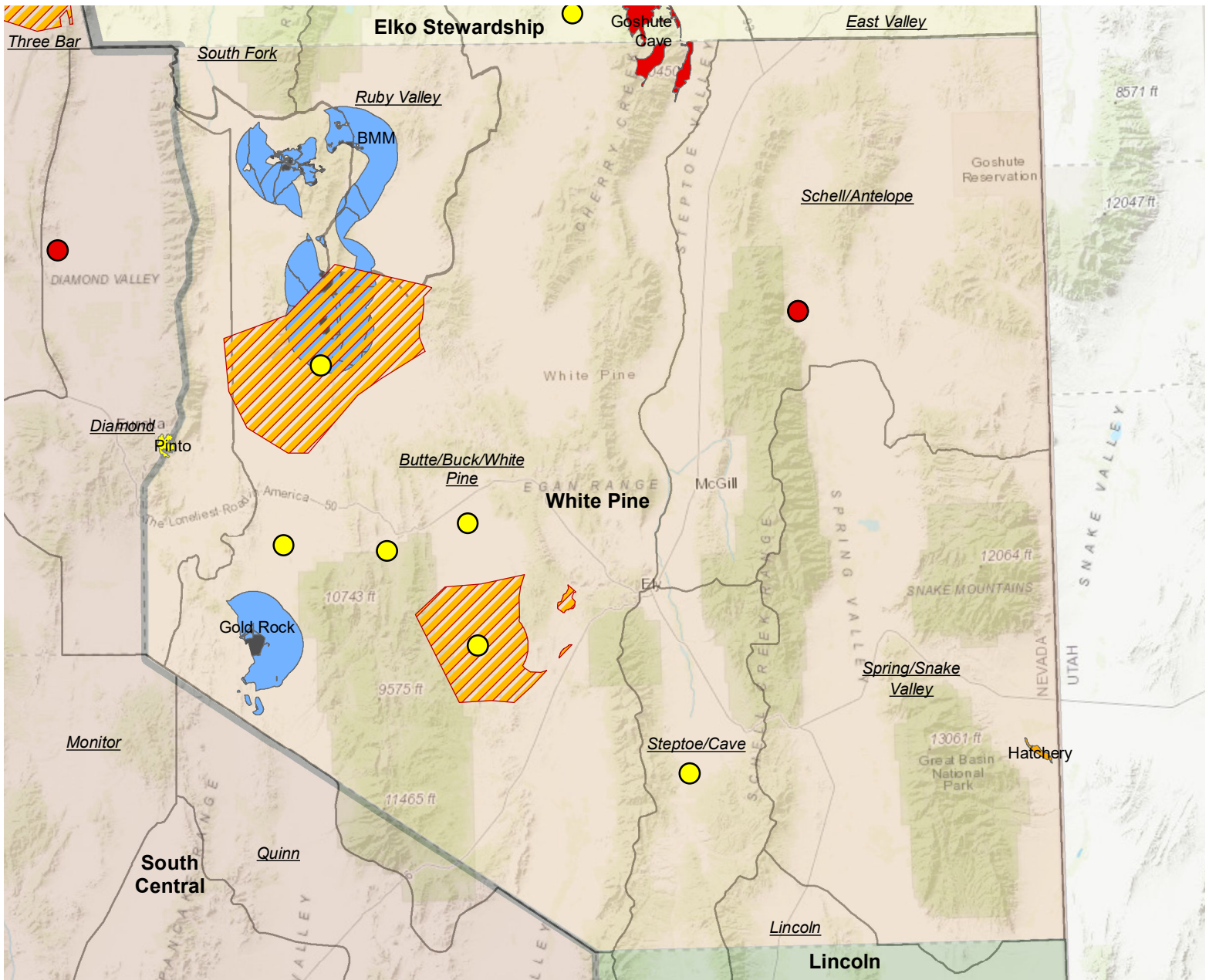
■ 2017

■ 2018

| South Central Group Area | |
|--------------------------|--------------------|
| PMU | Trigger |
| Three Bar | Population Trigger |
| Toiyabe | Population Trigger |
| Cortez | Population Trigger |
| Shoshone | Population Trigger |
| Diamond | Population Trigger |

South Central





Map Elements

- Lek Hard Trigger 2016
- Lek Soft Trigger 2016
- Lek Cluster Soft Trigger 2016

| White Pine Group Area | |
|-----------------------|--------------------|
| PMU | Trigger |
| Butte/Buck/White Pine | Population Trigger |
| Step toe/Cave | Population Trigger |
| Schell/Antelope | Population Trigger |

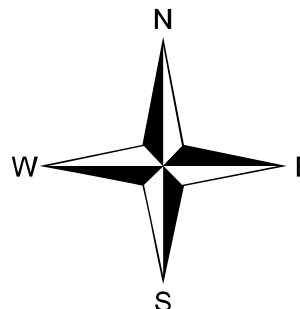
CCS Analyzed Anthropogenic Disturbance

- Direct
- Indirect

Recent Fires >1000 Acres

- 2016
- 2017
- 2018

White Pine



2019 Adaptive Management Habitat Warnings and Triggers (Low, No priority = No Trigger)

| PMU | MCAT | Habitat Affected by Anthro (% of total PMU acres) | 3 year fire occurrence (% of total PMU acres) | 10 year fire occurrence (% of total PMU acres) | Population Trigger? | Habitat Trigger? | Beginning Score | Average Habitat Suitability Index | Resistance and Resilience | % Affected by fire (10yr) | Genetic Connectivity Score | Final Score |
|-------------------------------------|------|---|---|--|---------------------|------------------|-----------------|-----------------------------------|---------------------------|---------------------------|----------------------------|-------------|
| PMUs with Anthropogenic Disturbance | | | | | | | | | | | | |
| Tuscarora | OHMA | 0.23% | 10.11% | 10.77% | Yes | Yes | 11.11363636 | 0.201808402 | 2.30861305 | 0.727759 | 0.324049804 | 4.534491 |
| | GHMA | 1.77% | 9.58% | 16.65% | | | | | | | | |
| | PHMA | 1.97% | 35.57% | 45.36% | | | | | | | | |
| Humboldt | OHMA | 18.51% | 3.87% | 4.56% | | No | 2 | 0.127954906 | 2.386059362 | 0.166842 | -0.872660697 | -0.714919 |
| | GHMA | 11.73% | 0.00% | 0.00% | | | | | | | | |
| | PHMA | 0.00% | 10.31% | 12.13% | | | | | | | | |
| Sonoma | OHMA | 2.15% | 4.10% | 4.55% | | No | 14.08333333 | 0.148449598 | 2.531717589 | 0.11797 | -0.718012254 | 0.035645 |
| | GHMA | 0.33% | 0.42% | 0.42% | | | | | | | | |
| | PHMA | 0.00% | 6.36% | 6.83% | | | | | | | | |
| Butte/Buck/White Pine | OHMA | 0.87% | 0.18% | 0.35% | Yes | | 12.02739726 | 0.08969147 | 2.627221356 | 0.014538 | -0.003755423 | 0.068767 |
| | GHMA | 3.18% | 0.11% | 0.11% | | | | | | | | |
| | PHMA | 2.74% | 0.78% | 1.00% | | | | | | | | |
| Ruby Valley | OHMA | 0.29% | 0.00% | 0.00% | Yes | | 12.95833333 | 0.098611966 | 2.429904352 | 0.010387 | -0.019368351 | 0.041487 |
| | GHMA | 2.13% | 0.34% | 0.34% | | | | | | | | |
| | PHMA | 1.94% | 0.70% | 0.70% | | | | | | | | |
| East Valley | OHMA | 5.00% | 0.11% | 0.11% | | No | 11.875 | 0.071007637 | 2.884624432 | 0.009682 | -0.272936094 | -0.230247 |
| | GHMA | 6.05% | 0.16% | 0.16% | | | | | | | | |
| | PHMA | 2.09% | 0.69% | 0.69% | | | | | | | | |
| Battle Mountain | OHMA | 7.58% | — | — | | No | 8 | 0.151207197 | 2.54896836 | 1 | -0.603291044 | 3.009801 |
| | GHMA | 7.04% | — | — | | | | | | | | |
| | PHMA | 49.10% | — | — | | | | | | | | |
| Fish Creek | OHMA | 0.64% | — | — | | No | 9 | 0.096151271 | 2.683985633 | 1 | -0.691836225 | 2.983802 |
| | GHMA | 0.00% | — | — | | | | | | | | |
| | PHMA | 0.00% | — | — | | | | | | | | |
| Lone Willow | OHMA | 0.00% | — | 13.21% | | Yes | 13.6440678 | 0.172808953 | 2.659396597 | 0.926901 | -0.079725933 | 5.497542 |
| | GHMA | 0.00% | — | 31.16% | | | | | | | | |
| | PHMA | 0.00% | — | 48.32% | | | | | | | | |
| Three Bar | OHMA | 0.00% | — | — | Yes | | 14.18181818 | 0.147270477 | 1.936904224 | 0.024595 | 0.130065837 | 0.336669 |
| | GHMA | 3.00% | — | — | | | | | | | | |
| | PHMA | 8.72% | — | — | | | | | | | | |
| Toiyabe | OHMA | 0.00% | — | 0.19% | Yes | | 13.84615385 | 0.114729563 | 2.424366482 | 0.003861 | 0.135164015 | 0.159748 |
| | GHMA | 2.47% | — | 0.00% | | | | | | | | |
| | PHMA | 6.35% | — | 0.19% | | | | | | | | |
| PMUs with Wildfire Disturbance Only | | | | | | | | | | | | |
| Virginia/Pahrah | OHMA | — | 8.15% | 8.49% | | Yes | 19.375 | 0.226076363 | 2.815590279 | 0.525292 | -0.429059586 | 4.002849 |
| | GHMA | — | 6.95% | 7.38% | | | | | | | | |
| | PHMA | — | 33.89% | 36.66% | | | | | | | | |
| Desert | OHMA | — | 4.78% | 4.78% | | Yes | 17.76923077 | 0.204304738 | 2.330363054 | 0.569737 | 0.403081371 | 5.634942 |
| | GHMA | — | 17.59% | 19.42% | | | | | | | | |
| | PHMA | — | 30.29% | 32.77% | | | | | | | | |
| Santa Rosa | OHMA | — | 1.67% | 2.09% | | Yes | 13.43548387 | 0.178494275 | 2.465460268 | 0.557795 | 0.578322967 | 4.160587 |
| | GHMA | — | 23.43% | 24.32% | | | | | | | | |
| | PHMA | — | 25.84% | 29.37% | | | | | | | | |

2019 Adaptive Management Habitat Warnings and Triggers (Low, No priority = No Trigger)

| PMU | MCAT | Habitat Affected by Anthro (% of total PMU acres) | 3 year fire occurrence (% of total PMU acres) | 10 year fire occurrence (% of total PMU acres) | Population Trigger? | Habitat Trigger? | Beginning Score | Average Habitat Suitability Index | Resistance and Resilience | % Affected by fire (10yr) | Genetic Connectivity Score | Final Score |
|-------------------|------|---|---|--|---------------------|------------------|-----------------|-----------------------------------|---------------------------|---------------------------|----------------------------|-------------|
| Clan Alpine | OHMA | — | 2.46% | 5.74% | | | 20 | 0.054950678 | 2.772315382 | 0.25817 | -0.595456289 | 1.369375 |
| | GHMA | — | 0.00% | 0.00% | | | | | | | | |
| | PHMA | — | 16.79% | 20.07% | | | | | | | | |
| Gollaher | OHMA | — | 2.23% | 2.83% | Yes | Yes | 12.675 | 0.156253376 | 2.330928066 | 0.306606 | 1.126499636 | 3.054258 |
| | GHMA | — | 9.53% | 9.93% | | | | | | | | |
| | PHMA | — | 16.56% | 17.90% | | | | | | | | |
| East Range | OHMA | — | 10.12% | 10.12% | | | #N/A | 0.120078002 | 2.485041702 | 0.212184 | -0.807879666 | #N/A |
| | GHMA | — | 0.00% | 0.00% | | | | | | | | |
| | PHMA | — | 11.10% | 11.10% | | | | | | | | |
| North Fork | OHMA | — | 0.34% | 0.47% | Yes | Yes | 17.90350877 | 0.246465432 | 2.086887357 | 0.299802 | 0.812099656 | 4.018034 |
| | GHMA | — | 8.78% | 13.29% | | | | | | | | |
| | PHMA | — | 10.51% | 16.22% | | | | | | | | |
| Trinity 1 | OHMA | — | 6.88% | 6.88% | | | #N/A | 0.089474389 | 3 | 0.137537 | -0.935620337 | #N/A |
| | GHMA | — | 0.00% | 0.00% | | | | | | | | |
| | PHMA | — | 6.88% | 6.88% | | | | | | | | |
| Pine Forest | OHMA | — | 0.00% | 0.00% | | | 9.8 | 0.230582589 | 2.278156902 | 0.096321 | -0.64710863 | -0.137223 |
| | GHMA | — | 4.82% | 4.82% | | | | | | | | |
| | PHMA | — | 4.82% | 4.82% | | | | | | | | |
| Buffalo/Skedaddle | OHMA | — | 0.17% | 0.17% | | | 20.9047619 | 0.214981756 | 2.50569144 | 0.088224 | -0.38099011 | 0.513295 |
| | GHMA | — | 4.10% | 4.10% | | | | | | | | |
| | PHMA | — | 4.56% | 4.56% | | | | | | | | |
| O'Neil Basin | OHMA | — | 0.02% | 0.02% | Yes | No | 15.11428571 | 0.25108662 | 2.102576902 | 0.071312 | 1.104904814 | 1.74624 |
| | GHMA | — | 1.83% | 2.54% | | | | | | | | |
| | PHMA | — | 3.73% | 4.57% | | | | | | | | |
| Islands | OHMA | — | 0.00% | 2.40% | Yes | No | 16.85714286 | 0.17392843 | 1.492840002 | 0.190162 | 0.450666232 | 2.971456 |
| | GHMA | — | 2.70% | 5.97% | | | | | | | | |
| | PHMA | — | 3.51% | 10.64% | | | | | | | | |
| South Fork | OHMA | — | 0.08% | 0.08% | | | 12.24390244 | 0.192790209 | 2.227196034 | 0.063893 | 0.296931933 | 0.715896 |
| | GHMA | — | 1.97% | 2.68% | | | | | | | | |
| | PHMA | — | 2.78% | 3.63% | | | | | | | | |
| Cortez | OHMA | — | 0.18% | 0.73% | Yes | | 10.47058824 | 0.199301702 | 2.260577851 | 0.133375 | -0.070294642 | 0.670596 |
| | GHMA | — | 2.40% | 3.55% | | | | | | | | |
| | PHMA | — | 2.76% | 9.06% | | | | | | | | |
| Shoshone | OHMA | — | 0.72% | 0.83% | Yes | | 9.9 | 0.143759015 | 2.395004099 | 0.053174 | -0.290357743 | -0.038958 |
| | GHMA | — | 0.68% | 1.16% | | | | | | | | |
| | PHMA | — | 2.57% | 3.33% | | | | | | | | |
| Desatoya | OHMA | — | 0.05% | 5.83% | | | 12.83333333 | 0.065537426 | 2.64154746 | 0.160367 | -0.144482825 | 0.685682 |
| | GHMA | — | 0.51% | 0.71% | | | | | | | | |
| | PHMA | — | 1.33% | 9.50% | | | | | | | | |
| Snake | OHMA | — | 0.00% | 0.00% | Yes | | 15.85 | 0.169247653 | 2.569481746 | 0.016759 | 0.956925203 | 1.077804 |
| | GHMA | — | 0.37% | 0.37% | | | | | | | | |
| | PHMA | — | 1.29% | 1.30% | | | | | | | | |
| Diamond | OHMA | — | 0.00% | 0.04% | Yes | | 9.142857143 | 0.124521299 | 1.875934286 | 0.023481 | -0.175377693 | -0.046684 |
| | GHMA | — | 0.29% | 0.61% | | | | | | | | |
| | PHMA | — | 0.29% | 1.70% | | | | | | | | |

2019 Adaptive Management Habitat Warnings and Triggers (Low, No priority = No Trigger)

| PMU | MCAT | Habitat Affected by Anthro (% of total PMU acres) | 3 year fire occurrence (% of total PMU acres) | 10 year fire occurrence (% of total PMU acres) | Population Trigger? | Habitat Trigger? | Beginning Score | Average Habitat Suitability Index | Resistance and Resilience | % Affected by fire (10yr) | Genetic Connectivity Score | Final Score |
|---------------------|------|---|---|--|---------------------|------------------|-----------------|-----------------------------------|---------------------------|---------------------------|----------------------------|-------------|
| Spring/Snake Valley | OHMA | — | 0.09% | 0.09% | Yes | | 10 | 0.073201758 | 2.452563358 | 0.004188 | -0.295366748 | -0.277039 |
| | GHMA | — | 0.12% | 0.12% | | | | | | | | |
| | PHMA | — | 0.21% | 0.21% | | | | | | | | |