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Implementing the Candidate Conservation Agreement for Greater Sage-Grouse on the Idaho National Laboratory Site: 2020 Summary Report

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ACKNOWLEDGEMENTS

The ESER Program recognizes and gives special thanks to Emma Casselman, Carson Kantack, Cory Braastad, Holly Forster, and Mauro Hernandez. These technicians completed one of the most challenging seasons the program has experienced. The team handled the challenges from the pandemic with grace and flexibility while taking on a workload that was substantially greater than previous efforts. We appreciate their refreshing enthusiasm and dedication to collect quality data over many dusty miles. We also thank Brande Hendricks for assistance with document formatting and Alana Jensen for cover design.

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ACRONYMS

BLM	Bureau of Land Management
CCA	Candidate Conservation Agreement
CA	Conservation Area
DOE	U.S. Department of Energy, Idaho Operations Office
ESER	Environmental Surveillance, Education, and Research
HMA	Habitat Management Area
INL	Idaho National Laboratory
SD	Standard deviation
SE	Standard error
SGCA	Sage-grouse Conservation Area
USFWS	U.S. Fish and Wildlife Service
WFMC	Wildland Fire Management Committee

1. INTRODUCTION

In October 2014, the U.S. Department of Energy, Idaho Operations Office (DOE) and the U.S. Fish and Wildlife Service (USFWS) entered into a Candidate Conservation Agreement (CCA) for Greater Sage-Grouse (*Centrocercus urophasianus*; hereafter sage-grouse) on the Idaho National Laboratory (INL) Site (DOE and USFWS 2014). The CCA stipulates that DOE submit a report annually to USFWS documenting monitoring activities that occurred within the preceding twelve months (DOE and USFWS 2014). This Summary Report highlights key findings of a comprehensive report (Shurtliff et al. 2021) produced by DOE's Environmental Surveillance, Education, and Research Program (ESER), satisfying the reporting requirement of the CCA. Comprehensive reports (i.e., Full CCA Reports) for each year can be found under the heading *Sage-grouse Reports* at http://www.idahoeser.com/Publications.html

The key findings from 2020 summarized here include (1) a concise description of results from all CCA monitoring tasks performed by ESER, and (2) actions taken by DOE, INL contractors, and other stakeholders to meet objectives of conservation measures designed to reduce threats to sage-grouse and its habitats (DOE and USFWS 2014). Most important, this Summary Report updates stakeholders regarding sage-grouse population and habitat trends as they apply to adaptive regulatory triggers established in the CCA. The two triggers and criteria that define them, are:

- Population Trigger: The three-year running average of peak male attendance, summed across 27 leks within the Sage-grouse Conservation Area (SGCA), falls below 253 males—a 20% decrease from the 2011 baseline of 316 males;
- Habitat Trigger: Total area designated as sagebrush habitat within the SGCA falls below 62,846 ha (155,296 acres)—a 20% drop from the 2013 baseline of 78,558 ha (194,120 acres).

Related monitoring tasks are grouped into three sections: Population Trigger Monitoring (Section 2), Habitat Trigger Monitoring (Section 3), and Threat Monitoring (Section 4). Section 5 describes actions taken during the past year to achieve the objectives of conservation measures listed in the CCA. The final section (Section 6) synthesizes key results from all monitoring tasks, proposes changes to the CCA or associated monitoring tasks for DOE and USFWS to consider, and documents changes to the CCA that have been approved by both signatories during the past year.

2. POPULATION TRIGGER MONITORING

2.1 Task 1—Lek Counts and Lek Route Surveys

Summary of Key Results: The three-year running average of sage-grouse peak male attendance on SGCA baseline leks was 299, a 16.9% drop from 2019. This average value is now 18% above the population trigger threshold, and if counts are less in 2021 than in 2020, the population trigger will be tripped.

2.1.1 Introduction

The primary purpose of the sage-grouse monitoring task is to document peak male attendance at all active leks on the INL Site (Figure 2-1). This information allows us to track abundance trends Site-wide and determine the three-year average male count on 27 leks within the SGCA (hereafter, baseline leks), which is the basis of the population trigger (DOE and USFWS 2014). Leks are surveyed individually or as a part of six lek routes from mid-March until early May. Those included on lek routes are used to estimate abundance trends. We also survey a few lek sites each year that are no longer active to determine if sage-grouse have reoccupied those sites. These monitoring activities help maintain accurate records of the number and location of active leks on the INL Site.

2.1.2 Results and Discussion

SGCA Baseline Leks

In 2020, we surveyed each baseline lek 3–7 times ($\bar{x}$ = 4.7 surveys, standard deviation [SD] = 1.1). Peak male attendance, summed across all baseline leks, was 227, a 25.3% decrease from 304 individuals recorded in 2019, and the lowest value recorded on these leks since we began analyzing them as a unit in 2011 (Figure 2-2). The 2020 count is the fourth consecutive year of double-digit percent declines on baseline leks, and male attendance has declined 52% during that time. Activity status of baseline leks did not change, as 19 of 27 remained active.

The three-year (2018–2020) running average of peak male attendance on baseline leks was 299 males (SD = 69.2), a 16.9% decrease from 2019 (Figure 2-2). This value is the lowest recorded since we began calculating the average in 2013 (Figure 2-2) and it is 18% above the threshold (253 males) that, if crossed, would trigger specified action by DOE and the USFWS (DOE and USFWS 2014). If the summed annual count of males in 2021 is lower than the count in 2020 by only a single male, the 3-year running average will drop below 253, and the population trigger will be tripped.

Lek Routes

We surveyed each of the six lek routes five or six times ($\bar{x}$ = 5.5 surveys, SD = 0.5; Figure 2-1). Males per lek surveyed increased 20% on one route, but for all others the number of males per lek surveyed was lower in 2020 than in 2019, with reductions ranging from −53.7% to −11.4%. On average, lek route counts declined 17% (SD = 23.5%), marking the fourth consecutive year of lek route declines.

Changes in Lek Classification

We visited 13 additional inactive leks two times each (i.e., not baseline leks; not included on survey routes). No sage-grouse were observed at any of these leks, so each will retain its inactive status and will be visited again in approximately five years. Following the 2020 field season, one baseline lek was upgraded to active status and another was downgraded to inactive status, leaving the count of known active leks on or near the INL Site at 40 (Figure 2-1).

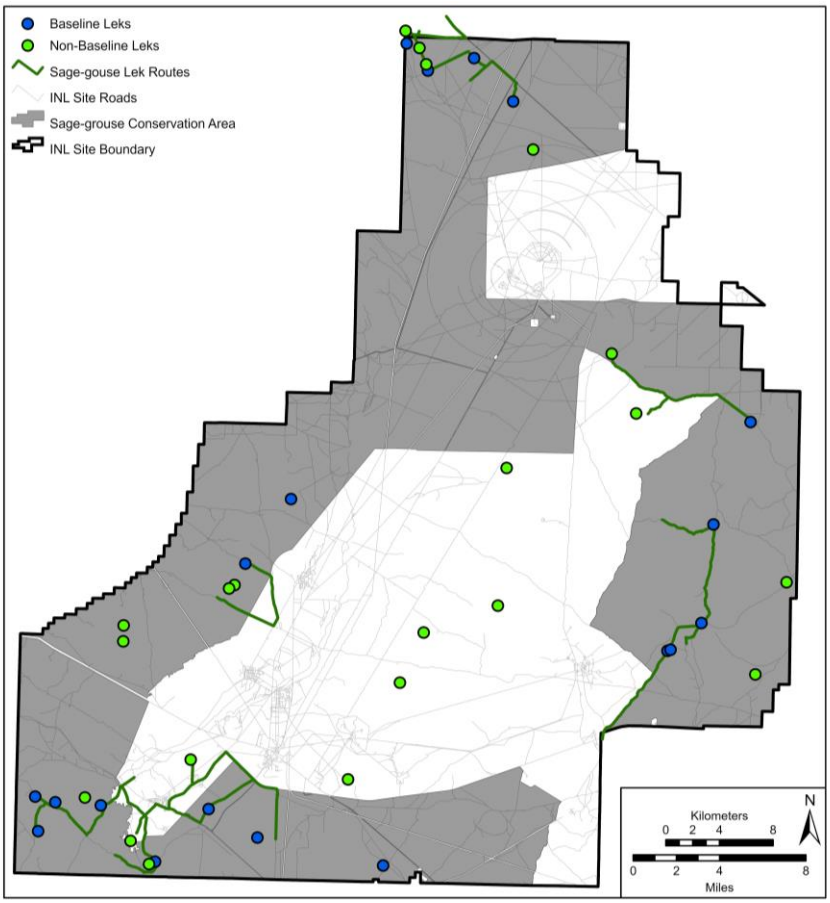

Figure 2-1. Location of 40 leks on or near the Idaho National Laboratory Site that were classified active following the 2020 field season.

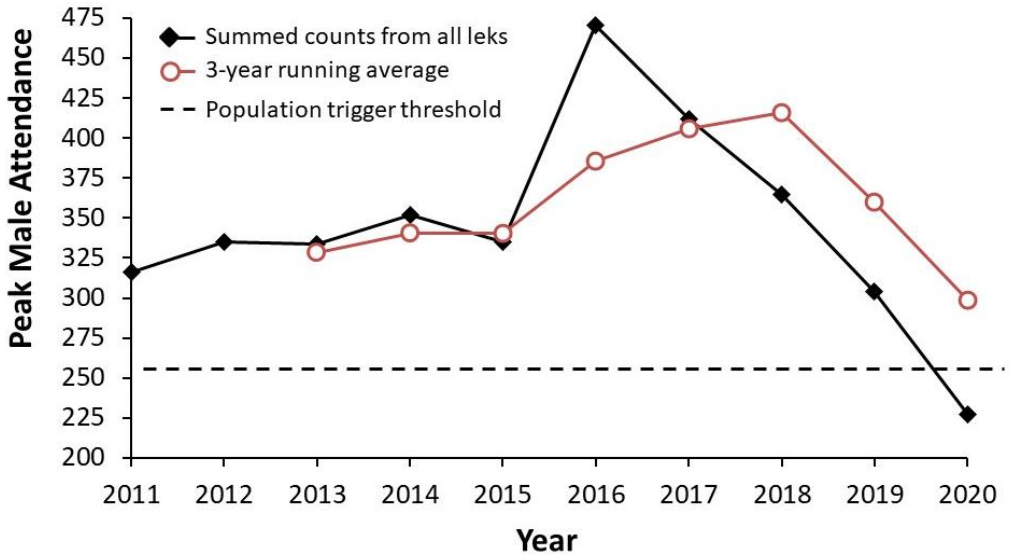

Figure 2-2. Peak male attendance of greater sage-grouse on the 27 leks in the Sage-grouse Conservation Area that are the basis for the population trigger. The population trigger will be tripped if the 3-year running average falls below the indicated threshold.

3. HABITAT TRIGGER MONITORING

Areas designated as sagebrush habitat will change through time based on gradual changes in vegetation composition and abrupt changes caused by wildland fire. Two monitoring tasks are designed to identify vegetation changes across the landscape and assist in maintaining an accurate record of the condition and distribution of sagebrush habitat within the SGCA to facilitate annual evaluation of the habitat trigger.

3.1 Task 5—Sagebrush Habitat Condition Trends

Summary of Results: Overall, intact sagebrush habitat remained in good condition based on 2020 summary metrics compared to a five-year baseline dataset. Trend analyses in sagebrush habitat indicate cover for introduced species slightly fluctuated but remained a minor component in comparison to native species. These results indicate intact sagebrush habitat is resistant to dominance by non-native species. Conversely, adjacent post-fire communities exhibit greatly amplified fluctuations of cheatgrass cover in response to seasonal distribution of precipitation events.

3.1.1 Introduction

This section of the Summary Report specifically addresses a dataset collected yearly from permanent vegetation monitoring plots distributed throughout the INL Site. Annual plot vegetation abundance and structure data were summarized from plots in polygons mapped as sagebrush habitat. Sagebrush habitat condition characteristics are evaluated by comparing the current year's metrics against baseline values. The baseline ranges were calculated from 48 vegetation monitoring plots over a five consecutive year period (2013–2017) for vegetation cover, vegetation height, and sagebrush density (Shurtliff et al. 2019*b*). Additionally, trend analyses use eight years of vegetation cover data to examine yearly patterns from native and non-native plant functional groups (i.e., shrubs, grasses, and forbs), providing ecological context. Concluding with vegetation composition comparisons between intact sagebrush habitat plots and plots located in areas recovering from wildland fire disturbance.

3.1.2 Results and Discussion

Several wildland fires have affected permanent vegetation monitoring plots but did not affect 2020 sampling. From the original 48 annual sagebrush habitat monitoring plots, five have been reclassified as non-sagebrush monitoring plots after wildland fire disturbance. In 2020, vegetation data were collected on a total of 45 annual sagebrush habitat plots. Although two plots were burned in the 2020 Telegraph Fire, field technicians successfully sampled vegetation plots prior to the wildland fire disturbance providing sufficient data for habitat conditions analyses.

Overall, 2020 summary vegetation data indicated intact sagebrush habitat is in good condition when compared to baseline data (Table 3-1; Table 3-2). Sagebrush habitat plots remain dominated by sagebrush (*Artemisia spp.*) species (Shurtliff et al. 2021) and sagebrush species cover was slightly greater than baseline. Sagebrush species height measurements were slightly below baseline but within the lower range limit. Perennial grass/forb cover was one and a half times greater than baseline (16%), exceeding the upper limit of the baseline range. Perennial grass/forb height was below baseline, but within recorded baseline ranges. Sagebrush density was lower than baseline and likely reflected low juvenile sagebrush recruitment.

Table 3-1. Summary of selected vegetation measurements for characterization of condition of sagebrush habitat monitoring plots* on the Idaho National Laboratory Site in 2020.

2020 Summary	Mean Cover (%)	Mean Height (cm)	Mean Density (individuals/m^2)
Sagebrush	23.05	46.24	3.45
Perennial Grass/Forb	16.17	19.93	

*sample size was reduced from 48 to 45 in 2020 due to wildland fire in 2019.

Table 3-2. Five-year averages of selected vegetation measurements for characterization of condition of sagebrush habitat plots on the Idaho National Laboratory Site. Baseline values were generated from vegetation monitoring plot data from 2013–2017. Standard Error (SE) is the variance.

Baseline Summary	Mean Cover (%)	SE	Mean Height (cm)	SE	Mean Density (individuals/m^2)	SE
Sagebrush	21.27	±0.33	47.81	±0.98	5.19	±1.80
Perennial Grass/Forb	9.99	±2.53	20.70	±3.67		

Trend analyses use vegetation cover data collected from sagebrush habitat plots since this monitoring effort began in 2013 (Figure 3-1; Figure 3-2). Shrub cover values slightly varied but are likely not ecologically meaningful. Herbaceous vegetation functional group cover values have greatly varied. Specifically, native perennial grasses trended upward from 2014 to 2018; however, they are returning from the upper end of their range of variability and likely stabilizing near their central baseline value of 10% absolute cover. Additionally, cover data from introduced annual grasses slightly fluctuated over the past four years but remained a minor component in comparison to native functional groups (Figure 3-2). Cheatgrass (*Bromus tectorum*) is the only introduced annual grass represented in this dataset. Cheatgrass cover has remained low within sagebrush habitat, suggesting intact sagebrush plant communities are resistant to cheatgrass dominance.

There are additional vegetation monitoring plots located in recovering burned areas known as non-sagebrush plots (Shurtliff et al. 2016*b*). Compared to intact sagebrush habitat, post-fire plant communities exhibit greatly amplified patterns of cheatgrass cover fluctuations (Shurtliff et al. 2021). Cover from the invasive annual grass reached a high in 2017, but then declined from 2018 to 2020, likely in response to seasonal distribution of precipitation (Shurtliff et al. 2021). The threat of annual grasslands should not be underestimated because cheatgrass is found within all habitats on the INL Site and can increase precipitously in just one growing season (Forman and Hafla 2018, Shurtliff et al. 2021).

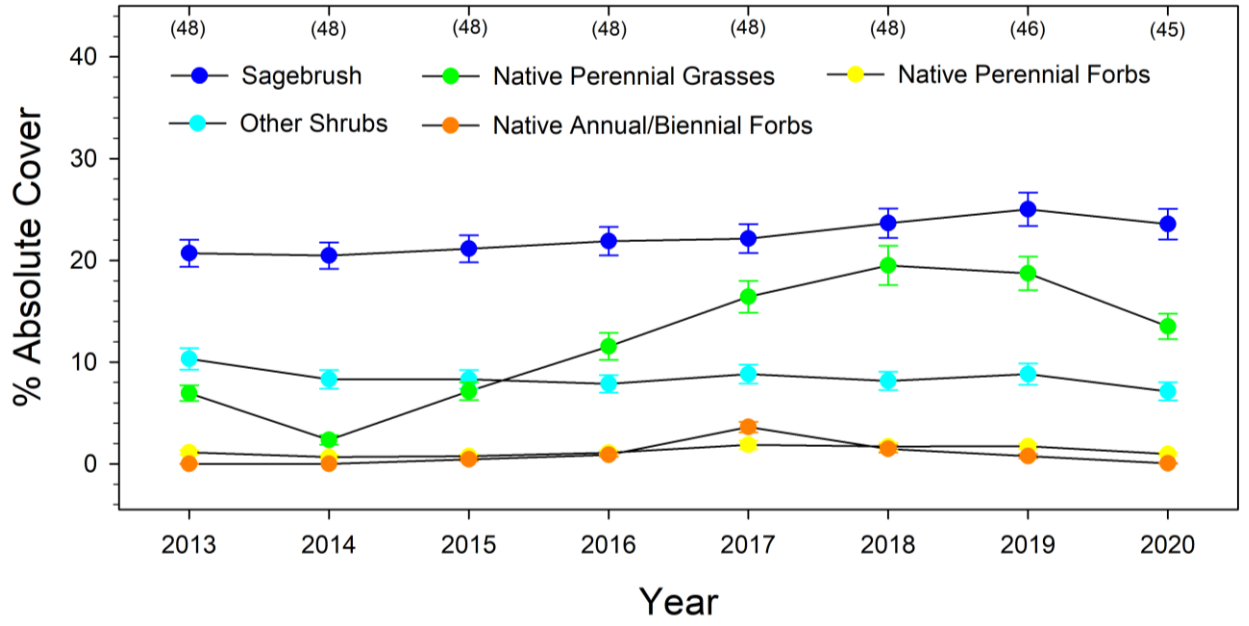

Figure 3-1. Mean cover from functional groups of native species in sagebrush habitat plots on the Idaho National Laboratory Site from 2013 through 2020. Error bars represent ± 1 SE. Tick marks along the tip denote sample size.

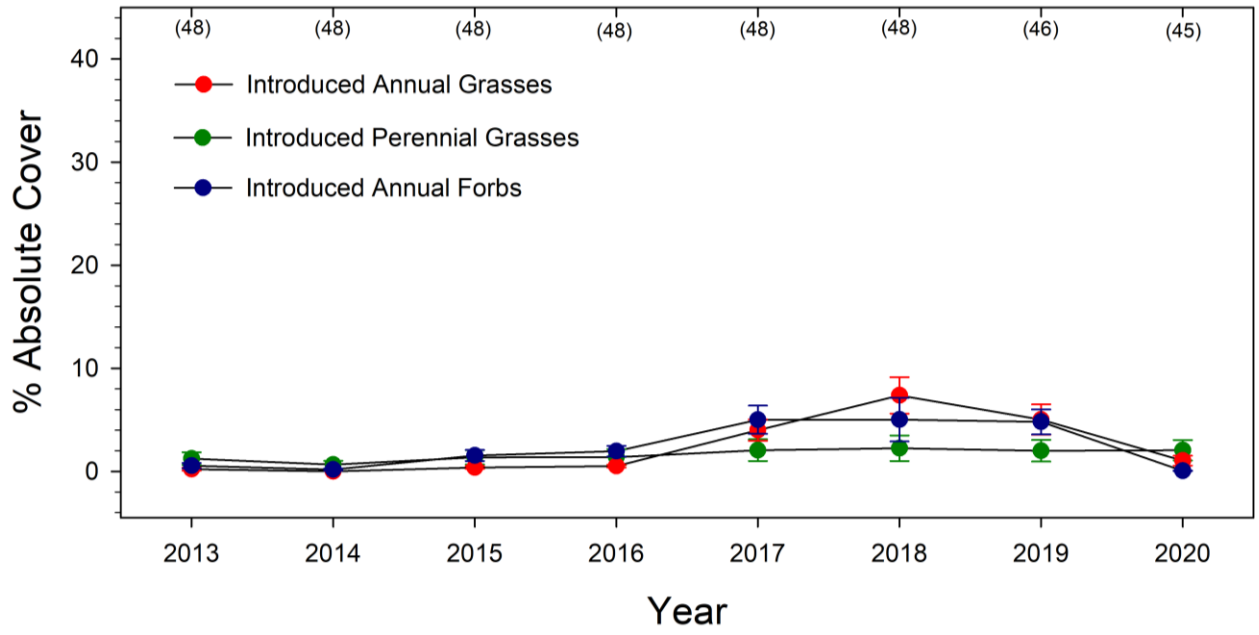

Figure 3-2. Mean cover from functional groups of introduced species in sagebrush habitat plots on the Idaho National Laboratory Site from 2013 through 2020. Error bars represent ± 1 SE. Tick marks along the top denote sample size.

3.2 Task 6—Monitoring to Determine Changes in Sagebrush Habitat Amount and Distribution

Summary of Results: Four wildland fires burned sagebrush habitat on the INL Site in 2020, resulting in 1,067.4 ha (2,637.6 ac) of sagebrush habitat removed from the SGCA. The current estimated acreage of sagebrush habitat in the SGCA is 77,486 ha (191,472.1 ac) representing a 1.4% decrease from the original baseline. These wildland fires also burned 21 ha (51.9 ac) of sagebrush habitat outside the SGCA and infrastructure expansion mapped in 2020 (see Section 4.2) removed an additional 35.7 ha (88.2 ac). The current estimated area of sagebrush habitat remaining outside the SGCA is 28,284.1 ha (69,891.5 ac).

3.2.1 Introduction

This task is intended to provide an update to the current sagebrush habitat distribution map, and primarily deals with losses to sagebrush habitat following events that alter vegetation communities. As updates are made to map classes (i.e., vegetation polygon boundaries are changed), the total area of sagebrush habitat mapped will be compared to the baseline value established for the habitat trigger to determine status with respect to the habitat trigger threshold.

3.2.2 Results and Discussion

There were five wildland fires over a hectare in size that burned on the INL Site in 2020 (Figure 3-3). Four of those fires reduced the distribution of sagebrush habitat both inside and outside the SGCA. Although the Lost River Fire did occur inside the SGCA, the burned area overlapped a previous wildland fire scar and no sagebrush habitat was present. The Telegraph Fire burned the largest amount of area and was composed entirely of big sagebrush habitat in the SGCA (Table 3-3). The Howe Peak Fire was the next largest with approximately 58% of the burned area represented as sagebrush habitat within the SGCA (Table 3-3). The CFA Complex and Cinder Butte Fires were smaller in extent and removed minimal amounts of sagebrush habitat outside the SGCA and within the SGCA, respectively (Table 3-3).

Table 3-3. Wildland fire summary statistics of the area burned and sagebrush habitat lost from the Sage-grouse Conservation Area on the Idaho National Laboratory Site in 2020.

Name	Total Area	Sagebrush Habitat (SGCA)
Howe Peak Fire	664 ha (1,640.8 ac)	382 ha (944 ac)
Telegraph Fire	677.9 ha (1,675.1 ac)	677.9 ha (1,675.1 ac)
CFA Complex Fire	17.5 ha (43.2 ac)	0*
Cinder Butte Fire	11 ha (27.1 ac)	7.5 ha (18.4 ac)

*The entire area burned was sagebrush habitat outside the SGCA

As of 2019, the sagebrush habitat area in the SGCA on the INL Site was 78,553.4 ha (194,109.7 ac). Following the fires in 2020, a total of 1,067.4 ha (2,637.6 ac) of sagebrush habitat was removed from the SGCA. The current estimated acreage of sagebrush habitat in the SGCA is 77,486 ha (191,472.1 ac) representing a 1.4% decrease from original baseline established in the CCA (DOE and USFWS 2014). This is the first year since the signing of the CCA that there has been any appreciable loss of sagebrush habitat inside the SGCA, although the loss is minimal and we do not anticipate tripping the habitat trigger in the near future.

The sagebrush habitat outside of the SGCA is considered a “conservation bank” that could be incorporated into the SGCA to replace lost sagebrush habitat resulting from wildland fire or new

infrastructure development (DOE and USFWS 2014). The wildland fires in 2020 burned 21 ha (51.9 ac) of sagebrush habitat outside the SGCA and infrastructure expansion removed an additional 35.7 ha (88.2 ac; see Section 4.2). The current estimated area of sagebrush habitat remaining outside the SGCA is 28,284.1 ha (69,891.5 ac).

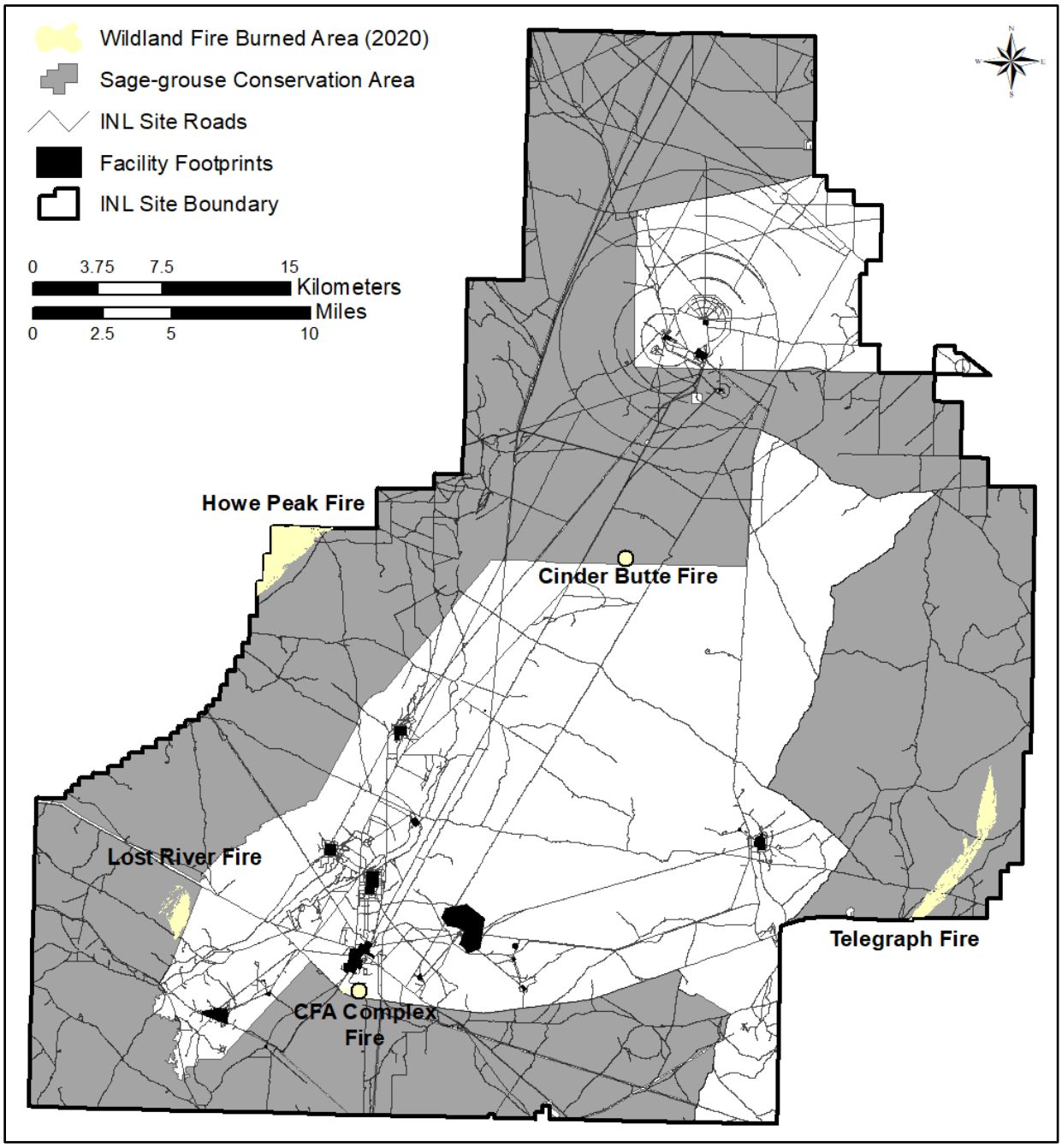

Figure 3-3. Location and mapped boundaries of wildland fires that burned on the Idaho National Laboratory Site in 2020. The Cinder Butte and CFA Complex Fires are represented as circles because the burned area is not visible at this map scale.

4. THREAT MONITORING

Certain threats that impact sage-grouse and its habitats on the INL Site require regular monitoring to understand the status of the threat and to establish baseline evidence so the success of implemented conservation actions can be evaluated. Raven predation and infrastructure development are two such threats, the monitoring of which we report on in the following sections.

4.1 Task 4—Raven Nest Surveys

Summary of Results: Observations of active common raven nests on INL Site infrastructure and in associated ornamental trees was higher in 2020 than in 2019, but there is no evidence of an increasing trend over the past seven years.

4.1.1 Introduction

Conservation Measure 10 in the CCA states that DOE will work with INL contractors and others to opportunistically reduce raven nesting on power lines and towers and at facilities (as amended, Shurtliff et al. 2019*a*). To support this effort, nearly all infrastructure on the INL Site are monitored during April and May, encompassing the core nesting period of the common raven (*Corvus corax*; hereafter, raven). The purpose of the task is three-fold: (1) to determine how many raven nests are supported each year by anthropogenic structures associated with the INL Site so DOE may be alerted to directional trends; (2) to identify structures or stretches of power line favored by ravens for nesting year after year, which may be candidates for retrofitting; and (3) to allow us to evaluate the effectiveness of deterrents after they are installed.

4.1.2 Results and Discussion

We observed 37 active raven nests on anthropogenic structures along survey routes or in trees associated with facilities in 2020. Twenty-five of the 37 nests were on power line structures. We merged four pairs of power line-based nests because they met our criteria for having been likely occupied by the same nesting pair (Shurtliff et al. 2017). As a result, the total number of active raven nests was adjusted down to 33, including 21 (64%) on power line structures (Figure 4-1). Thirteen nests on power line structures (62%) were inside or directly adjacent to the SGCA.

Of 13 facilities surveyed, we recorded nine active nests at eight facilities. Ravens also maintained nests on three towers that were outside facility footprints. These towers were all on the east side of the INL Site on cellular or meteorological towers.

The adjusted total number of raven nests recorded in 2020 was 14% higher than in 2019 (n = 29). Still, this value is lower than all other past years except 2014. Thus, there is no evidence from the seven-year data set that raven nesting on INL Site infrastructure is increasing (Figure 4-2).

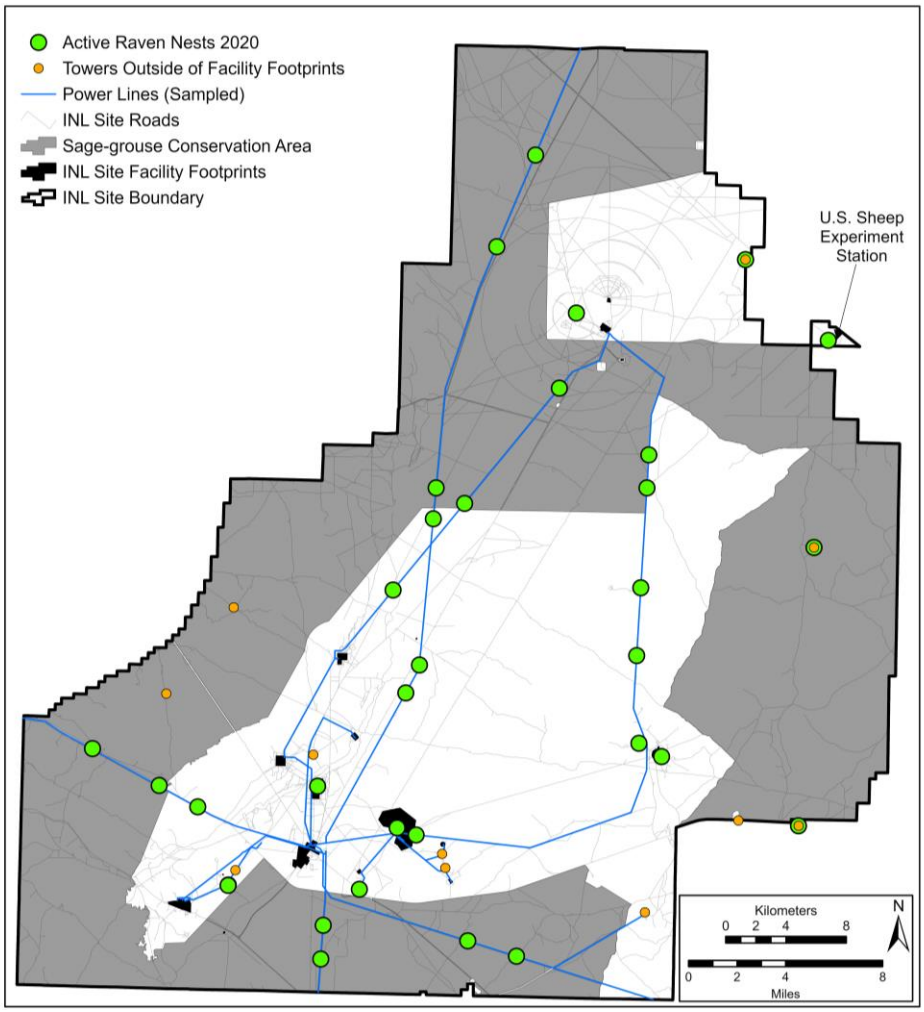

Figure 4-1. Results of the 2020 raven nest survey depicting all documented active raven nests on infrastructure, after accounting for nests that were potentially occupied by the same breeding pair.

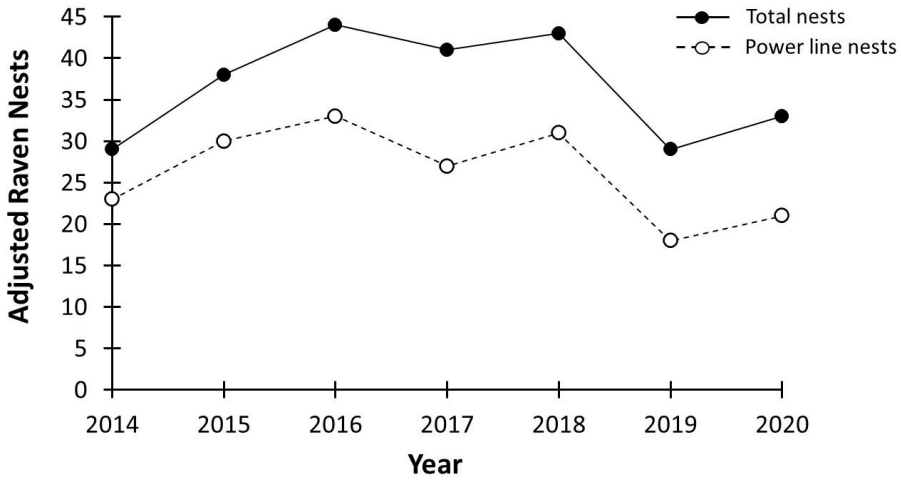

Figure 4-2. Raven nests observed on Idaho National Laboratory Site infrastructure (adjusted values).

4.2 Task 8—Monitor Expansion of the Infrastructure Footprint within the SGCA and Other Areas Dominated by Big Sagebrush

Summary of Results: There were nine locations mapped where infrastructure expansion removed sagebrush habitat resulting in a total loss of 35.7 ha (88.2 ac). However, all locations of sagebrush habitat loss from infrastructure occurred outside the SGCA. Two-tracks were found to be prevalent across the INL Site with 238.3 km (148.1 mi) of new linear features detected and mapped within the SGCA or existing sagebrush habitat. In addition to the new two-track linear features, 30.4 km (18.9 mi) of two-tracks were mapped, but when cross-referenced to previously collected imagery, these features were found to be present but missed during the last review process.

4.2.1 Introduction

Infrastructure development is considered a medium-ranked threat to sage-grouse on the INL Site. Infrastructure expansion on the INL Site occurs when facility or project footprints encroach into adjacent patches of sagebrush habitat or when new two-track linear features are created in otherwise undisturbed areas. The goal of this monitoring task is to identify where expansion of infrastructure has occurred and document and map all two-track linear features within the SGCA and other areas dominated by big sagebrush. This task serves as the mechanism to identify and report on new infrastructure and two-track linear features being developed and to update the sagebrush habitat distribution data layer due to changes across the landscape not associated with wildland fires.

This monitoring task is conducted whenever new high resolution imagery that encompasses the entire INL Site becomes available. Currently, this is reliant on the U.S. Department of Agriculture National Agricultural Imagery Program, which typically collects aerial digital imagery in Idaho every two years and is made publicly available at no cost. As other high resolution imagery becomes available (e.g., INL Site image acquisition following a large wildland fire), those data are also incorporated into the analysis to monitor infrastructure changes.

4.2.2 Results and Discussion

There were nine locations mapped where infrastructure expansion removed sagebrush habitat, resulting in a total loss of 35.7 ha (88.2 ac). All locations of sagebrush habitat loss from infrastructure occurred outside the SGCA, and the sagebrush was removed from what is considered a “conservation bank” that could be incorporated into the SGCA to replace lost sagebrush habitat resulting from wildland fire or new infrastructure development (DOE and USFWS 2014).

Two-tracks were found to be prevalent across the INL Site with 238.3 km (148.1 mi) of new linear features detected and mapped within the SGCA or existing sagebrush habitat (Figure 4-3). The previous two times this task has been reported, the longest new two-track mapped was 1.6 km (1 mi) in length with only a few mapped lines exceeding 1 km (0.6 mi) in length. This year there were 54 two-track linear features mapped that were at least 1 km (0.6 mi) in length with the longest feature reaching 5.7 km (3.5 mi).

In addition to the new two-track linear features, 30.4 km (18.9 mi) of two-tracks were mapped, but when cross-referenced to previously collected imagery, these features were found to be present but missed during the last review process (Figure 4-3). Additional linear features were identified on the INL Site in 2020; however, only features that are within or partially within either the SGCA or sagebrush habitat were included in this report.

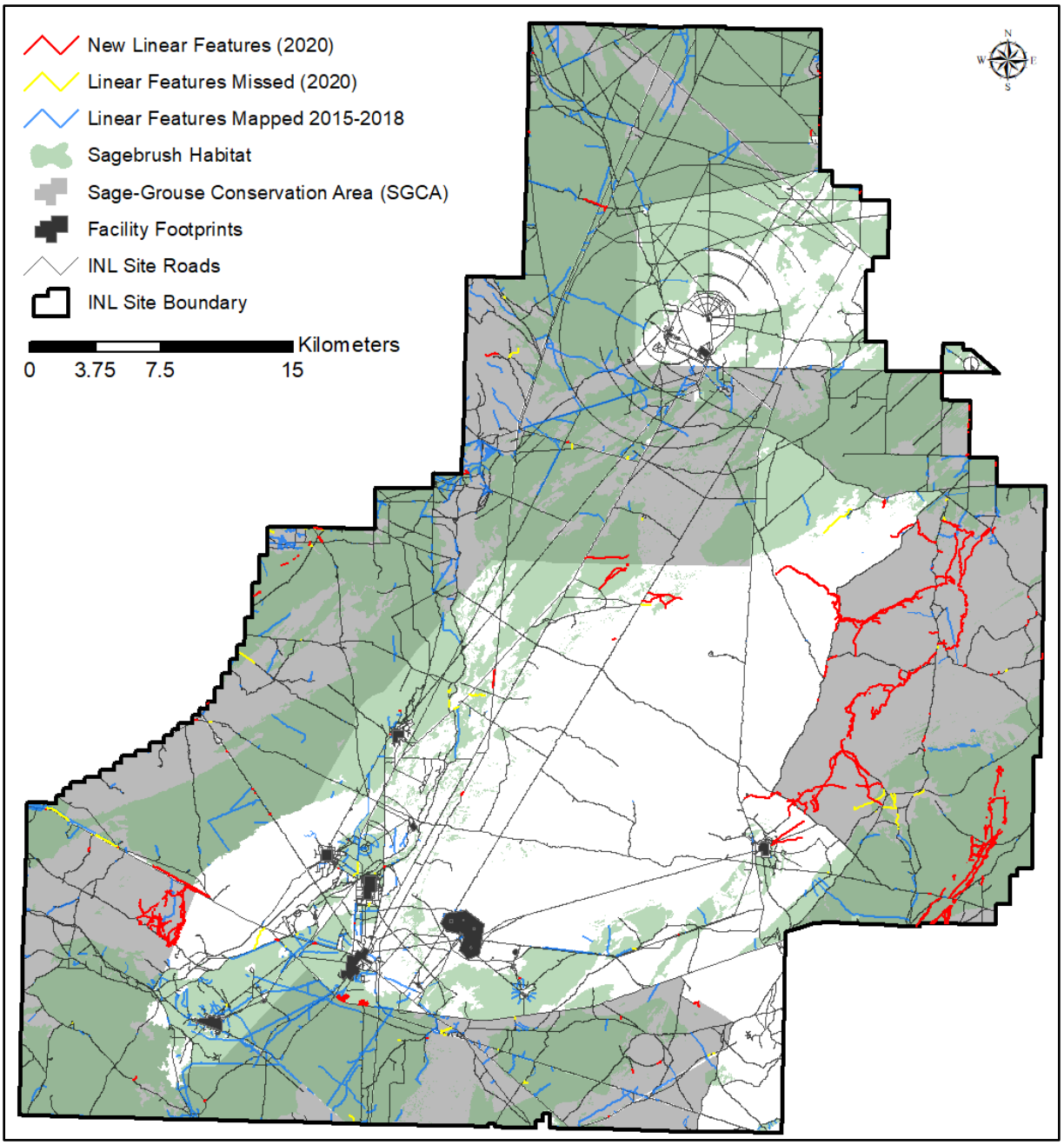

Figure 4-3. Two-track linear feature expansion mapped in 2020 within the Sage-Grouse Conservation Area or existing sagebrush habitat on the Idaho National Laboratory Site.

5. IMPLEMENTATION OF CONSERVATION MEASURES

5.1 Summary of 2020 Implementation Progress

The CCA outlines conservation measures designed to mitigate and reduce threats to sage-grouse and its habitats on the INL Site. It also articulates DOE's desire that infrastructure development results in no net loss of sagebrush. The following list highlights activities and accomplishments associated with conservation measures that DOE, contractors, and stakeholders participated in and achieved in 2020 to ameliorate threats. Minor activities and conservation measures that were not actively implemented during the past year are not listed here. For a full description, see the Appendix.

5.1.1 Threat: Wildland Fire

Conservation Measure 1—Prepare a restoration assessment following a fire >40 ha (99 acres) and, based on the assessment, develop a plan to hasten sagebrush reestablishment.

- The INL Wildland Fire Committee recommended that a post-fire assessment and recovery plan be developed for three 2020 fires that were greater than 40 ha and an 11-ha (28-acre) fire that burned in the SGCA and required containment lines.
- With the help of agency partners, DOE strip seeded approximately 10,117 ha (25,000 ac) of the Sheep Fire with big sagebrush in February 2020.
- The INL has committed resources and is planning to conduct weed control on noxious weeds within the Sheep Fire footprint and areas that are at high risk of cheatgrass dominance.
- ESER facilitated the planting of 20,000 sagebrush seedlings within historical wildland fire scar.

5.1.2 Threat: Infrastructure Development

Conservation Measure 2—Adopt Best Management Practices outside facility footprints.

- Multiple projects co-located new infrastructure with existing infrastructure to avoid damage to sagebrush.

5.1.3 Threat: Livestock

Conservation Measure 5—Encourage Bureau of Land Management (BLM) to take steps to keep livestock off leks; provide updated lek locations.

- The Twin Buttes Allotment permit renewal is currently in a Protest and Appeal period, and when a Final Decision is published, Terms and Conditions on the permits will be amended.

Conservation Measure 6—Communicate and collaborate with BLM to maintain the herbaceous understory for the benefit of sage-grouse and to ensure rangeland improvements follow guidelines.

- ESER provided data from the CCA Habitat Condition monitoring task to the BLM district office to support allotment assessments of the Quaking Aspen Allotment. DOE and ESER also engaged BLM in multiple post-fire activities related to the Sheep Fire.
- DOE provided support for a 2019 decision by BLM to permit installation of an underground pipe to maintain water troughs in the Deadman and Quaking Aspen allotments. This will allow for a more reliable water source, resulting in better livestock distribution and less road traffic.

5.1.4 Threat: Landfills and Borrow Sources

Conservation Measures 8 and 9—Do not disturb lekking sage-grouse at borrow sources and ensure sagebrush habitat is not lost due to borrow pit or landfill development.

- INL complied with seasonal and time of day restrictions.
- No new borrow pits or landfills were opened.

5.1.5 Threat: Raven Predation

Conservation Measure 10—Opportunistically reduce raven nesting on infrastructure.

- INL Power Management installed 16 new transmission-line crossarms in place of existing double wooden crossarms. The new crossarms deter nesting inherently because only one narrow beam is available for birds to build upon.

5.1.6 Threat: Human Disturbance

Conservation Measures 12 and 13—Minimize human disturbance of sage-grouse on leks across the INL Site and nesting hens within the SGCA.

- All CCA requirements were met, and restrictions followed at the National Security Test Range.
- No meteorological, sound detection and ranging, or other cell towers were erected within 1 km (0.6 mi) of a sage-grouse lek or within the SGCA.

5.2 Reports on Projects Associated with Conservation Measures

Since the CCA was signed, DOE, INL, and ESER have implemented activities on an as-needed or recurring basis to reduce the impact of wildland fire to sage-grouse habitats and to support the objective of Conservation Measure 1 (Appendix 1). These activities were not specifically called out in the CCA, but year-end results and updates are provided in this report because of their relevance to the mitigation of impacts from wildland fires.

5.2.1 Conservation Measure 1—Post-fire Recovery Planning, Implementation, and Monitoring

Summary of Results: Post-fire ecological recovery actions will continue to be implemented on the Sheep Fire including: noxious weed control, cheatgrass treatment, and sagebrush restoration. Emergency stabilization has been completed on the 2020 fires and post-fire recovery plans will be developed for four fires.

Introduction

The threat level of wildland fire was ranked as high in the CCA (DOE-ID and USFWS 2014) and wildland fire is one of the top threats to sage-grouse across their range (Federal Register 2010). Based on the analysis of the threat of wildland fire to sage-grouse, a conservation measure was developed for inclusion in the CCA that stated an assessment evaluating the need for post-fire restoration would be prepared and DOE would guide an approach for hastening sagebrush reestablishment on fires larger than 40 ha (99 ac.). After the CCA was signed, the INL Site did not experience any wildland fires meeting the conservation measure criteria for nearly five years, but several larger fires burned in 2019 and 2020.

2019—Sheep Fire

In 2019, the Sheep Fire burned more than 40,000 ha (98,842 ac) of land on the INL Site. Under the direction of INL's Wildland Fire Management Committee (WFMC), the ESER Program completed the Sheep Fire Ecological Resources Post-Fire Recovery Plan in January 2020 (Forman et al. 2020). Several natural resource recovery goals were identified within the plan and they were organized into four primary recovery objectives: 1) Soil stabilization for erosion and weed control immediately post-fire, 2) Cheatgrass and noxious weed control within the larger burned area, 3) Native herbaceous recovery, and 4) Sagebrush habitat restoration.

Soil stabilization efforts were completed on the Sheep Fire containment lines in 2020. Noxious weed control is an ongoing effort across the INL Site; however, the Sheep Fire burn area was a primary focus area in 2020. Upon finalization of the recovery plan in 2020, the WFMC met and prioritized restoration/treatment actions within two post-fire recovery objectives: cheatgrass control and big sagebrush habitat restoration.

The ESER Program monitored areas at high risk of cheatgrass invasion during the summer of 2020 to prioritize areas that would benefit from pre-emergent herbicide application (Figure 5-1). Results from monitoring were used to identify four 809-ha (2000-ac) polygons meeting the criteria for herbicide application. The polygons were prioritized so that the area most likely to respond well to treatment will be sprayed first and additional areas can be added as funding allows. The INL will spray cheatgrass beginning in 2021.

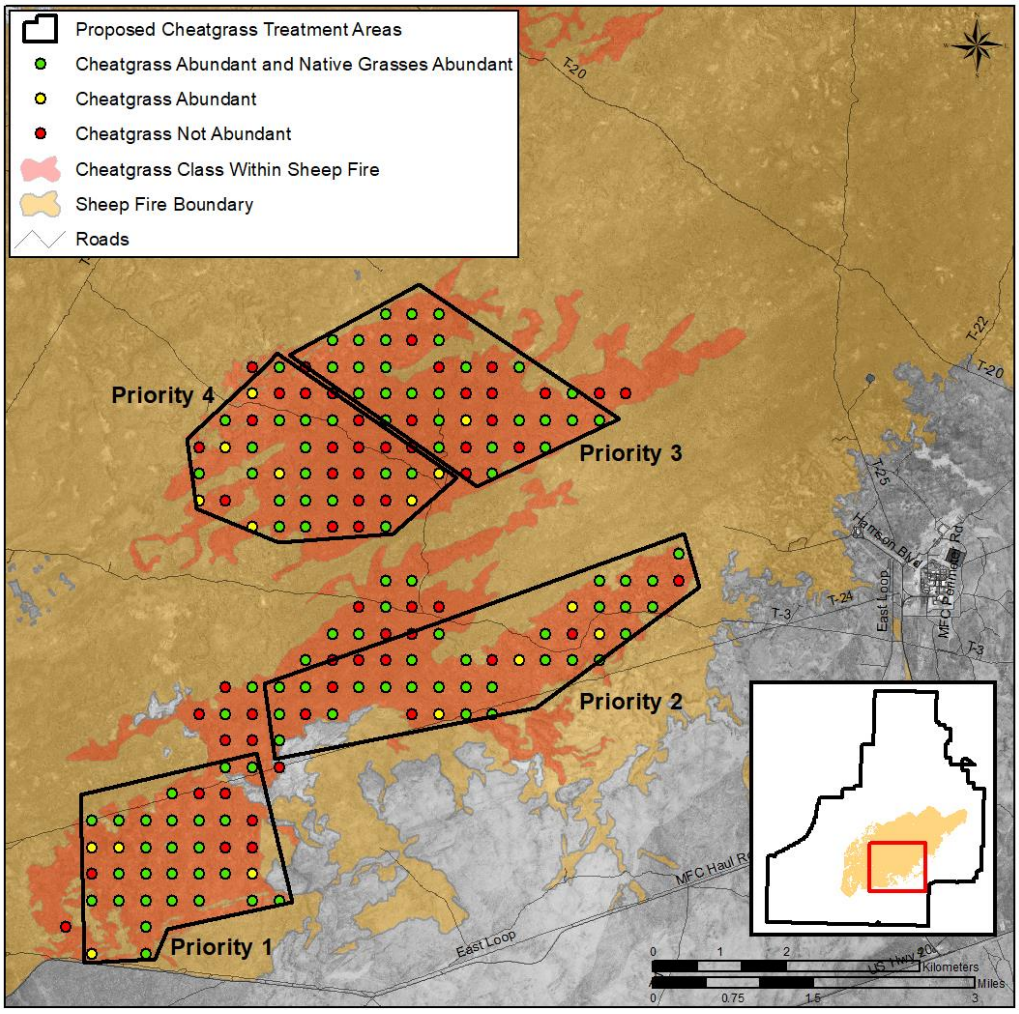

Figure 5-1. Results of cheatgrass monitoring to identify high priority treatment areas for pre-emergent herbicide application within the Sheep Fire footprint on the Idaho National Laboratory Site.

DOE and agency stakeholders collaboratively pursued aerial sagebrush seeding on portions of the Sheep Fire during the winter of 2019/2020. The seeding was completed across a target area of approximately 10,100 ha (25,000 ac) in and adjacent to the SGCA, and ESER monitored germination and establishment

of sagebrush in the seeded areas the following summer (Figure 5-2). There were no sagebrush seedlings observed that could be attributed to the aerial seeding.

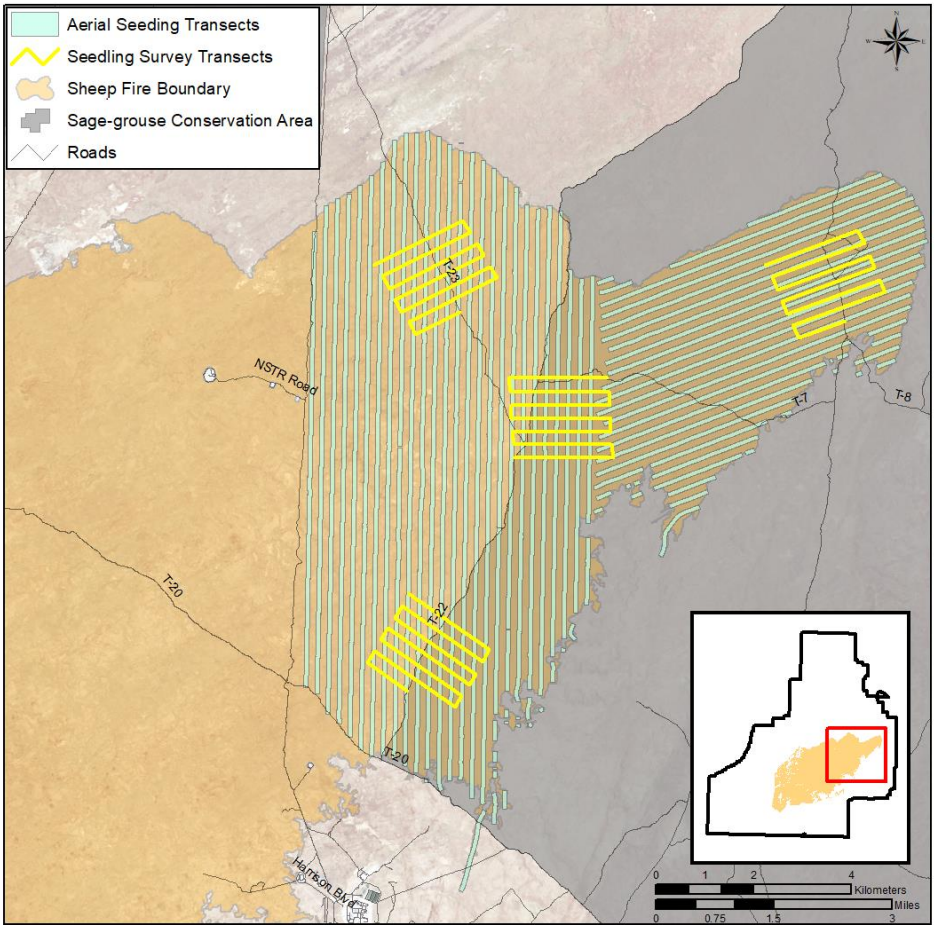

Figure 5-2. Flight lines for sagebrush seed aerial application on the Idaho National Laboratory Site, completed in February 2020 and survey transects used to assess germination and establishment of sagebrush seed; surveys were completed in August 2020.

Precipitation during several spring and summer months in 2020 were below long-term averages. The inherent uncertainty associated with aerial seeding combined with unfavorable precipitation patterns likely led to poor conditions for germination and establishment. Seed can remain viable for a few years and conducive weather conditions in 2021 could still result in some germination. Nevertheless, the WFMC has directed ESER to develop a plan for planting sagebrush seedlings in high priority restoration areas on the Sheep Fire in 2021 because initial monitoring results indicated poor establishment from the aerial seeding. DOE-ID authorized the collection of enough local sagebrush seed to support this and other seedling planting efforts on the INL Site over the next few years. Approximately 18 kg (40 lbs) of hand-stripped seed were collected in October 2020 and were shipped to a U.S. Forest Service Seed Extractory for cleaning and storage.

2020—Multiple Fires

In 2020, there were two very small wildland fires (<1000 m^2 or 0.25 ac) and five wildland fires ranging in size from 11 ha (27 ac) to 678 ha (1,675 ac) on the INL Site (Figure 3-3). Only three of the five fires

were large enough to meet the wildland fire conservation measure criteria; however, the WFMC requested an ecological assessment and fire recovery plan for four of the fires: the Howe Peak Fire, the Telegraph Fire, the Cinder Butte Fire, and the Lost River Fire (see Section 3.2.1 for more information on the fires).

Compared to past INL Site and other regional fires that ignited and burned under similar conditions, the amount of area impacted by the 2020 fires was relatively small. In 2020, the INL Fire Department applied a lot of effort toward implementing Sheep Fire lessons learned and these measures proved effective in improving fire suppression performance during the initial attack period and minimizing fire size. The INL Fire Department also appreciated the assistance received from BLM and other support agencies in aggressively addressing fires on the INL Site in 2020.

During the fall of 2020, the INL completed emergency stabilization actions on the fires that burned the previous summer including: recontouring containment lines on the fires where they were used, reseeding with native seed, and spraying noxious weeds, especially in disturbed soils on and around containment lines. INL is drafting an Environmental Compliance Permit that will expedite the National Environmental Policy Act process for non-emergency restoration actions and the ESER Program will complete an ecological resources post-fire recovery plan for four fires. The post-fire recovery plan for the 2020 fires will include an assessment the ecological impacts of four 2020 fires and it will address the same four primary recovery objects as the Sheep Fire Ecological Resources Post-Fire Recovery Plan.

5.2.2 Conservation Measure 1—Sagebrush Seedling Planting for Habitat Restoration

Summary of Results: *ESER managed the planting of 20,000 sagebrush seedlings in fall of 2020 in an area prioritized for restoration. Survivorship of seedlings planted in 2019 was at least 4.6%.*

Introduction

The objective of Conservation Measure 1 is to minimize the impact of habitat loss due to wildland fire and fire-fighting activities (Section 5.1). DOE began implementing the planting of sagebrush seedlings as an annually recurring task in 2015. This task facilitates planting at least 5,000 sagebrush seedlings each fall in priority restoration areas on the INL Site (DOE and USFWS 2014).

Results and Discussion

MP Forestry of Medford, Oregon, planted 20,000 seedlings on 46.5 ha (114.8 acres), or ~430 seedlings per ha (~175 seedlings per acre), on October 7, and 8, 2020, in the northeastern part of the INL Site (Figure 5-3). We marked the locations of 540 (~2.7%) seedlings for future monitoring.

To quantify 2019 seedling survivorship and condition, we revisited 500 sagebrush seedlings in September 2020. Survivorship surveys found 16 (3.2%) healthy, seven (1.4%) stressed, 122 (24.4%) dead, and 355 (71%) were missing. Assuming the missing seedlings were dead, a total of 4.6% of revisited seedlings survived the first year. Comparison to previous sagebrush planting survivorship and average water year precipitation is shown in Figure 5-4. While the cause of low survivorship in 2019 is ultimately unknown due to many variables, the low precipitation would appear to be a major contributing factor.

Sagebrush restoration has now been initiated on 218.4 ha (539.7 acres). Over the past five years, a total of 72,000 seedlings have been planted from all funding sources. This exceeds the 5-year objective of habitat restoration efforts by 60.6 ha and 47,000 seedlings (Shurtliff et al. 2016*a*).

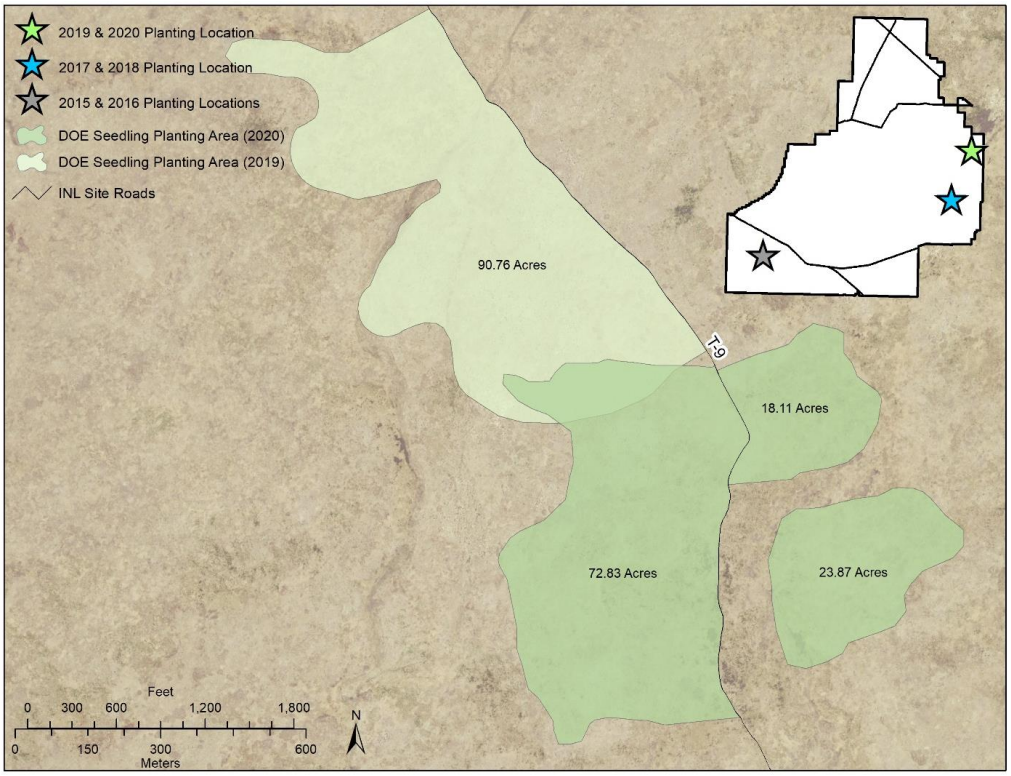

Figure 5-3. Area within the Jefferson Fire scar on the Idaho National Laboratory Site that was planted with big sagebrush seedlings in 2020.

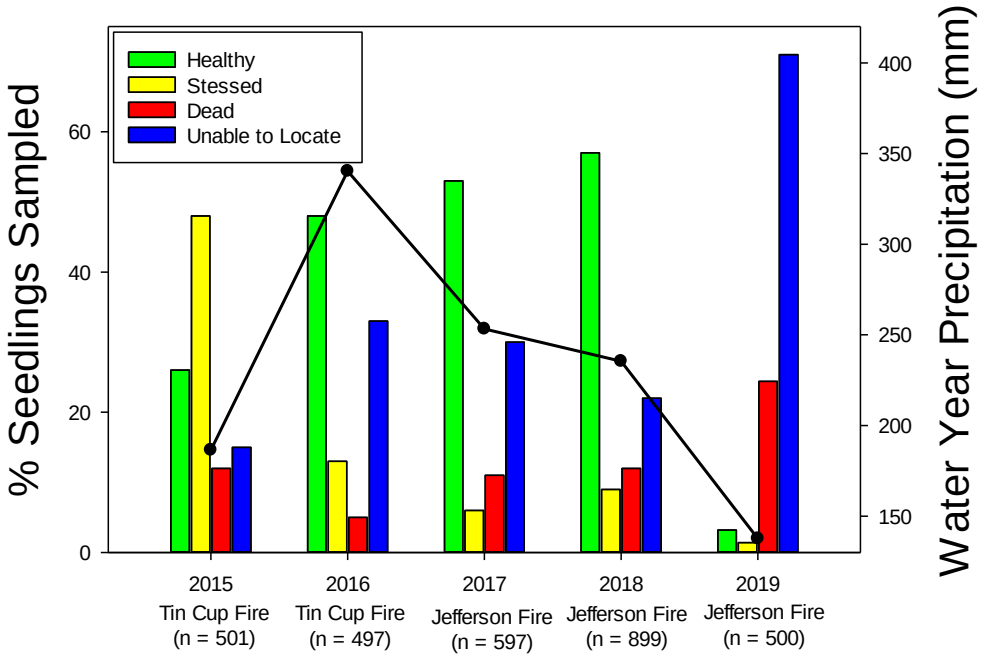

Figure 5-4. Sagebrush seedling survivorship each year since 2015. The black line and dots indicate the fluctuations in water year precipitation levels (October of planting year to September following year).

6. SYNTHESIS AND ADAPTIVE MANAGEMENT

6.1 Sage-grouse and Sagebrush Habitat Trends

The IDFG monitors sage-grouse populations in Idaho by dividing all sage-grouse habitats into four Conservation Areas (CAs) and further distinguishing areas within the CAs as Priority or Important Habitat Management Areas (HMAs; Governor's Sage-grouse Task Force 2012; Figure 6-1). Hence, there are eight HMAs across the state. Adaptive management triggers can be tripped for any HMA if the current 3-year average of male counts on lek routes declines 10% (soft trigger) or 20% (hard trigger) compared to 2011 counts (other criteria are also considered; Governor's Sage-grouse Task Force [2012], BLM [2019]).

The INL Site falls within the Desert CA and the Mountain Valleys CA. In 2019 and 2020, hard triggers were tripped in the Desert Priority and Important HMAs and in the Mountain Valleys Priority HMA (a soft trigger was also tripped in the Mountain Valleys Important HMA in 2019). Over the past five years (2016-2020), the 3-year lek count average declined 38% to 45% on each of the three HMAs in which hard triggers were tripped (Moser 2020). During the same period, the 3-year running average of lek counts on the 27 baseline leks on the INL Site declined 23%. Although we do not analyze baseline lek counts in the same way that the IDFG analyzes lek routes, the concordant direction of recent trends on the INL Site and across regional HMAs suggests the decline in lek counts on the INL Site is not a local anomaly.

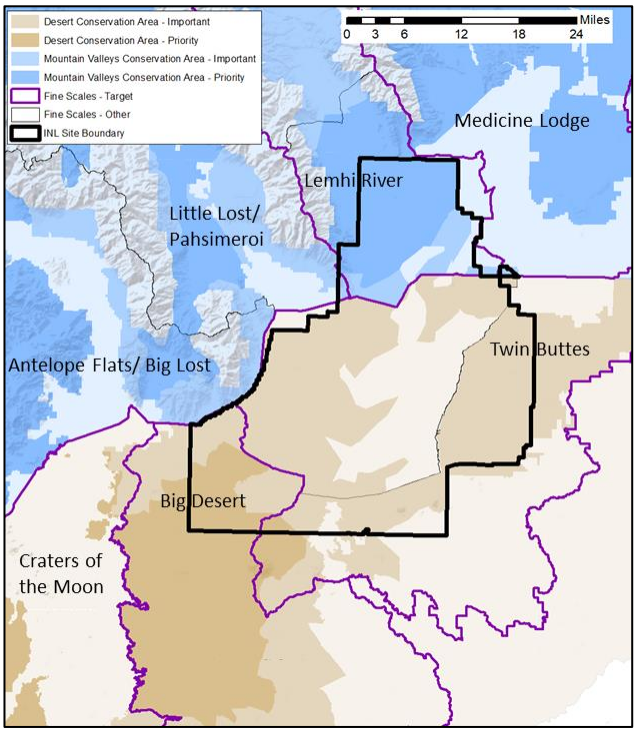

Figure 6-1. Two Idaho Conservation Areas (Desert and Mountain Valleys), with emphasis on Important and Priority Habitat Mangement Areas within each. Fine-Scale Areas are named, and those experiencing substantial population declines are outlined in purple. Figure was adapted from Ellsworth et al. (2019) using data provided by Bonnie Claridge, Idaho BLM, in January 2021.

An inter-agency Idaho Adaptive Management Team (hereafter Adaptive Management Team) recently completed a preliminary causal factor analysis for HMAs that tripped hard and soft adaptive management triggers in 2018 and 2019. To do so, they examined "fine-scale areas" (Figure 6-1) that have had precipitous lek count declines, and they talked with local experts to understand what might have caused

these declines. The Adaptive Management Team identified a fine-scale area called Twin Buttes (includes nearly all the INL Site and stretches from the western edge of the Sand Creek area north of Rexburg to the Big Desert area) as one of those areas that had experienced precipitous declines in lek counts. The Adaptive Management Team determined that repeated wildfires were the most significant issue in the Twin Buttes area. During multi-agency meetings held in Idaho Falls and Burley, local biologists identified other potential impacts within the region including the detrimental role of cheatgrass, agricultural practices, and a lack of a full complement of forb and grass species in sagebrush communities (Ellsworth et al. 2019).

On the INL Site, wildland fire continues to be the single greatest threat to sage-grouse due to its potential to rapidly remove sagebrush habitat from the landscape. Even though the INL Site lost virtually no sagebrush habitat to wildland fires between 2012 and 2019, declining lek counts since 2016 are likely attributable to cumulative impacts of fires on the INL Site and across the region over the last 25 years. Compounding the negative effects of sagebrush habitat loss, areas recovering from wildland fires are threatened by non-native annual grasses and are at greater risk of being dominated by cheatgrass, as demonstrated by the ESER habitat monitoring program. Fortunately, intact sagebrush habitat on the INL Site appears to be resistant to cheatgrass dominance and is generally in good condition.

Growing evidence indicates high raven abundance impacts sage-grouse reproduction through nest predation and avoidance of otherwise good nesting habitat by female sage-grouse (e.g., Coates et al. 2020, Dinkins et al. 2012). The Adaptive Management Team examined regional raven occurrence probabilities developed by O'Neil et al. (2018), which indicated there was a higher probability of raven occurrence in the Medicine Lodge and Lemhi River areas than in the Twin Buttes area. This suggests sage-grouse may experience relatively less impacts from raven predation in the latter area (Ellsworth et al. 2019). A more recent modeling exercise predicted that in the northern, southwestern, and east-central areas of the INL Site, sage-grouse reproduction is likely being impacted by raven predation (Coates et al. 2020). No data are available to confirm this prediction, and although we don't know what impact ravens have on sage-grouse on the INL Site, annual monitoring by ESER suggests their impact is not increasing.

Concerns for the future of sage-grouse in Eastern Idaho are justified given the substantial amount of sagebrush that has burned in recent years. It is possible, however, that recent declines in sage-grouse populations from loss and degradation of sagebrush habitats are being exacerbated by broad-scale climatic and environmental factors that have historically resulted in cyclic population trends in Idaho (Rich 1985, Row and Fedy 2017). If regional sage-grouse abundance is naturally cyclic, and if regional threats do not overwhelm that trajectory to break the cycle, we may find in the next three or four years that lek counts stabilize.

6.2 Proposed Changes

No changes to the CCA were proposed in 2020, but two proposals made in 2019 are still being considered by the USFWS. The first proposal was that the basis of the population trigger be changed from 27 SGCA baseline leks to the six lek routes, or perhaps to all active leks (either in the SGCA or the entire INL Site). The CCA anticipated a change to the current "interim population trigger" once new lek routes were created. The second proposal was to update the estimated area of sagebrush habitat in the SGCA, which is the basis for the habitat trigger. The ESER program updated the INL Site vegetation classification and map in 2019, resulting in a refined estimate of sagebrush habitat in 2011 that was 8% lower than the original estimate.

6.3 Adopted Changes

The USFWS and DOE made no changes to the CCA or associated monitoring tasks in 2020.

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APPENDIX—ACCOMPLISHMENTS IN 2020 FOR EACH CONSERVATION MEASURE

Threat:	Wildland Fire
Objective:	Minimize the impact of habitat loss due to wildland fire and firefighting activities.
Conservation Measures:	1. Prepare an assessment for the need to restore the burned area. Based on that assessment, DOE would prepare an approach for hastening sagebrush reestablishment in burned areas and reduce the impact of wildland fires >40 ha (99 acres).

Conservation Measure 1—Accomplishments in 2020:

BURN ASSESSMENT—Five wildfires over one hectare in size occurred on the INL Site in 2020, burning an estimated 1,934 ha (4,779 ac)[1]. The INL Wildland Fire Committee recommended that a post-fire assessment and recovery plan be developed for the three fires that were greater than 40 ha and an 11-ha (28-acre) fire that burned in the SGCA and required containment lines. The plan, which will be completed by spring 2021, will include an assessment of the natural resources impacted by the fire and provide numerous restoration options for improving habitat recovery.

Associated Conservation Actions that Addressed the Wildland Fire Threat:

FIREFIGHTING ACTIVITIES—The INL fire department applied many lessons learned from the 2019 Sheep Fire to aggressively attack the 2020 wildfires and minimize fire size. Most of this effort was directed toward improving coordination and deployment of bulldozer and support resources and creating a new bulldozer boss function to improve their performance. The fire department also invested in a tactical tender that allowed crews to engage initial attack more aggressively and safely (i.e., all firefighters in the cab of the vehicle could attack the blaze with triple the onboard water supply). The fire department gratefully acknowledges the support from BLM and other support agencies, which made it possible to aggressively combat the fires (Personal Communication with Eric Gosswiller, INL Fire Chief, 11/19/2020).

POST FIRE ADAPTIVE MANAGEMENT—In early 2021, BLM will close areas to livestock grazing that were impacted by two wildfires on the INL Site in 2020, the Telegraph Fire and the Lost River Fire (Personal Communication with Jordan Hennefer, Rangeland Management Specialist, BLM, 11/13/2020).

With the help of agency partners, DOE strip seeded approximately 10,117 ha (25,000 ac) of the Sheep Fire with big sagebrush in February 2020.

The INL dedicated funding to experiment with control measures in select areas of the Sheep Fire footprint that are at high risk of cheatgrass dominance. The first control measure to be used is aerial spraying of a pre-emergent, which will be applied in the early fall of 2021. The sample area is approximately 809 ha (2,000 ac). These actions are intended to improve understory conditions and increase the likelihood that high-quality sagebrush habitat will return.

Threat:	Infrastructure Development
Objective:	Avoid new infrastructure development within the SGCA and 1 km (0.6 mi) of active leks and minimize the impact of infrastructure development on all other seasonal and potential habitats on the INL Site.
Conservation Measures:	2. Adopt Best Management Practices outside facility footprints for new infrastructure development. 3. Infrastructure development within the SGCA or within 1 km (0.6 mi) of an active lek will be avoided unless there are no feasible alternatives.

Conservation Measure 2—Implementation of Best Management Practices in 2020:

[1] Unpublished wildland fire statistics summary for 2020; Eric Gosswiller, INL Fire Chief.

Multiple projects in FY 2020 co-located new infrastructure with existing infrastructure to avoid damage to sagebrush. Test Area North (TAN)-691, maintenance and vehicle-storage building (EC INL-20-035) was sited immediately adjacent to the Specific Manufacturing Capability fence. Two storage pads at Advanced Test Reactor (ATR) Complex (EC INL-20-103) are under construction inside the fence where old underground storage tanks once sat. A snowplow turnaround on U.S. Highway 20 (EC INL-20-148) was placed in a previously disturbed gravel lot. The U.S. Environmental Protection Agency is conducting cybersecurity and infrastructure tests within the existing Critical Infrastructure Test Range Complex (CITRC) footprint (EC INL-20-126). Security equipment for TAN-676 is being installed in coordination with the Nile Ave project (EC INL-19-143 R1) to avoid disturbing additional ground (EC INL-20-110).

Conservation Measure 3—Accomplishments in 2020:

INL Environmental Support and Services staff are unaware of any infrastructure built outside exempted corridors in FY 2020.

Threat:	Annual Grasslands
Objective:	Maintain and restore healthy, native sagebrush plant communities.
Conservation Measures:	4) ~~Inventory areas dominated or co-dominated by non-native annual grasses, work cooperatively with other agencies as necessary to identify the actions or stressors that facilitate annual grass domination, and develop options for eliminating or minimizing those actions or stressors.~~ DISCONTINUED (See Section 6.2.4, Shurtliff et al. [2019*a*]).

Threat:	Livestock
Objective:	Limit direct disturbance of sage-grouse on leks by livestock operations and promote healthy sagebrush and native perennial grass and forb communities within grazing allotments.
Conservation Measures:	5. Encourage the Bureau of Land Management (BLM) to seek voluntary commitments from allotment permittees and to add stipulations during the permit renewal process to keep livestock at least 1 km away from active leks until after May 15 of each year. Regularly provide updated information to BLM on lek locations and status to assist in this effort. 6. Communicate and collaborate with BLM to ensure that the herbaceous understory on the INL Site is adequately maintained to promote sage-grouse reproductive success and that rangeland improvements follow guidelines in the BLM Land Use Plan and the CCA.

Conservation Measure 5—Accomplishments and Disturbances in 2020:

PERMIT RENEWAL—The Twin Buttes Allotment permit renewal is currently in a Protest and Appeal period, and when a Final Decision is published, Terms and Conditions on the permits will be amended (Personal Communication with Jordan Hennefer, Rangeland Management Specialist, BLM, 11/13/2020).

UPDATED INFORMATION TO BLM—DOE provided updated GIS shapefiles of active lek locations to BLM early in 2020. ESER staff also participated in a BLM and IDFG fact-finding meeting that was part of a formal causal factor analysis aimed at trying to understand why lek counts in the region have fallen steeply in recent years.

Conservation Measure 6—Accomplishments in 2019:

COMMUNICATION & COLLABORATION—Due to the Covid-19 pandemic, the annual meeting among BLM, DOE, and ESER staff did not occur in 2020 as it has in the past. However, ESER provided data from the CCA Habitat Condition monitoring task to the BLM district office to support allotment assessments of the Quaking Aspen Allotment. DOE and ESER also engaged BLM in post-fire activities related to the Sheep Fire. Specifically:

- the BLM Boise Seed Warehouse sourced about 8,000 lbs of seed for an aerial seeding effort;
- the local BLM district office contributed 1,600 lbs of sagebrush seed through excess property transfer for aerial seeding;

- a BLM fire ecologist continued participating in INL's Wildland Fire Management Committee;
- BLM offered ESER and DOE advice about aerially spraying cheatgrass post-fire;
- BLM discussed challenges and options for controlling rush skeletonweed with ESER personnel;
- BLM provided recommendations to consider for potential vendors for spaying cheatgrass and growing sagebrush seedlings.

RANGELAND IMPROVEMENTS—DOE supported a 2019 decision by BLM to permit installation of an underground pipe to maintain water troughs in the Deadman and Quaking Aspen allotments. An Environmental Assessment for the project is nearly complete, and when it is mailed out, the Protest and Appeal period will open. The project, if authorized, will allow for a more reliable water source, resulting in better livestock distribution and less road traffic (Personal Communication with Jordan Hennefer, Rangeland Management Specialist, BLM, 11/13/2020).

Threat:	Seeded Perennial Grasses
Objective:	Maintain the integrity of native plant communities by limiting the spread of crested wheatgrass.
Conservation Measures:	7. Inform INL contractors about negative ecological consequences resulting from crested wheatgrass and persuade them to rehabilitate disturbed land using only native seed mixes that are verified to be free of crested wheatgrass contamination.

Conservation Measure 7—Accomplishments in 2020:

ESER has a native perennial seed mix list that is recommended whenever contractors request information prior to revegetation work. In 2020, all revegetation work on the INL Site was performed using certified native seed as recommended by ESER.

Threat:	Landfills and Borrow Sources
Objective:	Minimize the impact of borrow source and landfill activities and development on sage-grouse and sagebrush habitat.
Conservation Measures:	8. Eliminate human disturbance of sage-grouse that use borrow sources as leks (measure applies only to activities from 6 p.m. to 9 a.m., March 15–May 15, within 1 km [0.6 mi] of active leks). 9. Ensure that no net loss of sagebrush habitat occurs due to new borrow pit or landfill development. DOE accomplishes this measure by (1) avoiding new borrow pit and landfill development in undisturbed sagebrush habitat, especially within the SGCA; (2) ensuring reclamation plans incorporate appropriate seed mix and seeding technology, and (3) implementing adequate weed control measures throughout the life of an active borrow source or landfill.

Conservation Measure 8—Accomplishments in 2020:

INL complied with seasonal and time-of-day restrictions associated with sage grouse. Per "Idaho National Laboratory Gravel/Borrow Pits (Overarching) Environmental Checklist" (EC INL-14-045), projects must complete Form 450.AP01, "Gravel/Borrow Source Request Form," before removing gravel. This form reminds gravel-pit users of restrictions in place to protect sage grouse. Projects must also submit, in writing to Environmental Support and Services personnel, that they complied with the directives in this EC. Adams Boulevard, Lincoln Boulevard, Monroe Boulevard, Ryegrass Flats, T-12, and T-28 South are covered by this EC.

Conservation Measure 9—Accomplishments in 2020:

No new borrow pits or landfills were opened in 2020. According to INL Facilities and Site Services, T-12 was closed for all use in the spring of 2020, and there are no plans to reopen it anytime soon. Expansion of existing borrow sources and landfills is limited to footprints approved in Appendix C of the Spent Nuclear Fuel Environmental Impact Statement (EIS) (DOE/EIS-0203) or the Environmental Assessment (EA) for Silt/Clay Development and Use (DOE-EA-1083). Any expansion of gravel or borrow pits that would disturb surface soil or vegetation also requires a survey of cultural and biological resources by ESER. INL Facilities and Site Services personnel assist in the identification of approved footprints.

Threat:	Raven Predation
Objective:	Reduce food and nesting subsidies for ravens on the INL Site.
Conservation Measures:	10. DOE will work with INL contractors and the National Oceanic and Atmospheric Administration to opportunistically reduce raven nesting on power lines and towers and at facilities. 11. Instruct the INL to include an informational component in its annual Environment, Safety, and Health training module by January 2015 that teaches the importance of eliminating food subsidies to ravens and other wildlife near facilities.

Conservation Measure 10—Accomplishments in 2020:

INL Power Management operates and maintains 130 miles of overhead power lines. New power lines go through the National Environmental Policy Act process to determine whether nesting deterrents are required. When Power Management performs maintenance on distribution overhead lines, they install avian protection on each structure as the engineer and linemen see fit. There are approximately five different types of avian protection devices available for install. Per the Facilities and Site Services Program Environmental Lead, Power Management installed avian protection on 83 structures in FY 2020. Power Management replaces transmission structures based on age and deterioration by installing prefabricated metal crossarms in place of the existing wooden crossarms. The new crossarms are inherently nesting deterrents because only one beam is available for birds to build on (instead of two). In FY 2020, Power Management installed 16 new transmission-line cross arms.

Conservation Measure 11: Completed

Threat:	Human Disturbance
Objective:	Minimize human disturbance of sage-grouse courtship behavior on leks and nesting females within the SGCA and 1 km (0.6 mi) lek buffers.
Conservation Measures:	12. Seasonal guidelines (March 15–May 15) for human-related activities within 1 km (0.6 mi) lek buffers both in and out of the SGCA (exemptions apply—see Section 10.9.3): • Avoid erecting portable or temporary towers, including meteorological, SODAR, and cellular towers. • Unmanned aerial vehicle flights conducted before 9 a.m. and after 6 p.m. will be programmed so that flights conducted at altitudes <305 m (1,000 ft) will not pass over land within 1 km (0.6 mi) of an active lek. • Detonation of explosives >1,225 kg (2,700 lbs) will only occur at the National Security Test Range from 9 a.m.–9 p.m. • No non-emergency disruptive activities allowed within lek buffers March 15–May 15. 13. Seasonal guidelines (April 1–June 30) for human-related activities within the SGCA (exemptions apply—see Section 10.9.3): • Avoid non-emergency disruptive activities within the SGCA. • Avoid erecting mobile cell towers in the SGCA, especially within sagebrush-dominated plant communities.

Conservation Measures 12 and 13—Accomplishments in 2020:

Due to COVID-19 there were few detonations at the National Security Test Range (NSTR) this spring. All CCA requirements were met, and restrictions followed. No meteorological, sound detection and ranging, or other cell towers were erected within 0.6 miles of a sage-grouse lek or within the SGCA during FY 2020. INL Environmental Support and Services staff are not aware of any other Site activities that could disrupt nesting sage-grouse within the SGCA.