

The Buffalo Buzz

2022-2025 Winter Edition



About This Newsletter

Welcome to Wood Buffalo National Park's buffalo newsletter, The Buffalo Buzz! Here you'll find information, results, announcements, events, and all things buffalo-related. This is the second issue of The Buffalo Buzz, and it will be covering work completed from 2022-2025. New issues will be released twice a year, helping you stay up to date with the local herd happenings!

Disease in Wood Buffalo National Park (WBNP)

Wood buffalo are tough animals. They survive harsh winters and sweltering summers, all while searching for enough food to support their massive 2,500 lb bodies.

But even the toughest animals can get sick. Bovine tuberculosis and brucellosis, chronic cattle diseases, can affect buffalo within the park, with varying consequences.

Bovine tuberculosis was first recorded in WBNP in 1937, while brucellosis was first recorded in 1956. It has been reported that approximately 42-49% of the bison in WBNP have tuberculosis and 40-50% have brucellosis. Studies have indicated that these diseases can make it difficult for bison to get pregnant or to carry their pregnancies to full term. Despite the widespread presence of disease, buffalo in the park continue to produce a healthy number of calves.

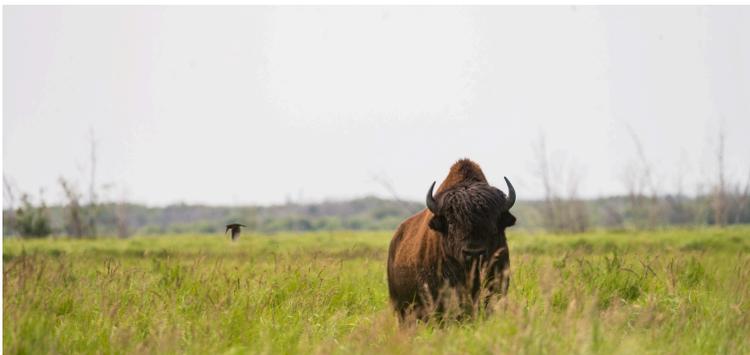


Photo: Jenna Rabley

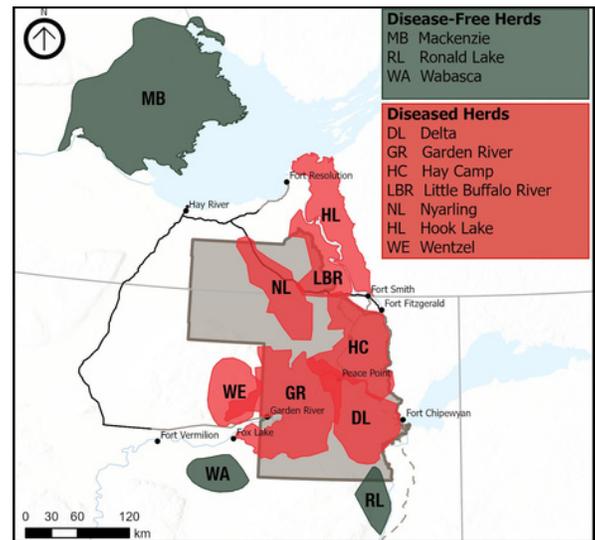


Figure 1. General areas of diseased and non-diseased buffalo herds in the greater Wood Buffalo ecosystem.

In other good news, not all herds in the greater Wood Buffalo ecosystem have been affected by bovine tuberculosis and brucellosis. So far, disease has never been detected in the Ronald Lake, Wabasca or Mackenzie herds. To maintain their disease-free status, WBNP is working in partnership with local Indigenous Nations, the Government of Alberta, and the Government of Northwest Territories. Together we track bison movement and prevent further disease spread in the greater Wood Buffalo ecosystem.



Beyond the Diagnosis: The Resilience of Buffalo in Wood Buffalo National Park

An interview with Parks Canada Wildlife Veterinarian Dr. Todd Shury

Dr. Todd Shury is the Manager of Wildlife Health and Management at Parks Canada, and he is part of a team called Bison Integrated Genomics (BIG) team. BIG is a team of researchers and scientists working to protect wood bison from serious threats.



What diseases affect buffalo in the park and how do they impact their health?

Anthrax is naturally occurring and can be found in the soil in certain areas. It is suspected that wet spring conditions followed by hot, dry weather may trigger outbreaks. Anthrax can cause buffalo to become ill and potentially die, within about a week or so.

Tuberculosis and brucellosis are chronic diseases originally found in cattle, but they have spread to buffalo herds in and around WBNP. Research shows that brucellosis can lead to higher rates of miscarriages, weaker calves at birth, and infertility. Studying tuberculosis in wild animals is challenging, so we often rely on cattle studies for insight. These studies found it difficult to distinguish between tuberculosis-infected and healthy animals but showed that some infected individuals showed symptoms such as weight loss, reduced appetite, coughing, and generally poor health.

How do we see disease impacting the buffalo in the park?

It's difficult to consistently observe or study wild animals, because they are always on the move. From a western science perspective, we do not see consistent disease symptoms in animals living on the landscape. Brucellosis tends to lead to lower birth rates, and joint problems. Tuberculosis can cause weakness, damaged lungs, and weight loss. Observations from WBNP, female bison are having a good number of calves each year. This means that fertility rates are healthy for a wild population despite the presence of the disease in the park. Although buffalo in the park have lived with high rates of these diseases for decades, it's hard to know how wild buffalo would be impacted.

Are there visual signs to indicate that a buffalo is sick?

It is usually very difficult to identify infected buffalo by just looking at them. They can carry one or both diseases for a very long time without showing any external signs of infection. Several Indigenous communities have shared that it is possible to observe sick buffalo as they get older. Western science observations suggest the same; older buffalo or those in later stages of infection may limp, lose a pregnancy, cough, have poor body condition, or swollen joints.

Is tuberculosis and brucellosis the reason buffalo numbers have declined in WBNP since the 1970s?

The rates of disease in the park are high but this is not likely to be the only reason that buffalo populations have declined. There could be several reasons for declines, including drowning due to flooding, anthrax outbreaks, predators and changes in habitat. While the presence of these two diseases impact buffalo health, it's likely the combination of other natural events. Animals carrying disease may exhibit symptoms when under stress – like during a dry summer with limited food availability.



How are brucellosis and tuberculosis transmitted?

Tuberculosis is primarily transmitted through direct contact, buffalo to buffalo, through coughing or close contact. Brucellosis is different from tuberculosis because it is only transmitted after a cow (a female bison) loses a pregnancy or gives birth to an infected calf. Other members of the herd may get infected when they lick the calf or fetus, which is a regular social behaviour in buffalo.

Is there a method to test for tuberculosis in buffalo?

Unfortunately, there currently aren't any effective methods for testing tuberculosis in living buffalo. Right now, the only valid test is a skin test that requires the buffalo to be captured and injected with a special protein called tuberculin. We then must wait three days before recapturing the same buffalo and gathering the result of the test. Tissues from hunted buffalo or buffalo killed in a vehicle collision need to be tested in a specialized laboratory to confirm the presence of disease.



Photo: Jenna Rabley

The good news is that Parks Canada is developing a blood test for tuberculosis in buffalo and is hoping to have another test, similar to a COVID-19 test, ready in the next two years than could be used while on the land.

How can bison harvesting outside the park support our work?

Buffalo meat harvested outside of the park can be tested for disease, if that's something you're curious about. Generally, lungs are needed to test for tuberculosis. You can contact Jack Saddleback, community liaison for the BIG Project, at jack.saddleback@usask.ca, or Alice Will, senior strategist for the BIG Project, at alice.will@usask.com, who will coordinate shipping and ensure the results get back to you. You'll also be helping Todd and his BIG team improve tests and get one step closer to helping the buffalo!

How would a vaccination be administered on the land?

We hope to develop something small and edible that buffalo will find tasty and interesting. Similar methods have been developed for other animals, such as for deer in Michigan. Another option may be to spray freeze-dried vaccine onto hay for buffalo to eat. A member of our team is currently working on this!

What's the likelihood of a healthy buffalo contracting either disease if it is within proximity to a diseased buffalo?

It is unlikely that buffalo would catch brucellosis from each other, except when a cow gives birth to an infected calf or loses a pregnancy. Herd members often lick newborn calves, which can spread disease and infect many animals. With tuberculosis, buffalo only pass on the disease when they are heavily infected in the lungs. This implies that the likelihood of infection is low unless a buffalo is in the later stages of infection.



Can different animals transmit brucellosis or tuberculosis? If so, what is the likelihood of this happening?

Buffalo can spread diseases like brucellosis and tuberculosis to cattle, elk, deer, or moose—and vice versa—but this is unlikely without close contact. Buffalo mostly spread disease to animals that behave like them, such as other buffalo or cattle. Canada's cattle herds don't have these diseases, so it's very unlikely that cattle would spread them. Elk, deer, and moose also don't usually carry these diseases, and predators like wolves, coyotes, and foxes are not significant carriers either. In the 1970s, Riding Mountain National Park recorded one case of tuberculosis in a wolf, but there have been no reported cases in wolves in Wood Buffalo National Park. Wolves may rarely get infected but are unlikely to spread the disease. Buffalo are far more likely to infect each other than other wild animals.

Buffalo in WBNP seem to persist regardless of these diseases. In your opinion, what makes them so resilient?

Buffalo are very tough and resilient animals. Even though their numbers dropped to the brink of extinction in the early 1900s, they have made a come back and seem to have good genetic diversity. When populations are very small there can be something called a 'genetic bottleneck'. It means that animals who are more closely related can have birth defects, be more vulnerable to changes in their environment, and have increased risk of disease. Even if an animal carries disease, it might not affect them for many years. And it is only when they go through a tough winter, or some other stressful situation, that they become infectious to other buffalo.

Do you have questions?

If you'd like more information about brucellosis or tuberculosis in buffalo, have observations from the land you would like to share or have questions, please email jack.saddleback@usask.ca.

Voices from Communities Around the Wood Buffalo Region

Stories have always been at the heart of how people connect. Stories bring communities together, pass down knowledge, and help us understand each other as well as the world around us. Stories are the threads that tie us to one another and remind us of what it means to be human.

Sharing stories, memories, or photos helps us recognize that Indigenous Peoples have lived on—and cared for—the land that is now Wood Buffalo National Park since time immemorial. These stories honour that ongoing relationship and celebrate the rich cultural and ecological knowledge held by communities and Nations.

Not everyone may feel comfortable sharing personal stories, and that's okay. There are many ways to share, and they don't have to be your own. You might choose to share a traditional buffalo story, or a legend passed down in your community. Maybe you know how buffalo are named in your language or have teachings that highlight their importance.

We are all connected by buffalo and the following stories reflect deep relationships with the land, the water, and of course, the buffalo. Sharing them strengthens our ties to each other and to the land we all call home.



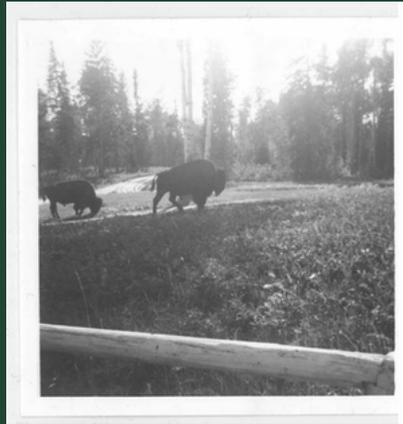
Photo: Sheryl Olvera



Life During the 1960s in Wood Buffalo National Park

In his early 20s, Norman Gauthier was working in Wood Buffalo National Park. He spent many days fishing in Hay Camp and observing buffalo by the calm waters of Pine Lake. Thanks to Sheryl Olvera for sending these amazing pictures for our archive.

Pine Lake:



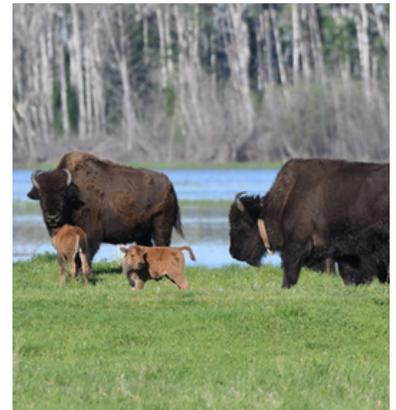
Collaring

In 2018, Environment and Climate Change Canada released a recovery strategy for wood bison in Canada. Brucellosis and bovine tuberculosis were identified as threats to bison survival. To prevent the spread of disease between herds, disease containment became a priority. The project requires real time information on animal location and movements. This information is best obtained using GPS radio collars. Since 2018, WBNP has deployed 181 collars on mature buffalo, split between 144 cows and 37 bulls.

Satellite collars share the precise location of the animals multiple times per day, letting us know where a bison is in real time. Over longer periods of time, data gathered by the collar can tell us of how movement patterns are influenced by changes in habitat and by season. On a frequent basis, our team monitors the locations of collared animals to assess their proximity to disease-free herds.

Due to the risk of spreading disease, WBNP has focused its efforts on collaring the Delta and Garden River herds. During early March of 2024, eleven cows and four bulls were collared in the Delta region. Unfortunately, bulls are extremely rough on collars during the rut and three of the four collars have since fallen off.

While the focus of our collaring efforts has been to prevent the spread of disease, the same data can be used to learn a lot about the herds! For example, collar data can help us identify which areas of the park buffalo prefer and also how rapidly changing conditions could affect them. We can also learn more about how predators influence the movement of buffalo and investigate their kill rate. In March 2024, four wolves were collared to explore these very themes.



WBNP is also using collar data from bison to study seasonal movement patterns, understand habitat preferences, outline herd ranges, and to study how fire might affect their food supply. However, collar data doesn't tell the whole story. That's why the WBNP buffalo team hopes to collaborate with Indigenous Nations to update the herd range maps. By weaving Indigenous Knowledge and Western Science together, we will create a better picture of buffalo movements, diets, and habitats – both past and present.

Predator-Prey Dynamics

This year, WBNP teamed up with the University of Alberta to study the predator-prey relationship between wolves and buffalo. From January to May, Brennan Stanfield (MSc) collected data to find out two things:

1. Do winter conditions affect how often wolves kill buffalo?
2. How does the relationship between wolves and buffalo in the Garden River and Delta herds affect where the buffalo go and how they behave?

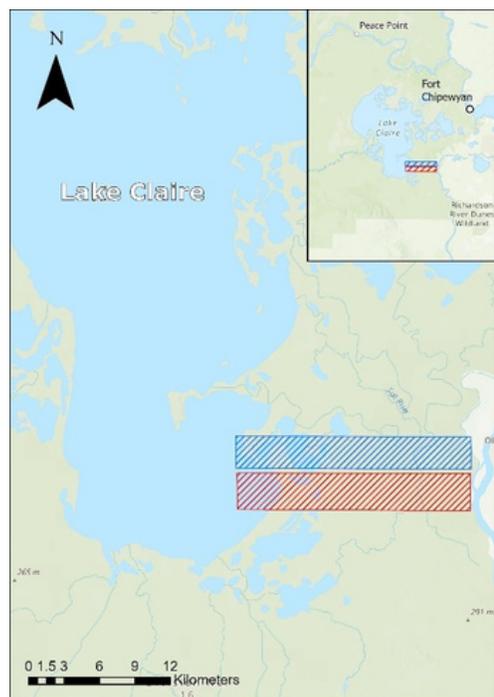


Photo: Brennan Stanfield

Using wolf collar data, Brennan investigated “wolf cluster sites.” Wolf cluster sites are areas that have been frequently revisited over four consecutive days within a small area. Over winter, cluster sites normally indicate the presence of a kill, rest or scavenge site. However, site investigation is required to confirm. If a kill is present on investigation, several samples are collected so that the age and health of the buffalo can be assessed. Wolf scat and buffalo feces are also collected across the landscape to increase our understanding of their diets.

In collaboration with Athabasca Chipewyan First Nation (ACFN), Mikisew Cree First Nation (MCFN), and Parks Canada staff, Brennan was able to investigate 131 sites in total. He confirmed that 32 of these were kill sites. He hopes to return next winter for his final field season.

If you have questions or would like more information please contact Brennan Stanfield at bstanfie@ualberta.ca or Jenna Rabley at jenna.rabley@pc.gc.ca.



Geo-fence

Radio collar technology can help us stay informed about animal movements, even if we are not actively monitoring the data. The Resource Conservation team at Parks Canada has set up digital boundaries called ‘geo-fences’ (see figure 4). When a collared animal enters or exits the blue and red areas, staff immediately receive an alert.

This technology allows us to keep tabs on buffalo movements without installing any physical equipment on the ground. Geofences are also being established by the Government of Alberta to monitor Ronald Lake herd movements. Both jurisdictions have agreed to work together to keep all partners informed.

Figure 2. Location of geo-fences (red and blue rectangles) in WBNP. Staff receive an alert when a collar crosses a geo-fence.

Ronald Lake Surveillance Flights

Satellite collars provide incredible real-time information, but what about uncollared animals?

WBNP can observe more animals by conducting regular surveillance flights in the southeast section of the park (Figure 3). With these flights, our team can measure the proximity of the Ronald Lake and Delta herds at different times of the year.



Photo: Jenna Rabley

Although a few flights ran in 2021, COVID-19 outbreaks prevented regular flight schedules. Beginning in 2022, there were flights twice a month between October and April, and once a month between May and September. Flights included staff members from WBNP, as well as observers from Mikisew Cree First Nation and Athabasca Chipewyan First Nation.



Figure 4. Shortest recorded distance between the Delta and Ronald Lake herds, observed on 2024-04-03.

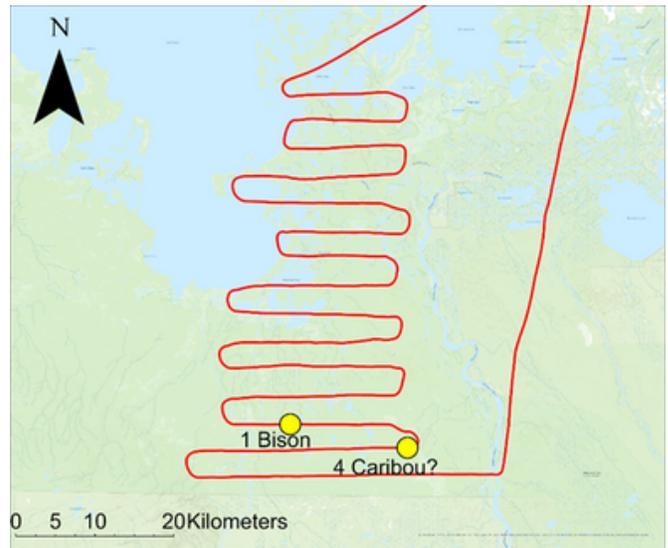


Figure 3. Example of buffalo surveillance flight tracks from 2024-10-31. Yellow dots show locations where animals were observed.

At first, observers didn't see any buffalo on their flights – however, this doesn't mean they weren't there, hidden amongst the trees (keep reading to see what we found on our trail cameras!). More buffalo were observed in 2023, allowing staff to estimate the distance between herds. The closest distance between herds in 2023 occurred in January, when the two groups were observed 30 km apart. The following year, in March, the herds were 20 km apart. Over the course of the winter in 2025, the herds were between 29 and 10 km from one another, with an average distance of 19 km.

Following surveillance flights, WBNP shares updates to the Ronald Lake Bison Herd Cooperative Management Board (RLBH CMB). RLBH CMB includes three Nations from Fort Chipewyan - MCFN, ACFN & FCMN - and works together to help lower the risk of disease spreading to the Ronald Lake buffalo herd.



Photo: Jenna Rabley

Ronald Lake Camera Grid

In 2021, 51 trail cameras were deployed in the southeastern corner of the park (Figure 5). This project was developed with the Alberta Biodiversity Monitoring Institute and with participation from Athabasca Chipewyan First Nation (ACFN) and Mikisew Cree First Nation (MCFN). Each year, parks staff and Fort Chipewyan community members repair sites, collect SD cards and swap camera batteries. The main purpose of this project is to try and answer the following questions:

1. When do Ronald Lake buffalo travel into the park and at what time of year do they leave?
2. How long do they stay and where do they go?
3. How many Ronald Lake animals are in the park during each season?
4. What is the body condition of these animals? Do they look healthy?
5. How many animals are in this herd? What is the ratio of cows, bulls, and calves? Are we observing cows with calves and yearlings, or lonely bulls wandering to new pastures?
6. Are we able to identify corridors that are used for travel?
7. Is herd movement largely confined to certain areas? What type of habitat are they most frequently captured in?

Camera data is still being analyzed, but there have been some interesting findings thus far.

- In 2022, Ronald Lake Buffalo were mostly spotted on the southern cameras, sticking close to the park border.
- In 2023, animals were mostly spotted in southern and central cameras. There were also a few animals captured on northern cameras, indicating that these animals may use more of this range than originally thought.
- Data from 2024 has been compiled and is now being sorted through.
- The camera data suggest that the herd use movement corridors. They seem to enter the park at the southwest end of the grid and then travel towards the center of the grid.

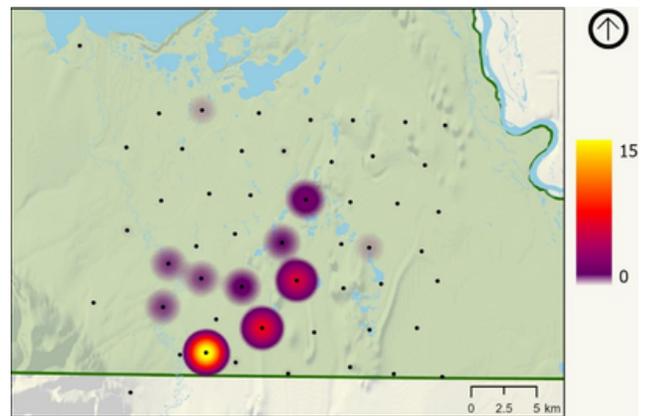


Figure 5. Heat map showing the number of days when bison were captured on each camera between fall 2021 and spring 2024.

Our team is currently working with partners to determine what else we can learn from this information, such as seasonal movement patterns and preferred habitats. Staff and community members will replace batteries and SD cards again in Spring 2026, giving us another year of photo data.



Photo: Jenna Rabley

Invitation to Submit!

Do you have an amazing or a fun photo of buffalo? A story you'd like to share? Would you like for your photo or story to be featured in our next newsletter? If so, send your submissions to: jenna.rabley@pc.gc.ca! The deadline to submit photos for our summer issue of the Buffalo Buzz is October 31st, 2025.