



2497 WEST CHICAGO STREET
RAPID CITY, SD 57702
PHONE: (605) 394-9730 /
FAX: (605) 394-7742
WEBSITE: WWW.ITBCBISON.COM

MEMORANDUM

TO: Board of Directors
FROM: Kristine Reed, Wildlife Biologist
DATE: October 30, 2008
RE: Yellowstone National Park Update

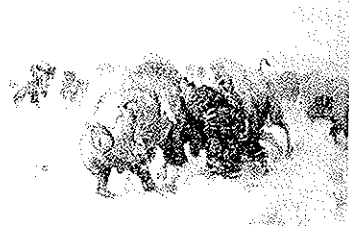
On October 1, 2008, I, Jim Stone, Ervin Carlson, Cecil Garvin and Brady Grant, met with Yellowstone National Park officials to discuss 3 main items:

1. Provide information to ITBC on bison management activities in the Greater Yellowstone Ecosystem, and recent efforts of the Interagency Bison Management Plan partners.
2. Discuss options for approaching the Interagency Bison Management Plan partners, seeking greater tribal involvement in the IBMP.
3. Discuss cultural awareness training for Yellowstone National park staff, and other opportunities for incorporating tribal views in NPS work.
4. Attached to this memo is a PowerPoint presentation that was conducted by YNP Supervisory Wildlife Biologist PJ White on the status of YNP bison activities.

Please contact me via email kristine@itbcbison.com or call the office at 1-877-884-7381 if you have any questions.

Status - Yellowstone Bison

- Abundance
- Life History
- Movements
- Genetics
- Brucellosis
- Interagency Bison Management Plan



Abundance – July 2008 Count

Park-wide Airplane Survey

3,000 bison counted

2,500 bison from winter 2007-08

500 calves-of-the-year

1,500 Bison in the Central and Northern Breeding Herds

Next Survey – December 2008

Life History

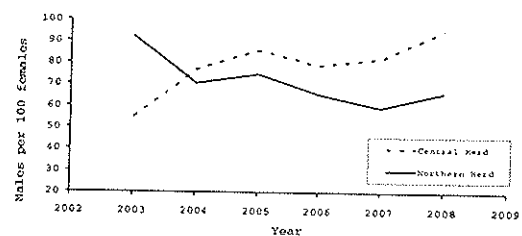


Age structure

	Adult	Yearling	Calf
Central	70%	12%	18%
Northern	66%	12%	22%

Life History

Sex Ratio – Males to Females



Life History

Adult Female Survival

91% without removals

83% with removals (boundary, hunts)

Pregnancy

90% of sero-negative, pregnant bison

20% lower in sero-positive bison

Life History

Birth Synchrony



Calving occurs during spring green-up

Maximizes calf growth prior to weaning

Peak calving = April 25 to May 25 (80% of births)

Winter Movements

Bison tend to travel along river corridors

Roads used for movements in some areas.

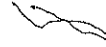
Northern herd – move down elevation gradient to Gardiner basin

Central herd – move to north & west boundary

- west only (50%)
- north only (31%)
- west early, then north later (8%)
- stay in central interior (11%)

Northern Herd

Seasonal Distribution of Yellowstone Bison



Present range (July-Aug) Past range (Sept-May)
Major roads

Central Herd

Seasonal Distribution of Yellowstone Bison



Present range (July-Aug) Past range (Sept-May)
Major roads

Few bison in Pelican & Hayden valleys all winter

Seasonal Distribution of Yellowstone Bison



Present range (July-Aug) Past range (Sept-May)
Major roads

Pelican Creek to Gardiner basin in 12 days

Seasonal Distribution of Yellowstone Bison



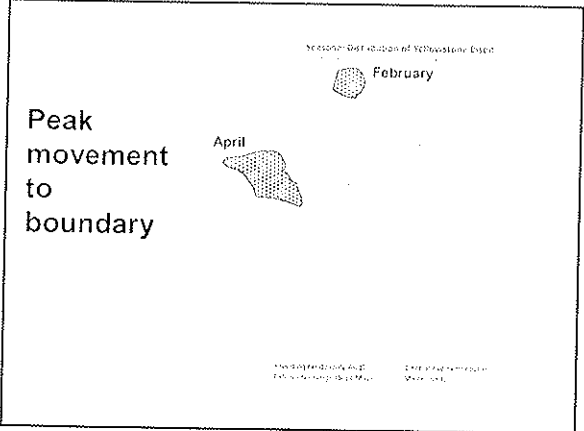
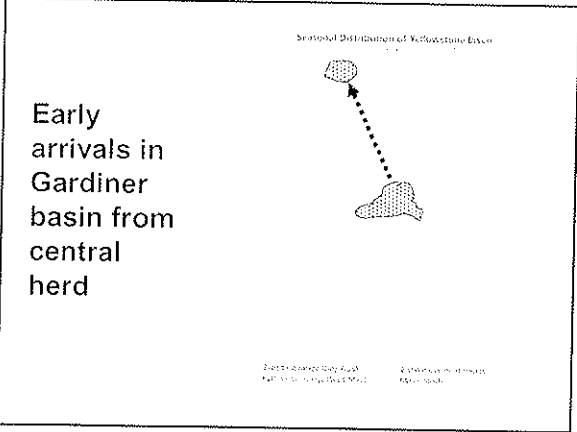
Present range (July-Aug) Past range (Sept-May)
Major roads

Madison to Gardiner basin in 3 to 21 days

Seasonal Distribution of Yellowstone Bison



Present range (July-Aug) Past range (Sept-May)
Major roads



Genetics

Population sub-division – 2 breeding herds

Removals affect genetic diversity

University of Montana – effects of removals on conserving genetic diversity

Brucellosis

2008 = 45% of bison exposed

Long-term = 40-60% of bison exposed

Extensive data set from winter 2007-08

- * ~ 400 bison sampled for culture
- * ~ 1600 bison sampled for serology

Culturing of samples in progress

Sero-prevalence is variable by age

Brucellosis

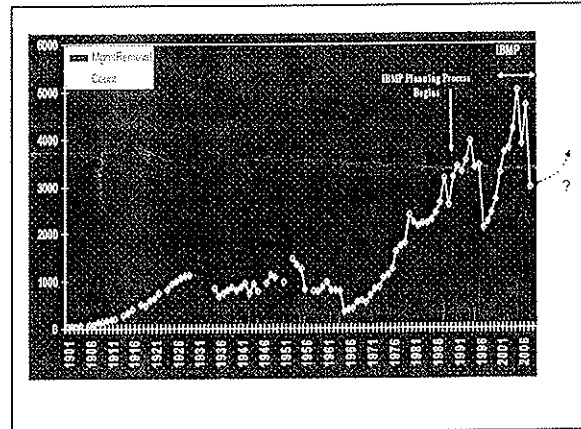
Gender	Age	% sero-positive
Male	calf	11
	yearling	35
	≥ 2	62
Female	calf	13
	yearling	35
	2	52
	3	67
	4	69
	≥ 5	69

Expectations and Realizations

	Expected in 2000	Observed 2000-2008
Management Removals	~7% or 250 bison per year	6-40% per year (max = 1700)
Population Size and Distribution	numbers reach ~ 3,700 <ul style="list-style-type: none"> * ¼ Central Interior * ¼ Northern Range 	numbers approach 5000 <ul style="list-style-type: none"> * ¼ central herd * ¼ northern herd
Migratory movements	Northern herd to Gardiner basin Central herd to West Yellowstone	Northern herd to Gardiner basin Central herd to north and west boundaries
Population Structure	1 male : 1 female	~ 1 male : 1 female (ratios variable by herd)
Vital Rates	Pregnancy 50% Birthing 50% Survival ??	Pregnancy 70-90% Birthing 90% Survival 91%

Implications

- Start winter 2008-09 with ~2,900 bison
- 1,500 bison in central and northern herds (expect large migration by northern herd)
- Natural mortality ~10% or 300 bison
- Harvest ~5-7% or 150-200 bison
- Need to minimize boundary removals



Need for Monitoring

- Effects and Effectiveness of Management Actions
- Vaccination
 - Free-ranging bison in Yellowstone
 - Remote delivery decision in 2010
- Government Accountability Office
 - Define measurable objectives
 - Apply adaptive management

Adaptive Management Principles

- Goals of the IBMP
 - Reduce the risk of transmission to cattle
 - Conserve a free-ranging bison herd
- Measurable Objectives
 - Management and research objectives
 - Define scientific and management questions
- Monitoring Activities
 - 13 specific activities to answer questions
 - ≥ 1 sampling objectives for each activity

Adaptive Management Principles

- Incorporate findings into the decision-making process
- Inform stakeholders
- Adjust the IBMP based on assessments
- Decision – remote delivery vaccination

Monitoring Activities 3 Primary Themes

- Conservation – preserve a wild bison population
- Risk Management – prevent brucellosis transmission from bison to cattle
- Brucellosis Suppression – reduce disease prevalence

Conservation

1. Estimate the abundance, demographic rates, and limiting factors for bison.
2. Describe migratory and nomadic movements by bison in and out of park.
3. Estimate genetic diversity and probabilities of long-term conservation

Risk Management

4. Estimate risks of brucellosis transmission within and between species and areas.
5. Estimate brucellosis exposure and infection rates.
6. Determine rates at which bison carrying brucellosis become infectious and shed bacteria

Risk Management

7. Determine factors influencing the vulnerability of bison to brucellosis infection and transmission.
8. Estimate the timing and % of removals.
9. Document bison use of areas outside the park and commingling with cattle.
10. Estimate the effects of hazing or holding bison at capture pens.

Disease Suppression

11. Determine the strength and duration of the immune response following syringe vaccination.
12. Determine the strength and duration of the immune response after remote delivery (biobullet) vaccination.
13. Document trends in prevalence and the effects of vaccination, other risk management actions, and ecological conditions on these trends.

Conservation & Disease Management for Yellowstone Bison

