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-B-SW-2020 Amendment #1

PROJECT NUMBER: 24.0

PROJECT TITLE: Wildlife Habitat Enhancement & Spatial Analysis

REPORTING PERIOD: 1 July 2020 to 30 June 2021

PERIOD OF PERFORMANCE: 1 July 2020 to 30 June 2021

REPORT DUE DATE: 30 September 2021

PRINCIPAL INVESTIGATOR: Susanne U. Rodman

COOPERATORS: Miles O. Spathelf, Mary Jo P. Hill, Thomas F. Paragi

I. PROGRESS ON PROJECT OBJECTIVES DURING PERIOD OF PERFORMANCE

OBJECTIVE 1: Represent the Department in the development and implementation of interagency fire management principles, operating plans, and strategies.

ACCOMPLISHMENTS:

In the Alaska Wildland Fire Coordinating Group (AWFCG), agencies serve to manage wildland fire and related activities across the state by fostering safety, cooperation, coordination, collaboration, and communication. In this forum and its committees, ADF&G has a voice to support wildlife conservation and habitat. By addressing the multiple objectives of the interagency community, members to AWFCG can better fulfill their individual agency missions. Within the Wildland Fire Prevention and Education Committee (WFPEC) under AWFCG, ADF&G participates in developing messaging and materials that are used in public outreach across the state: another way to connect fire's ecological role concerning wildlife habitat and conservation to wildland fire management for the protection of life and property.

Giving a voice to ADF&G's policy on wildland and prescribed fire is delivered through monthly telephonic meetings and usually several in-person meetings throughout the year. Sue Rodman serves as the primary ADF&G representative on the AWFCG and as the

liaison to the WFPEC. She annually reviews the updates to the Alaska Interagency Wildland Fire Management Plan and Annual Operating Plan (https://fire.ak.blm.gov/). Tom Paragi in Fairbanks continued to serve as the division's alternate representative on AWFCG; he participates in regular monthly meetings when the agenda covers specific topics on wildlife and also steps in for Rodman when she cannot attend. Topics addressed in the last year include the impacts of Covid-19 on fire management and the limited resources available to support Alaska wildland fires and new organizational structure at DOF to improve operations and partnerships in fire prevention and fuels management. With drought and wildfire incidents increasing in the Lower 48, fewer resources are available to travel to Alaska during the state's wildland fire season. Agencies are increasingly dependent on their own staff and strategic management of fires to limit spread.

Miles Spathelf, GIS Analyst in Anchorage, serves as the ADF&G representative on the Fire GIS committee. Paragi also serves as the primary representative on the Fire Research committee and in coordination with Miles Spathelf on the Fire GIS committee, primarily by phone and email. Spathelf and Mary Jo Hill, WB II, participated in a joint meeting of the Fire Research committee and the Alaska Fire Science Consortium to expand interagency access to one another's data on vegetation and post-fire severity and project descriptions. Rodman is also the liaison to the Fire Invasive Plants committee that supports limiting the transport of invasive species around the state during fire operations. Rodman also serves on the Fuels Committee to partner across agencies with intention of managing fuels through various treatments near communities; this is often complementary to enhancing wildlife habitat.

Paragi and Rodman coordinate on Interior fire issues to maintain consistent direction and messaging on behalf of the department. They send spring and summer emails to staff to share outreach opportunities with interagency partners so that area offices can stay informed about fire incidents that may impact wildlife.

Rodman attended the virtual Interagency Fall Fire Review (2020) and Spring Operations (2021) meetings. Rodman participated in the virtual ADNR Division of Forestry Fall Fire Review and the Spring Fire Operations meetings.

At both the fall (2020) and spring (2021) virtual interagency fire meetings, Rodman, Hill, Spathelf, and Paragi attended the Alaska Fire Science Consortium workshops.

Rodman, Spathelf, & Hill participated in the October virtual Kenai Peninsula All Lands All Hands Interagency meeting. This session was focused on interagency communications as the regular operations of many agencies were adjusted based on Covid-19 impacts. Projects still are ongoing however, with extensions planned for the Sterling Fuel Break as it becomes the Ridgeway Extension.

OBJECTIVE 2: Participate in fire and forest management decisions to benefit wildlife.

ACCOMPLISHMENTS:

Rodman serves on the advisory board of the DNR Division of Forestry Stewardship Program. She supports technology transfer and engages with foresters at DOF to consider entomological and forest health conditions affecting forest health and wildlife habitat. Discussions continue on the advancement of the spruce beetle epidemic throughout Southcentral Alaska.

OBJECTIVE 3: Develop and promote department policies and positions relative to fire and forest management.

ACCOMPLISHMENTS:

Rodman communicated with Division staff on various fire management issues throughout the year. She communicates regularly with state and federal fire agency administrators about forestry and fire issues in various geographic areas where wildlife habitat is of interest for specific game animals or other wildlife concerns. Further, Rodman engages with agency staff on how prescribed fire fits into Alaska wildland fire operations with respect to the risk and benefits for multiple objectives including wildlife habitat and mitigating the risk that wildland fire poses to people and infrastructure.

Paragi participated in a virtual meeting of the Tanana Valley State Forest (TVSF) Citizen Advisory Committee and mentioned his intent to work with area foresters and area biologists in Region III to consider options for timber sale and forest road layout beneficial to habitat and public access during the 2022 update of the Five-Year Schedule of Timber Sales. This process was one of the guidelines following a literature review[1]. He later met with the new Fairbanks-Delta Area Forester to discuss these schedule options and identify local areas of past enhancement for wildlife habitat where mechanical treatments might be reapplied in the future.

Rodman and Paragi provided comments to the Division of Forestry on its revision of the Alaska Forest Action Plan. Paragi provided comments to the Division of Habitat on Forest Land Use Plans for timber sales in the TVSF.**OBJECTIVE 4: Contribute to the advancement of fire science in Alaska, foster communication, and facilitate technology transfer between agencies, private entities, and the public on the science and ecology of wildland fire, prescribed fire, hazardous fuels management, and forest practices, as they relate to fish and wildlife.**

ACCOMPLISHMENTS:

Rodman reviewed the annual update to the Alaska Interagency Wildland Fire Management Plan for 2021. During the annual review of the Statewide Annual Operating

[1] Paragi, T. P., J. C. Hagelin, and S. M. Brainerd. 2020. Managing boreal forest for timber and wildlife in the Tanana Valley of eastern Interior Alaska. Alaska Department of Fish and Game, Wildlife Technical Bulletin ADF&G/DWC/WTB-2020-17, Juneau
https://www.adfg.alaska.gov/static/lands/habitatrestoration/pdfs/managing_boreal_forest_timber_wildlife_tanana_valley_wtb.pdf

Plan, Rodman supported integration of the Statewide Permit from ADF&G to BLM and DOF to manage water withdrawals and stream crossings in fish habitat streams.

As members of the Kenai Peninsula All Lands All Hands Interagency Group (KP ALAH), Rodman, Hill and Spathelf attended the Fall 2020 meeting; there was no spring meeting in 2021: Rodman coordinates these sessions and tried to share the responsibilities with other agencies but limited capacity postponed scheduling.

Rodman continued to serve on the advisory boards of the Alaska Fire Science Consortium (AFSC) and the UAF Renewable Resources Extension Act (Extension Forestry). WHESAP staff attended AFSC webinars through the winter months along with the sessions during the interagency fire meetings. Staff reviewed and commented on the AFSC publication "Alaska's Changing Wildfire Environment."

ADF&G supported the Kenai Peninsula Borough's Community Wildlife Protection Plan (CWPP) update through virtual core team meetings; most of the public meetings were postponed until FY22 due to Covid-19 concerns. Staff did support the KPB's meeting to review a proposal for funding that addresses spruce beetle impacts including wildland fire.

Spathelf and Hill implemented and filled an FFI database to allow for analysis and synthesis of past collected project data before and after treatment. With this progress, data collected from Survey 1-2-3 could now be analyzed for reports. With colleagues, Hill drafted project reports for Alphabet Hills, Funny River, and KNA projects.

WHESAP staff all contributed to developing outreach materials for the planned Alphabet Hills and Delta Junction Bison Range prescribed fires (AKW-5) that demonstrates the benefit of fire to wildlife habitat.

Mike Taras updated the ADF&G brochure "Fire and Wildlife in the Boreal Forest" in 2020. This publication was shared through the member agencies of the AWFCG and posted on that site for interagency use. It was also distributed to State Forestry and federal agency partners to hand out at public events.

Paragi provided data and assisted two University of Alaska professors on their analysis of moose harvest in recently burned areas of Alaska. He also evaluated moose numeric response and harvest in prescribed burn areas done as part of Intensive Management and moose harvest in selected large wildland fires in the same period.

Paragi was invited to a virtual workshop on fire management hosted by Yukon Flats National Wildlife Refuge, where he provided context about fire effects on wildlife habitat and historical factors in fire management policies. He also attended a virtual meeting of the Yukon River Chapter of the Alaska Society of American Foresters to hear presentations on fire management and ecology.

Paragi and Rodman were invited speakers at a virtual meeting of Yukon departments of Environment and Forestry and local First Nations (tribes). They presented options for fire

and mechanical treatments to maintain meadows in boreal forest with a primary focus on sharp-tailed grouse habitat. Rodman provided field protocols for monitoring treatment areas before and after mechanical and prescribed fire applications to the Canadian staff. Rodman also provided these protocols to the US Forest Service staff on the Chugach National Forest for potential moose habitat enhancement projects on the Glacier Ranger District.

OBJECTIVE 5: Evaluate and plan projects to benefit wildlife habitat.

ACCOMPLISHMENTS:

In planning for several habitat enhancement projects, Rodman conducts literature reviews and communicates with other agency staff to ensure that the treatments will result in benefits to wildlife with respect to vegetation, timing, and wildlife benefits intended. Hill and Spathelf contribute to these reviews and research.

Prescribed fire project planning for the Delta Bison Range (GMU 20D) and Alphabet Hills (GMU 13A&B) continued under this grant by Rodman, Hill, and Spathelf. Burn plans are mostly completed with outstanding segments requiring expertise from the Division of Forestry (DOF) and Bureau Land Management (BLM) for a 2022 implementation. Open burn permits were attained from the Alaska Department of Environmental Conservation, cultural resources were reconciled with USFWS, and mitigation activities are set to occur prior to ignition.

With Assistant Area Biologist Jeff Wells and Area Forester Nick Carter, Rodman conducted a reconnaissance flight of the 9-Mile and Gold Creek prescribed fire units in Tok (GMU 20E) to benefit moose. Values and topographic features were assessed for initial risk assessment and logistical arrangements. Spathelf and Rodman created a presentation for the Tok Area Advisory Committee regarding these burns; Rodman delivered this talk in February 2021.

WHESAP promoted the concept of advancing mechanical habitat enhancement treatments in ADF&G Critical Habitat Areas and Game Ranges. Staff had preliminary meetings to review ideas and methods for treatments that could also include prescribed fire, focusing on lands with ADF&G jurisdiction.

OBJECTIVE 6: Maintain and advance expertise, skills, and agency capacity in the ecology and management of fire and forests, particularly in the boreal region.

ACCOMPLISHMENTS:

Rodman reviewed Mike Taras' updated publication on Fire and Wildlife in Alaska. This brochure is used in many outreach venues that WHESAP is affiliated with: Kenai Peninsula Wildland Fire Education Cooperative, Kenai moose habitat enhancement projects, statewide moose habitat enhancement projects (prescribed fire planning and outreach), and the AWFCG Wildland Fire Prevention and Education Committee.

Rodman, Hill, Spathelf, and Paragi attended the Alaska Fire Science consortium workshops in October 2019 (Fairbanks) and March 2020 (online).

Rodman attended FEAT / FIREMON Integrated (FFI) training provided by Fire Research And Management Exchange System (FRAMES) for storage, analysis, and data sharing with federal partners of collected vegetation plot data. This system is designed for ecological monitoring and can be adapted to fit specific needs of a project or agency. With Hill having left the department in May 2021 and Miles being the only staff remaining to understand integration of WHESAP data into FFI, Rodman pursued training to bridge the gap until the wildlife biologist position is re-filled.

Rodman, Spathelf, and Hill attended the virtual Wildlife Society (TWS) conference in 2020, and Paragi attended the virtual meeting of the Alaska Chapter TWS in 2021. Rodman and Spathelf also attended the virtual winter Western Association of Fish & Wildlife Associations (WAFWA) conference in 2021 where prescribed fire discussions offered ideas to program efficiencies.

Spathelf attended the virtual ESRI User Conference in July 2020. Topics included geospatial applications, wildlife movement, field data collection products, and ESRI tools to support analysis and modeling.

Staff maintains currency on fire science, geospatial applications, and wildlife habitat research through published literature, technical bulletins, and attending on-line presentations of research.

OBJECTIVE 7: Prepare an annual budget, work plan, and documents needed to satisfy Federal Aid and other reporting requirements.

ACCOMPLISHMENTS:

WHESAP prepared an annual budget for FY22 with staffing reinstated.

OBJECTIVE 8: Advance technological applications for data collection and datasets to support evaluation and monitoring of treatment sites.

ACCOMPLISHMENTS:

With support from Hill and Rodman, Spathelf developed digital data forms using ESRI's Survey 123 application for collecting and storing plot vegetation and browse utilization data on the 2014 Funny River wildfire field work completed in July 2020. The forms captured all of the browse vegetation data needed to field correct the Forest Service's Kenai Peninsula Existing Vegetation Map. This data will be reconciled with moose movement research done in GMU 15B. Browse architecture, plant species, and forest stand structure are attributes gathered in this survey to qualify and quantify the status of available moose forage in response to the fire.

Spathelf contributed to the data model of the telemetry database being developed by ADF&G for storage and analysis of collared animals. He also provided cleaned datasets

of vhf and gps collars of the Nelchina Caribou Herd (NCH) for the telemetry database project in conjunction with Heidi Hatcher and Jeff Stetz.

OBJECTIVE 9: Provide organized spatial datasets for internal and external use for non-GIS technical staff.

ACCOMPLISHMENTS:

Spathelf and Hill developed additional geospatially enabled portable document format (pdf) maps for use in Avenza by ADF&G and partnering agencies for field work: Bald and Golden Eagle surveys at Alphabet Hills, Delta Junction field burns, and updated maps for prescribed fire plans at Alphabet Hills and Delta Junction. Spathelf and Hill organized Swan Lake Fire vegetation data into a geodatabase for analysis and data sharing with continuing work on adapting into FEAT / FIREMON Integrated (FFI); this work supports the permanent vegetation and moose nutrition plots in coordination with the Moose Research Center.

Spathelf assisted the Waterfowl Program within ADF&G by developing a Survey123 banding form for the Creamer's Field project to improve accuracy in data capture and eliminate duplicate banding numbers. He also expanded work on the self-contained VHF telemetry tag computer built on the CTT Sensorstation platform.

Spathelf provided cartography support for Regions IV and V staff for hunting map boundary changes, maps for Board of Game presentations, and maps for publications.

Spathelf provided non-sensitive data on large mammals to Axiom in support of the Alaska to Alberta Railway project.

Spathelf assisted with a Region IV moose calf observation database by implementing a Survey123 data form for workers while they were out in the field to adapt to changing data collection needs.

Spathelf assisted with requests for caribou and marine mammal datasets from outside sources by determining the type of information being requested and fulfilling data sets approved to be released to the public.

Spathelf assisted ADF&G headquarters staff with a potential ESA listing response for Humpback whale, Bearded seal, and Ringed seal concerning critical habitat delineation review and mapping during an internal comment period between ADF&G and NOAA.

Spathelf assisted biometric staff with a Geospatial Population Estimate (GSPE) used for moose population abundance estimations. He also provided GIS technical assistance for an Adaptive Cluster Sampling methodology addition to the GSPE.

Hill organized a geodatabase for management work that the program has completed since 2017 on Delta Junction Bison Range, including fuel breaks and prescribed fires completed to date.

Spathelf and Hill researched, gathered, and organized ancillary datasets for prescribed fire planning and operations.

OBJECTIVE 10: Model wildlife movement, distribution, and habitat for departmental analyses and planning needs.

ACCOMPLISHMENTS:

Spathelf mapped Teshekpuk Caribou Herd (TCH) locations for Summer 2020 field work planning. Western Arctic Herd (WAH) caribou GPS collar locations were mapped for calving / high use areas as delineated using Wilson et al. (2010) methods for determining core areas. Spathelf mapped WAH fall movement and winter holder-over areas for 2017-2021 that depicted shifts, possibly due to climate change, for Region V.

II. SUMMARY OF WORK COMPLETED ON PROJECT TO DATE.

Many objectives in this grant are on-going over the years and some progress can be made each year on communication with the protection agencies (USFS, Alaska Division of Forestry, and BLM-AFS) with respect to fire management option changes, non-standard responses, and long-term policy changes regarding the use of wildfire and prescribed fire. ADF&G coordinates with other agencies to support fire management strategies, fuel breaks, and prescribed fires with respect to infrastructure, communities, and wildlife habitat. As advances in technology occur, spatial analysis methods improve and applications for depicting wildlife movement and patterns also expand.

III. SIGNIFICANT DEVELOPMENT REPORTS AND/OR AMENDMENTS.

Travel expenditures were significantly decreased as a result of Covid-19-related restrictions placed on all travel and most group meetings converted to virtual events.

IV. PUBLICATIONS

Not applicable

V. RECOMMENDATIONS FOR THIS PROJECT

This project is expected to continue annually through the Wildlife Habitat Enhancement and Spatial Analysis Program. Committees and processes are ongoing in the interagency fire community. As federal policies are developed nationally, down-scaling at the state level continues to refine local programmatic operations and procedures.

Prepared by: Susanne U. Rodman, Miles Spathelf, and Tom Paragi

Date: September 1, 2021