

Biennial Monitoring Evaluation Report for the Wasatch-Cache National Forest



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NOTE: On June, 9, 2020, Monitoring Question #5 Fuels Reduction and Monitoring Question #6 Fire Management sections on Pages 11 and 12 were edited to fix inaccuracies in the acreage data, data sources, and duplicate paragraph and minor typographic errors.

About our Plan Monitoring Program

Purpose

The purpose of the biennial monitoring evaluation report is to help the responsible official determine whether a change is needed in forest plan direction, such as plan components or other plan content that guide management of resources in the plan area. The biennial monitoring evaluation report represents one part of the Forest Service's overall monitoring program for this national forest unit. The biennial monitoring evaluation report is not a decision document—it evaluates monitoring questions and indicators presented in the Plan Monitoring Program chapter of the forest plan, in relation to management actions carried out in the plan area.

Our monitoring plan covers these eight topics required under FSH 1909.12, in addition to social, economic and cultural sustainability. You'll find each of these topics addressed in this report, with a cross-reference to the Uinta NF Monitoring Questions provided on page 7.

1. The status of select watershed conditions.
2. The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
3. The status of focal species to assess the ecological conditions required under § 219.9.
4. The status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.
5. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.
6. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
8. The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)). (36 CFR 219.12(a))

How Our Plan Monitoring Program Works

Monitoring and evaluation requirements have been established through the National Forest Management Act (NFMA) at 36 CFR 219. Additional direction is provided by the Forest Service in Chapter 30 – Monitoring – of the Land Management Handbook (FSH 1909.12). The Wasatch-Cache National Forest monitoring program was updated on November 20, 2015 for consistency with the 2012 planning regulations [36 CFR 219.12 (c)(1)]. The Wasatch-Cache National Forest Plan was administratively changed to include the updated monitoring program (Chapter 6: Monitoring and Evaluation Plan). For a copy of the current monitoring program go to <https://www.fs.usda.gov/detailfull/uwcnf/landmanagement/planning/?cid=stelprdb5076960&width=full>. Monitoring questions and indicators were selected to inform the management of resources on the plan area and not every plan component was determined necessary to track [36 CFR 219.12(a)(2)].

The monitoring evaluation implementation guide (monitoring guide) is part of the overall plan monitoring program and provides more specific direction for implementing the more strategic plan monitoring program and details monitoring methods, protocols, and roles and responsibilities. The Monitoring Guide is not part of the plan decision and is subject to change as new science and methods emerge. The Uinta-Wasatch-Cache National Forest monitoring guide is available at upon request. Please contact Paul Cowley at the address on Page 2. Providing timely, accurate monitoring information to the responsible official and the public is a key requirement of the plan monitoring program. This biennial monitoring evaluation report is the vehicle for disseminating this information.

Monitoring Objectives

The objectives of our plan monitoring plan include:

- Assess the current condition and trend of selected forest resources.
- Document implementation of the Plan monitoring Program
- Evaluate relevant assumptions, changed conditions, management effectiveness, and progress towards achieving the selected desired conditions, objectives, and goals described in the Forest Plan.
- Assess the status of previous recommended options for change based on previous monitoring & evaluation reports.
- Document scheduled monitoring actions that have not been completed and the reasons and rationale why.
- Present any new information not outlined in the current plan monitoring program that is relevant to the evaluation of the selected monitoring questions.
- Present recommended change opportunities to the responsible official.

Monitoring Results Summary

In 2018, two Forest Plan amendments were completed in response to issues of obsolete standards, guidelines, and definitions in the WCNF plan for Canada Lynx (Scoping, analysis, and decision information can be found at <https://www.fs.usda.gov/project/?project=56203>), to correct inaccurate delineation of Wilderness Management Prescriptions of a small area in the Henrys Fork and Beaver Creek watersheds in the High Uintas Wilderness Area.

Monitoring from 2018-2019 identified three issues in the Wasatch-Cache NF Forest plan. The first one is that management direction is lacking on many acquired land parcels and on Forest Service lands that were inaccurately delineated during the 2003 WCNF revision. The second one is the need to allow vegetation/fuels treatments in undeveloped areas (Management Prescription 2.6) such as in pinion/juniper areas of the Forest. Monitoring in 2018 has provided additional information to the decision maker for the Sage Grouse amendment and the Washington Office is currently analyzing concerns identified in objection letters and as clarified in discussions with objectors and interested persons during an in-person meeting in Salt Lake City in December 2019.

Tables 1 and 2 below summarize current adaptation recommendations for line officer consideration. Table 1 shows that three amendments are needed to manage activities on the Uinta NF. Table 2 shows that all of the monitoring questions and monitoring items do not need changes.

Table 1. Quantitative summary of adaptive management recommendations for all monitoring questions addressed in this report (3 total)

Recommendation	Yes, need for change	Unsure	No
Results inconsistent with Forest Plan direction	0	0	16
Change to Forest Plan warranted	0	0	16
Change to management activities warranted	0	0	16
Change to Plan monitoring program warranted	0	0	16
Focused assessment needed	0	0	16

Table 2. Summary of findings for each plan monitoring item (questions and indicators).

Monitoring Item	Last Year Updated	Consistency with Plan Intent¹ <i>Do results demonstrate intended progress of the plan components associated with this monitoring item?</i>	Recommendation² <i>Based on the evaluation of monitoring results, may changes be warranted?</i>	Type of Change(s) under consideration² <i>Where may the change be needed?</i>
All Monitoring Items				
Monitoring Question #4, Are vegetation conditions stable or moving toward desired future conditions?	2017	B-Uncertain	B-Uncertain	More time needed to understand effect of wooly adelgid
Monitoring Question #11 Are Forest management activities and natural events affecting the ecological conditions of terrestrial and aquatic ecosystems?, Indicator #3 – Forested terrestrial ecosystem conditions	2017	B-Uncertain	B-Uncertain	<i>Assessments of soil burn conditions in the Francis, Snoqualmie, and Murdock fires indicate that 116 acres had high soil burn severity of which 62 acres were in burned conifer vegetation types that may take many decades of time to start the establishment of conifer seedlings. There is a need to monitor these areas to determine if it needs to be replanted or left to regenerate naturally.</i>
Monitoring Question #12 Are Forest management activities and natural events affecting watershed conditions? Indicator #2 Air Quality - Trends of lichen biomonitoring sites.	2017	A – Uncertain	A - Uncertain	The lichen monitoring interval is 10 years. Next lichen station monitoring expected to be 2021
All Other Monitoring Questions and	2017	Yes	None	N/A

Indicators				
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¹Plan intent:

(A) Uncertain – Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated);

(B) Uncertain – More time/data are needed to understand status or progress of the Plan Component(s);

²Refer to pages below for more details regarding any specific recommendations for change.

Past Monitoring Recommendation and Status Summary

The March 2018 monitoring and evaluation report had no recommendations for changes to the forest plan, management activities for implementing the forest plan, or the monitoring program or to conduct an assessment to determine if there exists a preliminary need to change the plan.

Other Considerations for Adaptive Management

Although not related to the monitoring program, two issues have arisen indicating a potential need to change the forest plan. The first is the need to add management direction for many acquired land parcels and for National Forest Service lands that were inaccurately delineated during the 2003 WCNF revision. The second is the need to allow vegetation/fuels treatments in undeveloped areas (Management Prescription 2.6) such as in pinion/juniper areas of the Forest.

Forest Supervisor's Certification

This report documents the results of monitoring activities that occurred through Fiscal Year 2019 on the Uinta National Forest. Monitoring on some topics is long-term and evaluation of those data will occur later in time.

I have considered the monitoring and evaluation results presented in this report. Based on the monitoring, I find no need to change the 2003 Land Management Plan, as amended, at this time and, therefore, consider it sufficient to continue to guide land and resource management of the Uinta National Forest for the near future. I also find no need to change the plan monitoring program or to conduct an assessment to determine if there exists a preliminary need to change the plan.

I will examine the recommended change to management activities and the two potential needs to change the plan in response to non-monitoring related issues through further discussion with resource specialists. If changes are needed, appropriate NEPA analysis and public engagement will occur.



DAVID C. WHITTEKIEND

Uinta-Wasatch-Cache National Forest Supervisor

Date: March 16, 2020

Cross-Walk between Eight Requirements and Wasatch-Cache NF Monitoring Questions

This section of the report presents a cross-walk between the eight requirements which are noted at 36 CFR 219.12(a)(5) and the Wasatch-Cache NF monitoring questions

Monitoring Question #1, Education-Information: Are we delivering key education/ enforcement messages to Forest employees and users? Addresses Requirement v. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.

Monitoring Question #2, What is visitor satisfaction on Forest Service lands? Addresses Requirement v. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.

Monitoring Question #3, Is adequate access to and across the Forest being provided? Addresses Requirement v. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives and Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.

Monitoring Question #4, Are vegetation conditions stable or moving toward desired future conditions? Addresses Requirement vi. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.

Monitoring Question #5, Fuels Reduction: Are fuels reduction projects protecting property, human health and safety, and reducing the potential for unwanted fire effects (in the Wildland Urban Interface (WUI) and non-WUI)? Addresses Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.

Monitoring Question #6, Fire Management: Are natural ignitions being managed to accomplish resource management objectives? Addresses Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.

Monitoring Question #7, Rangeland Management: What is the extent of the change of ecological conditions due to invasive species? Do rangeland plant communities have desired species composition and is ground cover adequate? Addresses Requirement i. The status of select watershed conditions.

Monitoring Question #8, Are Forest management activities and natural events affecting the ecological conditions indicated by the status of Focal species? Addresses Requirement iii. The status of focal species to assess the ecological conditions required under § 219.9.

Monitoring Question #9, Is there a change in species distribution across the Forest? Addresses Requirement vi. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.

Monitoring Question #10, Are Forest management activities and/or natural events affecting ecological conditions that contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of concern? Addresses Requirement iv. The status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.

Monitoring Question #11, Are Forest management activities and natural events affecting the ecological conditions of terrestrial and aquatic ecosystems? Addresses Requirement ii. The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.

Monitoring Question #12, Are Forest management activities and natural events affecting watershed conditions? Addresses Requirement i. The status of select watershed conditions.

Monitoring Question #13, NFMA compliance: Are we complying with appropriate NFMA requirements? Addresses Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities and Requirement viii. The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)).

Monitoring Question #14, Are timber management activities impairing soil productivity of the land?

Addresses Requirement viii. The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)).

Monitoring Question #15, Are goods and services being provided in accordance with Forest Plan goals and objectives? Addresses Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.

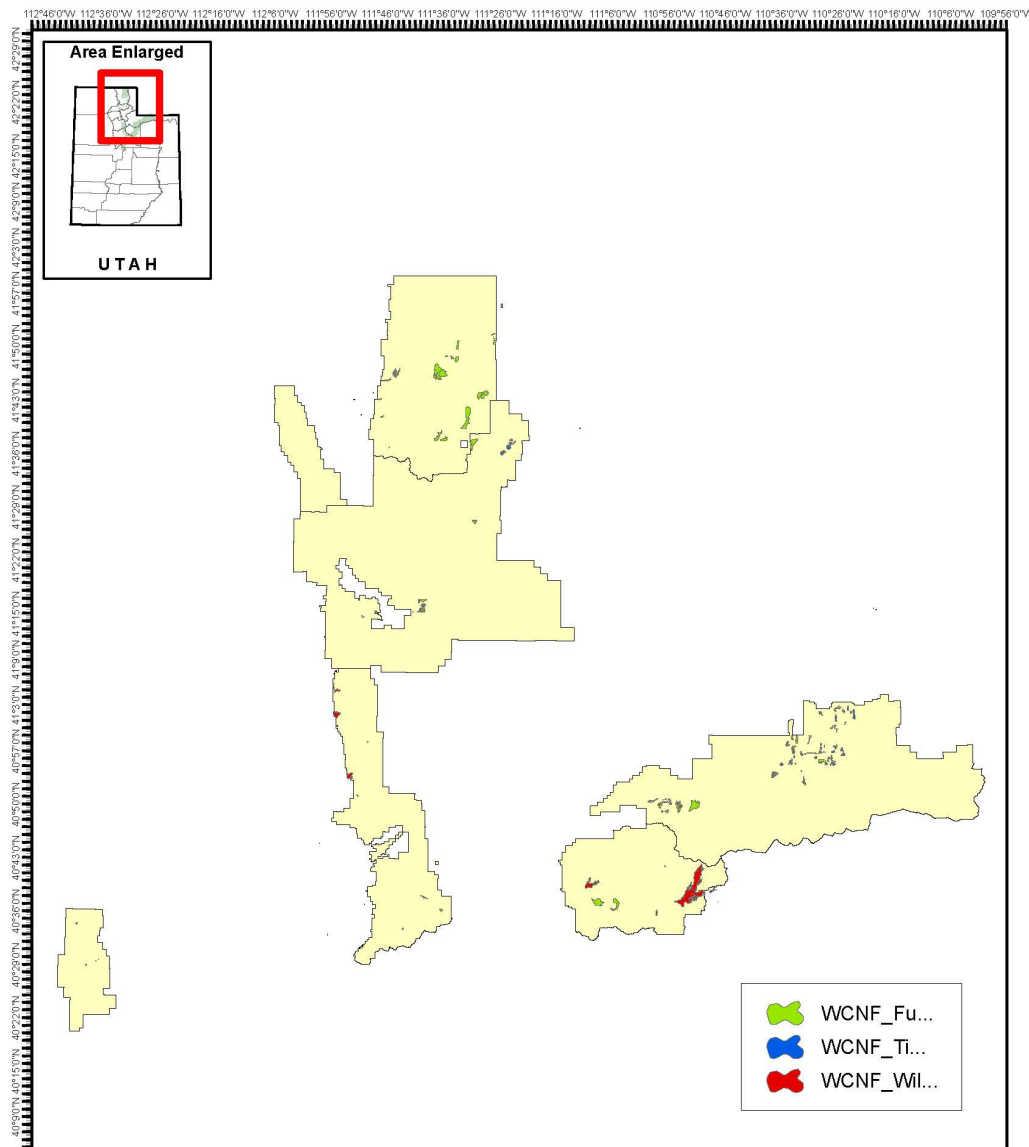
Monitoring Question #16, National Historic Preservation Act as amended: Are cultural resources being protected as the Forest Plan is implemented and are mitigation measures sufficient prevent damage to cultural resources from project activities? Are *Historic Properties* receiving adverse effects from project implementation, vandalism, looting, and/or neglect? Addresses Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.

SUMMARY OF CHANGES TO THE FOREST PLAN SINCE THE 2018 REPORT

In 2018, one Forest Plan amendment was completed in response to issues of obsolete standards, guidelines, and definitions in the WCNF plan for Canada Lynx (Scoping, analysis, and decision information can be found at <https://www.fs.usda.gov/project/?project=56203>).

Summary of Vegetative Changes in 2018-2019

The figure below is a broad view of areas on the Wasatch-Cache National Forest (WCNF) that have had timber harvest, fuels treatments, and wildfire. In 2018 to 2019, the main ecological change that has occurred is from vegetation changes resulting from several harvest units that totaled 2,625 acres and are shown in blue in the figure below. Fuel treatments have occurred on 11,547 acres and consist of thinning, burning of piled material and broadcast burning. The purpose of these treatments is to reduce large fires and to create diversity in age classes on the Forest. Based on analysis of Burned Area Emergency Response reports, wildfire has resulted in 116 acres of high burn severity that will take decades to begin to recover. Overall, there has been a small change in the vegetation across the total landscape area of the WCNF.



Wasatch-Cache National Forest

Treatment Areas and Wildfire Areas

Fiscal Years 2018-2019

Map Created 2/19/2020

US DEPARTMENT OF AGRICULTURE
UNITED STATES FOREST SERVICE

Data Source: USFS Corporate GIS database.
The Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. They may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised etc. Using GIS products for purposes other than those for which they were created, may yield inaccurate or misleading results.



INFORMATION ON MONITORING QUESTIONS AND INDICATORS

Monitoring Question #1 Education-Information: Are we delivering key education/ enforcement messages to Forest employees and users? (Key Focus Areas are: OHV use, recreation user ethics, fire's role/hazardous fuels, noxious weeds, watershed health).

Finding: No changes are needed. The Wasatch-Cache NF delivers key education/enforcement messages to the Forest employees and users.

Indicator #1 - Number of key messages.

Data source: *Uinta-Wasatch-Cache NF Public Affairs Officer, forms completed by teachers at the Logan Canyon Children's Forest, responses of users of the WCNF to questions asked by Forest Service field personnel regarding whether users know the key messages that are on kiosks, and on Forest Service website and social media.*

Monitoring result: *Logan Canyon Children's Forest – The Logan Canyon Children's Forest is supported by the Logan Ranger District and Stokes Nature Center. Through the partnership, opportunities are provided to students of all ages to explore, learn, and develop an appreciation and stewardship of the natural world. Forest Service and Stokes Nature Center staff provide service learning and mentorship for youth. Participants engage in campground activities, presentations, demonstrations, and hands-on activities. The programs focus on activities for local under-served youth. The activities and programs reached 4400 participants during 2019. Salt Lake Ranger District – Utilizing the Project Learning Tree "Places We Live" curriculum guide, educators learned how to integrate art, science, and observation skills. Participants learned how nature journaling techniques and the "Places We Live" curriculum can be used to explore earth sciences, culture, history, math, mapping, and environmental issues. Eleven educators participated in the Naturalist Program. Silver Lake Recreation Complex – The Silver Lake Recreation Complex and Visitor Center, at the headwaters of Big Cottonwood Canyon, offers an opportunity for visitors of all ages and abilities to interact with a diverse ecosystem within a .8 mile loop path. It provides an outdoor education classroom destination site for families, tourists, and recreation hub for local communities. This area connects an urban population to their national forest. Programs, activities, interpretive displays, and walks with rangers provide opportunities for visitors to understand the importance of protecting the municipal watershed. The site hosted 152,500 visitors during 2019.*

Monitoring Question #2 What is visitor satisfaction on Forest Service lands?

Finding: *No changes are needed.*

Indicator #1 - Level of visitor satisfaction.

Data source: *No National Visitor Use Monitoring (NVUM) Surveys were conducted in 2018 or 2019. However, in 2017 information on level of visitor satisfaction was collected using the NVUM protocol but the assessment report was not available for the 2016-2017 WCNF Forest Plan monitoring report. Information from the 2017 NVUM survey is used in this report along with information from the 2012 NVUM survey and both of these surveys were completed for the Uinta-Wasatch-Cache National Forest unit and the information is not separated between the Uinta NF and Wasatch-Cache NF.*

Monitoring result: *A summary of public satisfaction using a composite rating in 2012 and 2017 is shown in the table below. The 2012 report states that overall satisfaction results show that about 80% of people visiting indicated they were very satisfied with their overall recreation experience. Another 15% were somewhat satisfied. The results for the composite satisfaction indices were also very good. Satisfaction ratings for perception of safety were at least 90% for all types of sites. Satisfaction ratings for access items were above 85% for all types of sites. The 2017 NVUM report states that overall satisfaction results are quite good. About 84% of people visiting indicated they were very satisfied with their overall recreation experience. Another 13% were somewhat satisfied. The results for the composite indices were mixed. Satisfaction ratings for perception of safety were at least 70% for all types of sites. Ratings for the access composite was over 89% across all types of sites, but ratings for services in both dispersed settings was under 70%.*

Satisfaction Element	Satisfied Survey Respondents (%)					
	Developed Sites		Undeveloped Areas		Designated Wilderness	
	2012	2017	2012	2017	2012	2017
Developed Facilities	87.3	89.5	83.7	74.3	70.7	52.0
Access	94.3	86.0	90.6	84.4	89.2	83.4
Services	85.2	81.9	71.9	61.4	85.7	67.2
Feeling of Safety	98.6	95.8	93.6	97.0	99.6	97.2

Monitoring Question #3 Is adequate access to and across the Forest being provided?

Finding: *No changes are needed. Access is adequate.*

Indicator #1 - Miles of classified road open for public use, miles of motorized trail, miles of non-motorized trail.

Data source: *Uinta-Wasatch-Cache NF Motor Vehicle Use Map.*

Monitoring result: *At the end of FY 2019, the miles of classified roads open for public use were 1,182 miles, 26 miles more than the number of classified roads identified in GIS as open in 2017 (1,156 miles). The change in amount of roads on the Forest is due to GIS roads data that has been reviewed and edited in the Forest GIS database. Data for the miles of motorized trails and non-motorized trails is not available for 2018 and 2019 because of data review and re-digitizing in GIS.*

Monitoring Question #4 Are vegetation conditions stable or moving toward desired future conditions?

Finding: *No changes are needed.*

Indicator #1 Forested Vegetation –Extent of insect/disease infestations.

Data source: *Forest Health Protection Annual Aerial Detection Survey 2016.*

Monitoring result: *Insects and disease have caused several thousand acres of conifers on the plan area to experience tree mortality. The WCNF has experienced some level of mortality due to various pathogens has remained relatively constant with one exception. While the data shows that the largest amount of area that has been impacted is by the spruce beetle, the rates of mortality in these areas has remained very low to low with less than 3-10% of trees per acre experiencing mortality from this insect. This is not the case with the balsam wooly adelgid. The balsam wooly adelgid is an invasive insect that has moved into the Wasatch-Cache from Idaho and it was first discovered on the forest in 2017. Where this insect is found, the mortality rates in these areas is categorized as mostly moderate to severe. This categorization shows that 11% to 50% of the trees on these acres are experiencing mortality from this insect.*

Damage Agent	Affected Species	Estimated Acres (a)(b) within insect mortality by year																
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Spruce Beetle	Spruce	1586	5065	59	2	2	110	788	843	780	5055	24602	56244	51867	68469	42209	55460	No Data
Fir Engraver Beetle	Subalpine and White Fir	214	6966	223	35	1742	35	27	148	77	7	189	2234	156	22	202	10	No Data
Subalpine Fir Mortality Complex	Subalpine and White Fir	7854	3039	4463	5878	28639	8817	3504	4419	1866	2064	2869	9120	6576	5507	1841	6797	No Data
Mountain Pine Beetle	Lodgepole, Limber and Ponderosa Pine	31495	104255	6583	42163	250262	232706	205471	221704	44782	23073	13918	2841	2970	658	112	1803	No Data
Douglas-fir Beetle	Douglas-fir	2141	3824	1236	189	2705	776	261	1090	1062	794	943	998	600	359	639	284	No Data
Ips Beetle	Pinyon Pine	0	0	0	0	0	0	0	0	0	0	0	0	15	2	0	0	No Data
Balsam Woolly Adelgid	Subalpine and White Fir	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1955	9967	No Data

(a) Acres were estimated through GIS analysis for land ownership, mid-scale vegetation, and insect damage type.

Monitoring Question #5 Fuels Reduction: Are fuels reduction projects protecting property, human health and safety, and reducing the potential for unwanted fire effects (in the Wildland Urban Interface (WUI) and non-WUI)?

Finding: *No changes are needed. There are several examples of fuels treatments that contributed to the control and/or management of fire on the WCNF.*

Indicator #1 Acres of hazardous fuels reduction in WUI and non-WUI.

Data source: *Forest Service Activity Tracking System database.*

Monitoring result: *From 2018-2019, the WCNF implemented 13,140 acres of fuels reduction treatments which is about 1,000 acres more fuels treated than in 2016-2017. 3,047 of those acres were treated in WUI and 10,093 acres were treated in non-WUI.*

Indicator #2 Fire behavior and opportunities for suppression.

Data source: *Fuel Treatment Effectiveness Monitoring database.*

Monitoring result: *From 2018-2019, seven fires started or burned into the eight fuel treatment areas. The fires are 310, Box Canyon, Millcreek, Monviso, Gilbert Creek, Gun Range, and Snoqualmie. Fire behavior changed in seven of the eight fuels treatment areas and all treatments contributed to the control and/or management of fire. These treatments, combined with past fire scars, have been successful at altering fire behavior in a way that reduced unwanted fire effects, increased firefighter safety, and allowed for more fire management options (which makes it easier to protect property and life).*

Monitoring Question #6 Fire Management: Are natural ignitions being managed to accomplish resource management objectives?

Finding: *No changes are needed. Conditions must be favorable in order to manage fires for resource objectives, many of which are outside of our control (such as weather, available resources, and fire location). Therefore the percentage of natural ignitions that can be managed for resource objectives may vary significantly from year to year. However the goal is to see a long-term trend of increasing the percentage of fires with resource objectives. In the last two years, 17% of natural ignitions were managed to accomplish resource management objectives.*

We hope to see a trend of increasing percentages of acres with resource benefits from natural ignitions by managing more fires for resource objectives and implementing vegetation projects to reduce unwanted fire effects. Over the last two years, approximately 96% of the acres that burned from natural ignitions on the Wasatch-Cache were beneficial. Typically, non-beneficial acres are from fires burning at low elevations in the wildland urban interface where there are extensive weed populations such as along the Wasatch Front.

Indicator #1 Percent of natural ignitions with identified resource management objective.

Data source: *Wildland Fire Decision Support System database*

Monitoring results: *In 2018-2019, 17% of natural ignitions were managed to accomplish resource management objectives on the WCNF.*

The percentage of natural ignitions on the Wasatch-Cache from 2018 to 2019 that were managed in order to accomplish resource objectives.

Year	# Natural Ignitions	# Fires with Resource Objectives	%Fires with Resource Objectives
2018	13	4*	31%
2019	10	0	0%
Total	23	4	17%

*Fires included: Murdock (4,823ac), Slate (666ac), Notch (9ac), and Flat Canyon (3.5ac).

Indicator #2 Percent of natural ignition acres with resource benefit.

Data source: *Forest Service Activity Tracking System database, UWC fire perimeter GIS data.*

Monitoring results: *In 2018-2019, 96% of natural ignition acreage was beneficial for natural resources.*

The percentage of acres that resulted in resource benefit from natural ignitions on the Wasatch-Cache from 2018 to 2019.

Year	# Natural Ignitions Acres	# Acres with Resource Benefit	% Acres with Resource Benefit
2018	5,737	5,517	96%
2019	30	0	0%
Total	5,767	5,517	96%

Monitoring Question #7 Rangeland Management: What is the extent of the change of ecological conditions due to invasive species? Do rangeland plant communities have desired species composition and is ground cover adequate?

Finding: *No changes are needed. Although weed infestations are increasing on parts of the Wasatch-Cache Planning Area, the Forest has been making efforts to control weeds on the plan area. Riparian and upland condition and trend are overall in satisfactory condition and are meeting desired conditions or trending towards desired condition. Overall, ground cover conditions are adequate on range allotments. For the allotments on the WCNF, long-term monitoring studies indicative vegetative and ground cover conditions are in overall satisfactory condition and noxious weed infestations account for less than 1% of the district. Satisfactory condition is defined as meeting desired conditions or trending towards desired condition. Desired condition is defined as the 2003 Forest Plan Standards and Guidelines and having the desired plant communities.*

Indicator #1 Estimated acres infested with noxious weeds.

Data source: *Visual observations and/or treatment reports from seasonal noxious weed USFS crews.*

Monitoring results: *In the Kamas Valley and Mirror Lake corridor of the Wasatch NF, current noxious weeds infestations are being controlled and new noxious weed infestations are found almost on an annual basis. Mirror Lake corridor is a high use recreation area and noxious weeds are increasing in the area. These new noxious weed infestations are aggressively treated to keep infestations controlled and small. Musk Thistle, Yellow Toadflax, Bull Thistle are the three top invasive weeds found on the Wasatch NF.*

On the Evanston/Mt. View RD, in the Uinta Mountains, current noxious weeds infestations being controlled meaning they are decreasing in number and size. However, new noxious weed infestations are found almost on an annual basis. These new noxious weed infestations are aggressively treated to keep infestations controlled and small. Perennial pepperweed, oxeye daisy and scentless chamomile are newer noxious weeds recently found on the district and have been aggressively treated.

On the Ogden and Logan RD, 2019 noxious weed treatments were based on previously inventoried and treated populations of noxious and invasive plant populations. Treatment areas focused around the Pineview and Causey Reservoirs on the Ogden District, and Tony Grove and Logan Canyon on the Logan District. A two person crew using both chemical and manual methods accomplished a total of 300 acres (163 acres on Ogden, 137 acres on Logan). Volunteer efforts in 2019 on the River and Crimson Trails made an impact on treated acres, with our volunteer David Wallace contributing over 250 hours of time and accomplishing over 30 acres of herbicide treatment. Bio-controls were released on the Ogden District in 2019 in three locations; Winters Grove Trail, Willows Campground, and on the Bonneville Shoreline Trail North of Beus Canyon.

Acres of Noxious Weed Inventory and Treatments						
Ranger District	2015 USU Re-inventory		Weed Treatment Acres			
	Inventoried Acres	Weed Infested Acres	2016	2017	2018	2019
Salt Lake	N/A	N/A	770	1,107	0	24
Kamas	N/A	N/A	130	148	2	140
Evanston-Mt. View	N/A	N/A	1,693	2,097	0	106
Ogden	1,773	148	500	0	233	163
Logan	7,429	422	1,389	107	30	137
Totals	9,202	570	4,482	3,459	265	570

Indicator #2 Riparian and upland condition and trend.

Data source: *There are only three allotments on the Heber-Kamas District located on the Wasatch-Cache NF which include Curry, Kamas Valley and Weber River. In 2018-2019 on the Kamas RD, Kamas Valley and Mirror Lake corridor of the Wasatch NF approximately 63 long-term monitoring studies were established or re-read on the cattle allotments between 2018 and 2019. On the Evanston/Mt. View RD, on the North Slope of the Uinta Mountains approximately 750 long-term monitoring studies were established or re-read on multiple cattle and sheep allotments between 2018 and 2019. Some of these allotments include Burnt Fork, Beaver Creek, Poison Mountain, Red Mountain, West Fork-Smiths Fork, Blacks Fork, West Fork-Blacks Fork, Larson, Gold Hill and others.*

Monitoring results: *On the allotments monitored on the WCNF, the vegetative communities associated with the allotments are overall in satisfactory condition. Satisfactory condition is defined as meeting desired conditions or trending towards desired condition. Desired condition is defined as the 2003 Forest Plan Standards and Guidelines and having the desired plant communities.*

Monitoring Question #8 Are Forest management activities and natural events affecting the ecological conditions indicated by the status of Focal species?

Findings: *No changes are needed. Management activities over the past 15 years were unlikely to cause significant population level impacts to goshawk fledgling success. Although trends in fish populations vary by drainage, no changes are needed since the reasons for downward trends are from natural events or from stocking decisions not from issues with management direction.*

Indicator #1 Active Goshawk territories.

Data source: *2018-2019 Goshawk survey results of monitoring a subset (approximately 50%) of the known goshawk nesting territories and comparison to goshawk inventories from 2003. Surveys of territories are based on protocols for the UWCNF that have been adapted from the Northern Goshawk Inventory and Monitoring Technical Guide (Woodbridge & Hargis, Northern goshawk inventory and monitoring technical guide, 2006).*

Monitoring results: *There were 60 known territories at the conclusion of the 2018 field season. Since 1999, the number of known territories within the Wasatch-Cache Planning Area has increased due to increased sampling effort and new nest discoveries.*

Because of staffing and budgeting constraints, the Forest is not always capable of monitoring all known territories. To resolve this issue, the Forest chose to randomly select and monitor a subset of the known territories to analyze the population trends. This subset is called the focal territories. The overall goal is to monitor at least 50% of all known territories. One hundred percent of the focal territories are to be monitored each year and the focal territories represent the Wasatch-Cache goshawk population.

In 2016, the Wasatch-Cache discovered that the number of known territories increased each year between 2014 and 2016, but the number of monitored focal territories did not increase at the same ratio, which lead to the Forest monitoring slightly less than 50% of the known territories during these years. This discrepancy went un-noticed because there was turnover in biologists during these years. In 2017, the number of focal territories was increased to achieve the 50% monitoring objective. In 2019, the Wasatch-Cache monitored 100% of focal territories. Of the focal territories, three were occupied (10%), and three had active nests (10%) (Figure 1).

Number of Known, Monitored, Occupied Territories, Active Nests, and Fledgling Success

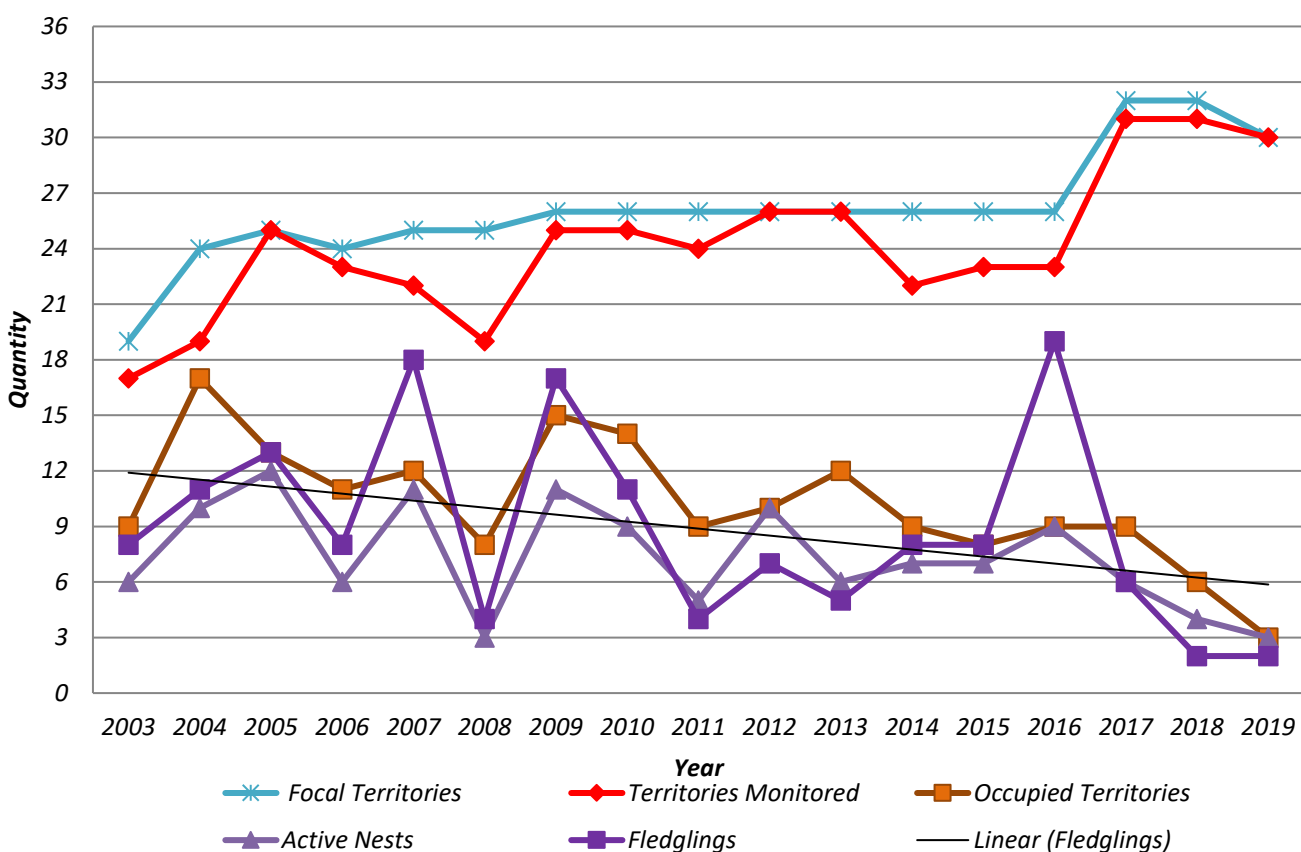


Figure 1. Known focal territories, monitored focal territories, occupied focal territories, active focal nests, and young fledged in focal territories on the Wasatch-Cache Planning Area between 2003 and 2019.

Reproductive success is determined by the presence of fledglings around the nest observed during monitoring activities in late July and early August. In 2019, two young on the Wasatch-Cache planning area (within focal territories) survived to the fledgling stage, there was an average of 0.67 fledglings per active nest, and 0.07 fledglings per monitored focal territory. The fledgling success tied for the second lowest since 2003 when formal monitoring began. The other lowest year was 2018. Fledglings per monitored territory are the second lowest numbers on record since 2003. The lowest number was 2018.

An occupied territory is a territory with significant signs of activity such as adult birds observed in the territory, new whitewash around the nest or perching sites, prey items present, greenery found in the nest, and/or presence of goshawk feathers.

Management activities over the past 15 years were unlikely to cause significant population level impacts to goshawk fledgling success. Of the Wasatch-Cache Planning Area, almost half of the land area is designated as Wilderness and Roadless areas. Management of these lands requires increased approvals from the Forest Service Regional and Washington Offices; therefore, management does not often occur in these areas. An

even smaller portion of the Wasatch-Cache Planning Area that can be managed, actually undergoes activities that could negatively affect the goshawks. These activities require environmental analysis, thereby reducing and mitigating negative effects.

The Wasatch-Cache Planning Area shows an overall upward trend in the number of focal and monitored territories but a downward trend in occupied territories (OT), active nests (AN), and fledgling success (FS) between the years of 2003 and 2018. A shift occurred around 2009. Before 2009, OT and AN had a flat trend line and FS was increasing. After 2009, OT, AN, and FS show a decreasing trend. When districts are individually examined, Evanston-Mountain View Ranger District (EMVRD) shows a decreasing trend in OT, AN, and FS (Figure 8) while Ogden-Logan RDs (Figure 9) and Kamas RD (Figure 10) show a more stable trends especially before 2018. The drop in AN and FS causes a slight downward trend for the districts. Salt Lake RD shows no change (Figure 11) because OT, AN, and FS remained at zero. EMVRD includes about half the number of all focal territories in the Planning Area; therefore, data from this district has a significant impact on the overall monitoring results each year.

The 2018 (OT, AN, FS) were exceptionally low and lowest since data collection began. EMVRD also had some of the lowest on record. Since EMVRD has the most known territories, it drives the data. The EMVRD downward trends may suggest that the beetle epidemic on the EMVRD may be impacting fledgling success for the entire Planning area. Goshawks prefer to nest in mature, large diameter trees in closed canopy forests. The dead lodgepole trees no longer provide a closed canopy, thereby may be exposing goshawk fledglings to hawk and owl predation.

Additionally, the winters of 2015/2016 and 2016/2017 had abundant snow accumulation and could have affected goshawk fledgling success, but the winter of 2017/2018 did not. The EMVRD showed exceptionally low OT, AN, and FS numbers. Other districts in the Planning Area showed lower than average indices as well in 2018. The Caribou portion of the Caribou-Targhee NF and the Ashley NF (South Slope of Uintas) experienced low fledgling successes as well (email from Rob Miller, research biologist Intermountain Bird Observatory. Rob is collecting data from R4 National Forest that want to participate in the goshawk fledgling success analysis. He will analyze the data and provide to the region. There is anecdotal evidence that the goshawk fledgling success region-wide is decreasing.

Indicator #2 Cutthroat Trout population estimates.

Data source: *In 2018, the Uinta-Wasatch-Cache National Forest conducted fish surveys on streams located on the Heber-Kamas Ranger District in the Smith & Morehouse drainage. These surveys repeated surveys conducted mainly in 2009 to monitor Bonneville cutthroat trout (BCT) and Forest management activities. In 2019, fish surveys were conducted on streams located on the Logan Ranger District. Two of the streams were tributaries to the Blacksmith Fork River and the third was Beaver Creek a tributary to the Logan River. The Blacksmith Fork tributary surveys repeated surveys conducted in 2015 to monitor Bonneville cutthroat trout (BCT) and Forest management activities. The Beaver Creek reach was previously surveyed in 1994.*

Monitoring results: *Data collected on Heber Kamas RD in previous surveys were compared with data collected in 2018 as shown in the table below.*

Stream	Survey Site	Fish Species	2009 salmonids per mile¹	2018 salmonids per mile	Comments	Reach Trend¹
Box Canyon	94	BCT	343	429		Up
Erickson Creek	92	BKT ²	717	747		Stable
Red Pine	95	BCT	257	80		Down
		TGT ²	231	0		Down
		RBT ²	15	0		Down
Smith & Moorehouse low	93	BCT	195	97		Down
		BKT	0	64		Up
Smith & Moorehouse high	143	BCT	337	595	Population fluctuations of tiger trout and grayling are due to stocking	Up
		TGT	419	0		Down
		BKT	72	145		Up
		MTS	Common	Common		Stable
		AGR	0	32		Up
		Sculpin	abundant	abundant		Stable

⁽¹⁾ Population estimates, biomass, and condition factor used to determine population trend

⁽²⁾ BCT = Bonneville cutthroat trout, BKT = Brook Trout, TGT = Tiger Trout, RBT = Rainbow Trout, MTS = Mountain sucker, AGR = Artic grayling

The Smith & Morehouse Drainage was impacted by the Box Canyon Fire during the summer of 2016. This fire burned throughout the drainage in varying intensities. The area is currently recovering, and stream conditions will continue to improve as large woody debris is added to the channels due to the fire. Flows in Red Pine Creek were extremely low during sampling in 2018. This was likely due to the ongoing drought. Numerous young-of-year BCT were observed during the 2018 sampling. Tiger trout were not observed in 2018. This was due to changes in the stocking program with the Utah Division of Wildlife Resources. Where tiger trout are sterile, their presence is dependent on frequent stocking. Overall, native populations of fish are doing well in the Smith & Morehouse drainage. Non-native brook trout are well established and will likely expand in the future as stream conditions continue to improve.

Data collected on Logan RD in previous surveys were compared with data collected in 2019 as shown in the table below.

Stream	Survey Site	Fish Species	Previous salmonids per mile	2019 salmonids per mile	Comments	Reach Trend
Left Hand		cutthroat	16	449		Up

Fork Blacksmith Fork	394	brown	1691	993		Down
		sculpin	abundant	abundant		Stable
Rock Creek	84	cutthroat	34	356	Habitat improvement project in 2016 is working	Up
		brown	481	2574		Up
		Mt. Sucker	common	abundant		Stable
		Sculpin	abundant	abundant		Stable
Beaver Creek	1	cutthroat	232	364		Up

Throughout these drainages, habitat conditions remain good and, in some instances, have improved. The habitat improvement projects in Left Hand Fork and Beaver Creek which moved dispersed camping away from riparian areas has helped fish populations in these drainages. The Utah Division of Wildlife Resources has also completed a habitat improvement project along Rock Creek where they removed livestock grazing and dispersed camping along the stream. Stream conditions continue to improve at all sampling sites.

Monitoring Question #9 Is there a change in species distribution across the Forest?

Finding: *No changes are needed.*

Indicator #1 Change from cold water to warm water species, change in terrestrial vegetation and species distribution.

Data source: *Field observations of aquatic habitat and fish population surveys*

Monitoring results: *From the results of fish population and habitat surveys, there is no indication of a change from cold to warm water species. There is no indication of a change in terrestrial species distribution.*

Monitoring Question #10 Are Forest management activities and/or natural events affecting ecological conditions that contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of concern?

Finding: *No changes are needed. For conditions indicated by goshawk and fish surveys and for other federally listed threatened and endangered species, conserve proposed and candidate species, management activities over the past 15 years were unlikely to cause significant population level impacts. For fisheries, most monitored sites indicate a stable to upward trend and where downward trends occur, they are from natural events or from stocking decisions not from issues with management direction.*

Indicator #1 Mature forest conditions and population estimates (e.g, Northern goshawk). *See Monitoring Question # 8, Indicator #1.*

Indicator #2 Aquatic and riparian condition: In-stream channel conditions and population estimates (e.g, Bonneville cutthroat trout and Colorado River cutthroat trout). *For fish abundance and condition surveys see Monitoring Question # 8, Indicator #2.*

Indicator #3 Habitat that contains other federally listed threatened and endangered species, conserve

proposed and candidate species – Documentation of alterations in habitat due to management actions and natural events.

Data source: Forest Service information in FACTS database on timber treatments, prescribed fire, wildfire, Burned Area Emergency Response (BAER) reports, and aquatic habitat improvement projects.

Monitoring results: Aquatic ecosystems have been improved on 0.5 miles of stream where two culverts were replaced in Porter Fork and the density of stream side vegetation has increased where a dam was removed in Mill Creek east of Salt Lake City.

Monitoring Question #11 Are Forest management activities and natural events affecting the ecological conditions of terrestrial and aquatic ecosystems?

Finding: No changes are needed. In 2018 to 2019, the main ecological change that has occurred is from vegetation changes resulting from several harvest units that totaled 2,625 acres and are shown in blue in the figure below. Fuel treatments have occurred on 11,547 acres and consist of thinning, burning of piled material and broadcast burning. The purpose of these treatments is to reduce large fires and to create diversity in age classes on the Forest. Most of these activities affected the terrestrial ecosystem by setting the seral stage of the vegetation to an earlier stage. Aquatic ecosystems have been improved on 0.5 miles of stream where two culverts were replaced in Porter Fork and the density of stream side vegetation has increased where a dam was removed in Mill Creek east of Salt Lake City.

Data source for all indicators: See Monitoring Question # 4, Indicator #1, Monitoring Question #5, Indicators #2, Monitoring Question # 6, Indicators #1 and #2, Monitoring Question # 7, Indicators #1 and #2, Monitoring Question # 8, Indicators #1 and #2 and the Utah 2016 Integrated Report (303(d) and 305(b) reports).

Indicator #1 Aquatic habitat conditions.

Monitoring results: For fish abundance and condition surveys see Monitoring Question # 8, Indicator #2. Water quality may indicate natural and/ or man-caused conditions that affect aquatic habitat. The Utah 2016 Integrated Report (303(d) and 305(b) reports) is submitted to the US Environmental Protection Agency (USEPA) and is awaiting their approval. This report lists several streams that are classified as not supporting its beneficial use and is presented in the table below. The Utah 2016 Integrated Report states that high priority for assessment for Parleys Canyon Creek-1 and Provo River-6. The other streams listed as not supporting are rated as low priority for assessment. The Utah Division of Water Quality will be assessing data and completing the biennial 2018/2020 Integrated Report (303(d) and 305(b) reports within next two years.

In 2018, Wyoming submitted to the US Environmental Protection Agency (USEPA) its final 2016/2018 Integrated 303(d) and 305 (b) Report and is awaiting their approval. Since final approval for the Utah or the Wyoming 2018 Integrated 303(d) and 305 (b) reports has not come from the USEPA, information from the 2014 Wyoming 303(d) list is used for this assessment, is the same as the assessment that is presented in the 2016-2017 WCNF Biennial Forest Plan Monitoring report, and this information is presented below.

Information from the 2014 Wyoming draft Integrated 303(d) and 305 (b) Report states”
Uinta County Conservation District (UCCD) monitored water quality at 12 sites in 2006 on the Blacks Fork as part of the Blacks Fork/Smiths Fork Watershed Section 319 Project Report. The goal of the project was to collect physical, chemical and biological data from several study sites along the Blacks Fork and Smiths Fork drainages. Data collected during this project showed that fecal coliform concentrations were above WDEQ’s recreational criteria at several sites in both watersheds throughout the study. The report also noted that sedimentation was a concern in both watersheds. UCCD collected E. coli data in 2009 and 2010 that showed

that bacterial concentrations on the Blacks and Smiths Forks were still exceeding WDEQ's recreational use criteria. UCCD has sponsored a watershed plan for the Blacks Fork and Smiths Fork Watersheds. WDEQ initiated TMDLs for the Smiths and Blacks Forks in 2013.

Willow Creek's headwaters are located in the northern foothills of the Uinta Mountains in the Wasatch-Cache National Forest near the Utah/Wyoming border and is a major tributary to the Smiths Fork. Data and other information collected during the mid-1990s by UCCD showed that Willow Creek was physically degraded due to eroding stream banks and sedimentation. Poor riparian vegetation cover was also noted as a concern. Willow Creek (WYGR140401070205_01) was added to the 303(d) List in 1998 as threatened because the cold water fishery and aquatic life other than fish uses were not supported for the entire watershed upstream of the confluence with the Smiths Fork. The cause of this threat was habitat alterations (i.e. sediment) and the source was identified as livestock grazing. UCCD completed a Section 319 Project for Willow Creek in 1999. The goals of this project were to improve the habitat condition and water quality of Willow Creek using several BMPs. BMPs included revising grazing management plans, planting riparian vegetation, improving and installing new upland stock watering ponds and fencing some riparian areas. WDEQ (2003) monitored Willow Creek at three sites in 2003 to determine whether the above BMPs were effective in improving the threat to the Willow Creek watershed. Elevated temperature, pH and algal and macrophyte cover were noted as concerns. Riparian condition was fair at all three study sites and streambed embeddedness was an issue within the middle reach. Results of macroinvertebrate sampling were inconclusive. The report concluded that the aquatic life uses on Willow Creek were still threatened, but that habitat condition may be improving. WDEQ's TMDL Program began monitoring Willow Creek again in 2013 to re-assess designated use support."

303(d) listed water bodies from Utah Division of Water Quality 2016 303(d) list.			
Ranger District	Analysis Unit ID	Analysis Unit Description	Parameter
Salt Lake RD	UT16020102-023_00	Hardscrabble Creek	Temperature
	UT16020102-026_00	East Canyon Creek-2	Temperature; OE Bioassessment; Total Dissolved Solids
	UT16020102-027_00	Kimball Creek	OE Bioassessment; Arsenic, Dissolved
	UT16020102-032_00	South and Middle Fork Kays Creek	Copper, Dissolved
	UT16020102-034_00	Holmes Creek-2	Copper, Dissolved
	UT16020102-038_00	Farmington Creek-2	Aluminum, Dissolved; Copper, Dissolved
	UT16020102-039_00	Farmington Creek-1	E. coli.; Copper, Dissolved
	UT16020102-043_00	Barnard Creek	E. coli. ; Dissolved Oxygen; Copper, Dissolved
	UT16020102-044_00	Parrish Creek	Copper, Dissolved
	UT16020102-045_00	Stone Creek-2	Copper, Dissolved
	UT16020102-049_00	Mill Creek2-Davis	Copper, Dissolved
	UT16020204-010_00	City Creek-2	Cadmium, Dissolved
	UT16020204-013_00	Parleys Canyon Creek-2	Cadmium, Dissolved
	UT16020204-020_00	Big Cottonwood Creek-2	Cadmium, Dissolved; Copper, Dissolved
	UT16020204-022_00	Little Cottonwood Creek-2	Cadmium, Dissolved; Copper, Dissolved; pH
	UT16020204-025_00	Parleys Canyon Creek-1	OE Bioassessment; E. coli
	UT16020203-026_00	Heber Valley	Temperature
Kamas RD	UT16020203-006_00	Provo River-6	Aluminum, Dissolved; Zinc, Dissolved
Evanston-Mt. View RD	UT14040106-003_00	West Fork Beaver Creek	Aluminum, Dissolved
	UT14040106-004_00	Middle Fork Beaver Creek	Aluminum, Dissolved
	UT14040107-001_00	Blacks Fork	Aluminum, Dissolved; pH
	UT14040107-005_00	East Fork Smiths Fork	Aluminum, Dissolved; Zinc, Dissolved
	WYGR140401070205_01	Willow Creek	Habitat Alteration
Ogden RD	UT16010101-007_00	Big Creek	E. coli; pH; Temperature; Total Dissolved Solids
	UT16020102-001_00	Weber River-1	OE Bioassessment
	UT16020102-002_00	Weber River-3	OE Bioassessment
	UT16020102-009_00	Middle Fork Ogden River	Dissolved Oxygen
Logan RD	UT16010201-001_00	Bear Lake West	OE Bioassessment
	UT16010201-002_00	Laketown	Dissolved Oxygen; Temperature
	UT16010203-020_00	Blacksmiths Fork-1	E. coli.; Dissolved Oxygen

Indicator #2 Riparian ecosystem conditions.

Monitoring results: *Very little change has occurred to riparian areas of the Wasatch-Cache Planning Area and most management activities have avoided impacts to these areas.*

Indicator #3 Forested Terrestrial ecosystem conditions.

Monitoring results: *In 2019, the Francis, Snoqualmie, and the Murdock fires burned on the WCNF for a total of 2,652 acres. Areas within a fire having high soil burn severity is an indication of changes to the soil that can result in reduced soil productivity. Assessments of soil burn conditions in the Francis, Snoqualmie, and Murdock fires indicate that 116 acres had high soil burn severity of which 62 acres were in burned conifer vegetation types that may take many decades of time to start the establishment of conifer seedlings. There is a need to monitor these areas to determine if it needs to be replanted or left to regenerate naturally.*

Indicator #4 Non-forested terrestrial ecosystem conditions. *See Monitoring Question #7, Indicator #2. The table above shows that 38 acres of non-forested area had high burn severity.*

Monitoring Question #12 Are Forest management activities and natural events affecting watershed conditions?

Finding: *No changes are needed. The UWCNF is working cooperatively to collect water samples and to provide information to the Utah Division of Water Quality on possible causes of water quality impairment. No lichen monitoring has occurred in 2016-2017. The next evaluation is scheduled in 2026 when another round of lichen monitoring should be complete. Past lichen monitoring indicates no change is needed. Based on projects monitored in 2018-2019, monitoring indicates that a small amount of impairment of soil properties have occurred from a dispersed site activity, the remaining sites have no permanent or substantial impairment of soil resources and there has been no loss of soil productivity. The Forest Plan allows for the rehabilitation of dispersed sites that have impairment of soil properties.*

Indicator #1 Aquatic Habitat conditions.

Data source: *See Monitoring Question #8, Indicator #2 and Monitoring Question #11, Indicator #1.*

Monitoring results: *See Monitoring Question #8, Indicator #2 and Monitoring Question #11, Indicator #1.*

Indicator #2 Air Quality - Trends of lichen biomonitoring sites.

Data source: *The WCNF has seven lichen monitoring sites. Four sites are established in the High Uintas Wilderness Area, one site in the Lone Peak Wilderness Area, and two in the Deseret Peak Wilderness Area. A report on lichen surveys was completed in 2013 by Brigham Young University. The results of the evaluation were presented in the 2016-2017 Forest Plan Monitoring Evaluation report. The monitoring interval for lichen monitoring is 10 years and no new data has been collected for 2018-2019 Forest Plan Monitoring Evaluation report.*

Monitoring results: *No data is available for evaluation for the 2018-2019 Forest Plan Monitoring Evaluation report.*

Indicator #3 Changes in soil properties (physical, chemical, and biological) that result in the loss of the inherent ecological capacity or hydrologic function of the soil resource.

Data source: *Soil resource condition surveys*

Monitoring results: *Four projects were reviewed and include Supreme ski lift tower replacement and realignment at Alta Ski Resort, seeding and natural recover following the Bountiful wildfire south of Bountiful, Utah, reconstruction of the paved Albion Parking Lot at Alta, and water developments on the Dairy Ridge*

allotment west of Woodruff, Utah. Monitoring of the Supreme ski lift tower replacement and realignment and the reconstruction of the paved Albion Parking Lot at Alta indicates that best management practices such as installing sediment fence, seeding, and covering soil with erosion control fabric had stopped almost all erosion on the site.

In 2018 and 2019, 10 activities were monitored and documented in the National Best Management Practices database and included implementation and effectiveness for the projects listed below.

- *Use of prescribed fire on Saddle Creek Phase II project, Logan RD (2018).*
- *Grazing management on West Fork Smiths Fork allotment, Evanston-Mt. View RD (2018).*
- *Ski run operation and maintenance on Solitude Little Dollie ski run, Salt Lake RD (2018).*
- *Dispersed recreation on the Left Hand Fork Blacksmith Fork, Logan RD (2019).*
- *Completed construction of non-motorized trail on Tony Grove to Bunchgrass trail, Logan RD (2019).*
- *Pack and riding stock use areas at East Fork Blacks Fork Guard Station and Camp Rogers YMCA Camp, Kamas RD (2019).*
- *Completed construction of parking area at Tony Grove Trailhead, Logan RD (2019).*
- *Ground-based skidding and harvesting at Woodpile Salvage Timber Sale Units 25 and 28, Evanston-Mt. View RD (2019).*

Results of monitoring indicates that nine of the 10 activities had BMPs mostly or fully implemented and that the BMPs were effective at reducing sediment movement. The activity where BMPs were not implemented was at a dispersed recreation site on the Left Hand Fork Blacksmith Fork. This site does not have an implementation plan and there was bank instability, trampling, and vegetation damage or bare ground along 15 feet of 150 feet of stream bank at the dispersed site due to cattle use of the opening to the stream created by campers. Also there was trash and toilet paper within the aquatic management zone. There is permanent impairment of soil properties and loss of soil productivity along the stream edge where there is bank trampling due to dispersed recreation activities.

Monitoring Question #13 NFMA compliance: Are we complying with appropriate NFMA requirements?

Finding: *No changes are needed.*

Indicator #1 Stocking of lands.

Data source: *Uinta-Wasatch-Cache NF Annual Reforestation and Timber Stand Improvement Needs Report*

Monitoring results: *The Wasatch-Cache National Forest planted 119 acres in 2019. The areas planted were on the Evanston-Mountain View District near Whitney Reservoir. The forest still shows a need to plant or certify as being restocked, an additional 71 acres.*

Monitoring Question #14 Are timber management activities impairing soil productivity of the land?

Finding: *No changes are needed.*

Indicator #1 Changes in soil properties (physical, chemical, and/or biological) that result in the loss of the inherent ecological capacity or hydrologic function of the soil resource. Specific indicators are amount of soil disturbance, change inorganic matter, or change in Soil structure, soil temperature, A horizon depth.

Data source: *Soil resource condition surveys conducted on timber harvest units.*

Monitoring results: *Three projects were monitored on the Evanston-Mt. view RD that include Mill Creek Timber Sale along North Slope Road, Woodpile Salvage Timber Sale, and Roadside Salvage Timber Sale along*

North Slope Road. The Mill Creek Timber Sale occurred seven years ago and from an ocular estimate, the density is less but the current vegetation composition on skid trails is similar to surrounding vegetation of harvest unit, No sign of off-road vehicle use. No sign of erosion or sediment movement is seen from anywhere within the harvest unit including the skid trail. No weeds were seen in the areas where slash piles were burned which could be from the lack of weeds in the area before harvest occurred. Monitoring of the Woodpile Salvage Timber Sale, and Roadside Salvage Timber Sale along North Slope Road indicates that timber contract provisions to protect soil and water resources were implemented and were effective in controlling erosion and sedimentation. The harvest contract included provisions such as erosion control, use of mechanized equipment in the aquatic management zone, size of landings, timing of harvest, and location of temporary and skid trails. The results indicate that very little permanent or substantial impairment of soil resources have occurred.

Monitoring Question #15 Are goods and services being provided in accordance with Forest Plan goals and objectives?

Finding: No changes are needed. The Wasatch-Cache NF is providing a variety of goods and services according to the Forest Plan.

Indicator #1 Number of Lands Special Use Permits.

Data source: Forest Service Special Uses Data System (SUDS) database.

Monitoring results: The number of lands and recreation special use permits are presented by ranger district in the table below. Lands SUPs are uses such as dams, water transmission lines, geophysical exploration.

Recreation SUPs are uses such as recreation residences, outfitter and guides, and recreation events.

Number of Lands Special Use Permits.			
Ranger District	Number of Lands SUP	Number of Recreation SUP	Total
Supervisor's Office ¹	49	12	61
Salt Lake	185	162	347
Heber/Kamas ¹	55	95	150
Evanston- Mt. View	44	48	92
Ogden	44	9	53
Logan	61	92	152
Total	438	418	856
¹ Note that Supervisor's Office is for both the Uinta NF and the Wasatch-Cache NF because they are managed as a combined Forest unit. Kamas/Heber RDs data is the total for both ranger districts and is not broken out by separate districts.			

Indicator #2 Number of Recreation Special Use Permits. See indicator #1 and table above.

Indicator #3 Acres leased for oil and gas exploration and development.

Data source: US Bureau of Land Management LR2000 database.

Monitoring results: As of 12/05/19, there are 37 authorized oil and gas leases containing 34,031 acres within the Wasatch NF plan area.

Indicator #4 Level of permitted livestock grazing.

Data source: Range Allotment Annual Operating Plans

Monitoring results: The level of permitted livestock grazing has not changed since 2015. The table below presents the permitted commercial livestock use levels. The term AUM means animal unit months.

Level of permitted livestock grazing.							
Ranger District	Number of permittees	Cattle Numbers	Cattle AUM	Sheep & Goats Numbers	Sheep & Goats AUM	Total number	Total AUM
Salt Lake	17	957	3,025	0	0	957	3,993
Kamas	12	989	5,146	0	0	989	5,146
Evanston- Mt. View	21	2,364	9,052	20,262	12,015	22,626	21,067
Ogden	17	2,549	4,549	9,915	6,242	12,464	10,791
Logan	31	5,132	23,760	11,029	9,826	16,181	33,586
Total	98	11,991	45,532	41,206	28,083	53,217	74,583

Indicator #5 Other Forest Products (Fuelwood and Christmas Tree Permits).

Data source: Forest Service PTSAR database.

Monitoring results: The Wasatch-Cache National Forest sold 3,749 special forest product permits to individuals in 2019. Among these permits were Christmas trees, firewood, and posts and poles. The table below presents forest products produced from the Forest in 2018-2019.

Other Forest Products		
Ranger District	Product	Amount
Salt Lake	<i>Firewood</i>	<i>4 cords²</i>
	<i>Poles</i>	<i>62 pieces</i>
Kamas/Heber¹	<i>Firewood</i>	<i>3,697 cords</i>
	<i>Poles</i>	<i>70 pieces</i>
	<i>Christmas Trees</i>	<i>2,055 trees</i>
Evanston- Mt. View	<i>Firewood</i>	<i>2,623 cords</i>

	<i>Poles</i>	<i>3,004 pieces</i>
	<i>Christmas Trees</i>	<i>3,390 trees</i>
Ogden	<i>Firewood</i>	<i>166 cords</i>
Logan	<i>Firewood</i>	<i>797 cords</i>
¹ Note that Kamas/Heber RDs data is the total for both ranger districts and is not broken out by separate districts. ² A cord is the amount of wood in a neat stack 4 feet wide by 4 feet high by 8 feet long (128 cubic feet).		

Indicator #6 Total Timber Sale Program Quantity.

Data source: Forest Service PTSAR database.

Monitoring results: In 2018-2019, the Forest sold a total of 21.6 MMBF (million board feet) of timber to commercial operators. Of this total, 9.1 MMBF was from the default and resale of a previous timber sale. The Forest plan indicates that the forest should average 4.5 MMBF of timber sold per year. The forest is exceeding this annual average to salvage beetle killed timber while there is some economic viability to it.

Monitoring Question #16 National Historic Preservation Act as amended: Are cultural resources being protected as the Forest Plan is implemented and are mitigation measures sufficient prevent damage to cultural resources from project activities? Are *Historic Properties* receiving adverse effects from project implementation, vandalism, looting, and/or neglect?

Finding: No changes are needed.

Indicator #1 Number of *Historic Properties* that received new adverse effects from looting, vandalism, and/or neglect.

Data source: Heritage data module, hard copy reporting.

Monitoring results: No adverse effects from project implementation, vandalism, looting, and/or neglect.