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Ashley National Forest

Monitoring Report for Fiscal Year 2014

**Daggett, Duchesne, Summit, Uintah, Utah and Wasatch
Counties, UT and Sweetwater County, WY**



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Introduction

The purpose of this report is to provide forest managers and the public with a brief look at the monitoring accomplished during fiscal year 2014 as part of implementing the Ashley National Forest Land and Resource Management Plan (Forest Plan), as well as other program-specific monitoring accomplished throughout the fiscal year.

All references to the year 2014 refer to the period from October 1, 2013 through September 30, 2014. This report does not discuss individual management projects; rather it provides a snapshot of active monitoring programs on the Forest. More information on specific projects is available from the Ashley National Forest Supervisor's Office at 355 N. Vernal Ave., Vernal UT, 84078.

Monitoring is often conducted on multi-year schedules according to the protocols and objectives for each resource indicator. Thus surveys performed at two, three or five year intervals will not appear in every annual report. Likewise, monitoring information is collected on a regular basis but only analyzed when enough information has been accumulated to support valid conclusions. This report focuses on the types of data collected in 2014; a brief interpretation of the results is provided when available, but is not the primary purpose of the document.

For an overview of all Forest monitoring activities including condition and trend analyses, refer to monitoring summary reports produced approximately every five years. The most recent summary report can be found on the Ashley's website on the planning page at <http://www.fs.usda.gov/main/ashley/landmanagement/planning>.

Program areas covered in this year's report are:

- Air Quality;
- Fisheries and Wildlife;
- Forest Vegetation;
- Heritage Resources;
- Rangeland Management;
- Recreation Program; and
- Soil and Water Resources.

Air Quality

Visibility

Air Quality continues to be monitored by various indicators. A visibility camera on Lake Fork Mountain offers a qualitative view of the High Uintas Wilderness which can be observed at the following link: (<http://www.fs.usda.gov/ashley>) and is also illustrated in Figure 1. Visibility is one of the first indicators of declining air quality.



Figure 1 - View from Lake Fork Mountain.

The digital images are qualitatively analyzed for visibility on a quarterly basis; complete tables along with the details on the analyzing process are available at: <http://ars-fsairpgm.com/>. Once at the site click on the tab for analytical reports, then on the tab for visibility reports to view the site specifications and qualitative data.

Table 1 presents visibility data that was collected for the High Uintas Wilderness in 2013. Haze conditions are summarized as uniform, ground-based, elevated or multiple. Uniform means no distinct haze layer is noticed, ground-based indicates

haze at ground level, elevated is haze at a higher elevation, and multiple is haze at both ground-level and elevated. Weather concealed means that clouds or precipitation are such that the determination of the sky value is impossible. During 2013, there were no elevated or multiple conditions for the High Uintas Wilderness. The number of days for each quarter is from three views per day taken at 9:00am, 12:00, and 3:00 pm. To view operating procedures and technical instructions select links at the same website as accessed for the data, and scroll down to Optical and Scene Standard Operating Procedures (SOPs) and Technical Instructions (TIs).

Table 1 - High Uintas Wilderness 2013 Air Quality Data

High Uintas Wilderness 2013						
Quarter	Possible ¹ Days	Collected ² Days	Valid ³ Days	Uni- form	Weather Con- cealed	Haze Condition
Jan 1 – Mar 31	270	240	236	139	97	0
Apr 1- June 30	273	216	216	149	67	0
July 1- Sept 30	276	251	249	176	73	0
Oct 1-Dec 31	276	220	220	144	76	0

¹Possible Days include views taken three times a day multiplied by the number of days a month in a quarter.

²Collected days are the numbers of days in that quarter when views were collected. Reasons for not collecting views could be equipment failure due to low solar power (i.e. solar panel covered by snow).

³Valid days are views that can be used for analysis. A lens flare or a blank view, for example, would render the view unusable and not valid.

The camera was installed in 2010 and put into service in the 3rd quarter. There was no ground, elevated or multiple levels of haze during 2013.

High Lakes Water Quality Sampling Data

High lakes samples were collected from Walkup, Uinta Noname, Upper Coffin (Figure 2), and Fish in 2014, but as of yet, the chemical analysis is not available. The parameters of high importance to surface water acidification studies are Acid Neutralizing Capacity (ANC), pH, sulfates, nitrates and calcium as these are the chemicals related to acidity with the exception of pH, which is important because biota respond to changes in pH (USFS, 2012). Other chemicals are also analyzed in the samples which provide more information about the lake. At least eight years of data need to be collected, and more time is advised, if that data is collected on a

yearly or quarterly basis, to determine trends in lake chemistry (USDA, 2012). We have not yet reached the point in continuous lake data collection using recommended protocols to determine trends, but continued sampling will eventually get us to a point where we can do this. Our lake samples are collected late August to mid-September.



Figure 2 - Coffin Lake

Cooperative Study Monitoring Data

The Ashley National Forest is participating with Western University to collect water quality sampling data. The cooperative study is investigating potential air deposition (air quality) and changing temperature effects on lakes in the Uintas. The lakes sampled in 2014 as part of the study included Walkup Lake, Larvae Lake, Denise Lake, Taylor Lake, Hidden Lake, and Jessen Lake.

Ozone Monitors

The Little Mountain ozone monitor is located just north of Vernal at an elevation of approximately 8,600 feet and the Dutch John monitor is located at the heliport in

Dutch John. The data is collected monthly and submitted to the Forest Service's Rocky Mountain Research Center for review. After review, the data is submitted to the Environmental Protection Agency (EPA). The 2012 and 2013 data is not yet entered into the EPA's webpage, but you can access data for 2010 and 2011 located at: http://www.epa.gov/airdata/ad_maps.html. The Dutch John ozone monitor runs from April to October and is taken down for the winter and the Little Mountain monitor runs year round and is illustrated in Figure 3.



Figure 3 - Dutch John Ozone Monitor

Regional Snowpack Deposition

The regional snowpack deposition sites are managed by the U.S. Department of Interior's U.S. Geological Survey. The sampling takes place on or around the end of March on the Ashley National Forest at Grizzly Ridge and Center Park in the Lake Fork Drainage. This regional study focuses on high elevation sensitive watersheds and the deposition that occurs with snowfall. The project spans the Rocky Mountain Region from Montana to New Mexico and has been in place for 20 years. As a result, some regional snowpack sites have many years of data. As with the High Lakes, more data over time needs to be collected to establish trends for the Forest as the Forest began participating in 2007. The project can be found on the following website

where data from other sites can also be visited. The data for Grizzly Ridge and Lake Fork can be viewed for all years 2007 through 2013, and as soon as it becomes available, the 2014 data will be uploaded to the website. http://co.water.usgs.gov/projects/RM_snowpack/index.html

Lichens

Last year Dr. Larry St. Clair, with Brigham Young University, completed the establishment of lichen air quality bio-monitoring reference sites on the South Unit, of the Roosevelt/Duchesne Ranger district. Dr. St. Clair also revisited the Cart Creek Bridge area on the Flaming Gorge Ranger District to establish a comprehensive elemental analysis sampling grid as prior monitoring had revealed elevated heavy metals.

Samples on the South Unit were collected and analyzed to establish background levels in areas where oil and gas development and production are taking place. The analysis revealed that concentrations of nitrogen and sulfur are generally within background levels for all five sites and that there are very slightly elevated levels of nitrogen, arsenic, chromium and nickel from some of the sites located in the Nutter's Canyon area.

The sampling data at Cart Creek Bridge and along Highway 191 indicate that elevated heavy metals are related to traffic along the highway and from heavy trucks cooling their brakes at the Cart Creek pull-off. Lead was within background levels along the highway, but higher at Cart Creek Bridge although not as high as when sampled several years ago. Numbers of sensitive indicator species upslope of Cart Creek Bridge are plentiful which according to Dr. St. Clair, indicates that heavy metal impact on the lichen is practically non-existent.

This year Dr. St. Clair re-visited some established monitoring sites which he will also do with the sites established at Cart Creek Bridge and on the South Unit on a five year interval. Continued monitoring will provide information about air quality in both of these areas as well as other locations across the forest where bio-monitoring sites are located.

Fisheries and Wildlife

Greater Sage Grouse

Vernal/Flaming Gorge District

Lek Surveys: Cooperative 2014 spring lek surveys were conducted with the Utah Division of Wildlife Resources and the Wyoming Game and Fish Department. Three Wyoming and five Utah leks were counted for long-term trend male attendance monitoring. Survey protocol prescribes daylight period visits to each lek at a minimum of three times during the April peak attendance period. The Wyoming leks are located along the National Recreation Area. The Utah leks are associated with the Diamond Mountain population and include Taylor Mountain, Brush Creek Mountain, and west Diamond Mountain. Table 2 represents male sage grouse counted in 2014 in comparison to 2013. These numbers only represent what the Forest Service counted. Total lek count data is kept and reported upon in the individual State wildlife systems.

Table 2 - 2013 and 2014 Lek Count Data in Wyoming and Utah.

Lek Name	2013 FS High Male Count	2014 FS High Male Count
Wyoming Lost Dog 4	17	12
Wyoming Brinnegar 2	16	12
Utah Taylor Face	9	9
Utah Taylor Pt Springs	3	3
Utah Colton Ridge	0	0
Utah Brush Crk Mtn	0	2
Utah Chicken Springs	5	14

Sage-grouse Fence Reflector Need Inventory and Installation: Grazing allotment and pasture fences near leks are being inventoried and scheduled for visual marker installation. In 2014, a total of 2.25 miles of fencing near the Brush Creek Mountain lek and Colton lek were fitted with visual markers. Sites needing markers were identified on Taylor Mountain and West Diamond Mountain near Chicken Springs for the 2015 field season.

Roosevelt/Duchesne District

Greater Sage Grouse were monitored forest-wide in 2014. Monitoring on the Roosevelt- Duchesne District, specifically, Anthro Mountain (~ 20,000 acres) was conducted by the west zone biologist in coordination with the Division of Wildlife

Resources. Lek counts continue to indicate the population is increasing, with a count of 64 males attending leks on Anthro in 2014. In 2002 the Forest coordinated an effort with the Division of Wildlife Resources to initiate a study of the Anthro Mountain sage grouse population which continued through 2012. Because of a lack of funds, 2013 was the first year since the inception of the study in 2002 that individual birds have not been tracked by telemetry. Funding for 2014 was leveraged and attempts were made to attach GPS transmitters to Anthro birds. However, due to weather and timing, birds were not captured and location data was not collected for FY 2014. It is anticipated that GPS transmitters will be attached to Anthro birds in FY15. Additionally, pellet transects established in 2007 were read in 2014, but the data has not yet been evaluated. These transects are anticipated to be read annually to provide another measure of sage grouse use on Anthro Mountain. Figure 4 illustrates a male sage grouse on Anthro Mountain.



Figure 4 - Male Sage Grouse on an Anthro Mountain Lek.

Migratory Birds

Vernal/Flaming Gorge District

Lewis's woodpecker nesting site surveys were conducted in the Greendale area. Nesting pairs were located in the two known traditional sites. . Two owl call surveys were completed in Whiterocks Canyon; however there were no responses to the calls. The bald eagle nest on Antelope Flat was successful again in 2014. Monthly waterfowl counts were conducted on the Henry's Fork wetland and Linwood Pond

areas to document species utilization. In total, 17 waterfowl species were recorded. A total of 36 CXT outhouse vault toilet lavatory buildings were surveyed for need and then fitted with vent pipe caps to prevent owl and bird entry and subsequent mortality.

The long-term breeding bird survey located on the Vernal District was completed in 2014 as well, and the data were submitted to the North American Breeding Bird Survey database. Results can be seen by going to www.pwrc.usgs.gov/bbs and selecting the Grizzly Ridge route from the Results and Analysis section of the web site.

Roosevelt/Duchesne District

In 2014, migratory bird surveys were conducted in the lower Lake Fork drainage, Rock Creek, NF Duchesne, lower Yellowstone drainage, Nutters Ridge, Brundage Ridge, Nutters Canyon, and Atwood Basin. During these surveys we found several Fish and Wildlife Service Birds of Conservation Concern (BCC), Partners in Flight (PIF) priority species, Forest Service sensitive species, and Ashley NF Management Indicator Species (MIS). MIS species found included warbling vireo, red-naped sapsucker, sage grouse, northern goshawk, golden eagle, and song sparrow. Sensitive species observed were three-toed woodpeckers and northern goshawk. F&WS BCC and PIF Priority species observed included three-toed woodpeckers, broad-tailed hummingbird, Brewer's sparrow, Cassin's finch, sage grouse, and pinyon jay.

In 2014 woodpecker surveys were conducted in Lower Lake Fork, Lower Yellowstone, Swift Creek, Atwood Basin, Pole Creek, and Pole Mountain. Woodpeckers detected during these surveys include the tree-toed woodpecker (sensitive), hairy woodpecker, downy woodpecker, northern flicker, and red-naped sapsucker (MIS). Woodpecker activity appears to be prolific and is anticipated to continue following the beetle epidemic across the Forest.

Northern Goshawk (Forest-wide)

The Forest has monitored northern goshawk steadily since 1988. In 2014 the Forest committed four full-time employees from late-May to mid-August to continue the monitoring. Sixty-four of the 65 known territories were visited on the Ashley National Forest in 2014. Figure 5 depicts the number of known territories that have been monitored since 1988 and Table 3 further summarizes that data. Table 4 summarizes goshawk occupancy and productivity on the Forest.

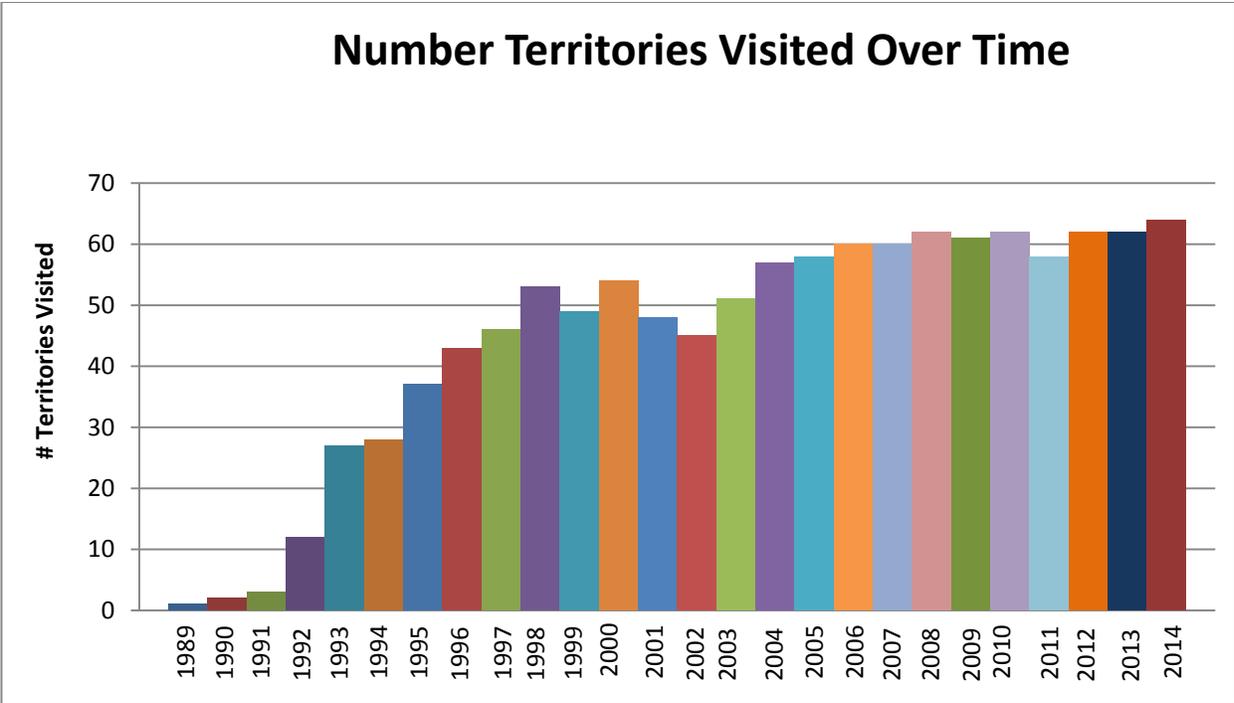


Figure 5 - Goshawk Territories Visited from 1988 to 2014.

Table 3 - Summary of All Northern Goshawk Territories, Number Visited, and Number Randomly Selected in the Uinta Mountain, 1988-2014.

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
# Territories	2	4	4	12	27	32	41	44	49	53	53	54	55	55	55
# Visited	-	1	2	3	12	27	28	37	43	46	53	49	54	48	45
# Occupied	2	3	1	11	25	24	24	23	30	25	21	23	29	9	13
# Random	-	-	-	-	-	-	-	-	-	-	-	27	28	28	28
# Random Visited	-	-	-	-	-	-	-	-	-	-	-	26	28	28	28

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
# Territories	56	58	60	62	62	63	63	63	63	63	63	65
# Visited	51	57	58	60	60	62	61	62	58	62	62	64
# Occupied	18	24	18	27	24	4	10	15	15	22	19	24

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# Random	28	28	29	30	31	31	32	32	32	32	32	32
# Random Visited	28	28	29	30	31	31	32	32	32	32	32	32

Table 4 - Summary of Occupancy and Productivity for Traditional Northern Goshawk Territories in the Uinta Mountains, 1992-2014.

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
# Territories	12	27	32	41	44	49	53	53	54	55	55	55	56	58	60
# Occupied	11	16	19	20	25	21	21	22	28	9	13	17	21	16	25
# Active	10	9	15	18	22	18	18	16	23	6	12	16	19	12	24
# Failed	1	7	5	2	2	4	11	5	2	0	0	6	2	1	8
# Successful	8	7	10	15	19	13	7	5	20	5	6	10	17	11	16
# Fledged	14	12	17	29	45	31	10	9	27	9	10	17	36	16	28
# Fledged/Occupied	1.27	0.75	0.89	1.45	1.80	1.48	0.48	0.41	0.96	1.00	0.77	1.00	1.71	1.00	1.12
# Fledged/Active	1.40	1.33	1.13	1.61	2.05	1.72	0.56	0.56	1.17	1.50	0.83	1.06	1.89	1.33	1.17
# Fledged/Successful	1.75	1.71	1.70	1.93	2.37	2.38	1.43	1.80	1.35	1.80	1.67	1.70	2.12	1.45	1.75

	2007	2008	2009	2010	2011	2012	2013	2014
# Territories	62	62	63	63	63	63	63	63
# Occupied	24	3	10	15	15	22	19	22
# Active	22	1	8	14	14	20	13	20
# Failed	9	1	3	7	8	3	3	10
# Successful	13	0	5	7	6	17	10	10
# Fledged	22	0	6	9	9	34	17	17
# Fledged/Occupied	0.92	0.00	0.60	0.60	0.60	1.55	0.89	0.77
# Fledged/Active	1.00	0.00	0.75	0.64	0.64	1.70	1.31	0.85
# Fledged/Successful	1.69	0.00	1.20	1.29	1.50	2.00	1.70	1.70

Winter Carnivore Track Surveys (Forest-wide)

Winter snow track surveys were conducted on the Paradise, Spirit Lake, Blind Stream, and Elkhorn Loop roads. In total, 20.5 miles were surveyed on the Vernal/Flaming Gorge District and 57 miles were surveyed on the Roosevelt-Duchesne District. Snowshoe hare, cottontail, weasel, bobcat, moose, elk, deer, and red squirrel tracks were recorded. No lynx or wolverine tracks were detected in the surveys.

Snowshoe Hare Pellet Count Surveys (Roosevelt-Duchesne District)

Seven (7) snowshoe hare plots were completed on D3/4. Generally speaking, more pellets were found in 2014 than in the past years.

Rocky Mountain Bighorn Sheep

Classification surveys were conducted on bighorn sheep in the Red Canyon and Dowd Mountain areas of Flaming Gorge. Bighorn sheep productivity was good in this area and greatly improved from the 2013 summer season.

Elk and Deer (Roosevelt/Duchesne District)

In addition to the population estimates provided by the DWR, the Forest has begun elk and deer pellet transects on Anthro Mountain. There were 50 transects that were completed in 2014. The data from these will be evaluated this winter and will give an indication of elk and deer (MIS species) use on the Forest portion of the Anthro Unit. Additionally, these transects have been set in sagebrush communities as paired plots in prescribed burn areas and control areas to compare big game usage in these areas. Figure 6 illustrates bull elk on Anthro Mountain.



Figure 6 - Bull Elk on Anthro Mountain.

South Brownie Creek and Mann Creek

Riparian protection fences located at Mann Creek (Flaming Gorge District) and South Brownie Creek (Vernal District) were checked for broken wires, loose nails or fasteners, and fallen trees across fences. Fences were repaired where needed. Additionally, the fallen trees at Mann Creek were cleared away in early June 2014. These riparian exclosures (designed to keep livestock out) are expected to protect the stream's water quality at least a half mile downstream from grazing impacts on both streams.

A 50' x 5' baffled culvert was installed on Mann Creek to allow better aquatic organism passage through the pipe. The baffles will help hold substrate that naturally flows into the pipe so overtime there will be a natural stream bottom through the pipe. Metal access gates were also installed in a post and pole fence to facilitate future maintenance of the culvert.

Lynn Creek, Reader Creek, and North Fork Sheep Creek Brook Trout Removal

Ashley NF fisheries staff assisted the Utah Division of Wildlife Resources with an intensive electrofishing effort to remove as many non-native brook trout from these waters to aid in the restoration of Colorado River cutthroat trout (CRCT) (Figure 7). Brook trout were removed on seven miles of Reader Creek, and four miles on Lynn Creek and North Fork Sheep Creek, for a total of 15 miles of CRCT streams enhanced through mechanical removal of non-native brook trout.

North Slope Sheep Creek CRCT Restoration

Middle Fork Sheep Creek from the Spirit Lake outlet downstream to the existing temporary fish barrier located just above Hickerson Park was treated with rotenone to remove the last remaining non-native fishes in preparation for restocking these waters with native CRCT (Figure 8). The rotenone application was successful in removing the few remaining non-native fish in the stream. (This was the third and final treatment, restocking of CRCT will begin in 2015).



Figure 7 - Electrofishing Crew Removing Brook Trout in the North Fork of Sheep Creek.



Figure 8 - Crew Member Using Backpack Sprayer to Apply Rotenone.

Amphibian Surveys

Annual amphibian monitoring was conducted from June through August across the Duchesne District in the Duchesne, Rock Creek (Figure 9), Lake Fork, Yellowstone and Uinta drainages. Boreal chorus frogs continue to be very abundant in all drainages surveyed. Populations of tiger salamanders were also encountered in the Duchesne, Rock Creek and Yellowstone drainages during 2014 surveys.



Figure 9 - Amphibian Monitoring Location on Rock Creek, August 2014.

Wilderness Cutthroat Trout Habitat

Cutthroat trout habitat in the High Uintas Wilderness was surveyed during a trip to the Atwood Basin during July 2014 (Figure 10). Atwood Lake contains a population of healthy brook trout. The fish population in Atwood Creek also contains very abundant small brook trout.



Figure 10 - Atwood Creek Below Lake Atwood, July 2014.

Timber Creek Barrier and Beaver Dam Monitoring

Habitat for Colorado River cutthroat trout in Timber Creek is monitored each year which includes monitoring the condition of the fish migration barrier and beaver dam complexes. The fish migration barrier was installed in 2007 prior to the treatment of the stream to remove competing and predatory brown trout in 2008. The treatment required the breaching of beaver dams to enable more thorough treatment and

reduce the area required to treat. Beaver dams are an important component of cutthroat trout habitat in Timber Creek. The condition and reconstruction of the breached dams as well as other beaver activity is monitored each year. Monitoring soon after the treatment showed many of the breached dams were immediately repaired. Continued monitoring in 2014 shows remaining breached dams continue to be repaired and new dams continue to be constructed. The presence and maintenance of the dams and associated ponds provides necessary overwintering habitat for Colorado River cutthroat trout.

Macroinvertebrate Sampling

Macroinvertebrates are sampled on the Ashley National Forest to monitor conditions of the watershed and water quality. Macroinvertebrate samples were collected across the Forest in several drainages in 2014. Streams where samples were collected on the Duchesne District include North Fork Duchesne, Rock Creek, Lake Fork, Yellowstone and Uinta.

Forest Vegetation

Repeat Photography Monitoring Program

In FY 2014, the Forest continued to transition our repeat photography monitoring program to virtual reality (VR) photography (360-degree interactive imagery) that we post on a dedicated webpage: <http://anfphotomonitoring.info>. The Ashley has already posted some FY 2014 data and will post the remainder of this year's collected data over the winter. The advance to VR photography has improved the accessibility, quality, and monitoring utility of the repeat photography program.

Ashley staff re-visited and re-photographed 10 existing photo monitoring points and established 19 new points in an ongoing effort to monitor the vegetation response to timber sales and timber stand treatments and to assess progress toward accomplishing vegetation treatment objectives. An example of using basic repeat photography to monitor vegetation response is illustrated in Figures 11-14. See the above web link for examples of VR photography.



Figure 11 - Cart Creek Salvage 2 Overview Point Pre-Treatment Photo: July 10, 2007.

Note the large amount of standing dead.



Figure 12 - Cart Creek Salvage 2 - Overview 3-Year Post-Treatment Photo: July 18, 2014 (Project Completed in 2011).

Note the growth of the regeneration in 7 years.



Figure 13 - Cart Creek Salvage 6 (Unit 8 Photo Point Line 3) Pre-Treatment Photo: July 10, 2007.

Note the large amount of standing and down dead.



Figure 14 - Cart Creek Salvage 6 (Unit 8 Photo Point Line 3) 3-Year Post-Treatment Photo: July 18, 2014 (Project Completed in 2011).

Timber Sale Contracts

The Ashley monitored timber sale contract compliance on 19 timber sales. Staff completed a minimum of weekly inspections on these sales during periods of active logging. Staff also documented contract compliance findings in 200 timber sale inspection reports.

Timber Stand Improvement

The Forest awarded service contracts on one pre-commercial thinning contracts totaling 697 acres. Ashley staff monitored compliance on the final 60 acres of the Lodgepole Timber Stand Improvement (TSI) Project, a pre-commercial thinning contract that began in FY 2012 and was completed this year (Figures 15 and 16). Contracting officers' representatives and project inspectors completed inspections on active work, then documented findings in daily diaries and forwarded them to contracting officers to document contract compliance. Findings are also used to certify that the thinning activities were completed and met prescription objectives



Figure 15 - Lodgepole TSI Monitoring.



Figure 16 - Lodgepole TSI Monitoring: A Portion of Unit 7 During Implementation.

Reforestation

Reforestation surveys conducted during FY 2014 confirm 1016 acres have successfully regenerated to an appropriate stocking level. These surveys are completed to monitor the success of natural regeneration following stand disturbances such as wildfire, insect outbreaks, or harvesting. Inventories occurred in areas such as the 2007 Neola North Fire and the 2008 Mill Hollow Fire.

A forest service crew (YCC) collected a total of nine bushels of lodgepole pine cones. The cones were sent to the Lucky Peak Nursery in Boise for processing and seed extraction to grow seedlings for future planting projects. The silviculturist worked with the crew to assure the cones were collected in accordance with the R4 Seed Handbook and to monitor the quantity and quality of the seed that was collected. Sampled cones were cut and examined to determine if they contained an adequate quantity of seed.

Forest Health Protection

Ashley staff monitored insect activity and control efforts at high-value recreation and administrative sites during an annual forest health protection review in September

2014. At least 80 percent of the sites are monitored post-treatment to determine effectiveness of ground-based sprays and pheromone application treatments. In 2014, approximately 80 acres at about 6 sites were treated with sprays forest-wide and about five acres at three sites were treated using pheromone application. Monitoring shows less than 10 percent loss of dominant trees on all sites after applications. Site visits supplement annual aerial detection surveys that monitor insect population trends. Contracting officers' representatives monitored spray contracts for proper insecticide application rates and coverage and documented findings in daily diaries, which they then forwarded to contracting officers.

Heritage Resources

Heritage Resource Inventory

Ashley NF personnel completed or oversaw 10 heritage resource inventory projects across the Forest in fiscal year 2014. The National Historic Preservation Act of 1966 (as amended) [16 USC 470], Executive Order 11593, and Forest Service Manual 2360 require the Forest to identify (inventory) and document all heritage/cultural resources on Forest lands. The Forest then evaluates the heritage/cultural resources for eligibility to the National Register of Historic Places (NRHP). The Forest is completing this process incrementally in advance of proposed projects and as funds become available. The cultural resource inventories and encountered sites are documented through gathered GIS data, photographs, and textual descriptions. The incremental datasets are added to the Forest Service Asset Management Database and GIS database. The inventories provide critical data for proposed projects and for future Forest planning.

In FY 2014, Ashley NF completed or supervised the completion of cultural resource inventory of 8,124 acres on Forest lands. Table 5 below summarizes the cultural resource inventory progress on the Forest.

Table 5 - Ashley National Forest Cultural Resource Inventory Progress: 2009 - 2014.

Year	Acres Inventoried	Total Previous Inventory	Total Forest Acres	% of Forest Inventoried
2014	8,124	99,791	1,400,293	7.1%
2013	3,894	95,897	1,400,293	6.8%
2012	4,512	92,003	1,400,293	6.6%
2011	1,150	87,491	1,400,293	6.2%
2010	7,217	86,341	1,400,293	6.1%
2009	3,000	79,124	1,400,293	5.7%

In fiscal year 2014, the Ashley NF identified and documented 114 previously unknown heritage / cultural sites on forest Lands. Table 6 summarizes the number of heritage / cultural sites on the Forest.

Table 6 - Heritage and Cultural Site Eligibility Status on the Forest.

Year	NR Eligible Sites Identified by year	Total NR Eligible Sites on Forest	NR Ineligible Sites Identified by year	Total NR Ineligible Sites on Forest	Total Sites on Forest
2014	60	1136	54	1042	2178
2013	20	1076	26	988	2064
2012	25	1056	33	962	2018
2011	37	1031	35	929	1960
2010	23	994	27	894	1888
2009	26	971	48	867	1838

Heritage Resource Monitoring

Ashley NF personnel monitored a total of 9 Priority Heritage Assets on Forest lands in fiscal year 2014. The National Historic Preservation Act of 1966 (as amended) [16 USC 470] and Forest Service Manual 2360 require the Forest to “monitor, assess, and document” the physical conditions of National Register eligible heritage/cultural resources on Forest lands. The Forest has selected a sample of 70 National Register eligible heritage/cultural sites across the Forest to monitor on a five year cycle as Priority Heritage Assets. Table 7 summarizes the heritage/cultural resource monitoring progress on the Forest.

The Forest completed a mitigation and monitoring plan for four sites that were adversely affected by oil and gas leasing construction activities. The Forest also completed a Memorandum of Agreement and monitoring plan for one site that was adversely affected by an ATV trail.

The Forest is in the process developing a project wide monitoring plan for areas affected by oil and gas leasing on the South Unit of the Forest.

Table 7 - Completed vs. Planned Monitoring of Cultural Sites.

Year	# of Heritage Sites Monitored each year	Planned # of Sites for Monitoring in five year cycle	# of Heritage Sites monitored in five year cycle	# of Total NR Eligible Sites on Forest	% of total NR eligible sites monitored in 5 year cycle
2014	9	70 (6.2% of total)	33	1136	2.9%
2013	5	88 (8.1% of total)	31	1076	2.8%
2012	6	88 (8.3% of total)	35	1056	3.3%
2011	8	88 (8.5% of total)	61	1031	5.9%
2010	5	88 (8.9% of total)	56	994	5.6%
2009	9	88 (9.1% of total)	54	971	5.6%

Rangeland Management

Forage Utilization

Allotments are monitored annually to determine if forage utilization is in compliance with Allotment Management Plans (AMPs) or Forest forage utilization standards. Of the 65 active allotments managed by the Ashley National Forest, 45 (69%) were monitored for utilization compliance in 2014. A total of 145 out of 232 pastures (63%) were monitored within the 65 allotments. Of the pastures monitored, 119 (82%) met utilization standards. Various techniques were used to determine forage utilization, including utilization cages, height/weight, stubble height, photo documentation, and ocular estimates.

In addition to the pastures that were monitored, forage utilization was assessed at 59 permanent study sites on various allotments across the Forest. Of these 59 study sites 27 met utilization standards.

Research Natural Areas

The Forest Plan requires that Research Natural Areas (RNAs) be monitored for unauthorized intrusions (i.e., unauthorized livestock use) or alterations (Ashley NF LRMP 1986 V-8). The following RNAs are located on the Ashley NF: Lance Canyon, Timber/Cow Ridge, Ashley Gorge, Pollen Lake, Sims Peak Potholes, Uinta/Shale Creek, and Gates of Birch Creek. Of these seven RNAs, five are either inaccessible to livestock or outside of a grazing allotment. The two that are accessible to livestock and on or near an allotment are Sims Peak Potholes and Timber/Cow Ridge. No livestock intrusions were detected in the Timber/Cow Ridge RNA. The Sims Peak Potholes RNA was not monitored for intrusions this year.

Recreation Program

Developed Recreation

Ranger district monitoring indicates that 90 percent of sites are full on the peak Utah holiday weekends of July 4th and July 24th. Recreation personnel across the forest completed the sustainable recreation site analysis in 2014. The analysis evaluated several criteria in addition to visitor use, and will be used to help inform future decisions regarding developed recreation sites. The 2012 NVUM report for the Ashley National Forest was completed in May, 2014 and contains further information regarding visitor use and demographics on the Ashley National Forest. All condition surveys on required Recreation Sites were completed in 2014 to document deferred maintenance needs.

Ute Tower repairs which were funded through the Resource Advisory Committee, were completed in 2014. New vault toilets were installed at the Whiterocks Campground and Greens Lake Campground.

Visual Resources

The current management activity with the greatest potential effect to visual resources is oil and gas development in the South Unit. Development of these mineral resources is being accomplished by both Berry Petroleum and Vantage Energy. Few of the wells will be visible from sensitive areas, and mitigations have been planned to help reduce impacts. Monitoring is ongoing to ensure mitigations are carried through the Application for Permit to Drill (APD) process and applied on the ground.

Travel Management Monitoring and Mitigation

Mitigation and monitoring activities required by the 2009 travel management plan decision continue to be implemented. Barricades, including both boulders and log fences were constructed in 2014 to block unauthorized routes where previous monitoring actions identified problem areas.

Wilderness

Limits of Acceptable Change campsite surveys were performed throughout the majority of the High Uintas Wilderness managed by the Ashley National Forest. Campsite surveys had been previously performed in 1990, 1995, 2000, and 2005. The surveys are used to determine recreational impacts to the High Uintas Wilderness and assist in directing management actions.

Trails

Five trails were surveyed in 2014 to document trail conditions and needed maintenance and construction actions.

Soil and Water Resources

Changes in Riparian Areas Due to Land Management Activities

In 2014 watershed personnel conducted riparian photo point and condition inventories in the Strawberry Peak allotments. Inventories of riparian condition and extent were also conducted in the areas of Atwood Dam, Cliff Lake Dam, Pole Mountain, West Fork Whiterocks River, Swift Creek and the South Fork Rock Creek.

Riparian photo points, Windward greenline surveys and National BMP monitoring protocols were also conducted for riparian areas within the Trout Creek grazing allotment. A proper functioning condition (PFC) riparian assessment was conducted on Cart Creek.

Watershed Improvement Needs

In the areas of Kabell Hollow, Iron Springs, Big Brush Creek, and Ashley Twin lakes inventories were made of non-system motorized routes causing resource damage. Through the inventories about 17 miles of non-system routes were field-verified, characterized, and closed.

An interdisciplinary ID team made field visits in the North Fork Duchesne River and Rhodes Canyon drainages to identify projects for watershed restoration. Surveys also identified future bank stabilization projects in Bowden Draw and on the South Fork Rock Creek.

Water Yield

Through the winter and spring watershed personnel monitored the snowpack using SNOWTEL site data. Through the May and June runoff season US Geological Survey (USGS) gauge data and flood forecasts were monitored. Throughout the year flow measurements were collected at selected STORET sites by watershed personnel as a part of cooperative monitoring efforts with the Utah Division of Water Quality (DWQ). Flood frequency modeling was conducted at Mann Creek associated with redesign of a culvert/road crossing.

Effectiveness Monitoring of Soil and Water Improvement Projects

Field inspection and photo documentation were made at project sites in the Cart Creek and Swift Creek Focus watersheds.

Water Quality

In 2014, five Environmental Protection Agency (EPA) STORage and RETrieval (STORET) stream sites were monitored by Forest personnel as a part of a continued cooperative agreement with the Utah Division of Water Quality (DWQ). The sampling sites in Cart Creek were chosen as part of monitoring for large restoration efforts taking place in the Cart Creek Watershed which is receiving EPA 319 and State NPS funding. Monitoring included instream measurements of water temperature, pH, conductivity, dissolved oxygen, as well as sample collection and lab analysis for water chemistry and nutrient parameters.

Following Forest Service lease requirements, quarterly water samples were collected at two locations on Sowers Creek by environmental consultants on behalf of Linn Energy. A suite of water chemistry parameters are analyzed to monitor water quality in the Linn Energy lease on the South Unit of the Ashley National Forest.

Water chemistry and nutrient data were collected from six lakes in the Whiterocks and Middle Fork Sheep Creek drainages as part of a cooperative lake study between the Forest Service and Western University. Water chemistry samples were also collected by Forest personnel from four headwater lakes as a part of long-term air quality monitoring.

On the Middle Fork of Sheep Creek water quality, macroinvertebrate, and zooplankton samples were collected as part of a cooperative study between the Forest Service and Utah State University. The study is monitoring five lakes and eight miles of stream that are part of a multi-year project conducted by the Utah Division of Wildlife Resources to reintroduce native Colorado cutthroat trout to the drainage using the piscicide rotenone.

Year-round water temperature monitoring was conducted on four streams (Cart Creek, Whiterocks River, Ashley Creek, South Fork Brownie Creek) and five lakes (Jessen Lake, Walkup Lake, Larvae Lake, Hidden Lake, Taylor Lake.) The data was collected at hourly intervals through the deployment of temperature probes. The data will be available for long-term temperature monitoring.

Riparian Condition in Rangeland

The Forest Plan requires the Forest to monitor and measure changes in riparian areas due to land management activities (Ashley NF LRMP 1986 V-14). The objective is to maintain or improve riparian areas in a stable or upward trend (Ashley NF LRMP 1986 IV-45). In 2014 riparian condition assessments (including photo point, greenline, PFC, and National BMP monitoring protocols) were conducted in the Bowden, Trout Creek-Taylor Mountain, and Strawberry Peak grazing allotments.

National Core Best Management Practice (BMP) Monitoring

Five national core protocols for BMP monitoring were performed on the Ashley as part of a Washington Office target. The national protocols tested on the Ashley were: Range A-“Rangeland Management,” Minerals D-“Oil and Gas Development and Restoration,” Recreation C-“Trail Construction,” Roads H-“Parking and Staging Areas,” and Water Uses B-“Operation and Maintenance of Springs.” From the five types of BMP protocols seven surveys were completed to meet the 2014 monitoring assignment.

For More Information

If you would like more information on the inventory and monitoring activities described in this report, stop by the Ashley National Forest Supervisor’s Office at 355, N. Vernal Avenue, Vernal, Utah or contact one of the following staff officers:

Dustin Bambrough Ecosystem Group (435) 781-5175
dbambrough@fs.fed.us

Kathy Paulin

Recreation, Heritage and Planning Group (435) 781-5160

kpaulin@fs.fed.us

References

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