

**From:** Miller, Ann  
**To:** [Joshua Hanson](#)  
**Cc:** [Bowman, Randal](#); [Simon, Benjamin](#); [Skrabis, Kristin](#)  
**Subject:** Re: National Monuments review economics reports  
**Date:** Thursday, August 17, 2017 3:45:00 PM  
**Attachments:** [NM review economics 8-17-17.zip](#)

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Hi Josh,

Attached is a zip file with reports on the economic contributions and economic values of the remaining 10 non-marine national monuments (in addition to the 12 I sent yesterday). Again, the "Background and Overview" document that was sent yesterday should be considered a part of any one of these individual reports. Let me know if you have any questions.

Thanks!  
Ann

On Wed, Aug 16, 2017 at 4:52 PM, Miller, Ann <[ann\\_miller@ios.doi.gov](mailto:ann_miller@ios.doi.gov)> wrote:

Hi Josh,

Attached is a zip file containing reports on the economic contributions and economic values for 12 of the non-marine national monuments under review, prepared by the Office of Policy Analysis. The balance will be coming to you by Friday (though most likely the bulk will be sent to you by COB Thursday). Please note that there is a document titled "Background and Overview" - this is a companion piece to, and is referenced by, each national monument report, and should be considered a part of any one of the individual reports. Let me know if you have any questions.

Thanks!  
Ann

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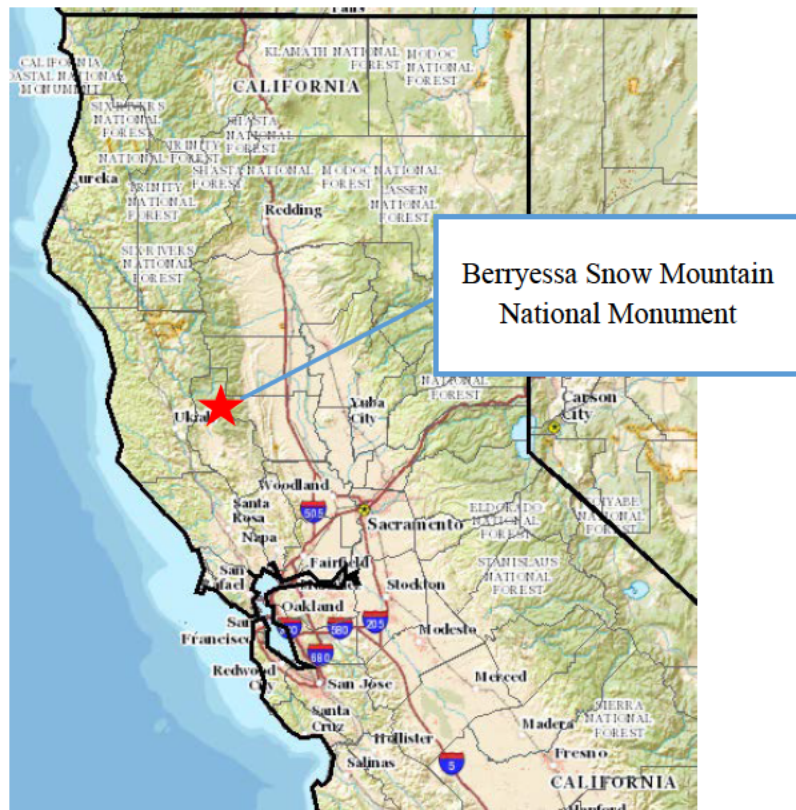
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# Berryessa Snow Mountain National Monument

Economic Values and Economic Contributions



## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Berryessa Snow Mountain National Monument (BSMNM or the Monument) as well as to provide a brief economic profile of Lake County, California (CA).<sup>1 2</sup>

## Background

BSMNM was established by President Obama on July 10, 2015 (Proclamation 9298), and is jointly managed by the Bureau of Land Management (BLM) and the USDA Forest Service (FS).<sup>3</sup> The Proclamation designated “approximately 330,780 acres” and states that acreage is “the smallest area compatible with the proper care and management of the objects to be protected.” The Monument covers a wide area near several tribes,<sup>4</sup> nearby cities,<sup>5</sup> and nearby counties,<sup>6</sup> and includes the Snow Mountain, Cache Creek and the Cedar Roughs Wilderness areas, and part of the Mendocino National Forest.

The USDA FS (Mendocino National Forest) and BLM (Ukiah Field Office) manage for multiple use within the Monument including wildlife management (hunting and fishing, recreation, grazing, and valid existing rights such as mining), while protecting and providing opportunities for scientific study and public enjoyment of the historic and scientific resources identified in the Proclamation. The objects of interest identified in the Proclamation include unique geology, watersheds, the Bartlett Springs fault zone, serpentine soils that host many unique botanical resources, some of the earliest prehistoric settlements in California, traditional gathering sites for Native American cultures, Cache Creek Archeological District, the historic 1860’s Nye Cabin, headwaters and waterways that harbor native fish, as well as wildlife habitat and migration corridors. Overall, multiple-use activities are allowed within BSMNM that are compatible with the protection of resources and objects identified in the Presidential Proclamation. Multiple-use activities are guided by decisions made in existing and future

### *Berryessa Snow Mountain National Monument*

**Location:** Northern California  
**Managing agencies:** BLM, USDA FS  
**Adjacent communities, Tribal and Federal land:** Ukiah, Santa Rosa, Woodland, Clearlake, CA; Elem Indian Colony, Yocha Dehe Wintun Nation, Middletown Rancheria, Big Valley Rancheria, Colusa Indian Community, Cortina Indian Rancheria, Grindstone Indian Rancheria, Potter Valley Rancheria, Robinson Rancheria of Pomo Indians, Round Valley Indian Reservation, Scotts Valley Indian Reservation, Sherwood Valley Rancheria, Upper Lake Rancheria, Koi Nation–Lower Lake Rancheria  
**Resource Areas:**  
☒ Recreation ☐ Energy ☒ Minerals  
☒ Grazing ☒ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

<sup>1</sup> The BLM provided data related to public land resources used in this paper.

<sup>2</sup> Lake Co. has about 2/3 of total acreage. Source: Larson, E. (2017) Lake County News. Posted June 9, 2017. Accessed July 19, 2017. <https://www.lakeconews.com/index.php/news/142-local-government/51195-support-gathers-for-maintaining-berryessa-snow-mountain-national-monument-status->

<sup>3</sup> Proposed BLM lands within Colusa County were omitted from the BSMNM boundary prior to designation/proclamation in response to public comments. Approximately 6,897 acres of FS lands within Colusa County are within the BSMNM boundary.

<sup>4</sup> Nearby tribal communities include Elem Indian Colony, Yocha Dehe Wintun Nation, Middletown Rancheria, Big Valley Rancheria, Colusa Indian Community, Cortina Indian Rancheria, Grindstone Indian Rancheria, Potter Valley Rancheria, Robinson Rancheria of Pomo Indians, Round Valley Indian Reservation, Scotts Valley Indian Reservation, Sherwood Valley Rancheria, Upper Lake Rancheria, and Koi Nation–Lower Lake Rancheria.

<sup>5</sup> Nearby towns include Calistoga, Calpella, Clearlake Oaks, Davis, Esparto, Guinda, Hopland, Kelseyville, Lucerne, Middletown, Nice, Redwood Valley, Sacramento, Santa Rosa, Ukiah, Upper Lake and Lower Lake, Winters, Woodland, and other towns near the upper San Francisco Bay.

<sup>6</sup> Nearby Counties include Lake, Colusa, Glenn, Mendocino, Napa, Solano, and Yolo.

USDA FS and BLM resource management planning efforts. The 1995 Mendocino National Forest Land and Resource Management Plan and the 2006 BLM–Ukiah Field Office’s Resource Management Plan currently direct BSMNM management.

The BLM and USDA FS are in the process of jointly developing a National Monument management plan in accordance with the Proclamation. Pending the outcome of this review, the agencies plan to begin the public scoping process in 2017. The USDA FS and BLM hosted three public meetings in the fall of 2016 to get early community input into the planning process. The plan will be developed in consultation with tribal, state, and local governments. The Federal Land Policy and Management Act (FLPMA) directs BLM and USDA FS to continue to allow for multiple uses on National Monuments.

The establishment of BSMNM received support at the State, local, and regional levels. Counties and cities in the region passed resolutions of support. The community was engaged in the legislative proposals for the area and the eventual designation as a National Monument.<sup>7</sup> BLM records reflecting the pre-designation community engagement efforts are limited because most of the sponsorship for this designation came from active non-profit organizations. This Monument offers an example of landscape-level cooperative management by multiple federal agencies through use of a Service First Agreement. The lands in and around BSMNM include a patchwork of state, county, local, and private ownership. Establishment of BSMNM provides a framework for cooperative coordination, grant writing, and cost-sharing opportunities with federal, state, county, local, private, and not-for-profit entities.

### *Public Outreach Prior to Designation*

The establishment of BSMNM was the result of a grassroots effort of regional and community support for interagency protection and enjoyment of these lands. The not-for-profit organization Tuleyome ([www.tuleyome.org](http://www.tuleyome.org)) with offices based out of Woodland, CA led this effort with a website, community, and regional outreach efforts. More than 200 local businesses voiced support for Monument designation.

The USDA FS held two tribal meetings in 2014. Former Secretary of the Interior Sally Jewell participated in a public meeting with Congressmen Mike Thompson and John Garamendi on December 19, 2014, to hear from local communities.

### *Local Economy and Economic Impacts*

Table 1 presents socioeconomic metrics for Lake County and the State of California. Lake County contains roughly 0.2% of the State’s population. The population of the County increased about 10% from 2000 to 2015.<sup>8</sup> Approximately 3.2% of the population of the county is Native American. The median household income of Native Americans in Lake County is 92% of the median household income for the county’s general population (see Table 1). The county has historically experienced higher levels of unemployment and lower levels of median household income in comparison to the State.

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<sup>7</sup> Prior to national monument designation, the following bills were introduced in the House and Senate. Neither bill made it out of committee: H.R.761 - Berryessa Snow Mountain National Monument Act, sponsored by Representative Mike Thompson during the 114<sup>th</sup> Congress (2015-2016) (<https://www.congress.gov/bill/114th-congress/house-bill/761>); S.393 - Berryessa Snow Mountain National Monument Act, sponsored by Senator Barbara Boxer during the 114<sup>th</sup> Congress (2015-2016) (<https://www.congress.gov/bill/114th-congress/senate-bill/393>).

<sup>8</sup> Population (2000) 58,309; (2015) 64,158



The economy in Lake County has firms in 20 sectors. Health care and social assistance is the largest sector by employment (see Figure 1), accounting for about 25% of total employment in the county.<sup>9</sup>

### *Activities and Resources Associated With Berryessa Snow Mountain National Monument*

Information on the economic contributions associated with the activities occurring at Berryessa Snow Mountain National Monument, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with BSMNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** Recreation opportunities at BSMNM include hiking, camping, backpacking, hunting, fishing, mountain biking, and horseback riding. A number of trailheads provide access to the interior of the Monument for hikers and equestrians. Horseback endurance rides are popular annual events within the Monument. The Mendocino National Forest and BLM host world-class off-highway vehicle trail systems, parts of which are in the Monument. The Monument also offers opportunities for kayaking in what is the closest whitewater river available to Sacramento and the San Francisco Bay area, as well as hot springs, swimming holes, and hang gliding launch points.

Recreation activities are the basis for economic activity generated from tourism. The economic contributions occur annually, and in cases where visitation increases over time, recreation generates additional activity each year. These contributions affect the regional and state economies. In fiscal year 2016, the approximately 107,300 visits to the BLM-managed part of the Monument are estimated to have contributed about \$5.8 million in value added (net economic contributions) and supported around 95 jobs.<sup>10 11</sup>

The portion of the Monument administered by the USDA FS is located within the Mendocino National Forest (MNF). The most recent visitation estimate to this portion of the Monument (28,000 visits for the whole National Forest) is from fiscal year 2013, which predates designation of the Monument in 2015.<sup>12</sup> This is considered to be a reasonable estimate for current visitation, given anecdotal information. Data collected during the 2018 sampling period will allow USDA FS to estimate the number of visits specifically to the Monument area of BSMNM. Local USDA FS offices have reported no increase in calls or visits, suggesting little change in visitation since Monument designation. Access to the Monument is challenging, requiring travel times of up to three hours over primarily dirt roads. Road damage from winter storms has restricted access to interior portions of the Monument.

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<sup>9</sup> U.S. Census Bureau County Business Patterns, 2015.

<sup>10</sup> The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>11</sup> Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>12</sup> The Forest Service develops visitation estimates for each national forest once every 5 years through its National Visitor Use Monitoring (NVUM) program.

In 2015 and 2016, after the designation of BSMNM, three major wildfires followed by heavy rains and landslides occurred on BLM-managed land. The Wragg Fire, Rocky Fire, Jerusalem Fire each impacted the recreational use areas closing trail access for major portions of the season. The Rocky Fire impacted much of the Cache Creek Wilderness, a popular wilderness area among hikers and equestrian users. The Jerusalem Fire impacted uses in the Knoxville OHV area, and the Wragg Fire impacted hiking trails at Cold Canyon, a preserve located just south of BSMNM. These wildland fire emergencies likely reduced annual visitation numbers at BSMNM.

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$44.95 per person per day, the estimated economic value (net benefits) generated in 2016 was \$4.8 million to \$6.1 million.<sup>13</sup>

- **Energy:** There are no oil wells, no gas wells, no coal developments, and no commercial renewable energy operations in BSMNM, nor is there any energy production within BSMNM. There is a Known Geothermal Resource Area on the Mendocino National Forest's portion of the Monument. However, there has been no development and no interest in development since the 1980s. There are 10 existing power transmission lines that intersect the BSMNM constructed from 1968-2000, all on BLM lands. No applications for new power transmission infrastructure have been submitted within the BSMNM boundaries. In general, the scope, magnitude, and timing of energy and minerals activities are closely related to supply and demand conditions in world markets and the market prices of mineral commodities. Local or regional cost considerations related to infrastructure, transportation, etc. also may play a role in defining the supply conditions.
- **Non-Energy Minerals:** There are seven locatable mineral mining claims (six mill sites and one lode claim) located within BSMNM, all owned by Homestake Mining Company and located on BLM-managed portions of the Monument. None of these claims is commercially active. There are no active mining claims, or other mineral developments, on USDA FS lands within the Monument. There are no mineral developments or process facilities adjacent to, or that have been impacted by the BSMNM designation.
- **Timber:** There is no active commercial timber program within the BLM-Ukiah Field Office. Approximately 20,000 acres of commercial timberlands on the Mendocino National Forest are located within the Monument. No commercial timber projects were planned for the area at the time of Monument designation, and no timber has been removed from these lands since the date

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<sup>13</sup> The consumer surplus unit value is a survey-based value for general recreation in the Pacific Coast region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates, which range from 107,260 visits to BLM-managed land to 135,260 visits when including 28,000 visits to USDA FS-managed land, to derive an estimate of economic value. The higher estimate should be considered an upper bound as there may be some double-counting between visits to BLM-managed land and to USDA FS-managed land. Economic value is the net benefit to recreational users (total benefits minus total costs).

of Monument designation. In the five years prior to designation, 4,000 CCF (hundred cubic feet) were produced.

- **Grazing:** The Monument Proclamation allows for the continuation of all pre-designation grazing activities, including maintenance of stock watering facilities. There are five allotments wholly contained within the BLM-managed portion of BSMNM. These allotments include 552 permitted Animal Unit Months (AUMs). Of the 552 permitted AUMs, 342 contained within two separate allotments have not been utilized since Monument designation due to catastrophic wildfire and drought. For 2016, there were only 126 billed AUMs (see Figure 3). Prior to this, there was an average of 519 billed AUMs per year since 2010. One allotment totaling 84 AUMs has not been utilized since 2005. The USDA FS has the three allotments located within the Monument, which have billed a total of 2,314 AUMs in 2016 and 2017. In 2016, the USDA FS grazing fee was \$1.35 per AUM and in 2017 and \$1.87 per AUM in 2016.<sup>14</sup>
- **Rights of Way:** There are few lands and realty actions that have been implemented or proposed within the BSMNM boundaries. According to the LR2000 Database System, during the period from 1968-2012, only 26 road right of ways, five road/federal highway actions, nine communication sites, and eight water/irrigation right of ways were processed. Currently, only one road safety amendment with the California Department of Transportation is currently being processed and one communications site transfer is being processed within BSMNM.
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these resources are valued by society, but those values are not bought or sold in the marketplace and therefore, difficult to quantify. Below is a brief overview of the natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources and Subsistence Living:** Native Americans have inhabited these lands for at least the last 11,000 years. The Yuki, Nomlaki, Patwin, Pomo, Huchnom, Wappo, Lake Miwok and Wintum tribes all had a role in the pre-history and history of this region—one of the most linguistically diverse in California. Nearby tribal communities include Elem Indian Colony, Yocha Dehe Wintun Nation, Middletown Rancheria, Big Valley Rancheria, Colusa Indian Community, Cortina Indian Rancheria, Grindstone Indian Rancheria, Potter Valley Rancheria, Robinson Rancheria of Pomo Indians, Round Valley Indian Reservation, Scotts Valley Indian Reservation, Sherwood Valley Rancheria, Upper Lake Rancheria, and Koi Nation–Lower Lake Rancheria. Through tribal consultation, the BLM has learned that areas such as Knoxville’s Cement Creek contain unidentified paleo-Indian sites, as does the Cache Creek Natural Area. Identified prehistoric sites include lithic scatters, sites with house-pits and dance-house depressions, chert, magnesite, and basalt quarries.

Activities currently undertaken by tribal members include hunting, fishing, gathering, wood cutting, utilization of traditional cultural places, and the collection of medicinal and ceremonial plants, edible herbs, and materials for crafting items like baskets and footwear.

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<sup>14</sup>This is an administrative fee and does not reflect the full economic benefit to the rancher.

- **Cultural (Historic and Archaeological) and Paleontological Resources:** A variety of historic and pre-historic sites have been identified within the BSMNM. There are 568 recorded historic and pre-historic sites: 426 sites on USDA FS land, and 142 sites on BLM land. The total extent of sites is most likely much larger, as only 17.5% of the Monument (BLM 10%, USDA FS 25%) has been surveyed. New sites are added to the inventory nearly every year. Multiple examples of seasonal camps, permanent villages, quarries, tool and food processing sites, and ceremonial sites, as well as historic sites with remnants of old sawmills, railroads, homesteaders' cabins, and hot spring or mineral spring resorts are found throughout the Monument. Historic-era sites consist of numerous homesteads, mercury mining operations, cinnabar prospects, and stone livestock corrals. The Cache Creek Archaeological District (Solari 1997)—listed on the National Register of Historic (NRHP) —contains paleo-Indian and ethnographic sites of the Pomo and Patwin. Cache Creek and Knoxville's Cement Creek represent the earliest known sites in California (and beyond), and are also examples of contact and enculturation when Euro-American cultures moved into the region. Prehistoric trade routes and the artifacts that moved over these trails help tie the cultures together. Significant nearby heritage resources are protected through prior inclusion in the adjacent Yuki Wilderness.
- **Scientific Investigation:** Other objects protected by the Proclamation include geological, ecological, and hydrological resources, and soils. Caves in the Monument provide shelter and habitat for a range of plants, lichens and animals. Most importantly, they provide roosts for bats. Bats provide important ecological services including predation of night-flying insects that may be agricultural pests. Visitation to experience and learn about the area's scenic geology is likely to increase as awareness builds.

The Monument has a variety of soils that provide a mosaic of habitat for plants and animals. The Monument's serpentinite and related rocks develop into nutrient-poor serpentine soils. These soils are habitat for rare and ecologically important plants. Safeguarding these soils and plant communities prevent formation of erosive barrens with little ecological value. In addition, the Monument's nutrient rich non-serpentine soils—mostly developed from siltstones—are critical for timber growth and forage. The Forest Service portion of the Monument supports economically viable forest products, while both BLM and FS provide grazing.

Water resources on the Monument are essential for supporting the unique natural and cultural resources found there. Beyond that, surface waters, including Cache Creek in particular, provide important off-site benefits to local communities and the State of California's agricultural economy. Aquifers underlying the Monument help maintain groundwater supplies in the Central Valley, further benefitting ranchers, farmers, and municipal domestic water supplies. BSMNM protects the intact ecosystems and geologic strata that are necessary to safeguard water quality and quantity for future generations.

Rich, diverse assemblage of habitats, plants, and animals run the spectrum from the common but beloved State Flower, California poppy, to extremely rare wildflowers that exist only on soils derived from serpentine, California's State Rock. These iconic natural resources draw tourists from around the world. Native and introduced fish and wildlife attract thousands of hunters and anglers each year. Grasslands, oak woodlands and mixed conifer-



woodland forests have vast carbon-storing capabilities and stabilize watersheds, thereby protecting both water quality and quantity.

- **Other Resources:** The extent and diversity of the BSMNM landscape provides education opportunities for local colleges and universities (UC Davis, Chico State, Sonoma State, Mendocino Community College, etc.) as well as opportunities for the job training for youth in rural communities through wildland fire rehabilitation efforts of the Northern California Indian Development Council and staffing provided by Mobilize Green and the California Conservation Corps. These types of resource-sharing partnerships provide benefits to schools, students, local communities, and the agencies managing the Monument, along with long-term social and economic benefits to society. Renewal of the human spirit is impossible to couch in economic returns. Additional public values provided by the Monument include enjoying resources such as dark night skies, natural quiet, solitude, and nature-viewing.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)

comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. If not for the designation, the following changes in resource conditions are estimated:

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Table 1. State and County Economic Snapshot

	<b>Lake County</b>	<b>California</b>
Population, 2015 <sup>a</sup>	64,158	38,421,464
Native American % of population, 2010 <sup>d</sup>	3.2	1.0
Employment, December 2016 <sup>b,c</sup>	27,247	17,982,086
Unemployment rate, April 2016 <sup>b,c</sup>	6.7%	5.5%
Median Household Income, 2015 <sup>a</sup>	\$35,578	\$61,818
Native American Median Household Income, 2015 <sup>e</sup>	\$32,750	\$45,490

<sup>a</sup> U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup> State data: <https://data.bls.gov/timeseries/LASST0600000000000003>

<sup>c</sup> County data: <https://www.bls.gov/web/metro/laucntycurl4.txt>

<sup>d</sup> U.S. Census Bureau, American Fact

Finder <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>

<sup>e</sup> 2011-2015 American Community Survey (B19013)

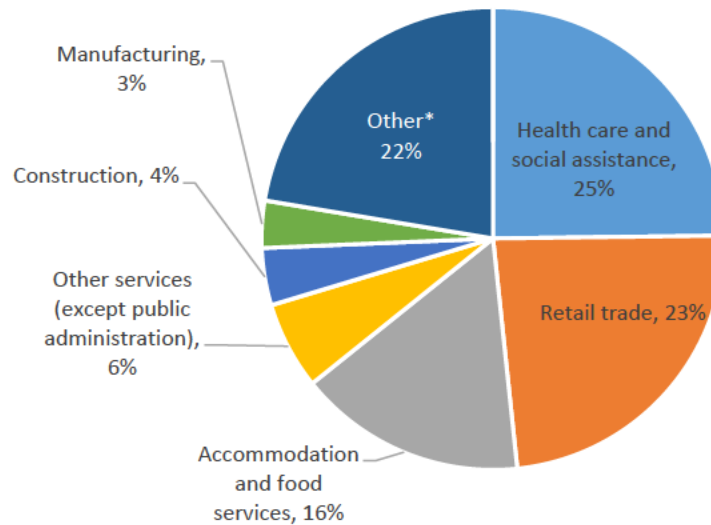
Table 2. BSMNM Estimated Economic Contributions, 2016

<b>Activities</b>	<b>Economic output (\$ millions)</b>	<b>Value added (net additions to GDP, \$ millions)</b>	<b>Employment supported (number of jobs)</b>
Recreation	\$9.6	\$5.8	95
Grazing	\$0.09	Not available	1
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup> Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

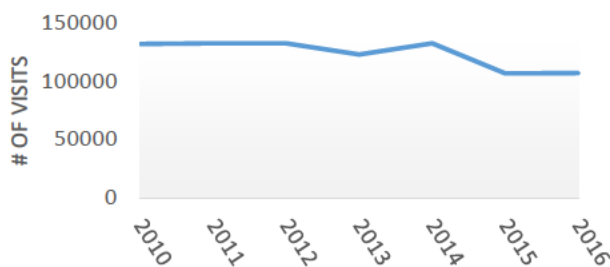
<sup>b</sup> BLM data.

Figure 1. Percent of employment by sector in Lake County, 2015



\* Other includes Administrative and support and waste management and remediation services; Agriculture, forestry, fishing and hunting; Arts, entertainment, and recreation; Educational services; Finance and insurance; Industries not classified; Information; Management of companies and enterprises; Mining, quarrying, and oil and gas extraction; Professional, scientific, and technical services; Real estate and rental and leasing; Transportation and warehousing; Utilities; and Wholesale trade. Each of these represents less than 3% of total employment. While this data source covers most NAICS industries, it excludes crop and animal production; rail transportation; National Postal Service; pension, health, welfare, and vacation funds; trusts, estates, and agency accounts; private households; and public administration. Most establishments reporting government employees are also excluded. Source: 2015 County Business Patterns, U.S. Census Bureau.

Figure 2. Recreation Visits to BSMNM, 2010-2016

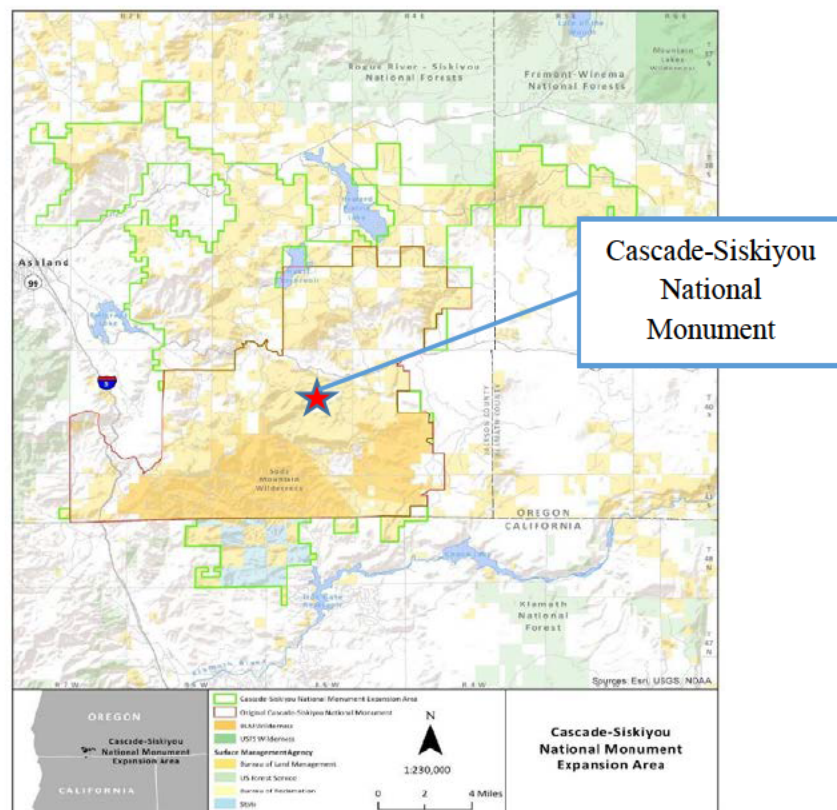






# Cascade-Siskiyou National Monument

Economic Values and Economic Contributions



## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Cascade-Siskiyou National Monument (CSNM or the Monument). A brief economic profile of Jackson and Klamath Counties, Oregon (OR), and Siskiyou County, California (CA), are also provided.

## Background

The Cascade-Siskiyou National Monument was established on June 9, 2000, by President Clinton (Proclamation 7318). The 65,000-acre Monument was the first such area to be established primarily to protect biodiversity. To date, BLM has acquired 13,355 acres of private inholdings within the original Monument boundary. Acquisitions have been by purchase (primarily through Land & Water Conservation Funds) or exchange (primarily legislated exchanges). President Obama issued Proclamation 9564 on January 12, 2017, expanding the Monument boundary by almost 48,000 acres to provide “habitat connectivity, watershed protection, and landscape-level resilience” for the area’s ecological and other values. Expansion of the Monument includes areas identified for their ecological contribution to the purposes of the original designation.<sup>1</sup> Together, these areas represent approximately 48,000 acres – 42,349 in OR, and 5,275 in CA.

CSNM’s 113,341 acres accommodate hunting, fishing, recreation, and grazing. Valid existing rights such as timber sale contracts and rights-of-way, among other activities, are recognized. The historic and scientific resources identified in the Proclamation are protected, as well as providing opportunities for scientific study. The Monument contains rare and endemic plants such as Greene's Mariposa lily, Gentner's fritillary, and Bellinger's meadowfoam. It also includes 38 miles of the Pacific Crest National Scenic Trail and the 24,707-acre Soda Mountain Wilderness within its borders. The CA portion of the expansion area is co-mingled with state lands managed by the California Department of Fish & Wildlife. The BLM lands are managed in a manner consistent with the state Wildlife Management Area. Activities are subject to decisions made in current and future BLM resource management plans (RMP), which include public participation. The CSNM lies entirely within the recognized aboriginal territory of the Klamath Tribes (Klamath, Modoc and Yahooskin Paiute). Traditional cultural plants and spiritual places, such as Pilot Rock, are important to the Shasta tribes. The CA portion of the expansion area includes the 320-acre Jenny Creek Area of Critical Environmental Concern (ACEC), which is associated with Tribal spiritual values.

### *Cascade-Siskiyou National Monument*

**Location:** Jackson County, OR (original and expanded); Klamath County, OR, and Siskiyou County, CA (expansion area)

**Managing agency:** BLM

**Adjacent communities, Tribal, and Federal land:** Natural and cultural resources of Klamath and Shasta Tribes (potentially other tribes); City of Ashland, OR; contains facilities owned and managed by the Bureau of Reclamation

**Resource Areas:**

☒ Recreation ☐ Energy ☐ Minerals  
☒ Grazing ☒ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

<sup>1</sup>The expansion area includes the Horseshoe Ranch and Jenny Creek areas in Siskiyou County, CA; the upper Jenny Creek Watershed, the Grizzly Peak area, Lost Lake, the Rogue Valley foothills, the Southern Cascades area (including Moon Prairie and Hoxie Creek), all in Jackson County, OR; and some of the area surrounding Surveyor Mountain, including Old Baldy and Tunnel Creek wetland in Klamath County, OR.

A substantial number of acres within both the original Monument and the expansion area are designated as Oregon and California Railroad Revested (O&C) Lands. These lands are covered by the O&C Act of 1937, which mandates that those lands determined to be suitable for timber production shall be managed for “permanent forest production and the timber shall be sold, cut and removed in conformity with the principal [stet] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing the economic stability of local communities and industry, and providing recreational facilities.” Further, the O&C Act provides: “The annual productive capacity for such lands shall be determined and declared as promptly as possible after the passage of this Act, but until such determination and declaration are made the average annual cut therefrom shall not exceed one-half billion feet board measure: Provided, That timber from said lands in an amount not less than one-half billion feet board measure, or not less than the annual sustained yield capacity when the same has been determined and declared, shall be sold annually, or so much thereof as can be sold at reasonable prices on a normal market.”

There are currently three lawsuits pending on the designation of the CSNM expansion area related to O&C lands (Association of O&C Counties. v. Trump, No. 1:17-cv-00280-RJL (D.D.C. filed on February 13, 2017); Murphy Co. v. Trump, No. 1:17-cv-00285-CL (D. Or. filed on February 17, 2017); AFRC v. United States, No. 1:17-cv-00441-RJL (D.D.C. filed on March 10, 2017)). The Klamath County Portion of the CSNM expansion area is 99 percent O&C lands.

### *Public Outreach Prior to Designation*

Prior to Monument designation, the area was designated as the Cascade Siskiyou Ecological Emphasis Area (CSEEA). The CSEEA, which did not include the Monument expansion area, was established in the 1994 Northwest Forest Plan and the 1995 Medford District RMP primarily because of its unique, diverse ecological and biological characteristics. In developing the CSEEA RMP, BLM conducted five field tours and held one meeting in 1999, covering both OR and Northern CA. During the scoping period, the agency received 427 letters, cards, and e-mails, and recorded 153 comments from the public meeting. The majority of comments fell into two groups: those supporting the special ecological emphasis designation (218) and those against further restriction of public land uses (128). Some letters supported a more middle-ground approach (29), while others requested more information without voicing an opinion (47). After coding and analyzing the letters and comments, BLM identified 54 issues, including ecological concerns, land use, and government control, among others. The comments supporting the CSEEA designation generally emphasized preservation and restoration of ecological values. Those against the designation generally raised concerns about restrictions on access to public resources and increased Federal control over public and private lands. The CSEEA Draft Management Plan/Environmental Impact Statement distribution included seven tribes: Confederated Tribes of Siletz, Quartz Valley Indian Reservation (Shasta Tribes), Shasta Nation, Confederated Bands [Shasta] Shasta Upper Klamath Indians, Confederated Tribes of the Rogue-Table Rock and Associated Tribes, Confederated Tribes of Grand Ronde, and the Klamath Tribes. Proclamation 7318 drew heavily from the most-protective alternatives in the CSEEA Draft Plan.

Five studies/reports from the scientific community were provided to Interior from 2011 to 2015.



Following these publications, 85 scientists sent a letter to former Secretary Sally Jewell requesting consideration of Monument expansion in order to adequately protect the resources, objects, and values for which the original Monument was designated. Senators Ron Wyden (D-OR) and Jeff Merkley (D-OR) introduced the *Oregon and California Land Grant Act of 2015* (S. 132), wherein a portion of the CSNM 2017 expansion area was under the forest emphasis designation and a portion was under the conservation designation. In both cases, the intention was that timber harvest would take place within these designations. For the conservation designation, the bill would take half of eligible acres off the table and spread them out over 50 years for the purpose of commercial thinning. This would only happen in stands less than 150 years in age. A public meeting was held in October 2016 in Ashland, OR, to hear public opinions about the CSNM expansion proposal. Approximately 500 people attended the meeting; a majority of speakers supported the expansion proposal. Attendees referenced the science-based rationale for expanding the Monument, including threats to the area's fragile natural resources, as well as benefits to the local tourism industry. The counties of Jackson (OR), Klamath (OR), and Siskiyou (CA) also hosted additional public meetings to allow for public input into the monument expansion. Collectively, approximately 600 people attended these county meetings.

A written comment period was sponsored by Senators Wyden and Merkley. A total of 5,488 comments were received with approximately three-fourths in favor of the expansion for scientific, recreational, environmental and economic reasons, among others. Opponents expressed concern that a larger Monument would hurt the region's economy with limits on logging and grazing. State Representatives Peter Buckley and Kevin Talbert, and the late State Senator Alan Bates, publicly endorsed the expansion. The two closest cities in OR, Ashland and Talent (City Councils, Mayors, and Chambers of Commerce), all formally endorsed expanding the Monument. The Klamath Tribes submitted a letter of support, noting that the expansion area is "critical to provide for more appropriate watershed scale management..." (November 2016). The Jackson County Board of Commissioners, Klamath County Board of Commissioners, Medford/Jackson County Chamber of Commerce, and Siskiyou County Supervisors expressed opposition to expansion. The objections included legal and economic impacts, as well as a lack of consensus on the scientific merits.

### *Local Economy and Economic Impacts*

The CSNM is in Jackson and Klamath Counties, OR, and Siskiyou County, CA. Table 1 provides an economic snapshot of these Counties and States. Jackson and Klamath Counties account for 7% of the State of OR's population. Klamath County has a higher Native American population (6.3%) than the State of OR. Siskiyou County has 0.1% of the population in CA with a higher Native American population (7.4%) than in the State of CA. All of the counties in the CSNM have higher unemployment rates and lower median household incomes than for the States. Although Klamath County's unemployment rate of 5.1% is higher than the State average, the State of OR highlighted that this level is at or ties the historic low unemployment rate. The populations of Siskiyou and Klamath Counties have remained flat to a low increase over the past 20 years, while Jackson County has increased by over 42%.

The USDA Economic Research Service (ERS) has developed a set of county-level typology codes that captures a range of economic and social characteristics. The CSNM counties are classified as follows:



- Low Employment (less than 65% of residents age 25-64 were employed in 2008-2012) – Klamath and Siskiyou Counties;
- Retirement Destination (number of resident 60 and older grew by 15 percent or more between 2000 and 2010) – Jackson County; and
- No dependence on farming, mining, or recreation, and no persistent poverty.

### *Activities and Resources Associated With Cascade-Siskiyou National Monument*

Information on the economic contributions associated with the activities occurring at CSNM, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with CSNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** There were 198,213 visits to CSNM in 2016.<sup>2</sup> This reflects average annual growth of 4.6% over 15 years. As summarized in Table 2, CSNM visitors spent approximately \$11.8 million in 2016, supporting 200 jobs and \$9.3 million in value added in the local communities. This amounts to over \$24 of economic output per \$1 of the Monument's Fiscal Year 2015 budget. Table 3 compares pre- and post-designation average annual visits for select recreation activities and sites in both the original and expanded area. Hunting and fishing is regulated by the Oregon Department of Fish and Wildlife, which has data available on the numbers of licenses issued.

The value of recreation opportunities and experience is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus value for the area of \$44.95 per person per day (recreational visitor day), the estimated economic value (net benefits) generated in 2016 was approximately \$8.9 million.<sup>3</sup>

- **Energy:** There has been no production of coal, oil, gas, and renewables in the Monument since designation. The potential for these energy resources within the Monument is low to non-existent. The Bureau of Reclamation is producing hydropower and has critical infrastructure within the CSNM at Keene Reservoir. While the Green Springs Powerplant was not in the original Monument boundary, there are supporting facilities within the original boundary. The Green Springs Powerplant is in the CSNM expansion area. Information is not available at this time on whether Reclamation's facilities are impacted, either positively or negatively, by the

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<sup>2</sup>BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>3</sup>The consumer surplus unit value is a survey-based value for general recreation in the Pacific Coast region from the USGS Benefit Transfer Toolkit (<https://my.usgs.gov/benefit-transfer/>). This unit value was applied to fiscal year 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

CSNM expansion area. USGS [reported](#) that CSNM is adjacent (immediate east) to area of high geothermal favorability.

- **Energy Transmission:** There are 17.78 miles of electrical transmission lines in the original Monument, and 17.82 miles of electrical transmission lines and 7.67 miles of gas line in the expansion area.
- **Non-Energy Minerals:** Since designation, no mineral materials have been commercially sold from within the CSNM. Mineral materials from CSNM quarries has been used to maintain Monument roads since designation, as described in the RMP/Record of Decision for the Monument. There are no mining claims in the Monument. There were no mining claims in the expansion area during the five years prior to the Monument expansion.
- **Timber:** The Monument Proclamation states, “[t]he commercial harvest of timber or other vegetative material is prohibited, except when part of an authorized science-based ecological restoration project aimed at meeting protection and old growth enhancement objectives. Any such project must be consistent with the purposes of this proclamation. No portion of the monument shall be considered to be suited for timber production, and no part of the monument shall be used in a calculation or provision of a sustained yield of timber. Removal of trees from within the monument area may take place only if clearly needed for ecological restoration and maintenance or public safety.”
  - **Within Original CSNM Designation:** 36,000 (0.036 million) board feet have been harvested; timber was removed only for the purposes of public safety.
  - **CSNM Expansion Area:** Since Monument expansion, approximately 310,000 (0.310 million) board feet have been harvested from within the OR portion of the expansion area under timber sale contracts that were entered into prior to January 12, 2017. These timber sales generated about \$200,000 in value added and supported an estimated 4 jobs. The contracts are considered valid existing rights and will be completed, including the approximately 2.9 million board feet of timber that remain to be harvested. Harvesting this timber, when and if it occurs, would generate economic contribution and support employment. The site conditions of the CA portion of the expansion area do not support commercial-grade timber resources.
- **Grazing:** BLM does not currently have data on the actual use of forage within and outside of the CSNM; the AUM numbers reported are for the entire allotment. Table 4 provides the permitted and billed AUMs for the original and expansion areas of the Monument. As summarized in Table 2, about 6 jobs were supported by 974 AUMs related to the original Monument, generating about \$0.3 million in economic output in 2016. For the expansion area allotment, about 20 jobs were supported by 2,945 AUMs, generating about \$0.8 million in economic output in 2016.
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. In general, these

resources are valued by society, but those values are not bought or sold in the marketplace and therefore, are difficult to quantify. Below is a brief overview of the natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:

- **Tribal Cultural Resources and Subsistence Living:** CSNM provides for the collection of certain natural materials by Native Americans under BLM permit. Dead and down wood is allowed to be collected for campfires within the CSNM, and the noncommercial gathering of fruits, nuts, berries, and mushrooms is also allowed. No data are available on the quantities harvested. The Klamath Tribe has cited the *American Indian Religious Freedom Act* (AIRFA) as the foundation for their support of the Maka Oyate Sundance ceremony, which is held annually within the Monument. However, AIRFA does not guide BLM management of the ceremony site. As already discussed above, the Klamath and Shasta tribes (potentially others) have natural, cultural, and spiritual values associated with the original and expanded areas.
- **Scientific Investigation:** The original Monument supports studies of ecology, evolutionary biology, wildlife biology, entomology, and botany. Proclamation 9564 notes that “[s]ince 2000, scientific studies of the area have reinforced that the environmental processes supporting the biodiversity of the monument require habitat connectivity corridors for species migration and dispersal. Additionally, they require a range of habitats that can be resistant and resilient to large-scale disturbance such as fire, insects and disease, invasive species, drought, or floods...”

A May 2017 [publication](#) describes how big data and fine-scaled modeling were used to (1) evaluate an existing network of protected areas in the Klamath Siskiyou Bioregion of southern OR and northern CA (includes CSNM), and (2) to identify and prioritize new areas for protection. The study, funded by BLM and NPS, builds on the work of a number of state and federal partners, including USFS, USGS, and the Corps of Engineers. The authors used 16 Partners in Flight focal bird species as indicators of priority habitats and habitat conditions. They hypothesized that current protected area allocations do not have adequate abundance of some conservation focal species and their habitats. This hypothesis was tested using models to evaluate the region's network of federally managed lands and protected areas. Senator Merkley is quoted in several press releases: “This study offers robust scientific evidence that expanding the Cascade-Siskiyou National Monument provides critical protection to an amazing ecosystem found nowhere else in the world, and will serve Oregonians well for decades to come.”

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply. See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)

A comprehensive evaluation

of tradeoffs would require a significant amount of research and additional analysis. Based on what is currently known, though, if the Monument had not been designated:

- (b) (5) [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]



(b) (5)



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<sup>4</sup>Alexander, J. D. et al. 2017. Using regional bird density distribution models to evaluate protected area networks and inform conservation planning. *Ecosphere* 8(5):e01799.

Frost, E., P. Trail and D. Odion. 2016. The ecological need to expand the Cascade-Siskiyou National Monument: Evidence from landscape-scale conservation assessments. Unpublished report, 12 pp. + maps.

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DellaSala, D. A., et al. 1999. A global perspective on the biodiversity of the Klamath-Siskiyou ecoregion. *Natural Areas Journal* 19:300–319.

Table 1. State and County Economic Snapshot

	<b>Jackson County</b>	<b>Klamath County</b>	<b>Oregon</b>	<b>Siskiyou County</b>	<b>California</b>
Population, 2016 <sup>a</sup>	208,363	65,972	3,939,233	43,895	38,421,464
American Indian and Alaska Native (alone or in combination) <sup>a</sup>	2.9%	6.3%	3%	7.4%	1.9%
Unemployment Rate, April 2017 <sup>b</sup>	4.3%	5.1% <sup>c</sup>	3.7%	7.4%	4.5%
Median Household Income, 2015 <sup>a</sup>	\$44,028	\$40,336	\$51,243	\$37,170	\$61,818

<sup>a</sup> U.S. Census Bureau, 2011-2015 American Community Survey; Native American population alone or in combination with one or more other races.

<sup>b</sup> <https://www.bls.gov/eag/eag.or.htm>

<sup>c</sup> The State of Oregon reports that this is at or ties the historic low unemployment rate.

Table 2. CSNM Estimated Economic Contributions, 2016

<b>Activities</b>	<b>Economic output (\$ millions)</b>	<b>Value added (net additions to GDP, \$ millions)</b>	<b>Employment supported (number of jobs)</b>
Recreation <sup>a</sup>	\$16.6	\$9.3	200
Grazing <sup>b</sup>	\$1.1	Not available	26
Timber <sup>b</sup>	\$0.6	\$0.2	3
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup> Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>b</sup> BLM data.

Table 3. CSNM Average Annual Visits per Select Recreation Activities and Sites

<b>Recreational Activities &amp; Sites</b>	<b>Prior to Original Designation (1998-2000)<sup>a,b</sup></b>	<b>Original Designation (2000-2017)</b>	<b>Prior to Expansion (2012-2017)</b>	<b>Expansion (2017-2017)</b>
Backpacking	N/A <sup>c</sup>	2,839	N/A	N/A
Camping	57,625	17,658	81,018	N/A
Fishing	2,088	7,856	3,240	N/A
Hiking/Running	29,090	255,736	81,021	N/A
Hunting, Big Game	23,001	114,981	48,611	N/A
Skiing XC	N/A	37,026	N/A	N/A
Snowmobiling	N/A	6,061	N/A	N/A
Hyatt Lake CG	13,928	19,976	7,206	N/A
Hyatt Lake Day-Use	N/A	284	966	N/A
BuckPrairie Winter Trails	Not in Original Monument	Not in Original Monument	23,966	N/A
Wildcat CG	2,224	6,056	1,130	N/A
Pacific Crest Trail	1,921	17,812	17,812	N/A
Grizzly Peak Trails	Not in Original Monument	Not in Original Monument	5,526	N/A
Table Mt. Tubing Hill	Not in Original Monument	Not in Original Monument	2,496	N/A

<sup>a</sup>All data are derived from the Recreation Management Information System (RMIS).

<sup>b</sup>RMIS data are not available prior to 1998, so data prior to original Monument designation cover only a 2-year period.

<sup>c</sup>N/A -- data are not available or were not collected.

Table 4. AUMs Permitted and Billed, CSNM, 1995-2016

Year	Original CSNM Designation			CSNM Expansion Area		
	Permitted Use	AUMs Billed	% Billed	Permitted Use	AUMs Billed	% Billed
1995	6,002	3,406	56.7%	N/A <sup>a</sup>	N/A	N/A
1996	6,002	4,180	69.6%	N/A	N/A	N/A
1997	6,002	4,158	69.3%	N/A	N/A	N/A
1998	6,002	4,333	72.2%	N/A	N/A	N/A
1999	6,002	4,537	75.6%	N/A	N/A	N/A
2000	6,002	4,190	69.8%	N/A	N/A	N/A
2001	5,793	3,661	63.2%	N/A	N/A	N/A
2002	5,350	3,348	62.6%	N/A	N/A	N/A
2003	5,350	3,690	69.0%	N/A	N/A	N/A
2004	5,350	3,967	74.1%	N/A	N/A	N/A
2005	5,350	4,746	88.7%	N/A	N/A	N/A
2006	5,350	3,418	63.9%	N/A	N/A	N/A
2007	5,350	3,264	61.0%	N/A	N/A	N/A
2008	5,350	2,026	37.9%	N/A	N/A	N/A
2009	1,437	763	53.1%	N/A	N/A	N/A
2010	1,317	1,009	76.6%	N/A	N/A	N/A
2011	1,317	1,074	81.5%	N/A	N/A	N/A
2012	1,317	1,217	92.4%	2,833	2,691	95.0%
2013	1,317	1,217	92.4%	2,833	2,659	93.9%
2014	1,317	1,217	92.4%	2,833	3,067	108.3%
2015	1,317	974	74.0%	2,833	2,851	100.6%
2016	1,317	974	74.0%	2,833	2,945	104.0%

<sup>a</sup>N/A; data are not available or were not collected.

Source: BLM data.



# Craters of the Moon National Monument & Preserve

## Economic Values and Economic Contributions



Craters of the  
Moon National  
Monument

## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Craters of the Moon National Monument & Preserve (CMNM or the Monument). A brief economic profile of Blaine, Butte, Minidoka, and Power Counties, which are in the Snake River Basin of Central Idaho (ID), are also provided. An economic profile of Lincoln County is not included because of the small amount of Monument lands within it.

### *Craters of the Moon National Monument & Preserve*

**Location:** Blaine, Butte, Lincoln, Minidoka, and Power Counties, ID

**Managing agencies:** NPS, BLM

**Resource Areas:**

☒ Recreation ☐ Energy ☒ Minerals  
☒ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

## Background

CMNM, the first national monument established in Idaho, was designated by President Coolidge on May 2, 1924 (Proclamation 1694), to preserve a “lunar” landscape that resembles the Moon. Between 1928 and 1962, four more presidential proclamations were issued, which increased the Monument in size from approximately 25,000 to 53,000 acres. In November 2000, President Clinton issued Proclamation 7373, expanding the CMNM from approximately 53,000 acres to nearly 750,100 total acres. It also enlarged the Monument’s administration by adding BLM lands to those of the National Park Service. It included BLM-managed lands to assure protection for the entire Great Rift volcanic zone, a “remarkable fissure eruption together with its associated volcanic cones, craters, rifts, lava flows, caves, natural bridges, and other phenomena characteristic of volcanic action which are of unusual scientific value and general interest.” In 2002, Congress passed PL 107–213, which re-designated as preserve the approximately 411,475 acres of NPS-managed land added through Proclamation 7373. This designation allows for hunting on NPS-managed lands. All BLM-managed lands are open for hunting and fishing.

Within the CMNM boundary are 275,100 acres of BLM land, 465,047 acres of NPS land, 8,200 acres of state land, and 6,600 acres of private land. The CMNM boundary occupies approximately 14% of the area in the Blaine, Butte, Lincoln, Minidoka, and Power counties. Because the Monument boundary is minimal in Lincoln County (2%), it is excluded from the economic profile provided below. The CMNM is within the historic cultural area of the Shoshone-Bannock and Shoshone-Paiute tribes.

## Public Outreach Prior to Designation

According to newspaper articles published in the early 2000s (prior to expansion), there had been numerous attempts by local booster organizations to expand CMNM, most recently in the 1980s. In April 2000, former Secretary Bruce Babbitt visited the area and met with local government officials, permittees and others to discuss options to protect the special volcanic resources found in the area. The following month, Babbitt returned to the area to meet with local ranchers and, with their input, mapped out what would become the boundaries of the expansion.

In June 2000, Senator Larry Craig held a Hearing of the U.S. Senate Subcommittee on Forests and Public Land Management in Twin Falls, Idaho. Three panels, comprising a mix of local government officials, environmental organizations, permittees, and other panelists, were convened to provide oral testimony on the proposal to expand the monument. There were approximately 75 people in attendance. More than 30

people provided oral testimony in addition to the people on the panels. Testimonies were about split between those in support of the expansion and those testifying against the expansion.

Within the NPS-administered portion of the 2000 Monument proposed expansion, the primary public concern was hunting restrictions. The 2002 Proclamation of the National Preserve allowed for hunting, eliminating this concern.

### *Local Economy and Economic Impacts*

The CSNM is in Blaine, Butte, Lincoln, Minidoka, and Power Counties. Table 1 provides an economic snapshot of these Counties (except Lincoln) and the State. Located in central ID, these Counties account for approximately 3% of the State's population. Only Blaine County exceeds the State's median household income. All but Power County have unemployment rates lower than the State's unemployment rate. The population of Blaine County has increased substantially over the past 20 years, while Butte County has decreased. According to the Census, the Native American population ranges from 0% to just over 4% in these Counties.

The USDA Economic Research Service (ERS) has developed a set of county-level typology codes that captures a range of economic and social characteristics. The CMNM counties are classified as follows:

- Farming dependent (farming accounted for 25% or more of the county's earnings or 16% or more of the employment averaged over 2010-2012) – Minidoka and Power Counties;
- Recreation dependent (ERS formula based on recreation-related employment, earnings, income, and seasonal housing) – Blaine County;
- Manufacturing dependent (manufacturing accounted for 23% or more of the county's earnings or 16% of the employment averaged over 2010-12) – Power County; and
- No dependence on mining, and no persistent poverty.

### *Activities and Resources Associated With Craters of the Moon National Monument*

Information on the economic contributions associated with the activities occurring at CMNM, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with CMNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** In 2016, 255,400 NPS park visitors spent an estimated \$8.9 million in local gateway regions while visiting CMNM.<sup>1</sup> As summarized in Table 2, these expenditures supported a total of 139 jobs and \$5.3 million in value added, generating \$3.3 million in labor income and \$10.2 million in economic output in local gateway economies surrounding the Monument. Another 3,654 visitors spent \$117,842 on BLM lands, supporting 2 additional jobs and \$78,941 in value added.<sup>2</sup> The Idaho Fish and Game Commission sets hunting seasons and other regulations for

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<sup>1</sup>National Park Visitor Spending, <https://www.nps.gov/subjects/socialscience/vse.htm>. The NPS Visitor Use Statistics Office compiles detailed park-level visitation data for 376 of the 417 National Park units and publishes this data in an annual Statistical Abstract.

<sup>2</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016. BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented



hunting in Idaho. Most of CMNM is within Idaho Fish and Game Hunting Unit 52A. The length of season and number of available controlled-hunt tags vary annually on the basis of wildlife population levels and other factors.

The value of recreation opportunities and experience is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus value for the area of \$54.19 per person per day (recreational visitor day), the estimated economic value (net benefits) generated in 2016 was approximately \$14 million for visitors to both NPS and BLM-managed lands.<sup>3</sup>

- **Energy:** There are no known natural gas or oil deposits within the Monument boundaries. The area has not been formally assessed for energy but a USGS survey on the mineral resource potential of an area that included CMNM noted that, “[l]ocating... hypothetical resources (oil and gas) that may underlie the geologically young lava flows of the study area would require extensive geophysical exploration and drilling.”<sup>4</sup>
- **Non-Energy Minerals:** There are no known mineral deposits within the Monument boundaries. Free Use Permits for pumice/cinder materials at two sites within the Monument produced 12,750 cubic yards in 1997 and 1,053 cubic yards in 1998. There was one Free Use Permit in existence in the BLM-managed Monument area on the date of Proclamation 7373. Once the permit expired, it was not re-issued. The Idaho Transportation Department 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. No mineral processing facilities are identified as located close to the Monument.
- **Timber:** There is no commercial timber production on the Monument. This area is not conducive to timber production.
- **Grazing:** NPS administers 465,047 acres (62%) of CMNM. The NPS-administered areas are 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. BLM manages livestock grazing on approximately 290,000 acres (including BLM, private, and state lands) in the Monument. Of the 275,100 acres managed by BLM, 273,900 (99.6%) are available for livestock

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in 1984, is the agency’s official system of record for recreation information relating to recreation visitation, permits, and partnerships. For both BLM and NPS, visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>3</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer Toolkit (<https://my.usgs.gov/benefit-transfer/>). This unit value was applied to fiscal year 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

<sup>4</sup>Mineral Resource Potential of the Great Rift Instant Study Area Blaine, Butte, Minidoka, and Power Counties, Idaho <https://pubs.usgs.gov/mf/1462-B/report.pdf>

grazing. Current permitted Animal Unit Months (AUMs) within the Monument total 36,965. Grazing is managed by three different BLM field offices and data on billed AUMs provided by BLM includes AUMs billed on allotments that do not fall within Monument boundaries. In fiscal year 2016, there were 51,386 billed AUMs between the three field offices of which an estimated 14,651 are attributed to the Monument. It is estimated that this level of grazing is associated with economic output of approximately \$7.0 million and supports around 94 jobs.<sup>5</sup> Direction contained in the CMNM Management Plan prohibits new livestock developments in the North Laidlaw Park pasture and Bowl Crater allotment. The Shoshone Field Office recently released a Proposed Resource Management Plan (RMP) Amendment that analyzes alternatives for livestock grazing management on BLM managed lands. The Proposed RMP includes minor changes to the total number of AUMs permitted in the Monument.

- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. In general, these resources are valued by society, but those values are not bought or sold in the marketplace and therefore, are difficult to quantify. Below is a brief overview of the natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources:** The archaeological record indicates members of the Shoshone-Bannock tribes and their ancestors spent considerable time at CMNM. A small amount of subsistence hunting occurs by members of the tribes. NPS reports that tribal access is good, and members appear to come to CMNM on a regular basis.
  - **Scientific Investigation:** Scientific research in CMNM is diverse and includes ongoing investigations of the geology and kipukas (isolated vegetation communities surrounded by lava). CMNM focuses interpretive and educational programs on geology, the prehistoric and historic value of the park, ecosystems, and adaptation.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply. See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)

Quantitative data regarding mineral extraction, subsistence activities, and cultural uses are not available. A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. Based on what is currently known, though, if the Monument had not been designated:

- (b) (5)

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<sup>5</sup>BLM data.

## Craters of the Moon National Monument

Table 1. State and County Economic Snapshot

	<b>Blaine, Butte, Minidoka, Power Counties</b>	<b>Idaho</b>
Population, 2016 <sup>a</sup>	51,972	1,616,547
Unemployment Rate, April 2017 <sup>b</sup>	2.2-3.5%	3.4%
Median Household Income, 2015 <sup>a</sup>	\$37,891-\$60,088	\$47,583

<sup>a</sup>U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup><http://lmi.idaho.gov/publications/2017/LAUS/unemploymentbycounty.pdf>

Table 2. CMNM Estimated Economic Contributions, 2016

<b>Activities</b>	<b>Economic output (\$ millions)</b>	<b>Value added (net additions to GDP, \$ millions)</b>	<b>Employment supported (number of jobs)</b>
Recreation <sup>a</sup>	\$10.2	\$5.3	139
Grazing <sup>b</sup>	\$7.0	Not available	94
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>National Park Visitor Spending, <https://www.nps.gov/subjects/socialscience/vse.htm>.  
Recreational visits are based on counts at the main entrance off Highway 20/26 and  
overnights at the NPS campground in the park.

<sup>b</sup>BLM data.



# Hanford Reach National Monument

Economic Contributions and Economic Values



Hanford Reach  
National  
Monument



## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Hanford Reach National Monument (HRNM or the Monument). A brief economic profile of Grant, Benton, and Franklin Counties in eastern Washington (WA), are also provided. An economic profile of Adams County, WA, is not included because of the small amount of Monument lands within it.

## Background

President Clinton issued Proclamation 7319 on June 9, 2000, establishing the 195,000-acre HRNM. The Monument is situated on the outskirts of the Department of Energy's (DOE) 375,040-acre Hanford Site. In 1989, DOE stopped producing plutonium and began cleaning up facilities, lands, and groundwater contaminated with hazardous materials, including radionuclides and chemical wastes. The Monument was created from buffer lands that were no longer necessary for the DOE's mission, forming a horseshoe shape around the cleanup area.

FWS manages approximately 165,000 acres through a DOE permit and other agreements. Specifically, the 32,000-acre Saddle Mountain National Wildlife Refuge (NWR) was established after signing a permit with DOE in 1971. That permit transferred management responsibilities of the Wahluke Slope to the FWS (Saddle Mountain NWR) and the Washington Department of Fish and Wildlife (WDFW). The agreement was updated in 1999 to modify the management responsibilities so that all of the Wahluke Slope, except about 800 acres near the Vernita Bridge to be managed by WDFW, would be managed by FWS (approximately 57,000 acres). FWS assumed management of the Fitzner-Eberhardt Arid Lands Ecology Reserve (ALE) (resources for ecosystem protection and management) via a 1997 DOE permit and MOU (approximately 77,000 acres). HRNM is managed as part of the Mid-Columbia River National Wildlife Refuge Complex, which comprises eight refuges within the Columbia Basin. DOE directly manages approximately 29,000 acres, and WDFW manages the remainder under a DOE permit.

As a buffer for the Hanford Site, the HRNM lands have remained largely undeveloped for over six decades. The Monument encompasses a biologically diverse landscape containing important and increasingly scarce scientific, historic and cultural resources. It provides opportunity for scientific study of a broad array of newly discovered and uncommon native plants and animals. Migrating salmon, birds and hundreds of other native plant and animal species, some found nowhere else in the world, are supported by its natural ecosystems. One of the highlights of the HRNM is the iconic White Bluffs (pictured on the cover page), which contain fossils of mastodons, camels, zebras and rhinoceros. The Monument also includes 46.5 miles of the last free-flowing, non-tidal stretch of the Columbia River, the 51-mile "Hanford Reach."

FWS and DOE have several missions they fulfill at the Hanford Site. FWS, under existing permits from DOE, is responsible for the protection and management of Monument resources and the management of people. FWS also has the responsibility to protect and recover threatened and endangered species;

### *Hanford Reach National Monument*

**Location:** Adams, Benton, Franklin, and Grant Counties, WA

**Managing agencies:** FWS, DOE

**Adjacent cities, counties, and reservations:** Richland, WA; Yakima Reservation

**Resource Areas:**

☒ Recreation ☒ Energy ☒ Minerals  
☐ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

administer the Migratory Bird Treaty Act; and protect fish, wildlife, tribal and other trust resources of the Monument. DOE is responsible for protecting the resources of a portion of the designated Monument that has yet to transition to FWS, managing energy research, and remediating wastes remaining from weapons material production. DOE also administers land use agreements and permits with the Washington Department of Transportation, Bureau of Reclamation, South Columbia Basin Irrigation District, Bonneville Power Administration, Energy Northwest, adjacent counties, and others to enable these entities to fulfill their missions in energy production and distribution, communications, transportation and irrigation. Because DOE is currently the underlying land holder, it retains approval authority over certain management aspects of the Monument.

Ancestors of the Wanapum People, Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Colville, Confederated Tribes of the Umatilla Reservation, and the Nez Perce all used this region for hunting, fishing, and other subsistence activities. Generations of local Native Americans fished along the Hanford Reach.

Prior to the DOE'S Hanford Site project, some of the Lands on the Wahluke Slope, north of the river, were identified for future irrigation development as part of Reclamation's Columbia Basin Project. Approximately 32,000 acres were eventually incorporated into the Hanford Site as part of a safety and security buffer zone. Reclamation lands are subject to a Memorandum of Agreement signed in 1957, which states that when these lands are no longer needed by DOE, they will be returned for incorporation into the Columbia Basin Project.

### *Public Outreach Prior to Designation*

In 1988, Congress directed NPS to study the Hanford Reach of the Columbia River and recommend protection measures. In 1994, NPS recommended designation of a National Wildlife Refuge north and east of the river, and a National Wild and Scenic River designation for the Hanford Reach. Legislation was introduced in 1995 and discussed until 1999, but failed to designate the Hanford Reach a Wild and Scenic River.

In 1999, after extensive discussions with the State of WA, Tribes, local governments, other federal agencies, environmental groups, and the public, DOE issued a Record of Decision (ROD) for future land uses of the entire Hanford Site, which designated the lands covered in the proposed Monument for preservation. Senator Patty Murray asked Secretary of the Interior Babbitt to consider recommending monument designation to protect the area. Secretary Babbitt visited the area to discuss protection for the Hanford Reach and surrounding land with a wide variety of affected interests, and then recommended that the area be designated a National Monument.

Former Secretary Babbitt established a Federal Planning Advisory Committee (Committee) in [December 2000](#), under regulations of the Federal Advisory Committee Act (FACA) to make recommendations to FWS and DOE on the preparation of a long-term Comprehensive Conservation Plan (CCP) and associated EIS for Hanford Reach. The Committee was comprised of a group of 13 different stakeholders in the local community, representing state, county, city, tribal, business, environment/conservation, outdoor recreation, education, scientific/academic (three seats), utilities/irrigation, and public-at-large interests. Public involvement was given considerable attention in the Monument's CCP process. The

formal planning process was started in June 2002. Four public scoping meetings and one Monument open house were held during the 120-day comment period. Meeting dates were published in the *Federal Register* and sent to local and regional media outlets prior to each meeting. FWS gave approximately 60 public presentations on the CCP/EIS project to a wide variety of audiences, ranging from the County Commissioners to local Kiwanis and Rotary Clubs to nongovernmental organizations. Tours of the Monument were organized for numerous interested organizations and individuals—tribes, Washington congressional representatives, Tri-City Herald Editorial Board, Washington Fish and Wildlife Commission, and local farmers and ranchers, among others. FWS used these tours to get valuable input for use in development of the CCP (p. 5-11).

### *Local Economy and Economic Impacts*

The HRNM is in Adams, Grant, Benton, and Franklin Counties. Table 1 provides an economic snapshot of these Counties (except Adams) and the State. Located in eastern WA, Benton, Franklin and Grant Counties account for approximately 5% of the State's population. All of these counties have higher unemployment rates and lower median household incomes than for the State. The populations have all increased substantially since 1990 with Franklin County increasing almost 131%.

The USDA Economic Research Service (ERS) has developed a set of county-level typology codes that captures a range of economic and social characteristics. The HRNM counties are classified as follows:

- Farm Dependent (farming accounted for 25% or more of the county's earnings or 16% or more of the employment averaged over 2010-2012) – Grant County;
- Urban (metro) (metro areas include all counties containing one or more urbanized areas: high-density urban areas containing 50,000 people or more; metro areas also include outlying counties that are economically tied to the central counties, as measured by the share of workers commuting on a daily basis to the central counties) – Benton and Franklin Counties;
- Retirement Destination (number of resident 60 and older grew by 15 percent or more between 2000 and 2010) – Franklin County;
- Low Education (at least 20% or more of the residents age 25 to 64 did not have a high school diploma or equivalent between 2008-2012) – Franklin and Grant Counties; and
- No dependence on mining or recreation, and no persistent poverty.

### *Activities and Resources Associated With Hanford Reach National Monument*

Information on the economic contributions associated with the activities occurring at HRNM, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with HRNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** FWS' Division of Economics reported the HRNM had 33,925 recreational visits in 2011. Fishing visits comprised 59 percent of all visits, and the majority of visitors were residents (63 percent). Table 2 shows total economic effects (total recreation expenditures plus net economic value). For an individual, net economic value is that person's total willingness to pay for a particular recreation activity minus his or her actual expenditures for that activity. The figure for economic value is derived by multiplying net economic values for hunting, fishing, and non-



consumptive recreation use like wildlife viewing (on a per-day basis) by estimated refuge visitor days for that activity. This figure is combined with the estimate of total expenditures to estimate total economic effects (Banking on Nature [2013](#)). For the entire HRNM, fishing and wildlife viewing were the major recreational activities, as shown in Table 3.

- **Energy:** According to the CCP, the Atomic Energy Commission (AEC) acquired the surface title to the Monument acreage by condemnation in 1952, but the Big Bend Alberta Mining Company retains its right to explore for oil and gas (p. 1-12). This mineral right is located on portions of three sections of land in the east end of the ALE (1,280 acres)(CCP, p. 1-13). Oil exploration was conducted in the Rattlesnake Mountain and Rattlesnake Hills area in the 1920s and 1930s, but useful deposits were not found. To the extent that rights exist, the CCP states they would be treated as valid existing rights. BLM reported that its LR2000 database has no matching records for authorized oil and gas leases in Washington State for BLM interests. There are 20 separate right-of-way corridors totaling approximately 73 miles which provide power to the region and parts of the northwest. A number of high voltage (up to 500kV) electrical power lines pass through the HRNM. There are 34 individual circuits within the 20 corridors and one substation, roughly 80-90 acres in size, located on the Monument. DOE and FWS report there are no processing facilities close to or adjacent to the Monument. The Monument continues to function as a safety and security buffer for ongoing environmental cleanup activities involving the management of nuclear waste and materials on the remainder of the Hanford Site.
- **Non-Energy Minerals:** There is information in NPS' Final River Conservation Study and EIS (1994) about potential minerals in and around HRNM. USGS indicates that there are no relevant mineral assessments. Additional research would be needed to determine whether there may be economically viable mineral resources. Because of the unique relationship of HRNM to the Hanford Site, DOE would likely need to be consulted.
- **Timber:** There is no commercially viable timber.
- **Grazing:** There is no current grazing. The CCP identified historic degradation of Monument lands by "historic uses (settlers, military, grazing), wildfire events, maintenance-related project work, Hanford Site mitigation, and invasive species" (p. 2-58).
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. In general, these resources are valued by society, but those values are not bought or sold in the marketplace and therefore, are difficult to quantify. Below is a brief overview of the natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources:** The [Vernita Bar Agreement](#) protects all fall Chinook spawning habitat within the Monument. The HRNM includes numerous archeological sites, multiple historic districts, and many Native American burials and cemeteries, among other cultural resources. Special Use Permits are granted for Native American religious ceremonies and traditional root gathering.

- **Scientific Investigation:** The Rattlesnake Hills Research Natural Area (RNA) in the HRNM was established as a result of a federal interagency cooperative agreement. Scientific use of RNAs has always been encouraged in OR and WA. RNAs provide useful and essential information to land managers; they also contribute to basic science. Research activities must be non-destructive, and the scientific and educational values of the areas must not be impaired. Each agency has a set of guidelines for use, but none is particularly restrictive as long as the essential characteristics and processes of the RNA are maintained. The ALE constitutes the single largest tract in the federal RNA system for OR and WA, due in part to it being one of the few remaining large tracts of shrub-steppe vegetation in WA that retains a predominant pre-European settlement character. The ALE is closed to general access by the public and is maintained for scientific purposes consistent with its value as an RNA (CCP, p. 3-192). As of 2008, biological diversity studies conducted in the Monument documented more than 1,500 unique species with more than 43 of which were new to science. This unit contains a rare plant population found nowhere else on the planet—Umtanum desert buckwheat (CCP, p. 2-35). In addition, the ALE is a designated Important Bird Area (IBA). It was chosen because of its unique habitat features, supporting a substantial assemblage of breeding birds (CCP, p. 3-191).

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply. See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)

A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. Based on what is currently known, though, the HRNM is different from other monuments in that it is a conversion of DOE lands that had restricted use for over 60 years. DOE continues to need a safety and security buffer for ongoing environmental cleanup activities at the Hanford Site. If the Monument had not been designated:

- (b) (5)

- (b) (5) [REDACTED]

[REDACTED]

[REDACTED]

Table 1. State and County Economic Snapshot

	<b>Benton County</b>	<b>Franklin County</b>	<b>Grant County</b>	<b>Washington</b>
Population, 2016 <sup>a</sup>	184,930	86,443	92,070	6,985,464
American Indian and Alaska Native (alone or in combination) population as a percent of total <sup>a</sup>	1.8%	1.3%	2.2%	3%
Unemployment Rate, April 2017 <sup>b</sup>	5.3%	6.1%	6.0%	4.6%
Median Household Income, 2015 <sup>a</sup>	\$60,251	\$56,980	\$48,714	\$61,062

<sup>a</sup>U.S. Census Bureau, 2011-2015 American Community Survey; Native American population alone or in combination with one or more other races.

<sup>b</sup><https://fortress.wa.gov/esd/employmentdata/reports-publications/economic-reports/monthly-employment-report/map-of-county-unemployment-rates>

Table 2. HRNM Summary of Local Economic Contributions of Recreation Visits, 2011<sup>a</sup>

Visitor Expenditures (\$ millions)	\$1.6
Net Economic Value (\$ millions)	\$1.5
Total Economic Effects (\$ millions)	\$3.1
Number of Jobs	17

<sup>a</sup>Spending and economic value estimates are based on 33,925 visits in 2011.

Source: FWS Banking on Nature (2013).

Available

at: <https://www.fws.gov/refuges/about/refugereports/pdfs/BankingOnNature2013.pdf>.

Table 3. HRNM Average Annual Visits per Select Recreation Activities

<b>Year<sup>a</sup></b>	<b>Visitors</b>	<b>Fishing</b>	<b>Hunting</b>	<b>Wildlife Observation<sup>b</sup></b>
2000	19,880	.	.	.
2001	23,178	.	.	.
2002	23,895	.	.	.
2003	20,273	.	.	.
2004	49,000	.	.	.
2005	49,000	.	.	.
2006	49,000	.	.	.
2007	49,000	.	.	.
2008	49,000	.	.	.
2009	49,000	.	.	.
2010	49,000	.	.	.
2011	43,000	20,000	825	8,000
2012	.	20,000	925	8,000
2013	43,000	.	.	.
2014	43,000	25,000	925	9,000
2015	43,000	25,000	825	9,000
2016	43,000	27,000	775	8,200

<sup>a</sup>Visitation use prior to establishment would have been associated with the Saddle Mountain National Wildlife Refuge.

<sup>b</sup>Includes foot trail/pedestrian visits and boat trail/launch visits.

Source: Refuge Annual Performance Plan (RAPP) database.





# Ironwood Forest National Monument

## Economic Values and Economic Contributions



Ironwood Forest  
National  
Monument



## Introduction

The purpose of this paper is to provide an overview of the economic values and economic contributions of the activities and resources associated with Ironwood Forest National Monument (IFNM or the Monument), as well as to provide a brief economic profile of Pinal and Pima counties, Arizona (AZ).<sup>1</sup>

## Background

The IFNM was established by President Clinton on June 9, 2000 (Proclamation 7320) and is managed by the Bureau of Land Management (BLM). Located in Pinal and Pima counties, AZ, approximately 80 miles south of Phoenix and 25 miles northwest of Tucson, AZ, the Monument encompasses 188,628 acres including 129,358 acres of BLM-administered land, 54,741 acres of Arizona State Trust lands, 632 acres of Pima County lands, 299 acres of U.S. Department of Defense lands, and 3,589 acres of private land.<sup>2</sup> In addition, there are areas within the IFNM where Federal minerals underlie State Trust land (approximately 14,680 acres) or private land (approximately 3,220 acres); this is considered split estate. The IFNM Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/FEIS) summarizes the purpose of the Monument designation “to protect objects of scientific interest within the Monument, including the drought-adapted vegetation of the Sonoran Desert, geological resources such as Ragged Top Mountain, and abundant archaeological resources.” To protect objects within the Monument, the Proclamation directed the following management:

- Prohibit all motorized and mechanized vehicle use off road, except for emergency or authorized administrative purposes and prepare a transportation plan that addresses action to protect identified objects (such as road closures or travel restrictions).
- Withdraw from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws including location, entry, and patent under the mining laws and mineral and geothermal leasing.
- Continue to issue and administer grazing leases and permits within the Monument.
- The Proclamation also states that the establishment of the Monument is subject to valid existing rights.

The IFNM Management Plan was approved in 2013. The Plan reflects the requirements of the Proclamation as well as being responsive to issues identified by the public, stakeholders, and BLM specialists and managers during the scoping period and applicable federal and state laws, regulations, and BLM policies.

### *Ironwood Forest National Monument*

**Location:** Pinal and Pima counties, AZ

**Managing agency:** BLM

**Adjacent communities, Tribal, and Federal land:** Eloy, AZ; Marana, AZ; Tohono O’odham Nation

**Resource Areas:**

☒ Recreation ☐ Energy ☐ Minerals  
☒ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

<sup>1</sup>The BLM provided data used in this paper.

<sup>2</sup>Acquisitions from willing sellers of private land within the Monument boundary added 358 acres of patented mining claims to protect endangered species habitat in 2014 and 602 acres to protect scenic views and vegetation in 2016, bringing the BLM-administered acres from 128,398 at Monument designation to 129,358.

The IFNM is situated primarily in Pima County with portions of the Monument extending north into Pinal County. Eloy and Marana were identified in the FEIS as communities most likely affected by management of the Monument. In addition, the Tohono O’odham Nation borders the IFNM along the south and west.

### *Public Outreach Prior to Designation*

The designation of the Monument evolved out of efforts by the Pima County Board of Supervisors. These efforts culminated in the *Proposal in Support of the Ironwood Preserve* that provided a discussion “for the need for the federal government to afford special protection for the Ironwood forest found in the Ragged Top and Silverbell Mountains.” The proposal also included a copy of Resolution 2000-63 stating that the Pima County Board of Supervisors “requests that the United States of America through the Secretary of the Department of the Interior, consistent with the Sonoran Desert Conservation Plan, work cooperatively with Pima County to establish the Ragged Top and Silverbell Ironwood Preserve in the Silverbell Mountains” (p. 17).<sup>3</sup>

This proposal and resolution were delivered to former Secretary of the Interior Babbitt in March 2000. No public meetings were convened prior to the designation.

### *Local Economy and Economic Impacts*

Table 1 summarizes some key demographic and economic indicators for Pima County, Pinal County, and the State of Arizona. Pima County accounts for about 15 percent of the State’s population, making it the second most populated county in the State. A majority of the County residents live in the Tucson area. Pima County grew at a slower rate than the State since 2001 (16% compared to 26%). Although Pinal County is a more rural county, accounting for around 6 percent of the State’s population, the County’s population has grown at a significant rate since 2001 (108%). The unemployment rate in both counties is below the State’s rate. A substantial portion of the Pinal County workforce is employed in jobs outside the County. This observation is reflected in the ratio of jobs to population (23% in Pinal County compared to 53% for the State) and BEA personal income data that shows a significant net inflow of income. This pattern is likely attributable to the close proximity of Phoenix (Maricopa County) and Tucson to the County. The USDA Economic Research Service’s (ERS) county-level typology codes indicate that both Pima and Pinal counties are “non-specialized” indicating a diversity of industries driving their economies. That said, based on 2015 BEA data for both counties, the proportion of jobs in the government sectors exceeds the State (17.6% in Pima and 22.6% in Pinal compared to 12.5% for the State). Pima County has a relatively higher proportion of jobs in the health care and social assistance sector. Pinal County employs relatively more people in the natural resource-related industries including farming (3.4%) and mining (1.8%). Together these two industries account for 5.2% of jobs (8.1% of earnings) compared to 1.5% of jobs (1.6% of earnings) in the State as a whole.

Non-labor income (income from dividends, interest, and rent and transfer payments) as a source of total income has increased for both counties between 2000 and 2015 (accounting for 46% in Pima and 42% in Pinal in 2015 compared to about 40% for the State as a whole).

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<sup>3</sup><http://www.pima.gov/CMO/SDCP/reports/d13/034PRO.PDF>

The racial and ethnic composition of Pima and Pinal counties are similar and comparable to the State as a whole. Generally, the percentage of non-Hispanic Whites is around 55 percent and about a third of the population identifies as Hispanic. Pinal County's proportion of Native American population is slightly higher than Pima County and the State.

As noted above, the City of Eloy (in Pinal County), Town of Marana (in Pima County), and the Tohono O'odham Nation were identified in the FEIS as communities most likely affected by management of the Monument. The City of Eloy has a population of around 17,200, of which approximately 6,500 represents the resident prison population.<sup>4</sup> Eloy is located north of the IFNM and provides easy access via Interstate 10. Eloy is historically an agricultural community and continues to have an agriculture component to its economy. However, given the location of Eloy at the crossroads of interstates 8 and 10 and along the growth corridor midway between Phoenix and Tucson, the City has attracted other industries (manufacturing and service related).<sup>5</sup> Also between Phoenix and Tucson, the Town of Marana has a population of about 44,000 and is located east of the IFNM. Marana's recently completed Economic Development Strategy describes the town as having a manufacturing- and tourism-based economy and as a "bedroom" community for the greater Tucson area.<sup>6</sup> The strategy recommends the Town of Marana target the information technology, advanced business services, manufacturing, and transportation, logistics, and distribution sectors for future economic development and diversification.

The BLM regularly consults with five Native American tribes who claim ancestral and/or traditional interest in the lands and resources of the Monument. These five federally recognized Tribes are: the Hopi Tribe, Pascua Yaqui Tribe, Tohono O'odham Nation, White Mountain Apache Tribe, and the Yavapai-Apache Nation. The Monument shares a border with the Tohono O'odham Nation, which results in effects that are more direct to this tribe, relative to other tribal nations with interests in the area. The Tohono O'odham Nation uses areas of the Monument to continue traditional cultural practices, and has a long and well-documented history of concern with the cultural and natural resources of the Monument.

### *Activities and Resources Associated With Ironwood Forest National Monument*

Information on the economic contributions associated with the activities occurring at Ironwood Forest National Monument, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with IFNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** Popular recreation activities in the IFNM include hiking, viewing wildlife and scenery, OHV use on designated roads or primitive roads, photography, camping, and hunting. A 2004 study conducted by the University of Arizona found that approximately 12,000 to 15,000 people visited the IFNM, primarily in the cooler months of November to April, with most of the use occurring on weekends. Recreation use has trended upward since the designation. The average number of visits to the IFNM over the last five fiscal years were estimated to be

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<sup>4</sup>Arizona Office of Employment and Population Statistics.

<sup>5</sup>See <http://www.accessarizona.org/business-item/city-of-eloy/> and <http://www.ci.eloy.az.us/280/About-Eloy>.

<sup>6</sup>See <http://www.maranaaz.gov/economic-development/>.

approximately 40,600<sup>7</sup> resulting in \$2.4 million annual expenditures in local gateway regions, on average. These expenditures support an estimated 36 jobs and \$2.1 million in value added in local gateway economies surrounding the Monument.

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$54.19 per person per day (recreational visitor day), the estimated economic value (net benefits) generated in 2016 was \$2.2 million.<sup>8</sup>

The Proclamation's prohibition of all motorized and mechanized vehicle use off road was implemented through travel management decisions during the planning process. The basic approach for implementation was to identify areas of the Monument as open, limited, or closed to motorized and mechanical use.<sup>9</sup> The BLM then reviewed existing routes within areas designated as limited and, based on input from interested stakeholders, determined the type of travel, if any, that would be permitted on existing routes and under what conditions. No motorized or mechanical travel would be permitted off existing routes designated for motorized or mechanical travel, except for emergencies. The final decisions reduced the number of miles of routes available for motorized and mechanical vehicle use (including bicycles) but continued to allow this travel on 124 miles of routes and on an additional 118 miles for mechanical use and administrative purposes. While not addressed in the Proclamation, the BLM did close the Monument to recreational target shooting activity in the approved management plan. The issue of recreational target shooting activity was a highly controversial component of the planning process.

- **Energy:** Based on information in the FEIS, there is no production of oil and gas within the IFNM and no oil and gas has been discovered; however, the area is rated as having moderate potential. There is no production or potential for coal in the Monument. There are no official "Known Geothermal Resource Areas" and there are no significant geothermal energy resources currently in use within the Monument. However, Avra Valley, located in the eastern portion of the Monument, has been identified as having potential for the development of geothermal resources. The region including the IFNM area have been identified as having a high-potential for solar energy development.<sup>10</sup> Potential for wind energy development in the region, including the IFNM, is considered low. The Monument contains rights-of-way for energy transmission infrastructure and gas pipelines, totally 76.1 miles. The designation withdrew the Monument from location,

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<sup>7</sup>The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>8</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

<sup>9</sup>No areas were designated as "open", the Monument lands were designated "limited" or "closed."

<sup>10</sup>FEIS/PRMP

entry, and patent under mining laws, subject to valid existing rights. Furthermore, the approved Resource Management Plan (RMP) allocated all BLM-managed lands within the IFNM as an exclusion area. This decision effectively prohibits new land use authorizations within the IFNM (including new transmission infrastructure, pipelines, or solar development); existing right-of-way authorizations would be allowed to continue and may be renewed in accordance with 43 CFR 2800, which regards rights-of-way under the Federal Land Policy and Management Act (FLPMA). In the event that a land use authorization was required by law, mitigation could be required to ensure protection of Monument objects.

- **Non-Energy Minerals:** The FEIS indicated that there is one known salt (sodium) deposit near the Monument and potential of deposits within the Monument. However, there is no production or leases for sodium production within the IFNM. At the time of designation there were 225 mining claims (associated with locatable minerals) within the Monument boundary but no active mines. The Silver Bell copper mine operates on adjacent private lands. No production information is available. The FEIS indicated that one industrial-grade limestone property is located within the Monument, but off of BLM-managed lands and has not been commercially developed. At the time of the FEIS, there were four salable mineral (mineral material) pit permits within the Monument, only one of which was active. The Red Hills Pit produced crushed granite and other decorative landscape rock and was closed prior to designation. There are two mineral material quarries on adjacent private lands. The designation withdrew the Monument from location, entry, and patent under mining laws, subject to valid existing rights.
- **Timber:** Timber resources are not present within the IFNM.
- **Grazing:** The BLM issues and administers grazing leases within the Monument. The Proclamation states that livestock grazing would not be altered by the designation of the Monument. At the time of the FEIS (based on 2004 data), the BLM administered leases on 11 grazing allotments. The leases authorize 7,849 Animal Unit Months (AUMs), primarily associated with cattle operations.<sup>11</sup> Figure 1 shows permitted and billed AUMs from 1995 through 2016.

Figure 1 also shows that permitted AUMs have remained the same over the 22 year period. Billed use (which approximates actual use) has fluctuated over time, but have generally trended upward since the designation of the Monument. Various reasons, in any given year, affect the number of AUMs used by permittees such as drought conditions, market forces, and fluctuations in individual permittee livestock operations. Based on 5-year average of recent billed AUMs (7,187), livestock grazing on the Monument has supported approximately 38 paid and unpaid (i.e., family labor) jobs annually resulting in approximately \$376,000 in labor income and generating about \$1.4 million in total economic output.
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these

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<sup>11</sup>BLM measures an AUM as the amount of forage needed to sustain one cow and her calf, one domestic horse, or 5 sheep or goats for one month <https://www.blm.gov/programs/natural-resources/rangelands-and-grazing/livestock-grazing/fees-and-distribution>.

resources are valued by society, but those values are not bought or sold in the marketplace and therefore, difficult to quantify. Below is a brief overview of the natural, cultural, and scientific features identified in Proclamation that the designation is intended to protect:<sup>12</sup>

- **Tribal Cultural Resources:** Although not explicitly discussed in the Proclamation, five Native American tribes claim ancestral and/or traditional interest in the lands and resources of the Monument. In particular, the Tohono O’odham Nation, which shares a boundary with the Monument, has an expressed interest in indigenous plant resources, access for tribal members, the protection and preservation of archaeological and historical O’odham sites, and coordinated resources management on the Monument.
- **Cultural (Historic and Archaeological) and Paleontological Resources:** The area holds abundant rock art sites and other archaeological objects of scientific interest. Humans have inhabited the area for more than 10,000 years. As noted in the FEIS, sites of the Formative era (650 A.D. to 1400 A.D.) dominate the regional archaeological record, especially sites associated with a culture known as the Hohokam.
- **Scientific Investigation:** The IFNM contains biological and geological resources of scientific interest. Drought-adapted and unique vegetation is prevalent throughout the Monument. In particular, Ironwoods, which can live in excess of 800 years, generate a chain of influences on associated understory plants, affecting their dispersal, germination, establishment, and rates of growth, as well as support a range of animal species in a variety of ways.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

(b) (5) [REDACTED] . A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. For example, mineral and archeological surveys could be updated and completed for the entire Monument.

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<sup>12</sup>In addition to the Proclamation, Chapter 1 of the FEIS (Table 1-2: Protection of Objects Within the IFNM) provides a more detailed description of these objects and their significance.



## Ironwood Forest National Monument

Table 1. State and County Economic Snapshot

	Pima County	Pinal County	Arizona
Population, 2016 <sup>a</sup>	998,537	389,772	6,641,928
Native American % of population <sup>a</sup>	3.3%	5.3%	4.4%
Employment, December 2016 <sup>c</sup>	500,592	90,119	3,542,969
Unemployment rate, March 2017 <sup>b</sup>	4.2%	3.9%	5.0%
Median Household Income, 2015 <sup>a</sup>	\$46,162	\$49,477	\$50,255

<sup>a</sup>U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup><https://laborstats.az.gov/sites/default/files/documents/files/emp-report.pdf>

<sup>c</sup>U.S. Bureau of Economic Analysis (BEA), Regional Economic Accounts. Table CA25N.

Table 2. IFNM Estimated Economic Contributions, 2016

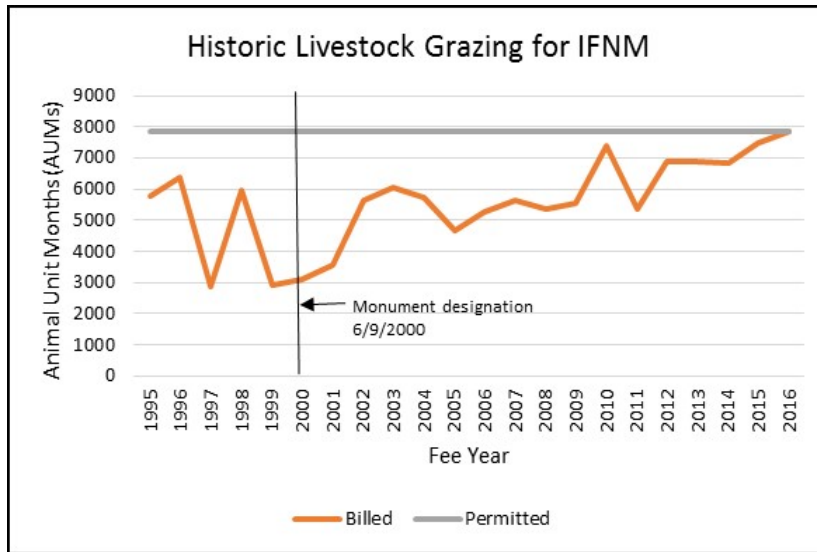
Activities	Economic output (\$ millions)	Value added (net additions to GDP \$ millions)	Employment supported (number of jobs)
Recreation <sup>a</sup>	\$2.0	\$1.5	27
Grazing <sup>b</sup>	\$1.6	Not available	38
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016 (visits represent 5-year average).

<sup>b</sup>BLM data.

## Ironwood Forest National Monument

Figure 1. AUMs Billed and Permitted



Source: BLM data.



# Katahdin Woods and Waters National Monument

Economic Values and Economic Contributions



Katahdin Woods  
and Waters  
National  
Monument

## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Katahdin Woods and Waters National Monument (KAWW or the Monument) as well as to provide a brief economic profile of Penobscot County, Maine (ME).

## Background

The Katahdin Woods and Waters National Monument was established by President Obama on August 24, 2016 (Proclamation 9476). The Monument encompasses 87,563 acres in Penobscot County, Maine, and was established for purposes of protecting lands that contained cultural, historic, and scientific resources. The Penobscot Indian Nation considers the Penobscot River watershed a centerpiece of their culture and spiritual values. All KAWW lands were donated to the federal government by Elliotsville Plantation, Incorporated (EPI), for the purpose of including the land in the National Park System. This gift of land was accompanied by an endowment of \$20 million (over 7 years) to supplement federal funds for initial park operational needs and infrastructure development at the new National Monument, and by a pledge of another \$20 million in future philanthropic support. Prior to gifting the lands, EPI was managing the lands as a recreation area.

### *Katahdin Woods and Waters National Monument*

**Location:** Penobscot County, ME

**Managing agency:** NPS

**Adjacent communities, Tribal and**

**Federal land:** Patten, ME; Penobscot  
Nation

**Resource Areas:**

☒ Recreation ☐ Energy ☐ Minerals

☐ Grazing ☒ Timber ☒ Scientific

Discovery ☒ Tribal Cultural

## Public Outreach Prior to Designation

Former Secretary of Interior Ken Salazar and NPS Director Jon Jarvis moderated a public meeting on the “Maine Woods Proposal” in Millinocket, Maine on August 18, 2011. On May 16, 2016, NPS Director Jarvis and U.S. Senator Angus King met with elected officials and local community members in the Millinocket area and attended a public meeting at the University of Maine in Orono. The joint appearances of Jarvis and King were scheduled so that Mainers could voice their opinions on a proposed donation of private lands in the Katahdin region that could result in a new unit of the national park system. In addition, EPI engaged in substantial public outreach prior to designation.

## Local Economy and Economic Impacts

Penobscot County, with a population of 151,806 people<sup>1</sup>, is home to less than 11.4% of the population of the State of Maine. In recent years, the County has experienced slightly higher levels of unemployment and lower levels of median household income than the State. The County also has a significantly higher Native American population, with 1.2% of the population being of Native American descent versus 0.7% for the State. The Penobscot Indian Island Reservation is within the County borders.

## Activities and Resources Associated With Katahdin Woods and Waters National Monument

Information on the economic contributions associated with the activities occurring at Katahdin Woods and Waters National Monument, as well as resources within the Monument, is provided below.

<sup>1</sup> 2011-2015 ACS, 5-Year Estimates, U.S. Census Bureau

Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** Visitor activities at the Monument include: hiking, skiing, snowshoeing, driving, hunting, camping, mountain biking, snowmobiling, and fishing. Quantitative visitor use data is limited, as the Monument did not open until August 24, 2016 and was privately owned prior to designation. Gathering accurate visitor use data for KAWW is a challenge; there are seven roads leading into the Monument, as well as an entrance by the East Branch of the Penobscot. The Katahdin Loop Road vehicle counter was the only counter the Monument had in place during 2016. This counter was in place before and after the Monument opened. From the date of designation to the time the counter was pulled for the season (end of October 2016), the counter recorded a total of 1,215 vehicles (an average of just over 18 vehicles per day). It is estimated that the 1,215 vehicles carried a total of approximately 2,500 visitors. Two additional vehicle counters were installed during the 2017 summer season. Through July 25th, counters have recorded over 2,400 vehicles entering the Monument, including 1,465 vehicles over the Loop Road. It is estimated that the vehicles counted have carried over 5,000 summer 2017 visitors, to date (as of July 25, 2017). The Monument did not have counters during the 2016- 2017 winter, but a couple of the area's snowmobile trails (Interconnected Trail System) pass through five sections of the Monument. NPS staff spoke with one of the businesses that rents sleds and grooms the trails, and estimates that between 10,000 and 15,000 sleds came through the Monument during the winter of 2016- 2017.

According to NPS, trip-related spending by KAWW visitors generates and supports a considerable amount of economic activity within surrounding communities. With more data and time an economic contributions analysis could be done to measure how visitor spending cycles through local economies, generating business sales and supporting jobs and income.

The value of recreation opportunities and experience is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). The average consumer surplus unit value for the Northeast is \$128.28 per person per day.<sup>2</sup> Once estimates of annual visitation are developed by NPS, this consumer surplus value can be used to derive an estimate of annual economic value (net benefits).

- **Energy:** There are no known oil, gas, coal, or other energy mineral deposits within the Monument boundaries.
- **Non-Energy Minerals:** There are no known mineral deposits within the Monument boundaries.
- **Timber:** There is no commercial timber production on the Monument. From designation to the present, approximately 80 cords of hardwood will be sold as the result of a road clearing project

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<sup>2</sup> The consumer surplus unit value is a survey-based value for general recreation in the Northeast region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). Economic value is the net benefit to recreational users (total benefits minus total costs).



within the boundary of the Monument. At this time, KAWW is not aware of any additional projects that would result in timber harvest.

- **Grazing:** There is no grazing within the Monument boundaries.
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. In general, these resources are valued by society, but those values are not bought or sold in the marketplace and therefore, are difficult to quantify. Below is a brief overview of the natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources and Subsistence Living:** For some 11,000 years, Native Americans have inhabited the area, depending on its waterways and woods for sustenance. They traveled during the year from the upper reaches of the East Branch of the Penobscot River and its tributaries to coastal destinations like Frenchman and Penobscot Bays. Native peoples have traditionally used the rivers as a vast transportation network, seasonally searching for food, furs, medicines, and many other resources. Based on the results of archeological research performed in nearby areas, researchers believe that much of the archeological record of this long Native American presence in KAWW remains to be discovered, creating significant opportunity for scientific investigation. The Wabanaki people, in particular the Penobscot Indian Nation, consider the Penobscot River (including the East Branch watershed) a centerpiece of their culture and spiritual values.

There is occasional hunting, fishing, and fiddlehead gathering done by tribal members of the Penobscot, Passamaquoddy, Mic-Mac, and Maliseet tribes, in addition to other residents of Maine.
  - **Cultural and Historical Resources:** A cultural resources assessment is ongoing for Lunksoos Camps, a site occupied for at least 150 years in conjunction with logging, timbering, and tourism (it was a sporting camp at one time). There are remaining buildings at Lunksoos Camps, but the exact age is unknown. The main lodge building may be up to 50 years old. The buildings from 150 years ago are no longer present at the site, though there may still be foundations or other evidence of their existence.
  - **Scientific Investigation:** The area has significant biodiversity, spanning three ecoregions, containing many forest types, and supporting a number of high-quality patch ecosystems of scientific significance, often in spots that are relatively remote or inaccessible.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)

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comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis.



# Organ Mountains-Desert Peaks National Monument

Economic Values and Economic Contributions

Organ Mountains-  
Desert Peaks  
National Monument



## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Organ Mountains – Desert Peaks National Monument (OMDPNM) as well as to provide a brief economic profile of Doña Ana County, New Mexico (NM).<sup>1</sup>

## Background

The Organ Mountains-Desert Peaks National Monument was established by President Obama on May 21, 2014 (Proclamation 9131), and is managed by the Bureau of Land Management (BLM). The Monument encompasses 496,330 acres in Doña Ana County and Luna County, NM, and was established for protecting visual, cultural, geologic, paleontological, ecological, and scientific resources. Overall, multiple use activities are allowed in Organ Mountains-Desert Peaks National Monument that are compatible with the protection of resources and objects identified in the Presidential Proclamation. Multiple use activities are subject to decisions made in current and future BLM resource management planning efforts, which include public participation. National monuments and other conservation areas managed by the BLM continue to allow for multiple uses according to the Federal Land Policy and Management Act (FLPMA).

### *Organ Mountains-Desert Peaks National Monument*

**Location:** Doña Ana County, NM

**Managing agency:** BLM

**Adjacent communities, Tribal, and Federal land:** Las Cruces, Mesilla, NM; Luna County, NM (a small portion of the Monument is in Luna County)

**Resource Areas:**

☒ Recreation ☐ Energy ☒ Minerals  
☒ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

## Public Outreach Prior to Designation

Meetings hosted by Congressional delegations, the Secretary's office, and community groups were held prior to designation. BLM participated in these meetings as subject matter experts and did not keep records of dates, attendees or content of these meetings. Support for the creation of OMDPNM was expressed by New Mexico representatives and senators as well as elected officials of the county and nearby cities and towns (Mesilla, Las Cruces, El Paso) and various community members and groups.

## Local Economy and Economic Impacts

Table 1 presents socioeconomic metrics for Doña Ana County and the state of New Mexico. The County contains roughly 10% of the State's population.

The top three sectors in Doña Ana County—healthcare and social services, retail trade, and arts, entertainment, accommodation and food services—make up nearly 60% of the total employment (see Figure 1).<sup>2</sup> In recent years, the county has experienced slightly higher rates of unemployment and lower levels of median household income compared to the state.

## Activities and Resources Associated With Organ Mountains-Desert Peaks National Monument

Information on the economic contributions associated with the activities occurring at Organ Mountains-Desert Peaks National Monument, as well as resources within the Monument, is provided below. Table 2

<sup>1</sup>The BLM provided data used in this paper.

<sup>2</sup>2015 County Business Patterns, U.S. Census Bureau

provides estimates of the economic contributions of activities associated with OMDPNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** Opportunities for recreation include hiking, camping (both developed and dispersed), climbing, viewing prehistoric and historic sites, viewing geologic sites, horseback riding, mountain biking, and use of OHVs on existing roads and trails. Hunting and trapping is also permitted as regulated by the New Mexico Department of Game and Fish.

Annual recreation visitation data is available for specific recreation sites of the Mimbres Resource Management planning area in the Las Cruces District Office that are now within OMDPNM (see Figure 2). The Monument has four separate units which, along with the dispersed recreation use across the Monument, makes gathering visitation statistics challenging; pedestrian and vehicle counters have recently been installed but these data are not yet available. There were an estimated 395,000 recreation visits to the Monument in FY 2016.<sup>3</sup>

Recreation activities provide the opportunity for economic activity to be generated from tourism for an indefinite period of time. The economic contributions occur annually, and in cases where visitation increases over time, recreation generates additional activity each year. These contributions affect the regional and state economies. Recreation activities based on visitation to the Monument are estimated to contribute about \$13 million in value added (net economic contributions) and support 306 jobs.<sup>4</sup>

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$54.19 per person per day, the estimated economic value (net benefits) generated in 2016 was \$21.4 million.<sup>5</sup>

- **Energy:** In general, the scope, magnitude, and timing of energy and minerals activities are closely related to supply and demand conditions in world markets and the market prices of mineral commodities. Local or regional cost considerations related to infrastructure, transportation, etc. also may play a role in defining the supply conditions. There has been no energy production from coal, oil and gas, or renewables since at least five years prior to designation. The majority of the Monument area has prior designations that prohibit leasing that

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<sup>3</sup>BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>4</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>5</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).



date back at least 20 years prior to designation. There have been no nominations for coal, oil, or gas leasing in Doña Ana County in at least 10 years and there are no leases in OMDPNM.<sup>6</sup>

- **Coal:** There have been no coal developments in the Monument area.
- **Oil and gas:** A USGS study of mineral resources of approximately 7,300 acres of the Organ Mountains found the mineral resource potential for oil and gas to be low throughout the study area.<sup>7</sup> A USGS study of mineral resources of a large portion of the Potrillo Mountains area of the Monument found low energy resource potential.<sup>8</sup>
- **Non –Energy Minerals:** The last known mineral production within the Monument was in 2008 from a designated Common Use Area, which contains travertine boulders. Mineral resource studies of areas within the Organ Mountains and Potrillo Mountains found common varieties of carbonate rock and sand and gravel, as well as volcanic cinder, but low potential for near-surface base (copper, lead, zinc, tin) and precious (gold, silver, platinum) metals. Relics of historic mining exist but there has been no active mining in over two decades.
- **Timber:** The Monument contains a desert ecosystem and therefore does not have any timber resources.
- **Grazing:** The Monument Proclamation allows for the continuation of all pre-designation grazing activities, including maintenance of stock watering facilities. The 38 grazing allotments that are wholly or partially contained within the boundaries of OMDPNM include approximately 86,300 permitted Animal Unit Month (AUMs)<sup>9</sup>. In 2016, there were about 49,900 billed AUMs (see Figure 3). This level of grazing activity is estimated to support about 250 jobs and about \$11.7 million in economic output.<sup>10</sup>
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. In general, these resources are valued by society, but those values are not bought or sold in the marketplace and therefore, are difficult to quantify. Below is a brief overview of the natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources:** Members of Ysleta del Sur Pueblo and other Puebloan peoples view the area as a traditional cultural property.
  - **Cultural (Historic and Archaeological) and Paleontological Resources:** OMDPNM contains 344 recorded archaeological sites spanning various eras of human history, including Paleoindian, Archaic, Formative, Protohistoric, and Historic period sites. The records of these sites were mostly documented in the 1970s and 1980s and contain little information.

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<sup>6</sup>BLM data.

<sup>7</sup> <https://pubs.usgs.gov/bul/1735d/report.pdf>

<sup>8</sup> <https://pubs.usgs.gov/bul/1735b/report.pdf>, note that what was known as the West Potrillo Mountains-Mount Riley WSA roughly coincides with what is now the Potrillo Mountains area of OMDPNM.

<sup>9</sup>BLM measures an AUM as the amount of forage needed to sustain one cow and her calf, one domestic horse, or 5 sheep or goats for one month <https://www.blm.gov/programs/natural-resources/rangelands-and-grazing/livestock-grazing/fees-and-distribution>.

<sup>10</sup>BLM data.

As of the FY2014 Manager's Report, only about 6,300 acres (about 1.3% of the Monument) had been inventoried for archaeological resources.

Artifacts common to the area include rock art, ceramics, and basket fragments. Remnants of ancient dwellings include those at La Cueva and a ten room pueblo in the Robledo Mountains. The La Cueva rock shelter was occupied from almost 5,000 BC through the historic period that followed the arrival of the Europeans. Approximately 100,000 artifacts have been recovered from this rock shelter. The Monument also contains sites relevant to modern history such as Spanish colonization, the Civil War and the Euro-American exploration of the West. The ruins of the Dripping Springs complex, a mountain resort constructed in the last 1800s that was later converted to a sanitarium, lay scattered in a canyon in the Organ Mountains, while Outlaw Rock contains the inscription of Billy the Kid. More recent historical sites include bombing targets that were used to train WWII pilots.

Paleontological resources are also available at OMDPNM, predominantly Permian Age fossil material. The primary resources include the fossilized tracks of the ancient animals whose fossil remnants can be found in the adjacent Prehistoric Trackways National Monument. Sites within OMDPNM also include fossil remnants of ancient giant ground sloths, birds, and voles.

- **Scientific Investigation:** OMDPNM contains unique geologic resources as the area has a violent geologic history of seismicity and volcanism. Kilbourne Hole is a low-relief volcanic crater over a mile wide and over 300 feet deep that was designated as a National Natural Landmark in 1975 and was used for training the Apollo astronauts due to its lunar landscape. The Monument's volcanic fields contain other smaller volcanic craters, as well as cinder cones up to 1 million years old, lava tubes, steep-walled depressions, and pressure ridges. These various volcanic features have served as research sites for geology and volcanology. Other mountain ranges in the Monument have served as sites for research on desert soils, sedimentary rock, sedimentation, and stratigraphy.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

Areas within the Monument, including parts of the Organ Mountains, Robledo Mountains, and Doña Ana Mountains, were designated as Areas of Critical Environmental Concern (ACECs) in the 1993 Mimbres Field Office Resource Management Plan for cultural or paleontological reasons. All ACECs were closed to fluid mineral leasing and mineral material disposal and the Organ Mountains ACEC was also withdrawn from locatable mineral entry. In addition, the Podrillo Mountains and parts of the Organ, Doña Ana and Sierra de las Uvas Mountains were designated as Wilderness Study Areas (WSAs), and thus closed to mineral leasing. Thus the majority of the Monument's lands have been closed to mineral entry and/or leasing prior to Monument designation in accordance with multiple-use land management. The Proclamation does not affect existing laws, regulations, and policies followed by the BLM associated with grazing activities. In addition, BLM believes that the increase in visitation in FY 2016 to the



developed sites within the Organ Mountains portion of the Monument is a result of the media attention the area received in 2015 for Monument designation.<sup>11</sup>

(b) (5)

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comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. For example, mineral and archeological surveys could be updated and completed for the entire Monument.

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<sup>11</sup>BLM data.

Table 1. State and County Economic Snapshot

	<b>Doña Ana County</b>	<b>New Mexico</b>
Population, 2015 <sup>a</sup>	213,963	2,084,117
Unemployment rate, May 2017 <sup>b</sup>	7.0%	6.6%
Median Household Income, 2015 <sup>a</sup>	\$38,853	\$44,963

<sup>a</sup>U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup><https://www.dws.state.nm.us/Portals/0/DM/LMI/TA2017.pdf>

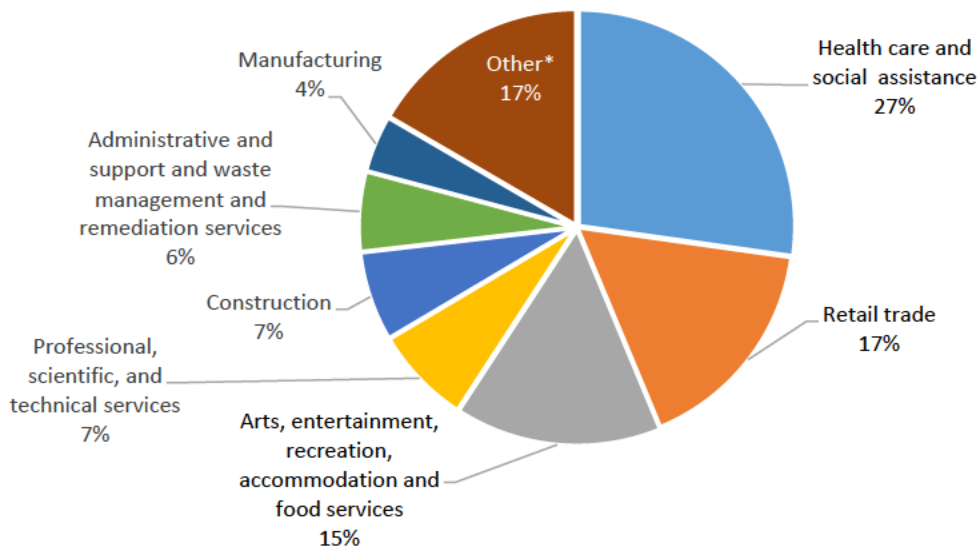
Table 2. OMDPNM Estimated Economic Contributions, 2016

<b>Activities</b>	<b>Economic output (\$ millions)</b>	<b>Value added (net addition to GDP, \$ millions)</b>	<b>Employment supported (number of jobs)</b>
Recreation <sup>a</sup>	\$23.6	\$13.0	306
Grazing <sup>b</sup>	\$11.7	Not available	250
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>b</sup>BLM data.

Figure 1. Percent of employment by sector in Doña Ana County, 2015



\*Other includes agriculture/forestry; mining, quarrying and oil extraction; utilities; wholesale trade; finance and insurance; real estate; information; educational services; and transportation and warehousing. Each of these represents less than 4% of total employment. While this data source covers most NAICS industries, it excludes crop and animal production; rail transportation; National Postal Service; pension, health, welfare, and vacation funds; trusts, estates, and agency accounts; private households; and public administration. Most establishments reporting government employees are also excluded. Source: 2015 County Business Patterns, U.S. Census Bureau.

Figure 2. Recreation Visits to BLM Organ Monuntains , 2009-2016

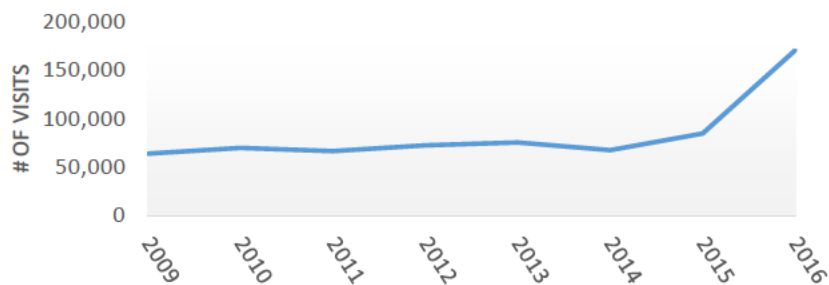
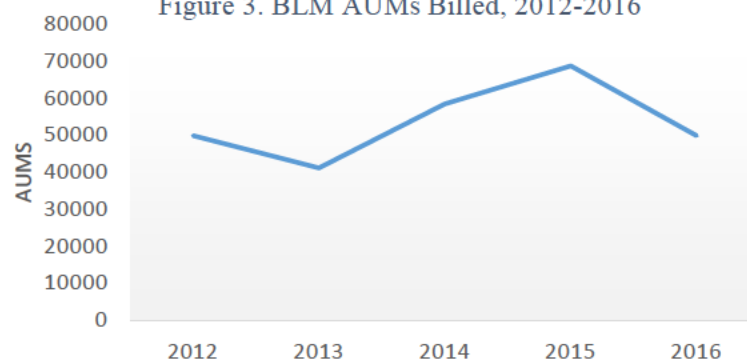


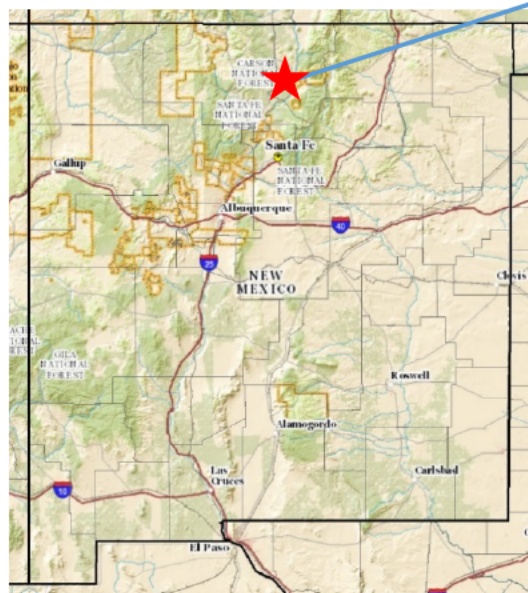
Figure 3. BLM AUMs Billed, 2012-2016





# Río Grande del Norte National Monument

Economic Values and Economic Contributions



Río Grande del Norte  
National Monument

## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Río Grande del Norte National Monument (RGDNM or the Monument) as well as to provide a brief economic profile of Taos County, New Mexico (NM).<sup>1</sup>

## Background

Río Grande del Norte National Monument was established by President Obama on March 25, 2013 (Proclamation 8946) and is managed by the Bureau of Land Management (BLM). The Monument encompasses 242,455 acres in Taos County, NM, and was established for the purposes of protecting lands that contain cultural and historic resources, ecological diversity, wildlife, and geology. The Río Grande Wild and Scenic River (designated in 1968, extended in 1994), a key component which covers 15,000 acres in the Monument, including 68 miles south of the Colorado border, is managed to protect Outstandingly Remarkable Values of cultural, fish and wildlife habitat, riparian and scenic values, geologic features, and recreation.<sup>2</sup> The BLM manages the Monument for multiple use (hunting, fishing, recreation, grazing, woodcutting, and collection of herbs, pine nuts, and other traditional uses), while protecting the historic and scientific resources identified in the Proclamation, and providing opportunities for scientific study of those resources. Taos and Río Arriba County have claims under RS 2477, but none are contested or challenged.<sup>3</sup> The BLM Taos Field Office is in the process of preparing a Monument Management Plan. Until this Plan is complete, the Taos Resource Management Plan (RMP-May 2012) remains the current land use plan for the Monument.<sup>4</sup>

### *Río Grande del Norte National Monument*

**Location:** Taos County, NM

**Managing agency:** BLM

**Adjacent communities, Tribal, and Federal land:** Taos, Questa, NM; Taos Pueblo; Carson National Forest

**Resource Areas:**

☒ Recreation ☐ Energy ☐ Minerals

☒ Grazing ☐ Timber ☒ Scientific

Discovery ☒ Tribal Cultural

Several legislative proposals have been introduced into the House and/or Senate to establish a National Conservation Area in areas covered by the current Monument designation. S.432, the Cerros del Norte Conservation Act, introduced in the Senate 02/16/2017, designates the Cerro del Yuta Wilderness (13,420 acres) and Río San Antonio Wilderness (8,120 acres) within the Río Grande del Norte National Monument in New Mexico as wilderness and as components of the National Wilderness Preservation System. The San Antonio Wilderness Study Area (7,050 acres) was established by Congress; other areas managed for wilderness characteristics include the unit adjacent to the San Antonio WSA (9,859 acres) and the unit within Ute Mountain (13,190 acres).

## Public Outreach Prior to Designation

Congressional delegations and community groups held multiple public meetings from 2007 to 2013 regarding the proposed National Monument prior to designation. The BLM participated in these meetings

<sup>1</sup>The BLM provided data used in this paper.

<sup>2</sup>National Wild and Scenic Rivers System. <https://www.rivers.gov/rivers/rio-grande-nm.php>

<sup>3</sup>Revised Statute 2477 is an 1866 law allowing construction of public access roads across public lands, repealed in 1976 under the Federal Land Policy and Management Act (FLPMA). RS 2477 claims are court cases about continuing use of these roads.

<sup>4</sup>The Taos RMP is available here:

[https://eplanning.blm.gov/epl-front-office/projects/lup/68121/86167/103325/Approved\\_Taos\\_RMP\\_-\\_5.16.12\\_\(print\\_version\).pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/68121/86167/103325/Approved_Taos_RMP_-_5.16.12_(print_version).pdf). The Monument Management Plan is anticipated to be completed in summer 2018.



as subject matter experts, and did not keep records of dates, attendees or content of these meetings. A coalition of sportsmen, ranchers, land grant members, water right holders, outfitters and guides, local business groups, local government bodies and others was formed in 2007. The coalition held public meetings, shared information, and created a website that describes this effort.<sup>5</sup>

During formal scoping from January 2014 to March 2014, the BLM received approximately 1,200 public comments (126 unique comments), as published in the 2014 scoping report.<sup>6</sup>

### *Local Economy and Economic Impacts*

Table 1 presents socioeconomic information for Taos County. The population of Taos County increased about 43% from 1990 to 2015. For comparison, during the same period the population of New Mexico grew about 38%, and the U.S. population grew about 29%. About 8% of the County population is Native American, lower than the New Mexico State average. Over the last eight years, the unemployment rate in Taos County rose to about 10.7% in 2010 and has since declined to about 8.6% which is above the state average of 6.2%. Median household income is about 88% of the state average.

Figure 1 shows percentage employment by sector in Taos County for 2015.<sup>7</sup> The largest sectors are accommodations and food service (22%), retail trade (18%), and health care (16%).

### *Activities and Resources Associated with Río Grande del Norte National Monument*

Since designation, few changes have occurred to livestock grazing AUMs, rights-of-way restrictions, and forestry and wildlife activities.<sup>8</sup> Information on the economic contributions associated with the activities occurring at RGDNNM, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with RGDNNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** Hunting, fishing, hiking, and general recreation all occur on the Monument. Annual visitation is shown in Figure 2. Average visitation has been about 162,000 over 2008-2016.<sup>9</sup> While trends in the data are difficult to discern, with the exception of 2014, visitation in recent years has generally been higher than pre-designation years. BLM indicates that there has been an increase of use at developed recreation sites. Recreation staff managing these developed sites in

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<sup>5</sup>This website can be accessed at: [www.riograndedelnorte.org/monument-review](http://www.riograndedelnorte.org/monument-review)

<sup>6</sup>[https://eplanning.blm.gov/epl-front-office/projects/lup/72807/97058/117224/RGdN\\_Scoping\\_Report\\_5.22.14\\_\(1\).pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/72807/97058/117224/RGdN_Scoping_Report_5.22.14_(1).pdf)

<sup>7</sup>U.S. Census Bureau County Business Patterns, 2015.

<sup>8</sup>The 2012 Taos RMP established the Taos Plateau Area of Critical Environmental Concern (ACEC) which limited commercial or surface disturbing activities that had been occurring.

<sup>9</sup>The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.



the lower part of the Monument have reported that use increased at an average annual yearly rate of 20% since designation. Camp and day-use sites that were filled only a few times each year are now being used at capacity every weekend from May through mid-September. The Taos Plateau area west of the Río Grande has also had a noticeable increase in visitation. There is anecdotal information suggesting that the town of Taos has experienced an increase in economic activity associated with increased visitation to the Monument.

Fishing is an everyday occurrence along the Río Grande in the Monument, and accounts for about 13% of total visitor use each year. The New Mexico Department of Game and Fish conducts a creel survey every five years. Information from the survey indicates that the Monument receives about 80,000 fishing visits per year.<sup>10</sup> Hunting licenses are issued by the New Mexico Game and Fish Department for elk, mule deer, antelope, and bighorn. In 2016-2017, a total of 3,569 permits were issued for the three game management units covering the National Monument.<sup>11</sup>

Recreation activities provide the opportunity for economic activity to be generated from tourism for an indefinite period of time. The economic contributions occur annually, and in cases where visitation increases over time, recreation generates additional activity each year. These contributions affect the regional and state economies. Recreation activities based on visitation to the Monument are estimated to contribute about \$7.4 million in value added (net economic contributions) and support 169 jobs.<sup>12</sup>

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$54.19 per person per day, the estimated economic value (net benefits) generated in 2016 was \$10.6 million.<sup>13</sup>

- **Energy:** There is no oil, gas, coal or renewable energy production within the Monument. The volcanic history of the area eliminated the potential for hydrocarbons, so there is no oil and gas potential within the Monument. There is no renewable energy production within the Monument (the 2012 Taos Resource Management Plan excludes wind and solar energy development). There are four transmission line rights-of way for electricity (managed by BLM) and 12 distribution lines to end-users. There are no gas pipelines and no applications pending for new or upgraded lines.

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<sup>10</sup>New Mexico Game and Fish Department unpublished data collection. The recreation visits from 2016 are collected through vehicle counters at certain developed recreation sites, and access points, so probably encompassed a portion of the fishing visits.

<sup>11</sup>The New Mexico Game and Fish Department has continued to keep 10,903 acres, within the Monument's 242,455 acres, closed to hunting, in coordination with the BLM, in a developed recreation area with high density use.

<sup>12</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>13</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

- **Non-Energy Minerals:** Mineral sales are not allowed within the Monument under the current management plan, other than those associated with valid existing rights. However, there were no mining claims or operations at the time of designation so there are no valid existing rights for mining claims or mining operations in the RGDNNM.<sup>14</sup> There are no mineral developments or process facilities adjacent to or impacted by the Monument designation. There are large scale perlite mining operations on private lands adjacent to or near the Monument boundary. These are considered world-class perlite deposits in the No Agua Mining District. These operations include some on-site processing facilities, are on private/patented land, and are subject to the State of New Mexico, Mining and Mineral Division regulations. These existing perlite operations are minimally affected by the Monument, if at all. Taos Gravel is an existing large-scale sand and gravel operation on BLM land adjacent to the Monument boundary. Their operations might be minimally affected by the Monument if noise and visual resource management (VRM) issues apply to their existing operation.
- **Timber:** The Río Grande del Norte National Monument is not available for large scale timber harvesting or for commercial fuelwood harvest. All removal of fuelwood is for personal harvest; from 2008-2016 sales varied between about 200 and 800 CCF of green fuelwood. Since 2013 several hazardous fuels reduction and forest health treatments were completed by BLM, in partnership with other agencies (federal, state, and non-profit). In 2016 BLM began to permit the removal of dead and down fuelwood. It is anticipated in the future new areas will be available for green fuelwood cutting and removal.
- **Grazing:** There are 71 grazing allotments within the Monument: 62 are active grazing allotments and 9 were closed to grazing before the designation. Within the Monument there are currently 13,759 permitted Animal Unit Months (AUMs).<sup>15</sup> Figure 3 shows the number of AUMs used annually since 2008. Actual use fluctuates due to a combination of grazing permittee's herd sizes, weather conditions, and range conditions. The amount of permitted grazing use has not changed since the designation of the Monument. In FY 2016, grazing supported an estimated 42 jobs and about \$2 million in economic output.
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these resources are valued by society, but those values are not bought or sold in the marketplace and therefore, difficult to quantify. Below is a brief overview of the natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:

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<sup>14</sup>The 2012 Taos Resource Management Plan designated the Taos Plateau Area of Critical Environmental Concern (ACEC) that covers most of the Río Grande del Norte National Monument. The ACEC and the Río Grande Wild and Scenic River were closed to salable mineral disposal and all leasable mineral entry. Locatable mineral entry was allowed in most of the area, with the exception of the San Antonio WSA (7,050 acres), the Ute Mountain area (13,190 acres), and the Wild Rivers zone of the Río Grande Gorge Recreation Area (about 10,000 acres).

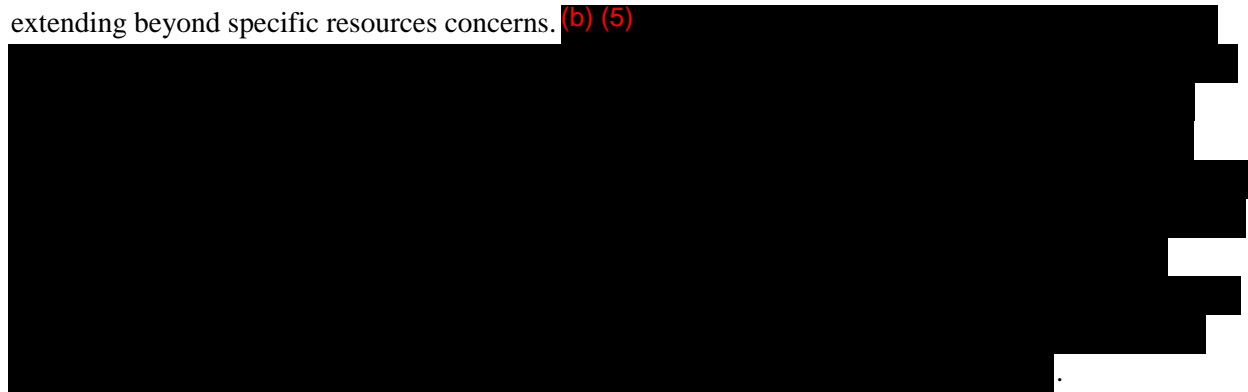
<sup>15</sup>BLM measures an AUM as the amount of forage needed to sustain one cow and her calf, one domestic horse, or 5 sheep or goats for one month <https://www.blm.gov/programs/natural-resources/rangelands-and-grazing/livestock-grazing/fees-and-distribution>.

- **Tribal Cultural Resources:** Activities currently undertaken by tribal members include hunting, fishing, gathering, wood cutting, and the collection of medicinal and ceremonial plants, edible herbs, and materials for crafting items like baskets and footwear, as well as transmitting knowledge and culture related to these resources and activities.
- **Cultural (Historic and Archaeological) and Paleontological Resources:** The Monument includes some of the largest (200-to-2000 rooms) prehistoric and early historic period pueblo ruins in the Southwest. These individual sites and the attendant landscapes are important to the Tiwa and Tewa Pueblo people of the upper Río Grande region and contain important religious and sacred sites. Also within the Monument boundaries is Mesa Prieta, a 6,500-acre tract of private land currently under consideration for acquisition by the BLM. Mesa Prieta contains over 80,000 petroglyph sites and other archaeological remains associated with prehistoric Tewa and Spanish Colonial cultures. It is unique to the region and exceeds the numbers of petroglyphs recorded to date within the Petroglyph National Monument near Albuquerque. The Ojo Caliente Area of Critical Environmental Concern (ACEC) boundaries were expanded in the 2012 Taos Resource Management Plan (RMP) to include Mesa Prieta as a potential acquisition and addition to this management unit. Cultural landscapes extend beyond the confines of the current management boundary. Potential acquisition of adjacent lands from willing owners through purchase, exchange, or donation, or expansion of the Monument boundaries to include adjacent BLM lands containing critical cultural resources and cultural landscape elements, would further provide management of the cultural resources within the contexts of its landscape.
- **Scientific Investigation:** The Ojo Caliente ACEC (66,150 acres) contains relevant and important cultural resources, as well as scenic quality, sensitive ecological processes, riparian areas, and special status species and other critical wildlife habitat values.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

The RGDNNM Proclamation contains specific provisions for the protection of heritage objects and values extending beyond specific resources concerns. (b) (5)



(b) (5)



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comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. Mineral and archeological surveys could be updated and completed for the entire Monument. Based on what is currently known, though, it is clear significant cultural resource values are present; there are no known oil, gas, or coal resources; and recreation use has been increasing.

Table 1. State and County Economic Snapshot

	<b>Taos County</b>	<b>New Mexico</b>
Population, 2015 <sup>a</sup>	32,943	2,084,117
Native American population as a % of the total <sup>a</sup>	7.6%	10.3%
Employment, December 2015 <sup>c</sup>	8,741	626,284
Unemployment rate, March 2017 <sup>b</sup>	8.6%	6.2%
Median Household Income, 2015 <sup>a</sup>	\$36,582	\$44,963

<sup>a</sup>U.S. Census Bureau, 2011-2015 American Community Survey.

<sup>b</sup><https://www.dws.state.nm.us/Portals/0/DM/LMI/TA2017.pdf>

<sup>c</sup>U.S. Census Bureau, 2015 County Business Patterns

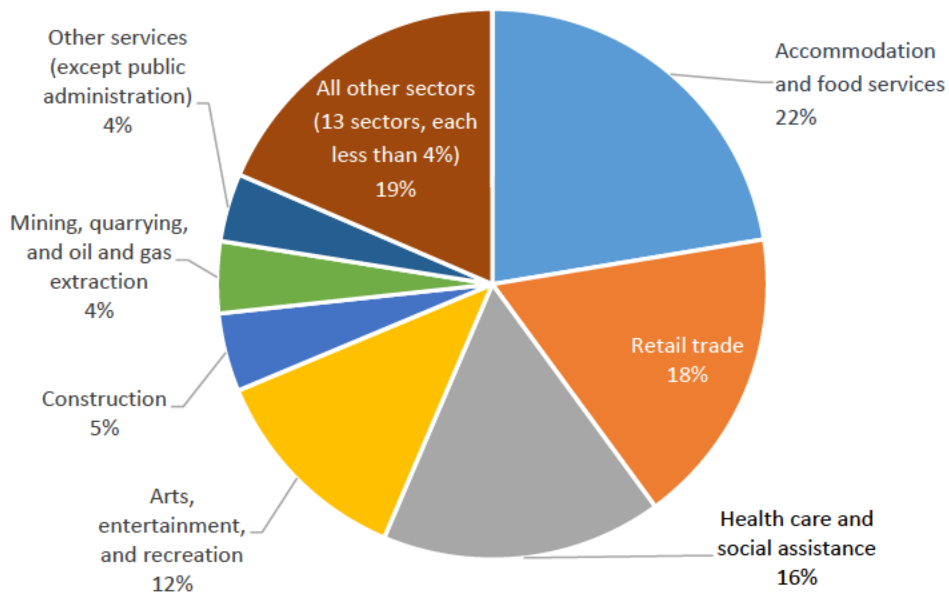
Table 2. RGDNNM Estimated Economic Contributions, 2016

<b>Activities</b>	<b>Economic output (\$ millions)</b>	<b>Value added (net additions to GDP, \$ millions)</b>	<b>Employment supported (number of jobs)</b>
Recreation <sup>a</sup>	\$13.4	\$7.4	169
Grazing <sup>b</sup>	\$1.9	Not available	42
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>b</sup>BLM data.

Figure 1. Percent of employment by sector in Taos County, 2015



\*Other includes Professional, scientific, and technical services; Real estate and rental and leasing; Administrative and support and waste management and remediation services; Finance and insurance; Utilities; Information; Manufacturing; Educational services; Transportation and warehousing; Wholesale trade; Agriculture, forestry, fishing and hunting; Management of companies and enterprises; Industries not classified. Each of these represents less than 4% of total employment. While this data source covers most NAICS industries, it excludes crop and animal production; rail transportation; National Postal Service; pension, health, welfare, and vacation funds; trusts, estates, and agency accounts; private households; and public administration. Most establishments reporting government employees are also excluded. Source: 2015 County Business Patterns, U.S. Census Bureau.

Figure 2. Recreation Visits, 2008-2016

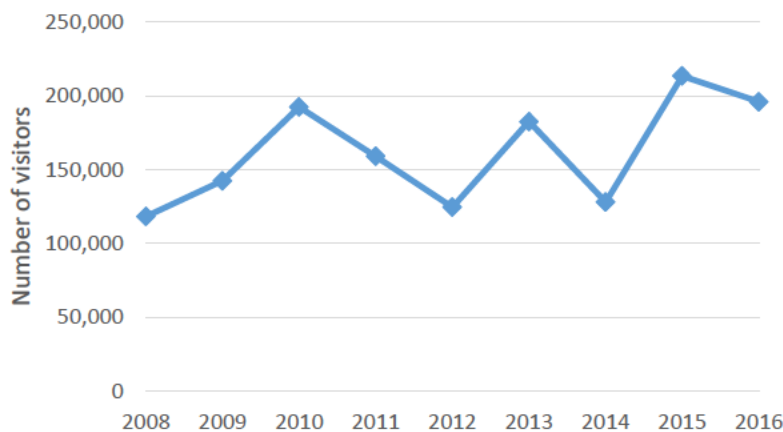
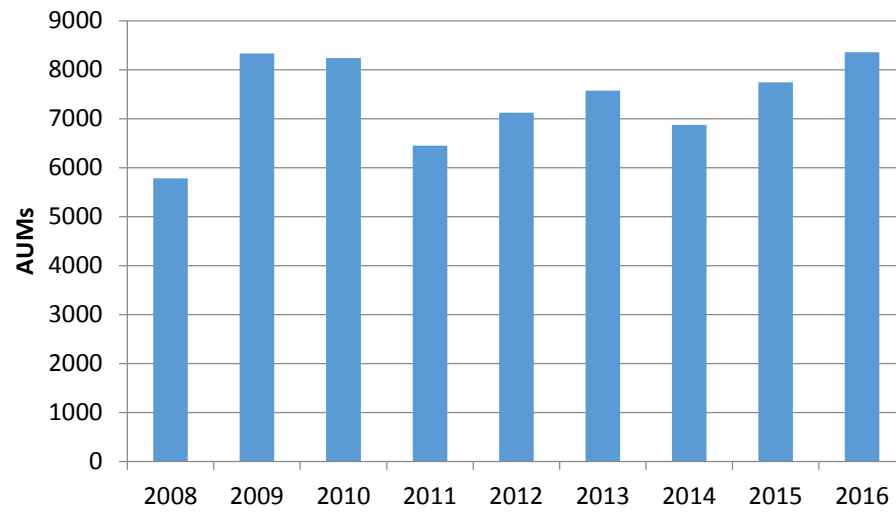




Figure 3. AUMs Sold, 2008-2016



Source: BLM data.



# Sand to Snow National Monument

## Economic Values and Economic Contributions



## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Sand to Snow National Monument (STSNM or the Monument) as well as to provide a brief economic profile of San Bernardino and Riverside Counties, California (CA).<sup>1</sup>

## Background

STSNM was established in 2016 and encompasses 83,000 acres of Bureau of Land Management (BLM) and 71,000 USDA Forest Service (FS) lands, to be managed jointly by both agencies. The San Gorgonio Wilderness makes up almost two-thirds of STSNM. Public lands in the Monument are withdrawn from mineral exploration under the General Mining Act of 1872, however valid existing rights are protected under the Monument Proclamation. The western half of the Sand to Snow National Monument shares its southeastern boundary with the northern boundary of the Reservation of the Morongo Band of Mission Indians. The Federal agencies managing the Monument work in concert with the Morongo Band of Mission Indians to conserve and protect cultural/heritage resources and provide resource management technical advice.

Neither the BLM nor the USDA FS has initiated public scoping for STSNM Management Plan. However, a series of public workshops were hosted by the San Bernardino National Forest and the BLM California Desert District in July of 2016. The workshops focused on gathering information about what workshop participants value most about STSNM and to identify the types of experiences participants want when visiting. The information gathered at the workshops will inform the development of the Monument Management Plan.

For the BLM portion of STSNM, the 1980 California Desert Conservation Area Plan (CDCA) and its various amendments will be followed in the interim.<sup>2</sup> For the portion of the Monument that lies within the San Bernardino National Forest, the 2006 San Bernardino National Forest Land Management Plan will be followed in the interim.<sup>3</sup>

### *Sand to Snow National Monument*

**Location:** Southern California  
**Managing agencies:** BLM, USDA FS  
**Adjacent communities, Tribal, and Federal land:** Palm Springs; Palm Desert; Cathedral City; Desert Hot Springs; La Quinta; Riverside; Los Angeles; San Manuel Band of Mission Indians; Twenty-Nine Palms Band of Mission Indians; Soboba; Cahuilla; Morongo; Los Coyotes; La Jolla; Santa Ysabel; Pauma and Yuma; Pechanga; and Pala

**Resource Areas:**

☒ Recreation ☐ Energy ☒ Minerals  
☐ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

<sup>1</sup> The BLM and USDA FS provided data related to public land resources used in this paper.

<sup>2</sup> California Desert Conservation Plan: [https://eplanning.blm.gov/epl-front-office/projects/lup/66949/82080/96344/CDCA\\_Plan.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/66949/82080/96344/CDCA_Plan.pdf); Proposed California Desert Conservation Area Plan Amendment for the Coachella Valley and Final Environmental Impact Statement (for BLM National Monument Lands in the Whitewater, Desert Hot Springs, and Seven Palms Valley 24K quads, and parts of the Catclaw Flat, Morongo Valley, and Yucca Valley South 24K quads): <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=96939>; 2005 West Mojave Plan Amendment to the California Desert Conservation Plan: <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=72544&dctmId=0b0003e880e36812>; 2016 Desert Renewable Energy Conservation Final Plan and Proposed EIS: <http://www.drecp.org/finaldrecp/>.

<sup>3</sup> Online at <https://go.usa.gov/xNpBU>

### *Public Outreach Prior to Designation*

STSNM first appeared as a legislative proposal in 2009. After subsequent versions of the legislation sponsored by both parties failed to pass, Senator Feinstein (D-CA) sent a letter to the President in August 2015 requesting designation of STSNM and two other national monuments under the Antiquities Act. Senator Feinstein and other members of the California Congressional delegation hosted a listening session in October 2015, which was attended by Department of Interior and Agriculture officials. Tribal representatives from the Agua Caliente Band of Cahuilla Indians, the Cahuilla Band of Mission Indians, the Colorado River Indian Tribes, the Fort Mojave Indian Tribe, the Morongo Band of Mission Indians, the San Manuel Band of Mission Indians, the Death Valley Timbisha-Shoshone Tribe, and the Twenty-Nine Palms Band of Mission Indians attended the meeting to discuss tribal concerns and opportunities of the proposed Monument designation. Members of the San Bernardino County Board of Supervisors also attended. The tribes expressed support for the proposed designation.

### *Local Economy and Economic Impacts*

Table 1 presents socioeconomic information on San Bernardino County and the state of California. The County contains approximately 5% of the State's population. About 2% of the population is Native American. The population of the county has increased about 50% since 1990. The median household income in the county is about 86% of the state average. The unemployment rate in the county increased from about 5.6% in 2007 to 13.5% in 2010, and has since declined to about 4.5%.<sup>4</sup>

The largest sectors, as measured by employment, in San Bernardino County are health care and social assistance, manufacturing, and transportation and warehousing (see Figure 1).<sup>5</sup>

### *Activities and Resources Associated With Sand to Snow National Monument*

Information on the economic contributions associated with the activities occurring at Sand to Snow National Monument, as well as resources within the Monument, is provided below. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** A wide variety of outdoor recreation activities are available to STSNM visitors including: horseback riding, backpacking, rockhounding/mineral collecting, viewing historic sites/areas, target shooting, photography, environmental/outdoor classroom education, wildflower viewing, hiking/biking/running/walking, off-highway vehicle use on designated routes, nature study, picnicking, hunting, Pacific Crest National Scenic Trail use, and wildlife viewing. The Monument is open to hunting, which is regulated by the California Department of Fish and Wildlife. Some activities that are inconsistent with the Wilderness Act, such as bicycling and off-highway vehicle use, are not allowed within San Geronio Wilderness. No recreation visitation data is available for the portion of the Monument administered by the USDA FS. BLM data<sup>6</sup>

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<sup>4</sup> USDA Economic Research Service County Typology Codes, <https://www.ers.usda.gov/data-products/county-typology-codes/>

<sup>5</sup> U.S. Census Bureau County Business Patterns, 2015.

<sup>6</sup> The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data.



indicate that STSNM visitation was increasing during the years prior to designation. Visitation information for two BLM visitor contact areas (Big Morongo Canyon and Whitewater Preserve) includes:

- Big Morongo had an estimated 66,675 visitors in 2016
- Whitewater Preserve had an estimated 139 hunting visits in 2016, compared to 152 in 2015, and 36 in 2014.<sup>7</sup>

The Forest Service National Visitor Use Monitoring (NVUM) program measures visitor use at the level of the national forest once every 5 years. The Monument is included within the San Bernardino National Forest. Visitation data for the San Bernardino National Forest was last obtained in fiscal year 2014. Data from the National Visitor Use Monitoring program was used to estimate visitation to the portion of the San Bernardino National Forest that lies within the area which was subsequently included in the Monument designation. Based on the 2014 data, the Forest Service estimated 45,000 visits to this portion of the forest that was subsequently included within the Monument. Beginning in 2019, the Forest Service will begin separately monitoring visitation to its portion of the Monument.

Recreation activities from tourism tend to generate economic activity for an indefinite period of time, and when visitation increases over time (as at STSNM), economic contributions likewise increase. These contributions affect the regional and state economies. Visitor expenditures to Big Morongo Canyon and Whitewater Preserve supported an estimated 44 jobs and \$2.8 million in value added in local gateway economies surrounding the Monument.

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$44.95 per person per day, the estimated economic value (net benefits) generated in 2016 was \$3.0 million to \$5.0 million.<sup>8</sup>

- **Energy:** In general, the scope, magnitude, and timing of energy and minerals activities are closely related to supply and demand conditions in world markets and the market prices of mineral commodities. Local or regional cost considerations related to infrastructure, transportation, etc. also may play a role in defining the supply conditions.
  - **Oil, natural gas, coal, and renewables:** There is no coal, oil and gas or renewable energy produced in STSNM. No authorized federal oil and gas leases are located within the boundary of STSNM. No authorized or pending Applications for Permit to Drill are associated with these leases. No renewable energy rights-of-way are present within the

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Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>7</sup> Visitation information is not available for the USDA FS lands.

<sup>8</sup> The consumer surplus unit value is a survey-based value for general recreation in the Pacific Coast region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates, which range from 66,814 visits to portions of BLM-managed land to 135,260 visits when including 45,000 visits to USDA FS-managed land, to derive an estimate of economic value. The higher estimate should be considered an upper bound as there may be some double-counting between visits to BLM-managed land and to USDA FS-managed land. Economic value is the net benefit to recreational users (total benefits minus total costs).

- boundary of STSNM. Lands within STSNM were closed to renewable energy rights-of-way through the Desert Renewable Energy Conservation Plan process.
- **Energy distribution/transmission:** Three small distribution lines are present within the boundaries of STSNM. No major transmission lines are within the boundaries. The Proclamation allows for upgrades and expansions of transmission and telecommunication infrastructure (as well as new infrastructure) within the Monument. To date, no new requests for energy transmission or energy generation projects have been proposed.
  - **Non-Energy Minerals:** One active locatable mining operation, California Blue Mine, Gemstone, is in STSNM. No production information is available. Prior to 2006, no mineral material production had occurred. Between 2006 and 2011 the California Blue mine produced aquamarine, gem beryl, topaz, microcline, and smoky quartz. In November 2011, excavations were closed and backfilled per BLM requirements, with potential future evaluation for underground development.<sup>9</sup> As of May 24, 2017, three mines are active within STSNM. Nine mining claims associated with these three mines located within or adjacent to the Monument were filed prior to designation of the Monument. Each of these is a 20-acre placer claim. No production data is available for these mining claims. There are no mineral developments or processing facilities adjacent to or impacted by STSNM designation.
  - **Timber:** There is no timber production in the Monument. Merchantable timber is found within the San Gorgonio Wilderness, however timber harvesting or tree removal is not allowed in wilderness areas under the Wilderness Act of 1964. Most of the BLM portion of STSNM lies in lower elevations that support woody vegetation, such as California juniper (*Juniperus californica*), that BLM considers could support artisanal woodcutting or firewood. Collection of forest products, as well as firewood for personal noncommercial use is allowed under the Proclamation outside of wilderness areas, however no information is available on quantities collected or available.
  - **Grazing:** No BLM-permitted livestock grazing allotments currently exist within the Monument, although grazing is not necessarily precluded by the Proclamation.
  - **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these resources are valued by society, but those values are not bought or sold in the marketplace and therefore, difficult to quantify. Below is a brief overview of the natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
    - **Tribal Cultural Resources:** Tribes use the lands within STSNM for ceremonies and visitation of sacred sites. Traditions of gathering medicinal and ceremonial plants, edible plants, herbs, and materials for crafting items such as footwear, are still practiced by tribal members. Prior to the designation of STSNM, BLM had, and still has, a gathering policy with tribes that ensures traditional practitioners maintain access to plants. Gathering permits are

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<sup>9</sup> Hunerlach, M.P. (2012): "California Blue Mine Yucca Valley, San Bernardino County, California A New Gem Pegmatite." *Rocks & Minerals* 87:6, 502-509. Online at <http://dx.doi.org/10.1080/00357529.2012.728923>




- not required for Native Americans. BLM policy, then as now, also emphasizes local collaboration, implementation, and issue resolution.
- **Cultural (Historic and Archaeological) and Paleontological Resources:** Dozens of recorded archaeological sites lie within STSNM. The majority of these sites are prehistoric (predating the 1800s). These prehistoric sites include pottery, stone tool (lithic) scatters, remains of cooking features (hearths), rock shelters, prehistoric roads, and an estimated 1,700 petroglyphs and pictographs. In addition, the known historic resources include cattle ranching/grazing related items such as structures, foundations, infrastructure such as corrals, wells, check-dams, and fencing. Bonnie Bell, a known 1850s stagecoach stop, was located in Whitewater Canyon. Other historic resources include those related to mining, such as old cabins, mine shafts, prospecting pits, and refuse deposits. The BLM has not completely surveyed the Monument for cultural resources. To date 7.2% of STSNM has been surveyed for cultural resources.
  - **Scientific Investigation and other resources:** The Monument also includes geological features, oases, rare plants, dark night skies, and wildlife.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

The STSNM Proclamation contains specific provisions for the protection of heritage objects and values extending beyond specific resources concerns. This emphasis on protection rather than mitigation, is a critical distinction in the preservation of significant historic objects within STSNM. The STSNM Proclamation states that STSNM contains “exceptional objects of scientific and historic interest” and that the purpose of this designation, and the provisions it contains, is the “protection of these objects.” This protection is largely derived through the extra regulatory Proclamation provisions for limitations on uses which are known to impact heritage objects and values, and requirements that the BLM implement the purposes of the Proclamation to protect these resources.

Visitation numbers collected by the Palm Springs South Coast and Barstow Field Offices have increased slightly since the designation of STSNM. It is unclear whether the change represents is attributable to the Monument designation.<sup>10</sup> If the Monument had not been designated, visitor numbers may still have increased over time due to a growth in population centers near the Monument.

(b) (5)  A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. Mineral and archeological surveys could be updated and completed for the entire Monument.

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<sup>10</sup> Anecdotal information from the BLM Palm Springs South Coast Field Office suggests that requests for overnight camping at the Whitewater Preserve area have increased by 12 % since designation and visitation to the Black Lava Buttes unit of the Monument increased by 15% since designation.

Table 1. State and County Economic Snapshot

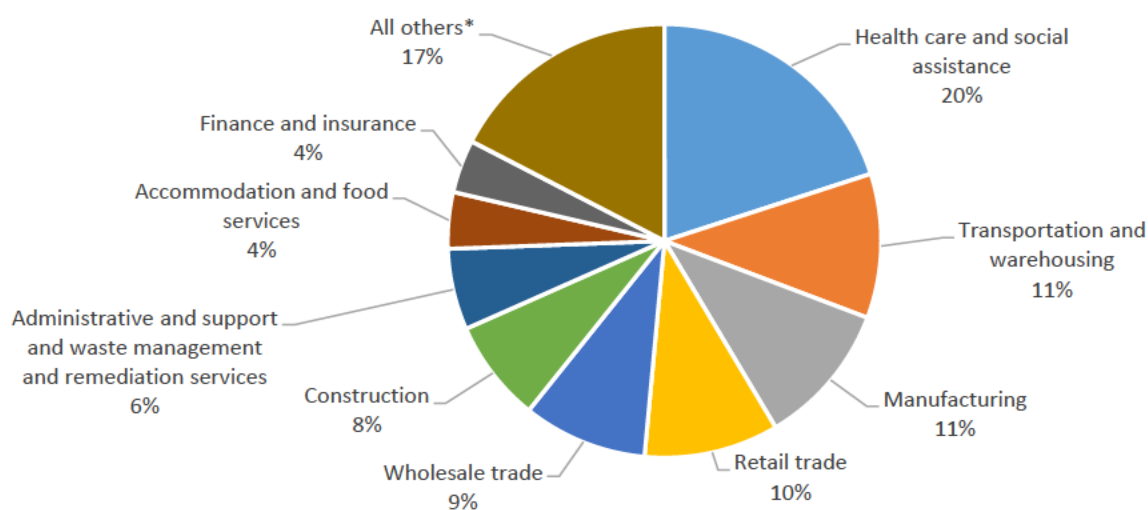
	San Bernardino County	California
Population, 2015 <sup>a</sup>	2,094,769	38,421,464
Employment, December 2016 <sup>b,c</sup>	878,350	17,982,086
Unemployment rate, April 2016 <sup>b,c</sup>	5.6	5.5
Median Household Income, 2015 <sup>a</sup>	53,433	61,818

<sup>a</sup> U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup> State data: <https://data.bls.gov/timeseries/LASST0600000000000003>

<sup>c</sup> County data: <https://www.bls.gov/web/metro/laucntycur14.txt>

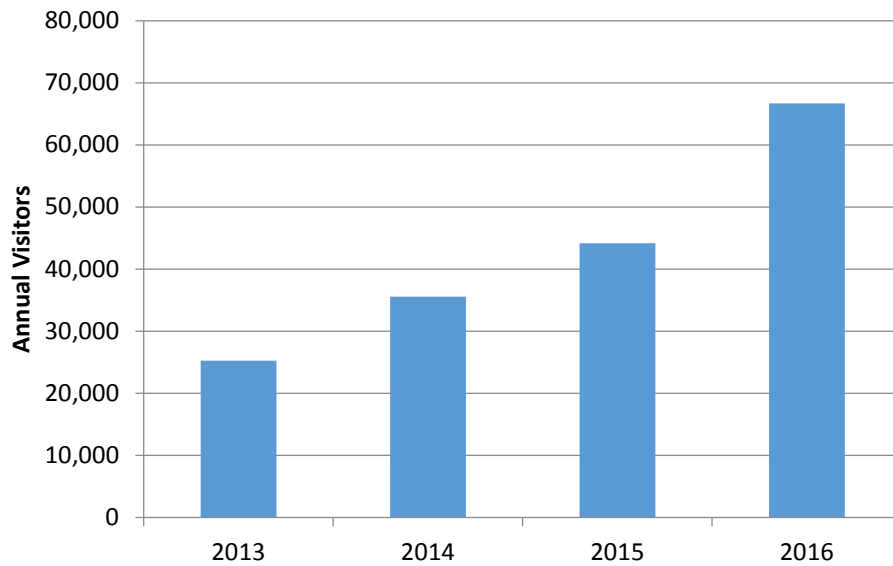
Figure 1. Employment by sector in San Bernardino County, 2015



\* The “All others” category includes agriculture/forestry; utilities; wholesale trade; real estate; professional, scientific and technical services; admin and support services; waste management; educational services; and arts and entertainment. Each of these represents less than 4% of total employment. While this data source covers most NAICS industries, it excludes crop and animal production; rail transportation; National Postal Service; pension, health, welfare, and vacation funds; trusts, estates, and agency accounts; private households; and public administration. Most establishments reporting government employees are also excluded.

Source: 2015 County Business Patterns, U.S. Census Bureau.

Figure 2. Annual Visitation at STSNM (does not include USDA FS areas)



Source: BLM



# Upper Missouri River Breaks National Monument

Economic Values and Economic Contributions



Upper Missouri  
River Breaks  
National Monument



## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Upper Missouri River Breaks National Monument (UMRBNM or the Monument), Montana (MT).<sup>1</sup>

## Background

The Upper Missouri River Breaks National Monument was established by President Clinton on January 17, 2001 (Proclamation 7398) and is managed by the Bureau of Land Management (BLM). The Monument spans 374,663 acres in Blaine, Fergus, Phillips and Chouteau Counties in north central Montana and was established for the purposes of protecting a number of biological, geological, and historical objects.

### *Upper Missouri River Breaks National Monument*

**Location:** Blaine, Fergus, Phillips and Chouteau counties, MT

**Managing agency:** BLM

**Adjacent communities, Tribal, and Federal land:** Fort Benton, Big Sandy, MT; Fort Belknap Reservation; Rocky Boy Reservation

**Resource Areas:**

☒ Recreation ☒ Energy ☐ Minerals  
☒ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

## Local Economy and Economic Impacts

Collectively, the population of the four counties on which the Monument is located (Blaine, Fergus, Phillips, and Chouteau) make up about 3% of the population of the State of Montana. Nearly half of the population of Blaine County, in which the majority of the Fort Belknap Reservation is located, and around 20% of Chouteau County, where part of the Rocky Boy Reservation is located, is Native American. These four counties have recently experienced relatively low unemployment rates (ranging from 2.9% to 3.5% in May 2017). The adjacent reservations have substantially higher unemployment rates (7.8% in Ft. Belknap and 9.7% in Rocky Boy in May 2017). Median household incomes for the four counties are somewhat lower than that of the State, ranging from \$36,071 to \$40,881 in 2015. The median household incomes of Native Americans in Blaine and Chouteau counties are substantially lower, ranging from \$20,078 to \$26,364.<sup>2</sup>

## Activities and Resources Associated With Upper Missouri River Breaks National Monument

Information on the economic contributions associated with the activities occurring at UMRBNM, as well as resources within the Monument, is provided below. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** A variety of recreational opportunities exist within the UMRBNM including hiking, camping, hunting, fishing, boating, horseback riding, mountain biking, and off-highway vehicle riding. Additionally, commercial recreation permits are issues for hunting, fishing, and scenic and interpretive activities. In fiscal year 2016, the visitation level of 46,300 visitors was associated with approximately \$1.3 million in value-added and supported approximately 32 jobs.<sup>3 4</sup>

<sup>1</sup>The BLM provided data used in this paper.

<sup>2</sup>All population and income data are 2015 estimates from the 2011-2015 American Community Survey 5-Year Estimates, U.S. Census Bureau

<sup>3</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$54.19 per person per day, the estimated economic value (net benefits) generated in 2016 was \$2.5 million.<sup>5</sup>

- **Energy:** The Monument includes about 396,000 acres of federal minerals. While the Monument designation closed the area to new oil and gas leases, those with valid existing rights are allowed to continue operation subject to lease stipulations. The total value or amount of energy or mineral production foregone as a result of the designation cannot be determined. For more information, see the Background and Overview materials.
  - **Coal:** There have been no commercial coal developments in the Monument area.
  - **Oil and gas:** Historically, the majority of oil and gas exploration activity in the Monument area has been for natural gas. Oil in commercial quantities is not present within the Monument.<sup>6</sup> The production of natural gas occurs on Monument land. Production levels of 27,314 mcf (thousand cubic feet) of natural gas in fiscal year 2016 are associated with about \$0.03 million in value-added and \$0.09 million in economic output, and support about one job.
- **Non-Energy Minerals:** No locatable mineral production occurs within in the Monument. USGS survey reports of the area found deposits containing copper, lead, zinc, zeolites, uranium, niobium, zirconium, thorium, titanium, sulfur, tantalum, beryllium, lanthium, cerlum, and vermiculite, but estimates these occurrences to be unrecoverable and marginal in value. There are no existing leases or mining claims for solid leasables and no active pit or quarry sites located on the Monument.<sup>7</sup>
- **Timber:** There has been no commercial timber production pre- or post- designation within UMRBNM.

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<sup>4</sup>The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting. Estimates of visitation for UMRBNM represent the estimated visitor use for the Upper Missouri River Breaks Interpretive Center in combination with use along 149 miles of the Missouri River corridor. Use in the uplands is unknown due to the remoteness of the area and numerous access points.

<sup>5</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

<sup>6</sup>BLM data.

<sup>7</sup>BLM data.



- **Grazing:** In fiscal year 2016, there were 45,829 permitted Animal Unit Months (AUMs) occurring within the Monument, and 39,950 billed AUMSs. This level of billed AUMs is associated with approximately \$10 million in economic output and supported approximately 105 jobs. Although grazing levels have varied considerably from year to year due to factors such as drought, no reductions in permitted livestock grazing use have been made as a result of the Monument designation.<sup>8</sup>
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these resources are valued by society, but those values are not bought or sold in the marketplace and therefore, difficult to quantify. Below is a brief overview of the natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources:** Seven tribes in and around Montana have interest in the UMRBNM; none are resident. Lewis & Clark noted the presence of tribes in the area; the 1855 Lane Bull Treaty at Council Island had representatives from Piegans, Bloods, Gros Ventres, Blackfeet, Nez Perce, Salish, and Cree. Before the time of Lewis and Clark, the area was inhabited by numerous native tribes, including the Blackfeet, Assiniboin, Gros Ventre (Atsina), Crow, Plains Cree, and Plains Ojibwa. The confluence of the Judith and Missouri Rivers was the setting for important peace councils in 1846 and 1855.
  - **Cultural (Historic and Archaeological) and Paleontological Resources:** Archaeological surveys carried out to date reveal concentrated use of the UMRBNM, primarily along the Upper Missouri Wild and Scenic River. Other areas of note include artifacts and sites associated with Native American hunting activity. Hundreds of recorded sites include rock art panels, occupation sites, campsites, hunting impoundments and drive lines. Cultural landscapes associated with the Lewis & Clark National Historic Trail and the Nez Perce National Historic Trail remain intact. Landscapes associated with steamboats and later exploration, as well as settlement associated with homesteading and other agricultural settlement still exist as well. As of April 25, 2017, there are 439 recorded cultural sites within the UMRBNM; at this time twenty-two percent of the Monument has been surveyed.
  - **Scientific Investigation:** The area remains as remote and nearly as undeveloped as it was during the time Lewis and Clark traversed it, and it continues to serve as essential habitat for a wide range of wildlife such as elk and big horn sheep herds, mule deer, antelope, sage grouse, prairie dogs, various raptors and water fowl, and forty-eight fish species. One of the few remaining fully functional cottonwood gallery forest ecosystems on the Northern Plains can be found in UMRBNM.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

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<sup>8</sup>BLM data.

There are protective designations in the area that pre-date the establishment of the Monument, including 7 Wilderness Study Areas (WSAs) and 149 miles of Wild & Scenic River, as well as segments of the Lewis and Clark National Historic Trail, and the Nez Perce National Historic Trail. The protective aspects of these designations would continue to be in place even in the absence of a Monument designation.

(b) (5)



A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis.