2013 Manager's Annual Report

Grand Staircase-Escalante

National Monument

Manager's Annual Report

FY 2013

BLM

Utah

1 Grand Staircase-Escalante NM Profile

Designating Authority

Designating Authority: Presidential Proclamation 6920

Date of Designation: September 18, 1996

If other legislation exists that has affected the management of the unit, list it here as well.

N/A

Location and Acreage

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.

Contact Information

Unit Manager	Phone	E-mail	Mailing Address
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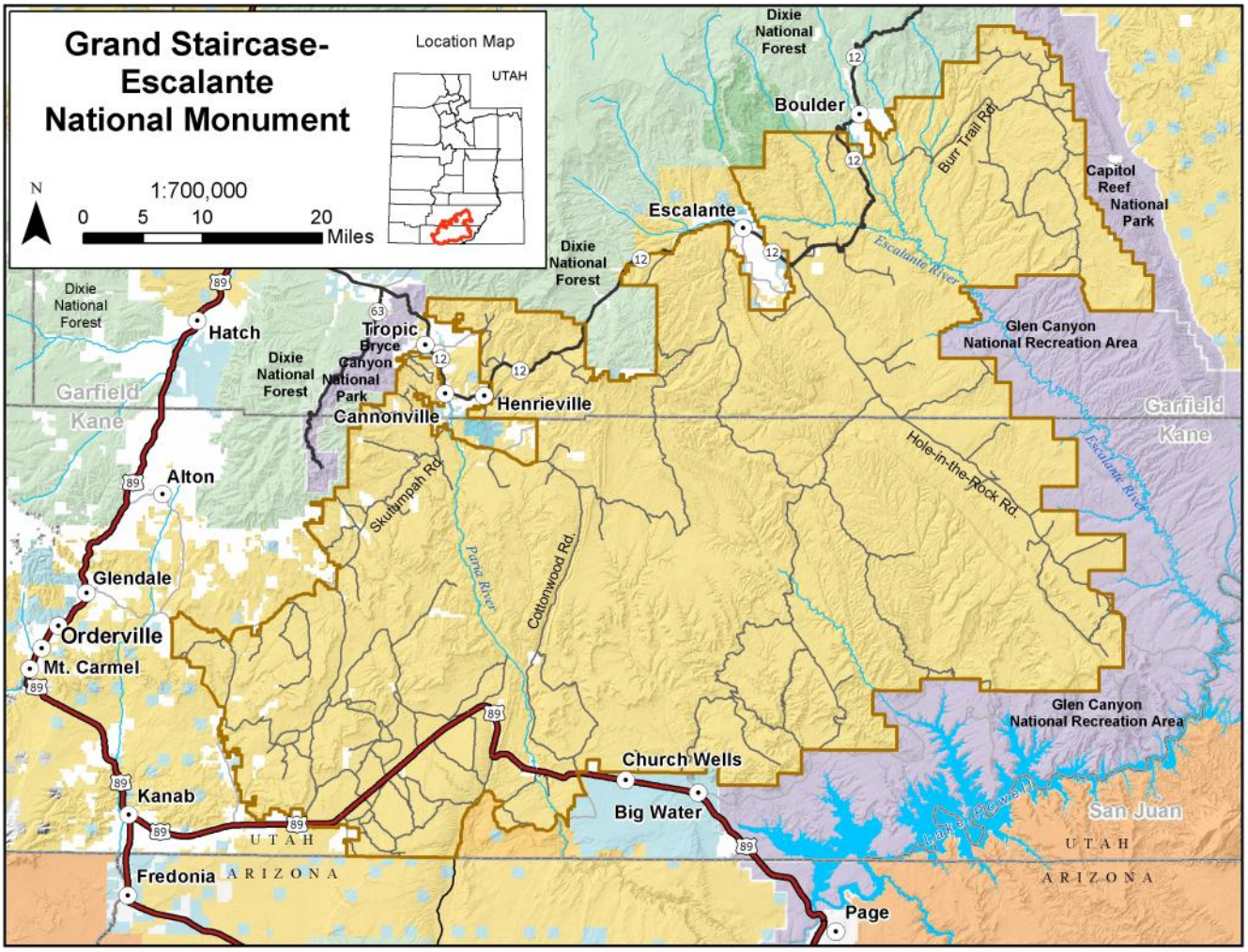
Field Office	District Office	State Office
N/A	N/A	Bernice Sterin

Map of Grand Staircase-Escalante National Monument.



Managing Partners

N/A

Staffing and Administrative Functions

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 FY13, the Monument staff consisted of 52 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), as well as a three-Ranger Law Enforcement Team. The Monument staff includes an administration team, facilities management, law enforcement, backcountry rangers, visitor center staff, planners, a science program administrator and resource specialists. GSENM has a nationally significant conservation role for the Bureau and national 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 RMP

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.

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. It will also consider the compatibility of livestock grazing with the Monument's objects and values, as these are identified in the 1996 Monument Proclamation.

The next Plan Evaluation is scheduled for FY 2015.

Status of Activity Plans

Transportation Management Plan

The Transportation Management Plan (TMP) for GSENM was included in the MMP (2000). Full implementation of the TMP has not been accomplished. 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 recently pursued funding for a route inventory and

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" (MMP, p. 58). Activity plans for the six SRMA have not been completed.

Status of 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. Prioritization and implementation has varied across programs.

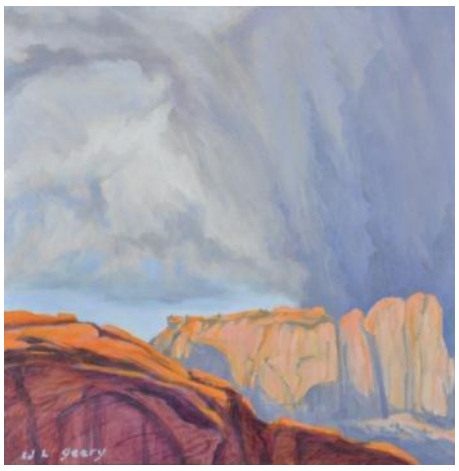
3 Year's Projects and Accomplishments

General Accomplishments

Appreciative Inquiry Study on Tourism: GSENM, Arizona State University, Grand Staircase Escalante Partners (GSEP) - a 501 (c) 3 non-profit "friends group," and gateway communities to GSENM—Page and Fredonia, Arizona and Kanab, Mt. Carmel, Orderville, Glendale, Alton, Hatch, Panguitch, Bryce Canyon City, Henrieville, Cannonville, Tropic, Escalante, and Boulder, Utah collaborated to identify the qualities of people and place that make these communities and nearby, resource-rich tourist destinations unique. The pilot, part of BLM's implementation of the President's National Travel & Tourism Strategy for the U.S., has yielded immediate results: Orderville created a farmers' market; Big Water started a dinosaur festival; and several towns extended their tourism seasons and altered business hours to better serve visitors.

The Arroyo Excavation Report Released: Retired GSENM archaeologist Douglas McFadden's monograph details the excavation and analysis of the Arroyo Site, which served as a model for the interpretive exhibits at the GSENM Visitor Center in Kanab. The study is an important contribution to the archaeological literature of southern Utah and the Arizona Strip, and is published in the BLM Cultural Resource Series and Special Monument Publications.

Artist in Residence Program: Wayne Geary, a Salt Lake City-based artist served as the 2013 Escalante Canyons Artist in Residence. This two-year-old program was developed by GSENM and serves as the National Conservation Lands partnership model for hosting an artist in residence with supporting external organizations.



Close up of Storm Over Calf Creek*, Oil on Panel, 12x12, and Wayne Geary, the 2014 Escalante Canyons Artist in Residence by some paintings in his exhibit during the Escalante Canyons Art Festival.*

Assessment, Inventory and Monitoring (AIM): GSENM partnered with USDA Agricultural Research Service, Jornada Experimental Range, and Great Basin Institute (GBI) to pilot an AIM program for the Monument. The Jornada, part of USDA's Agricultural Research Station, Las Cruces, New Mexico, developed the sampling design in conjunction with GSENM and BLM National Operations Center staff, and the GBI provided a field crew and associated field support.

Fivemile Sagebrush Restoration: An additional 2000 acres of the Fivemile Sagebrush Restoration project was completed in two different treatments in partnership with Utah Division of Natural Resources (DNR), Utah Partnership Conservation Development (UPCD), Color Country District BLM, Natural Resources Conservation Service (NRCS), and grazing permittees. 900 acres of decadent sagebrush were treated with a flex harrow and aerial seeding; 1100 acres of heavy pinyon-juniper woodland, where erosion and loss of understory vegetation was contributing to a failure to meet land health standards, were "bull-hogged" and received aerially-applied native seed. These projects help GSENM lands move towards meeting land health standards and improve and increase species diversity.

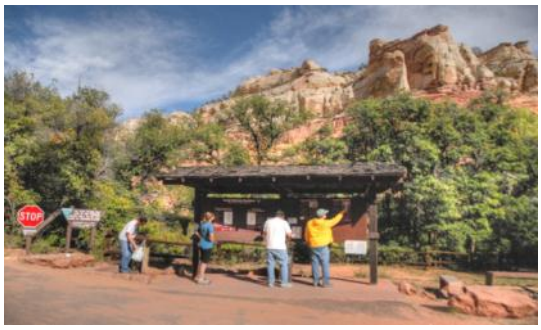
Left to right: Native seed being flown on treatment area; Fivemile seed coverage.

Initiation of Campground Fee Business Plan for Escalante-area Sites: GSENM operates several developed recreation sites, including four visitor centers, three contact stations, three campgrounds, three picnic areas, 30+ established trailheads, and one designated hiking trail (Lower Calf Creek). GSENM manages camping and day-use standard and expanded amenity fee -site facilities at two sites: Calf Creek Recreation Area and camping facilities at Deer Creek Campground. Calf Creek Recreation Area also provides access to the only developed trail in the Monument, Lower Calf Creek Falls Trail. Calf Creek Recreation Area is the most heavily visited recreation destination on the Monument receiving 5,191 campers and 21,605 day-users in 2013. The campground, day-use site, and adjoining interpretive trail to Lower Calf Creek Falls occupy a stunning riparian setting that serves as a showcase for the Monument and NLCS.

In 2013, GSENM proposed to increase fee rates at Calf Creek and Deer Creek campgrounds in order to maintain and operate facilities to an acceptable standard. The draft plan addressing proposed fee rate increases, operating costs, priorities for future expenditures, comparable recreation fee rates and fee increase impact analysis was developed in 2013 and public outreach to 324 organizations, businesses and individuals was initiated late in FY13.

Interagency Paria Management Team: FY13 saw the completion of a new inter-office BLM Memorandum of Understanding (MOU) to operate facilities within Paria Canyon-Coyote Buttes Special Recreation Management Area, which includes portions of GSENM, Kanab Field Office, Arizona Strip Field Office, and Vermilion Cliffs National Monument. Whitehouse Campground, Paria Townsite, Wirepass and Buckskin Trailheads, and Paria Contact Station, while physically located on GSENM, are maintained by KFO and St. George Field Office through this MOU. The three signatories to the MOU include Vermillion Cliffs National Monument, Kanab Field Office, and GSENM. The Paria Team named in the MOU, with staff representation from GSENM, Kanab Field Office, and Arizona Strip Field Office, met monthly to discuss issues associated with managing North and South Coyote Buttes (The Wave) and Paria Canyon-Vermillion Cliffs Wilderness. A series of heat-related fatalities and SAR incidents at The Wave in summer 2013 prompted a joint Utah-Arizona Paria Safety Plan that included GSENM's development of heat- related messages for trailhead signage.

Nephi Pasture Staging Area Construction: This project, completed in FY13, 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 Utah State Recreational Trails grant funds and BLM recreation fee monies.



Left to right: New vehicle staging area, Nephi Pasture trailhead. Note new restroom facilities and ample room for horse trailer and vehicle parking. Calf Creek Recreation Area fee station, bulletin board, and potable water.

Northern Arizona University/Colorado Plateau Archaeological Alliance Field Study: A pollen core and packrat midden samples from Meadow Canyon are currently under analysis at Northern Arizona University as part of a multi-year research program to study human occupation of the Colorado Plateau. An archaeological inventory of a 640-acre block around the sample site recorded more than 50 previously undocumented archaeological sites, including some potentially important Basketmaker II sites showing some of the earliest upland farming in the GSENM area.

Old Corral Springs Project: In 2013, Paiute and other youth crews began the rigorous job of removing invasive tamarisk from Old Corral Springs as part of a multi-year effort to restore the spring riparian zone to a pre-contact condition. The restored spring will be managed by the Kaibab Paiute using traditional Native American methods.

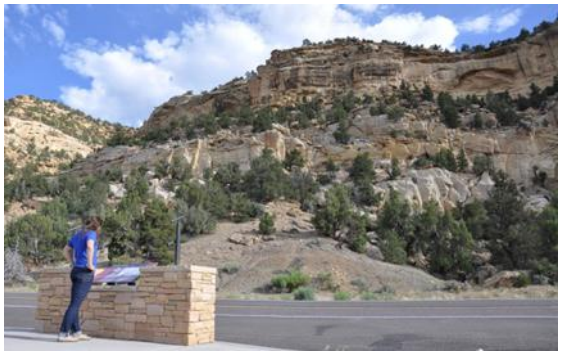
Recreation Agreements and Partnerships: In FY13, GSENM accomplished several critical tasks through recreation agreements and partnerships. These included monitoring 12 backcountry and road-based overnight sites for use impacts under a long-standing assistance agreement with Northern Arizona University, Department of Geography, Planning and Recreation under direction of Dr. Pam Foti; and hosting five information desk staffers at GSENM visitor centers under an agreement with the Glen Canyon Natural History Association. We began a multi-year *Recreation Experience Baseline Study* through an agreement with Colorado Mesa University Natural Resource Center under direction of Dr. Tim Casey. This study received a National Conservation Lands Science grant and Federal Lands Recreation Enhancement Act fees to support Phase I, aimed at helping BLM better respond to public's desires and expectations for how recreation on the Monument is managed; the Hole in the Rock Road corridor was the focus in FY13.

Research Findings From the 2006 Buckskin Fire Presented at the 12th Biennial Conference of Science and Management on the Colorado Plateau in Flagstaff, Arizona: Seven years of monitoring results following the Buckskin Fire revealed successful results in several areas: less soil loss from restoration work than anticipated; non-native species in the seed mix successfully prevented noxious invasive species such as cheat grass and Russian thistle from getting established; and seeded species provided rapid improvement in soil stability and ground cover. Finally, monitoring showed that non-native species continue to propagate and grow on the initial seeded sites.

Salinity Control: Initial salinity control site stabilization work, including spillway reconstruction and restoration and rip rap rock installation, was completed in preparation for major site work to be performed in FY14. Approximately 6,000 cubic yards of saline earthen material were utilized to create spreader dikes and silt settling ponds that prevented monsoonal floods from downcutting and causing structural failures.

Left to right: Eightmile spreader dike; new Eightmile spillway..

Scenic Byway 12 Foundation Partnership: Projects completed in FY13 under this 10-year partnership included reconstruction of the Upper Valley Granary Wayside just west of Escalante, and kickoff of an Economic Impacts of Byway Designation Study. Wayside improvements were supported by National Scenic Byway Program grants secured by the Utah Department of Transportation. The economic study is slated to be completed in FY14.



Scenic Byway 12 travelers at the Upper Valley Wayside looking up toward the granary in the cliffs.

Site Steward Monitoring on Fiftymile Mountain: The Site Steward program, now in its third year, monitored a series of sites representing the range of cultural resources and settings on Fiftymile Mountain, a natural laboratory for studying the effects of cattle grazing on archaeological sites. As cattle have been turned out again on the Lake allotment, these sites have been visited on an annual basis to observe and document cattle impacts. This project will provide data for the livestock grazing management plan amendment.

Visual Resources Inventory: Monument and UTSO staff, student interns, local area volunteers, and other stakeholders worked in teams to complete re-inventory of GSENM visual resources. American Conservation Experience (ACE) interns working with the UTSO VRM lead created, compiled, and organized imagery and data needed to document Scenic Quality Rating Units for the inventory. The inventory will be completed in FY14.

ACE interns and UTSO State VRM lead enjoy a day in the field doing VRM.

Visitor Services: Total visitation in 2013 was 759,587; this reflects a 35% increase since 2000. Grand Staircase-Escalante National Monument operates four visitor centers gateway communities and provides visitor trip planning support at a regional Utah state park. Visitor contact at these venues meets the Monument's mission to facilitate public enjoyment of its significant resources. These centers are the public face for the Monument and the flagship unit of BLM's National Conservation Lands. In FY 13, five fatalities occurred on BLM in southern Utah. Open and staffed visitor centers reduce fatalities and search & rescue (SAR) risk by providing trip planning, Leave No Trace, environment and road conditions information to visitors. In 2013, staffing levels dropped to record low levels and seasonal closures were instituted; limited daily operating hours also occurred in summer 2013. One visitor fatality occurred in the vicinity of Peek a Boo Slot Canyon; this visitor did not receive a contact at the Visitor Center. New trailhead signs were also initiated at this time.

Watson Cabin Stabilization: Work continued on the stabilization of the Historic Watson Cabin located three miles up Hackberry Creek in the Paria-Hackberry Wilderness Study Area. Restoration specialist John Azar, under contract to Grand Staircase-Escalante Partners through a BLM grant, removed soil that had been deposited around the cabin and began to replace badly weathered logs in the cabin walls and roof. Resources staff felled cottonwood trees for replacement timbers; the heavy green logs were dragged to the cabin site by horse. The logs will season overwinter and be incorporated into the stabilization project in FY14. In early FY12 fencing was installed around the perimeter of the site to protect it from cattle. A hiker maze allows passage of visitors wishing to view the cabin at close range.

Left to right: Watson Cabin under stabilization. GSENM resources and recreation staff constructing fence around cabin site.

Wildlife Fencing along Highway 89: A substantial grant to GSENM from the Federal Highways Administration Public Lands Highways Discretionary Fund, coupled with contributions from Kane County, Arizona Game & Fish Department, Utah Division of Wildlife Resources and UDOT Enhancement Funding, resulted in 13 miles of game fencing both sides of Highway 89 and the installation of highway culvert crossings, cattle guards and escape ramps. This collaborative effort to reduce wildlife/vehicle collisions was completed in time for the fall 2013 migration of the world-class Paunsaugunt mule deer herd as it moves between Utah winter range and Arizona summer range.

Current Areas of Focus

Grand Staircase-Escalante National Monument addressed several pressing issues in FY13, including a restart and relaunch of a Livestock Grazing Monument Management Plan Amendment and associated Environmental Impact Statement, litigation associated with livestock grazing and Revised Statute 2477 (RS2477) right of way issues., and increasing interest in recreational uses of Monument resources. These issues were a major focus of staff activities and will continue to occupy staff and impact the Monument's work through FY14 and out years.

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

The Monument Management Plan (MMP) that became effective February 2000 provides both a set of decisions outlining management direction and creates a framework for future planning and decision making. The MMP, however, deferred decisions related to livestock grazing and did not identify lands available or not available for that use. Instead the MMP outlined a process for completing grazing assessments, allotment management plans, and authorizations by July 2003. A multi-year attempt to move forward with grazing authorizations that began in 2000 was unsuccessful, though BLM released the GSENM Draft Monument Plan Amendment & Draft Rangeland Health Environmental Impact Statement (DEIS) to the public in 2008. BLM management decided that the DEIS failed to meet the BLM's original purpose and need for the action. This effort was concluded in 2012., but BLM Utah further determined that the need for a livestock grazing EIS process still existed and was appropriate.

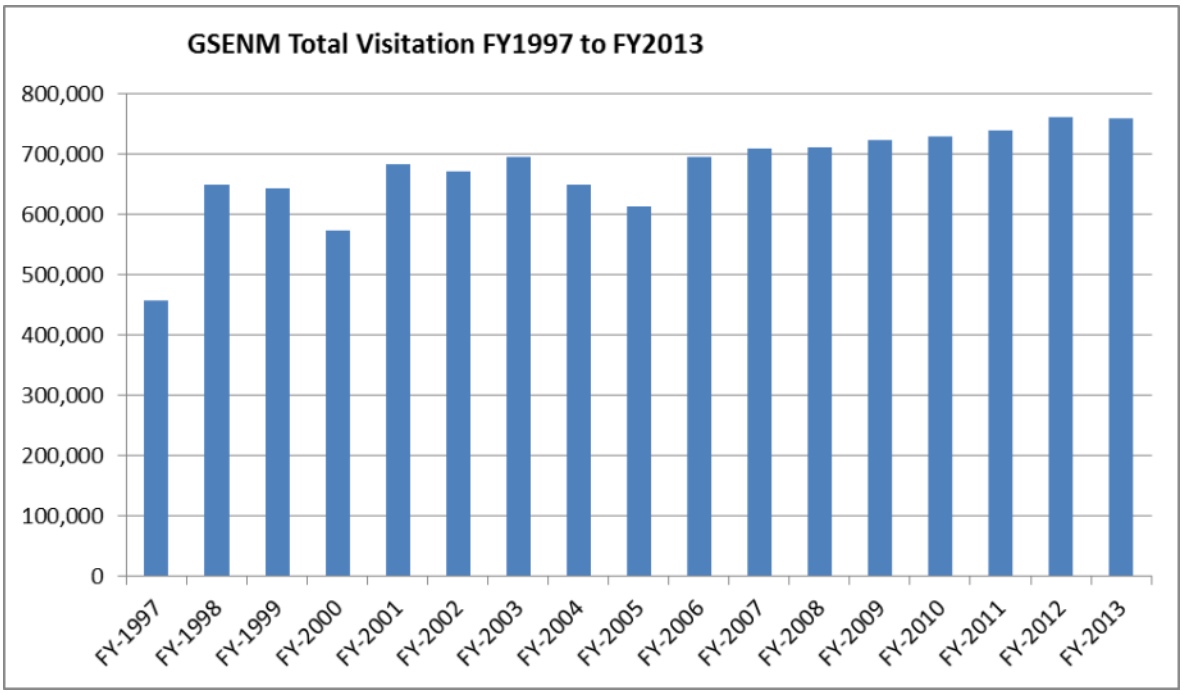
The goal for the new MMP-A/EIS is to develop and analyze management alternatives and reach a decision that will enable sustained use of the land through improved land health and science-based grazing management. Management of uses will be guided by the overall direction given in the Presidential Proclamation that established Grand Staircase-Escalante National Monument. The Proclamation directs the US Secretary of the Interior and the Bureau of Land Management (BLM) to protect a spectacular array of historic, biological, geological, paleontological, and archaeological objects in the context of the natural environment that supports and preserves them. The MMP-A/EIS will be developed in collaboration with local, state governments and organizations and interested parties to improve land health, maintain healthy lands, and solidify the grazing management on the Monument. The Notice of Intent for the MMP-A/EIS is expected to be published in November, 2013.

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 required three key range staff to spend months developing the administrative record and compiling, copying, scanning, paginating tens of thousands of pages in preparation for the Justice Department to try the case. The grazing lawsuit has not yet gone to trial.

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; it is under appeal by both parties. 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 Interest in Monument Resources



Interest in recreational uses on Grand Staircase-Escalante National Monument continues to grow. GSENM staff have implemented several actions to meet these interests, including developing programmatic approaches to approving a number of priority organized group and commercial recreational uses; launching visitor experience studies and studies of community involvement and interest with GSENM; providing more visitor outreach materials in visitor centers and at trailheads and recreational facilities; and developing partnerships with adjacent federal land managers to meet growing interest in using Scenic Highway 12 and Highway 89, the major access routes for the Monument, for competitive bicycle races, foot races, and organized recreational tours. These initiatives are multi-year, on-going efforts, and are helping GSENM to coordinate activities with adjacent federal, tribal, state, and county management.

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 FY13, GSENM actively sought to engage and implement the Assessment, Inventory, and Monitoring program and to incorporate the Colorado Plateau Rapid Ecoregional Assessment findings and toolkit for Monument planning.

Key NEPA Actions and/or Authorizations

GSENM completed 4 environmental assessments, 8 categorical exclusions, and 19 determinations of NEPA adequacy. Environmental assessments were prepared to enhance wildlife habitat, protect riparian habitat, or for land uses. GSENM approved a programmatic environmental assessment to streamline processing of special recreation permits. The majority of categorical exclusions were for land uses (rights-of-way, film permits). One categorical exclusion was prepared to authorize mine reclamation at the Little Creek Mine. 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 13, GSENM was able to utilize programmatic environmental assessments to analyze applications for 12 special recreation permits, 4 hunting outfitters, 2 heritage groups, and 4 film permits. GSENM also approved fossil collections at 13 sites.

GSENM began work on an environmental assessment to enhance the parking area at the Dance Hall Rock historic site. Work on the environmental assessment is continuing into FY 14. When completed, this environmental assessment will address increased recreation demands, reduce resource impacts at the historic site, and address public health and safety concerns from improperly disposed human waste.

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.

Education, Outreach, and Interpretation

Native Plant Restoration Project: GSENM's Hands-on-the-Land (HOL)/ Take-it-Outside (TIO) initiative hosted classroom presentations and fieldtrips for the Kanab High School Natural Resources Class. In FY13, students learned how to use GPS devices to establish frequency transects, identify native plants, and document Sage Grouse occupancy. GSENM, Grand Staircase Escalante Partners, and Kanab High School staff developed web-based curriculum. Producer Marsha Walton filmed the students for a segment on PBS's "This American Land."

Left to right: "This American Land" series producer, Marsha Walton and cameraman Dave Waters film Kanab High School teacher Barbara Warner at the Native Plant Restoration Project test site; Martin Tyner, Southwest Wildlife Foundation with golden eagle at Christmas Bird Count event, Bryce Valley Elementary—see Youth Education Outreach, next page of report.

Discovery Trunks and Traveling Exhibits GSENM and Grand Staircase Escalante Partners (GSEP) began a lending program for their Archaeological Discovery Trunks. GSENM, GSEP, and area educators partnered in development of a Paleontological Discovery Trunk and companion curriculum. The team field-tested Discovery Trunk contents and curriculum in Kanab and Escalante Elementary Schools with students ranging from 3rd to 5th grade. Dinosaur skull traveling exhibits were provided to five venues: The Great Outdoor Day Event in St. George, Utah; the Outdoor Retailers Expo and Salt Lake City offices; Lumber Plus Home Store, in partnership with Grand Staircase Escalante Partners (GSEP) in Kanab, UT; and GSENM's Big Water Visitor Center, where GSEP's newly-discovered *Nasutoceratops titusi* cast was placed on display.

Youth Educational Outreach: GSENM and GSEP staff coordinated and provided presentations about paleontology, archaeology, and biology to boy scouts and students from Kanab, Utah, and Fredonia/Page Arizona schools in classrooms and field trips to GSENM Visitor Centers. GSENM staff provided support and instruction for the Escalante River Watershed Partnership Youth Conservation Corp training, Native American Kwiyamuntsi Youth Camp, Southern Utah University Intergovernmental Internship Cooperative End of Year Gathering, and Panguitch High School Science Fair. Partnering with the BLM Kanab Field Office, Kane County Schools Foundation for Students, and Kanab City Library, GSENM and GSEP participated in the Dinosaur Road Show and 4H Events.

Local and Regional Event Support: GSENM co-sponsored the Audubon Society Christmas Bird Count, a BLM Hands on the Land/Take it Outside event, with the BLM Kanab Field Office(KFO) in partnership with the Audubon Society, Pipe Spring National Monument, Bryce Canyon NP, Glen Canyon NRA, Grand Staircase Escalante Partners, Glen Canyon Natural History Association, Dixie/Arizona Strip interpretive Association, Bryce Canyon Natural History Association, Southwest Wildlife Foundation and Kane, Garfield, Page, and Fredonia Schools. Presentations to local schools by GSENM and Southwest Wildlife Foundation staff provided educational information about wildlife resources, promoted land stewardship, and encouraged participation in the bird count. Other events supported by GSENM included an Earth Day Festival area-wide poster contest; a National Public Lands Day partnership; Western Legends Round-Up, Kane County's largest annual heritage festival; Escalante Canyons Art Festival/ Everett Ruess Days; Bryce Canyon National Park Geology Festival; Leave it to Beaver Festival; and Big Water Dinosaur Festival, a newly-developed event focused on paleontology that was an outcome of the Appreciative Inquiry Tourism study sponsored by the BLM.

Walks and Talks Lecture Series and Other Presentations: GSENM staff, researchers, and guest lecturers presented programs on topics such as archaeology, geology, moths, dinosaurs, the Old Spanish Trail, western riparian ecosystems, geodesy, and living history, including a Teddy Roosevelt re-enactment performer. GSENM staff also provided formal and informal interpretive presentations on paleontology, archaeology, range, wildlife, and stewardship at GSENM visitor centers professional meetings, workshops, seminars, and trainings.

Grand Staircase Escalante Partners volunteer Mike Satter talks to visiors about GSENM's paleontological program at the Bryce Canyon National Park Geology Festival.

Interpretive Panel Displays: GSENM produced four interpretive panels for the new GSENM Kanab Headquarters Building in Kanab, UT. The exhibits feature photos, text, and map illustrating the special character of the National Conservation Lands, GSENM, and Kanab Field Office. A new sign material, tested at Calf Creek and the Wahweap Hoodoo Trailhead, proved to be durable and should significantly reduce costs. In FY13, GSENM partnered with Red Pueblo and Armijo Chapters of the Old Spanish Trail to unveil an interpretive sign celebrating the Old Spanish National Historic Trail on Highway 89 at the Paria Town site turnout.

Additional Outreach Efforts: GSENM produced 57 posters, event handouts, 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.

Partnerships

Grand Staircase-Escalante's extensive research, outreach, and educational programs in FY13 were supported by more than 50 active partnerships. These included the Monument's non-profit friends group, Grand Staircase Escalante Partner, as well as private foundations, academic institutions and individual researchers, regional and statewide partnerships, and interagency partnerships.

Grand Staircase Escalante Partners (GSEP), a 501(c)3 non-profit friends group , began working with the Monument in 2008. In FY13, major accomplishments included a renewed focus on four key programs: Education and native plants, archaeological site stewardship, paleontological lab coordination, 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. The Site Steward program involved 40 volunteers monitoring site conditions at more than 60 archaeological sites. The Paleo Lab program was supported by 12 regular volunteers; this program also developed a travelling 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 four major community-based resource-focused "festival-style" events, (the Big Water Dinosaur Festival, the Amazing Earthfest in Kanab, the Escalante Canyons Arts Festival, and the Boulder Heritage Festival). GSEP generated 14,660 hours of volunteer and staff time in support of the Monument in FY13.

The Escalante River Watershed Partnership , 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 FY13, BLM Utah State Director Juan Palma recognized Kristina Waggoner (GSEP) and Amber Hughes (GSENM) as Youth Program Superstars for their work with conservation corps on GSENM, the Dixie National Forest, and Glen Canyon National Recreation Area. The ERWP itself was selected to participate in the DOI's Great Outdoors Rivers program for the second year in a row. Also in FY13, ERWP sponsored outreach events focused on wildlife management, tree ring and fire history, and Russian olive invasion research. ERWP also participated in the River Crossings—Linking River Communities Conference and Workshop, hosted a week-long Conservation Corps Collaborative Training—the largest event of this kind ever held—and raised nearly $2M to implement high priority restoration actions from private grants and donations, and federal, state, volunteer, and in-kind services. In FY13, ERWP treated 492 acres ; retreated 790 acres; and monitored 295 acres.

In FY13, GSENM began a long-term collaboration with the Great Basin Institute to implement the Bureau's Assessment, Inventory, and Monitoring (AIM) protocol 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 FY13, UPCD and UDWR partnered with GSENM to treat 2000 acres of decadent sagebrush and heavy pinyon-juniper cover to improve and increase species diversity.

GSENM continued its strong partnership with the Glen Canyon Natural History Association. (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.

The Monument also continued its close association with the Utah Scenic Byway 12 Foundation, collaborating on wayside exhibits and interpretive projects to enhance the visitors' experience of this All American Highway and maintained its invaluable partnership with the Southern Utah University Intergovernmental Internship Cooperative program which provides students with experience working with GSENM in range management, archaeology, trails construction and other recreation program management areas.

Volunteers

The Monument sponsored 128 volunteers (including 15 youth volunteers) and 16 hosted workers (including 8 youth) in FY13. These volunteers donated 29,788 hours to our programs, with a monetary value of $649,080. 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 FY13, including Great Old Broads for Wilderness, Wilderness Volunteers, Utah Backcountry Volunteers, and the Grand Staircase Escalante Partners. One of our most outstanding volunteers, Susan O'Dell, was recognized by the Utah State Director for her dedication and service to the Monument.

The GSENM camp host program provided daily guidance at Calf Creek, the Monument's busiest recreation site; we had 11 volunteers work a total of 2,730 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 2013, including three one-week long trips with Wilderness Volunteers to remove Russian olive (31 total participants); one one-week long trip with Great Old Broads to remove Russian olive (8 Participants); and several individual volunteers during the FY13 field season.

Budget

MLR Functional Area	Carryover from FY12	Base	One Time	Total
1010			110,000	110,000
1020	100		55,000	55,100
1040			20,000	20,000
1210	1,500	358,400	-12,900	347,000
1220	1,900		10,000	11,800
1610		7,700	900	8,600
1660		66,700	47,100	113,800
1653			5,000	5,000
1711	66,200	4,215,900	157,000	4,439,100
TOTAL MLR				**5,110,400**

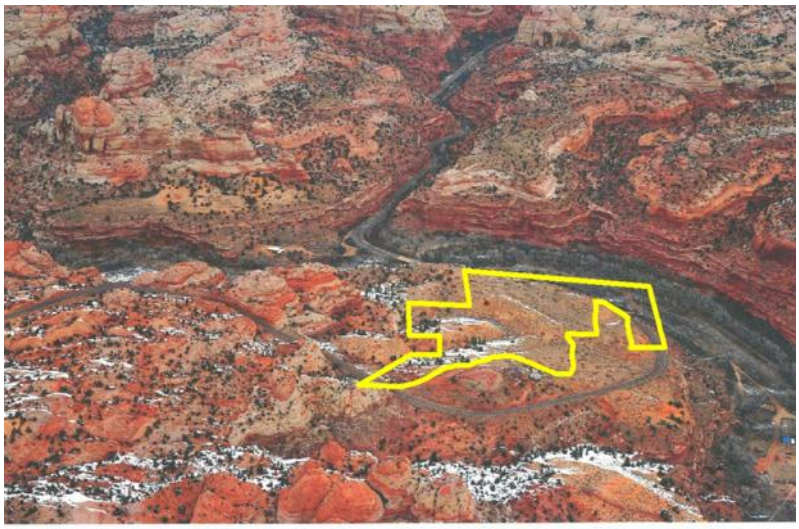
NON MLR Functional Area	Carryover from FY12	Base	One Time	Total
3130	15,400			15,400
5900			70,000	70,000
8100	3,900		48,800	52,700
TOTAL NON MLR				**138,100**

Land or Easement Acquisitions

Early in FY13, GSENM completed acquisition of 31.34 acres of private in-holdings at the confluence of Calf Creek and the Escalante River in Garfield County, Utah. In partnership with the Grand Canyon Trust, and with support provided by the Land and Water Conservation Fund (LWCF), GSENM acquired 10 building lots and associated utility easements. The acquired parcels included sensitive riparian areas, as well as scenic benches and slopes adjacent to All American Highway 12.

Acquisition of these parcels offers further protection to suitable wild and scenic river corridors, continues the remote character of the landscape in the area, and maintains the intrinsic values described within the Monument Proclamation. This acquisition was completed in two phases. Phase one completed in FY12, included approximately 20 acres; the remaining 10+ acres were brought into federal ownership. In FY13

Above: Aerial photo of acquisition completed in December 2012, at the confluence of Calf Creek and the Escalante River. Below: Acquired lands as seen from All American Highway 12.



4 Science

Science

Science Plan Status

The GSENM Science Plan is in draft; estimated completion is late FY14, pending workload redistribution to relieve the Science Program Administrator from collateral duties as the Soil/Water/Air program lead and as the AIM project lead. While some collateral work has been required to keep a minimal level of essential project work going, such as water quality monitoring, much of the collateral work has been associated with the livestock grazing EIS/MMP-A. The Monument Soil/Air/Water program lead and the Monument Ecologist positions were both vacated in FY13.

Review of the current draft by the Monument Advisory Committee (MAC) identified several shortcomings. First, the Plan was believed to be too long and more focused on defining the state of GSENM science than in planning its future. Second, the Plan was seen as uneven in its treatment of different resources, notably falling short in biological resources. Finally, the section on recreation and social sciences was delayed pending a review and revision by the incoming Outdoor Recreation Planner.

The first shortcoming was addressed first by finding a template that would help both to reduce the length of the Plan and to improve its focus. A draft outline was developed following that template, the "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.treesearch.fs.fed.us/pubs/33426). Existing material from the current draft, plus new material for the biological resources section and the re-written recreation/social science section will be edited into the new outline (both have been developed to follow the new outline).

The second shortcoming was addressed by holding a workshop at the end of January 2014 that brought together BLM and NPS staff scientists with ecologists associated with Grand Staircase Escalante Partners and others to discuss the outline of the Plan and to make sure it adequately covered the important points (goals, emerging questions and strategic actions) related to botanical science and management of botanical resources. The ideas that came out of the workshop will need to be incorporated into the Plan.

Current Science Projects

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
Phylogeography and evolution of Mentzelia cronquistii (Loasaceae) and the Mentzelia marginata 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 Mentzelia marginata complex.	botany, plant speciation	Dr. Larry Hufford and Joseph Grissom, Washington State University; Wendy Hodgson, Desert Botanical Garden, Phoenix, AZ	Research In Progress	$0
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
BLM Assessment, Inventory and Monitoring (AIM) Utah Pilot Project	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	$100,000

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
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 Nemoria.	zoology, Leipidoptera	John W. Gruber, Friends' Central School and Jason D. Weintraub, Academy of Natural Sciences of Philadelphia	Research In Progress	$0
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, Leipidoptera	Dr. Richard Zweifel	Research In Progress	$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	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	Report Submitted	$10,000

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
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	$15,000
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	Report Submitted	$0
Archaeological Assessment Project	Assistance Agreement L11AC20222	cultural resources, archaeology	Jerry Spangler, Colorado Plateau Archaeological Alliance	Report Submitted	$35,686

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
untitled	The purpose of the proposed research is: 1) to assess and document active, historic and potential beaver habitat in the Escalante River watershed; 2) to assess and document recruitment and demography of cottonwood trees; 3) collect geomorphology data to support the development of a Beaver Restoration Assessment Tool (BRAT); and 4) collect incidental data on motorized use, recreation patterns, and other land uses.	ecology, animal ecology, plant ecology, zoology, botany, geomorphology, beaver, cottonwood	Jeremy Christensen et al, Grand Canyon Trust	Report Submitted	$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	Report Submitted	$0
Paleoecology study of the GSENM	Assistance Agreement L11AC20143	ecology, paleoecology, paleoenvironment, cultural resources	Scott Anderson, Northern Arizona University and Ken Cole, USGS	Report Submitted	$30,922
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	Report Submitted	$0

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
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	Research In Progress	$0
Restoration Studies (and dust collection study)	Determines what mechanisims 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 Extention Service; NRCS	Research In Progress	$0
untitled	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)	Research In Progress	$0
Chronostratigraphic delineation of the muddy Entrada Sandstone in central Utah using the 40Ar/39Ar 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 40Ar/39Ar dating and chemical analyses	geology	Toby Dossett, BYU	Research In Progress	$0

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
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
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	Lucyna Leda Skonieczna, Natural History Museum Berlin	Research In Progress	$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 L12AC20541)	Research In Progress	$765

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
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	$0
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 Memberand 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

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
Evaluating the History of Eolian and Interdune Fluid-Sediment Interactions and Mass Transfer in an Acid and Redox Influenced Diagenetic System: Mollies Nipple, GSENM	Purpose: To study the history of fluid-sediment interactions within the Jurassic Navajo Sandstone in Southern Utah.To understand spatial variability and distribution of diagenetic processes and products along bounding surfaces to improve understanding of fluid flow in subsurface eolian reservoirs for aquifer management, groundwater contaminate transport, hydrocarbon recovery, and future CO2 sequestration.	geology, carbon sequestration, climate change	Brenda Beitler Bowen, Purdue University Department of Earth and Atmospheric Sciences	Research In Progress	$0
untitled	Purpose: To study the interaction of aeolian and fluvial processes during deposition of the Upper Cretaceous capping sandstone member, Wahweap Formation, Kaiparowits Basin, Utah, U.S.A. Sampling sandstones from the Wahweap Formation.	geology, sedimentology	Ed Simpson, Kutztown University of Pennsylvania Department of Physical Sciences	Report Submitted	$0
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)	Report Submitted	$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	Report Submitted	$0

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
Geologic Map of the Panguitch 30'x60' quadrangle, Garfield, Iron, and Kane Counties, Utah	Purpose: to complete a new geologic map of the Panguitch 30' x 60' quadrangle. Mapping will focus on resolving long-standing gaps in our knowledge of the stratigraphy and structure, in particular correlation of Upper Cretaceous strata and the age and extent of volcanic strata at the south edge of the Marysvale volcanic complex. Additionally, we will provide more detailed mapping of surficial deposits, including widespread landslides and units with shrinking and swelling soils.	geology, geologic mapping, stratigraphy, correlation	Robert F. Biek, Utah Geological Survey	Report Submitted	$0
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	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	Research In Progress	$0
Paleomagentic 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	Report Drafting	$1,785

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
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	Report Submitted	$0
Ground Water Study to Inventory and Map Water Wells in the Grand Staircase Escalante National Monument (L10PG00902)	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. Approximately 12 data attributes will be selected to comprise the well data, and will be selected by mutual agreement with USGS and BLM.	hydrology, ecology	Bert Stolp, USGS Utah Water Science Center	Research In Progress	$14,031

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
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.	Report Submitted	$5,612
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.	Report Submitted	$765
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	$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.	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	Report Submitted	$0
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 crocodilians and theropod dinosaurs, but all vertebrate groups will be assessed.	paleontology (vertebrate)	Joseph Sertich, Curator of Vertebrate Paleontology, Denver Museum of Nature and Science	Report Submitted	$10,000

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
Cretaceous Vertebrate Heritage Resource Inventory/Specimen Protection (includes NMHU L12AC20378; helicopter L12PG000094; GeoCorps L08AC13869)	Purpose: To survey and research vertebrate paleontological resources from Late Cretaceous deposits within the Monument: survey, collection (surface collection and excavation), preparation, and study of dinosaur and other vertebrate materials from the Wahweap and Kaiparowits formations; study of the geologic and paleoenvironmental context of these formations; collection and study of representative plant (pollen and macrofossil) and invertebrate remains. The ultimate goal is to reconstruct the changing nature of these Late Cretaceous ecosystems and place them into context with other coeval ecosystems in the Western Interior of North America. Ground inventory for significant vertebrate fossils using GPS technology, field notes, and photographs to document resource location/condition. Most significant specimens are collected to preserve them. Collected specimens are stabilized and prepared for long term curation by volunteers at the GSENM paleo lab and facilities at the NHMU.	paleontology (vertebrate), paleontology (invertebrate), paleobotony, paleoenvironment	Randall Irmis, Natural History Museum of Utah at the University of Utah	Report Submitted	$12,232
Cultural Affiliation, Function, and Distribution of Cup-and-Channel Petroglyphs	Analysis of Cup-and-Channel petroglyphs, a form of prehistoric rock art particular to the GSENM area. Research and analysis completed as a Masters degree from Northern Arizona University, Department of Anthropology.	petroglyphs, rock art, cultural resources, prehistoric	Michael Terlep	Report Submitted	$0
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
Backcountry and Dispersed Recreation Impact Monitoring	Assistance Agreement L08AC14327	recreation	Pam Foti, Northern Arizona University	Report Drafting	$6,104

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
GSENM-Hole in the Rock Area 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 includes a baseline inventory to ascertain who our visitors are, what they are doing where, and most importantly, why they are doing it and the associated outcomes. This study is initially documenting the recreation baseline for the Hole in the Rock Road area. Pending funding, future baseline studies will be conducted on other areas of GSENM. During the spring and summer visitation season in 2013, focus groups have been 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. The first baseline study is projected to conclude during the summer of 2013 with a deliverable report both written and local presentation in the Fall of 2013. 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	Recreation experience, visitor experience, sense of place, user preferences	Dr. Tim Casey	Research In Progress	$12,824
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

Current Science Projects, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
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	$8,340
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	$1,940
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	$11,800
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	$8,340
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, continued

Project Name	Project Description	Project's Key Words	Principal Investigator	Project's Status	BLM Contributed Funds (FY12)
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
Habitat and Biodiversity Monitoring Using Terrestrial Arthropod Surveys	This project seeks to search for and collect a new moth species in the genus Plagiomimicus (Noctuidae, Amphipyrinae), conduct a general sampling of moths, and search for and collect a new subspecies (possible new species) of butterfly diurnally (net) in the genus Euphilotes (Lycaenidae).	zoology, ecology, animal ecology, lepidoptera, arthropods	Paul Opler and David Wikle, Colorado State University	Report Submitted	$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

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.

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.

Status and Trend, Scientific Study and Landscape-related Values

Value	Status	Trend
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

Scientific Study and Landscape-related Values

Inventory, Assessment and Monitoring, Scientific Study and Landscape-related Values				
Object or Value	**Inventory Type**	**Amount Inventoried** (acres, miles, etc).	**Amount Possessing Object**	**Amount Monitored** (acres, miles, etc.)
Scientific study	N/A; see project listing, Section 4			
Vast and austere landscape	Visual Resource Management System (Scenic Quality, Sensitivity, Distance Zones)	1.9 million acres	1.9 million acres	Monument lands monitored as needed per individual project requirements
Rugged and remote character	1980 Utah BLM Wilderness Inventory; 1999 Utah BLM Wilderness Inventory	881,997 acres of Wilderness Study Area or Instant Study Area; 208,438 additional acres of Lands with Wilderness Character	1,090,435	661,350
Unspoiled natural area	1980 Utah BLM Wilderness Inventory; 1999 Utah BLM Wilderness Inventory	881,997 acres of Wilderness Study Area or Instant Study Area; 208,438 additional acres of Lands with Wilderness Character	1,090,435	661,350
Frontier character	1980 and 1999 Utah BLM Wilderness inventory; see also cultural resource inventory	881,997 acres of Wilderness Study Area or Instant Study Area; 208438 additional acres of Lands with Wilderness Character	1,090,435	661,350
Long, dignified human history	See cultural resource inventory	130,000 acres	6,000 sites	60 sites monitored annually through Site Steward program; otherwise, Monument lands spot-checked and/or inventoried to a Class III standard per individual project requirements

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. Present low use fees are inadequate to support recreation programs sufficient to support increased use (a business plan is under development to begin to address this issue). Other planning efforts are needed to insure adequate use management and resource protection.

Travel Management Implementation: State and county R.S. 2477 claims and other unresolved issues (e.g., signing open/admin roads, reclaiming closed roads have hindered implementing the travel management plan. This creates constant tension between GSENM staff, the general public, local county governments and other stakeholders. Transportation management is a major management plan component that needs to be addressed effectively at GSENM.

R.S. 2477 litigation: RS 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.

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.

Monument geological resources contribute to the regional geology acknowledged worldwide for its scenic beauty. As note 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.

Geological Objects and Resources Status and Trend Table

Status and Trend, Geological Objects and Resources		
Object or Value	**Status**	**Trend**
Grand Staircase	Good	Stable
White Cliffs	Good	Stable
Vermillion Cliffs	Good	Stable
Kaiparowits Plateau	Good	Stable
Circle Cliffs	Good	Stable
East Kaibab Monocline - The Cocks-comb	Good	Stable
Waterpocket Fold (portion of it)	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

Inventory, Assessment and Monitoring, Geological Objects and Resources				
Object or Value	**Inventory Type**	**Amount Inventoried** (acres, miles, etc).	**Amount Possessing Object**	**Amount Monitored** (acres, miles, etc.)
Grand Staircase	USGS topographic and geologic maps	1.9 million acres (all of GSENM)		known physiographic feature
White Cliffs	USGS topographic and geologic maps	1.9 million acres (all of GSENM)		known physiographic feature
Vermillion Cliffs	USGS topographic and geologic maps	1.9 million acres (all of GSENM)		known physiographic feature
Kaiparowits Plateau	USGS topographic and geologic maps	1.9 million acres (all of GSENM)		known physiographic feature
Circle Cliffs	USGS topographic and geologic maps	1.9 million acres (all of GSENM)		known physiographic feature
East Kaibab Monocline - The Cockscomb	USGS topographic and geologic maps	1.9 million acres (all of GSENM)		known physiographic feature
Waterpocket Fold (portion of it)	USGS topographic and geologic maps	1.9 million acres (all of GSENM)		known physiographic feature
Upper Paria Canyon System	USGS topographic and geologic maps	1.9 million acres (all of GSENM)		known physiographic feature
Upper Escalante Canyons	USGS topographic and geologic maps	1.9 million acres (all of GSENM)		known physiographic feature
Burning Hills coal seams	USGS topographic and geologic maps	1.9 million acres (all of GSENM)		known geologic feature
Escalante Natural Bridge	individual known geologic feature	1.9 million acres (all of GSENM)	1 each	individual known geologic feature
Grosvenor Arch	individual known geologic feature	1.9 million acres (all of GSENM)	1 each	individual known geologic feature
Arches and Natural Bridges	USGS topographic and geologic maps	Unknown	unknown	many known geologic features mapped; no separate GSENM-wide inventory

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.

The Monument's paleontological resources are well-known and regarded as some of the worlds' best-preserved from the late Cretaceous. Paleontological inventory and research on GSENM has re-written our understanding of those ecosystems, as demonstrated in a recently published volume (Titus, A.L and M.A. Loewen 2013. At the Top of the Grand Staircase: The Late Cretaceous of Southern Utah. Bloomington, IN (US). Indiana University Press.). Cretaceous fossil resources primarily occur in the Kaiparowits Formation, but also in the Wahweap, Straight Cliffs and other formations (see Management Recommendations, below). Other strata preserve fossil resources from the Jurassic and the Triassic.

Status and Trend, Paleontological Objects and Resources

Value	Status	Trend
Late Cretaceous fossils	Generally good	Generally stable
Petrified wood – Circle Cliffs	Subjected to periodic looting near Wolverine Trailhead. Most other localities are good.	Generally stable

Paleontological Objects and Resources

Inventory, Assessment and Monitoring, Paleontological Objects and Resources				
Object or Value	**Inventory Type**	**Amount Inventoried** (acres, miles, etc).	**Amount Possessing Object**	**Amount Monitored** (acres, miles, etc.)
Late Cretaceous fossils	Fossil resources occur unpredictably in bedrock outcrop areas (badlands and sparsely vegetated/thinly soiled over areas). These areas are covered by pedestrian surveys with experienced crews.	115,000 acres (12% of GSENM) surveyed through FY12; 1,293 acres surveyed in FY13 totals are taken from annual reports published by formal partners and the in-house GSENM paleontologist	115,000 ac + 1,293 ac 73 new fossil sites were documented by BLM crews during FY13: 60 vertebrate sites; invertebrate sites 2; paleobotanical sites: 7; ichnological sites: 4; nearly all of these are in Cretaceous age strata of the Kaiparowits Basin (a Triassic locality and two Jurassic age sites were also documented) 31 sites were excavated or required intensive surface collection by BLM crews. Numerous other localities were documented and/or collected by other institutions.	A total of 50 sites were monitored in FY13
Petrified wood – Circle Cliffs	Pedestrian Survey. Fossil forest area is estimated at 50,000 acres. Inventory has not been started.	0 (Circle Cliffs wood resource has been claimed by Sid Ash to be the 2nd largest in North America next to Petrified Forest National Park)	Unknown	The Wolverine Trailhead site (one site, about 5 acres) is monitored every year, including FY2013, for qualitative condition. No unauthorized collection was noted in FY13.

Stressors Affecting Paleontological Objects and Resources

The primary stressor affecting paleontological resources is ground-disturbing activities from many sources. Many of these are specifically analyzed through the NEPA process, and planned disturbances are modified or relocated where possible to protect paleontological resources. Other land uses (such as recreation and grazing) have the potential to disturb paleontological resources, but the effects are believed to be minimal. Any land use that accelerates erosion has the potential to increase the exposure of paleontological resources, which allows them to be identified, documented and collected as long as the rate of exposure does not exceed our capacity for documentation and collection.

Cretaceous sites documented during the FY2013 inventory continue to demonstrate that the Kaiparowits Formation justifies its position as the highest priority formation. Important new specimens and even new kinds of dinosaurs continue to be found, making our knowledge of the Cretaceous of southern Utah more complete. Work in the lower portion of the formation, particularly along Paradise Canyon on the east side of Horse Mtn. yielded very little significant material. This is in keeping with the overall experience that the lower member south of the Four Mile Bench Road and southeast of Horse Mountain does not yield an abundance of significant resource. This is probably because of high recycling rates and floodplain conditions related to lower accommodation space. 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.

The lower portion of the Wahweap Formation also continues produce, sparse, but important vertebrate sites. Although much more time is required to produce results, they are scientifically so significant that the formation is worth the investment. Any potential ground disturbing action that would occur in the middle unit of the Wahweap must have a thorough inventory beforehand.

A considerable effort was made in 2013 to eliminate the backlog of new inventory sites needed additional testing for significance. Of the new sites documented in the last two years of inventory, only two remain to be tested for future potential. These are: HSR-12-02 (associated Ornithischian in Wahweap Fm.) and HSR-13-10 (associated hadrosaur in Kaiparowits Fm.). Testing of these sites is a top priority for FY2014.

Inventory priorities for 2014 will be focused on the remaining areas around Fossil Ridge, Paradise Canyon, Wahweap Headquarters, and Brigham Plain areas that have never had thorough surveys.

For the next three years, priorities for inventory and research remain the same as determined in the 2011 report, namely that the Kaiparowits should receive 60% of the non-section 106 inventory effort, with the other formations sharing the remaining time and resources. In 2013 the Kaiparowits probably received about 70% of the effort. However, that effort clearly paid off. It is planned that other formations, particularly the Straight Cliffs and Wahweap, will receive more work in 2014.

The Kaiparowits Formation's fossil content clearly dictates that it remain as the top priority in the ongoing inventory required by the Monument's Management Plan. Based on the previous six years of inventory, the inventory priorities rank in the following order:

1. Kaiparowits Formation
2. Wahweap Formation
3. Straight Cliffs Formation
4. Dakota Formation
5. Tropic Shale
6. Chinle Formation
7. Morrison Formation
8. Moenave/Kayenta Formations
9. Navajo Formation
10. Quaternary Fill, Rock Shelters, Lake Deposits, etc.
11. All other formations

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.

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. The Monument Proclamation recognizes some TCP within the Monument boundary.

Status and Trend, Archaeological Objects and Resources

Value	Status	Trend
Archaeological sites	generally good, although examples ranging from “Poor” to “Excellent” can be found across GSENM	generally stable, perhaps with a slight downward trend primarily due to natural erosional processes
Historic object and values	generally good	generally stable

Inventory, Assessment and Monitoring, Cultural Resources Objects and Values

Object or Value	**Inventory Type**	**Amount Inventoried** (acres, miles, etc).	**Amount Possessing Object**	**Amount Monitored** (acres, miles, etc.)
Archaeological sites	Primarily pedestrian inventory and recording, although aerial techniques (helicopters) have been used to record inaccessible, cliff-side sites.	130,000 acres (~7% of GSENM)	6,000 sites NOTE: The site types listed in the Proclamation (Anasazi cultural sites, Fremont cultural sites, rock art panels, occupations sites, campsites and granaries) have been lumped together as "Archaeological sites" for this reporting. Numbers are approximate.	136 sites
Modern tribal use (Southern Paiute and Navajo)				"Inventory" not applicable to this category; Native American use of GSENM continues on an opportunistic basis, use restrictions are generally not applied.
Powell Expedition Routes / Sites	pedestrian inventories			No inventories for the Powell expedition routes initiated.
Mormon Pioneer Trails				primary trails are well known; no other systematic GSENM-wide inventory
Historic Inscriptions	pedestrian inventories	130,000 acres (~7% of GSENM)	250 sites	Historic inscriptions are a common element at historic sites, and are common across GSENM; numbers approximate.
Ghost towns	(see Old Paria Townsite, below)	1.9 million acres (all of GSENM)	1 site	The Old Paria Townsite is the only known "ghost town" within GSENM. The historic community of Rock House was located on GSENM, but it is suspected to have been washed away by flooding of the Paria River in

Inventory, Assessment and Monitoring, Cultural Resources Objects and Values

Object or Value	**Inventory Type**	**Amount Inventoried** (acres, miles, etc).	**Amount Possessing Object**	**Amount Monitored** (acres, miles, etc.)
Rock houses	pedestrian inventories			"Rock house" is not a specific historic structure type. Any historic cabin or structure may be recorded as such, with construction technique being secondary. Examples of rock-constructed houses can be found in the Old Paria Townsite (see below).
Cowboy line camps, currently used	Sites, Permit, RAS/RIPs	300,000 acres (~16% of GSENM)	9 each	To date approximately 56 line camps have been inventoried . Each year different line camps are utilized depending on where the workload is identified.
Cowboy line camps, historic	pedestrian inventories	130,000 acres (~7% of GSENM)	80 each	Historic livestock-related camps, number approximate.
Old Paria Townsite	pedestrian inventories	1.9 million acres (all of GSENM)	1 each	The Old Paria Townsite has been recorded and documented.
Hole in the Rock Trail	pedestrian inventories	1.9 million acres (all of GSENM)	1 each	The Hole in the Rock Trail has been inventoried and recorded, and is listed, at least in part, on the National Register. It is also under consideration as an historic TCP.
Dance Hall Rock National Historic Site	pedestrian inventories	1.9 million acres (all of GSENM)	1 each	Dance Hall Rock has been recorded and documented, is under consideration for listing on the National Register, and is also under consideration as an historic TCP.

Stressors Affecting Cultural Resources Objects and Values

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 greatest to least effect, excluding erosion and other natural processes)

1. man-related impacts including recreation
2. looting
3. vandalism
4. firewood cutting
5. development projects
6. grazing related impacts such as trampling, trailing, and increased erosion
7. other very minor sources of impact

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.

Biological Objects and Resources, continued

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 (which see) 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.

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Status and Trend, Biological Objects and Resources

Value	Status	Trend
Hanging Gardens Floristic Communities	Mostly unassessed; where assessed conditions are good.	The sites that have been observed are stable.
Tinajas Floristic Communities	Unassessed	unknown
Rock Crevice Floristic Communities	Unassessed	unknown
Canyon Bottom Floristic Communities	Unassessed	Unknown
Dunal Pocket Floristic Communities	Unassessed	Unknown
Endemic plants and their pollinators	Mostly unassessed; <1% of the GSENM has been inventoried.	Unknown
Relict Plant Communities	Unassessed	unknown
No Man's Mesa	Poor if considered a relic grassland	Static to Downward (due to natural succession)
Pinyon-Juniper Communities with up to 1400 to trees	Good	Stable
Mountain lion	Good	Stable
Bear	Good	Stable to Increasing
Desert Bighorn Sheep Habitat	Good	Increasing
200 Bird Species	Good	Stable
Bald Eagles	Good	Stable to Increasing
Peregrine Falcons	Good	Stable to Increasing
Neo-tropical Birds in riparian corridors (Paria and Escalante Rivers)	Good	Stable
Riparian Corridors	Varies; conditions range from Proper Functioning Condition (PFC; most), to Functioning-at-Risk (FAR), with a few Non-Functioning (NF)	Varies; PFC mostly stable; most of FAR and NF are upward to PFC
Cryptobiotic Crusts (biological soil crusts)	Where known, ranges from good to poor, but generally unknown	Varies, but mostly unknown
Packrat Middens	Good	Stable
Water sources (streams, springs, seeps, tinajas, wells)	Where assessed conditions range from good to poor (a number of stream segments do not meet UT water quality standards and are included on the 303(d) list. Springs have mostly been assessed	Varies, but most springs are stable, many seeps are unknown. Actively running streams have been assessed.
Soils	Where known, ranges from good to poor, but generally unknown	Unknown
Forestry (Ponderosa Pine)	Good	Stable

Inventory, Assessment and Monitoring,

Object or Value	**Inventory Type**	**Amount Inventoried** (acres, miles, etc).	**Amount Possessing Object**	**Amount Monitored** (acres, miles, etc.)
Hanging Gardens Floristic Communities	no systematic GSENM-wide inventory; extent unknown			0
Tinajas Floristic Communities	no systematic GSENM-wide inventory; extent unknown			0
Rock Crevice Floristic Communities	no systematic GSENM-wide inventory; extent unknown			0
Canyon Bottom Floristic Communities	Modified Whitaker Plots no systematic GSENM-wide inventory; extent unknown	Tom Stohlgren with CSU did baseline vegetation surveys in the late 1990s-early 2000s that recorded some of this community.		0
Dunal Pocket Floristic Communities	no systematic GSENM-wide inventory; extent unknown			0
Endemic plants and their pollinators	Ocular Surveys	16 sites	200000 acres	2 sites
Relict Plant Communities	no systematic GSENM-wide inventory; extent unknown			0
No Man's Mesa	Long Term Trend Studies	1500 acres	1500 acres	750 acres
Pinyon-Juniper Communities with up to 1400 year-old trees	Modified Whitaker Plots, Buckskin monitoring plots 1000' meter. no systematic GSENM-wide inventory; extent unknown	38,000 acres		0
Diversity of wildlife species	Trapping, Sampling, point counts, mist netting, vehicular surveys, wildlife observation reports, telemetry	Since 1999, numerous universities, permanent and seasonal staff, have contributed to roughly 1,425,000 acres being inventoried. Nearly all habitat types have been inventoried in one way or another.	1.9 million acres, or the entirety of the Monument contributes to diversity due to a wide array of habitats and ecosystems.	Annually, a percentage of the Monument is monitored for continued presence of diverse species through mist-netting, point counts, and observations.

Inventory, Assessment and Monitoring, Biological Objects and Resources				
Object or Value	**Inventory Type**	**Amount Inventoried** (acres, miles, etc).	**Amount Possessing Object**	**Amount Monitored** (acres, miles, etc.)
Mountain lion	Wildlife observation reports, hunter harvest reports, tracking and trapping	Not inventoried specific for Mountain Lion. Relying mostly on observations, hunter harvest reports, and a recent study involving tracking and collaring of several mountain lions for scientific study.	1.9 million acres, or the entirety of the Monument has the possibility of having mountain lion presence at one time or another as they travel in search of home ranges and food sources.	In 2013, a collared male lion was tracked through his habitat for a period of nine months using GPS technology. The area involved included roughly 20 square miles or 256,000 acres.
Bear	Wildlife observation reports, hunter harvest reports	Not inventoried specific for black bear. Relying mostly on observations, and hunter harvest reports.	Approximately 300,000 acres have habitat suitable to provide life cycle requirements for bears.	N/A; Rare species occasionally inhabiting the Monument. Not monitored with a specific program.
Desert Bighorn Sheep Habitat	UDWR census flights, telemetry data, wildlife observation reports, hunter harvest reports	Approximately 1,500,000 acres have been aerially inventoried by UDWR in recent years.	Approximately 750,000 acres have habitat requirements suitable for bighorn sheep.	Annually, the UDWR flies vast acreage on the Monument conducting census counts on four separate herd units. Additionally, BLM uses telemetry to keep track of reintroduced sheep on thousands of acres.
200 Bird Species	Point count surveys, winter raptor surveys, Christmas bird count	Approximately 1,500,000 acres have been surveyed at one time or another in search of bird species. This accounts for all of the major habitat types within the Monument.	1.9 million acres, or the entirety of the Monument contributes to diversity due to a wide array of habitats and ecosystems.	Annually, BLM staff conduct point count surveys in pinyon-juniper woodland, sagebrush, mixed conifer, and riparian habitats for bird diversity. Additionally winter raptor surveys and the Christmas bird count contribute to knowledge regarding bird diversity.

Inventory, Assessment and Monitoring, Biological Objects and Resources

Object or Value	**Inventory Type**	**Amount Inventoried** (acres, miles, etc).	**Amount Possessing Object** (acres, miles, etc.)	**Amount Monitored** (acres, miles, etc.)
Bald Eagles	Winter raptor surveys	Approximately 200 miles of highway are surveyed annually.	1.9 million acres, or the entirety of the Monument has the potential for bald eagles during migration and winter months. Use on the Monument is primarily centered around major highways where they feed on carrion during winter months before returning to summer habitat.	Winter raptor surveys along highway corridors are carried out annually to account for bald eagle trends. Approximately 200 miles are surveyed several times throughout the winter months. Bald eagles appear to be stable to increasing.
Peregrine Falcons	Territory monitoring, raptor surveys, wildlife observation reports, winter raptor surveys.	Approximately 1,500,000 acres of the Monument have been surveyed at one time or another in search of bird species.	Approximately 500,000 acres with habitat on cliff faces is suitable for peregrine falcon.	14 Peregrine falcon territories are monitored annually. This accounts for the known territories. Sighting reports indicate birds doing well and are expanding.
Neo-tropical Birds in riparian corridors (Paria and Escalante Rivers)	Point count surveys, mist netting	Nearly the entirety of these two mentioned streams have been surveyed for migratory birds either through point count surveys or mist netting. This has been conducted by both BLM and UDWR staff.	These two mentioned stream corridors account for approximately 50,000 acres of habitat.	Mist netting was used for baseline data in the early years of the Monument. No mist-netting has been conducted in recent years. Point count surveys continue to be conducted annually at several locations along these stream corridors.
Packrat Middens	No systematic inventory to date			
Riparian Corridors	Escalante: ocular, Point Count Transects, repeat photography. Paria: Henrieville Creek.	<19,000 acres (<1% of GSENM)	Escalante: 13,500 acres	Esccalante and Paria: 13,500 acres
Cryptobiotic Crusts (biological soil crusts)	systematic survey of low-disturbance sites on ~25-40% of GSENM to develop predictive model for biological soil crust abundance GSENM-wide	(~25-40% of GSENM)	unknown	Bowker, MA, J Belnap and ME Miller. 2006. Spatial modeling of biological soil crusts to support rangeland assessment and monitoring. Rangeland Ecology and Management 59(5):519-529.

Inventory, Assessment and Monitoring, Biological Objects and Resources

Object or Value	**Inventory Type**	**Amount Inventoried** (acres, miles, etc).	**Amount Possessing Object**	**Amount Monitored** (acres, miles, etc.)
Water sources (streams, springs, seeps, tinajas, wells)	1:24,000 scale topographic maps (USGS 7½-minute series)	1.9 million acres (all of GSENM)	unknown	Unknown
Water sources (streams, springs, seeps, tinajas, wells)	water rights database (State of UT)	1.9 million acres (all of GSENM)	unknown	Unknown
Water sources (streams, springs, seeps, tinajas, wells)	characterization of water sources (stream gauging, spring/seep flow rates, water chemistry, aquifer characterization, groundwater/ surface water exchange, human effects on quantity and quality, etc.)	380,000 acres (~20% of GSENM) estimated 20% based on previous and ongoing studies	unknown	routine water quality monitoring is typically conducted at 10 sites (5 year-round) but was reduced to 8 in FY13 dues to funding (the 5 year-round sites plus limited sampling at 3 of the other 5 sites)
Soils	soil survey (3rd Order)	1.9 million acres (all of GSENM)	1.9 million acres	Systematic monitoring began FY13 with AIM; 33 sites monitored
Soils	ecological site description (final ESD with state and transition model)	1.9 million acres (all of GSENM)	23 ESDs	S&T models define "community dynamics"; GSENM has 58 ecological sites: 23 have final ESD w/ S&T; 21 have final ESD w/o S&T; 9 have draft ESD w/ S&T; 5 have no ESD
Forestry (Ponderosa Pine)	Stand Exams	1,161		This is a plot-based inventory system that samples 5-10% of each inventoried stand for items such as: tree species composition, tree density (trees per acre, basal area, stand density index), wood volumes (tons of biomass, cords, and board feet of sawtimber), damaging agents (insects, diseases, mechanical damage), tree diameters, tree heights, tree age, etc.

Stressors Affecting 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. Present low use fees are inadequate to support recreation programs sufficient to support increased use (a business plan is under development to begin to address this issue). Other 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 (as described is the sections devoted to those resources, e.g., paleontological resources, cultural resources, water quality, plants and animals—whether Sensitive Species or not). 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 grazing, or recreation if not properly managed). It is important to note that the effects of grazing use are known though 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 serious 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). 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 Section3, "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 Measures

The objects, resources, and values identified in the Monument proclamation are generally in good condition, and have remained in good condition since the Monument was established. The values which the Monument was created to conserve, including the opportunity for scientific study, the landscape character, and the diversity of plant and animal communities and individual species found in this region of the Colorado Plateau, are still present and are still drawing scientists , the visiting public, and users from local communities. Many of the scientific objects are geological in nature, and will remain largely unchanged except for the effects of natural erosion. This is also true of paleontological resources and archaeological and historic resources, although natural erosion and a historical practice of unauthorized collecting, continue to pose threats to the scientific value of these resources. Many of the biological objects for which the Monument was recognized have yet to receive systematic inventory, however, and GSENM staff cannot accurately characterize trends in their condition. This is true for many of the special biological communities—hanging gardens, tinajas, rock crevice, dunal pocket, relict plant communities, and cryptobiotic crusts—as well as the Monument's water resources, and will remain an issue until we have been able to conduct baseline inventory and condition assessments. The AIM inventory program, launched in FY13, will remedy some of these information gaps; dedicated inventory targeting these resources, is still needed.

Summary Table, Scientific Study and Landscape-related Values

Value	Status	Trend
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

Summary Table, Geological, Paleontological, Archaeological and Historic Objects and Resources

Resource, Object, or Value	Status	Trend
Grand Staircase	Good	Stable
White Cliffs	Good	Stable
Vermilion Cliffs	Good	Stable
Kaiparowits Plateau	Good	Stable
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
Late Cretaceous fossils	Generally good	Generally stable
Petrified wood — Circle Cliffs	Generally good; some periodic looting at Wolverine Trailhead	Generally stable
Archaeological sites	Generally good; range from “Poor” to “Excellent”	Generally stable, some natural erosion
Historic objects	Generally good	Generally stable

Summary Table, Biological Objects and Resources

Resource, Object, or Value	Status	Trend
Hanging Gardens Communities	Good, where assessed	Stable
Tinaja Communities	Unassessed	Unknown
Rock Crevice Communities	Unassessed	Unknown
Canyon Bottom Communities	Unassessed	Unknown
Dunal Pocket Communities	Unassessed	Unknown
Endemic plants and pollinators	Mostly unassessed	Unknown
Relict Plant Communities	Unassessed	Unknown
No Man's Mesa Relict Grass-	Poor (not a relict grassland)	Stable to Downward, due
Pinyon-Juniper Communities	Good	Stable
Mountain lion	Good	Stable
Bear	Good	Stable to increasing
Desert Bighorn Sheep Habitat	Good	Increasing
200 Bird Species	Good	Stable
Bald Eagle	Good	Stable to increasing
Peregrine Falcon	Good	Stable to increasing
Neo-tropical birds (Paria and Escalante Rivers)	Good	Stable
Riparian corridors	Most at Proper Functioning Condition, few are Non-Functioning	Varied
Cryptobiotic Crusts (biological soil crusts)	Good to poor; mostly unas-sessed	Unknown
Packrat Middens	Good	Stable
Water sources	Good to poor	Varied
Soils	Good to poor	Unknown
Forestry (Ponderosa Pine)	Good	Stable

7

Manager's Letter

This past year was a year of accomplishments and new directions for Grand Staircase-Escalante National Monument. Visitors came in record numbers, more outfitters and guides are working here than ever before, our science program continues to grow, and our visitor centers and our educational programs have become essential parts of our gateway communities. We have developed a strong network of local leaders who are working with us to develop visitor experiences that will sustain tourism and bring new benefits to rural southern Utah.

We launched a planning effort to fully incorporate livestock grazing decisions into our Monument Management Plan. This project has attracted national attention and given us the opportunity to make new connections with livestock grazing permittees, state and county interests, and stakeholders across the nation. By the end of FY13, we had built up enough confidence in our planning approach to send out our Federal Register notice to begin the process, and we expect to release a final Monument Management Plan Amendment in late FY15.

We made a concerted effort to involve the Monument in several national science-focused efforts, including implementing the Assessment, Inventory, and Monitoring program here and putting the Colorado Plateau Rapid Ecoregional Assessment data syntheses and analytical tools to work in local planning and resource management. We continue to sponsor both applied and basic scientific research at GSENM, and have more than 50 partnerships in place to further our understanding of the Monument's resources.

The Monument continues to be a lightning rod for important discussions about the role of the public lands in the West. We expect that challenges to our management will continue; this year, we faced litigation on our grazing management and lawsuits dealing with Revised Statute 2477 (RS2477) rights-of-way on more than 1,500 roads on the Monument and neighboring Kanab Field Office lands. These are long-term challenges that will run for a number of years before they are resolved, but as this report shows, they have not kept us from our mission to study, understand, conserve, protect, and restore the outstanding natural and historic resources which make the Grand Staircase-Escalante National Monument a leader for the National Conservation Lands.

Sarah Schlanger, Acting Monument Manager

NATIONAL CONSERVATION LANDS

Grand Staircase-Escalante

National Monument

Bureau of Land Management, Utah

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Big Water Visitor Center:

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Escalante Interagency Visitor Center

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DATE: July 10, 2014