

**Alaska Department of Fish and Game
Wildlife Restoration Grant**

GRANT NUMBER: AKW-C-2-2019

PROJECT NUMBER: 10.0

PROJECT TITLE: The Restoration of Wood Bison to Interior Alaska and Evaluation of the Factors Influencing Their Survival and Growth

PERIOD OF PERFORMANCE: July 1, 2019 – June 30, 2020

PERFORMANCE YEAR: July 1, 2019 – June 30, 2020

REPORT DUE DATE: Due to FAC Sept 1, 2018

PRINCIPAL INVESTIGATOR: C. Tom Seaton, Wood Bison Project Biologist

I. PROGRESS ON PROJECT OBJECTIVES DURING PERFORMANCE YEAR

OBJECTIVE 1: Population Enumeration

Wood bison populations can be readily counted when they are concentrated away from vegetative cover. The best times for counting are during the rut, or when herd social conditions make the animals most visible. For small herds, direct counting is sufficient, but for large populations, aerial photographs are often required. Radio-marked individuals may be used to ensure that all segments of a given population are located or counted.

ACCOMPLISHMENTS: Completed population studies. Mortality was higher in this reporting period. 6 collared bison died from July 2019 through June 2020. The estimated number of total decline for the herd was 19 for this reporting period. A peak of 9 calves was observed in June 2020. The total population estimate on June 30, 2020 was 94 bison, down from an estimate of 113 bison the previous year.

OBJECTIVE 2: Population Sex and Age Composition Surveys

Composition data are best obtained when herds are aggregated so that a representative sample can be obtained. These classifications are best made from the ground, but techniques are being developed to use high resolution aerial photography. Bison can be readily classified as calves, yearlings, adult cows, young bulls, and mature bulls. Calf production and yearling recruitment are expressed as calves or yearlings per 100 cows. Similarly, ratios of bulls per 100 cows may be useful in understanding the sex and age structure within a population.

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ACCOMPLISHMENTS: Completed population sex and age composition surveys. Calves in groups are counted on every radiotracking flight. Peak numbers were listed above. Significant work was done to help develop a composition survey method that involves high resolution aerial photography from ADF&G's caribou photocensus aircraft. Bison in high resolution photos were classified to sex and age categories in 2017 through 2019. In 2017, the bull to cow ratio was 0.50, the calf to cow ratio was 0.46, the estimated yearling recruitment was 65%, and the percent of the population that was wild born was 32%. In 2018, shortly after the winter stress event, the bull to cow ratio was 0.36, the calf to cow ratio was 0.26, the yearling recruitment was 0.40, and the population that was wild born was 33%. In 2019, the herd rebounded, the bull to cow ratio was 0.84 (indicating that some bulls were probably missed in the 2018 survey), the calf to cow ratio was 0.54, the yearling recruitment was 0.64, all indicative of population growth. Estimating the proportion of the population that was wild born is no longer accurate without modeling, because survival data in the 2-5 year old age classes is limited. Analysis of composition data from the June, 2020 photos has not been completed yet.

OBJECTIVE 3: Range Resource Assessments

Understanding the impact of changing range conditions on bison requires knowledge of their food habitats and the availability of range resources. These data can be obtained by analysis of range conditions, productivity, feeding behavior, and analysis of rumen contents and fecal samples. Bison sometimes forage in burned areas so work can be coordinated with fire-control agencies to assess the amount of forage and improve habitat that might be made available if a controlled burn were conducted in a particular area.

ACCOMPLISHMENTS: Progress was made on range resource assessments. Greater than 100 fecal samples were collected summer, fall, and winter to document plant composition of the wood bison diet. Plant and soil samples were also collected to be analyzed for forage quality and trace minerals. Hundreds of photos have been taken of wood bison during radiotracking flights which will illustrate their small scale habitat choices over time. Range resource assessment is still in the data collection phase. However, it has been estimated that the current range of the Lower Innoko/Yukon rivers wood bison herd has the capacity to hold thousands of bison, and there is much room for expansion both to the north and the south along a 600 mile long corridor of good bison habitat. The total bison carrying capacity for the 600 mile stretch would be tens of thousands of bison.

OBJECTIVE 4: Distribution and Movements

Knowledge of distribution and movements is essential for efficient management. Seasonal movement times and routes vary. Radio collars are particularly useful when placed on female bison because of their gregarious nature. Information from marked bison is also useful in survey operations.

ACCOMPLISHMENTS: Distribution and movements were studied. No new collars were deployed during this reporting period, and 17 total collars were active at the beginning of July 2019. Eight radiocollars remained on the air at the end of June 2020. More collars will be deployed in the winter of 2020-2021. Loss of radio collars was sometimes associated with the engineering or useful life of the collars and sometimes associated with mortalities. Many

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radiocollars were built to fall off of growing animals with a breakaway cotton section that was designed to degrade in the sun and rain. Also, bulls tended to tear off their collars during late summer rut activities.

Sixteen radiotracking flights were completed from July 2019 through June 2020, obtaining distribution and movement information on the bulk of the herd via the deployed VHF and GPS collars. Since release 4,300 VHF and 130,000 GPS collar locations have been obtained. A few animals have dispersed from the lower Innoko area, but almost 98% of the bison have stayed within 50 miles of the release site. The dispersing animals have helped identify habitats that are available for future expansion of the herd. Three main dispersing bison have explored an area of connected bison habitats that is over 600 miles length, from the mouth of the Kuskokwim to the upper Kobuk River. A large metapopulation (many local populations connected through the occasional exchange of individuals) of bison along this 600 mile corridor of habitat in western Alaska would constitute a successful wood bison restoration goal.

OBJECTIVE 5: Mortality Surveys/Harvest Assessment

Legal harvest mortality is assessed from hunter permit reports. Other human caused mortality is known from reports of the Fish and Wildlife Protection Division regarding illegal kills. Additional mortality information will be gathered during aerial and ground observation and the course of other work as well as from reports from the public.

ACCOMPLISHMENTS: There were no open hunting seasons during this reporting period. There is no evidence that there has been mortality from infectious disease. There was no evidence of wolf predation during this reporting period. Three uncollared bison were found dead during the radiotracking flights. Two slipped on glare ice and could not regain their footing and died struggling. This happened after a very unique weather phenomenon, when there was a warm Chinook wind that melted most of the snow in the south end of their range, mid-winter. On a long narrow lake, the snow was all melted and the ice became glare smooth and had a thin layer of water on it. In the middle of the night in the high winds, one group of cows tried to cross the lake and one fell and could not get up. For two days the rest of the group waited on the bank until they tried to cross. Two more fell to the same fate and eventually died, with a total of one collared and two uncollared cow mortalities at the glass smooth lake. The remaining uncollared dead bison found was amongst the others that died during the April winter stress event. Some of the short yearlings disappeared in late winter. We could find no evidence to elucidate their disappearance or suggest cause of death. Similar, late winter, short yearling mortality occurs in the Farewell plains bison herd 150 miles to the east. Perhaps late winter weather conditions in western Alaska are an issue. This would be similar to moose in the area. It is also possible that the short yearling deaths are associated with wolf predation or wolf harassment of the bison groups. Winter snow conditions during this reporting period were deep, yet the bison seemed to do well until April, despite the snow. The remaining five of the 6 collared bison mortalities occurred in April and early May and were associated with the deep, hard snow persisting through the calving season. It is possible that April snow conditions are the key to population increase and decrease for wood bison in this part of the State. The winter climate more to the west is more rain and melting events during winter and the climate more to the east is normally

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shallower snow. In March, 2020, the McGrath area (120 miles to the Northeast of this herd) reported the deepest late winter snow for more than 50 years. Relief finally came for the wood bison along the Innoko when snow finally melted about the 3rd week of April, exposing their forage for easy consumption.

OBJECTIVE 6: Disease and Parasite Monitoring

Regular monitoring of bison blood and tissue samples from captured and hunter-killed bison will be undertaken.

ACCOMPLISHMENTS: Blood, fecal, hair and mucus membrane samples were taken and tested for parasites and disease. No disease was detected. Fecal samples were tested for parasites by the University of Missouri Molecular Pathogenesis and Therapeutics department. A report is forthcoming.

OBJECTIVE 7: Hunter Questionnaires

Additional information is sometimes collected from bison hunters through the use of mail questionnaires. These are used to assess the quality of the hunting experience as well as to document success rates, relative size (and thus age) of harvested animals, and access methods and means.

ACCOMPLISHMENTS: No hunting seasons were open during this reporting period, so no hunter questionnaires were solicited. However, many local public meetings and presentations were held where ADF&G answered the public's questions about wood bison. Education curricula were developed and implemented that included training for future hunters so that they might better understand selective harvest of bison and bison natural history.

OBJECTIVE 8: Write Management Reports

Department biologists gather data from various sources regarding Alaska's wood bison populations into a biennial statewide management report that includes historical and current data, management directions, methods, Board of Game actions, harvests and natural mortality, habitat assessments, and local and statewide non-regulatory issues. Division biologists use this report to maintain an ongoing record of our bison management efforts in Alaska. Biologists use the report in management planning and in presentations to the Board of Game. User-groups and land management agencies also use this report in their planning processes. This report often takes more than one year to prepare so biologists may be either drafting or finalizing it in any given year.

ACCOMPLISHMENTS: The Management Report cycle has not been initiated for wood bison. However, many other forms of information on the herd have been produced to inform the public such as periodic Facebook posts, Wood Bison News issues, periodic website updates, several education curricula, and dozens of in-person presentations.

OBJECTIVE 9: Develop Population Objectives

Population objectives represent planned statewide management strategies to maintain established goals for population size and composition. Population objectives are derived from surveys and research, and are necessary to balance harvests with population size, promote

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proper age composition within a population, estimate future population characteristics and assess the carrying capacity of different bison habitats. These objectives are integral to the planning process for sustained, consumptive and non-consumptive public uses, and for the sustainability of statewide bison populations. Although population objectives may not always be achieved in some areas of the state, they remain important standards for thorough quantitative analysis to monitor population trends.

ACCOMPLISHMENTS: In the publicly written management plan, “Wood Bison Management Plan for Lower Innoko/Yukon River in west central Alaska, 2015-2020”, the population objective was set to support “growth and expansion of wood bison into adjacent areas where suitable habitat exists.” As the years go by, ADF&G will be monitoring the way bison use their habitat to better understand carrying capacity. At this time, it appears that the habitat accessible from the release area (up and down the Yukon River drainage) could hold thousands of wood bison. Quantitative population objectives will be built upon habitat use and the will of the people as wood bison build in number.

II. SUMMARY OF WORK COMPLETED ON PROJECT TO DATE.

In addition to the details provided above in Objective Accomplishments, additional summary of work completed is contained within Wood bison herd updates and Wood Bison News issues at the following address:

<http://www.adfg.alaska.gov/index.cfm?adfg=woodbisonrestoration.herdupdates>

III. SIGNIFICANT DEVELOPMENT REPORTS AND/OR AMENDMENTS.

N/A

IV. PUBLICATIONS

Wood Bison News Issue No. 10, Spring – 2018, and several other WBN issues and updates posted on the ADF&G web site at:

<http://www.adfg.alaska.gov/index.cfm?adfg=woodbisonrestoration.main>

V. RECOMMENDATIONS FOR THIS PROJECT

This project will be ongoing indefinitely

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Date: 31 September 2020