Species Management Report and Plan ADF&G/DWC/SMR&P–2021–37

Plains Bison Management Report and Plan, Game Management Unit 20D:

Report Period 1 July 2013–30 June 2018, and

Plan Period 1 July 2018–30 June 2023

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Photo Source: U.S. Army, 1928.

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Alaska Department of Fish and Game Division of Wildlife Conservation

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Report Period 1 July 2013–30 June 2018, and

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Species management reports and plans provide information about species that are hunted or trapped and management actions, goals, recommendations for those species, and plans for data collection. Detailed information is prepared for each species every 5 years by the area management biologist for game management units in their areas, who also develops a plan for data collection and species management for the next 5 years. This type of report is not produced for species that are not managed for hunting or trapping or for areas where there is no current or anticipated activity. Unit reports are reviewed and approved for publication by regional management coordinators and are available to the public via the Alaska Department of Fish and Game's public website.

This species management report and plan was reviewed and approved for publication by Doreen Parker McNeill, Management Coordinator for the Division of Wildlife Conservation.

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Please contact the authors or the Division of Wildlife Conservation at (907) 465-4190 if you have questions about the content of this report.

Cover Photo: Photo by U.S. Army from ADF&G photo archive. Original bison release on Delta River, archived from 1928.

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Purpose of this Report

This report provides a record of survey and inventory management activities for plains bison in Unit 20D for the 5 regulatory years 2013–2017 and plans for survey and inventory management activities in the following 5 regulatory years, 2018–2022. A regulatory year (RY) begins 1 July and ends 30 June (e.g., RY14 = 1 July 2014–30 June 2015). This report is produced primarily to provide agency staff with data and analysis to help guide and record agency efforts but is also provided to the public to inform it of wildlife management activities. In 2016 the Alaska Department of Fish and Game's (ADF&G, the department) Division of Wildlife Conservation (DWC) launched this 5-year report to more efficiently report on trends and to describe potential changes in data collection activities over the next 5 years. It replaces the plains bison management report of survey and inventory activities that was previously produced every 3 years and supersedes the 1976 draft Alaska wildlife management plans (ADF&G 1976).

I. RY13–RY17 Management Report

Management Area

The Delta bison herd (DBH) occupies the southwestern portion of Game Management Unit 20D. This area includes the Tanana River floodplain, the lower Delta River floodplain, the Gerstle River drainage, the Delta Agricultural Project (DAP), and the U.S. Army Donnelly Training Area. DBH spends the spring months calving in the extreme southwest portion of their range in the army ranges of Donnelly Training Area and the Delta River. DBH spends the majority of the year (July–February) on the Delta Junction Bison Range (DJBR) and the Delta Agricultural Project (DAP; private land). Land ownership of the DBH range is a mix of state, federal, and private. The community of Delta Junction is located just north of where DBH ranges. The Delta Junction climate is typical of Interior Alaska where temperatures frequently reach 80°F in summer and −40° F in winter. Snow depths are generally below 32 inches (Western Regional Climate Center 2006). There are strong southern chinook winds often experienced throughout the winter which are unique to the Delta Junction area and are not typical elsewhere in Interior Alaska. These winds bring mild temperatures to the range of DBH and blow much of the range free of snow. East winds also occur regularly in the Delta Junction area blowing snow from open areas. These minimal or snow-free areas make for ideal bison conditions. Maps for the Delta Junction Area, including bison hunt boundaries can be found at http://www.adfg.alaska.gov/index.cfm?adfg=maps.main.

Summary of Status, Trend, Management Activities, and History of Bison in Unit 20D

The ancestors of modern bison first colonized North America after migrating from Asia to Alaska over the Bering Land Bridge a few hundred thousand years ago (Reynolds et al. 1982). During the last 10,000 years 2 modern subspecies developed: wood bison (*Bison bison athabascae*) in Alaska and parts of Canada, and plains bison (*Bison bison bison*) in Canada and the contiguous United States. Bison were once the most abundant large land mammal in Alaska, but were largely extirpated about 200–300 years ago, probably due to a combination of changing

habitat and unregulated hunting (Skinner and Kaisen 1947, Guthrie 1990, Stephenson et al. 2001).

In 1928, 23 plains bison were translocated from the National Bison Range in Montana to the Delta River area of Alaska. At the time, biologists were unaware of the existence of wood bison in Canada. By 1947 the herd had increased to 400 animals. Hunting of the Delta bison began in 1950 and is now one of the most popular permit drawing hunts in the state. Delta bison have been translocated to other parts of Alaska, and 3 other populations have been established. These are the Farewell, Chitina River, and Copper River herds.

As agriculture developed on their established range, DBH movements began to intersect with hay and cereal grain fields. In 1976 the State of Alaska made agricultural development a priority within the established range of DBH, and large-scale agricultural land disposals began in 1978. Eventually, bison began to negatively impact agricultural harvests by damaging crops in the fall before harvest.

In 1979 the Alaska legislature established the 90,000-acre Delta Junction Bison Range (DJBR) south of the Alaska Highway and adjacent to the Delta Agricultural Project (DAP). The purpose of DJBR was to perpetuate free-ranging bison by providing adequate winter range and altering seasonal movements of bison to diminish damage to agriculturally developed land. In 1984 the legislature appropriated $1.54 million for DJBR development and increased the Delta bison permit hunt application fee from $5 to $10, with the intent that $5 from each application be used for DJBR management. Since 1984 the appropriated funds have been used to hire personnel, purchase equipment for use in forage management, and develop 2,800 acres of bison forage on DJBR in the Panoramic and Gerstle field complexes. Bison damage to farms on DAP was significantly reduced in 1985 with the first substantial forage production on DJBR. DJBR forage development and management continued through this report period, reducing conflicts between bison and agriculture.

The Delta Bison Working Group (DBWG) was created in order to make bison management recommendations to ADF&G. The DBWG is composed of a diverse group of stakeholders including local and nonlocal hunters, farmers, Delta Junction community members and businesses, and the U.S. Army. DBWG assisted ADF&G in developing a series of management plans beginning in 1992.

From the mid-1980s through 2007, the public, including DAP producers, did not express unusually high concern about conflicts between bison and agriculture. When the effort to update the 2000–2005 Delta Bison Management Plan proceeded during winter 2008–2009, some members of the Delta agricultural community expressed an elevated level of concern about conflicts between bison and agricultural production. In response, ADF&G expanded the planning process to fully evaluate issues involving conflicts between DBH and agricultural operations and consider options to minimize these conflicts (ADF&G 2012).

Management Direction

ADF&G will manage DBH to accomplish a reasonable balance between providing the greatest opportunity to hunt and view bison while keeping negative impacts to private property to a

minimum. This was listed as a management goal in the survey and inventory report for Unit 20D (Bruning 2014) and is carried forward to this reporting period as management direction.

Management activities include aerial population abundance surveys, radiocollaring female bison to maintain an adequate sample of collared bison in order to track movements, harvest monitoring, disease screening, and habitat management on DJBR. ADF&G will also work with the Delta agricultural community to keep them informed about bison management activities and to keep them notified about bison distribution throughout the growing season. ADF&G will also provide input to the U.S. Army on habitat improvement projects carried out on army lands.

EXISTING WILDLIFE MANAGEMENT PLANS

A wildlife management plan for Unit 20D exists in the 2014 plains bison management survey and inventory report for Unit 20D (Bruning 2014). The Delta Bison Management Plan 2000–2005 and the Delta Bison Interim Management Plan 2012 (ADF&G 2012) also provide guidance for managing DBH.

GOALS

G1. Manage DBH to accomplish a reasonable balance between providing the greatest opportunity to hunt and view bison while keeping negative impacts to private property to a minimum.

G2. Minimize conflicts between bison and the public, including, but not limited to, agriculture interests in the Delta Junction area.

G3. Monitor for disease, manage to prevent any spread if disease were to occur, and ensure the long-term health and survival of this wild free-ranging herd.

G4. Provide opportunities for nonconsumptive enjoyment of DBH, such as bison viewing, interpretation, and education.

CODIFIED OBJECTIVES

Alaska Statute (AS) 16.20.310 requires a game management plan for the Delta Junction Bison Range. The game management plan must include, but is not limited to 1) planting grains for bison and planting other wildlife forage; 2) altering existing plant cover to create additional range and year-round habitat for bison and other animal species in the area; and 3) tilling to produce forage. The game management plan must coordinate as closely as possible with the activities of the Alaska Department of Natural Resources relating to the Big Delta agricultural development project.

C1. Maintain a game management plan for DJBR.

Amounts Reasonably Necessary for Subsistence Uses

There are no customary and traditional use findings or amounts necessary for subsistence uses objectives for DBH.

Intensive Management

There are no intensive management objectives for DBH.

MANAGEMENT OBJECTIVES

M1. Maintain a disease-free precalving herd size of approximately 360 bison.

M2. Maintain a sex ratio of no less than 50 bulls (≥1-year old):100 cows.

M3. Maintain an annual harvestable surplus of 70 or more bison.

M4. Manage DJBR to encourage DBH to remain south of the Alaska Highway, out of private agricultural lands as late in the fall as possible, attract more bison to DJBR in the winter, and provide greater accessibility to the herd for bison hunters.

M5. Enhance bison summer range west of the Richardson Highway to increase its attractiveness to the Delta bison herd and attempt to delay the herd's migration toward the Delta Junction Bison Range and private agricultural lands.

M6. Informing the public, particularly the Delta agricultural producers about bison distribution throughout the growing season and offer assistance regarding bison conflicts.

MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Conduct spring aerial minimum count abundance surveys to estimate the number of adults in the population and the rate of calving (objectives M1, M3).

Data Needs

Annual population data are needed to determine population size, harvestable surplus, and calf recruitment.

Methods

Annual population abundance flights were conducted every 7–10 days throughout the calving grounds from mid-April through early June from a Piper Super Cub (PA-18) fixed-wing aircraft. ADF&G biologists used previously radiocollared bison to aid in locating groups of bison during the survey. Groups that were difficult to count directly were photographed with a digital single-lens reflex camera and counted using the photographs. The number of newborn calves was also recorded to document the parturition rate. At the end of the survey period in early June all the flight data sheets were tallied, and the peak adult and calf numbers were used to calculate a total population estimate.

The primary calving grounds for DBH are on the floodplain of the Delta River between the mouth of Jarvis Creek and Black Rapids Glacier. However, recent observations from ADF&G biologists and reports from Delta agricultural producers have shown increased calving activity in

the spring (mid-April to mid-June) on both DAP land and along the Tanana River; there have also been sporadic bison observations throughout the rest of the year on DAP land. The earliest recorded bison calf in Alaska was observed by ADF&G staff on DAP land in March of 2018.

RY17 data were based on a photocensus, which differs from the normal annual spring minimum count abundance surveys. All previously radiocollared bison were located using radiotelemetry from a Piper Super Cub (PA-18) fixed-wing aircraft. The Super Cub would then radio the photocensus plane to come in and take photos of the bison groups (collared and uncollared).

The bison groups were photographed from a DeHavilland DHC-2 Beaver aircraft with a customized digital aerial camera system composed of 3 medium-format 100-megapixel cameras, with 2 of the cameras oriented obliquely, and one at nadir. Target altitude for photography was 1,500 feet above ground level (AGL). All cameras are contained within a rigid insert which is attached to a gyrostabilized mount. The system is instrumented with a differential GPS and inertial measurement unit (IMU) to record position and attitude (pitch, roll, and yaw). Customized flight management software running on a laptop computer controls the cameras and navigation system, and allows the pilot and camera operator to see footprints of the imagery in real time as well as inspect thumbnails of each image as they are captured.

Flight data from the GPS and IMU are post-processed using differential correction or precise point positioning (PPP) depending on the proximity to continually operating reference stations (CORS). Images are individually inspected and adjusted for exposure before being exported from raw format. Exterior orientation information (position, elevation, and attitude) and imagery are then processed through photogrammetry software using automated tie-point extraction and bundle adjustment to produce digital terrain models which are then used to orthorectify individual images. Once orthorectification is completed, the oblique and nadir orthophotos are mosaicked separately.

Bison are enumerated from image mosaics using geographic information system (GIS) software. This software has a tool that allows users to count and classify bison by manually placing colored points on each animal within the image. Point data are stored in file geodatabases and archived.

Female bison were periodically captured and fitted with VHF radio collars to maintain a sample size of 6–10 so bison movements could be easily tracked. No captures were conducted during this reporting period, but captures were conducted in July of 2018 and May of 2019.

Results and Discussion

POPULATION SIZE

RY13—The prehunt herd size for fall 2013 was 476 bison (Table 1). The precalving population size was 400 in spring 2014 (Table 1).

RY14—The prehunt herd size for fall 2014 was 428 bison (Table 1). The precalving population in spring 2015 was 355 bison.

RY15—Comprehensive aerial surveys were not conducted due to a lack of staff availability through the survey period; no prehunt herd size estimate was available for fall 2015. The spring 2016 precalving population estimate was also unavailable.

RY16—The prehunt herd size for fall 2016 was 502 bison (Table 1). The precalving population in spring 2017 was 453 bison.

RY17—The prehunt herd size for fall 2017 was 551 bison (Table 1). The precalving population in spring 2018 was 471 bison. The RY17 data were based on a photocensus, which differs from the normal annual spring minimum count abundance surveys.

Table 1. Delta bison precalving and postcalving population estimates, 2007–2017, Unit 20D, Alaska.

Regulatory year	Spring precalving population estimate[a]	Fall prehunt population estimate[b]		
		No. Adults	No. calves	Total
2007	397	–	–	516
2008	416	–	–	494
2009	380	–	–	435
2010	366	–	–	412
2011	337	–	–	407
2012	351	–	–	461
2013	399	394	82	476
2014	400	364	64	428
2015[c]	355	–	–	–
2016	–	389	113	502
2017[d]	453	428	123	551

[a] The spring precalving estimate is calculated by taking the fall estimate and subtracting the number of known mortalities.
[b] The fall prehunt population size estimate is based on highest count of adults and calves during aerial surveys from April through August.
[c] Comprehensive aerial surveys were not conducted, no data available.
[d] High count was determined using a more detailed photo census flight.

Recommendations for Activity 1.1.

We recommend continued spring aerial minimum count abundance surveys or photocensus to estimate population status and trend and allowable harvest of bison.

ACTIVITY 1.2. Ground sex and age composition surveys (objective M2).

Data Needs

Bison composition data are needed to ensure that bull-to-cow ratio objectives are met and determine calf recruitment.

Methods

In late summer or fall, large groups of bison (100 or more) were observed (from the ground or air) and group locations were recorded; ADF&G staff then traveled by ground vehicle to the location of the group as soon as possible. After several failed attempts to gain access to private land in September and October to count bison groups, ADF&G increased efforts to conduct these counts in August when bison were more likely to be on DJBR. Upon arriving at the site, a 2-person team (observer and recorder) approached the group of bison, getting as close as possible without spooking them. Once in position, the observer used binoculars and a high-powered spotting scope to count and identify all individuals in the group as either cows, calves, or 1 of 4 age classes of bulls (yearling bull, small bull, medium bull, large bull; Table 2). While the observer classified bison, the data recorder wrote the sex and age classifications on a datasheet and tallied classification categories (Appendix A).

When possible, counts were conducted in one day to prevent double counting of animals, because bison groups can mix. If bison locations were unchanged from one day to the next, and groups were far enough apart that mixing was unlikely, then counts were sometimes completed the following day.

Results and Discussion

POPULATION COMPOSITION

RY13—Ground sex and age composition surveys were not conducted in RY13 due to lack of access to private land where the herd was grouped.

RY14—Ground sex and age composition surveys were estimated from a sample of 228 bison counted on 15 and 17 October 2014 (Table 2). Calf survival was 41 calves:100 cows, which is among the long-term average of 40–45 calves:100 cows. Calves composed 20% of the sample. Adult and yearling cows composed 50% of the sample.

The bull-to-cow ratio was 61:100, which met the management objective, with a yearling bull-to-cow ratio of 14:100 cows. We observed and classified 69 bulls during composition surveys based on horn size and shape. The bull sample consisted of 23% adults and 7% yearlings of the total population (Table 2).

RY15—Ground sex and age composition surveys were not conducted in RY15 because ADF&G staff were unavailable when the herd was grouped on DJBR, and ADF&G was not able to access private land when the herd moved to DAP.

RY16—Sex and age composition were estimated from a sample of 241 bison counted on 19 August 2016 (Table 2). Calf survival was 18 calves:100 cows, which is well below the long-term average of 40–45 calves:100 cows. Calves composed 9% of the sample. Our calf sample size was very small, so it is possible there were more calves in RY16 than data suggest. Adult and yearling cows composed 51% of the sample.

Table 2. Delta bison fall ground composition count data and estimated population size, regulatory years 2007–2017, Unit 20D, Alaska.

Regulatory year	Bulls:100 cows	Yearling bulls: 100 cows	Calves:100 cows	Adults		Percent yearling bulls	Percent calves	Total sample size	Estimated prehunt population size[b]
				Percent bulls	Percent cows[a]				
2007	55	13	55	20	48	6	26	214	516
2008	73	36	54	16	44	16	24	168	494
2009	57	24	44	16	50	12	22	179	435
2010	–	–	–	–	–	–	–	–	412
2011	40	7	53	17	52	3	27	266	407
2012	53	11	38	22	52	6	20	359	461
2013	–	–	–	–	–	–	–	–	476
2014	61	14	41	23	50	7	20	228	428
2015	–	–	–	–	–	–	–	–	–
2016	77	12	18	33	51	6	9	241	502
2017	101	16	25	38	44	7	11	319	551

[a] Includes yearlings and adult cows.

[b] The fall prehunt population size estimate is based on the highest count of adults and calves during aerial surveys from April through August.

The bull-to-cow ratio was 77:100, which met the management objective; the yearling bull-to-cow ratio was 12:100. We observed and classified 95 bulls during composition surveys based on horn size and shape; 33% of the total bull population were adults and 6% were yearlings (Table 2).

RY17—Ground composition surveys for sex and age were conducted on a sample of 319 bison on 7 August 2017 (Table 2). Calf survival was 25 calves:100 cows, which is below the long-term average of 40–45 calves:100 cows. Calves composed 11% of the sample. Our calf sample size was small, so it is possible there were more calves than the data suggest. Adult and yearling cows composed 44% of the sample.

The bull-to-cow ratio of 101:100 was the highest ever recorded, and met the management objective, with a yearling bull-to-cow ratio of 16:100 cows. We observed and classified 143 bulls during composition surveys based on horn size and shape. The bull sample consisted of 38% adults and 7% yearlings of the total population (Table 2).

Recommendations for Activity 1.2.

Continue annual bison composition counts to ensure bull-to-cow ratio objectives are met and to help further determine calf recruitment. We also recommend conducting counts while bison are on DJBR (late July to early August) where access is easiest.

ACTIVITY 1.3. Periodic aerial surveys to keep local farmers informed about bison movements by monitoring distribution. Distribution flights will be conducted from May through September, which is the length of the growing season in the Delta Junction area (objective M6).

Data Needs

Bison distribution flights are needed to find bison groups and conduct composition counts, document and record seasonal movement patterns, and to inform producers in DAP about current bison distribution in relation to unharvested crops.

Methods

We monitored bison movements by locating radiocollared and nonradiocollared bison from fixed-wing aircraft and from reports by people who observed and reported bison moving through the area. We also obtained some locations by ground tracking radiocollared bison and observations while completing other duties. Flights were conducted 2–3 times through the growing season (May–September) with 1 flight consistently in early August.

Results and Discussion

Bison spent an average of 39 days on DJBR during RY13–RY17 compared to an average of only 21 days during RY08–RY12 (Table 3). It is possible that increased military training on Donnelly Training Areas has pushed bison onto DJBR sooner and adequate bison range forage has kept them on the range until late August. Nonmotorized restrictions on DJBR also continue to help keep herd disturbances to a minimum and therefore help keep bison on DJBR longer.

Table 3. Date of the Delta bison herd (DBH) movements to the Delta Junction Bison Range (DJBR) and Delta Agricultural Project (DAP), 2007–2017, Unit 20D, Alaska.

Year	To DJBR	To DAP	Days from DJBR to DAP
2007	Jul 16	Aug 3	18
2008	Jul 14	Jul 31	17
2009	Jul 28	Aug 11	14
2010	Jul 29	Aug 15	17
2011	July 31	Aug 24	24
2012	July 29	Aug 30	32
2013	NA	NA	NA
2014	July 18	Aug 20	33
2015	July 20	Aug 30	41
2016	July 13	Aug 25	43
2017	July 13	Aug 21	39
2018	July 6	Aug 10	35
2019	June 30	July 31	31

DAP producers were informed about bison distribution throughout their crop growing season (objective M6). Extra emphasis was placed on the August flight to make sure farmers had accurate information about bison locations so they could plan to protect their crops for harvest, which usually begins about 1 September.

Recommendations for Activity 1.3

Continue summer distribution flights to keep local farmers informed about bison movements.

ACTIVITY 1.4. Health monitoring of DBH (objective M1).

Data Needs

The known health status of DBH is crucial to understanding diseases that may affect bison, and how they can be mitigated or prevented.

Methods

Health monitoring was based on extensive observations by ADF&G staff and the public, sample collection, and submission of samples for disease screening. DBH was observed through a combination of air and ground methods for more than 50 hours per year during RY13–RY17. Additionally, 80–100 hunters observed bison annually in RY13–RY17 during the hunting season. At hunter check-out we visually inspected approximately 5–10 carcasses from bison harvested each year for signs of disease or poor body condition. All hunters were also required to submit lungs in RY13–RY14 for visual inspection and we send any abnormalities to the lab for testing. In RY15–RY17 lung samples were not required, but ADF&G continued to request that hunters submit samples. Nearly 50% of the hunters submitted at least some lung tissue in RY15–RY17. We also attempted to collect samples from other bison mortalities that were observed or

reported, especially if they were in close proximity to domestic livestock. Beginning in 2018, nasal swabbing was added to the sampling protocol to look for respiratory infections and diseases.

Muscle tissue samples were collected in RY13–RY17 for genetic testing. These samples were mandatory during RY13–RY14 and optional in RY15–RY17.

Results and Discussion

Disease transmission from domestic livestock in the Delta Junction area was the greatest potential source of nonhunting mortality for bison in RY13–RY17. Cattle in the area have had infectious bovine rhinotracheitis, bovine viral diarrhea, bovine respiratory syncytial virus, infectious bovine kerato conjunctivitis, parainfluenza 3 (PI3), Johne's disease (present in Alaska livestock but not verified from Delta Junction), and *Neospora caninum* (D. Quarberg and C. Crusberg, local domestic livestock producers' personal communication with S. DuBois, Delta Area Wildlife Biologist, 2008). During RY13–RY17 we inspected 200–300 sets of bison lungs, approximately 50 entire bison carcasses, and visually inspected countless live bison in the field. Minimal bacterial infections that are commonly found in bison were identified in these sampling efforts. However, in RY13 a young female Delta bison became contained in a Yak pasture on DAP, which resulted in ADF&G euthanizing the individual. The necropsy revealed the bison was full of several pathogens and parasites commonly found in domestic livestock, some of which could potentially spread to wild bison. Based on all past health monitoring efforts, we believe there are no major health risks to DBH at this time. However, during annual migration the herd is in close proximately to domestic livestock and some domestic livestock have become feral within the range of DBH. ADF&G has no control over domestic livestock health and limited control over the consequences of contact between free-ranging bison and livestock.

Muscle tissue samples taken during RY13–RY17 are stored and archived, but genetic sequencing tests have not been run. We are working with several labs and universities to arrange funding to complete the testing so the genetic makeup of the herd can be further documented.

Recommendations for Activity 1.4.

Continue a vigilant sampling regimen of DBH mortalities to better understand diseases that may affect bison and how they can be mitigated or prevented. All abnormal specimens should be sent to the ADF&G's wildlife health veterinarian as soon as possible for further analysis. Health monitoring of DBH will continue to rely on extensive observation effort by ADF&G staff, bison hunters, and the public. Animals deemed of high interest by ADF&G staff regarding their health status may be immobilized or euthanized for examination and testing. Optional muscle tissue sampling should also continue to further document the genetic makeup of DBH.

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor harvest through drawing permit administration in order to keep the herd at desired levels (objectives M1 and M3).

Data Needs

Annual drawing report data are needed to track the number of harvested bison, help evaluate population size, track the relative take of bulls and cows, provide hunter opportunity, and to reduce hunter-landowner conflict.

Methods

We monitored harvest by drawing permit which enabled us to issue the appropriate amount of permits, maintain the desired herd size, as well as spread hunters out in the beginning of the season to help reduce over-crowding issues and hunter-landowner conflicts. This was accomplished through staggering the start dates of permit holders with a limited number of permits starting weekly through the month of October. The DBH hunt is the most popular draw hunt in Alaska with more than 18,000 applications received annually. Hunters were required to report within 2 days of harvest in person, by phone, or by using the after-hours check-out procedure. They reported harvest date, location, days hunted, transportation mode, commercial services used, and method of take. Successful hunters are also asked to complete a DBH checkout form and questionnaire. If hunters check out in person, the age of their bison is determined and other samples are collected as indicated in Activity 1.4. Bison teeth are aged first by looking at incisor tooth replacement for animals up to 5.5 years of age; for older animals incisor wear is considered. This technique was verified by Elk Island National Park in Canada by cross sectioning teeth; a user-friendly guide was developed that we used as quick reference for aging harvested bison (Olson 2005: page 89).

ADF&G staff have also sent in teeth to Matson's lab in Montana if an animal appeared to be very old, or if there were abnormalities in the teeth that are not addressed in the Elk Island chart. We have learned that the chart is accurate up to 5.5 years of age after comparing it with age data from Matson's lab. After 5.5 years of age there is more subjectivity in using the chart as tooth replacement is complete at 5.5 years of age, so an age greater than 5.5 years of age can only be determined by looking at tooth wear. Again, bison ages derived from the Elk Island chart are typically within 2–3 years of ages determined by Matson's lab. Given the accuracy that this chart provides, and the cost of sending teeth to the lab, we almost exclusively rely on the chart for aging. If hunters use either the phone to check-in or the after-hours check-out option, they are asked to leave either part of the jaw or send photos of the jaw to ADF&G so the animal can be aged.

Season and Bag Limit

RY13–RY17—The resident and nonresident bison hunting season was 1 July–30 June during RY13–RY17 hunting seasons. Residents could apply for the DBH hunt and successful permittees could take 1 bison every 10 regulatory years by drawing permit. Even if applicants were unsuccessful they could not apply to hunt bison in Alaska for 10 years. Nonresidents could take 1 bison per lifetime by drawing permit. Nonresidents were ineligible to hunt bison again in their lifetime after receiving a DBH permit. Beginning in 2016 applicants were able to apply up to 6 times per species/hunt. Prior to 2016, hunters could only apply for 3 bison hunts statewide, and only once per hunt (i.e., once for DI403, once for DI404, plus 1 additional bison hunt in the state).

Through ADF&G's discretionary permit hunt authority, hunting did not begin until 1 October each year in RY13–RY17 so that DAP farmers could finish harvesting their crops before the

hunt started. DAP crops are generally harvested by the time hunters begin pursuing bison, minimizing crop damage by bison and the hunters pursuing them.

In RY13 and RY15–RY16, both the DI403 (bull) and DI404 (cow) hunts were held. In RY14 and RY17 only the DI403 hunt was held, with a bag limit of any bison. ADF&G and the governor's office also issued special permits for any Delta bison, designated as SI405 for each of the reporting years. Two SI405 permit were issued each year in RY13–RY17. Recipients of DI403, DI404, and SI405 permits were required to follow all regulations and permit conditions. The following conditions applied to the permits:

- Permittees were required to attend an orientation course or review an online orientation course before hunting. Inperson hunter orientations were conducted each year for RY13–RY17 before each hunt group started (5–7 times).

- Permittees for the DI403 and DI404 hunts were assigned specified periods to begin hunting between 1 October–10 November. These assignments were determined by the order permits were drawn.

- Permittees for the SI405 hunt were assigned a hunting period of 1 October–31 March.

- Permittees were required to use a rifle capable of shooting a 200-grain bullet with 2,000 ft/lb of retained energy at 100 yards. Certain muzzle loading and black powder cartridge rifles also qualified. Bows and crossbows had to comply with the legal qualifications for big game hunting listed in the Alaska hunting regulations in order to be a legal means of harvest.

Results and Discussion

Harvest by Hunters-Trappers

Seventy-five bison were harvested in RY13, 72 were harvested in RY14, 65 in RY15, 47 in RY16, and 79 in RY17. The harvestable surplus (objective M3) was met each year during the reporting period. However, harvest was below the available surplus in RY15 and RY16, (Table 4).

Permit Hunts

RY13—Ninety-five (93%) permit holders hunted, harvesting 37 bulls and 38 cows for a total of 75 animals (79% success; Table 4). We received 19,861 drawing permit applications and issued 102 permits (Table 5).

RY14—Seventy-six (93%) permit holders hunted, harvesting 43 bulls and 29 cows for a total of 72 animals (95% success; Table 4). We received 12,549 drawing permit applications and issued 82 permits (Table 5). The DI404 hunt was not held in RY14.

RY15—Ninety-seven (95%) permit holders hunted, harvesting 32 bulls and 33 cows for a total of 65 animals (67% success; Table 4). We received 23,701 drawing permit applications and issued 102 permits (Table 5).

Table 4. Reported Delta bison harvest data by permit hunt, regulatory years 2007–2017, Unit 20D, Alaska.

Hunt number	Regulatory year	Reported number of hunters	Number of hunters that did not hunt	Percent unsuccessful[a] permittees	Percent successful[a] permittees	Harvest					
						Bulls	(%)	Cows	(%)	Unknown	Total
DI403	2007	80	9	33	56	43	(96)	2	(4)	0	45
	2008[b]	100	7	19	74	38	(51)	36	(49)	0	74
	2009[b]	90	4	20	76	39	(57)	29	(43)	0	68
	2010	70	2	37	60	41	(98)	1	(2)	0	42
	2011	55	8	43	57	24	(89)	3	(11)	0	27
	2012	40	3	5	95	33	(94)	2	(6)	0	35
	2013	50	1	24	76	36	(97)	1	(3)	0	37
	2014[b]	80	6	5	95	42	(60)	28	(40)	0	70
	2015	48	4	25	75	30	(91)	3	(9)	0	33
	2016	51	1	48	52	22	(85)	4	(15)	0	26
	2017[b]	90	5	9	91	47	(61)	30	(39)	0	77
DI404	2007	75	3	24	72	5	(9)	49	(91)	0	54
	2008	70	3	40	56	3	(8)	36	(92)	0	39
	2009[c]	–	–	–	–	–	–	–	–	–	–
	2010	50	8	30	54	2	(7)	25	(93)	0	27
	2011	50	3	40	60	4	(14)	24	(86)	0	28
	2012	35	2	27	73	4	(17)	20	(83)	0	24
	2013	50	4	24	76	0	(0)	36	(100)	0	36
	2014[c]	–	–	–	–	–	–	–	–	–	–
	2015	49	1	38	63	0	(0)	30	(100)	0	30
	2016	50	2	40	60	2	(11)	17	(89)	0	19
	2017[c]	–	–	–	–	–	–	–	–	–	–

-continued-

Table 4. Page 2 of 2.

Hunt number	Regulatory year	Reported number of hunters	Number of hunters that did not hunt	Percent unsuccessful[a] permittees	Percent successful[a] permittees	Harvest			
						Bulls (%)	Cows (%)	Unknown	Total
Total for all permit hunts[d]	2007	156	12	28	64	49 (49)	51 (51)	0	100
	2008	172	10	28	66	42 (37)	72 (63)	0	114
	2009	91	4	20	76	40 (58)	29 (42)	0	69
	2010	121	10	30	58	44 (63)	26 (37)	0	70
	2011	106	11	41	59	29 (52)	27 (49)	0	56
	2012	76	5	15	85	38 (63)	22 (37)	0	60
	2013	102	7	21	79	37 (49)	38 (51)	0	75
	2014	82	6	5	95	43 (60)	29 (40)	0	72
	2015	99	5	31	69	32 (49)	33 (51)	0	65
	2016	103	3	53	47	26 (55)	21 (45)	0	47
	2017	92	5	9	91	49 (62)	30 (38)	0	79

[a] Prior to 2011 the percent successful and unsuccessful included those who did not hunt and was calculated based on the total number of permits. Post 2011 percent success was calculated on the number of successful hunters compared to the number who hunted.

[b] The DI403 hunt was for either-sex bison.

[c] There was no DI404 hunt in regulatory years 2009, 2014 and 2017.

[d] Total also includes the 1 or 2 SI405 permits issued per year.

Table 5. Delta bison hunt applications received, and permits issued, regulatory years 2007–2017, Unit 20D, Alaska.

Regulatory year	Applications received	Number of permits issued			
		DI403	DI404	SI405	Total
2007	15,397	80	75	1	156
2008	16,597	100	70	2	172
2009[a]	11,026	90	–	1	91
2010	20,711	70	50	1	121
2011	19,535	55	50	1	106
2012	19,080	40	35	1	76
2013	19,861	50	50	2	102
2014[a]	12,549	80	–	2	82
2015	23,701	50	50	2	102
2016[a,b]	24,208	51	50	2	103
2017	26,803	90	–	2	92

[a] There was not a DI404 hunt in regulatory years 2009, 2014, or 2017. DI403 was an either sex hunt these years.
[b] Beginning in 2016 applicants were able to apply up to 6 times per species/hunt.

RY16—One hundred (97%) permit holders hunted, harvesting 26 bulls and 21 cows for a total of 47 animals (47% success; Table 4). We received 24,208 drawing permit applications and issued 103 permits (Table 5).

RY17—Eighty-seven (95%) permit holders hunted, harvesting 49 bulls and 30 cows for a total of 79 animals (91% success; Table 4). We received 26,803 drawing permit applications and issued 92 permits (Table 5). The DI404 hunt was not held in RY17.

Number of Days Hunted

RY13—Successful hunters with bull permits (DI403) hunted a mean of 5.7 days and unsuccessful hunters hunted a mean of 9.4 days. Successful hunters with cow permits (DI404) hunted a mean of 6.4 days and unsuccessful hunters hunted a mean of 9.4 days (Table 6).

RY14—Successful hunters with either-sex permits (DI403) hunted a mean of 3.9 days and unsuccessful hunters hunted a mean of 7.3 days. The DI404 (cow) hunt was not held, because DI403 was an either-sex hunt (Table 6).

RY15—Successful hunters with bull permits (DI403) hunted a mean of 6.8 days and unsuccessful hunters hunted a mean of 16.9 days. Successful hunters with cow permits (DI404) hunted a mean of 7.1 days and unsuccessful hunters hunted a mean of 11.6 days (Table 6).

RY16—Successful hunters with bull permits (DI403) hunted a mean of 7.9 days and unsuccessful hunters hunted a mean of 15.5 days. Successful hunters with cow permits (DI404) hunted a mean of 12.5 days and unsuccessful hunters hunted a mean of 12.7 days (Table 6).

RY17—Successful hunters with either-sex permits (DI403) hunted a mean of 4.8 days and unsuccessful hunters hunted a mean of 9.4 days. The DI404 (cow) hunt was not held, because DI403 was an either-sex hunt (Table 6).

Table 6. Delta bison mean number of days hunted for hunts DI403 and DI404, regulatory years 2007–2017, Unit 20D, Alaska.

Regulatory year	Mean number of days hunted			
	Hunt DI403		Hunt DI404	
	Successful	Unsuccessful	Successful	Unsuccessful
2007	10.8	12.6	7.5	3.4
2008	6.4	10.8	6.8	12.4
2009[a]	5.0	10.4	–	–
2010	7.4	10.0	7.1	8.3
2011	7.0	13.1	6.5	7.7
2012	6.5	6.5	5.3	10.9
2013	5.7	9.4	6.4	9.4
2014[a]	3.9	7.3	–	–
2015	6.8	16.9	7.1	11.6
2016	7.9	15.5	12.5	12.7
2017[a]	4.8	9.4	–	–

[a] There was not a DI404 hunt in regulatory years 2009, 2014, or 2017.

Hunter Residency and Success

RY13—Ninety-two percent of successful hunters were nonlocal residents of Unit 20D, 5% were local residents, and 2% were nonresidents of Alaska (Table 7).

RY14—Ninety-six percent of successful hunters were nonlocal residents of Unit 20D, 3% were local residents, and 1% were nonresidents of Alaska (Table 7).

RY15—Ninety-seven percent of successful hunters were nonlocal residents of Unit 20D. There was only 1 local hunter and 1 nonresident hunter in RY15 (Table 7).

RY16—Ninety-four percent of successful hunters were nonlocal residents of Unit 20D, 6% were local residents, and there was no nonresident harvest (Table 7).

RY17—Ninety-four percent of successful hunters were nonlocal residents of Unit 20D, 6% were local residents, and there was no nonresident harvest (Table 7).

During RY13–RY17, nonlocals (state residents residing outside of Unit 20D) continue to be the most abundant participants in the DBH hunt, while local participation has consistently stayed low (residents of Unit 20D), and nonresident (people residing outside of Alaska) participation has tapered off (Table 7). The DBH hunt continues to be the most popular drawing hunt in Alaska, as bison are a unique species to hunt and DBH is the only road-accessible bison herd in Alaska. Most people who draw DBH permits are from Anchorage, the Matanuska Valley, or Kenai Peninsula, which are also the areas where most Alaska residents live. Because so many people apply for this hunt and it is a random draw, there is no discernable pattern to explain user groups who are awarded permits. Nonresident participation each year is not limited, but very few nonresidents apply and nonresidents may harvest only 1 bison per lifetime.

Table 7. Delta bison hunter reported residency and success for drawing permit hunts regulatory years 2005–2017, Unit 20D, Alaska.

	Successful					Unsuccessful						
Regulatory year	Local resident[a]	Nonlocal resident	Nonresident	Unk	Total (%)	Local[a] resident	Nonlocal resident	Nonresident	Unk	Total (%)		Total hunters
2007	8	90	1	0	99 (69)	2	42	0	0	44	(31)	143
2008	4	108	1	0	113 (71)	3	44	0	0	47	(29)	160
2009	1	66	1	0	68 (79)	0	18	0	0	18	(21)	86
2010	3	66	0	0	69 (63)	0	41	0	0	41	(37)	110
2011	2	53	0	0	55 (59)	2	37	0	0	39	(41)	94
2012	1	57	1	0	59 (84)	1	10	0	0	11	(16)	70
2013[b]	4	69	2	0	75 (79)	1	19	0	0	20	(21)	95
2014	2	69	1	0	72 (95)	0	4	0	0	4	(5)	76
2015	1	63	1	0	65 (69)	0	29	0	0	29	(30)	94
2016	3	44	0	0	47 (47)	0	53	0	0	53	(53)	100
2017	5	74	0	0	79 (91)	0	8	0	0	8	(9)	87

[a] Local residents reside in Unit 20D.

[b] Beginning in 2013 bison harvested on the SI405 permits (1–2 per year) are included in the data.

Harvest Chronology

RY13—Most harvest (49%) occurred during the first month of the hunting season in October. November and March were tied for the second highest harvest at 17% each (Table 8). December and January had the lowest harvest.

RY14—October, the first month of the hunting season had the most harvest at 43% of the total. November had the second highest harvest at 31% followed by 13% in March (Table 8). December and January had very little harvest.

RY15—October had the highest harvest at 32%. The rest of the harvest was fairly evenly distributed across the remainder of the hunting season, with December being the second highest at 17% (Table 8).

RY16—October had the highest harvest at 26%. The rest of the harvest was fairly evenly distributed across the remainder of the hunting season, with March having the second highest at 21% (Table 8). The overall harvest was significantly lower this year from past years likely due to the bison spending more time on private lands where hunting was not allowed, or the fee to hunt was deemed unaffordable to hunters.

RY17—October had the highest harvest at 57% of the total harvest. November had the second highest harvest at 19%, March had the third highest harvest at 16%, December and January had very little harvest (Table 8).

Table 8. Delta bison percent harvest by month, regulatory years 2000–2017, Unit 20D, Alaska.

Regulatory	Percent harvest by month											
year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Unk	*n*
2007	–	–	–	32	17	3	12	13	22	0	0	99
2008	–	–	–	29	23	3	1	19	26	0	0	113
2009	–	–	–	46	15	10	6	10	13	0	0	68
2010[a]	0	4	13	26	7	9	9	12	20	0	0	69
2011	–	–	–	38	16	2	5	9	27	0	2	55
2012	–	–	–	53	15	5	5	8	14	0	0	59
2013[b]	–	–	–	37	17	7	7	15	17	0	0	75
2014	–	–	–	43	31	0	3	11	13	0	0	72
2015	–	–	–	32	14	17	9	15	12	0	0	65
2016	–	–	–	26	19	11	6	17	21	0	0	47
2017	–	–	–	57	19	1	0	6	16	0	0	79

[a] The hunting season opened on 26 July in 2010.
[b] Beginning in 2013 bison harvested on the SI405 permits (1–2 per year) are included in the data.

Transport Methods

During RY13–RY17 highway vehicles were the single most common transport method for successful bison hunters, with 69–91% of successful hunters using highway vehicles each year (Table 9). Snowmachines were the second most common form of transportation. Hunters typically use highway vehicles in the early portion of the season before snow depth makes their use difficult. Hunters then usually use snowmachines. However, the Delta area has been receiving below average snowfall the last several seasons, which allows the use of highway vehicles later into the season.

Harvest Location

RY13—The majority of reported bison harvest occurred on the Delta Agricultural Project (72%), followed by the Delta Junction Bison Range (21%). Harvest from all other areas, which is mostly made up of land located on the U.S. Army Donnelly Training Area was 7% (Table 10).

RY14—The majority of reported bison harvest occurred on the Delta Agricultural Project (75%), followed by the Delta Junction Bison Range (24%). Harvest from all other areas, which is mostly made up of land located on the U.S. Army Donnelly Training Area was 1% (Table 10).

RY15—The majority of reported bison harvest occurred on the Delta Agricultural Project (71%), followed by the Delta Junction Bison Range (22%). Harvest from all other areas, which is mostly made up of land located on the U.S. Army Donnelly Training Area was 8% (Table 10).

RY16—The majority of reported bison harvest occurred on DAP (53%), followed by harvest from all other areas (26%), which is mostly made up of land located on the U.S. Army Donnelly Training Area. The Delta Junction Bison Range (21%) had the third highest harvest in RY16 (Table 10). The higher harvest on U.S. Army land this year was likely because bison were on private land and inaccessible during the fall portion of the hunt (October and November) and the bison making an early migration toward their calving grounds along the Delta River in early February.

RY17—Most reported bison harvest occurred on the Delta Agricultural Project (72%), followed by the Delta Junction Bison Range (27%). Harvest from all other areas, which is mostly made up of land located on the U.S. Army Donnelly Training Area was 1% (Table 10).

Table 9. Delta bison hunter percent by transport method for permit hunts, regulatory years 2007–2017, Unit 20D, Alaska.

Regulatory year	Harvest percent by transport method: Airplane	Horse/dog team	Boat	3- or 4-wheeler	Snowmachine	Other off-road vehicle	Highway vehicle	Unknown	*n*
2007	0	0	0	2	7	5	85	1	143
2008	1	0	0	2	21	3	70	3	160
2009	0	0	0	7	15	2	73	2	86
2010	0	1	0	3	20	0	75	2	110
2011	0	0	0	10	15	2	69	4	94
2012	0	0	0	1	11	0	87	0	70
2013[a]	0	0	0	5	21	1	69	1	95
2014	0	0	0	7	8	0	83	3	76
2015	0	0	0	3	0	2	91	2	94
2016	0	0	0	2	18	5	73	2	100
2017	0	0	0	9	11	3	75	1	87

[a] Beginning in 2013 bison harvested on the SI405 permits (1–2 per year) are included in the data.

Table 10. Delta bison harvest percent by kill location during permit hunts for regulatory years 2007–2017, Alaska.

Regulatory year	Harvest percent by kill location: Delta Agriculture Project	Delta Junction Bison Range	Other	Unknown	*n*
2007	70	18	11	1	99
2008	74	24	3	0	113
2009	61	38	1	0	68
2010	60	31	6	3	69
2011	64	23	13	0	55
2012	88	7	5	0	60
2013[a]	72	21	7	0	75
2014	75	24	1	0	72
2015	71	22	8	0	65
2016	53	21	26	0	47
2017	72	27	1	0	79

[a] Beginning in 2013 bison harvested on the SI405 permits (1-2 per year) are included in the data.

Other Mortality

During RY13–RY17 the primary nonhunting mortality of DBH shifted from motor vehicle collisions to other human-caused sources such as agriculture and army developments. These mortalities mostly involved bison getting entangled in fences or other debris or machinery on the landscape as a result of agricultural and army operations. Predation by wolves and grizzly bears likely occurs, but is rarely documented. Wounding loss through hunting continues to a substantial source of mortality. Nonhunting mortality is outlined by regulatory year below and Table 11 represents total reported and estimated mortality of DBH during this reporting period.

RY13—One female bison jumped into a pasture of domestic yaks (Table 11). Upon discovery, ADF&G staff euthanized and necropsied the animal.

RY14—No nonhunting mortalities were documented in RY14 (Table 11).

RY15—A female calf was euthanized by the Alaska Wildlife Troopers in December 2015 after it was injured by a motor vehicle. Two female bison were found dead in January and February of 2016 (Table 11). One was found dead on a farmer's property and the other was a collared bison discovered dead on the Tanana river during an aerial survey. Causes of death were unknown.

RY16—In March 2017 an adult female bison was reported deceased on Donnelly Training Area (Table 11). This bison got its leg entangled in an Army gate on the installation and was not able to free itself.

RY17—No nonhunting mortalities were reported in RY17 (Table 11).

Recommendations for Activity 2.1.

Continue the current DBH drawing hunt structure with all current reporting requirements. Continuing to administer and monitor the DBH drawing hunt will provide hunter opportunity, help to maintain the population at desired levels, and ensure the long-term conservation of this herd as a disease-free wild bison herd (objectives M1, M2, M3).

Table 11. Total Delta bison mortalities, regulatory years 2007–2017, Alaska.

Regulatory year	Reported harvest	Wounding loss	Other known mortality	Total
2007	100	11	0	111
2008	114	12	0	126
2009	69	10	0	79
2010	70	8	5	83
2011	56	7	0	63
2012	60	5	2	67
2013	75	7	1	83
2014	72	6	0	78
2015	65	7	3	75
2016	47	7	1	55
2017	79	6	0	85

3. Habitat Assessment-Enhancement

ACTIVITY 3.1. Maintain adequate forage on the Delta Junction Bison Range (DJBR) to diminish bison damage to the Delta Agricultural Project (DAP) and to provide public bison hunting opportunity (objective M4).

Data Needs

Annual forage samples and post-fire analysis on DJBR are needed to determine the effectiveness of our planting, fertilizing, and fire rotation plan. Documenting bison's use of DJBR is also important in determining where future management efforts will be most beneficial in enticing bison to remain on DJBR for as long as possible each year.

Methods

To meet the management guidelines for DJBR set by the Alaska Legislature (AS 16.20.310), bison forage management occurs on more than 500 acres within the Panoramic and Gerstle fields annually. Habitat improvement projects occur across many more acres of DJBR outside of the fields, including creation of forest clearings for grouse and moose that also benefit bison. Management practices conducted by DJBR staff include planting oats, turnips, bluegrass, and other cereal crops, as well as fertilizing existing forage to enhance quality. Fertilizer rates and blends vary annually and by crop; further information on fertilizer use may be found in Delta Junction Bison Range annual reports which are available at the Alaska Department of Fish and Game office in Delta Junction. Other activities include mowing to control brush growth, fallowing unproductive areas to control unwanted and noxious plants, and prescribed fire to control undesirable species and to promote new growth of graminoid species that are more palatable to bison. These activities serve to fulfill objective C1.

ADF&G has taken steps to further enhance the productivity of the bison range, such as the creation of the Bison Range Youth Hunt management area in 2002. The drawing hunt was created to regulate moose hunting on the fields of DJBR to reduce the impact of moose hunting on bison and bison forage management on DJBR.

Note: All DJBR management is conducted in compliance with the 1979 legislatively designated mandates and the existing game management plan for DJBR (AS 16.20.310). An annual internal DJBR report is completed by the Delta Junction Bison Range Manager to track all management completed on the range. This data is then later entered into this report to be published (objective C1).

Results and Discussion

DJBR is managed on a calendar year and growing season basis. Therefore, data below are based on the growing season of that particular calendar year and do not reflect the regulatory year.

Calendar year 2013—Approximately 730 acres of bluegrass were fertilized on the Panoramic and Gerstle fields at a cost of $29,300. Fertilizer was applied at a rate of 200 lb/acre. The grass acreage was fertilized during 21–31 May 2013.

Approximately 230 acres (150 acres at Panoramic fields and 80 acres at Gerstle fields) of Mustang oats were planted during 13–30 June. Forage samples were not taken.

Approximately 160 acres in the Panoramic and Gerstle fields were disked and left fallow to control undesirable grasses and woody vegetation. Approximately 60 acres were mowed on the Panoramic and Gerstle fields to control woody vegetation.

Approximately 10,000 gallons of water were pumped into stock tanks at DJBR during late July–September. Rainfall measurements at DJBR totaled 8.30 inches on the Panoramic fields and 7.25 inches on the Gerstle fields. We placed trace mineral blocks at multiple locations at DJBR in July and removed them prior to the 1 September opening date of the bison range youth moose hunt.

Calendar Year 2014—Approximately 100 acres of bluegrass were fertilized in June 2014 at a cost of $7,708.90. Bluegrass was sampled 16 September and tested for relative feed value (RFV). A 100-acre field fertilized 24 June had an RFV of 80. An unfertilized field had an RFV of 69, and a 100-acre field that was seeded in 2013 had an RFV of 75.

Approximately 300 acres (200 acres at Panoramic fields and 100 acres at Gerstle fields) of Mustang oats were planted during 16–23 June. The following oat plantings were sampled on 16 September and tested for RFV: 116 acres planted 16 June at Panoramic fields, RFV of 141; 84 acres planted 23 June at Panoramic fields, RFV of 69; 100 acres planted 20 June at Gerstle Fields, RFV of 68.

Calamagrostis canadensis (bluejoint reedgrass) was sampled for RFV on 16 September at both Panoramic and Gerstle fields. Results showed an RFV of 145 at Panoramic field and 66 at Gerstle field. An RFV of 145 is very high compared to historical data and may be due to an early maturity sample.

Approximately 20 acres were disked and left fallow at the Panoramic and Gerstle fields to control bluejoint reedgrass and trees. Less than 100 acres at the Panoramic and Gerstle fields were mowed to control woody vegetation.

Bison consumed approximately 13,965 gallons of water from stock tanks at DJBR during late July–September. We placed trace mineral blocks at multiple locations at DJBR in July and picked them up in the fall prior to the 1 September youth moose hunt opener.

Calendar Year 2015—Approximately 210 acres of bluegrass were fertilized in May and June at a cost of $13,574.23. Sixty acres of Midnight Kentucky Bluegrass/Gold Nugget Bluegrass were planted on 17 June in Panoramic field. Forage samples were collected on 1 September to test for RFV. The new seeding had an RFV of 119. Another bluegrass sample was taken from a field that had been mowed in the summer but not fertilized. The RFV of that sample was 106.

Approximately 140 acres (60 acres of Panoramic fields and 80 acres of Gerstle fields) of Mustang oats were planted during 6–23 June. A 60-acre field in the Panoramic fields planted on 25 June had an RFV of 149. An 80-acre portion of the Gerstle field was planted 24 June had an RFV of 139 on 1 September.

Approximately 60 acres of Appin turnips were planted in the Panoramic fields on 6 June. Turnips sampled on 1 September had an RFV of 469.

Approximately 50 acres of Austrian field peas were planted 19 June on the Panoramic fields and had an RFV of 199 on 1 September.

Approximately 60 acres were disked and left fallow in the Panoramic and Gerstle fields to control unwanted grasses and trees. Two hundred acres were mowed on the Panoramic and Gerstle fields (100 acres on each) to control woody vegetation. The disking and mowing occurred during the months May–September. In addition to the interior fallow areas a fire line was put in around the entire perimeter of both the Panoramic and Gerstle Fields using a combination of both disking and bulldozer work to remove the vegetation down to mineral soil. A preburn vegetation assessment was also conducted on both the Panoramic and Gerstle fields in order to collect data to compare after a prescribed burn.

Approximately 11,160 gallons of water from stock tanks were consumed by bison at DJBR during late July–September. Tanks were not used as much as previous years due to the high rainfall during bison migration. We placed trace mineral blocks at multiple locations on DJBR in July and picked them up in the fall prior to the 1 September youth moose hunt opener.

Calendar Year 2016—Approximately 216 acres of bluegrass were fertilized in May and June 2016 at a cost of $17,667.63. Forty-five acres of Kenai Kentucky Bluegrass were planted 15 June on the Panoramic fields. Forage samples were collected on 8 September. The new seeding had an RFV of 121. Two other fields of bluegrass, which contained some *Calamagrostis* intermixed, were also sampled. The 2 fields had similar RFV values of 102 and 112.

Approximately 150 acres (85 acres at Panoramic fields and 65 acres at Gerstle fields) of Mustang oats were planted from 9 June to 18 June. In addition, 105 acres of oats were seeded as a cover crop for turnips and a new stand of bluegrass. Oats sampled on the Panoramic fields seeded 10 June had an RFV of 91 on 8 September. Oats sampled at Gerstle fields that were seeded on 17 June had an RFV of 175.

Approximately 60 acres of Appin turnips on the Panoramic fields seeded on 18 June had an RFV of 217 on 8 September.

Approximately 82 acres were disked and left fallow on the Panoramic and Gerstle fields to control unwanted grasses and trees. Approximately 150 acres were mowed on the Panoramic fields to control woody vegetation. Through a collaborative effort with the Alaska Department of Natural Resources (DNR), Division of Forestry, an 18-foot-wide fire break around the entire perimeter of the Gerstle and Panoramic fields was either created or improved around spruce islands within the field complexes.

Approximately 9,900 gallons of water were consumed by bison from stock tanks at DJBR from mid-June through September. Tanks were not used as much as previous years due to the moderate to high rainfall during bison migration. We placed trace mineral blocks at multiple locations at DJBR in July and picked them up in the fall prior to the 1 September youth moose hunt opener.

Calendar Year 2017—Approximately 315 acres of bluegrass and other mixed grass species were fertilized in May and June 2017 at a cost of $19,282.67. Eighty acres of Kenai Kentucky Bluegrass were planted in June on the Gerstle fields. Forage samples were collected on 31 August. We collected 5 samples of moderately to heavily grazed bluegrass and 1 sample from a newly planted Gerstle field which had little bison presence before the samples were collected. Bluegrass RFV averaged 104, ranging 90–119.

Approximately 110 acres of Mustang oats were planted on the Panoramic fields from 13 June to 23 June. In addition, 60 acres of oats were seeded as a cover crop for turnips on the Panoramic fields, and 80 acres were seeded as a cover crop for a new stand of bluegrass on the Gerstle fields. Oats were sampled on 31 August for RFV. Panoramic fields seeded on 17 June had an RFV of 191 and oats sampled on the Gerstle fields seeded in late June had an RFV of 95. The forage quality of the Gerstle field oats was likely lower because this field was more mature than the Panoramic oat field.

Approximately 60 acres of Pointer turnips on the Panoramic fields seeded 15 June had an RFV of 579 on 31 August.

Approximately 80 acres were disked and left fallow on the Panoramic and Gerstle fields to control unwanted grasses and trees. We mowed 125 acres on the Panoramic fields to control woody vegetation.

A prescribed burn of more than 800 acres was implemented on 22 and 23 April 2017. DNR Division of Forestry supplied 2 engines and 8–10 personnel to conduct the burn. The grass fields burned very well; also, fields that were primarily grass with some brush component burned well and the fire top-killed the woody vegetation. Some areas consisting primarily of taller and denser aspen and willow did not burn, as the tree rows still retained a high moisture content. Areas with dense brush also tend to lack the grass cover necessary to carry fire. A post-fire vegetation assessment on August 22 indicated that the burn was beneficial in promoting bison forage species over woody vegetation.

A grouse habitat improvement project was conducted on DJBR between the Gerstle and Panoramic fields in the vicinity of 1402 road and the bison trail. This work was done during winter 2017–2018. State forestry operated a dozer pulling a roller chopper to clear regenerated aspen and willow in the 1994 Hajdukovich fire area. Ten polygons totaling 203 acres were cleared to provide differing age classes of regenerating aspen and willow primarily to benefit ruffed and sharp-tailed grouse, but they will also create usable habitat for moose and bison. Some dozer work was also done on the Gerstle fields, with a corner of one of the spruce islands being walked down with the dozer, and 14 acres of large aspen in the southeast corner were roller-chopped.

Approximately 13,431 gallons of water were consumed by bison from stock tanks at DJBR during mid-June–September. Tanks were used more than the previous 2 years, probably due to warm weather in July and early August. We placed trace mineral blocks at multiple locations at DJBR on 5 July and picked them up in the fall prior to the 1 September youth moose hunt opener.

Recommendations for Activity 3.1.

Continue to manage as much forage on DJBR as possible with the current operating budget and personnel. This activity will help diminish bison damage to DAP and to provide public bison hunting opportunity (objective M4) by maintaining or increasing bison habitat quantity and quality.

ACTIVITY 3.2. Enhance bison summer range west of the Richardson Highway to increase its attractiveness to the Delta bison herd (DBH; Objective M5).

Data Needs

The U.S. Army's goal of providing forage on Donnelly Training Area is to draw bison away from desired army training lands. This helps the Army complete their training mission and in-turn helps ADF&G delay the migration to DJBR and eventually DAP. Bison are further benefited by this habitat work by limiting disturbance to them while they are calving.

Methods

Partnering with the Salcha–Delta Soil and Water Conservation District (SDSWCD), we advised the U.S. Army regarding habitat improvements on army land west of the Richardson Highway during RY13–RY17. This is the portion of DBH's range where the herd calves and spends the early summer months. Habitat improvement was completed on the Buffalo Dome Flat within the Delta River floodplain and on the southern portion of Donnelly Training Area. This work was conducted to try to draw bison away from the northern training ranges, which are more heavily used by the army. In addition, the area around Big Lake on the northern portion of Donnelly Training Area was seeded with bluegrass and has been maintained for bison forage production. Army management activities are listed below for RY13–RY17 following the management activities listed for DJBR.

Results and Discussion

Calendar Year 2013—A vegetation survey was conducted by SDSWCD on approximately 1,000 acres within Buffalo Dome Flats to identify and quantify the acreage that could be cleared of woody vegetation for natural regrowth of existing graminoid and forb species. Approximately 265 acres were fertilized by SDSWCD personnel using tractor equipment and approximately 22 tons of fertilizer was applied aerially by a contractor using fixed-wing aircraft.

Big Lake management included harrowing the range to break up and spread out bison manure. Approximately 25 acres of bluegrass were fertilized by SDSWCD personnel with tractor equipment. SDSWCD staff also leveled out 1.5 acres of berms, fertilized, and then seeded them with a bluegrass and annual rye mixture. Foxtail and woody regrowth were also monitored throughout the growing season by SDSWCD staff.

Calendar Year 2014—Bison manure was once again harrowed and broke up at Big Lake. Twenty-five acres of bluegrass were fertilized with tractor equipment. Berms were reseeded where bluegrass cover was poor. Bare areas at the tops of the berms where bison traffic was heavy and wallows were present were the main focus areas for fertilizing and seeding. All 2014 army land bison range management was completed by SDWSCD staff.

heavy and wallows were present were the main focus areas for fertilizing and seeding. All 2014 army land bison range management was completed by SDWSCD staff.

There was no management activity in calendar year 2014 at Buffalo Dome.

Calendar Year 2015—Fertilizer was applied to 145 acres at Buffalo Dome Flats in May. Approximately 25 acres were cleared of brush in September; primarily cottonwood <3 inches in diameter.

Bison manure was harrowed at Big Lake in the spring of 2015. Twenty-five acres of bluegrass were fertilized at Big Lake with tractor equipment. Foxtail and woody regrowth continued to be monitored. All 2015 army land bison range management was completed by SDWSCD staff.

Calendar Year 2016—Baseline data was collected by SDSWCD staff as to how to best control brush at Buffalo Dome Flats. Mechanical and herbicide treatment plots were established and compared to control plots that did not have any treatment done at all. SDSWCD or Army staff will attempt to go back to each site annually for 5 years to evaluate the success of the treatments.

No work was done at Big Lake in calendar year 2016.

Calendar Year 2017—First-year-post-herbicide analysis was attempted by SDSWCD, but not completed due to range closure at Buffalo Dome Flats.

No work was completed at Big Lake in calendar year 2017.

Recommendations for Activity 3.2.

Continue to make habitat improvement recommendations to the U.S. Army. Habitat improvement and maintenance is an important component of maintaining bison calving habitat. It also helps diminish bison damage to DAP and provides public bison hunting opportunity (objective M4) by maintaining or increasing bison habitat quantity and quality.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

DELTA BISON MANAGEMENT PLAN

In 2011, ADF&G staff prepared an update to the Delta bison management plan based on input from the public, recommendations of the Delta Bison Working Group, and best professional judgment including considerations of the department's present legal authorities, funding capabilities, and biological expertise. The updated plan was designated as interim in 2012 pending resolution of the issue of fencing (ADF&G 2012).

Bison conflict with private agricultural landowners in the Delta Junction area continues to be the biggest management challenge for the Delta Bison Herd. With this comes the risk of disease transmission between domestic livestock and Delta Bison. With domestic bison in the area, the conservation of the genetic purity of Delta Bison is also at risk. A more recent management problem is high-tensile fencing on private land. Bison have become trapped in enclosures as well as entangled in perimeter fence leading to several mortalities. The fences are also changing bison movement patterns and restricting bison hunting opportunity during the bison hunting season.

Property owners of many other unfenced lands also no longer allow hunting on their property. In combination, fencing and lack of permission to access private lands greatly reduces available bison hunting opportunity.

Anecdotal reports from hunters suggest that bison are exhibiting increased nocturnal activity and have increased utilization of forested areas during diurnal hours. This could be caused by less area for bison to roam due to the fences, and therefore more hunter presence on available bison habitat. Hunter reports of this being more evident later in the hunting season supports this theory.

Ongoing military activity on the calving grounds of DBH has also been a long running issue. These exercises disrupt natural movement patterns and may displace perinatal bison. Army management of training ranges (Activity 3.2) helps draw bison away from active training areas and also limits disturbance to bison. Army personnel also complete a wildlife survey before live ammunition is fired. ADF&G continues to work with the U.S Army to minimize the effect of training exercises on bison as much as possible.

Data Recording and Archiving

- Harvest data and capture data are stored on an internal database archived on an internal server, WinfoNet Data Archive (project title: Delta area survey and inventory: bison; http://winfonet.alaska.gov/index.cfm).

- All other electronic data and files such as survey memoranda, reports, and DJBR annual reports are located on the Delta Area Biologists computer; bwschmidt Home Drive (H:) Bison and archived in WinfoNet Data Archive (project title: Delta area survey and inventory: bison).

- Field data sheets, paper files, hard copies, etc. are located in the file cabinet located in Delta Junction Area Biologist office (MP 266.8, Richardson Highway, Delta Junction, Alaska).

Agreements

U.S. Army Garrison Fort Wainwright Integrated Natural Resources Management Plan.

Permitting

None.

Conclusions and Management Recommendations

The Delta bison herd (DBH) exceeded the population objective of approximately 360 bison (objective M1) during RY13–RY17 except in RY15 when the population of 355 met the objective (Table 1). At 453 animals, RY17 had the most animals above the precalving population. The number of drawing permits have been increased annually to decrease herd size. We will continue to adjust permit numbers to try to achieve the precalving population objective.

Health monitoring has not resulted in discovery of abnormal diseases in DBH (objective M1). No genetic samples have been analyzed from DBH, but samples have been archived and will be

analyzed when funding is available. There has been genetic testing completed on the Farewell Bison Herd, which is a transplant from the Delta bison herd. These tests didn't document any presence of cattle genes. During annual DBH movements, the herd comes into proximity of domestic livestock in the Delta Junction area. Several diseases are known to occur in domestic livestock in the Delta Junction area. ADF&G has no control over domestic livestock health and limited control over the consequences of contact between free-ranging bison and livestock. These consequences include negative impacts to the health of Delta bison and other wildlife species. We will continue to screen as many hunter killed bison as possible for diseases and genetic purity. Live animals deemed of high enough interest regarding their health status may be immobilized or euthanized for further examination and testing.

Herd productivity and calf survival greatly varied during RY13–RY17. Calf-to-cow ratios ranged 18–41 (9–20% of the herd). The bull-to-cow ratio was well above objective M2 of no less than 50 bulls (>1-year old):100 cows. In RY17 we recorded the highest bull-to-cow ratio on record at 101 bulls:100 cows. The low calf numbers in the RY16 composition survey may have been an artifact of few calves in bison groups that were selected for ground sex and age composition surveys. The spring aerial surveys (April–June 2016) showed above average calf counts, so it is possible the calf numbers are not as low as portrayed in the composition surveys. We will continue to evaluate ratios through future surveys.

Herd movements to the Delta Junction Bison Range appeared to shift slightly earlier than during the early years of DJBR. Prior to the year 2000, the bison typically arrived on DJBR in late July. Since 2000, bison have typically arrived on DJBR about 2 weeks earlier than they did prior to 2000. In RY13–RY17, the average day of arrival to DJBR was 14 July. Bison are still migrating towards the Delta Agricultural Project in mid- to late August as they have since the creation of DJBR. This earlier arrival has led to bison spending more time on DJBR.

The bison conflict management objectives in the Delta Bison Management Plan, as listed in M4, were met. DJBR met the legislative intent to reduce conflicts between bison and agriculture and continued to benefit farmers by delaying and/or reducing bison movements onto DAP; however, we continue to strive to improve the situation. We administered the bison hunt to minimize conflicts with private landowners. Bison habitat was enhanced west of the Richardson Highway by the U.S. Army and the Salcha–Delta Soil and Water Conservation District, with advice from ADF&G. The department responded to all calls from members of the public who had questions or concerns about bison presence and behavior.

A harvestable surplus of 70 or more bison annually (objective M3) was maintained during RY13–RY17. Hunter success averaged 76% during RY13–RY17, which was slightly lower than during the 1970s–1990s (>90%; Table 8). However, this is higher than 69% success which was reported during RY11–RY12. The current hunt structure allows unrestricted access to DJBR during the entire season, and hunting parties often interfere with each other, possibly limiting success. In addition, hunters who seek bison on DAP often wait for access permission on certain tracts of land rather than seeking hunting opportunities elsewhere. This may contribute to slowing the rate of active hunting and could be impacting harvest rate. Further, Delta bison behavior has changed over the past 2 decades (S. DuBois, retired former ADF&G Delta Area Wildlife Biologist, personal communication). Bison harvest has been adequate for maintaining the herd at or near the population objective. We continue to try to spread hunters out and

encourage them to seek as many hunting locations as possible instead of waiting for permission on a particular tract of land. We also encourage hunters to hunt multiple days, as bison eventually move off private land where hunting may not be allowed. Hunt administration will continue to be important in managing the Delta bison herd.

The greatest challenges to DJBR management continued to be 1) controlling native grass, bluejoint reedgrass, and woody regrowth with nonherbicidal techniques; 2) developing more cost-effective forage management techniques; and 3) holding bison on DJBR as late in the fall as possible. We will continue work to improve these aspects of DJBR management.

During RY13–RY17 we observed an increased rate of wounding loss, particularly during either-sex hunts. This evidence was gathered through anecdotal reports by hunters in the field and ADF&G staff responding to and inspecting either wounded bison, bison that were found dead, and/or old bullet wounds observed in the carcass. This is a management challenge, the herd can sustain either-sex permits in some years and hunters do prefer it, but it needs to be balanced with the level of wounding loss that the public is willing to accept.

We will continue to investigate the possibility of improving bison viewing opportunities for the public on DJBR.

II. Project Review and RY18–RY22 Plan

Review of Management Direction

Management Direction

ADF&G will continue to manage the Delta bison herd to accomplish a reasonable balance between providing the greatest opportunity to hunt and view bison while keeping negative impacts to private property to a minimum. Management will include population abundance surveys, radiocollaring female bison to maintain an adequate sample of collared bison in order to track movements, harvest monitoring, disease screening, and habitat management on the Delta Junction Bison Range (DJBR). ADF&G will also work with the Delta agricultural community to keep them informed about bison management activities and to keep them notified about bison distribution throughout the growing season.

GOALS

Goal G4 was deleted because it was redundant in combination with Goal G1. Management goals G1, G2, and G3 were revised slightly to more accurately reflect goals for the plan period.

G1. Manage the Delta bison herd (DBH) to provide the greatest opportunity to hunt and view bison while keeping negative impacts to private property to a minimum.

G2. Minimize conflicts between bison and the public, including, but not limited to, agricultural interests in the Delta Junction area.

G3. Monitor for disease, manage to prevent any spread if disease were to occur, and ensure the long-term health and survival of this wild free-ranging herd.

CODIFIED OBJECTIVES

Alaska Statute (AS) 16.20.310 does require a game management plan for the Delta Junction Bison Range.

C1. Maintain a game management plan for DJBR.

REVIEW OF MANAGEMENT OBJECTIVES

The RY13–RY17 management objectives were appropriate. The RY18–RY22 objectives will follow the RY13–RY17 objectives unless the current Delta Bison Interim Management Plan is revised. If the plan is revised at any point management objectives will need to be changed to follow objectives outlined in the new plan. The objectives for the RY18–RY22 reporting period will be as follows.

Amounts Reasonably Necessary for Subsistence Uses

There are no customary and traditional use findings or amounts necessary for subsistence uses for the Delta bison herd.

Intensive Management

There are no intensive management objectives for DBH.

MANAGEMENT OBJECTIVES

M1. Maintain a disease-free pre-calving herd size of approximately 360 bison.

M2. Maintain a sex ratio of no less than 50 bulls (>1-year old):100 cows.

M3. Maintain a harvestable surplus of 70 or more bison annually.

Objective M4 is modified to more succinctly reflect the intent of this objective.

M4. Maintain adequate forage on the Delta Junction Bison Range and other lands to keep off of Delta Agricultural Project land for as long as possible.

M5. Enhance bison summer range west of the Richardson Highway to increase its attractiveness to the Delta bison herd and attempt to delay the herd's migration toward the Delta Junction Bison Range and private agricultural lands.

M6. Informing the public, particularly the Delta agricultural producers about bison distribution throughout the growing season and offering assistance regarding bison conflicts.

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Conduct spring aerial minimum count abundance surveys to estimate the number of adults in the population and the rate of calving (objectives M1 and M3).

Data Needs

Annual population data are needed to determine population size, harvestable surplus, and calf recruitment.

Methods

Methods are the same as RY13–RY17.

ACTIVITY 1.2. Ground sex and age composition surveys (objective M2).

Data Needs

Bison composition data are needed to ensure that the bull-to-cow ratio objective is met and to help further determine calf recruitment.

Methods

Methods are the same as RY13–RY17.

ACTIVITY 1.3. Periodic distribution flights from May through September, which is the length of the growing season in the Delta Junction area, and periodic distribution flights through the growing season (objective M6).

Data Needs

Bison distribution flights are needed to find bison groups for composition counts, to document and record/ archive seasonal movement patterns, and to inform DAP producers about current bison distribution in relation to unharvested crops.

Methods

Methods are the same as RY13–RY17.

ACTIVITY 1.4. Health monitoring of the Delta bison herd (objective M1).

Data Needs

Understanding the health status of DBH is crucial to understanding diseases that may affect bison, and how they can be mitigated or prevented. The need for genetic testing is also of high interest to ensure that genetic purity of DBH is conserved.

Methods

Continue health-monitoring efforts from the previous reporting period. Secure funding to complete genetic testing of tissue samples.

2. Mortality-Harvest Monitoring

ACTIVITY 2.1. Monitor harvest through drawing permit administration (objectives M1 and M3).

Data Needs

Annual drawing report data are needed to track the number of harvested bison, help evaluate population size, track the relative take of bulls and cows, provide hunter opportunity, and to reduce hunter-landowner conflict.

Methods

Methods are the same as RY13–RY17.

3. Habitat Assessment-Enhancement

ACTIVITY 3.1. Maintain adequate forage on the Delta Junction Bison Range to diminish bison damage to the Delta Agricultural Project and provide public bison hunting opportunity (objective M4).

Data Needs

Annual forage samples and post-fire analysis of DJBR are needed to determine the effectiveness of our planting, fertilizing, and fire rotation plan. Documenting bison use of DJBR is also important to help determine where future management efforts will be the most beneficial entice bison to remain on DJBR for as long as possible each year.

Methods

Same as previous reporting period; we do plan to plant earlier in the growing season to accommodate bison arriving earlier to DJBR.

ACTIVITY 3.2. Enhance the bison summer range west of the Richardson Highway to increase its attractiveness to DBH (objective M5).

Data Needs

The U.S. Army's goal of providing forage for bison within the Donnelly Training Area will draw bison away from their desired training lands. This benefits the Army by allowing them to complete their training mission and in-turn benefits ADF&G by delaying the migration of the Delta bison herd to the Delta Junction Bison Range and eventually to the Delta Agricultural Project. Bison are further benefited by this habitat work by limiting disturbance while they are calving.

Methods

Methods are the same as RY13–RY17.

4. Management with Public Participation and Outreach

ACTIVITY 4.1. Provide information to state and federal regulatory processes and the public on management of DBH.

Data Needs

In order for regulatory bodies and the public who engage in regulatory processes to understand management and biology of DBH, it is important for staff to communicate and coordinate with ADF&G advisory committees, the Alaska Board of Game, and local agricultural producers about bison management and biology and review and analyze regulation proposals for the Alaska Board of Game.

Increasing public awareness of DBH population trends, disease, and management direction will provide the public with valuable information to make informed decisions when participating in these regulatory processes.

Methods

We will attend meetings of ADF&G advisory committees and the Alaska Board of Game, to provide information about bison biology and management and review, and analyze regulation proposals for the Alaska Board of Game. We will distribute newsletters, brochures, news releases, and other documents to the public.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Management of the Delta bison herd will continue to be based on the 2012 Delta Bison Interim Management Plan. The plan was designated interim until a fencing resolution could be determined.

ADF&G will continue to work with local farmers to address bison conflict with private agricultural lands and to help minimize the negative effects of high-tensile fencing. ADF&G will also work with farmers to inform them of the risk of disease transmission between domestic livestock and wildlife in the area, including bison; and the importance of conserving the genetic purity of Delta bison.

ADF&G will also continue to work with the U.S. Army to address military training on the DBH calving grounds and to minimize these effects on the herd.

Data Recording and Archiving

- Harvest data and capture data are stored on an internal database archived on an internal server, WinfoNet Data Archive (project title: Delta area survey and inventory: bison) (http://winfonet.alaska.gov/index.cfm).

- All other electronic data and files such as survey memos and reports are located on the Delta Junction area biologist's computer; bwschmidt home drive (H:) bison and archived in WinfoNet Data Archive (project title: Delta area survey and inventory: bison).

- Field datasheets, paper files, hard copies, etc. are located in the file cabinet located in Delta Junction area biologist's office (MP 266.8, Richardson Highway, Delta Junction, Alaska).

Agreements

U.S. Army Garrison Fort Wainwright Integrated Natural Resources Management Plan.

Permitting

None.

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Appendix A. Delta bison composition data sheet.

Delta Bison Composition

Date: _____

Observers: _____ Calves:100 cows =_____ Bulls:100 cows =_____

Group No.	Obs.	Time	Location	Cows	Calves	Yrling Bull	Sm. Bull	Med. Bull	Lg. Bull	Total Bulls	Total Comp.
			Total count:								


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