

## Chapter 2 THE PLAN





## Chapter 2: THE PLAN



AREAS ZONED AS PRISTINE ARE UNDEVELOPED AND PROVIDE A WILD EXPERIENCE.

The key components of the Craters of the Moon National Monument and Preserve Management Plan are as follows:

- Promotes use of partnerships at off-site facilities such as visitor centers, state parks, and gateway communities to provide Monument information and interpretation.
- Emphasizes protection of vegetation resources in North Laidlaw Park.
- Maintains a road network suitable for aggressive fire management within the Monument.
- Encourages outfitter and guide services in the expanded portion of the Monument instead of new agency-provided services and facilities.
- Supports a large and proactive integrated weed management program.
- Proactively protects and restores sagebrush steppe communities.
- Continues to focus visitor experience within the Monument on the existing NPS lands and facilities at the north end of the Monument.

### DESCRIPTION OF MANAGEMENT ZONES

All federal lands within the Monument are assigned to one of the four management zones (see Figure 3 and Table 1). The management zones — Frontcountry, Passage, Primitive, and Pristine — guide future

management actions within the Monument.

Management zones are tools that help guide decision-making on appropriate visitor uses, facility development, and other uses. Management zones do not address natural and cultural resource management. Management zoning is established throughout the planning area to provide and maintain a range of recreation and access for different user-types with varying interests and abilities. Each separate zone has distinct settings to be provided and maintained. Physical settings consider the degree of naturalness and amount and type of facilities, as well as proximity to roads. Social settings consider the number of contacts with other people, the size of groups, and evidence of other users. Managerial settings consider the amount of visitor management used to achieve desired social and resource conditions, the compatibility of traditional land uses with the recreational environment, and the type of access and vehicle use allowed in the area.

Although different management emphasis will be applied in each of the management zones of the Monument, the actions of managers must always be consistent with the purposes for which the Monument was established, applicable laws, regulations and policies, and with the mission goals identified in Chapter 1.



DEVELOPED TRAILS IN THE FRONTCOUNTRY ZONE PROVIDE ACCESS TO A VARIETY OF VOLCANIC FEATURES.

**TABLE 1. MANAGEMENT ZONES**

	FRONTCOUNTRY ZONE	PASSAGE ZONE	PRIMITIVE ZONE	PRISTINE ZONE
<b>Basic Concept</b>	The frontcountry zone is defined by structures and grounds provided for visitor support services such as information, education, and recreation. Access will be easy and convenient, and the encounter rate very high. High maintenance and intervention will be required to accommodate concentrated visitor use. Challenge and adventure is less important compared to other zones. Zone corridor will be 660 feet wide along roads.	The passage zone is intended to accommodate the flow of people and vehicles from one place to another and to provide minimal accommodations such as parking, trailheads, primitive campsites, and information kiosks or signs for people preparing to venture into the Primitive and/or Pristine Zones of the Monument. Where the zone is only a narrow corridor following a road (660 feet wide), the expectation is that a particular road will be maintained to a consistent standard along the length of the corridor, normally a Class B or Class C road from one end of the corridor to the other.	The primitive zone provides an undeveloped, primitive, and self-directed visitor experience while accommodating motorized and mechanized access on designated routes. Facilities will be rare and provided only where essential for resource protection.	The pristine zone includes mostly lava flows, designated Wilderness, and Wilderness Study Areas. This zone provides an undeveloped, primitive, and self-directed visitor experience, generally without motorized or mechanical access. Facilities will be virtually nonexistent.
<b>Visitor Experience</b>	High chance for encounters with people.	Medium chance for encounters with people.	Low chance for encounters with people.	High chance for solitude.
	Travel on paved, improved, or maintained roads.	Travel on higher level of road maintenance than the Primitive Zone.	Travel on low-standard roads with challenging driving conditions.	Travel involves challenging conditions and no roads.
	Developed campgrounds.	Rustic, designated campsites.	No developed campsites; dispersed primitive camping.	No developed campsites; dispersed primitive camping.
	A high level of interpretation programs; informational exhibits.	Limited interpretation, wayside exhibits.	Minimal on-site interpretation.	No on-site interpretation.
	Diverse trail system, some paved.	Multiuse, maintained, and designated trails.	Low-standard multiuse trails with little or no maintenance.	Very few trails.
	Low chance for encounters with livestock or associated developments.	High chance for encounters with livestock or associated developments.	Medium chance for encounters with livestock or associated developments.	Low chance for encounters with livestock or associated developments.
	High level of contact with agency staff.	Low to moderate level of contact with agency staff.	Very low level of contact with agency staff.	Essentially no contact with agency staff.
	Typical visitor activities: sightseeing, driving, bicycling, walking, nature study, ranger-led programs, camping, and picnicking.	Typical visitor activities: driving, sightseeing, hiking, mountain biking, horseback riding, and dispersed camping.	Typical visitor activities require self-sufficiency: hiking, hunting, horseback riding, mountain biking, remote camping, and driving on unimproved roads.	Typical visitor activities require self-sufficiency and involve challenge, risk, and adventure: dispersed camping, backpacking, nature study, and hunting.
<b>Access and Kinds of Development</b>	Paved roads and high-standard gravel roads.	Class B-D roads. Some arterial roads would be regularly maintained to allow seasonal car, SUV, light truck passage.	Class C-D roads. Dirt roads, accessible seasonally only with high-clearance vehicles and off-highway vehicles.	No roads.
	Hardened and maintained pedestrian trails.	Trailheads; maintained motorized and non-motorized trails.	Low standard multiuse trails.	Very few trails; no motorized trails.
	Frequent signs for directions, safety, and interpretation.	Signs for directions, safety, resource protection, and interpretation.	Minimal signs for visitor safety and resource protection only.	Very few signs.
	Offices, utilities, maintenance facilities, storage areas, visitor center, employee housing, and restrooms.	Minimal administrative structures, vault toilets.	No buildings.	No buildings.

## ROAD AND TRAIL CLASSIFICATIONS

Within the Monument, a “road” is defined as an established route capable of accommodating travel by a full-sized automobile or truck. Following other routes or establishing new routes with motorized or mechanized vehicles is considered “off-road” use, which is prohibited in the Monument. Following are four different road classifications and two trail classifications within the Monument:

**Class A Roads** generally are paved and have a surface of asphalt, concrete, or similar continuous material. In addition to US Highway 20/26/93 (US 20/26/93), the only Class A roads are the loop drive, spur roads, and associated parking areas in the original NPS Monument. Class A roads are only found in the Frontcountry Zone.

**Class B Roads** are improved roads constructed with a natural or aggregate surface, and they may have berms, ditches, or culverts. Regular maintenance allows passage by standard passenger and commercial vehicles such as cars, light trucks, and some heavy trucks. Seasonal conditions and lack of snow removal may render these roads impassable. Class B roads are found primarily in the Passage Zone.

**Class C Roads** have a natural surface and may be either constructed or established over time by repeated passage of vehicles. The natural surface may be dirt, sand, or rock. A minimal amount of maintenance, if any at all, is limited primarily to spot surface grading to allow vehicle passage within the original road corridor. Maintenance on these roads is performed only as necessary, not in accordance with any regular schedule. Class C roads accommodate a

much smaller range of vehicles than Class B roads, usually high-clearance two-wheel-drive and four-wheel-drive vehicles. Seasonal conditions or wet weather may render these roads impassable at any time. Class C roads are found primarily in the Passage and Primitive Zones.

**Class D Roads** are primitive roads that were not constructed but have been established over time by the passage of motorized vehicles. These roads receive no maintenance or grading. However, management retains the authority to perform occasional emergency repairs or maintenance as necessary for administrative purposes and general resource protection. These roads are generally referred to as “two-tracks” or a set of two ruts with vegetation growing in between the wheel ruts. The condition of these roads varies from sometimes passable by a passenger car to only suitable for high-clearance four-wheel-drive vehicles. Seasonal conditions or wet weather may render these roads impassable at any time. Class D roads are found primarily in the Primitive Zone.

Class D Roads and other existing roads include only those roads in existence as of the date of Monument Proclamation 7373 and shown on Figure 4. Any routes created by cross-country vehicle or mechanical use since the date of Proclamation 7373 are considered illegal and will be closed.



MANY ROADS WITHIN THE MONUMENT ARE PRIMITIVE DIRT TRACTS CLASSIFIED AS CLASS D ROADS.

**TABLE 2. ROAD AND TRAIL INVENTORY BY MANAGEMENT ZONE**

Road Classification	MANAGEMENT ZONES*				Total Miles
	Frontcountry	Passage	Primitive	Pristine	
Class A	30	0	0	0	30
Class B	0	46	11	0	57
Class C	2	34	321	2	359
Class D	0	2	141	26	169
Class 1 Trails	7	0	1	6	14
<b>Total Miles</b>	<b>39</b>	<b>82</b>	<b>474</b>	<b>34**</b>	<b>629</b>

\*Approximate miles of existing roads and trails within each zone rounded to the nearest whole number.

\*\*To be closed.

**Class 1 Trails** are restricted to non-motorized/non-mechanized travel (wheelchairs are allowed). Examples of permitted forms of travel include foot travel, pack animal, and horseback. Examples of prohibited forms of travel on Class 1 trails include mountain bikes and all motorized vehicles. Class 1 trails may be further restricted, for example, to foot travel only.

**Class 2 Trails** are open to motorized/mechanized travel in addition to foot travel, pack animal, horseback, and other forms of passage. Examples of prohibited forms of travel include any vehicle with a footprint wider than an 18-inch tread (all-terrain vehicles, four-wheelers, and four-wheel-drive vehicles). Class 2 Trails can only be created from decommissioned roads that will no longer be open to use by full-sized vehicles. No new Class 2 Trails will be created in any other manner.

Table 2 summarizes where the various types of roads would fall within the management zones.

## BOUNDARIES

### MONUMENT BOUNDARIES

The original Craters of the Moon National Monument is an area of 53,420 acres, with all federal lands administered by the National Park Service. Proclamation 7373 expanded the boundaries by adding to Craters of the Moon National Monument all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled “Craters of the Moon National Monument Boundary Enlargement,” which is included as part of Appendix B.

In a memorandum from the Secretary of the Interior (memo from the Secretary of the Interior dated November 24, 2000), the Bureau of Land Management was instructed to complete a metes and bounds description of the Monument boundary. A cadastral survey of the external monument boundary was completed in 2001. Based on that survey, the total area encompassed by the Monument boundary is 753,333 acres including 738,680 acres of federal land, 8,157 acres of state land, and 6,642 acres of private land. State and private lands within the Monument boundary are not affected by this plan.

## **NATIONAL PRESERVE BOUNDARIES**

Proclamation 7373 states that the National Park Service shall have primary management authority over the portion of the Monument that includes the exposed lava flows. This land area was described as including approximately 410,000 acres and is specifically designated as a unit of the National Park System “Craters of the Moon National Preserve” by Public Law 107-213 on August 21, 2002.

Proclamation 7373 describes the boundary between the NPS- and BLM-administered lands as being the edge of exposed lava fields, an irregular natural feature. When a determination of the National Preserve boundary within the greater Monument area is required, the line will generally be described by the edge of the brown-colored shading for lava flows on the most recent U.S. Geological Survey 7.5-minute series topographic quadrangle maps available on the date of the Proclamation 7373.

## **BOUNDARY MODIFICATIONS**

Potential boundary modifications are examined to identify potential additional lands with significant resources or opportunities, or which are critical to fulfilling the Monument’s mission. The agencies referred to previous studies of boundary modifications for Craters of the Moon, including the Reconnaissance Survey — Expansion of Craters of the Moon National Monument (1989) and Management Alternatives — Expansion of Craters of the Moon National Monument (1990), and concluded that no additional recommendation for boundary adjustments needed to be proposed in this plan. However, when the Bureau of Land Management develops the Shoshone Resource Management Plan, areas such as Sand Butte (identified by the public for inclusion within the Monument) will be examined to determine if additional protection is warranted.

Based on these criteria, eight areas have been identified for potential boundary modifications and are described in Appendix C. All resolve potential conflicts with existing grazing use by transferring small tracts within the National Preserve to the BLM Monument where grazing is authorized.

## **MANAGEMENT OF MONUMENT RESOURCES**

Laws, regulations, and policies provide the legal basis for management. These can expressly mandate certain things and prohibit others. Such legal guidance leaves certain decisions up to the discretion of the agencies. This section describes these discretionary decisions, made by the Bureau of Land Management and National Park Service, regarding future management of natural and cultural resources, development, and recreational and non-recreational uses within the Monument.

Organized by resource topic, this section includes a brief summary on the status of the resource in the Monument, the desired condition of each resource in the monument, and specific management actions identified to maintain or achieve these desired conditions. In addition to resources, topics include the recreational experience of visitors to the Monument, facilities such as roads and campgrounds, and uses such as livestock grazing.

Desired condition statements describe what the status of the resource or recreational experience should be, which may or may not currently be the case. Management actions maintain the resource condition at the desired condition or help move it closer to the desired condition.

## NATURAL RESOURCES

### NATURAL RESOURCES — GENERAL

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The awesome effects of volcanism are evident throughout the Monument. During the past 15,000 years, lava eruptions created a rugged but scenic landscape that has forced animals and plants to adapt, and people to endure, detour, or ponder. Located on the Snake River Plain, a volcanic terrain spanning southern Idaho, the Monument encompasses the Great Rift volcanic rift zone. In places, this plain is 60 miles wide, with basalt lava deposits more than 10,000 feet deep in some locations. Eruptions 2,000 years ago at the Craters of the Moon and the Wapi Lava Fields are among the most recent volcanic activity to take place anywhere in this immense geographic area.

The protection, study, and appreciation of the Monument's unique natural features in this remote and often harsh environment are the overriding purposes of the Monument as directed by Proclamation 7373. To that end, basic and applied scientific research, resource inventories, and monitoring of resource conditions play important roles in the identification, characterization, and interpretation of the Monument's resources.

Today the Monument provides unique opportunities for visitors to encounter plants and animals in various lava habitats, enjoy hiking on a number of trails, or simply partake in the solitude and beauty of this incredible place.

#### Desired Future Conditions:

Resource inventories and surveys documenting the condition and extent of natural resources including geologic features and processes, kipukas, and sensitive species are given sufficient emphasis to enable completion during the life of the plan.

Monitoring programs are developed and implemented to track changes in the condition of key resources serving as "vital signs" of ecosystem health or to fulfill other purposes of enabling proclamations and laws.

#### Management Actions:

- NRES-1: Resource inventories, surveys, and monitoring programs will be provided for and implemented.
- NRES-2: Proactive management activities will be undertaken to mitigate potential effects of public use.
- NRES-3: Information gained will be disseminated to the public and used in management decisions.
- NRES-4: The agencies will seek opportunities with the tribes and state and federal agencies for partnering in long-term monitoring of the Monument's natural resources.

### GEOLOGICAL RESOURCES

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The purpose and significance of the Monument tie directly to its volcanic geology. Volcanism has generated an array of features and habitats that make the Monument a recognized outdoor laboratory. As a result, the Monument draws scientists and visitors from around the world to study and experience the diverse volcanic terrain.

The Monument is in the Snake River Basin-High Desert (Omernik 1986) and is comprised of three geologically young (Late Pleistocene-Holocene) lava fields that lie along the Great Rift. The Great Rift volcanic rift zone, which varies in width between approximately 1 and 5 miles, is a belt of open cracks, eruptive

fissures, shield volcanoes, and cinder cones. It begins north of the Monument, approximately 6 miles from the topographic edge of the Snake River Plain, in the vent area of the Lava Creek flows located in the southern Pioneer Mountains (Kuntz et al. 1992). The Great Rift extends southeasterly from the Lava Creek vents for more than 50 miles to somewhere beneath the Wapi Lava Field (Kuntz et al. 1982).

The Craters of the Moon Lava Field is the northernmost and largest of the three young lava fields. Kings Bowl Lava Field is the smallest and lies between Craters of the Moon Lava Field and the Wapi Lava Field. The rest of the Monument is composed of Pleistocene-age pahoehoe and a'a flows, near-vent tephra deposits, cinder cones, lava cones, and shield volcanoes (Kuntz et al. 1988). These older areas are mantled with loess deposits (wind-blown silt) and in some places by wind-blown sand. During the Holocene (last 10,000 years), the most volcanic activity of any of the Eastern Snake River Plain basaltic rift systems was exhibited by these three lava fields associated with the Great Rift (Hughes et al. 1999).

Kings Bowl Lava Field formed approximately 2,200 years ago during a single burst of eruptive activity that may have lasted as little as six hours (Kuntz et al. 1992). Kings Bowl has a central eruptive fissure approximately 4 miles long, flanked by two sets of non-eruptive fissures. The dominant feature is a bowl, 280 feet long, 100 feet wide, and 100 feet deep, produced when lava came into contact with groundwater, causing a steam or phreatic explosion.

The Craters of the Moon Lava Field formed during eight eruptive periods with a recurrence interval averaging 2,000 years, and it has been more than 2,000 years since the last eruption. The constancy of the most recent eruptive periods suggests that slightly more than one cubic



mile of lava will be erupted during the next eruption period.

In the past, eruptions in the Craters of the Moon Lava Field have generally shifted to the segment of the Great Rift with the longest repose interval. The next eruptive period should begin along the central portion of the Great Rift in the Craters of the Moon Lava Field, but may include the northern part of the Monument (Kuntz et al. 1986). Initial flows, based on past performance, will probably be relatively non-explosive and produce large-volume pahoehoe flows. Eruptions from potential vents on the northern part of the Great Rift may be comparatively explosive and may produce significant amounts of tephra, destroy cinder cones, and build new ones (Kuntz et al. 1986).

There are many different kinds of caves in the Monument. Shelly pahoehoe areas contain many small open tubes and blisters. There are thousands of these small open tubes and blisters in the Monument. Pahoehoe flows can travel more than 20 miles because the ceilings of lava tubes insulate them from heat loss and some of the tubes are greater than 30 feet in height. Some fissure caves associated with the Great Rift can be passable to hundreds of feet below the surface. The nature of flowing lava can produce shallow caves and

PILLAR BUTTE IS THE HIGHEST POINT ON THE WAPI LAVA FIELD.



HUNDREDS OF LAVA TUBE CAVES OCCUR WITHIN THE MONUMENT.

overhangs at flow fronts as a result of inflation processes. Differential weathering of cinder layers on some cinder cones has also generated a few shallow caves. Some of these small caves are more than 10 feet deep.

These various types of caves in the Monument can be associated with archeological and paleontological features, and they can harbor wildlife such as the blind lava-tube beetle, bushy-tailed woodrats, and Townsend's big-eared bats. Deep cracks and fissures, including cracks with likely connections to lava tubes beneath, and the entrances to caves often create or provide microenvironments or microhabitats. Some of these microenvironments support impressive moss, algal, or lichen communities and even ferns. People are attracted to caves, and some of the easily accessed caves in the Monument now contain considerable graffiti (e.g., Lariat Cave), litter, and other forms of vandalism.

#### **Desired Future Conditions:**

Natural processes remain the dominant agents of change to geologic resources within the Primitive and Pristine Zones.

Unique or representative geologic features within Frontcountry and Passage Zones are identified and documented and have

protective strategies implemented to minimize any adverse effects from improved public access to the areas.

Knowledge and understanding of geologic resources and process are sufficient to interpret the interrelationships between geology and biotic communities.

Resource inventories and surveys that document the condition and extent of geologic features (including caves and paleontological resources) and also the geologic processes are sufficiently completed to provide scientifically defensible management decisions.

Disturbed or degraded geologic features are identified and restored when feasible.

Geologic knowledge and understanding are effectively shared with the public in order to stimulate appreciation and protection of the geologic resources.

#### **Management Actions:**

- GEOL-1: When developing any visitor access within the Frontcountry and Passage Zones, the least impacting methods will be utilized to facilitate visitor access while also protecting geologic features.
- GEOL-2: Steps will be taken to protect geological features from damage resulting from unrestricted public access and/or poorly designed or constructed public facilities.
- GEOL-3: Threats to unique or outstanding examples of geologic features, including paleontological and cave resources, will be identified and mitigated as appropriate.
- GEOL-4: Prior to authorizing surface-disturbing activities, areas will be surveyed for unique, rare, or special geologic resources including fossils.

GEOL-5: A cave management plan will be developed to meet Federal Cave Resources and Protection Act requirements.

GEOL-6: An intensive restoration program will be initiated to remove graffiti from caves and foster public understanding of the need for cave resource protection.

GEOL-7: Public access to caves and other geological features that are experiencing recreational use-related damage will be controlled, and damaged geological features will be restored as needed and when feasible.

## SOILS

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The soils of the Monument area reflect the differences and interactions between parent material, topography, vegetation, climate, and time. The most notable differences in soils involve the presence or absence of more recent volcanic materials and the degree of soil development on volcanic substrates.

The basalt flows that are visible on the surface of the majority of the Snake River Plain began approximately 2 million years ago, during the Pleistocene, and continued until approximately 2,000 years ago. The younger or more recent lava flows occupy two-thirds of the Monument. The soils on the younger basalt flows and cinder beds are limited to the initial decomposition of rock and cinders and deposition of windblown loess within crevices, cracks, and fissures. Plants can establish and grow in little to no soil. As time progresses, soil development continues and more vegetation establishes.

Sagebrush steppe, mountain areas, and kipukas within the Monument have deeper, well-formed soils derived from weathering geologic parent materials within the Basin and Range Province — sedimentary, igneous, and silica-rich lava rocks deposit-

ed during a sequence of geologic events that began almost 600 million years ago. The high desert environment results in lighter colored soils with low organic matter content. Soil textures in the Monument range from fine to coarse; however, most of the soils in the Monument area are silt loam to sandy loam in texture and vary in depth. They are moderately drained to well drained, except where clay horizons are present. Soils that are disturbed, not properly vegetated, or located on steep slopes are susceptible to water and wind erosion.

Biological soil crusts are a feature common to nearly all plant communities in arid and semiarid regions throughout the world (Belnap et al. 2001). The development of biological soil crusts is dependent on a number of factors, including soil texture and chemistry, annual precipitation amount and timing, associated vegetation, and disturbance history. Biological soil crusts have not been observed as a highly conspicuous element in the Monument, which could be due to any one of these factors.

### Desired Future Conditions:

Soils are stable and functional. The amount of bare mineral soil and cover of perennial vegetation, litter, and biological soil crust are within 10% of that expected for the ecological site.

### Management Actions:

SOIL-1: Soils will be protected from accelerated or unnatural erosion from ground-disturbing activities. For example, post-fire stabilization efforts will protect erosion-prone soils through natural and assisted revegetation.

SOIL-2: The potential for, or presence, extent and condition of, biological soil crusts will be investigated to provide specific management guidance.



LIMBER PINE

SOIL-3: Biological soil crusts will be considered in management decisions where appropriate.

### VEGETATION, INCLUDING SPECIAL STATUS SPECIES, AND FIRE MANAGEMENT

Although some of the younger lava flows are devoid of vegetation, there is a surprising diversity of plants and plant communities in the Monument (see Figure 5). The type and density of vegetation varies widely, depending on the availability of soil. The lavas and kipukas (islands of vegetation surrounded by younger lava flows) show a full range of ecological succession — from pioneer plants, such as lichens and mosses on the basalt surfaces, to complex mid- to late- seral plant communities in the kipukas and rangelands bordering the lava flows. The rough topography of the lava flows creates numerous microsites where soil and water accumulate to support plants that would normally occur in higher precipitation zones.

Limber pine (*Pinus flexilis*) stands occur on the cinder cones and lava flows in the northern part of the Monument. A transition between limber pine and juniper (*Juniperus* spp.) vegetation types occurs between Blacktail Butte and the original Monument. This ecotone normally occurs only in montane regions and is thus an unusual feature for the lava flows. Quaking aspen (*Populus tremuloides*) and Douglas-fir (*Pseudotsuga menziesii*) stands are found on some north-facing slopes in



LOW ELEVATION SAGE-BRUSH STEPPE

the northern portion of the Monument. Riparian and wetland habitats are directly influenced by the watersheds of the Pioneer Mountains and are limited to the northern periphery of the Monument due to the geology, topography, and climate of this Basin and Range Province.

Early successional plant communities on the cinder cones produce stunning spring wildflower displays. Areas with greater soil development support the sagebrush steppe vegetation that typifies the Snake River Plain. Sagebrush steppe is found on approximately 60% of the Monument and covers the more developed soils of the rangelands, kipukas, cinder cones, older lava flows, and the foothills of the Pioneer Mountains. This once was the most common vegetation throughout the Snake River Plain, as well as in the Intermountain West and Upper Columbia River Basin. However, fire, agriculture, and livestock grazing have modified composition and reduced the extent of this vegetation type throughout these regions (Blaisdell et al. 1982; Whisenant 1990; Bunting et al. 2002).

Sagebrush steppe, which is the dominant vegetation in the Monument, appears to be a monotonous landscape; however, there is a range of plant and community types occurring over an elevation gradient. Many factors influence the diversity, density, cover, distribution, and health of this high desert sagebrush steppe, including differences in soil depth and development; the precipitation gradient ranging from 8 to 16 inches; the elevation gradient ranging from 4,000 to 7,500 feet between the southern and northern ends of the Monument; historical and current land management; invasive species; and fire frequency. In turn, vegetation structure and composition influence the ability of the plant community to (1) resist invasive species infestation; (2) its susceptibility to, as well as recovery from, fire; and (3) land management goals, decisions, and practices.

Understory components in the sagebrush steppe complex vary in type and abundance, but common species include Sandberg bluegrass (*Poa secunda*), Idaho fescue (*Festuca idahoensis*), needle-grasses (*Stipa* spp.), bluebunch wheatgrass (*Pseudoroegneria spicata*), and the exotic annual cheatgrass. Forbs such as buckwheats (*Eriogonum* spp.), arrowleaf balsamroot (*Balsamorhiza sagittata*), lupine (*Lupinus* spp.), phlox (*Phlox* spp.), and milkvetches (*Astragalus* spp.) are also commonly found growing in these vegetation types. Both diversity and abundance of herbaceous plants increase with increasing elevation and moisture in the Monument (Hironaka et al. 1983).

The variation of sagebrush steppe communities influences the multiple values and uses of this landscape in the Monument. These areas are valued as crucial winter range habitat for mule deer and pronghorn, essential habitat for sagebrush-obligate wildlife such as Greater sage-grouse, important watersheds, sources of forage for livestock, and enjoyable recreational sites. There is a range of conditions, primarily due to relative isolation and past and present land uses.

The Monument contains more than 500 kipukas, many of which have not been grazed by domestic livestock and have seen little in the way of other human-related disturbances. While fire, livestock grazing, recreation, or cheatgrass invasion have altered some of the kipukas, others that are protected by new rough lavas offer some of the best remaining examples of native sagebrush steppe for the Snake River Plain. They are valuable as examples of range conditions in the absence of domestic livestock, and offer an opportunity to observe climax vegetation, as well as successional processes associated with natural disturbances such as fire. Four of these areas — Carey Kipuka, Brass Cap Kipuka, Sand Kipuka, and Big Juniper Kipuka — were designated as Research Natural Areas for their long-term value as reference areas. Brass Cap, Sand, and Big



Juniper Kipukas were formerly managed by the Bureau of Land Management; all four are currently under NPS management.

There are no proposed or listed threatened or endangered plants known within the Monument. However, two BLM sensitive plants are known to occur within the Monument. Obscure phacelia (*Phacelia inconspicua*) is one of Idaho's most rare plants, with only six occurrences (population areas) known statewide. This species is also listed as endangered in Nevada. It is a diminutive annual that occurs on north- and east-facing slopes of volcanic-based mountains and buttes. Picabo milkvetch (*Astragalus oniciformis*) is a perennial species that is narrowly endemic to stable, sandy soils near the foothills of the Pioneer Mountains and in the central portion of the northern Snake River Plain.

Fire plays a key role in determining the diversity and condition of vegetation communities. Large tracts of sagebrush have been lost due to extensive wildfires, and fires have perpetuated exotic annual grasslands. However, fire also plays an important role in the maintenance of some vegetation types, including aspen and mountain shrub.

Between 1970 and 2005, more than 300,000 acres have burned in wildfires within the boundary of the expanded Monument, primarily on BLM-administered land. Nearly a third of this acreage

CHEATGRASS HAS INVADDED EXTENSIVE AREAS OF SAGEBRUSH STEPPE HABITAT.



THE 2006 SHALE BUTTE FIRE IN LOW ELEVATION SAGE-BRUSH STEPPE.

has burned two or more times. About half of Laidlaw Park and Paddelford Flat and nearly all of Little Park have remained unburned in the last decade. Relatively small fires have burned on vegetated lava and in kipukas, notably Little Prairie in 1992 (1,900 acres) and Echo Crater in 2000 (632 acres). Overall, fires within the original NPS Monument boundaries represent less than 10% of the total area burned since 1970.

The length and timing of the fire season is highly dependent on annual weather and fuel conditions. Generally, the season can extend from mid-May through mid-October. Warm, dry, and windy weather associated with thunderstorm cells can result in lightning activity with or without rain. Ignition of vegetation can occur from natural sources, primarily lightning, or from human sources such as vehicles, campfires, or cigarettes.

Fire management in the Monument is directed by the Fire Management Plan for the South Central Idaho Fire Planning Unit (USDI 2005), and the NPS Craters of the Moon National Monument Wildland Fire Management Plan (USDI NPS 2000a) within the original Monument boundaries. Under these plans, all wildfires are suppressed except for naturally ignited fires in designated wilderness, which may be managed for resource benefit (also known as wildland fire use).

Federal wildland fire policy (USDI and USDA 1995; USDI et al. 2001; USDI BLM 2003) focuses on protecting sensitive resources while using fire along with other treatments (such as herbicides and seeding) to achieve desired future conditions for vegetation resources. Currently all federal land management agencies are implementing, or preparing to implement, this policy through a cohesive strategy (Lavery and Williams 2000). This strategy presents guidelines for reducing wildland fire risk to human communities and to restore and maintain ecosystem health within fire-prone areas.

The cohesive strategy is based on the concept of restoring vegetation composition and structure (and thus fire regimes) to historical levels. As part of this process, three fire condition classes (FCC1 through 3) have been identified to help clarify the degree to which a particular vegetation community departs from its historic fire regime, with FCC1 having the least departure and FCC3 having the greatest. These ratings, along with recent inventories, were used to categorize vegetation conditions within the Monument and prioritize areas for fuels reduction and restoration projects (see Figure 6 and Table 3). In general, FCC3 corresponds with poor biotic integrity, FCC2 with fair biotic integrity, and FCC1 with good biotic integrity.

Ten species of weeds designated as noxious by Idaho State Law (State of Idaho 2001) have been identified in the



CONTROL OF NOXIOUS WEEDS REQUIRES CONTINUOUS CONTROL EFFORTS.

**TABLE 3. APPROXIMATE ACREAGE OF EACH VEGETATION TYPE IN THE MONUMENT AND PERCENTAGE THAT OCCURS IN EACH FIRE CONDITION CLASS**

VEGETATION TYPE	APPROXIMATE ACREAGE IN MONUMENT	% FIRE CONDITION CLASS 1	% FIRE CONDITION CLASS 2	% FIRE CONDITION CLASS 3
Low-Elevation Sagebrush Steppe	157,000	40	20	40
Annual Grassland (exotic)	31,000	0	0	100
Perennial Grassland (seeding and native)	153,000	10	90	0
Mid-Elevation Sagebrush Steppe	9,400	0	100	0
Lava (bare and vegetated)	399,000	100	0	0
Mountain Shrub	400	50	50	0
Aspen	60	0	100	0
Conifer (Douglas fir)	140	50	50	0
Riparian	670	90	10	0

Monument: spotted knapweed, diffuse knapweed, Russian knapweed, rush skeletonweed, leafy spurge, Canada thistle, musk thistle, Scotch thistle, dalmation toadflax, and field bindweed. Most of the noxious weeds occur in areas particularly susceptible to invasion by exotics — previously disturbed areas such as road rights-of-way, intensively grazed areas, and wildland fire burns.

Other invasive exotic species such as cheatgrass are as much of a concern as state-listed noxious weeds. Cheatgrass is extremely competitive and readily invades and dominates disturbed land. It is also a common component of undisturbed or otherwise healthy sagebrush steppe in an arid environment. Cheatgrass has been documented in several kipukas. This annual grass outcompetes native vegetation and perpetuates a frequent fire regime that further discourages regrowth of native species and encourages more cheatgrass. This has been a key management concern for the Bureau of Land Management and has driven the development of more effective disturbed land rehabilitation techniques.

Both the Bureau of Land Management and the National Park Service have implemented nationwide policies against invasive exotic species through integrated weed management programs. Selective herbicide programs to control these species are in effect. Limited biological control agents have been released. The priority species discussed have been targeted specifically for mapping, treatment, and prevention programs. Education and public awareness are emphasized by both agencies. Involvement in cooperative weed management areas has resulted in strong community commitment and cost-effective management of noxious weeds.

**Desired Future Conditions:**

The high ecological condition of the vegetation of North Laidlaw Park and Bowl Crater is maintained.

There is no net loss, and preferably a net gain, of sagebrush steppe communities over the life of the plan.

Native plant communities sustain biodiversity and provide habitat for native wildlife.



RUSH SKELETON WEED IS A NEW INVADER OF THE MONUMENT.

Woodland communities (e.g., limber pine, aspen, and juniper) are maintained as healthy mixed-age communities within their natural range and distribution.

Natural ecological processes are the dominant factor in determining the composition and distribution of plant communities in the Preserve and Wilderness areas.

Continuity of habitat for special status species and general wildlife are emphasized.

Preventing or limiting the spread of noxious weeds using integrated weed management perpetuates the natural condition and biodiversity of the planning area.

The areas dominated by invasive annual species (cheatgrass and other similar plants) are minimized.

Kipukas in the Pristine Zone are free of noxious weeds.

Sustainable forage is available for livestock and wildlife.

All plant communities are in or making progress towards Fire Condition Class 1 (see Table 3).

Fire is allowed to function as a natural process in the Wilderness and Preserve.

#### **Management Actions:**

VEG-1: To protect vegetation resources, no new livestock developments will be permitted in North Laidlaw Park pasture and Bowl Crater allotment unless they result in a net benefit to those resources identified as needing improvement or protection.

VEG-2: Existing sagebrush steppe communities will be protected to prevent loss of shrub cover and managed to promote a diverse, desirable grass and forb understory.

VEG-3: Annual grasslands and highly degraded sagebrush steppe communities will be restored to achieve a mosaic of shrubs, forbs, and grasses capable of sustaining native animal populations.

VEG-4: Restoration projects will be prioritized relative to locations of key Greater sage-grouse habitats and population strongholds. Emphasis will be on projects that restore annual grasslands and degraded sagebrush steppe communities, as well as enlarging and connecting habitats in good condition.

VEG-5: National and Idaho state habitat guidelines for Greater sage-grouse and sagebrush steppe obligates developed by interagency working groups regarding composition and structure of sagebrush habitats on a landscape scale will be adopted to guide sagebrush steppe management.

VEG-6: Current science and best available technologies and plant materials will be considered in analysis and implementation of all restoration projects. Restoration treatments may be active or passive and may include but are not limited to the following: prescribed fire, thinning, mowing, herbicide treatment, seeding, temporary removal of livestock and/or changes in grazing regimes or facilities, and road closures.

VEG-7: Areas classified as poor to fair biotic integrity will be highest priority for restoration treatments (see Figure 6; see also Jurs and Sands 2004).

VEG-8: Aggressive protection of existing sagebrush steppe communities and proactive restoration of areas with poor to fair biotic

integrity through both active and passive means (see Figure 6) will be emphasized.

- VEG-9: Approximately 80,000 acres of BLM-administered land (11% of the entire Monument) will be restored. About 31,000 acres of annual grassland and 49,000 acres of highly degraded low elevation sagebrush steppe (poor to fair biotic integrity) will be treated to control cheatgrass and restore big sagebrush cover with a perennial understory.
- VEG-10: All special status species in the Monument will be inventoried with monitoring plans established, particularly when and where adverse impacts may occur.
- VEG-11: Actions and stipulations necessary to protect special status species and their habitats will be made part of land use authorizations (e.g., limiting fragmentation of special status species populations when considering road maintenance) and fire planning.
- VEG-12: Use of native plants will be emphasized in rehabilitation and restoration projects, and only native plants will be used for rehabilitation or restoration projects within the Pristine Zone. Integrated weed management principles will be used to
- detect and eradicate all new infestations of noxious weeds;
  - control existing infestations; and
  - prevent the establishment and spread of weeds within and adjacent to the planning area.
- VEG-13: Weed infestations in wilderness areas will be controlled by methods consistent with minimum tool requirements and integrated weed management principles, including prevention of distur-



bance activities, use of cultural and mechanical methods to control or physically remove noxious weeds, and selective application of herbicides and possibly biological controls.

- VEG-14: Integrated weed management principles will be applied proactively throughout all zones. This program will emphasize protection of weed-free areas and aggressive detection and control of noxious or highly invasive exotic weeds and will include an analysis of the trade-offs involved in herbicide use versus non-chemical methods of weed control.
- VEG-15: Only certified weed-free hay, straw, and mulch will be permitted within the Monument.
- VEG-16: Wildland fire will be suppressed to protect life and property, healthy sagebrush steppe communities, recent rehabilitation and restoration projects, cultural sites, and the Little Cottonwood Creek watershed.
- VEG-17: Fire will be managed to maximize protection and restoration of sagebrush steppe in the Passage and Primitive Zones.
- VEG-18: Wildland fire use will be allowed in the Wilderness and Preserve except when incompatible with resource management objectives

MONITORING OF VEGETATION ALLOWS MANAGERS TO DETERMINE WHETHER DESIRED CONDITIONS ARE BEING ACHIEVED.

or there is danger to life or property.

- VEG-19: Limited prescribed fire (<500 acres) will be used in the aspen, conifer, and mountain shrub vegetation types to improve wildlife habitat and invigorate plant communities while protecting the Little Cottonwood watershed.
- VEG-20: In the event of wildland fire, burned areas will be rehabilitated when necessary to restore the appropriate mosaic of sagebrush species and subspecies, along with a diverse perennial understory, and to suppress invasive and noxious weeds.
- VEG-21: The cooperative arrangement between the Bureau of Land Management and the National Park Service related to fire management will continue, including cooperative agreements with local fire departments and rural fire districts.
- VEG-22: The Bureau of Land Management and the National Park Service will develop a joint fire management implementation plan for the Monument.
- VEG-23: The network of main arterial roads will be managed to support access for wildland fire suppression.

## WATER RESOURCES

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Surface water resources are limited in the Monument. Stream channels are largely nonexistent within the exposed lava flows, and streams draining the Pioneer Mountains rapidly become subterranean once they encounter the lava flows. There are several small perennial streams in the Pioneer Mountains at the north end of the Monument. The entire watersheds of Little Cottonwood and Leech Creeks are in the Monument. Very short segments of the Little Wood River, Big Cottonwood

Creek, Fish Creek, and Huff Creek fall just within the Monument boundaries.

The slopes of the Pioneer Mountains contain numerous perennial and ephemeral springs that feed small creeks and marsh wetlands. Just north of the Craters of the Moon Lava Field is a small hot springs complex. Parts of Lava Lake and Huff Lake are also in Monument boundaries. Dozens of groundwater-fed pools exist in the lava flows near Carey Lake marsh. Seasonal playa lakes are scattered throughout the sagebrush steppe desert. Many of these playas have been developed by the Bureau of Land Management to create reservoirs, which increases their water holding capacity and longevity. Numerous caves within the Monument lava flows contain year-round ice deposits, which produce melt water during the summer.

Steep-sided canyons with high gradient channels and a narrow floodplain characterize the watershed of Little Cottonwood and Leech Creeks. Mean discharge rates for both streams are less than 1 cubic foot per second. Streamwater quality in Little Cottonwood and Leech Creeks has been monitored and has generally been found to be good, with no violations of Idaho state standards for temperature, dissolved oxygen, and turbidity (Falter and Freitag 1996).

The state granted the National Park Service federal reserved water rights within the original Monument in 1998. The rights provide for domestic, irrigation, or industrial use within the Monument, as well as in-stream flow rights on areas including Little Cottonwood and Leech Creeks (Hurlbutt 1998). The Bureau of Land Management has 337 filed water right claims on 18 springs, 192 playa lakes, and 127 reservoirs within the Monument. Priority dates of the water rights claims are as early as 1926.

Many of the water resources in the Monument are used in a variety of ways —



GROUND WATER HAS CREATED WATER HOLES WITHIN THE LAVA FLOWS NEAR CAREY LAKE.

drinking water for the visitor center and campground, irrigation water for farms, livestock watering sites, and recreational opportunities like bird watching. Human use and activities may alter water and associated resources. Playas and reservoirs developed by the Bureau of Land Management are an integral part of this semiarid ecosystem, and they often are the only source of water for wildlife and livestock.

**Desired Future Conditions:**

Riparian areas and wetlands within the planning area are maintained, restored, or enhanced so that they provide diverse and healthy habitat and water quality conditions for riparian and wetland obligates and other wildlife species.

Little Cottonwood watershed yields sufficient safe drinking water for current public and administrative uses in the visitor center complex.

**Management Actions:**

**WATER-1:** No additional playas will be modified or developed.

**WATER-2:** Playas will be evaluated for restoration on a case-by-case basis.

**WATER-3:** The agencies will work with appropriate state authorities to obtain water resources needed for Monument purposes.

**WILDLIFE, INCLUDING SPECIAL STATUS SPECIES**

During some portion of each year, about 200 species of birds, 60 species of mammals, 10 species of reptiles, and at least three species of amphibians can be found in the Monument. (See the Proposed Monument Management Plan / Final Environmental Impact Statement, Appendixes D and E, for more information on these species.) Limited surveys in the late 1960s identified more than 2,000 species of insects (Horning and Barr 1970).

Sagebrush steppe communities comprise much of the wildlife habitat in the Monument. Sagebrush obligates that occur in the Monument include the sage sparrow, black-throated sparrow, Brewer's sparrow, sage thrasher, Greater sage-grouse, pygmy rabbit, sagebrush vole, and sagebrush lizard. Some species, such as Brewer's sparrows, are at their highest densities statewide in ungrazed portions of the Monument (Bart 2001).

Extensive lava flows also serve as habitat for numerous animal species. At least seven species of bats, several species of rodents, and several species of cave invertebrates use lava tubes and flows in the Monument. The flow surfaces also are used by many species of vertebrates and invertebrates, and several species are dependent on the lava structures. Species such as pika, woodrats, skinks, and rock wrens are found primarily on the rock surfaces. Several snake and bat species are dependent on cavities in the lava for hibernation sites. Two of the three known bat maternity colonies of Townsend's big-eared bat in Idaho are found in the Monument lava tube caves (Pierson et al. 1999).

Six species of large mammals are known to inhabit the Monument — mule deer, pronghorn, elk, cougar, black bear, and moose. Most are widespread throughout the Snake River Plain and Pioneer Mountains and regularly can be found in the Monument.

Special status species are those listed as endangered or threatened under the Endangered Species Act; candidates or species proposed for listing under the act; species listed by the Idaho Department of Fish and Game as endangered, threatened, or species of special concern; and/or species listed by the Bureau of Land Management as sensitive. The Bureau of Land Management manages all species identified as sensitive to minimize the need for future listing as threatened or endangered under the Endangered Species Act. The National Park Service strives to manage its lands to protect any federally listed, state-listed, or BLM-listed species.

The U.S. Fish and Wildlife Service has provided a list of endangered, threatened, proposed, and/or candidate species that may be present in the area of the Monument (see Table 4). According to this list, threatened and endangered animal species that could potentially occur in the

Monument area are Canada lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), bald eagle (*Haliaeetus leucocephalus*), bull trout (*Salvelinus confluentus*), Bliss Rapids snail (*Taylorconcha serpenticola*), Utah valvata snail (*Valvata utahensis*), and Snake River physa (*Physa natricina*). However, sufficient habitat for Canada lynx, bull trout, and the snails is not available. The Monument area is not in a lynx analysis unit because it lacks suitable habitat for the species. There is not adequate surface water present in the Monument area for the survival of bull trout or the snails, all of which require substantial riverine habitat.

Greater sage-grouse (*Centrocercus urophasianus*) is a BLM sensitive species. Since 1950, 148 Greater sage-grouse leks have been documented on BLM-administered land in the Monument. Between 1979 and 1983, 83 leks were active, and between 1999 and 2003, there were 53 active leks. These observations (made by the Idaho Department of Fish and Game personnel) indicate a 36% decrease in Greater sage-grouse leks over the past 25 years.

Pygmy rabbits have been documented in several areas of the Monument. Records ranging from the 1930s through 2003 indicate locations from the southernmost areas to the original Monument lands (Hoffman 1988). Pygmy rabbit populations have experienced severe declines throughout their range, including in Idaho. The rabbits generally prefer mature sagebrush stands with a dense canopy cover (Gabler et al. 2001). However, there are few surveys for the species in southern Idaho, and the distribution and status of the species is not well understood.

The Monument contains hundreds of caves and several cave-related species of concern, including seven species of bats that are U.S. Fish and Wildlife Service species of concern, Idaho species of special concern, or BLM sensitive species. As of 1999, three maternity colonies of

Townsend’s big-eared bat (*Corynorhinus townsendii*) have been identified in Idaho (Pierson et al. 1999), with two occurring in the Monument. Numerous hibernacula have been identified in the Monument for this and other bat species. Six other cave roosting bat species that are classified as sensitive or of concern are found in the Monument (see Table 4; Keller 1996). In addition to bats, other cave species are of concern, including the blind cave leiodid

beetle (*Glavcavicicola bathyscioides*). Two of the four known worldwide sites for this species are in the Monument (Idaho Conservation Data Center 2002).

**Desired Future Conditions:**

Habitat within the planning area supports a diverse range of native wildlife species and gives the public high-quality opportunities for wildlife-based recreation.

**TABLE 4. SPECIAL STATUS ANIMAL SPECIES IN THE MONUMENT**

SPECIES	STATUS		
	Federal	BLM	Idaho
<b>MAMMALS</b>			
Gray wolf ( <i>Canis lupus</i> )	T		
Townsend's big-eared bat ( <i>Corynorhinus townsendii</i> )	I	S	S
Western small-footed myotis ( <i>Myotis ciliolabrum</i> )	I	W	
Long-eared myotis ( <i>Myotis evotis</i> )		W	
Fringed myotis ( <i>Myotis thysanodes</i> )		S	S
Long-legged myotis ( <i>Myotis volans</i> )	I	W	
Yuma myotis ( <i>Myotis yumanensis</i> )	I	W	
Western pipistrelle ( <i>Pipistrellus hesperus</i> )	I	W	S
Pygmy rabbit ( <i>Brachylagus idahoensis</i> )	I	S	S
Kit fox ( <i>Vulpes macrotis</i> )	I	S	
Piute ground squirrel ( <i>Spermophilis mollis</i> )		S	
<b>BIRDS</b>			
White-faced Ibis ( <i>Plegadis chihi</i> )	I	S	
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	T		
Northern goshawk ( <i>Accipiter gentilis</i> )	I	S	S
Ferruginous hawk ( <i>Buteo regalis</i> )	I	S	
Swainson's hawk ( <i>Buteo swainsoni</i> )		W	
Prairie falcon ( <i>Falco mexicanus</i> )		S	
Peregrine falcon ( <i>Falco peregrinus</i> )			E
Dusky grouse ( <i>Dendrogapus obscurus</i> )		W	
Greater sage-grouse ( <i>Centrocercus urophasianus</i> )	I	S	
Columbian sharp-tailed grouse ( <i>Tympanuchus phasianellus columbianus</i> )	I	S	S
Wilson's phalarope ( <i>Phalaropus bicolor</i> )		W	
Long-billed curlew ( <i>Numenius americanus</i> )	I	W	
Black tern ( <i>Chlidonias niger</i> )			S
Short-eared owl ( <i>Asio flammeus</i> )		W	
Western burrowing owl ( <i>Athene cunicularia</i> )	I	W	S
Calliope hummingbird ( <i>Stellula calliope</i> )		S	
Lewis' woodpecker ( <i>Melanerpes lewis</i> )		S	

**TABLE 4. SPECIAL STATUS ANIMAL SPECIES IN THE MONUMENT**

Red-naped sapsucker ( <i>Sphyrapicus nuchalis</i> )		W	
Williamson's sapsucker ( <i>Sphyrapicus thryoideus</i> )		S	
Olive-sided flycatcher ( <i>Contopus borealis</i> )		S	
Loggerhead shrike ( <i>Lanius ludovicianus</i> )	I	S	S
Cordilleran flycatcher ( <i>Empidonax occidentalis</i> )		W	
Hammond's flycatcher ( <i>Empidonax hammondi</i> )		S	
Willow flycatcher ( <i>Empidonax traillii</i> )		S	
Pinyon jay ( <i>Gymnorhinus cyanocephalus</i> )		W	
Sage thrasher ( <i>Oreoscoptes montanus</i> )		W	
Green-tailed towhee ( <i>Pipilo chlorurus</i> )		W	
Grasshopper sparrow ( <i>Ammodramus savannarum</i> )		W	
Brewer's sparrow ( <i>Spizella breweri</i> )		S	
Sage sparrow ( <i>Amphispiza belli</i> )		S	
Black-throated sparrow ( <i>Amphispiza bilincata</i> )		S	
Brewer's blackbird ( <i>Euphagus cyanocephalus</i> )		W	
Cassin's finch ( <i>Carposdacus cassinii</i> )		W	
<b>REPTILES &amp; AMPHIBIANS</b>			
Western night snake ( <i>Hypsiglena torquata</i> )		S	
Western toad ( <i>Bufo boreas</i> )	I	S	S
Short-horned lizard ( <i>Phrynosoma douglassi</i> )	I	S	
<b>INVERTEBRATES</b>			
Idaho dunes tiger beetle ( <i>Cicindela arenicola</i> )		S	
Blind cave leiodid beetle ( <i>Glacivicola bathysciodes</i> )	I	S	S
Idaho pointheaded grasshopper ( <i>Arolophitus pulchellus</i> )	I	S	

**Federal Designations:**

T = Federally Listed as Threatened

I = Species of Concern

**BLM**

S = Bureau of Land Management Sensitive Species: In this listing, all species without other current status but formerly federal candidates or state species of concern; additionally all species with either federal or state status should also be considered BLM Sensitive Species.

W = Watch list species: Species that are not BLM Sensitive Species but current population or habitat information suggests that the species may warrant sensitive species status in the future.

**Idaho Species of Special Concern:** (Native species that are either low in numbers, limited in distribution, or have suffered significant habitat losses)

E = Endangered

S = Special Concern

Habitat for migratory birds, including forage, water, cover, structure, and security, is available within the Monument to support healthy populations of resident and migrant species.

Greater sage-grouse restoration habitat (R1 & R2) will achieve significant progress towards reclassification as Key habitat. (See glossary for definitions and details.)

High-quality habitats for sagebrush obligate species are provided.

Species composition in key Greater sage-grouse habitat will reflect site potential.

#### **Management Actions:**

**WLIFE-1:** Inventory and monitoring of wildlife will emphasize species that are regionally or nationally important.

**WLIFE-2:** A monitoring program will be established to detect species populations in decline and species as indicators of the health of the ecosystem, and to record the presence of species of special concern.

**WLIFE-3:** The National Park Service, in consultation with the state and tribes, will designate areas within the Preserve and periods of time when no hunting will be permitted for protection of the area's resources.

**WLIFE-4:** On all NPS-administered lands, predator control will not be authorized by the Park Service except on a case-by-case basis.

**WLIFE-5:** Native animal species identified as pests will be managed in accordance with the applicable BLM or NPS management policies depending upon the administrative area in which the pest occurs.

**WLIFE-6:** All special status species in the Monument will be inventoried

with monitoring plans established, particularly when and where adverse impacts may occur.

**WLIFE-7:** Actions and stipulations necessary to protect special status species and their habitats will be made part of land use authorizations (e.g., limiting fragmentation of special status species populations when considering road maintenance) and fire planning.

**WLIFE-8:** Active and historic leks will be protected from disturbance during the Greater sage-grouse breeding season. Some examples of potential protective measures as presented in the Idaho Sage-grouse Advisory Committee's 2006 Conservation Plan for the Greater Sage-grouse in Idaho include the following:

- Apply use restrictions where needed and appropriate on existing roads or trails near occupied leks to minimize nonessential activity between 6:00 PM to 9:00 AM (in general this guideline should be applied from approximately March 15 through May 1).
- Avoid human activities such as fence maintenance or construction or any project or related work at or near (1 km or 0.6 mile) occupied leks that results in or will likely result in disturbance to lekking birds, between 6:00 PM to 9:00 AM (in general this guideline should be applied from approximately March 15 through May 1).
- Avoid creating unnecessary disturbances related to livestock management activities near occupied leks whenever possible.

- Improve the dissemination of information to elementary and high school students, hunters, resource user-groups, and others to increase their understanding of Greater sage-grouse and sagebrush steppe conservation issues.
- Monitor leks in a manner that minimizes disturbance to Greater sage-grouse following established protocol (Idaho Sage-grouse Advisory Committee 2006, Sections 5.2.1.1 and 5.2.1.2).

**Note:** Road closures or restrictions during the Greater sage-grouse breeding season will not apply to agency (BLM and NPS) vehicles, including Idaho Department of Fish and Game vehicles and personnel who conduct necessary Greater sage-grouse inventory and monitoring.

**WLIFE-9:** Consistent with Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (USDI BLM 1997) determinations, livestock grazing management will be modified as necessary to ensure that key Greater sage-grouse habitat achieves site potential.

**WLIFE-10:** The Bureau of Land Management will continue to hold annual meetings and coordinate closely with U.S. Department of Agriculture, Wildlife Services Program, and livestock lessees to reduce livestock losses. The Bureau of Land Management will encourage using non-lethal methods, education, and the targeting of specific offending

animals for lethal methods. These procedures will be implemented to protect both public safety and the natural resources for which the Monument was designated.

## AIR QUALITY

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The Monument is within one of the cleanest air regions of the country. While generally well below the national average for most air pollutants, some pollutants, such as ozone, are currently trending upwards. Air quality varies, depending on the location within the unit, the pollutant being measured, the season and time of day, wind direction, and climatic factors. Clean air greatly enhances the understanding and appreciation of the Monument's geologic resources by allowing clear views of distant landscape features.

The Craters of the Moon National Wilderness Area (43,243 acres) within the Monument is a mandatory Class I area, as defined in Clean Air Act (42 U.S. Code Sections 7401-7671q; as amended in 1990, Public Law 101-549). Congress created a Prevention of Significant Deterioration (PSD) section, the purpose of which is "to preserve, protect, and enhance the air quality in national parks, national wilderness areas and other areas of special national or regional natural, recreational, scenic, or historic value." Specifically, the PSD section reflected the law's intention that, among the clean air regions of the country, certain areas — the Class I areas — deserve the highest level of air quality protection. The impairment of visibility within Class I areas was a major concern addressed in the Clean Air Act. Because of the Class I designation the National Park Service has operated an extensive air quality monitoring program at the Monument for more than 25 years.

The rest of the Monument is a Class II area (including the Wilderness Study Areas). Class II areas also have limits on

increases of particulate matter and sulfur dioxide above baseline concentrations. The allowable increases for Class II areas are higher than those established for Class I areas.

#### Desired Future Conditions:

Air quality related values, particularly visibility, within the Class I Craters of the Moon Wilderness Area are not degraded and adverse impacts do not occur.

Air quality parameters that negatively affect human health, visibility, or biological diversity remain at or below current levels.

#### Management Actions:

The agencies will work proactively with surrounding communities, land manage-



MONITORING OF AIR QUALITY HAS BEEN AN ONGOING ACTIVITY IN THE MONUMENT SINCE 1980.

ment agencies, and the Idaho Department of Environmental Quality to limit increases of particulate matter and sulfur dioxide, which could reduce visibility, throughout the entire Monument.

## CULTURAL RESOURCES

### ARCHEOLOGICAL AND HISTORICAL RESOURCES

Both the National Park Service and the Bureau of Land Management are responsible for identifying, protecting, managing, and enhancing archeological, historic, architectural, and traditional lifeway values located on their lands, as well as those that might be affected by BLM or NPS undertakings on non-federal lands. The National Park Service and the Bureau of Land Management both manage archeological remains, historic values, and traditional cultural properties important to federally recognized Native American tribes.

There are more than 500 known, recorded cultural resources sites in the Monument, representing a variety of types and chronological periods, dating from at least 8,000 years old to the present. Identified prehistoric sites include lithic scatters, rock shelters, rock structures and piles,

and pictographs. Near the north end of the Monument there may be stone tool quarry sites yet undocumented. These remains mainly represent activities in the area before European contact in the 1800s.

The Monument contains portions of Goodale's Cutoff, which was an alternate route of the Oregon Trail that skirted the northern edge of the Craters of the Moon Lava Field. Portions of Goodale's Cutoff from US 20/26/93 in Butte County west to Blaine County are on the National Register of Historic Places. Historic sites in the Monument include portions of the historic trail, as well as sheepherder camps, cairns, and dumps. A few stock-raising homestead claims were filed in the Monument in the 1890s and early 1900s, but the environment proved too harsh for them to succeed and most were canceled. Virtually no visible physical evidence of these endeavors remains (Louter 1995). During the early days of Euro-American settlement in southern Idaho, sheep and

cattle grazing were the predominant economic pursuit in this area. During the late 19th and 20th centuries, silver, gold, and lead mining also took place in the mountains just north of the Monument.

The Monument headquarters complex, including the visitor center, employee residences, and maintenance buildings, was recently determined to be eligible for nomination to the National Register of Historic Places (USDI NPS 2000b). The eligibility is based on the continued integrity of the modern architectural design with grouping of public and administrative facilities in a headquarters area. This approach typified the NPS Mission 66 Program of the late 1950s and early 1960s (Allaback 2000). Mission 66 was a 10-year development program designed to upgrade facilities throughout the National Park System. The current NPS visitor center and headquarters complex was designed and constructed during the Mission 66 era of National Park development. The concept of a single complex incorporating public facilities, interpretive programs, and administrative functions originated during the Mission 66 Program.

Cultural resources are generally identified through field inventories conducted by qualified professionals in compliance with Section 106 of the National Historic Preservation Act of 1966 or under the authority of Section 110 of that act. Interviews and historical records can also be used to identify archeological, historical, and traditional lifeway values. David Louter (1995) completed the Craters of the Moon National Monument: Historic Context Statement.

Three types of inventories — Class I, II, and III — are conducted to identify and assess cultural values on BLM lands. A Class I inventory, a literature review, was completed for the BLM portion of the Monument in 1982, as part of a larger study that included the Boise and Shoshone management areas. Since then, several smaller Class III intensive

inventories have been completed in the Monument to fulfill Section 106 responsibilities. These inventories were associated with project activities where sites needed to be identified and evaluated to protect significant values and minimize effects on these values. No Class II inventories have been conducted in the Monument. No formal inventories for traditional cultural properties of importance to tribes have been completed for the Monument.

Over the years, several different universities have also conducted Class III inventories on the Monument, unassociated with any specific development project, expanding the information base. It is estimated that less than 5% of the Monument has been intensively inventoried for cultural resources. No systematic inventory of the caves associated with the lava flows has been completed. There may be many important cultural resources associated with the lava tubes, as well as the harder to reach kipukas, which have not been recorded by archeologists because of their remote nature.

Early surveys in the 1960s suggested that there was not a great deal of prehistoric use in this area, but more recent surveys on the adjacent BLM lands would seem to indicate otherwise. These early surveys were concentrated in areas archeologists deemed likely because they contained known water sources. We now know that Native Americans used this area much more than archeologists originally believed. Data from recent nearby fire rehabilitation surveys indicate a rather high density of prehistoric sites in association with the lava flows. Therefore, it is believed that there is a significant prehistoric cultural component associated with the Monument area, in addition to the well-documented historic component.

Cultural resource conditions and trends within the Monument vary considerably because of the variability of terrain and geomorphology, access and visibility, and past and current land use. Exposed

artifacts and features on the ground surface can be disturbed by elements such as wind and water erosion, animal and human intrusion, and development and maintenance activities. Based on limited site monitoring and documentation, the trend of site conditions within the Monument is considered stable in most areas. Vandalism and unauthorized collection at sites constitutes the main source of cultural resource degradation.

Looting of archeological sites has been occurring in the Monument for some time, especially in the remote, hard-to-reach kipukas. With the advent of Internet auctions, illegal artifact collection is becoming more profitable than ever. As long as there is a market, looting will continue to be a problem.

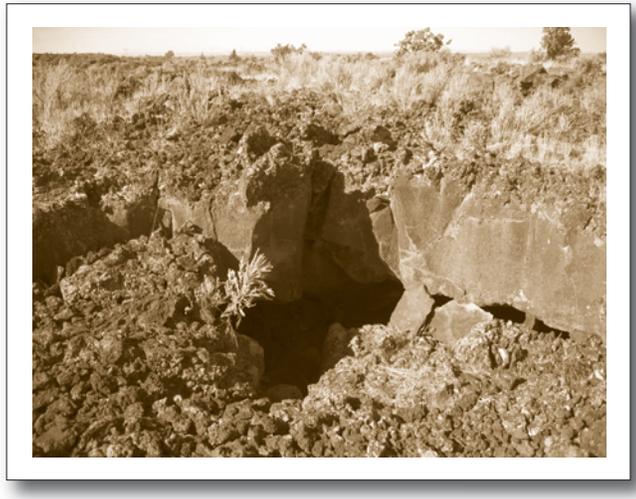
It is likely there are many sites in the interior of the lavas that are unknown at present, and they might lead to clues needed to understand just what prehistoric people were doing in this area thousands of years ago. Undisturbed caves also may hold a fascinating record of the Monument's early natural history in the form of fossilized skeletal material of Pleistocene mammals. Other caves on the Snake River Plain have produced fossil remains of mammoth, grizzly bear, bison, musk ox, and camel.

#### **Desired Future Conditions:**

The extent and condition of cultural resources and traditional cultural properties are documented and adverse effects are avoided.

The agencies maintain a single, consolidated cultural resource database.

Archeological resources either listed in or eligible to be listed in the National Register of Historic Places (national register) are protected in an undisturbed condition unless it is determined through appropriate consultation that disturbance or natural deterioration is unavoidable.



THIS ENTRANCE TO BAKER CAVE HAS BEEN PARTIALLY BLOCKED BY THE ROCKS ON THE RIGHT, CAREFULLY PLACED THERE BY HUMANS SOME 700 TO 1,000 YEARS AGO.

The qualities that contribute to the eligibility for listing or listing of prehistoric/historic structures and historic trails in the national register are preserved and protected in accordance with the Secretary of the Interior's Standards, unless it is determined through appropriate consultation that disturbance or natural deterioration is unavoidable.

#### **Management Actions:**

- CULT-1: A comprehensive Archeological Overview and Assessment of known and potential archeological resources (baseline research report) within the planning area will be completed.
- CULT-2: A Cultural Resource Management Plan that describes how specific sites will be managed, defines what areas need additional inventory, and designates potential use categories for sites will be completed for the Monument.
- CULT-3: Measures such as access limitations and periodic monitoring will be identified to proactively manage and protect cultural resources, including traditional cultural properties.
- CULT-4: Projects will be planned and designed so as to avoid

adversely impacting cultural resources where possible. The Bureau of Land Management and the National Park Service will consult with Tribes and the Idaho State Historic Preservation Officer to develop alternatives to avoid, minimize, or mitigate any potential adverse effects.

- CULT-5: Through consultation with the Idaho State Historic Preservation Officer, areas for Section 110 cultural resource inventories will be prioritized.
- CULT-6: A proactive Section 110 inventory will be conducted as funding allows, expanding the cultural resource database for the Monument.
- CULT-7: A minimum of 10% of the Monument will be inventoried (Section 110 National Historic Preservation Act) for cultural resources over the life of the plan. The focus of the Section 110 inventory will be in the Primitive and Passage Zones.
- CULT-8: The significance of known archeological and historic resources, structures, and landscapes will be evaluated and documented, in conjunction with the Idaho State Historic Preservation Officer, for listing in the national register.
- CULT-9: Activities that may affect the Goodale's Cutoff of the Oregon Trail, the NPS headquarters/visitor center Mission 66-era area, or other properties listed or eligible for the national register will be undertaken in consultation with the Idaho State Historic Preservation Officer.
- CULT-10: At-risk national register eligible sites will be monitored for vandalism or other distur-

bances and protected/stabilized as necessary.

- CULT-11: National register eligible properties will be monitored periodically, and steps will be taken to stabilize any property found to be deteriorating and to limit access as needed.
- CULT-12: The agencies will pursue more public education and interpretation off site, with increased monitoring and protection for those sites at risk.

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## MUSEUM COLLECTIONS

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The Monument's museum collections include objects, specimens, and archival and manuscript collections that serve as scientific and historical documentation of the Monument's purpose and resources. Museum collections are currently stored at the NPS visitor center in a dedicated storage facility. There are no Native American Graves Protection and Repatriation Act materials in the existing museum collections from the Monument and Preserve. In the event that materials are inadvertently discovered or encountered during authorized archeological excavations, the affiliated tribes would be contacted immediately and the procedures outlined in the act would be followed.

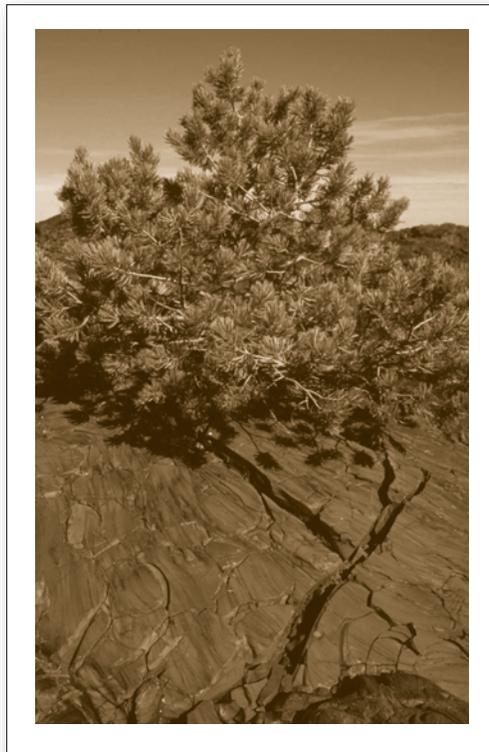
### Desired Future Conditions:

Museum collections (prehistoric and historic objects, works of art, historic documents, and natural history scientific specimens) are maintained according to NPS museum management program requirements.

### Management Actions:

- MUSE-1: Monument collections will be accessible for legitimate research and educational purposes.

MUSE-2: All resource management records directly associated with museum objects will be managed as museum property. These and other resource management records will be preserved as part of the archival and manuscript collection because they document and provide an information base for the continuing management of the Monument's resources.



LIMBER PINE IN PAHOEHOE LAVA.

## NATIVE AMERICAN RIGHTS AND INTERESTS AND ETHNOGRAPHIC RESOURCES

Native Americans inhabited southern Idaho, including the present-day Monument lands, for thousands of years prior to European contact. Ethnographic information suggests that aboriginal populations constantly traversed the Snake River Plain during their seasonal subsistence rounds, moving to the Camas Prairie in the spring and then further into the mountains for the summer. In the fall, they would return to the Snake River for the winter (Steward 1938, Liljeblad 1957, 1960, Murphy and Murphy 1960). According to Shoshone-Bannock tribal legends and information, Indians traveled throughout the Salmon River Basin following subsistence resources based on the seasons. Some bands traveled to the Camas Prairie area to gather plants, others traveled to buffalo country, and others went to the Salmon and Snake Rivers for fish. The different bands of Shoshone, Bannock, and Paiute all have their place names for specific areas and locations within this region, which includes the

Great Rift area. Indians have always utilized the unique features of the Great Rift area for various uses, and they continue to hold this area sacred and important. This ancient way of life was dismantled when large numbers of immigrants seeking land sought to displace the tribes. During the 1850s and 1860s, treaties were negotiated with the tribes in the northwestern United States in part to acquire Indian lands for homesteading.

On July 3, 1868, the Eastern Band of Shoshone and Bannock Tribes and the United States signed the Treaty with the Eastern Band Shoshone and Bannock, commonly referred to as the Fort Bridger Treaty (15 Statute 673). In the Fort Bridger Treaty, the tribes relinquished claims on approximately 20 million acres to the United States. The Treaty retains the tribes' rights to hunt, fish, and gather natural resources, and provides other associated rights necessary to effectuate these rights on open and unoccupied lands of

the United States. The Shoshone-Bannock Tribes have a long, rich, historical association with the Monument, and their use of those trust resources continues today.

The agencies also maintain a trust relationship with the Shoshone-Paiute Tribe of the Duck Valley Reservation, which was established by Executive Order in 1877. Western Shoshone, Northern Paiute, and some Northern Shoshone people were relocated to the remote Duck Valley Reservation, which lies in northeastern Nevada and southwestern Idaho. These people once roamed much of Nevada, Oregon, and southern Idaho. The Shoshone-Paiute never formally ceded any of their territory to the U.S. government through treaty. Today, agency consultation and coordination with the Shoshone-Paiute takes place in monthly meetings with tribal representatives using a process known as Wing and Roots.

The Bureau of Land Management and National Park Service have a unique relationship with federally recognized Native American tribes and are responsible for maintaining a formal government-to-government relationship with tribal leadership. As outlined in treaties, executive orders, legislation, and federal policies, this relationship focuses on ensuring that the rights and/or interests of tribes are considered and protected. This includes consulting with tribal representatives and identifying and protecting important archeological, religious, and/or sacred sites, as well as providing tribal members appropriate access to these sites. Also included are provisions for reasonable access for tribal members to gather and harvest plant, animal, and aquatic resources on certain state and federal lands where these activities are not otherwise prohibited.

No specific sacred sites or traditional cultural properties within the Monument have been identified by the Shoshone-Bannock Tribes or Shoshone-Paiute

Tribes, but there are oral histories documenting the use of the area by tribal members. It is possible tribal members still visit the isolated areas of the Monument for spiritual purposes today. The local tribes generally do not disclose sacred site locations to federal agencies. Not knowing the location of these sacred areas makes it difficult for land managers to assess the impacts of federal actions on them. Continued consultation with tribes is the best way to maintain an open dialog so tribal members can voice their concerns should a federal action threaten a sacred site or traditional use area.

#### **Desired Future Conditions:**

Traditional cultural properties of Native American tribes and access to those properties are preserved within the Monument for the use and benefit of current and future tribal members.

For Native American tribes that have ties to this land as part of their ancestral homeland, the Monument holds meaning and value and is a place where treaty rights and religious/sacred traditions may be practiced in a manner supportive of the purpose of the Monument.

Agencies and tribes maintain a government-to-government relationship, and the agencies routinely consult on matters involving the treaty interests and/or rights of the tribes.

Tribal oral history will be considered and incorporated into interpretive materials, as well as resource management.

#### **Management Actions:**

NAAM-1: Native American tribes that have expressed an interest in traditional cultural properties within the Monument will be consulted on a regular basis regarding the management of those properties.

- NAAM-2: Handling of Native American Graves Protection and Repatriation Act materials will be addressed as a component of a Cultural Resources Management Plan.
- NAAM-3: Should any Native American Graves Protection and Repatriation Act materials ever be inadvertently discovered within the Monument, the agencies will follow the tribal consultation procedures outlined in the act regarding their treatment.
- NAAM-4: The agencies in consultation with the tribes will identify protection measures for places of traditional cultural importance to Native Americans to preserve the integrity and use of these areas as described in National Register Bulletin 38.
- NAAM-5: Agencies will consult with associated Native American tribes to develop and accomplish the programs of the Monument in a way that respects their beliefs, traditions, and other cultural values.
- NAAM-6: Agencies will consult with Native American tribes prior to taking actions that will affect natural and cultural resources that are of interest and concern to them.
- NAAM-7: Hunting, gathering, and use of certain natural resources as sacred objects for religious use will continue on the Preserve and expanded areas of the Monument.



FOR THE NATIVE AMERICAN TRIBES ASSOCIATED WITH CRATERS OF THE MOON, THE ROOTS OF BITTERROOT (LEWISIA REDIVIVA) ARE AN IMPORTANT TRADITIONAL FOOD.

## LAND USE AND TRANSPORTATION

### TRAVEL AND ACCESS

One of the most important issues to be considered in this planning effort is the amount and type of access to and within the Monument. This plan characterizes the existing road and trail network using the best available data on current condition and historical maintenance practices.

With the exception of road closures implicit in the application of Pristine Zone areas, decisions affecting the status or condition of all roads and trails within the Monument will be made in a follow-up travel management implementation-level plan. As stated in the Desired Future Conditions section below, there will be a net decrease in road mileage within the Monument. All travel and access will be limited to the existing roads and trails. The existing roads and trails were evaluated by agency staff and organized into the following classification system to provide for a reasonable baseline data set to be used within the context of a more specific travel management plan to follow.

**Class A** — paved surface roads

**Class B** — improved, maintained, constructed roads with natural or aggregate surface

**Class C** — roads constructed or established through use with a natural surface and little or no maintenance

**Class D** — primitive roads established through use with no maintenance

**Class 1 Trail** — restricted to non-motorized/non-mechanized travel; wheelchairs allowed

**Class 2 Trail** — open to motorized/mechanized travel with a footprint no wider than an 18-inch tread

Table 5 summarizes the current status of roads and their designated classes in the monument.

#### Desired Future Conditions:

There is a net decrease in road mileage within the Monument.

**TABLE 5. ROADS WITHIN THE MONUMENT**

ROADS WITHIN THE MONUMENT	MILES	MAINTENANCE
Class A	30	Idaho Transportation Department maintains 21 miles; NPS maintains 9 miles.
Class B	58	BLM maintains 28 miles; remaining 30 miles maintained by Blaine (28) and Butte (2) Counties.
Class C	367	BLM maintains 365 miles, NPS maintains 1 mile, Blaine County maintains 1 mile.
Class D	173	Not maintained.
Arco-Minidoka Road	69	BLM maintains 15 Class B miles and 25 Class C miles; remaining 29 miles maintained by Butte (24) and Blaine (5) Counties.
Carey-Kimama Road	40	BLM maintains 15 miles (all Class B); remaining 25 miles maintained by Blaine (12) and Lincoln (13) Counties.

The road system in the planning area provides access for visitors, permittees, non-federal landowners, and administrative needs while protecting those resources and values the Monument was established to preserve.

The agencies coordinate road management inside and outside of the Monument in a cooperative fashion with local government agencies so that the transportation system is managed in a comprehensive, logical manner.

The agencies also work cooperatively with local government agencies to provide appropriate access to the Monument and private land within the Monument.

The road system within the planning area supports efficient response time for fire suppression activities.

Most management direction related to travel and access is covered by management zone allocation.

#### **Management Actions:**

- ROAD-1: All lands except for the existing roads shown on Figure 4 are designated as “closed” to vehicle use. Off-highway vehicle (OHV) use is “limited” to existing roads shown on Figure 4 unless and until such roads are closed, converted to Class II Trails, or are further limited by operation of this plan or by the forthcoming travel management plan. (OHV designations do not apply to specifically authorized administrative use.)
- ROAD-2: All land within the Monument other than designated roads and trails will be designated “closed” for off-highway vehicle (OHV) and mechanized vehicle use.
- ROAD-3: The agencies will prepare an implementation-level travel

management plan showing road and trail classifications, standards, restrictions, and closures. Current road standards and classifications will be in effect until the travel plan is approved.

- ROAD-4: The agencies will prepare guidelines and procedures for authorization of emergency and administrative off-road travel.
- ROAD-5: The agencies will prepare a travel map showing allowable uses, road and trail classifications, and standards and restrictions.
- ROAD-6: No motorized vehicle roads or trails will be permitted within the Pristine Zone.
- ROAD-7: The agencies will close and rehabilitate all routes established in Wilderness Study Areas that were not identified in the wilderness inventory as “existing ways.”
- ROAD-8: All roads and trails shown on Figure 4 within the BLM-administered portions of Monument will be designated “limited” for OHV/motorized vehicle use unless further limited or closed in the forthcoming travel management plan.
- ROAD-9: All authorized roads on NPS-administered portions of the Monument and Preserve will be open only to bicycles and highway licensed motorized vehicle travel and will be designated as “park roads.”
- ROAD-10: The agencies may close individual roads and trails temporarily or permanently to protect resources on a case-by-case basis.
- ROAD-11: Snowmobile use on BLM-administered portions of the Monument will be addressed

in an upcoming travel management plan.

- ROAD-12: The agencies will seek local jurisdiction concurrence (county or highway district) for any change in the commitment to future maintenance for any roadway under that entity's jurisdiction.
- ROAD-13: Existing Class B and C roads will remain open, but maintenance will be driven by natural resource management needs, primarily fire suppression, weed management, and restoration activities.
- ROAD-14: A Class B standard will be allowed on the Arco-Minidoka Road through the Monument should the adjacent road segments outside the Monument be upgraded.
- ROAD-15: Selected Class D roads in the Primitive Zone could be converted to trails or closed for resource protection. Class D roads in the Pristine Zone could be converted to Class I trails where resource protection needs dictate.
- ROAD-16: Temporary improvements to existing Class C and D roads could be authorized in the Passage and Primitive Zones to facilitate fire suppression and restoration activities or other management actions aimed at natural resource protection.
- ROAD-17: In cooperation with the counties, the agencies will maintain the primary access roads to provide better access for fire management.
- ROAD-18: Redundant, unnecessary, or unused roads will be closed as determined by management after completing a travel management plan.



LIVESTOCK GRAZING IS AUTHORIZED ON MOST OF THE BLM MONUMENT.

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## LIVESTOCK GRAZING

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The proclamation expanding the Monument states:

Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing permits or leases on all lands under its jurisdiction shall continue to apply with regard to the lands in the Monument administered by the Bureau of Land Management.

Proclamation 7373

The Monument is cooperatively managed by the National Park Service and the Bureau of Land Management. The National Park Service administers 465,047 acres, or 62% of the Monument, and that area is not available for livestock use. These areas consist primarily of exposed lava flows, which are mostly devoid of available forage and/or inaccessible to livestock; therefore, prohibiting grazing in these areas has little to no impact on the livestock industry.

Three BLM field offices (Idaho Falls, Burley, and Shoshone) in the Idaho Falls and Twin Falls Districts administer livestock use on the 286,487 acres (including BLM, private, and state lands) in the Monument. Sheep and/or cattle graze these lands, which are divided into management units known as allotments. Grazing permits are awarded to permittees by allotment. These permits, or leases,

convey no right, title, or interest in the land or resources. Although the proclamation specifically mentions livestock grazing, it does not establish the practice as a “right” or convey to it any new status. There are an additional 1,800 acres of BLM-administered land adjacent to privately owned agriculture fields and NPS-administered lava that are designated not available for grazing.

Grazing systems, or acceptable grazing practices, for allotments are detailed in Allotment Management Plans. Grazing systems result from certain decisions and agreements and are subject to standards and guidelines, as are adjustments made to stocking rates. Animal unit months (AUMs) reflect current authorizations and are not a mandated level of use.

#### **Desired Future Conditions:**

Sustainable rangeland ecosystems are healthy; public rangelands are maintained or restored to meet Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (USDI BLM 1997).

Livestock forage is provided on a sustainable basis for the life of the plan, consistent with other resource objectives and with public land use allocations.

Livestock developments are consistent with the desired future conditions for natural, cultural, and visual resources.

#### **Management Actions:**

GRAZ-1: Nine allotment boundaries will be altered to accurately reflect the NPS/BLM boundary. There will be no change in AUM preferences actually available for grazing. (See Appendix F of the Proposed Monument Management Plan / Final Environmental Impact Statement [USDI NPS and BLM 2005] for additional details.)

GRAZ-2: BLM land available for livestock use totals approximately 273,000 acres. BLM land not available for livestock use totals approximately 1,800 acres. NPS land not available for livestock use totals approximately 465,000 acres.

GRAZ-3: Permitted livestock use totals 36,965 animal unit months. The current livestock use authorizations will be maintained until Idaho Standards for Rangeland Health evaluations or similar NEPA-compliant decisions identify the need for adjustments in livestock use to meet standards, vegetation, livestock, or resource objectives.

GRAZ-4: Use of existing livestock developments in Primitive and Pristine Zones may continue. The Bureau of Land Management may remove developments if they are no longer serving a useful purpose or resource objectives warrant their removal. Sites will be restored.

GRAZ-5: The Brigham Point and Paddelford Flat sheep trails across NPS land will be evaluated for future use.

GRAZ-6: There will be no new livestock developments permitted in North Laidlaw Park pasture and Bowl Crater allotment unless they result in a net benefit to those resources identified as needing improvement or protection.



THE MONUMENT VISITOR CENTER HOUSES INTERPRETIVE EXHIBITS, MUSEUM COLLECTIONS AND ADMINISTRATIVE OFFICES.

## FACILITIES

Administrative and visitor facilities in the Monument are concentrated in an area of about 90 acres adjacent to US 20/26/93 in the north area of the Monument. These are the visitor center/administrative building, maintenance shop, five residential buildings, the entrance station, paved parking areas and roads, a campground, a campsite, and related utilities. The visitor center (which also serves as the NPS administrative headquarters), the maintenance building, and five residential buildings were built in the late 1950s as part of the NPS Mission 66 Program.

The visitor center building contains a lobby with book displays, sales, and an information desk; a small exhibit room; and public restrooms. The administrative office area of the building originally consisted of six rooms serving as offices and shared work areas. Renovation of the building and additions of 1,800 square feet for staff work area and curatorial space and 450 square feet for a multipurpose audiovisual room were completed in 2005.

The maintenance building provides limited area for its intended purposes, since parts of the building have been converted to offices for maintenance staff and storage of supplies. One of the residential buildings has been converted to staff offices. The campground contains more than 50 campsites, a 130-seat amphitheater, and three restrooms. An entrance station where visitors are contacted before entering the paved loop

drive is adjacent to the campground. North of the highway is a public group campsite. In this vicinity are the Monument's potable water wells and delivery systems and underground water storage reservoirs.

A 7-mile paved loop drive with short spur roads, pullouts, and parking areas gives visitors access to scenic vistas, hiking trailheads, and other attractions. Vault toilets are available at three of the parking areas.

Kings Bowl was once a developed site. From the mid-1960s to late-1980s, private operators under permits from the Bureau of Land Management operated a concession at the site with a developed trail/tunnel system into Crystal Ice Cave, a parking and picnicking area, a trailer pad, a generator building, and a small concession stand. All of the aboveground facilities have been removed because of safety concerns. A small parking area and remnants of footpaths and vehicle trails remain. In 2002 the National Park Service and Bureau of Land Management installed a series of waysides and signs in the area to convey important safety and resource protection messages to people who might visit this site.

### Desired Future Conditions:

Visitor and administrative facilities within the Frontcountry Zone of the NPS Monument meet visitors' needs.

The agencies cooperate with gateway communities in providing information and services to visitors at sites outside the Monument.

Location of agency facilities and staffing levels promotes efficiency of operations and public needs.

Principles of sustainable and universal design are incorporated into all facilities and operations.

Off-site facilities for new visitor services are emphasized.

## Management Actions:

- FAC-1: Existing paved road system and parking areas will be modified to address safety and maintenance concerns.
- FAC-2: BLM fire stations at Carey and Kimama will include Monument information. There will be informational kiosks located along roads leading into the Monument.
- FAC-3: Opportunities for sharing BLM and NPS facilities and staff will be evaluated.
- FAC-4: Signs and wayside exhibits previously approved for visitor safety and resources protection will be installed at Kings Bowl.
- FAC-5: Monument informational materials will be provided for display or distribution at non-agency sites in communities surrounding the Monument.
- FAC-6: Partnerships will be encouraged in developing new visitor information facilities in gateway communities.
- FAC-7: The Bureau of Land Management and National Park Service will become involved with other agencies and the private sector in seeking opportunities for visitor information centers in communities along the interstate corridor.

## LANDS AND REALTY

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The planning area encompasses approximately 753,333 acres (see Table 6 and Figure 7). Private and state land within the Monument boundary is not part of the Monument and is not subject to the direction in this plan. Most of the private land holdings in the planning area were obtained through agricultural entries such as the Desert Land Act, the Carey Act, the Reclamation Homestead Act, and the Stock Raising Homestead Act. There were

no pending agricultural entries in the Monument on the date of Proclamation 7373. The private and state land inholdings are used for grazing and contain related developments such as fences, wells, corrals, camp trailers, and seedings. There are no houses, cabins, or other permanent human dwellings on the private or state land.

The agencies will consider acquiring private and state land in the Monument through exchange, purchase, or donation. Acquisitions of private land will only be initiated by the private landowners as a willing seller. Private or state land acquired by the agencies will automatically become part of the Monument and subject to the direction in this plan.

Proclamation 7373 withdrew all federal land within the Monument and Preserve from all forms of entry, location, selection, sale, and other forms of disposition. Therefore, the agencies cannot exchange, sell, or dispose of any federal land in the Monument except for extremely rare situations that would further the protective purposes of the Monument. This withdrawal includes the disposal of land to local governments for public purposes and community expansion.

Lands and realty authorizations fall into two broad categories — valid existing rights and other valid but lesser interests. Proclamation 7373 states that: “The establishment of this monument is subject to valid existing rights.” Valid existing rights within the Monument include highway rights-of-way, powerlines, phone lines, a seismic station, a snow fence, a well, and mineral material sites (see Table 7 and Figure 8).

Other existing authorizations in the Monument are three Free Use permits for mineral materials (see the “Mineral Materials” section, below) and 14 easements held by the Bureau of Land Management across state and private land. At the time of Proclamation 7373, there

**TABLE 6. LANDOWNERSHIP**

LAND STATUS	ACRES*	% OF MONUMENT
<b>NPS Lands</b>	465,047	61
Original Monument	53,420	7
National Preserve	411,627	54
<b>BLM Lands</b>	273,488	37
<b>Federal Total</b>	738,535	98
State Total	8,157	1
Private Total	6,642	1
<b>Grand Total</b>	<b>753,334</b>	<b>100</b>

\*Inconsistencies with acreage figures referenced in other documents will exist as a result of updates to data, differing projections, or changes in calculation techniques.

**TABLE 7. VALID EXISTING RIGHTS**

LOCATION ON FIGURE 6	CASE TYPE	CUSTOMER NAME	CASE FILE NUMBER	SIZE IN ACRES	EXPIRATION DATE
1	Federal Aid Highway 93	ITD <sup>a</sup>	IDI-001314	94	Perpetuity
2	ROW <sup>b</sup> Powerline	Lost River Electric Cooperative	IDI-002855	19	12/16/2019
3	ROW Observation Well	USGS <sup>c</sup>	IDI-012671	10	12/02/2009
4	ROW Telephone Line	ATC Communications	IDI-020118	6	08/08/2012
5	ROW Seismic Station	DOE <sup>d</sup>	IDI-028657	<1	04/16/2012
6	ROW Snow Fence	ITD	IDI-032380	14	09/09/2017
7	ROW Mineral Material Site	ITD	IDI-006614	109	Perpetuity
8	ROW Observation Wells	BOR <sup>e</sup>	IDI-0008954	4	Perpetuity
9	Emergency Airstrip Lease	Idaho Division of Aeronautics	IDI-0010307	43	03/05/2013
10	Emergency Airstrip Lease	Idaho Division of Aeronautics	IDI-0010310	40	09/19/2013
11	Federal Aid Highway 93	ITD	IDBL-0047476	87	Perpetuity
12	ROW Mineral Material Sites	ITD	IDBL-0047852	156	Perpetuity
13	Federal Aid Highway 93	ITD	IDBL-0049776	373	Perpetuity
14	ROW Mineral Material Site	ITD	IDBL-0052624	40	Perpetuity
15	Federal Aid Highway 93	ITD	IDBL-0052700	141	Perpetuity
16	Federal Aid Highway 93	ITD	IDBL-0053778	28	Perpetuity
17	ROW Mineral Material Sites	ITD	IDBL-0053709	7	Perpetuity

a. Idaho Transportation Department; b. right-of-way; c. U.S. Geological Survey; d. Department of Energy; e. Bureau of Reclamation

were no other pending lands and realty cases or applications such as rights-of-way, land use permits, exchange or sale proposals, or trespass cases.

#### **Desired Future Conditions:**

Existing access to private lands is maintained, consistent with applicable laws, while minimizing environmental impacts.

Valid existing rights are protected.

#### **Management Actions:**

LANDS-1: Private or state lands within the Monument boundary acquired by the agencies will automatically become part of the Monument and subject to the direction in this plan.

LANDS-2: The agencies will pursue acquisition or exchange for private inholdings within the Monument based on initiation by willing seller.

LANDS-3: The agencies will pursue an exchange with Idaho Department of Lands for state lands located in and near the Monument.

LANDS-4: Action on applications for new discretionary land use authorizations will be guided by existing NPS and BLM policies.

### **MINERAL MATERIALS**

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The proclamation expanding the Monument withdrew all federal lands and interests in lands within the Monument from entry, location, selection, sale, lease, or other dispositions (except for exchanges that would further the protective purposes of the Monument) under the public land laws, including the mineral leasing and mining laws. Thus, new federal mineral leases or prospecting permits may not be issued, nor may new mining claims be located within the Monument. No mining claims existed in the

Monument on the date of Proclamation 7373.

There are no known natural gas, oil, or mineral deposits within the Monument boundaries. The general area has moderate potential for developable geothermal resources (Kuntz et al. 1979, Ridenour 1979). Active mining claims for locatable minerals, primarily gold, exist just north of the Monument in the Pioneer Mountain foothills. The National Park Service has rehabilitated two old abandoned gold mine adits in the northern portion of the original Monument. The Bureau of Land Management processed several applications for geothermal leases in the 1970s and issued one lease, which was relinquished in 1982.

There are three Free Use Permits for pumice/cinders on BLM lands in the Monument. Butte County and Blaine County use these sites as a material source for gravel road maintenance. Free Use Permits authorize use only by state or local governments. These material sites are not available to the general public or commercial parties.

The amount of suitable road surface material available within the Monument is essentially unlimited. However, Proclamation 7373 and agency policy restricts extraction of mineral materials to valid existing rights and administrative uses only. Cinders are generally considered to be an undesirable material for road maintenance because they are not very durable compared to gravel. Cinders are very light, which reduces transportation costs. High quality crushed gravel is available outside the Monument, but at a substantially higher cost than the readily available cinders.

The Idaho Transportation Department also holds three right-of-way grants for five pumice/cinder material sites in the Monument. These right-of-way grants are valid existing rights unaffected by Proclamation 7373. The former General

Land Office granted these rights-of-way in the 1940s during the construction of US 20/26/93.

**Desired Future Conditions:**

Material sites (sites excavated for gravel, cinder, and other materials) are reclaimed and restored where feasible when no longer in use.

Current BLM reclamation requirements at material sites include: sloping of all pits to a natural contour and appearance; replacement of stockpiled topsoil and reseeded with recommended seed mix; reduction or removal of all vertical slopes and removal of all overhangs; scarification and rehabilitation of all created roads used to access the site; and other stipulations as agreed upon by the Bureau of Land Management and applicant at the time that the use was permitted and included in the mining and reclamation plan for mineral material disposal. Although complete restoration may not be practical, feasible, or desirable, reclamation of a mineral material site in the Monument shall be deemed successful when the site has been stabilized and revegetated, and it blends into the surrounding landscape.

**Management Actions:**

- MINE-1: Existing authorization for material sites within the Monument will continue for the term of the authorization.
- MINE-2: A Material Sites Reclamation Plan will be prepared.
- MINE-3: New materials sites will not be developed except for Monument administrative purposes.
- MINE-4: Agencies will consult with Idaho Transportation Department on relinquishment of three right-of-way grants for material sites along US 93.

- MINE-5: Information will be provided on BLM areas outside the Monument where casual collection is appropriate and permitted for materials similar to those found in the Monument.

**WILDERNESS AND  
WILDERNESS STUDY AREAS  
(WSAS)**

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Congressional designation of the 43,243-acre Craters of the Moon National Wilderness Area was enacted on October 23, 1970, making the Monument and Petrified Forest National Park the first units within the National Park System with designated wilderness areas (PL 91-504). The Craters of the Moon Wilderness is entirely within the original Monument (see Figure 9). All but the north end of the wilderness boundary is adjacent to lands inventoried by the Bureau of Land Management as the Great Rift Wilderness Study Area in 1980 (USDI BLM 1980a, 1980b). When designated, the wilderness boundary was offset one-eighth of a mile (660 feet) inside the Monument boundary. This “buffer” area was intended to permit administrative vehicle access for firefighting and other management needs (U.S. House of Representatives 1970). Since the narrow buffer area does not contain roads and consists largely of impassable lava flows, it never has been used for such purposes.

Wilderness Study Areas are lands identified through the BLM wilderness inventory process as possessing wilderness characteristics (defined by the Wilderness Act of September 3, 1964, 16 U.S. Code 1131). Wilderness Study Area lands are designated in BLM land use plans and managed under the BLM “Interim Management Policy for Lands under Wilderness Review, Handbook H8550-1,” so as not to impair their suitability for wilderness designation (USDI BLM 1995).

Four Wilderness Study Areas have been designated within the boundaries of the Monument (see Table 8 and Figure 9). Eighty-four percent of the Wilderness Study Areas are within the National Preserve; the rest is managed by the Bureau of Land Management. The 381,800-acre Great Rift Wilderness Study Area was designated in 1980 (USDI BLM 1980a, 1980b). The Great Rift Wilderness Study Area encompasses most of the Craters of the Moon and Wapi Lava Fields, along with parts of the surrounding sagebrush grasslands. The Raven's Eye Wilderness Study Area covers 68,300 acres of the western part of the Craters of the Moon Lava Field, with 66% of the area within the Monument. The Little Deer Wilderness Study Area takes in 35,200 acres of a narrow extension of the Craters of the Moon Lava Field and adjacent sagebrush grasslands. The 9,700-acre Bear Den Butte Wilderness Study Area is centered on a narrow finger of the Craters of the Moon Lava Field, which extends into Laidlaw Park. The Raven's Eye, Little Deer, and Bear Den Butte Wilderness Study Areas were designated in 1986 (USDI BLM 1987).

Presidential Proclamation 7373 transferred portions of the four Wilderness Study Areas to the National Park Service in 2000. The proclamation directed the following:

Wilderness Study Areas included in the Monument will continue to be



BLACKTAIL BUTTE.

managed under Section 603(c) of the Federal Land Policy and Management Act of 1976 (43 U.S. Code 17011782).

Section 603(c) requires that Wilderness Study Areas be managed to maintain their suitability for wilderness designation and prevent unnecessary or undue degradation. BLM wilderness inventory procedures (USDI BLM 2001b) define roads as routes improved and maintained by mechanical means to ensure relatively regular and continuous use. A route maintained solely by the passage of vehicles is defined as a vehicle way. Numerous vehicle ways exist within the Wilderness Study Areas. The BLM Interim Management Policy for Lands under Wilderness Review (USDI BLM 1995) permits continued motorized travel on those ways recorded during the wilderness inventory. Additional vehicle routes created after the

**TABLE 8. SUMMARY OF WILDERNESS STUDY AREAS**

WILDERNESS STUDY AREA	AREA WITHIN MONUMENT (ACRES*)	NPS AREA (ACRES*)	BLM AREA (ACRES*)	TOTAL WSA AREA (ACRES)	AREA WITHIN MONUMENT RECOMMENDED SUITABLE BY THE BUREAU OF LAND MANAGEMENT (ACRES)
Great Rift	381,100	335,000	46,000	381,800	322,450
Raven's Eye	45,400	37,000	8,400	68,300	67,110
Little Deer	35,100	21,300	13,800	35,200	0
Bear Den Butte	9,700	4,300	5,400	9,700	0

\*Acreage within the monument has been rounded to the nearest hundred acres.

inventory are not authorized, and motorized vehicle use of such routes is prohibited.

#### **Desired Future Conditions:**

Natural conditions in Wilderness and Wilderness Study Areas, including air quality, dark night skies, and natural quiet, are substantially free of human influences.

Air quality degradation and adverse impacts to air quality related values, particularly visibility, within the Class I air quality Craters of the Moon Wilderness Area, do not occur.

Future generations enjoy the enduring wilderness resources of the Craters of the Moon Wilderness, including its conservation, scientific, cultural, educational, and recreational benefits.

Wilderness Study Areas retain the wilderness values identified in the wilderness inventory and study process.

#### **Management Actions:**

**WILD-1:** NPS and BLM staff will develop a joint Wilderness / Wilderness Study Area Management Plan following completion of this plan. No additional wildlife water developments or other habitat manipulations will be undertaken to manage wildlife populations in Wilderness, Wilderness Study Areas, or the Preserve.

**WILD-2:** As part of the joint Wilderness / Wilderness Study Area Management Plan, and consistent with current guidance on inventorying for and management to protect or enhance wilderness characteristics, the agencies may conduct additional inventory, consider citizen proposals, and consider protections of lands with wilderness characteristics.

**WILD-3:** Minimum requirement analysis will precede any proposed management activities within designated wilderness areas and Wilderness Study Areas managed by the National Park Service. BLM-administered Wilderness Study Areas will continue to be managed under the guidance in the Interim Management Policy for Lands under Wilderness Review. Should those portions of the Great Rift Wilderness Study Area adjacent to the original Monument be designated as wilderness, the 660-foot strip of non-wilderness between the Craters of the Moon Wilderness boundary and the original Monument boundary should be designated as wilderness as well.

**WILD-4:** Use of aircraft to survey and monitor wildlife populations could be continued, but flights will be scheduled to avoid high visitor use periods. Any landing of aircraft or dropping of supplies from aircraft in wilderness or Wilderness Study Areas will be consistent with a minimum requirement and minimum tool analysis.

**WILD-5:** Ways or travel routes within Wilderness Study Areas not identified during wilderness inventories will be closed to motorized vehicles and rehabilitated.

**WILD-6:** Should Congress release any Wilderness Study Area from WSA status, then the area will be managed under the direction of this land use plan.

## VISITOR EXPERIENCE

### INTERPRETATION/ VISITOR UNDERSTANDING

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The interpretive program at the Monument focuses on providing an educational experience to the widest possible variety of visitors. Major target audiences are summer visitors, school students, visitors from local communities, and winter visitors. Other groups are backcountry travelers, hunters, and people planning visits to the Monument. Programs to best meet the needs of these groups are regularly scheduled walks and talks during summer, school group orientations and teacher workshops in spring and fall, special topic weekend programs, and winter ecology workshops.

Interpretive waysides, informational kiosks, press releases, publications, and agency websites also provide for the informational and interpretive needs of the public. Visitors unable to attend or take advantage of the various scheduled interpretive programs have an excellent opportunity to learn about the Monument through these other venues.

Interpretive themes are important ideas, stories, and concepts that are presented to visitors in exhibits, publications, and programs. With the development of the Long-Range Interpretive Plan for the Monument (see “Future Planning Needs” in Chapter 3), the following interpretive themes will be addressed:

- The Monument provides opportunities for people to explore a remarkably well preserved volcanic landscape.
- The Great Rift and its associated features are only the most recent reminders of an awesome series of geologic events that began to shape the Snake River Plain 16 million years ago.
- The geology of Craters of the Moon has created unique and unexpected habitats that provide for the survival of a surprising diversity of plant and animal species. This vast lava and sagebrush plain also provides for critical human needs throughout this desert region.
- Searing lava flows that initially destroyed everything in their path today protect the last islands of intact sagebrush steppe communities on the Snake River Plain.
- Craters of the Moon contains vast areas that are managed to preserve their wilderness characteristics.
- For thousands of years people have avoided, endured, and pondered this vast western landscape.

#### Desired Future Conditions:

The Monument builds and maintains positive relationships with visitor user groups and educational organizations.

The public perceives the Monument as a single entity, and its management as a model of public service.

The public understands and appreciates the area’s natural and cultural resources, including its history and uses.

The public has access to Monument information and learning opportunities, both on- and off-site.

Information/orientation materials such as travel maps, safety bulletins, resource information, and recreation information are available.

Visitors are offered a variety of interpretive media within the Frontcountry Zone.

### Management Actions:

- VISIT-1: A Long-Range Interpretive Plan for the Monument will be developed.
- VISIT-2: Both agencies will coordinate services to meet the needs of permittees, visitors, students, educators, interest groups, and the general public.
- VISIT-3: Monument staff will continue to promote visitor safety and resource protection. Designated roads, trails, and facilities will be maintained, and new facilities will be provided as appropriate in the Frontcountry Zone for resource protection and visitor enjoyment.
- VISIT-4: Developed facilities such as the visitor center at the original NPS Monument will continue to be provided. Informational/orientation materials dealing with recreation, maps, safety, and resource concerns will be posted on kiosks located at all primary backcountry access points surrounding the Monument and at the Carey and Kimama BLM fire stations.
- VISIT-5: Interpretive programs and the maintenance of exhibits and waysides will continue.
- VISIT-6: Educational programs for schools will focus on programs on-site in the original NPS-administered Monument. A number of programs (summer and winter) aimed at special users will be presented each year.
- VISIT-7: Educational programs will be expanded to off-site locations.
- VISIT-8: A variety of interpretive media for on- and off-site use will continue to be developed.
- VISIT-9: Interpretive signs will be provided along the US 20/26/93 corridor.
- VISIT-10: Interpretation outside the Frontcountry Zone will emphasize publications, websites, exhibits, and other off-site interpretive media.
- VISIT-11: Interpretive emphasis will be on providing new interpretive and educational materials and programs outside the expanded portion of the Monument and in partnering communities and facilities.
- VISIT-12: A variety of portable media (maps, tapes, guidebooks, etc.) will be developed to interpret the expanded portion of the Monument.
- VISIT-13: Informational/orientation materials dealing with recreation, maps, safety, and resource concerns will be available in gateway communities. Visitor center(s) operated in cooperation with local partners will be proposed within the I-84 corridor.
- VISIT-14: Commercial outfitters and guides will be encouraged to offer a range of guided experiences. Visitors who might not otherwise have the proper knowledge, vehicles, or preparation to experience the interior of the Monument will then have a viable option that will not require a lot of road, trail, and facility improvement.
- VISIT-15: Safety and resource protection will be emphasized at access points.

## RECREATION

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Visitation to the original NPS Monument averages 200,000 people per year, with peak visitation on summer weekends. Many visitors are on vacations that include Yellowstone and Grand Teton National Parks to the east and Sun Valley and the Sawtooth National Recreation Area to the west (USDI NPS 1990). Commonly, visitors spend less than 3 hours at the Monument; 5% remain overnight. The typical visitor will stop and tour the visitor center, then sightsee along the 7-mile paved loop drive, taking advantage of photographic opportunities and often having a picnic before leaving.

School groups represent an important visitor group. More than 100 school groups comprising more than 3,000 students visit the Monument each year. Teachers who have attended one of the Monument-provided teacher orientation workshops lead many of these groups.

Commercial tours also come to the Monument through the primary visitation season. Commercial tour numbers vary from year to year, but the average is between 30 and 40 tour buses each year.

Winter visitation is low, but winter attracts local and regional visitors familiar with the quality cross-country skiing and snowshoeing opportunities. The loop drive is closed to vehicle traffic and groomed for skiing in winter. The National Park Service has also offered winter ecology programs for the past few years; these are always well attended.

Visitation to the expanded parts of the Monument during the last 10 years averaged approximately 20,000 visits per year, according to BLM's Recreation Management Information System (RMIS). Some popular sites are Pillar Butte, Wood Road Kipuka, Bear Park, Snowdrift Crater, Kings Bowl, and Bear Trap Cave. No visitor facilities are available at any of the sites, but all receive day use and



GUIDED INTERPRETIVE WALKS ARE SCHEDULED THROUGHOUT THE SUMMER MONTHS.

occasional overnight camping. Recreational activities in the expanded part of the Monument, in order of popularity, are hunting; driving for pleasure; geologic exploration including caving, lava hiking and sightseeing; hiking; primitive camping; photography; horseback riding; and mountain biking.

**Commercial Outfitters and Guide Services.** There is currently one temporary special use permit issued for guided tours within the Monument. In 2004 there were no tours conducted under the two existing hunting outfitter permits issued for Hunting Units 52A and 68 (one in each unit) within the Monument, and past use of these permits has been quite low as well. Although some interest in commercial outfitter and guide permits has been expressed, the agencies do not foresee a dramatic increase in demand for these permits over the life of the plan.

**Hunting.** The Idaho Fish and Game Commission sets hunting seasons and other regulations for hunting in Idaho. Most of the Monument and Preserve is within Idaho Fish and Game Hunting Unit 52A (see Figure 10). The southern part of the area, including all of the Wapi Lava Field, is included in Unit 68. A very small portion of the northern edge of the Monument and Preserve falls within Units 49 and 50. The length of season and number of available controlled-hunt tags vary annually on the basis of wildlife population levels and other factors.

BLM's Recreation Management Information System and Idaho Department of Fish and Game estimates indicate that Greater sage-grouse hunting and open mule deer hunting attract the highest number of hunters in the Monument. The open seasons for archery (antelope, elk, and deer), other small game (rabbits, upland birds), predators, and unprotected species, along with the controlled seasons (draw tags) for antelope, elk, and deer, account for a much smaller portion of hunting use.

Almost all hunting has historically been in the BLM portions of the Monument. Hunting occurs in what is now the NPS Preserve, although hunting has never been authorized in the original NPS Monument. The exposed lava flows in the NPS Preserve can be used for a quality hunt for a few hunters who seek the challenge. The very small amount of hunting by members of the Shoshone-Bannock Tribes that takes place in the Monument is considered a treaty right and is not considered a recreational hunting experience.

**Motorized and Mechanized Recreation.** OHV (off-highway vehicle) use in the Monument includes off-highway motorcycles, all-terrain vehicles, and snowmobiles. Most OHV use in the Monument takes place during hunting seasons or in association with other land uses like livestock operations. The amount of OHV-specific recreation activity in the Monument is quite small (Recreation Management Information System estimates less than 5,000 visits per year). Most OHV activity takes place on the road network, since no trails have been designated for motorized use.

A small amount of mountain biking occurs in the expanded Monument. This small but growing recreational use is confined primarily to the existing road network, because no designated trails for mountain biking exist. In the area of the original Monument, mountain bike permits are available for riding along portions of Goodale's Cutoff. Bicycle use occurs on the 7-mile loop drive and other areas. No OHV use is permitted within the original Monument.

**Hiking and Horseback Riding.** Most hikers hike on designated trails in the original Monument. Hiking trails to features of interest in the original Monument are the North Crater Flow, Devils Orchard, Inferno Cone, the Big Craters/Spatter Cones area, Tree Molds, and the Caves Area. Hikers in the non-wilderness part of the original Monument regularly see other

visitors, because the area is highly used. Opportunities for solitude are limited; however, the Craters of the Moon Wilderness offers outstanding opportunities for self-directed hiking, with an excellent chance to experience solitude.

Wilderness use is extremely light, with an average of 130 overnight backpackers per year (based on backcountry permits issued 1990 through 2002). Backpacking parties usually consist of fewer than four persons, and they seldom stay out more than two nights (USDI NPS 1990). All water must be packed into the backcountry. Exact numbers of day users are unavailable. Some constructed hiking trails exist at the Crystal Ice Caves/Kings Bowl area (Recreation Management Information System estimates 1,000 visits).

Horseback riding in the original Monument is limited to the Craters of the Moon Wilderness Trail by permit only. No other designated trails currently exist for horseback riding.

**Camping.** In the original Monument, more than 50 developed campsites with water, restrooms, charcoal grills, and picnic tables are available on a first-come-first-served basis. Most campers stay only one night. The campground is rarely full, with the exception of several weekends during the summer, generally around holidays.

**Caving.** Tens of thousands visit the Caves Area in the developed portion of the Monument each year. Although dispersed caving does not draw large numbers of visitors, it is an important and unique recreation opportunity at the Monument. Opportunities exist for recreational cave experiences throughout the Monument, ranging from hiking a paved trail to an easily accessible lava tube such as Indian Tunnel, to visiting a remote wild cave somewhere in the expanded portion of the Monument, to the potential to actually discover a previously unknown cave.



LAVA FLOW  
CAMPGROUND.

**Health and Safety.** Several factors are involved in health and safety concerns for Monument visitors and surrounding communities. These factors include road standards and levels of maintenance, extreme weather, wildfires, caves/fissures, lava terrain, livestock, and snakes.

#### **Desired Future Conditions:**

Opportunities are available for diverse recreational experiences, consistent with the intent of Monument proclamations and applicable laws.

The area continues to offer a range of opportunities for discovery.

The public enjoys opportunities for self-discovery and primitive type recreational experiences.

Unsigned and self-directed motorized recreation opportunities are available.

Within the Pristine Zone, public opportunities to experience solitude, natural quiet/night sky, and views of landscapes remain substantially free of human influence.

Commercial outfitters and guide services provide opportunities for visitors to experience and learn about the resources, reducing the need for development and agency staffing.

Public awareness of responsible low-impact recreational use reduces or eliminates the need for restrictive management policies.

Responsible low-impact recreational use allows for relatively unrestricted recreational opportunities throughout much of the Monument.

Public awareness of area hazards, along with an attitude of self-reliance and personal safety, substantially reduces the need for restrictive management policies.

Impacts associated with recreational uses do not adversely affect the physical and visual integrity of geologic features or the biological integrity of the ecosystem.

The National Park Service, the Bureau of Land Management, and external partners provide the public accurate and consistent information on recreational opportunities throughout the Monument.

Partnerships with off-site facilities, such as visitor centers and state parks, provide Monument information and interpretation.

#### **Management Actions:**

REC-1: The current Idaho State Comprehensive Outdoor Recreation and Tourism Plan and the Idaho outdoor recreation demand assessment will be utilized in implementation-level planning to assist managers in understanding the recreational use patterns, trends, and recreational facilities needed for the area.

REC-2: Implementation-level planning will make determinations as to where specific trails, trailhead facilities, and/or number of primitive campsites will be needed or desired within the Passage Zone.

REC-3: Resources and areas most vulnerable to vandalism, theft, and/or recreational use impacts will be inventoried.

REC-4: The agencies, in consultation with the state, could designate areas within the Preserve and periods of time when no hunting and/or use of firearms will be permitted for reasons of public safety, administration, and/or public use and enjoyment.

REC-5: Information/orientation materials such as travel maps, safety bulletins, resource information, and recreation information will be conveniently available.

REC-6: Permits will continue to be required for overnight camping in the Wilderness and/or biking or hiking in the original Monument area north of US 20/26/93.

REC-7: Applications for permitted outfitters and guide services will be encouraged.

REC-8: Should permitted outfitter, guide, or similar NPS concession use numbers of the Monument reach 2,000 annual user days in the expanded portion of the Monument, BLM and/or NPS staff will prepare an implementation level plan for the management of these services. This plan will include use allocations and limits for a variety of recreational experiences, such as geology tours, nature walks, bird/wildlife watching, or horseback riding.

REC-9: No wood fires will be permitted within the original Monument (campground sites provide grills for charcoal cooking only; wood fires are permitted at group campsites).

REC-10: No hunting will be allowed in the NPS Monument.

REC-11: Programs will promote wilderness and backcountry ethics.

REC-12: The agencies will continue to provide and promote

cross-country skiing and snowshoeing activities along the 7-mile loop drive in the northern end of the Monument.

- REC-13: Leave-No-Trace and Tread Lightly programs will be promoted with staff and the public.
- REC-14: Up to six locations could be developed for camping in the Passage Zone.
- REC-15: The Bureau of Land Management and the National Park Service will actively seek potential partnerships with off-site Monument information and interpretation.

## VISUAL RESOURCES

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**Viewscape.** Perpetuating scenic vistas and open western landscapes for future generations is one of the purposes identified for the Monument. The visual resources of the Monument represent a remnant of the undeveloped American West and one of the few remaining great expanses of sagebrush steppe. The contrasting lava flows were described in the 1924 Presidential Proclamation originally establishing the Monument as a “weird and scenic landscape peculiar to itself.” This creates a viewscape unique in North America.

The gray-green sagebrush steppe and black lava fields about the high Pioneer Mountains to the north. Across the Monument, 3,500 feet of vertical relief present visitors with enormous panoramic views to the south. On a clear day, the Grand Tetons, 140 miles to the east, can be seen from the Monument. One of the nation’s clearest airsheds enhances these long, uninterrupted vistas.

The Monument contains numerous striking volcanic features such as pahoehoe and a’ā lava flows, cinder cones, spatter ramparts, and enormous lava fields. Low shield volcanoes and cinder cones (known locally as “buttes”) rise up throughout the

entire Monument landscape. The exposed lava varies in color, while shapes and textures of the flows add scenic variety on a smaller scale. Nearly barren of vegetation, the most recent lavas at times flowed around kipukas, which offer some visual relief from the continuous lava. Expansive sagebrush steppe and grasslands, as well as the different ages and types of lava surfaces, support a remarkable variety of plant and animal communities that add to the visual diversity of the Monument.

**Visual Resource Management.** Visual Resource Management (VRM) is a standard tool used by the Bureau of Land Management to identify and protect visual values on public lands (USDI BLM 1986a, 1986b). A VRM inventory of the Monument area was completed in 1989, including an evaluation of scenic quality, identification of viewsheds, and key observation points for visitors (see Figure 11). This inventory data was analyzed and presented as visual resource classes. This Plan places all public land into one of four VRM management classes. VRM classes provide standards for planning, designing, and evaluating future management projects. The four VRM management class designations are as follows:

Class I — The objective of this class is to preserve the existing character of the landscape. Any contrast created within the characteristic landscape must not attract attention. This classification is applied to visual Areas of Critical Environmental Concern (ACEC), Wilderness and Wilderness Study Areas, Wild and Scenic Rivers, and other similar situations.

Class II — The objective of this class is to retain the existing character of the landscape. Changes in any of the basic visual elements caused by management activity should not be evident in the landscape. A contrast may be seen but should not attract attention.

Class III — The objective of this class is to partially retain the existing character of the landscape. Contrasts to the basic elements caused by a management activity may be evident and begin to attract attention in the landscape. The changes, however, should remain subordinate in the existing landscape.

Class IV — The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. Contrasts may attract attention and be a dominant feature in the landscape in terms of scale. However, the change should be compatible with the basic element of the landscape.

**Desired Future Conditions:**

Existing opportunities to experience solitude, dark night sky, and views of landscapes remain substantially free of human intrusions.

A primitive and natural visual setting is retained.

The visual integrity of the Goodale's Cutoff historic trail corridor remains protected.

Management activities meet or exceed adopted Visual Resource Management (VRM) classes.

**Management Actions:**

VRM-1: BLM and NPS managers should seek the cooperation of visitors, neighbors, and local government agencies to prevent or minimize impacts and prevent the loss of western landscape vistas and natural dark conditions.

VRM-2: Existing waste dumps will be inventoried and cleaned up.

VRM-3: VRM inventory classes will be designated as management classes as shown in Figure 11.

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**SOUNDSCAPES**

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The Monument is a quiet place. "Natural quiet" refers to the state of having only natural sources of sound — for example, wind, rustling leaves, water, and animal calls. Most of the Monument is not subject to modern sources of unnatural sound intrusion, or noise. The only major noise producers are highway traffic from outside the Monument, the railroad near the southern edge of the Monument, and aircraft overflights.

**Desired Future Conditions:**

Aircraft noise impacts are minimized.

Existing opportunities to experience solitude and natural quiet remain substantially free of human intrusions.

**Management Actions:**

SOUND-1: Aircraft landings associated with commercial air tours will not be authorized within the Pristine Zone.

SOUND-2: The agencies will coordinate with the Department of Defense, Federal Aviation Administration, and the Idaho Department of Aeronautics regarding noise impacts.

## SOCIAL AND ECONOMIC CONDITIONS

A look at economic change in each of the five counties within the planning area shows that the economies of even adjacent counties can be very different. While some typify changes that are occurring in many areas of the western United States, others retain high levels of more traditional economic sectors or reflect unique histories. Blaine and Minidoka Counties, for example, follow widespread patterns of economic change in that the services and professional and non-labor income (income derived from investments, retirement, social security, etc.) categories have shown the most significant growth. Despite this similarity, these two counties are at the high (Blaine) and low (Minidoka) ends of the spectrum in terms of per capita income, housing values, and educational attainment.

The Monument contributes to the local economy through its employment of 21 part- or full-time workers and administrators and approximately 10 to 20 seasonal employees who live in various communities around the Monument. The National Park Service also uses concession contracts and commercial use authorizations (formerly incidental business permits) to manage commercial activities within its units. Currently, the only concession con-

tract is issued to the nonprofit Craters of the Moon Natural History Association. This contract allows the association to offer convenience items such as sunscreen, film, and soft drinks, as well as books and educational materials, for purchase by visitors in the NPS visitor center. There are no current commercial use licenses or incidental business permits issued for activities on NPS lands in the Monument. The Idaho Department of Fish and Game offers commercial use licenses on BLM-administered land.

### Desired Future Conditions:

Gateway and other nearby communities benefit economically and socially from the presence of the Monument.

### Management Actions:

- SOCIO-1: An intergovernmental coordinating group will be considered to ensure consistency of this plan with other state and local plans.
- SOCIO-2: The agencies will participate with interested communities in their planning for accommodating Monument visitors through their communities.

## RESEARCH

All of the proclamations associated with Craters of the Moon National Monument focus on the unique geologic resources of the Monument. The protection, study, and appreciation of the Monument's unique geologic features are perhaps the overriding purposes of the Monument. Both agencies acknowledge the need for scientific study of the Monument's remote and often harsh environment. However, restrictions on surface disturbance and cross-country travel can constrain geo-

logic research. Basic research plays an important role in the identification, characterization, and interpretation of the Monument's resources.

BLM and NPS staff have been working with the U. S. Geological Survey to pursue ongoing research involving geologic mapping, geochemistry, geophysics, geomorphology, seismology, geomagnetism, geodesy, tectonics, earthquake hazards, volcanic hazards, and climate change.

The agencies have engaged in numerous partnerships with a variety of academic organizations, professional societies, clubs, and hobby organizations who have expressed interest in the Monument's unique geologic resources. These organizations include three separate Grottos (chapters) associated with the National Speleological Society.

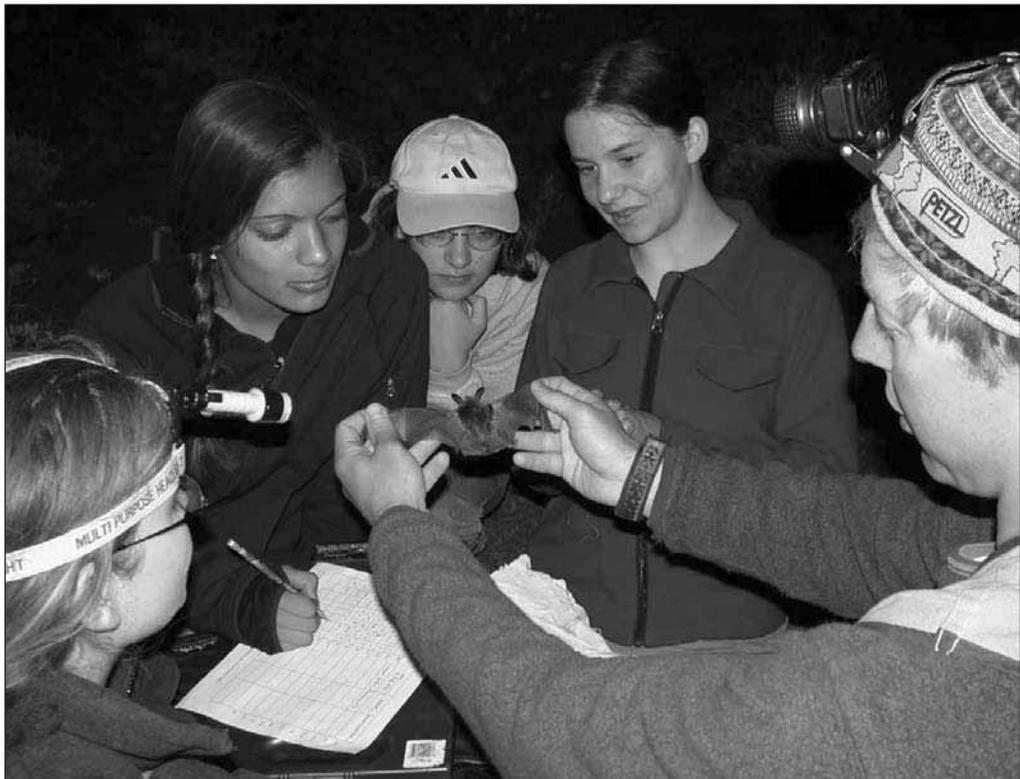
The National Park Service has a long-term air quality monitoring program in place. Both agencies will strive to continue and expand climatic and air quality research and monitoring. The Idaho National Energy and Environmental Laboratory is an important partner in these activities.

The Monument contains several ongoing archeological scientific studies. The agencies will continue established relationships with academic institutions for these challenge cost share research projects. Inventory, characterization, and protection of cultural resources are a high priority for both agencies. The potential for additional discoveries of significant cul-

tural and paleontological resources is high. Investigations will conform to policy guidelines for surface disturbance within Wilderness Study Areas and minimize surface disturbance elsewhere

The lava flows at Craters of the Moon create many unique opportunities for the study of isolated, relatively undisturbed native plant communities. The proclamation describes kipukas as important comparative benchmarks relative to human-altered plant communities in the Snake River Plain. The Monument has been the site of many vegetative studies and research projects. Several studies involving rare plants, natural fire, fire rehabilitation, and grazing are in progress.

The Monument is also a remnant stronghold for Greater sage-grouse and is particularly suited for the study of healthy Greater sage-grouse populations. The agencies will continue to encourage both population and habitat research in cooperation with the Idaho Department of Fish and Game.



STUDENTS CAN SERVE AS CITIZEN SCIENTISTS IN RESEARCH PROJECTS.

Several potential partners have expressed an interest in biological science at the Monument including Idaho's Conservation Data Center, the Idaho Rangeland Resource Commission, universities, and the Biological Division of the U.S. Geological Survey. Both agencies actively encourage appropriate and needed biological research in cooperation with these partners to fulfill this important aspect of Monument designation.

**Desired Future Conditions:**

The findings of scientific research enhance management decisions and increase public appreciation and understanding of Monument resources.

The research community and the Monument staff view the Monument as a productive outdoor laboratory.

**Management Actions:**

RSEAR-1: To maintain a complete record of research activities and research and specimen collecting, permits will be required for all projects. Standard operating procedures for the NPS permit process will be incorporated for the entire Monument.

RSEAR-2: The agencies will coordinate the review and approval of research applications to confirm adherence to each agency's policy and to ensure compatibility with the purposes of the Monument.

RSEAR-3: Varying means, including interdisciplinary and interagency research projects, will emphasize the use of the Monument as a productive outdoor laboratory.

RSEAR-4: BLM and NPS staff will facilitate the transfer of research information to the public.

RSEAR-5: To the extent they are available, NPS and BLM facilities and staff assistance may be made available to qualified researchers and educational institutions conducting authorized studies or field classes.

RSEAR-6: The agencies will work with interested partners in sponsoring a symposium or similar forum for sharing information on past research and helping identify future research needs and opportunities.

