

2016-2017 Operations

Summer 2016: ~5,500 bison with 4,000 in north and 1,500 in central Yellowstone

Manage for a decreasing population

Removed ~1,274 bison in winter 2017

- **~486 harvested; 788 culled**
- **492 adult females; 209 adult males; 342 calves; 195 juveniles; 36 not recorded**
 - **Removals biased towards females and young**

Harvests and Culls of Bison 2016-2017

	MT	CSKT	Nez Perce	ShoBan	CTUR	ITBC	APHIS	Other
Total (1,274)	70	683	101	22	81	246	0	71
Harvest (486; 38%)	70	181	101	22	81	0	0	31
Culled (788; 62%)	0	502	0	0	0	246	0	40

Other includes bison held for quarantine (35), bison confiscated or dispatched [wounded] (18), management deaths and shootings (5), and the Yakama Nation harvest (13).

Harvests and Culls of Bison

2011-2017

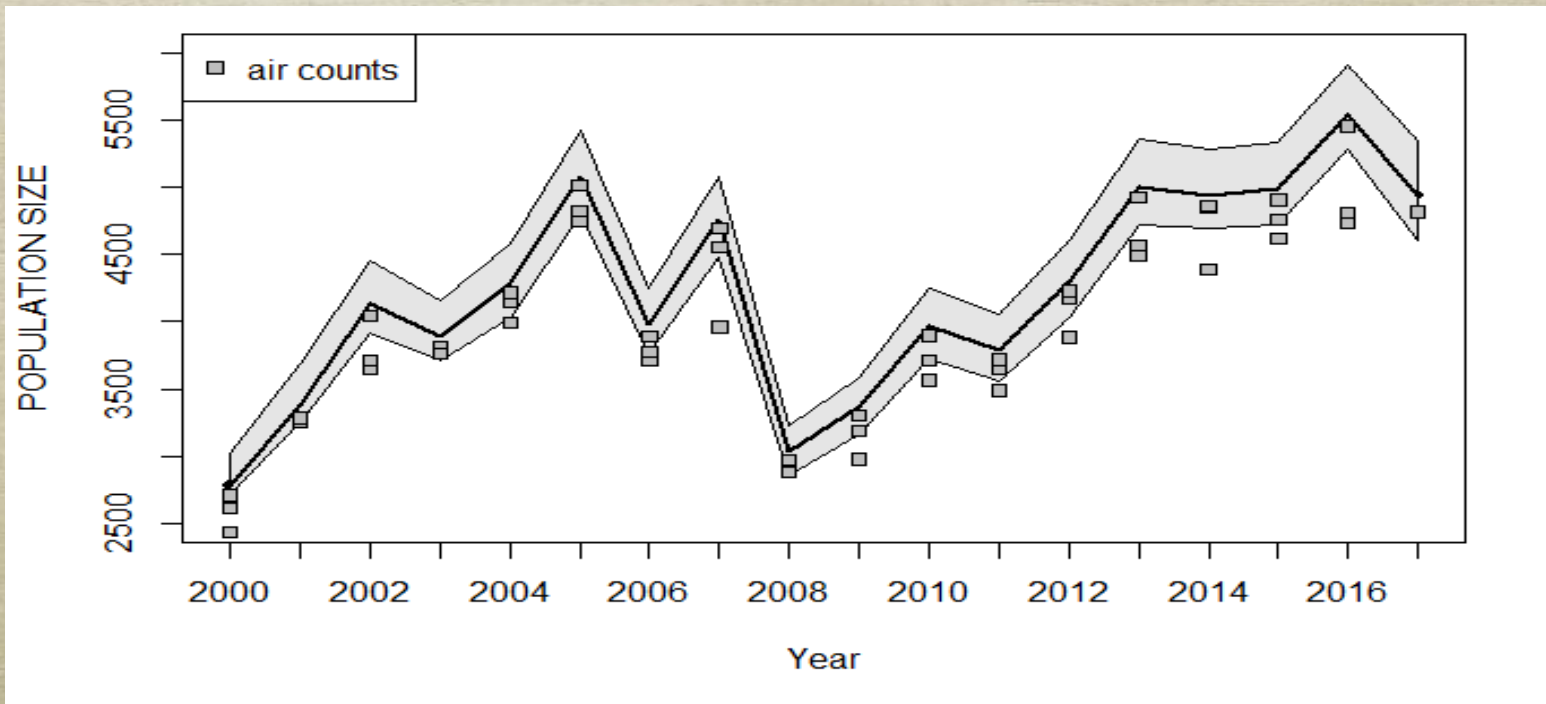
	MT	CSKT	Nez Perce	ShoBan	CTUR	ITBC	APHIS	Other
Total (3,641)	251	1,712	535	61	260	605	120	97
Harvest (50%)	14%	39%	29%	3%	14%	0	0	1%
Culled (50%)	0	57%	0	0	0	34%	7%	2%

MT = Montana public hunt; CSKT = Salish and Kootenai tribes; ShoBan = Shoshone Bannock tribes; CTUR = Umatilla tribes; ITBC = InterTribal Buffalo Council; Other includes the Yakama Nation harvest, bison held for quarantine, and management removals.

Population Count - Summer 2017

4,816 bison after calving (12% decrease from 2016)

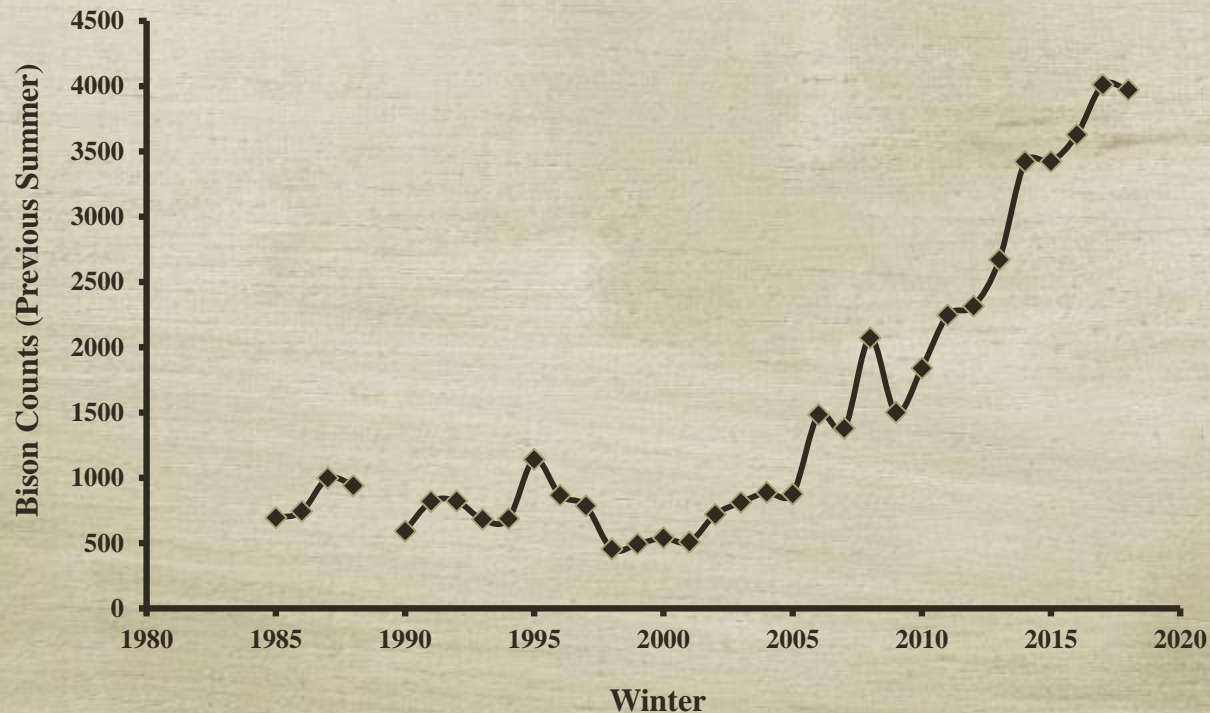
- **3,969 in north Yellowstone (1-2% decrease)**
- **847 in central Yellowstone (42-48% decrease)**



Bison in Northern Yellowstone

Long-term trend = exponential growth due to high birth, survival, and immigration rates

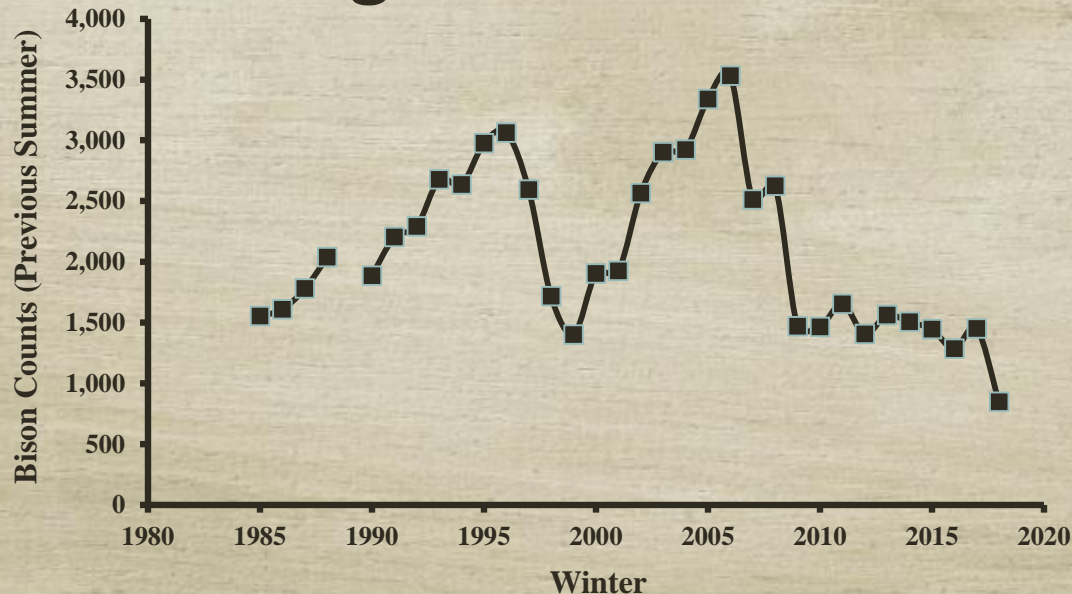
No indication of resource limitation affecting birth and survival rates despite high bison density



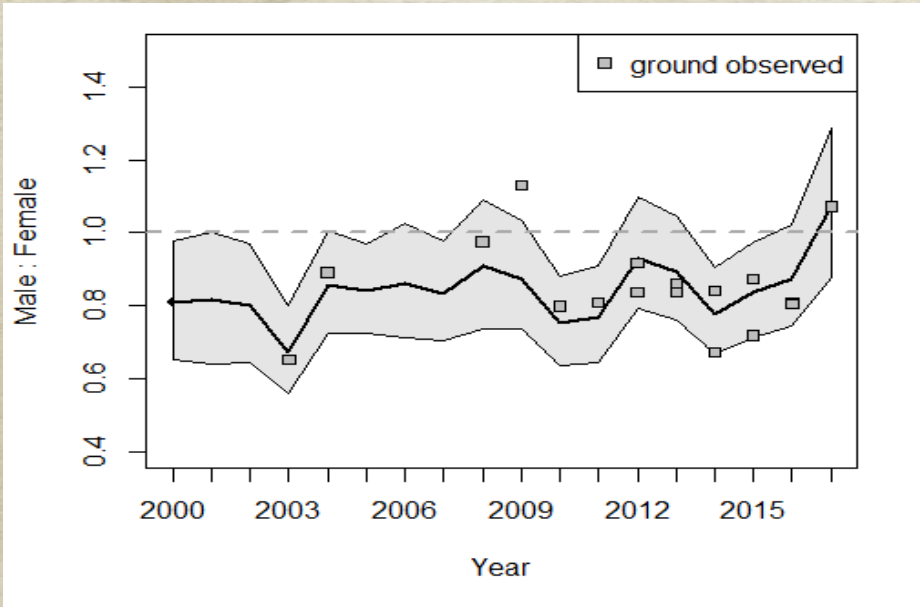
Bison in Central Yellowstone

Long-term trend = substantial decrease due to large removals (2006, 2008, 2017), lower production, and continued dispersal to north

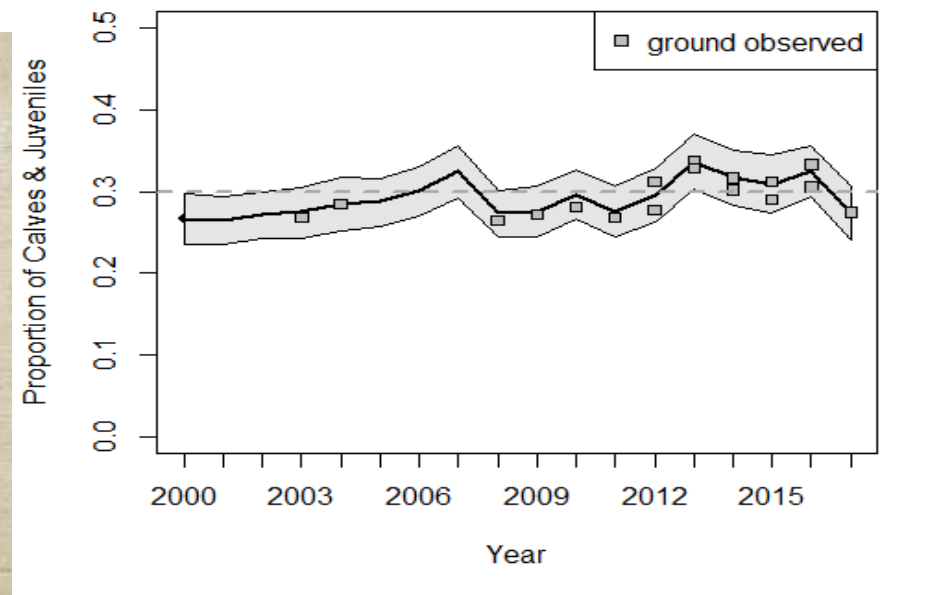
- ~30% of bison migrate north in severe winters; some are harvested or culled; causes of emigration are unknown



Overall Age and Sex Composition

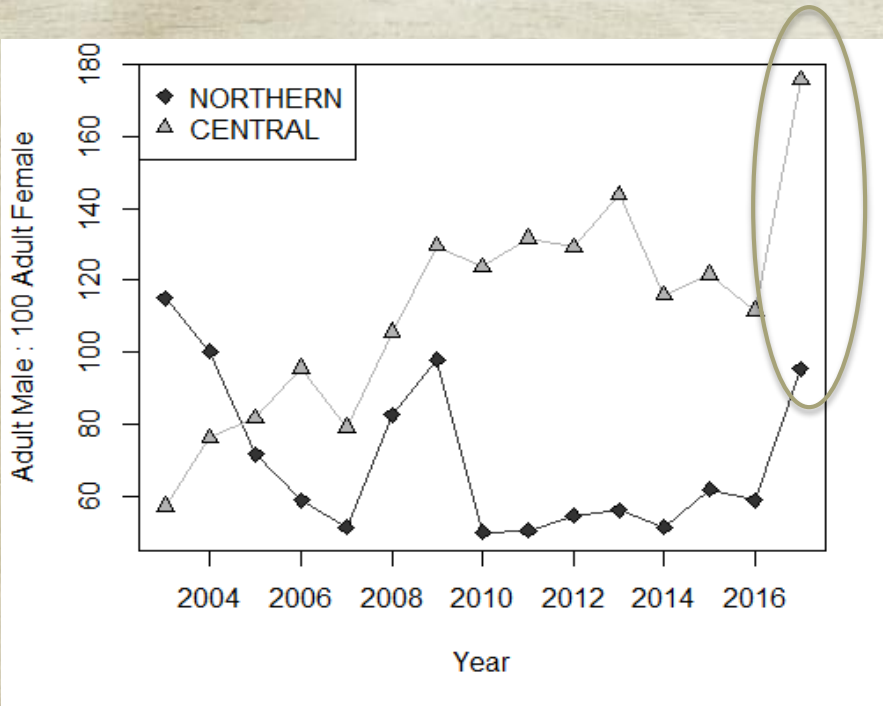


Proportion of males and females are similar and near the desired condition (dotted line) in 2017



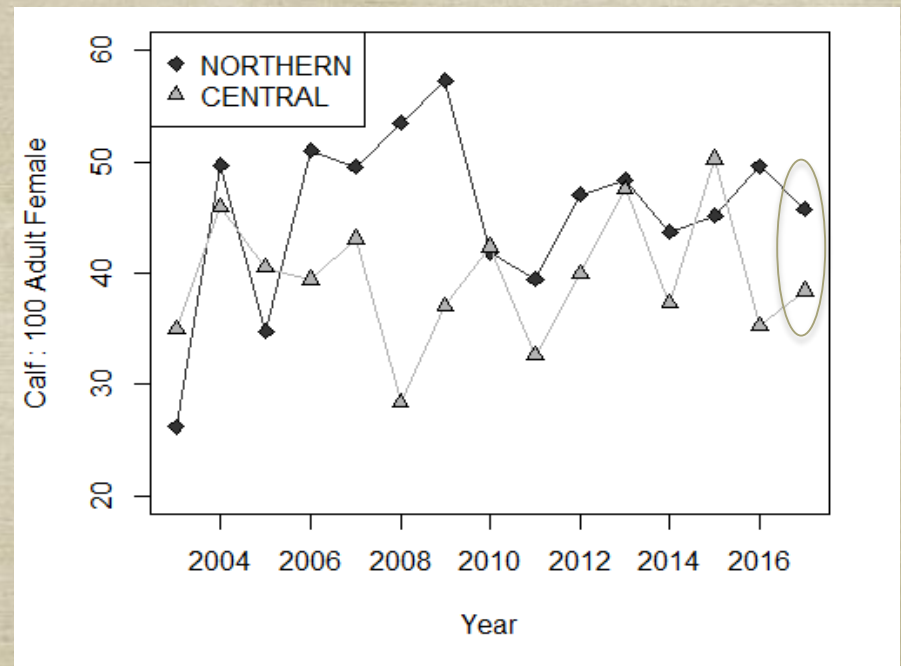
Proportion of calves and juveniles (27%) is near the desired condition (30%) in 2017

Age and Sex Composition by Herd



Increase in males during 2017 reflects higher removals of females at the boundary

Productivity of central bison is lower than northern bison (long-term average = 43)



Management Issues

- **Even though 92% of harvests and culls occurred in or near northern Yellowstone, there were still nearly 4,000 bison in this region after calving**
 - **Intense grazing in some areas during summer**
 - **Dispersal from central Yellowstone**
 - **Since 2004, 26 of 39 (67%) collared adult female bison in central Yellowstone migrated with other female and young bison to northern Yellowstone during winter**
 - **Twelve of the 26 (46%) females remained there the next summer through breeding**

Factors Potentially Influencing Increased Dispersal to North since 2005

High bison densities, intense grazing in some areas, and severe winters (~3,500 central bison in 2005)

Intense hunting and hazing of bison along western boundary to keep them in the park through 2005

Groomed roads for over-snow vehicles facilitate rapid travel

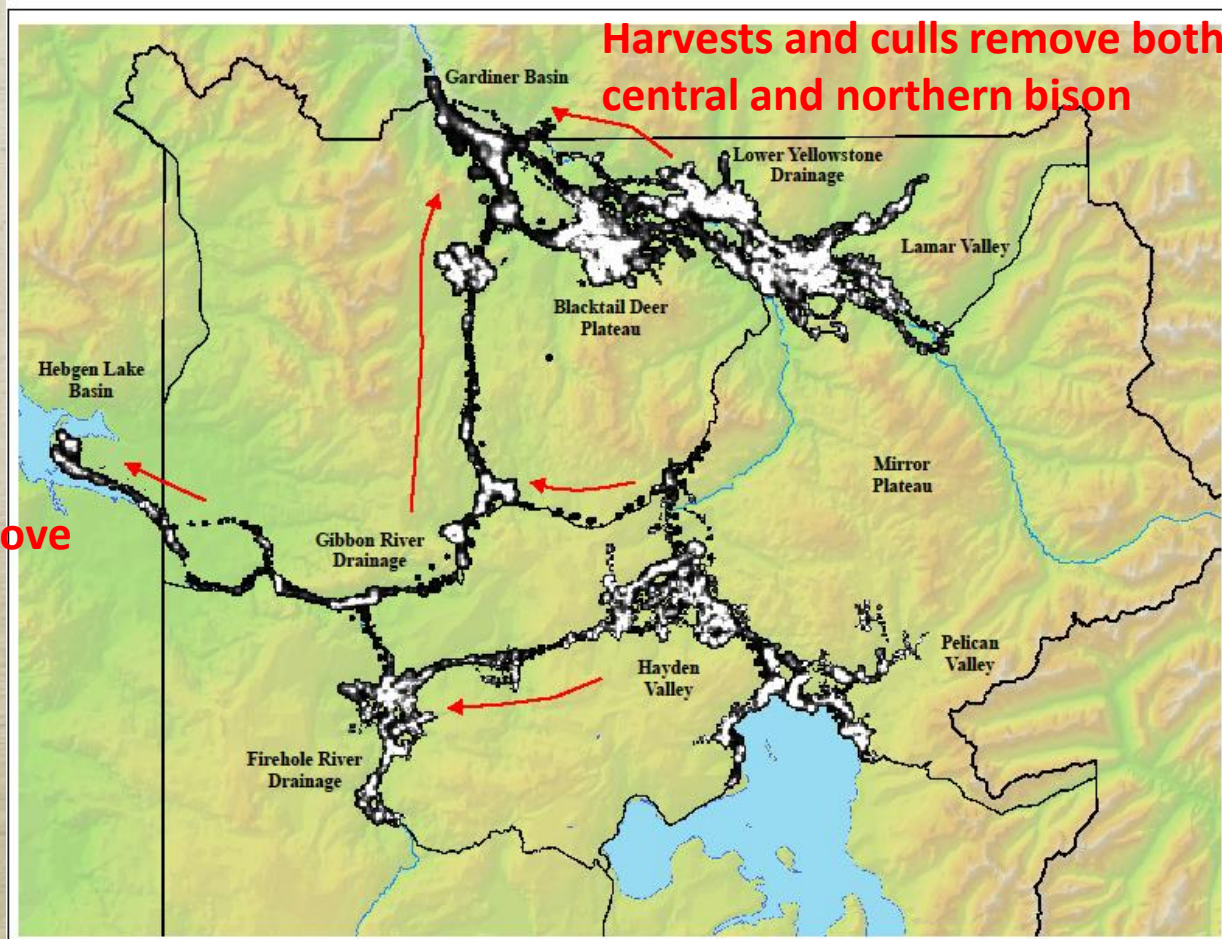
High wolf densities and selection of bison in central Yellowstone during early 2000s

A 50% decrease in numbers of elk spending winter in northern Yellowstone by 2006; 75% decrease by 2013

Bison intermix and remain with groups encountered in northern Yellowstone

Management Issues

Culling at north boundary will continue to remove many central herd bison, especially during severe winters



Harvests remove central bison

Harvests and culls remove both central and northern bison

Females and young disproportionately migrate outside the park during severe winters

Management Issues

- **Culling at north boundary will continue to remove many central herd bison**
 - **Could lead to further decreases in central bison (<300 adult females in 2017)**
 - **Genetic lineages (indigenous; reintroduced)**
- **Lack of a consistent strategy among winters**
 - **Executive Order/Hunting: 2011-2013, 2016**
 - **Culling through winter: 2014-2015, 2017**
- **Hunting is effectively working like hazing did prior to 2011 to keep bison primarily in the park**
 - **Need to allow bison to distribute across the landscape and pioneer new areas**
 - **Transition to a conflict resolution approach**

2017-2018 Operations

- **Manage for a decrease in the number of bison breeding and living in northern Yellowstone**
- **Allow bison to distribute on landscape and hunt where suitable; limit harvests on west side**
- **Begin culling bison in north when migration is sufficient to support hunting and culling**
- **Maintain 250-400 bison north of Mammoth to support harvests, but reduce potential conflicts**
- **Remove bison in proportion to occurrence (~73% adults, 12% yearlings, 15% calves; 50:50 sex ratio)**
- **Use telemetry to inform timing and extent of removals (reduce culls of central bison, if possible)**

Predicted Outcomes

Remove few bison → ~5,500 bison after calving

Remove 600 bison → ~4,900 bison after calving

Remove 1,000 bison → ~4,400 bison after calving

Remove 1,400 bison → ~4,000 bison after calving

