

# Fossil Butte National Monument

## Long-Range Interpretive Plan

2006

National Park Service  
U.S. Department of the Interior



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## *Long-Range Interpretive Plan*

Prepared by the Department of Interpretive Planning  
Harpers Ferry Center  
and  
Fossil Butte National Monument

June 2006

National Park Service  
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Flower, NPS photo

# INTRODUCTION AND BACKGROUND

## Introduction

Following congressional hearings Fossil Butte National Monument became a National Park Service area on October 23, 1972. While general management and facility planning were underway, modest interpretive efforts began in 1974. A trailer at the Historic Quarry trailhead open summers only housed the temporary visitor center. The current visitor center opened in June 1990.

During fiscal year 2002, the thirtieth anniversary year of the monument, Fossil Butte National Monument received Servicewide funding to initiate a Long-Range Interpretive Plan with the National Park Service's Interpretive Design Center. The identification of the need for this plan was a direct result of an April 2000 Oversight Review (Operations Evaluation) of Fossil Butte National Monument by the Intermountain Region. The planning team acknowledged that the "current boundary does not include all resources necessary to fully tell the story of the Fossil Lake Basin." Team members agreed that the 1980 General Management Plan "is largely adequate to meet monument needs at this time", and that the monument should undertake comprehensive interpretive planning.

During the scoping of this Long-Range Interpretive Plan, the planner asked Monument Superintendent Dave McGinnis: "What specific goals should the plan address?" He replied:

*We are at a crossroads as our program and park interpretive operation evolves. There is a critical link to be made between the*

*fossil discovered/displayed, the ecosystem where it lived, and where it was found in relationship to the park. We are still evolving as to how we tell our story. At the same time we are learning more from scientists about the evolutionary history of the Fossil Lake Basin. We have completed all elements and outgrown our 1984 Interpretive Prospectus. The timing of this interpretive planning process is ideal.*

This Long-Range Interpretive Plan defines the monument's vision for the next ten years. Two interpretive planning workshops were held in July 2002 and July 2003 to develop recommendations for future interpretive services, facilities, and media. National monument staff, partners, stakeholders, scientists, and media specialists worked together to develop this plan. The goal is to promote the national monument's resource values through specially planned visitor experiences and excellence in interpretation. This Long-Range Interpretive Plan will address how to convey this complex story through media, personal services, and partnerships within the current boundaries of the monument. Recommendations will also address how to interpret the larger story in related areas beyond the monument boundary.

## The Planning Process

The ultimate goal of the interpretive planning process is a cost-effective, tightly-focused, high-quality interpretive program to effectively serve all audiences and achieve management goals.

The Long-Range Interpretive Plan recommends actions for the next ten years. It identifies



Visitor Center, NPS photo



Priscacara liops, NPS photo, Arvid Aase

monument themes, describes visitor experience goals, and recommends a wide array of interpretive services, media, programs, and outreach activities to communicate in the most efficient and effective way the monument's purpose, significance, themes, and values. In combination, the LRIP, a monument-produced Annual Interpretive Plan and the Interpretive Database will form the Comprehensive Interpretive Plan for Fossil Butte National Monument.

Barring legislative changes or major new research, the planning foundation expressed in this LRIP - purpose, significance, themes, and visitor experience goals - will remain constant over the life of this plan. Specific recommendations about media and programs may need updating as staffing, funding, technology, or resource conditions change. Additional design documents will need to be prepared to implement some of the goals and recommendations in this plan.

### **Executive Summary**

The planning team acknowledges that the development of the Fossil Butte National Monument Long-Range Interpretive Plan coincides with the current stringent budget tightening required to meet immediate Servicewide goals. Conversely, the past is often prologue. Just as the understanding of the dynamics of this ancient ecosystem has changed, so too will opportunities to improve facilities, media, and programs during the next decade.

The intended audience for this Plan includes monument and Intermountain Regional Office staff, media specialists, stakeholders, and future

contractors. The Plan is congruent with all other monument planning documents. The recommendations address and support the monument's purpose and significance (page 11), identified planning needs (pages 8-10), interpretive themes (page 12), and visitor experience goals (pages 12-13).

### **Significant recommendations include:**

1. Develop the primary visitor experience at the visitor center in recognition that 90% of the visitors do not venture further into the monument. Pursue a pragmatic and methodical improvement approach.
  - Obtain cost-estimates to correct errors in exhibit artwork and panel texts.
  - If not cost-effective to repair, seek funding to replace the current exhibit.
  - During the exhibit planning/value analysis process, evaluate how best to expand the area devoted to interpreting this very complex story. Alternatives include relocating staff offices, expanding outdoor exhibits to the visitor center porch, or a building addition. During this evaluation phase, explore partnership options to pursue mutual goals, facility requirements, and funding needs.
2. Fund an additional GS-9 year-round Interpretive Park Ranger (Education Specialist) position to address existing program deficits by:
  - developing a more interactive website,
  - expanding the curriculum-based education program beyond primary grades,
  - fostering educational partnerships with other state, county, and federal land management agencies to promote monument interpretive goals.

Following coverage of the visitor center and regularly scheduled programs for the general public, the aforementioned program areas were consistently identified by the monument planning team as the highest priorities to implement during the next ten year period.

3. Replace the orientation video. Seek funds to develop a new 15 - 20 minute AV presentation that interprets the complexity of the Fossil Butte story. Visitors require a concise, moving and dramatic overview that ties the pieces of this complex story together.
4. Seek funds to develop a monumentwide Wayside Exhibit Proposal/Plan. This plan will guide wayside development at Fossil Butte toward a complete, high-quality, unified system of waysides, identify all desired wayside exhibits within the monument and beyond the monument boundaries, and prioritize development and installation based on funding.
5. Develop an accessible fossil quarry experience available to all visitors. The value of the existing NPS quarry is well documented. The quarry demonstrates the importance of scientific research and careful documentation, and provides visitors an active hands-on experience and promotes the preservation ethic.
6. Support the designation of the Backcountry Byway and obtain the requisite funds to plan and upgrade related facilities. This includes the scenic drive, parking and trails along Cundick Ridge, and requisite visitor interpretive elements. This interagency initiative with the Bureau of Land Management (BLM), the local community, the NPS Intermountain Regional Trails Office, and the monument explores the possibility of establishing a designated scenic "Backcountry Byway" connecting Fossil Butte National Monument to the Sublette Cutoff of the Oregon Trail and the California Trail. If approved, the byway may facilitate future partnership opportunities for potential quarry sites on BLM or Wyoming state lands.
7. Pursue partnerships that promote the monument's educational and resource preservation objectives to reach students and educators, residents and visitors, businesses, and local, state, and federal agencies that live, work, recreate, and/or administer lands within the boundaries of the ancient ecosystem.
8. In light of new scientific research, work with Intermountain Region's legislative staff to explore the process of redefining monument boundaries and/or encouraging the BLM and State of Wyoming to change land status to increase protection of fossil resources from damage by commercial endeavors in order to protect the most significant fossil features of ancient Fossil Lake. (See Legislative Background Section, pages 6-8.)

Achievement of these recommendations (and others listed in detail within the LRIP's "Recommendations" section) is based on receipt of funding and the monument's coordinated efforts with partners.

## Site Background

### Location

Fossil Butte National Monument is located near Kemmerer, Wyoming, north of Interstate 80 on U.S. Highway 30. Many visitors stop at the national monument en route to Dinosaur National Monument, Yellowstone National Park, or Grand Teton National Park.

The monument is a day-use area; overnight accommodations are available in Kemmerer and Diamondville. Camping is allowed on adjoining BLM public lands. National monument facilities include the visitor center, two self-guided interpretive hiking trails, a picnic area, and a 7.5-mile scenic drive.

### Geology/Paleontology

Fossil Butte National Monument presents a window into life in southwestern Wyoming fifty million years ago during the Eocene Epoch. Today's high-desert environment of the monument is a stark contrast to the sub-tropical lake environment of the past.

Fossil Lake, Lake Gosiute, and Lake Uinta formed a sub-tropical lake ecosystem commonly referred to today as the "Green River Lake System." The lakes were located in what are now the states of Wyoming, Utah, and Colorado. The original Fossil Lake was 40-50 miles long (north/south) and 20 miles wide (east/west). During its approximately two million-year life, its length and width varied considerably.

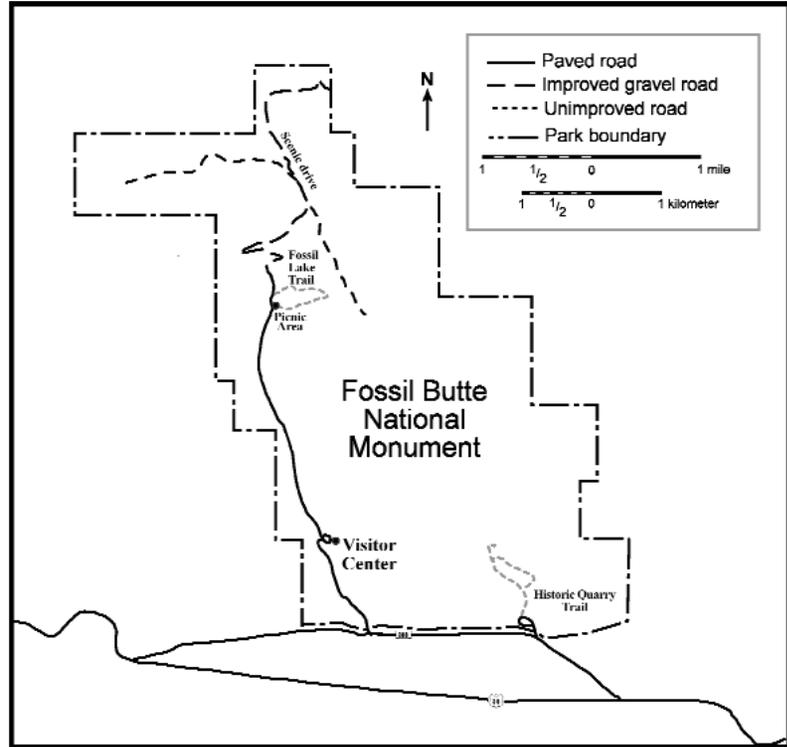
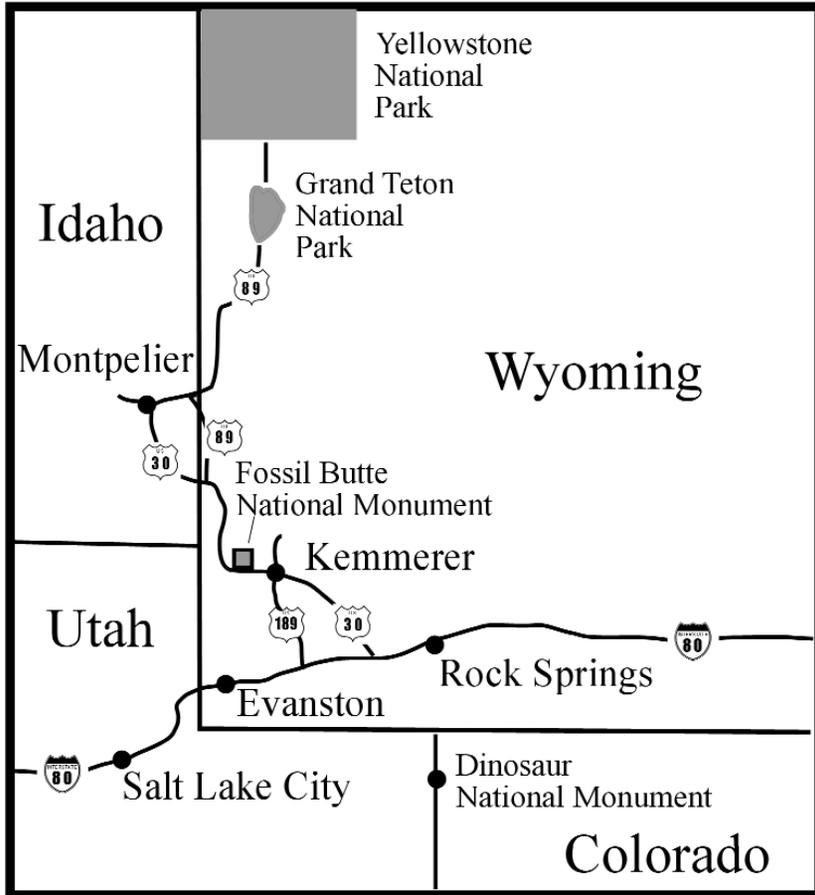
Today, the national monument protects small

portions of the original Fossil Lake and the larger Green River Lake ecosystem. The monument consists of 13 square miles (8,198-acres) of the 900-square-mile (595,200 acre) ancient Fossil Lake. One of the monument's geological formations is formed from the ancient lake sediments. Scientists refer to these lake sediments, now rocks, as the Green River Formation. These rocks preserve a tremendous variety of fossils. In addition to the Green River Formation, the Wasatch Formation, composed of river and stream sediments, is exposed in the monument. The Wasatch Formation contains fossilized teeth and bone fragments of many Eocene bird, reptile, fish, plant, and mammal species, including early primates and horses. These fossils indicate what animals lived near Fossil Lake, adding the shoreline environment to Fossil Lake's story.

### Globally Significant Paleontological Resources

The fossil record preserved within the Eocene Green River Formation of Fossil Basin is world-renowned. Over 100 years of continuous collecting has revealed a wide diversity of fossil fish, reptiles, birds, mammals, insects, and plants. Discoveries of new fossil species from the ancient lake sediments continue to expand understanding of the paleoecosystem.

Most notably, the extraordinary quality of fossil preservation is nearly unparalleled in the fossil record. The quiet-water conditions, fine-grained lake sediments, and absence of scavengers combine to preserve articulated skeletons (all bones are in place rather than scattered). The delicate bones of rarely-preserved fish, birds, and bats yield valuable scientific data.



Fossil Butte National Monument and area map, NPS



Eocene horse, *Hyracotherium*  
NPS photo of James E. Tynsky specimen  
by Arvid Aase

Fossils from Fossil Basin are located in museums around the world. Active commercial fossil collecting in areas around the national monument yields tens-of-thousands to hundreds-of-thousands of fossil fish each year. These fossil fish represent the most common articulated fossil vertebrates for sale anywhere in the world.

A small portion of Fossil Lake is protected and managed by the National Park Service. Fossil Butte National Monument promotes the protection of this world-class paleontological heritage. Additionally, the national monument was established and is managed in order to:

- 1) educate the public at large in the geological and paleontological sciences;
- 2) ensure sustainable development (geotourism); and
- 3) protect endangered geological (paleontological) heritage sites for future generations.

These goals directly coincide with the goals of the UNESCO World Heritage Site Program. As commercial fossil activities rapidly deplete the non-renewable remains of the ancient lake around Fossil Butte National Monument, the National Park Service recognizes the potential for nomination of the national monument as a Geological Heritage Site under the World Heritage Site Program. Although lesser sites have such recognition in other parts of the world, no site in the United States has ever been nominated solely in recognition of paleontological resources.

## Legislation

The national monument, established on October

23, 1972 was carved primarily from existing Bureau of Land Management lands. Boundaries were based on historic grazing allotments and use and then-known mid-lake fossil outcrops where extensive quarry activity had taken place. The authorizing legislation defined the purpose of the national monument:

*...to preserve for the benefit and enjoyment of present and future generations outstanding paleontological sites and related geological phenomena, and to provide for the display and interpretation of scientific specimens.*

The intent of the enabling legislation was to preserve the area most likely to contain the most significant fossil record of ancient Fossil Lake. At that time, little was known about Fossil Lake's paleogeographic boundaries and significant geological features and phenomena such as deltas and shore environments. Thirty years ago, prevailing science placed Fossil Butte at the center of the pre-historic lake. Excerpts from congressional testimony that led to the creation of Fossil Butte National Monument demonstrate the known science of the day and subsequent congressional intent:

*Although the Fossil Butte area is only a small part of a vast area in which the fine-bedded layers of the Green River formation make up much of the landscape, it is particularly well situated since, in addition to the rich fossil deposits located here, there are also outstanding examples of lake, shoreline and tributary river flood plain deposits. The bill's recommended area of 8, 200 acres would provide adequate area to protect and display the features of primary significance as well as those which tie the geologic*

*story together.*

**Wyoming Governor Stan Hathaway,  
February 28, 1972**

*Mr. Chairman, it is difficult in words to describe the beauty of this area and the geological formations which have evolved from a metamorphosis of the earth's surface over a period of 50 million years. No other site in America has a more abundant supply of fossil fish deposits. As only one example of the fossilized marine life, Eocene fish fossils at Fossil Butte are believed to be the best and most significant in the United States and probably the world. It is truly a paleontologist's paradise and has attracted the attention of the academic community and laymen alike for many years.*

**Gale, McGee, U.S. Senator from  
Wyoming**

During the past twenty-five years, significant limnological studies and fossil finds have occurred beyond monument boundaries, changing the understanding of this ancient ecosystem. Two esteemed scientists who collaborate with monument staff have dedicated their life's work to understanding the geology and paleontology of the Green River Formation. These scientists are Dr. Paul Buchhiem, a sedimentologist with Loma Linda University, and Dr. Lance Grande, a paleontologist with the Chicago Field Museum of Natural History. Their continuing research challenges past scientific theories and indicates that Fossil Ridge, two miles outside of the national monument boundary to the south, is actually the ancient lake's center. This area has proven very rich in fossil resources and is the source of many significant research finds. Fossil Ridge is easily seen from the monument's visitor center. Near-shore deposits to

the east of Fossil Butte National Monument have also yielded unique fossils and new geologic specimens. Today, Fossil Ridge and the eastern margin of the lake are a mix of private, state, and BLM lands.

In essence, Fossil Butte National Monument does not protect the most critical paleontological resources of ancient Fossil Lake as congressional sponsors, scientists, and members of the community originally intended. One of the primary reasons the monument was established is unrealized. Partnerships and an examination of the monument boundary are all potential solutions to consider. Monument legislation provides for the acquisition of "lands and interests in lands by donation, purchase, or exchange...except that lands of interests therein owned by the State of Wyoming or a political subdivision thereof...at no time shall the boundaries encompass more than eight thousand two hundred acres".

The April 2000 Oversight Review (Operations Evaluation) of Fossil Butte National Monument by the Intermountain Region acknowledged that the "current boundary does not include all resources necessary to fully tell the story of the Fossil Lake Basin." Team members agreed that the 1980 General Management Plan "is largely adequate to meet monument needs at this time", and that the monument should "request a Comprehensive Interpretive Plan". This Long-Range Interpretive Plan will address how to convey this complex story through media and personal services within the current boundaries of the monument. Recommendations will also address how to interpret the larger story in related areas beyond the monument boundary.

Livestock grazing, authorized for a limited period by the enabling legislation, terminated in 1989. The monument has an active resource management program to restore the lands disturbed by past grazing practices and other agricultural activity. The enabling legislation also authorizes that "stock driveways shall continue in perpetuity at such places where this use will not conflict with the administration of the national monument." Use of the stock driveways by local ranchers provides monument visitors with opportunities to observe traditional western scenes of cattle and sheep drives.

## **Other Planning Considerations**

### **Key Monument Planning Documents**

This plan proceeds under the auspices of the 1980 General Management Plan, the 1996 Statement for Management and the 2005 Strategic Plan. The April 2000 Intermountain Region Operations Evaluation/Oversight Review Report concluded that the monument need not pursue a new General Management Plan. Interpretation and visitor services planning issues identified in the April 2000 document are considered in this Long-Range Interpretive Plan. The planning team also considered and addressed shared interpretive issues identified in the draft-2001 Museum Management Plan and Scope of Collection Plan, and the 1994 Resource Management Plan.

### **The Monument Visitor Center**

The monument has outgrown the visitor center/administrative office facility. This building houses visitor center operations, exhibit area, fossil preparation laboratory, a multipurpose

room/audiovisual area for programs and activities, public restrooms, library, administrative and curatorial support offices, and the cooperating association sales area and storage. The Oversight Review Report noted that the monument has a serious shortage of office, work and curatorial space, which negatively impacts monument operations. The monument continues to prioritize space for the visitor experience over all other staffing requirements and works diligently to overcome these difficulties.

Monument staff drafted a design for a visitor center addition to increase space for public use and offices. The proposed "pod" design was reviewed and is supported by the original building architect, Andy Beck. The Long-Range Interpretive Plan will explore how to improve the visitor experience within the existing facility, and outline potential improvements if construction funding for an addition is obtained.

### **The Research Quarry**

The Fossil Butte research quarry operates under National Park Service Management Policies (4.8.2 protection of geological features, and 4.8.1 paleontological resources and their contents). The purpose of the quarry is to collect baseline data for future research projects. Data allow a more accurate assessment of fossil density, population diversity and make-up, and three-dimensional analysis. Quarried items, accessioned and catalogued as part of the monument's curatorial collection, are maintained in perpetuity. Excavation of the rock takes place only while visitors are present, thus slowing the removal of non-renewable fossil resources and extending the life of this popular interpretive program.

The quarry is open during the heaviest visitation, on weekends Memorial Day through Labor Day. Trained staff and volunteers under the supervision of a paleontologist remove fossil specimens. If interested, visitors may participate. The specimens are then taken to the visitor center's fossil preparation lab where visitors can observe the painstakingly slow process of preparing fossil field specimens for further study and exhibition. This hands-on experience is extremely valuable when interpreting the scientific value of fossils and the importance of protecting them.

However, the anticipated quality of specimens at the research quarry has not been realized. In addition the quarry is not accessible to all visitors. The monument staff would like to provide a visitor experience with a more accessible quarry. Although static displays are nice, visitors want to see and experience an active quarry. The 1995 Quarry Study Report explored the potential of alternate quarry sites that would serve both interpretive and research functions. A site within the monument boundary on Cundick Ridge was identified as well as several alternate sites on Bureau of Land Management (BLM) or Wyoming State lands. All sites have varied accessibility and more extensive planning is required.

### **Philosophical Issues of Interpreting Fossils**

The monument is located in an area where digging for fossils is a large commercial activity. There are 10 or more legal quarries just outside the monument boundary. In addition, the Wyoming Travel and Tourism Department promotes "Fishing for Fossils" to attract visitors. Differing state and federal regulations regarding fossil col-

lecting often confuse visitors. "Fossil fishing" is allowed in some private and state locations, but is illegal in Fossil Butte National Monument and on surrounding BLM lands.

### **Partnerships**

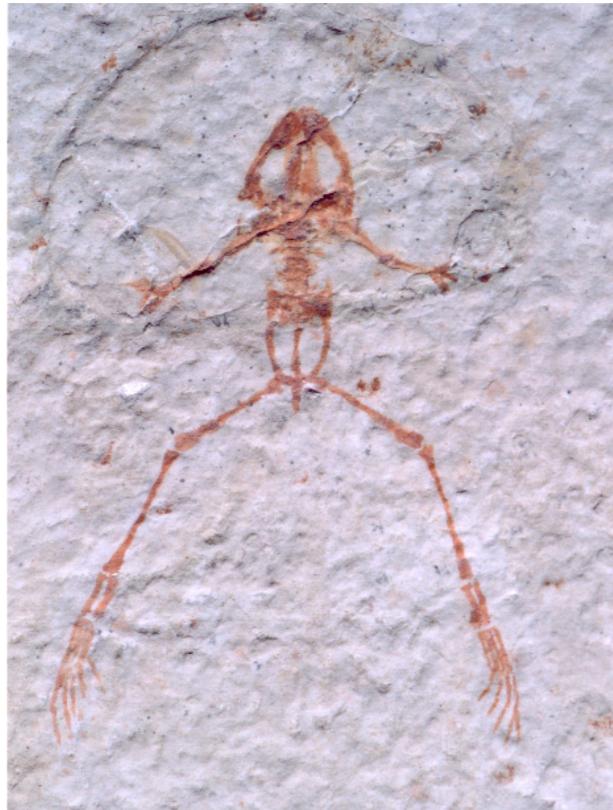
An interagency planning initiative with the BLM, local community, NPS Intermountain Regional Trails Office, and the monument explored establishing a designated scenic "Backcountry Byway" connecting Fossil Butte National Monument to the Sublette Cutoff of the Oregon Trail and the California Trail. If approved, the byway may facilitate future partnership opportunities by providing for accessible quarry sites on BLM or State of Wyoming lands.

Over the years, monument staff has developed many partnerships to support monument goals. The LRIP will explore how to improve interpretation and visitor services through existing and future partnerships.

### **Other Significant Resource Issues**

Public, state, and private lands surround the national monument. Associated land use practices by these neighbors provides opportunities to address topics such as wildlife, grazing, exotic plants, open space and viewshed, mining, commercial fossil collecting, and oil and gas development. Currently, a critical mitigation need is a private industry proposal to construct 100-plus wind generators on Fossil Ridge. The 26 foot diameter concrete pads will penetrate 30 feet into the ground, threatening the "best of the best fossil resources". The 300 foot high towers and blades will pockmark the monument's viewshed. Fossil Butte National Monument is recovering

from years of livestock grazing, presenting opportunities to interpret the recovering ecosystem. The findings of the Oversight Review (Operations Evaluation) documented "significant incidents of elk, grouse, antelope, and deer poaching, antler collecting, and other wildlife and resource violations." Planning discussions will address this resource issue and seek recommendations for interpretation and visitor services.



The only known frog from Fossil Lake, NPS photo of James E. Tynsky specimen by Arvid Aase

# FOUNDATION FOR PLANNING

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## **Purpose and Significance**

The National Park Service mission is to preserve, unimpaired, natural and cultural resources and values of the National Park System for the enjoyment, education and inspiration of this and future generations. The park service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

Planning focuses first on why a park was established and what conditions should exist before delving into details about specific actions. Park purpose statements are based on park legislation and legislative history, other special designations, and National Park Service policies. Purpose statements provide the foundation for park management and use.

Park significance statements capture the essence of the park's importance to the nation's natural and cultural heritage. Significance statements do not inventory resources; rather they describe the park's distinctiveness and help to place it within regional, national, and international contexts. They are the basis for the development of the primary interpretive themes and program.

## **Purpose**

Fossil Butte National Monument preserves for the benefit and enjoyment of present and future generations paleontological sites and geological phenomena; provides for research, display, and interpretation of scientific specimens; and con-

serves unimpaired for future generations the resources, scenery, and the wildlife of a portion of Fossil Basin.

## **Significance**

Fossil Butte National Monument contains part of the widespread Green River Formation that is the world's best preserved, most thoroughly studied, and accessible Eocene subtropical lake system.

One of the world's best-preserved and most diverse assemblages (associate groups) of fossilized animals and plants are contained within Fossil Lake deposits.

Scientific and commercial collecting of fossils has occurred in Fossil Basin for over 125 years. Fossil Butte National Monument represents fossil preservation and research in the midst of active commercial fossil collecting.

The monument provides diverse educational opportunities for the public to experience fossils in situ (in place), under preparation, and on display, while providing the most current scientific interpretation of their geological, paleontological, and historical significance.

The national monument is the only significant portion of public land in southwestern Wyoming with a recovering sagebrush steppe ecosystem, which excludes hunting and grazing.

The sweeping vistas capture the vast expanse of historic and prehistoric landscapes.

## Interpretive Themes

Primary interpretive themes are those ideas or concepts that every visitor should understand. These themes are the key ideas through which the public explores the monument's nationally significant resource meanings and values. They provide the foundation for interpretive programs and media. They do not include everything interpreted, but rather the ideas critical to a visitor's understanding of the monument's significance. All interpretive efforts should relate to one or more of the themes, and each theme should be addressed in the overall interpretive program. The themes that follow are numbered for easy reference rather than priority order.



1. Fossil Butte National Monument provides an opportunity to study the abundant, diverse, and exquisitely preserved fossil specimens of Fossil Basin and the well-preserved rock record of the basin itself, enabling us to understand the surprising array of plants and animals that inhabited this system of lake environments during the early Cenozoic Era (Age of Mammals).

### Sub-themes:

Carefully excavated and painstakingly prepared, fossils reveal evidence of ancient life. The wonder and mystery of evolution and extinction in the early Cenozoic Era drive the scientific research at Fossil Butte National Monument.

For scientists and amateurs alike, Fossil Butte National Monument serves as a center for scholarly study to explore the

ancient sub-tropical Green River lake system.

2. Fossils have garnered the interest of commercial and scientific collectors since their discovery over 125 years ago in Fossil Basin. Fossil Butte National Monument provides a forum to discuss the benefits and shortfalls of fossil collecting and articulates the need to ensure the preservation of fossils for future generations.
3. Climate change is evident when comparing the fossil evidence of a subtropical environment to the semiarid sagebrush steppe ecosystem of Fossil Butte National Monument today. Studying these fossils reveals how climate and life are intrinsically linked and continually changing, helping us better understand changes through time.
4. Fossil Butte National Monument's cultural history reveals a dynamic interaction between people and the land, illustrating the ongoing struggle to balance diverse resource uses and their consequences.
5. Fossil Butte National Monument provides an increasingly rare opportunity to experience solitude, unencumbered vistas, and night skies.

## Visitor Experience Goals

Visitor experience goals describe the physical, intellectual, and emotional experiences that should be available for visitors of Fossil Butte National Monument. These experiences will be available to visitors of all abilities, including those with visual, auditory, mobility, or cognitive impairments.

The desired outcome of monument operations is to manage visitor-resource interactions to maintain resources unimpaired for the enjoyment of future generations while ensuring that opportunities exist for the widest variety of visitors to forge meaningful connections with those resources. The following visitor experience goals will guide the development of the monument's interpretive program.

Visitors to Fossil Butte National Monument will have opportunities to:

- contemplate, relax, and enjoy monument resources without pressure.
- have a safe visit.
- have their comfort needs met.
- learn about monument themes in ways appropriate to their ages and abilities.
- find their way around the monument without assistance.
- interact with the monument staff informally and formally.
- become involved with the preservation of the monument.
- discover the scientific and educational values associated with fossils and other national monument resources.
- see and experience the present day Fossil Butte ecosystem.
- visit and interact with the scientific collection of fossils in a research quarry regardless of physical ability.
- view fossils being scientifically prepared.
- experience solitude and unencumbered views of landscapes and night skies.

Through exploration of monument-specific topics

visitors will understand:

- the processes resulting in the well-preserved fossil specimens.
- the scientific methods and techniques utilized in new discoveries and research.
- how rocks tell the story of climate change, lacustrine (lake) deposition processes, and other lake processes such as chemical and physical changes.
- the importance of the Eocene epoch and evolution, adaptations, and the extinction of life.
- the relationship between the landforms and features viewed at Fossil Butte National Monument today to ancient Fossil Basin (50 million years ago); learn how complex and dynamic forces such as uplift and erosion created the present landscape.
- the environmental changes that occurred over time in the Fossil Butte area.
- land management practices and land health issues of the national monument and surrounding area.
- how humans have adapted to and impacted the physical setting of Fossil Butte National Monument through exploration of these monument-specific topics: scientific and commercial collecting of fossils; the establishment and disappearance of the Town of Fossil; grazing and stock driveways; emigrant activities; energy development (coal, gas and oil extraction; wind generators); and rail and highway transportation.
- the National Park System mission, and support the protection of fossils and other resources within National Park Service areas and associated national historic trails.



Dr. Paul Buchheim prepares a fossil fish "in situ", NPS photo

## EXISTING CONDITIONS

### Visitor and Audience Profiles

The ten-year average visitation is approximately 20,000 annually. Currently the natural features, trails, programs, and services of Fossil Butte National Monument are under-utilized by visitors. During the average visit of one hour or less, few venture beyond the visitor center to hike the trails or visit the research quarry that operates on weekends Memorial Day through Labor Day. Monument visitation lacks ethnic diversity. Local residents rarely visit.

Between June 28 and August 25, 2001, Karen S. Hockett and Joseph W. Roggenbuck from Virginia Tech, Department of Forestry, in Blacksburg, Virginia studied characteristics of monument visitors and the influence of interpretation on their fossil knowledge and ethics. The following narrative summarizes staff observations supported by this study.

Families come from all over the United States to visit Fossil Butte National Monument, usually attracted by their interest in fossils. Most visit for less than two hours and generally stay in the visitor center. Some groups just use the visitor center restrooms and stamp their "Passport to Your National Parks". Most obtain their information primarily from highway signs and maps. Although families are interested in the fossil story; many do not hike the trails in the summer; the heat and the distance from the visitor center being the primary factors. Many families come with pets, which presents a variety of problems in the summer heat. Some families stop first at the Fossil Country Museum in nearby Kemmerer, Wyoming. Fossil Butte works in partnership with the museum by providing an exhibit on the monument and its resources. The Fossil Country Museum staff observed that most museum visitors are unaware



A family on the visitor center porch, NPS photo

of the national monument until viewing the exhibit in the museum or speaking with a museum volunteer.

**Incidental Visitors** often see the highway signs and stop at the monument. Frequently this group is en route to or from Yellowstone National Park or Dinosaur National Monument. This group generally stays less than two hours and expresses disappointment when there is no fossil preparation demonstration.

**International Visitors** generally plan their trip and stay longer than two hours. They enjoy the exhibits in the visitor center, hiking, and participating in ranger-conducted programs. However, organized international tour groups generally stay less than one hour. This group spends a lot of time and money in the bookstore. The primary languages of international visitors are German and Japanese; currently the official monument brochure is translated into only Spanish, German, and Russian.

**Local Residents** comprise a small portion of the monument visitation. Most drive through to access Bureau of Land Management lands for hunting and other outdoor recreation. Local visitors come primarily as family groups with out-of-town guests, or as part of a scout or church group. Some use the monument for recreational activities such as wildlife viewing, hiking, family reunions, and cross-country skiing. Monument staff is acutely aware of the need to reach out to this audience and has experimented with a variety of programming opportunities. These programs have had marginal success and seem to draw the same select audience each time.

**School Groups** usually pre-plan their visit. They may learn of the site via the Internet and call for a program reservation. During FY 2003, 816 students from 23 schools participated in formal education programs by reservation. This audience ranges from kindergarten through 12th grade. They visit mostly during May and September and are primarily interested in the fossil story as it relates to their science curriculum. School groups want a hands-on experience in the research quarry, but because a quarry visit requires small groups and close supervision, current staffing levels only "adequately" meet this group's expectations. During FY 2003, 10% of school groups participated in the quarry activity.

There is a growing trend in **home-schooled visitors**. These students generally arrive unannounced and frequently travel long distances. It is not unusual for this student group to arrive unprepared for an outdoor experience - without appropriate clothing or water. Their experience is primarily speaking with the ranger at the information desk, viewing the visitor center exhibits, and participating in the self-directed Junior Ranger program. Current staffing levels limit any flexibility in program opportunities with this unannounced audience.

**Regional Visitors** come to Fossil Butte as a planned destination, generally after reading a tourism promotional article published in a regional newspaper or magazine. This audience tends to stay longer than most groups; in addition to exploring the visitor center, they hike the trails and visit the quarry. This group comes with little subject-matter preparation and represents a full range of educational backgrounds and interests.

**Subject Matter Specialists and College Field Study Groups** interests range from paleontology and geology, to natural history. These groups expect an in-depth experience, a well-educated staff, and one-on-one contact with a ranger or staff paleontologist. The monument makes every effort to serve groups that provide advance notice of arrival. These groups are interested in technical publications and spend time and money in the bookstore.

**Senior Citizen** visitation is increasing. Most come in April/May and September/October. Group composition ranges from couples, to chartered tour groups, to Elderhostels. Many are unable to hike and expect a capsulated-summary experience in the visitor center.

**Mobility or Sensory-Impaired Individuals** come in family groups. Unless a staff member observes a special need, or the visitor or group member requests assistance, these visitors interact with monument resources, programs and facilities unobserved and are mainstreamed into the general programs and activities offered. The monument staff feels this group is not well served in regard to the weekend quarry program and interpretive hikes.

**Tour Groups** generally arrive unannounced with a limited amount of time. They mainly seek a visitor center experience - viewing exhibits, using the restrooms, browsing the bookstore, and attending a short orientation program by a ranger. Frequently the monument is unable to provide this personal service due to staffing levels.

**Virtual Visits** exceed physical ones by more than two to one with an annual average visitation of 40,479. There is tremendous interpretive potential here.

**Characteristics Common to All Groups:** Many visitors come unprepared, without water bottles or food and with unsuitable footwear for hiking. Visitors have a high degree of education - 70% surveyed had college degrees. Many leave disappointed that they did not see the fossil preparation/demonstration activity.

## **Pre-visit**

### **Media Outreach**

The monument informs the public of upcoming events and special programs through public service announcements sent to area newspapers and radio stations.

### **Personal Services**

Information requests are received via mail, phone, and Internet. Follow-up correspondence may include the monument brochure, site-bulletins, and/or reference to the monument's web page. Detailed requests involving paleontological questions are answered by the paleontologist.

### **Monument Web Site**

Fossil Butte National Monument's extended web page provides access to information about the monument, fossils, scientists, activities, education, photos of many fossils, and links to several other sites.

## Arrival

It is easy to find the monument. Well-placed official highway signs are located along Interstate 80 and U.S. Highways 189 and 30 and through the town of Kemmerer. Nine miles west of Kemmerer visitors exit onto County Road 300. This road brings visitors past the Historic Fossil Quarry Trail and the south side of Fossil Butte. Visitors then turn north for one mile onto the Chicken Creek entrance road past one wayside exhibit pull-off before arriving at the visitor center parking lot. A prominent sign along the entrance road indicates that fossil collection is prohibited.

Access to the monument is via a gated roadway closed only during severe winter storms. Although the monument is open from sunrise to sunset the posted hours at the county road turnoff are specific to the visitor center.

Analysis:

- The staff is not trained to update and upgrade the website to provide improved pre-visit planning.
- The sign on U.S. Highway 30 at the county road turnoff gives the overall impression that outdoor monument features - roads, trails, picnic areas are open only when the visitor center is open. The planning team thought the entrance gate closed when facilities closed.
- The paved parking lot accommodates five tour busses or large recreational vehicles and twenty smaller vehicles. During the summer, it is often filled beyond capacity and visitors park along the entrance road.
- No visitor wayfinding occurs outside the visitor

center or at the Historic Quarry Trail facility, which precedes the visitor center.

## Facilities

### Visitor Center

*I still don't have the big picture. I'm concerned because if I don't, I imagine many others don't when they leave here -- particularly since their average length of stay is one-hour. So far I've spent 6-hours experiencing your park. I hiked the Historic Fossil Quarry Trail last night. Then spent close to two hours yesterday afternoon looking at the exhibits, attending a porch program, and seeing the park video. This should tell us something.*

### Workshop Participant

### Lobby/Foyer

A literature rack in the main entrance foyer provides maps, emigrant trail brochures and other area information.

Three temporary exhibits near the entrance doors display a fossilized bird, "the Road to Fossilization", and information about the Junior/Senior Ranger program. The visitor register is adjacent to the Junior/Senior Ranger display.

The visitor center is divided into five areas that open into each other:

- visitor center information desk
- fossil preparation lab
- Intermountain Natural History Association (INHA) bookstore
- exhibits
- multipurpose/audiovisual



Entrance sign, NPS photo

**Analysis:**

The open design of the visitor center permits a tremendous amount of competing sound. This is due to the close proximity of the fossil preparation lab to the information desk, and the carry-over sound of the audiovisual program in the multi-purpose room. Even when only a few visitors are present, sound conflicts challenge their ability to focus on the complex ideas presented. For example, conversations at the information desk are difficult when the nearby fossil preparation video is playing. These same conversations can also be overheard in the exhibit room. Although the videos have closed captioning, and the sound can be turned off, the staff has observed that visitors do not like the captioning and will not stay to view the video program.

**Visitor Center Information Desk**

The information desk incorporates a variety of functions. Staff provides basic information and orientation, conduct bookstore sales, interpret the fossil preparation lab, and supervise a small work area where children complete Junior Ranger program activities, and make fossil rubbings, and visitors date stamp their "Passport to the National Parks". The desk is also home to the Electronic Ranger, an interactive computer program. (see description in interpretive media section, page 33.)

On one side of the information desk is the fossil preparation lab. On the other side of the desk is a small sales area operated by Intermountain Natural History Association.

**Analysis:**

Due to its size, the sales area is limited mainly to books. The outlet's annual sales are profitable. Size prohibits sale of three-dimensional theme related items.

**Fossil Preparation Lab**

Adjacent to the information desk on the left is a glass enclosed fossil preparation lab used by the paleontologist or trained staff and volunteers to prepare fossil specimens. Visitors view live demonstrations through sliding glass windows that open into the lobby. A video camera attached to the microscope projects a magnified image of the fossil to a monitor above the window. When the lab is not in use, visitors may view a push-button activated three-minute film on fossil excavation and preparation.

**Analysis:**

- The visitor center design emphasizes fossil preparation as an important activity. However most of the time this area is not staffed and visitors are clearly disappointed they can not witness this activity first-hand.
- The power equipment used to prepare specimens is noisy. Use of the lab equipment overwhelms conversations at the information desk and intrudes into the multipurpose and exhibit areas.

**Multi-Purpose Room/ Audiovisual Area**

Beyond the information desk and sales area is the multi-purpose/audiovisual room. Most of the time this space serves as an auditorium for viewing a 13-minute film "Lance and Paul Go Fishing"

produced by the Harpers Ferry Center. This room seats 30 and is also used for indoor programs and activities for school groups. The chairs can be removed if necessary.

**Analysis:** This section evaluates the physical space. Evaluation of the film follows in the interpretive media section.

- The size of the multi-purpose area is inadequate for school groups. In addition, tour groups larger than 30 cannot be accommodated simultaneously, an issue when tour groups are on tight schedules.
- Sounds from all other visitor center areas impair hearing the audio portion of the video. In turn, sound from any activity held in this room infiltrates into the exhibit and information desk areas.

### Exhibit Area

The 600 square foot exhibit area displays original and replica fossil specimens of different flora and fauna (primarily fish) excavated in the Fossil Lake region, with detailed information about each. A time-line places the ancient Eocene Fossil Lake in context with the evolution of the earth and its various animal groups - reptile, mammal, amphibian, insect, etc. Opposite the time-line, a large color mural portrays an artist's rendition of how this section of southwestern Wyoming appeared fifty million years ago and the creatures that inhabited Fossil Lake. The exhibit area also includes an exhibit on how fossils are formed.

**Analysis:**

- The focus of current exhibits is primarily on the

fossil specimens as museum objects. Although the mural provides some visual context about the environment in which a particular species lived, there is not enough emphasis or connection between the fossil specimen displayed and the ancient ecosystem to enhance visitor understanding of this very complex resource.

- The exhibit space does not allow for comprehensive interpretation of the monument's story. There are fossil specimens that could be exhibited and themes that could be interpreted, but there is no space to do so.
- Many museum exhibits are outdated. Results of significant research, undertaken since the visitor center opened, needs incorporating into new exhibits. At present, the staff must explain inaccuracies and recent developments.
- Visitors are disappointed when they discover they are seeing fossil replicas rather than real fossils from the monument.
- The lights in the exhibit area are hot and create building temperature problems in the summer. Nine tilting (height adjustable to accommodate children and visitors in wheelchairs) exhibit cases have a defective and dangerous lighting system.

### Staff Offices

The building has three "behind-the-scene" rooms used for office space. The superintendent and administrative staff each have separate offices; the third "multi-function" room accommodates office space for the chief ranger, lead interpreter, paleontologist/museum specialist, biological technician, seasonal and volunteers. The 409 square foot room also houses the library and serves as staff lunch area.



Visitors in exhibit room, NPS photo

### Analysis:

Due to the professionalism of the staff, visitors are completely unaware of the extremely cramped working conditions behind the scenes. The staff is so good at compensating that, in this instance, excellence in service inadvertently undermines any attempt to gain approval to proceed with correcting this major facility deficit -- the basic operational requirement to provide adequate space for a variety of monument functions.

### Porch Area

During the summer, rangers present formal interpretive programs on the east porch. A Mark III Binocular enhances wildlife viewing on the surrounding hillsides. A wayside exhibit identifies and describes fossil quarry sites visible from the visitor center.

### Analysis:

- Consider interchangeable seasonal waysides to interpret specific wildlife topics such as sage grouse, elk, or a permanent wayside that features year-round wildlife cycles. The second alternative may be easier to maintain and there are no storage requirements.
- This is a good location to interpret the sagebrush ecosystem.

### Scenic Drive

*Lots of things jelled for me here. It was important to have the bird's eye view of the entire ecosystem from Cundick Ridge.* **Workshop Participant**

From the visitor center, a 7.5-mile (3.5 miles paved, 4 gravel) scenic drive takes visitor past different views of Fossil Butte and the surrounding basin to the top of Cundick Ridge. From Cundick Ridge hikers can follow abandoned two-track roads to scenic vistas. Along the drive there are a variety of visitor opportunities:

- two pull-offs with waysides interpret area flora and fauna of today and 50 million years ago.
- Chicken Creek Picnic Area, a small aspen-shaded site, is approximately 2.5 miles north of the visitor center.
- From the picnic area visitors can access the Fossil Lake Trail or a second trailhead located 100 yards north of the picnic area; and, when in operation, visit the monument's research quarry.

It is along Cundick Ridge that the monument boundary meets Bureau of Land Management lands and the monument's scenic road connects to an unpaved BLM two-track road, now under consideration for a designated "Backcountry Byway".

### Analysis:

- There are major safety issues in promoting the scenic drive. The road is narrow and lacks adequate signs. When two vehicles meet on the uphill section, one must drive in reverse to a wider section.
- Most visitors are unaware of the scenic drive. The monument's official uni-grid brochure does not describe this opportunity, nor does it provide an adequate map to assist with this experience. Visitors often learn about the scenic drive from a staff member at the visitor center.



View from hairpin turn along the scenic drive, NPS photo

- At the top of Cundick Ridge, there are no designated pull-offs for parking to view the spectacular scenery, and key natural and cultural features are not identified or interpreted.
- The monument is within ten miles of the Oregon and California Trails. Visitors are interested in the pioneer story and the proposed Backcountry Byway would more easily connect them to it.
- The proposed byway route provides views of the boundaries of ancient Fossil Lake.
- It is important for the monument to support the byway because:
  - designation of the byway may help fund improvements along the monument's scenic road and vistas.
  - it would provide broader access to the area's history. There is an advantage to telling the local history outside of the monument boundary and not wedging it into the monument's primary story.
  - considering the monument mission, it is important to pursue a partnership that may also provide a route to an accessible research quarry site.

## Self-Guiding Interpretive Trails

### Historic Quarry Trail

The 2.5-mile Historic Quarry Trail leads to an inactive historic quarry (used prior to the establishment of the monument) on the south side of Fossil Butte. Fourteen wayside exhibits along the trail interpret the cultural history and present ecology of the area. The trail is moderately strenuous and visitors are warned to avoid overexertion. In the quarry eight new interpretive signs identify five rock layers of the Fossil Butte Green River Formation. These signs comply with the new

National Park Service Messaging Project guidelines, so their appearance differs from older wayside exhibits in the monument.

Earlier planning efforts identified several visitor experience goals. Along this trail visitors will have the opportunity to:

- learn about the history of fossil collecting on Fossil Butte,
- be introduced to the paleontology and geology of the Green River and Wasatch formations,
- experience fossils "in-situ" at the historic quarry, and
- learn about site-specific natural history of today's high-desert environment.

Since 1994, buried trail counters indicate that eleven percent of visitors hike this trail.

Analysis:

- The trailhead and parking lot precedes the visitor center. Some visitors hike the trail or use the restrooms at the trailhead (visible from the roadway) before stopping in the visitor center.
- Trailhead information should include heat stress, dehydration, lightning strike risk, elevation gain and other safety information.
- Six of 18 wayside panels contain conceptual or technical errors.
- The history of fossil collecting as presented on the wayside exhibits excludes the scientists who first brought the world's attention to fossils from the Green River Formation.
- A directional sign at the junction of the trail loop would encourage visitors to follow a specific



David Haddenham's summer cabin is situated along the Historic Quarry Trail, NPS photo

route and would allow for a more thematic approach.

- The Historic Quarry Trail provides visitors with an experience that touches on theme 5-sweeping vistas and open skies.

### **Fossil Lake Trail**

This 1.5-mile trail is accessible from the Chicken Creek Picnic Area or a separate trailhead along the scenic drive. The trail winds through aspen stands and meadows and in close proximity to geological features composed of ancient limestone lake sediments. Three new wayside exhibits along the trail interpret the aspen community, sagebrush community and fossil quarry. These waysides comply with the new NPS Messaging Project guidelines so their appearance is different from the other wayside exhibits in the national monument.

The visitor experience goal for this trail is for visitors to understand geology's active role in the landscape and provide an opportunity to see fossils "in-situ" when the research quarry is in operation.

Near the trail's halfway point, a spur trail leads to the research quarry. The quarry is open 10:00 a.m. to 3:00 p.m., Saturdays and Sundays, June through August, weather permitting. On those days, visitors access the site from the trail and may assist a member of the paleontology staff with the scientific excavation of fossils. When the quarry is closed, a signed chain barrier placed across the trail indicates its closure. Although a sign encourages visitors to respect monument resources and not remove fossils, some vandalism and collecting occur when this area is closed.

Eight percent of visitors hike the Fossil Lake Trail.

Analysis:

- The name of the trail does not match the primary experience offered - nature in motion.
- Trailhead information should indicate elevation gain, dehydration risk, and other safety issues.
- The panoramic vistas are spectacular. A hike along the Fossil Lake Trail provides visitors with an experience that touches on interpretive theme 5 - sweeping vistas and open skies.

## **Interpretive Media**

### **Audio Visual Presentations**

There are two push-button-start, captioned audiovisual presentations offered in the visitor center:

1. "Lance and Paul Go Fishing": a 13 minute orientation video conveys the importance of fossils in learning about the past, and
2. a 3-minute film about fossil excavation and preparation is offered at the fossil preparation lab as an alternative experience when there is no demonstration.

Both videos are popular, but misleading. Little is said regarding the cultural history tied to fossil collecting. Both need a stronger preservation message.

Analysis "Lance and Paul Go Fishing:

- The film is accurate but fails to address how the boundaries and resources of Fossil Butte

National Monument relate to the bigger picture - the larger ancient lake ecosystem.

- The quarrying sequences were filmed outside the monument and cause many visitor misconceptions. Although interesting, these segments confuse the public who generally assume that they will find this type of activity at the monument's research quarry. They will not.
- The monument wants to convert the Laserdisc and original video footage to a DVD format.

Analysis Fossil Prep Lab Film:

- On-screen captions are not verbatim to the narrative. They should either be verbatim or created as informational subtitles.
- Need text at the end of the film that says "The End". As it is, visitors continue watching, expecting more.
- Relocate audiovisual equipment outside of the dusty lab environment.

### **Electronic Ranger**

Two volunteers created this interactive computer program that leads visitors through topics of fossils, geology, and modern day inhabitants of the sagebrush steppe ecosystem via narrated color photographs. Navigating through the various topics by touch-screen provides perspective on the interrelationships between the sub-tropical environment of the past and today's high desert environment.

Visitors who don't venture beyond the visitor center can access detailed information about the natural environment. Those who hike the trails, drive the scenic road, or visit the research quarry can learn more about the geology, fossils, plants

and animals they may encounter along the way.

Analysis:

- If the volunteers are unavailable to work with the staff in the future, staff training will be required in order to maintain this program.
- The electronic ranger is situated on the front desk, the center of activity. Because of this, most visitors are unaware of the program. The interactive program would better serve the visitor if placed in a stand-alone cabinet away from the front desk.
- The push of a button enables visitors to page through" each fossil bearing layer of the virtual research quarry. This section of the program is in its infancy and needs further development.

### **Exhibits**

Discussed in previous Facilities/Visitor Center Section, page 19.

### **Publications**

Harpers Ferry Center produced unigrid brochure analysis:

- Enlarge the map, provide relief, and feature more prominently. Place more emphasis on facilities and visitor opportunities.
- Visitors do not understand the back side of the brochure that links fossil parks in the National Park Service to the evolution of life over the last 65 million years (Cenozoic Era). Visitors think all of the creatures depicted in the brochure are found in the monument - that they existed during the Fossil Lake period.
- Brochure photographs do not illustrate the diversity of the ancient Fossil Lake ecosystem,

now Fossil Butte National Monument. The brochure should represent the diversity of the monument and ecosystem by including photos of a turtle, snake, bird, insects, plants, bat, and other mammals.

### **Wayside Exhibits**

Fossil Butte National Monument has 28 waysides: 18 along the Historic Quarry Trail and 1 in the trail-head parking lot; 3 along the Fossil Lake Trail and 2 at the trailheads; 1 on the visitor center porch, and 3 along the monument's scenic road. The panels represent various design generations and do not present a unified NPS messaging system.

#### **Analysis:**

The staff has made noble attempts to tell the story of the ancient fossil lake landscape and historic quarry operations in the monument using the HFC Wayside Technical Assistance Program. However, it is time to take a comprehensive look at wayside development. Wayside exhibits have great potential to assist management and convey safety and resource management messages. They also enhance visitors experience by interpreting the geology of the region as it appeared 50 million years ago as a subtropical environment. Waysides would contribute greatly to the fossil preservation message and the geologic scene if strategically placed throughout the monument and neighboring partner areas. Waysides would also assist visitors with site orientation and visitor experience planning.

### **Website**

In FY02, the staff, with volunteer assistance, created the "In Depth" webpage link from the Servicewide template.

#### **Analysis:**

- The website is informative and creates a positive first-impression. However, it is not easy to navigate. In order to get from the Servicewide template cover page to monument specific information, the virtual visitor needs to know to select "In Depth". Lack of direct connection to this information from the cover page makes navigation cumbersome. From the "In Depth" page visitors can receive information on:
  - trip planning, educational programming, and site specific learning opportunities. Recent research conducted in Fossil Basin is available via links to the scientists' websites.
  - maps and photographs of the monument, facilities, and fossils.
  - partner areas.
- Some "In Depth" partner links are broken including the Kemmerer Chamber of Commerce, the Wyoming Chapter of OCTA, and the Oregon-California Trail Association. The Intermountain Natural History Association link does not connect to the Association's front page.
- The staff needs Servicewide web training in order to make the website more visitor-friendly. Currently, the staff can make only very simple updates to the Servicewide/park cover page template, and none to the "In Depth" extended pages.

## Media Assets

Media Assets include other available resources that support the design of personal services programs or other interpretive media (exhibits, publications, website, etc.)

## Museum Collections

The catalogued collection includes archives (paper records, photographs, videotapes, and aerial photography) fossils (mammals, fish, plants, insects, trace fossils), study skins, herbarium, and artifacts.

Issues:

Much of the collection from the monument's research quarry is common species. The more uncommon mammal, reptile, and even bird fossils are found outside monument boundaries. These specimens come into the collection rarely through a temporary loan.

All rare fossils are reproductions. The collection of "original" fossils lacks diversity: there are no mammal, reptile, bird or amphibian fossils from the Eocene era. The monument's collection is limited.

Many of the photographs are not digitized, which limits access by interpreters and scholars.

The monument lacks sufficient temporary exhibit space to display and interpret new finds from ongoing scientific research and loans from commercial quarries.

## Interpretive Collection

The interpretive collection includes original and

fossil replicas from the Eocene Green River and Wasatch Formations and other geologic eras, rock samples, modern animal skulls, antlers, bones, magnifiers, laminated images, a spotting scope, and other props.

Issue:

The interpretive collection is stored where space is available. Storage should be located in a central area and be easily accessible to interpretive staff.

## Monument Libraries

The **General Reference Library** is available for use by the seasonal staff for interpretive program preparation. The library is expanding due to an annual donation from INHA and targeted funds from the monument's donation account.

The **Research Library** is a catalogued collection managed by the museum specialist. It is available to staff and by appointment only to outside researchers. The collection includes reference material on earth sciences, life science, archeology, history of the monument, rare books, and related studies including master's theses and doctoral dissertations, maps, and periodicals.

## Monument Goals for Libraries:

Develop the research library into a reference center for the Green River and Wasatch formations.

Pursue funding to upgrade the cataloguing to the "Voyageur Catalogue Program" for inclusion on the Servicewide parknet website. Both libraries are catalogued in the NPS "Procite" catalogue computer program.



13' juvenile crocodile, *Leidyosuchus*; replica, Photo by Jeff Vanuga

Issues:

1. The monument does not have sufficient staff or funds to promote scholarly access.
2. Space. Behind the scene work areas are very limited. An expanding library collection magnifies the problem.
3. The impacts of limited staffing include:
  - data entry to catalogue new materials occurs only during winter months.
  - current staff levels prohibit upgrade to the new Servicewide catalogue program.
  - the frequency of trips to obtain newly published research (dissertations and masters theses) is limited to once a year. At minimum, biannual trips are necessary to obtain up-to-date research. These trips also provide a strong connection with students for future projects and hiring opportunities. Trips to the University of Utah or Brigham Young University take one to two days to complete and require an overnight stay.

## Personal Services

### Staff

#### Permanent Staff

The GS-12 Chief Ranger (I &RM ) position, vacant since May 2003, oversees the interpretive division at Fossil Butte National Monument. The GS 9 Lead Interpretive Ranger plans and conducts interpretive programs year round and supervises the front-line summer staff. Strong geology and biology backgrounds are critical recruitment/hiring requirements for interpretive

positions.

- October through April the lead interpreter is responsible for visitor center operations including the information desk, bookstore sales, fossil preparation lab demonstrations, providing programs requested by large groups (bus tours, school classes), and outreach.
- Seasonal staff, May through September, consists of one GS-5 and one or two GS-4 seasonal interpretive rangers, two Student Conservation Association (SCA) interns, and one Intermountain Natural History Association (INHA) sales clerk.

### Volunteers and Interns

The monument relies on the Volunteer In Parks Program to make up for eroded staffing and operating funds. On average, and mostly from May through October, fourteen volunteers per year complement staffing at Fossil Butte National Monument. They provide crucial assistance to interpretation (1599 hours), and resource management (248 hours), curatorial/paleontology (447 hours), and administrative and maintenance projects. Sixty-eight percent of the hours provided during FY 2004 were in the interpretive division. Fossil Butte receives \$1000 dollars from the Intermountain Region to assist with the monument's VIP program. Volunteers are reimbursed for mileage and uniform costs (\$2,172/year). Total FY04 VIP/Intern expenditures were \$8,830 (\$7,830 from monument donation account).

Volunteers and interns assist with front desk operations (439 hours), fossil preparation demonstrations (54 hours), weekend quarry programs (334 hours), Junior and Senior Ranger program (35

hours), roving (86 hours), and school groups (20 hours). They perform a crucial role in the success of the interpretive program by contributing to both visitor satisfaction and the understanding of the monument story. Projects in other divisions include wildlife monitoring, exotic plant control, stream restoration, cataloging museum specimens, fossil surveys, fossil excavation, filing, fence repair, and trail maintenance.

The Student Conservation Association funds one twelve-week internship from May 1-July 24th. The monument donation account supports the second internship scheduled August 1 through October 23rd. Four days/week are dedicated to the interpretive division and one day/week to resource management projects.

The Geological Society of America funds twelve weeks of a fifteen-week internship. The monument's donation account supports the remaining nine weeks. On Saturday and Sunday during the summer this intern operates the research quarry providing visitors the opportunity to assist in the scientific collection of fossils. Three days/week they assist the museum specialist with cataloging and fossil surveys.

The past five years, Fossil Butte National Monument hosted seasonal international volunteer interns from Canada, Scotland, England, and Russia. They provided assistance to the interpretive division 20 hours/week.

#### Staffing Analysis:

The planning team was impressed with the dedication, accomplishments, and quality of interpretive services provided at the monument. It is evident that visitors feel welcome and interact with an informed and friendly staff. The 2004 Annual Visitor Survey Card (VSC) survey reported 96% of visitors to Fossil Butte National Monument were satisfied with facilities and visitor services.

- Assigned collateral duties consume approximately 75% of the lead interpreter's time. In addition to presenting programs, the lead interpretive ranger hires, supervises, and trains the seasonal interpretive staff, and coordinates the Volunteer in Parks Program and the Cooperating Association Program. Year-round, 10% - 15% of the workweek is devoted to managing the fire program and 5-10% to coordinating the Volunteer in Park and Intermountain Natural History Association. In the absence of a chief ranger, the lead interpreter is responsible for preparing GPRA goals for the interpretive division, writing the annual interpretive plan, and preparing other planning documents. In addition, when the chief of maintenance is absent, the lead interpreter acts as back-up water treatment operator. In summary, what this means is that generally the lead interpretive ranger spends only 5 - 10 % of the work year conducting interpretive programs or planning new ones.
- The current interpretive operation is dependent on all other divisions for visitor center operation. Basic operation and successful program expansion requires at least one additional full-time

interpretive position. This second position is critical for successful program expansion.

- Any variations in staff due to transfers or funding reductions mandate a cutback in the programs and services.
- October - April, 36% of the interpretive workweek (the lead interpreter's days off) is covered by another staff member from a different program area including: the museum technician, administrative staff, or superintendent. This problem is magnified during holidays, vacations, and unscheduled sick leave.
- It is difficult to promote tours when coverage takes away from another program area.



Interpretive porch program, NPS photo

### Interpretive Training

The permanent staff strives to provide seasonal and volunteer interpretive staff with the training and experience to develop into top-notch interpreters. The goal is for every visitor to leave Fossil Butte National Monument with all the information they desire, plus a little more. The seasonal staff attends 40 hours of training in May. Training includes the history and mission of the National Park Service, paleontology and geology of Fossil Basin, flora and fauna of Fossil Butte National Monument, interpretive techniques, first aid, and CPR. Training follows Interpretive Development Program principles, the basis of all National Park Service interpretive products.

Analysis:

- Funding for the permanent interpretive staff to attend training is inconsistent.
- Travel restrictions now limit attendance to one

training activity per year.

- Collateral duty assignments such as fire training preclude attendance at desired interpretive training opportunities.
- A bonus for the interpretive staff is interacting with the scientists doing research in Fossil Basin, which greatly enhances their knowledge of the monument's story.

### Interpretive Program

#### Porch Programs

Twenty-minute "Porch Programs" are the primary formal programs offered by the interpretive staff. Scheduled daily during the summer at 10:00 a.m., 12:00 p.m., and 2:00 p.m. on the east porch of the visitor center, programs introduce visitors to the area's geology and fossil resources. Approximately 22 percent of visitors attend these programs.

Analysis:

Because there is no shade in this area, visitors sit in the direct sun. Program attendance is drastically reduced on hot summer days.

#### Junior/Senior Ranger Program

The self-directed Junior and Senior Ranger programs provide the opportunity for all visitors to expand their experience at Fossil Butte. This 1-3 hour program utilizes booklets for four age groups and includes a ranger-led hands-on opportunity to "clean a fossil" using a plaster covered fossil replica. This activity is the "highlight" of the visit for many.



Seasonal staff get a lesson on stratigraphy, NPS photo

**Fossil Lab Preparation Demonstrations**

Live fossil preparation demonstrations are popular with visitors of all ages. These demonstrations are scheduled during the busiest part of the day, usually between 10:00 a.m. and 3:00 p.m. but not on a regular basis because of limited staffing. During summer 2004, 13 hours of fossil preparation demonstrations occurred each week (1-2 hours/day, seven days/week); 35 hours per week are desirable.

Analysis:

- Many visitors leave disappointed because they were not able to see this activity.
- Staff and volunteers conducting this program require training from the monument paleontologist.
- Time to set-up/take down equipment and specimens is required.

**Interpretation at Research Quarry**

*Somehow we need to juxtapose the difference between a research quarry and the care that is taken not to destroy evidence with what we saw at the commercial quarry. There we saw massive destruction of a landscape, where a tremendous amount of waste seems to occur. **Workshop Participant***

The purpose of the research quarry is described previously in "Other Planning Considerations". This section of the document will address the interpretive component of the research quarry.

On weekends, June through August, visitors may access the research quarry from the Fossil Lake

Trail. An intern paleontologist works in the quarry collecting baseline data. After an introduction, visitors may assist in the scientific collection of fossil specimens. This "hands-on program" creates an interpretive opportunity while simultaneously carrying out scientific research.

Analysis of the Interpretive Program at the Quarry:

- This is a very important experience. However, lack of shade tends to shorten participants' time at the quarry.
- Most visitors do not venture past the visitor center.
- The lack of staff and limited fossil storage space restricts this program to weekends.
- Visitor participation in ongoing research and excavation provides opportunities to learn about the importance of leaving fossils in place. This is an interactive way to approach monument regulations protecting fossil resources.

**Roving Interpretation**

Roving interpretation is scheduled twice a day in 3-hour blocks on Saturday and Sunday, and twice a day in two-hour blocks Monday through Friday during the summer.

Roving presents an opportunity for visitors to interact with NPS staff in the natural environment of the monument. Spontaneous interpretive contacts facilitate a connection between the interests of visitors and the significance of the monument.

Analysis:

- Prior to FY03, summer staff self-scheduled

roving assignments, but never quite found the time to get out in the field. Daily scheduling by the lead interpreter has eliminated this void.

- Priority lies in scheduling staff to cover the information desk and formal interpretive programs. Roving interpretation rarely occurs September through May.

## Educational Programs

### On-site Programs

Formal on-site educational programs at Fossil Butte National Monument are very successful. In 2004, 705 students (28% of the monument's visitation) participated in the environmental education program.

Program goal: to impart a special appreciation for paleontological resources and encourage a preservation ethic in participating youth.

### Off-site Programs

Outreach programs include occasional visits to Kemmerer area school classrooms, Fossil Country Museum-sponsored children's campfire program, activities for the annual Kemmerer Fossil-Fest celebration, and occasional teacher workshops.

### Traveling Fossil Education Kits

In 1993, Fossil Butte National Monument developed a fossil education curriculum and traveling kit for 2nd and 3rd grade students through a Parks as Classrooms project grant. The curriculum and kit assist teachers who introduce fossils in their science curriculum. Fifteen kits are available to teachers throughout the continental USA. Teachers can use the kits for six weeks and are responsible for return postage. The popular kits,

available since 1994, reach approximately 600 students (20 classes) each year.

## Interpretive Program Analysis

- The monument does not have sufficient staff to interpret the broader story of the Fossil Lake system.
- The current program does not address interpretive themes four (cultural history) and five (unencumbered vistas and skies).
- The public is interested in the research quarry and the fossil preparation lab but visitor access to these areas is limited due to staffing levels.
- Most of the 20,000 annual visitation is during the "visitor season" from Memorial Day weekend through Labor Day weekend. Even with seasonal staff, the monument is often unable to meet visitor expectations for live fossil demonstration preparations, quarry visits, and additional activities such as guided hikes.
- April, May, September and October are the months for school group visits. Many seniors and retirees also visit during these months, often 30-40 each day. Unfortunately, they often miss out on programs because the seasonal interpreters are busy with school groups and cannot present fossil demonstrations and other formal programs.
- November through March visitation is minimal and sporadic, occurring usually on weekends. As only one ranger staffs the visitor center through the winter months, formal weekend programs are impossible to provide. The interpretive program is limited to covering the visitor center and visiting classes in Kemmerer. The visitor center remains open during the off season because closure will not accrue cost savings. The museum specialist, backed up by the administra-



Playing the Fossilization Game, NPS photo

tive staff, covers the information desk when the lead interpreter is off.

## Partnerships

Partnerships with federal, state, local and private entities continue to enhance the interpretive program in a variety of aspects

## Research

- For more than 20 years Loma Linda University and the Chicago Field Museum of Natural History have contributed significantly to Fossil Butte National Monument's research program. Both provided technical assistance for visitor center exhibits in the 1980s and continue to provide the monument with the latest scientific information.

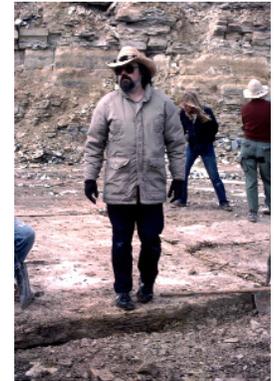
Dr. Paul Buchheim of Loma Linda University completed a three-year project investigating the paleoecology of a recently discovered fossiliferous bed in the upper member of the Green River Formation. Dr. Buchheim is currently assisting the monument in mapping 12 geological 7.5-minute quadrangles that will include the monument and surrounding area. This project will be completed in 2006.

Dr. Lance Grande of the Chicago Field Museum of Natural History began his studies of the paleontology of Fossil Basin in the 1970s, and has maintained an association with Fossil Butte National Monument for many years. Although the bulk of his field work takes place outside monument boundaries, his contributions to the understanding of this unique paleoenvironment enable the interpretive staff to present an

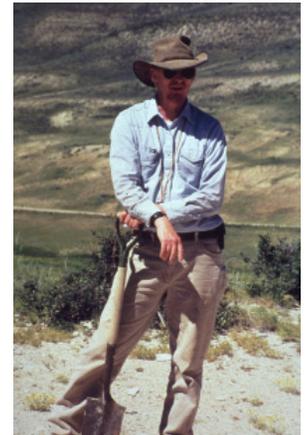
increasingly more detailed picture of the past. His work has made the Field Museum of Natural History the world's most complete repository of Green River Formation fossils.

In 2004, the Chicago Field Museum and Fossil Butte National Monument formed a partnership to display unique and scientifically important fossils. Specimens from the Field Museum's Green River Formation fossil collection will rotate through exhibit cases at the monument's visitor center. These temporary displays will address the diversity of life discovered in Fossil Lake and the scientific research that has occurred in Fossil Basin beyond the monument boundary.

- The University of Michigan studied the fossils of the Wasatch Formation between 1995 and 1997. A manuscript describing their findings is in preparation for publication in a peer-reviewed journal.
- During summer 2001, Karen S. Hockett and Joseph W. Roggenbuck from Virginia Tech in Blacksburg, Virginia conducted a two-part visitor study. Part one assessed visitor characteristics and the influence of information acquired at the visitor center on their fossil knowledge and ethics. Part two addressed the influence of interpretation on visitor attitudes and behavior towards fossils. Findings from this research assist the monument in evaluation of visitor services.



Dr. Lance Grande,  
ichthyologist,  
NPS photo



Dr. Paul Buchheim,  
sedimentologist,  
NPS photo

### **Cooperating Association**

The Intermountain Natural History Association (INHA), formerly Dinosaur Nature Association, operates a sales outlet in the visitor center. Educational items for sale include publications, posters, postcards, video programs, and fossil replicas. Convenience items include film, bottled water, and environmentally friendly mosquito spray. The association supports monument interpretive efforts through donations for education, donation incentives, library publications, and fossil preparation tools for visitor demonstrations.

Budget constraints in FY 2003-2005 prevented INHA from providing their yearly cash donation, which historically averages \$5200. The INHA board hopes to resolve this issue prior to 2006. If not resolved, the monument may reconsider its agreement with INHA and consider partnership with a different cooperating association.

### **Fossil Country Museum**

Currently on display at the Fossil Country Museum is a monument-developed, temporary exhibit that introduces visitors to the well-preserved fossils of Fossil Basin. The museum provides a unique opportunity to interpret the monument's themes through exhibits and programs. Fossil Butte National Monument also participates in museum-sponsored summer campfire programs.

### **Wyoming Geologic Survey**

The Wyoming Geologic Survey is developing several sales items available through the Intermountain Natural History Association at the visitor center. A poster featuring the fishes of

Fossil Lake, scientific research volumes, a fossil fish card game, "Then and Now" publication comparing modern and ancient organisms, and postcards are some of the proposed interpretive items.

Rare fossils discovered on state lands are turned over to the geologic survey and occasionally loaned to the monument. In 1988 a rare bat fossil and in 1996 a crocodile scute were loaned to the monument for public display. The Survey is currently preparing a bird for display at the monument.

### **Private Fossil Quarry Operators**

A unique partnership exists with the commercial fossil quarry operators of Fossil Basin. Some provide fossil specimens for use in fossil preparation demonstrations at the visitor center. Many invite the monument paleontologist to document and photograph unique fossil and geology specimens, or loan the specimens for public display at the visitor center. One commercial fossil quarry allows Dr. Grande to collect scientific specimens for his research on the evolution of fishes. Some donate specimens to the monument and allow the staff to visit their quarries during seasonal training.

Fossil Butte National Monument's excavation of fossils is limited and small scale to preserve non-renewable fossil resources. Without cooperation from commercial fossil quarry operators, much of the information about the diversity of life of Fossil Lake would not be available.

**Issues and Influences**

The July 2002 Foundation Workshop identified two different management issues that could be addressed through interpretation:

**Issue 1:**

How should Fossil Butte National Monument interpret the ancient lake ecosystem that extended well beyond the current monument boundary?

Background:

Today, the national monument landscape protects only a small portion of the original Fossil Lake and the larger Green River Lake ecosystem. The national monument consists of 13 square miles (8,198 acres) of the ancient Eocene Epoch Fossil Lake, which covered at least 900 square miles or 595,200 acres. Lands that were once part of the larger ancient ecosystem today cross state boundaries and are owned by many different land holders - private, state, and federal. Currently no partnership organization exists to voice the broader interpretive story.

**Issue 2:**

How can the national monument interpretive program reduce visitor misunderstanding regarding NPS regulations that prohibit commercial fossil digging in the monument and convey that fossils are non-renewable resources?

Background:

The national monument is located in an area where digging for fossils is a large commercial activity. There are 10 or more legal quarries just outside the monument boundary. In addition, the Wyoming Travel and Tourism Department

promotes "Fishing for Fossils" to attract visitors. Visitors are confused regarding the rules and regulations for collecting fossils. Some "fossil-fishing" activities are allowed in locations (private and state lands) a few miles from the national monument, yet these same activities are illegal at Fossil Butte National Monument and on surrounding Bureau of Land Management lands.

# RECOMMENDATIONS

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## Recommendations

Interpretive planning analyzes significant needs and recommends a wide array of interpretive services, facilities, programs, and opportunities for partnerships to communicate in the most efficient and effective way the monument's purpose, significance, and values.

This "Recommendations Section" is a description of programs, media proposals, and partnerships designed to realize the visions, objectives, themes, and visitor experiences previously described for Fossil Butte National Monument. The recommended methods of presentation should not limit creativity in the development of personal services or media design.

## Planning Criteria to Address During Implementation

During the development of the Long-Range Interpretive Plan seven areas were consistently identified as the areas that require the most significant emphasis to interpret monument themes and achieve management goals for interpretation and visitor services. All recommendations reflect and support this program emphasis. These areas include:

1. It is crucial that NPS stewardship philosophies and site interpretive program messages, operations, and practices unite to provide a positive visitor experience that supports desired management objectives. The interpretive program should:
  - communicate the inherent scientific and educational value of paleontological

resources.

- better define the NPS mission at the monument
  - work with the Wyoming Travel and Tourism Department to ensure the monument preservation message is not mixed with the promotion message of commercial quarries.
  - inform visitors that the monument will prosecute individuals when fossils are illegally removed from the monument.
2. The planning team feels a balanced discussion of fossil collecting on parklands and an explanation of NPS policy is critical in an environment where fossil fishing is promoted as a tourist activity and commercial quarries operate. The importance of science and an explanation of why fossils cannot be collected without a scientific permit at Fossil Butte should be emphasized versus a taboo on collecting. During workshop discussions, scientists reminded participants that many of the world's greatest paleontologists began their studies as youthful collectors curious about what was in their backyard. Explaining the reasons behind policy and practice in a national park area is an important cornerstone for building understanding and support.
  3. Updated and/or new interpretive media and personal services should integrate the depth and breadth of the monument story. The approach should: (a) focus on what fossils tell us about the ancient ecosystem, evolution and adaptation rather than an object emphasis approach that focuses solely on fossil identification; (b) foster a self-guided visitor experience that demonstrates the connection between field research in a quarry, fossil preparation, and ongoing scientific

study; (c) convey the excitement of what was learned, how new information (or important fossil "finds") was discovered, and its significance to the scientific community; (d) integrate the area's cultural history into the story of the ongoing understanding of this unique and world renown fossil-rich area; and (e) explain:

- how the 21st century landscape relates to the boundaries of ancient Fossil Lake and the geo-dynamics that caused these changes.
- from 50 million years ago to today, what and where in the world are the related tropical species that evolved from the ancient Fossil Lake environment?

4. Pre-visit and on-site media should encourage visitors to experience opportunities beyond the visitor center.
5. The staff feels they are under-serving student and senior groups.
6. The staff is unable to devote the time required to pursue partnerships necessary to interpret the ancient lake system beyond monument boundaries.
7. An accessible fossil quarry is an important visitor experience. The quarry demonstrates the importance of scientific research and careful documentation, provides visitors with a hands-on experience, and promotes a preservation ethic.

### Common Elements to All Monument Interpretation

The following principles apply to all interpretation

at Fossil Butte National Monument:

- All interpretation will address physical and programmatic accessibility.
- When possible, actual fossils (preferably from Fossil Basin and monument-specific examples) will bring the story alive for visitors.
- When possible, the monument will partner with scientists, universities, landowners, nearby land management agencies, institutions and quarries to develop programs, media, share research, etc.
- The monument will implement recommendations from the National Park Service Identity Project as interpretive media and signs are upgraded.
- Interpretation will include examples and perspectives from diverse scientific and historical points of view.
- When possible, internet "virtual visitors" can view key monument vistas and access new research, studies, management plans, and historical information.

All planning team recommendations for facilities, interpretive media, personal services and partnerships to support the development and delivery of the interpretive program are discussed in this section of the document. Phased implementation priorities are outlined in the Appendices.

### Pre-Visit

Provide pre-visit information through the following venues:

1. by telephone, mail, and the Internet.
2. partner with community leaders to collectively



Unidentified bird (replica), NPS photo

market Fossil Butte as a key area attraction, and improve informational signs directing travelers to Fossil Butte National Monument and the community.

3. Target domestic and international tour operators in order to acquaint visitors with the variety of monument experiences and opportunities.
4. Partner with the Wyoming Travel and Tourism Department to expand public relations programs to increase off-season (October-April) visitation. Assist with the development of their marketing/media plan, and coordinate with the local business community to market monument hours of operation, program schedule, and nearby dining facilities and accommodations. Highlight dramatic weather: monument offers a unique indoor winter discovery experience in a museum setting; promote winter recreational opportunities - cross country skiing, snowshoeing, and wildlife viewing.
5. Utilize website for trip planning. Include safety tips for visitors planning day hikes. Address the need to carry food, water, and wear appropriate footwear.

## **Website**

### **Short-term:**

- Send lead interpreter to web training and refresher training as necessary. The web site is a useful tool for successful pre-visit trip planning and the lifeblood of an expanded interpretive program beyond the boundaries of the monument.

- Keep website current, update as required by National Park Service, and correct broken links.
  - Maintain website link to key scientists doing research in Fossil Basin. Update with the latest scientific discoveries in the monument or basin.
  - Post new interpretive materials developed on-site for public use.
  - Post student/teacher curriculum materials.
  - Include Superintendent's Page addressing issues and appropriate behavior in the monument.

### **Long-term:**

- Promote scholarly access. Develop an Eocene geology and paleontology bibliography for researchers. The database will include documents, archival material, and research library materials.
- Add video clips of someone working at the research quarry. When the quarry is operational add webcam access for action viewing. Include demonstrations from the education program and the fossil preparation lab.

## **Arrival Experience**

- Modify the entrance sign with hours of visitor center and grounds. Encourage visitors to stop first at the visitor center and include mileage to different destinations.
- Develop a specific message that the removal of fossils and other items from the monument is prohibited and that the monument prosecutes violations. Place signs at the entrance of the Historic Fossil Quarry Trail and Fossil Lake Trail.
- Locate informational bulletin boards/wayside exhibits outside the visitor center and at all

- parking lot pull-offs. Encourage a stop at the visitor center first. Provide information on other monument experiences with recommended time estimates. Repeat the fossil removal/monument preservation message in all orientation panels.
- Pursue funding to redesign parking lot to accommodate increased use by recreation vehicles and buses. Incorporate shaded pet kennel area and water fountain for visitors and pets.

## Facilities

### Visitor Center

*The visitor center comes across very piecemeal. You have created temporary fixes to address what is not interpreted in the main exhibit area. This approach is not highly successful or easy to follow. This is a complex story that requires a cohesive approach. Workshop Participant*

- Develop the primary visitor experience at the visitor center in recognition that 90% of the visitors do not venture further into the monument. The planning team discussed three funding dependent alternatives. Pursue "Alternative 1" if limited funding is available; or, Alternative 2, or 2A if the monument receives Servicewide Major Exhibit Planning and Installation funding. (Please note: since this is a 10-year plan and the funding climate may change through the receipt of Servicewide and/or partner funding, it is conceivable that alternatives 1, 2, and 2A could be achieved over the next 10-year period. The recommendations below outline a logical, cost-effective approach.)

### Alternative 1:

#### Exhibits:

- Through the Harpers Ferry Center (HFC) Task Assist Exhibit Rehabilitation Program, obtain cost estimates for minor rehabilitation of the exhibits. If the cost is reasonable, rehabilitate existing exhibits in the following priority order:
  1. Correct inaccuracies in the Fossil Lake mural including redrawing the tapir, show a greater diversity of plants in the foreground, adjusting the snake, and correct other inaccuracies.
  2. Correct text inconsistencies and inaccuracies on exhibit panels.
  3. Redesign exhibit case and overhead exhibit lighting to reduce energy use, lower heat output, and improve the lighting of the exhibit panels and artifacts.
  4. Remove timeline exhibits and replace with fossil bird tracks and lakeshore exhibit.

Strongly recommend contracting this work with an exhibit fabrication firm with exhibit design capability to ensure modifications are compatible with the current design.

#### Audiovisual:

5. Continue use of Fossil Prep Lab video. Add a text disclaimer to program stating the location of the quarry featured in the video is outside of the monument boundary. Include an explanation

about the monument's research quarry. Obtain cost-estimate from HFC to update video with verbatim narrative captions or informational subtitles, add on-screen text "The End", and convert video to DVD format. Purchase and install new DVD equipment in a dust free area.

6. Obtain HFC cost estimate to reformat "Lance and Paul Go Fishing" to DVD. Add a text disclaimer stating the location of the quarry featured in the video is outside the monument boundary. Include an explanation about the monument's research quarry. Purchase and install new DVD equipment.
7. Continue developing electronic ranger, building upon research quarry program and adding a section on human history. Move electronic ranger to a stand alone cabinet.

### **Alternative 2:**

#### **Exhibits**

- Pursue funding for major exhibit rehabilitation. Any interpretive project costs exceeding \$500,000 requires NPS Development Advisory Board review. In addition to addressing primary interpretive elements, it is critical to eliminate competing noise elements documented in the "Existing Conditions Section". During the exhibit planning/value analysis process consider expanding the area devoted to interpretation of this very complex story by:
  - relocating staff offices;
  - adding outdoor exhibits to the visitor center porch (Alternative 2A); and

- constructing designed/architect approved pod addition.

During this planning/evaluation phase, explore partnerships to forward mutual goals and facility and funding needs.

#### **New exhibits should:**

- Communicate the lake environment diversity
- Incorporate interactive exhibits
- Include animation of landform changes over time
- Communicate the excitement of past and present scientific discovery
- Incorporate new scientific information
- Obtain and incorporate plant, insect, and mammal fossil specimens representing the diversity of the lake environment
- Replace fossil casts with original fossil specimens as possible
- Communicate the wonder and mystery of evolution and extinction
- Compare modern and ancient ecosystems
- Present the monument as a center of scholarly study.
- Discuss beneficial and detrimental effects of fossil collecting
- Present the case for the need to preserve fossil resources
- Expand and redesign the sales area to enhance sales and include more interpretive sales items (See related design comments in the "Personal Services" recommendations section, pages 45-48.)

#### **Audiovisual:**

- Proposed videos/AV/interactives for new exhibits include:
  - "Fossil Quarry": film paleontologists uncovering layers and include interactive

- digital animation of quarry. Make it so the user can click on each layer for more information
- "Computer Animation Video" to demonstrate change over time; geology; climate; interconnectedness of flora, fauna with ecosystem; evolution/extinction
- "Scientific Research": AV program illustrating the scientific process e.g., quarrying by Dr. Buchiem
- Paul and students; answer the questions why the work is important; what research tells us about the past, present and future; "So what?"
- Addressing the issue that fossils are a non-renewable resource; preservation message; poaching removes pieces of the scientific puzzle
- 3D model of Fossil Basin, with AV to tell the Fossil Lake story
- Replace the existing visitor orientation video.
- Expand interpretive opportunities on the porch:
  - Develop a relief of the landscape as it looked 50 million years ago.
  - Install bronze/porcelain fossil plaques for the visitor to touch and learn about the various types of fossils discovered in the region. The plaques will extend interpretive opportunities when the visitor center is closed and enhance porch programs. Incorporate the plaques into the patio tiles.
- Develop new waysides for the patio railing to enhance enjoyment and appreciation of the open space and panoramic views of the sagebrush steppe landscape. New waysides can change to include interpreting sage grouse, pronghorn, and elk (winter); or, year round wayside panels can address wildlife through all four seasons. Additional waysides could interpret the dynamic interaction between people and the land including coal, oil and gas extraction, wind farms, and rail and highway transportation. These exhibits should be planned as part of the Wayside Exhibit Proposal/Plan; see recommendations in "Wayside" section of document, page 43-44.

### **Alternative 2A:**

Short of building an annex, the monument could expand outside onto the patio IF SHADED. Zion National Park successfully brought the visitor center museum outside. The planning team recommends implementation of all items in the next section (Visitor Center Porch) regardless of which alternative is pursued for the visitor center exhibits.

### **Visitor Center Porch**

- Design and build an open, shaded area on the patio for interpretive talks and general visitor comfort when used at other times.

### **Research Quarry**

*Quarries offer two opportunities: collecting and the pursuit of science. These opportunities are not necessarily mutually exclusive...[The]... important discussion is what is the role of Fossil Butte's research quarry in bridging the understanding of why things are different here in the national monument?*

#### ***Workshop Participant***

- Provide shade at the existing quarry for paleontologist and visitors.

- Provide interpretive access to existing quarry through a pre-taped video experience in the visitor center.
- Add a follow-up interactive website component. After visitor assisted fossil-finds are catalogued, post a photograph of the visitor, the fossil found, and pertinent fossil information on the website.
- Continue efforts to develop an accessible fossil quarry experience available to all visitors at all times the monument is open during the busy season (Memorial Day through Labor Day). Pursue partnerships in support of this effort.

### **Scenic Drive and Cundick Ridge Area**

*This is where you see and begin to understand the big picture. I've visited this park four times, and never been up to Cundick Ridge. After taking the Scenic Drive and looking at the vistas on top, I finally put it together. Workshop Participant*



View from Cundick Ridge looking east, NPS photo

*This is the best place to tie the park to the larger ecosystem. Can also use the scenic views to discuss issues. Stock dams and cattle/sheep grazing are viewable on BLM lands. Workshop Participant*

- Promote this visitor experience in interpretive opportunities.
- Improve existing signs regarding road conditions and vehicle restrictions.
- Pursue funding for an engineer's analysis of pull-off locations, locate parking areas on top of the ridge, and trail extensions to key vistas. The engineer should also evaluate a possible alternative route from the ridge top. Install interpretive waysides in parking areas and at trail vistas. Proceed with planning once study is completed.

### **Backcountry Byway**

- Continue to pursue this partnership project. Incorporate interpretive requirements as project proceeds. Consider an accessible quarry during interagency discussions. Recommend that road improvements not include paving. It is important to keep the "backcountry" feel.

### **Historic Quarry Trail**

*The trail vistas, views of the old Town of Fossil, the railroad, and the existence of the fossil prospector's cabin depict the spirit of the old west. The trail actually follows the old quarry trail. It's neat to know that you're following in the footsteps of other fossil collectors. Seeing the deserted collector's shack smacks of the romance of the past. Play on this. Workshop Participant*

Pursue funding to develop new waysides as part of a the Wayside Exhibit Proposal/Plan.

1. Focus on interpretive theme 1, 2, & 4. Connect the area's vistas (view of railroad and Town of Fossil), remnants of the Haddenham cabin and the historic quarries to the fossil collecting history of the monument. Integrate the monument's significance in the paleontological world and NPS resource preservation policies as appropriate.
2. Since this trail precedes the visitor center in the "arrival experience", many visitors start their visit here. Include monumentwide information at the trailhead parking lot. Provide "monument trip planning" - information on the variety of visitor experiences with recommended time estimates to complete the activity.
3. Reverse the trail route to take advantage of views on the way down. Sign the route along loop trail to provide a more cohesive interpretive experience.
4. Preserve the Haddenham cabin, designated a Historic Landmark
5. When developing future media, incorporate Gertrude Lewis' written history of area quarries. (Gertrude's family homesteaded in the area and she provided the monument with detailed information about area fossil digging history.)
6. Save the story of environmental change for the trail experience offered along the Fossil Lake Trail; theme 3 is better handled there. But since this trail provides the best opportunities to view

falcons in the monument, maintain a wayside that interprets raptors along this trail.

## **Fossil Lake Trail**

*Geology creates the landscape that attracts the animals. In addition to the porch area, along this trail you also have opportunities to talk about the issues in the park that affect wildlife.*

### ***Workshop Participant***

- Change the trail name to reflect the connection between the ancient ecosystem and today's sagebrush-steppe environment. Highlight the viewable landscape adaptation, evolution, etc. (theme 3). The recent appearance of aspens, due to beaver activity, provides comparison of today's environment and animals to the past/ancient ecosystem. Compare: plant to plant, animal to animal, and ancient to existing ecosystem.
- Review the trail waysides installed in 2002. Discuss how best to interpret the seasonal research quarry. (Note: This will not be necessary if quarry relocation precedes funding of a Wayside Exhibit Proposal.)

## **Interpretive Media**

### **Audiovisual**

#### **Short-term Recommendations:**

- Request a Harpers Ferry Center (HFC) audiovisual technician specialist to perform a two-day site evaluation. (Recommend coordinating this trip with another Intermountain Regional park to defray travel costs.) The evaluation should

address the following LRIP recommendations and provide cost-estimates to implement them:

1. Fossil prep lab audiovisual (AV) program and equipment
  - Relocate fossil preparation lab AV equipment to the visitor center desk (outside of the lab's dusty environment). If funding is available to reformat to DVD, install DVD equipment.
  - Evaluate use of headsets or handsets for program audio to eliminate sound interference with visitor center desk operations.
2. Audiovisual/Multi-purpose room
  - Determine how best to prevent migration of sound into other areas of the visitor center. Compare the use of soft panels versus hard walls, sound cones above seating, and/or baffles (wings) on AV cabinet to prevent sound from traveling into other spaces.
  - Move speakers away from TV monitor.
  - Convert original raw footage to DVD.
  - Recommend DVD equipment for "Lance and Paul Go Fishing" (AV program to be converted to DVD format) and specific installation requirements.
3. Explore connecting the VC to the current quarry location via satellite to meet accessibility requirements and allow live broadcasting. Also, add a film clip to the monument website. Make this "alternate experience" available in the VC.

**Long-term Recommendations:**

- Pursue funding to replace the existing visitor orientation video. This is a high priority. A new

video is a critically important component of the visitor center experience, especially if the monument is only able to fund minor rehab of the current exhibit (correct text labels and graphic errors).

Visitors require a concise, moving, and dramatic overview that ties the pieces of this story together in one place. A 15-20 minute interpretive video will help visitors understand the complexities of the ancient subtropical ecosystem as compared to the topography of the high desert steppe environment of the monument today. New technologies, such as high-definition video and 3D-computer animation, present new interpretive possibilities. Interpretive videos are popular with visitors, ranking third (behind tours and park brochures) in a recent NPS Social Science survey of interpretive media. Good interpretive videos are not inexpensive and provide a consistent message to visitors with little or no staffing required. The video should address themes 1, 2, and 3 and include a strong message that emphasizes the need to protect fossil resources.

**Publications**

**Short-term Recommendations:**

- Create a literature inset to the NPS uni-grid brochure that addresses preservation/law enforcement/ and fossil protection concerns.

**Long-term Recommendations:**

- Request a redesign and rewrite of the Harpers Ferry unigrid brochure. A new brochure should include:

1. the Fossil Lake story -- relate fossils to the lake ecosystem. Include a map that depicts the large area beyond the monument boundary that Fossil Lake once occupied. Coordinate with scientists for computer graphics to aid in map making.
  2. historical background and pictures of quarrying in the area.
  3. a more prominent map with shaded relief that clearly illustrates all visitor experience opportunities and the scenic road connecting to BLM land and the proposed byway.
  4. consider including an information panel depicting other places in the world where the same period and type of ecosystem are preserved.
- In-house publication possibilities:
    1. partner with local colleges to provide translations for foreign language brochures. Begin with a Japanese translation - the greatest audience need.
    2. develop a publication that relates the monument's cultural history to the nearby emigrant trails and informs visitors about the proposed scenic byway.
    3. develop more child-oriented free publications to increase visitor center learning opportunities.
    4. expand the variety of free pamphlets for varying levels of knowledge and understanding of the monument story, from introductory to in depth. (Monument has some already - interpreting

geology; fossil collecting issues; "In English Please"; Geology Terms).

## Signs

### Signs outside the monument

- Coordinate with Wyoming Department of Transportation to install a directional sign at the Route 30 bypass.

### Signs inside the monument

- Install "entering/leaving" FOBU sign at north boundary .
- Install safety signs along scenic drive including: "road narrows, steep, proceed with caution, oncoming traffic", etc.
- Work with maintenance staff to conduct a complete sign inventory that incorporates important visitor safety, wayfinding needs, and regulatory requirements.
- Upgrade monument signs to NPS Identity Standards with cyclic maintenance replacement program.

## Waysides

- Pursue funding for a Wayside Exhibit Proposal to guide wayside development toward a complete, high-quality, unified system. Prepared by HFC and monument staff, it will identify all desired wayside exhibits within the monument and external to its boundary. It will bring a unified, coherent approach to wayside exhibit development, thereby avoiding a haphazard approach resulting in multigenerational waysides with no common appearance. The proposal can include a priority list if funds are limited or need to be secured over many years.

Based on the site visit the following areas/topics were discussed for wayside exhibit consideration:



School children at waysides, NPS photo

1. Orientation/trailhead waysides should include a monument map, orientation to the monument and its resources, and safety issues. Desired locations include the Historic Quarry parking lot, Chicken Creek Picnic Area, on the proposed Backcountry Byway (BLM road), at the visitor center parking lot, and in downtown Kemmerer. The waysides could offer a monument visit plan designed to help visitors decide what to do depending on their interest and time available. For example, the panel could discuss (1) trail destinations, supplies needed, safety messages, and time needed to complete a hike; and (2) explain quarry activities, where and how visitors can participate and the estimated time needed. [Zion National Park has done this type of visit plan very effectively with a series of waysides in their plaza area.]
2. Interpretive wayside exhibits need a more comprehensive approach to interpreting the big geology story—the evolution of the region from a subtropical landscape to a high altitude, arid landscape. There are appropriate locations in the monument to dramatically depict this evolution. Waysides work best when they caption the landscape; the sites that illustrate this landscape evolution are along Fossil Lake Trail and Cundick Ridge. Other important sites to include in the proposal include:
  - The Historic Quarry Trail: focus on the cultural history of the area as it relates to fossil quarry activities over the past century. Provide a definition of a quarry

and compare the historic quarry to quarries of today.

- The area surrounding the visitor center: interpret the flora and fauna of the high arid landscape, as well as geological features.
- The Fossil Lake Trail: caption the 50 million-year geology story and introduce the visitor to a fossil quarry experience. The quarry location itself needs more interpretation so that the visitor understands the monument's preservation concerns and the quarry experience when it is closed. The current waysides along the trail inadequately interpret the landscape and a more cohesive approach is recommended.
- At the proposed Cundick Ridge overlooks and backcountry trail vistas: geology, flora and fauna exhibits.
- Along the proposed backcountry byway: enhance the Fossil Lake story (especially at the Watercress Canyon overlook). Sites and topics along the byway include the Oregon Trail, the Nancy Hill gravesite, the ranching and mining history of the area, energy development, stock trail drives and commercial fossil quarries.

## Media Assets

### Collection

- Develop an acquisition program to support the interpretive themes and the reasons the monument was established. Identify fossils, artifacts, and other items to acquire for future exhibition.

- Digitize photographs to improve access by interpreters and scholars.
- Purchase display cases for temporary loans. If the exhibit area is remodeled or expanded in the future, include temporary exhibit space within the main exhibit area.

### **Monument Library**

- Seek funding to upgrade library catalogue system from Procite to the Voyageur Catalogue Program. Incorporate completed data base as a website link for researchers.
- Continue trips to nearby universities to obtain recently published research materials to keep the interpretive program grounded in current scholarship and support interpretive recruitment needs.

### **Personal Services**

The planning team discussed and identified important future projects to undertake as part of the overall interpretive program. Program expansion with existing staff and funding is identified as "short-term recommendations". Projects outlined in the "long-term recommendations" section require the addition of a GS 9 park ranger education specialist.

Until the recommended interpretive position is filled, compromises and trade-offs will continue. Time devoted by the lead park ranger to a new program area, such as upgrading the website or developing a new program or publication, requires back-fill from other positions or a reduction in interpretive programs.

### **Short-term Recommendations:**

- Establish a monument priority for the lead interpreter (in addition to training for mandatory collateral duty assignments), monument funded yearly interpretive training.
- Find a contact within the local home-schooled community to determine how to connect with and better serve this growing audience.
- Establish, under superintendent's signature, written guidelines addressing commercial quarry inquires. This document will be used for all staff/volunteer training and serve as a guide to develop interpretive media.
- Keep website current. Provide a program/events schedule, information on management issues and land practices, and information of theme-based topics.
- Incorporate into all programs and media "take only memories, leave only footprints" and the message of fossils as a non-renewable resource.
- In addition to posting regulations on fossil theft include a message that the monument prosecutes violations.
- Provide site brochure to commercial quarry operators to distribute to their visitors.
- Develop and aggressively promote and advertise teacher workshops/certification classes.
- Continue efforts to educate the community about the scientific value of fossils. Cultivating a sense of shared stewardship, specifically emphasizing that Fossil Butte is part of the local community might help change attitudes regarding the national monument.

Outreach includes:

- Acknowledge the involvement of local residents in the monument. Institute a proactive media

program. For example: Distribute press releases with photos when new fossils are displayed, whether they are donated or loaned to the monument, highlight local connections as appropriate. Feature volunteer contributions and activities.

- Develop radio spots.
- Foster more involvement with community organizations - Chamber, Rotary, Lions, and Fossil Basin Promotion Board. Co-sponsor theme related events with local organizations. Use porch for events/general public use (as the monument now does for the Rotary Club).
- Utilize cable TV and develop a community message about the monument for this channel.

Accept that although it is a worthy goal to provide each visitor with a interactive fossil preparation demonstration and a hands-on quarry experience, it is not possible through personal services.

1. Explore opportunities with the Chicago Field Museum to station a full-time preparator at Fossil Butte National Monument.
2. Videotape programs and demonstrations at the visitor center and the quarry. Add these program clips as featured links to the monument website. Provide a monitor for visitor access at the information desk. This recommendation will meet several audience needs. It will expand interpretive opportunities to virtual visitors and provide an acceptable substitution for visitors unable to hike to the quarry. The program will also assist visitors when a knowledgeable staff member is not available at

the visitor center desk.

3. Create a "touch table" that includes reproductions of fossils and tools for a self-guided interactive experience that focuses on the process of rock removal at a research quarry.
4. If funds are obtained for an exhibit/visitor center redesign, consider making the fossil preparation lab a "behind the scenes area" available by appointment or for special programming only. The existing design promotes fossil preparation as a significant activity by its placement in the visitor center. Considering expected staff levels, it is impossible to meet this visitor expectation and unwise to make it a featured attraction in the visitor center.

In lieu of the fossil preparation lab, during the exhibit redesign create an exhibit showing the science behind the story. The exhibit should include audiovisual interactives featuring fossils "in situ", the site quarry, fossil preparation, scientific analysis and the discoveries made -- the exhibit approach should stress the relationship between each component.

### **Long-term Recommendations:**

The complexity and depth of the planning team's recommendations for personal services will require phased implementation. All long-term planning recommendations are outlined below. Recommended phased implementation priorities are addressed in Appendix D.

A second GS-9 park ranger will eliminate the current compromises and tradeoffs in programs. Presently, any time devoted to a new program must

be off set by another division's employee, or a reduction in existing programs.

- Pursue base budget increase for an additional GS-9 year round interpretive park ranger/education specialist position. Continue funding the interpretive positions at the FY2004 level: including the GS 9 lead park ranger, one GS 5 seasonal park ranger, and one GS 4 park guide.

A second permanent position will facilitate improvement of three critical projects:

1. develop a more interactive website,
2. expand curriculum-based education program beyond primary grades, and
3. pursue educational partnerships with other state, county, and federal land management agencies to promote monument interpretive goals.

After visitor center coverage and regularly scheduled programs, the aforementioned program areas were consistently identified as the highest priorities to implement during the next 10-years.

- Expand volunteer recruitment:
  - Highlight opportunities to work with fossil resources (fossil quarry and demonstration/preparation lab) and stewardship projects such as exotic species control.
  - Develop middle and high school volunteer/intern opportunities.
  - Promote RV hookup availability.
- Pursue funding to upgrade 2nd and 3rd grade curriculum based fossil program.
  - Expand existing materials to other grade levels with teacher input. Develop a kinder-

garten - 12th grade curriculum based education program for on-site (local) and long distance learning.

- Collaborate with cooperating association to offer upgraded educational kits as sales items and/or fund teacher stipends for program development.
- Coordinate the development of an expanded education program and a fossil education kit for special population groups including seniors and mobility/sensory impaired visitors.
- Continue to experiment with program offerings, times, and publicity. Program ideas include:
  - year round guided hikes and special programs such as ecology hikes, evening star programs, and co-sponsored events or seminars with local organizations and universities.
  - a program and/or demonstration that interprets components of the modern ecosystem. Focus on mammals and "watchable" wildlife. For appropriate audiences, delve into evolution, adaptation, and extinction by comparing modern creatures and those that lived during the Eocene era.
  - interpret the uplift and erosion processes.
- Develop temporary exhibits on a variety of theme related topics and highlight new discoveries. This will mitigate community feeling that nothing new ever happens in the monument. Future exhibit ideas include:
  - Illustrating the impact of fossil theft.
  - A portable display for use in the county library and other community venues.
- Work with Intermountain Regional personnel to

develop and provide staff training to improve visitor service to mobility impaired and sensory impaired visitors.

- Develop Expedition Fossil Butte
- Market the monument to college field study groups.

### **Partnerships**

- Promote partnership efforts with the Bureau of Land Management (BLM) and local community governments for the backcountry byway to expand interpretive opportunities.
- Work with BLM to conduct a viewshed analysis to protect key scenic vistas from the visitor center and the trail system.
- Collaborate with the Wyoming Travel and Tourism Department to present a clear message about the monument's mission and visitor opportunities.
- Work with Wyoming, Colorado and Utah Departments of Transportation to develop interpretive kiosks along the roads bisecting the ancient lake ecosystems.
- Continue support for scholars and research programs regarding Eocene paleogeography, tectonics, and erosion.
- Maintain cooperative partnerships with local quarry operators to share information and pursue loans of significant fossil finds.
- Pursue partnerships that acknowledge the value of commercial collection to science, and increase visitor understanding of the difference between a research quarry and a commercial quarry.
- Expand educational programming by:
  1. pursuing a formal partnership agreement with Lincoln County School District #1 and expanding curriculum-based programming through high school level. Dedicated teachers keep this program alive, a more formalized relationship that builds on these pioneer-programming efforts will be mutually beneficial.
  2. working with educators to disseminate educational materials, trail guides, and teaching activities beyond the primary grade levels.
  3. improving Internet presence making educational program opportunities more visible, and posting teacher/student materials on the website.
- Partner with Salt Lake City School for the Deaf to translate current publications into Braille.
- Seek a partner or volunteer to keep the website current. Post current interpretive publications, guides, and program materials.
- Undertake a business plan with the community to clarify economic benefits of the monument.
- Request cooperating association to:
  1. sponsor a field school seminar to provide in depth interpretive opportunities.
  2. develop and sell a poster that interprets Fossil Lake through time.

3. keep technical bulletins related to the interpretive themes "in stock" in the monument bookstore year-round.
  4. have research papers available as sales items.
- Explore alternative sites for museum displays that interpret the monument and its resources.
  - Develop publications and sales items through the State Geological Survey.
  - Consider future partnership opportunities with:
    - Colorado State, Dinosaur National Monument, and Colorado National Monument
    - federal agencies and local and state governments to establish a curatorial repository
    - Lincoln County Historical Society
    - Lions Park - State Park if established

## In Summary

The Fossil Butte Long-Range Interpretive Plan provides a strategic approach to protect monument resources through a high-caliber interpretive program. The strategy defined by monument staff, scientists, media specialists and stakeholders includes a vision broad in scope with a corresponding implementation plan. Guiding this vision are National Park Service management policies that recognize that paleontological resources are non-renewable.

The 2002 Museum Management Plan voices the resource protection and interpretive challenges at Fossil Butte National Monument:

*The paleontology of Fossil Basin tells a story of*

*change, not only of change in the paleoenvironment, but of many changes in our understanding of Fossil Lake...this story of change is ongoing as scientists continue their study of Fossil Basin. Fossil Butte National Monument strives to present the most up-to-date information obtained by these researchers to visitors.*

Unless the boundaries of the monument are adjusted to protect the most significant fossil resources, the planning team feels that in order to successfully present the story of ancient Fossil Lake and preserve related paleontological resources, interpretation must extend beyond the monument's boundaries.

*Through interpretation we build understanding, through understanding appreciation, through appreciation preservation. Freeman Tilden*

The monument lies in an area of active commercial fossil quarrying. Its 13 square miles (8,198 acres) protects only a small portion of the original 900 square mile (595,200 acres) Fossil Lake and its associated sediments. Continuing research has identified other critical paleontological resources outside monument protection, no longer placing the monument at the heart of paleontologic significance as congressional sponsors, scientists and community members originally intended. One of the primary reasons the monument was established is an unrealized dream. The recommended interpretive approach includes partnering with federal, state, private landholders, and scientists to share important scientific discoveries, new research and foster a collaborative approach to enhance public interest, appreciation and support for the resources of the ancient Fossil Basin.

The planning team feels that a balanced discussion of fossil collecting and an explanation of NPS policy is critical in an environment where commercial quarries operate and fossil fishing is promoted as a tourist activity. The importance of science and an explanation of why fossils cannot be collected without a scientific permit at Fossil Butte should be emphasized versus a taboo on collecting.

Partnerships, facility development, and increased staffing are necessary to achieve this vision. Implementing the recommendations requires a significant investment of money obtained through a mixture of National Park Service and partner funding.

Since the establishment of Fossil Butte National Monument in 1972; much has been learned about ancient Fossil Lake and much has been achieved. Knowing that the past is prologue to the future, the planning team is confident that those who work to achieve this plan will assist the National Park Service in its mission to:

*...conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations. NPS Organic Act, 1916*



Dragonfly, photo by Jeff Vanuga

## **The Planning Team**

### **Fossil Butte National Monument Staff**

Dave McGinnis, Superintendent  
Vince Santucci, Chief Ranger (transferred to George Washington Memorial Parkway)  
Marcia Fagnant, Lead Interpreter  
Arvid Aase, Museum Specialist  
Clay Kyte, Biological Technician  
Liz Parker, Administrative Support Clerk  
Kathleen Taylor, Park Volunteer

### **Other National Park Service Staff**

Mary Mallen, Park Ranger-Interpretive Planner, Harpers Ferry Center  
Winnie Frost, Wayside Exhibit Planner, Harpers Ferry Center  
Anne Tubiolo, Audiovisual Producer-Director, Harpers Ferry Center  
Ben Miller, Exhibit Planner, Harpers Ferry Center  
Linda Lutz-Ryan, Interpretive Specialist, Intermountain Region  
Jere Krakow, Long Distance Trails Office, National Park Service  
Keith Morgan, Interpretive Planning, Harpers Ferry Center  
Amy Maslak, Interpretive Planning, Harpers Ferry Center

### **Monument Partners**

Hilary Barton Billman, Manager, Fossil Country Museum, Kemmerer, Wyoming  
Richard Millet, Business Manager, Intermountain Natural History Association  
Clint McKnight, Publications Specialist, Intermountain Natural History Association  
Eva Lamp, Teacher, Kemmerer Elementary School  
Dr. Paul Buchiem, Sedimentologist/Geochemist, Loma Linda University  
Trey Davis, Wildlife Biologist/Naturalist, former Fossil Butte staff member  
Wally Mierzejewski, Recreation Planner, Bureau of Land Management

## **Accessibility**

Every attempt will be made to provide full access to interpretive media and programs to ensure people with physical and mental disabilities have access to the same information necessary for safe and meaningful visits to national parks. This is in compliance with the National Park Service policy:

*" ...To provide the highest level of accessibility possible and feasible for persons with visual, hearing, mobility, and mental impairments, consistent with the obligation to conserve park resources and preserve the qualities of the park experience for everyone."  
NPS Special Directive 83-3, Accessibility for Disabled Persons*

All interpretation will follow general standards for accessibility as described in the Harpers Ferry Center Programmatic Accessibility Guidelines for Interpretive Media.

## References

2001 - 2005 Strategic Plan, Fossil Butte National Monument

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2001 Fossil Butte National Monument Visitor Study, Karen S. Hockett and Joseph W. Roggenbuck, Virginia Polytechnic Institute and State University

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Visitor Use and Evaluation of Interpretive Media, September 2003, The National Park Service Visitor Services Project and Harpers Ferry Center

"Paleontological Resource Monitoring Strategies for the National Park Service", Vince Santucci and Allison Koch, Park Science, Volume 22, Number 1, Fall 2003

"A Paleoecological Approach to Managing Paleontological Resources", Vince Santucci, Ranger: The Journal of the Association of National Park Rangers, Fall 1999

Fossil Butte National Monument: Along the Shores of Time, Peter, D. Ambrose, Intermountain Natural History Association

## Implementation Priorities

### First Steps

#### 2006

- Update website
- Purchase and install soft panels and wings for video cabinet
- Move speakers away from the TV monitor
- Add text disclaimer to orientation and fossil prep videos
- Convert original video footage to DVD format
- Convert orientation and fossil prep video to DVD format
- Purchase DVD equipment for orientation and fossil prep videos
- Install new DVD equipment in a dust-free environment away from the lab
- Move electronic ranger to stand alone cabinet
- Develop site bulletin on cultural history, discuss monument's location in relationship to nearby emigrant trails
- Plan and produce child-oriented site bulletin
- Continue development of curriculum-based program for K-12
- Pursue viewshed analysis in partnership with Bureau of Land Management (BLM)
- Promote park mission and visitor opportunities through Wyoming Travel and Tourism
- Maintain website link with scientists
- Develop website bibliography for scientists
- Incorporate monument library as website link for researchers
- Request two-day site evaluation by HFC AV technician
- Translate park brochure into Japanese

- Establish written guidelines to address commercial quarry inquiries
- Establish a contact with home-schooled community
- Develop and promote teacher workshops
- Conduct sign inventory with maintenance division
- Pursue backcountry byway project with BLM
- Partner with community to market monument and improve directional signs

#### 2007

- Post new interpretive materials on website
- Encourage domestic and international bus tour visits
- Expand variety of free site bulletins from introductory to in-depth (newspaper)
- Seek funding to develop wayside exhibit proposal/plan
- Change trail route on Historic Quarry Trail to counter-clockwise direction and develop appropriate signage
- Partner with Wyoming Travel and Tourism to promote off-season visitation

#### 2008

- Create superintendent's page on website addressing issues and appropriate visitor behavior
- Post visitor-assisted fossil finds on website
- Post curriculum materials for teachers and students on website
- Add human history component to electronic ranger
- Plan and provide accessible quarry experience for all visitors June-August
- Seek funding to plan and design bronze/porcelain fossil plaques for patio

- Develop and promote teacher workshops
- Improve overhead and exhibit case lighting.
- Seek funding and conduct an engineer's analysis of pull-off locations and parking area on Cundick Ridge; trail extensions
- Improve scenic drive signage; include road conditions and vehicle restrictions
- Update entrance sign to reflect visitor center/grounds hours
- Provide entering/leaving sign at north boundary
- Partner with WYDOT/UDOT for interpretive kiosks

## **Second Steps**

### 2009

- Install bronze/porcelain fossil plaques on patio
- Videotape programs/demonstrations/quarry program and add them as an optional viewer activity to website
- Provide video monitor at front desk so visitors can experience the quarry when it is closed or if they are unable to hike up to the quarry due to time or physical limitations
- Plan and produce a touch-table/self-guided interactive experience of research quarry activity
- Move time-line; install lake-shore exhibit
- Create new interpretive displays at local community sites
- Provide text for visitor safety, wayfinding needs, and regulatory requirements on waysides at trailheads and parking areas (signs)
- Coordinate with WDOT for sign at Route 30 bypass
- Partner with local community on business plan

### 2010

- Correct inaccuracies in Fossil Lake mural
- Correct exhibit text inaccuracies
- Seek funding to provide live-feed from research quarry to visitor center
- Develop and promote teacher workshops
- Provide shade at research quarry for visitors and paleontologist
- Re-design visitor center parking area to accommodate large recreational vehicles
- Provide shaded pet area, and outside drinking fountain
- Upgrade signs to NPS Identity Standard with cyclic maintenance replacement program
- Partner with Intermountain Natural History Association to offer field school seminars, and sell technical bulletins and research papers

### 2011

- Seek base budget increase for GS-9 interpretive/education specialist
- Develop more interactive website
- Purchase and install headsets or handsets for program audio-lab video
- Experiment with program offerings, times and publicity
- Redesign and rewrite NPS unigrid brochure
- Develop a 3-D map to interpret uplift and erosion processes
- Change "Fossil Lake" trail name to reflect connection between ancient and today's ecosystem
- Implement K-12 curriculum based program
- Develop expanded education program and kit for special population groups
- Upgrade 2nd and 3rd grade curriculum based fossil program
- Partner to create fossil education kits available for sale

- Design and build an open, shaded area on the patio for porch programs and general visitor comfort
- Market the monument to college field study groups

### **Third Steps**

#### 2012/2013

- Plan and provide year round guided hikes, ecology hikes, evening star programs, and co-sponsored events
- Develop temporary exhibits on fossil theft impact; portable display/county library and other community venues
- Improve visitor service to mobility impaired and sensory impaired visitors
- Develop and promote teacher workshops
- Design middle and high school volunteer/intern opportunities
- Collaborate and develop a partnership agreement with Lincoln County School District #1

#### 2014

- Develop and promote teacher workshops
- Develop "Expedition Fossil Butte"

#### 2015

- Partner with Salt Lake City School for the Deaf to develop Braille publications
- Partner with federal agencies and local/state governments for curatorial repository

### **On-going Projects**

- Fund annual interpretive training for lead interpreter
- Promote scenic drive and Cundick Ridge area as interpretive opportunities

- Identify fossils, artifacts, and other items to acquire for future exhibition
- Digitize photographs
- Continue trips to nearby universities to obtain recent research publications and target recruit for staff and intern positions
- Keep website current
- Add layers of research quarry to electronic ranger
- Educate community about scientific value of fossils
- News releases/radio spots/cable TV
- Promote RV hookup availability for volunteers
- Share information and pursue loans of significant finds with local quarry operators
- Identify sources to acquire unique fossil specimens
- Develop publications and sales items with Wyoming Geological Survey
- Translate park brochure into wide range of languages

### **Projects (Unidentified time line/dependent on funding or increase in staff)**

- Purchase display cases for temporary loans
- Replace orientation video
- Design and produce:
  - Interactive digital animation of fossil quarry
  - Computer animation video of changes over time
  - 3D model of Fossil Basin with AV to tell the Fossil Lake story
  - Relief landscape exhibit as it appeared 50 million years ago
- Outdoor exhibits/waysides on visitor center

porch (alt 2A)

- Seek facility planning money to design and construct VC pod
- Relocate staff offices
- Partner with Chicago Field Museum for full-time fossil preparator at monument
- Support scholars and research programs through partnerships
- Pursue the development of partner projects with Dinosaur National Monument, Colorado National Monument; Lincoln County Historical Society
- Seek partnership with Lions State Park (when established)
- Nominate monument as a Geological Heritage Site under the World Heritage Site Program