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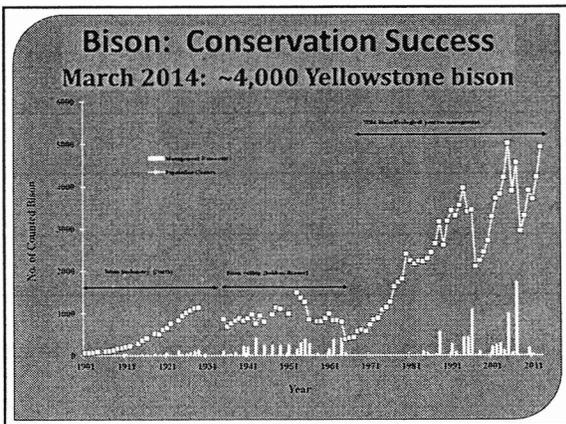
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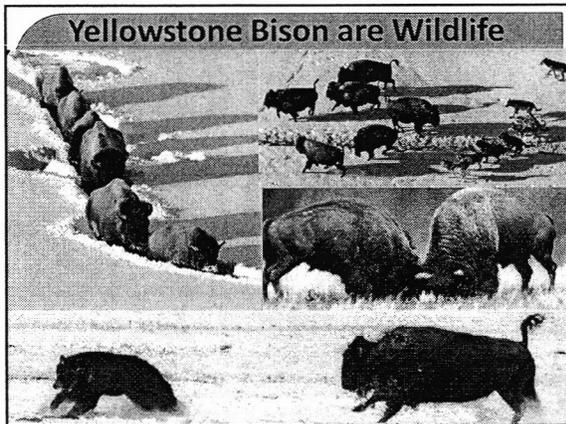
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**Brucellosis**  
Cattle  
Elk

**Conflict**  
Grass  
Property  
Safety

Check it out Frank—  
also over and then  
jump been real quick!  
It drives me nuts!

YELLOWSTONE NATIONAL PARK

MONTANA (the old m'ntain)

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Move over a Large Landscape  
Including into Montana during Winter

Seasonal Distribution of Yellowstone Bison

Conflict Areas

● Breeding range July-Aug  
● Calf winter range March-May  
● Winter range  
● Bison movement routes

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Do Bison put large numbers of cattle  
at risk?

YELLOWSTONE NATIONAL PARK

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**Interagency Bison Management Plan (2000)**

- ❖ Park Service, State of Montana, Forest Service, APHIS, Salish/Kootenai tribes, Nez Perce tribe, InterTribal Buffalo Council
- ❖ Objectives
  - Conserve free-ranging bison (~3,000)
  - Minimize brucellosis transmission to cattle
- ⊙ Allow some bison outside of the park in winter; haze them back during spring (due to cattle)

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**The Toolbox**

- ⊙ Hazing/Capture of bison
  - Separation of bison/cattle; Protect private property and human safety; Spring haze-back from Montana into park
- ⊙ Vaccination for brucellosis
  - Capture facilities: North/west boundary (not interior)
  - Remote vaccination (i.e., no capture) - NPS evaluation
- ⊙ Ship bison to slaughter facilities
  - Bison testing positive for brucellosis exposure
- ⊙ Ship bison to quarantine and research facilities
  - Feasibility study; No operational facilities
- ⊙ Hunting in Montana
  - Not authorized in the park; Number depends on migration patterns (bison density, snow pack)

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**Increased Scientific Knowledge**

- ⊙ Substantial suppression of brucellosis through vaccination not feasible with existing vaccines and delivery technologies
- ⊙ Transmission risk of brucellosis from bison to cattle is minute compared to the risk from elk
- ⊙ Brucellosis persistence is negligible by the timing of cattle release on summer allotments
- ⊙ Brucellosis dynamics: infection of young; Recovery and immune protection in older animals
- ⊙ Bison migration: influenced by forage, snow, bison density; Numbers at boundary vary among winters

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**Scientific Knowledge *continued***

- Vaccination—remote delivery and substantial suppression of brucellosis not feasible
- Economic analyses (costs of cattle/wildlife management exceed costs of brucellosis outbreaks)
- Better understanding of subpopulation dynamics

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**Accomplishments of IBMP**

- > Agencies worked together to implement an effective bison conservation and brucellosis risk management strategy
- > Largest wild population of plains bison (average ~3,900 during IBMP)
- > Bison have retained adaptive capabilities and genetic diversity
- > Increased acceptance of bison outside Yellowstone
- > No transmissions of brucellosis to cattle from bison
  - 20+ transmissions from elk to cattle since 2002

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**Brucellosis: the facts**

>20 livestock herds infected since 2002—all traced to wild elk

**No transmissions from bison**

Estimated risk of exposure to cattle from Yellowstone bison was insignificant (0-0.3%) compared to elk (99.7-100% of total risk) \*

Poor vaccine efficacy for bison and elk

**Elk seroprevalence**

- 5-10% in Yellowstone
- 5-20% in Montana
- 5-30+% in Wyoming

\*Risk Analysis of *Brucella abortus* Transmission among Bison, Elk, and Cattle in the Northern Greater Yellowstone Area  
 Brent A. Schumaker,<sup>1</sup> Janne A.K. Mazer,<sup>2,3</sup> John Treanor,<sup>4</sup> Rick Wallen,<sup>4</sup> Ian A. Gardner,<sup>3</sup> Martin Zaluský,<sup>5</sup> and Tim E. Carpenter<sup>1,3</sup>




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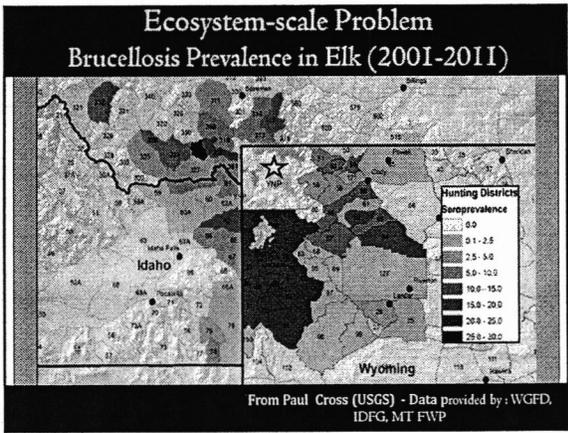
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### Winter 2014

- ◉ 4600 bison in the park at the end of winter
- ◉ Starting in January, bison began to migrate outside the park, with 0 to hundreds outside the park.
- ◉ 634 bison have been removed to date
  - 318 transferred by the park to CSKT (101), ITBC (157), and APHIS (60)
  - 316 harvested by hunters: North (252), and West (64)
- ◉ Operations are over for 2014.
- ◉ A handful of bison are outside the park's west boundary and about 200 outside the park's northern boundary

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### Is there an overpopulation of bison in Yellowstone?

No, the best available science indicates a carrying capacity of about 6000 bison.

Biological Conservation

Journal homepage: [www.sciencedirect.com/journal/biological-conservation](http://www.sciencedirect.com/journal/biological-conservation)

Review  
Carrying capacity, migration, and dispersal in Yellowstone bison  
Glenn E. Fazio<sup>a,\*</sup>, F.J. White<sup>a</sup>, Michael B. Cocheron<sup>a</sup>, Rik L. Wallen<sup>a</sup>

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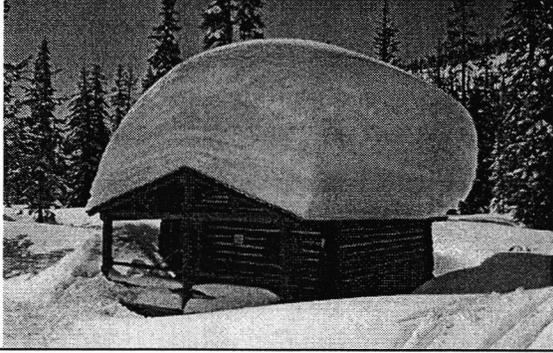
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Why do bison leave the park each winter?



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