Lessons from Other Programs

In an effort to gain better insights into bison management programs in different states and Canadian provinces, FWP staff met with regional agencies, private landowners, and bison working groups. The following are summaries of five free-ranging bison management programs and one captive program. These case scenarios are presented so as to examine the successes and challenges of the respective programs. Though implementation and management differs among programs, and each is faced with conflicts and concerns unique to its specific circumstances, there are some general overarching lessons that can be gleaned from their collective experiences. Community and public involvement appears to directly tie into the acceptance and tolerance of free-ranging bison programs.

Henry Mountains Wildlife Management Area, Utah

Henry Mountains bison habitat.
PHOTO CREDIT: A. DOOD

The area occupied by bison within the Henry Mountains Wildlife Management Area comprises approximately 300,000 acres that range from 4,800 to 11,500 feet in elevation, and includes approximately 4,203 acres of private land (1.4 percent of the total) (Utah Division of Wildlife Resources, 2007b). The region consists of steep mountain slopes, flat mesas, deeply eroded canyons, benches, and foothills, which support salt desert shrub, pinyon-juniper, mountain brush, aspen-conifer, and subalpine vegetative communities (Utah Division of Wildlife Resources, 2007b). Bison have proved very adaptable and have utilized all of the elevations, topography, and plant communities within the area (Utah Division of Wildlife Resources, 2007b).

The free-ranging herd was reintroduced to the region in 1941 with 18 bison from Yellowstone National Park. Five bulls were added in 1942, following dispersal by some of the original bulls. There has not been a need for additional augmentations to the herd since that time (Utah Division of Wildlife Resources, 2007b). Traditionally, the population objective for the Henry Mountains herd was approximately 275 adults after the end of each hunting season. The current management plan aims to reach a new population target of 325 adults post–hunting season. This target is being achieved through an incremental increase to 305 in 2010, 315 in 2011, and 325 by 2012 (J. Shannon, Utah Division of Wildlife Resources, personal communication).

Disease management is an ongoing concern for the Henry Mountains herd. The three primary concerns are brucellosis, tuberculosis, and malignant catarrhal fever (Utah

Division of Wildlife Resources, 2007b). Following the detection of positive titers for brucellosis within the herd in 1962, the herd was corralled, tested, and inoculated for brucellosis. Individual bison suspected of infection were marked and then released for sport hunters to cull. Blood from hunter collection kits is tested annually, and there has been no indication of the presence of the disease since 1963. The herd is now considered brucellosis free (Utah Division of Wildlife Resources, 2007b). Testing for tuberculosis in 2001 indicated that the disease was not present within the Henry Mountains herd (Utah Division of Wildlife Resources, 2007b). Agencies have successfully worked with the region's livestock operators to convert domestic sheep grazing allotments to cattle in order to reduce the chance of infection of the bison with malignant catarrhal fever (Utah Division of Wildlife Resources, 2007b).

Bison and cattle have coexisted within the Henry Mountains since 1941. Cattle are managed within fencing and bison are free to move across the landscape. As the population of bison increased, so did tension with regional landowners. Efforts to mitigate these issues include the creation of the Henry Mountains Bison Committee. Public support and/or tolerance of the free-ranging herd appear to have increased following the creation of this group. Studies in the region have indicated that while bison and cattle often utilize different habitats, with bison grazing at higher elevations than cattle, there is substantial overlap in range use (Van Vuren, 1983; Utah Division of Wildlife Resources, 2007b). Within the arid climate of the Henry Mountains, grazing capacity is often limited for both cattle and bison by environmental factors. The BLM, the Utah Division of Wildlife Resources, conservation organizations, and sportsmen's groups have worked together to ensure that grazing continues to be shared by bison and cattle within the Henry Mountains. This effort has been supported by the creation of a Resource Management Plan, Grazing Allotment Plans, and the purchase of grazing privileges from willing sellers (Utah Division of Wildlife Resources, 2007b). There have also been substantial efforts by agencies and groups to improve the grazing habitat for livestock, bison, and mule deer. These programs have included prescribed burns, mechanical treatments, reseeding, and improvement of water sources (Utah Division of Wildlife Resources, 2007b). The impact of bison on regional agriculture has been limited. Bison have encroached upon irrigated agricultural fields during at least two periods of drought in the past 20 years. In both instances the bison were herded from the fields and the landowner was compensated for damages (Utah Division of Wildlife Resources, 2007b).

Though parts of the region have significant physical barriers to bison movement, it is probable that population management has had the greatest effect on the minimal dispersal observed. Public hunting of the Henry Mountain bison has been an essential part of the management program. Approximately 150 highly sought after permits are awarded annually. As of 2007, overall hunter success has been around 87 percent (Utah Division of Wildlife Resources, 2007b). There has been an increased effort by sportsmen and landowners to work together to reduce bison conflicts. Sportsmen's groups have spent hundreds of thousands of dollars on range enhancement and water resources, and have been active in assisting livestock producers with fence repairs.

Book Cliffs Wildlife Management Unit, Utah

Book Cliff's bison habitat.
PHOTO CREDIT: A. DOOD

The Book Cliffs Wildlife Management Unit (BCWMU) consists of approximately 2.1 million acres within Utah's Uintah and Grand Counties, which are managed as BLM lands, Native American Trust Lands, and State of Utah Trust Lands. The BCWMU is divided into three subunits. The Book Cliffs bison herd is managed on the Bitter Creek and Little Creek subunits, which consist of approximately 1.47 million acres, of which 5 percent is private land, 35 percent is Ute Tribe Trust Land, and the remaining 60 percent is BLM, Utah Division of Wildlife Resources, and State Trust Lands (Utah Division of Wildlife Resources, 2007a). The region of the BCWMU containing the bison herds varies in elevation from 7,500 to 9,000 feet, and is part of the arid Colorado Plateau ecotype. The vegetation consists of oak brush and sage, with some aspen and conifers (D. Mangus, Utah Division of Wildlife Resources, personal communication).

Book Cliffs: Ute Tribal

Though bison were historically present in the region, they were absent from the Book Cliffs until the Ute Indian Tribe reintroduced six bison onto the Uintah and Ouray Reservation in 1986 (Utah Division of Wildlife Resources, 2007a). Through additional introductions and natural growth the herd has increased to approximately 600 to 650, though the stated objective is 450 bison (K. Corts, Ute Tribe, personal communication). The tribe manages the population through the issuance of hunting permits, and has increased the number of permits in an attempt to reduce the size of the herd. They are also exploring the potential to sell some of the bison to other programs or tribes to further control the growing herd (K. Corts, personal communication).

The winter range of the tribal bison consists of a mix of desert scrub, pinyon-juniper, and sagebrush flats. Summer range consists of pine and grass meadows (K. Corts, personal communication). When the population numbers were closer to objective, the Ute Tribe reports that there was not a problem with bison moving off reservation land. As the size of the herd increased, bison began to move from the reservation onto adjacent BLM and private lands. This distribution shift resulted in conflicts with adjacent landowners (K. Corts, personal communication; D. Mangus, personal communication). A large number of the tribal bison are rounded up on an annual basis for disease testing. As of October 2010, there has not been any indication of brucellosis within the herd (K. Corts, personal communication).

Book Cliffs: Wildlife Management Unit Public Herd

The effort to reintroduce a free-ranging public herd to the Book Cliffs region began about 20 years ago. Following the movement of some of the tribal bison across the Book Cliffs, in 2006 the North Book Cliffs Bison Planning Committee (committee) was created to examine the potential of reintroducing a public herd to the region. The committee was made up of a diverse collection of public agencies, private landowners, and interest groups (Utah Division of Wildlife Resources, 2007a). The committee established management goals and reintroduction plans. The post–hunting season population goal of the public herd was set at 450 bison (Utah Division of Wildlife Resources, 2007a).

Reintroduction began in August 2008 when 14 bison that had been donated by the Ute Tribe were introduced to the Book Cliffs (D. Mangus, personal communication). In January 2009, 31 bison were captured from the Henry Mountains and 30 were relocated to the Book Cliffs, (D. Mangus, personal communication). The bison from the Henry Mountains were tested for disease prior to release. Though the original plan was for the release of 45 bison total, a surplus of bison at the Henry Mountains allowed the capture and release of an additional 40 bison in January 2010 (D. Mangus, personal communication). The 40 bison, plus a calf that was born while the bison were being held due to snowstorms, were released in May 2010. There are now approximately 100 bison in the public herd. The herd is divided into two groups, each of which contains approximately 50 bison. One group remains primarily on public land, and the other group moves between public land and reservation land. This latter group has some interaction with the tribal bison herd (D. Mangus, personal communication). As bison move between public and reservation lands, the management of the bison shifts between the Utah Division of Wildlife Resources and the Ute Tribe (D. Mangus, personal communication).

Bison being transported for reintroduction to the Book Cliffs.
PHOTO CREDIT: A. DOOD

The management plan calls for public hunting to be the principal population management tool, though it is believed that drought will have an impact on reproduction rates (Utah Division of Wildlife Resources, 2007a). The management plan states that if bison move beyond the BCWMU, they may be considered nuisance wildlife (Utah Division of Wildlife Resources, 2007a). When the population reaches the appropriate level to allow the implementation of the hunting program, hunter test kits will be used to monitor the

herd for disease, but until that time the Utah Division of Wildlife Resources will continue annual disease testing. The herd is currently free of reportable disease (Utah Division of Wildlife Resources, 2007a; D. Mangus, personal communication).

As within the Henry Mountains, there is overlap between the range use of bison and cattle, as well as with other wild ungulates. The Utah Division of Wildlife Resources, with the help of the committee and sportsmen's groups, completed cooperative range and habitat improvement projects on approximately 114,555 acres between 2002 and 2007, and plans to continue to implement range improvement projects (Utah Division of Wildlife Resources, 2007a). The Utah Division of Wildlife Resources and sportsmen's groups have also purchased lands and made those grazing allotments available to wildlife, including bison (D. Mangus, personal communication). This has reduced the contact between bison and livestock. Private grazing allotments are still maintained on the BCWMU.

House Rock Wildlife Management Area, Arizona

Bison utilize all elevations of habitat at House Rock. PHOTO CREDIT: A. DOOD

Though bison were historically present in small numbers throughout Arizona, unregulated hunting led to their extermination from the state (Bison Management Team, 2002). Charles J. "Buffalo" Jones established a herd on the North Kaibab Plateau in 1905, and the U.S. Congress listed bison as one of the wildlife species that should be maintained on the Kaibab Plateau during the establishment of the Grand Canyon Game Preserve (Bison Management Team, 2002). In 1926 Jimmy Owens sold 98 bison to the State of Arizona, which then moved them to the House Rock Valley (Bison Management Team, 2002). The USFS, BLM, Arizona Game and Fish Commission, and local livestock grazing permittees established an agreement, which created the House Rock Wildlife Management Area (House Rock) and determined it would be used for wildlife only (Bison Management Team, 2002).

House Rock is located along the southeastern edge of the North Kaibab Plateau in Coconino County, Arizona. It consists of 30 acres owned by the Arizona Game and Fish Department and over 60,000 acres managed by the USFS. The elevation varies from 5,200 feet in House Rock to over 8,000 feet on top of the North Kaibab Plateau. The terrain consists of arid, rolling plains with some canyons and the steep slopes of the North Kaibab Plateau and Saddle Mountain Wilderness. The vegetation varies from desert scrub and grasslands with some sagebrush at the lower elevations, to pinyon-juniper woodlands and ponderosa pine at the mid-elevation, to dense forests of spruce-fir, aspen, and some mixed conifers of ponderosa pine and white fir interspersed with subalpine meadows at the upper elevations (Bison Management Team, 2002).

The House Rock bison herd reached a population of around 300 during the late 1950s and early 1960s. The herd was then reduced to 100, and a population objective was set to maintain 100 bison (Bison Management Team, 2002; C. King, Arizona Game and Fish Department, personal communication). The bison hunting program was established in 1927, and was considered a herd culling operation, which entailed rounding up the bison using corral traps, and then having hunters selectively harvest them in a larger corral (Bison Management Team, 2002). Pressure from the public led to the transition to "fair chase" hunts in 1972 (Bison Management Team, 2002). The current population is estimated to have grown to over 300 bison as a result of the bison's ability to take refuge in Grand Canyon National Park during the hunts (C. King, personal communication).

Traditionally, the bison freely used the lower-elevation plains and woodlands of House Rock during early spring and summer and then moved toward the higher, more densely forested areas of the North Kaibab Plateau, outside of House Rock, in the fall and winter (Bison Management Team, 2002). Hunting pressure to reduce herd size has resulted in the bison moving off of, and remaining outside of, House Rock and the surrounding national forest land. The herd now seeks refuge from hunting pressure in the adjacent Grand Canyon National Park (C. King, personal communication). Older females, who traditionally led the bison back to House Rock to calve, tend to be the individuals selected by hunters during adult cow and yearling bull/cow hunts. Removal of these individuals has led to concern for retention of this migratory behavior. In 2010 the herd did not migrate down to House Rock to calve, and instead produced their young inside Grand Canyon National Park for the first time. The herd moves out of Grand Canyon National Park and onto national forest land after the hunt ceases. The boundary between the park and the national forest is permeable, and several sections of fence that used to separate the two jurisdictions have been destroyed in wildfires (C. King, personal communication).

Grand Canyon National Park considers the herd an invasive nonnative species because they possess cattle genes (C. King, personal communication; Gates et al., 2010). There is potential for Grand Canyon National Park to support a small population of genetically pure bison that could be kept in House Rock, but they do not want the herd within the park boundaries because it is believed the herd may be damaging natural and archeological resources. To successfully manage the herd, there will need to be a cooperative management program between the Arizona Game and Fish Department and the NPS to reduce conflicts and create a program that will allow for the coordinated management of the herd (C. King, personal communication).

The Grand Canyon Trust, a private nonprofit organization that owns the adjacent Kane Ranch, is also concerned with the status of the existing herd. The Trust's concern is not competition between bison and livestock for forage or the potential for disease transmission. They, like the national park, are concerned about resource damage to springs and other water sources; the persistence of rare, endemic plants found only in the subalpine meadows of the Kaibab Plateau; and protection of archeological sites (C. King, personal communication).

The House Rock herd is actively monitored for brucellosis from hunter-collected blood samples. The herd has not shown any evidence of brucellosis or other diseases of concern to date (Bison Management Team, 2002). In addition to hunting and wildlife viewing, House Rock continues to gain in popularity as a location for a variety of other recreational activities including hiking, bird watching, jeep and ATV tours, and firewood cutting (Bison Management Team, 2002).

Raymond Ranch Wildlife Area, Arizona

Raymond Ranch habitat.
PHOTO CREDIT: A. DOOD

The Arizona Game and Fish Department also manages a bison herd on the Raymond Ranch Wildlife Area (Raymond Ranch). This herd is actively managed within a fenced area. The area manager notes, however, that there is no such thing as "completely contained" bison. The Raymond Ranch, which is located near Flagstaff, consists of 9,438 acres owned by Arizona Game and Fish and an additional 5,199 acres that are leased from the Arizona State Land Department (Bison Management Team, 2002). The highest elevation on the Raymond Ranch is approximately 6,000 feet. The topography consists primarily of gently rolling plains intermixed with some shallow canyons and drainages. The vegetation progresses from primarily plains grassland with desert scrub in the washes and breaks at the lower elevations, to pinyon-juniper woodlands sparsely covering the higher elevations and ridges (Bison Management Team, 2002). The bison move freely within the Raymond Ranch and naturally rotate through the different sections of the ranch based on available forage (Bison Management Team, 2002).

Raymond Ranch was established in 1942 to preserve habitat for pronghorn antelope (Bison Management Team, 2002). Bison were introduced from House Rock in 1945, and their numbers increased to 275 in the 1970s (Bison Management Team, 2002). Similar to House Rock, a public culling operation involving the harvest of corralled bison was utilized to manage the herd down to 40 to 60 bison (Bison Management Team, 2002). Due to public outcry these hunting practices were modified in 1972. The wildlife area manager now guides approximately six to eight hunters annually, though this number is flexible depending on the current demographics of the herd and the population objective. The manager accompanies the hunters to minimize disturbance to the herd, and to help identify the correct age and sex class (Bison Management Team, 2002; A. Zufelt, Arizona Game and Fish Department, personal communication). The bison are monitored for brucellosis through hunter sample kits, and thus far the herd has not shown any evidence of infection (Bison Management Team, 2002).

The primary challenge associated with managing the Raymond Ranch herd is containing them within the wildlife management area. Perimeter fencing has progressed through modifications that include "electric fencing, extension of the fence to nearly nine feet, and use of welded wire panels. These measures have resulted in little improvement in the ability to confine the bison to the wildlife area" (Bison Management Team, 2002, pp. 6). There is concern that the increased height of fencing negatively impacts other wildlife; therefore most of the ineffective fence height extensions have been removed to allow the crossing of elk and mule deer (Bison Management Team, 2002). The perimeter fence currently consists primarily of barbed wire and high-tensile smooth wire. The high-tensile smooth wire fencing can be problematic for other species as the wire does not readily break, resulting in the entanglement of elk and mule deer (A. Zufelt, personal communication). Though the fencing is adequate to confine the bison during most of the year, escape is common during hunting seasons and somewhat common during drought periods when bison seek forage and water on neighboring rangeland. Dominance contests between breeding bulls sometimes results in roaming and escaped younger males (Bison Management Team, 2002, pp. 6). Concerns from neighbors of the Raymond Ranch consist mostly of interference with livestock operations, consumption of forage, and damage to fencing and corrals from escaped bison (Bison Management Team, 2002).

Section of Raymond Ranch perimeter fencing.
PHOTO CREDIT: A. DOOD

Grand Teton National Park and National Elk Refuge, Wyoming

The free-ranging bison herd that resides within Teton County, Wyoming, and the surrounding national park and national forest is managed cooperatively by the USFWS, Wyoming Game and Fish Department, NPS, and USFS (USDI, 2007). The National Elk Refuge consists of 24,700 acres that is part of the National Wildlife Refuge System managed by the USFWS (USDI, 2007). The 309,995-acre Grand Teton National Park and the 23,777-acre John

Bison with elk on the National Elk Refuge.
PHOTO CREDIT: S. ADAMS

D. Rockefeller Jr. Parkway are managed by the NPS (USDI, 2007). The bison herd ranges largely within the national park system and the National Elk Refuge, though some of the bison cross into the Bridger-Teton National Forest and onto state and private lands in the Jackson Hole area (USDI, 2007). The valley's elevation begins around 6,200 feet on the sagebrush-dominated valley floor that is intermixed with grassy meadows, marshes, and forests of pine, fir, spruce, cottonwood, and aspen (Craighead, 2006). Meadows cover much of the southern end of the National Elk Refuge and are an essential food source for the elk and bison that winter on the refuge (Clark, 1999). The valley is known for short, mild summers and long, cold winters, with annual precipitation averaging 16 inches (E. Cole, United States Fish and Wildlife Service, personal communication).

Bison were historically present in the region, but were extirpated by the 1880s (USDI, 2007). In 1948 a small herd of approximately 20 bison from Yellowstone National Park were reintroduced to the 1,500-acre Jackson Hole Wildlife Park, located near Moran, Wyoming. A population of approximately 15 to 30 bison were maintained in a large enclosure within the wildlife park until 1963 (E. Cole, personal communication). In 1963 brucellosis was discovered within the captive herd, and all of the adult bison were destroyed. Four of the vaccinated yearlings and five of the vaccinated calves were retained within the enclosure, and 12 certified brucellosis-free bison were added from Theodore Roosevelt National Park (E. Cole, personal communication).

In 1968 the herd, which was down to 11 bison and a few calves, escaped from their enclosure, and the decision was made to allow them to remain as a free-ranging herd (E. Cole, personal communication; USDI, 2007). The small herd began to winter on the National Elk Refuge in 1975, and began to utilize the supplemental winter-feeding program that the refuge provides for elk in 1980 (USDI, 2007). The refuge began to liberally feed the bison herd in an attempt to keep them separated from the elk population and to reduce human/bison conflict. The increase in quality and quantity of their winter diet due to supplemental feed allowed the herd's growth rate to reach about 13 percent annually, with approximately 1,100 bison observed in 2007 (USDI, 2007). The rapidly growing bison population raised concerns over increasing damage to habitat, competition with elk, the risk of brucellosis, human safety, private property damage, and the additional cost of providing supplemental feed (USDI, 2007).

A plan developed in 1998 would have utilized public hunting to reduce the number of bison on the National Elk Refuge. A lawsuit was subsequently filed and the court ruled that the USFWS had not complied with the necessary National Environmental Policy Act requirements for the establishment of a bison hunt on the refuge (Hatch, 2007). The Wyoming Game and Fish Department was able to move forward in 1998 with a hunt outside of the refuge and the park, but it resulted in little success as most bison tend to stay within the park and refuge lands during hunting season (USFWS, 2006).

The Final Bison and Elk Management Plan and Environmental Impact Statement was released in 2007 with the goal of managing the Jackson bison and elk herds and their habitat to improve environmental health and biotic integrity over the long term. It focuses on the improvement and restoration of native and cultivated forage within the National Elk

Refuge and the park; working with private and agency partners to reduce the conflict between bison and private landowners by providing resources to manage commingling with livestock and reduce depredation of private hay supplies; establishing a public education effort to increase the understanding of natural bison behavior, distribution, disease implications, and effects on other species; and developing a framework of management actions that could progressively transition from intensive supplemental feeding to a greater reliance on natural forage (USDI, 2007).

The plan established a bison population objective of 500, and allows for the public hunting of bison on the refuge (USDI, 2007). The plan also allows for the annual ceremonial taking of approximately five bison by Native American tribes associated with the region (USDI, 2007). The current attempt to reduce the number of bison through hunting has been hindered by the fact that the bison tend to stay in Grand Teton National Park, where they are safe from hunting pressure during the hunting season. Doug Brimeyer, a biologist with the Wyoming Game and Fish Department, notes that "the bison are extremely sensitive to hunter pressure" (Bozeman Daily Chronicle, 2010). In an attempt to encourage the bison to move back onto the National Elk Refuge where they can be harvested, the refuge has adopted a rotational strategy where hunting is permitted for two weeks, then closed for a week, and then reopened for two weeks (Bozeman Daily Chronicle, 2010). For the 2010 season, 80 "any bison" tags and 200 cow tags were issued (Bozeman Daily Chronicle, 2010), and during the season 69 bulls and 115 cows were harvested (E. Cole, personal communication).

Bison grazing in Grand Teton National Park.
COURTESY NPS

The bison that were part of the original herd that escaped from the captive wildlife park in 1968 had all tested negative for brucellosis (USFWS, 2006; USDI, 2007). Brucellosis was observed within the herd in the late 1980s, and as of 2007 between 57 and 84 percent of the herd has tested positive for brucellosis exposure based on small, non-random samples. These percentages indicate that antibodies are present from previous exposure, but do not necessarily indicate active infection. Research has indicated that a much smaller percentage of bison have active infections (USFWS, 2006). The 2007 plan allows the Wyoming Game and Fish Department to vaccinate bison for brucellosis on the refuge, as long as it is logistically feasible and the vaccines are determined to be safe for bison (USDI, 2007).

Sturgeon River Plains Bison Herd, Saskatchewan

Bison within Prince Albert National Park.
PHOTO CREDIT: A. DOOD

Though historically present within the region, plains bison were almost hunted to extinction during the 1880s. In 1906 the Canadian government purchased one of the last remaining plains bison herds from the United States (Parks Canada, 2009). This herd was used to establish the herd in Elk Island National Park, Alberta (Parks Canada, 2009). In 1969, 50 bison from the Elk Island National Park herd were transferred to the Thunder Hills, which lies to the north of Prince Albert National Park, as an additional meat source for First Nations People (Parks Canada, 2009). Upon release the bison began to move south out of the Thunder Hills. Most of these bison were relocated to other regions. Between 10 and 22 of the Thunder Hills bison were permitted to remain in Prince Albert National Park and formed what is now the Sturgeon River Plains Bison Herd (Parks Canada, 2009). The population continued to grow within the park and reached 400 in 2006 (Parks Canada, 2009). The population was reduced to approximately 200 following an anthrax outbreak. The current population has since recovered to close to its 2006 numbers (G. Vaadeland, personal communication). First Nations People have the reserved right to harvest bison from the Sturgeon River Plains Bison Herd outside of park boundaries with landowner permission through treaty rights (G. Vaadeland, personal communication).

The Sturgeon River Plains Bison Herd now utilizes an area of over 500 square miles, which consists of the southwestern corner of Prince Albert National Park and surrounding public and private lands (Parks Canada, 2008; G. Vaadeland, personal communication). The habitat within the region consists of aspen forests, native wet sedge, and dry fescue grasslands (Parks Canada, 2008). Parks Canada (2008) notes that this is the only disease-free, unfenced plains bison population that exists within its historic range in Canada, and the bison are allowed to freely move between the park and surrounding land.

The management of the Sturgeon River Plains Bison Herd is a cooperative effort between government agencies and regional landowners. Bison movement onto private land surrounding the park has led to some conflict with neighboring landowners over crop depredation. The Sturgeon River Plains Bison Stewards (SRPBS) is a nonprofit organization of concerned landowners, ranchers, farmers, and bison producers who work collectively with Prince Albert National Park and the Saskatchewan Ministry of Environment. The SRPBS seeks to conserve Canada's only free-ranging herd of plains bison still within their historic range and to create an environment where they can coexist with local landowners in a mutually beneficial way (SRPBS, 2010). The organization works to fund management of the bison on private land and to develop programs to mitigate the effects of bison on

private land (Parks Canada, 2009). The SRPBS hires wranglers to "gently move bison away from sensitive areas on private farm and ranch land" in the fall; completes vegetation monitoring and sampling on private land to gain a better understanding of bison forage behavior; and provides regional landowners with fencing material to keep bison out of sensitive areas (SRPBS, 2010). The organization also works to identify economic opportunities related to bison and create educational outreach within the region (Parks Canada, 2009).

In 2004 a three-year proposal was submitted to Parks Canada to obtain funding to create and implement a management strategy for the Sturgeon River Plains Bison Herd, to carry out research on techniques to influence the movement of bison, and to create and implement a communication strategy. The proposal was approved in 2005 (Parks Canada, 2008). The management strategy was created by a committee of 14 members representing all jurisdictions, some public interest groups, and individuals from various groups within the local community (Parks Canada, 2008). The recommendations that came out of the committee "include activities that can be undertaken on private lands to reduce the impacts of bison, reducing the cost to landowners associated with the presence of bison, as well as research-based adaptive management options that could be implemented outside and within the Park to influence the movements of bison" (Parks Canada, 2008). The research has led to the continuing development of programs to encourage bison to remain within the park, such as salt stations and the use of drift fencing to direct the movement of bison toward meadows within the park.

SRPBS hosted the Bison on the Edge Conference attended by over 150 individuals.
PHOTO CREDIT: A. DOOD

The 2008 Prince Albert National Park Management Plan proposed creating a trail system to move human activity away from core bison habitat (Parks Canada, 2008). The park has since decided to work with regional stakeholders to design and construct new trails that are designed "to withstand both human and bison traffic and to allow visitors the best opportunity to safely view bison in the Park, as opposed to trying to move human activity away" (G. Vaadeland, personal communication).

Beginning in 2010 and moving forward into 2012, the SRPBS, Parks Canada, and the Saskatchewan Ministry of Environment have begun the process to develop a long-term, adaptive management plan for the Sturgeon River Plains Bison Herd (G. Vaadeland, personal communication). This planning process is unique in that the federal and provincial governments have agreed to allow SRPBS, which represents private landowners,

to "sit at the table in full partnership with the government agencies in the development of this plan" (G. Vaadeland, personal communication).

Potential Sources of Bison

There are numerous bison management programs, including public conservation herds, Native American herds, and private conservation herds. In the past, animals provided by Wind Cave National Park, Elk Island National Park, Yellowstone National Park, Custer State Park, and Theodore Roosevelt National Park were primarily used to reestablish conservation herds. Historically many conservation herds were started or supplemented with bison from the Bronx Zoo by the American Bison Society (K. Aune, Wildlife Conservation Society, personal communication).

Bison from the Pablo-Allard herd being transported to waiting trains to take them to Canada. PHOTOGRAPHY BY N. A. FORSYTH; COURTESY MONTANA HISTORICAL SOCIETY

Management considerations that must be evaluated for source herds include the disease status of the herd, the origin of the herd's founding animals, the level of cattle introgression that is present, and the management regime the herds are habituated to.