NATIONAL CONSERVATION LANDS

Upper Missouri River Breaks National Monument Science Plan

U.S. Department of the Interior
Bureau of Land Management

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TABLE OF CONTENTS

1 – INTRODUCTION AND SCIENTIFIC MISSION

1.1 PURPOSE OF NATIONAL CONSERVATION LANDS SCIENCE PLANS

The BLM's National Conservation Lands, formally known as the National Landscape Conservation System (NLCS) was administratively established in 2000 and legislatively codified in the Omnibus Public Land Management Act of 2009 (PL 111-11). This system encompasses 905 units spread across over 37 million acres of public lands managed by the Bureau of Land Management (BLM). The BLM is mandated to conserve, protect, and restore the outstanding cultural, ecological, and scientific values of NLCS units. Scientific investigation can aid in the conservation, protection, and restoration of these lands, and therefore, science is strategically planned and organized within NLCS units.

The objectives of NLCS units' science plans are to:

- Identify the scientific mission of the unit.
- Summarize past scientific efforts in the unit and identify the priority needs and management issues within the unit that can be addressed by scientific inquiry.
- Define a strategy for accomplishing the scientific goals of the unit.
- Develop science protocols to, for example, ensure that scientific inquiry does not negatively impact the long-term sustainability of the unit and its resources.
- Create a system to organize scientific reports.
- Help and promote the integration of science into management.

The science plans of NLCS units are considered 'living' documents and should be revised and updated frequently (e.g., 3-5 years). Scientific needs that emerge while implementing a science plan may be added to the plan on an as-needed basis to meet the unit's scientific mission.

Within NLCS units there is an expectation for "identifying science needed to address management issues, communicating those needs to science providers, and incorporating the results into the decision-making process" (BLM 2007). Science has been defined within the BLM several times (BLM 2007, BLM 2008a), but is essentially the study of natural and social phenomena using repeatable observations or experiments. In the context of land management, scientific data are collected, analyzed, and/or synthesized to increase knowledge and support decision-making.

Based on the BLM's NLCS Science Strategy, the goals of science within the NLCS are to: 1) Gain scientific understanding of NLCS resources and landscapes and the benefits they provide the American public; and 2) Apply scientific understanding to management, education, and outreach. The UMRBNM will develop objectives and actions to achieve these goals.

1.2 UNIT AND GEOGRAPHIC AREA DESCRIPTION

On January 17, 2001, the Upper Missouri River Breaks National Monument (UMRBNM) was created through Presidential Proclamation #7398. A vast area of north Central Montana, extending from Fort Benton to the upper reach of the Charles M. Russell National Wildlife Refuge (CMR), was reserved for the purpose of protecting the spectacular array of biological, geological, and historical objects of interest contained within.

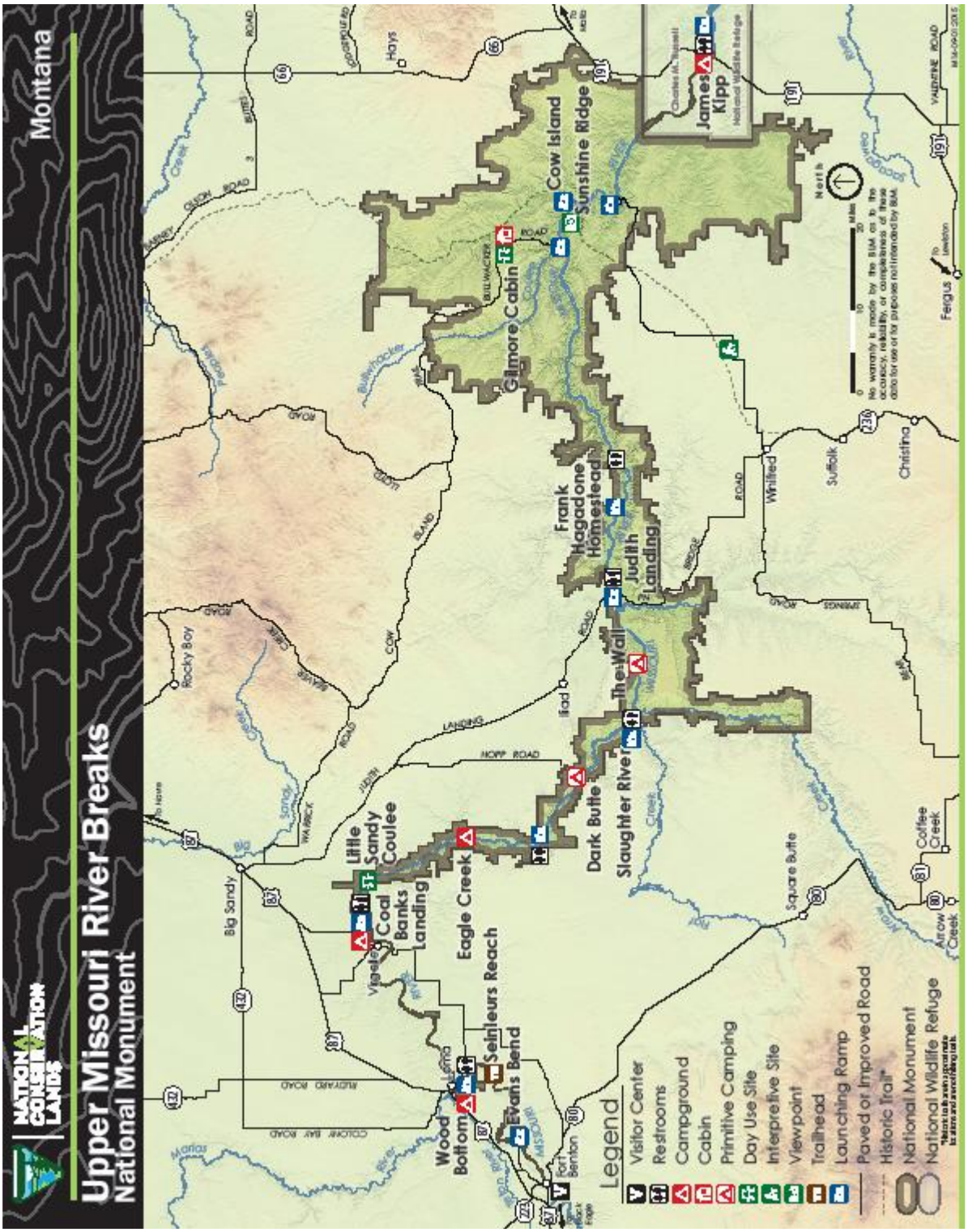
The unit encompasses more than 377,000 surface acres of BLM administered public land, including the 149-mile Upper Missouri National Wild and Scenic River, six wilderness study areas (Antelope, Cow Creek, Dog Creek South, Ervin Ridge, Stafford, Woodhawk), the adjacent Breaks country, and portions of Arrow Creek, Antelope Creek, and the Judith River (Figure 1). UMRBNM is located within the BLM's North Central Montana District with both the Malta and Havre Field Offices to the north, Lewistown Field Office to the south and the CMR to the east. UMRBNM encompasses land in Chouteau, Fergus, Phillips, and Blaine counties. The landscape has remained largely unchanged since Meriwether Lewis and William Clark traveled through it on their epic journey with the Corps of Discovery over 200 years ago.

Acreage

Total Acres in Unit	377,346
BLM Acres	377,346
Other Federal Acres	0
State Acres*	39,000
Private Acres*	80,000

*State and Private Acres are not part of the total unit acres

Figure 1. Map of Upper Missouri River Breaks National Monument



1.3 SCIENTIFIC MISSION

This science plan along with the UMRBNM Approved Resource Management Plan (ARMP) will be used as the basis for conducting science in the Monument. Scientific efforts within the Monument should support the conservation, protection, and restoration of the objects identified in the designating language. The UMRBNM ARMP and Record of Decision (BLM 2008) did not specify goals and objectives with regards to science in the Monument. Few references specifically call out science, research, or scientific use of the Monument. Those few references include:

> *The BLM may authorize research activities by permit (archaeological, historical, and paleontological) (p.13).*
>
> *Prehistoric and historic resources placed in the Scientific Use category will be preserved until their research potential is realized (p.33).*
>
> *The BLM may allow and authorize paleontological research by permit. All BLM land is closed to commercial collecting of paleontological resources under existing policy and regulation (BLM Manual 8270). Permits are issued to accredited institutions to conduct activity on BLM land to ensure that the resource is used for public display and education purposes only. Scientific use allows for survey/reconnaissance or limited excavation work with a minimum amount of surface disturbance if such work is conducted under a paleontological permit and maintains the values for which the Monument was established (pp.41-42).*
>
> *Within the Cow Creek Area of Critical Environmental Concern, scientific use of the resource will be allowed (p.86).*

Specifically, it is the scientific mission of the UMRBNM Science Plan to:

1. Encourage, support, and conduct scientific research within the Monument to improve understanding, management, and protection of the objects of the Monument.
2. Encourage, support, and conduct scientific research while minimizing disturbance and consumption of resources and maximizing benefits to the management goals of the Monument and to the scientific community.
3. Improve baseline knowledge of the species present in the UMRBNM, and general understanding of the ecosystem processes (e.g., food web dynamics, vegetation succession, and water dynamics); cycles (e.g., fire return and nutrient cycles) and anthropogenic influences (e.g., grazing, recreation, oil & gas development/extraction) at work in the Monument.
4. Improve baseline knowledge and general understanding of biological, geological, and historical objects.
5. Improve understanding of the social, economic, and recreational benefits associated with the Monument.

2 – SCIENTIFIC BACKGROUND

2.1 BACKGROUND INFORMATION AND SCIENTIFIC INVESTIGATIONS

The following provides background information relative to Monument resources as well as objects of interest identified within the Proclamation. Notable scientific research relevant to the Monument or its objects is listed as well, however, this is not meant to be exhaustive nor static. A more comprehensive inventory of scientific research or reference material can be found in Appendix 2.

2.1.1 Climate

The Monument has a continental semi-arid climate with hot summers, cold winters, and low annual precipitation, typically averaging 13 inches per year with most of that moisture coming in the month of June as rain. Winifred, Montana, a gateway community near the center of the Monument experiences an average daily high and average daily low temperature of 86.3 degrees and 9.1 degrees Fahrenheit, respectfully, in late July and early January. Since 1979 the average annual temperature of the Monument has increased by 0.2 degrees Fahrenheit per decade, and the average annual precipitation has increased by 0.4 inches per decade (Hegewisch & Abatzoglou, 2024).

Veselka et al. (2024) climate change impact assessment for the Monument addressed potential impacts of climate change on habitat types and select prioritized objects. Overall, the region has experienced a 2 degrees Fahrenheit warming and 10% increase in precipitation in the last four decades. Temperature is expected to increase during the 21st century as the concentration of atmospheric greenhouse gasses increases. The yearly precipitation is expected to increase as well, although there is large variation across different climate projections. The magnitude of projected changes in temperature and precipitation depends on future concentrations of greenhouse gasses, climate variability, and differences among climate models (Veselka et al., 2024).

2.1.2 American Indian Uses and Traditional Practices

Long before Lewis and Clark passed through the Monument, the area was frequented by numerous native tribes, including the Blackfeet, Assiniboine, Gros Ventre (Atsina), Crow, Shoshone, Cheyenne, Sioux, Nez Perce, Plains Cree, and Plains Ojibwa. Though sparse in appearance, the Missouri River landscape provided many resources the tribes needed for daily living, including numerous types of plant and animal life. These tribes lived by following the tremendous herds of bison as the animals roamed the prairie. Other game species, such as elk, antelope, and deer, also provided sustenance. Plants along the Missouri River, such as willow and snowberry, provided for and supplemented their nutritional and medicinal needs. These first peoples utilized the Missouri River as a path of trade and transport. In addition, the river and its tributaries formed tribal boundaries. The confluence of the Judith and Missouri rivers

was the setting for important peace councils in 1846 and 1855. The Nez Perce also spent time in the present-day Monument, most notably in 1877 when they encountered the U.S. Army in the Cow Island Skirmish as they headed north for the Canada border.

2.1.3 Cultural and Historic Resources

The Proclamation discusses the importance of the Monument's archeological and historical resources. Remnants of rich history are scattered throughout the Monument, and the river corridor retains many of the same qualities and much of the same appearance today is it did more than 200 years ago. Historical objects of interest such as the Lewis and Clark and Nez Perce National Historic Trails, teepee rings, abandoned homesteads and lookout sites used by Meriwether Lewis are just a few of those noted in the Proclamation.

Hundreds of cultural resource inventories have been performed for the purpose of compliance with Section 106 and Section 110 of the National Historic Preservation Act. These results are in most cases specific to areas within the Monument and summarize the diverse historic properties within its boundaries. The Montana State Historic Preservation Office maintains digitized copies of these records. To date, two hundred and eighty-five cultural resource inventories have been conducted in the Monument, encompassing 82,493 acres, or 22% of the Monument. The results of these inventories have documented approximately 798 sites, 8 historic districts, 7 National Register listed sites, 2 National Historic Trails, and a portion of the Fort Benton National Historic Landmark.

Each year significant cultural and paleontological locations are monitored by cultural resource staff, the purpose of which is to note any anthropogenic or naturally occurring site changes which may have an adverse effect on the integrity of the resources. This information can in some cases help establish preservation measures as well as influence management practices. In addition to monitoring, significant data collection and preservation methods have been employed regarding historic homesteads within the Monument due in large part to the collection of previously mentioned monitoring data.

From 2003 to 2006, Eckerle et al. (2006) conducted a geoarchaeological assessment of the Monument "to identify which stretches of the Upper Missouri River were most dynamic and which site-bearing landforms were more at risk from river erosion and exposure to vandalism, and which landforms would most likely contain archaeological deposits with preserved context." The results of this report could be used to guide future inventory and monitoring efforts, with specific guidance on examining the impacts of regularly occurring erosion processes as well as a comparative analysis of the impacts of climate change.

2.1.4 Fish and Wildlife

The importance of the Monument's wildlife and wildlife habitats are mentioned in the Proclamation. Many of the biological species described in the Lewis and Clark Journals continue to make the Monument their home. The black-tailed prairie dog was discovered in what is

known today as the Monument. It was collected by Lewis and shipped back to President Jefferson as a species "new to science". Numerous other species are mentioned including elk, big horn sheep, mule deer, antelope, sage grouse, and each of their respective habitats, perching raptors including ferruginous hawk, peregrine and prairie falcon, bald and golden eagle, great blue heron, pelican, and a wide variety of waterfowl. The river and its tributaries also host nearly 50 fish species, including paddlefish, sauger, sicklefin, small mouth buffalo and the endangered pallid sturgeon, just to name a few.

The amount of scientific understanding including status and trends for these objects varies. However, a suite of both annual and periodic monitoring efforts is conducted for targeted BLM sensitive species, many of which are also objects.

At a broad scale, the Monument falls within the Northwestern Plains Rapid Ecoregional Assessment area (BLM 2012). These largely undeveloped wild lands of the Missouri River Breaks and the adjacent U.S. Fish and Wildlife Service's Charles M. Russell National Wildlife Refuge provide some the largest intact landscapes within the entire ecoregion. This results in one of Montana's most viable elk herds and one of the continental United States most premier Rocky Mountain bighorn sheep populations (BLM 2008).

Some of the change agents identified as threats throughout this ecoregion include development, wildfire, invasive species, insect outbreak and disease and climate change (BLM 2012). Within the Monument, the most likely development potential includes range improvement projects constructed in support of grazing management, recreational infrastructure, and oil and gas development. Tillage agriculture does occur on private lands within, as well as adjacent, the Monument. A recent publication by Veselka et al. (2024) discusses multiple climate change scenarios and potential effects to important habitats of the Monument as well as vulnerabilities to select biological objects of interest. Although approximately 20 different climate models of various outputs were reviewed, all models forecast mean annual and seasonal temperatures within the Monument to increase substantially by the end of the century. Mean annual precipitation is expected to increase by the end of the century across most models but the magnitude of increase varies substantially among models.

Recent scientific studies within the Monument include work on spiny softshell turtles using telemetry, remote cameras, and visual surveys to document nesting behavior and habitat use (Tornabene 2014). University of Montana Bird Ecology Lab continues to complete studies on breeding bird populations and habitat conditions (UMBEL 2019, UMBEL 2023), while Holmquist et al. (2017, 2019) continues to concentrate efforts on pallid sturgeon reproductive ecology and movements.

2.1.5 Geology and Paleontology

The Monument contains a spectacular array of geologic objects of interest. The landscape is covered with sedimentary rocks deposited in shallow seas that covered central and eastern

Montana during the Cretaceous period. Glaciers, volcanic activity, and erosion have since folded, faulted, uplifted, and sculpted the landscape to the majestic form it takes today. Lewis described the magnificent White Cliffs with great detail using descriptions such as “elegant ranges of lofty freestone buildings” and “soft sand cliffs … worn into a thousand grotesque figures.”

Numerous studies focused on sedimentary geology, vertebrate taphonomy and terrestrial deposition have been conducted over the past decades with annual operations conducted by Macalester College. Recent studies address the “Judith River – Belly River problem” (Rogers et al., 2023) as well as trematode parasitism of bivalves (Rogers et al., 2018).

2.1.6 Soils

It is a goal of the Monuments to maintain or improve soil health and productivity to provide an ecosystem supporting plant and animal species. Although playing a very integral supporting role for biological objects, soils specific objects were not mentioned in the Proclamation.

A recent study providing insight to sites similar to the Monument include Pellegrini et al. (2020) who studied the influences of repeated fires and the shifting of nutrient cycling and changes to plant inputs and soil decomposition.

2.1.7 Riparian and Aquatic Habitat

A diversity of vegetative communities was identified in the Proclamation - specifically riparian vegetation and cottonwood galleries. The Breaks, in combination with the Missouri River, results in an impressive variety of vegetation communities. River communities show a wide variety of vegetative types with some examples being cottonwood gallery forest types, green ash climax type, silver sagebrush and black greasewood types and many others. Unlike the more extensive bottomland forests of the middle and lower Missouri River, cottonwood forests in the Monument are relatively small, often discontinuous stands of predominantly older trees.

Though the riparian areas within the Monument are in proper functioning condition, much of the research completed along this stretch of the river indicates that the cottonwood galleries are being compromised by flow regulation and natural disturbances such as ice scouring. Flow regulation effect is particularly evident in the reach of the Upper Missouri from Fort Benton to Judith Landing where very limited recruitment of new forest has occurred in recent years. Research has also documented the impacts of beaver and herbivory (wildlife and livestock) to cottonwood gallery health.

Monitoring can be useful for determining a number of background conditions, trends, etc.; and to track the stressors affecting stream health and riparian-related objects of the Monument. As described in the RMP, the goal regarding riparian vegetation is to achieve, or make significant progress toward, proper functioning condition in riparian and wetland areas and to

sustain a diverse age-class and composition of riparian-wetland vegetation for maintenance and recovery of riparian-wetland areas.

Riparian Proper Functioning Condition assessments (Proper Functioning Condition Assessment for Lotic Areas Technical Reference 1737-15 Second Edition) are used to determine the current health of a stream system at a snapshot in time. This information forms part of the basis of the Integrated Riparian Management Process and helps to focus other monitoring or restoration objectives. Over 310 miles of perennial and intermittent streams within the Monument have been assessed.

Multiple Indicator Monitoring (Technical Reference 1737-23) provides long-term trend monitoring along the Missouri River as well as other tributaries. To date, there are 18 monitoring reaches along the Missouri River and 13 in other main tributaries.

Riparian long-term photo point monitoring has been established in key riparian areas. There are over 130 sites along the Missouri River which help track impacts of grazing, ice, fire, beaver, etc. Photo point monitoring has also been established on the lower part of Dog Creek.

Most of the scientific research completed on the various aspects of the riparian and aquatic habitats within the Monument focused on cottonwood galleries and the impact of fire on drainages (groundwater and hillslope movement). The research completed on cottonwood regeneration has helped identify the limiting factors of regeneration and improved the understanding of the historic and current potential of cottonwood extent. Additionally, a study by Clayton et al. (2006) completed in the Breaks specifically as well as other studies in similar locations have tracked the impact of prescribed fire and illustrated the level of increased hillslope movement and groundwater following these activities.

2.1.8 Livestock Grazing and Vegetation

Livestock grazing persists within the Monument as the Proclamation stated “laws, regulations and policies followed by the Bureau of Land Management in issuing and administering grazing permits or leases on all lands under its jurisdiction shall continue to apply with regard to the lands in the Monument.” The allocation of forage for livestock grazing was established following the Taylor Grazing Act of 1934. Since that time, several laws, regulations, and changes have revised livestock grazing on BLM land (BLM 2008). Livestock grazing is managed through current grazing regulations and the implementation of Standards for Rangeland Health and Guidelines for Livestock Grazing Management (BLM 1997). The RMP identified goals to permit livestock grazing consistent with maintaining healthy vegetation communities and to manage for healthy vegetation communities that provide for a wide variety of long-term benefits such as aesthetics, wildlife, recreation, livestock grazing, etc.

The purpose of upland monitoring is to help the BLM make informed decisions when developing and executing grazing strategies. Upland monitoring is conducted through a couple different studies that provide the BLM specific quantitative data. The Assessment, Inventory,

and Monitoring (AIM) study incorporates protocol to methods that generate indicators which represent the minimum information necessary to describe three key ecosystem attributes: Soil and site stability, watershed function, and biotic integrity. For example, the line-point-intercept method measures soil cover, vegetation cover (see Table 1), litter cover, rock cover, and biological crust cover. The other core methods are vegetation height, gap intercept, and soil stability. AIM points are randomly generated annually across a specified strata on BLM lands. The data collected are correlated with the sites topographic, soil, and satellite imagery pixel characteristics. AIM data continually feeds into imagery-based models, such as the Rangeland Analysis Platform (RAP) Tool, allowing the models to make better ground cover estimates. The RAP tool is then used to detect areas with rangeland health issues to focus management on.

The BLM has determined areas within the Monument that require routine monitoring to track trends and quantify the effects of current grazing management on rangeland health. The UMRBNM refers to these monitoring points as 'legacy' points. The methods used to collect data at legacy points may include line point intercept, vegetation height, soil stability, Daubenmire, Robel pole, photo point, and species inventory depending on the management objectives and their indicators. Roughly 64 legacy points exist within the Monument and many of them have been returned to since the 1970's. Comparing data from the past with current data provides trend information. Trend information helps the BLM observe changes on the landscape and the effect current livestock grazing management has on rangeland health over time. Observations gathered from legacy point monitoring data helps specialists determine whether current grazing management is maintaining or making significant progress toward meeting the Standards for Rangeland Health and to make management decisions.

Table 1. Top 20 species from 119 AIM points across the Monument; average percent cover with standard deviation (SD) is shown for sites where species were present at higher than trace amounts. Although access and design constraints mean these data points are unable to adequately sample the Monument as a whole, they do help characterize the grass-dominated benches and valley bottoms found throughout the Monument.

Species	Sites Present (% of Total)	Average Cover ± SD (# sites included)
western/thickspike wheatgrass	119(100)	10.5±10.7(110)
Wyoming big sage	98(82)	8.2±6.6(84)
bluebunch wheatgrass	94(79)	8.0±8.3(87)
annual bromes	90(76)	8.5±10.1(60)
prairie Junegrass	85(71)	3.2±3.3(68)
western yarrow	82(69)	2.3±2.0(45)
Sandberg's bluegrass	77(65)	4.4±4.7(60)
fringed sagewort	76(64)	2.7±3.1(29)
bastard toadflax	74(62)	1.7±2.4(30)

salsify	74(62)	1.1±.6(15)
ponderosa pine	69(58)	9.8±11.2(59)
rocky mountain juniper	67(56)	13.3±12.0(60)
American vetch	64(54)	1.5±1.2(28)
prairie sandreed	60(50)	4.0±4.4(41)
green needlegrass	60(50)	4.7±4.5(35)
rubber rabbitbrush	60(50)	2.1±2.1(28)
broom snakeweed	60(50)	1.6±1.1(22)
curlycup gumweed	58(49)	0.9±0.3(6)
yellow sweet clover	52(44)	6.4±9.7(31)
blue grama	48(40)	5.1±7.0(37)

Forage utilization plays a major factor in upland health, whether that is use from livestock or wildlife. The removal of vegetation directly affects plant vigor and reproductive capabilities. Therefore, it is vital that utilization levels do not exceed what the vegetation communities can support. Managing forage utilization in the Monument is made difficult due to the landscape's topography, limited water sources, and coniferous woodlands. All these factors effect grazing use patterns because they limit available forage for livestock. Steep slopes, proximity to water, and dense stands of coniferous trees restrict where livestock will graze on the landscape and therefor result in uneven forage utilization. The BLM monitors forage utilization to understand forage utilization patterns in the Monument. Understanding where use is occurring, or not occurring, and to what level, helps the BLM make management decisions. The most common utilization study method the BLM uses in the Monument is the paired plot method referenced in the Utilization Studies and Residual Measurements Technical Reference (TR 1734-3, 1996). Under this method, forage from protected and unprotected plots is clipped and weighed at the end of the grazing season. The difference represents the amount of forage consumed or destroyed by animals during that period. There are currently 22 paired plot utilization monitoring sites within the Monument.

2.1.9 Noxious and Invasive Species

The BLM has developed a management plan for invasive plants in the UMRBNM. This plan is revisited about every 10 years (or as need may arise) to incorporate new practices and address changes in policy, management, etc. As part of this process, the transportation network and Wild and Scenic River Corridor is surveyed to collect data to compare to baseline information established between 1999 and 2000.

There are several sites in the UMRBNM that have been established to monitor classical biological weed control. Monitoring at these sites utilizes the Standard Impact Monitoring Protocol (SIMP) established for biological control systems in the Western U.S.A.

Many terrestrial noxious and/or invasive plant species are present within the Monument. This includes plants such as annual bromes, leafy spurge, spotted knapweed, Russian olive, and tamarisk. Both BLM staff and cooperators perform invasive species treatments annually throughout the Monument. Surveys are conducted periodically in backwaters, sloughs, and areas of high recreation use for the presence absence of several aquatic invasive plants.

The Monument seeks to assist relevant research in invasive species management in Montana whenever possible. Most of this activity has involved biological weed control. The USDA Agricultural Research Service has used sites in the Monument as part of a statewide effort to determine why some sites are better suited for biological control agents (*Aphthona spp. Oberea erythrocephala*) on leafy spurge (*Euphorbia esula, E. virgata*). Researchers from Montana State University and the USFS Rocky Mountain Research Station have conducted mite surveys on Russian olive (*Elaeagnus angustifolia*) to determine if a species that had been identified as a potential biological control agent had been inadvertently introduced to North America. The Monument has also participated in surveys for Eurasian watermilfoil (*Myriophyllum spicatum*) in coordination with state agencies when populations were identified upstream (Canyon Ferry) and downstream (Fort Peck Reservoir/Dredge Cuts) of the Monument.

2.1.10 Recreation and Travel Management

The Monument provides vast recreational opportunities with a goal to manage for a variety of sustainable visitor opportunities in mostly primitive and natural landscapes. The RMP called out a recreation emphasis to develop and maintain opportunities for dispersed recreation activities such as hunting, hiking, scenic and wildlife viewing and driving for pleasure, consistent with current policies, practices, and the Proclamation. However, no specific mention of recreation is made in the Proclamation.

With completion of the RMP in 2008, the Monument updated portions of the river management plan. Changes were made to the seasonal motorized watercraft travel restrictions on the 149-mile wild and scenic river. Additionally, travel management planning was completed at that time to designate roads within the Monument as open, limited or closed.

Brown et al. (2015) employed a semi-structured, key informant interview method to gain understanding of visitor experiences within the Monument. Similar themes resulted from interview questions with respondents identifying important places or features within the Monument as well as those feelings experienced while recreating. Similarly, the Public Lands Recreation Research Partnership (PLRRP) conducted research on outdoor recreation taking place within the Monument and its impacts on surrounding landscapes and communities (Casey 2023). A final report detailing Outcome Focused Management was completed in 2023 with many themes shared and a deep connection and love for the landscape revealed by respondents of local communities.

2.1.11 Fire and Fuels Management

The BLM's goal is to manage wildland fire safely, efficiently and with minimal impact to resource values while minimizing the risk of catastrophic fire within the Monument and communities adjacent to the Monument. This includes maintaining or reestablishing the natural influence of fire on vegetation communities and associations (BLM 2008). The Missouri River Breaks is a product of multiple levels of varying disturbance including highly erosive soils, geology, and frequent fire return intervals.

Tree densities of conifer in the Monument have experienced great departure from historical vegetation reference conditions with areas of woodland stands encroaching upon adjacent sagebrush steppe. Wyoming big sagebrush recovery from fire, both prescribed and wild, is extremely slow in the Missouri River Breaks (Cooper et al., 2007). In recent years, multiple habitat enhancement and mechanical fuels mitigation projects have been completed in and adjacent to sagebrush steppe habitats. Together, BLM personnel and contracted crews have utilized various treatments including lop and scatter, cut and pile, and mastication to treat targeted conifer encroachment into sagebrush steppe. These mechanical treatments totaled 9,079 acres of treated sagebrush habitat since 2019.

Prescribed fire treatments in woodland dominated landscapes have been implemented throughout portions of the Monument to mitigate severity of wildfires as well as enhance and protect wildlife habitat. In 2024, prescribed fire was reintroduced to the Monument for the first time in over a decade as a management tool in the Two Calf and Antelope Creek drainages. These prescribed fires treated a total of 5,550 acres of conifer woodlands.

Ponderosa pine stands sustain themselves in the presence of frequent, low intensity fires that reduce ground fuels and competing conifer vegetation while posing little threat to the dominant Ponderosa pine overstory. The presence of Douglas fir and tree age classes suggest that fire return intervals differ from those of the neighboring Musselshell breaks and eastern portions of the Missouri River Breaks. It is assumed that a century of fire suppression has altered historic fire regimes within portions of the Monument thus resulting in often higher severity and longer duration wildfires. Ponderosa pine/Douglas-fir plots sampled by Mangan (2004) revealed Douglas-fir ranged from 64-205 years old (average age: 121.6) at diameter at breast height (DBH) with a DBH range of 4 –15" (average DBH: 9.6"). The ages and sizes of these Douglas-fir, coupled with the lack of fire scars on many sites, gives evidence of the lack of fires that have affected these stands over the past 100-200 years (Mangan 2004).

When frequent, low-intensity fires are reduced or eliminated from Ponderosa pine stands, ground and ladder fuels accumulate and other conifer species like Douglas-fir begin entering the site. If ignition occurs in these sites and burning conditions are conducive to rapid spread, the result is often a high intensity, stand replacing fire (Mangan 2004). Per the UMRBNM ARMP and Record of Decision (BLM 2008), prescribed burns will be used in the Monument to protect

infrastructure or wildlife habitat that would be permanently lost in the event of a catastrophic fire, to achieve desired plant communities, and to reduce hazardous fuel loads.

3 – IDENTIFICATION AND PRIORITIZATION OF SCIENCE NEEDS

3.1 SCIENTIFIC NEEDS

The scientific needs of UMRBNM are based on pressing management questions as well as lack of known information and frequently change as management decisions are made and new concerns arise. As a result, the scientific needs will remain fluid and opportunities for research should remain open and inclusive. The Monument's current science needs, as determined in the RMP and through specialist input, are listed in Table 2. Priority levels have been assigned to each desired research topic or question and are described as such:

High: Research that is critical to inform management decisions within 1-3 years.

Medium: Research that could be relevant to future management.

Low: Research that will advance the scientific understanding but that is not immediately relevant to management decisions.

Table 2. Science needs in UMRBNM.

Resource/Topic Area	Desired Research Topic/Question	Priority Level
American Indian Uses and Traditional Practices	What traditional use areas, sites, cultural landscapes, or biological resources within the Monument hold significance to Tribes?	High
	What factors influenced Native Americans to utilize particular ecosystems in the Upper Missouri River Breaks region traditionally?	Medium
	What are traditional place names within the Monument and what could that tell us about resources present or traditional relationships with the landscape?	Medium
Cultural and Historic	How should awareness, education, public use, and interpretation of historical objects be provided to the public without compromising the resource	Medium
	How should historic structures of the Monument be utilized that best integrates public use and the goals of historic preservation? Research into period correct construction, repair techniques, and methods to accurately repair and stabilize historic structures.	High
	How can we improve our understanding or develop preservation methods through the application of new technologies for cultural resource management in the Monument?	Low/Med.

	- Evaluating the influence of these technologies in detecting changing archaeological/paleontological patterns across time, from geological, paleontological, pre-historical, proto-historical, historical eras. -Improving understanding of the likely returns from differing methodologies applied in a variety of contexts, with the aim of formulating better and more holistic research strategies. -Improving planning and conservation strategies and policies in the Monument. This could have a potentially significant impact on the quality of heritage conservation, but also on business and employment in the area. -use new technologies and methodology to non-invasively identify, preserve, document, or evaluate archaeological/paleontological sites and objects of the Monument.	
	How can an archaeological research effort over large geographic areas within the monument be prioritized to concentrate resources in areas most likely to produce scientifically significant results	Med./High
Fish and Wildlife	Are burrowing owls present within the Monument and where do they exist	Medium
	What effect does concentrated public use of riparian woodlands have on avian communities	Med./High
	How are mechanical habitat treatments influencing avian communities in sagebrush habitats	Low/Med.
	Are pollinator species utilizing the Monument and what locations provide the greatest opportunity for enhancing their habitat	Medium
	What role do tributaries including Arrow Creek, Birch Creek, Dog Creek, Cow Creek etc. play in fish ecology of the Missouri River	Medium
	What is the extent of bat hibernacula within the Monument	Medium
	Is cavity nesting habitat for avian species limited in the Monument's river corridor	Medium
Geology and Paleontology	How can paleontology research effort over large geographic areas be prioritized to concentrate resources in areas most likely to produce scientifically significant results	High
	What effect does concentrated public visitation have on the erodibility of geologic features and trails	Low/Med.
Soils	Understand the general relationship between river dynamics (disturbance processes), organic matter, and potential	Low

	vegetation on the upper Missouri River (Research opportunity identified in the Upper Missouri River Riparian PFC Assessment Report - April 2012).	
	Continue the partnership between BLM and NRCS to collect and analyze ecological site data for the development and revision of Ecological Site Descriptions/Ecological Site Groups and Reference Worksheets.	Medium
	Does livestock grazing during wet/moist soil conditions lead to the expansion of panspots?	Low
Riparian and Aquatic Habitat	What is the projected potential for woody riparian vegetation (all species) considering current impacts from beaver, ice jams, climate change, and altered hydrologic flows. What should be the diversity and distribution of non-cottonwood woody species along the mainstem Missouri River as well as larger tributaries. And how critical are these groves to wildlife species.	Low/Med.
	What stream restoration techniques work best in dispersal clay and salt dominated soils	Medium
	What is the green ash population and distribution within the Breaks and what is their vulnerability (assessment needed). How will future climate changes impact the spread of emerald ash borer?	Low/Med.
	Distribution and quality of groundwater dependent ecosystems and associated species	Medium
	How will a changing climate impact the streamflow volatility and will this offset the impacts of streamflow restrictions on riparian resources and woody regeneration?	Low
	At what level has increased conifer cover within the Monument (Breaks) impacted groundwater movement and riparian/spring areas?	Medium
	How significant an impact will additional water restrictions/storage from large and small reservoirs (including stockwater reservoirs) have on streamflow and sediment transport within sub-watersheds of the Monument?	Medium
	To what extent is BLM management affecting water quality throughout the UMNWSR?	Medium
	How would proposed flow release modification from upstream dams influence current water quality trends with the UMNWSR?	Low
Recreation and Travel Management	How can we incorporate or implement results of the 2024 Outcomes Focused Management studies?	Medium
	What objects of the Monument are most at risk with increased recreational activity?	Medium
	How has the creation and management of the UMRBNM affected the ORVs identified in the UMNWSR?	Low
Livestock Grazing and Vegetation	Is virtual fencing a viable alternative to traditional livestock management in the breaks?	Low/Med.

	What are best management practices for restoring upland vegetative resources in the Monument?	Medium
Noxious and Invasive Species	What noxious/invasive species pose the greatest threat to land health and Monument Objects?	Medium
	Are biological weed control agents influencing targeted species and how can BLM best integrate their use?	Low/Med.
	What are the ecological effects of Russian olive expansion in the Monument and what are the best ways to remove and reclaim infested sites?	Med./High
	How are ecosystem processes affected by annual grass invasion: including fire regimes, insect and animal diversity and abundance?	Low
	Can crested wheatgrass be effectively converted to desirable vegetation types within previously disturbed sites?	Low
	How are BLM recognized sensitive plants identified and managed in the Monument?	Medium
Fire and Fuels Management	How does Douglas fir distribution densities influence fire behavior in Ponderosa Pine/Rocky Mountain Juniper dominated landscapes?	High
	What age class and DBH of conifer species should be targeted for removal in forested stands?	Medium
	What is the history of Quaking Aspen in the UMRBNM? Is it naturally occurring or coincidental?	Low
	What role does, or should, fire play in riparian forests in the UMRBNM?	Medium
	Which remote sensing data product most accurately describes existing and desired vegetative condition in the UMRBNM?	High
	How has human disturbance, including steamboats/woodhawks, homesteading, and agriculture, shaped fire return intervals in the UMRBNM?	Medium
	What is the appropriate disturbance regime for sagebrush ecosystems in the UMRBNM?	Medium

4 – MEETING SCIENCE NEEDS

4.1 INTERNAL ORGANIZATION

An effective internal organization is necessary to strategically identify and address science in the Monument. The internal organization is effective if it promotes ***interdisciplinary*** awareness among staff and scientists. Specifically, communication among scientist and specialists in different disciplines is critical for successful incorporation of science pertaining to management of the Monument.

In the absence of a Science Coordinator, the Monument Manager will serve as the principal manager of scientific inquiries. The role of a science coordinator includes:

- Coordinate and collaborate to identify and prioritize the Monument's science needs.
- Serve as the contact person for scientific inquiries within the Monument.
- Ensure that partners and collaborators are familiar with the science needs and priorities outlined in this plan and to reach out to potential new science partners.
- Coordinate with staff to approve science proposals.
- Ensure that results of scientific inquiries are available to BLM staff, in appropriate formats, including progress and final reports.
- Communicate results of scientific inquiries to researchers, staff, and managers both within and outside of the BLM, and to the public when appropriate.
- As necessary, coordinate and collaborate to update and revise the Monument's science plan.
- Conduct needed monitoring and scientific inquiries, as time permits, within the Monument.
- Interpret long-term data and periodically publish results, as appropriate.

4.2 COLLABORATION AND PARTNERS

Collaboration and open communication with existing and potential science partners is critical to the success of implementing the Science Plan. As daily operations often preclude BLM field staff from rigorous scientific study, partnering with multiple outside entities can greatly increase the BLM's ability to use science to inform management decisions and actions.

There are numerous potential partners for scientific study. When appropriate, the Monument will coordinate research needs through the cooperative networks and with appropriate partners. This science plan will be available on the BLM science program website and provided to partners upon request. Great potential exists for citizen science opportunities with visitors longing for an opportunity to engage in science important to the Monument.

Current scientific partnerships include:

- Macalester College: sedimentary geology, vertebrate taphonomy and terrestrial deposition
- Montana Department of Fish, Wildlife and Parks: Pallid sturgeon radio tracking and resource selection
- Montana State University/University of Montana: Invasive species ecology, management, and control
- Northwestern Energy: Cavity Nesting bird study, riparian vegetation/cottonwood enhancement, Missouri River bird monitoring
- University of Montana Bird Ecology Laboratory: Breeding birds, habitat conditions, and trends
- University of Montana O'Connor Center for the Rocky Mountain West: Data collection and logistics for Assessment, Inventory, and Monitoring points.
- USDA Agricultural Research Service: Invasive species ecology, management, and control
- USDA Natural Resource Conservation Service: Ecological Site Description Revisions

5 – SCIENCE PROTOCOLS

5.1 GENERAL SCIENCE GUIDELINES

It is anticipated that three main types of science are likely to occur within the Monument:

1. Assessment, inventory, and monitoring.
2. Solicited science addressing management questions/science needs.
3. Unsolicited contributed scientific studies.

General guidelines that apply to all of types of science in the Monument include:

1. All scientific investigation must comply with relevant laws and regulations.
2. All non-permitted external scientific investigations must be authorized, according to the procedures described below and as stated in the RMP. The final decision maker for granting authorization will be the Monument manager.
3. Science should not impact the long-term health or sustainability of the resources of the Monument, especially the objects for which the Monument was designated.
4. A balance must be maintained between research and education, and preservation and protection of Monument resources.
5 Scientists initiating research projects within the Monument should be aware of existing data within the BLM and should incorporate these data into projects whenever possible.
6 Proposed research within the six wilderness study areas should comply with appropriate laws and regulations including the Wilderness Act of 1964 and BLM wilderness policy (Manual 6340).
7 Monument staff should use all available monitoring protocols to achieve adequate monitoring of the resources of the Monument.

5.2 SCIENCE AUTHORIZATIONS AND TRACKING PROCESS

Currently, there is no formal process for scientific authorizations with the Monument outside of the state-wide process for permitting paleontological and archaeological research. The process described below is not meant to replace or duplicate these processes. When a prior process is already in place, it will take precedence, and researchers will only need to complete one permitting process. The process outlined below will only take affect when no other permitting process applies. However, permits and authorizations will be shared between appropriate state, field office and Monument staff for research taking place within the Monument.

All requests should be carefully considered, weighing potential benefits and costs. The following process has been adapted from other NLCS units.

1. Scientist submits proposal to Monument science coordinator.
    a. Proposals must include:
        i. Contact information for the principal investigator
        ii. Summary of proposed research (not to exceed 3 pages) including

1. A brief explanation of background information.
2. Rationale for research.
3. Research methods.
4. Timeline for work to be completed.
5. Outline of public outreach effort, if appropriate.
6. Description of the proposed products to be generated (publications, reports, collections, GIS data, etc.).

2. The proposal will be considered by the Monument science coordinator for completeness. The coordinator will consult with staff specialists, as appropriate, to determine if the proposal is:
   a. Complete.
   b. Conforms to the UMRBNM Science Guidelines (including all relevant laws and regulations).
   c. Conforms to the UMRBNM Resource Management Plan.
   d. Meets the UMRBNM scientific mission.

3. The science coordinator will brief the Monument manager on the review of the science proposal. Subsequently, the Monument manager (or the manager's designee) will grant or deny authorization to conduct the scientific investigation.
4. If a proposal is denied authorization:
   a. A letter of denial will be provided to the scientist and will include justification for the denial.
5. If a proposal is granted authorization:
   a. A determination will be made as to what, if any, NEPA analysis is necessary.
   b. A letter of authorization will be provided to the scientist, signed by the UMRBNM manager (or the manager's designee). The authorization may include stipulations such as NEPA analysis requirements, time limits, geographic limits, reporting requirements, and public outreach requirements.
   c. The proposal will be added to an internal tracking document of on-going scientific investigations in UMRBNM, accessible by all UMRBNM staff.
   d. Reporting requirements for all scientific investigations will require:
      i. Progress reports (at least annually), filed with the science coordinator.
         1. Progress reports should include status of the investigation and preliminary findings when possible.
      ii. Final reports, filed with the science coordinator, should include:
         1. Research background and results.
         2. Discussion of the results including how the results are relevant to the NLCS unit and potential management decisions.
         3. A summary of the public outreach effort, if appropriate.
         4. Raw data where appropriate.
         5. Electronic copies of any published papers resulting from the scientific investigation.
      iii. Manager's summary reports, brief presentations to BLM, which ensure that:
         1. Management questions are answered.

2. Managers have a full understanding of scientific findings; and
3. Managers can incorporate these findings into management decisions.

iv. If results of research are not sensitive material (e.g. archaeological site location), incorporate a public outreach component.

6. The authorization is routed to UMRBNM staff. Sensitive or proprietary information should be excluded from public information for protection of resources.
7. Research is initiated and conducted according to the stipulations outlined in the authorization.
8. Research is completed, with the final report filed with the science coordinator.

6 – ORGANIZATION AND COMMUNICATION OF COMPLETED SCIENCE

6.1 INTERNAL ORGANIZATION OF COMPLETED SCIENCE

All reports, as described in Section 5, submitted to the Monument science coordinator will be stored and organized on a shared drive, or via a similar medium (e.g., a SharePoint site), accessible by all UMRBNM staff. The science coordinator should aim to organize periodic presentations of scientific results to UMRBNM staff.

6.2 CONTRIBUTIONS TO BROADER BLM ORGANIZATIONS OF COMPLETED SCIENCE

The Monument science coordinator will comply, in a timely manner, with all requests for completed scientific investigations, information, and/or reports from BLM Field Offices, District Offices, State Offices, and National Headquarters.

6.3 COMMUNICATING SCIENTIFIC RESULTS TO THE PUBLIC

The science coordinator will strive to make information on science projects within the Monument accessible to the public. The format to present material may include but is not limited to links to short informational videos or written descriptions of scientific inquiries occurring within the Monument, public presentations, and citations of published research papers. The public has a vested interest in the Monument, which is heavily utilized by varied outdoor enthusiasts. Thus, sharing what research is occurring (or has occurred) within the Monument and why it is occurring (or has occurred) should be a priority, and can help avoid confusion and discontent that can stem from misunderstandings about the nature of scientific inquiries. However, while communication with the public is important, sensitive information about certain scientific projects may need to be kept confidential to ensure the protection of these resources.

7 – INTEGRATING SCIENCE INTO MANAGEMENT

7.1 INTEGRATING SCIENTIFIC FINDINGS INTO MANAGEMENT DECISIONS

It is the responsibility of the science coordinator to ensure that scientific findings are communicated to managers and specialists. Managers can then use scientific information as they deem appropriate.

Written progress reports, final reports, published papers, and manager's summary will all be available to decision-makers, as described in Section 6, to help inform decisions. Furthermore, direct dialogue between scientists and managers will be encouraged.

8 – SIGNATURE PAGE

I approve the Upper Missouri River Breaks National Monument Science Plan.

This plan will be used as the basis for conducting science in the Upper Missouri River Breaks National Monument, the Upper Missouri National Wild and Scenic River, the Lewis and Clark National Historic Trail, the Nez Perce National Historic Trail, six wilderness study areas (Cow Creek, Dog Creek South, Stafford, Woodhawk, Ervin Ridge, and Antelope Creek), and the Cow Creek Area of Critical Environmental Concern.

As a living and working document this plan will be updated no less than every five years, preferably more frequently. Scientific needs that emerge during implementation of this plan may be added to the plan on an as-needed basis to meet the unit's scientific mission.

JESSE HANKINS Digitally signed by JESSE HANKINS
Date: 2024.12.18 14:00:27 -07'00'

Jesse Hankins, Monument Manager (Acting) Date
Upper Missouri River Breaks National Monument

ZANE FULBRIGHT Digitally signed by ZANE FULBRIGHT
Date: 2024.12.18 14:08:01 -07'00'

Zane Fulbright, District Manager Date
North Central Montana District

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APPENDIX 1 – PRESIDENTIAL PROCLAMATION

Proclamation 7398—Establishment of the Upper Missouri River Breaks National Monument
January 17, 2001
By the President of the United States of America A Proclamation

The Upper Missouri River Breaks National Monument contains a spectacular array of biological, geological, and historical objects of interest. From Fort Benton upstream into the Charles M. Russell National Wildlife Refuge, the Monument spans 149 miles of the Upper Missouri River, the adjacent Breaks country, and portions of Arrow Creek, Antelope Creek, and the Judith River. The area has remained largely unchanged in the nearly 200 years since Meriwether Lewis and William Clark traveled through it on their epic journey. In 1976, the Congress designated the Missouri River segment and corridor in this area a National Wild and Scenic River (Public Law 94-486, 90 Stat. 2327). The Monument also encompasses segments of the Lewis and Clark National Historic Trail, the Nez Perce National Historic Trail, and the Cow Creek Island Area of Critical Environmental Concern. Lewis and Clark first encountered the Breaks country of the Monument on their westward leg. In his journal, Clark described the abundant wildlife of the area, including mule deer, elk, and antelope, and on April 29, 1805, the Lewis and Clark expedition recorded the first big horn sheep observation by non-Indians in North America. Lewis' description of the magnificent White Cliffs area on the western side of the Monument is especially vivid, and not just for his sometimes colorful spellings: "The hills and river Clifts which we passed today exhibit a most romantic appearance. . .. The bluffs of the river rise to hight of from 2 to 300 feet and in most places nearly perpendicular; they are formed of remarkable white sandstone which is sufficiently soft to give way readily to the impression of water . . . "The water in the course of time . . . has trickled down the soft sand clifts and woarn it into a thousand grotesque figures, which with the help of a little immagination and an oblique view, at a distance are made to represent eligant ranges of lofty freestone buildings, having their parapets well stocked with statuary; collumns of various sculptures both grooved and plain, are also seen supporting long galleries in front of these buildings; in other places on a much nearer approach and with the help of less immagination we see the remains or ruins of eligant buildings; some collumns standing and almost entire with their pedestals and capitals; others retaining their pedestals but deprived by time or accident of their capitals, some lying prostrate an broken othe[r]s in the form of vast pyramids of conic structure bearing a serees of other pyramids on their tops . . . As we passed on it seemed as if those seens of visionary inchantment would never have and [an] end; for here it is too that nature presents to the view of the traveler vast ranges of walls of tolerable workmanship, so perfect indeed are those walls that I should have thought that nature had attempted here to rival the human art of masonry . . ." The Monument is covered with sedimentary rocks deposited in shallow seas that covered central and eastern Montana during the Cretaceous period. Glaciers, volcanic activity, and erosion have since folded, faulted, uplifted, and sculpted the landscape to the majestic form it takes today. The area remains remote and nearly as undeveloped as it was in 1805. Many of the biological objects described in Lewis' and Clark's journals continue to make the Monument their

home. The Monument boasts the most viable elk herd in Montana and one of the premier big horn sheep herds in the continental United States. It contains essential winter range for sage grouse as well as habitat for prairie dogs. Lewis sent Jefferson a prairie dog specimen which was, as Lewis noted at the time, "new to science." Abundant plant life along the River and across the Breaks country supports this wildlife. The lower reach of the Judith River, just above its confluence with the Missouri, contains one of the few remaining fully functioning cottonwood gallery forest ecosystems on the Northern Plains. Arrow Creek, originally called Slaughter River by Lewis and Clark, contains the largest concentration of antelope and mule deer in the Monument as well as important spawning habitat for the endangered pallid sturgeon. An undammed tributary to the Missouri River, Arrow Creek is a critical seed source for cottonwood trees for the flood plain along the Missouri. The cliff faces in the Monument provide perching and nesting habitat for many raptors, including the sparrow hawk, ferruginous hawk, peregrine falcon, prairie falcon, and golden eagle. Several pairs of bald eagles nest along the River in the Monument and many others visit during the late fall and early winter. Shoreline areas provide habitat for great blue heron, pelican, and a wide variety of waterfowl. The River and its tributaries in the Monument host forty-eight fish species, including goldeye, drum, sauger, walleye, northern pike, channel catfish, and small mouth buffalo. The Monument has one of the six remaining paddlefish populations in the United States. The River also supports the blue sucker, shovel nose sturgeon, sicklefin, sturgeon chub, and the endangered pallid sturgeon. The Bullwacker area of the Monument contains some of the wildest country on all the Great Plains, as well as important wildlife habitat. During the stress-inducing winter months, mule deer and elk move up to the area from the river, and antelope and sage grouse move down to the area from the benchlands. The heads of the coulees and breaks also contain archeological and historical sites, from teepee rings and remnants of historic trails to abandoned homesteads and lookout sites used by Meriwether Lewis. Long before the time of Lewis and Clark, the area was inhabited by numerous native tribes, including the Blackfeet, Assiniboin, Gros Ventre (Atsina), Crow, Plains Cree, and Plains Ojibwa. The confluence of the Judith and Missouri Rivers was the setting for important peace councils in 1846 and 1855. In 1877, the Nez Perce crossed the Missouri and entered the Breaks country in their attempt to escape to Canada. The Cow Island Skirmish occurred in the Breaks and was the last encounter prior to the Nez Perce surrender to the U.S. Army at the Battle of Bear Paw just north of the Monument. Pioneers and the Army followed Lewis and Clark in the 1830s establishing Fort Piegan, Fort McKenzie, and Fort Benton. Remnants of this rich history are scattered throughout the Monument, and the River corridor retains many of the same qualities and much of the same appearance today as it did then. Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national Monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected. Whereas it appears that it would be in the public interest to reserve such lands as a national Monument to be known as the Upper Missouri River Breaks National Monument: Now, Therefore, I, William J. Clinton, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat.

225, 16 U.S.C. 431), do proclaim that there are hereby set apart and reserved as the Upper Missouri River Breaks National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Upper Missouri River Breaks National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 377,346 acres, which is the smallest area compatible with the proper care and management of the objects to be protected. All Federal lands and interests in lands within the boundaries of this Monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the Monument. The establishment of this Monument is subject to valid existing rights. The Secretary of the Interior shall manage development on existing oil and gas leases within the Monument, subject to valid existing rights, so as not to create any new impacts that would interfere with the proper care and management of the objects protected by this proclamation. The Secretary of the Interior shall prepare a transportation plan that addresses the actions, including road closures or travel restrictions, necessary to protect the objects identified in this proclamation. For the purpose of protecting the objects identified above, the Secretary shall prohibit all motorized and mechanized vehicle use off road, except for emergency or authorized administrative purposes. Lands and interests in lands within the proposed Monument not owned by the United States shall be reserved as a part of the Monument upon acquisition of title thereto by the United States. The Secretary of the Interior shall manage the Monument through the Bureau of Land Management, pursuant to applicable legal authorities, including the National Wild and Scenic Rivers Act, to implement the purposes of this proclamation. Because waters of the Upper Missouri River through the Monument area have already been reserved through the Congress's designation of the area as a component of the National Wild and Scenic River System in 1976, this proclamation makes no additional reservation of water, except in two small tributaries, the Judith River and Arrow Creek. These tributaries contain outstanding objects of biological interest that are dependent on water, such as a fully functioning cottonwood gallery forest ecosystem that is rare in the Northern Plains. Therefore, there is hereby reserved, as of the date of this proclamation and subject to valid existing rights, a quantity of water in the Judith River and Arrow Creek sufficient to fulfill the purposes for which this Monument is established. Nothing in this reservation shall be construed as a relinquishment or reduction of any water use or rights reserved or appropriated by the United States on or before the date of this proclamation. Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction of the State of Montana with respect to fish and wildlife management. Nothing in this proclamation shall be deemed to enlarge or diminish the rights of any Indian tribe. Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing permits or leases on all lands under its jurisdiction shall continue to apply with regard to the lands in the Monument. Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national Monument shall be the dominant reservation. Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this

Monument and not to locate or settle upon any of the lands thereof. In Witness Whereof, I have hereunto set my hand this seventeenth day of January, in the year of our Lord two thousand one, and of the Independence of the United States of America the two hundred and twenty-fifth.

WILLIAM J. CLINTON

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