

NEVADA CONSERVATION CREDIT SYSTEM

ADAPTIVE MANAGEMENT ANNUAL REPORT – 2019

The purpose of this Adaptive Management Response Team (AMRT) annual report is to provide a summary of the results of the adaptive management process as outlined by the Nevada Greater Sage Grouse Conservation Plan. The adaptive management process identifies habitat and population triggers reached within the State of Nevada across seven Conservation Planning Areas. Following identification of triggers, the local AMRT within each conservation planning area will identify causal factors and develop management recommendations to address habitat and population triggers.

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 is comprised of representatives from Bureau of Land Management (BLM), U.S. Forest Service, U.S. Fish and Wildlife Service, Nevada Department of Wildlife (NDOW), Nevada Association of Counties, University of Nevada – Reno, U.S. Geological Survey, Nevada Division of Forestry. This team assigned triggers on August 8th, 2019. The local AMRT regional meetings occurred throughout the winter of 2019-2020. These teams consisted of willing participants from all stakeholder groups in a defined area such as local conservation groups, grazing permittees, other affected land users, and federal/State agencies. This process is intended to determine 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. This document outlines the results of the triggers reached by the Statewide Technical Team, and the results of the causal factor analysis and management recommendations developed by the AMRTs.

CONTENTS

ADAPTIVE MANAGEMENT ANNUAL REPORT – 2019	1
CONTENTS	2
I. ADAPTIVE MANAGEMENT STRATEGY OVERVIEW	3
II. POPULATION TRIGGERS – STATEWIDE OVERVIEW	5
III. HABITAT TRIGGERS – STATEWIDE OVERVIEW.....	6
IV. POPULATION AND HABITAT TRIGGERS - DETAIL	7

****SEE http://sagebrushco.nv.gov/Adaptive_Management/2019/2019/ FOR AREA-SPECIFIC INFORMATION ON MANAGEMENT RECOMMENDATIONS MADE BY LOCAL AREA ADAPTIVE MANAGEMENT RESPONSE TEAMS AND RESPONSES FROM MANAGEMENT AGENCIES****

I. ADAPTIVE MANAGEMENT STRATEGY OVERVIEW

This adaptive management strategy includes warnings, soft and hard triggers and responses. Triggers are not specific to any particular agency effort but identify GRSG population and habitat thresholds outside of natural fluctuations or variations (with the exception of wildfires). Triggers are based on the two key metrics that are being monitored; population status and habitat loss. Adaptive management, responding to specific triggers, can provide added confidence that management actions are robust and able to respond to a variety of conditions and circumstances to enable conservation of GRSG habitat and populations. Reaching a trigger will initiate a local-state-federal interagency dialogue in collaboration with affected authorized land users (e.g., grazing permittee) to evaluate causal factor(s) and recommend adjustments to implementation-level activities to reverse the trend. The State of Nevada will use a collaborative and consensus-based process with stakeholders, appropriate state and local agencies, and affected authorized land users when developing and implementing management responses when a trigger has been identified.

The scales used to analyze population triggers and apply management responses are at the individual lek, lek cluster, and BSU (Figure 1). Adaptive management responses will only apply to habitat management areas (HMAs), which includes PHMA, GHMA, OHMA, within these scales. Habitat adaptive management warnings and triggers will be analyzed only at the lek cluster scale. The boundaries of the BSU and lek clusters may be adjusted over time, based on the understanding of local GRSG population interactions, genetic sampling and climate variation. Population and habitat analyses used to identify warnings and triggers may be updated based on new science and advances in technology (e.g., integrated population models).

The hierarchy of GRSG population and habitat scales is as follows:

- Lek—Individual breeding display site where male and female GRSG congregate, with males performing courtship displays to gain mating opportunities with females.
- PMU (Lek cluster)—A group of leks in the same vicinity, among which GRSG may interchange over time and representing a group of closely related individuals.
- Biologically Significant Units (BSUs) —Represents nested lek clusters with similar climate and vegetation conditions.

Figure 1 below corresponds to lek clusters and BSUs that were defined by the USGS modeling analysis. They are different boundaries than the PMUs and BSUs that are defined by the State of Nevada, by NDOW. While USGS identifies population triggers according to their lek cluster and BSU spatial boundaries, for the purposes of this adaptive management strategy the SETT will be using the NDOW PMU and BSU boundaries to identify causal factors and management responses. USGS population triggers reached, such as individual lek or lek cluster triggers, will be applied to and identified with the NDOW PMU and BSUs. Habitat triggers as identified by the Statewide Technical Team will be based on the PMU or BSU spatial scale (i.e., Tuscarora PMU reached a habitat trigger due to fire within a large portion of that PMU).

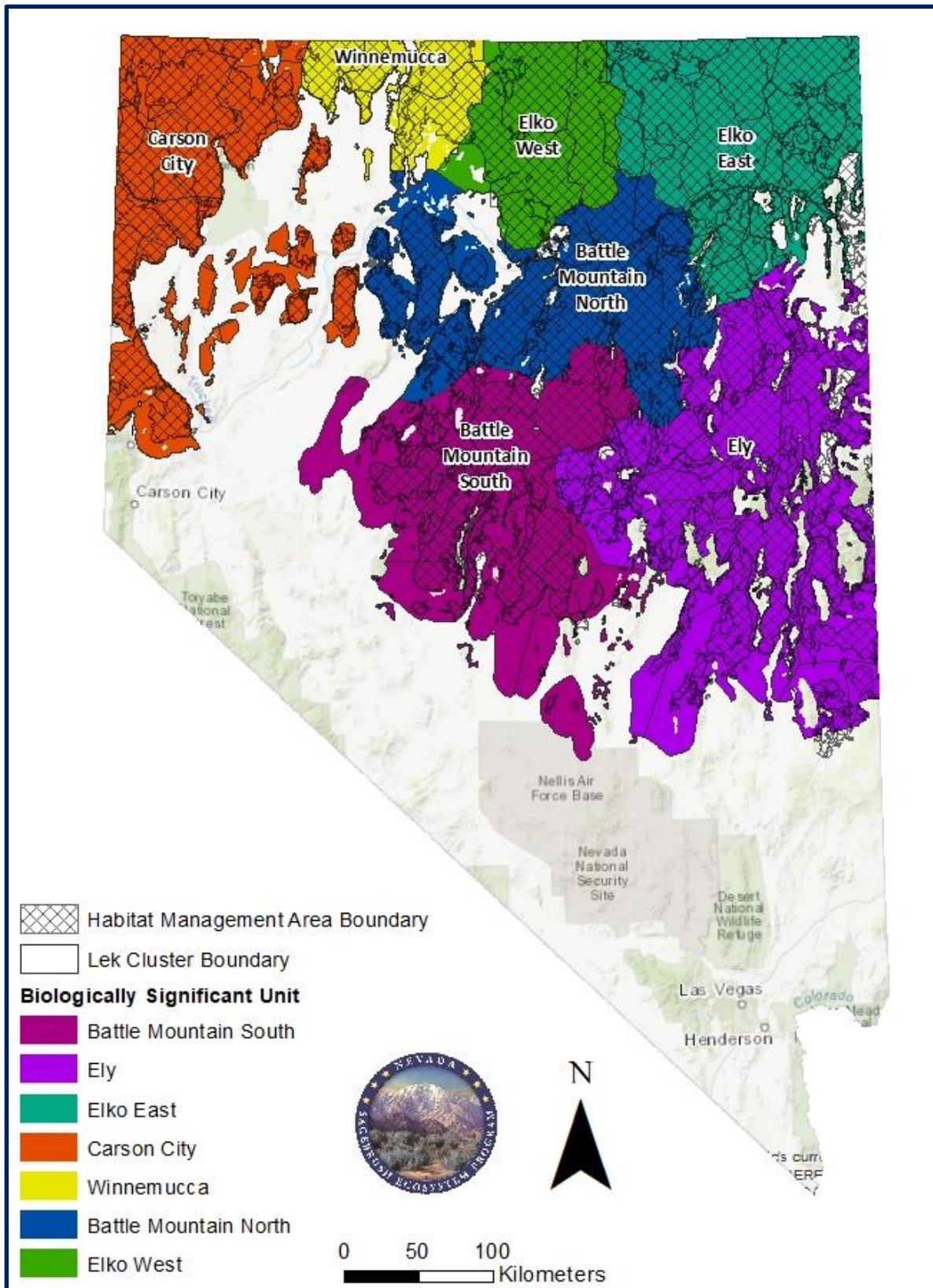


Figure 1. Adaptive management trigger analysis areas: USGS defined Biologically Significant Units and lek clusters (PMUs) for GRSG in Nevada.

II. POPULATION TRIGGERS – STATEWIDE OVERVIEW

The USGS analyzed population triggers at multiple spatial scales using a state-space, hierarchical modeling process (Coates et al. 2017). The analysis identifies soft and hard warnings and triggers based on population rates of change at the lek, lek cluster (PMU), and BSU levels. The rate at which a population trend declines and decouples from the trend at the associated higher-order scale will dictate whether or not a soft or hard trigger is reached. Thresholds for stability and decoupling for soft and hard triggers were determined from simulation analyses that used 17 years of lek data (2000-2016). In this analysis, USGS identified 12 soft lek triggers, five hard lek triggers, and seven soft lek cluster (PMU) triggers (Figure 2). More detail on population triggers provided in Section IV.

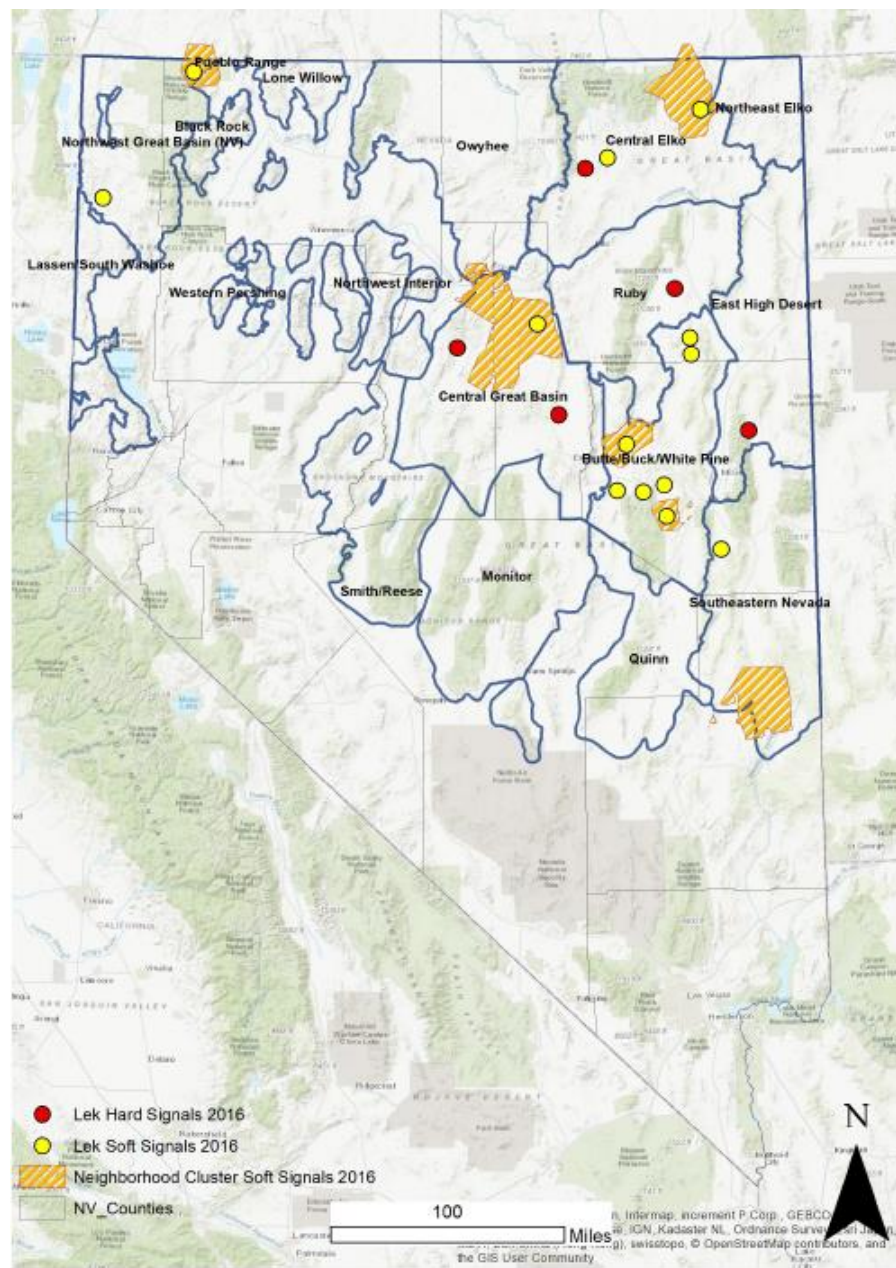


Figure 2. USGS lek and lek cluster (PMU) triggers reached in 2017.

III. HABITAT TRIGGERS – STATEWIDE OVERVIEW

The Statewide Technical Team created a list of habitat warnings (wildfires, new anthropogenic disturbance, other events causing sagebrush habitat loss) over a three-year period. A process was developed to prioritize and rank warnings based on several data layers to inform importance of habitat that was impacted, which included proportion of leks affected, genetic connectivity, fire risk, resistance and resilience scores, and others. Professional opinion and judgement was used to help refine the initial rankings. Habitat triggers are only analyzed at the PMU and BSU scales, and seven PMUs were identified as having reached a habitat trigger.

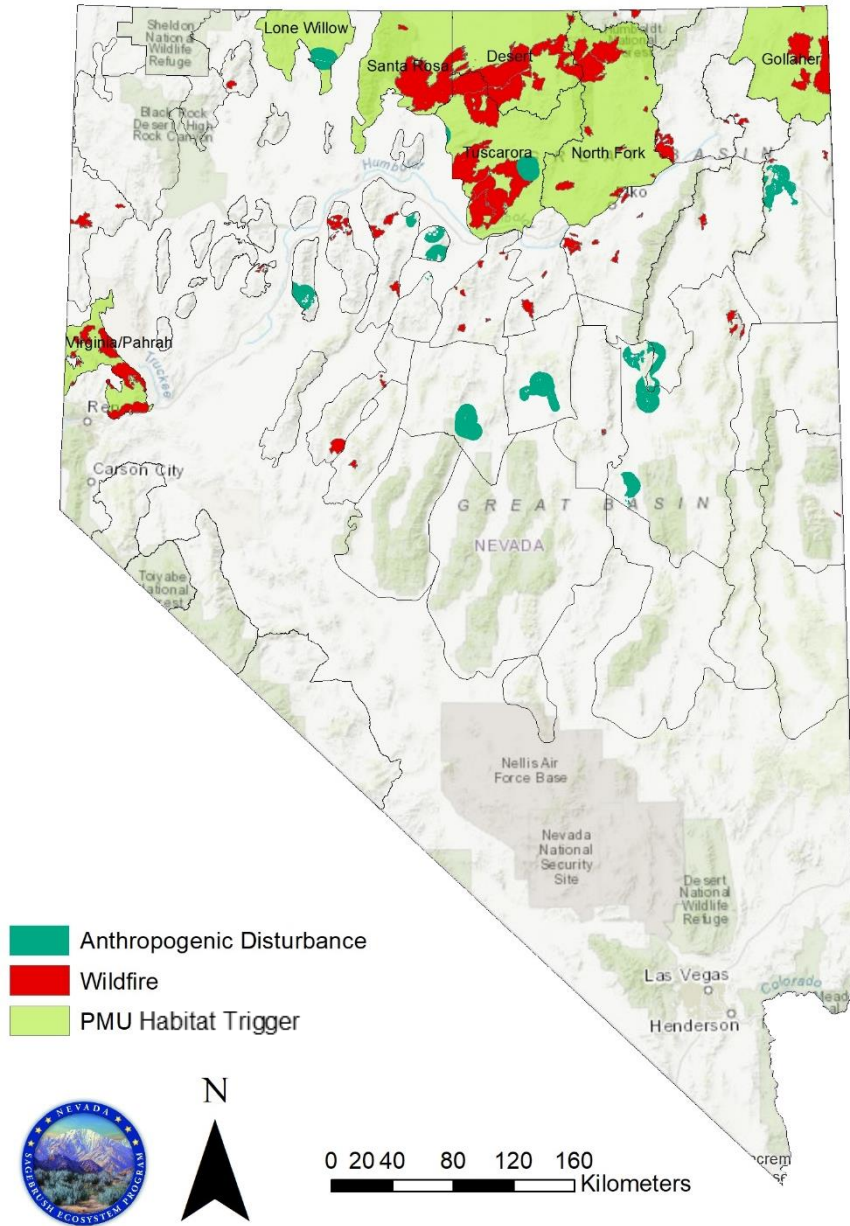


Figure 3. The seven PMUs that reached a habitat trigger. Habitat warnings that were identified and analyzed, including wildfire and new anthropogenic disturbance, are also mapped.

IV. POPULATION AND HABITAT TRIGGERS - DETAIL

In total, the Statewide Technical Team identified seven PMU habitat triggers, seven soft lek cluster PMU triggers, five hard lek triggers, and 12 soft lek triggers (Figure 4). Population triggers affected 18 PMUs, and Habitat triggers affected seven PMUs, of which three contained both population and habitat triggers, resulting in a total of 22 PMUs having reached a trigger.

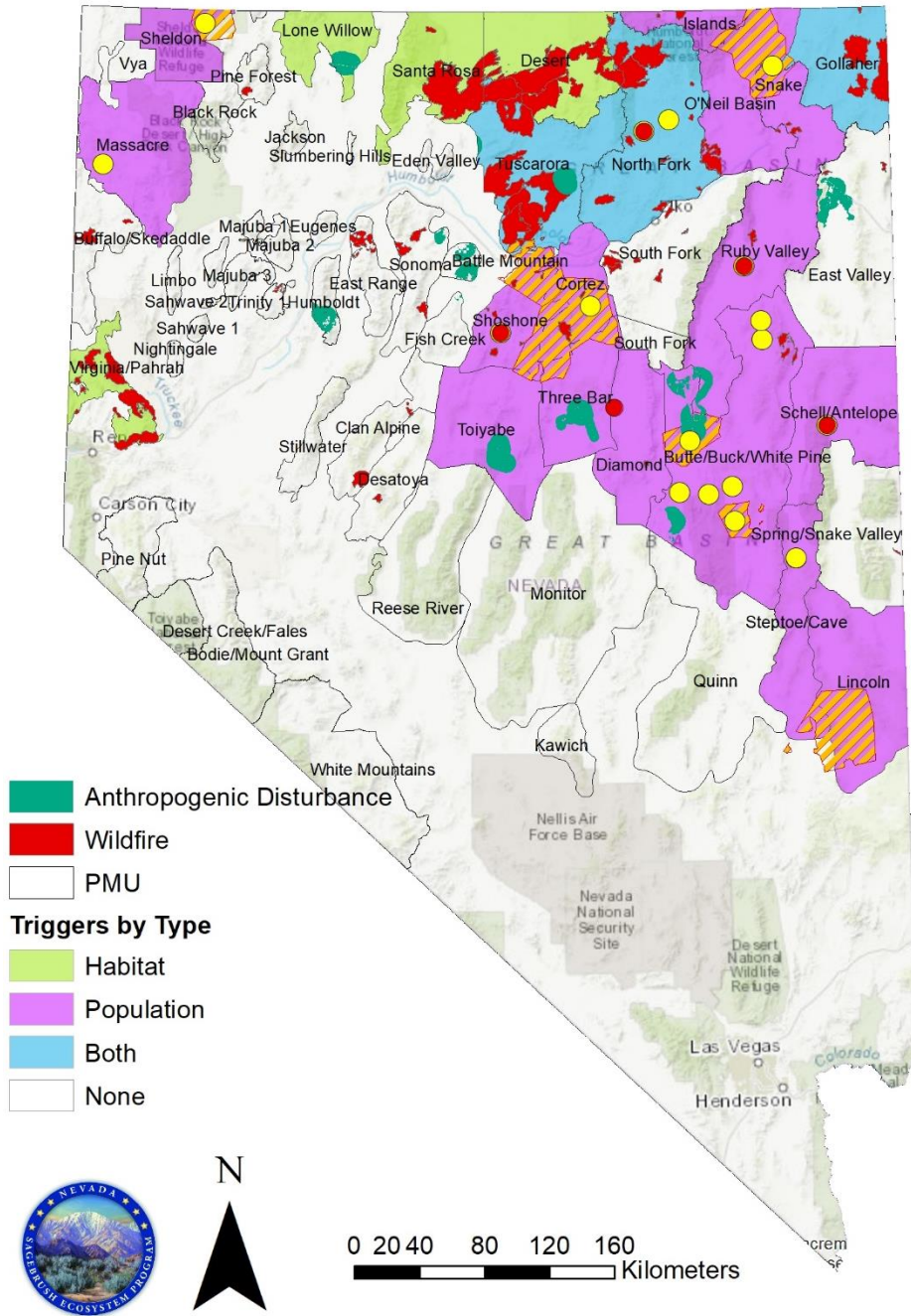


Figure 4. Final population and habitat triggers analyzed by the Statewide Technical Team.

The Local AMRTs were tasked to further define and prioritize habitat and population triggers identified by the Statewide Technical Team (Figure 4). The AMRTs, based on local knowledge and resources, can recommend to remove or add triggers. The triggers below are the final habitat and population triggers recommended by the AMRTs. If a trigger was suggested to be removed or added, justification is provided. Definitions for the column headings in the tables below for each Conservation Planning Area include:

Conservation Planning Area: One of the seven identified Conservation Planning Areas.

Trigger Type – Statewide: The ‘Habitat’ or ‘Population’ trigger as identified by the Statewide Technical Team and USGS.

Spatial Scale: Scale of the population or habitat trigger, can be ‘lek’, ‘PMU’, or ‘BSU’.

Trigger Name: The name of the lek, fire, PMU, event, or other identifying description for the trigger.

Table 1.

Conservation Planning Area	Trigger Type - Statewide	Trigger Name or Description (if applicable)	PMUs Affected
Elko Stewardship	Population – Hard Lek	High Beach 2	Ruby Valley
Elko Stewardship	Population – Hard Lek	Saval 05 (Mahala Creek)	North Fork
Elko Stewardship	Population – Soft Lek	Double Mtn Well 3 NW	North Fork
Elko Stewardship	Population – Soft Lek <i>AMRT recommends removing due to GRSG travel between leks in close proximity.</i>	East Antelope Spring	Snake
Elko Stewardship	Population – Soft Lek	Elko County 3; Twin Springs	Butte/Buck/White Pine
Elko Stewardship	Population – Soft Cluster (2) <i>AMRT recommends the lek cluster trigger be removed for Islands and Gollaher due to a very small area affected in those PMUs</i>		Tuscarora, O’Neil Basin, Islands, Snake, Gollaher
Elko Stewardship	Habitat (4 PMUs)	Wildfire	Gollaher, Tuscarora, Desert, North Fork
Lincoln	Population – Soft Cluster		Lincoln, Steptoe/Cave
North Central	Habitat	Wildfire and anthropogenic disturbance	Lone Willow
North Central	Habitat	Wildfire	Santa Rosa

South Central	Population – Hard Lek	Cooks Creek 2	Shoshone
South Central	Population – Hard Lek	Pony Express 2	Diamond
South Central	Population – Soft Lek	Modarelli Mine 2	Cortez
South Central	Population – Soft Cluster (2)		Shoshone, Cortez, Tuscarora, Three Bar, Toiyabe
South Central	Habitat <i>AMRT recommends adding due to new information.</i>	Anthropogenic Disturbance	Toiyabe
Washoe/Modoc/La ssen	Population – Soft Lek		Massacre
Washoe/Modoc/La ssen	Population – Soft Lek	Big Springs Table	Sheldon
Washoe/Modoc/La ssen	Population – Soft Cluster		Sheldon
White Pine	Population – Soft Lek	South Newark Valley 2, Illipah Reservoir, Central Jakes Valley SE, Deadman Wash,	Butte/Buck/White Pine
White Pine	Population – Soft Lek	Cattle Camp Wash N, Beck Pass 3	Steptoe/Cave
White Pine	Population – Hard Lek <i>AMRT (NDOW – Kody Menghini) recommends removing due to database error</i>	North Creek	Schell/Antelope
White Pine	Population – Soft Cluster (2)		Butte/Buck/White Pine, Ruby Valley, Diamond