

# FEDERAL AID INTERIM PERFORMANCE REPORT

ALASKA DEPARTMENT OF FISH AND GAME  
DIVISION OF WILDLIFE CONSERVATION  
PO Box 115526  
Juneau, AK 99811-5526

## Alaska Department of Fish and Game Wildlife Restoration Grant

**Grant Number:** AKW-5

**Segment Number:**

**Project Number:**

**Project Title:** Habitat Enhancement for Wildlife

**Project Duration:** October 1, 2014 – September 30, 2019 (Performance Period October 1, 2014 – September 30, 2015)

**Report Due Date:** December 1, 2015

**Partner:**

**PRINCIPAL INVESTIGATOR:** Sue Rodman, Program Coordinator

**COOPERATORS:**

**WORK LOCATION:** Anchorage, AK (statewide)

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### I. PROGRESS ON PROJECT OBJECTIVES DURING LAST SEGMENT

OBJECTIVE 1: Develop local or regional plans to moderate environmentally-driven changes in moose populations through habitat enhancement; address both short and long-term options.

OBJECTIVE 2: Improve habitat quality for moose populations by increasing quality and quantity of forage, especially during winter.

OBJECTIVE 3: Develop partnerships with local, state and federal entities to leverage treatment prescriptions with other land management objectives and actions.

Through coordination among ADF&G staff and with other agencies, progress was made on all three objectives. While specifics are described below, long term plans are being addressed in Kenai, Tok and the Matanuska-Susitna areas. The Glennallen area (Tazlina) has a more complicated political and ecological landscape with respect to developing programs with the Ahtna Corporation. While we are supporting their program with our technical expertise, they are coordinating among agencies and others regarding the integration of fire management, wildlife management and biomass for local use and economic development. Land use, fire management, ecological succession, predator success, and how wildlife populations fluctuate in response to these and other factors create a complicated network of ecological and human-related influences.

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To determine where moose habitat enhancement is most needed, the department considers several variables including the population trend within the specified Game Management Unit, what known and potential factors contribute to its status (decline), whether habitat projects are feasible, and can a positive response be expected. While more rigorous analyses are conducted within each project area currently, the department is also in the process of developing a protocol to drive a corresponding decision matrix.

With the focus being on habitat quality, we are carefully considering specific vegetation types that can be feasibly modified through fire and mechanical treatments. In some of these cases, immediate response to treatment is expected such as the Tok roller chopping project. The planned prescribed burn at Sutton would also offer a short term response (one to two years). Habitat in both of these treatment sites would benefit moose for up to 15-20 years. However, it is important to expand moose forage opportunities over time so that moose do not over browse the limited acres within one year's treatment area.

For this program, similar to habitat enhancement projects in the past, staff are using their best judgement, expertise, available information and tools to develop projects that can have long-term impact. More importantly, in all areas, staff are looking at the potential for maintaining good habitat over decades with programmatic adjustments that will allow us to continue partnerships and management activities to sustain healthy wildlife populations. As an example, the use of prescribed and wildland fire can be accommodated at a landscape scale over decades if the respective parties are at the planning table now. The Kenai project demonstrates this concept through the interagency All Lands All Hands partnership. The department is dedicated to maintaining healthy interagency relationships as we are all dependent on one another's expertise, management directives, and conservation ethic in managing land and wildlife resources.

## **II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD**

This statewide program to enhance moose habitat originally identified five project areas. Through the course of developing specific projects and partnerships with agencies external to ADF&G, some project areas have been modified and others added to the scope. In this section, project descriptions within geographic areas are included along with new projects and modifications to existing projects to update the information provided in the original federal assistance project statement.

Summary of project objectives for this performance period:

### October 1, 2014 – September 30, 2015

- Plan treatment sites through coordination with State Forestry, including both mechanical treatment (or hand crew) options and prescribed fire plans for the Kenai, Mat-Su, Alphabet Hills, Tazlina and Delta areas. Funds will cover staff for both ADF&G and State Forestry.

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- Kenai: The interagency group planned to build a shaded fuel break and fire break around the northeast corner of Sterling to allow for future prescribed and wildland fire in the Kenai National Wildlife Refuge. State Forestry will administer that project in February – April 2016. This is phase I of a comprehensive plan to support fire management for ecological processes including wildlife habitat.
- Mat-Su: State Forestry wrote the Little Granite Creek prescribed burn plan for Sutton. The May 2015 ignition was cancelled due to high humidity that would limit the effectiveness of the burn. At this time, the burn is postponed until 2017 due to budget cuts in DNR. The Trapper Lake prescribed burn plan was planned to be written in winter 2015/2016 but is also postponed due to budget cuts and limited staff.
- Alphabet Hills: State Forestry and BLM coordinated with ADF&G to re-open this project, and are supporting the completion of this prescribed burn plan during winter 2015/2016. Potential ignition of this burn could occur in spring 2016.
- Tazlina: ADF&G is in communication with Ahtna and the associated CRITR program to coordinate expertise and possibly resources on advancing habitat enhancement in the Glennallen area.
- Delta: An interagency working group convened to initiate plans for prescribed fire in the Delta Junction Bison Range. The burn plan was drafted in January 2015 and is planned for completion and approval by spring 2016 with possible implementation in 2016.
- Tok: This site was added when ADF&G staff agreed to partner with State Forestry on an existing project that could be augmented to further support moose habitat in the area. Roller chopping in the 1990 Tok River fire area was initiated in March 2015 with associated vegetation plots measured before and after treatment.
- Research on all 5 sites for vegetation sampling to include moose utilization study in 15B.
  - Vegetation sampling was conducted for the Little Granite Creek prescribed fire and roller chopping in Tok. Moose collaring and recapture was conducted in GMU 15B.
- Outreach for sites: Kenai, Mat-Su, Alphabet Hills, Tazlina.
  - Several articles describing the Little Granite Creek prescribed burn were published in April and May 2015. Individual letters to landowners adjacent to the burn area were sent in April from ADF&G.

**Job/Activity 1: Kenai Peninsula – GMU 15**

Moose populations have fluctuated across the Kenai Peninsula in response to wolf and bear predation and habitat availability resulting from wildland fire. In GMU 15A, a 500-square mile wildland fire in 1947 producing vast forage opportunities, and yielding low wolf numbers, resulted in a moose population that exceeded the carrying capacity of the area. Over browsing followed by another significant fire in 1969, and subsequent harsh winters initially reduced the moose population and then allowed for its recovery again by 1982 to 3000 moose. Since 1991, the moose population has continuously declined to 1,569 estimated during the 2013 census, significantly less than the Intensive Management (IM) population objective set at 3,000-3,500 moose for 15A (5 AAC 92.108).

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15A has a current Intensive Management (IM) plan implemented to address predation and habitat for critical declines in the population. IM is instituted through Alaska Statute when population objectives are not met. Wolf control was implemented in 2013 along with a small treatment area for habitat enhancement on 85 acres north of Sterling. Much of this subunit is within the Kenai National Wildlife Refuge. ADF&G is establishing a planning and implementation process with the Refuge and State Forestry to determine appropriate treatments for the respective ownerships concerning forest management and prescribed fire.

15B experienced a 200,000 acre fire in the spring of 2014, effectively enhancing habitat on much of this acreage. ADF&G seeks to monitor movement of moose through this area in the post-fire environment to assist with developing site prescriptions for adjacent areas for long term habitat treatment. While the 2014 Funny River Fire and other past wildfires do provide for habitat enhancement in general, there are many cases where post-fire re-vegetation was dominated by *Calamagrostis spp.* grass which out-competes hardwood and shrub species needed by moose. A recent spruce bark beetle epidemic, historical accounts of cover type changes, and climate change all may account for stand conversion from mixed hardwood boreal forest to grassland savannah. To address habitat maintenance over time, whether or not wildland fires ignite, it is useful to have prescribed fire plans and habitat treatment plans developed.

### **Proposed Actions**

- Develop prescribed burn plans in 15A to support the use of wildland fire and prescribed fire in cooperation with the Refuge and State Forestry. Expand and update existing burn plans where applicable.
- Use existing Community Wildfire Protection Plans to plan additional shaded fuel breaks and fire breaks that could support expanded use of fire.
- Identify treatment prescriptions that support fire mitigation and habitat enhancement.
- Continue to coordinate with State Forestry to incorporate habitat enhancement tactics into timber sales.

### **Accomplishments**

Through a collaborative partnership, the Alaska Department of Fish and Game (ADF&G), Alaska Department of Natural Resources – Division of Forestry (DOF), Chugachmiut, and the USFWS Kenai National Wildlife Refuge (Refuge), among other landowners and land managers through the All Lands All Hands group, have developed a plan to construct fuel breaks while enhancing moose habitat throughout the northern Kenai Peninsula. The Sterling Fuel Break is divided into two blocks with several units in each; the East Block is the focus of 2016 activities. Extending from the Sterling Highway at MP 76 north for 2.4 miles along the property boundary between the Refuge and private and borough lands, the proposed project area then heads west for seven miles, across the Moose River, to the Swanson River Road. In the next phase, we will address the West Block which extends west from the Swanson River Road toward Soldotna Creek and the Kenai Spur Highway.

The partnering agencies, including ADF&G, are coordinating with the land owners along this proposed treatment corridor. Site specific prescriptions are in the process of being finalized by fuel type with accompanying fire behavior analyses and evaluation of forage species regeneration potential.

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Sterling's Community Wildfire Protection Plan supports this project. Further, land owners in Sterling have provided their support for this project as they witnessed the fires of 2014 and 2015 advance toward their homes. An open house will be held in January 2016 to share details of this project with the community.

The proposed Sterling Fuel Break is intended to provide two primary functions: 1) protect homes, infrastructure, and resources from wildland fire, and 2) enhance moose habitat in Game Management Unit 15A. Since extensive fire suppression has taken place in recent decades, the availability of moose forage has declined with a consequent decrease in the moose population. Additionally, wildland fires in 2014 and 2015 demonstrated how the resulting volume of fuel in the forests of the northern Kenai Peninsula can carry wildland fires out of control.

State Forestry will administer the contracts for this project in February – April 2016. Federal aid funds for AKW-5 will pay for work done on public lands owned by the Kenai Peninsula Borough. USFWS funds will pay for work done on privately held (CIRI) lands in this unit.

**Job/Activity 2: Matanuska – Susitna Drainages – GMU 14 (subunits A and B)**

This project area is separate from the Susitna River drainage which addresses GMU 16. The project area description and justification was revised by Region IV staff as follows:

In GMU 14A, the 2013 moose population estimate of 8,500 exceeds the population objective of 6,000-6,500 moose. In addition to increasing the amount of young hardwoods and willows from increasing development, the Miller's Reach fire burned 37,000 acres in the western portion of this unit in 1996. A substantial increase in forage availability in subsequent years yielded more moose in this area. ADFG has been trying to regulate the moose population through increased harvest to prevent over-browsing of the habitat, which could lead to a population crash.

Within this geographic area, moose are likely to experience a decline in abundance for three reasons: 1) the high numbers of moose now are putting substantial pressure on the available forage; 2) the vegetation from the 1996 Miller's Reach fire is less available to moose (i.e., poorer quality, beyond reach); and 3) the increased development observed in GMU 14A generally leads to reductions in available forage and habitat over the long-term. In a comprehensive view, these combined variables may again provide a balance of the moose population with habitat and forage availability as the population approximates the set objective.

In other areas of the state past cooperation with State Forestry and conservation organizations have resulted in prescribed fires, mechanical treatments, and timber sales that provided habitat and forage benefits. Efforts in other portions of GMU 14A may help alleviate a potential decline in habitat quality and quantity in the vicinity of the Miller's Reach fire. In addition, the main objective identified in the Matanuska Valley Moose Range Management Plan is "to maintain, improve or enhance moose populations and habitat either through forestry practices...." However, pending the size and location of the treatment area, there may only be local benefits that do not correlate to the entire GMU's population. Treatment plans in GMU 14A are likely to vary with respect to local and area-wide benefits to habitat and forage availability. Designing a long-term comprehensive habitat enhancement plan would provide

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for an improved balance of animals and habitat across this management unit that would compensate for expanding development.

**Proposed actions:**

- Develop prescribed burn plans in 14A, defining 100 to 500 acre units across the Matanuska Valley Moose Range and other areas. Accompanying timber sales or mechanical manipulation may be an option where residual stands of aspen occur.
- Consider opportunities to combine habitat enhancement with wildland urban interface fire mitigation where appropriate conditions exist.
- Continue to coordinate with State Forestry to incorporate habitat enhancement tactics into timber sales. Site scarification and thinning treatments can often be adjusted to further support regeneration or germination of hardwood species.

**Accomplishments:**

Through coordination with State Forestry, we designed the Little Granite Creek prescribed burn. This 314-acre treatment near Sutton would kill spruce, aspen, and birch within the unit, allowing for aspen root suckers to regenerate the site. The burn plan was technically reviewed and approved by State Forestry. We jointly attended the Sutton Community Council meeting in March to provide an overview of the project and answer questions. The Pioneer Peak Hotshots prepared the perimeter by thinning spruce trees and setting up hose to ‘plumb’ the unit. A RAWS fire weather station was set up on site to provide on-site temperature, wind and relative humidity.

The Burn Boss Abe Davis monitored conditions daily to assess whether conditions would allow for ignition. Continued high humidity within the stand delayed the ignition date beyond leaf out of the mature trees. Collectively, we decided to postpone the burn until the following season to stay within the set prescription which also correlates to achieving the objectives. Ignition after leaf out would reduce the efficiency of killing the aspen, leaving fewer regenerating seedlings to follow.

Within the Matanuska Valley Moose Range, there are several other units that could be burned to enhance habitat. These will be reviewed in the coming year to follow up with prescribed burn plans as appropriate.

**Job/Activity 3: Susitna River Area – GMU 16**

This project area description and justification was also revised by Region IV staff as follows:

The population objective set for GMU 16A is 3,500-4,000 moose. The 1997 estimate of 3,600 has fluctuated due to severe winters and predation. The 2009 survey estimated the population to be at 2,600, up 59% from 2005. Selective harvest strategies restricting bull harvest began in 1993. Predation control in GMU 16B was expanded for wolves in 2006 to include portions of 16A and a black bear control program began in 2007. The intent of these programs is to increase calf recruitment and thus moose abundance. Common to other areas of the state, the quantity and quality of habitat has a strong influence

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on moose populations. Some areas within this GMU have burned and other areas have existing prescribed burn plans. GMU 16B also experienced a decline in the moose population since the winter of 1989-1990. The population objective for this subunit is 6,500-7,500. The last population survey estimated 7,418 moose - which is above the midpoint of the population objective. With respect to the predation control programs noted above, habitat enhancement planning here could work in concert with intensive management and expanded forest and fire management in the adjacent GMU 16A. Addressing habitat enhancement opportunities in advance of succession or development affecting forage and habitat availability supports the viability of this currently healthy moose population.

### **Proposed Actions**

- Expand prescribed burn plans in 16A. The 1994 Trapper Lake prescribed burn plan did experience a wildland fire in 2007, consuming approximately 10,000 of the planned 18,000 acres. Additional burn plans in this area can be prepared in cooperation with State Forestry to support more management of fire for habitat in 16A. We also will review opportunities for fire use in 16B.
- Change fire management options in 16B to “limited” protection to allow more wildland fire to burn when it does ignite. Where fuel types and terrain features are appropriate with respect to land ownerships and merchantable timber, much of the “full” protection area can be converted to “modified” or “limited.”
- Continue to coordinate with State Forestry to incorporate habitat enhancement tactics into timber sales. Site scarification and thinning treatments can often be adjusted to further support regeneration or germination of hardwood species.

### **Accomplishments**

*South Trapper Lake Prescribed Burn Plan* – ADF&G is coordinating with State Forestry staff in Palmer to develop a prescribed burn plan for this area north and west of Willow where the 2015 Sockeye Fire burned over 8,000 acres along the road corridor. Due to the limited staff of State Forestry after the 2015 budget cuts, the Palmer office has declined to move forward on this project for now. There may be potential to continue the planning process through BLM or USFS. The Sockeye Fire burn area is already showing substantial regeneration of willow and aspen.

*State Forestry* still will coordinate the conversion of lands in GMU 16 from modified and full fire suppression to limited. This will allow more flexibility in the use of wildland fire when conditions allow.

*The Willow Mountain Critical Habitat Area* is managed by ADF&G for moose and grouse habitat. Rick Jandreau, area forester with DOF in Palmer, continues to encourage firewood cutters to use the DNR lands adjacent to the WMCHA to thin out dense stands of spruce in an effort to reduce wildland fire fuels. We are planning additional reconnaissance in this area in spring 2016 to evaluate the need for more habitat enhancement in these decadent forested stands. The Willow Mountain CHA management plan will be updated by ADF&G Refuges Program beginning December 2015.

### **Job/Activity 4: Nelchina & Upper Susitna – GMU 13**

This region includes two primary project areas: Alphabet Hills and Glennallen.

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Throughout GMU 13, severe winters and wolf predation from the late 1990s through 2001 caused the population to reach a low in 2002 with an average of 1.0 moose/mi<sup>2</sup> since the peak in 1987 of 6,892 counted in trend count areas (before extrapolation to entire unit). In 2004, a land-and-shoot wolf control program was implemented. Positive results have been recorded with an increased density of moose to 1.7 moose/mi<sup>2</sup> in 2011 and a stabilization of wolves near their population objective of 135-165 animals since 2006. The 2011 survey estimated 3,890 moose in 13A, 5,340 moose in 13B, and 1,950 moose in 13D. While these population estimates are well within the IM objectives of 3,500-4,200 for 13A, 5,300-6,300 for 13B, and 1,200-1,900 for 13D, severe winters and predation can challenge healthy populations over relatively short time periods. Continued monitoring of habitat quality combined with an active habitat enhancement plan can offset these external variables. The remoteness and expanse of this unit lends well to using fire as a habitat management tool. Since much of this area in 13A and 13B is in limited fire protection, the case for using prescribed fire can be feasibly made. In 13D, however, full fire protection is expansive to protect inholdings and forest biomass opportunities.

Alphabet Hills, near the West Fork of the Gulkana River, is in GMU 13B. Applying prescribed fire here is expected to result in regrowth of willow, aspen and birch. An existing prescribed burn plan for this area was written for habitat improvement. Approximately 5,000 acres were burned in 2003 with an additional 41,000 acres burned in 2004. Additional burns could be implemented under appropriate conditions in partnership with State Forestry. Vegetation regrowth monitoring and an additional moose count area are both component to this plan; results from previous burns can be used to plan future burn projects.

Along the road system near Tazlina in GMU 13D, crushing would be an effective mechanical treatment to support increased winter browse opportunities, especially near riparian corridors. There is an opportunity to partner with private landowners and leverage stewardship programs through the Natural Resources Conservation Service.

### **Proposed Actions**

- Update the Alphabet Hills prescribed burn plan and prepare for implementation when conditions again provide for ignition.
- Develop additional burn plans as appropriate in 13B and 13A in coordination with State Forestry.
- Explore opportunities to apply mechanical vegetation treatments in moose wintering areas along the highway corridor, south of Glennallen.

### **Accomplishments**

*Alphabet Hills prescribed burn plan* – Sue Rodman met with staff from State Forestry and BLM Alaska Fire Service to create a timeline and action plan. The existing burn plan needs to be updated: ADF&G staff will convert the existing template into the federal format. BLM staff conducted the archaeological review for the BLM lands within the fire's maximum map area. Rodman will submit the cultural resource review application in early 2016. Upon technical review and approval of the burn plan by Robert Schmoll of DOF and Kato Howard of BLM, an implementation plan can be put in place for potential ignition in spring 2016.



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*Glennallen area habitat enhancement* – ADF&G staff is coordinating with Copper River Ahtna Intertribal Resource Conservation District (CRITR) to explore opportunities to partner on habitat projects near Glennallen and Tazlina. While their scope is more expansive, including wildland fire management and biomass (fuel) development along with economic sustainability, their interest in wildlife habitat coincides with the objectives of this project. CRITR has conducted treatment on Ahtna lands in the region; ADF&G and State Forestry staff have provided technical expertise and attended meetings. Next steps include 1) comparing land ownership patterns with habitat enhancement opportunities, 2) establishing protocols for treatment that conserve forest health and provide for habitat enhancement, and 3) identify which lands are best suited for work by both partners.

### **Job/Activity 5: Delta Area - GMU 20D**

This project description and justification was updated as follows:

Moose populations in this area were severely depressed in the 1970s from harsh winters, predation, and heavy harvest. Through modifications to the harvest regulations, predator control and mild winters, the population recovered again during the 1970s and 1980s. In 1995, the IM population objective was set at 8,000-10,000. The Bison Range Youth Hunt Management Area was created in 2002 to reduce the impact of moose hunting in the fields of the Delta Junction Bison Range (DJBR). Despite this action, conflicts between moose hunters and bison continue. Moose hunters are allowed in the areas surrounding the two bison field complexes; high ATV disturbance from moose hunters is a confounding factor in bison habitat use. They are potentially pushed north into the agricultural project while there is still plenty of forage in the field complexes.

Habitat enhancement proximal to the Delta Junction Bison Range would expand areas available to moose providing for greater dispersion, thereby potentially relieving concentrations of moose near the two field complexes on the bison range. Habitat enhancement here will also alleviate long-term range damage from moose. ADF&G implemented antlerless harvest in 2006 to address the high density population, moderate overwinter browse removal and moderately low twinning rates.

The population estimate for the southern portion of GMU 20D was 5,606 moose in 2009 and 5,534 moose in 2010. The northern portion of 20D has not been surveyed since 2004. However, the population is expected to be increasing as a result of large wildland fires and wolf control conducted since 2004 to benefit the Fortymile caribou herd.

### **Proposed Action**

- Explore opportunities to apply mechanical vegetation treatments near the Delta Junction Bison Range to expand forage opportunities for moose, dispersing them away from bison late summer range in and near the two field complexes. Treatments are intended to stimulate regeneration of aspen and other hardwood species preferred by moose.

### **Accomplishments**

*Delta Bison Project Scoping Group* - Support use of prescribed and wildland fire within the DJBR to 1) stimulate the growth of forbs and graminoids, and to reduce encroachment of shrubs and trees on the

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cleared portions (fields intended for use by bison); and 2) stimulate regeneration of aspen and other hardwood species to support moose forage.

In fall 2014, an ad hoc interagency group formed to discuss coordination of habitat and fire management on the DJBR. The 'Delta Bison Project Scoping Group' (Scoping Group) includes ADF&G, DNR - Division of Forestry (DOF), Bureau of Land Management – Alaska Fire Service (BLM), the Salcha-Delta Soil and Water Conservation District (SDSWCD), and the Army. In establishing complementary objectives, the group supports the concept of using fire within and adjacent to the DJBR for wildlife habitat enhancement, wildland fire mitigation for the community, and maintaining ecological processes on the landscape. Across state and federal ownership of lands and jurisdiction of fire management, the Scoping Group members are in agreement that both prescribed and natural wildland fire can be useful tools to reduce the fuel hazard with respect to the residential and other infrastructure of Delta Junction as indicated in its Community Wildfire Protection Plan. Fire is also a useful and cost-effective tool for improving wildlife habitat along with forage and grazing opportunities for bison, moose, sharp-tailed grouse, and several passerine bird species needing early seral habitat. In this regard, habitat enhancement designated for the DJBR south of the Alaska Highway serves to reduce conflict potential between the DBH and agricultural production north of the highway.

ADF&G requests that a non-standard response be considered for some of the state lands within and adjacent to the DJBR. State ownership in the DJBR is primarily under Modified protection with Full protection along the highway corridor, whereas Army ownership protection is Limited. Considering the Maximum Manageable Area (MMA) for the proposed prescribed fire plan as designated on the appended map, there are values identified along the Gerstle River indicating Full protection south of the DJBR. With consideration for the conditions that exist during a wildland fire event and the assessment of risk to values, a decreased level of suppression on State lands would serve the objectives identified above. In this case, Modified protection allows for this balance with respect to suppression costs provided that landowners and residents are involved in this process of consideration, in advance of any wildland fire and potential change in suppression operations.

*Develop prescribed burn plan for the DJBR in cooperation with ADNR – Division of Forestry.* Tom Paragi, wildlife biologist and Sue Rodman are coordinating with Robert Schmoll, operations forester to complete the DJBR Rx burn plan. The plan is expected to be completed and approved in winter 2016 for potential implementation in spring 2016. ADF&G expects to submit a cultural resources review application for this project in January 2016.

The draft burn plan objectives describe the use of fire and mechanical treatments to encourage graminoid regeneration and growth. From the treatment, we fully expect substantial moose habitat expansion on the DJBR. Considering how much acreage within the two fields is still occupied by spruce stands, prescribed or wildland fire in these areas will stimulate the regeneration of aspen and other hardwoods. Further, there are stands of pure aspen within these fields that will be burned with this prescription. Regeneration of hardwoods is an expected outcome of using fire in this area.

### **Job/Activity 5: Tok Area – GMU 12**

This project area was added by Region III to address the Tok River area.

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The 2012 moose population estimate for GMU 12 was 5,700 moose, which is within the intensive management (IM) population objective of 4,000–6,000 moose, and annual harvest during RY08–RY12 averaged 130 moose per year, which does not meet the IM harvest objective of 250–450 moose per year. The Tok River drainage, which is located in the northwestern portion of GMU 12 near the community of Tok, is an important area for the GMU 12 moose population, both in terms of habitat and harvest. First, past research has shown that the lower Tok River valley is an important wintering area for moose (Kelleyhouse 1983). Both migratory and non-migratory moose winter within the lower Tok River valley, with the migratory portion typically traveling to areas south of the Alaska Range to calve (GMU 13C) and to areas within the upper Tok River to rut. Second, a considerable amount of the annual moose harvest in GMU 12 occurs within the Tok River drainage ( $\bar{x} = 29\%$  of the total harvest during RY11–RY12 whereas this area represents 9% of the total GMU 12 area). Therefore, attempts to maintain or increase the moose population within the Tok River valley are important in light of achieving the IM population and harvest objectives.

In 1990, the Tok River fire burned approximately 155 mi<sup>2</sup> of primarily black spruce muskeg in the Tetlin Hills and lower Tok River valley. Subsequently, moose browse quality and availability improved, and the moose density within the burned area increased from an estimated 0.19 moose/mi<sup>2</sup> in 1989 (Kelleyhouse 1990) to 1.0 moose/mi<sup>2</sup> in 1997 (Gardner 1998). The burn is now dominated by quaking aspen and although it is expected to continue to provide winter moose browse for the next 5–10 years, browse availability will decrease as the burn ages. Therefore, mechanical treatments to create patches of aspen and willow regeneration within the 25-yr-old aspen cohort created by the burn would be beneficial to the moose population by creating browse that will continue to be available to the moose population as browse availability decreases in the aging aspen stand. We propose dormant-season roller-chopping on an annual basis of selected stands within the 1990 aspen cohort to stimulate regeneration of deciduous vegetation.

That portion of the lower Tok River valley that did not burn in the 1990 wildfire is largely composed of black spruce muskeg with riparian willow communities surrounding the river itself. These riparian areas provide important winter moose habitat, especially during winters with heavy snow fall (Gardner 2000). Past habitat projects have been conducted to improve moose browse production in these riparian areas, including mechanically crushing over 1,300 and 275 acres of decadent willows to stimulate crown sprouting of new leaders during the 1980s and 1997, respectively. After studying the areas crushed during the 1980s, Nellemann (1990) found that browse production (dominated by feltleaf willow) increased by an average of 30 fold 3–5 years following the disturbance, and crushed areas received significantly higher use by moose than adjacent uncrushed areas with similar pre-crush habitat. However, he predicted browse would become unavailable to moose 15–25 years following a disturbance due to shrub height exceeding the reach of moose. Furthermore, heavy browsing pressure can decrease browse quality and availability (Seaton 2002). Therefore, due to the time since the last disturbance and heavy browsing pressure in some areas, many of these riparian sections would once again benefit from disturbance via mechanical crushing. We propose to crush riparian areas to create young feltleaf willow and other riparian willow primarily in the inactive flood plain (vegetated oxbows) of the lower Tok River.

In conclusion, the Tok River valley is an important area for moose in GMU 12. The 1990 Tok River burn continues to provide winter moose browse, but browse availability will likely begin to decrease within the burn in the next 10 years. Furthermore, riparian areas along the lower Tok River provide

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important winter moose habitat, but browse quality has likely declined since the early 2000s due to browsing pressure and age (and therefore height) of the vegetation. Habitat enhancement, through roller-chopping within the 1990 burn and mechanical crushing within the riparian areas, will benefit the moose population by improving or maintaining browse production as the 1990 burn ages. The combined spatial scale of both projects is not expected to produce a population-level increase in vital rates or abundance of moose in Unit 12 that would permit a greater sustainable harvest, but it is expected to attract local moose into areas accessible to hunters by highway vehicle or ATV (although new access routes will not be created through this project – all access will utilize existing roads and trails) and to hunters using boats on the Tok River. This could enable greater harvest success within sustained yield, potentially with greater catch per unit effort. Greater harvest would be progress toward achieving the Intensive Management harvest objective.

Where opportunities exist, continued treatment through a long-term strategic approach would allow for improved management of moose with respect to available browse over time. Providing active management on the landscape in partnership with complementary efforts, such as ruffed grouse habitat and forest management, yields multiple benefits from treatment applications.

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### Proposed Actions

- Coordinate with State Division of Forestry to apply mechanical vegetation treatments (e.g. roller-chopping) on state land within the 1990 Tok River burn near Tok to promote regeneration of quaking aspen. These treatments will supplement work being funded by the Ruffed Grouse Society of South Central Alaska.

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- Mechanically crush riparian areas dominated by willow within the lower Tok River valley to stimulate sprouting of new leaders.

### **Accomplishments**

*Spring 2015 Treatment.* Through coordination with State Forestry, roller chopped 140 acres in March 2015. ADF&G biologist Jeff Wells conducted aerial reconnaissance with a helicopter to identify priority treatment areas. Aerial imagery was dated and difficult to use for vegetation interpretation. Jeff Wells and Bob Gingue conducted limited vegetation surveys in advance of the treatment (February 2015) through challenging snow and temperature conditions. This recon confirmed that the treatment areas were primarily aspen regeneration that was 25 years old and prime for ‘roller chopping’ to stimulate young shoots.

GPS coordinated were provided to the operators of the equipment (State Forestry technicians) on a tablet computer with orthorectified images that allowed them to ‘drive the map.’ The units were variable in size but approximately 40 acres each with uneven edges to provide for habitat.

Field sampling of the treated units in addition to untreated sites was completed in August 2015. This work confirmed the regenerating stems per acre in the 2015 sites were productive with aspen seedlings along with other forage species preferred by moose. The untreated units proved unusable to moose as the trees averaged 23 feet in height and out of reach for moose. Very little moose sign was noted within the untreated units.

*Fall 2015 Treatment.* Evaluated additional acres in the 1990 Tok River burn area through use of a drone-mounted camera. In a contract with Overwatch, the ‘pilot’ flew the drone over the area of interest where available imagery was inadequate to specify treatment areas. ADF&G biologists Jeff Wells and Cameron Carroll delineated the treatment areas for the Fall 2015 roller chopping planned for October and November.

### **III. SIGNIFICANT DEVIATIONS AND/OR ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD**

As noted, Tok was added to this program. The full project justification and activities are described above.

### **IV. PUBLICATIONS**

ADF&G published several habitat and fire related articles in the Alaska Fish & Wildlife News over the past years. In October 2015: [Enhancing Habitat for Moose and Grouse](#) by Riley Woodford was published specific to this project. While this was posted after the performance period, it does reflect past work done and highlights plans and collaboration for the coming year.

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The Little Granite Creek prescribed burn near Sutton was the focus of a May 5, 2015 article in the Alaska Dispatch News, helping notify the public of the project: [State plans to light controlled fire near Sutton on Mother's Day](#) by Zaz Hollander.

ADF&G also published a press release for this project on the department's website: [Agencies Team Up to Create, Maintain Habitat for Moose and Other Wildlife](#) by Ken Marsh.

Project updates were posted at akfireinfo.com to help locals know the progress of the fire and eventual postponement of the project until 2016:

[ADF&G and State Forestry plan prescribed burn for moose habitat](#) by Sue Rodman (April 9, 2015)

[Little Granite Creek prescribed fire near Sutton is postponed](#) by Sue Rodman (May 10, 2015)

[Little Granite Prescribed burn for moose habitat is cancelled for this spring](#) by Sue Rodman (May 12, 2015)

## V. RECOMMENDATIONS FOR THIS PROJECT

**Prepared by:** Sue Rodman, Program Coordinator II

**Date:** December 1, 2015