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Implementing the Candidate Conservation Agreement for Greater Sage-Grouse on the Idaho National Laboratory Site: 2019 Summary Report

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the
Idaho National Laboratory Site:
2019 Summary Report**

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ACRONYMS

BLM	Bureau of Land Management
CCA	Candidate Conservation Agreement
DOE	U.S. Department of Energy, Idaho Operations Office
ESER	Environmental Surveillance, Education, and Research
INL	Idaho National Laboratory
MFC	Materials and Fuels Complex
SGCA	Sage-grouse Conservation Area
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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. 2020) 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.idahoenser.com/Publications_Wildlife.htm.

The key findings from 2019 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 importantly, 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 to implement conservation measures during the past year. 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 360, a 13.5% drop from 2018. This value is now 142% of the population trigger threshold. Lek route counts were 27.5% lower than in 2018. Four leks were reclassified as inactive, reducing the count of active leks monitored on and near the INL Site to 40.

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

We surveyed each baseline lek 3–7 times ($\bar{x} = 4.9$ surveys, $SD = 1.3$) in 2019. Peak male attendance, summed across all baseline leks, was 304, a 16.7% decrease from 365 individuals recorded in 2018, and the lowest value recorded on these leks since we began analyzing them as a unit in 2011 (Figure 2-2). Peak male attendance decreased at least 11% each of the past three years, and the 2019 count is 35.5% lower than the 471 males recorded in 2016. Activity status of baseline leks did not change, as 19 of 27 remained active.

The three-year (2017–2019) running average of peak male attendance on baseline leks was 360 males ($SD = 54.2$), a 13.5% decrease from 2018 (Figure 2-2). This result marks the first year a decrease in the three-year average has occurred. However, the average remains higher than pre-2016 values and is 142% of the threshold (253 males) that would trigger specified action by DOE and the USFWS (DOE and USFWS 2014).

Lek Routes

We surveyed each of the six lek routes 4–7 times ($\bar{x} = 5.8$ surveys, $SD = 1.0$; Figure 2-1). For all routes, the number of males per lek surveyed was lower in 2019 than in 2018, with reductions ranging from –7.5% to –66.0%. On average, lek route counts declined 27.5% ($SD = 22.8\%$). This marks the third consecutive year in which lek route counts have declined (Shurtliff et al. 2019a).

Changes in Lek Classification

We surveyed 13 inactive leks at least two times each (range 2–5) but did not observe sage-grouse at any lek. Thus, no leks were reclassified as active. In contrast, four active leks were reclassified as inactive following the 2019 field season, reducing the total count of known active leks on or near the INL Site to 40 (Figure 2-1).

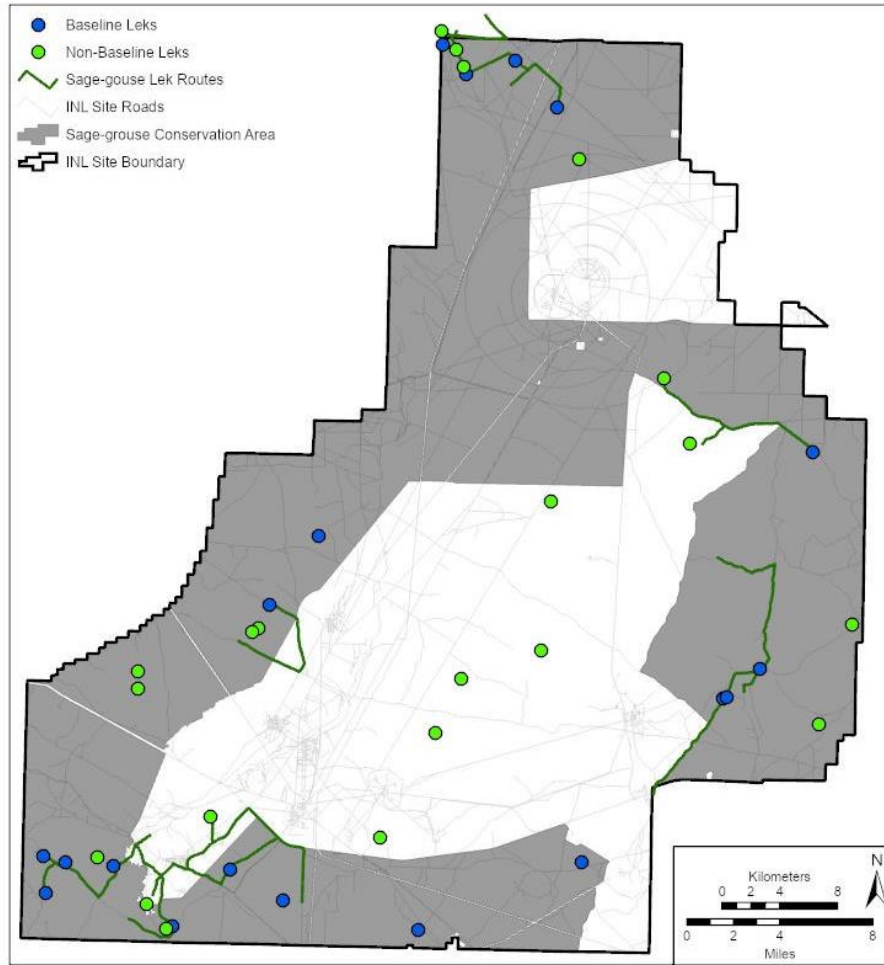


Figure 2-1. Locations of 40 leks on or near the Idaho National Laboratory Site that were classified active following the 2019 field season.

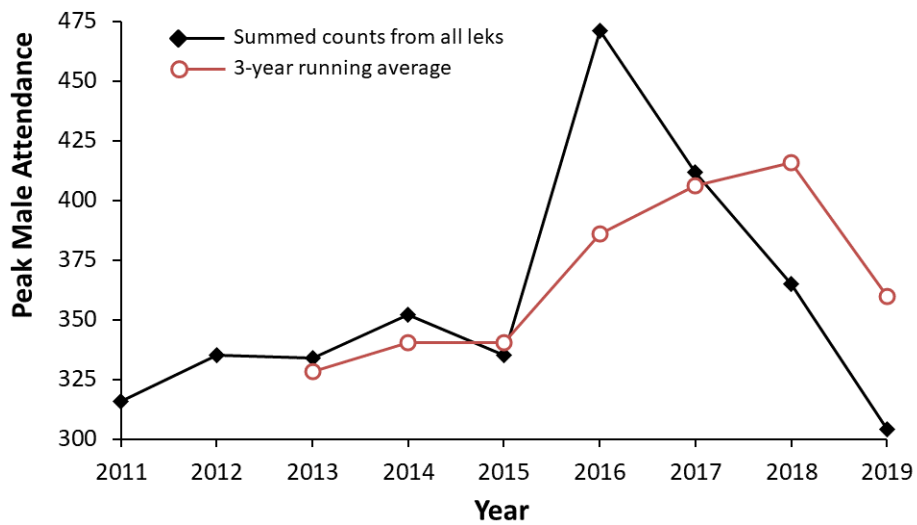


Figure 2-2. Peak male attendance of greater sage-grouse on 27 leks in the Sage-grouse Conservation Area that are the basis for the population trigger.

3. HABITAT TRIGGER MONITORING

Areas designated as sagebrush habitat will change through time based on gradual changes in vegetation composition and also from 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: Vegetation monitoring plots located within sagebrush habitat contained greater cover for sagebrush species and perennial herbaceous functional groups than comparable plots from 2013 to 2017. Height measurements were greater for grasses and forbs, while sagebrush species remained stable. Sagebrush cover has continued to gradually increase since 2014 within sagebrush habitat plots.

3.1.1 Introduction

This Summary Report specifically addresses data from plots located in polygons mapped as sagebrush habitat from ongoing monitoring to assess habitat condition on the INL Site. Summarized sagebrush habitat condition characteristics from the current-year is compared to site-specific average values (2013–2017) for sagebrush cover, height, and density site-wide (Shurtliff et al. 2019b). Sagebrush habitat condition monitoring also compares cover and height data for other shrubs and herbaceous vegetation. Additionally, seven years of sampling also provided data for conducting trend analyses of plant functional groups (shrubs and grasses) within sagebrush habitat.

3.1.2 Results and Discussion

The annual plot vegetation abundance and structure data were summarized to evaluate habitat condition during 2019. Data were collected on a total of 46 out of 48 annual sagebrush habitat plots. The plots not sampled were burned during the Sheep Fire. However, 95% of annual sagebrush habitat plots were successfully sampled prior to the wildland fire providing sufficient data for current habitat conditions analyses.

Habitat Condition

Overall, nearly all annually summarized metrics were higher than averages in sagebrush habitat plots (Table 3-1; Table 3-2). Sagebrush species dominated shrub cover in sagebrush habitat plots (Shurtliff et al. 2020) and sagebrush cover was higher than average. Sagebrush height was nearly identical to the average. Perennial grass/forb height was greater than average, and cover was two times greater (20%). Native grass/forb cover is likely at the upper end of their range of variability when compared with other long-term data sets (Forman and Hafila 2018), whereas sagebrush cover is slightly higher. Sagebrush density was lower, but within the recorded ranges from the 2013–2017 data (Shurtliff et al. 2019a). Within intact sagebrush habitat plots, cheatgrass cover remains relatively low (Shurtliff et al. 2020).

Over the seven-year period during which habitat condition data have been collected, absolute cover values have remained stable for most vegetation functional groups on sagebrush habitat plots (Figure 3-1). Although native perennial grasses increased substantially between 2014 and 2017, they appear to be stabilizing. Native species remain far more abundant than introduced species (Figure 3-1). It is important to note, cheatgrass cover has been higher in burned areas than in sagebrush habitat (Shurtliff et al. 2020) and cheatgrass cover in burned areas may fluctuate periodically.

Table 3-1. Summary of selected vegetation measurements for characterization of condition of sagebrush habitat plots on the INL Site in 2019.

2019	Mean Cover (%)	Mean Height (cm)	Mean Density (individuals/m ²)
Sagebrush Habitat Plots (n = 46*)			
Sagebrush	25.02	47.78	4.01
Perennial Grass/Forb	20.46	26.33	

*sample size is different from past sampling efforts.

Table 3-2. Five-year averages of selected vegetation measurements for characterization of condition of sagebrush habitat plots on the INL Site. Site-specific averages were generated from vegetation monitoring plot data from 2013–2017.

Local Means	Mean Cover (%)	Mean Height (cm)	Mean Density (individuals/m ²)
Sagebrush Habitat Plots (n = 48)			
Sagebrush	21.27	47.81	5.19
Perennial Grass/Forb	9.99	20.70	

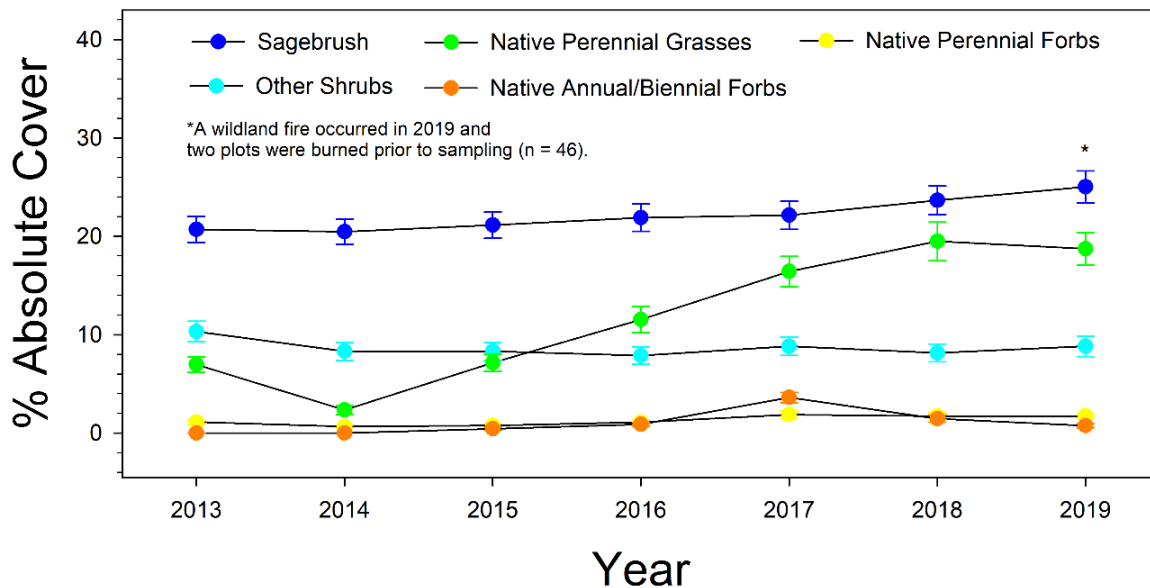


Figure 3-1. Mean cover from functional groups of native species in sagebrush habitat plots (n = 48) on the Idaho National Laboratory Site from 2013 through 2019. Error bars represent ± 1 SE.

Similar fluctuations in the abundance of herbaceous functional groups have been noted in the Long-Term Vegetation dataset (Forman and Hafla 2018). The recent fluctuations in cheatgrass on monitoring plots for this task are similar to patterns observed in the Long-Term Vegetation dataset, which shows both upward and downward trends in cheatgrass abundance from one time period to another. Direct comparisons between both monitoring datasets are difficult due to different sampling designs. The threat of cheatgrass to sagebrush habitat should not be underestimated, but seven years of trend data from this monitoring effort are likely not enough to fully understand the trajectory of cheatgrass abundance.

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

Summary of Results: The distribution and area of sagebrush habitat remains virtually unchanged in 2019 with a loss of 2.3 ha (5.7 acres) in the SGCA resulting from the Sheep Fire. The Sheep Fire also burned approximately 10,402 ha (25,703 acres) of sagebrush habitat outside the SGCA, reducing the “conservation bank” by 28.6%. There were three other small fires that burned on the INL Site in 2019, none of which were located within sagebrush habitat.

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 available 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

Mapping results indicate the 2019 Sheep Fire burned approximately 40,403.3 ha (99,838.8 acres), which is a reduction from the initial estimate of 45,368 ha (112,106.7 acres) calculated using the original Bureau of Land Management (BLM) boundary (Figure 3-2). The only sagebrush habitat lost within the SGCA were a few unburned patches of sagebrush that remained within the footprint of the 2010 Jefferson Fire boundary totaling 2.3 ha (5.7 acres). There were three other small fires that burned on the INL Site in 2019, none of which were located within sagebrush habitat.

The sagebrush habitat outside of the SGCA is considered a “conservation bank” (DOE and USFWS 2014) that could be incorporated into the SGCA to replace lost sagebrush habitat resulting from wildland fire or new infrastructure development. Prior to the Sheep Fire, the total area of sagebrush habitat outside the SGCA was 38,742.5 ha (95,734.8 acres). The Sheep Fire burned 10,401.7 ha (25,703.1 acres) of sagebrush habitat outside the SGCA, reducing the “bank” by 28.6% (Figure 3-2).

Following the Sheep Fire, the current estimated sagebrush habitat area in the SGCA is 78,553.4 ha (194,109.7 acres). The reduction in sagebrush habitat within the SGCA is less than a 0.01% change from the baseline value, and even though a significant amount of habitat was burned in the Sheep Fire, the losses do not impact the sagebrush habitat conservation trigger status.

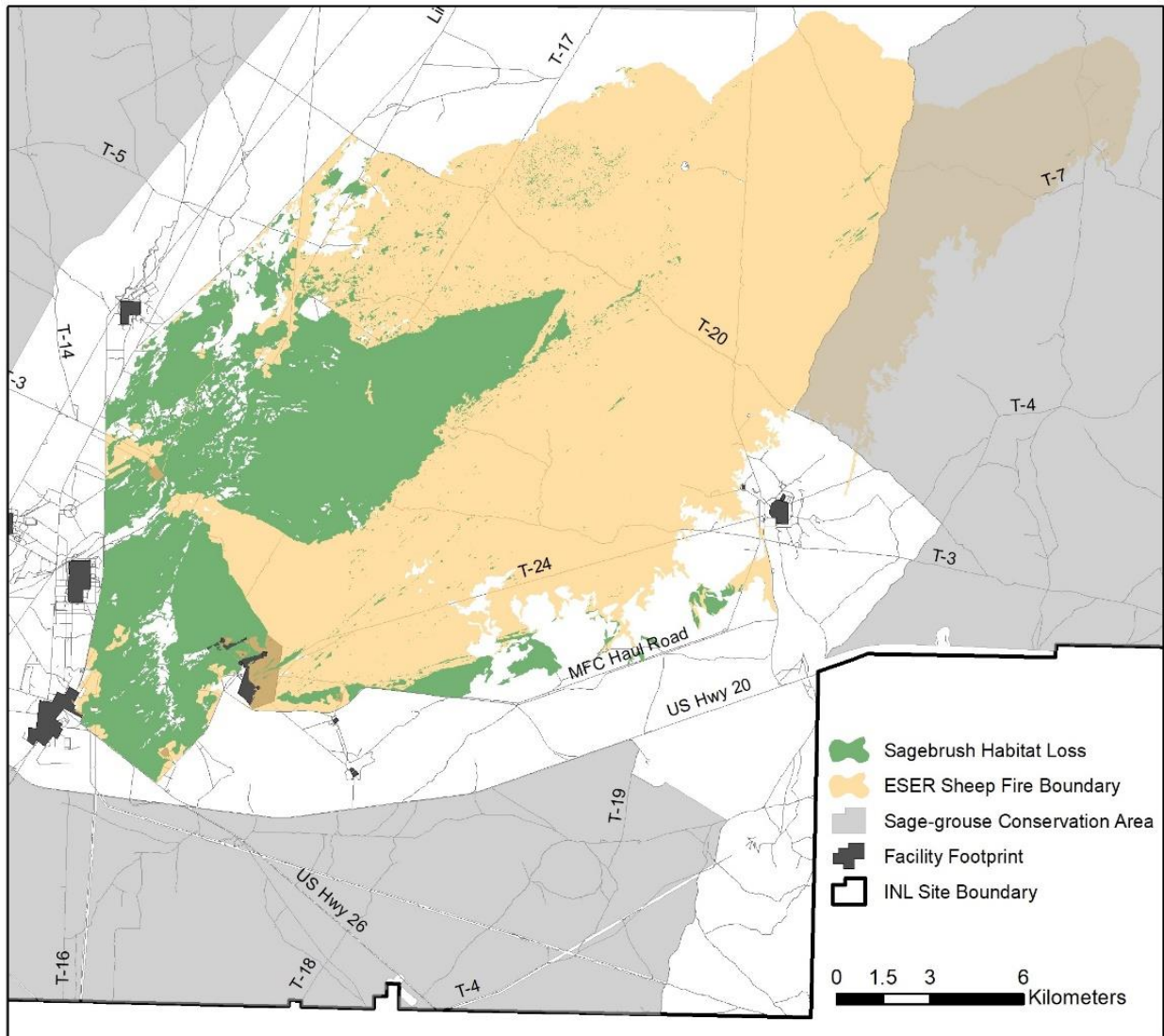


Figure 3-2. Distribution of sagebrush habitat burned in the 2019 Sheep Fire on the Idaho National Laboratory Site.

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 conservation actions, once implemented, 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 33% lower in 2019 than in 2018, matching the lowest level recorded since monitoring began in 2014.

4.1.1 Introduction

To support Conservation Measure 10, 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 32 active raven nests on anthropogenic structures along survey routes or in trees associated with facilities in 2019. Twenty-one of the 32 raven nests were on power line structures, two of which were distribution poles with attached electrical equipment. We merged three 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 adjusted total number of active raven nests dropped to 29, including 18 (62%) on power line structures (Figure 4-1). Ten nests on power line structures (56%) were inside or within 75 m of the SGCA.

Of 13 facilities surveyed, we recorded seven nests at seven facilities. Ravens also maintained nests on four cell towers, three of which were located near the INL Site boundary and one immediately outside the Materials and Fuel Complex east fence.

The 29 raven nests recorded in 2019 is 33% lower than 2018 results (43 nests) and matches the lowest number of raven nests recorded since this monitoring project began in 2014. Similarly, the 18 raven nests observed on power line structures is 42% lower than in 2018 (31 nests) and 21% lower than the 23 nests recorded in 2014, which is the next lowest count (Figure 4-2).

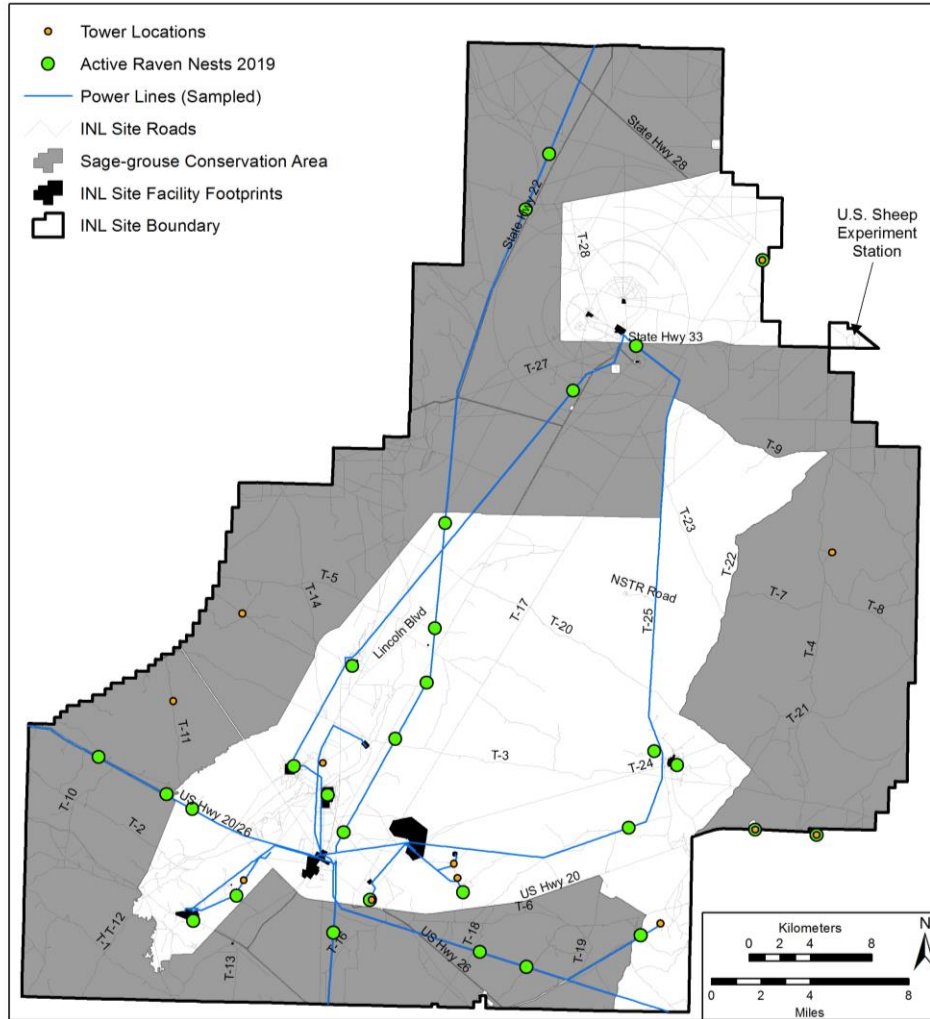


Figure 4-1. Results of the 2019 raven nest survey depicting all documented active raven nests on infrastructure, after accounting for nests that were potentially occupied by the same breeding pair. For clarity, towers associated with facilities are not shown.

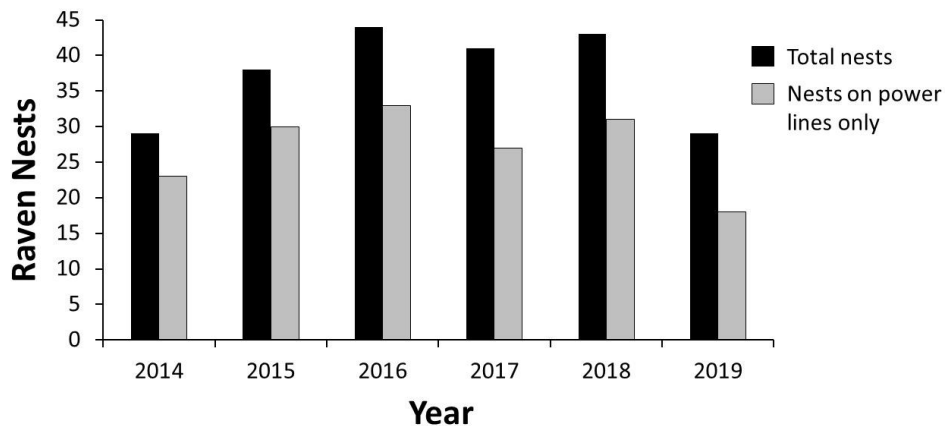


Figure 4-2. Raven nests observed on Idaho National Laboratory Site infrastructure (adjusted values).

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

Summary of Results: There was no work conducted on this task in 2019 because no new high resolution imagery was available for the INL Site. The U.S. Department of Agriculture National Agricultural Imaging Program collected high resolution imagery across the State of Idaho during the summer of 2019 and those data are typically made available the following spring. Once we download and process the new imagery, we will systematically review the INL Site for expansion of linear features and losses of sagebrush habitat due to facility or project footprint expansions, and those results will be presented in 2020.

5. IMPLEMENTATION OF CONSERVATION MEASURES

5.1 Summary of 2019 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 2019 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 at the end of this Summary Report.

5.1.1 Threat: Wildland Fire

Conservation Measure 1—Prepare a restoration assessment following a fire >40 ha (99 acres).

- Based on the size of the Sheep Fire, The INL Wildland Fire Committee recommended that a post-fire recovery plan be developed. A plan was drafted in fall/winter of 2019; it includes an assessment of the natural resources impacted by the fire and it provides numerous restoration options for improving habitat recovery.
- Agency stakeholders participated in scoping for the post-fire recovery plan and stressed the importance of controlling cheatgrass and reestablishing sagebrush.
- Initial post-fire restoration activities include assessing and prioritizing containment lines to address soil stabilization and aerial seeding of sagebrush on about 25,000 acres, including all the area in the SGCA that was affected by the Sheep Fire.

5.1.2 Threat: Infrastructure Development

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

- Multiple projects were co-located with existing infrastructure near facilities and placed on previously disturbed land.
- A 32-m (106-ft) tower was installed within the SGCA, but it is 3 km from the nearest lek.
- 0.5 ha (1.25 acres) of sagebrush was mowed to facilitate seismic borehole drilling within a facility footprint. Work is ongoing in the area, so the final disturbed area could be larger. The project plans to revegetate in Fiscal Year 2020.
- Activities associated with Carbon Free Power Project site characterization impacted 1.9 ha (4.8 acres) of sagebrush in Fiscal Year 2019. The project will span multiple years and may expand up to 809 ha (2,000 acres) if the location is chosen to build a small modular reactor.

5.1.3 Threat: Livestock

Conservation Measure 5—Encourage BLM to take steps to keep livestock off leks; provide updated lek locations.

- ESER observed a sheep camp on a lek in April. BLM was informed and its staff immediately contacted the permittee.
- A new stipulation was included in the Mahogany Butte lease restricting cattle trailing and placement of water and salt near Birch Creek.
- ESER and BLM discussed a potential alternative strategy for ensuring BLM has current information on lek locations.

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 reviewed and commented on allotment permit renewal proposals for Twin Buttes and Mahogany Butte Allotments and range improvement proposals for Deadman and Quaking Aspen Allotments.
- DOE and ESER participated in allotment assessment field days for Deadman and Sinks Allotments.
- ESER provided data to support BLM permit renewal Environmental Assessments.
- ESER provided data to the BLM to support a causal factor analysis for declining sage-grouse populations.
- DOE and ESER engaged BLM in post-fire activities related to the Sheep Fire.
- DOE supported a decision by BLM to permit installation of an underground pipe to maintain water troughs, which should facilitate better livestock distribution through the allotment.

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.

- The National Oceanic and Atmospheric Administration was successful at discouraging raven nesting on one of its remote towers that has supported raven nests for at least the past four years.

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.

- INL contractors complied with seasonal guidelines for human-related activities near lek and within the SGCA.

5.2 Reports on Projects Associated with Conservation Measures

5.2.1 Conservation Measure 1—Sagebrush Seedling Planting for Habitat Restoration

Summary of Results: ESER managed the planting of an estimated 10,000 sagebrush seedlings in fall of 2019 in an area prioritized for restoration. Survivorship of seedlings planted in 2018 was at least 66%.

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

We planted approximately 10,000 seedlings on 36.8 ha (91 acres), or ~272 seedlings per ha (110 seedlings per acre), on October 16, 2019, in the northeastern part of the INL Site (Figure 5-1). We marked the locations of 501 (~5%) seedlings for future monitoring.

To quantify 2018 seedling survivorship and condition, we revisited 899 sagebrush seedlings in August 2019. We documented 509 (57%) healthy, 85 (9%) stressed, 108 (12%) dead, and 197 (22%) missing (Figure 5-3). Assuming the missing seedlings were dead, a total of 66% of revisited seedlings survived the first year.

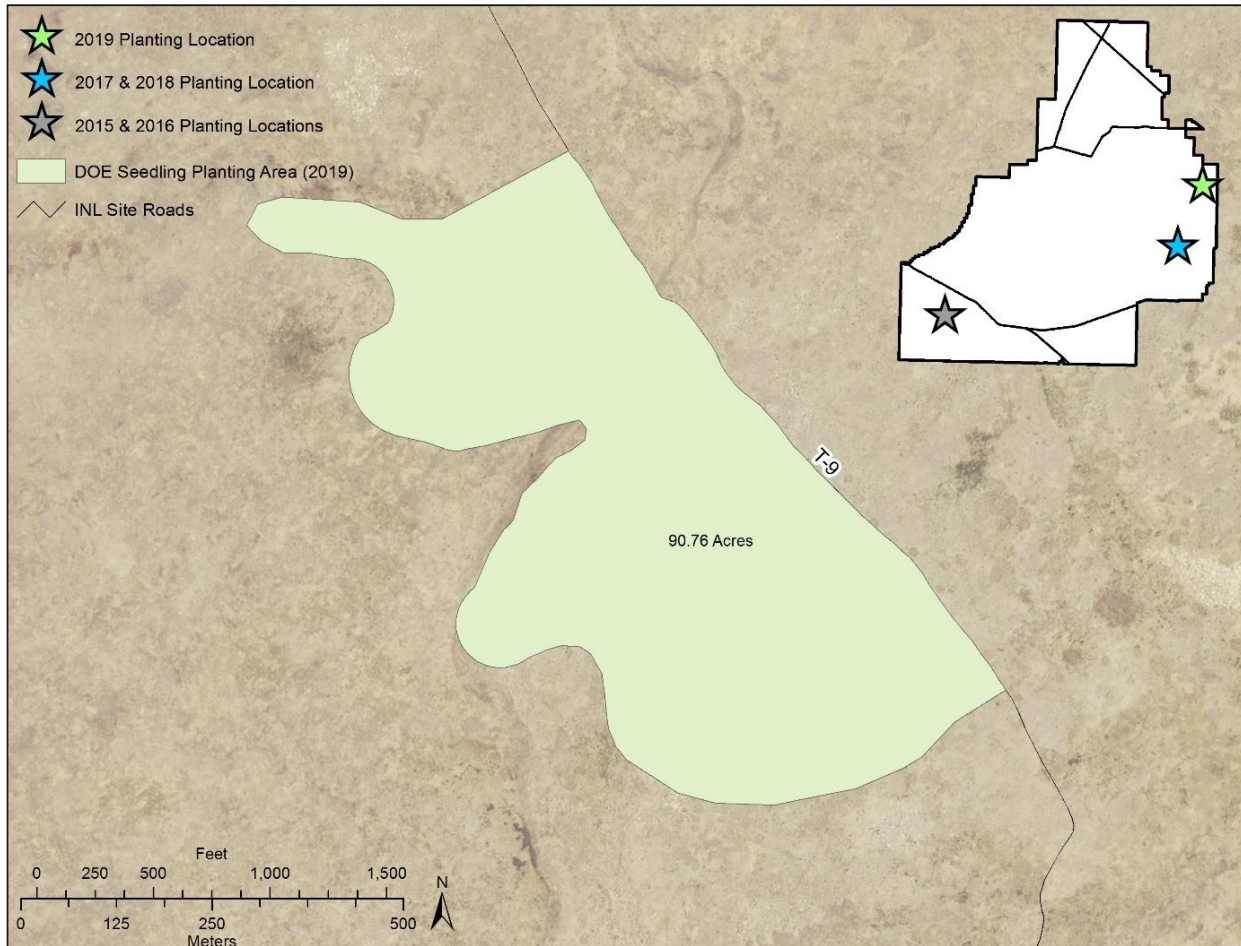


Figure 5-1. Area within the Jefferson Fire scar on the Idaho National Laboratory Site that was planted with big sagebrush seedlings in 2019.

6. SYNTHESIS AND ADAPTIVE MANAGEMENT

6.1 Sage-grouse and Sagebrush Habitat Trends

Across Idaho, sage-grouse lek counts were approximately 25% lower in 2019 compared to 2018, marking the third consecutive year of state-wide sage-grouse declines¹. These results closely mirror lek count results documented in the present report. The similarity between regional and local trends suggests sage-grouse abundance on the INL Site is being driven by broad-scale environmental, ecological, or anthropogenic factors, or INL Site-specific pressures are generally having the same impact as related factors elsewhere across the state.

As described previously in this report, the Sheep Fire eliminated thousands of hectares of sagebrush-dominated communities in the center of the INL Site, including areas near three leks. In 2019, prior to the fire, these locations ranked among the top 13 most-attended leks and had peak male attendance ranging from 13–21 individuals. Male sage-grouse may continue to congregate at these leks in the near term, but the probability of lek abandonment has been shown to increase when areas close to leks burn (Hess and Beck 2012).

In areas like the INL Site that receive low levels of annual precipitation, mature sagebrush stands do not regenerate quickly after a large wildfire; thus, short-term effects of habitat loss are inevitable. Following the Sheep Fire, ESER produced a fire recovery plan that addresses sagebrush recovery and threat mitigation. In addition, DOE and other stakeholders have secured sagebrush seed and will aerially seed a portion of the burned area early in 2020. To the degree that seeding and other remedial actions succeed, the time between sagebrush elimination and restoration of sage-grouse habitat in seeded areas will be reduced.

6.2 Proposed Changes

Restructure the Population Trigger

The CCA describes what we currently use for the sage-grouse population trigger (i.e., male counts on 27 leks in the SGCA) as an “interim population trigger” (DOE and USFWS 2014). The intent was that the interim population trigger would be replaced by a trigger framework based on lek route data following establishment of additional lek routes. As reported last year (Shurtliff et al. 2019a), DOE and the USFWS decided during their 2018 annual stakeholders meeting that it would be best to postpone restructuring the population trigger until after the BLM Land Use Plan is released. As of this writing, the Land Use Plan has not yet been released.

In preparation for a conversation about population trigger restructuring, we have begun to investigate if lek route data from six routes are the most appropriate basis for the trigger. The lek monitoring program on the INL Site is unique because ESER carried out a sustained, systematic effort (2009–2017) to search for lekking sage-grouse near roads and in remote areas where few active leks were known (DOE and USFWS 2014, Shurtliff et al. 2018). Due to this effort, we are confident that we know of and monitor most, if not all major lek sites on the INL Site annually. We are currently investigating whether sage-grouse abundance trends would be more appropriately based on an analysis of all active leks on the INL Site, rather than on lek routes. The population trigger was designed to focus only on leks within the SGCA, and at a minimum it may be best to update the baseline leks to include all active leks within the SGCA. Alternatively, a trend analysis based on all INL Site leks may serve the dual purpose of providing long-term context and supporting population trigger monitoring. We are aware that the Western

¹ Unpublished data, personal communication with Ann Moser, Wildlife Staff Biologist, Idaho Department of Fish and Game; Oct. 15, 2019.

Association of Fish and Wildlife Agencies grouse technical team and other grouse researchers are working on a Population Monitoring and Analysis Guidelines document (personal communication with Ann Moser, Wildlife Staff Biologist, Idaho Department of Fish and Game; November 14, 2019). When those guidelines become available and the BLM Land Use Plan is released, it may be appropriate for DOE and USFWS to revisit the topic of restructuring the population trigger.

Update the Habitat Trigger Baseline

In 2017, the ESER program initiated an update that included a new vegetation classification and map delineating vegetation class distribution across the INL Site. The only major change in methods from the previous INL Site vegetation map was that the manual delineations were performed at a 1:6,000 scale compared to 1:12,000 (Shive et al. 2019).

Previously, four sagebrush-dominated vegetation classes were combined to produce the CCA sagebrush habitat layer. The new classification simplified the number of vegetation classes with each class encompassing a broader range of variability. The new classification resulted in only three sagebrush-dominated vegetation classes that, when combined, represent sagebrush habitat (Big Sagebrush – Green Rabbitbrush (Threetip Sagebrush) Shrubland, Big Sagebrush Shrubland, Low Sagebrush Shrubland).

When the three new sagebrush-dominated vegetation map classes were combined to produce a new estimate of sagebrush habitat across the INL Site, the resulting total area was 109,822.7 ha (271,377.9 acres). This is approximately 6.4% lower than the original sitewide sagebrush habitat estimate of 117,300 ha (289,854.7 acres; Figure 6-1). The sagebrush habitat area within the SGCA, which is the baseline for the habitat trigger, was originally calculated as 78,557.5 ha (194,119.9 acres), and the new 2019 estimate of sagebrush habitat is 72,299.6 ha (178,656.2 acres). The new sagebrush habitat estimate is 8% lower within the SGCA following the map update.

We propose that the habitat trigger baseline be updated to 72,299.6 ha (178,656.2 acres) to incorporate the best available data. It is important to note that the difference in sagebrush habitat area was not caused by actual loss of habitat but rather the mapping scale used to define the new distribution. There has been negligible loss of sagebrush habitat (<0.01%) within the SGCA due to wildland fire or infrastructure expansion since the signing of the CCA.

Add a Cheatgrass Status Update to the Threats Section of Future CCA Reports

Conservation Measure 4 and related Monitoring Task 7 addressed the risk of cheatgrass spread through a targeted inventory effort. When it became apparent the inventory approach was not achieving its intended objectives, the annual inventory effort was curtailed and the concerns previously targeted by Conservation Measure 4 were redirected through Conservation Measures 1 and 2 (Shurtliff et al. 2019a), which address cheatgrass risk as a component of wildland fire and infrastructure development. Although Conservation Measures 1 and 2 sufficiently address the primary drivers for cheatgrass risk, they lack a cheatgrass monitoring component. Given the importance of the cheatgrass risk and its potential impacts on recovering sagebrush habitat, adding a brief section about cheatgrass status to the threats section of the annual monitoring report may be warranted. Drafting this section would require relatively minimal effort, as data already collected through the habitat condition and distribution monitoring could be used. Including a cheatgrass report in the threats section of the report would enhance our ability to discuss cheatgrass specifically as a threat, and not just as a component of habitat condition.

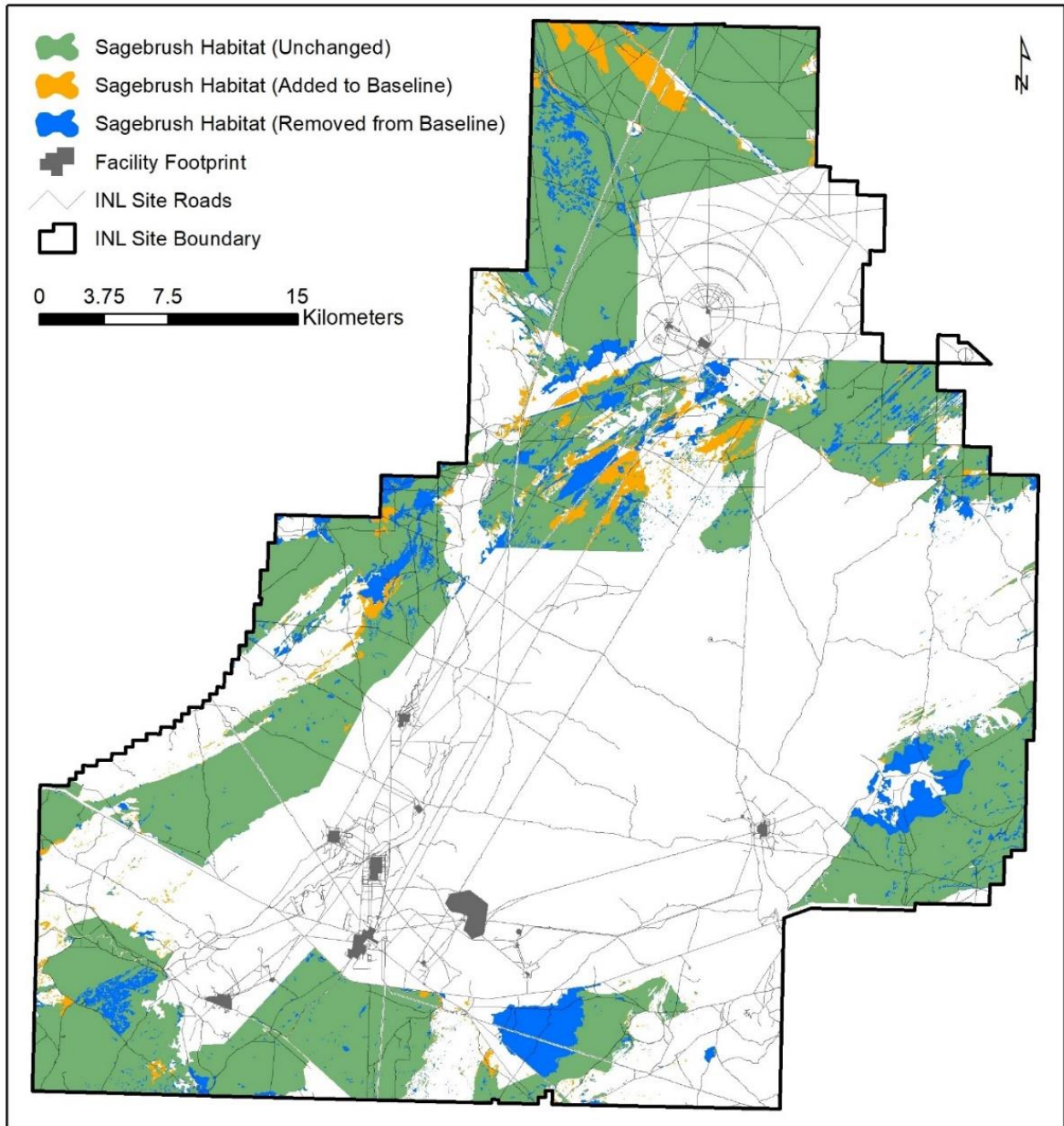


Figure 6-1. Sagebrush habitat within the Sage-grouse Conservation Area on the Idaho National Laboratory Site. The map shows sagebrush habitat distribution in 2019 relative to the 2011 baseline.

6.3 Changes Made to the CCA in 2019

The USFWS and DOE made no changes to the CCA or associated monitoring tasks in 2019.

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APPENDIX—ACCOMPLISHMENTS IN 2019 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).
<p>Conservation Measure 1—Accomplishments in 2019:</p> <p>BURN ASSESSMENT— Four lightning-caused wildland fires occurred on the INL Site in 2019². Two were 0.4 ha (1 acre) or less and one was 21 ha (52 acres). A fourth, the Sheep Fire, burned primarily in the center of the INL Site and was initially estimated at 45,368 ha (112,106 acres); however, we analyzed imagery obtained after the fire which revealed that much of area within the fire footprint burned incompletely, leaving thousands of unburned patches. Our updated estimate of area burned is 40,403 ha (99,839 acres; Section 3.2.2).</p> <p>The Sheep Fire is the first to have burned over 40 ha since the CCA was signed, and it therefore is the first fire for which a burn assessment is necessary to comply with Conservation Measure 1. The INL Wildland Fire Committee recommended that a post-fire recovery plan be developed, and a plan was drafted during fall/winter of 2019. The plan includes an assessment of the natural resources impacted by the fire, and it provides numerous restoration options for improving habitat recovery. DOE invited the USFWS, BLM, and Idaho Office of Species Conservation to participate in a scoping meeting for the post-fire recovery plan, during which agency staff stressed the importance of controlling cheatgrass and reestablishing sagebrush. Initial post-fire restoration activities include assessing and prioritizing containment lines to address soil stabilization and aerial seeding of sagebrush on about 25,000 acres, including all the area in the SGCA that was affected by the Sheep Fire. DOE and agency stakeholders cooperated to purchase sagebrush seed and are planning to aerially broadcast the seed in early 2020.</p> <p>Associated Conservation Actions that Addressed the Wildland Fire Threat:</p> <p>INFORMATION DISEMINATION—The INL Fire Chief sent out iNotes via email to all INL employees on July 9 and 30, 2019, and September 24, 2019. These notes informed employees of any changes to the fire danger rating, whether Stage I or Stage II Fire Restrictions were in place, what those restrictions were, other fire prevention strategies, and what actions employees should take if they observe smoke/fire. The iNote on July 9, 2019, also included a link to a YouTube video about sage-grouse on the INL Site.</p>	
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.
<p>Conservation Measure 2—Implementation of Best Management Practices in 2019:</p> <p>Multiple projects in FY 2019 co-located new infrastructure with existing infrastructure to avoid damage to sagebrush. The Sample Preparation Laboratory project (Environmental Checklist [EC] INL-16-075) is constructing a 4,552 m² (49,000 ft²) building within a previously disturbed portion of the Materials and Fuels Complex (MFC) and is tying into existing utilities. The parking area, laydown area, and guardhouse will be placed just outside the facility fence. SMC Parking</p>	

² Unpublished wildland fire statistics summary for 2019; Eric Gosswiller, INL Fire Chief.



Lot Repaving, ATR Complex Parking Lot Reconstruction, and MFC Parking Lot Expansion and Reconfiguration (ECs INL-18-079, INL-19-055, and INL-19-088 respectively) kept their footprints, including material piles and equipment, within gravel areas. These projects limited the disturbance of vegetation to previously disturbed areas on the side of the roads. The project to Relocate [the] Power Management Laydown Yard (EC INL-19-071) moved equipment from the Scoville substation to within the Central Facilities Area boundary.

The GANNETT project (EC INL-18-059) installed a 32-m (106-ft) tower within the SGCA, about 3 km from the nearest lek buffer area. However, the tower was installed on a paved road surface at the south end of Fillmore Boulevard, near ARA-1. Per the project manager, this tower is taken down at the end of every project workday. Demobilization prevents birds from nesting on the tower.

The Versatile Test Reactor Preconceptual Design project drilled two seismic boreholes to the south and southeast of MFC, just outside the facility fence (EC INL-18-014). According to the EC, an area of 76 m x 76 m (250 ft x 250 ft), which equals 0.57 ha (1.4 acres), was estimated to be mowed for a well pad and support trailer. U.S. Geological Survey (USGS) measured the actual mowed area to be 0.5 ha (1.25 acres), and Veolia determined that to be sagebrush habitat, which requires revegetation. The location to the east of MFC (USGS-148) is between the facility fence and concrete barriers that mark the facility boundary. Per the Project Manager, it is not scheduled for mowing or revegetation since it is the proposed footprint for Versatile Test Reactor. USGS is still working in the location to the southeast of MFC (USGS-149), so the final disturbed area will be calculated after the well has been completed. Per USGS, an area large enough to allow vehicular access and sampling will remain cleared around USGS-149. The project plans to revegetate in FY 2020.

Utah Associated Municipal Power Systems is testing suitability of the INL Site for a small modular reactor. Currently, the project is focusing on an area near Highway 33 and T-11, which is within the SGCA. The current EC (INL-19-067) estimates that the Carbon Free Power Project Site Characterization impacted 1.9 ha (4.8 acres) of sagebrush in FY 2019. The project will span multiple years and may expand up to 809 ha (2,000 acres) if the location is chosen to build small modular reactor. Revegetation plans for this project will be included in a future report and based on actual disturbances.

Conservation Measure 3—Accomplishments in 2019:

INL Environmental Support and Services staff are unaware of any infrastructure built outside exempted corridors in FY 2019.

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. [2019a]).
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 2019:

MINIMIZING LEK DISTURBANCE—A new stipulation was included in the Mahogany Butte lease stating that cattle are not to be trailed along Birch Creek, and water and salt stations are required to be set back at least one mile from the dry creek bed. Although the stipulation was put in place to protect cultural resources, it will help to reduce the potential for disturbance of sage-grouse on leks near the creek bed.

LEK DISTURBANCE—On 17 April 2019, an ESER biologist observed a sheep camp early in the morning on a lek on the Tractor Flats lek route. By 8:30 a.m. sheep were being moved to a nearby lek where water troughs were being placed and filled. DOE contacted BLM staff, who immediately responded by reaching out to permittees.

UPDATED INFORMATION TO BLM—In an effort to improve the usefulness of updated lek maps DOE provides BLM each year for conveyance to permittees, ESER drafted several alternative products for BLM to consider. ESER and BLM discussed an alternative strategy, which is that ESER would send updated GIS lek data each year to the BLM so the agency’s staff could print maps or disseminate the information in a manner that they feel is most appropriate.

Conservation Measure 6—Accomplishments in 2019:

COMMUNICATION & COLLABORATION—The annual meeting among BLM, DOE, and ESER staff did not occur in 2019 as it has the past couple of years. However, DOE and BLM actively communicated and collaborated to manage livestock grazing in a way that would reduce pressure on sage-grouse on the INL Site and within the region. The following are highlights from 2019:

- ESER reviewed and provided comments on allotment permit renewal proposals for the Twin Buttes and Mahogany Butte Allotments
- ESER reviewed and provided comments on a range improvement proposal for the Deadman and Quaking Aspen Allotments.
- DOE and ESER participated in allotment assessments (field days) for the Deadman and Sinks Allotments and ESER provided data from the Long-Term Vegetation monitoring database and from the CCA Habitat Condition Monitoring Task to support permit renewal Environmental Assessments.
- ESER provided data from the CCA Habitat Condition Monitoring Task to the BLM state biologist to support causal factor analysis on declining sage-grouse populations east of the INL Site. Later, ESER staff participated in a stakeholder meeting aimed at identifying causal factors.
- DOE and ESER engaged BLM in the post-fire activities related to the Sheep Fire. BLM provided feedback about areas of sage-grouse conservation concern based on their telemetry data and they have provided support for planning post-fire restoration activities.

POST SHEEP FIRE ADAPTIVE MANAGEMENT—In fall of 2019, BLM decided it will reduce Animal Unit Month levels for the Twin Buttes Allotment by 9% to compensate for lost fodder due to the Sheep Fire that burned on July 22, 2019.

RANGELAND IMPROVEMENTS—DOE supported a decision by BLM to permit installation of an underground pipe to maintain water troughs. This improvement will reduce the amount of water-hauling traffic on two-track roads.

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 2019:	
ESER has a native perennial seed mix list that is recommended whenever contractors request information prior to revegetation work.	
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:	<p>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).</p> <p>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.</p>
Conservation Measure 8—Accomplishments in 2019:	
INL complied with the seasonal and time of day restrictions. Per “Idaho National Laboratory Gravel Source and Borrow Pit Operations (Overarching) Environmental Checklist” (INL-19-155), 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 2019:	
No new borrow pits or landfills were opened in 2019. 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/borrow pits that would disturb surface soil/vegetation also requires a biological resources survey 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:	<p>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.</p> <p>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.</p>
Conservation Measure 10—Accomplishments in 2019:	
<p>INL Power Management operates and maintains 130 miles of overhead power lines. This includes installation of nest deterrents, sometimes referred to as plastic tents, on existing power poles. In 2015, the U.S. Fish and Wildlife Service reviewed and agreed with a cooperative agreement between the ESER contractor, INL, and National and Homeland Security to install nest deterrents only on dead-end and corner poles and not to install any nest or perch deterrents on other poles. These deterrents are installed during the performance of maintenance activities as funds allow. New power lines go through the EA/EC process to determine if nesting deterrents are required.</p> <p>In 2018, National Oceanic and Atmospheric Administration staff added an additional layer of wire mesh to two of its towers on the INL Site that had been occupied by ravens every year since 2014 and 2015 (Shurtliff et al. 2019a). During nest surveys of towers in April 2019, no raven nests were found on either tower</p>	

(see Section 4.1.4). We checked one of the towers again at the end of May and it remained unoccupied. On July 2, 2019, we serendipitously discovered a pair of ravens nesting on the other tower. It appears that the wire mesh was partly successful at discouraging nesting on towers.

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:	<p>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):</p> <ul style="list-style-type: none"> • 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. <p>13. Seasonal guidelines (April 1–June 30) for human-related activities within the SGCA (exemptions apply—see Section 10.9.3):</p> <ul style="list-style-type: none"> • 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 2019:

TOWERS—No meteorological, SODAR, or other cell towers were erected within 1 km (0.6 mi) of a sage-grouse lek or within the SGCA during FY 2019.

EXPLOSIVES—No National Security Test Range detonations >1,225 kg (2,700 lbs) occurred between March 15 and May 15, 2019.

UNMANNED AERIAL VEHICLES— All unmanned aerial vehicle flights complied with the requirements for FY 2019. Per INL-16-149, “Unmanned Aerial Vehicle Operations Environmental Checklist,” flights are prohibited within 1 km (0.6 mi) (vertical and horizontal) of a sage-grouse lek during breeding season.

DISRUPTIVE ACTIVITIES—INL Environmental Support and Services staff are unaware of any other Site activities that could have disrupted nesting sage-grouse within the SGCA.