



**NATIONAL  
CONSERVATION  
LANDS**

Utah

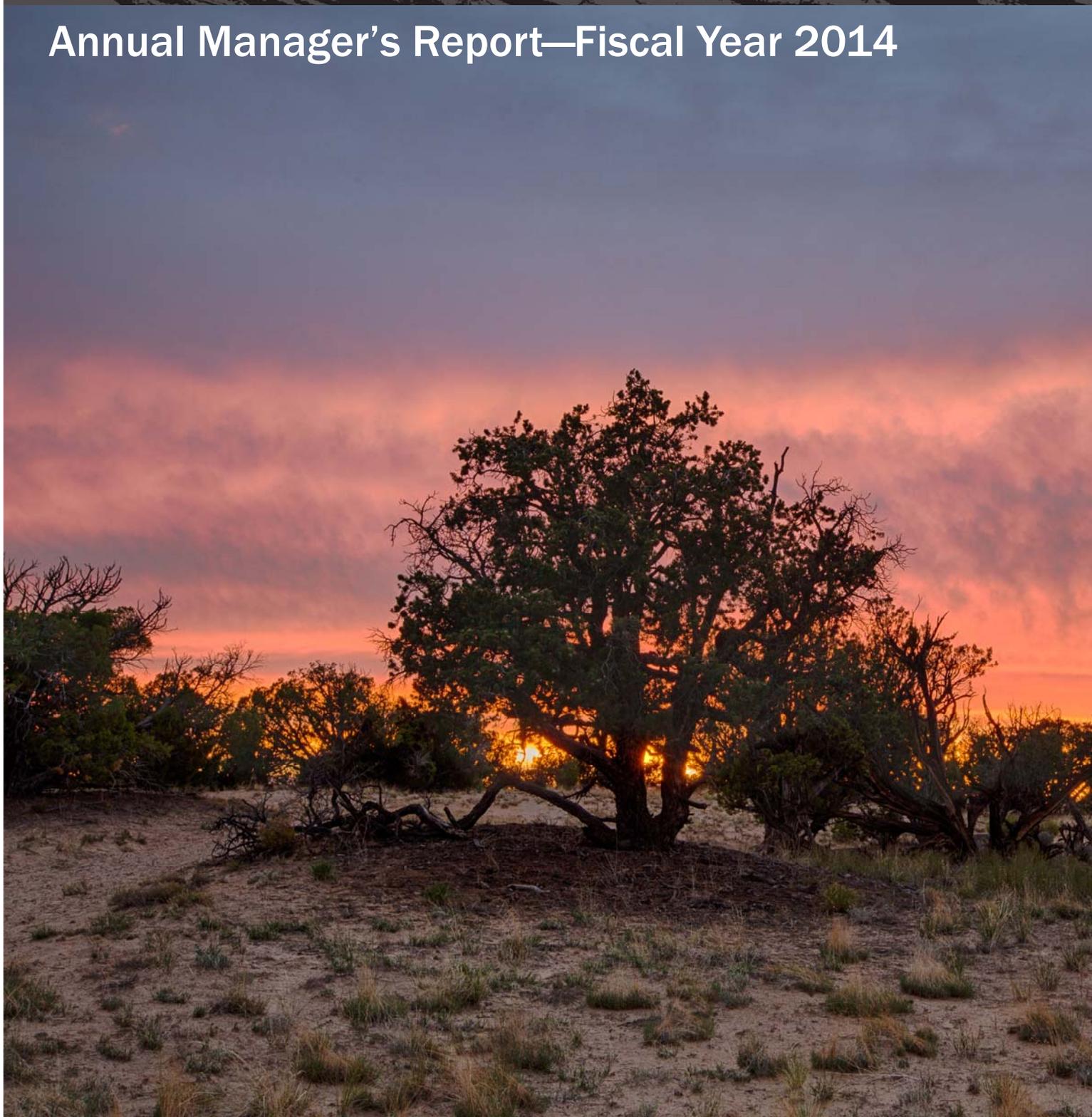
---

# Grand Staircase-Escalante

National Monument

---

Annual Manager's Report—Fiscal Year 2014



# Table of Contents

---

Grand Staircase-Escalante Profile .....	1
Planning and NEPA .....	4
Year's Projects and Accomplishments .....	7
Science.....	26
Resources, Objects, Values, and Stressors .....	50
Summary of Performance Measure .....	73
Manager's Letter .....	77

# 1 Grand Staircase-Escalante Profile

---

## Designating Authority

**Designating Authority:** Presidential Proclamation 6920

**Date of Designation:** September 18, 1996

## Acreage

<b>Total Acres in Unit</b>	1,866,134
<b>BLM Acres</b>	1,866,134
<b>Other Federal Acres</b>	0
<b>State and Private Acres*</b>	13,977

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

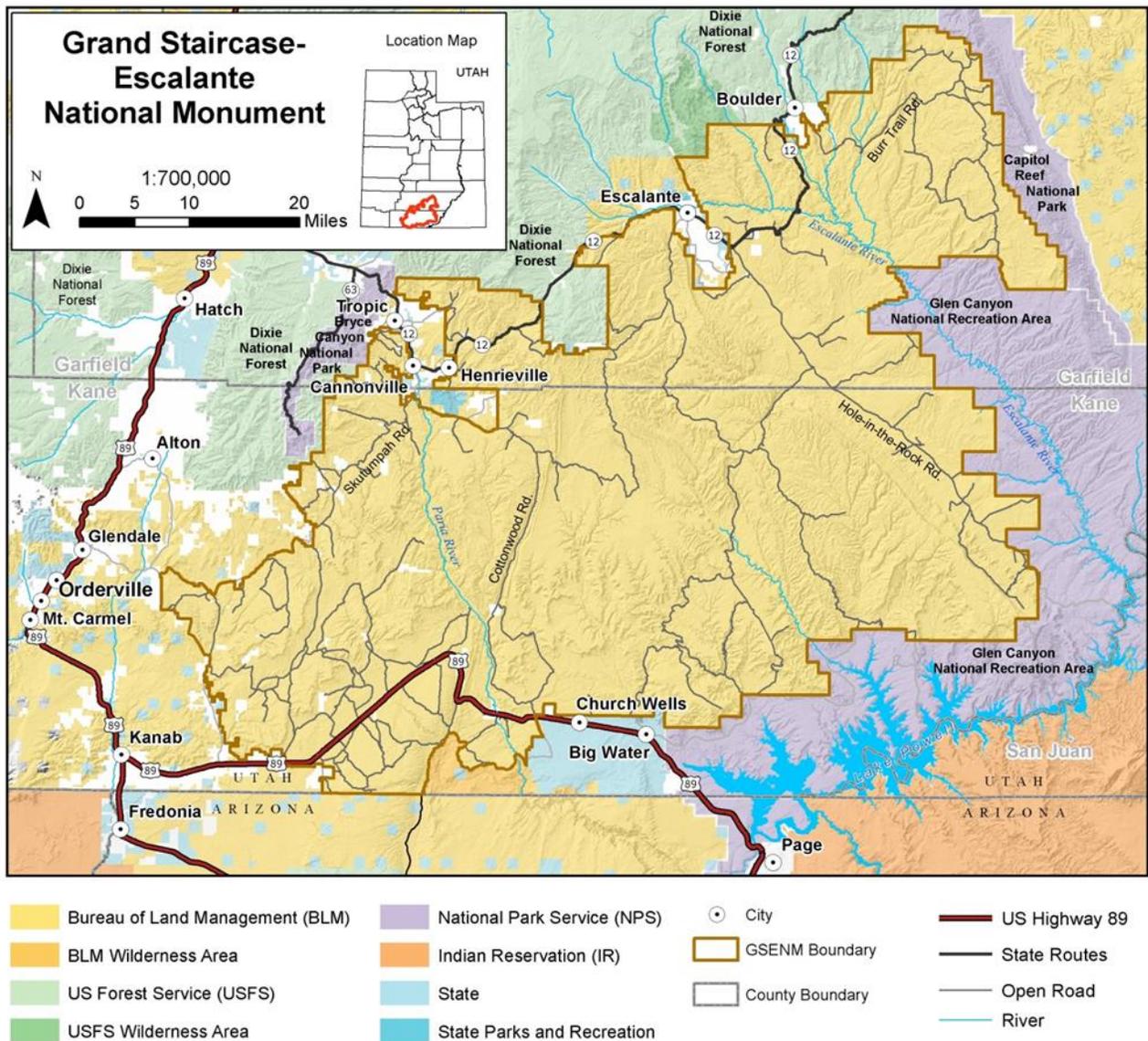
## Contact Information

<b>Unit Manager</b>	Cynthia Staszak
<b>Phone</b>	435-644-1240
<b>E-mail</b>	cstaszak@blm.gov
<b>Mailing Address</b>	669 South HWY 89A Kanab, Utah 84741
<b>Field Office Name</b>	Grand Staircase-Escalante
<b>District Office Name</b>	
<b>State Office Name</b>	Utah

## Budget

<b>Total Fiscal Year 2014 Budget</b>	\$6,225,900
<b>Subactivity 1711</b>	\$5,070,800
<b>Other Subactivities' Contributions</b>	\$274,900
<b>Other Funding</b>	\$880,200

## Map of Grand Staircase-Escalante National Monument



Grand Staircase-Escalante National Monument (GSENM) is managed by the Bureau of Land Management (BLM) as part of the National Landscape Conservation System. Reporting directly to the BLM Utah State Office, the Monument Manager oversees approximately 1.8 million acres of public lands which contain some of America's most scientifically exciting and visually stunning landscapes. The monument boundary encompasses 1,880,461 total acres including 14,130 acres that are privately held. No State land is found within GSENM.

---

## Managing Partners

The GSENM does not currently have established partnerships to assist with the management of the unit.

## Staffing

Grand Staircase-Escalante National Monument is the largest of the Bureau's National Conservation Lands units, and the largest national monument in the contiguous United States. The Monument is comparable in program size, complexity and land base to many BLM Districts, and considerably larger than most BLM Field Offices. In Utah BLM's organization, the Monument is equivalent to a District Office.

In FY14, the Monument staff consisted of 49 full-time employees, led by two line officers, the Monument Manager and Associate Monument Manager. Staff is organized into three major functional Divisions; Planning and Support Services, Resources, and Science and Visitor Services. The Monument staff includes an administration team, facilities management, law enforcement, backcountry rangers, visitor center staff, planners, a science program administrator and resource specialists. Until 2014, the Monument directed the activity of three law enforcement rangers. Supervision of these rangers has now been transferred to the Color Country District, under a newly established zone Lead Law Enforcement Ranger. GSENM has a nationally significant conservation role for the Bureau and nationally significant programs, managed by resource specialists, in paleontology, archaeology, biology, botany, ecology, history, wildlife, planning and environmental coordination, range management, realty, recreation, soil, air and water, wilderness, and visual resources.

The Monument shares its Headquarters building, at 669 South Highway 89A, with the Kanab Field Office (a unit of the Color Country District, Utah BLM), and the two offices share some front desk and administrative staff duties. The Monument also receives administrative support, primarily in property management, but also including some accounting and budget functions, from the Color Country District.

The Monument works with the Kanab Field Office and the Arizona Strip District to administer the Paria Special Management Area (SMA) under an MOU between the three offices. The Monument manages the Kanab Visitor Center, which is the major contact point for visitors to the Paria SMA in Utah, and the location of the world-famous "Wave Lottery." The major trailheads to the Wave originate on the Monument, and Whitehouse Campground, the major overnight camping facility for Wave permit holders, falls within the Monument boundary.

The Monument also administers grazing permits for a number of allotments which fall fully or partially within the boundaries of three other units: the Kanab Field Office (Color Country District, Utah BLM), the Arizona Strip Field Office (Arizona Strip District, Arizona BLM), and Glen Canyon National Recreation Area, National Park Service.

## 2 Planning and NEPA

---

### Status of the Resource Management Plan

Grand Staircase-Escalante National Monument is managed under a Monument Management Plan (MMP) adopted in 2000, and a series of four Management Framework Plans (MFP), adopted in the 1980's, which govern livestock grazing. The MMP has been amended once via the Tropic to Hatch 138 kV Transmission Line Project EIS in which a 300-foot wide by approximate 3-3/4-mile long swath of the Monument was changed from Primitive Zone to Passage Zone and from VRM Class II to Class III. The four MFPs were replaced by the MMP for all decisions but livestock grazing. In 1999, the Escalante MFP was amended to reallocate 5,630 AUMs of forage to purposes other than livestock grazing. This amendment also created a forage reserve to be used during emergencies or for research purposes.

The next Plan Evaluation is scheduled for FY 2015.

In the latter part of FY13 GSENM launched a planning effort to prepare a Livestock Grazing Monument Management Plan Amendment with an associated Environmental Impact Statement (EIS). Environmental Management and Planning Solutions Inc. (EMPSi) was hired in September 2013 to write the EIS; the Notice of Intent to initiate the planning effort was published in early FY14. The Plan Amendment will make land use-level decisions associated with livestock grazing, including lands available or not available for livestock grazing, forage currently available on an area-wide basis for livestock grazing and available for anticipated future demands, and guidelines and criteria for future allotment-specific adjustments. The Environmental Impact Statement will analyze the effects of all alternatives on the Monument's resources.

### Status of Activity Plans

#### Transportation Management Plan

The Transportation Management Plan (TMP) for GSENM was included in the MMP (2000). As of this report, the TMP has not been fully implemented. Open routes have been signed in Kane County (approximately 2/3 of the land area) but not in Garfield County. Some administrative routes have been signed. Due to the legal status of RS2477 road claims and ongoing litigation, routes that were not considered necessary or desirable have not been closed or rehabilitated. GSENM does not have a detailed route inventory. The Monument has identified this as a priority data need.

#### Special Recreation Area Management Plans

Six Special Recreation Management Areas (SRMA) were established in the MMP-EIS "where more intensive recreation management may be needed because the area will be a

focal point for visitation or because recreational uses within the area need to be closely managed or limited to prevent conflicts with Monument resources.” Activity plans for the six SRMAs have not been completed. The Monument is developing information for this effort through its multi-year Visitor Experience Survey, which continues in FY15.

## **Status of the RMP Implementation Strategy**

The MMP was the subject of an Implementation Review in 2010. Management actions taken to remedy the issues and concerns noted in the review report have included developing and carrying out an action plan; revising the GSENM’s Table of Organization; filling critical positions where possible; renewing the GSENM’s commitment to a focus on science and science-based decision making; and working with the interested public and applicable agencies and organizations to resolve issues regarding travel and transportation management, grazing administration, and protection of the objects identified in the Monument’s Proclamation.

Per the Implementation Review and resulting Action Plan, a Plan Implementation Strategy was initiated at GSENM. The Implementation Strategy identified numerous projects in the Monument’s program areas. The Monument is identifying priorities and implementing projects as resources allow..

## **Key National Environmental Policy Act Actions and/or Project Authorizations**

GSENM completed 5 environmental assessments, 4 categorical exclusions, and 17 determinations of NEPA adequacy in FY14. Environmental assessments were prepared to promote collection of scientific information, improve visitor experience and public safety, improve wildlife habitat, or for land uses. The categorical exclusions were for land uses (rights-of-way and film permits). Over the years, GSENM has completed several programmatic environmental assessments to streamline the NEPA review process for several types of routine projects including paleontological collections, special recreation permits, film permits, and heritage group permits. In FY 14, GSENM was able to utilize programmatic environmental assessments to analyze applications for 14 special recreation permits, 2 hunting outfitters, 2 heritage groups, and 1 film permit. GSENM also approved fossil collections at nine sites.

GSENM is continuing to work on a programmatic noxious weed and non-native invasive plant management environmental assessment. When completed, this programmatic environmental assessment will allow GSENM land managers to implement an integrated weed management program and react quickly to newly discovered weed infestations. Integrated weed management is designed to improve ecosystem health by manipulating vegetation to enhance native plant communities, benefit fish and wildlife habitat, improve riparian and wetland areas, and improve water quality.

---

## **Special Recreation Permits**

**In 2014, the number of Special Recreation Permit holders rose from 78 to 92. The Monument received 22 new applications of which 14 successfully resulted in permits. These applications were processed using the Programmatic Environmental Assessment for Issuing Special Recreation Permits within the Grand Staircase-Escalante National Monument (2012).**

# 3 Year's Projects and Accomplishments

---

## General Accomplishments

### Livestock Grazing Plan Amendment:

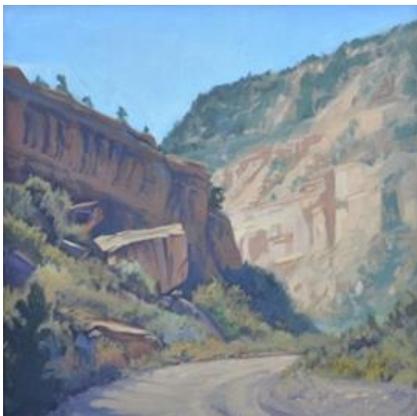
In FY2014, GSENM conducted three public scoping meetings, three socioeconomic workshops, four rangeland monitoring workshops, a Biological Soil Crust Science Forum, and two Colorado Plateau Rapid Eco-regional Assessment presentations. GSENM met with Cooperating Agencies eight times, met with representatives from Utah government, and attended two county-hosted coordination meetings. GSENM distributed two newsletters, a scoping report, and a socioeconomic workshop report.

GSENM is seeking a greater level of public engagement as part of the EIS process. GSENM has held monthly cooperating agency meetings and has expanded outreach efforts with other stakeholder organizations including the Grand Canyon Trust, The Wilderness Society, Western Watersheds Project, and Wild Utah at their requests. The Monument also participated in National Park Service Glen Canyon National Recreation Area-hosted public meetings to share information on the Grazing EIS.

GSENM is preparing to release preliminary alternatives for a public review prior to initiating analysis for the Draft EIS. GSENM wants to ensure a wide range of alternatives is considered in detail. Kane and Garfield County presented information on state and local ordinances to aid in alternative development.

### Artist in Residence Program:

Dennis Farris, a Fort Worth, Texas based artist served as the 2014 Escalante Canyons Artist in Residence. This three-year-old GSENM program serves as the National Conservation Lands partnership model for hosting an artist in residence with supporting external organizations.



Left and right: Smoky Mountain Road, Oil on Panel, 12x12, and Dennis Farris, the 2014 Escalante Canyons Artist, in action on a stormy afternoon in front of the Escalante Interagency Visitor Center.

### **Calf Creek Recreation Area and Deer Creek Campground Fee Business Plan:**

GSENM's proposal to increase standard and expanded amenity fee rates at Calf Creek Recreation Area and Deer Creek Campground was approved and in March, 2014 the Campground Business Plan was finalized, on-site signage was updated, and the fee increases were implemented.

### **Graffiti Removal Field Training:**

Monument park rangers initiated a field education program over two busy summer weekends along the Calf Creek trail to educate visitors about the Monument's on-going challenges with graffiti removal. Dozens of hikers and a local Boy Scout Troop were trained in the use of wire brushes to remove graffiti from on a sandstone wall that abuts a large campsite. Park rangers also removed graffiti at three other sites in the area.

### **Nephi Pasture Staging Area Construction:**

This project was completed in November 2013 with the installation of 400+ native shrubs and grasses. It provides parking and restroom facilities to equestrian and motorized recreation users. The staging area is located approximately 15 miles northeast of Kanab; funds were provided through the Utah State Recreational Trails grant funds and recreation fee monies.

### **Recreation Experience Baseline Study:**

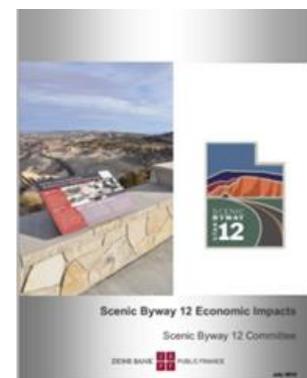
Colorado Mesa University's Natural Resource Center and GSENM used a National Conservation Lands Science grant and Federal Lands Recreation Enhancement Act fees to support the second phase of a multi-year study aimed at helping the BLM better respond to the public's desires and expectations for how recreation on the Monument is managed. The Grand Staircase region was the focus of this study in FY14.

### **Paria Team:**

The Paria Team (staff from Vermillion Cliffs National Monument, Kanab Field Office, and GSENM) met monthly in 2014 to discuss issues associated with managing North and South Coyote Buttes (The Wave) and the Paria Canyon-Vermillion Cliffs Wilderness. GSENM has hosted the daily walk-in lottery for the Wave at the Kanab Visitor Center since 2013. GSENM developed heat-related messages for trailhead signage that were translated into 8 languages and posted in Visitor Centers and trailheads.

### **Scenic Byway 12 Foundation Partnership:**

The Scenic Byway 12 Foundation, of which GSENM is a primary partner, hired Zion's Bank Public Finance to conduct a yearlong study to determine the economic impact of Scenic Byway 12 being



**Cover of Scenic Byway 12 Economic Impact analysis.**

designated an All American Road. The final report was released in July 2014 and revealed that Scenic Byway 12 generated \$12.75 million in spending in Garfield and Wayne Counties in 2013.

### **Special Recreation Permit Business Plan:**

In May 2014, GSENM staff completed a Special Recreation Permit Program Business Plan to meet the criteria defined in the “Federal Lands Recreation Enhancement Act, 2004” (FLREA). At GSENM commercial and organized recreational use is managed through the SRP program to control visitor use, protect recreational, natural, and cultural resources, and provide for the health and safety of the visiting public.

### **Visual Resources Inventory:**

Work conducted by an American Conservation Experience intern and GSENM staff in the summer of 2014 continued the effort to re-inventory GSENM visual resources. Work completed included converting all data to the VRM data standard, finalizing scenic quality rating unit boundaries, determining distance zones and the seldom seen area, and capturing additional inventory observation point imagery.



An example of an inventory observation point panoramic image

### **Visitor Center Management and Visitation:**

Despite the loss of the Monument’s lead Park Ranger to retirement, and vacancies in visitor contact staffing at Escalante that were not filled until midyear, GSENM was able to provide exceptional front desk visitor services at four Visitor Centers and to support visitor contact in the backcountry during a record year for visitation. Annual visitation numbers reached an all-time high of 878,000 visitors counted in the RMIS system and 139,078 visitors welcomed at GSENM Visitor Centers. Sites with highest increases in visitation include Lower Calf Creek Falls (32,800), Devil’s Garden (24,667), Dry Fork Trail (21,331), Sheffield Road (12,659) and Toadstools Trailhead (16,104). Visitor Center totals for FY14: Big Water, 22,978; Cannonville, 25,919; Escalante, 50,851; Kanab, 39,330.

### **Backcountry Use:**

GSENM issued 2,490 backcountry permits for 7,461 visitor use days, and 9,687 campground or day use permits, for 25,643 visitor use days. GSENM conducted 1,130 backcountry patrols. A total of 3,339 visitors were contacted, 2,388 vehicles were counted, 289 trailheads were serviced, 35 permits were issued in the field, and 982 campsites were monitored. GSENM installed 12 new boundary signs.

### **Vegetation Monitoring Public Workshops:**

Two vegetation monitoring training workshops were offered to the public as part of GSENM's outreach during development of the plan amendment for grazing. The workshops were held in field locations near Escalante and Kanab and gave participants a hands-on experience that helped foster understanding of how and why GSENM conducts vegetation monitoring.

### **Last Chance Creek Survey:**

In May 2014, GSENM's annual resources staff field monitoring workshop was held on Last Chance Creek. Interdisciplinary Teams of Monument and Kanab Field Office staff carried out approximately 50 miles of Proper Functioning Condition surveys from the Last Chance headwaters down to the shore line of Lake Powell. The training included an invasive species and noxious weed survey of the same area. Support for the workshop was provided by Clean Water and Watershed Restoration funding.



Left, vegetation monitoring public workshop; center and right, Last Chance Creek Proper Function Condition survey.

### **Vegetation Monitoring:**

Vegetation monitoring occurred on approximately 200,000 acres and consisted of Proper Functioning Condition (Lotic and Lentic), Rangeland Health (IIRH), Long Term Trend, Vegetation Treatment establishment monitoring, and fire restoration monitoring. GSENM also monitored the condition of willows transplanted in 2013 on Henrieville Creek, along Highway 12. The Monument has had success in partnering with local schools in its willow planting project. The schools help cut willow shoots, the Monument prepares the cuttings, then the schools place the willow cuttings to reduce erosion and shade water.



Left, Fivemile Substation trend monitoring; center, willow monitoring, Henrieville Creek; right, Fivemile sagebrush mortality monitoring. Decadent mature sagebrush indicates potential for restoration.

## Eightmile Salinity Control:

Phase 1 Initial salinity control in 2013 included site stabilization work, including spillway reconstruction, spillway restoration and spreader dike construction in preparation for major site work to be performed in FY14. Phase 2 in 2014 began the capacity restoration to the impoundment reservoir. Over 60,000 cubic yards of saline material was removed and impounded on site. Equipment and materials were utilized from local businesses.

## Wildlife Habitat Projects:

During 2014 Monument Resource Staff completed several wildlife water projects which have led to the better distribution of species and numbers across a wide area and alleviated high impacts to a localized key areas and critical natural waters.



Left, installing storage tanks for wildlife drinker at Eightmile; center, putting a lid on the Coyote storage tank. Lid have drastically reduced mortalities at GSENM waters. Right, new Brown Springs trough installed outside riparian area. Riparian area will be fenced in 2015.



Left, West Clark bench wildlife drinker installed; right, Paunsagunt mule deer using drinker shortly after installation.

## Hummingbird and Bat Study:

The Monument continued a long-term study of bats and hummingbirds. In addition to noting species, weight, and key measurements on the hummingbirds, the staff scientists have also initiated a study of the plant species utilized by these birds. Pollen swabs show the variety of plants visited by hummingbirds, including golden current and other native species critical for pollinators. The trapping program identified four species caught in three locations and habitats: Calf Creek (desert riparian), Escalante interagency office (pinyon-

juniper and developed), and Wildcat Ranger Station (Mountain meadow). Partners in this project are Hummingbird Monitoring Network, BLM (GSENM), Dixie National Forest, and Fishlake National Forest.



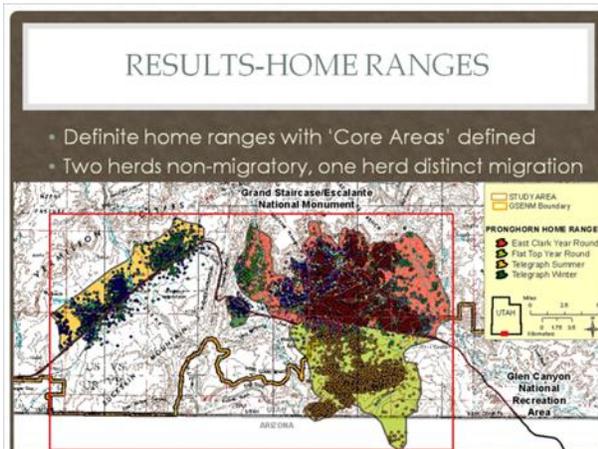
Left, *Ribes aureum* (golden current) pollen from hummingbird swab; center, hoary bat captured and banded; right, Snowy Egrets resting in a juniper on the Monument before continuing migration.

### Desert Bighorn Sheep Introduction:

In November of 2012, fifty desert bighorn sheep from Nevada were released on portions of GSENM on Smoky Mountain and near Cave Spring. Most of the sheep from the release were fitted with radio collars and ear tags to aid in monitoring. Telemetry-aided surveys in 2014 indicated that the sheep have dispersed from their release locations, several ewes have produced lambs, and the sheep appear to be doing well.

### Pronghorn Home Range and Survival:

The pronghorn study initiated in 2012 with 25 GPS-collared doe pronghorn antelope is yielding initial results on survival rates, habitat use, home ranges, and reproduction success. The GPS collars, which were programmed to drop off the animals after two years, were collected by staff in March of 2014. The pronghorn appear to reside in three distinct herds which do not interact, and two of the herds appear to not be viable due to limited populations.



Left, initial findings from the Pronghorn home range study, presented at the 26th biennial Pronghorn workshop in Texas, will be incorporated into a forthcoming publication. Right, captured cougar being outfitted with radio collar for predation study.

### **Cougar Predation:**

The GSENM cougar predation study tracked a male collared with a GPS transmitter in June of 2013. During the 2014 field season, the cougar's movements and all of his kills were monitored through April, 2014. Preliminary data suggest a large home range of nearly 400 square miles. Kills by the cougar varied from 3-4 per week during deer fawning and elk calving season to less than one per week during winter months. GSENM hopes to continue this study by collaring two more cougars this year.

### **Range Administration:**

During 2014 the range program lost a Rangeland Management Specialist and a Range Technician. In spite of the personnel loss the program processed 184 grazing bills and four grazing preference transfers; conducted monitoring on 14 allotments; completed rangeland health evaluations on Vermilion and School Section Allotments and began the preparation work for 10 more evaluations; collected data for Interpreting Indicators for Rangeland Health on the Soda and Vermilion allotments covering approximately 116,000 acres; and completed 48 compliance inspections.

### **Current Areas of Focus**

Grand Staircase-Escalante National Monument addressed several pressing issues in FY14, including Monument staff changes and reductions, an oil spill on the Monument, on-going litigation associated with livestock grazing and Revised Statute 2477 (RS2477) right of way issues, increasing recreational demands and visitation and continuing work on and interest in our Livestock Grazing Monument Management Plan Amendment and associated Environmental Impact Statement. These issues were a major focus of staff activities and will continue to occupy staff and impact the Monument's work through FY15 and out years.

### **Staff Changes and Reductions:**

Monument Manager Rene Berkholt retired, and Associate Monument Manager Sarah Schlanger filled the void as Acting Manager for much of the fiscal year. Cindy Staszak was selected for the Monument Manager position and reported permanently to the Monument in late August, 2014. The Lead Park Ranger/ Visitor Center Manager in Escalante also retired, and several additional Park Ranger positions were not filled until mid season. This left Monument staff stretching to fill many roles. The Park Ranger/Visitor Center Manager Position will be filled in February, 2015. Workforce planning and limited funding have resulted in other key positions being left vacant, reorganized or reclassified. The Resource Program lost a Range Management Specialist and Range Technician, and the soil scientist position became vacant. The Planning and Business Services Division had a vacancy in the front desk staff and the IT position was centralized and moved to Sacramento. GSENM Law Enforcement positions were reorganized under a District Law Enforcement Ranger based in the Color Country District Office. GSENM currently has only one Law Enforcement Officer for 1.8 million acres, and are waiting to fill the remaining 2

positions. Monument staff has been reduced by almost 18% over the past few years. As we move forward into FY15, we will continue to address staffing reductions through workforce planning, budget analysis, sharing resources, increasing volunteer opportunities, prioritizing workloads and determining what we will be unable to accomplish, with limited staff.

### **Oil Spill:**

In March of 2014, an oil spill was reported in the Little Valley Wash on Grand Staircase-Escalante National Monument. Little Valley Wash is an intermittent drainage located southwest of Escalante, Utah and downstream from the producing Upper Valley Unit oil field, which is located both on Forest Service and BLM-managed lands. The BLM, in coordination with the Dixie National Forest and Citation Oil & Gas Corporation, undertook field inspections by petroleum engineering technicians, natural resource specialists, geologists, botanists, biologists and other experts in resource management to determine the extent of the spill. A report was completed and released to the public in May, 2014. It was determined that at least three separate events- one recent leak and two older spills- deposited substantial oil residues in the wash. The two older spills were estimated to have left a deposit of some 550 barrels of oil. The most recent leak, a small pipeline spill in December 2013, was likely less than 10 barrels of a mixture of mostly saline water and some oil. The report also concluded that the oily deposits, 54 stream-miles from the Escalante River, appear to be relatively stable and, if undisturbed, pose no immediate threat to wildlife and vegetation in the wash. Active remediation of the oil deposits, in the narrow, rocky canyons, would cause greater harm and impacts than passive remediation. Follow-up actions include increased reporting levels and frequencies by the oil company, completion of an assessment of the Upper Valley oil field infrastructure, preparation and implementation of a new surface use plan by Citation, continued and increased monitoring of natural resource conditions in Little Valley Wash and monitoring in other drainages leading from the Upper Valley Field. Oil field infrastructure repairs were identified and completed in 2014. The new surface use plan is scheduled for completion and implementation in 2015.

### **Litigation:**

Several on-going lawsuits, one related to livestock grazing which was brought by the Western Watersheds Project, and five dealing with Revised Statute 2477 (RS2477) rights of ways, created an enormous workload for Monument staff and a burden on the budget. The grazing lawsuit culminated in FY2014 with a summary judgment in favor of the Monument.

The RS2477 cases involve more than 1,500 roads across the Monument and the Kanab Field Office in Kane and Garfield Counties. These cases create a massive workload on staff requiring them to review the cases and prepare the necessary documentation for Justice Department attorneys. The decision in the first case (Kane 1), adjudicating just 15 roads, was signed by the judge in the spring of 2013; and was soon appealed by both parties. A decision was issued and published by the United States Court of Appeals, Tenth Circuit on December 2, 2014. The appeal was affirmed in part, reversed in part and remanded the

case. Kane 2 (64 roads), Kane 3 (706 roads), Garfield 1 (96 roads) and Garfield 2 (640 roads) have yet to be heard in court.

#### **Increasing recreational demands and visitation:**

GSENM experienced a record year for visitation, with 878,000 total visitors, and 139,078 visitors in our Visitor Centers. The number of Special Recreation Permits also increased from 78 in FY 13 to 92 in FY 14. Several actions were completed in FY 14 to meet the demands that come with increased visitation. The Business Plans for Calf Creek Recreation Area and Deer Creek Campground were completed, and the proposed standard and expanded amenity fee increases were implemented, helping to support the operation and management of these very popular recreation areas. The Special Recreation Permit Business Plan was completed, and is providing guidance and direction for the SRP program to control visitor use, protect resources and provide for the health and safety of the visiting public. The Recreation Experience Baseline study focused on the Grand Staircase region in 2014 and is continuing into 2015. Several new initiatives were launched including a visitor capacity study at Calf Creek watershed and Dry Fork slot canyons, and a Monument-wide baseline acoustic monitoring.

#### **Livestock Grazing Monument Management Plan Amendment/Associated Environmental Impact Statement (MMP-A/EIS)**

GSENM is continuing work on the Livestock Grazing Monument Management Plan Amendment and associated EIS. We are addressing issues raised with this controversial EIS by increasing our engagement and transparency with the Cooperators and the public. We have conducted three scoping meetings, three socioeconomic workshops, four rangeland monitoring workshops, a Biological Soil Crust Science Forum and two Colorado Plateau Rapid Eco-regional Assessment presentations. GSENM has held monthly cooperating agency meetings, held coordination meetings with Kane and Garfield counties and met with State of Utah representatives, the Grand Canyon Trust, The Wilderness Society, Western Watersheds Project and Wild Utah. The goal for the new MMP-A/EIS is to develop and analyze management alternatives and reach a decision that will enable sustained use of the land through improved land health and science-based grazing management. We will continue this elevated level of engagement and outreach in FY15, involving the public in commenting on the range of alternatives developed for the EIS.

### **Education, Outreach, and Interpretation**

#### **Native Plant Restoration Project:**

GSENM's Hands-on-the-Land (HOL)/ Take-it-Outside (TIO) initiative sponsored a fieldtrip for 32 Kanab High School Natural Resources (KHS) students. Students learned how to establish frequency transects, identify native plants, and document Sage Grouse occupancy. This project was highlighted by PBS's "This American Land" series in 2014 <http://www.thisamericanland.org/lesson-plans/restoring-native-plants>. Unfortunately, due to changes in class scheduling, KHS will no longer be able to continue project activities.

Therefore, GSENM and KHS have agreed to end KHS's involvement in the project, but GSENM will continue the project at Old Corral Spring in partnership with the Kaibab Paiute Tribe and the Intergovernmental Internship Cooperative (IIC). As part of the Hands on the Land sponsored program, Teacher on Public Land, Megan Miles created new curriculum on climate change that is expected to be field-tested at Kanab Middle School in FY 2015.

#### **Discovery Trunks:**

GSENM and Grand Staircase Escalante Partners (GSEP) updated 5 of the Paleontological Discovery Trunk curriculum units to match changes in Utah standardized curriculum objectives and restocked activity supplies for both the Archaeological and Paleontological Discovery Trunks. GSENM and Grand Staircase Escalante Partners (GSEP) staff utilized both trunks as part of in-school presentations, public outreach events, and school fieldtrips to GSENM visitor centers. As part of their Environmental Education outreach efforts, GSEP in cooperation with GSENM created a Paleontological "Fossils on Display" Touch Table with real and reconstructed fossils and artifacts as a supplemental teaching tool to be utilized primarily for school groups.

#### **Traveling Exhibits:**

GSENM's and Grand Staircase Escalante Partners' (GSEP) traveling exhibits were highlighted at several regional school assemblies, public outreach events, visitor centers, and public venues. Three travelling exhibits were adopted by the BLM's Washington Office for their public outreach efforts. *Lythronax argestes* and *Teratophoneus curriei* were displayed as part of a larger exhibit on North American Tyrannosaurus at the Natural History Museum on the National Mall which drew an estimated 11,000 visitors. The third exhibit was retained by the WO on a long term loan and is displayed prominently at the BLM offices at Main Interior. GSENM also supported an exhibit at the National Turkey Federation Conference in Nashville, Tennessee with new exhibit elements, posters, and handouts, and supplied a dinosaur cast and exhibit materials to the BLM Utah State Office for the Outdoor Retailers Expo in Salt Lake City, Utah.

#### **Youth Educational Outreach:**

GSENM and GSEP staff coordinated and provided 39 presentations about paleontology, archaeology, wildlife, botany, geology, and history for 2,163 students and other youth as part of assemblies, in-class presentations, visitor center fieldtrips, and organized educational activities including the Escalante River Watershed Partnership Youth Conservation Corp training, Native American Kwiyauntsi Youth Camp, Southern Utah University Intergovernmental Internship Cooperative End of Year Gathering, and Panguitch High School Science Fair. As part of the Hands on the Land sponsored program, Teacher on Public Land, Megan Miles created new curriculum on climate change that will be field-tested at Kanab Middle School in FY 2015.

#### **Local and Regional Event Support:**

GSENM co-sponsored the Audubon Society Christmas Bird Count (CBC), a BLM Hands on

the Land/Take it Outside event, with the BLM Kanab Field Office (KFO) in partnership with the Audubon Society, Bryce Canyon NP, Glen Canyon NRA, Pipe Spring NM, Grand Staircase Escalante Partners, Glen Canyon Natural History Association, Dixie/Arizona Strip interpretive Association, Bryce Canyon Natural History Association, and Kane, Garfield, Page, and Fredonia Schools. At area schools, GSENM and KFO staff set up bird feeders, distributed bird identification materials, and provided in-class presentations to 120 local students. Over 2,000 students participated in the event identifying and collecting bird and migration data. In addition, GSENM and KFO sponsored 3 CBC events located in Boulder, Kanab, and Escalante drawing 200 regional residents.

As part of Paiute Youth Day event activities, Paiute Elders gave two presentations on the Paiute culture and demonstrations on coppicing willows to five all Native American Youth Conservation Corp (YCC) members and 26 tribal youth and partner participants who practiced coppicing willows and cut willows to build a traditional Paiute dwelling for the subsequent Timeless Traditions of the Southern Paiutes event. One educational handout was created for the event.

Native American culture was also highlighted at the Timeless Traditions of the Southern Paiutes event. 20 visitors were invited to participate and learn about the Paiute Culture, along with eight BLM staff. Six tribal elders gave two presentations on traditional native plant uses and Paiute cultural history as part of the event. In addition, IIC supplied 26 youth work crews members to provide facility maintenance and constructed a traditional Paiute dwelling as an exhibit for the visitor center. One publication and an interpretive sign on coppicing were also created for the event.

Other events supported by GSENM included an Earth Day Festival and poster contest for local students drawing over 400 participants; a National Public Lands Day Event for 250 participants; Western Legends Round-Up Festival drawing 700 participants; Escalante Canyons Art Festival/ Everett Ruess Days attracting 500 people; Bryce Canyon National Park Geology Festival drawing 500 participants; Leave it to Beaver Festival attracting 200 people; Get Outside Day Event delighting 150 people; Color Country Wilderness Festival for 50 participants; and two Big Water Dinosaur Festivals. GSENM participated in the second annual Big Water Dinosaur Festival in September in partnership with Big Water City, Kane County Office of Tourism, Glen Canyon Natural History Association (GCNHA), and Grand Staircase Escalante Partners (GSEP). As part of the event, GSENM hosted two exhibits featuring seven Paleontological Traveling Exhibits, including GSEP's *Nasutoceratops titusi*. In addition, GCNHA hosted two evening paleontology presentations and GSENM sponsored two field-trips to a dinosaur excavation site in support of the event. The combined activities drew over 1,050 people.

#### **Walks and Talks Lecture Series and Other Presentations:**

GSENM staff, researchers, and guest lecturers presented formal public outreach programs on topics such as archaeology, geology, botany, dinosaurs, and history. GSENM staff also provided formal and informal presentations on paleontology, archaeology, range, wildlife, and stewardship at GSENM visitor centers, professional meetings, workshops, seminars, and trainings. Altogether, GSENM provided 138 presentations and fieldtrips for 4,270

participants.

### **Interpretive and Program Support Media:**

In FY14, GSENM produced 82 information signs, interpretive panels, posters, news releases, and support publications. In addition, ten 20-minute radio shows about GSENM programs and goals were broadcast in Page, Arizona to a radio audience that included the Navajo Reservation and southern Utah. More than 50 news releases were generated and 90+ news queries from local, regional and national media were answered. In addition, GSENM's cooperating organization Glen Canyon Natural History Association launched the long awaited GSENM Cottonwood Road Geology Guide.

### **Wilderness 50th Anniversary Year:**

The Monument led or co-hosted 15 community and on-site events which included three ranger-led hikes in the Monument's wilderness study areas, 8 showings of evening wilderness movies (and popcorn), and four well-attended presentations by various speakers. Four new exhibits including a timeline of eligible, proposed and designated wilderness lands managed by the Monument as well as Dixie National Forest and Glen Canyon NRA were initiated by an interagency team of GSENM-BLM, USFS and NPS park rangers. The exhibits included a map used by visitors to show their favorite home wilderness as well as an on-going journal that captured visitor's thoughts and impressions of the meaning of wilderness. A culminating highlight of the year was two evening performances at the Escalante High School. "Delighted" audiences of more than 100 local residents and out of the area visitors saw living history performances featuring Naturalist John Muir and President Teddy Roosevelt conversing about conservation and preservation on public lands, and Muir alone recounting his harrowing adventures in the western wilds. The living history presentations were made possible by special funding from the National BLM Wilderness Program Office featuring professional actors, Lee Stetson as John Muir and Allan Sutterfield as Teddy Roosevelt. Partners and organizations supporting these efforts include Glen Canyon Natural History Association, City of Kanab, the Earthfest committee, and the Escalante Arts Festival.

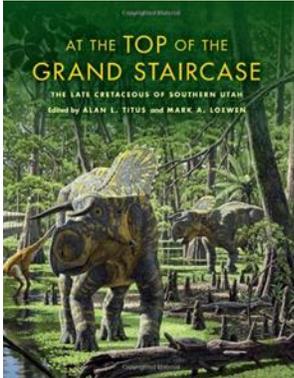
### **Escalante Ranger-Led Evening Programs:**

A new series of ranger-led talks in campground settings was started in the Escalante Interagency Visitor Center in 2014. There were 12 evening programs given at GSENM-Calf Creek Campground by two BLM park rangers and 8 programs given at Escalante Petrified Forest State Park by two NPS/USFS rangers.

### **Paleontology:**

Early in the year (October, 2013) Indiana University Press published "At the Top of the Grand Staircase-The Late Cretaceous of Southern Utah," edited by GSENM paleontologist Alan Titus. The 624-page volume is a comprehensive look at what was known about GSENM Cretaceous geology and paleontology as of 2010 and is the first technical overview of the subject ever published. A portion of the proceeds from book sales at Visitor Centers

come back to GSENM to fund paleontological research.



Left, Cover of *At the Top of the Grand Staircase*; right, volunteers working at the new tyrannosaurus bonebed (14UTKA-8).

Over 1,500 acres of inventory were completed in FY14 by the BLM's in-house program with another approximate 4,000 acres contributed by museum partners. Among the dozens of new sites documented, highlights include a new kind of horned dinosaur and a unique, multi-individual tyrannosaurus site (Figure N), along with a complete tortoise bearing a clutch of eggs and 60% complete giant alligator skull. Surprisingly, the new tyrannosaurus site (14UTKA-8), one of the most important ever found in the Monument, was found south of the Four Mile Bench road, an area that was regarded in FY13 as having low potential. The bulk of Kaiparowits fossils continue to come from the lower half of the middle member no matter where it is inventoried. Areas underlain by this unit must be extensively inventoried prior to any action taken there and it maintains its Potential Fossil Yield Classification (PFYC) of 5, which is the highest rating.

For the first time ever, in FY2014 the lower portion of the Wahweap Formation was nearly as productive as the Kaiparowits. Several giant alligator and dinosaur sites were documented in the area between Tibbett Springs and Nipple Butte. This appears to contrast with the alluring, but generally barren mudstones in the middle unit and is a result of refining methods of searching in the lower unit. As a result, the lower member of the Wahweap locally rates a PFYC of 5, while overall the Wahweap Formation has been assigned a PFYC of 4. This means extra scrutiny should be given to projects proposed to occur in lower unit and many important sites are within easy access to local residents in the Page and Big Water areas. Increased law enforcement and backcountry patrols in the Tibbett Spring area are anticipated in FY2015.

Inventory priorities for 2014 were on the Tibbett Bench-Nipple Spring areas and south of the Four Mile Bench Road. While 1500 acres of survey was completed, the majority of BLM paleo program time in FY2014 was spent excavating a giant alligator site and a tyrannosaurus bonebed (Figure N). The latter may be one of the program's most important finds and has yielded bones of at least two separate tyrannosaurs (t-rex like animals), as well as the remains of other kinds of dinosaurs and five species of fish and two species of turtle.

New Cretaceous fossil sites documented during the FY2014 inventory continue to demonstrate that the Kaiparowits Formation justifies its position as the highest priority formation for collection of baseline data. However, sites found in the Tropic Shale and Wahweap Formation have caused a slight shift in inventory priority, with the Kaiparowits receiving slightly less effort in FY2015. Based on the results of the last five years, the priorities for the Tropic Shale, Straight Cliffs Formation, and Dakota Formation have also shifted. The Tropic now ranks as the third priority, jumping two places past the latter two formations. Future inventory priorities now rank as follows: Kaiparowits Formation, Wahweap Formation, Tropic Shale, Straight Cliffs Formation, Dakota Formation, Chinle Formation, Morrison Formation, Moenave/Kayenta Formations, Navajo Formation, Quaternary Fill, Rock Shelters, Lake Deposits.

### **Cultural Resources:**

As GSENM continues development of its ongoing Livestock Grazing EIS and Monument Management Plan Amendment, GSENM staff is conducting cultural resource inventories in targeted allotments and monitoring known archaeological sites for grazing related impacts. Monitoring activities were concentrated on sites with the “grazing impacts” check box marked on the site record forms in an effort to more accurately describe the types of and severity of grazing related impacts. Results so far indicate that while certain sites and classes of sites do indeed have livestock activities, the majority of monitored sites show cattle use but no grazing related adverse effects.



**Left, GSENM Archaeological Technician Shaun Dinabulo and volunteer Cynthia Campbell record an archaeological site on the Kaiparowits Plateau; right, volunteer Ashton Mieritz and hosted worker Peter Yaworsky collect a packrat midden.**

Fieldwork continued in 2014 on the Lake Pasture Pollen Core paleoenvironmental research project. In 2012 a pollen core was collected from Lake Pasture, on the Kaiparowits Plateau, and a 640 acre cultural resource inventory was conducted surrounding the pollen core location. More than 80 archaeological sites were located. The 2014 field season focused on site recordation. The crew, which included a GSENM archaeological Hosted Worker, the GSENM seasonal Archaeological technician, two volunteers, the NAU graduate student working on the pollen cores, and the GSENM staff archaeologist, recorded 18 archaeological sites over the course of four days, and collected important packrat midden samples from an alcove structural archaeological site. The use of packrat midden material augments the data that will be derived from the pollen core,

giving a broader and more detailed picture of environmental change over the past hundreds or thousands of years.

The proposed Dance Hall Rock parking area redesign project created a unique opportunity to partner with a community with a long tradition on the Monument. Dance Hall Rock was a center for social activities during the arduous trek of Mormon pioneers to the San Juan River area in 1879-1880. Today, it is an important site for modern Latter Day Saints as well as other tourists and history buffs, and sees ever-increasing visitation from an appreciative public. This project involves the construction of a new parking area near the popular historic site that will incorporate a



The Hole-in-the-Rock trail in the area to be readied for pedestrian traffic. White lines indicate the original wagon trail.

short segment of the original Hole in the Rock wagon trail for use as vehicle access to the new parking area, and continuing from there as foot trail access to Dance Hall Rock itself. Repair and stabilization of this short trail segment will prevent further deterioration and loss of this trail segment, and increase interpretive potential. Consultations concluded with the LDS Church History Division, the Hole-in-the-Rock Foundation, the NPS, the California-Oregon Trails Association, and the Utah SHPO in support of the trail segment rehabilitation and stabilization. As visitors approach Dance Hall Rock along the original wagon trail, they will encounter a “first view” of the rock much as the original pioneers must have seen it.

## Partnerships

The Monument’s extensive research, outreach, and educational programs were supported by more than 50 active partnerships in 2014. These included the Monument’s non-profit friends group, Grand Staircase Escalante Partners, as well as private foundations, academic institutions and individual researchers, regional and statewide partnerships, and interagency partnerships.

### Grand Staircase Escalante Partners (GSEP):

Grand Staircase Escalante Partners (GSEP), a 501(c)(3) non-profit friends group, began working with the Monument in 2008. In FY14, major accomplishments included a renewed focus on four key programs: education and native plants, archaeological site stewardship, paleontological lab coordination and outreach, and the Escalante River watershed restoration project. The first three programs are supported primarily through assistance

agreements with BLM; the Escalante River work is supported through a major grant to GSEP from the Walton Family Foundation, plus another six grantors. The Site Steward program involved 30 volunteers monitoring site conditions at more than 60 archaeological sites on both the GSENM and Kanab Field Office lands. The Paleo Lab program was supported by 12 regular volunteers; this program also developed a travelling discovery trunk for K-12 educational outreach. Other accomplishments included school programs, constructing “Discovery Trunks” for educational outreach, developing a travelling exhibit program focused on paleontological specimen casts, and support for five major community-based resource-focused “festival-style” events including the Big Water Dinosaur Festival, Kanab Amazing Earthfest, Bryce Canyon NP Geology Festival, Escalante Canyons Arts Festival, and Boulder Heritage Festival. GSEP generated approximately 14,600 hours of volunteer and staff time in support of the Monument in FY14.



**Mike Satter, Education Committee Chair, Grand Staircase Escalante Partners, at the Bryce Canyon National Park Geology Festival.**

**The Escalante River Watershed Partnership (ERWP):**

The ERWP, created in 2009 to bring together efforts to control Russian olive, monitor the spread and effects of the tamarisk leaf beetle, and improve the management of resource usage of the Escalante River watershed, has over 30 partners, including local landowners, local business owners, city and county municipalities, non-profit organizations, conservation corps, and federal and State land agencies. The ERWP aims to restore and maintain the natural ecological conditions of the Escalante River and its watershed and involve local communities in promoting and implementing sustainable land and water use practices. ERWP uses the best available science, community input and adaptive management methods to make sound decisions. In FY14, ERWP fielded an 8-person Utah Conservation Corps crew and supported a Great Old Broads volunteer trip and a Wilderness

Volunteers trip. Altogether, the partnership treated 132 acres ; retreated 525 acres; and monitored 584 acres.

**Great Basin Institute and AIM Implementation:**

In FY14, GSENM extended its long-term collaboration with the Great Basin Institute (GBI) to implement the Bureau's Assessment, Inventory, and Monitoring (AIM) protocol on the Monument. GBI crews located and initiated new monitoring stations; the stratified sampling design focused on ecological sites critical to ecosystem function on the Monument.

In addition to stewardship and restoration-focused initiatives, GSENM also maintains nearly 4 dozen active research programs with academic institutions and individuals. These programs are identified individually in Section 4 of this report.

GSENM also works closely with the Utah Partners for Conservation and Development (UPCD) and the Utah Division of Wildlife Resources. (UDWR) UPCD brings together natural resource-oriented agencies and organizations committed to providing solutions to conservation issues. In FY14, UPCD and ERWP partnered with GSENM to eradicate Russian olive along the Escalante River.

**Glen Canyon Natural History Association (GCNHA):**

GSENM continued its strong partnership with GCNHA. This group works with the Monument to stock and staff the book and gift shops in our four visitor centers, and also works with GSENM to assist with temporary and seasonal staffing needs at these centers. In 2014, a new assistance agreement was awarded. Six hosted workers were hired to staff information desks at visitor centers. One Monument Recreation Planner serves as the Program Officer and works as liaison for issues related to books and retail items and attends monthly board meetings of GCNHA year-round.

**Utah Scenic Byway 12 Foundation:**

The Monument also continued its close association with the Utah Scenic Byway 12 Foundation. In FY14, in addition to collaborating on wayside exhibits and interpretive projects, the foundation sponsored a study of the economic impact of All American Road designation for the byway. The final report found that the byway designation resulted in \$12.75 million in spending in Garfield and Wayne Counties in 2013.

**Southern Utah University, Department of Psychology:**

In 2014, a new Assistance Agreement was initiated to conduct baseline acoustic monitoring Monument-wide. September, 2014 was the kick-off for the agreement with initial training conducted on equipment deployment, data collection, equipment extraction, data analysis and reporting presented by the Natural Sounds Program (NPS) for 6 SUU student assistants, the project lead and principal investigator, Professor Britt Mace, and 8 BLM staff. Sound monitoring equipment was deployed at three sites for 25 day periods: Lower Calf Creek, Deer Creek and Dry Fork. Two Monument Backcountry Park Rangers and One Monument Outdoor Recreation Planner worked with the university team.

**Colorado Mesa University, Natural Resources Center:**

In 2014, GSENM worked with Colorado Mesa University to implement the second phase of a project to establish the recreation experience baseline for areas of the Monument that receive increasing levels of recreational use. This phase focused on the Cottonwood and Skutumpahugh Roads with on-site and web-based focus group participation.

**Aldo Leopold Wilderness Research Institute/Rocky Mountain Research Station, US Forest Service:**

A new interagency agreement was established under Service First Agreement Authority to analyze existing visitor capacity in the Calf Creek watershed and the Dry Fork slot canyons.

**SUU-IIC Partnership:**

Administered by Southern Utah University's (SUU) Harry Reid Outdoor Engagement Center, the Intergovernmental Internship Cooperative (IIC) coordinates work- and-project-based internship and service learning projects to serve southern Utah and northern Arizona by matching the needs of state and federal land and resource management agencies with University students, educators, and young people seeking meaningful land management and education opportunities. Through this cooperative effort, IIC promotes professionalism in land stewardship and creates opportunities to learn about, contribute to, and benefit from land management and resource conservation.

IIC is a unique and diverse group of partners working together for a common purpose. Apart from SUU, members include: Bureau of Land Management Color Country District, Arizona Strip District, and Grand Staircase-Escalante National Monument; National Park Service Bryce Canyon National Park, Zion National Park, Cedar Breaks National Monument, Pipe Spring National Monument, and Grand Canyon-Parashant National Monument; Bureau of Indian Affairs (BIA) Southern Paiute Agency; U.S. Forest Service Dixie National Forest; Natural Resources Conservation Services Cedar City Field Office; Utah Department of Natural Resources Division of Parks and Recreation, Division of Wildlife Resources, and Division of Forestry, Fire and State Lands; Paiute Indian Tribe of Utah and Kaibab Band of Paiute Indians; Utah and Arizona Departments of Work Force Services; and Dixie State University. Through an Assistance Agreement, the IIC partnered with GSENM to provide three internships for regional students in recreation and range management, and five Native American youth as part of a Corp work crew participating in the Old Corral Spring Project. The crew treated one acre.

**Utah Partnership for Conservation and Development (UPCD) and the Utah Division of Wildlife Resources (UDWR):**

Partnership projects with UPCD and UDWR were monitored and reviewed for implementation success and completeness. Several restoration projects have additional phases planned for 2015. The 2014 monitoring showed UPCD projects were improving and implementation success is increasing overall.



Left, IIC work crew at Escalante Interagency Visitor Center; right, Paiute youth planting willow stems at Old Corral Spring.

## Volunteers

The Monument sponsored 120 volunteers (including 8 youth volunteers) and 55 hosted workers in FY14. These volunteers and Hosted Workers performed a total of 33,888 duty hours to our programs, with a monetary value of \$738,420. Volunteers were recruited and managed through several Monument programs, including our Site Steward heritage stewardship initiative, our watershed restoration work, and the paleontology laboratory. Several organized volunteer groups donated time and effort to the Monument in FY14, including Great Old Broads for Wilderness, Wilderness Volunteers, Utah Backcountry Volunteers, and the Grand Staircase Escalante Partners.

The GSENM camp host program provided daily guidance at Calf Creek, the Monument's busiest recreation site; we had 8 volunteers work a total of 1,854 hours at the Calf Creek trailhead and campground. The Escalante River Watershed partnership (ERWP) also continues in collaboration with Grand Staircase Escalante Partners, our non-profit friends group. The ERWP organized several volunteer activities in 2014. We had several groups including Local ATV and Backcountry Horseman's, come together in an effort to finish a recreational staging area for Equestrian and ATV use in the Nephi Pasture. A total of 28 Volunteers donated 168 hours, finishing with a grand opening of a new multiuse Nephi Pasture recreation staging area.

## Land (or Interests in Land) Acquisitions

No lands were acquired in FY2014.

# 4 Science

---

## Science

The GSENM Science Plan is in its 2nd draft (dated 09/14/2012). Completion has been delayed because the Science Program Administrator has been serving in several acting capacities since late 2012/early 2013 (both as the Soil/Water/Air program lead, primarily for NEPA purposes, but also to keep a minimal level of essential project work going, such as water quality monitoring; and as the AIM project lead). Much of this collateral work has been associated with the livestock grazing EIS/MMP-A.

The GSENM Monument Advisory Committee reviewed the 2nd draft in 2014 and has recommended that the plan be refocused on defining the future of science at GSENM, and that GSENM staff follow a template adopted in another landscape level science planning effort, "Interagency Strategy for the Pacific Northwest Natural Areas Network" (Wilson, Todd M. and others. 2009. General Technical Report PNW-GTR-798. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.; <http://www.treearch.fs.fed.us/pubs/33426>).

GSENM is refocusing the plan through two workshops, one held in early 2014 and one planned for early spring, 2015. The 2014 workshop brought together BLM and NPS staff scientists with ecologists to address goals, emerging questions and strategic actions related to botanical science and management of botanical resources. The 2015 workshop will bring together BLM and NPS recreation planners and other interested social scientists to conduct a review similar to that done for biological resources. Following that workshop the recreation/social science section will be updated and the final draft plan finalized for internal review by staff and external review by the Monument Advisory Committee and others. The final draft is expected by the end of FY15, with review and comment expected to extend into the first quarter of FY16.

### Moving Bureau-wide Science Initiatives Forward

GSENM sits in a large tract of federal and state lands, and shares borders with three National Park Service units, two state parks, and a National Forest. Together, these units include over 4 million acres of lands managed for conservation. In FY14, GSENM worked with Great Basin Institute project leaders and field crews to establish an additional 50 Assessment, Inventory, and Monitoring (AIM) stations on the Monument and worked with the National Operations Center and with the Utah State Office to incorporate the Colorado Plateau Rapid Ecoregional Assessment findings and toolkit for Monument planning purposes.

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Archaeological Inventory and Monitoring (part of Assistance Agreement L11AC20222: NLCS GSENM Archaeological Assessment Project)	The purpose of this project is to gather baseline data on the archaeological sites and distributions within GSENM, as well as monitoring the conditions of these sites.	archaeology, history, monitoring	Jerry Spangler, Colorado Plateau Archaeological Alliance	Report in preparation	\$19,147
Meadow Canyon Archaeological Inventory (part of Assistance Agreement L11AC20222: NLCS GSENM Archaeological Assessment Project)	The purpose of this inventory is to characterize the archaeology in the vicinity of the Meadow Canyon Pollen Core so that data from the core can be used in conjunction with historic and prehistoric use of the landscape.	archaeology, paleoenvironments, palynology, botany, climate change	Jerry Spangler, Colorado Plateau Archaeological Alliance	Report in preparation (NOTE: funds for this project lumped with those for "Archaeological Inventory and Monitoring" – same Assistance Agreement)	\$0
Lake Pasture Archaeological Inventory (part of Assistance Agreement L11AC20222: NLCS GSENM Archaeological Assessment Project)	The purpose of this inventory is to characterize the archaeology in the vicinity of the Meadow Canyon Pollen Core so that data from the core can be used in conjunction with historic and prehistoric use of the landscape.	archaeology, paleoenvironments, palynology, botany, climate change	Jerry Spangler, Colorado Plateau Archaeological Alliance	Research in progress (NOTE: funds for this project lumped with those for "Archaeological Inventory and Monitoring" – same Assistance Agreement)	\$0
Identification and collection of Penstemon taxa native to Utah for diversification, documentation, and genotyping studies	Purpose: To produce a Penstemon field guide for Utah, and to gain a better understanding of the genetic diversity of Penstemon within Utah.	botany	Mikel R. Stevens, Brigham Young University Plant and Wildlife Sciences Department	Research in progress; one public presentation at GSENM	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Baseline Inventory of Bryophytes of GSENM (Assistance Agreement L14AC00275)	This proposal will examine questions/issues dealing with (1) what species of bryophytes occur within the GSENM?, (2) where are the “hot spots” of bryophyte diversity within the GSENM?, and (3) characterizing rare, regionally disjunct, or new species to science within the GSENM.	botany, bryophyte, inventory, taxonomy, diversity	Lloyd Stark, University of Nevada-Las Vegas	Project initiated in FY14	\$38,000
Scent-mediated diversification of evening primrose (Onagraceae) flowers and moths across western North America	This project will examine the role of floral scent in the diversification of a model plant-pollinator-enemy system in the western North American evening primroses (Onagraceae), focusing on how chemically-mediated interactions between flowering plants, pollinators, and enemies affect diversification at population, species, and higher levels.	botany, ecology, plant ecology, pollination	Dr. Krissa Skogen, Jeremie Fant, Rick Overson, Tania Jogesh, Matt Rhodes, Evan Hilpman: Chicago Botanic Garden	Research in progress; annual report submitted	\$0
Special Status Species: Threatened and endangered species monitoring (L11AC20161)	Annual monitoring and surveying of three federally listed plant species. Ute Ladies'-tresses, Jones' Cycladenia, and Kodachrome bladderpod. Monitoring is used to detect trend and surveys occur to find unknown population sites	botany, endangered species	Amber Hughes, GSENM	Research in progress	\$10,000

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Seeds of Success	Seeds of Success (SOS) was established in 2001 by the Bureau of Land Management (BLM) in partnership with the Royal Botanic Gardens, Kew Millennium Seed Bank (MSB) to collect, conserve, and develop native plant materials for stabilizing, rehabilitating and restoring lands in the United States. The initial partnership between BLM and MSB quickly grew to include many additional partners, such as botanic gardens, arboreta, zoos, and municipalities. These SOS teams share a common protocol and coordinate seed collecting and species targeting efforts. SOS is a vital part of the Native Plant Materials Development Program.	botany, native plants, restoration	Amber Hughes, GSENM	Research in progress	\$16,138
Phylogeography and evolution of <i>Mentzelia cronquistii</i> (Loasaceae) and the <i>Mentzelia marginata</i> complex	This project will explore how geographic and topographic complexity shape migration routes, gene flow, and plant speciation on the Colorado Plateau through a study of the geographic patterning of genetic diversity in the <i>Mentzelia marginata</i> complex.	botany, plant speciation	Dr. Larry Hufford and Joseph Grissom, Washington State University; Wendy Hodgson, Desert Botanical Garden, Phoenix, AZ	Research in progress	\$0
Learning from native 'winners'	Purpose: to identify native species and populations that can perform well in degraded sites and potentially facilitate succession to diverse native communities	botany, restoration	Andrea Kramer et al, Chicago Botanic Garden	Research in progress; annual report submitted	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
BLM Utah rare plant research and ex-situ conservation of plant species	The purpose for this project is to conduct ex-situ conservation through seed collection and long-term storage of threatened, endangered, candidate, BLM sensitive and native species in southwestern and other areas of Utah. Seed collected will be stored as long-term ex-situ conservation germ plasm at both Red Butte Garden and CGRP in Fort Collins. If seed numbers allow, a small portion will be used to conduct non-destructive seed viability and propagation studies.	botany, seed conservation	Rita Reisor, Red Butte Garden, University of Utah	Research in progress	\$0
USDA Forest Service National Forest Inventory and Analysis program	Purpose: To conduct forest inventory at selected locations throughout the Monument to determine: status and trends in forest area and location; species, size, and health of trees; total tree growth, mortality, and removals by harvest; wood production and utilization rates by various products; and forest land ownership.	ecology, forestry, forest ecology, forest inventory	Maryfaith Snyder, USDA Forest Service Rocky Mountain Research Station, Interior West Forest Inventory and Analysis	Research in progress	\$0
Paleoecology study of the GSENM	Assistance Agreement L11AC20143	ecology, paleoecology, paleoenvironment, cultural resources	Scott Anderson, Northern Arizona University and Ken Cole, USGS	Research in progress	\$23,829
untitled	Purpose: To test the hypothesis that habitat near or at ecological potential will show significantly reduced impacts from the expected effects of climate change.	ecology, plant ecology, climate change	Jim Catlin, Wild Utah	Research in progress; annual report submitted	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Ecological effects of stream drying under climate change in the Upper Colorado River Basin	The purpose of the proposed research is to examine the effects of reduced low flow stream on riparian plant communities. Researchers will sample riparian plant communities along a hydrologic gradient (perennial to intermittent) to develop statistical relationships between flow parameters and biotic responses to help predict biotic changes under climate change-driven stream drying.	ecology, plant ecology, climate change, hydrology, geomorphology	Lindsay Reynolds et al, USGS	Project completed; final report submitted	\$0
Restoration Studies (and dust collection study)	Determines what mechanisms of disturbance creates the greatest opportunity for success in restoration processes. Dust collection study is designed to collect data on soil loss from disturbed sites.	ecology, restoration, soil, erosion	Raymond Brinkerhoff, GSENM; UPCD; Color Country District BLM; Utah Cooperative Extension Service; NRCS	Research in progress	\$8,500
Untitled	The purpose of this project is to study weathering processes and their products in the Navajo Sandstone, and to compare them with those in Japan and related areas in Asia with different geologic and climate settings.	geochemistry, weathering	Hirokazu Yoshida, Nagoya University	Project initiated in FY14	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Geomorphology and geochronology of andesitic boulder deposits in the Escalante Canyons section of GSENM	This project will study the andesitic boulder deposits around the southern Boulder Mountain and Aquarius Plateau piedmont, including the effect that andesitic boulder gravels have on modern river incision rates.	geology	David Marchetti and Amy Ellwein, Western State Colorado University; Scott Hynek and Thure Cerling, University of Utah	Research in progress	\$0
Late Triassic Wood Ichnology	Purpose: To study a series of previously unknown Triassic-age insect borings in petrified wood from Chinle Formation in the Wolverine Petrified Forest.	geology	Eric Roberts, James Cook University School of Earth and Environmental Sciences, Queensland, Australia (formerly with Southern Utah University)	Project Terminated due to relocation of PI to Australia	\$0
Chronostratigraphic delineation of the muddy Entrada Sandstone in central Utah using the $^{40}\text{Ar}/^{39}\text{Ar}$ method to date juvenile ashes; a sequence stratigraphic study	This project will construct a sequence stratigraphic model for the muddy portion of the Entrada Sandstone to correlate deformation in the Entrada to the proposed "Elko Orogeny" using $^{40}\text{Ar}/^{39}\text{Ar}$ dating and chemical analyses	geology	Toby Dossett, BYU	Research in progress	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
untitled	This project will focus on the biotic recovery after the end-Permian mass extinction (252 Ma ago) in order to better understand patterns and processes of diversity dynamics during the Early Triassic	geology, geochemistry	Arnaud Brayard et al, Centre National de la Recherche Scientifique, France (National Center for the Scientific Research)	Research in progress; no field work in FY14	\$0
untitled	Purpose: To study various iron-oxide rich concretions using petrography and SEM, and to measure the orientation of more pipe-like concretions that define the flow direction and geochemical evolution of a paleoaquifer.	geology, geochemistry	David B. Loope, University of Nebraska Department of Geosciences	Research in progress; annual report submitted; publication of one book chapter; one paper submitted to peer-reviewed journal (accepted pending minor modification); one public presentation at GSENM	\$0
Early Laramide influenced Sedimentary patterns along the East Kaibab Monocline.	The purpose of this project is to examine the geology of the East Kaibab Monocline, especially with respect to sag ponds.	geology, sedimentology	Dr. Ed Simpson, Kutztown University of Pennsylvania, Department of Physical Sciences and Dr. Mike Wizevich, Central Connecticut State University	Two scientific publications in FY2014. Annual Report submitted.	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Upper Paleozoic and lower to middle Mesozoic eolian quartzarenites on the western Colorado Plateau Province	This project will study quartzarenites from upper Paleozoic and lower to middle Mesozoic lithostratigraphic units of mainly eolian origin on the western Colorado Plateau Province in southwestern Utah. Several specific eolian stratification types (wind-ripple, sandflow, and grainfall strata—where preserved in the Lower Jurassic Navajo Sandstone, Middle Jurassic Page Sandstone, particularly the Thousand Pockets Tongue and Leche-e Member and eolian beds in the Middle Jurassic Entrada Sandstone) will be sampled. Textural attributes will be compared with eolian calcarenites from the Bahamas.	geology, sedimentology	Dr. Mario Caputo, San Diego State University & California State Polytechnic University, Pomona	Research in progress	\$0
The Permian-Triassic boundary and the Early Triassic in Transcaucasian pelagic sections	This project will examine early Triassic microbialites to determine mode of deposition (abiotic, microbially-control, or microbially-induced), and to characterize the relationship between microbialite occurrence and oceanic conditions at deposition.	geology, sedimentology	Kirk Johnson, Denver Museum of Nature and Science	Results presented at conference. Technical publication in early FY2014.	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
NSF Earth Life Transitions (ELT) Project: Perturbation of the Marine Food Web and Extinction During the Oceanic Anoxic Event at the Cenomanian/Turonian Boundary	The purpose of this project is to test for evidence of ocean acidification during the OAE 2 event. This permit authorizes the team to drill a hole in the Tropic Shale to collect samples of unaltered bivalves, snails, and ammonites for analysis.	geology, sedimentology, paleobiology	Brad Sageman (Northwestern U); Mark Leckie (UMass-Amherst); Tim Bralower, Mike Arthur, Matt Fantle, and Lee Kump (Pennsylvania State U); Mick Follows, Julio Sepulveda; (Massachusetts Institute of Technology)	Core was drilled summer of FY2014. Samples currently undergoing analysis.	\$0
Soft Sediment Deformation and Injectites in the Jurassic Carmel Formation, Southern Utah: Implications for Reservoir Characterization, and Geomorphic Features on Mars	This study will examine a well-exposed example of numerous injectites/clastic pipes in the Jurassic Carmel Formation south of Big Water, Utah and to compare them to similar pipes along the White House Trailhead road, South of the Paria Contact Station. The objectives are to: characterize the sedimentology, mineralogy, and diagenesis of the pipes; map population clusters; measure size hierarchies; and examine spatial relationships of regional tectonics, faulting, and relation to paleoshorelines.	geology, sedimentology, paleoshorelines	Dr. Marjorie Chan, University of Utah	Research In Progress; annual report submitted; one MS thesis defended (Steve Pinta)—final thesis in prep; two abstracts submitted for professional conferences	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/ Accomplishments	BLM Contributed Funds (FY14)
EarthScope Program	Purpose: To install one GPS monument in GSENM as part of a network of 33 sites in the southwest to study the crustal motion and deformation of the Colorado Plateau and the transition zones with the northern and southern Basin and Range.	geology, seismology	Cornelius Kreemer, University of Nevada Reno Nevada Bureau of Mines and Geology	Research in progress; annual report submitted	\$0
Ash-bed geochronology of Cretaceous sediments in the Grand Staircase Escalante National Monument	Purpose: To date Cretaceous stage boundaries, key fossil sites and Ocean Anoxic Events using ash from various Cretaceous strata, including the Tropic Shale, Dakota, Wahweap, Straight Cliffs and Kaiparowits formations.	geology, stratigraphy, dating	Kirk Johnson, Denver Museum of Nature and Science	Ash samples were analyzed in late FY2013. Publication on results forthcoming.	\$0
Paleomagnetic Survey of Late Cretaceous Strata - Kaiparowits Plateau, Utah (L08AC13131)	Purpose: To refine the temporal characterization of late Cretaceous strata through magnetostratigraphic analysis and its correlation to the Global Geomagnetic Polarity Time Scale (GPTS) in order that the hundreds of fossil localities currently known can be accurately placed in time. Field collection of rock samples to analyze at the UC Berkeley Geochronology lab for remnant magnetism to determine polarity and age.	geology, stratigraphy, dating	L. Barry Albright III, University of North Florida Department of Physics	Scientific publication to be submitted in FY2015. Annual report submitted.	\$430

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Facies analysis, correlation, and reservoir prediction in nonmarine-shallow marine strata: Cretaceous Straight Cliffs Formation, Utah	Purpose: To document fluctuating marginal marine successions, explain facies variation in correlative nonmarine strata, and address the possible primary factors driving development of sequence and stratigraphic architecture (e.g., tectonic and eustatic controls).	geology, stratigraphy, deposition	Cari Johnson, University of Utah Department of Geology and Geophysics	Research in progress; annual report submitted; two papers to peer-reviewed journals in review, one paper to peer-reviewed journal in press; web site developed (Rocks to Models: r2m.utah.edu); eight presentations at professional society meetings	\$0
Stratigraphy, sedimentology and taphonomy of Upper Cretaceous strata in the Kaiparowits Basin	This project will resolve the temporal, taphonomic, paleogeographic, and paleoenvironmental framework of the Upper Cretaceous Kaiparowits, Wahweap, and Straight Cliffs formations by: 1) developing a chronostratigraphic record from volcanic ashes; 2) making paleoenvironmental interpretations from invertebrate and ichnological fossils; and 3) analyzing paleosols and associated fluvial and paludal sediments.	geology, stratigraphy, paleoenvironments	Dr. Eric Roberts, James Cook University, Queensland, Australia; NOTE: connected with paleo project with Leif Tapanila, Idaho State U (Assistance Agreement L12AC2054 1)	Research in progress	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/ Accomplishments	BLM Contributed Funds (FY14)
Ground Water Study to Inventory and Map Water Wells in the Grand Staircase Escalante National Monument (L10PG00902)	<p>The USGS, Utah Water Science Center, will complete an update of the water well inventory was done in 2000 - 2001. The area of coverage will be same as the previous inventory, to include the entire GSENM as well as the lands adjacent to the GSENM on the north side in the vicinity of the town of Boulder, and the lands on the west side of the monument in the vicinity of the town of Escalante. The inventory will include 1) review and completion of missing data elements in the existing inventory (where additional data is available), 2) updating the inventory data base with all new wells drilled since the last inventory, and 3) the inventory of wells will be mapped into GIS coverage, so that individual wells can be reviewed for relevant information, such as date drilled, total depth drilled, producing aquifer, producing yield, screened interval, etc.</p> <p>Approximately 12 data attributes will be selected to comprise the well data, and will be selected by mutual agreement with USGS and BLM.</p>	hydrology, ecology	Bert Stolp, USGS Utah Water Science Center	Currently funded phase of research completed; final report and geodatabases submitted	\$14,754

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
BLM Assessment, Inventory and Monitoring (AIM) Project (Assistance Agreement L13AC00126)	This project will collect data on land health for the Utah pilot implementation project of BLM's national Assessment, inventory and Monitoring (AIM) strategy. The study will follow a probabilistic (random, stratified) sampling design developed in conjunction with USDA ARS Jornada Experimental Range. Data will be collected in accordance with AIM standard methods (MacKinnon, W.C., J.W. Karl, G.R. Toevs, J.J. Taylor, M. Karl, C.S. Spurrier, and J.E. Herrick. 2011. BLM core terrestrial indicators and methods. Tech Note 440. U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, CO.).	land health	Jerry Keir, Great Basin Institute	Research in progress; annual report and datasets submitted	\$124,440

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Toward an integration of historical and contemporary data to inform assessment, monitoring, and decision-making on the Grand Staircase-Escalante National Monument (Assistance Agreement L13AC00249)	Purpose: to conduct a retrospective study of existing vegetation assessment and monitoring data and to compare the results of that study with anticipated results under the AIM strategy. This study will: a) evaluate the representativeness of existing GSENM vegetation monitoring data previously sampled using both probabilistic and non-probabilistic designs; b) summarize and compare methodologies used to collect these data in a rigorous analytical framework; and c) evaluate the potential for integration of these data into the stratified probabilistic design to be developed through the application of the AIM strategy for land health assessment on GSENM.	landscape ecology, land health, range assessment, range monitoring	Brett Dickson, Northern Arizona University	Research in progress; preliminary results submitted	\$11,687
Cretaceous Paleobotanical Heritage Resource Inventory/Specimen Protection (L11AC20100)	Purpose: To inventory Cretaceous paleobotanical resources in the Kaiparowits Plateau region. Ground inventory for significant plant fossils using GPS technology, field notes, and photographs to document resource location/condition. Significant specimens are collected to preserve them. Collected specimens are stabilized and prepared for long term curation by volunteers at the DMNS.	paleobotany	Dr. Ian Miller, Denver Museum of Nature and Science.	Research in progress; annual report submitted. One scientific publication (book chapter)	\$6,000

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Kaiparowits Basin Project-Invertebrate Survey (L12AC20541)	Survey of Invertebrate Molluscan diversity and correlation of ecological disparity with environmental facies.	paleontology (invertebrate), paleoenvironment	Drs. Lief Tapanila, Idaho State University, and Eric Roberts, James Cook University School of Earth and Environmental Sciences, Australia.	Research in progress	\$235
Freshwater molluscan diversity and paleoecology of the Kaiparowits Fm.	Intensive sampling of freshwater molluscs in a variety of sedimentary facies should allow for characterization of ecological preferences of each species. This in turn will help refine paleoecological models for all Late Cretaceous fossil taxa.	paleontology (invertebrate), paleoenvironment.	Dr. Lief Tapanila, Idaho State University	Research in progress; annual report submitted	\$1,200
Middle Jurassic mammalian diversity.	Inventory of Middle Jurassic age rocks for primitive therians.	paleontology (vertebrate)	Dr. Brian Davis, Missouri Southern State University	Research in progress; annual report submitted	\$0
Cretaceous marine vertebrate diversity.	Inventory of Tropic Shale outcrops mostly for marine reptiles, but also for fish and the rare dinosaur.	paleontology (vertebrate)	Dr. David Gillette, Museum of Northern Arizona, with Dr. Beck Schmeisser, Norbert College.	Research in progress; annual report submitted	\$0
Cretaceous microvertebrate diversity.	To sample mudstone facies to recover small terrestrial vertebrate fossils and assess overall diversity of different times and facies.	paleontology (vertebrate)	Dr. Jeff Eaton, Weber State University	Research in progress; annual report submitted	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Kaiparowits Basin Project	Quantification of fossil vertebrate diversity and ecological disparity of vertebrate taxa in Kaiparowits and Wahweap formations through inventory and collection and research on existing collections. Emphasis is on crocodylians and theropod dinosaurs, but all vertebrate groups will be assessed.	paleontology (vertebrate)	Dr. Joseph Sertich, Curator of Vertebrate Paleontology, Denver Museum of Nature and Science	Research in progress; annual report submitted	\$10,000
Late Cretaceous Squamate Diversity	Collection and research on fossil squamates (lizards and snakes) of the Kaiparowits Plateau region.	paleontology (vertebrate)	Dr. Randall Nydam, Midwestern University.	Three scientific publications in FY2014, including a book chapter.	\$0
Late Cretaceous Vertebrate Diversity-Kaiparowits Formation	Collection and research on vertebrate fossils from the Kaiparowits Fm. near Canaan Peak.	paleontology (vertebrate)	Drs. Don Lofgren and Andy Farke, Raymond Alf Museum.	Two scientific publications in FY2014. Annual Report submitted.	\$0
Cretaceous Vertebrate Heritage Resource Inventory/Specimen Protection (includes NMHU L12AC20378; helicopter L12PG000094)	Purpose: To survey and research vertebrate paleontological resources from Late Cretaceous deposits within the Monument.	paleontology (vertebrate), paleontology (invertebrate), paleobotany, paleoenvironment	Randall Irmis, Natural History Museum of Utah at the University of Utah	Research in progress; annual report submitted	\$16,842
Late Cretaceous Biodiversity GSENM region.	Inventory, collection, and research on late Cretaceous fossil ecosystems of the Grand Staircase and Kaiparowits Plateau areas.	paleontology (vertebrate), invertebrate, paleobotanical, ichnology).	Dr. Alan Titus, Monument Paleontologist, Grand Staircase-Escalante National Monument.	Technical Book published. One additional scientific publication. Annual report submitted.	

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/ Accomplishments	BLM Contributed Funds (FY14)
Utah BLM State Monitoring	New long term trend monitoring designed to make data collection uniform across the state	range management	Utah State BLM, Univ. of Arizona	Research in progress	\$0
GSENM-Recreation Experience Baseline Study (L12AC20566)	This study is designed to facilitate social science research aimed at understanding recreation experiences at Grand Staircase-Escalante National Monument (GSENM). Project uses focus groups, conducted in face-to-face sessions as well as via web-based sessions, to determine interests and expectations of recreationists, desired outcomes, setting characteristic preferences, sense of place, and tolerance for changes such as crowding and physical setting changes. Focus groups have been conducted with local residents, commercial guides, local officials, and members of the tourism support industries in the area. Data collection has been aided by audience polling technology and the BLM project lead has assisted in populating the focus groups, developing the scripts, and securing locations and times for the focus group sessions. Phase 1 was conducted in 2013 and studied the Hole in the Rock area; Phase 2 was conducted in 2014 and studied the Grand Staircase region.	recreation experience , visitor experience , sense of place, user preferences	Dr. Tim Casey, Colorado Mesa University	Research in progress; annual report submitted	\$30,000

<p>Baseline Acoustic Monitoring at GSENM (assistance Agreement L14AC00078)</p>	<p>This agreement was initiated in 2014 to conduct baseline acoustic monitoring at GSENM to determine current soundscape conditions and develop a better understanding of how natural sound and noise affect visitor experience and monument resources.</p>	<p>recreation, acoustics, visitor experience</p>	<p>Britton Mace, Grant Corser, Larissa Reynolds, Shelly Ewen, Jennifer Anderson, Cassi Hoffmeister, Stuart Clements, Alex Vittum-Jones, Glenn Beacham and Kaitlin Potter: Southern Utah University, Dept. of Psychology</p>	<p>Research in progress; Three sets of monitoring equipment were loaned to GSENM in Sept 2014 by NPS. Training on deployment, data collection, extraction, data analysis and reporting was conducted by NPS Natural Sounds Office. Training attended by PI, 8 student research assistants and 8 GSENM staff. PI and research assistants check equipment every two weeks and download data once per month. Planning, site selection, and scoping were conducted with GSENM staff, the PI, research assistants, and NPS personnel. Equipment deployed along Calf Creek and Deer Creek Trails and in the Dry Fork Canyons area. Data sets consisting of 25 days of complete acoustic recordings and decibel measurements were collected at these three locations over a three month period.</p>	<p>\$14,886</p>
--------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/ Accomplishments	BLM Contributed Funds (FY14)
Research to Evaluate Visitor Capacity of the Dry Fork slot canyons and within the Calf Creek watershed and analysis of existing data (Interagency Agreement IGO with Aldo Leopold Wilderness Research Institute)	This research will rely primarily on existing data from two locations to determine visitor experience and resource conditions that are needed for future backcountry management related to day-use and implementation of a SRMA or SMA An initial internal BLM workshop to look at visitor capacity will kick off in the spring of 2015.	wilderness study areas, visit or experience , visitor capacity, day-use, resource impacts	Dr. David Cole	Research beginning in spring 2015	\$20,000
Big Horn Sheep Connectivity Study	Determines sheep movement across the monument to identify populations and genetics	wildlife, animal ecology, habitat connectivity, climate change, bighorn sheep	Ryan Monello, National Park Service; also Oregon State University, Utah Dept of Wildlife Resources	Research in progress	\$0
Cougar Connectivity Study	GSENM is the last area to be studied on the Colorado Plateau. Determines the movement and ranges of cougars	wildlife, animal ecology, habitat connectivity, climate change, cougar, mountain lion	David Mattson, USGS; also NPS and Utah Division of Wildlife Resources	Research in progress	\$8,500
Bat population and pollen study	Identifys species, movement, and populations; sample pollinators to identify the various types of pollen and where it came from	wildlife, bats, ecology, zoology, botany	Terry Tolbert, GSENM; also volunteers, Dixie National Forest, BCNP	Research in progress	\$2,000

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/ Accomplishments	BLM Contributed Funds (FY14)
Hummingbird migration study	Banding and tracking migration of the different species of humming birds and their importance to pollinization.	wildlife, hummingbirds, botany	Terry Tolbert, GSENM; also volunteers, Dixie National Forest, BCNP	Research in progress	\$12,000
Pronghorn Location Monitoring	Tracking the migration, reproduction, and forage use of five different populations of pronghorn.	wildlife, zoology, animal ecology, Pronghorn	Cameron McQuivey, GSENM; also Utah Department of Wildlife Resources, volunteers	Research in progress	\$8,500
Global Survey and Inventory of Camel Spiders (Arachnida, Solifugae)	The purpose of the proposed research is to collect and inventory camel spider diversity in sites near the type localities of species previously collected and largely known only from historical records. Specimens will be used for both a higher level phylogenetic analysis of Solifugae, for a phylogenetic analysis of the Eremobatidae, and to investigate the taxonomy, ecology, behavior, and morphology of the group.	zoology, animal ecology, arachnids	Paula Cushing, Denver Museum of Nature and Science	Research in progress	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Estimating Occupancy Rates, Reproductive Effort and Effects of Recreation on Mexican Spotted Owls in Southern Utah	Purpose: This research project involves studying the prey dynamics of the threatened Mexican Spotted Owl in the Monument. The objective of this project is to develop a long-term (i.e., >10 year) monitoring study concerning trends in prey abundance and factors that influence spotted owl population dynamics in the Monument. A second objective of this research will be to assess the effects of climate changes on both spotted owls and their primary prey.	zoology, animal ecology, Mexican Spotted Owl, endangered species	David W. Willey, Montana State University Department of Ecology	Research in progress	\$0
A study of American Black Bears ( <i>Ursus americanus</i> ) on the Paunsaugunt Plateau, Utah	This project will to identify the movements of black bears on the Paunsaugunt Plateau in relation to centers of human activity and anthropogenic food sources, including: documenting movement, association with anthropogenic food sources, annual reproduction and survival data, evaluating methods for aversively conditioning food-conditioned bears.	zoology, animal ecology, wildlife, behavioral ecology	Dr. Tom Smith, Brigham Young University, Wildlife and Wildlands Conservation Program	Research in progress; quarterly progress reports submitted	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
untitled	This project will conduct a taxonomic revision and provide an identification key for the New World species of <i>Heliophila</i> .	zoology, arthropods, bees	Michael Orr, Terry Griswold, Harold Ikerd, Skyler Burrows, Jonathan Koch, Zachary Portman, Joan Meiners, David Denlinger, Emily Sadler, Zachary Valois: Utah State University, Dept of Biology and USDA-ARS National Pollinating Insect Collection	Research In progress; annual report submitted	\$0
Habitat and Biodiversity Monitoring Using Terrestrial Arthropod Surveys	This project seeks to search for and collect a new moth species in the genus <i>Plagiomimicus</i> (Noctuidae, Amphipyridae), conduct a general sampling of moths, and search for and collect a new subspecies (possible new species) of butterfly diurnally (net) in the genus <i>Euphilotes</i> (Lycaenidae).	zoology, ecology, animal ecology, lepidoptera, arthropods	Paul Opler and David Wikle, Colorado State University	Research in progress; annual report submitted; one publication in a peer-reviewed journal	\$0
untitled	Purpose: To conduct bird surveys and surveys for tamarisk beetle in the Escalante-Grand Staircase National Monument.	zoology, ecology, ornithology, invertebrate zoology	Jason Beason, Rocky Mountain Bird Observatory	Research in progress	\$0

Current Science Projects at GSENM					
Project Name	Project Description	Project Key Words	Principal Investigator	Project Status/Accomplishments	BLM Contributed Funds (FY14)
Diversity and distribution of GSENM Lepidoptera (butterflies)	This project will develop a baseline inventory of the Lepidoptera (primarily butterflies) of GSENM, with emphasis on diversity and distribution. It is expected to provide data with which other studies can be compared. Other arthropods will also be collected and documented as the opportunity presents itself.	zoology, Lepidoptera	Dr. Richard Zweifel	Research in progress; annual report submitted	\$0
Diversity of insect populations with a focus on systematic biology and life history of Southwestern moth species	This project is part of ongoing research exploring insect diversity on public lands in Texas, New Mexico, Arizona and Utah. It focuses on moths in the family Geometridae in an effort to gain insight into the taxonomic position and host plant associations of selected species in the genus <i>Nemoria</i> .	zoology, Lepidoptera	John W. Gruber, Friends' Central School and Jason D. Weintraub, Academy of Natural Sciences of Philadelphia	Research in progress	\$0

# 5 Resources, Objects, Values, and Stressors

## Scientific Study and Landscape-related Values

*“The Grand Staircase-Escalante National Monument's vast and austere landscape embraces a spectacular array of scientific and historic resources. This high, rugged, and remote region, where bold plateaus and multi-hued cliffs run for distances that defy human perspective, was the last place in the continental United States to be mapped. Even today, this unspoiled natural area remains a frontier, a quality that greatly enhances the monument's value for scientific study. The monument has a long and dignified human history: it is a place where one can see how nature shapes human endeavors in the American West, where distance and aridity have been pitted against our dreams and courage. Remoteness, limited travel corridors and low visitation have all helped to preserve intact the monument's important ecological values.” –Presidential Proclamation 6920-*

The values described in the Proclamation include: a vast and austere landscape; a rugged and remote landscape character; an unspoiled natural area, where natural processes are unaltered by man; a frontier character; and a long and dignified human history. The primary value of the Monument is its value for the scientific study of human history, flora and plant refugia, geology and the formation of the earth, paleontology of the late Cretaceous Era, modern vegetative communities, endemic plants and pollinators, relict vegetation, wildlife, soils and soil crusts, and unusual isolated biological communities.

## Scientific Study

### Scientific Study Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Scientific Study Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	Unknown	Unknown

## Vast and austere landscape

### Vast and austere landscape Values Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

**Vast and austere landscape Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	1,866,134	Unknown

**Rugged and remote character**

**Rugged and remote character Status and Trend Table**

Status of Resource, Object, or Value	Trend
Good	Stable

**Rugged and remote character Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,090,435	1,090,435	661,350

**Unspoiled natural area**

**Unspoiled natural area Values Status and Trend Table**

Status of Resource, Object, or Value	Trend
Good	Stable

**Unspoiled natural area Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,090,435	1,090,435	661,350

**Frontier character**

**Frontier character Values Status and Trend Table**

Status of Resource, Object, or Value	Trend
Good	Stable

### Frontier character Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,090,435	1,090,435	661,350

### Long, dignified human history

#### Long, dignified human history Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

#### Long, dignified human history Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	130,000	5,000 sites	100 sites

### Stressors Affecting Scientific Study and Landscape-related Values

**Climate change:** Climate change is a broad environmental stressor with the potential to drastically change the character of the landscapes within GSENM, our ability to protect objects and values for which GSENM was designated (especially natural resources), and to manage resource use. In the next 50 years, the Colorado Plateau REA has predicted the Monument will be severely impacted by drought, which may result in the loss of critical elements of major plant communities, including loss of pinyon pine in the pinyon pine-juniper vegetation community which currently covers nearly 35% of the Monument, and associated impacts to wildlife, water quantities and quality, and increased erosion. This change will alter the area's value for scientific research, and will probably push Monument research in the direction of applied studies focused on climate change impacts to Monument resources. Adequate planning to mitigate impacts and to address management challenges will increase workloads in the long-term. Potential effects include drought and severe flash floods.

**Increasing Recreational Use:** GSENM is experiencing constantly increasing recreational use as a result of national and international advertisement promoting it as an iconic canyon country destination. This presents management challenges in balancing use with adequate protection of GSENM objects and values. Increased backcountry visitor impacts include increased graffiti, human waste issues, water quality concerns and parking congestion. Dispersed campsites are proliferating. Planning efforts are needed to insure adequate use management and resource protection.

**R.S. 2477 litigation and travel management plan implementation:** R.S. 2477 litigation has pulled key specialist positions (including GIS and Realty specialists, but also including Range Management specialists, Backcountry Rangers, and others) away from day to day workload needing completion. Meeting the data requirements of, and supporting Solicitor and Department of Justice needs has meant a reduction in staff ability to support GSENM programs and accomplish work on the ground. The on-going litigation has also hindered effective implementation of the travel management plan. As noted previously, routes have not been effectively closed and/or rehabilitated, and on-going communication and coordination issues have hampered signage and maintenance efforts.

## **Geological Objects and Resources**

*“The monument is a geologic treasure of clearly exposed stratigraphy and structures. The sedimentary rock layers are relatively undeformed and unobscured by vegetation, offering a clear view to understanding the processes of the earth's formation. A wide variety of formations, some in brilliant colors, have been exposed by millennia of erosion. The monument contains significant portions of a vast geologic stairway, named the Grand Staircase by pioneering geologist Clarence Dutton, which rises 5,500 feet to the rim of Bryce Canyon in an unbroken sequence of great cliffs and plateaus. The monument includes the rugged canyon country of the upper Paria Canyon system, major components of the White and Vermilion Cliffs and associated benches, and the Kaiparowits Plateau. That Plateau encompasses about 1,600 square miles of sedimentary rock and consists of successive south-to-north ascending plateaus or benches, deeply cut by steep-walled canyons. Naturally burning coal seams have scorched the tops of the Burning Hills brick-red. Another prominent geological feature of the plateau is the East Kaibab Monocline, known as the Cockscomb. The monument also includes the spectacular Circle Cliffs and part of the Waterpocket Fold, the inclusion of which completes the protection of this geologic feature begun with the establishment of Capitol Reef National Monument in 1938 (Proclamation No. 2246, 50 Stat. 1856). The monument holds many arches and natural bridges, including the 130- foot-high Escalante Natural Bridge, with a 100 foot span, and Grosvenor Arch, a rare "double arch." The upper Escalante Canyons, in the northeastern reaches of the monument, are distinctive: in addition to several major arches and natural bridges, vivid geological features are laid bare in narrow, serpentine canyons, where erosion has exposed sandstone and shale deposits in shades of red, maroon, chocolate, tan, gray, and white. Such diverse objects make the monument outstanding for purposes of geologic study.” –Presidential Proclamation 6920-*

Monument geological resources contribute to the regional geology acknowledged worldwide for its scenic beauty. As noted in the Proclamation, these resources are clearly exposed, providing windows on geologic processes such as erosion, deposition and deformation, which represent “outstanding” opportunities for scientific study.

## Grand Staircase

### Grand Staircase Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Grand Staircase Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	Unknown	Unknown

## White Cliffs

### White Cliffs Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### White Cliffs Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	Unknown	Unknown

## Vermillion Cliffs

### Vermillion Cliffs Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Vermillion Cliffs Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	Unknown	Unknown

## Kaiparowits Plateau

**Kaiparowits Plateau Status and Trend Table**

Status of Resource, Object, or Value	Trend
Good	Stable

**Kaiparowits Plateau Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	Unknown	Unknown

## Circle Cliffs

**Circle Cliffs Status and Trend Table**

Status of Resource, Object, or Value	Trend
Good	Stable

**Circle Cliffs Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	Unknown	Unknown

## East Kaibab Monocline—The Cockscomb

**East Kaibab Monocline—The Cockscomb Status and Trend Table**

Status of Resource, Object, or Value	Trend
Good	Stable

**East Kaibab Monocline—The Cockscomb Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	Unknown	Unknown

## Waterpocket Fold

### Waterpocket Fold Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Waterpocket Fold Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	Unknown	Unknown

## Upper Paria Canyon System

### Upper Paria Canyon System Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Upper Paria Canyon System Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	Unknown	Unknown

## Upper Escalante Canyons

### Upper Escalante Canyons Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Upper Escalante Canyons Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	Unknown	Unknown

## Burning Hills coal seams

**Burning Hills coal seams Status and Trend Table**

Status of Resource, Object, or Value	Trend
Good	Stable

**Burning Hills coal seams Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	Unknown	Unknown

## Escalante Natural Bridge

**Escalante Natural Bridge Status and Trend Table**

Status of Resource, Object, or Value	Trend
Good	Stable

**Escalante Natural Bridge Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	1 each	Unknown

## Grosvenor Arch

**Grosvenor Arch Status and Trend Table**

Status of Resource, Object, or Value	Trend
Good	Stable

**Grosvenor Arch Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	1 each	Unknown

## Arches and Natural Bridges

### Arches and Natural Bridges Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Arches and Natural Bridges Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	Unknown	Unknown

## Stressors Affecting Geological Objects and Resources

Some recreational use, especially technical climbing, and vandalism, have the potential to adversely affect geological resources. Such impacts are typically localized, although they have the potential to be locally significant. The Recreation program has been considering ways such impacts can be better managed.

No other stressors known.

## Paleontological Objects and Resources

*“The monument includes world class paleontological sites. The Circle Cliffs reveal remarkable specimens of petrified wood, such as large unbroken logs exceeding 30 feet in length. The thickness, continuity and broad temporal distribution of the Kaiparowits Plateau's stratigraphy provide significant opportunities to study the paleontology of the late Cretaceous Era. Extremely significant fossils, including marine and brackish water mollusks, turtles, crocodilians, lizards, dinosaurs, fishes, and mammals, have been recovered from the Dakota, Tropic Shale and Wahweap Formations, and the Tibbet Canyon, Smoky Hollow and John Henry members of the Straight Cliffs Formation. Within the monument, these formations have produced the only evidence in our hemisphere of terrestrial vertebrate fauna, including mammals, of the Cenomanian-Santonian ages. This sequence of rocks, including the overlaying Wahweap and Kaiparowits formations, contains one of the best and most continuous records of Late Cretaceous terrestrial life in the world.” –Presidential Proclamation 6920-*

The Monument's paleontological resources are becoming better known to the greater research community as a result of 15 years of BLM sponsored collaborative, interdisciplinary research. During that time, teams from more than two dozen museums and universities have documented thousands of new fossil sites. From these sites many truly world class fossils have been collected including over twenty new species of dinosaur, giant alligators, turtles, fish, mammals, and a spectacular fossil tropical flora. The result

has been that the expectations of the Proclamation have actually been exceeded, placing GSENM in the unique position as the most diverse and significant southern Laramidian terrestrial Cretaceous locality, that rivals the importance of the Dinosaur Provincial Park World Heritage site in Alberta, Canada. Monument finds are causing the research community to revise long held ideas on Cretaceous dinosaur diversity and ecology and serve as a touchstone for most new hypotheses on these topics. The 634 page Indiana University Press technical volume “At the Top of the Grand Staircase-The Late Cretaceous of Southern Utah” was released early in FY14 (October 2013). It summarizes much of what was known as of 2010. However, many new significant finds, including new kinds of dinosaurs, have been made even since that volume was released. The Kaiparowits Formation (76-74 million years old) consistently produces spectacular fossil finds of all types, but the Wahweap, Tropic, Straight Cliffs and other formations (see Management Recommendations, below) have also yielded many highly significant sites. Jurassic and the Triassic strata also contain significant resources, but at a much lower volume.

### Late Cretaceous fossils

**Late Cretaceous fossils Status and Trend Table**

Status of Resource, Object, or Value	Trend
Good	Stable

**Late Cretaceous fossils Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	119,000	124,500	50 sites

### Petrified wood – Circle Cliffs

**Petrified wood – Circle Cliffs Status and Trend Table**

Status of Resource, Object, or Value	Trend
Good	Stable

**Petrified wood – Circle Cliffs Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	Unknown	1 site

## Stressors Affecting Paleontological Objects and Resources

The primary stressor affecting paleontological resources is natural erosion from deeply rooted xeric plants, freeze thaw, and intense precipitation events, followed by anthropogenic ground-disturbing activities, looting, and vandalism. When disturbances would result from Proposed Actions on Federal land they can be analyzed in advance through the NEPA process, allowing for mitigation to protect paleontological resources. Land uses (such as recreation and grazing) are believed to have minimal impacts to fossil resources. At the other end of the spectrum are fossil theft and vandalism which pose serious threats. Active in house BLM inventory programs, as well as those of other institutions, help to identify where high value resources are at risk and allow for prioritization of mitigation measures. Scientific collection and curation in an approved public repository is frequently the best solution for at risk vertebrate body fossils and collaborative work between the BLM, the Natural History Museum of Utah, and the Denver Museum of Nature and Science ensure that the highest priority specimens are protected.

## Cultural Resources (Archaeological and Historic) Objects and Resources

*“Archeological inventories carried out to date show extensive use of places within the monument by ancient Native American cultures. The area was a contact point for the Anasazi and Fremont cultures, and the evidence of this mingling provides a significant opportunity for archeological study. The cultural resources discovered so far in the monument are outstanding in their variety of cultural affiliation, type and distribution. Hundreds of recorded sites include rock art panels, occupation sites, campsites and granaries. Many more undocumented sites that exist within the monument are of significant scientific and historic value worthy of preservation for future study.*

*The monument is rich in human history. In addition to occupations by the Anasazi and Fremont cultures, the area has been used by modern tribal groups, including the Southern Paiute and Navajo. John Wesley Powell's expedition did initial mapping and scientific field work in the area in 1872. Early Mormon pioneers left many historic objects, including trails, inscriptions, ghost towns such as the Old Paria townsite, rock houses, and cowboy line camps, and built and traversed the renowned Hole-in-the-Rock Trail as part of their epic colonization efforts. Sixty miles of the Trail lie within the monument, as does Dance Hall Rock, used by intrepid Mormon pioneers and now a National Historic Site.” – Presidential Proclamation 6920-*

Cultural resources on GSENM include both historic and prehistoric sites, as named in the Proclamation. The cultural resource program also addresses Traditional Cultural Properties (TCP), Native American Sacred Sites, and cultural landscapes. Several potential TCP have been identified by the Paiute, but have not yet been finalized.

Includes historic inscriptions, ghost towns, rock houses, cowboy line camps(historic and current), modern tribal use, Powell expedition routes and sites, and Mormon pioneer trail.

## Archaeological sites

### Archaeological sites Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Archaeological sites Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	130,000	5,000 sites	136 sites

## Historic objects

### Historic objects Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Historic objects Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	Unknown	Unknown

## Stressors Affecting Cultural Resources Objects and Resources

**Interest in Hole in the Rock corridor:** Management of the Hole in the Rock corridor is complicated by one long-standing issue, and several rising issues. These include a need to complete SRMA planning for the Escalante Canyons area, a task identified in the 2000 Monument Management Plan; resource concerns arising from increasing traffic on the road; State of Utah litigation to settle RS2477 ROW claims, including the Hole in the Rock Road; Garfield County interest in reducing maintenance issues on the road through changing the surface character; and the identification of the Hole in the Rock route and associated historic sites as eligible for consideration as Traditional Cultural Properties by the culturally-affiliated Church of Jesus Christ of Latter-Day Saints.

**Other stressors affecting slight downward trend in condition**  
(from greater to lesser effect)

- erosion and other natural processes
- human impacts
  - recreation

- looting
- vandalism
- grazing impacts such as trampling, trailing, and increased erosion

## Biological Objects and Resources

*“Spanning five life zones from low-lying desert to coniferous forest, with scarce and scattered water sources, the monument is an outstanding biological resource. Remoteness, limited travel corridors and low visitation have all helped to preserve intact the monument's important ecological values. The blending of warm and cold desert floras, along with the high number of endemic species, place this area in the heart of perhaps the richest floristic region in the Intermountain West. It contains an abundance of unique, isolated communities such as hanging gardens, tinajas, and rock crevice, canyon bottom, and dunal pocket communities, which have provided refugia for many ancient plant species for millennia. Geologic uplift with minimal deformation and subsequent downcutting by streams have exposed large expanses of a variety of geologic strata, each with unique physical and chemical characteristics. These strata are the parent material for a spectacular array of unusual and diverse soils that support many different vegetative communities and numerous types of endemic plants and their pollinators. This presents an extraordinary opportunity to study plant speciation and community dynamics independent of climatic variables. The monument contains an extraordinary number of areas of relict vegetation, many of which have existed since the Pleistocene, where natural processes continue unaltered by man. These include relict grasslands, of which No Mans Mesa is an outstanding example, and pinon-juniper communities containing trees up to 1,400 years old. As witnesses to the past, these relict areas establish a baseline against which to measure changes in community dynamics and biogeochemical cycles in areas impacted by human activity. Most of the ecological communities contained in the monument have low resistance to, and slow recovery from, disturbance. Fragile cryptobiotic crusts, themselves of significant biological interest, play a critical role throughout the monument, stabilizing the highly erodible desert soils and providing nutrients to plants. An abundance of packrat middens provides insight into the vegetation and climate of the past 25,000 years and furnishes context for studies of evolution and climate change. The wildlife of the monument is characterized by a diversity of species. The monument varies greatly in elevation and topography and is in a climatic zone where northern and southern habitat species intermingle. Mountain lion, bear, and desert bighorn sheep roam the monument. Over 200 species of birds, including bald eagles and peregrine falcons, are found within the area. Wildlife, including neotropical birds, concentrate around the Paria and Escalante Rivers and other riparian corridors within the monument.*

*This proclamation does not reserve water as a matter of Federal law. I direct the Secretary to address in the management plan the extent to which water is necessary for the proper care and management of the objects of this monument and the extent to which further action may be necessary pursuant to Federal or State law to assure the availability of water.” –Presidential Proclamation 6920-*

The values described in the Proclamation include a broad diversity of plants, animal, communities and ecosystems. The plants include warm and cold desert flora and a high number of endemic species. Plant communities include: hanging gardens, tinajas and rock crevice, canyon bottom and dunal pocket communities and biological soil crusts. A wide diversity of animals are supported by the varied plant communities, precipitation/elevation zones and soils including: mule deer, mountain lion, bear, desert bighorn sheep, pronghorn, birds (including many raptors), numerous reptiles and amphibians and countless invertebrate species. Ecosystems include widely variable desert, semi-desert, mountains, canyon, slickrock, aquatic systems and relict grasslands. The remoteness and relative inaccessibility of much of the Monument provides unique opportunities for studying past, present and future population, community, ecosystem and landscape dynamics, including biogeochemical and hydrological cycling.

Proclamation language regarding aquatic resources is limited, as shown by the quotes above, which are the only mentions of water or aquatic resources. However, it is clear from the Proclamation’s requirement for “... the Secretary to address ... the extent to which water is necessary for the proper care and management of the objects...,” that we are to manage water insofar as it is important for other objects (e.g., to sustain ecological processes that affect soils, plants, animals and all resources that constitute this “outstanding biological resource”). The Monument’s objectives with respect to water are to ensure that appropriate quality and quantity of water resources are available for the proper care and management of the objects of the Monument; to increase public education and appreciation of water resources through interpretation; and to facilitate appropriate research to improve management of water resources.

All plants and animals are ultimately dependent on soils, without which there can be no terrestrial life. The biodiversity on GSENM described in other sections is a result of the diversity of soils coupled with variation in other environmental variables (such as precipitation, temperature regime, landform, elevation, topography, aspect). Continued protection of soils and soil productivity, especially from loss due to erosion that is controllable by management practices, is of paramount importance to sustainable management of the Monument.

### **Hanging Gardens Communities**

#### **Hanging Gardens Communities Status and Trend Table**

<b>Status of Resource, Object, or Value</b>	<b>Trend</b>
Unassessed	Unknown

#### **Hanging Gardens Communities Inventory, Assessment, Monitoring Table**

<b>Acres in Unit</b>	<b>Acres Inventoried</b>	<b>Acres Possessing Object</b>	<b>Acres Monitored in FY14</b>
1,866,134	Unknown	Unknown	Unknown

## Tinajas Communities

**Tinajas Communities Status and Trend Table**

Status of Resource, Object, or Value	Trend
Unassessed	Unknown

**Tinajas Communities Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	Unknown	Unknown

## Rock Crevice Communities

**Rock Crevice Communities Status and Trend Table**

Status of Resource, Object, or Value	Trend
Unassessed	Unknown

**Rock Crevice Communities Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	Unknown	Unknown

## Canyon Bottom Communities

**Canyon Bottom Communities Status and Trend Table**

Status of Resource, Object, or Value	Trend
Unassessed	Unknown

**Canyon Bottom Communities Inventory, Assessment, Monitoring Table**

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	Unknown	Unknown

## Dunal Pocket Communities

### Dunal Pocket Communities Status and Trend Table

Status of Resource, Object, or Value	Trend
Unassessed	Unknown

### Dunal Pocket Communities Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	Unknown	Unknown

## Endemic plants and pollinators

### Endemic plants and pollinators Status and Trend Table

Status of Resource, Object, or Value	Trend
Unassessed	Unknown

### Endemic plants and pollinators Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	16 sites	200,000	2 sites

## Relict Plant Communities

### Relict Plant Communities Status and Trend Table

Status of Resource, Object, or Value	Trend
Unassessed	Unknown

### Relict Plant Communities Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	Unknown	Unknown

## No Man's Mesa Relict Grassland

### No Man's Mesa Relict Grassland Status and Trend Table

Status of Resource, Object, or Value	Trend
Poor	Stable

### No Man's Mesa Relict Grassland Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,500	1,500	750

## Pinyon-Juniper Communities

### Pinyon-Juniper Communities Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Pinyon-Juniper Communities Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	38,000	Unknown	Unknown

## Mountain lion

### Mountain lion Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Mountain lion Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	1,866,134	Unknown

## Bear

### Bear Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Bear Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	300,000	Unknown

## Desert Bighorn Sheep Habitat

### Desert Bighorn Sheep Habitat Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Upward

### Desert Bighorn Sheep Habitat Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,500,000	750,000	Unknown

## 200 Bird Species

### 200 Bird Species Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### 200 Bird Species Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,500,000	1,866,134	Unknown

## Bald Eagle

### Bald Eagle Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Bald Eagle Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	200 miles	1,866,134	200 miles

## Peregrine Falcon

### Peregrine Falcon Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Peregrine Falcon Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,500,000	500,000	14 territories

## Neo-tropical birds (Paria and Escalante Rivers)

### Neo-tropical birds (Paria and Escalante Rivers) Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Neo-tropical birds (Paria and Escalante Rivers) Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	50,000	50,000	Unknown

## Riparian corridors

### Riparian corridors Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Riparian corridors Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	19,000	13,5000	13,500

## Cryptobiotic Crusts

### Cryptobiotic Crusts Status and Trend Table

Status of Resource, Object, or Value	Trend
Fair	Unknown

### Cryptobiotic Crusts Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	450,000	Unknown	Unknown

## Packrat Middens

### Packrat Middens Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Packrat Middens Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	Unknown	Unknown	Unknown

## Water sources

### Water sources Status and Trend Table

Status of Resource, Object, or Value	Trend
Fair	Stable

### Water sources Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	Unknown	Unknown

## Soils

### Soils Status and Trend Table

Status of Resource, Object, or Value	Trend
Fair	Unknown

### Soils Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,866,134	1,866,134	50 sites

## Forestry (Ponderosa Pine)

### Forestry (Ponderosa Pine) Status and Trend Table

Status of Resource, Object, or Value	Trend
Good	Stable

### Forestry (Ponderosa Pine) Inventory, Assessment, Monitoring Table

Acres in Unit	Acres Inventoried	Acres Possessing Object	Acres Monitored in FY14
1,866,134	1,161	Unknown	Unknown

## Stressors Affecting Forestry Biological Objects and Resources

**Climate change:** Climate change is a broad environmental stressor with the potential to drastically change the character of the landscapes within GSENM, our ability to protect objects and values for which GSENM was designated (especially natural resources), and to manage resource use. In the next 50 years, the Colorado Plateau REA has predicted the Monument will be severely impacted by drought, which may result in the loss of critical elements of major plant communities, including loss of pinyon pine in the pinyon pine–juniper vegetation community which currently covers nearly 35% of the Monument, and associated impacts to wildlife, water quantities and quality, and increased erosion. This change will alter the area’s value for scientific research, and will probably push Monument research in the direction of applied studies focused on climate change impacts to Monument resources. Adequate planning to mitigate impacts and to address management challenges will increase workloads in the long-term. Potential effects include drought and severe flash floods.

**Increasing Recreational Use:** GSENM is experiencing constantly increasing recreational use as a result of national and international advertisement promoting it as an iconic canyon country destination. This presents management challenges in balancing use with adequate protection of GSENM objects and values. Increased backcountry visitor impacts include increased graffiti, human waste issues, water quality concerns and parking congestion. Dispersed campsites are proliferating. Planning efforts are needed to insure adequate use management and resource protection.

**Erosion:** Erosion is the primary stressor on soil resources (including biological soil crusts). Erosion is a natural process that can be changed by human activities. In addition to the direct effects of erosion on the soil itself (through soil loss and the resulting losses in productivity and hydrologic and biogeochemical capacity), erosion is an indirect threat to many other resources. Management should seek to avoid, minimize and mitigate human-caused changes to natural erosion processes wherever possible (including restoration of soil and soil processes where possible).

**Land disturbing activities/land use:** Land-disturbing activities and land uses can be significant stressors on soil resources (including biological soil crusts). The primary effect is through increased erosion (disturbance can remove or alter plant cover or otherwise destabilize soils) and trampling (by people, wildlife, and livestock). The effects of land disturbance/use are generally localized, but can be wide-spread (e.g., due to livestock grazing, or recreation if not properly managed). It is important to note that the effects of grazing use are known through rangeland health assessments (soil health is one of the Utah Rangeland Health Standards: “Standard 1. Upland soils exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate, and landform.”), although this does not necessarily mean the condition of the soils is known. Soils can also be affected by the introduction of nutrients and toxins, either through atmospheric deposition (uncontrollable) or the intentional application of toxic chemicals (e.g., for weed control).

**Water withdrawals (NOTE: this refers to removal of water from aquifers and surface waters for various human uses: irrigation, grazing, etc. Distinguish from the realty sense of “withdrawal.”):** Water withdrawals have the potential to seriously affect our ability to manage and protect water-dependent resources. As noted above, the Proclamation did not “reserve water as a matter of Federal law,” although BLM holds numerous water rights on GSENM, primarily associated with livestock grazing, but also associated with culinary water for the Town of Henrieville, Kodachrome State Park and the Calf Creek Campground. In the MMP’s “Strategy for Assuring Water Availability” (pp. 31-34), it is noted that new water appropriations are still available, which may in the future affect our ability to manage and protect water-dependent resources. Instream flows are not assured, although at the time the MMP was written, it was believed “that both currently and into the reasonably foreseeable future, sufficient water will continue to be available for these purposes” (instream flows assure there is enough water in streams to sustain ecological processes—habitat for aquatic plants and animals, hydrologic process such as discharge and recharge, and biogeochemical processes such as nutrient cycling—required for the proper management and protection of some Objects and Values). Whether this continues to be the case is unknown, but the subject of study with the USGS (see Section 4, “Science”). We need to fully implement the recommendations of the MMP (Decisions WAT-1, WAT-2 and WAT-3; pp. 31-34) to assure continued viability of water-dependent resources, especially in the face of uncontrolled stressors.

**Threats to water quality:** Threats to water quality come from various sources, including direct effects from most human uses (e.g., recreation, livestock grazing, ground-disturbing activities), and indirect effects from the consequences of poor management of those uses (e.g., increased erosion). As noted above, as the State of Utah improves their assessments of surface water quality, they continue to add stream segments (or entire watersheds) to the 303(d) list (the Clean Water Act-required report to U.S. EPA of streams that do not meet designated uses). In FY14 the State of Utah issued a new draft 303(d) list, which added numerous parameters to already listed segments, and some new segments. While most of the causes (where known) are associated with natural processes such as erosion (which affects Total Suspended Solids, TSS or sediment; Total Dissolved Solids, TDS or salts/salinity; and various metals), we can manage so as to reduce erosion and its effects, both by managing to protect plant cover and by restoring erosion (and salinity) control structures. Other watershed-scale restoration projects have been (and should continue to be) developed with water quality improvement as a goal (e.g., the Escalante River restoration projects done with the Escalante River Watershed Partnership; see Section 3, “Year’s Projects and Accomplishments”). Other causes, while unknown, may be associated with water withdrawals (discussed above), e.g., stream segments listed in 2010 for poor benthic macroinvertebrate habitat. Programmatic requirements for water quality monitoring (i.e., those associated with use authorizations, such as livestock grazing—water quality is one of the Utah Rangeland Health Standards) should be coordinated with baseline monitoring, and both should be coordinated with the State of Utah Division of Water Quality.

The lack of reliable funding for routine baseline water quality monitoring and other water programs also stresses (limits) our ability to properly manage water.

# 6 Summary of Performance Measure

Please provide a brief qualitative summary of the status of ROVs listed in the previous section. This summary and the below table are intended to provide a simple overview of the prior section—no additional information is being requested here.

This text is only a placeholder. Select this text and start typing the information for the NLCS unit.

<b>Resources, Objects, and Values Status Summary Table</b>		
<b>Resource, Object, or Value</b>	<b>Status</b>	<b>Trend</b>
<b>Scientific Study and Landscape-related Values</b>		
Scientific study	Good	Stable
Vast and austere landscape	Good	Stable
Rugged and remote character	Good	Stable
Unspoiled natural area	Good	Stable
Frontier character	Good	Stable
Long, dignified human history	Good	Stable
<b>Geological, Paleontological, Archaeological and Historic Objects and Resources</b>		
Grand Staircase	Good	Stable
White Cliffs	Good	Stable
Vermilion Cliffs	Good	Stable
Kaiparowits Plateau	Good	Stable

<b>Resources, Objects, and Values Status Summary Table</b>		
<b>Resource, Object, or Value</b>	<b>Status</b>	<b>Trend</b>
Circle Cliffs	Good	Stable
East Kaibab Monocline—The Cockscomb	Good	Stable
Waterpocket Fold (portion on Monument)	Good	Stable
Upper Paria Canyon System	Good	Stable
Upper Escalante Canyons	Good	Stable
Burning Hills coal seams	Good	Stable
Escalante Natural Bridge	Good	Stable
Grosvenor Arch	Good	Stable
Arches and Natural Bridges	Good	Stable
<b>Paleontological Objects and Resources</b>		
Late Cretaceous fossils	Good	Stable
Petrified wood — Circle Cliffs	Good	Stable
<b>Archaeological Objects and Resources</b>		
Archaeological sites	Good	Stable
Historic objects	Good	Stable
<b>Biological Objects and Resources</b>		

<b>Resources, Objects, and Values Status Summary Table</b>		
<b>Resource, Object, or Value</b>	<b>Status</b>	<b>Trend</b>
Hanging Gardens Communities	Unassessed	Unknown
Tinaja Communities	Unassessed	Unknown
Rock Crevice Communities	Unassessed	Unknown
Canyon Bottom Communities	Unassessed	Unknown
Dunal Pocket Communities	Unassessed	Unknown
Endemic plants and pollinators	Unassessed	Unknown
Relict Plant Communities	Unassessed	Unknown
No Man's Mesa Relict Grassland	Poor	Stable
Pinyon-Juniper Communities	Good	Stable
Mountain lion	Good	Stable
Bear	Good	Stable
Desert Bighorn Sheep Habitat	Good	Upward
200 Bird Species	Good	Stable
Bald Eagle	Good	Stable
Peregrine Falcon	Good	Stable
Neo-tropical birds (Paria and Escalante Rivers)	Good	Stable

<b>Resources, Objects, and Values Status Summary Table</b>		
<b>Resource, Object, or Value</b>	<b>Status</b>	<b>Trend</b>
Riparian corridors	Good	Stable
Cryptobiotic Crusts (biological soil crusts)	Fair	Unknown
Packrat Middens	Good	Stable
Water sources	Fair	Stable
Soils Forestry (Ponderosa Pine)	Fair	Unknown

# 7 Manager's Letter

---

I was delighted and humbled to join Grand Staircase-Escalante National Monument as the Monument Manager in August, 2014. I have been astonished and inspired by the level and volume of projects and accomplishments the staff have completed, despite declining staff numbers and limited budgets. I have been thankful for the extensive partnerships, collaborative efforts and volunteers that have been established and are engaged and doing great work and contributing tremendously to accomplishments on the Monument; completing work that would not be possible without them. I have been heartened by the interest, support and involvement of the local communities as well as by the more expanded communities of interest. And I have been encouraged by the engagement and willingness to work together by the local, county and state government representatives. I have certainly come to a place with a lot of passion, opinions, drive, motivation and energy. I know that working together; we can turn that passion, energy, goodwill and motivation into a wonderful outlook for the management of Grand Staircase-Escalante National Monument, and accomplish great things. As Margaret Mead said; "Never doubt that a small group of thoughtful, committed, citizens can change the world. Indeed, it is the only thing that ever has."

This Managers Report outlines the many accomplishments and projects completed in FY14.

Through the combined efforts of many, we were able to tackle some of our biggest challenges, and move forward. We saw our biggest increase in visitation ever at GSENM. Realizing that these increases in visitation and uses are impacting the monument resources, we continued current research and put in place several new initiatives to help us look at how to manage that increasing use. Our combined outreach and education efforts reached thousands of students and visitors with updated Paleontological Discovery Trunks, traveling exhibits, presentations, tours, walks, talks and lectures and interpretive and program support media. "At the Top of the Grand Staircase-The Late Cretaceous of Southern Utah", was published and paleontological inventory work on the monument resulted in dozens of new sites documented and included a new kind of horned dinosaur and a unique multi-individual tyrannosaur site, along with a complete tortoise bearing a clutch of eggs. Our Resources staff conducted two monitoring workshops for members of the public and completed vegetation monitoring on over 200,000 acres, along with many wildlife habitat improvement projects. Our research efforts initiated many new studies, recorded a record year for hummingbird numbers, and monitored cougars, Desert Bighorn Sheep and Pronghorn. Our Grazing EIS and Monument Management Plan Amendment made extraordinary strides in public involvement and engagement, while moving forward through development of a range of alternatives.

2015 is shaping up to see many ongoing and continuing projects moving forward, along with new projects, research efforts, collaborations and partnerships. The Grazing EIS is moving on to analysis of the alternatives, with a Draft EIS anticipated in late FY 15/early FY 16. The Dance Hall Rock Environmental Assessment will be signed and work will begin on relocating the parking area and installing a vault toilet. The Salinity Project will

---

continue, completing the capacity restoration of the impound reservoir. The BLM, USFS and NPS will be evaluating a “Service First” option for the Escalante Interagency Visitor Center. The Lake Powell Pipeline project is moving forward through the Environmental Analysis, and GSENM will be participating in the ID team, as the proposed pipeline will cross the Monument. The Navajo Generating Station in Arizona is up for renewal, and GSENM will be involved in the Environmental Analysis for renewing the ROW for the transmission line, which also crosses the Monument. These projects, along with many additional projects, will all move us closer to fulfilling our mission to study, understand, conserve, protect and restore the outstanding natural and historic resources of Grand Staircase-Escalante National Monument.

Cindy Staszak  
Monument Manager



**NATIONAL  
CONSERVATION  
LANDS**

## **Grand Staircase-Escalante**

### **National Monument**

#### **Headquarters**

669 South Highway 89A  
Kanab, Utah 84741  
Phone: 435 644-1200

#### **Big Water Visitor Center**

20 Revolution Way  
Big Water, Utah 84741  
Phone: 435 675-3200

#### **Cannonville Visitor Center**

10 Center Street  
Cannonville, Utah 84718  
Phone: 435 826-5640

#### **Escalante Interagency Visitor Center**

775 West Main  
Escalante, Utah 84726  
Phone: 435 826-5499

#### **Kanab Visitor Center**

745 Highway 89 East  
Kanab, Utah 84741  
Phone: 435 644-1300

January 26, 2015

The mention of company names, trade names, or commercial products does not constitute endorsement or recommendation for use by the federal government.