Bringing Alaska's Wood Bison Back

THE AMERICAN CONSERVATION STORY THAT ALMOST WASN'T

By C. Tom Seaton

Wood bison, the largest terrestrial animal in North America, is a distinct subspecies from the American plains bison. Adult bulls such as this one can weigh over 2,200 pounds and have larger bodies, a differently shaped hump, woollier pelages and reduced secondary sex characteristics such as the hair of their beard and chaps compared to plains bison.

Credit: Doug Lindstrand

The magnificent rumble of thundering hooves roared past the fence, kicking up flecks of snow like confetti at a welcome home celebration, and a cloud of frozen breath hung in the air like fog, as the only population of wild wood bison (*Bison bison athabascae*) on U.S. soil in a hundred years ran to freedom. After more than 20 years of careful planning and preparation, North America's largest native land mammal finally made tracks in the snow of wild Alaska on April 3, 2015.

Exactly why wood bison disappeared from the United States and much of northern Canada is unknown. Habitat changes combined with hunting and other mortality factors likely caused their disappearance (Gates et al. 2001).

The question was: Could a viable wood bison population be restored in Alaska? The Alaska Department of Fish and Game (ADF&G) asked Alaskans at public meetings and in association with a feasibility study (ADF&G 1994) if they favored restoring the species. The answer was a resounding "yes." Habitat studies completed with help from some of Canada's leading experts (Berger et al. 1995, Gardner et al. 2007) showed that the state had some of the most valuable, unoccupied wood bison habitat in North America. What's more, an environmental assessment identified three areas that could each hold at least 500 bison in the Yukon River drainage (ADF&G 2013).

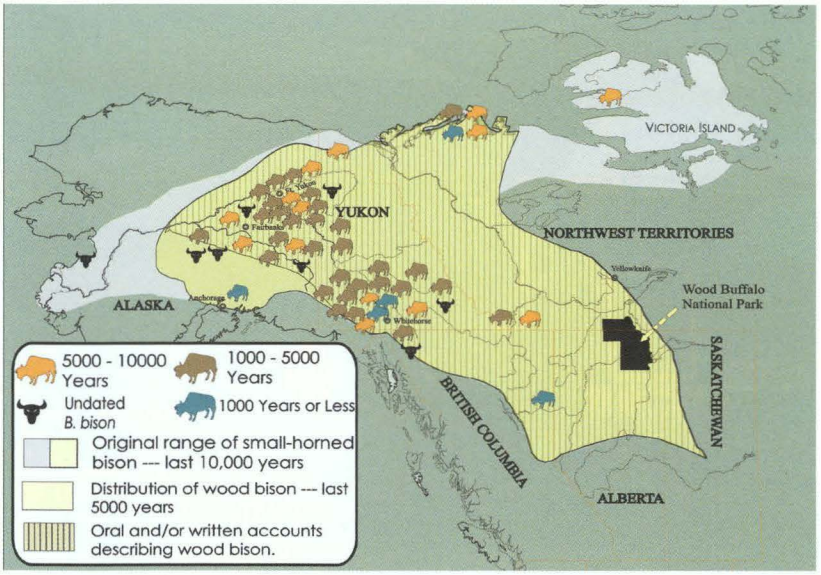
In 2005, Alaska's first State Wildlife Action Plan identified wood bison as a species of greatest conservation need, and funds obtained from the U.S. Fish

and Wildlife Service State and Tribal Wildlife Grants Program helped support housing and feeding animals being raised in captivity from 2008 to 2012. But planning their release into the wild started two decades ago and was delayed numerous times by bureaucratic challenges until just last year, when a team of dedicated biologists set the captive-reared herd free.

A Missing Species

Wood bison are the northern subspecies of American bison (*Bison bison*) — the iconic animals that once roamed the Great Plains of the United States and Canada. Although wood bison occurred in the northern part of the continent for the last 10,000 years, they disappeared from what is now Alaska sometime in the last 200 years based on zooarchaeological, paleontological, and oral and written historical documentation (see map; Stephenson et al. 2001).

The idea of pursuing a reintroduction effort first took hold in 1991 when ADF&G biologist Bob Stephenson was traveling in northeastern Alaska. He found bison bones in several places and wondered why the animals weren't still found on the extensive sedge meadows. Stephenson later asked local Athabascan elders and academic experts about when bison lived in the area and recorded oral histories and patterns of their use by native people. Based on carbon dating of dozens of collected skulls and other bones, Stephenson was able to document that indeed bison had once roamed the area 170 to 11,000 years ago (Stephenson et al. 2001).



Credit: Stephenson et al. 2001

▲ **Wood bison once inhabited much of the boreal forest regions of Alaska, Yukon, western Northwest Territories, northeastern British Columbia, northern Alberta, and northwestern Saskatchewan in North America. A population survived in Alberta and Northwest Territories, but the animals disappeared from Alaska.**

Busting Through Barriers

As the enthusiasm for the restoration effort took hold in Alaska, bureaucratic, political and logistical challenges also surfaced over the years, almost

◀ **On April 3, 2015, author Tom Seaton, the wood bison project biologist for the Alaska Department of Fish and Game, led captive-raised animals from a soft-release pen to freedom across the Innoko River in Alaska. The release represented a 20-year restoration effort by the state agency.**

Credit: Johane Janelle

Credit: Doug Lindstrand

▲ **A front loader pulls a container full of wood bison from a cargo plane at the Shageluk Airport in late March 2015. The specially modified containers were used to transport the captive-reared animals on a 300-mile plane ride to the release site located four miles north of the village.**

ending the reintroduction several times. However, consistent and strong public support provided the critical momentum to keep the project alive throughout the battles.

Given the lack of data associated with the animals' extirpation in 1997, USFWS opposed releasing them on a wildlife refuge in northeastern Alaska based on a perceived incompatibility with the refuge's management objectives. But scientific evidence supporting the history of wood bison as an extirpated indigenous species was growing. To keep the restoration effort moving forward, ADF&G continued to search for other potential release areas.

Other roadblocks popped up along the way. Wood bison were formally listed as endangered under the Endangered Species Act (ESA) in 1973. A corporate landowner holding mineral rights on all three potential release sites, a few Alaska state legislators, and high-level state land managers raised concerns that reintroduction of an ESA-listed species would impede the future of petroleum and mineral development in Alaska by tying it up in litigation from NGOs citing critical habitat designation under the ESA.

By 2005, the Wood Bison Restoration Advisory Group composed of a diverse group of citizens unanimously recommended continuing the project. Two years later, ADF&G completed an environmental review that included public comment once again supporting the reintroduction.

But the effort regained considerable momentum in 2007 when ADF&G partnered with the Alaska Wildlife Conservation Center (AWCC) — a nonprofit conservation organization about 50 miles from Anchorage — to hold Canadian bison stock for the required disease testing and quarantine period associated with import. The facility was already holding some wood bison placed there after USFWS confiscated them from a rancher who had illegally imported them in 2003. Another critical piece adding to momentum came from the U.S. Forest Service when it agreed to lease land adjacent to AWCC for the herd.

Around the same time, Canada's Wood Bison Recovery Team filed a petition with USFWS to down list wood bison from endangered to threatened. Meanwhile, ADF&G obtained the necessary import and ESA permits in 2008 as well as the State Wildlife Grant funding to support housing the animals. With everything now in place to care for the captive herd, 53 wood bison were transported from Elk Island National Park in Alberta to AWCC. Still the animals' endangered status continued to raise concerns among landowners and developers, making it too risky for the state to move forward with the bison reintroduction in the wild.

Developers' fears over the power of ESA regulations continued to cripple the project. To overcome the objections, in late 2008 USFWS and ADF&G started to develop a special rule under ESA Sections 10 (Exceptions) and 4 (Determination of endangered species and threatened species) to designate wood bison in Alaska as a "nonessential experimental population." The reintroduction stalled once again in 2009 when the corporate landowner urged the state to halt the project because of the potential for ESA litigation by NGOs that could stop or hinder development of oil, gas and mining resources.

By now, two years into the captive bison breeding project, the herd exceeded 100 animals, resulting in signs of overcrowding at the AWCC facilities. To mitigate this problem, ADF&G reduced breeding and had to cull some of the animals.

Finally in 2012, wood bison were down listed from endangered to threatened and in June 2014, ESA's Nonessential Experimental Population rule (Section 10(j)) was published along with a new environmental assessment by ADF&G (ADF&G 2013). The new rule under ESA Section 4(d) prohibited "critical habitat" designations under the ESA, gave management authority to the state and allowed for removal of the population if the protections for development changed because of litigation.

After more than 20 years of bumps and obstacles in the road, Alaska's Gov. Sean Parnell gave formal approval in August 2014 to release wood bison into the lower Innoko-Yukon Rivers area in western Alaska. Here — where there were no concerns about resource development plans as well as access to quality habitat and strong local support — the animals would have a good chance of doing well.

Herd on the Move

During the next seven months, the project accelerated from glacial to light speed. By this time, AWCC was holding 142 bison in captivity, but the state had only committed funds to transport 30 bison — the minimum number needed for the reintroduction. To give the population the strongest possible start, the goal was to release 130 animals. With money donated by the Safari Club International and Bass Pro Shop and matching funds from the Pittman-Robertson Act for wildlife restoration, along with discounts from transportation and fabrications companies, the target number began to look more feasible.

Shageluk in west-central Alaska was chosen as the release site because its airport runway was large enough for a C130 cargo aircraft to land and the area is surrounded by excellent bison habitat on land owned privately, by the state and by the Bureau of Land Management. Wildlife managers and local laborers built temporary pens for a soft release to give the animals a chance to become acclimated to the new habitat before setting them free. Two pens were built enclosing six acres with 3,500 feet of 8-foot-high game fencing. The teams also used existing trees and freshly cut tree trunks as fence posts where needed.

As an added precaution, biologists conditioned the animals during their last month at AWCC to follow a snowmobile tossing out food cubes. This strategy would help the team lead the animals to feeding stations upon their release into the wild, reducing the risk that they would scatter across the landscape.

To transport the animals, staff modified six large shipping containers by installing ventilation, removable partitions, air-cooling units, grip flooring, and feed and watering capabilities. Each container could safely hold seven adult cows, three adult bulls or 15 calves. Before shipping the animals, biologists closely examined the pens, alleyways, chutes, and the shipping containers to remove hazards that might injure or kill the bison during handling, transport and the soft release.

Ensuring the animals' safety during the trip was a high priority. Biologists tested a calming drug — haloperidol — on the bison at six dosage levels in the months prior to transport and continued to collect data on the drug's effects during the animals' actual transport. They also found the immobilizing drug thiafentanil to be effective and safe during testing protocols.

Credit: ADF&G

▲ **After immobilizing the animals, biologists carefully monitored each bull wood bison before lifting them into a shipping container where the drug's effects were reversed. The animals were then transported 1,000 miles from the captive breeding facility to the wild by truck and river barge.**

▼ **On June 25, 2015, two of 30 adult bull wood bison leave a specially designed shipping container on a barge and walk up the riverbank to freedom. Biologists wanted to enhance the genetic diversity of the previously released animals by letting the bulls out near the established cow groups.**

Credit: ADF&G

As part of the soft release, the team also shipped 40 tons of certified, weed-free hay, alfalfa cubes and grain pellets. Over 10 days, while the bison became acclimatized to their new environment, they were fed 15 tons of food in the soft release pens. With the help of custom-designed snowmobile sleds built to transport and unroll 1,000-pound round bales of timothy and brome hay, the team also placed 25 tons of feed in stations a few miles outside the pens along high-quality sedge meadows to provide a gradual transition to wild forage after the release.

With the release site now ready, it was time to take the animals to their new home. It took more than 50 people to transport the captive-bred bison by air and move them into the temporary pens on flight days. Loading crews made a final health check and gave the animals vitamins and a dewormer, and fitted them with radio collars while loading them into the shipping containers. To reduce stress on the animals, they worked in silence around the bison. Crews loaded the containers onto trucks, drove them 50 miles to the waiting cargo plane at the Anchorage airport, and then flew the animals 300 miles to Shageluk. Once there, the containers were removed from the aircraft and pulled to the soft release pens where the bison were unloaded.

The crews at both sites worked in harmony during limited daylight hours, using a single aircraft twice a day for three days. When all was said and done, they had shipped a total of 100 bison from March 23 to 25 by air, including 50 adult cows and 50 sub-adult animals that weighed from 200 to 1,400 pounds each.

The Freedom to Roam

Even with more than 20 years of preparation and planning and seven months of intense logistical efforts, the entire project risked failure if the animals were to scatter and fail to form a viable herd in the targeted habitat. The release strategy, which relied heavily on knowledge of bisons' social and instinctual behavior, was carefully designed to encourage the bison to stay in a 900,000-acre good habitat area without barriers. To minimize dispersal from this habitat and the chance of subsequent isolation or starvation, the strategy included many elements: food conditioning before release to encourage the bison to follow biologists on snowmobiles to feeding stations; a soft-release pen to acclimate the animals to the area; snow and ice cover at the time of the release to focus the bison on the feeding stations for the first few days; perceived water barriers to encourage the animals to stay relatively close to the release site; and calving starting a month after release to limit their movements.

During the first few weeks, the bison stayed within 12 miles of the release site and regularly visited the feeding stations. When the spring thaw occurred in May, the ice weakened along the Innoko River and surrounding sloughs, and nine bison drowned after falling though the thawing ice. Five more animals died from the apparent stress of transitioning from domestic to wild habitat; however, biologists found no evidence of predation, poaching, or infectious disease in the dead animals.

To ensure the genetic diversity of future generations, the plan included releasing animals with a sex ratio as near to 50:50 as possible in the founder population. After totaling the expenses, donations, and discounts from the April release, sufficient funds remained to ship 30 adult bulls, which would boost the gene pool. But by this time, air transport was no longer an option because the airport runway had thawed. Instead, after tranquilizing the bulls to load them in the containers and then reversing the effect, the team trucked the loaded containers 300 miles to Nenana. There, river barges transported the bulls the remaining 700 miles along the Tanana, Yukon and Innoko Rivers over 4-½ days to the closest cow groups near Shageluk.

Individual bulls in this shipment weighed between 900 and 2,250 pounds. They were released near cows before breeding season without a soft release, and the majority made contact with cow groups as expected. With the completion of this second shipment, crews had transported 130 bison without injury or mortality — a major accomplishment.

As the spring green-up progressed, the bison appeared to gain more energy and began exploring their range more widely. The vast majority — more than 98 percent — have either stayed within 30 miles of the release site within the predicted habitat area or developed a pattern of periodically venturing off and coming back to within 30 miles of the release point. Exceptions include two lone cows: one moved 150 miles north and the other about 150 miles south of the release site.

In the Wild at Last

Now that the release has finally taken place, all early signs of the herd's survival in the wild are looking good. While 19 animals have died in the process of natural selection, 16 calves were born in the first eleven months and after the first winter season, observations of their body conditions are encouraging.

Today, after many years of effort and thanks to the dedication of countless individuals, Alaska is finally home to a population of wood bison. With a little luck, they will prosper and rejoin the ecosystem of Alaska and the culture of the people who live here. ■

Credit: Johane Janelle

C. Tom Seaton, MS, AWB® is the wood bison project biologist for the Alaska Department of Fish and Game.