



Wenk, Dan &lt;dan\_wenk@nps.gov&gt;

## Secretary's visit

1 message

**Dan Wenk** <dan\_wenk@nps.gov>

Sun, Mar 19, 2017 at 9:06 PM

To: Sue Masica <Sue\_Masica@nps.gov>

Bcc: Beverly Stephens <grace\_stephens@nps.gov>, Jody Lyle <Jody\_Lyle@nps.gov>

A brief (now that it is done, not so brief) synopsis of Secretary's visit to Yellowstone on Friday March 17, 2017.

Secretary Zinke spent approximately 7 hours in Yellowstone.

Arrived North Entrance with photo op at the entrance sign and the Roosevelt Arch. He was accompanied on the trip by his advance team, security and personal friend Dave Mihalic.

Stopped at Mammoth Hot Springs for photo op and to discuss thermal features and their protection. Also, a stop at the Grand Canyon of the Yellowstone where we discussed the project to rehabilitate the trails and overlooks on the north and south rim of the canyon.

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### General Topics

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- discussed with him the GYCC and how the "federal family" sets goals we all work to achieve within our different missions
- discussed his desire to have USFS as a part of Interior
- discussed importance of ecosystem management
- I suggested that NPS didn't want all the forest surrounding the park as part of Yellowstone just the wilderness ;-)
- discussed difference in management of NPS areas and wilderness
- management of lands, natural processes versus active management. Started as a result of what he saw or believed about forest management and flooding of campground at Glacier we talked about fire management and creation of defensive zones around developed areas as an active program in Yellowstone and NPS areas

### Bison Management

- Secretary believes we have too many bison based on range conditions in Lamar Valley. He was in Yellowstone, unannounced, during the summer of 2016 with "range managers" who discussed the range conditions and their view of overgrazing especially in Lamar Valley
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### Grizzly Bear Management

- discussed current status of delisting
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when determining discretionary mortality for the three state areas, and NPS support of delisting

- discussed importance of stable population at the time of delisting and use of different population estimators.
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6/29/2018

DEPARTMENT OF THE INTERIOR Mail - Secretary's visit

- toured recently completed Albright Visitor Center. Partnership project between NPS for structural stabilization and friends group for updating exhibits

Had private lunch with the Secretary and DM.

Sorry for typos,

Available to answer any questions.

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002





Wenk, Dan &lt;dan\_wenk@nps.gov&gt;

## Re: Secretary's visit

1 message

Reynolds, Michael &lt;michael\_reynolds@nps.gov&gt;

Mon, Mar 20, 2017 at 9:52 AM

To: "Masica, Sue" &lt;sue\_masica@nps.gov&gt;

Cc: Dan Wenk &lt;dan\_wenk@nps.gov&gt;, Herbert Frost &lt;bert\_frost@nps.gov&gt;, Lena McDowall &lt;Lena\_McDowall@nps.gov&gt;

This is very very helpful. Thanks again Dan and Sue...

On Mon, Mar 20, 2017 at 10:54 AM, Masica, Sue <sue\_masica@nps.gov> wrote:

Thanks Dan ... appreciated the verbal download on Saturday and this summary that I'm sharing with Mike, Bert, and Lena. Let me know what you develop in terms of the actions re: bison.

Sue

---

Sue Masica | National Park Service | Regional Director, Intermountain  
12795 W. Alameda Parkway | Lakewood, CO 80228 | (303) 969-2503

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Michael Reynolds  
National Park Service  
Acting Director  
1849 C Street NW Ste. 3110  
Washington, DC 20240  
(202) 208 4621  
(202) 208 3818  
[michael\\_reynolds@nps.gov](mailto:michael_reynolds@nps.gov)

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Wenk, Dan &lt;dan\_wenk@nps.gov&gt;

## Re: Secretary's visit

1 message

**Frost, Herbert** <bert\_frost@nps.gov>

Tue, Mar 21, 2017 at 12:00 PM

To: "Masica, Sue" &lt;sue\_masica@nps.gov&gt;

Cc: Dan Wenk &lt;dan\_wenk@nps.gov&gt;, Michael Reynolds &lt;Michael\_Reynolds@nps.gov&gt;

We got a follow up request yesterday. Apparently the Sec was impressed with PJ's conversation with him on range management issues and the instructions we got yesterday was to make sure the FWS bison folks are talking with Dr White about bison management. I thought FWS was going to reach out to Steve Torbit and have him talk directly to PJ but I just a note from Steve indicating he was told by his folks to reach out to me. I am going to redirect him to PJ but wanted give you a heads up before I do. I am not exactly sure what they want PJ and Steve to talk about other some coordination on bison issues.

Bert

-----

Herbert C. Frost, Ph.D.  
Acting Deputy Director, Operations  
National Park Service

202-208-3818 - Office

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Wenk, Dan &lt;dan\_wenk@nps.gov&gt;

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**Fwd: YELL Bison briefing update: due today at 4:00 EDT**

1 message

**Frost, Herbert** <bert\_frost@nps.gov>

Mon, Mar 27, 2017 at 10:48 AM

To: Dan Wenk &lt;Dan\_Wenk@nps.gov&gt;, Sue Masica &lt;sue\_masica@nps.gov&gt;

See below

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Herbert C. Frost, Ph.D.  
Acting Deputy Director, Operations  
National Park Service

202-208-3818 - Office

----- Forwarded message -----

From: **Foster, Maureen** <maureen\_foster@ios.doi.gov>

Date: Mon, Mar 27, 2017 at 12:41 PM

Subject: YELL Bison briefing update: due today at 4:00 EDT

To: Bert Frost &lt;Bert\_Frost@nps.gov&gt;

Cc: Alexa Viets &lt;alexa\_viets@nps.gov&gt;, Justin Monetti &lt;justin\_monetti@nps.gov&gt;

Bert:

I need an update on bison management. Here is the latest version. If the park can update by 4:00 today EDT, that would be great. We need it for a secretarial briefing paper.

Thanks.

---

Maureen D. Foster  
Chief of Staff  
Office of the Assistant Secretary  
for Fish and Wildlife and Parks  
1849 C Street, NW, Room 3161  
Washington, DC 20240

202.208.5970 (desk)

202.208.4416 (main)

[Maureen\\_Foster@ios.doi.gov](mailto:Maureen_Foster@ios.doi.gov)

----- Forwarded message -----

From: **Viets, Alexa** <alexa\_viets@nps.gov>

Date: Wed, Mar 15, 2017 at 10:19 AM

Subject: Fwd: Final Briefings 1 of 4

To: Maureen Foster &lt;maureen\_foster@ios.doi.gov&gt;, Virginia Johnson &lt;virginia\_johnson@ios.doi.gov&gt;

Cc: Michael Reynolds &lt;michael\_reynolds@nps.gov&gt;, Herbert Frost &lt;bert\_frost@nps.gov&gt;

Maureen &amp; Virginia,

FYI - This is what spurred me to mention to Dan J. on Monday that we need to coordinate Scheduling Office requests through DC. I'm going to forward to you a series of briefing materials Dan has sent directly.

The issue came to my attention on Monday when I sent a request to Dan / Regional Office to update briefing material re: YELL Bison and the Interagency Bison Management Plan. Dan let me know that he'd already been requested to provide

similar briefing materials to the Scheduling team directly. Rather than have the park go through the exercise twice with short turn around for the Secretary's upcoming visit, I asked him to just copy us on the materials he was already providing.

Tx,  
Alexa

----- Forwarded message -----

From: **Dan Wenk** <[dan\\_wenk@nps.gov](mailto:dan_wenk@nps.gov)>

Date: Tue, Mar 14, 2017 at 8:59 PM

Subject: Final Briefings 1 of 4

To: [amy\\_mitchell@ios.doi.gov](mailto:amy_mitchell@ios.doi.gov)

Cc: Sue Masica <[Sue\\_Masica@nps.gov](mailto:Sue_Masica@nps.gov)>, [alexa\\_viets@nps.gov](mailto:alexa_viets@nps.gov), [thomas\\_crosson@nps.gov](mailto:thomas_crosson@nps.gov), [april\\_slayton@nps.gov](mailto:april_slayton@nps.gov), [rick\\_frost@nps.gov](mailto:rick_frost@nps.gov), [james\\_doyle@nps.gov](mailto:james_doyle@nps.gov)

Amy, in order to assure these briefs get into the Secretary's hands prior to his departure I am sending directly to you. I have also copied the regional and Washington offices. If we have any changes to these briefs I will get them to you as quickly as possible.

#### **Briefs**

- Bison Issues, Population, Quarantine, Removal/Winter Operations

#### **Attachments**

- Bison Management
- Bison Quarantine
- Bison Grazing Effects

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

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Alexa Viets  
Chief of Staff (Acting)  
National Park Service  
202-208-4530

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**Bison Management.doc**  
38K

## Bison Management

### Key Points:

- There is very limited tolerance for wild bison in Montana due to concerns about competition with cattle, human safety, property damage, and brucellosis transmission. Idaho and Wyoming do not want wild bison outside parks.
- Approximately 5,500 Yellowstone bison were counted during summer 2016. High bison densities can degrade other resources and result in the migration of thousands of bison into Montana, which can overwhelm managers' abilities to maintain separation with cattle and protect people and property.
- In December 2016, YELL and other members of the Interagency Bison Management Plan (IBMP) agreed to manage for a decreasing population this winter, using hunting in Montana and capture/culling (primarily shipments to slaughter) to remove more than 750 bison; possibly as many as 1,300 bison.
- As of March 13, 2017, 460 bison have been harvested, 660 have been shipped to slaughter, and 23 have been removed by other means (1,143 total). Another 100 bison have been captured, but not yet shipped to slaughter. Additional captures and shipping may continue through March.
- The shipment of bison to meat processing (slaughter) facilities is extremely controversial and generates negative publicity. However, there is limited habitat inside the park and limited tolerance for bison outside the park.

### Background:

- The federal government and the State of Montana are signatories to the IBMP, which has been implemented since 2001 to manage Yellowstone bison and reduce the risk of brucellosis transmission from bison to cattle.
- The plan has been successful at conserving a viable population of wild, wide-ranging bison and there have been no transmissions of brucellosis from bison to cattle. Other members involved with the IBMP include the Animal and Plant Health Inspection Service, *Confederated Salish and Kootenai Tribes of the Flathead Nation*, Forest Service, InterTribal Buffalo Council, and the Nez Perce Tribe.
- Five tribes have hunted bison on open and unclaimed lands in Montana adjacent to YELL, including the *Confederated Salish and Kootenai Tribes*, Nez Perce Tribe, Shoshone-Bannock Tribes, Confederated Tribes of the Umatilla Reservation, and the Yakama Nations.
- There are recurring ethical, public relations, and safety issues in communities of Montana adjacent to YELL due to concentrations of hunters, gut piles near roads and residences, shooting across roads, shooting elk, and hunting practices perceived to be unethical (e.g., firing lines of hunters along the park boundary; "flock" shooting).
- Hunting is prohibited in YELL. However, when bison migrations into Montana are small or late, tribal hunters become frustrated and assert that treaty rights include hunting bison inside the park; a point that is encouraged by the Montana legislature, state veterinarian, and organizations associated with the livestock community.

### Current Status:

- While hunting and meat processing are currently available tools for managers, quarantine and release of live, brucellosis-free animals are being considered as a future option.
- Montana recently decided to provide for some additional tolerance of bison north and west of the park. In addition, the NPS and Montana have initiated the preparation of a new environmental Impact Statement to consider changes in the management of bison and brucellosis given substantial new information, changed circumstances, and the passage of 15 years since the IBMP was initiated.







Wenk, Dan &lt;dan\_wenk@nps.gov&gt;

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**Re: YELL Bison briefing update: due today at 4:00 EDT**

1 message

---

**Dan Wenk** <dan\_wenk@nps.gov>  
To: "Masica, Sue" <sue\_masica@nps.gov>  
Cc: "Frost, Herbert" <bert\_frost@nps.gov>

Mon, Mar 27, 2017 at 12:23 PM

We are updating the numbers right now. Will have to you shortly. Bottom line small changes in harvest and ship to slaughter and the total will be about 1,250+/-

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

On Mar 27, 2017, at 11:10 AM, Masica, Sue <sue\_masica@nps.gov> wrote:

From my perspective, the quick answer is that this BP is generally accurate. The only thing that might change is the # of bison sent to slaughter (the BP references as of 3/13, so that is accurate; if possible, the park might be able to update that number). If not, I don't think it skews the underlying bison narrative sufficiently to render this BP moot -- esp. given DOI's request for something by 2pm MT.

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Sue Masica | National Park Service | Regional Director, Intermountain  
12795 W. Alameda Parkway | Lakewood, CO 80228 | (303) 969-2503

On Mon, Mar 27, 2017 at 10:48 AM, Frost, Herbert <bert\_frost@nps.gov> wrote:  
See below

-----  
Herbert C. Frost, Ph.D.  
Acting Deputy Director, Operations  
National Park Service

202-208-3818 - Office

----- Forwarded message -----  
From: **Foster, Maureen** <maureen\_foster@ios.doi.gov>  
Date: Mon, Mar 27, 2017 at 12:41 PM  
Subject: YELL Bison briefing update: due today at 4:00 EDT  
To: Bert Frost <Bert\_Frost@nps.gov>  
Cc: Alexa Viets <alexa\_viets@nps.gov>, Justin Monetti <justin\_monetti@nps.gov>

Bert:

I need an update on bison management. Here is the latest version. If the park can update by 4:00 today EDT, that would be great. We need it for a secretarial briefing paper.

Thanks.

---

Maureen D. Foster  
Chief of Staff  
Office of the Assistant Secretary  
for Fish and Wildlife and Parks  
1849 C Street, NW, Room 3161  
Washington, DC 20240

202.208.5970 (desk)

202.208.4416 (main)

[Maureen\\_Foster@ios.doi.gov](mailto:Maureen_Foster@ios.doi.gov)

----- Forwarded message -----

From: **Viets, Alexa** <[alexa\\_viets@nps.gov](mailto:alexa_viets@nps.gov)>

Date: Wed, Mar 15, 2017 at 10:19 AM

Subject: Fwd: Final Briefings 1 of 4

To: Maureen Foster <[maureen\\_foster@ios.doi.gov](mailto:maureen_foster@ios.doi.gov)>, Virginia Johnson <[virginia\\_johnson@ios.doi.gov](mailto:virginia_johnson@ios.doi.gov)>

Cc: Michael Reynolds <[michael\\_reynolds@nps.gov](mailto:michael_reynolds@nps.gov)>, Herbert Frost <[bert\\_frost@nps.gov](mailto:bert_frost@nps.gov)>

Maureen & Virginia,

FYI - This is what spurred me to mention to Dan J. on Monday that we need to coordinate Scheduling Office requests through DC. I'm going to forward to you a series of briefing materials Dan has sent directly.

The issue came to my attention on Monday when I sent a request to Dan / Regional Office to update briefing material re: YELL Bison and the Interagency Bison Management Plan. Dan let me know that he'd already been requested to provide similar briefing materials to the Scheduling team directly. Rather than have the park go through the exercise twice with short turn around for the Secretary's upcoming visit, I asked him to just copy us on the materials he was already providing.

Tx,  
Alexa

----- Forwarded message -----

From: **Dan Wenk** <[dan\\_wenk@nps.gov](mailto:dan_wenk@nps.gov)>

Date: Tue, Mar 14, 2017 at 8:59 PM

Subject: Final Briefings 1 of 4

To: [amy\\_mitchell@ios.doi.gov](mailto:amy_mitchell@ios.doi.gov)

Cc: Sue Masica <[Sue\\_Masica@nps.gov](mailto:Sue_Masica@nps.gov)>, [alexa\\_viets@nps.gov](mailto:alexa_viets@nps.gov), [thomas\\_crosson@nps.gov](mailto:thomas_crosson@nps.gov),  
[april\\_slayton@nps.gov](mailto:april_slayton@nps.gov), [rick\\_frost@nps.gov](mailto:rick_frost@nps.gov), [james\\_doyle@nps.gov](mailto:james_doyle@nps.gov)

Amy, in order to assure these briefs get into the Secretary's hands prior to his departure I am sending directly to you. I have also copied the regional and Washington offices. If we have any changes to these briefs I will get them to you as quickly as possible.

#### **Briefs**

- Bison Issues, Population, Quarantine, Removal/Winter Operations

#### **Attachments**

- Bison Management
- Bison Quarantine
- Bison Grazing Effects

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

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Alexa Viets  
Chief of Staff (Acting)  
National Park Service  
202-208-4530







Wenk, Dan <dan\_wenk@nps.gov>

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## Background Bison Brief

1 message

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**Dan Wenk** <dan\_wenk@nps.gov>  
To: Sue Masica <Sue\_Masica@nps.gov>

Fri, Sep 8, 2017 at 11:45 AM

1 of 2

Per phone call need to get to Todd Willens ASAP

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### 2 attachments

 **noname.txt**  
1K

 **Bison combined BP updated 09-08-17.docx**  
34K

## Briefing Statement FY 2017

**Bureau:** National Park Service (NPS)  
**Issue:** Bison Issues (Population, Quarantine, Removal/Winter Operations)  
**Park:** Yellowstone National Park (YELL)

### Key Points

- The management of bison migrating outside YELL during winter remains a contentious issue involving the NPS, State of Montana, Animal Plant Health and Inspection Service (APHIS), Native American tribes, U.S. Forest Service, and other stakeholders (livestock, conservation, animal rights).
- Winter operations, including harvests in Montana and capture/culling in northern YELL, are conducted pursuant to an Interagency Bison Management Plan (IBMP). During 2017, approximately 1,274 bison were removed from the population, including 748 shipped to slaughter, 468 harvested in Montana, 35 male calves held for quarantine, and 23 otherwise removed (e.g., killing of animals wounded during hunts; vehicle strikes).
- Twenty-four male bison have been held in isolation at the Stephens Creek capture facility in northern YELL since March 2016 pending transfer to the Fort Peck Reservation for quarantine. The risk of brucellosis transmission from these bison to cattle is negligible because they have been test-negative for more than 1 year (11 tests) and males are not known to transmit brucellosis, as well as the state-of-the-art facility at Fort Peck, the rigorous and proven testing protocol, and commitments from the tribes to work with APHIS on testing.
- The NPS requests APHIS agree these 24 males pose negligible disease threat to cattle in Montana and approve their shipment to the facility on the Fort Peck Reservation to complete the full 1-year quarantine protocol with APHIS providing testing oversight (see detailed brief on quarantine).
- Bison management requires communication and cooperation among multiple federal and state agencies and tribes with different mandates, philosophies, and treaties. Complicating any movement of bison outside the park are Montana and APHIS requirements about brucellosis-free certifications and a Montana executive order regarding state approval to transport bison on state roads. If those parties are in disagreement with NPS actions, they may reach out to Department of Interior leadership for engagement.

### Background

- Yellowstone bison are important due to their large population size, high genetic diversity, lack of interbreeding with cattle, and wild behaviors and adaptive capabilities like their ancestors.
- Many bison are infected with the disease brucellosis, which was introduced by cattle and induces abortions, reduces pregnancy rates, and poses a risk of transmission back to cattle.
- Brucellosis and concerns about property damage, human safety, and competition with cattle for forage limit tolerance for bison outside YELL and prevent relocations elsewhere to restore the species.
- Yellowstone bison have high reproductive and survival rates, with few animals perishing due to predators and severe winter conditions. Thus, some bison need to be culled from the population.
- Alternative strategies for bison management have been constrained by legal and administrative factors, including federal trust responsibilities to tribes, Montana statutes and executive orders, and APHIS' Uniform Methods & Rules with regard to protocols for quarantine.

#### Current Population Size and Management Actions

- The federal government and the State of Montana have implemented the IBMP since 2001 to sustain a viable population of Yellowstone bison, with no brucellosis transmission from bison to cattle. For comparison, 27 livestock herds in the Greater Yellowstone Area have been infected by wild elk since 1998.
- Bison numbers almost doubled to 5,500 bison during 2008 to 2016, leading to concerns that high grazing intensities on some summer ranges may not be sustainable over time. Also, the mass migration of bison into Montana can overwhelm efforts to protect people, cattle, and property. The 2017 count is currently underway.
- Managers removed approximately 1,276 bison from the population during winter 2017, primarily through public and treaty harvests in Montana and capture in YELL for shipment to slaughter. Tribes transfer bison to meat processing facilities and distribute the meat to their members.

- The shipment of bison to processing facilities is extremely controversial and generates negative publicity. However, the effectiveness of hunting has been limited by concentrations of hunters near the park boundary that prevent bison from distributing, wound bison, and cause safety issues.

#### Consideration of a Quarantine Program

- In 2012, the Secretary of the Interior directed YELL to explore developing and operating quarantine facilities for Yellowstone bison. Park managers drafted a Finding of No Significant Impact to implement quarantine with initial screening in the park and completion of APHIS' testing protocol on the Fort Peck Reservation.
- Montana maintains the shipment of bison to the Fort Peck Reservation is prohibited by state law until bison complete quarantine and are certified as brucellosis-free. Also, APHIS maintains quarantine facilities must be located in or near YELL and approved by animal health officials according to their 2003 Uniform Methods and Rules; even though our understanding is that they are currently conducting quarantine with about 20 Yellowstone bison at their research facility in Fort Collins, Colorado.
- The NPS is at an impasse because Montana and APHIS have refused to allow bison quarantine on the Fort Peck Reservation. Also, Department of Interior solicitors maintain the Secretary must conclude this impasse is preventing the carrying out of our statutory duties before bison can be transferred without agreement.
  - Departmental policies regarding state and federal relationships are set forth at 43 CFR Part 24. Such policies direct agencies to consult with states and comply with state permit requirements regarding the planned removal of surplus or harmful populations of wildlife and the disposition of these wildlife except in instances where the Secretary determines that such compliance would prevent him from carrying out his statutory responsibilities (*e.g.* 43 C.F.R. 24.4(i)(5)).
- The Fort Peck tribes are frustrated the NPS has not released a decision document and by the State of Montana's and APHIS' refusal to allow the quarantine of bison on the Fort Peck Reservation.
- YELL recommends issuing a Finding of No Significant Impact to conduct quarantine at the Fort Peck Reservation, while continuing negotiations with the State, APHIS, and the Tribes.

#### Development of a New Interagency Bison Management Plan

- The NPS and the State of Montana have entered into an agreement to co-lead the development of a new Yellowstone Bison Management Plan. The NPS is funding the effort.
- There are six cooperating agencies, including the U.S. Forest Service, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Shoshone-Bannock Tribes, Nez Perce Tribe, and InterTribal Buffalo Council. The states of Wyoming and Idaho, as well as APHIS, declined to participate.
- Public scoping was initiated in 2015, with 8,300 individual comments received. Since that time, the NPS and Montana have met several times to develop a range of alternatives for a draft Environmental Impact Statement.
- There has been little agreement on many facets of bison management, both under the existing IBMP and in this new planning process. Montana has two agencies involved, the Department of Livestock and Fish, Wildlife & Parks, which differ in their perspectives on bison management. This has made it difficult to come to agreement on a range of alternatives, tools for management, and overall objectives and goals.
- In addition, relationships are strained due to the disagreement over the NPS bison quarantine proposal and current management under the existing IBMP. There may need to be a reevaluation of goals and objectives, as well as renewed State of Montana commitment, to a new bison management plan to move forward.

#### **Current Status**

- Biologists at YELL are currently evaluating post-calving counts of bison in the central and northern regions of the park. These counts will be used to determine the appropriate levels of removals next winter to continue to decrease population size towards 4,200 bison.
- YELL will retain the 24 male bison in isolation at Stephens Creek until an option for quarantine is determined. Options include: 1) sending the bison to the Fort Peck Reservation for quarantine (preferred); 2) conducting quarantine at the Stephens Creek capture facility in YELL; or 3) killing or releasing the bison.
- The Intermountain Region is prepared to complete its work on the quarantine Environmental Assessment and sign the Finding of No Significant Impact.

**Contact Person:** Daniel N. Wenk, Superintendent, 307-344-2002, dan\_wenk@nps.gov

**Last Updated:** September 8, 2017







Wenk, Dan &lt;dan\_wenk@nps.gov&gt;

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## Yellowstone Bison

1 message

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**Masica, Sue** <sue\_masica@nps.gov>

Fri, Sep 8, 2017 at 3:01 PM

To: Todd Willens &lt;todd\_willens@ios.doi.gov&gt;

Cc: Maureen Foster &lt;maureen\_foster@ios.doi.gov&gt;, Michael Reynolds &lt;Michael\_Reynolds@nps.gov&gt;, Bob Vogel &lt;bob\_vogel@nps.gov&gt;, Jennifer Wyse &lt;jennifer\_wyse@nps.gov&gt;, Dan Wenk &lt;dan\_wenk@nps.gov&gt;

Todd:

I understand you requested these two briefing papers about Yellowstone bison, following up on the ongoing efforts to get the 24 bison transferred from the park to Fort Peck. Sorry for the delay in transmitting.

Sue

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Sue Masica | National Park Service | Regional Director, Intermountain  
12795 W. Alameda Parkway | Lakewood, CO 80228 | (303) 969-2503

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### 2 attachments

**Bison combined BP updated 09-08-17.docx**

28K

**YELL\_BisonQuarantine24Males\_Sep2017.docx**

24K

## Briefing Statement FY 2017

**Bureau:** National Park Service (NPS)  
**Issue:** Bison Issues (Population, Quarantine, Removal/Winter Operations)  
**Park:** Yellowstone National Park (YELL)

### Key Points

- The management of bison migrating outside YELL during winter remains a contentious issue involving the NPS, State of Montana, Animal Plant Health and Inspection Service (APHIS), Native American tribes, U.S. Forest Service, and other stakeholders (livestock, conservation, animal rights).
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- The NPS requests APHIS agree these 24 males pose negligible disease threat to cattle in Montana and approve their shipment to the facility on the Fort Peck Reservation to complete the full 1-year quarantine protocol with APHIS providing testing oversight (see detailed brief on quarantine).
- Bison management requires communication and cooperation among multiple federal and state agencies and tribes with different mandates, philosophies, and treaties. Complicating any movement of bison outside the park are Montana and APHIS requirements about brucellosis-free certifications and a Montana executive order regarding state approval to transport bison on state roads. If those parties are in disagreement with NPS actions, they may reach out to Department of Interior leadership for engagement.

### Background

- Yellowstone bison are important due to their large population size, high genetic diversity, lack of interbreeding with cattle, and wild behaviors and adaptive capabilities like their ancestors.
- Many bison are infected with the disease brucellosis, which was introduced by cattle and induces abortions, reduces pregnancy rates, and poses a risk of transmission back to cattle.
- Brucellosis and concerns about property damage, human safety, and competition with cattle for forage limit tolerance for bison outside YELL and prevent relocations elsewhere to restore the species.
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- Bison numbers almost doubled to 5,500 bison during 2008 to 2016, leading to concerns that high grazing intensities on some summer ranges may not be sustainable over time. Also, the mass migration of bison into Montana can overwhelm efforts to protect people, cattle, and property. The 2017 count is currently underway.
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- In 2012, the Secretary of the Interior directed YELL to explore developing and operating quarantine facilities for Yellowstone bison. Park managers drafted a Finding of No Significant Impact to implement quarantine with initial screening in the park and completion of APHIS' testing protocol on the Fort Peck Reservation.
- Montana maintains the shipment of bison to the Fort Peck Reservation is prohibited by state law until bison complete quarantine and are certified as brucellosis-free. Also, APHIS maintains quarantine facilities must be located in or near YELL and approved by animal health officials according to their 2003 Uniform Methods and Rules; even though our understanding is that they are currently conducting quarantine with about 20 Yellowstone bison at their research facility in Fort Collins, Colorado.
- The NPS is at an impasse because Montana and APHIS have refused to allow bison quarantine on the Fort Peck Reservation. Also, Department of Interior solicitors maintain the Secretary must conclude this impasse is preventing the carrying out of our statutory duties before bison can be transferred without agreement.
  - Departmental policies regarding state and federal relationships are set forth at 43 CFR Part 24. Such policies direct agencies to consult with states and comply with state permit requirements regarding the planned removal of surplus or harmful populations of wildlife and the disposition of these wildlife except in instances where the Secretary determines that such compliance would prevent him from carrying out his statutory responsibilities (*e.g.* 43 C.F.R. 24.4(i)(5)).
- The Fort Peck tribes are frustrated the NPS has not released a decision document and by the State of Montana's and APHIS' refusal to allow the quarantine of bison on the Fort Peck Reservation.
- YELL recommends issuing a Finding of No Significant Impact to conduct quarantine at the Fort Peck Reservation, while continuing negotiations with the State, APHIS, and the Tribes.

#### Development of a New Interagency Bison Management Plan

- The NPS and the State of Montana have entered into an agreement to co-lead the development of a new Yellowstone Bison Management Plan. The NPS is funding the effort.
- There are six cooperating agencies, including the U.S. Forest Service, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Shoshone-Bannock Tribes, Nez Perce Tribe, and InterTribal Buffalo Council. The states of Wyoming and Idaho, as well as APHIS, declined to participate.
- Public scoping was initiated in 2015, with 8,300 individual comments received. Since that time, the NPS and Montana have met several times to develop a range of alternatives for a draft Environmental Impact Statement.
- There has been little agreement on many facets of bison management, both under the existing IBMP and in this new planning process. Montana has two agencies involved, the Department of Livestock and Fish, Wildlife & Parks, which differ in their perspectives on bison management. This has made it difficult to come to agreement on a range of alternatives, tools for management, and overall objectives and goals.
- In addition, relationships are strained due to the disagreement over the NPS bison quarantine proposal and current management under the existing IBMP. There may need to be a reevaluation of goals and objectives, as well as renewed State of Montana commitment, to a new bison management plan to move forward.

#### **Current Status**

- Biologists at YELL are currently evaluating post-calving counts of bison in the central and northern regions of the park. These counts will be used to determine the appropriate levels of removals next winter to continue to decrease population size towards 4,200 bison.
- YELL will retain the 24 male bison in isolation at Stephens Creek until an option for quarantine is determined. Options include: 1) sending the bison to the Fort Peck Reservation for quarantine (preferred); 2) conducting quarantine at the Stephens Creek capture facility in YELL; or 3) killing or releasing the bison.
- The Intermountain Region is prepared to complete its work on the quarantine Environmental Assessment and sign the Finding of No Significant Impact.

**Contact Person:** Daniel N. Wenk, Superintendent, 307-344-2002, dan\_wenk@nps.gov

**Last Updated:** September 8, 2017

## **Briefing Statement FY 2017**

**Bureau:** National Park Service (NPS)  
**Issue:** Quarantine Plan for 24 Male Yellowstone Bison  
**Park:** Yellowstone National Park (YELL); Dan Wenk, Superintendent, dan\_wenk@nps.gov

### **Key Points**

- The NPS proposes to transfer 24 male Yellowstone bison aged 2-3-years-old and all testing negative for brucellosis exposure since March 2016 from YELL to a facility on the Fort Peck Reservation for completion of the quarantine testing protocol (~1 year) and subsequent release on the Reservation.
- The NPS requests the Animal and Plant Health Inspection Service (APHIS) agree these 24 males pose negligible disease threat to cattle in Montana and approve their shipment to the state-of-the-art surveillance facility on the Fort Peck Reservation to complete the full 1-year quarantine protocol with APHIS providing testing oversight.
- The 24 male bison were captured and isolated in a secure fenced pasture during March 2016. These bison have tested negative for brucellosis exposure 11 times (at >30 day intervals) through August 24, 2017. A binder with all testing results for each bison was given to the APHIS and the State Veterinarian during August 2017.
- The Fort Peck tribes constructed a double-fenced quarantine facility within a larger fenced pasture that meets the specifications used by the APHIS and the State of Montana during a 2006-2010 quarantine study and have agreed to implement the brucellosis testing protocol developed by APHIS.
- The actual risk of brucellosis transmission from these bison in quarantine to cattle is negligible because they have been test-negative for more than 1 year and males are not known to transmit brucellosis, as well as the state-of-the-art facility, rigorous and proven testing protocol, and commitments from the Fort Peck tribes to collaborate with APHIS on further testing.

### **Actions Needed by APHIS to Facilitate Bison Quarantine at Fort Peck**

- NPS requests that APHIS agree these 24 males pose negligible disease threat to cattle in Montana and approve the transfer of these animals to Ft. Peck.
- APHIS needs to certify the double-fenced facility on the Fort Peck Reservation, which it previously inspected with the Montana State Veterinarian, as suitable for quarantine.
- APHIS needs to inform the Governor of Montana that transfers of Yellowstone bison testing negative for brucellosis exposure to the quarantine facility on the Fort Peck Reservation will not change the brucellosis-free status of the State of Montana because bison will be isolated in a secure facility and serial testing of each bison will detect and remove (kill) any subsequent reactors before the remaining cohort is certified as brucellosis free.
- APHIS needs to work collaboratively with the NPS, Fort Peck tribes, and the State of Montana to develop a Memorandum of Agreement regarding the transfer of bison and implementation of quarantine.
- APHIS needs to provide qualified personnel to certify the number of wild bison loaded and secured in each trailer at YELL for transport, as well as the number unloaded into the quarantine facility on the Fort Peck Reservation.
- In collaboration with the Fort Peck tribes, APHIS needs to provide qualified personnel to conduct and oversee the testing of the bison in quarantine at the Fort Peck facility.
- In collaboration with the State of Montana, APHIS needs to consult with the Fort Peck tribes to implement a record keeping system to identify the original bison transferred to the facility for quarantine, any deaths, and all procedures done to each animal for the duration of the testing period.
- APHIS needs to interpret serology test results and consult with the Fort Peck tribes to help determine the disposition of each bison, which could include remaining in the quarantine cohort (i.e., test-negative), consignment to slaughter (i.e., test-positive), or removal to a separate pasture for further testing (i.e., suspect).
- When the surveillance period ends, APHIS needs to certify the bison as brucellosis free (with the State Veterinarian) and vaccinate them before they are released from the surveillance facility.

### **Timeline/Schedule for Implementation**

#### September/October 2017

- Sign a Memorandum of Agreement between the NPS, APHIS, State of Montana, and Fort Peck tribes to outline roles and responsibilities for transport, testing, and holding animals at the Fort Peck facility.
- Issue a Finding of No Significant Impact for conducting quarantine with Yellowstone bison.
- Arrange shipping and security for the bison transfer and notify the Governor of Montana of the shipment date(s).
- Transfer the brucellosis-free, male bison to the quarantine facility on the Fort Peck Reservation.





Wenk, Dan &lt;dan\_wenk@nps.gov&gt;

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**Fwd: YELL\_BisonManagement\_3-12-18\_FINAL.docx**

1 message

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**Dan Wenk** <dan\_wenk@nps.gov>  
To: Dave Mihalic <david\_mihalic@ios.doi.gov>

Mon, Mar 12, 2018 at 3:21 PM

The most recent drill. Wanted you to see this because of the lack of a common understanding of the results of the meeting on February 28th. Working on getting a common understanding with all parties. Not an easy task.

If you want to talk about this let me know. In meetings the next two days but can step out.

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

Begin forwarded message:

**From:** Dan Wenk <dan\_wenk@nps.gov>  
**Date:** March 12, 2018 at 3:07:46 PM MDT  
**To:** rick\_obernesser@nps.gov, Sue Masica <Sue\_Masica@nps.gov>  
**Cc:** jennifer\_carpenter@nps.gov, pj\_white@nps.gov, rick\_wallen@nps.gov, Tim Reid <tim\_reid@nps.gov>, chris\_powell@nps.gov  
**Subject:** YELL\_BisonManagement\_3-12-18\_FINAL.docx


Obe,

Good afternoon. The attached brief is an attempt to meet the needs for Todd to brief the Secretary. The brief is divided into three parts. The first part, Key Points, are the seven bullets that are critical to briefing the Secretary on the situation that exist today, the second and third sections are Background and Current Status are for more information if necessary.

Questions? Let me know.

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

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 **YELL\_BisonManagement\_3-12-18\_FINAL.docx**  
36K

## **Briefing Statement FY 2019**

**Bureau:** National Park Service  
**Issue:** Bison Management Plan Interagency  
**Member:** General Interest  
**Park:** Yellowstone National Park

### **Key Points:**

- Approximately 800 bison have been captured to date at the Stephens Creek facility. 355 bison have been transported to slaughter, with that number expected to reach 500 by March 16. To date, treaty and state hunters have harvested approximately 260 bison.
- Transport to slaughter is estimated to continue through the week of March 19. At that time, unless more capture is required to contain a mass late winter migration, no bison will remain in the Stephens Creek facility with the exception of the 100 head quarantine cohort.
- There have been three criminal acts at the Stephens Creek facility during the past two months, including the release of 52 bison from quarantine, the release of 50+ bison from the capture facility, and the brief self-chaining of two activists to the processing facility. The three individuals arrested in the latter incident were arraigned on March 12. All three plead guilty, with each individual being fined \$500, levied a \$500 Community Service Payment, sentenced to time served (6 days), banned from the park for five years, and assigned five years of unsupervised probation.
- On February 28, 2018, the Yellowstone Superintendent met with the Secretary of Interior and his staff, the USDA APHIS Deputy Administrator and staff, the Resource Policy advisor for State of Montana Governor, and representatives from the Fort Peck Tribe, to discuss relocating quarantine bison to Fort Peck.
- During the February 28 meeting, the Animal and Plant Health Inspection Service (APHIS) and the State of Montana posited that no bison can be transported to the Fort Peck Indian Reservation until they complete the quarantine protocol developed by APHIS, which will take about 2 years for males and more than 3 years for females.
- Subsequent conversations with February 28 meeting participants indicate that a common understanding of the outcome is lacking; Fort Peck believing they can receive bison in 7 to 8 months, USDA APHIS perceiving their position holds on no bison transfer until quarantine is complete, and the State of Montana looking to USDA APHIS to modify their position and allow early transfer to Fort Peck.
- YELL still believes quarantine science supports that male bison repeatedly testing negative for brucellosis after 7-8 months could be sent to Fort Peck for the 1-year quarantine testing protocol and another year of post-quarantine testing with negligible risk of brucellosis transmission to cattle.

### **Background:**

- The federal government and State of Montana are signatories to the IBMP, which has been implemented since 2001 to manage bison numbers toward a negotiated guideline of 3000 and reduce the risk of brucellosis transmission from bison to cattle.
- The plan has been successful at conserving a viable population of wild, wide-ranging bison and there have been no transmissions of brucellosis from bison to cattle.

- Other members of the IBMP include APHIS, Confederated Salish and Kootenai Tribes of the Flathead Nation, Forest Service, InterTribal Buffalo Council and the Nez Perce Tribe.
- Seven tribes hunt bison on land outside the park boundary in Montana adjacent to YELL: Blackfeet Nation, Confederated Salish and Kootenai Tribes of the Flathead Nation, Crow Tribe, Confederated Tribes of the Umatilla Reservation, Confederate Tribes and Bands of the Yakama Nation, Nez Perce Tribe, and Shoshone-Bannock Tribes.

**Current Status:**

- There is limited tolerance for wild bison in Montana due to concerns about competition with cattle, human safety, property damage, and brucellosis transmission. The States of Idaho and Wyoming do not want wild bison.
- There is no social tolerance for harvesting 600+ bison in communities of Montana adjacent to YELL due to concentrations of hunters and gut piles near roads and residences, human safety issues, and hunting practices perceived to be unethical (e.g., firing lines of hunters along the park boundary, “flock” shooting).
- Captures at the Stephens Creek facility began on February 16 and will occur through March; captured bison will be sent to slaughter, quarantine or held for release in spring.
- There have been three criminal acts at the Stephens Creek facility during the past two months, including the release of 52 bison from quarantine, the release of 50+ bison from the capture facility, and the brief self-chaining of two activists to the processing facility.
- The NPS is negotiating with APHIS and the State of Montana to reach an agreement to quarantine bison and send brucellosis-free bison to the Assiniboine and Sioux tribes at Fort Peck Reservation.
- Hunting is prohibited in YELL. However, when bison migrations into Montana are small or late, tribal hunters become frustrated and assert that treaty rights include hunting inside the park; a point that is encouraged by the state veterinarian and others associated with the livestock community.
- In February 2018, the Cottonwood Environmental Law Center filed litigation to stop the IBMP managers from capturing, hazing, or quarantining bison until supplemental NEPA analyses are conducted regarding the increased number of tribal bison hunters this winter. The judge declined to issue a temporary restraining order; no hearing date has been set.
- Plaintiffs sought action against the U.S. Fish and Wildlife Service for a 90-day determination that their petition failed to present sufficient scientific evidence that the listing of YELL bison as threatened or endangered was warranted. On January 31, 2018, the U.S. District Court for the District of Columbia granted the plaintiffs’ motion for summary judgment and remanded the case to the agency to conduct a new 90-day finding.

**Contact Person:** Daniel N. Wenk, Superintendent, Yellowstone National Park, (307) 344-2002, [dan\\_wenk@nps.gov](mailto:dan_wenk@nps.gov)

**Last Updated:** Monday, March 12, 2018





**From:** [Mihalic, David](#)  
**To:** [Dan Wenk](#)  
**Subject:** Re: YELL\_BisonManagement\_3-12-18\_FINAL.docx  
**Date:** Tuesday, March 13, 2018 9:22:20 AM  
**Attachments:** [Bison Slide 13MAR2018.pptx](#)

---

Morning,

Tried Carrie Evans a few minutes ago to leave verbal message but no answer and didn't want to leave voicemail.

Do you have updated "bison to slaughter" number as of today or tomorrow? There will be a brief to secretary and I am briefing on this issue - I am attaching a copy of the powerpoint slide for your perusal - but want to have up-to-date numbers. If there is comment on the slide or how it is presented, please advise!

Dave

On Mon, Mar 12, 2018 at 5:21 PM, Dan Wenk <[dan\\_wenk@nps.gov](mailto:dan_wenk@nps.gov)> wrote:

The most recent drill. Wanted you to see this because of the lack of a common understandings no of the results of the meeting on February 28th. Working on getting a common understanding with all parties. Not an easy task.

If you want to talk about this let me know. In meetings the next two days but can step out.

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

Begin forwarded message:

**From:** Dan Wenk <[dan\\_wenk@nps.gov](mailto:dan_wenk@nps.gov)>  
**Date:** March 12, 2018 at 3:07:46 PM MDT  
**To:** [rick\\_obernesser@nps.gov](mailto:rick_obernesser@nps.gov), Sue Masica <[Sue\\_Masica@nps.gov](mailto:Sue_Masica@nps.gov)>  
**Cc:** [jennifer\\_carpenter@nps.gov](mailto:jennifer_carpenter@nps.gov), [pj\\_white@nps.gov](mailto:pj_white@nps.gov), [rick\\_wallen@nps.gov](mailto:rick_wallen@nps.gov), Tim Reid <[tim\\_reid@nps.gov](mailto:tim_reid@nps.gov)>, [chris\\_powell@nps.gov](mailto:chris_powell@nps.gov)  
**Subject:** YELL\_BisonManagement\_3-12-18\_FINAL.docx

Obe,

Good afternoon. The attached brief is an attempt to meet the needs for Todd to brief the Secretary. The brief is divided into three parts. The first part, Key Points, are the seven bullets that are critical to briefing the Secretary on the situation that exist today, the section and third sections are Background and Current Status are for more information if necessary.

Questions? Let me know.

--

David A. Mihalic

Senior Advisor to the Secretary  
United States Department of the Interior  
MIB Room 6124  
1849 "C" Street NW  
Washington, D.C. 20240

Phone: 202-208-4130

[david\\_mihalic@ios.doi.gov](mailto:david_mihalic@ios.doi.gov)

*Remember, everything I send or receive is subject to the Freedom of Information Act*



# Dave Mihalic

## Senior Advisor to the Secretary

### Bison

- Players: NPS, USDA-APHIS, Fort Peck Assiniboine and Sioux Tribes
- Two-fold issue: 1) Bison *MIGRATE* 2) *OVERGRAZING* in Yellowstone
  - Meeting on 28 February *DID NOT result in a common understanding*
    - Ft. Peck: Have built a quarantine facility for bison
    - APHIS: Bison must be quarantined at Yellowstone 2-3 YEARS
    - State/MT: Only APHIS can relax their position
- Potential for MEDIA BLACK EYE: 355 Bison to slaughter – 260 by hunt



**From:** [Dan Wenk](#)  
**To:** [Mihalic, David](#)  
**Subject:** Re: YELL\_BisonManagement\_3-12-18\_FINAL.docx  
**Date:** Tuesday, March 13, 2018 10:13:36 AM

---

I will get to you, before noon my time, the latest hunt numbers and slaughter numbers through today and estimated numbers by day through the week.

Also, I know the Secretary believes that bison are overgrazing. There is no ecological evidence that is true. The summer of 16 when he saw it was a very dry year, last year was wet and entirely entirely different. The limiting factor is not grazing and available food in the park. The limiting factor is tolerance when they migrate out of the park.

I assume from the slide that you agree that we have a disconnect at a minimum with the Tribes at Fort Peck on when bison might be "eligible for transfer" based on the position of APHIS.

If you'd like to talk. I'm available.

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

On Mar 13, 2018, at 9:21 AM, Mihalic, David <[david\\_mihalic@ios.doi.gov](mailto:david_mihalic@ios.doi.gov)> wrote:

Morning,

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Dan Wenk  
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**Date:** March 12, 2018 at 3:07:46 PM MDT  
**To:** [rick\\_obernesser@nps.gov](mailto:rick_obernesser@nps.gov), Sue Masica  
<[Sue\\_Masica@nps.gov](mailto:Sue_Masica@nps.gov)>  
**Cc:** [jennifer\\_carpenter@nps.gov](mailto:jennifer_carpenter@nps.gov), [pj\\_white@nps.gov](mailto:pj_white@nps.gov),  
[rick\\_wallen@nps.gov](mailto:rick_wallen@nps.gov), Tim Reid <[tim\\_reid@nps.gov](mailto:tim_reid@nps.gov)>,  
[chris\\_powell@nps.gov](mailto:chris_powell@nps.gov)  
**Subject:** YELL\_BisonManagement\_3-12-18\_FINAL.docx

Obe,

Good afternoon. The attached brief is an attempt to meet the needs for Todd to brief the Secretary. The brief is divided into three parts. The first part, Key Points, are the seven bullets that are critical to briefing the Secretary on the situation that exist today, the section and third sections are Background and Current Status are for more information if necessary.

Questions? Let me know.

--

David A. Mihalic

Senior Advisor to the Secretary  
United States Department of the Interior  
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Phone: 202-208-4130  
[david\\_mihalic@ios.doi.gov](mailto:david_mihalic@ios.doi.gov)

*Remember, everything I send or receive is subject to the Freedom of Information Act*

<Bison Slide 13MAR2018.pptx>







Wenk, Dan &lt;dan\_wenk@nps.gov&gt;

---

**BisonSlides\_IBMP\_WinterOps\_NPS\_4-25.pptx**

1 message

---

**Dan Wenk** <dan\_wenk@nps.gov>  
To: Dave Mihalic <david\_mihalic@ios.doi.gov>

Fri, May 11, 2018 at 12:29 PM

This is the power point used in the April IBPM meeting. Question give me a call.

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002



---

**BisonSlides\_IBMP\_WinterOps\_NPS\_4-25.pptx**  
805K

# **NPS Recommendations 2017**

**~4,800 bison: ~3,970 north/~850 central**

- Remove up to 1,250 bison breeding in north**
- Decrease numbers to 4,200-4,400 after calving**
- No removals in west due to lower numbers**
- Allow bison to distribute on landscape and hunt**
- Maintain 250-400 bison in Gardiner basin**
- Begin culling bison in north when migration deemed sufficient to support hunting and culling**
- Conduct larger culls if there is a larger migration**

# **17/18 Winter Operations Plan**

**Manage for a decreasing population**

- **Optimize harvest while assuring combined hunt/cull take of 600 to 900 bison**
- **Reduce impacts of bison captures on hunt**
- **Monthly removal goals:**
  - **75-115 by the end of November**
  - **225-335 by the end of December**
  - **372-560 by the end of January**
  - **522-785 by the end of February**
  - **600-900 by March 15**



# Harvests

**December 2017:** Hunters began harvesting bison west of the park (NPS recommended zero)

**Removal goals/reported harvests (north):**

- **November 30: Goal = 75-115; Harvest = 8**
  - **December 31: Goal = 225-335; Harvest = 8**
  - **January 31: Goal = 372-560; Harvest = 21**
  - **February 28: Goal = 522-785; Harvest = 146**
  - **March 15: Goal = 600-900; Harvest = 206**
- **Reported harvests lagged well behind removal goals by mid-February**

# Captures/Culls

- Winter conditions led to a large migration into Gardiner basin during late February/March
- NPS began capturing on February 16 and captured ~800 bison over a 3-week period
- Another 800+ bison in the Gardiner basin (Mammoth-Yankee Jim) during captures
- NOTES:
  - Harvest higher after captures began (77 bison harvested 30 days before; 172 after)
  - Many harvests and reports after March 11, when captures ended



# Harvests and Culls

	MT/ NPS	CSKT	Nez Perce	ShoBan	CTUR	Yakama	BFN
<b>Hunt (372)</b>							
<b>North</b>	37*	2	111	35	28	40	32
<b>West</b>	22*	45	4	2	0	8	6
<b>Subtotal</b>	<b>59</b>	<b>47</b>	<b>115</b>	<b>37</b>	<b>28</b>	<b>48</b>	<b>38</b>
* includes 6 dispatched, 3 poached, 1 abandoned							
<b>Cull (796)</b>							
<b>Slaughter</b>	<b>694</b>	<b>Transferred to the CSKT for processing Includes 25 female and 73 male yearlings</b>					
<b>Quarantine</b>	<b>98</b>						
<b>Pen Mort</b>	<b>4</b>						
<b>Total</b>	<b>1,168</b>	<b>2018: Harvest 32%; Culls 68%</b> <b>2012-2017: Harvest 50%; Culls 50%</b>					

# WHY > 600-900

- Winter severity exceeded predictions.
- Unusually large migration in late February allowed continued capture and hunter success with > 500 bison north of park at times.
- Telemetric data indicating that bison migrating into Gardiner bison were associated with the northern breeding area.
- NPS holds that a long-term average of ~4,200 bison allows balance of myriad demands/values surrounding bison and provides opportunity for progress on issues that have been difficult to advance, including:
  - Full dispersal into the conservation area
  - Reduced hunting pressure near boundary/better hunt success and optics
  - Mitigation of capture/hunt conflict
  - Reduction of cull size and shipments to slaughter
- The removal of 1,100+ bison provided the highest chance of a summer 2018 count near 4,200 bison compared to other alternatives.
  - Summer 2018: Predict ~4,200 +/- 500 bison post-calving
  - <4,500 bison for the first time since 2012



# Conclusions/Considerations

The combined use of hunting and culling over the past six years has reduced bison numbers toward the NPS objective (4,200), while supporting hunter harvest (41% of removals) and no >800 to slaughter in any one winter.

Future removals to stabilize population growth could be one-half of what was necessary to reduce the population size (i.e., 400-500 instead of 1,000 – 1,200).

## Consider:

Removal of fewer bison via capture/culling can shift focus to reducing hunt pressure near boundary and advance other efforts:

- As outlined in the 2000 IBMP ROD, establish temporary capture facilities near Yankee Jim Canyon. Facilitates bison distribution over available landscape, habitat learning, and a dispersed hunt.
- Limit capture at Stephens Creek primarily to support quarantine or research.
- Utilize quarantine facilities at Stephens Creek, Corwin Springs, and Fort Peck Reservation to reduce shipments to slaughter.





**From:** [Dan Wenk](#)  
**To:** [Susan Combs](#)  
**Cc:** [Sue Masica](#); [rick\\_obernesser@nps.gov](mailto:rick_obernesser@nps.gov); [paul\\_smith@nps.gov](mailto:paul_smith@nps.gov); [chris\\_powell@nps.gov](mailto:chris_powell@nps.gov)  
**Subject:** Bison Briefs  
**Date:** Monday, May 14, 2018 2:09:57 PM  
**Attachments:** [ATT00001.htm](#)  
[YELL\\_Bison Quarantine 5-14-18.docx](#)  
[YELL\\_BisonManagement\\_FY2019\\_5-14-18.docx](#)  
[ATT00002.htm](#)  
[4062018 Bison Quarantine letter - Zinke and Purdue \(1\).pdf](#)  
[ATT00003.htm](#)

---

Assistant Secretary Combs,

I have included three documents that give the status of bison management and quarantine in Yellowstone. If you have any questions please let me know and we will be pleased to clarify or to provide additional information.

1. Bison General Information Brief
2. Bison Quarantine Brief
3. Letter to Secretaries Zinke and Perdue from Montana Governor Bullock

Dan Wenk  
Superintendent  
Yellowstone National Park.  
(307) 344-2002.

## **Briefing Statement FY 2019**

**Bureau:** National Park Service  
**Issue:** Quarantine of Yellowstone Bison  
**Member:** General Interest  
**Park:** Yellowstone National Park

### **Key Points:**

- Yellowstone bison have ecological, genetic, and cultural value that would enhance conservation efforts for the species. Indian tribes and conservation entities are interested in obtaining live Yellowstone bison. However, the population is infected with the bacterial disease brucellosis, which could be transmitted to cattle.
- The NPS has proposed quarantine in Yellowstone National Park (YELL), at the Corwin Springs facility near Yellowstone, and at the Fort Peck Indian Reservation to identify brucellosis-free bison to: establish new conservation and cultural herds, enhance cultural and nutritional opportunities for Indians, and reduce shipments of bison to slaughter facilities.
- Parallel agreements for quarantine process and operations are being negotiated between the Animal and Plant Health Inspection Service (APHIS), YELL and Assiniboine and Sioux tribes at Ft. Peck.
- Conducting quarantine in YELL and on the Fort Peck Reservation would not increase risk to livestock because the NPS and Fort Peck tribes will use facilities and testing protocols that meet APHIS-developed specifications and that have been found to effectively identify brucellosis-free bison.

### **Background:**

- The public disdains the practice of shipping bison to slaughter. As a result, bison managers have explored alternatives to preserve valuable brucellosis-free bison.
- The NPS and Fort Peck tribes adhered to specifications and requirements provided by APHIS and the State of Montana to construct double-fenced quarantine facilities and to establish testing protocols.
- The NPS has proposed to transfer male bison testing negative for brucellosis exposure for 7-8 months from YELL to a facility on the Fort Peck Reservation to complete quarantine (1-2 years) and, eventually, to be released on the Reservation. Bison transport would necessarily occur on Montana highways.
- Female bison and their offspring could be transferred to Fort Peck for additional testing and released after completing the entire quarantine protocol in the YELL facility or another double-fenced facility in Corwin Springs, Montana, which APHIS has used since 2005.

### **Current Status:**

- The NPS completed structural improvements to the proposed quarantine pastures in YELL; APHIS and State of Montana representatives inspected the facility on December 7, 2017. APHIS has verbally certified the YELL quarantine facility, as of inspection date, though written certification is still forthcoming.
- During December 2017, the NPS, APHIS, and the State of Montana developed and signed an agreement in principle which could facilitate the movement and future release

## **Briefing Statement FY 2019**

**Bureau:** National Park Service  
**Issue:** Bison Management Plan Interagency (Yellowstone NP)  
**Member:** General Interest  
**Park:** Yellowstone National Park

### **Key Points:**

- Approximately 4800 bison were counted during summer 2017. Yellowstone National Park (YELL) and other members of the Interagency Bison Management Plan (IBMP) agreed to manage for a decreasing bison population this winter using hunting in Montana and capture/culling to ensure removal of 600-900 bison.
- 1,173 bison were removed from the population through capture operations and public/treaty hunting outside the park (per state of Montana hunt update on 5/3/18).
- The late summer 2018 population estimate for Yellowstone bison is 4,200 (+/- 500).
- Without capture and culling, the population will continue to grow, which is not sustainable without access to additional habitat in Montana and other states surrounding the park in winter.

### **Background:**

- The federal government and State of Montana are signatories to the IBMP, which has been implemented since 2001 to manage bison numbers toward a negotiated guideline of 3000 and reduce the risk of brucellosis transmission from bison to cattle.
- The plan has been successful at conserving a viable population of wild, wide-ranging bison and there have been no transmissions of brucellosis from bison to cattle. Other members of the IBMP include the USDA Animal and Plant Health Inspection Service (APHIS), Confederated Salish and Kootenai Tribes of the Flathead Nation, US Forest Service, InterTribal Buffalo Council and the Nez Perce Tribe, Montana Fish Wildlife and Parks, and Montana Department of Livestock.
- Six tribes hunt bison on land outside the park boundary in Montana adjacent to YELL: the Confederated Salish and Kootenai Tribes of the Flathead Nation, Nez Perce Tribe, Shoshone-Bannock Tribes, Confederated Tribes of the Umatilla Reservation, Confederate Tribes and Bands of the Yakama Nation and the Blackfeet Nation.

### **Current Status:**

- There is limited tolerance for wild bison in Montana due to concerns about competition with cattle, human safety, property damage, and brucellosis transmission. The States of Idaho and Wyoming do not want wild bison.
- There is no social tolerance for harvesting 600+ bison in communities of Montana adjacent to YELL due to concentrations of hunters and carcasses near roads and residences, human safety issues, and hunting practices perceived to be unethical (e.g., firing lines of hunters along the park boundary, “flock” shooting).
- In 2018 captures at the Stephens Creek facility began on February 16 and ended on March 11. At total of 1,173 bison were removed from the population (694 captured by NPS and transferred to the Confederated Salish and Kootenai tribes for slaughter, 377 harvested outside the park by public and treaty hunters, 98 entered in to Yellowstone Quarantine program, 4 capture facility mortalities).

OFFICE OF THE GOVERNOR  
STATE OF MONTANA

STEVE BULLOCK  
GOVERNOR



MIKE COONEY  
LT. GOVERNOR

April 6, 2018

Secretary Ryan Zinke  
U.S. Department of Interior  
Washington, DC

Secretary Sonny Perdue  
U.S. Department of Agriculture  
Washington, DC

Dear Secretary Zinke and Secretary Perdue:

I am writing to reaffirm the State of Montana's support for the quarantine and translocation of Yellowstone National Park (YNP) bison to the Ft. Peck and Assiniboine Tribes for cultural and conservation purposes. The State believes that a rigorous and science-based approach to manage brucellosis risk can protect our livestock industry, meet the needs of tribal nations, and inform future bison management among federal and state partners.

The criminal acts on January 14<sup>th</sup> that released bison held in quarantine at YNP's facility at Stephens Creek represents an unfortunate setback in our efforts to advance our shared goals. Unfortunately, that release of bison was just the latest development in a process that has been unnecessarily delayed due to YNP's deviation from regulatory standards for testing and quarantine since initial capture in spring 2016. These delays have thwarted efforts for a timely transport of genetically valuable bison to tribal partners. In light of a second incident at the Stephens Creek facility during the week of February 19<sup>th</sup>, the State feels that facility security must be a greater priority for all partners for bison holding areas.

The State has reviewed the U.S. Department of Agriculture Animal Plant and Health Inspection Service's (APHIS) recently completed draft risk assessment *Equivalency of B. abortus Mitigations in Yellowstone Bison*. Considering this analysis and the memorandum of agreement reached between APHIS, the National Park Service and Montanan's Department of Livestock, the State believes it may be reasonable to investigate a modified approach to the Uniform Methods and Rules (UM&R) for bison quarantine—the established science-based protocols used to eliminate disease risk.

Female bison pose the greatest risk for transmission of brucellosis. And therefore, the State of Montana agrees with YNP that any quarantine of female bison should undergo the full testing protocol outlined in the UM&R, and be geographically located within the existing Designated Surveillance Area (DSA) for brucellosis. While the established testing regime of the UM&R protocol coupled with the existing risk management of the DSA best addresses the risk of transmission of brucellosis outside of current disease management areas, we support the validation of a shorter quarantine if justified by additional experience with the program.

Based on previous quarantine efforts, the findings of the APHIS risk assessment, and recent research concerning male bison, the State recognizes the reduced risk male bison present for disease transmission. After a period of testing under procedures comparable to the UM&R and in facilities approved for quarantine, past cohorts have demonstrated extremely low risk of transmission of brucellosis after a period of isolation and routine testing of approximately 7.5 months. Under prior quarantine efforts, no bull bison have seroconverted to a positive test for brucellosis after a period of 205 days. In accordance with the risk assessment findings and epidemiological standards, the State believes it may be reasonable and appropriate to transfer bison bulls to the Ft. Peck facility for required monitoring and quality assurance testing if the animals are:

- Greater than 30 months of age at release, and;
- Held in existing facilities at Stephens Creek and Corwin Springs for a minimum duration of 9 months and
- Held a minimum of 90 days following the last non-negative test in the test group

This regimen should allow for test-negative, prior year's cohorts to be transferred ahead of winter capture operations. The timeline would have the added benefit of ensuring absolute separation of annual cohorts and thereby eliminating any possibility of disease transfer between groups of different disease status.

Montana recognizes that any deviation from existing UM&R standards should be evaluated and supported by APHIS. Without such support, the State would not agree to this modified approach, and it's also unlikely that bison would be allowed interstate movement to other tribes and restoration herds following completion of any unapproved protocol. Therefore, Montana encourages APHIS to accept this proposal, or present an alternate testing plan that outlines the sample size and frequency of testing that would provide sufficient statistical confidence to consider future revisions to the UM&R protocol.

Post quarantine testing, monitoring and quality assurance as stipulated in the UM&R is a critical component of bison quarantine that would be well placed at Ft. Peck. Should Ft. Peck or another tribal nation wish to partner with state and federal agencies to conduct this work at an appropriate facility on tribal lands, the State welcomes the opportunity to ensure effective communication of testing results as a means of informing future bison management and maintaining commitments to manage disease risk.

Secretary Zinke and Secretary Purdue

April 6, 2018

Page 3

Only through close coordination and communication can we continue to learn the best approaches to manage risk and to ensure that a quarantine program continues to meet the diverse objectives of state, federal and tribal partners.

It is my intent that this correspondence clarifies the state's position on future quarantine efforts and serves as a platform for all parties to recommit to partner to meet our shared goals for bison management.

Sincerely,

A handwritten signature in blue ink, appearing to be "Steve Bullock", with a long horizontal flourish extending to the right.

STEVE BULLOCK

Governor

cc: Chairman Floyd Azure, Ft. Peck and Assiniboine Tribe





**From:** [Dan Wenk](#)  
**To:** [Dave Mihalic](#)  
**Subject:** fuhlendorf et al 2012.pdf  
**Date:** Wednesday, May 16, 2018 4:28:00 PM  
**Attachments:** [ATT00001.txt](#)  
[fuhlendorf et al 2012.pdf](#)

---

relevant article -- see table 2

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

## **Conservation of Pattern and Process: Developing an Alternative Paradigm of Rangeland Management**

Author(s): Samuel D. Fuhlendorf, David M. Engle, R. Dwayne Elmore, Ryan F. Limb, and Terrence G. Bidwell

Source: Rangeland Ecology & Management, 65(6):579-589. 2012.

Published By: Society for Range Management

DOI: <http://dx.doi.org/10.2111/REM-D-11-00109.1>

URL: <http://www.bioone.org/doi/full/10.2111/REM-D-11-00109.1>

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# Conservation of Pattern and Process: Developing an Alternative Paradigm of Rangeland Management

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## Abstract

This article examines the question of how well the rangeland management profession has served conservation of patterns and processes that support multiple ecosystem services. We examine the paradigms under which rangeland management operates and argue that our profession developed under the utilitarian paradigm with the primary goals of sustainable forage for livestock production. While optimization of multiple rangeland products and services has always been a consideration, a comprehensive set of principles have not been developed to advance this concept. We argue that fire and grazing, often viewed as mere tools used for production goals, should rather be viewed as essential ecosystem processes. Rangeland management continues to operate under the utilitarian paradigm appropriate to societal values of the 20th century and by and large has failed to provide management guidance to reverse degradation of several highly valued ecosystem services. We support this argument with evidence that biodiversity has declined on rangelands in the past half century and that much of this decline is due to management goals that favor a narrow suite of species. The full suite of ecosystem services valued by society will only benefit by management for heterogeneity, which implies that there is no one goal for management and that landscape-level planning is crucial. Explicitly incorporating heterogeneity into state-and-transition models is an important advancement not yet achieved by our profession. We present new principles for rangeland management formed on the basis of conservation of pattern and process. While recognizing that many rangelands have significant deviations from historic plant communities and disturbance regimes, we suggest that management for conservation of pattern and process should focus on fire and grazing to the extent possible to promote a shifting mosaic across large landscapes that include patches that are highly variable in the amount of disturbance rather than the current goal of uniform moderate disturbance.

## Resumen

Este artículo examina la pregunta de que tan bien los profesionales en manejo de pastizales han aplicado los patrones y procesos en la conservación de los servicios múltiples que proveen los ecosistemas. Examinamos los paradigmas bajo los cuales opera el manejo de pastizales y discutimos el desarrollo de nuestra profesión bajo el paradigma utilitario con el principal objetivo de sustentabilidad forrajera para la producción de ganado. Mientras que la optimización de los múltiples productos y servicios de los pastizales han sido consideradas un paquete completo de principios no ha sido desarrollado para avanzar en este concepto. Discutimos que el fuego y el pastoreo a veces son vistos como simples herramientas usadas para objetivos de producción cuando deberían ser vistas como partes esenciales de los procesos del ecosistema. El manejo de pastizales continúa operando bajo el paradigma utilitario típico de los valores sociales del siglo XX y por mucho ha fallado en proveer directrices de manejo para revertir la degradación de varios servicios valiosos de los ecosistemas. Apoyamos este argumento con evidencia de que la biodiversidad ha decaído en los pastizales en la mitad del siglo pasado y mucho de esta disminución se debe a los objetivos de manejo que favorecen a un reducido número de especies. El juego completo de servicios valuados por la sociedad solo beneficiara con el manejo por heterogeneidad el cual implica que no hay un objetivo para el manejo y que la planeación a nivel paisaje es crucial. Incorporando de manera explícita modelos de estado y transición es un avance importante que no ha sido logrado por nuestra profesión. Presentamos nuevos principios para el manejo de pastizales desarrollados en base a procesos y patrones de conservación. Mientras reconozcamos que muchos pastizales tienen desviaciones significativas de históricas comunidades de plantas y regímenes de disturbio, sugerimos que el manejo por conservación de patrones y procesos deberá enfocarse en fuego y pastoreo en medida de lo posible para promover el cambio en un mosaico a través de grandes paisajes que incluyen parches que son altamente variables en la magnitud de disturbio en lugar de objetivos actuales de disturbio uniforme y moderado.

**Key Words:** biodiversity, fire, grazing, landscape ecology, pyric herbivory, shifting mosaic

## INTRODUCTION

Conservation of natural resources has been described as progressing through three sequential paradigms (Callicott 1990; Weddell 2002). The first was the utilitarian paradigm, which was based largely on conservation to maintain long-term and sustainable production with the objective of providing the

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Manuscript received 1 July 2011; manuscript accepted 31 March 2012.

most benefit for the many (Pinchot 1947). Gifford Pinchot is considered the dominant influence for this perspective, which is based on conservation to maintain economic stability. Motivated by the spirituality of conservation and emerging from ideas of Ralph Waldo Emerson, Henry David Thoreau, and John Muir, the protectionist paradigm aims to protect nature from humans by setting aside or reserving lands, national parks, and wilderness areas from human influence. Utilitarianism and protectionism were often viewed as dichotomous perspectives. The third paradigm, ecosystem management, emphasizes conservation of processes and interrelatedness of parts by maintaining processes (grazing, fire, water cycling, nutrient cycling, and so on) with the objective of ultimately maintaining the full suite of biodiversity (Leopold 1949). Many attribute the ecosystem management paradigm to Aldo Leopold, who developed it to counter a land management system that he viewed as exploitive and without science at its core. While rangelands have benefited from conservation based on all three of the paradigms, the rangeland management profession developed largely under the utilitarian paradigm with the primary long-term goals of sustainable forage for livestock production and conserving production potential by minimizing soil erosion. Optimizing for all ecosystem services, while mentioned even early in the range profession history, has had limited application on large landscapes.

Because of these goals, conservation strategies in rangeland management have focused largely on minimizing irreversible soil degradation and loss of dominant forage species (Holechek et al. 2004). Traditional rangeland management consequently promoted late successional plant communities capable of sustaining livestock production. When the management goal is light or moderate disturbance and late successional plant communities, many native species of fauna and flora dependent on disturbance and earlier successional plant communities are neglected.

Under the utilitarian paradigm, livestock grazing and wildlife have often been viewed as competing rather than complementary (Stoddart et al. 1975), and grazing has been viewed more as a land use than as a process that promotes a pattern that is essential to ecosystem structure and function. In a similar way, the essential role of fire as an ecosystem process with importance equal to climate and soil (Axelrod 1985; Pyne 1991; Bond and van Wilgen 1996; Bond and Keeley 2005) has been replaced with the view that fire is merely a vegetation management tool (one among many other tools) applied primarily to benefit livestock production. This difference in how grazing and fire are viewed is not trivial if ecosystem services are important rangeland management goals. Viewing fire or grazing as tools interchangeable with herbicides and mechanical methods (e.g., Riggs et al. 1996; Scifres 2004) ignores the historical and ecological significance of these processes to biodiversity and patterns inherent to rangelands. In this article, we use biodiversity to present evidence of the essential role of pattern of process to ecosystem services. We discuss biodiversity as encompassing ecological patterns and processes according to the definition by West (1993, p. 2): "biodiversity is a multifaceted phenomenon involving the variety of organisms present, the genetic differences among them, and the communities, ecosystems, and landscape patterns in which they occur."

Concomitant to development of the conservation paradigm, the science of ecology has progressed from studies that rely on many replications of small plots to studies that emphasize pattern and process at multiple temporal and spatial scales. Watt (1947) and later Turner (1989) connected pattern to process, which led to *landscape ecology* as a discipline that has increased scientific attention to heterogeneity. In spite of these developments, rangeland management and research have failed generally to recognize the importance of scale and heterogeneity to biodiversity and ecological processes (Fuhlendorf and Smeins 1996, 1999; Briske et al. 2003). Increased interest in biodiversity conservation and the role of scale and heterogeneity are indications that traditional approaches to the science and management of rangelands may be inadequate to effectively embrace multiple uses at sufficient scales to meet society's expectations.

In this article, we argue that a *conservation of pattern and process* paradigm is a rational alternative to the utilitarian paradigm for the rangeland profession. While a conservation-based paradigm is neither novel nor entirely counter to the historical underpinnings of the profession (see Rumburg 1996), we argue that if rangelands are to fully meet the expectations of society, it will require fundamental and substantial change in the principles of our discipline and ultimately to the application of management at the landscape level. We also argue that focusing on soil protection and plant species composition as the primary indicators of rangeland condition to the exclusion of processes and life forms other than vascular plants impedes our profession's development and the profession's ability to meet society's values placed on rangeland ecosystem services. The paradigm of conservation of pattern and process broadly includes conservation of all species and life forms, habitat structures, and processes across complex landscapes. We examine rangeland conservation under the utilitarian paradigm followed by describing the conservation of pattern and process paradigm as it could be applied to rangeland management. We conclude by providing a framework for the conservation paradigm through a modified set of rangeland management principles that concomitantly address the current status of North American rangeland and societal values. Throughout, we supplement our focus on North American rangelands with citations from rangelands from other continents (e.g., Australia and Africa). We focus on rangelands that developed with a strong influence of grazing and/or frequent fire, but we broaden this to include rangelands that developed with infrequent fire.

## BASIS AND LIMITATIONS TO THE UTILITARIAN PARADIGM

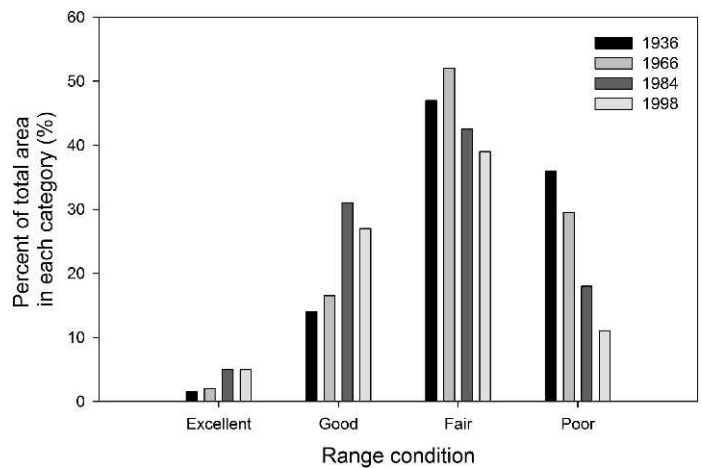
We rightly take pride in our profession's contributions to management that grew out of concern over destructive grazing practices and unregulated livestock use of private and public rangelands after the Civil War (Sampson 1952; Pieper 1994; Holechek et al. 2004). Driven largely by society's concern about reduced potential of these lands to produce forage for livestock resulting from an increase of undesirable species (i.e., species with low productivity and low livestock forage value) and eroded soil, pioneers of our profession discovered and successfully implemented practices that conserved rangeland

production potential (i.e., desirable forage species and soil) for future utilitarian purposes. The first unified theory of rangeland conservation was based on the seminal paper by E. J. Dyksterhuis (1949) in which he proposed that condition of rangelands be based on the proportions of *increaser*, *decreaser*, and *invader* species in the plant community. Species were classified on the basis of their response to grazing such that increased grazing pressure would promote *increaser* and *invader* species and cause a decline in *decreaser* species. The species most preferred by livestock were classified as *decreasers*, and management was intended to promote *decreaser* dominance. The highest-quality rangeland vegetation from a livestock production context (excellent or good condition) was most similar to the climax plant community and thus not recently disturbed by grazing or fire (Pendleton 1989).

The definition of rangelands as ecosystems capable of supporting grazing animals led to management focused largely on manipulating domestic livestock grazing (Holechek et al. 2004). Some 60 yr after Sampson's (1952) early book on rangeland management, sustainable livestock grazing and economic returns continue to drive rangeland management decisions (Dunn et al. 2010), and conservation continues to focus primarily on maintaining or enhancing livestock production (Toombs and Roberts 2009). The utilitarian roots of range management that promoted protecting the soil and vegetation from disturbance and maintaining the output of products (Holechek et al. 2004) led to four foundational principles of rangeland management that focused on manipulating livestock grazing. These principles of rangeland (grazing) management are to 1) maintain proper stocking rate (number of animals per unit area per unit time), 2) achieve proper distribution of animals in space (generally considered to be spatially uniform grazing use), 3) achieve proper forage utilization in time, and 4) use the proper kind and class of grazing animals to match or obtain the desired plant community. These strategic principles, accompanied by many tactical rules of thumb, formed the basis for rangeland management as practiced today.

Ranchers do not normally manage with the goal of achieving excellent range condition across their ranch, but they have succeeded in managing for uniform grazing and increasing the proportion of desirable forage grasses while reducing bare ground—managing for the middle (Fuhlendorf et al. 2009). Applying the utilitarian paradigm has therefore achieved a measure of success reflected by improved range condition in the United States over the past century (Fig. 1; Holechek et al. 2004). The distribution of range condition (highest percentage in good and fair condition and lowest of excellent and poor) reflects meaningful achievement toward the management goal of obtaining uniform, moderate utilization necessary to minimize soil loss and rangeland area in poor condition. Goals of increasing dominance of important forage species and reducing bare ground have been achieved through cross fencing, water development, and other practices that promote uniform, moderate utilization while minimizing ungrazed and heavily grazed areas.

This is not to say that the scientific underpinnings of rangeland management have not advanced since Stoddard. The theoretical framework of rangeland management recently shifted focus from equilibrium to nonequilibrium dynamics, state-and-transition models, and rangeland health (Briske et al.



**Figure 1.** Proportion of US privately owned rangelands in each of four range condition classes from 1936 to 1998 (modified from Holechek et al. 2004).

2003, 2005). Although an important advance in rangeland science and management, the shift largely refined the utilitarian model because single plant communities remain the primary management goal rather than embracing spatial and temporal heterogeneity. Policies of federal agencies have advanced the utilitarian model. For example, the US Department of Agriculture Natural Resource Conservation Service, through its Environmental Quality Incentive Program, invested primarily in improving and maintaining livestock production with most of the practices promoting uniform distribution of grazing animals and limiting the dominance of species of minimal forage value for livestock (Toombs and Roberts 2009). While management that achieves uniform grazing distribution and moderate forage utilization can benefit soil protection, water quality, and habitat for some wildlife species, the practices often fail to provide for habitat requirements and ecological processes that may be dependent on the extremes of a disturbance gradient (Knopf 1996; Fuhlendorf et al. 2006). Highly palatable and rare species ("ice cream plants") that are expected to be sacrificed under grazing practices designed to achieve uniform grazing use of abundant forage plants is yet another example of inattention to pattern and process under traditional rangeland management (Stoddard and Smith 1943; Vallentine 2001).

Rangeland monitoring has focused recently on rangeland health, leading to conservation management based on reducing bare ground, stabilizing soil (Pellant et al. 2005), and anticipating threshold changes (Bestelmeyer et al. 2003). Rather than focusing on climax plant communities, the current plant community and soil conditions are compared to a potential natural community and desirable plant communities—a single reference community phase (Pellant et al. 2005). Therefore, monitoring continues to focus largely on maintaining desirable forage species and minimizing bare ground with a single state, phase, or condition considered the most appropriate for any ecological site (Bestelmeyer et al. 2003, 2009). This ignores the role of pattern and process of disturbance and enhancement of ecosystem services other than livestock production, and it reinforces the notion that a single plant community and homogeneity of the landscape are the

**Table 1.** Requirements to ensure processes and habitat for imperiled species on rangelands. These examples demonstrate that managing complex landscapes to achieve homogeneous accumulations of litter and minimizing bare ground will lead to undesirable biotic and abiotic changes on many rangelands.

Species/process	Location	Requirement	Citations
Biological diversity	Globally	Landscape heterogeneity	Christensen (1997), Wiens (1997), Fuhlendorf and Engle (2001), Fuhlendorf et al. (2006, 2009), Tews et al. (2004)
Diversity of insects	Grassland/steppe	Heterogeneity	Bestelmeyer and Wiens (2001), Dennis et al. (1998), Engle et al. (2008)
Diversity of mammals	Rangeland	Heterogeneity	Ceballos et al. (1999), Dean et al. (1999)
Diversity of birds	Rangelands	Heterogeneity	Knopf (1994), Fuhlendorf et al. (2006), Gregory et al. (2010), Reinkensmeyer et al. (2007)
Ecosystem stability	General	Heterogeneity	Holling and Meffe (1996), van de Koppel and Rietkerk (2004)
Soil aggregate stability and nutrient cycling	General	Heterogeneity	Herrick et al. (2002), Augustine and Frank (2001), Anderson et al. (2006)
Grazing patterns	General	Heterogeneity	Senft et al. (1987), Stuth (1991), Fuhlendorf and Engle (2004), Fryxell et al. (2005), Fuhlendorf et al. (2009)
Fire behavior	General	Heterogeneity	Fuhlendorf and Engle (2001), Archibald et al. (2005), Kerby et al. (2007), Fuhlendorf et al. (2009)
Hydrology	General	Heterogeneity	Belnap et al. (2005), Ludwig et al. (2000), Eldridge et al. (2002)
Blowout penstemon ( <i>Penstemon haydenii</i> )	Central Great Plains	Bare ground	Stubbendieck et al. (1993)
Western juniper ( <i>Juniperus occidentalis</i> )	Intermountain West	Low frequency of fire	Miller and Rose (1999)
Black-tailed prairie dog ( <i>Cynomys ludovicianus</i> )	Shortgrass prairie	Low vegetation structure	Milne-Laux and Sweitzer (2006), Augustine et al. (2007), Northcott et al. (2008)
Mountain plover ( <i>Charadrius montanus</i> )	Shortgrass prairie	Bare ground or heavy grazing	Derner et al. (2009), Knopf and Rupert (1995)
Aspen ( <i>Populus tremuloides</i> )	Intermountain West	Periodic fire with limited herbivory	Bartos et al. (1991), White et al. (1998)
Henslow's sparrow ( <i>Ammodramus henslowii</i> )	Tallgrass prairie	Ungrazed and unburned for > 2 yr	Coppedge et al. (2008), Herkert (1994)
Plains cottonwood ( <i>Populus deltoides</i> )	Great Plains	Periodic bare ground	Braatne et al. (1996), Mahoney and Rood (1998)
Gopher tortoise ( <i>Gopherus polyphemus</i> )	Gulf coastal plain	Frequent fire	Ashton et al. (2008), Landers and Speake (1980)
Ruffed grouse ( <i>Bonasa umbellus</i> )	Northern forests and mountains	Young forest < 20 yr	Jones et al. (2008), Dessecker and McAuley (2001)
Sage thrasher ( <i>Oreoscoptes montanus</i> )	Intermountain West	Sagebrush without juniper	Reinkensmeyer et al. (2007)
Horned lark ( <i>Eremophila alpestris</i> )	Western North America	Recently disturbed areas	Reinkensmeyer et al. (2007)
Upland sandpiper ( <i>Bartramia longicauda</i> )	Tall and mixed prairie	Recently burned prairie	Fuhlendorf et al. (2006)
Cotton rat ( <i>Sigmodon hispidus</i> )	Tallgrass prairie	Unburned and ungrazed prairie	Cully and Michaels (2000)
Regal fritillary ( <i>Speyeria idalia</i> )	Tallgrass prairie	Unburned and ungrazed prairie	Swengel (1998), Vogel et al. (2007)
Black-backed woodpecker ( <i>Picoides arcticus</i> )	Western Forests	High fire severity, recently burned	Hutto (1995), Koivula and Schmiegelow (2007)
Cassin's sparrow ( <i>Aimophila cassini</i> )	Great Plains	Undisturbed shrubland	Kirkpatrick et al. (2002)

appropriate targets for rangeland management. This is not a phenomenon confined to North America. Recent studies of piospheres in Australia (James et al. 1999; Hoffmann and James 2011) and communal grazing in Africa (Rutherford and Powrie 2011) suggest that management that would be considered inappropriate from a traditional rangeland management approach might actually contribute to regional patterns of biodiversity. Therefore, it should be of little surprise that the definition of *poor* range condition, often termed the at-

risk community phase (Briske et al. 2005, 2008), is strikingly similar to habitat requirements of many imperiled plant and wildlife species in a variety of rangeland types from across the world that are highly valued by society (Table 1). Furthermore, the concurrent loss of abundance of these species on rangelands worldwide could be viewed as indicators of significant deviations from historic processes.

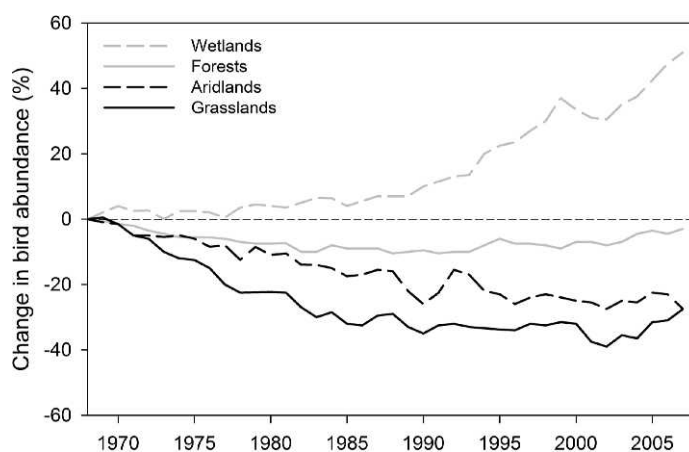
This evidence indicates that biodiversity and ecological processes have not moved forward as fundamental elements



of the rangeland profession. This is likely a legacy of larger agricultural and rural society in the first half of the 20th century that viewed wildlife as competitors and conflicting with livestock production and disturbance as reducing productivity reflected in early range management textbooks (Stoddard and Smith 1943; Sampson 1952). Although the profession's attitudes and perceptions of wildlife have changed over time, wildlife continue to be considered by the rangeland profession to be largely a source of economic return or a land use objective rather than as an ecosystem component (Holechek et al. 2004). In contrast to systematic efforts to establish indicators of rangeland health to include ecological processes (water cycle, energy flow, and nutrient cycles) and biotic integrity that supports ecological processes (Pellant et al. 2005), no systematic effort has translated scholarly efforts (e.g., West 1993) into principles and practices for conserving biodiversity or restoring the full suite of ecological processes on complex rangeland landscapes. Efforts to focus on ecological processes are often limited to a single process without consideration of the full potential suite of processes (e.g., water purification, water cycle, carbon sequestration, nitrogen cycling, and so on). Rangelands continue to be described as simple homogeneous states despite the volumes of data that suggest that these complex systems are in fact dynamic in space and time and that complex patterns are essential to a full suite of ecosystem services (Table 1). Despite changing social perspectives that question the range profession's self-image associated with livestock (Brunson and Steel 1994) and research demonstrating that grazing was not responsible for all changes in rangeland ecosystems (Westoby et al. 1989), the science and management of rangelands have lagged behind other disciplines—and arguably the public—in embracing an expanded view of rangelands as complex ecosystems that support multiple land use objectives and provide a full suite of ecosystem services including biodiversity (West 1993; Krausman 1996; Havstad et al. 2007).

The evidence clearly indicates that utilitarian principles of rangeland management that focused on dominant forage species and soil protection represent a century of scholarly effort that improved rangelands throughout the world. However, society dictates and research confirms that livestock-centric approaches are incapable of providing an effective template that optimizes all ecosystem services. Svejcar and Havstad (2009, p. 30) suggested, "Science has provided basic principles for management tied to the spatial and temporal scales and uses of the 20th-century land manager. . . . What has changed is the demand for a wider variety of goods and services." This statement acknowledges that providing ecosystem services in addition to livestock production requires a new rangeland management paradigm that links pattern and process at multiple scales.

Ample evidence indicates that rangeland capacity to produce goods and services valued by 21st-century society has declined in the past half century or so. The North American Breeding Bird Survey is one of the longest (1966 to present) and most extensive ecosystem monitoring efforts covering most of North America and evaluating birds across all landscape types. Classification of species based on their preferred habitat type (grassland, aridland, forest, and wetland) indicates that some species groups are stable (forests) or even increasing (wetlands), while those associated



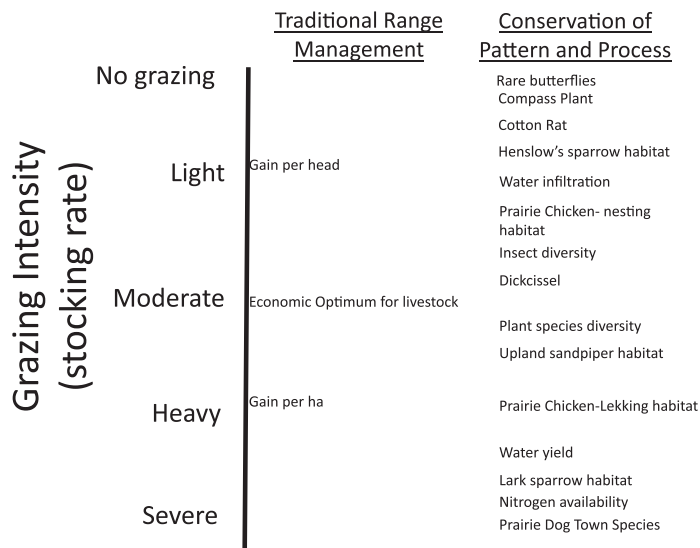
**Figure 2.** Change from a baseline of 1966 in bird populations associated with four major habitat types reported by the North American Breeding Bird Survey (North American Bird Conservation Initiative, U.S. Committee, 2009). Rangeland habitats are most closely approximated by grasslands and aridlands, which have seen the greatest decline since 1966 in birds native to these habitats.

with rangelands (defined here as grasslands and aridlands) are the most rapidly declining group of species in North America (Fig. 2). Examples include the McCown's longspur (2.1% annual decline, 1966–2006), Henslow's sparrow (8.3% annual decline, 1966–2006), and Cassin's sparrow (1.5% annual decline, 1966–2006; Sauer et al. 2008). Diverse communities of species require habitat heterogeneity that includes intensively disturbed habitats (i.e., bare ground and relatively short-statured vegetation) and habitats with minimal disturbance dispersed as a shifting mosaic across a complex landscape (Fig. 3; Table 1; Knopf 1996; Fuhlendorf et al. 2006, 2009). Studies of rangeland birds from the shortgrass steppe (Knopf 1996), intermountain West (Reinkensmeyer et al. 2007), and Africa (Skowno and Bond 2003; Krook et al. 2007; Gregory et al. 2010) have also indicated similar relationships in which bird community composition is dependent on variable patterns of fire and grazing. While other factors are certainly involved, declines in grassland and aridland birds of North America were simultaneous with nationwide improvements in rangeland condition and rangeland health, as our profession has defined these terms (Holechek et al. 2004). This suggests that our approach to defining rangeland condition and health is insufficient to determine ecosystem health that reflects societal values. A recent meta-analysis of the relationship between animal species diversity and habitat heterogeneity found that over 80% of all studies surveyed found a positive relationship (Tews et al. 2004). Studies included relationships with arthropods, birds, mammals, amphibians, and reptiles in all types of ecosystems across the globe, clearly supporting the view that heterogeneity is the root of biodiversity and therefore should be the basis for conservation of rangelands and other ecosystems (Wiens 1997; Fuhlendorf et al. 2006).

## RANGELAND MANAGEMENT TO CONSERVE PATTERN AND PROCESS

Conservation of rangeland biodiversity is most threatened by regional losses of rangeland through cultivation, woody plant





**Figure 3.** Objectives achieved through the utilitarian paradigm (“proper” range management) when constrained to a single stocking rate contrasted to complete rangeland conservation in which stocking rate varies in space and time. Conservation of pattern and process examples are mostly from North American prairies, but examples also exist for Mountain Big Sagebrush (Reinkensmeyer et al. 2007) and African (Gregory et al. 2010) rangelands.

encroachment, suburban sprawl, invasive species, and desertification. Conservation must first consider large-scale patterns on rangelands and areas that have experienced severe fragmentation and/or species invasions are constrained by those changes (Fuhlendorf et al. 2002). This is particularly relevant in areas of the American West where annual grasses are rapidly altering plant composition and function to a new state. Thus, historic patterns and processes may not be appropriate or feasible. Large-scale fragmentation and alteration make conservation decisions more complex. Yet they do not alter the reality that disturbance processes shape plant community structure, biodiversity, and ecosystem function even when those disturbances are highly altered from historic conditions.

For large-scale patterns, it is useful to compare the foundational principles of rangeland (grazing) management as a framework for contrasting conservation management under the utilitarian paradigm with an alternative paradigm to rangeland management that conserves pattern and process. We approach this by developing new principles for rangeland management based on several key aspects related to grazing management principles, namely, grazing intensity and distribution of grazing in time and space. To these we add fire because most rangelands of the world are fire-dependent ecosystems and because, until recently, fire has received infrequent attention in both the science and the management of rangelands (Axelrod 1985; Bond and Keeley 2005). We do not include kind and class of animals because matching the type of animal with the environment is equally important to utilitarian management and management for conservation of pattern and process.

### Grazing Intensity

Grazing intensity (proportion of the aboveground net primary production consumed by grazing animals) is considered the

most important principle of grazing management (Heitschmidt and Taylor 1991; Milchunas and Lauenroth 1993; Holechek et al. 2004). Although grazing intensity and stocking rate are not synonyms, the two are often discussed together because the concepts overlap considerably. Numerous experimental studies have demonstrated that optimum animal gains per unit area are accomplished through fairly heavy stocking, optimum gain per individual animal occurs at light stocking, and economic optimum is near moderate stocking where 25–30% of the forage is harvested (i.e., moderate utilization) by domestic livestock (Hart et al. 1988; Heitschmidt and Taylor 1991; Torell et al. 1991). Achieving moderate utilization is a challenging objective for nonequilibrium ecosystems because of highly variable interannual weather patterns. Under utilitarian management, “proper” stocking (i.e., moderate utilization) maintains the dominant forage species, minimizes soil loss, and optimizes economic returns.

From a conservation perspective, optimal stocking rate becomes much more complex because no single stocking rate is optimum for all species and processes (Fig. 3). Table 1 includes examples of species that either require heterogeneity (from severely disturbed to undisturbed habitat) or require habitat that is either severely disturbed or undisturbed. Because no single stocking rate is most appropriate for all species and processes, there is no single “proper” stocking rate if the goal is biodiversity by maintaining ecosystem processes. Therefore, there is a conservation paradox of grazing intensity because the full range of stocking rates must be present at the appropriate scales to maintain biodiversity. This paradox can be addressed within the conservation of pattern and process paradigm by focusing on heterogeneity in space and time and considering grazing as a disturbance process that interacts with other disturbances across complex landscapes (Fuhlendorf and Engle 2001; Archibald et al. 2005; Fuhlendorf et al. 2009). At the landscape scale, this necessitates that managers consider the context of landscapes in making decisions. Removal or moderation of grazing on patches may be most important on landscapes that are uniformly and heavily grazed, while landscapes with minimal grazing should focus on creating disturbed and variable habitats. At the local scale, management should strive to achieve a dynamic management such that the system is variable at small scales while stable at increasing scales if conservation of biodiversity is the objective. Inherent to this approach is that no single species or plant community is maximized across all spatiotemporal points; rather, the full suite of species and conditions for that system would be optimized. This will not be consistent with some objectives in some places. Thus, recognition should be given that maximizing any one thing is to the detriment of others.

### Distribution of Grazing in Space and Time

The management goal of most grazing systems, termed “management to the middle” (Fuhlendorf et al. 2006, 2009), promotes uniform dominance of the most productive forage species while maintaining efficient use of these species through moderate and even use across the landscape (Stoddart et al. 1975; Bailey 2004). The focus on uniform utilization in space and time resulted from the growth of range management during a time when the primary concern on rangelands was overuse

and concentration of animals near water and other attractants. As expressed by Stoddart et al. (1975), "Overgrazing on a range is not dependent entirely upon the number of animals; all the attendant results can be realized locally if stock are not distributed properly." Standardized uniform and efficient utilization developed from the attempt to maximize livestock production (e.g., Hart et al. 1993) and minimize degradation of riparian areas (Vallentine 2001; Bailey et al. 2006). To conserve the larger landscape, sacrifice areas, particularly around specific watering and mineral locations, often would be targeted for moderated grazing (Vallentine 2001). Although still necessary in some situations (e.g., riparian areas), this focus developed into a standard that may now be a historical artifact no longer appropriate for meeting the full suite of conservation goals. That no "proper" stocking rate exists for all aspects of rangeland ecosystems applies equally to distribution of grazing in space and time.

When animals are allowed to graze at moderate stocking rates across a large landscape, their distribution in space and time is highly variable and dependent on water, topographic features, vegetation structure and composition, and previous disturbance (Heitschmidt and Taylor 1991; Ash and Stafford Smith 1996; Bailey et al. 1996; Holechek et al. 2004). Animals will preferentially select previously grazed or otherwise disturbed areas that have short-statured regrowth, a phenomenon that works counter to uniform moderate grazing (Coppedge and Shaw 1998; Fuhlendorf and Engle 2001; Limb et al. 2010b). This kind of selective grazing behavior results in heterogeneous vegetation structure and composition within the landscape where some local areas are heavily grazed and some areas can be ungrazed or nearly so (Coppedge and Shaw 1998; Fuhlendorf and Engle 2004). Assuming that the disturbance is not static and becomes a regime that shifts across the landscape, this heterogeneity or mosaic generally benefits biodiversity (see reviews by Adler et al. 2001; Fuhlendorf and Engle 2001).

A negative perception of heterogeneity arose out of concern that heavily grazed locations will be grazed heavily and repeatedly over a series of years, resulting in loss of productivity, soil damage, and impaired water quality. While this is an understandable concern when disturbance is static and treated as a discrete event, historically it functioned because of the dynamic nature of the interactions and scales of multiple disturbance regimes. A consequence of the alteration of these regimes has been the decline of disturbance-sensitive and disturbance-dependent plants, such as compass plant (*Silphium laciniatum* L.) and blowout penstemon (*Penstemon haydenii* S. Watson). Species that require vegetation structure at the extremes of stocking rate—either heavy use or no use—are also susceptible to decline from grazing management for the middle (Table 1).

To counter this, our profession has often applied high stock density and rotational grazing by cross fencing pastures to force less selectivity and more uniformly utilize each paddock in the rotation so as to minimize bare ground and maintaining late seral stage vegetation (Savory 1999). Although this management has been argued to be consistent with historic grazing patterns with migrating large ungulates (Savory 1999), in practice the intent is typically to uniformly graze (often multiple times) each year, resulting in a landscape that has little or no ungrazed vegetation.

Ironically, rotational grazing has been viewed as a conservation-based alternative to continuous grazing because it reduces patch grazing and heterogeneity (Teague et al. 2004; Teague et al. 2009). However, the management objective of uniform grazing is not consistent with meaningfully variable grazing patterns across the landscape that are essential to heterogeneity that supports the conservation of biodiversity (Fuhlendorf et al. 2006) and in some cases animal productivity (Anderson et al. 2006; Limb et al. 2011). Broad grazing ecology research from the Serengeti and South Africa demonstrates that grazing animals benefit from local, heavy utilization or patch grazing on grazing lawns through increased forage quality and nitrogen availability (McNaughton 1984; McNaughton et al. 1997; Archibald et al. 2005). The utilitarian paradigm of uniform distribution of grazing in space and time is incapable of maintaining or enhancing biodiversity and productivity on rangelands at large scales.

### Fire as a Rangeland Ecosystem Process

Utilitarian management views fire as a vegetation management tool primarily used to control unwanted plants (Scifres and Hamilton 1993; Ansley and Taylor 2004; Holechek et al. 2004) even though rangeland ecologists were among the first to recognize the central role of fire in developing and maintaining ecosystems (Humphrey 1962). Fire regime was referred to as the "fire climate" to reflect the duality of fire in both formation and maintenance of rangeland—equivalent to climate (e.g., see Wright and Bailey 1982). However, the utilitarian approach limits fire to maintain dominant forage species and control of woody plants while minimizing factors that are perceived as negative to simple livestock objectives (Holechek et al. 2004). Management recommendations also caution against the increase of undesirable forage species, exotic plants, bare ground, and soil erosion (Teague et al. 2010), which, while justified, fail to account for the effect of *no fire* on fire-dependent landscapes.

Most rangelands of the world evolved with lightning ignitions and anthropogenic fires (Pyne et al. 1996). Although some rangelands have been degraded by an increase in fire frequency (e.g., Great Basin, USA; Whisenant 1990), fire suppression and barriers to using prescribed fire led to fire exclusion on the vast majority of rangelands that resulted in woody plant encroachment and biosimplification of many rangelands worldwide (Humphrey 1962; Hamilton and Ueckert 2004). Invasion of woody plants into grasslands is a dominant cause of the global loss of rangelands over the past several decades (Fuhlendorf et al. 2002; Bond and Keeley 2005; Limb et al. 2010a). Fire clearly maintains herbaceous dominance in many grasslands, but even in rangelands with persistent herbaceous dominance with infrequent fire return intervals, fire can be used to restore heterogeneity and alter grazing patterns in a manner than enhances biodiversity (Anderson et al. 2006; Fuhlendorf et al. 2009). Most rangeland fauna and flora respond to fire in a manner similar to grazing intensity in the sense that some species increase and others decrease after fire depending on time since fire, fire season, and fire intensity (Fuhlendorf et al. 2006; Reinkensmeyer et al. 2007).

The conservation of pattern and process paradigm suggests that historical and potential plant communities are complete as management guides only if fire is included in the landscape. Fire

is a pattern-driving process on rangelands that interacts with other disturbances to contribute to heterogeneity. While fire can be a useful tool for managing woody plant invasion, it is shortsighted to relegate fire to a toolbox of other options considering that its importance as an evolutionary process has been exhaustively documented. Management of rangelands focused on maintaining or enhancing biodiversity cannot be accomplished without restoring historic fire regimes, including variable fire season and fire intensity together with other disturbance interactions, across the landscape. This is as true in rangelands with long fire intervals as it is in systems with frequent fire. Furthermore, the simple reintroduction of fire is not the only requirement because fire should interact with other disturbances to create a dynamic pattern—a shifting mosaic of fire, grazing intensity, and vegetation structure—across the landscape that preserves the historical processes under which most rangeland evolved (Fuhlendorf and Engle 2001). Some landscapes may have crossed thresholds where the mere restoration of fire may have limited impact (e.g., closed-canopy juniper woodlands) or because of their susceptibility to shifting to a new state (brome-invaded Great Basin shrublands), but once these degraded landscapes have been restored, interactive patterns of fire and grazing should be a conservation objective. In the interim, holding these at risk communities in a relatively stable state will constrain the species that can be conserved to only species that fit that stable state. Thus, research and management focused on maintenance of historical plant communities without considering spatial and temporal patterns of disturbance processes will always have limited success.

## NEW PRINCIPLES FOR CONSERVATION OF PATTERN AND PROCESS ON RANGELAND ECOSYSTEMS

Our appeal is that range science and management should embrace a broader conservation perspective using biodiversity and ecosystem processes as primary guiding principles (Fig. 3; Table 2) while recognizing that livestock production, a service that results from healthy rangelands, will not be the primary driving factor in management decisions. Therefore, we propose the following principles of rangeland conservation of pattern and process. We are certain these principles are not exhaustive, and they are not intended to entirely replace all of the traditional principles of range (grazing) management. Instead, we intend these principles to serve as an initial starting place for developing a new conservation paradigm for rangelands.

1. Maintenance of large continuous tracts of rangelands is critical for conservation of patterns and processes so that disturbance processes can interact with complex landscapes and form multiscaled mosaics.
2. Grazing intensity (i.e., stocking rate) is the primary factor influencing the effect of grazing on rangeland, but no single grazing intensity is “proper.” For ecosystems that evolved with grazing, all evolutionarily appropriate grazing intensities are, by definition, essential to conservation of biodiversity across large, complex landscapes.

**Table 2.** Attributes of traditional range management contrasted with range management aimed at conservation of processes and patterns.

Attributes	Traditional range management	Conservation of pattern and process
Outcome	Single use/optimal livestock production	Biodiversity and processes
Distribution	Uniform	Nonuniform
Ungrazed area	Minimal	Substantial
Severely grazed area	Minimal	Substantial
Rate of rotation among fenced units	Rapid	None or slow
Application of fire	Uniform	Patches
Fire perspective	Brush control tool for forage production	Critical ecological process
Philosophy of management goals	Uniformity	Heterogeneity
	Simplicity	Complexity
	Equilibrium	Dynamic
	Management for the middle	Management for extremes

3. Obtaining uniform distribution of grazing in time and space across a landscape is neither possible nor desirable. Managing grazing distribution for heterogeneity as a shifting mosaic across the landscape should be the goal.
4. Shifting mosaics are necessary for maintaining ecosystem structure and function and achieving multiple objectives. Managing for a single condition, state, phase, or successional stage might maximize and sustain livestock production but will not be capable of promoting biodiversity or multiple uses.
5. Conservation of rangelands ultimately should consider all species of animals and plants. Individual species and groups can be used as diagnostic indicators of response to management, but plants and animals should not be considered “sacrifice species” or “management objectives” across an entire landscape.
6. Disturbance regimes, such as fire and grazing, are as vital to ecosystem structure and function as climate and soils. They must be viewed as interactive processes if we are to have any hope of maintaining biodiversity.

## MANAGEMENT IMPLICATIONS

The rangeland management profession has clearly advanced natural resource conservation worldwide. Our discipline has grown from the initial concern of maintaining sustainable forage and livestock production on rangelands to one of conservation of complex rangeland landscapes for multiple uses that encompass all ecosystem services, including agriculture, biodiversity, and aesthetics. While we have made an important transition in recognizing the importance of these other services, we must begin to apply management that will achieve these broader goals. We must also recognize that no single state exists in space or time that is most desirable for all objectives, and the patterns that exist (both inherent topographic and disturbance driven) on rangelands are fundamentally important to the functioning of these



complex ecosystems. We need to embrace management and monitoring approaches that encourage conditions that support all native plants, animals, and ecological processes at large scales—conservation management. Recent research has demonstrated that conservation management can be consistent with agricultural production objectives (Fuhlendorf and Engle 2004; Limb et al. 2011). These studies indicate that management that promotes heterogeneity can provide greater stability and at least equivalent productivity on North American grasslands. Thus, these new principles hold promise both at small scales to meet production and single species objectives and at large scales to conserve biodiversity. This will require critical planning at multiple scales while always being cognizant of the landscape context. Thus, policy would need to encourage various states and conditions that are dynamic at small scales and increasingly stable at larger scales. This will be a dramatic shift from our current management and will necessitate a much deeper level of planning, monitoring, and understanding of rangelands.

Changes in our research approaches and the development of a paradigm for conservation of pattern and process would offer several benefits to the rangeland profession. First, by focusing on pattern and processes rather than simple management objectives, system sustainability will be maintained, and thus conservation and production can be achieved simultaneously. Second, by changing our conservation paradigm, the range profession will be a leader in broadening the conservation ethic and working with other natural resource disciplines to move to a more systems-based approach that is capable of efficiently linking science, management, and policy. Finally, rangeland science will be in a strategic position that is in line with societal views on the importance of rangelands and the goods and services expected from their management (Brunson and Steel 1994). Implementation will face many social and policy barriers. It is our hope that this article will serve as a catalyst for a rigorous and spirited dialogue on the contextual specifics of the paradigm and how to implement it on rangelands worldwide.

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Wenk, Dan <dan\_wenk@nps.gov>

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## BisonAbundanceIBMP\_May2018.docx

1 message

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**Dan Wenk** <dan\_wenk@nps.gov>  
To: Dave Mihalic <david\_mihalic@ios.doi.gov>

Thu, May 17, 2018 at 7:03 AM

2 of 2

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002



**BisonAbundanceIBMP\_May2018.docx**  
22K



## Briefing Statement FY 2018

**Bureau:** National Park Service  
**Issue:** Bison Abundance under the Interagency Bison Management Plan  
**Member:** State of Montana, Montana Congressional Delegation  
**Issue:** Yellowstone National Park

### Key Points:

- When the Interagency Bison Management Plan (IBMP) was negotiated (late 1990s), there was pressure to prevent cattle from being infected with brucellosis to maintain interstate movements and trade agreements without additional testing. A population target of 3,000 bison was chosen to reduce migrations outside the park to prevent brucellosis transmission. Elk were considered unlikely to mingle with cattle and transmit brucellosis.
- We now know brucellosis is sustained independently in elk populations inhabiting about 17 million acres, whereas bison inhabit about 1.5 million acres near the core. Elk commonly mingle with livestock and have transmitted brucellosis to them 27 times since 1998. No transmissions from bison to cattle have been detected.
- A 2006 adjustment to the IBMP clarified “a population of 3,000 bison is defined as a population indicator to guide implementation of risk management activities, and is not a target for deliberate population adjustment.”
- During 2006-2017, spatial and temporal tolerance for more untested bison in Montana was increased several times due to fewer cattle adjacent to YELL, desire for larger public and treaty harvests, changes in APHIS regulations regarding brucellosis class-free status, recognition that bull bison are not transmission vectors, and successful management to reduce conflicts with landowners and livestock operators.
- Bison numbers were allowed to increase and averaged ~4,200 during 2001-2017 (range ~2,900-5,500).

### Background:

- 2000: The goal of the IBMP is “to maintain a wild, free ranging population of bison and address the risk of brucellosis transmission to protect the economic interest and viability of the livestock industry in Montana.”
- 2002: An independent review of grazing and grasslands in northern YELL by the National Academy of Sciences concluded the park was not overgrazed and managers could continue to allow numbers of ungulates to fluctuate in response to predators, resource limitations, weather, and hunting outside the park.
- 2004-2005: The State of Montana completed environmental evaluations for a public bison hunt and hunting was included in the IBMP as a management action outside YELL.
- 2005: An independent evaluation of the food-limited carrying capacity for Yellowstone bison was completed by Colorado State University and the U.S. Geological Survey. With about 5,000 elk, the model predicted a carrying capacity of more than 8,000 bison. With about 20,000 elk, the model predicted a capacity of about 6,200 bison. Currently, there are about 8,000 northern Yellowstone elk; 80% of which winter outside YELL.
- 2006: Montana recognized the treaty rights of the Salish and Kootenai tribes and the Nez Perce tribe for harvesting bison on open and unclaimed federal lands adjacent to YELL. Treaty rights of the Shoshone-Bannock, Umatilla, Yakama, and Blackfeet tribes were recognized during 2009-2018.
- 2006: The IBMP was adjusted to increase tolerance for bull bison in Montana because there is virtually no risk of them transmitting brucellosis to cattle.
- 2008: The State of Montana signed a 30-year livestock grazing restriction and bison access agreement with the Church Universal and Triumphant, Inc. to remove livestock from the Royal Teton Ranch, located just north of the park boundary. The National Park Service provided \$1.5 million to implement the initial payment for this agreement and allow progressively increasing numbers of bison to use habitats north of the park boundary, including portions of the Royal Teton Ranch and the Custer Gallatin National Forest.
- 2009: A peer-reviewed article by YELL staff proposed maintaining a bison population that varies on a decadal scale between 2,500 and 4,500 animals to satisfy the collective long-term interests of stakeholders, as a balance between the park’s forage base, conservation of the genetic integrity of the bison population, protection of their migratory tendencies, brucellosis risk management, and other societal constraints.
- 2010: APHIS promulgated a regulatory rule that greatly reduced the risk of Montana losing its brucellosis-free status and experiencing associated economic costs by dealing with outbreaks in cattle on a case-by-case basis and eliminating the need to remove exposed herds and test across the entire state.
- 2011-2012: Several adjustments were made to the IBMP to substantially increase spatial and temporal tolerance for bison migrating north and west of YELL during winter.

- 2015: The Governor of Montana approved a greater distribution of wild bison on some lands near YELL, including year-round in some areas, which he concluded would not increase the risk of brucellosis transmission to cattle.
- 2016: An independent analysis of genetic data determined all cattle herds infected with brucellosis in the Greater Yellowstone Area were from elk, not bison. There were five distinct strains of *Brucella abortus* bacteria, four of which were associated with elk and originated from the feed grounds in Wyoming. Brucellosis was self-sustaining in elk and spreading at an increased rate in populations outside of the feed grounds. As a result, control measures in bison likely would not affect the dynamics of unrelated strains in elk populations.
- 2016: At meetings with the State of Montana regarding alternatives for a new Environmental Impact Statement (EIS) regarding bison management, there was agreement in principle to average 4,200 bison (summer count) over 5-year moving windows.
- 2017: The National Academies of Sciences, Engineering, and Medicine issued a report revisiting brucellosis in the Greater Yellowstone Area and concluded there was clear evidence that brucellosis transmission to livestock has come from infected elk and, as a result, aggressive control measures in bison seem unwarranted until tools become available that would simultaneously allow for an eradication program in elk.

**Current Status:**

- A total of 4,816 bison were counted in YELL during summer 2017, including 3,969 in northern YELL and 847 in central YELL. About 1,173 bison were removed from the population this winter, primarily in northern YELL. Thus, biologists expect about 4,300 bison after calving, which will be verified with a count in late July.
- Under the IBMP, there has been no detected transmission of brucellosis from wild bison to cattle, while a viable, wild population of bison has been sustained in YELL.
- Preparation of a new EIS for the IBMP has stagnated in recent years due, in part, to a lack of commitment, funding, and staff participation from the State of Montana and some cooperators. The Superintendent of YELL intends to reinitiate discussions regarding whether this effort should be rekindled.

**Contact Person:** Dan Wenk, Superintendent, Yellowstone National Park, (307) 344-2002, dan\_wenk@nps.gov

**Last Updated:** May 17, 2018

**Updated By:** P. J. White, Chief, Wildlife and Aquatic Resources Branch, Yellowstone Center for Resources



**From:** [Dan Wenk](#)  
**To:** [Dave Mihalic](#)  
**Subject:** Fwd: PJ's request - description of agreement with Washington Lee Univ  
**Date:** Wednesday, June 06, 2018 9:32:47 PM  
**Attachments:** [ATT00001.htm](#)  
[Hamilton Modification 2018 - Task Agreement.docx](#)  
[C-3 Modification - P15AC01660 Mod 1- 2-6-17.pdf](#)  
[ATT00002.htm](#)  
[P15AC01660 YELL-WLU -Award 9-15-15.pdf](#)  
[ATT00003.htm](#)

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Please see email below. Happy to get on phone to discuss. This is a good project that contributes significantly to our knowledge about habitat. Not a needless field trip at all.

By the way got a two minute butt call from you tonight.

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

Begin forwarded message:

**From:** "Geremia, Chris" <[chris\\_geremia@nps.gov](mailto:chris_geremia@nps.gov)>  
**Date:** June 6, 2018 at 5:24:01 PM MDT  
**To:** Dan Wenk <[dan\\_wenk@nps.gov](mailto:dan_wenk@nps.gov)>, PJ\_White <[PJ\\_White@nps.gov](mailto:PJ_White@nps.gov)>, Jennifer Carpenter <[jennifer\\_carpenter@nps.gov](mailto:jennifer_carpenter@nps.gov)>  
**Subject:** PJ's request - description of agreement with Washington Lee Univ

PJ, Jennifer, and Dan,

We requested a modification to cooperative agreement P15AC01660 "The influence of bison grazing in soil system dynamics in Yellowstone National Park" with Washington and Lee University

- This agreement has been in place since 2015 and has directly supported our research assessing the sustainability of park grasslands to bison grazing.
- Through this agreement:
  - Approximately 15 undergraduate students led by Dr. Bill Hamilton have traveled to Yellowstone each year to collect soil samples in the beginning of each growing season. Students also carry fencing materials to set up grazing exclosures that NPS staff use during the remainder of the summer to measure site productivity and consumption.
  - NPS staff continue to collect soil and plant samples monthly during the remainder of the summer
  - Samples are shipped to WLU where Dr. Hamilton and these students analyze samples for key soil nutrients (phosphorus, nitrogen, organic matter) used to identify overgrazing. Students also analyze plant tissue samples collected by NPS staff for key plant nutrients.
  - This agreement has supported one WLU staff measuring soil and plant conditions with NPS staff during summers 2017-present
  - Students have analyzed more than 3,000 soil cores and 2,000 plant tissue samples. This is an extremely cost effective approach as typical analyses cost approximately \$10/sample

The proposed modification was to:

- a. Analyze plant tissue and soil samples collected during 2017-2019 for nitrogen, carbon, and phosphorus percentages.
- b. Perform a five species (expanded from 2 species under cooperative agreement

P15AC01660) greenhouse experiment to identify the magnitude of grazing necessary to diminish plant production for key species

c. Use stable isotope analysis to identify animal diet composition from fecal matter. This research will help identify the dietary overlap of elk, bison, mule deer, pronghorn, and bighorn to determine potential effects of high bison grazing on these other grazers

d. Support Dr. Hamilton in preparing a paper suitable to a peer-reviewable journal evaluating the sustainability of soil resources in the park to recent bison grazing

The modification was for \$32,296 during June 1 2018 through June 1 2023. The cooperative agreement was previously funded for \$42,548 2015-present. Therefore, the total project cost since 2015 with the modification is \$74,844 although we are only requesting \$32,296 in additional funds this year.

See proposed mod attached and previous agreements.

Ger

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Chris Geremia

Bison Ecology and Management Office  
Mammoth Hot Springs, WY 82190  
Yellowstone National Park  
Office (307) 344-2584

## Cooperative Agreement Modification

Modification Number XX to Cooperative Agreement Number P15AC01660

Between

United States Department of the Interior  
National Park Service

And

Washington and Lee University  
DUNS No: 041283242  
204 West Washington Street  
Lexington, VA 24450

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CFDA: 15.954

Project Title: The influence of bison grazing in soil system dynamics in Yellowstone National Park

Previous Federal Funding: \$42,548

Federal Funds Obligated by this Action: \$32,296

Total Amounts Federal Funds Obligated: \$74,844

Total Amount of Agreement (Includes all cost share): \$74,844

Period of Performance: June 1, 2018 through June 1, 2023

### GENERAL

The purpose of this modification is to modify ARTICLE III, Section A – Washington and Lee University agrees to and Section C – Washington and Lee University and NPS jointly agree to.

A historically large bison population has caused immediate concern whether there is home on the range for the most diverse and abundant ungulate and carnivore community in North America. While currently dominated by bison, northern Yellowstone is home to significant elk, mule deer, bighorn sheep and pronghorn populations. All of these ungulates must cope with changing plant conditions and grazing effects, while facing predation risk from a rich community of wolves, cougars, and bears. Bison are uniquely constrained to live almost exclusively within Yellowstone, with their abundance controlled by management removals that occur when bison leave the park. Bison numbers in northern Yellowstone increased by 700% since 2000 due in part to emigration from other areas of the park resulting in high levels of grazing that may not be sustainable over time. Transition to a bison dominated system likely has cascading behavioral and numerical effects on the diverse ungulates and carnivores that make up this multi-prey, multi-prey system. Thus, there is an important park need to understand how ungulate and plant communities are responding to bison and maintaining a home on the range.

Management reductions over the past two years have returned the bison population to lower abundance. The intent of this modification is to continue field and greenhouse studies initiated under Cooperative Agreement Number P15AC01660 to evaluate effects of changing bison population abundance on grassland and soil system dynamics.

### MODIFICATION

1. ARTICLE III, Introduction. The following is modified: The specific objectives of this agreement are to: 1) prepare a paper suitable to a peer-reviewable journal evaluating grazer modification of soil nitrogen, phosphorus, and carbon availability based on field data collected through Cooperative Agreement P15AC01660; 2) expand an existing greenhouse experiment initiated under P15AC01660 evaluating effects of mechanical removal on plant growth from two to five grass species; 3) continue collecting field data on consumption, production, and nutrient availability; 4) continue nutrient analysis of soil and plant tissue samples; and 5) complete isotope analysis of bison, elk, pronghorn, mule deer and bighorn sheep fecal samples.
2. ARTICLE III, Section A, BULLET 1. The following is modified:
  - a. Analyze plant tissue and soil samples collected during 2017-2019 for nitrogen, carbon, and phosphorus percentages.
3. ARTICLE III, Section A, BULLET 2. The following is modified:
  - a. Perform a five species (expanded from 2 species under cooperative agreement P15AC01660) greenhouse experiment to identify the magnitude of grazing necessary to diminish plant production. By species, propagate grass plugs and subject to different slipping regimes to identify grazing intensity effects on production and identify grazing intensity necessary for plant mortality.
4. ARTICLE III, Section C, BULLET 4. The following is modified:
  - a. Use stable isotope analysis to identify animal diet composition from fecal matter. Complete analysis of 35 elk and 35 bison samples collected during winter 2014-15 and additionally analyze carbon and nitrogen isotopic analysis of fecal samples collected from radio collared bison, elk, mule deer, bighorn sheep, and pronghorn. Compare existing results obtained using microscopic plant-fragment identification.
5. ARTICLE III, Section C. The following is added:
  - a. Prepare a paper suitable to a peer-reviewable journal evaluating grazer modification of soil nitrogen, phosphorus, and carbon availability using field data collected by the NPS and the recipient through this agreement.
  - b. Prepare a paper suitable to a peer-reviewable journal evaluating moisture, grazing intensity, and nutrient availability controls on grazing optimization using field data collected by the NPS and the recipient through this agreement.

6. All other terms and conditions remain unchanged.

ATTACHMENTS

Attachment A: Budget

SIGNATURES

**IN WITNESS WHEREOF**, the parties hereto have executed this modification on the date(s) set forth below.

**FOR *Washington and Lee University***

\_\_\_\_\_  
Judith Wubah  
Associate Director for Strategic Initiatives

\_\_\_\_\_  
March 19, 2018

**FOR THE NATIONAL PARK SERVICE**

\_\_\_\_\_  
Tina Holland  
NPS Financial Assistance Awarding Officer

\_\_\_\_\_  
March 19, 2018



Modification Number 01 to  
Under Cooperative / Agreement P15AC01660  
Between  
The United States Department of the Interior  
National Park Service  
And  
WASHINGTON AND LEE UNIVERSITY  
DUNS No: 041283243  
204 West Washington Street  
Lexington, VA 24450

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CFDA: 15.954

Project Title: The Influence of grazing in soil system dynamics throughout bison use areas, Yellowstone National Park

Previous Federal Funding: \$8,400

Federal Funds Obligated by this Action: \$35,148

Total Amounts Federal Funds Obligated: \$43,548

Total Amount of Award (Includes all cost share): \$43,548

Period of Performance: Jan 2017 through September 30, 2020

GENERAL

The purpose of this modification is to modify ARTICLE III, Section A – Washington and Lee agrees to and Section C – Washington and Lee University and NPS jointly agree to. The need for this modification is because a couple of large fires that occurred in and adjacent to our established study area in 2016 has created an opportunity to evaluate the disturbance influence of fire in to our ongoing monitoring program. A long standing argument exists with some tribal communities that bison habitat needs to be burned to make shrub/grasslands more attractive for bison and they may choose to stay in those area longer than in previous years. This would benefit the treaty tribes if a burned area near the park boundary would provide opportunity for bison to remain in the area longer during the spring or return to this area sooner in the autumn. It would benefit the park if there were more sources of mortality on wild bison when they migrate to ranges outside the park boundary. The balance of nature could occur with less NPS management to actively capture and remove wild bison.

MODIFICATION

1. ARTICLE III, Introduction. The following is a modification to the existing text. The NPS proposes to pay W&L to collaboratively conduct a study of plant community production and soil characteristics at study sites identified and established by the NPS throughout the range of the Yellowstone bison.
2. ARTICLE III, Section A. The following is added:
  - Analyze leaf %N and leaf %C in approximately 1,500 samples collected as part of a long term monitoring project of grazed and ungrazed areas in Yellowstone

- Perform greenhouse experiments to identify the magnitude of grazing necessary to diminish plant production. By species, propagate grass plugs and subject to different clipping regimes to identify grazing intensity effects on production and identify grazing intensity necessary for plant mortality.

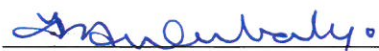
3. ARTICLE III, Section C. The following is added:

- Install 5-6 1.5 m<sup>2</sup> temporary exclosures in a study site located in burned sagebrush-bunchgrass community in the Slough Creek area. This site will be compared with nearby sagebrush-bunchgrass sites (Specimen ridge trailhead and Crystal bench).
- Install 5-6 1.5 m<sup>2</sup> temporary exclosures in a study site located in burned sagebrush-bunchgrass community in the Cougar Meadow area. Note, we will likely need to create a paired plot in unburned area in Cougar Meadow.
- Collect data on production and consumption using canopy intercept each month during the snow-free period. Collect soil cores to measure soil-nitrogen at three points during the growing season. Collect vegetation samples monthly to monitor leaf nitrogen and carbon.
- Evaluate a new lab technique that uses stable isotope analysis to identify animal diet composition from fecal matter. Evaluate 35 elk and 35 bison samples collected during winter 2014-15 from December through March. Compare with existing results obtained using microscopic plant-fragment identification.
- Evaluate a new field technique to measure above ground primary production and shoot biomass. Calibrate measurements of production and shoot biomass estimated using NDVI calculated from digital photos using a spectrophotometer with measurements made using canopy intercept.

4. All other provisions remain unchanged.

**IN WITNESS WHEREOF**, the parties hereto have executed this modification on the date(s) set forth below.

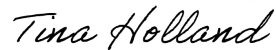
**FOR W&L UNIVERSITY**



Judith Wubah  
Associate Director for Strategic Initiatives

01 - 31 - 2017  
Date

**FOR THE NATIONAL PARK SERVICE**



Tina Holland  
Awarding Officer

02/06/2017  
Date

Attachment A: Budget

SF-424A - Budget Information - Non-Construction Programs

Salary for Cooperator	\$ 4,000
(overhead costs for cooperator)	1,000
Salary for student/technicians to conduct Field work at Yellowstone	\$16,000
(FICA and other admin costs)	890
Vehicle rental for travel while in the field (\$350/mo @ 4 months)	\$ 1,400
Travel for Cooperator and Students	\$ 2,000
1 trip per year for 2 years	
Laboratory supplies	\$ 4,000
Sub total	\$29,290
Indirect expenses (20% of subtotal)	<u>\$ 5,858</u>
Total	<u>\$35,148</u>

**Cooperative Agreement**

**P15AC01660**

Between

THE UNITED STATES DEPARTMENT OF INTERIOR

NATIONAL PARK SERVICE

AND

WASHINGTON AND LEE UNIVERSITY

DUNS No: 041283243

204 West Washington Street

Lexington, VA 24450

---

CFDA: 15.954

Project Title: The influence of grazing in soil system dynamics throughout bison use areas, Yellowstone National Park

Amount of Federal Funds Obligated: \$8,400

Total Amount of Award: \$16,900

Period of Performance: September 1, 2015 through September 30, 2020

This Cooperative Agreement P15AC01660 is entered into by the U.S. Department of the Interior, National Park Service (NPS), and Washington and Lee University (W&LU).

**ARTICLE I – BACKGROUND AND OBJECTIVES**

The objective of this Agreement is to have Washington and Lee University teach the Bison Ecology and Management team how to collect soil samples pertinent to their study of bison grazing dynamics throughout the park and to periodically come to Yellowstone and collect samples at study sites across the wild bison range of distribution. The samples will subsequently be shipped to the University for Laboratory Analysis. W&LU will complete the lab work and share the results with the Bison Ecology team and collaborate in the interpretation of the results.

The NPS and W&LU recognize the directive established in the NPS enabling legislation to monitor the ecological relationships between the ungulate community and the ranges that they occupy (a public trust resource). Biogeochemical effects of predators preying on grazers indirectly influence the plant community by affecting the number of grazers in the system. The overall effects of these grazers recycling nutrients by turning plant biomass in to recycled nitrogen and carbon and providing nutrients for the plant communities is a natural function of dynamic systems and directly influences nutrient cycling in the soil. Preservation of these natural ecosystem processes is a fundamental part of the NPS mission.

Bison management in and around Yellowstone National Park is a contentious land management issue of high public interest. As part of a negotiated settlement between the State of Montana and Yellowstone National Park (YELL) to provide for greater tolerance for wild bison in the state of Montana, the NPS conducts analyses of how bison use available habitat and the role bison play in their interaction with grassland communities. Bison migration to low elevation winter ranges in the State of Montana have resulted in ongoing negotiations to 1) better define the conservation area boundary for the population and 2) most effectively resolve conflicts that arise as bison migrate across the National Park boundary and in to Montana. Grazing animals are known to increase plant productivity through eating, urinating and defecating in the grasslands they occupy. The biological process of clipping the plants during grazing is thought to stimulate ecological processes within the soil to influence how nitrogen, phosphorus and carbon are cycled within the local environment. The bison conservation program is hotly debated among many publics with wide ranging perspectives. The information generated by the agencies is used widely by these publics and the National Park Service contributes the majority of the new information to inform the debate.

The Interagency Bison Management Plan (IBMP) adaptive management strategy includes tasks to better understand the role bison play in influencing plant community dynamics. Recently the state of Montana expanded the bison conservation area and has additional proposals to evaluate alternate areas of possible habitat for bison in the future. A better understanding of the interaction bison have with their habitat will provide managers and the public with predictions of how bison may affect grassland communities in potential new areas that Montana wildlife managers may consider for wild bison.

In this project NPS scientists and investigators at W&LU will collaborate to sample and estimate soil characteristics throughout the range of distribution for Yellowstone bison. This collaboration will quantify soil nitrogen, phosphorus and carbon and microbial biomass. Together the two entities will describe how grazing by bison and other ungulates influences these soil characteristics on both summer and winter ranges.

## **ARTICLE II - AUTHORITY**

NPS enters into this Agreement pursuant to:

- A. 54 U.S.C. §101702(a) Cooperative Agreements, Transfer of Service Appropriated Funds
- B. 54 U.S.C. §101702(b) Cooperative Agreements, Cooperative Research and Training Programs
- C. Whereas the NPS, in accordance with applicable Federal laws and regulations, is responsible for and has jurisdiction over the use and management of lands within the boundaries of YNP; and
- D. Whereas W&LU is an academic institution with faculty and students conducting scientific investigations to pursue studies of ecosystem relationships; and

E. Whereas the Yellowstone bison population is a migratory native wildlife population that has been restored to the Yellowstone Ecosystem over the course of the past 100 years and has evolved to fill habitat niches both within and outside the boundaries of YNP; and

F. Whereas bison management program actions are designed around understanding the ecological relationships bison have with other ecosystem components, one of which is the relationship bison have with habitat features on the ranges they occupy within the park; and

G. Now, therefore, the parties agree to work cooperatively in the following manner

### **ARTICLE III – STATEMENT OF WORK**

The NPS proposes to pay W&LU to collaboratively conduct a study of soil characteristics at study sites identified and established by the NPS throughout the range of the Yellowstone bison.

A. The Washington & Lee University agrees to:

1. Travel to YELL to meet with NPS staff when necessary to both train NPS staff in field sampling measures and to critically review on the ground study methods for scientific merit.
2. During trips to YELL, work with NPS to collect soil samples at bison habitat sampling sites throughout the park at three different times during each growing season (At spring green up, during middle of the growing season, and in Sept/Oct when late season flush of growth is likely to occur).
3. Conduct laboratory analyses of field collected soil samples to quantify nitrogen, phosphorus and carbon
4. Provide NPS with a spreadsheet of results from laboratory analyses for inclusion in NPS managed data base of project results.
5. Communicate frequently to share status of lab work and coordinate field work at Yellowstone.

B. NPS agrees to:

1. Take primary responsibility for collecting monthly production, consumption data at study sites throughout the park in order to correlate relationships with soil characteristics that are quantified by W&LU laboratory work.
2. Collaborate with W&LU to collect soil samples that cooperator is unable to collect during their field work sessions due to remote locations or logistical time constraints.
3. Communicate frequently to share status of collections and troubleshoot problems that may arise.

C. The Washington & Lee University and NPS, jointly, agree to:

1. Collaborate to interpret data regarding any correlation to increase in plant community growth rates or overall production and report results in a peer reviewed journal article (agreed to by both parties) to include both cooperators as coauthors.

#### **ARTICLE IV – TERM OF AGREEMENT**

The Agreement will become effective upon the date of the last signature in Article XIII and will expire five years from that date, unless terminated earlier per Article XI. The period from the Effective Date to the Expiration Date is the period of performance for the Agreement.

#### **ARTICLE V – KEY OFFICIALS**

- A. Key officials are essential to ensure maximum coordination and communications between the parties and the work being performed. They are:

1. **For the NPS:**

Awarding Officer (AO):

Tina Holland  
Financial Assistance Agreements Officer  
Northern Rockies Major Acquisition Office  
PO Box 168  
Yellowstone National Park, WY 82190  
Phone: (307) 344-2082  
Fax: (307) 344-2079  
tina\_holland@nps.gov

Agreement Technical Representative (ATR):

Rick Wallen  
Wildlife Biologist  
Bison Ecology and Management Team  
National Park Service  
PO Box 168  
Yellowstone National Park, WY 82190  
Phone (307) 344-2207  
FAX (307) 344-2211  
rick\_wallen@nps.gov

2. **For the W&LU:**

**Key Official**

Dr. Bill Hamilton  
Professor of Biology, Biology Dept. Head  
Washington & Lee University  
Howe Hall H403  
204 West Washington Street  
Lexington, VA 24450  
Phone: 540-458-8890  
Fax: 540-458-8012  
[hamiltone@wlu.edu](mailto:hamiltone@wlu.edu)

**Signatory Officer**

Judith Wubah, PhD  
Associate Director for Strategic Initiatives  
Washington & Lee University  
Office of Corporate & Foundation Relations  
Development Building  
204 West Washington Street  
Lexington, VA 24450  
(540) 458-8424 PHONE  
(540) 458-8428 FAX  
[jwubah@wlu.edu](mailto:jwubah@wlu.edu)

- B. **Communications.** Recipient shall address any communication regarding this Agreement to the ATR with a copy to the AO. Communications that relate solely to technical matters may be sent only to the ATR.
- C. **Changes in Key Officials.** Neither the NPS nor Recipient may make any permanent change in a key official without written notice to the other party reasonably in advance of the proposed change. The notice will include a justification with sufficient detail to permit evaluation of the impact of such a change on the scope of work specified within this Agreement. Any permanent change in key officials will be made only by modification to this Agreement.

**ARTICLE VI – AWARD AND PAYMENT**

- A. NPS will provide funding to the Recipient in an amount not to exceed \$8,400.00 for the Statement of Work described in Article III and in accordance with the NPS approved budget in Attachment B. Any award beyond the current fiscal year is subject to availability of funds.



B. Recipient shall request payment in accordance with the following:

1. **Method of Payment.** Payment will be made by advance and/or reimbursement through the Department of Treasury's Automated Standard Application for Payments (ASAP) system.
2. **Requesting Advances.** Requests for advances must be submitted via the ASAP system. Requests may be submitted as frequently as required to meet the needs of the Financial Assistance (FA) Recipient to disburse funds for the Federal share of project costs. If feasible, each request should be timed so that payment is received on the same day that the funds are dispersed for direct project costs and/or the proportionate share of any allowable indirect costs. If same-day transfers are not feasible, advance payments must be as close to actual disbursements as administratively feasible.
3. **Requesting Reimbursement.** Requests for reimbursements must be submitted via the ASAP system. Requests for reimbursement should coincide with normal billing patterns. Each request must be limited to the amount of disbursements made for the Federal share of direct project costs and the proportionate share of allowable indirect costs incurred during that billing period.
4. **Adjusting Payment Requests for Available Cash.** Funds that are available from repayments to, and interest earned on, a revolving fund, program income, rebates, refunds, contract settlements, audit recoveries, credits, discounts, and interest earned on any of those funds must be disbursed before requesting additional cash payments.
5. **Bank Accounts.** All payments are made through electronic funds transfer to the bank account identified in the ASAP system by the FA Recipient.
6. **Supporting Documents and Agency Approval of Payments.** Additional supporting documentation and prior NPS approval of payments may be required when/if a FA Recipient is determined to be "high risk" or has performance issues. If prior Agency payment approval is in effect for an award, the ASAP system will notify the FA Recipient when they submit a request for payment. The Recipient must then notify the NPS AO that a payment request has been submitted. The NPS AO may request additional information from the Recipient to support the payment request prior to approving the release of funds, as deemed necessary. The FA Recipient is required to comply with these requests. Supporting documents may include invoices, copies of contracts, vendor quotes, and other expenditure explanations that justify the reimbursement requests.

- B. In order to receive a financial assistance award and to ensure proper payment, it is required that Recipient maintain their registration with the System for Award Management (SAM), accessed at <http://www.sam.gov>. Failure to maintain registration can impact obligations and payments under this Agreement and/or any other financial assistance or procurements documents the Recipient may have with the Federal government.
- C. Any award beyond the current fiscal year is subject to availability of funds; funds may be provided in subsequent fiscal years if project work is satisfactory and funding is available.
- D. **Allowable and Eligible Costs.** Expenses charged against awards under the Agreement may not be incurred prior to the beginning of the Agreement, and may be incurred only as necessary to carry out the approved objectives, scope of work and budget with prior approval from the NPS AO. The Recipient shall not incur costs or obligate funds for any purpose pertaining to the operation of the project, program, or activities beyond the expiration date stipulated in the award.
- E. **Travel Costs.** For travel costs charged against awards under the Agreement, costs incurred must be considered reasonable and otherwise allowable only to the extent such costs do not exceed charges normally allowed by the Recipient in its regular operations as the result of the Recipient's written travel policy. If the Recipient does not have written travel policies established, the Recipient and its contractors shall follow the travel policies in the Federal Travel Regulation, and may not be reimbursed for travel costs that exceed the standard rates. All charges for travel must conform to the applicable cost principles.
- F. **Indirect Costs.** Indirect costs will not be allowable charges against the award unless specifically included as a line item in the approved budget incorporated into the award.
- G. **Recipient Cost Share or Match.** Any non-Federal share, whether in cash or in-kind, is expected to be paid out at the same general rate as the Federal share. Exceptions to this requirement may be granted by the AO based on sufficient documentation demonstrating previously determined plans for or later commitment of cash or in-kind contributions. In any case, the Recipient must meet their cost share commitment over the life of the award.

## ARTICLE VII – PRIOR APPROVAL

The Recipient shall obtain prior approval for budget and program revisions, in accordance with 2 CFR 200.308.

## ARTICLE VIII – INSURANCE AND LIABILITY

(a) Insurance. The recipient shall be required to (1) obtain liability insurance or (2) demonstrate present financial resources in an amount determined sufficient by the Government to cover claims brought by third parties for death, bodily injury, property damage, or other loss resulting from one or more identified activities carried out in connection with this financial assistance agreement.

(b) Insured. The federal government shall be named as an additional insured under the recipient's insurance policy.

(c) Indemnification. The recipient hereby agrees to indemnify the federal government, NPS or from any act or omission of W&LU, its officers, employees, or (members, participants, agents, representatives, agents as appropriate), (1) against third party claims for damages arising from one or more identified activities carried out in connection with this financial assistance agreement and (2) for damage or loss to government property resulting from such an activity. This obligation shall survive the termination of this Agreement.

1. To purchase public and employee liability insurance at its own expense from a responsible company or companies with a minimum limitation of one million dollars (\$1,000,000) per person for anyone claim, and an aggregate limitation of Three Million Dollars (\$3,000,000) for any number of claims arising from any one incident. The policies shall name the United States as an additional insured, shall specify that the insured shall have no right of subrogation against the United States for payments of any premiums or deductibles due thereunder, and shall specify that the insurance shall be assumed by, be for the account of, and be at the insured's sole risk. Prior to beginning the work authorized herein, W&LU shall provide the NPS with confirmation of such insurance coverage.
2. To pay the United States the full value for all damage to the lands or other property of the United States caused by W&LU, its officers, employees or representatives.
3. To provide workers' compensation protection to W&LU officers, employees, and representatives.
4. To cooperate with NPS in the investigation and defense of any claims that may be filed with NPS arising out of the activities of the W&LU, its agents, and employees.
5. In the event of damage to or destruction of the buildings and facilities assigned for the use of W&LU in whole or in part by any cause whatsoever, nothing herein contained shall be deemed to require NPS to replace or repair the buildings or facilities. If NPS determines in writing, after consultation with W&LU that damage to the buildings or portions thereof renders such buildings unsuitable for continued use by W&LU, NPS shall assume sole control over such buildings or portions thereof. If the buildings or facilities rendered unsuitable for use are essential for conducting

operations authorized under this Agreement, then failure to substitute and assign other facilities acceptable to W&LU will constitute termination of this Agreement by NPS.

## **ARTICLE IX – REPORTS AND/OR DELIVERABLES**

- A. Specific projects, tasks or activities for which funds are advanced will be tracked and reported by quarterly submission of a SF-425 Federal Financial Report (FFR) and quarterly submission of a Performance Report. A final SF-425 and Performance Report shall be submitted at the completion of the Agreement. The following reporting period end dates shall be used for interim reports: 3/31, 6/30, 9/30, 12/31. For final the SF-425 and Performance Report, the reporting period end date shall be the end date of the agreement. Interim reports shall be submitted no later than 30 days after the end of each reporting period. Annual and final reports shall be submitted no later than 90 days after the end period date. All reports shall be submitted via email to the NPS AO with a copy to the NPS Agreements Technical Representative via email.
- B. The Secretary of the Interior and the Comptroller General of the United States, or their duly authorized representatives, will have access, for the purpose of financial or programmatic review and examination, to any books, documents, papers, and records that are pertinent to the Agreement at all reasonable times during the period of retention in accordance with 2 CFR 200.333.

## **ARTICLE X – PROPERTY UTILIZATION**

All tools, equipment, and facilities furnished by NPS will be on a loan basis. Tools, equipment and facilities will be returned in the same condition received except for normal wear and tear in project use. Property management standards set forth in 2 CFR 200.310 through 200.316 *apply* to this Agreement.

## **ARTICLE XI – MODIFICATION, REMEDIES FOR NONCOMPLIANCE TERMINATION**

- A. This Agreement may be modified only by a written instrument executed by the parties. Modifications will be in writing and approved by the NPS AO and the authorized representative of Recipient.
- B. Additional conditions may be imposed by NPS if it is determined that the Recipient is non-compliant to the terms and conditions of this agreement. Remedies for Noncompliance can be found in 2 CFR 200.338.
- C. This Agreement may be terminated consistent with applicable termination provisions for Agreements found in 2 CFR 200.339 through 200.342.

## ARTICLE XII – GENERAL AND SPECIAL PROVISIONS

### A. General Provisions

1. **OMB Circulars and Other Regulations.** The following Federal regulations are incorporated by reference into this Agreement (full text can be found at <http://www.ecfr.gov>):

- a) **Administrative Requirements:**

*2 CFR, Part 200 – Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards;*

- b) **Determination of Allowable Costs:**

*2 CFR, Part 200 – Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, Subpart E;*

and

- c) **Audit Requirements:**

*2 CFR, Part 200 – Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, Subpart.*

- d) **Code of Federal Regulations/Regulatory Requirements:**

*43 CFR 43, “Governmentwide Requirements for a Drug-Free Workplace”;*

*2 CFR Part 1400, “Non-Procurement Debarment and Suspension”, previously located at 43 CFR Part 42, “Governmentwide Debarment and Suspension (NonProcurement)”;*

*43 CFR 18, “New Restrictions on Lobbying”;*

*2 CFR Part 175, “Trafficking Victims Protection Act of 2000”;*

*FAR Clause 52.203-12, Paragraphs (a) and (b), Limitation on Payments to Influence Certain Federal Transactions;*

- 2 CFR Part 25, System for Award Management ([www.SAM.gov](http://www.SAM.gov)) and Data Universal Numbering System (DUNS); and*

*2 CFR Part 170, "Reporting Subawards and Executive Compensation".*

2. **Buy American Act.** Pursuant to Section 307 of the Omnibus Consolidated Appropriations Act of 1997, Public Law 104-208, 110 Stat. 3009, Recipient agrees to follow the requirements in 43 CFR Part 12, Subpart E, Buy American Requirements for Assistance Programs; in the case of any equipment or product that may be authorized to be purchased with financial assistance provided using funds made available in this Act, it is the sense of the Congress that entities receiving the assistance should, in expending the assistance, purchase only American-made equipment and products.
3. **Non-Discrimination.** All activities pursuant to this Agreement shall be in compliance with the requirements of Executive Order 11246, as amended; Title VI of the Civil Rights Act of 1964, as amended, (78 Stat. 252; 42 U.S.C. §§2000d et seq.); Title V, Section 504 of the Rehabilitation Act of 1973, as amended, (87 Stat. 394; 29 U.S.C. §794); the Age Discrimination Act of 1975 (89 Stat. 728; 42 U.S.C. §§6101 et seq.); and with all other federal laws and regulations prohibiting discrimination on grounds of race, color, sexual orientation, national origin, disabilities, religion, age, or sex.
4. **Lobbying Prohibition.** 18 U.S.C. §1913, Lobbying with Appropriated Moneys, as amended by Public Law 107-273, Nov. 2, 2002 - No part of the money appropriated by any enactment of Congress shall, in the absence of express authorization by Congress, be used directly or indirectly to pay for any personal service, advertisement, telegram, telephone, letter, printed or written matter, or other device, intended or designed to influence in any manner a Member of Congress, a jurisdiction, or an official of any government, to favor, adopt, or oppose, by vote or otherwise, any legislation, law, ratification, policy, or appropriation, whether before or after the introduction of any bill, measure, or resolution proposing such legislation, law, ratification, policy, or appropriation; but this shall not prevent officers or employees of the United States or of its departments or agencies from communicating to any such Members or official, at his request, or to Congress or such official, through the proper official channels, requests for legislation, law, ratification, policy, or appropriations which they deem necessary for the efficient conduct of the public business, or from making any communication whose prohibition by this section might, in the opinion of the Attorney General, violate the Constitution or interfere with the conduct of foreign policy, counter-intelligence, intelligence, or national security activities. Violations of this section shall constitute violations of section 1352(a) of title 31. In addition to the above, the related restrictions on the use of appropriated funds found in Div. F, § 402 of the Omnibus Appropriations Act of 2008 (P.L. 110-161) also apply.

5. **Anti-Deficiency Act.** Pursuant to 31 U.S.C. §1341 nothing contained in this Agreement shall be construed as binding the NPS to expend in any one fiscal year any sum in excess of appropriations made by Congress, for the purposes of this Agreement for that fiscal year, or other obligation for the further expenditure of money in excess of such appropriations.
6. **Minority Business Enterprise Development.** Pursuant to Executive Order 12432 it is national policy to award a fair share of contracts to small and minority firms. NPS is strongly committed to the objectives of this policy and encourages all recipients of its Cooperative Agreements to take affirmative steps to ensure such fairness by ensuring procurement procedures are carried out in accordance with 43 CFR 12.944 for Institutions of Higher Education, Hospitals and Other Non-Profit Organizations, and 43 CFR 12.76 for State and Local Governments.
7. **Assignment.** No part of this Agreement shall be assigned to any other party without prior written approval of the NPS and the Assignee.
8. **Member of Congress.** Pursuant to 41 U.S.C. § 22, no Member of Congress shall be admitted to any share or part of any contract or agreement made, entered into, or adopted by or on behalf of the United States, or to any benefit to arise thereupon.
9. **Agency.** The Recipient is not an agent or representative of the United States, the Department of the Interior, NPS, or the Park, nor will the Recipient represent its self as such to third parties. NPS employees are not agents of the Recipient and will not act on behalf of the Recipient.
10. **Non-Exclusive Agreement.** This Agreement in no way restricts the Recipient or NPS from entering into similar agreements, or participating in similar activities or arrangements, with other public or private agencies, organizations, or individuals.
11. **Survival.** Any and all provisions which, by themselves or their nature, are reasonably expected to be performed after the expiration or termination of this Agreement shall survive and be enforceable after the expiration or termination of this Agreement. Any and all liabilities, actual or contingent, which have arisen during the term of and in connection with this Agreement shall survive expiration or termination of this Agreement.
12. **Partial Invalidity.** If any provision of this Agreement or the application thereof to any party or circumstance shall, to any extent, be held invalid or unenforceable, the remainder of this Agreement or the application of such provision to the parties or circumstances other than those to which it is held invalid or unenforceable, shall not be affected thereby and each provision of

this Agreement shall be valid and be enforced to the fullest extent permitted by law.

13. **Captions and Headings:** The captions, headings, article numbers and paragraph numbers appearing in this Agreement are inserted only as a matter of convenience and in no way shall be construed as defining or limiting the scope or intent of the provision of this Agreement nor in any way affecting this Agreement.
  14. **No Employment Relationship.** This Agreement is not intended to and shall not be construed to create an employment relationship between NPS and Recipient or its representatives. No representative of Recipient shall perform any function or make any decision properly reserved by law or policy to the Federal government.
  15. **No Third-Party Rights.** This Agreement creates enforceable obligations between only NPS and Recipient. Except as expressly provided herein, it is not intended nor shall it be construed to create any right of enforcement by or any duties or obligation in favor of persons or entities not a party to this Agreement.
  16. **Foreign Travel.** The Recipient shall comply with the provisions of the Fly America Act (49 USC 40118). The implementing regulations of the Fly America Act are found at 41 CFR 301-10.131 through 301-10.143.
- a) **Special Provisions**
- 1) **Public Information and Endorsements.**
    - a) Recipient shall not publicize or otherwise circulate promotional material (such as advertisements, sales brochures, press releases, speeches, still and motion pictures, articles, manuscripts or other publications) which states or implies governmental, Departmental, bureau, or government employee endorsement of a business, product, service, or position which the Recipient represents. No release of information relating to this award may state or imply that the Government approves of the Recipient's work products, or considers the Recipient's work product to be superior to other products or services.
    - b) All information submitted for publication or other public releases of information regarding this project shall carry the following disclaimer.
    - c) The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or



policies of the U.S. Government. Mention of trade names or commercial products does not constitute their endorsement by the U.S. Government.

- d) Recipient must obtain prior Government approval for any public information releases concerning this award which refer to the Department of the Interior or any bureau or employee (by name or title). The specific text, layout photographs, etc. of the proposed release must be submitted with the request for approval.
  - e) Recipient further agrees to include this provision in a subaward to a subrecipient, except for a subaward to a State government, a local government, or to a federally recognized Indian tribal government.
- 2) **Publications of Results of Studies.** No party will unilaterally publish a joint publication without consulting the other party. This restriction does not apply to popular publications of previously published technical matter. Publications pursuant to this Agreement may be produced independently or in collaboration with others; however, in all cases proper credit will be given to the efforts of those parties contribution to the publication. In the event no agreement is reached concerning the manner of publication or interpretation of results, either party may publish data after due notice and submission of the proposed manuscripts to the other. In such instances, the party publishing the data will give due credit to the cooperation but assume full responsibility for any statements on which there is a difference of opinion.
- 3) **Rights in Data.** The Recipient must grant the United States of America a royalty-free, non-exclusive and irrevocable license to publish, reproduce and use, and dispose of in any manner and for any purpose without limitation, and to authorize or ratify publication, reproduction or use by others, of all copyrightable material first produced or composed under this Agreement by the Recipient, its employees or any individual or concern specifically employed or assigned to originate and prepare such material.
- 4) **Retention and Access Requirements for Records.** All Recipient financial and programmatic records, supporting documents, statistical records, and other grants-related records shall be maintained and available for access in accordance with 43 CFR 12.82 for State, local and Indian tribal governments or 43 C.F.R. 12.953 for institutions of higher education, hospitals, other non-profit and all other organizations.
- 5) **Audit Requirements.**
- a) Non-Federal entities that expend \$750,000 or more during a year in Federal awards shall have a single or program-specific audit conducted for that year in accordance with the Single Audit Act Amendments of 1996

(31 U.S.C. 7501-7507) and 2 CFR Part 200, Subpart F, which is available at <http://www.ecfr.gov/cgi-bin/text-idx?SID=fd6463a517ceea3fa13e665e525051f4&node=sp2.1.200.f&rgn=div6>

- b) Non-Federal entities that expend less than \$750,000 for a fiscal year in Federal awards are exempt from Federal audit requirements for that year, but records must be available for review or audit by appropriate officials of the Federal agency, pass-through entity, and General Accounting Office (GAO).
  - c) Audits shall be made by an independent auditor in accordance with generally accepted government auditing standards covering financial audits. Additional audit requirements applicable to this agreement are found at 43 CFR 12.66 or 43 CFR 12.926, as applicable. General guidance on the single audit process is included in a pamphlet titled, "Highlights of the Single Audit Process" which is available on the internet at <http://www.oig.dol.gov/public/reports/oa/documents/singleauditpamphlet.pdf>. Additional information on single audits is available from the Federal Audit Clearinghouse at <http://harvester.census.gov/sac/>.
- 6) **Procurement Procedures.** It is a national policy to place a fair share of purchases with minority business firms. The Department of the Interior is strongly committed to the objectives of this policy and encourages all recipients of its grants and cooperative agreements to take affirmative steps to ensure such fairness. Positive efforts shall be made by recipients to utilize small businesses, minority-owned firms, and women's business enterprises, whenever possible. Recipients of Federal awards shall take all of the following steps to further this goal:
- a) Ensure that small businesses, minority-owned firms, and women's business enterprises are used to the fullest extent practicable.
  - b) Make information on forthcoming opportunities available and arrange time frames for purchases and contracts to encourage and facilitate participation by small businesses, minority-owned firms, and women's business enterprises.
  - c) Consider in the contract process whether firms competing for larger contracts intend to subcontract with small businesses, minority-owned firms, and women's business enterprises.
  - d) Encourage contracting with consortiums of small businesses, minority-owned firms and women's business enterprises when a contract is too large for one of these firms to handle individually.

- e) Use the services and assistance, as appropriate, of such organizations as the Small Business Development Agency in the solicitation and utilization of small business, minority-owned firms and women's business enterprises.

7) **Prohibition on Text Messaging and Using Electronic Equipment Supplied by the Government while Driving.** Executive Order 13513, Federal Leadership on Reducing Text Messaging While Driving, was signed by President Barack Obama on October 1. This Executive Order introduces a Federal Government-wide prohibition on the use of text messaging while driving on official business or while using Government-supplied equipment. Additional guidance enforcing the ban will be issued at a later date. In the meantime, please adopt and enforce policies that immediately ban text messaging while driving company-owned or –rented vehicles, government-owned or leased vehicles, or while driving privately owned vehicles when on official government business or when performing any work for or on behalf of the government.

8) **Trafficking in Persons.** This term of award is pursuant to paragraph (g) of Section 106 of the Trafficking Victims Protections Act of 2000, as amended (22 USC 7104).

- a) Provisions applicable to a recipient that is a private entity.

- 1. You as the Recipient, your employees, subrecipients under this award, and subrecipients' employees may not-
  - i. Engage in severe forms of trafficking in persons during the period of time that the award is in effect;
  - ii. Procure a commercial sex act during the period of time that the award is in effect; or
  - iii. Use forced labor in the performance of the award or subawards under the award.
- 2. We as the Federal awarding agency may unilaterally terminate this award, without penalty, if you or a subrecipient that is a private entity-
  - i. Is determined to have violated a prohibition in paragraph a.1 of this award term; or

- ii. Has an employee who is determined by the agency official authorized to terminate the award to have violated a prohibition in paragraph a.1 of this award term through conduct that is either:
    - a. Associated with performance under this award; or
    - b. Imputed to you or the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR part 180, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (NonProcurement)," as implemented by our agency at 2 CFR part 1400.
- b) Provision applicable to a recipient other than a private entity. We as the Federal awarding agency may unilaterally terminate this award, without penalty, if a subrecipient that is a private entity-
  - 1. Is determined to have violated an applicable prohibition in paragraph a.1 of this award term; or
  - 2. Has an employee who is determined by the agency official authorized to terminate the award to have violated an applicable prohibition in paragraph a.1 of this award term through conduct that is either:
    - i. Associated with performance under this award; or
    - ii. Imputed to the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR part 180, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (NonProcurement)," as implemented by our agency at 2 CFR part 1400.
- c) Provisions applicable to any recipient.
  - 1. You must inform us immediately of any information you receive from any source alleging a violation of a prohibition in paragraph a.1 of this award term.
  - 2. Our right to terminate unilaterally that is described in paragraph a.2 or b of this section:

- i. Implements section 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended (22 USC 7104(g)), and
  - ii. Is in addition to all other remedies for noncompliance that are available to us under this award.
- 3. You must include the requirements of paragraph a.1 of this award term in any subaward you make to a private entity.

d) Definitions. For purposes of this award term:

- 1. "Employee" means either:
  - i. An individual employed by you or a subrecipient who is engaged in the performance of the project or program under this awards;  
or
  - ii. Another person engaged in the performance of the project or program under this award and not compensated by you including, but not limited to, a volunteer or individual whose services are contributed by a third party as an in-kind contribution toward cost sharing or matching requirements.
- 2. "Forced labor" means labor obtained by any of the following methods: The recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.
- 3. "Private entity" means:
  - i. Any entity other than a State, local government, Indian tribe, or foreign public entity, as those terms are defined in 2 CFR 175.25; and
  - ii. Includes:
    - a. A nonprofit organization, including any nonprofit institution of higher education, hospital, or tribal organization other than one included in the definition of Indian tribe at 2 CFR 175.25(b).
    - b. A for-profit organization.

4. “Severe forms of trafficking in persons,” “commercial sex act,” and “coercion” have the meanings given at section 103 of the TVPA, as amended (22 USC 7102).

**9) Recipient Employee Whistleblower Rights and Requirement to Inform Employees of Whistleblower Rights.**

- a) This award and employees working on this financial assistance agreement will be subject to the whistleblower rights and remedies in the pilot program on Award Recipient employee whistleblower protections established at 41 U.S.C. 4712 by section 828 of the National Defense Authorization Act for Fiscal Year 2013 (Pub. L. 112-239).
- b) The Award Recipient shall inform its employees in writing, in the predominant language of the workforce, of employee whistleblower rights and protections under 41 U.S.C. 4712.
- c) The Award Recipient shall insert the substance of this clause, including this paragraph (c), in all subawards or subcontracts over the simplified acquisition threshold, 42 CFR § 52.203-17 (as referenced in 42 CFR § 3.908-9).

**10) Reporting Subawards And Executive Compensation**

- a) Reporting of first-tier subawards.
  1. Applicability. Unless you are exempt as provided in paragraph D. of this award term, you must report each action that obligates \$25,000 or more in Federal funds that does not include Recovery Act funds (as defined in section 1512(a)(2) of the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5) for a subaward to an entity (see definitions in paragraph E. of this award term).
  2. Where and when to report.
    - i. You must report each obligating action described in paragraph A.1. of this award term to <http://www.fsrs.gov>.
    - ii. For subaward information, report no later than the end of the month following the month in which the obligation was made. (For example, if the obligation was made on November 7, 2010, the obligation must be reported by no later than December 31, 2010.)

3. What to report. You must report the information about each obligating action that the submission instructions posted at <http://www.fsrs.gov> specify.
- b) Reporting Total Compensation of Recipient Executives.
1. Applicability and what to report. You must report total compensation for each of your five most highly compensated executives for the preceding completed fiscal year, if—
    - i. The total Federal funding authorized to date under this award is \$25,000 or more;
    - ii. In the preceding fiscal year, you received—
      - a. 80 percent or more of your annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and
      - b. \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and
    - iii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/excomp.htm>.)
  2. Where and when to report. You must report executive total compensation described in paragraph A.1. of this award term:
    - i. As part of your registration profile at <https://www.sam.gov>.
    - ii. By the end of the month following the month in which this award is made, and annually thereafter.
- c) Reporting of Total Compensation of Subrecipient Executives.

1. Applicability and what to report. Unless you are exempt as provided in paragraph D. of this award term, for each first-tier subrecipient under this award, you shall report the names and total compensation of each of the subrecipient's five most highly compensated executives for the subrecipient's preceding completed fiscal year, if—
    - i. In the subrecipient's preceding fiscal year, the subrecipient received—
      - a. 80 percent or more of its annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and
      - b. \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts), and Federal financial assistance subject to the Transparency Act (and subawards); and
    - ii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>.)
  2. Where and when to report. You must report subrecipient executive total compensation described in paragraph c.1. of this award term:
    - i. To the recipient.
    - ii. By the end of the month following the month during which you make the subaward. For example, if a subaward is obligated on any date during the month of October of a given year (i.e., between October 1 and 31), you must report any required compensation information of the subrecipient by November 30 of that year.
- d) Exemptions.
1. If, in the previous tax year, you had gross income, from all sources, under \$300,000, you are exempt from the requirements to report:



- i. Subawards, and
  - ii. The total compensation of the five most highly compensated executives of any subrecipient.
- e) Definitions. For purposes of this award term:
  - 1. Entity means all of the following, as defined in 2 CFR part 25:
    - i. A Governmental organization, which is a State, local government, or Indian tribe;
    - ii. A foreign public entity;
    - iii. A domestic or foreign nonprofit organization;
    - iv. A domestic or foreign for-profit organization;
    - v. A Federal agency, but only as a subrecipient under an award or subaward to a non-Federal entity.
  - 2. Executive means officers, managing partners, or any other employees in management positions.
  - 3. Subaward:
    - i. This term means a legal instrument to provide support for the performance of any portion of the substantive project or program for which you received this award and that you as the recipient award to an eligible subrecipient.
    - ii. The term includes your procurement of property and services needed to carry out the project or program. The term does not include procurement of incidental property and services needed to carry out the award project or program.
    - iii. A subaward may be provided through any legal agreement, including an agreement that you or a subrecipient considers a contract.
  - 4. Subrecipient means an entity that:
    - i. Receives a subaward from you (the recipient) under this award; and

- ii. Is accountable to you for the use of the Federal funds provided by the subaward.
- 5. Total compensation means the cash and noncash dollar value earned by the executive during the recipient's or subrecipient's preceding fiscal year and includes the following (for more information see 17 CFR 229.402(c)(2)):
  - i. Salary and bonus.
  - ii. Awards of stock, stock options, and stock appreciation rights. Use the dollar amount recognized for financial statement reporting purposes with respect to the fiscal year in accordance with the Statement of Financial Accounting Standards No. 123 (Revised 2004) (FAS 123R), Shared Based Payments.
  - iii. Earnings for services under non-equity incentive plans. This does not include group life, health, hospitalization or medical reimbursement plans that do not discriminate in favor of executives, and are available generally to all salaried employees.
  - iv. Change in pension value. This is the change in present value of defined benefit and actuarial pension plans.
  - v. Above-market earnings on deferred compensation which is not tax-qualified.
  - vi. Other compensation, if the aggregate value of all such other compensation (e.g. severance, termination payments, value of life insurance paid on behalf of the employee, perquisites or property) for the executive exceeds \$10,000.

11) **Conflict of Interest**

- a) The Recipient must establish safeguards to prohibit its employees and Sub-recipients from using their positions for purposes that constitute or present the appearance of a personal or organizational conflict of interest. The Recipient is responsible for notifying the Awarding Officer in writing of any actual or potential conflicts of interest that may arise during the life of this award. Conflicts of interest include any relationship or matter which might place the Recipient or its employees in a position of conflict, real or apparent, between their responsibilities under the agreement and any other outside interests. Conflicts of interest may also include, but are not limited to, direct or indirect financial interests, close personal

relationships, positions of trust in outside organizations, consideration of future employment arrangements with a different organization, or decision-making affecting the award that would cause a reasonable person with knowledge of the relevant facts to question the impartiality of the Recipient and/or Recipient's employees and Sub-recipients in the matter.

b) The Awarding Officer and the servicing Ethics Counselor will determine if a conflict of interest exists. If a conflict of interest exists, the Awarding Officer will determine whether a mitigation plan is feasible. Mitigation plans must be approved by the Awarding Officer in writing.

c) Failure to resolve conflicts of interest in a manner that satisfies the government may be cause for termination of the award. Failure to make required disclosures may result in any of the remedies described in 2 CFR § 200.338, Remedies/or Noncompliance, including suspension or debarment (see also 2 CFR Part 180).

### ARTICLE XIII – ATTACHMENTS

The following completed documents are attached to and made a part of this Agreement:

- Attachment A. SF-424 - Application for Federal Assistance
- Attachment B. SF-424A - Budget Information - Non-Construction Programs
- Attachment C. SF-424 B - Assurances - Non-Construction Programs
- Attachment D. SF-LLL - Disclosure of Lobbying Activities

The Standard Forms (SF) can be downloaded electronically at [www.grants.gov](http://www.grants.gov) or by contacting the NPS Awarding Officer.

### ARTICLE XIV – SIGNATURES

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date(s) set forth below.

**FOR WASHINGTON AND LEE UNIVERSITY**



Judith A. Wubah  
Associate Director for Strategic Initiatives

September 14, 2015  
Date

9/15/2015  
Date



**From:** [Mihalic, David](#)  
**To:** [Dan Wenk](#)  
**Subject:** Re: PJ's request - description of agreement with Washington Lee Univ  
**Date:** Thursday, June 07, 2018 8:26:02 AM

---

Hi Dan,

Thanks - the question was whether this was the study you referred to the other day in your comment about getting "\$75,000" for a study to which I responded yes, that I knew Danny had set aside that amount for the "secretary's" request for a new look at the issues of over-grazing.

I told the reviewer I thought this was an existing study and just wanted to ensure that was the case.

Sorry about the butt call - I noticed it in the secretary's office at a reception and felt badly about it.

Regarding those range studies all I have is a paper copy of several hundred pages of what looks like 7 journal articles by those individuals I told you about earlier.

Dave

On Wed, Jun 6, 2018 at 11:32 PM, Dan Wenk <[dan\\_wenk@nps.gov](mailto:dan_wenk@nps.gov)> wrote:

Please see email below. Happy to get on phone to discuss. This is a good project that contributes significantly to our knowledge about habitat. Not a needless field trip at all.

By the way got a two minute butt call from you tonight.

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

Begin forwarded message:

**From:** "Geremia, Chris" <[chris\\_geremia@nps.gov](mailto:chris_geremia@nps.gov)>  
**Date:** June 6, 2018 at 5:24:01 PM MDT  
**To:** Dan Wenk <[dan\\_wenk@nps.gov](mailto:dan_wenk@nps.gov)>, PJ\_White <[PJ\\_White@nps.gov](mailto:PJ_White@nps.gov)>, Jennifer Carpenter <[jennifer\\_carpenter@nps.gov](mailto:jennifer_carpenter@nps.gov)>  
**Subject:** PJ's request - description of agreement with Washington Lee Univ

PJ, Jennifer, and Dan,

We requested a modification to cooperative agreement P15AC01660 "The influence of bison grazing in soil system dynamics in Yellowstone National Park" with Washington and Lee University

- This agreement has been in place since 2015 and has directly supported our research

assessing the sustainability of park grasslands to bison grazing.

- Through this agreement:
  - Approximately 15 undergraduate students led by Dr. Bill Hamilton have traveled to Yellowstone each year to collect soil samples in the beginning of each growing season. Students also carry fencing materials to set up grazing exclosures that NPS staff use during the remainder of the summer to measure site productivity and consumption.
  - NPS staff continue to collect soil and plant samples monthly during the remainder of the summer
  - Samples are shipped to WLU where Dr. Hamilton and these students analyze samples for key soil nutrients (phosphorus, nitrogen, organic matter) used to identify overgrazing. Students also analyze plant tissue samples collected by NPS staff for key plant nutrients.
  - This agreement has supported one WLU staff measuring soil and plant conditions with NPS staff during summers 2017-present
  - Students have analyzed more than 3,000 soil cores and 2,000 plant tissue samples. This is an extremely cost effective approach as typical analyses cost approximately \$10/sample

The proposed modification was to:

- a. Analyze plant tissue and soil samples collected during 2017-2019 for nitrogen, carbon, and phosphorus percentages.
- b. Perform a five species (expanded from 2 species under cooperative agreement P15AC01660) greenhouse experiment to identify the magnitude of grazing necessary to diminish plant production for key species
- c. Use stable isotope analysis to identify animal diet composition from fecal matter. This research will help identify the dietary overlap of elk, bison, mule deer, pronghorn, and bighorn to determine potential effects of high bison grazing on these other grazers
- d. Support Dr. Hamilton in preparing a paper suitable to a peer-reviewable journal evaluating the sustainability of soil resources in the park to recent bison grazing

The modification was for \$32,296 during June 1 2018 through June 1 2023. The cooperative agreement was previously funded for \$42,548 2015-present. Therefore, the total project cost since 2015 with the modification is \$74,844 although we are only requesting \$32,296 in additional funds this year.

See proposed mod attached and previous agreements.

Ger

--

Chris Geremia

Bison Ecology and Management Office  
Mammoth Hot Springs, WY 82190  
Yellowstone National Park  
Office (307) 344-2584

--

David A. Mihalic

Senior Advisor to the Secretary

United States Department of the Interior  
MIB Room 6124  
1849 "C" Street NW  
Washington, D.C. 20240

Phone: 202-208-4130  
cell: 202-706-4978  
[david\\_mihalic@ios.doi.gov](mailto:david_mihalic@ios.doi.gov)

*Remember, everything I send or receive is subject to the Freedom of Information Act*





**From:** [Bowman, Randal](#)  
**To:** [Mihalic, David](#)  
**Cc:** [Dan Wenk](#)  
**Subject:** Re: PJ's request - description of agreement with Washington Lee Univ  
**Date:** Thursday, June 07, 2018 9:05:18 AM

---

Great - will so advise Ryan

On Thu, Jun 7, 2018 at 11:02 AM, Mihalic, David <[david\\_mihalic@ios.doi.gov](mailto:david_mihalic@ios.doi.gov)> wrote:

Randy,

Looks like good science effort that will contribute to the understanding requested by the secretary. Danny said he "set aside" 75K for that study for the secretary - and I and Dan Wenk are discussing its parameters and scope. But this can be approved.

Please let me know if you have more questions.

Dave

----- Forwarded message -----

**From:** **Dan Wenk** <[dan\\_wenk@nps.gov](mailto:dan_wenk@nps.gov)>

**Date:** Wed, Jun 6, 2018 at 11:32 PM

**Subject:** Fwd: PJ's request - description of agreement with Washington Lee Univ

**To:** Dave Mihalic <[david\\_mihalic@ios.doi.gov](mailto:david_mihalic@ios.doi.gov)>

Please see email below. Happy to get on phone to discuss. This is a good project that contributes significantly to our knowledge about habitat. Not a needless field trip at all.

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

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**From:** "Geremia, Chris" <[chris\\_gerencia@nps.gov](mailto:chris_gerencia@nps.gov)>

**Date:** June 6, 2018 at 5:24:01 PM MDT

**To:** Dan Wenk <[dan\\_wenk@nps.gov](mailto:dan_wenk@nps.gov)>, PJ\_White <[PJ\\_White@nps.gov](mailto:PJ_White@nps.gov)>, Jennifer Carpenter <[jennifer\\_carpenter@nps.gov](mailto:jennifer_carpenter@nps.gov)>

**Subject:** PJ's request - description of agreement with Washington Lee Univ

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Ger

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Chris Geremia

Bison Ecology and Management Office  
Mammoth Hot Springs, WY 82190  
Yellowstone National Park  
Office (307) 344-2584

--

David A. Mihalic

Senior Advisor to the Secretary  
United States Department of the Interior  
MIB Room 6124  
1849 "C" Street NW  
Washington, D.C. 20240

Phone: 202-208-4130

cell: 202-706-4978

[david\\_mihalic@ios.doi.gov](mailto:david_mihalic@ios.doi.gov)

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**From:** [Mihalic, David](#)  
**To:** [Dan Wenk](#)  
**Subject:** Bison Brief  
**Date:** Monday, June 11, 2018 3:24:48 PM  
**Attachments:** [MIHALIC\\_Special Projects\\_June 2018.pptx](#)

---

Attached is what I have with info from our earlier call - happy to adjust with comments!

Dave

--

David A. Mihalic

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United States Department of the Interior  
MIB Room 6124  
1849 "C" Street NW  
Washington, D.C. 20240

Phone: 202-208-4130  
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[david\\_mihalic@ios.doi.gov](mailto:david_mihalic@ios.doi.gov)

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# Special Projects



# Special Projects

## Yellowstone Bison

- Players: NPS, USDA-APHIS, Fort Peck Assiniboine and Sioux Tribes
- 95 bison in QUARANTINE in the Stephens Creek facility
- 2018 Target Population: 3,600 before calving; 4,200 after
- Secretary requested a RANGE CARRYING CAPACITY assessment
  - NPS has set aside \$75,000
  - Presently developing assessment parameters
- Montana, USDA-APHIS and NPS FINALIZING PROTOCOLS for quarantine and transfer
- Goal: FIRST BISON TO TRANSFER to Fort Peck in October-November





**From:** [Dan Wenk](#)  
**To:** [Mihalic, David](#)  
**Subject:** Re: Bison  
**Date:** Monday, June 11, 2018 10:27:31 AM

---

Can I call later this morn8ng

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

On Jun 11, 2018, at 10:07 AM, Mihalic, David <[david\\_mihalic@ios.doi.gov](mailto:david_mihalic@ios.doi.gov)> wrote:

Hi Dan,

I'm to give an update on Bison at the secretary's briefing with assistant secretaries/advisors tomorrow (I just learned...) - anything you want me to say in particular?

I usually just give the present status of the capture/quarantine operation and any updates to the movement to Ft. Peck or the APHIS part -

I'll add that the NPS is working on a proposal for a \$75,000 study of current range science projects that will focus on the bison numbers for the range carrying capacity.

Just looking for input if you have any....

Best,

Dave

--

David A. Mihalic

Senior Advisor to the Secretary  
United States Department of the Interior  
MIB Room 6124  
1849 "C" Street NW  
Washington, D.C. 20240

Phone: 202-208-4130  
cell: 202-706-4978  
[david\\_mihalic@ios.doi.gov](mailto:david_mihalic@ios.doi.gov)

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Wenk, Dan &lt;dan\_wenk@nps.gov&gt;

---

**Re: Bison Brief**

1 message

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**Mihalic, David** <david\_mihalic@ios.doi.gov>  
To: Dan Wenk <dan\_wenk@nps.gov>

Tue, Jun 12, 2018 at 9:29 AM

TNX !!

On Tue, Jun 12, 2018 at 10:32 AM, Dan Wenk <dan\_wenk@nps.gov> wrote:  
Parkwide. We expect northern range end of summer to be about 3,400. Tuesday/Wednesday are better.

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

On Jun 12, 2018, at 6:51 AM, Mihalic, David <david\_mihalic@ios.doi.gov> wrote:

Updates made - an ISSUE which continually comes up on the numbers ("3,750~4,400...") Are these PARK-WIDE or N. Range?

I'll look to next week - a specific day to shoot for being there? Monday? Tuesday?

On Mon, Jun 11, 2018 at 7:18 PM, Dan Wenk <dan\_wenk@nps.gov> wrote:  
Would suggest the following changes. And would like to suggest you come out early next week to develop what we will do with the \$75k. You can stay the supt's house. Give me a call this evening.

"Players: DOI-NPS, DOA-APHIS, Montana and Fort Peck Assiniboine and Sioux Tribes

After 3 serial test 66 male and 24 female remain in quarantine

2018 population after reduction 3,750. First count after calving 4,400

Secretary requested a range carrying capacity assessment

- NPS set aside \$75,000
- meeting with Park week of August 18 to develop and finalize parameters

NPS, APHIS, Montana and Fort Peck Tribes finalizing agreements and protocols

- target to have agreements in place August 1, 2018
- target to move bison to Fort Peck November, December 2018"

Dan Wenk  
Superintendent  
Yellowstone National Park  
(307) 344-2002

On Jun 11, 2018, at 3:24 PM, Mihalic, David <david\_mihalic@ios.doi.gov> wrote:

Attached is what I have with info from our earlier call - happy to adjust with comments!

Dave

--

David A. Mihalic

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&lt;MIHALIC\_Special Projects\_ June 2018.pptx&gt;

--

David A. Mihalic

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# Special Projects



# Special Projects

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