Status Report on the Yellowstone Bison Population to the Superintendent

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September 30, 2024

Population Numbers

- **April 2024**: Estimated at 4,469±330 bison.
- **August 2024**: Increased to 5,449±335 bison after calving.

Removal Recommendation for IBMP Partners and American Indian Tribes

- The NPS will implement the 2024 Record of Decision on bison management, coordinating with IBMP partners and American Indian Tribes to maintain the bison population within a range of 3,500-6,000 animals. To help achieve this, the NPS will take steps to reduce removals when the late-winter population approaches 3,000 and use all available tools to decrease numbers when the population exceeds 5,200 animals.

- Since the population exceeds the assurance threshold, the NPS will manage for a decreasing population and work with its partners to remove up to 25% of the population (1,375) during winter 2024-25.

- The NPS will balance capturing bison for the BCTP and TFTP while supporting harvest opportunities outside the park, all while working within the logistical constraints of meeting the removal objective.

- Total removal among partners and methods should reflect existing demographic conditions of 30% calves and yearlings, 70% adults, with an even sex ratio of 50% males and females.

Background

In 2024, the National Park Service issued a decision on bison management, setting a target population of 3,500–6,000 bison post-calving, with the goal of achieving objectives related to demographics, genetics, ecology, social considerations, and reducing the risk of brucellosis transmission through adaptive management. This status report evaluates the NPS's progress in meeting these objectives and outlines the winter management strategy based on the 2024 decision.

Adaptive Management Objectives

1. **Sustain a bison population of 3,500-6,000 animals.**
    - In 2024, the bison population was estimated at 4,469±330 pre-calving and 5,449±335 post-calving.
    - Over the past five years, the average population estimates were 4,258 pre-calving and 5,130 post-calving.
    - The bison population growth rate, excluding losses due to management actions, was 14.5%. Over the past five years, the management-adjusted growth rate averaged 15.6%, reflecting a steady population increase when management removals are not factored in.
    - The population is best described as a metapopulation—a single population with sufficient gene flow across two relatively distinct breeding geographies. In 2024, the northern herd bred in the Lamar, Upper Lamar, Mirror Plateau, and Pelican Valleys, while the central herd bred in the Hayden Valley.
    - The number of bison counted in traditional central herd units averaged 2,012, while northern herd units averaged 3,499. However, including animals in the Pelican Valley (as radio-collared individuals there also spent summer in the Lamar) resulted in an adjusted average of 1,108 bison for the central herd and 4,403 for the northern herd.

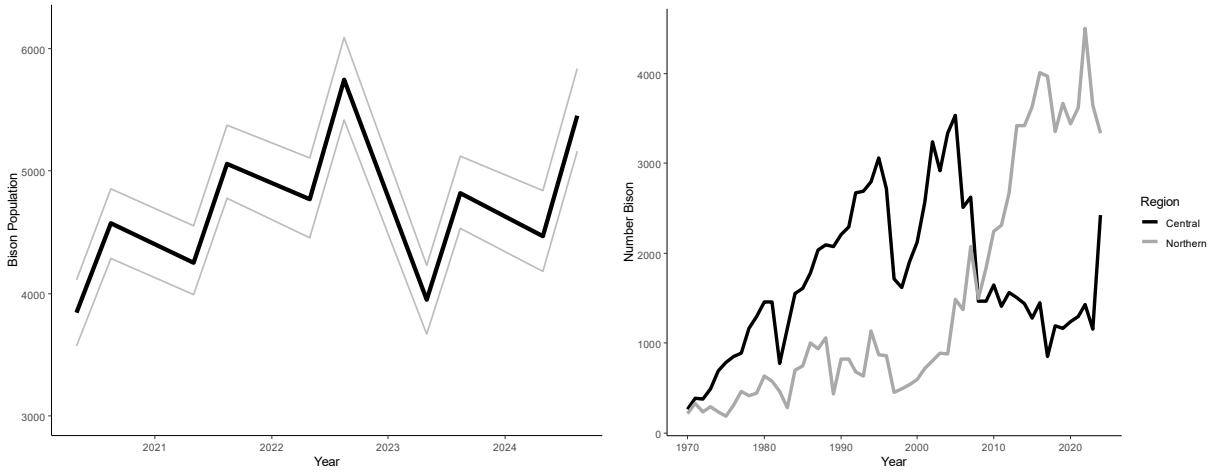

Figure 1. (*left*) Average population estimates from April 2020 to July 2024, represented by the dark line, with the 95% range shown by the gray lines. (*right*) Herd counts categorized by geographic regions.

2. **Maintain a balanced sex ratio of about 50% males and 50% females.**
   - In 2024, the post-calving sex ratio was 54.7% ± 4.8% female.
   - Over the past five years, the average sex ratio was 52.0% female.
   - During the breeding season, the northern herd had a sex ratio of 55.2% female, while the central herd had a sex ratio of 51.5% female.

3. **Maintain an age structure of about 70% adults and 30% younger animals.**
   - In 2024, animals less than two years of age represented 32.8% of the population.
   - Over the past five years, the average juvenile percentage was 30.0%.
   - Calving rate was 47±11 calves per 100 2+ year-old females in 2024 and averaged 46 per 100 2+ year-old females over the past five years.

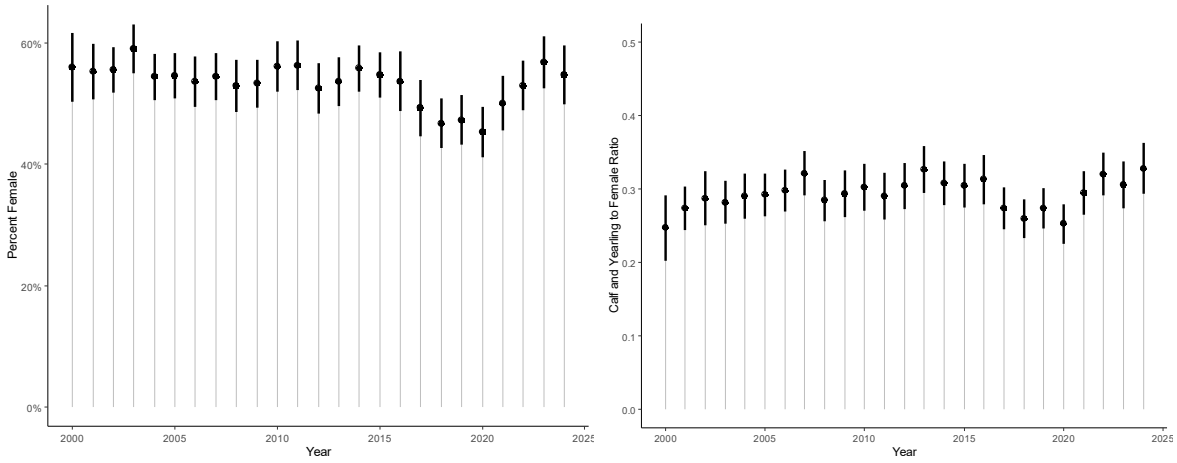

Figure 2. (*left*) Average sex ratio and 95% range. (*right*) Average juvenile ratio and 95% range.

4. **Maintain gene flow between primary breeding herds and preserve existing genetic diversity.**
   - In 2024, the NPS completed a scientific study analyzing nuclear and mitochondrial DNA from 282 bison sampled between 2019 and 2021. The study found evidence that bison form a single intermixing population. Both contemporary single nucleotide polymorphisms and traditional microsatellites were used to assess genetic differentiation. Some results suggested that the central herd contains only a subset of the genetic diversity present in the overall population. The average observed genetic diversity was consistent with estimates from the late 1990s. Bison with ancestry from both of the park's original female founding populations were distributed across the park and its herds. (Citation: Stroupe S, Geremia C, Wallen RL, White PJ, Derr JN. Genetic Re-assessment of Population Subdivision in Yellowstone National Park Bison. Journal of Heredity. 2024 Sep 13:esae050.)

5. **Maintain existing low risk of brucellosis transmission from bison to cattle.**
   - There have been zero brucellosis transmissions from Yellowstone bison to cattle.

6. **Protect human safety and property and alleviate conflicts with livestock, people and property.**

- In 2024, of the over 4 million visitors to the park, one visitor was severely injured by a bison when that individual was observed harassing the animal. A total of 15 bison were reported killed after being struck by a motor vehicle in the park.
- In 2024, the NPS is not aware of a bison moving outside tolerance areas established by the State of Montana adjacent to the park.
- The NPS observed bison in the Beattie Gulch area on only 4 days during March 24th to May 1st, with the largest group consisting of 55 animals. Bison were not observed in other regions of the northern tolerance area. Approximately 100-200 bison were observed in tolerance areas in spring near West Yellowstone.

7. Operate Bison Conservation Transfer Program at full capacity.

- In coordination with USDA-APHIS, the NPS transferred 116 bison to the Fort Peck Tribes for assurance testing.
- The NPS continues to quarantine 80 bison within the park's brucellosis-quarantine facility, with their release expected by December 2025, and another 6 bison with a release date in December 2026.
- In 2024, only 5 animals entered the program, as limited migration prevented meeting the full 120 animal capacity that was available.

8. Ensure more bison are removed by harvest than the Tribal Food Transfer Program over time.

- In 2024, 68 bison were removed in 2024: 5 placed in the BCTP, 14 donated to the TFTP, 48 harvested (15 by state hunters and 33 by tribal members), and 1 mortality in the NPS bison management facility.
- Insufficient numbers of bison were removed by management actions to alter demographic conditions. The removal included 59 adults, 6 calves, and 3 yearlings with a sex ratio of 16 female to 46 male.
- Over the last past 5 years: 402 bison placed in the BCTP, 581 donated to the TFTP, and 1,707 harvested by state hunters and tribal members.

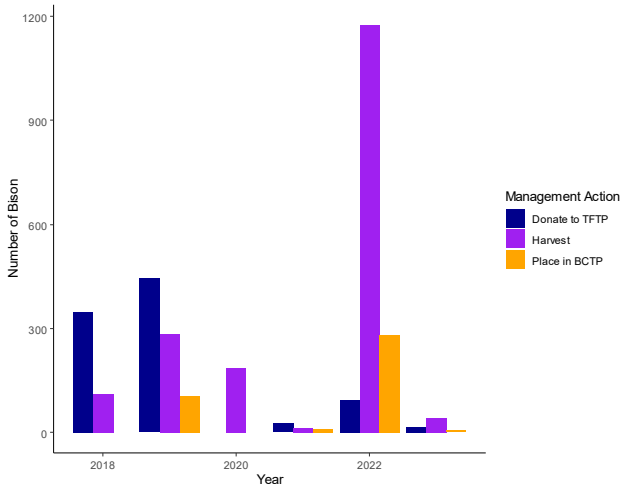

Figure 4. Numbers of bison removed through management actions.

9. **Maintain or lower brucellosis prevalence in the bison population over time.**
    - In 2024, 27 bison were tested for brucellosis in late winter with 52% testing positive.
    - Since 2018, 2,260 brucellosis tests were completed in late winter with calf prevalence estimated 6.8%, yearling prevalence 39.9%, adult female prevalence 64.9%, adult male prevalence 65.9% and population prevalence 40.9%.

10. **Other adaptive management objectives not specifically addressed in this status update** include promote an environment where wildlife remain uncontrolled and visitors could be impressed an inspired by their uninhibited behaviors, sustain the ecological role of bison, and maintain grasslands and sagebrush steppe with functioning energy, nutrient and water cycles.

Management Strategy for Winter 2024-25

Removal Guidelines: The NPS will coordinate with IBMP partners and American Indian Tribes to manage bison within a range of 3,500-6,000 animals. To help achieve this, the NPS will take steps to reduce removals when the late-winter population approaches 3,000 and use all available tools to decrease numbers when the population exceeds 5,200 animals.

Removal Recommendation:

- The NPS will manage for a decreasing population and work with its partners to remove up to 25% of the early-winter population (1,375 bison).
- Total removal among partners and methods should reflect existing demographic conditions of 30% calves and yearlings, 70% adults, with an even sex ratio of 50% males and females.
- The size of the migration is driven by weather which is outside the control of the NPS and its partners. More bison need to be removed during larger migrations particularly when the population is near the upper target of 6,000. If migration is minimal, 700 animals need to be removed to decrease the population and 200 animals need to be removed for the post-calving population to remain below 6,000.

Balancing Removal Tactics: The IBMP partners have three tools to manage bison numbers: state and tribal harvests outside the park, placement of bison in the BCTP, and donation to the TFTP. The NPS prioritizes the BCTP and relies on harvests to control numbers when the population is below the assurance threshold of 5,200 animals. When the population exceeds this threshold, the NPS must proactively capture additional bison and use the TFTP to reduce numbers. It is not feasible for the NPS to wait until late winter to utilize the TFTP when the population is above the assurance threshold.

- The NPS will balance capturing bison for the BCTP and TFTP while supporting harvest opportunities outside the park, all while working within the logistical constraints of meeting the removal objective.
- Up to 100 bison will be placed in the BCTP.
- Brucellosis-positive animals will be immediately donated to the TFTP, while brucellosis-negative animals will be held temporarily for decisions based on harvest outcomes.

- If the number of bison outside the park exceeds tolerance levels or total removals surpass 1,375 animals, the NPS may capture or hold additional bison for spring release, while continuing to monitor partner activities.
- The NPS will collaborate with IBMP partners to track removals throughout the winter and adjust management tactics as needed.
- Passive capture methods will be employed where possible to bait animals into the facility, while allowing others to move toward park boundaries to support harvests.

Decision Tree: A series of yes or no decisions and NPS actions to balance removal tactics.

1. **Have removals surpassed 25% of the population?**
    - **Yes** → Go to Step 2.
    - **No** → Go to Step 3.
2. **Are harvests continuing, or is the state tolerance area full?**
    - **Yes** → Coordinate with partners to reduce harvests and NPS capture; hold animals if necessary.
    - **No** → Continue monitoring and coordinating with partners.
3. **Is the BCTP at capacity?**
    - **No** → Use passive capture to support both capture and harvest opportunities. Place animals in the BCTP and donate brucellosis-positive animals to TFTP.
    - **Yes** → Go to Step 4.
4. **Are harvests on track to reduce the population and remove up to 25%?**
    - **Yes** → Continue monitoring and coordinating with partners.
    - **No** → Go to Step 5.
5. **Are there logistical (i.e., weather, time of year, facility) constraints on meeting the objective?**
    - **No** → Intensify capture and prioritize donating brucellosis-positive animals to TFTP when feasible.
    - **Yes** → Greatly intensify capture and donate all bison to TFTP.