



**NATIONAL
CONSERVATION
LANDS**



Berryessa Snow Mountain

National Monument



California Annual Manager's Report—Fiscal Year 2020

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

U.S. Department of Agriculture
Forest Service, Mendocino National Forest

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

Berryessa Snow Mountain

National Monument

Designating Authority

Designating Authority: Designated by Presidential Proclamation 9298 in accordance with Antiquities Act, Section 320301 of Title 54, United States Code.

Date of Designation: July 10, 2015

Managing Partners

The U.S. Department of Agriculture's Forest Service and The Department of the Interior's Bureau of Land Management (BLM) each manage the portion of these lands that are pursuant to their respective legal authorities. BLM manages federal lands at the southern portion while the Forest Service manages federal lands of Mendocino National Forest in the north. The BLM and Forest Service work together to maximize opportunities, pursuant to applicable legal authorities, for shared resources, operational efficiency, and cooperation. The lands in and around Berryessa Snow Mountain National Monument (BSMNM) include state, county, local, and private ownership. BSMNM provides a framework that supports collaboration with federal, state, county, local, private, and not-for-profit entities.

Additional Designations

The monument includes three designated wilderness areas and three State Wild and Scenic River segments of Cache Creek. Areas of Critical Environmental Concern including the Knoxville, Indian Valley Brodiaea Research Natural Area, Cache Creek, Northern California Chaparral Research Area, and Cedar Roughs Natural Area were identified in the 2006 BLM Ukiah Field Office Resource Management Plan. Forest Service resource protections were identified in the 1995 Forest Service Land and Resource Management Plan and 2019 Management Baseline. Lands in the Cache Creek Natural Area are managed by BLM and the California Department of Fish and Wildlife in accordance with the 2004 Cache Creek Coordinated Resource Management Plan.

Site Description

The Berryessa region exhibits some of the most scenic and biologically diverse landscapes in California. BSMNM encompasses 330,780 acres that are rich with cultural significance and provide important habitat for plants and wildlife. To the north, Snow Mountain Wilderness offers scenic forested trails. Further south, the Cache Creek Wilderness and Berryessa Peak offer educational and recreational activities. Native American cultural legacies are an important component of this landscape. The proclamation provides many examples of diverse and unique species, cultural sites, geologic features, water resources, educational and research opportunities.

Monument Offerings

BSMNM attracts visitors from larger population centers in the San Francisco Bay area and Sacramento. It also brings in visitors from the redwood, coastal, and wine country tourism routes. Recreational groups use the trails on both BLM and Forest Service managed lands. OHV and equestrian riders host events and provide important volunteer support. Other uses include wildlife viewing, hunting, fishing, swimming, kayaking, hang gliding, camping, and whitewater rafting.

Year Accomplishments

BLM and Forest Service worked with non-profit partners, schools, and state agencies to offer more than forty educational and public engagement programs this year. 60% of those programs were hosted before emergency measures were enacted due to wildland fires and Covid-19. By March 31, 2020, the Monument had already exceeded the total number of programs offered in 2019. Additionally, online collaborations enabled agencies and partner organizations to utilize web apps, virtual tours, webinars, and videos to more than double the number of programs offered this year.

Future Priorities and Opportunities

Post-fire repairs and rehabilitation from the LNU Lightning Complex and the August Complex fires will be top priority for both agencies in 2021. Mendocino National Forest completed analysis for a travel management plan of the entire forest in 2003, and the 2006 Ukiah Field Office Resource Management Plan identified Travel Management as an additional planning need. In 2021, BLM will initiate the public process to develop a travel management plan for federal lands that BLM manages within BSMNM.

Berryessa Snow Mountain

National Monument

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1 Berryessa Snow Mountain Overview

Acreage

| | |
|----------------------------|--------------------------|
| Total Acres in Unit | 330,780 |
| BLM Acres | 133,576 |
| Other Federal Acres | 197,204 (Forest Service) |
| State Acres* | 0 |
| Private Acres* | 0 |

*State and Private Acres are not part of the total unit acres listed above because the monument designation does not include public lands that are owned or managed by private, state, county, or municipal governments.

BLM Budget

| Budget Title | Code | Funding |
|--------------------------------|------|-----------|
| Monuments & Conservation Areas | 1711 | \$226,000 |
| Wilderness Management | 1210 | \$32,548 |
| Recreation & Visitor Services | 1220 | \$79,062 |
| Other Federal (Forest Service) | 1920 | \$46,221 |
| Total Budget | | \$383,831 |

Current Areas of Focus

The highest priority work for both agencies in 2020 was to ensure public safety, resource conservation, and public access to public lands that were impacted by wildfires. On BLM managed lands, emergency closures associated with the LNU Lightning Complex were enacted within the Cache Creek Natural Area, the Cedar Roughts Wilderness, the Knoxville Management Area, public access to Berryessa Peak and in the Stebbins Cold Canyon area. Only 10% of this 363,220-acre fire impacted BLM managed lands within BSMNM.

The 2018 Mendocino Complex which impacted BSMNM lands was reputed as the largest fire in California History until the 2020 August Fire Complex surpassed it with a total of 1,032,648 acres. Only 4% of this fire impacted Forest Service managed lands within BSMNM.

Repairs and rehabilitation for 77,075 acres of burned federal lands within BSMNM will continue in 2021. Collaboration with Clear Lake Environmental Research Center (CLERC), University of California at Davis (UC Davis),



Figure 1. Post-fire of Cache Creek Natural Area.
Credit: BLM.

Tuleyome and Tribal EcoRestoration Alliance (TERA) focus on vegetation management, collaborative research, education, community, and workforce development.

Planning and NEPA

The enabling proclamation that established BSMNM directs Forest Service and BLM to manage the monument pursuant to their respective applicable authorities. The Forest Service and BLM are managed by separate governmental departments (U.S. Department of Agriculture and U.S. Department of the Interior), they have different directives, policies, and priorities. The agencies have worked together to create a strategy for managing this national monument that allows each agency to adhere to its particular planning requirements, enables both agencies to support the other throughout the process, provides for ongoing use and management of the monument, and strengthens public enjoyment and stewardship now and into the future.

The agencies have agreed that the foundational tasks necessary to ensure the protection of BSMNM resources, objects, and values are:

1. To explicitly identify the resources, objects, and values within the monument.
2. For each agency to evaluate its existing management direction to determine if it allows for effective protection of the objects of historic and scientific interest (Forest Service and BLM) and resources, objects, and values (BLM).
3. To identify and compile the information needed to assure day-to-day continuity of public use and infrastructure support, including descriptions of monument activities, information resources, and public opportunities.
4. To complete Forest Service agency-specific administrative changes needed to implement the proclamation.

Based on this strategy, an interdisciplinary team of resource and technical specialists from Forest Service completed a [Management Baseline](#) report in 2019 for lands within BSMNM that the Forest Service manages. Forest Service project-level decisions will continue to be made on a case-by-case basis, after additional detailed analysis and public involvement. All current Forest Service management direction applies to Forest Service lands within the BSMNM boundary unless it is determined to conflict with protecting and restoring the objects of interest or is explicitly excluded by the proclamation.

The BLM Ukiah Field Office continues to compile resource and stakeholder information for upcoming planning efforts. The field office funded a Cultural Resources Overview of the Berryessa Snow Mountain National Monument in 2018 and staff continue to collect information through resource monitoring efforts. Public engagement in the Travel Management planning process for BLM managed federal land within BSMNM is scheduled to begin in 2021.

Staffing

Approximately 40% of BSMNM lands are managed by the BLM Ukiah Field Office and 60% of BSMNM lands are managed by the Forest Service (38% by the Upper Lake and Covelo Ranger Districts and 22% by the Grindstone Ranger District). An Interagency Monument

Management Team meets quarterly to guide the operational management of BSMNM. The monument has one full-time permanent staff member who is funded jointly by the BLM and Forest Service through a Service First Agreement. BLM employs this position and Forest Service funds approximately 40% of associated employment costs plus project-specific costs for supplies, interns, and contracts. Federal employees from both agencies who supported federal land management before the monument designation in 2015, continue to provide shared resource and management services. BLM funds provided through the National Monuments and National Conservation Areas program support the remaining salary and associated employment costs for the Monument Manager, interns, project-specific costs, and support the salaries of Ukiah Field Office staff when they work on BSMNM lands.

Project and staff funding requests are evaluated on a case-by-case basis by each agency. In 2020, one intern was provided through the Hispanic Access Foundation (HAF) Resource Assistant program through an agreement between the Forest Service and HAF. Costs for the intern were provided by the BLM Ukiah Field Office. A second intern was provided by the American Conservation Experience (ACE) through the BLM Direct Hiring Authority program. A third internship hosted a student from California State University at Chico's Department of Recreation, Hospitality, and Parks Management. These interns worked side by side with agency staff to develop career skills and support the accomplishments outlined in this report.



Figure 2. Frog Pond Trail before the 2020 fires. Credit: Tuleyome

2 Programs and Accomplishments

General Accomplishments

Visitor use tracking numbers provide an estimate of visitor use on BLM lands but do not include visitor counts on Forest Service lands, nor do they include info station contacts during 2020 emergency closures. In compliance with county and state Covid-19 health orders, some facilities were temporarily closed during the months of April, May and June. For example, The BLM emergency closure order started on March 31 and ended on June 5, resulting in a 67-day closure of the restroom facilities at several sites. Visitor contact stations were also closed due to precautions related to the Covid-19 pandemic and many in-person public programs were cancelled or converted to online applications this year.

Some areas were closed once again when the LNU Lightning Complex and August Complex fires burned lands within the monument. As fire lines were able to contain these fires, federal agencies were able to reopen some of these areas. On September 4, the Cache Creek Wilderness reopened. More than 95% of the Knoxville Management Area was also able to reopen on November 25, 2020.

Areas of Mendocino National Forest that were impacted by the August Complex, the Cedar Roughs Wilderness, Berryessa Peak and Stebbins Cold Canyon, and portions of the Cache Creek Natural Area that are south of the Yolo County Road 40 bridge remained closed through the end of 2020. Both agencies continue to evaluate conditions and work to reduce hazards and provide more access to burned areas. Agency staff are working with volunteers to conduct post-fire recovery and rehabilitation efforts. These efforts will continue in 2021.

Field observations indicated an increase in visitation in dispersed areas where people can recreate outdoors while social distancing, but fewer visitors were counted in the developed areas. Many regularly hosted public events were cancelled due to Covid-19 precautions. This reduced staff's ability to outreach to large crowds at festivals and fairs. Fortunately, monument staff had already exceeded the total number of programs offered in 2019 before pandemic-related stay at home orders went into place. Web-based collaborations still enabled our partners to utilize apps, virtual tours, webinars, and videos to more than double the total number of programs offered this year.

General Accomplishments Table

| | Number of BLM Visitors | BLM & MNF Education Participants | BLM & MNF Public Engagement Contacts | BLM & MNF Volunteer Hours |
|---------------|------------------------|----------------------------------|--------------------------------------|---------------------------|
| TOTALS | 320,656 | 1,927 | 5,200 | 7,958 |

Education, Outreach, and Interpretation

Many events that were scheduled before April of 2020 were a great success. Early in this fiscal year, BSMNM hosted a booth at the Winters Salmon Festival and offered several partner-led educational hikes. A presentation about ongoing research within BSMNM and potential volunteer opportunities was hosted by the Redwood Chapter of the Sierra Club at Mendocino Community College.

Tuleyome hosted guided hikes at the Judge Davis Trail, Annie's Trail, and offered an overnight camping trip as well. BLM once again hosted the annual Bald Eagle Hikes into the Cache Creek Wilderness. Several guided hikes were cancelled due to county and state mandated covid restrictions, but when they were offered again mask and social distancing within family groups to provide a safe and educational outdoor experience.



Figure 3. Partner guided hikes used face masks and social distancing for safety. Credit: Tuleyome.

Information booths at the San Francisco Chinese New Year celebrations and at the Bok Kai Festival in Marysville provided information about Mendocino National Forest, the

BLM, and BSMNM. Smokey Bear also paid a visit to the Lake County Public Library with local firefighters to talk with pre-school aged children about fire prevention, forest management, and environmentally responsible practices.

Continued collaboration with Tuleyome, CDFW, Mendocino National Forest, and the BLM Ukiah Field Office enable us to offer a field trip for fifth grade classes from Burns Valley Elementary school. Four interpretative stations were set up along the Redbud hiking trail. Groups of students visited each table to learn about various aspects of the Cache Creek Wilderness, and other resources within BSMNM. These stations included overviews about cultural resources, native plants, fire ecology, and wildlife. One station talked about the native plant community and how these plants sustained the native Hill Patwin, Pomo, and Miwok cultures for thousands of years. Another talked about ecological practices that support a healthy and productive land-base. Each child had an opportunity to hike in the wilderness before eating lunch and heading back to the school.



Figure 4. BLM Archaeologist hosting an interpretive station.
Credit: Tuleyome.

Several opportunities were also offered for students at the high school level. BLM natural resource staff hosted two workability students to conduct Foothill Yellow Legged Frog Surveys and collect water survey data quality data in anadromous streams. Mendocino National Forest staff participated in the Lower Lake High School Career Day event. Tuleyome worked with Emerson Sr. High School to develop content for an informational kiosk along the Frog Pond Trail.

As 2020 progressed, BSMNM education, outreach and interpretation efforts focused more on virtual opportunities. BLM continued to offer information for elementary school children on the Agents of Discovery App, and contributed nine additional stops for the National Science Foundation sponsored Flyover Country App. Tuleyome hosted virtual Wildflower Tours and produced a [Happy 5th Anniversary Berryessa Snow Mountain National Monument](#) video.

A new guide was also published with contributions from BSMNM partners. "[Berryessa Snow Mountain National Monument, Exploring the Berryessa Region, A Geology, Nature, and History Tour](#)" is authored by Eldridge and Judith Moores, Marc Hoshovsky, Peter Schiffman, and Bob Schneider. This publication provides an overview of the region, historical context, and describes the geological processes that formed this unique landscape. It provides an interpretive driving tour those who want to experience these wonders firsthand.

Fish and Wildlife

BSMNM works closely with state, federal, and nonprofit organizations to manage wildlife habitats and support educational programming. BSMNM lands support several BLM sensitive species and a wide array of sensitive terrestrial species. Wildlife studies and habitat monitoring was conducted in 2020 to gain important information about the tule elk and BLM Sensitive Species including foothill yellow-legged frog and Western pond turtle. More detailed information about the work that BLM conducted in 2020 to monitor and improve wildlife habitat is provided in later sections of this report. Highlights include habitat improvement projects within the Cache Creek Natural Area and Knoxville Management Area.

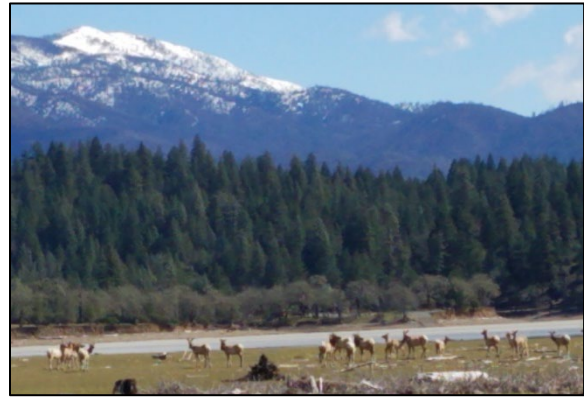


Figure 5. Elk Grazing below Snow Mountain.
Credit: Forest Service.

Grazing

Grazing within the monument continues in accordance with BLM and Forest Service permitting processes. A total of 1,739 Animal Unit Months (AUM) were grazed on federal agency lands within BSMNM.

There are five grazing allotments on BLM lands, and each has one permit assigned to it. The Jericho Valley (335 AUM), Rocky Ridge (120 AUM), and Maxwell Creek (6 AUM) allotments were all active during the 2020 grazing season. The Cement Creek (84 AUM) allotment was inactive this year. Salt Lick Canyon (6 AUM) was not used. A total of 461AUM were grazed on BSMNM lands managed by the BLM Ukiah Field Office.

On Forest Service lands, the Elk Mountain Allotment (1067 AUM) and Middle Creek Allotment (211 AUM) were grazed in 2020. Open Ridge, an active allotment, was not grazed this year. Some livestock were removed before the end of the grazing season due to the August Complex fires. The Snow Mountain Allotment, Little Stony Allotment, and Anderson Ridge Allotment remain Vacant. A total of 1278 AUM were grazed on BSMNM lands managed by Mendocino National Forest.

| Grazing Allotments within Berryessa Snow Mountain National Monument | | | |
|--|--------------------------|----------|-------------------------|
| Allotment Name | Acres within BSMNM | Status | Federal Management Unit |
| Rocky Ridge | 1,492 | Active | BLM Ukiah Field Office |
| Jericho Valley | 4,433 | Active | BLM Ukiah Field Office |
| Maxwell Creek | 466 | Active | BLM Ukiah Field Office |
| Cement Creek | 1,695 | Inactive | BLM Ukiah Field Office |
| Salt Lick Canyon | 85 | Nonuse | BLM Ukiah Field Office |
| Elk Mountain | 8,269 | Active | Forest Service |
| Middle Creek | 7,990 | Active | Forest Service |
| Open Ridge | 15,116 | Active | Forest Service |
| Snow Mountain | 20,973 | Vacant | Forest Service |
| Little Stony | 6,560 | Vacant | Forest Service |
| Anderson Ridge | 19,496 | Vacant | Forest Service |

Partnerships

Collaboration with more than 40 groups enables us to support community-based outreach and focus on programs and projects that are highly valued by those communities. A few of the key partners who made significant contributions to the accomplishments in this report are identified in the following section.



Figure 6. Maintaining trails. Credit: Tuleyome.

Continued work with the not-for-profit group Tuleyome provides diverse, educational, and outdoor opportunities. This group was influential in the establishment of BSMNM and continues to support scientific research, provide school programs, host guided hikes, and offer volunteer support for post-fire trail rehabilitation efforts.

The University of California at Davis (UC Davis) Natural Preserve System is another key partner who supports training, maintenance, and safe use of trail systems that cross lands managed by multiple federal, state, and private entities. The UC Davis Natural Preserve system worked cooperatively with BLM to provide volunteer training and work opportunities at Stebbins Cold Canyon.

Another active partner is the California Department of Fish and Wildlife (CDFW). The Berryessa Peak Trail, Stebbins Blue Ridge Loop, Annie's Loop, Cedar Roughs Wilderness, Redbud Trail, Judge Davis Trail, and some lands surrounding Indian Valley Reservoir are accessed from lands that are owned and managed by CDFW. This partnership provides access and wildlife studies that are essential to managing and public enjoyment of resources within BSMNM. One example in 2020 is the collaboration of CDFW, the California Department of Transportation, and other stakeholders who began exploring potential locations for a wildlife bridge across State Highway 20 to make easier dispersal between populations of tule elk and other wildlife.

The monument also works in partnership with Tribal EcoRestoration Alliance (TERA) and the Clear Lake Environmental Research Center (CLERC). TERA is a cross-cultural, multi-organizational collaborative that provides local job training and indigenous-led stewardship opportunities. We look forward to hosting post-fire rehabilitation and forest fuels treatment opportunities for their crews in 2021.

The BLM Ukiah Field Office and Mendocino National Forest were awarded grants from the California State Parks Off-Highway Motor Vehicle Recreation (OHMVR) Grants & Cooperative Agreements Program in 2020. These grants partially supported on-the-ground activities within the Indian Valley Management Area, Knoxville Management Area, and Mendocino National Forest. The Program's grants support maintenance, administrative operations, law enforcement, restoration, and conservation of trails, trailheads, and other facilities associated with the use of off-highway motor vehicles (OHV). These funds helped federal agencies to maintain facilities, provide information at popular recreation sites, maintain trails, and replace older signs. Some of this work was done by agency staff and volunteers. In the Mendocino National Forest, the Konocti CDC crews also helped to brush trails and perform fuels reduction along OHV trails and at camping areas. Other work was done by a California Conservation Corps crew who helped the BLM conduct Emergency Stabilization Repairs in areas that were impacted by recent fires. Volunteers from local OHV groups contribute many hours of support toward these projects each year.

Recreation and Visitor Services

BSMNM includes a diverse landscape and numerous recreational opportunities. The monument does not operate a visitor center but instead provides maps and information about BSMNM in local communities, at the BLM Ukiah Field Office, and at Forest Service offices at the Upper Lake Ranger District, Covelo Ranger District, Supervisors Office/Grindstone Ranger District, and Stonyford Work Center.

Some of the most popular recreational areas are:

- **BLM Cache Creek Natural Area** provides access to the Cache Creek Wilderness and adjacent areas within BSMNM. Hiking trails include the Redbud Trail (7 miles), Judge Davis Trail (5.5 miles), the Perkins Creek Ridge Trail (5 miles), Blue Ridge Trail (8.5 miles), Fiske Creek Trail (4 miles), and Frog Pond Trail (5 miles). Hiking, horseback riding, rafting, picnicking, wildlife viewing, and hunting are popular here. Cache Creek is home to a free-roaming herd of tule elk that can be seen seeking out water and shade at Cache Creek in summer. Bald eagles nest in this area during the winter and guided hikes are offered to view these seasonal animals.
- **BLM Indian Valley and Walker Ridge** are in the eastern portion of Lake County, just north of Hwy 20. Indian Valley Reservoir and Blue Oaks Campground provide public recreational opportunities for fishing, boating, camping, and other day uses. Walker Ridge Road traverses the top of Walker Ridge and offers views of the reservoir and surrounding areas. This graded gravel road provides access to the reservoir and to monument lands managed by the BLM and Forest Service.

- **BLM Cedar Roughs Wilderness** offers hiking, hunting, primitive camping, and wildlife viewing. It protects an impressive stand of McNab Cyprus trees and Oaks. Cedar Roughs Wilderness can be accessed on foot or by boat. Partner-led river trips up Pope Creek offer a unique way to view this wilderness.
- **BLM Knoxville Management Area** consists of 17,700 acres of steep rolling hills, with the vegetation ranging from scattered hardwoods and grasses to dense chaparral brush. The protected serpentine barrens in this area allow for unique plant communities that are found nowhere else. OHV riding, camping, swimming, and hunting are popular here. The North Staging Area provides bathroom and parking for recreationists. Hunting Creek Campground offers bathroom and camping.
- **BLM Berryessa Peak and Stebbins Cold Canyon** include Berryessa Peak and scattered tracts of BLM managed lands in the vicinity of Stebbins Cold Canyon. Located so close to Sacramento, Winters, and Davis, the trails in this area get a lot of use. Hiking trails offer iconic overlooks, camping, and other undeveloped recreational opportunities. Federally managed lands are open to the public but some of the popular access routes traverse lands that are not federally managed.
- **Forest Service Penny Pines, Deer Valley and Middle Creek Areas** offer exceptional mountain overlooks, forested hikes, rivers, wildlife habitat, trails, and camping. Camping, OHV facilities, and day use areas are available within ten miles west of BSMNM including facilities at Deer Valley, Middle Creek, Penny Pines, and at five campgrounds near Lake Pillsbury.
- **Forest Service Letts Lake and Stoney Creek Areas** are located to the east of Berryessa Snow Mountain National Monument. These areas host sixteen Forest Service campgrounds within ten miles of the monument boundary. Campgrounds are clustered near Letts Lake, along Stoney Creek, and near trailheads that provide access to the Snow Mountain Wilderness.
- **Forest Service Snow Mountain Wilderness** offers exceptional hiking and equestrian opportunities within Mendocino National Forest. Overnight camping may be found at the Lower Nye, West Crocket, Summit Springs, and Bear Creek campgrounds. A network of trails provides access to stunning views, forested areas, waterfalls, and recreational opportunities.

This year, the BLM issued Special Recreation Permits for commercial rafting services provided by White Water Adventures, LLC. The BLM also issued three Letters of Agreement in fiscal year 2020. A letter was issued to the 707 Trail Riders, to host club campouts within the Indian Valley and Knoxville Management areas. Another was issued to Nueva Vida, to host weekend retreat camping trips each month at Blue Oak Campground. A letter of authorization was also issued to Tuleyome, to create educational virtual tours for the public within the Berryessa Snow Mountain National Monument. Six other groups cancelled their events within Berryessa Snow Mountain National Monument due to Covid-19 state and county health orders.

Volunteers

Most volunteer projects in 2020 focused on rehabilitating fire impacted infrastructure. OHV recreational groups repaired burned infrastructure on Forest Service Lands within the monument and at developed recreational areas adjacent to it. Volunteers helped an interagency crew to build cattle exclusion fencing near Deer Creek Campground as part of the Deer Valley Meadow Restoration Project.

U.C. Davis and Tuleyome hosted volunteer events to help assess and repair fire damaged trails that provide access to national monument lands in the Stebbins Cold Canyon area. Their contributions rallied more than 160 volunteers in support of trail repair, trail maintenance, and public programs. Several volunteer workdays were hosted early in the year and some of the post-fire assessment work was also done by volunteers.

The Ukiah Field Office and Berryessa Snow Mountain National Monument recruited a total of five interns through three different programs in FY 2020. Three of these interns worked solely on BSMNM lands, and an additional two interns worked for the BLM Ukiah Field Office to support work at both BSMNM and California Coastal National Monument. Student internships were provided through agreements between the Hispanic Access Foundation and Mendocino National Forest, an agreement with the American Conservation Experience (ACE) through the BLM's Direct Hiring Authority program, and through the Department of Recreation, Hospitality and Parks Management at California State University in Chico. A volunteer crew of six students from Sonoma State University assisted with archeology field surveys that were associated with a BLM Assistance Agreement. Volunteers and internships provided more than 3,000 hours of service on BLM managed lands.



Figure 7. Volunteers at Stebbins Cold Canyon. Credit: U.C. Davis.

Wildland Fires

A lightning event that stretched from the Mexican border to British Columbia produced 17,000 lightning strikes with 650 fire starts. Well-above normal temperatures along with dry conditions were recorded across the region during the period right after ignition. Strong winds combined with poor humidity causing several already large fires to burn together. Lightning strikes on August 16 and 17 resulted in 35 fires on the Mendocino National Forest, which became known as the August Complex. Lightning strikes on BLM managed lands within BSMNM became known as the LNU Lightning Complex.

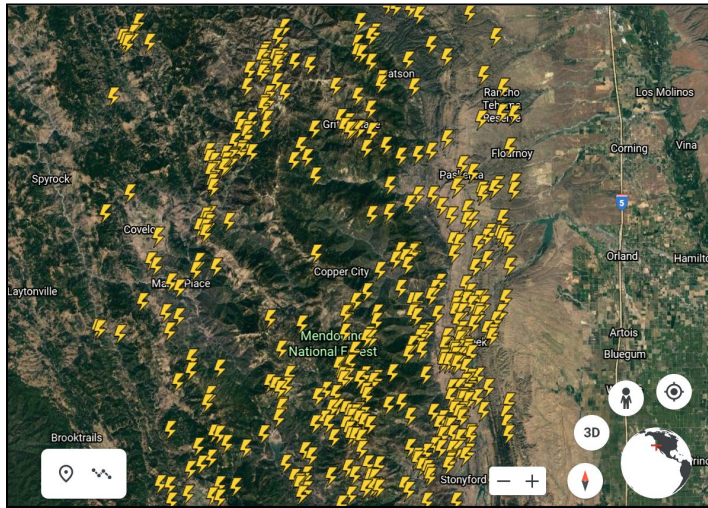


Figure 8. August storm lightning strikes displayed in yellow. Credit: Forest Service.

The August Complex exceeded the 1,000,000-acre mark on October 5 and Mendocino National Forest was closed during periods of high fire danger. The August Complex is 70 miles long by 45 miles wide, covering an area larger than the entire state of Rhode Island. That includes portions of seven counties across six different fire weather forecasting zones. With this large area comes a wide range of topographic features. Elevation ranges from approximately 700' at Elk Creek on the east of the Complex to peaks in the Yolla Bolly-Middle Eel Wilderness with

elevations over 8,000'. Only 39,940 acres of BSMNM lands burned in the August Complex fires.

The LNU Lightning Complex consisted of the Hennessey, Wallbridge, and Meyers fires. Emergency closures were implemented on BLM lands to protect firefighters and recreationists. This fire was contained on October 2. Of the 363,220 acres of land burned, only 37,136 acres were on BLM managed lands within the monument. During suppression activities, 50 miles of bulldozer and hand lines were placed within the Cache Creek and Knoxville management areas.

BLM resource advisors worked with CalFire to implement suppression repair efforts on these lines, which included placing water bars, pulling back unburnt vegetation, and blocking off vehicle access to the suppression lines. Impacts to lands caused by the fire were analyzed by the BLM Ukiah Field Office and an Emergency Stabilization and Rehabilitation Plan was created. Emergency efforts will include hazard tree removal, trail stabilization and erosion control, and invasive vegetation management.



Figure 9. Resource Advisor and Sherwood Rancheria Tribal Member Hillary Renick. Credit: BLM

3 Science

Science

The monument does not have a science plan but has been collecting baseline data useful for ongoing management and future planning efforts. Several partners have expressed support for the development of a science plan and a willingness to participate in this effort. In the meantime, partner-driven research projects have been customized to include strategic resource assessments. These assessments are designed to assist land managers with the daily challenges associated with protecting the resources, objects, and values that BSMNM was established to manage.

Cache Creek Paleo-Indian Model Truthing / Survey

The BLM, Ukiah Field Office continued to work with Sonoma State University to ground truth a Cache Creek Paleo-Indian predictive model. In 2017, their Anthropological Studies Center helped the BLM construct a model to identify these cultural resources, and better understand past use throughout the Cache Creek Natural Area. These efforts will help the BLM identify and protect non-renewable resources, some of which may be eligible for the National Register of Historic Places. Knowing where such resources are located will both improve planning and guide the configuration of future trail development and trail rerouting projects. In November 2019, the university added a considerable amount of survey coverage, including “The Peninsula” and Buck Island. Future efforts for this project may include subsurface testing and obsidian hydration of identified sites to help assign dates to each identified resource.



Figure 11. DHA Intern, Isaac Davis conducting surveys. Credit: BLM.



Figure 10. Scott McGaughey and Samantha Dollinger recording a newly identified site. Credit: BLM.

Wildfire Severity Studies

Federal agencies continue to work with external partners and provide information in support of ongoing research and site-specific studies. Examples include providing information for studies conducted by U.C. Davis and the Forest Service Northwest Research Station that are associated with the North Shore Restoration Project. Information gathered through an agreement between U.C. Davis and the BLM has also contributed to new publications in 2020. For example, “Intensified burn severity in California’s northern coastal mountains by drier climatic condition” was authored by Yuhang Huang, Yufang Jin, Mark W. Schwartz and James H. Thorne and is available online at [IOPScience](#). This article includes data from BSMNM and provides valuable insight regarding the factors that influence burn severity in this region.



Figure 12. Postfire landscape in BSMNM. Credit: BLM.

Geology Studies and Informational Products

Several projects were undertaken in 2019 and 2020 to better understand the tectonic history of the Berryessa Region. Serpentine soils, volcanic activity, hot springs, and earthquakes are subjects of scientific interest. Last year, Mendocino National Forest issued a permit to California State University at Santa Barbara to conduct a geologic study in the Snow Mountain Wilderness. The intent of this study is to enhance our knowledge of tectonic history for Snow Mountain.

This year, Jared R. Peacock, Margaret Mangan, Seth Burgess, and others at the U.S. Geological Survey (USGS) embarked on a project to better understand the volcanic history of the Clear Lake Volcanic Field and surrounding area. Researchers are gathering gravity, magnetic, magnetotelluric, and seismic data. They are also collecting rock samples and using this geophysical data to generate 3-D models that will help us to make more informed interpretations. This study is ongoing and will continue for the next two years. Data for this study is being conducted on lands managed by the BLM and by the Forest Service. More information about this study is available on the [USGS website](#).

4 Resources, Objects, Values and Stressors

The establishment of Berryessa Snow Mountain National Monument has provided an opportunity for the BLM and Forest Service to pool resources when appropriate and facilitate shared accomplishments on behalf of both agencies and partners. BLM and Forest Service follow the annual reporting procedures established by each of their respective agencies. Accomplishments for the entire monument are also included in many of the preceding sections of this report. However, the information in section four only pertains to lands managed by the BLM unless otherwise noted. The heading of each table indicates which agency and what resources are represented in cases where management data collection methods differ from one agency to another.

Cultural Legacies

This landscape and the resources within it retain deep cultural significance for many communities. Natural resources within BSMNM continue to support traditional lifeways for many Native Americans. Traditional ecological knowledge contributes important information for our understanding and management of these lands.

Despite a small percentage of archeological survey coverage, hundreds of prehistoric villages, seasonal camps, historic homestead cabins, and evidence of historic industries have been identified. The Cache Creek National Register District alone contains 31 contributing prehistoric resources. This area was dense with sites in the middle to late Emergent Period. It also retains evidence of several Paleo-Indian sites dating to the Pleistocene-Holocene transition.

Historic-era sites include logging roads, abandoned mercury mines, and nineteenth-century homesteads. The Knoxville area was heavily prospected and mined for the mercury bearing ore cinnabar during the late 1800s. Walker Ridge was also heavily prospected especially during the mid-20th century for mercury bearing ore. Though most prospects were unsuccessful, these abandoned sites have a fascinating history. The discreet terraces in riparian corridors were a source of fodder and perennial water supply for nineteenth-century grazing and farming.

BLM & Forest Service Cultural Legacies Status and Trend Table

| Status of Resource, Object, or Value | Trend |
|---|---|
| Less than 20% of all lands within BSMNM have been inventoried for cultural resources. | Stable / Deteriorating Post-fire surveys identified resource concerns. |

BLM Cultural Legacies Inventory, Assessment, Monitoring Table

| Acres in Unit | Acres Inventoried in 2020 | Number of Sites Newly Identified in 2020 | Acres Monitored in 2020 |
|---------------|---------------------------|--|-------------------------|
| 330,780 | 120 | 3 sites | 20 (12 sites) |

Stressors Affecting Cultural Legacies

More than 300 cultural resource surveys have been sponsored by the BLM and Forest Service. Primary stressors affecting cultural resources within the BLM portion of the Monument are recreation related activities, wildlife, and fires. Within the Knoxville Management Area, several sites are bisected by OHV trails. These trails are monitored annually to better understand impacts. Several resources previously barricaded with boulders and or post-and-cable within the vicinity of the Indian Valley and Walker Ridge management areas continue to be impacted by unauthorized OHV use. Resources within the Cache Creek Natural Area are faring better, but some natural erosion and rodent burrowing has been observed.

Fire impacts to cultural resources during the August Complex are still being assessed, but more information is available regarding cultural resource impacts from the LNU Lightning Complex. The LNU Lightning Complex incident started on the eastern-side of Napa Valley and burned eastward towards Vacaville. It also burned and northerly into the Cedar Roughs Wilderness, southern portions of the Cache Creek Natural Area, and the Knoxville Management Area.

This fire spread at such speed that relatively few dozer-lines were established on the BLM land-base. As part of the incident, Ukiah Field Office Archaeologist Christopher Lloyd and BOEM Tribal Liaison / Sherwood Pomo Tribal member Hillary Renick flagged sensitive resources to ensure fire-lines would avoid sensitive cultural resources. Sites that were potentially impacted by the fires were visited to ensure that resources were unaffected and stable. While working the incident Mr. Lloyd and Ms. Renick checked in with nearby tribes, Middletown Rancheria and Yocha Dehe Wintun Nation to report observations and listen to any concerns the nearby tribes might have. To date, few sites on BLM lands appear to have been adversely affected by fire suppression damage from the LNU Lightning Complex fires, however, several sites did burn over. There is the potential for dozer-lines to funnel unsanctioned activities into formerly off-limit areas with potential unanticipated effects to cultural resources. Some sites are more exposed now that there is less vegetative ground cover. Fire also affects surface artifacts such as obsidian and chert; thermal alterations to artifacts can make them brittle and removes hydration rinds which may help with artifact dating.

Soils & Geology

BSMNM exhibits stunning geologic features, unique habitats, and reveals a story of plate tectonics that engages visitors like no other. The steep mountains and valleys, shaped by numerous fault zones, supply endless views within this impressive landscape. Near-vertical cuts expose stratigraphic layers and expose volcanic rocks that formed during the Great Valley and Franciscan Complex.

Caves and serpentine rich soils provide unique habitats that sustain a vast diversity of plants and animals. Soils formed from serpentinite rocks contain materials, such as chromium, cobalt, and nickel, which are harmful to many plants. The combination of soils and specialized plants that rely on this habitat provide a unique setting for research, education, and visitor enjoyment.

Management of soil and geological resources within BSMNM includes many facets and not all of them are included in the tables below. The following table represents information about serpentine soils, because these unique soils and the rare plants that are found in serpentine habitats are an important component of habitat management on BLM lands.

| Status of Resource, Object, or Value | Trend |
|--------------------------------------|--------|
| Fair | Stable |

BLM Soils & Geology Inventory, Assessment and Monitoring Table

| Serpentine Soil Acres in Unit | Acres Inventoried | Acres Possessing Serpentine Soils | Acres Monitored |
|-------------------------------|-------------------|-----------------------------------|-----------------|
| 330,780 | 330,780 | 84,765 | 0 |

Stressors Affecting Soils & Geology

Soils were impacted by recent fires and fire suppression activities. Vegetation, duff, and root systems that help to stabilize soils and promote infiltration have been reduced by recent fires. This increases the potential for runoff and sediment loss. Serpentine soils were impacted during suppression activities where the top layer of soil was scraped bare by bulldozers. Recovery of serpentine soils, and the sensitive plant species they support, will be slow within the burn perimeter and may require additional support. Recreational OHV use on unauthorized trails will continue to degrade serpentine soils.

A Watershed Emergency Response Team (WERT), sponsored by the California Natural Resources Agency, CalFire and others, completed an assessment of the Hennessy Fire (LNU Lightning Complex) looking at risks to human life and property. They used the

USGS Burned Area Reflective Classification (BARC) maps generated from satellite images of pre-burn and post-burn fire outlines and validated the BARC overlays. WERT classified the intensity and impacts of this fire to have burned less than 1% at high, 21% at moderate, and 78% at low or very low soil burn severity levels. Thus, confirming that the LNU Complex was a fast-moving fire that is less likely to cause long term impact to soils in less the densely vegetated areas that burned.

Water & Hydrological Resources

Resource monitoring and post-fire infrastructural repairs were conducted this year. Watersheds were assessed to address increased runoff, debris, sediment transport, and channeling of drainage paths within burned watersheds. Treatments such as culvert replacement, water bar installation, and outsloping are being prescribed throughout the burned area to reduce erosion and sediment transport.

BLM Water & Hydrology Status and Trend Table

| Status of Resource, Object, or Value | Trend |
|--------------------------------------|--------|
| Fair | Stable |

BLM Water & Hydrology Resources Inventory, Assessment, and Monitoring Table

| Acres in Unit | PFC Miles Inventoried | Miles Possessing Object | Miles Monitored |
|---------------|-----------------------|-------------------------|-----------------|
| 330,780 | 35 miles | 93 miles | 0 miles |

Stressors Affecting Water & Hydrological Resources

The impacts of frequent fires, illicit marijuana cultivation, unauthorized off-trail OHV use, and water pollution from residual mine waste are threats to the ecological integrity of hydrologic resources. Hydrologic resources were impacted by the LNU Complex fires of 2020. Fire and suppression activities reduced vegetative cover, duff, and root systems that function to stabilize soils and promote infiltration. Fine sediments eroding from burned areas are suspended in runoff, moving down through the watershed, they increase turbidity and transport nutrients to the waterbodies they feed. This influx of nutrients can lead to harmful algal blooms impacting fish and recreational opportunities. Community and agency efforts have made great strides to monitor and reduce post-fire effects on water and hydrological resources. One concern is sediment transport from roads and trails within the burned areas. Efforts to map, monitor, and treat these areas are ongoing.

Biodiversity & Research

BSMNM exhibits some of the most scenic and biologically diverse landscapes in California. Serpentine soils host several species that are endemic to this region. Each year, BLM and Forest Service monitor the status of key species within their respective management areas of BSMNM. BLM sensitive species include foothill yellow-legged frog and Western pond turtle. Priority game species like the California endemic tule elk are plentiful within the monument. This year, wildlife habitat monitoring, sensitive species population monitoring, and wildlife habitat improvement was conducted in the Cache Creek Natural Area and the Knoxville Management Area.

BLM sensitive species monitoring of foothill yellow-legged frog and Western pond turtle revealed that both species were affected by the low amounts of precipitation received in the winter and spring months of 2020. However, both species seemed to benefit from the reduced recreational use in developed areas during state and county mandated Covid-19 stay at home orders. Western pond turtle was monitored in Cache Creek, Hunting Creek and Bear Creek. Foothill yellow-legged frog was monitored in Wolf Creek, Cache Creek, Hunting Creek and Bear Creek.

Wildlife habitat monitoring in the Cache Creek Natural Area was conducted to assess tule elk habitat. Weeds treatments were performed within priority tule elk habitat to curb the non-native invasion of yellow starthistle. Post treatment, many native plant species were observed including purple needlegrass (*Nasella pulchra*). Other wildlife habitat improvement projects included the removal of derelict fencing at the Pluth Ranch, a valuable tule elk habitat within the Cache Creek Natural Area.

Inventory and monitoring of sensitive botanical species in the Knoxville and Indian Valley Management Areas were conducted to better understand sensitive species population locations and prioritize management actions in those areas.

BLM Biodiversity & Research Status and Trend Table

| Status of Resource, Object, or Value | Trend |
|--|---|
| Fair The resource is listed as fair due to the stressors to populations of sensitive species. | Stable Sensitive species and botanical resources are stable within BSMNM based on recent monitoring data. Game species populations are stable within the region. Some local populations may be declining due to stressors. |

BLM Biodiversity & Research Inventory, Assessment, and Monitoring Table

| Acres in Unit | Acres Inventoried | Acres Possessing Object | Acres Monitored |
|---------------|-------------------|-------------------------|-----------------|
| 330,780 | 10.000 | 14,706 | 10,000 |

Stressors Affecting Biodiversity & Research

Threats to ecological integrity are similar to those for Water and Hydrologic Resources with a few additional considerations. Non-native and invasive weeds also pose a threat to biodiversity. Invasive weeds spread to new areas of BSMNM when seeds are carried by vehicles, recreational uses, and firefighting equipment. Some of the more invasive weed species do well in recently burned areas and outcompete native plant species. Climate warming, wildfire, and wildfire suppression activities, like dozer lines are also stressors in this area.

BSMNM is visited by thousands of people every year and some of those visitors inadvertently impact fragile serpentine ecosystems and other resources that BSMNM is mandated to protect. Serpentine ecosystems are slow to recover because they have limited soil nutrient levels. We continue to collect information and research that provides the basis for successful protection and management of the unique and abundant biodiversity within BSMNM.

5 Summary of Performance Measure

Most of the resources, objects, and values within Berryessa Snow Mountain National Monument are stable. Recent fire events caused a temporary decline in resource status, but resources are stabilizing as soils and plant communities recover.

| Resources, Objects, and Values BLM Status Summary Table | | |
|---|---|------------------------|
| Resource, Object, or Value | Status | Trend |
| Cultural Legacies | Less than 20% of BSMNM has been surveyed to inventory for cultural resources. | Stable / Deteriorating |
| Soils & Geology | Fair status, most soils exhibit low soil burn severity impacts. | Stable |
| Water & Hydrological Resources | Fair status due to a temporary increase of sedimentation. | Stable |
| Biodiversity & Research | Fair status as endemic species recover from fire impacts. | Stable |



Figure 13. View of Mendocino National Forest wildflowers the after the Ranch Fire. Credit: BLM.

6 Manager's Letter

Most importantly, I want to thank all of the partners who contributed to the accomplishments in this report. Your efforts are truly appreciated. In light of so many challenges this year, it was fun to review our combined accomplishments for 2020.

Post fire assessments and addressing the needs of fire impacted areas will be our top priority in 2021. Fostering strong partnerships within local communities will be more important than ever. Information provided in recent studies will help to guide our actions as we care for these lands. Continued support from volunteers, recreational user groups, and other partners will be the key to our success as we replace damaged infrastructure and help these areas recover quickly.

In 2021, the BLM will host workshops to gather information about trails and travel on BLM managed lands within the monument. This is part of the ongoing effort to provide quality recreational opportunities, while also ensuring that the resources, objects and values that this monument was designated to manage are being well cared for. I hope that many of you will join us and share your observations on this subject. There is still much for us to do, and I look forward to it.

Berryessa Snow Mountain National Monument is such a special place for so many people. The beauty and resilience of this landscape inspires us to get outdoors and enjoy nature. It is a place for recreation, study, inspiration, and so much more. I hope to see you all on the trails this upcoming year!

Sincerely,

Rebecca Carr Wong

Rebecca Carr Wong, Monument Manager
Berryessa Snow Mountain National Monument



Berryessa Snow Mountain

National Monument



**NATIONAL
CONSERVATION
LANDS**

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