

Wildlife Restoration OPERATING GRANT FINAL 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-B-R3-2020

PROJECT NUMBER: P10.0

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, 2021

PERFORMANCE YEAR: July 1, 2020 - June 30, 2021; year 2 of a 2-year grant

REPORT DUE DATE:

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

COOPERATORS: N/A

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 lower in this reporting period with only two known mortalities. The estimated number of total increase for the herd was 9 for this reporting period. A peak of 26 calves was observed in June 2021, which was the highest number of calves recorded since release in 2015. The total population estimate on June 23, 2021 was 103 bison, up from an estimate of 94 bison the previous year. This is approximately a 10% increase.

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.

ACCOMPLISHMENTS: Completed population sex and age composition surveys. Calves in groups are counted on every radiotracking flight. Peak numbers were listed above. Some 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 2021. 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 a winter stress event, the bull to cow ratio was 0.36, the calf to cow ratio was 0.26, the yearling recruitment was 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 64%, all indicative of population growth. Estimating the proportion of the population that was wild born is no longer accurate without modeling after 2018, because wild born bison are now becoming part of the adult age class and are not discernable from released bison. In 2020, shortly after another winter stress event, the bull to cow ratio was 0.72, the calf to cow ratio was 0.32, and the estimated yearling recruitment was 45%. In 2021 after good survival and productivity, the bull to cow ratio was 1.07, the calf to cow ratio was 0.87, and the estimated yearling recruitment was 63%.

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 throughout the year to document plant composition of the wood bison diet. 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 habitat that contains good bison forage. The total bison carrying capacity based on forage resources for the 600 mile stretch could be tens of thousands of bison. However, the deep, ice layered snow in late winter has caused 2 major population declines in 2018 and 2020, indicating that snow characteristics of the region may limit population growth in spite of abundant forage resources. Twenty seven different fecal collection events from all seasons, collected 2015-2020 were analyzed using plant DNA metabarcoding (Jonah Ventures, <https://jonahventures.com>) technique to describe the diet of bison in the Lower Innoko-Yukon herd. Across all seasons and years, the

diet was composed of 10% equisetum, 10% forb, 4% grass, 2% moss, 39% sedge, and 35% woody.

These fecal analysis results showed a seasonally variable diet. Equisetum use peaked in summer at 45% in June with almost no use in the winter months. Forbs were mainly used in late summer with a peak of 25% in August and very little use in winter. Grass was used mainly in the fall with a peak of 100% of the diet in October with little use the rest of the year. Moss was only 0-6% of the diet and was variable throughout the year and highest in late winter. I suspect that moss species were inadvertently eaten as part of grazing other forages. Sedge was the highest component of their year round diet and was as much as 94% of their winter diet and was almost unused in the summer. Woody plants were about half of their diet in the summer, about ¼ of their diet in the late winter, and almost none of their diet in early winter. I suspect that the summer consumption of woody plant species is mainly leaves of those plants, low to the ground. This analysis represents a sample size of 2 to 4 fecal collection events in each calendar month, except for May (n=0), September (n=1), October (n=1) and November (n=0). These months with low sample size represent the times of year that it is difficult to access fecal patties because it is either breakup, freezeup, or hunting season. During breakup, helicopter would be the only access, and that is cost prohibitive. During September is moose hunting season with many hunters in the area, and we don't want to disrupt their hunts. During October and November is freezeup making helicopters the only access again. Knowing these holes in the fecal data has provided focus to fecal collection efforts and alternative methods will be used to attempt more fecal collections during these difficult periods to help complete the year-round picture of bison diet in the lower Innoko/Yukon river herd.

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 Eight total collars were active at the beginning of July 2020. Six radiocollars remained on the air at the end of June 2021. More collars were not deployed in the winter of 2020-2021 because of Covid restrictions and how they limited access to the area. With easing Covid restrictions, we hope to deploy more collars in December 2021. Loss of radio collars was sometimes associated with the engineering or useful life of the collars and sometimes associated with mortalities. Many 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.

Thirteen radiotracking flights were completed from July 2020 through June 2021, obtaining distribution and movement information on the bulk of the herd via the deployed VHF and GPS collars. Since release approximately 4,400 VHF and 289,000 GPS collar locations have been obtained. Annual and seasonal home range analyses were completed using data from April 2015 through the end of 2020.

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. One collared bison and one uncollared bison were the only confirmed mortalities from July 2020 through June 2021. They both fell through the ice on the same lake and were observed during breakup in the spring. In December of 2020 one collared bison vanished with no trace. After broad radiotracking revealed nothing, specific water bodies near the bison's last locations were investigated and a faint signal was heard at one lake. At breakup one collared bison and one uncollared bison were observed floating in the lake. The collar was retrieved in late June 2021 and the bison were too decomposed for a necropsy. It is believed that they both fell through the ice in winter and stayed under the ice until spring. Despite deep snows in late winter, mortality was low. The snow was shallow most of the winter and the late winter snows were soft with no ice layers. This allowed the bison ample access to forage throughout the winter and contributed to their high survival over the reporting period.

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 were 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 and the public answered ADF&G's questions about their opinions and knowledge regarding 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 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.

Wood bison herd updates and Wood Bison News issues are commonly post at the following web address. <http://www.adfg.alaska.gov/index.cfm?adfg=woodbisonrestoration.herdupdates>

III. SIGNIFICANT DEVELOPMENT REPORTS AND/OR AMENDMENTS.

The closure of communities due to Covid restrictions from February 2020 through June 2021 made monitoring of the Lower Innoko-Yukon rivers wood bison herd, but not impossible. Helicopter work was completely curtailed because ferry time to open communities became

logistically and financially prohibitive. There is hope that helicopter work can be resumed in the C. Tom Seaton next reporting period.

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

Prepared by:, Wood Bison Project Biologist

Date: 12 August 2021