



United States Department of Agriculture

# Biennial Monitoring Evaluation Report Tongass National Forest Fiscal Years 2018-2019



Forest Service

March 2021

**For More Information Contact:**

Monique Nelson, Inventory and Monitoring Coordinator  
8510 Mendenhall Loop Road, Juneau, AK 99801

monique.nelson@usda.gov

<https://www.fs.usda.gov/main/tongass/landmanagement/planning>

*Cover photograph: Watershed restoration monitoring site on Price of Wales Island.  
US Forest Service 2018*

## Introduction

This biennial monitoring evaluation report highlights the key findings of monitoring work completed during fiscal years (FY) 2018 and 2019 for the Tongass National Forest, including monitoring activities, results, and management recommendations.

The purpose of the biennial monitoring evaluation report is to make the most recent monitoring information available to the public and to support adaptive management so that the Forest Supervisor can determine if changes are needed to the Tongass National Forest Land and Resource Management Plan (Forest Plan), management activities, or the Plan Monitoring Program or if an assessment is needed to inform management. This biennial monitoring evaluation report is not a decision document—it evaluates monitoring questions and indicators presented in the Plan Monitoring Program in relation to management actions across the Forest. The full Forest Plan Monitoring Program is available on the Tongass National Forest web site at [https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fseprd500650.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd500650.pdf).

Monitoring and evaluation requirements are established through the National Forest Management Act (NFMA) land management planning regulations at 36 CFR 219. Additional direction is provided by the Forest Service in Chapter 30 – Monitoring – of the Land Management Planning Handbook (FSH 1909.12). The Tongass National Forest Plan Monitoring Program was updated in May 2016 for consistency with the 2012 Planning Rule (36 CFR 219.12 (c)(1)). Monitoring questions and indicators were selected to inform management of resources across the Tongass National Forest. This is the second monitoring evaluation report since the Plan Monitoring Program 2016 update and the second report since the 2016 amendment to the Forest Plan was finalized. Past monitoring reports are available on the Tongass National Forest web site at <https://www.fs.usda.gov/detail/tongass/landmanagement/planning/?cid=stelprdb5368225>.

This monitoring evaluation report provides a summary of monitoring information and recommendations for each of eight required monitoring items. The appendix provides a summary of monitoring information for five additional monitoring questions that were part of the original Plan Monitoring Program from 2008 and continue to be addressed. More detailed reports used to build this summary are available upon request.



## Summary of Required Monitoring Items

### Monitoring Item (i): Status of select watershed conditions

**Table 1. Monitoring information for item (i)**

| Monitoring Question   | Plan Component(s)  | Indicators   | Data collection interval | Data Source / Partner                            |
|---|--|--|--------------------------|--|
| Question 21: What are the ecological conditions and trends of key characteristics (such as soil productivity, water quality and quantity, invasive species, etc.) of watershed health identified in the desired condition (aquatic ecosystem potential) of the plan area? How effective are management actions in improving watershed health (maintaining or moving watersheds toward Condition Class 1)? | Watershed Restoration, Soil and Water Quality Protection and Restoration (SW4, Forest Plan p. 4-63). | Effects of management activities on Watershed Condition Class. Number of Watersheds moved to Condition Class 1 (all essential projects completed). | Every 5 years            | Watershed condition Framework 5-year assessments |

#### Monitoring summary and results for item (i)

As part of the Forest Service Watershed Condition Framework, 12 core indicators were evaluated to classify watershed condition across the Tongass National Forest in 2011 and again in 2016. These indicators are scheduled to be reevaluated in 2021 pending a national review of the watershed condition assessment process.

Most of the 900 watersheds within the Tongass National Forest are in near-natural condition (Condition Class I). Less than 7 percent have higher condition scores and may be at risk for maintaining ecological functions due to past management practices; these watersheds likely have restoration needs. Degraded watershed condition on the Tongass National Forest is primarily a result of timber harvest and road building between 1950 and 1979. The Tongass Timber Reform Act (1990) and subsequent Forest Plans (1997, 2008, 2016) require more restrictive measures to protect watershed condition and salmon habitat. Old-growth harvest is no longer allowed in Trout Unlimited “Tongass 77” watersheds.

#### Monitoring Discussion and Findings for Item (i)

Following a review by Tongass National Forest staff and stakeholders, the Forest Supervisor established priority watersheds on which to focus restoration plans and activities. Restoration projects include road storage and decommissioning, removal and remediation of fish barriers at road-stream crossings, wildlife habitat improvements in young-growth forests, riparian young-growth forest treatments, and large wood placement to restore floodplain and stream functions that provide spawning and rearing habitat features critical to freshwater salmon life stages. Essential projects were completed and watershed condition was restored in two watersheds during the 2018-2019 monitoring period: Staney Creek (Thorne Bay Ranger District) and Iris Meadows (Sitka Ranger District).

*Based on the monitoring results, are Forest Plan components progressing, trending, or maintaining as desired or anticipated? Is there a need to change the Forest Plan?*

- Forest Plan components are effectively protecting watershed condition.
- There is no need to change Forest Plan direction related to this monitoring item (i) at this time.

*Did any Forest Service management activities or other events in the plan area positively or negatively influence monitoring results? Is there a need to change management activities?*

- During the 2018-2019 monitoring period, two watersheds, Stanley Creek and Iris Meadows, were moved to Condition Class I due to Forest Service management activities.
- There is no need to modify management activities at this time.

*Did monitoring results provide all the information necessary to answer the monitoring question? Is there a need to change the Plan Monitoring Program?*

- The Watershed Condition Framework is part of a comprehensive watershed improvement process (Figure 1) that includes pre-project assessment and post-activity monitoring. This process and monitoring results provide all necessary information.
- There is no need to modify the Plan Monitoring Program at this time.

*Do the monitoring results show trends or values not anticipated? Is there a need to develop an assessment related to this monitoring item?*

- The monitoring results do not show any unanticipated trends or values. There is no need to develop an assessment at this time.

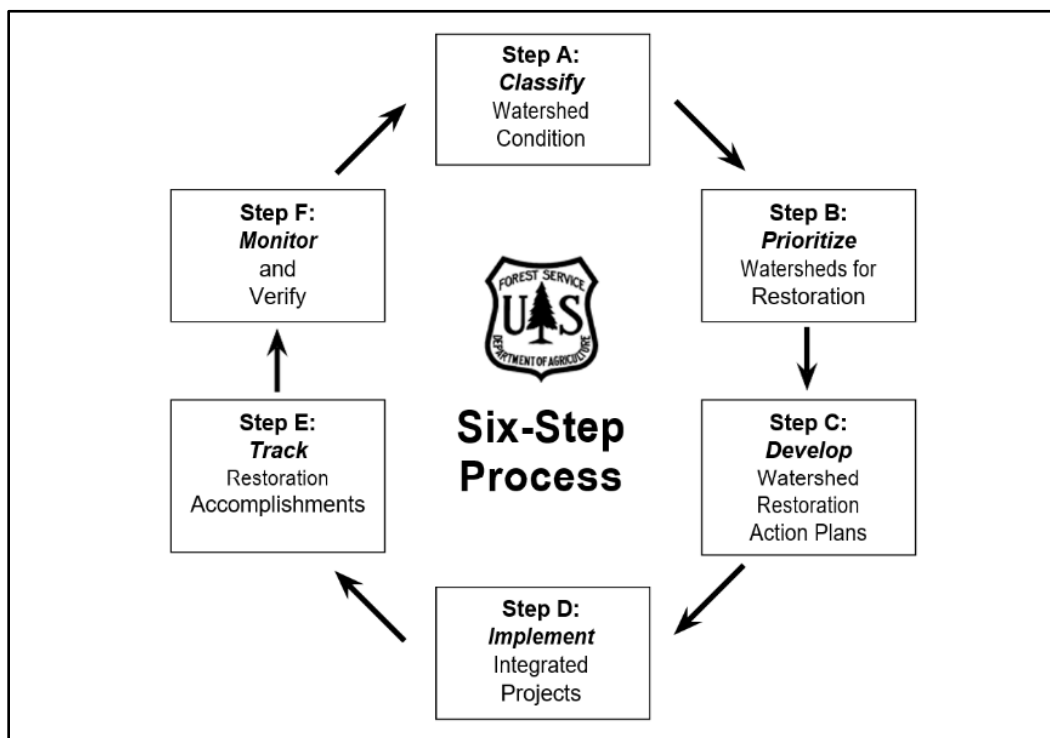


Figure 1. Comprehensive watershed improvement process

## Monitoring Item (ii): Status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems

Table 2. Monitoring information for item (ii)

| Monitoring Question  | Plan Component(s)  | Indicators  | Data collection interval | Data Source / Partner  |
|--|--|---|--------------------------|--|
| Question 3: Following young-growth treatments, is the change in understory vegetation providing improved habitat for key old-growth associated species?  | Wildlife Habitat Improvement (WILD2, Forest Plan p. 4-93)  | Assessment of understory species composition  | Annual                   | Silviculture inventory (FACTS), wildlife inventory, Tongass-wide young-growth study (TWYGS), research studies, GIS, NEPA decisions |
| Question 6: Are any effects on biodiversity resulting from the cumulative change in the extent of old growth by biogeographic province, and are those effects consistent with the estimates and intent of the Forest Plan? | Habitat Planning and Coordination (WILD1.II.B, Forest Plan p. 4-93)                              | Changes in the amount of old growth in relation to finer scale classification (such as plant association or high volume strata). Change could include effects of timber harvest, land conveyance, windthrow, insect and disease, climate change, etc. | Annual                   | Silviculture inventory (FACTS), wildlife inventory, Tongass-wide young-growth study (TWYGS), research studies, GIS, NEPA decisions |
| Question 7: Are old growth features retained in the matrix consistent with expectations and is it representative of old growth types across value comparison units (VCUs) and across the Forest?                           | Biodiversity Goals and Objectives (Forest Plan p. 2-3), Wildlife Objectives (Forest Plan p. 2-6) | Amount of retained old-growth structure within managed landscapes (examples include legacy structure, reserve trees, windfirm buffers)  | Annual                   | Silviculture inventory (FACTS), wildlife inventory, Tongass-wide young-growth study (TWYGS), research studies, GIS, NEPA decisions |
| Question 12: Is the natural range and frequency of aquatic habitat conditions maintained?  | Fish Habitat Planning (FISH2.IV and FISH3.I Forest Plan pp.4-10, 4-13)                           | Compliance with Fish Standards and Guidelines   | Annual                   | Field collected data; Forest-wide databases  |

### Monitoring summary and results for item (ii)

#### Questions 3,6,7: Terrestrial Habitat

The Tongass National Forest has been working to improve the value of young growth stands for wildlife habitat and to improve their value for future harvest. This is accomplished using a wide variety of vegetation management activities including pre-commercial thinning and small gap

creation, as described in the Tongass Young Growth Management Strategy ([https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fseprd559973.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd559973.pdf)). Some of the objectives of this strategy include greater integration in meeting multiple resource needs when managing young growth stands and continuing to increase knowledge of young growth management treatments through programs such as the Tongass-wide Young Growth Study (TWYGS). A total of 4,889 acres of precommercial thinning in young growth stands was completed in FY2018 and FY2019 on the Tongass National Forest (Table 3).

A primary finding of the TWYGS project is that simple, age-appropriate precommercial thinning effectively increases understory biomass and improves compositional diversity when compared to not doing vegetation treatments in young Sitka spruce-western hemlock stands in southeast Alaska. Stand tree density negatively affected understory biomass, whereas temperature and precipitation positively interacted to increase biomass. Thinning had an enduring effect on understories, with at least twice as much biomass in thinned versus unthinned stands through year 10 post-treatment.

**Table 3: Young growth stand improvements completed in FY 2018 and 2019, derived from the Forest Service FACTS database.**

| Treatment Type   | FY2018<br>acres | FY2019<br>acres | Total<br>acres |
|--|-----------------|-----------------|----------------|
| Precommercial Thinning   | 3,029           | 1,860           | 4,889          |
| Wildlife Habitat: Create Leave/Uncut Corridors in Precommercial Thinning Units | 135             | 0               | 135            |
| Wildlife Habitat: Create Small Gap Openings (1/8 acre or less)                 | 9               | 0               | 9              |

Effects on biodiversity, based on the cumulative change in old-growth habitat availability by biogeographic province, included timber harvest and land exchange in FY 2018 and 2019. During this time, 986 acres of productive old growth were harvested (Table 4) and 1,205 acres of productive old growth were lost to land exchange.

Much of the timber harvest on the Forest occurred outside of value comparison units (VCUs) that have had concentrated past timber harvest activity and are at risk for not providing the full range of matrix functions to meet the intent of the old growth conservation strategy. Where harvest did occur in high risk VCUs, much of it was exempted from application of legacy standards and guidelines (see Forest Plan pp. 4-86 to 4-87) because of the harvest method used (i.e., single tree selection, group selection cut). Legacy standards and guidelines were applicable to 520 acres in FY 2018 and 338 acres in FY 2019 (Table 5). Legacy standards were maintained in all acres.

The 2017 Alaska Mental Health Trust Authority Land Exchange Act provided for an exchange of 18,000 non-Federal acres to be acquired by the United States, in exchange for disposal of 21,000 Federal Acres to the Alaska Mental Health Trust Authority. The full exchange is expected to be complete in 2021 and to result in the transfer of 8,815 acres of productive old growth to the Alaska Mental Health Trust Authority, including 5,018 acres of high-volume productive old-growth and 2,597 acres of large tree productive old growth on Prince of Wales and Revillagigedo Islands. Inventory data to show acres of productive old growth to be acquired as part of the

exchange is not currently available. The portion of the exchange completed in 2019 included the disposal of 1,205 acres of productive old growth with 750 acres of high-volume productive old growth and 547 acres of large tree productive old growth.

**Table 4: Acres of productive old growth (POG), high-volume productive old growth (HPOG), and large tree productive old growth (SD67) harvested during FY 2018 and FY 2019, by biogeographic province**

| Biogeographic Province   | All POG | HPOG | SD67 |
|--|---------|------|------|
| Etolin Island & Vicinity   | 530     | 350  | 83   |
| North/North Central Prince of Wales Island; Honker Divide; 12 Mile | 457     | 236  | 163  |
| Total  | 986     | 586  | 246  |

**Table 5: Timber sales where legacy standards and guidelines were applied, FY 2018 and FY 2019**

| Timber Sale                     | Legacy VCU | Original Stand > 20 Acres | Legacy Retained | Legacy Rationale             |
|---------------------------------|------------|---------------------------|-----------------|------------------------------|
| 2018: Big Thorne Stewardship    | 5810       | Yes                       | Yes             | Single Tree Selection Cut    |
| 2018: Big Thorne Stewardship    | 5830       | Yes                       | Yes             | Single Tree Selection Cut    |
| 2018: Big Thorne Stewardship    | 5850       | Yes                       | Yes             | Single Tree Selection Cut    |
| 2018: Frenchie Stewardship IRTC | 4570       | Yes                       | Yes             | Leave Trees Wildlife Reasons |
| 2019: Mud Duck                  | 5790       | No                        | Yes             | Less than 20 acres           |
| 2019: Big Thorne Stewardship    | 5972       | Yes                       | Yes             | Leave Trees Wildlife Reason  |
| 2019: Buck Rush                 | 5972       | Yes                       | Yes             | Group selection cut          |
| 2019: Frenchie Stewardship IRTC | 4570       | Yes                       | Yes             | Group selection cut          |

### **Question 12: Aquatic Habitat**

As part of a multi-year monitoring project, 12 culverts spanning fish streams on Chichagof and Wrangell Islands were monitored in 2018 to assess their ability to provide fish passage. These culverts were chosen from 285 culverts Forest-wide that were installed, reinstalled, or retrofitted in fish streams between 1998 and 2019. To date, 258 unique stream crossings have been monitored as part of this project, comprising approximately 91 percent of the culverts recently installed, reinstalled, or retrofitted in fish streams on the Tongass National Forest. The majority (67 percent) of the 258 stream crossings monitored were installed between 2000 and 2005. Twenty-nine culverts that were installed between 2012 and 2015 using a simplified stream simulation (SSS) design were monitored annually between 2012 and 2015, and seven were resurveyed in 2018.



A culvert's ability to provide fish passage is classified as Green, Yellow, Gray, or Red. Eighty percent of the culverts monitored to date are Green or Yellow, meaning they have met the acceptable passage criteria consistent with State of Alaska juvenile fish passage standards and are assumed to provide unimpeded juvenile and adult fish passage. (Those classified as yellow have potentially insufficient depth of bedload material in the bottom of the culvert, which elevates concerns about the ability of the bedload to be retained. These culverts are on a more frequent inspection schedule to assure that bedload is retained.) Seven percent of the culverts are Gray, meaning they require more comprehensive analysis to determine passage status. The remaining 13 percent are Red, meaning they are assumed not to provide adequate passage at all desired stream flows (Figure 2).

Fifty-five percent of the monitored culverts used stream simulation designs, 11 percent were installed using an simplified stream simulation (SSS) design, 18 percent utilized a no-slope design, 2 percent are hydraulic designed, 3 percent were retrofits, and 11 percent were incorrectly designed without adequate fish passage considerations. Three percent of the stream simulated designed culverts are Red. Seventeen percent of the SSS designed culverts are Red. None of the 47 installed no-slope designed culverts are Red. One of the retrofits is Red but needs re-evaluation. All five of the hydraulic designed culverts require more comprehensive analysis to determine passage status. Twenty-nine culverts were installed without discernable fish passage design considerations and as a result 24 (83%) of them are Red (Figure 2).

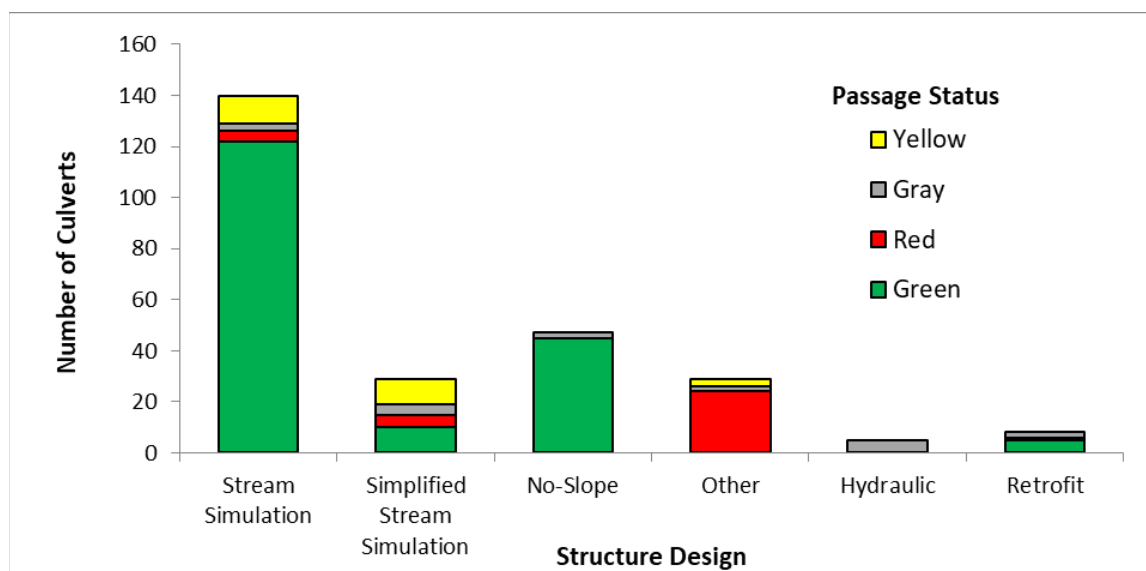


Figure 2. Design type and juvenile fish passage status of monitored culverts

Of the culverts that were determined to be consistent with passage standards, most were ideal installations. They contained appropriate bedload depth and material, were not blocked with debris, were not perched at the outlet and did not constrict the channel or cause any undesirable channel modifications.

Thirty-four (13 percent) of the 258 culverts monitored to date and assessed via the Alaska Region juvenile fish passage criteria matrix are classified as Red and may to some extent impede the passage of juvenile fish for the following reasons:

1. Seventeen of the 34 red culverts were known fish stream crossings requiring passage considerations but were installed without fish passage design considerations due to project personnel apparently being unaware of aquatic passage objective.
2. Seven of the red crossings were installed without passage considerations because they were not identified as crossings requiring fish passage until after construction was completed.
3. Five of the culverts not meeting juvenile passage standards are SSS designed culverts and have not accumulated enough bedload within them to provide adequate roughness and moderate water velocity or were undersized and constricting the channel. These culverts will potentially continue to accumulate bedload over time.
4. One of the Red culverts is a stream simulated designed culvert that has sections completely scoured free of bedload.
5. One stream simulated culvert is not providing adequate passage because it is blocked by woody debris
6. One stream simulated culvert was not installed per plans so there is a lack embedment depth and substrate at inlet causing it to be Red for gradient. This culvert is likely providing adequate passage now but will need frequent re-inspections to monitor that it is not losing bedload due to gradient and lack of embedment at inlet
7. One stream simulated open bottom culvert that was installed in 2000 has had scour around the concrete footers creating a perch at the outlet
8. One culvert is Red after being retrofitted with a structure placed near the outlet to backwater the culvert. The entire culvert is not backwatered at this site and re-evaluation is needed since the last survey occurred in 2001.

To reduce the significant costs associated with designing and installing culverts that provide fish passage, the Tongass National Forest evaluated the SSS design. Similar to stream simulation design, the goal of the simplified design is to create fish passage conditions in the culvert that attempt to mirror that of the natural channel as much as possible by matching stream gradient, width, and bedload roughness. Compared to stream simulation design, SSS design typically involves less comprehensive stream survey and engineering analysis and relies to some degree on natural stream bedload mobilization to infill the culvert. Due to these differences there may be an inherent greater risk of not achieving or maintaining fish passage and greater associated maintenance costs.

Results from this monitoring indicate that 5 (17 percent) of the 29 installed SSS culverts are red and not meeting juvenile fish passage standards. By comparison, 3 percent of the 140 monitored

stream simulated designed culverts are red. See monitoring reports 2013-2017 for more information and results of SSS monitoring.

### Monitoring Discussion and Findings for Item (ii)

*Based on the monitoring results, are Forest Plan components progressing, trending, or maintaining as desired or anticipated? Is there a need to change the Forest Plan?*

- Forest plan components related to this monitoring item are progressing as anticipated.
- There is no need to change Forest Plan direction related to this monitoring item (ii) at this time.

*Did any Forest Service management activities or other events in the plan area positively or negatively influence monitoring results? Is there a need to change management activities?*

- Yes, vegetation treatments, the Alaska Mental Health Trust land exchange, and culvert replacements affected monitoring results.
- There is no need to modify management activities at this time.

*Did monitoring results provide all the information necessary to answer the monitoring question? Is there a need to change the Plan Monitoring Program?*

- Monitoring results provide necessary information. There is no need to modify our current Plan Monitoring Program at this time.

*Do the monitoring results show trends or values not anticipated? Is there a need to develop an assessment related to this monitoring item?*

- The monitoring results do not show any unanticipated trends or values. There is no need to develop an assessment at this time.

### **Monitoring Item (iii): The status of focal species to assess the ecological conditions required under § 219.9**

Focal species have not yet been identified for the Forest, therefore there is nothing to report on the status of focal species.

**Monitoring Item (iv): The status of a select set of 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.**

**Table 6: Monitoring information for item (iv)**

| Monitoring Question   | Plan Component(s)  | Indicators  | Data collection interval | Data Source / Partner  |
|---|--|---|--------------------------|--|
| Question 17: Is current management providing for ecological conditions to support federally listed threatened or endangered species, and Alaska Region sensitive species? | Threatened, Endangered, and Sensitive Plants and Wildlife Species (PLA1 and WILD4, Forest Plan p. 4-39 and 4-94) | Changes in habitats for listed threatened or endangered species and Alaska Region sensitive species; changes to listed species or critical habitat; biological evaluation findings / number of consultations; mitigation measures implemented / number of populations located | Annual                   | Wildlife inventory and monitoring; population trend data from various sources (ADF&G, Breeding Bird Survey, Alaska Landbird Monitoring); TNF Rare Plant surveys; project BE/BA analyses; NEPA documents – review mitigation measures and S&G implementation; GIS |

**Monitoring summary and results for item (iv)**

Forest Service activities that result in “may affect” determinations (Table 7-Table 9) are related either to potential disturbance associated with the connected actions of marine traffic (acoustic disturbance and increased potential for vessel strikes) or log transfer facility (LTF) reconstruction and use activities (possibility of acoustic disturbance, habitat alteration, and pollution), entanglement from mooring lines, and accidental glycosphate herbicide exposure. Forest Plan standards and guidelines direct the Tongass National Forest to prevent or reduce potential harassment of Steller sea lions and humpback whales due to activities carried out by or under the jurisdiction of the Forest Service. Project actions follow established best management practices (BMPs) and specific mitigation measures identified by project type. Negative effects from accidental herbicide spills are expected to be mitigated through specific project design features.

No projects had significant impacts on threatened or endangered species and no projects required formal consultation with the U.S. Fish and Wildlife Service or National Marine Fisheries Service. No projects had adverse effects on populations of sensitive species that could lead to Federal listing. Surveys conducted for Sensitive Species are listed in Table 10.

Species of Conservation Concern have not been identified for the Tongass National Forest. The Forest needs to identify species of conservation concern to fully respond to Monitoring Item iv.

**Table 7: Number of proposed projects on the Tongass National Forest in FY 2018 and 2019 for which the biological assessment made a “may affect but not likely to adversely affect” or “likely to adversely affect” determination for federally listed wildlife species or critical habitat**

| Determination                              | Humpback Whale Mexico DPS | Steller Sea Lion Western DPS | Stellar Sea Lion Critical Habitat | Short-tailed Albatross | Sperm Whale | Fin Whale |
|--|---------------------------|------------------------------|-----------------------------------|------------------------|-------------|-----------|
| May affect, not likely to adversely affect | 3                         | 2                            | 1                                 | 0                      | 1           | 1         |
| May affect, Likely to adversely affect     | 0                         | 0                            | 0                                 | 0                      | 0           | 0         |

**Table 8. Number of proposed projects on the Tongass National Forest in FY 2018 and 2019 for which the biological assessment made a “may affect but not likely to adversely affect” or “likely to adversely affect” determination for federally listed fish species.**

| Determination                              | Chinook (6 listed ESUs) | Steelhead (5 listed ESUs) | Lower Columbia River Coho Salmon | Columbia River chum salmon | Snake River sockeye salmon | Southern DPS Green Sturgeon |
|--|-------------------------|---------------------------|----------------------------------|----------------------------|----------------------------|-----------------------------|
| May affect, not likely to adversely affect | 2                       | 2                         | 1                                | 1                          | 1                          | 1                           |
| May affect, Likely to adversely affect     | 0                       | 0                         | 0                                | 0                          | 0                          | 0                           |

**Table 9: The number of proposed projects on the Tongass National Forest in FY 2018 and 2019 for which the biological evaluation made a “may adversely affect individuals but not populations” and “likely to result in loss of viability” determination for Regional Forester Sensitive Species**

| Determination  | Queen Charlotte Goshawk | Black Oystercatcher | Kittlitz’s Murrelet | Aleutian Tern |
|--|-------------------------|---------------------|---------------------|---------------|
| May adversely affect individuals, but not likely to result in loss of viability in the planning area, nor cause a trend toward Federal listing | 10                      | 1                   | 0                   | 0             |
| Likely to result in a loss of viability in the planning area or in a trend toward Federal listing  | 0                       | 0                   | 0                   | 0             |



**Table 10: Surveys conducted for Sensitive Species in FY 2018 and 2019 across the Tongass National Forest**

| Project  | Survey Type <sup>1</sup> | Sensitive Species                        | FY         | Sensitive Species Detections     |
|--|--------------------------|--|------------|----------------------------------|
| Prince of Wales Landscape Level Analysis Project | BAS                      | Queen Charlotte Goshawk                  | 2018, 2019 | 4-Individuals<br>2-Nests         |
| Central Tongass Project                          | BAS                      | Queen Charlotte goshawk                  | 2018, 2019 | 4 individuals<br>1 nest          |
| South Revilla Integrated Resource Project        | BAS                      | Queen Charlotte goshawk                  | 2019       | 1 individual                     |
| Upper Appleton Creek Fish Passage                | BAS                      | Queen Charlotte goshawk                  | 2019       | 0                                |
| South Revilla Integrated Resource Project        | Standard grid            | edible thistle                           | 2019       | 0.9 survey acres,<br>plant found |
| Central Tongass Project                          | Standard grid            | mountain lady's slipper                  | 2018       | 0.6 survey acres,<br>plant found |
| Prince of Wales Landscape Level Analysis Project | Standard grid            | lesser and greater yellow lady's slipper | 2018       | plant found                      |
| Prince of Wales Landscape Level Analysis Project | Standard grid            | lesser round-leaved orchid               | 2018, 2019 | 440 survey acres,<br>plant found |
| Prince of Wales Landscape Level Analysis Project | Standard grid            | slender-spire orchid                     | 2018       | 8 survey acres,<br>plant found   |

<sup>1</sup>BAS: broadcast acoustical survey

### Monitoring Discussion and Findings for Item (iv)

*Based on the monitoring results, are Forest Plan components progressing, trending, or maintaining as desired or anticipated? Is there a need to change the Forest Plan?*

- Forest plan components related to this monitoring item are progressing as anticipated.
- There is no need to change Forest Plan direction related to this monitoring item (iv) at this time.

*Did any Forest Service management activities or other events in the plan area positively or negatively influence monitoring results? Is there a need to change management activities?*

- Project-specific analyses and survey work provided additional information for monitoring.
- There is no need to modify management activities at this time.

*Did monitoring results provide all the information necessary to answer the monitoring question? Is there a need to change the Plan Monitoring Program?*

- The Tongass National Forest needs to identify species of conservation concern to fully respond to Monitoring Item iv.

*Do the monitoring results show trends or values not anticipated? Is there a need to develop an assessment related to this monitoring item?*

- The monitoring results do not show any unanticipated trends or values. There is no need to develop an assessment at this time.

### **Monitoring item (v): The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives**

Recreation on our National Forests is more than just camping, fishing, and hiking. Research has shown that people choose a specific setting for each of these activities to realize a desired set of experiences. For example, camping in a large undeveloped setting with difficult access and few facilities offers a sense of solitude, challenge, and self-reliance. In contrast, camping in a setting having easy access and highly developed facilities offers more comfort, security, and social opportunities. The Recreation Opportunity Spectrum (ROS) offers a framework for understanding these relationships and interactions. The Forest Plan includes seven ROS classes: Urban (U), Rural (R), Roaded Modified (RM), Roaded Natural (RN), Semi-primitive Motorized (SPM), Semi-Primitive Non-Motorized (SPNM), and Primitive (P). Maintaining a broad spectrum of these classes provides people with choices. There are seven indicators that have been identified from research on visitor preferences that are used to help determine the possible effects on ROS settings from project implementation. The indicators are access, remoteness, visual characteristics, site management, visitor management, social encounters, and visitor impacts.

The Tongass National Forest maintains two large visitor centers, 189 cabins and shelters, more than 460 miles of non-motorized trails, and more than 500 miles of motorized trails for use by local residents and visitors. Along with this infrastructure, recreation use of the Tongass National Forest is facilitated through outfitters and guides. These services range from accommodation of transport to cabins and shelters, to multi-day big game hunting experiences in the most remote locations of the Tongass National Forest.

**Table 11: Monitoring questions for item (v)**

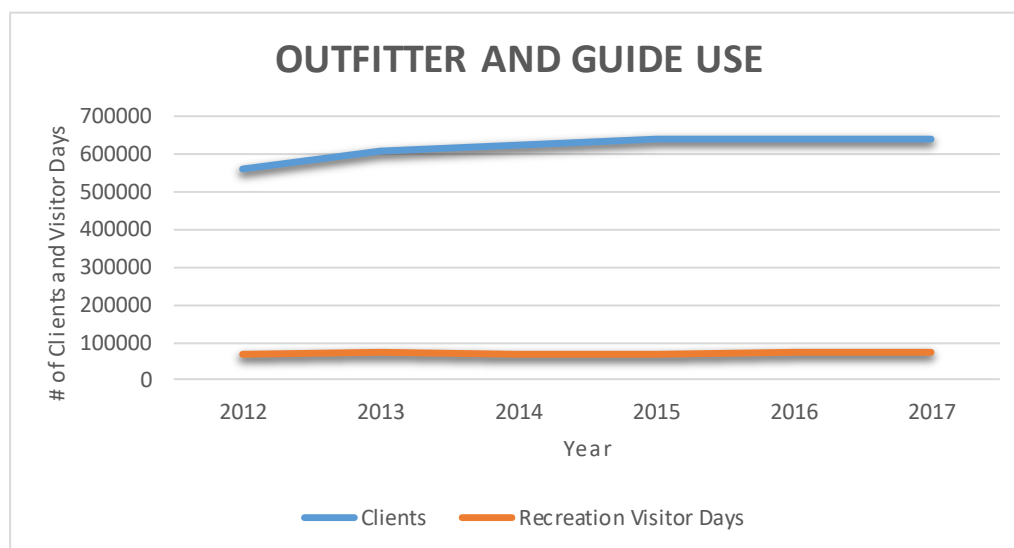
| <b>Monitoring Item</b>   | <b>Plan Component(s)</b>   | <b>Associated Indicators</b>   | <b>Data collection interval (dates)</b> | <b>Data Source / Partner</b>  |
|--|--|--|---|---|
| Question 33: Are areas of the Forest being managed in accordance with the Recreation Opportunity Spectrum (ROS) class in Forest-wide standards and guidelines? | Recreation Use Administration (REC3 I, II, III, Appendix I, Forest Plan pp. 4-43 to 4-45, I-1) | Compliance with Forest Plan guidelines, including those specific to numbers of encounters allowed in each LUD / ROS class. | Annual                                  | Recreation inventory and monitoring; ROS updates in GIS<br>National Visitor Use Monitoring (NVUM) Program |

| Monitoring Item  | Plan Component(s)  | Associated Indicators   | Data collection interval (dates) | Data Source / Partner                          |
|--|--|---|----------------------------------|--|
| Question 34: What is the status and trend of visitor use and satisfaction? | Recreation and Tourism Goals and Objectives (Forest Plan p. 2-4) | Annual Visitation Estimates, Percent Satisfied, Site Types visited, Distance Travelled. | 5 year                           | National Visitor Use Monitoring (NVUM) Program |

## Monitoring summary and results for item (v)

### *Outfitter and Guide Use*

Due to database transition the FY2018 and 2019 outfitter/guide counts are not currently available. However, prior data indicate a level trend (Figure 3). No areas permitted for outfitter/guide use were reported as exceeding the established ROS class. Guides provided nature touring, hiking, flightseeing, wildlife viewing, freshwater fishing, wilderness adventures, and big game guiding. Currently, this use is authorized through existing environmental analysis that is consistent with the Forest Plan direction for providing a level of commercial uses appropriate to capacity.



**Figure 3: Outfitter and guide use trend data from 2012-2017.**

### *Developed Recreation Facilities and Trails*

In 2018 a sustainable cabin working group was put together to evaluate the cabin system on the Tongass National Forest. The last evaluation occurred in 2013. A sustainable cabin strategy was finalized in 2020 that lays out objectives for the next 10-15 years through cabin decommission, relocation, and new cabin construction.

Developed recreation site use on the Forest indicates a level trend through 2017. Data for 2018 and 2019 are not currently available. No areas were reported as exceeding the established ROS class.

### ***Non-developed Recreation Sites***

Approximately 550 non-developed recreation sites have been recorded within Tongass National Forest wilderness areas. Monitoring of 262 non-developed recreation sites within Chuck River, Endicott River, Kootznoowoo, Kuiu, Misty Fjords National Monument, Petersburg Creek-Duncan Salt Chuck, Russell Fjord, South Baranof, South Etolin, Stikine-LeConte, Tebenkof Bay, Tracy Arm-Ford's Terror and West Chichagof-Yakobi Wilderness Areas took place in 2018 and 2019. In general, monitoring indicates that most sites continue to have minimal impacts and that the number of sites is gradually decreasing.

### ***Social Encounter Monitoring***

Social encounter monitoring took place in the Chuck River, Endicott River, Kootznoowoo, Kuiu, Misty Fjords National Monument, Petersburg Creek-Duncan Salt Chuck, Russell Fjord, South Baranof, South Etolin, Stikine-LeConte, Tebenkof Bay, Tracy Arm-Ford's Terror and West Chichagof-Yakobi Wilderness Areas in 2018 and 2019. Monitoring took place on 105 days with a total of 145 social encounters on National Forest System land or freshwater lakes and 2,406 aircraft/boat encounters, which affect the remoteness indicator.

Monitoring indicates that within wilderness, encounters continue to meet ROS class guidelines but influences from outside the wilderness area (boats and airplanes) continue to impact the visitor experience. Overall, social encounters are well within the primitive ROS class. However, within the Chuck River, Kootznoowoo and Tracy Arm-Ford's Terror Wilderness areas, monitoring indicates that along marine travel ways and under flight routes the ROS class being met is closer to Roded Modified.

National Visitor Use Monitoring is on a 5-year evaluation cycle. The next evaluation will be in FY 2020.

### **Monitoring Discussion and Findings for Item (v)**

***Based on the monitoring results, are Forest Plan components progressing, trending, or maintaining as desired or anticipated? Is there a need to change the Forest Plan?***

- Forest plan components related to this monitoring item are progressing as anticipated.
- There is no need to change Forest Plan direction related to this monitoring item (v) at this time.

***Did any Forest Service management activities or other events in the plan area positively or negatively influence monitoring results? Is there a need to change management activities?***

- Forest Service management activities did not influence the monitoring results.
- There is no need to modify management activities at this time.

***Did monitoring results provide all the information necessary to answer the monitoring question? Is there a need to change the Plan Monitoring Program?***

- There may be a need to revise this monitoring item. Although the Forest Plan components are appropriate and ROS class guidelines set limits, the Forest Plan also allows for changing the ROS class to meet changing conditions rather than placing further restrictions on visitors when ROS class is violated.

- The Forest should consider switching to a 5-year summary of the National Visitor Use Monitoring data to completely align with the intent of Item V.

*Do the monitoring results show trends or values not anticipated? Is there a need to develop an assessment related to this monitoring item?*

- The monitoring results do not show any unanticipated trends or values. There is no need to develop an assessment at this time.

## **Monitoring item (vi): Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area**

**Table 12: Monitoring question for item (vi)**

| <b>Monitoring Item</b>  | <b>Plan Component(s)</b>   | <b>Associated Indicators</b>  | <b>Data collection interval (dates)</b> | <b>Data Source / Partner</b>  |
|---|--|---|---|---|
| Question 2: What are the measurable changes to climate change and other stressors that may be affecting the Forest? | Climate Change and other stressors (AIR1 Forest Plan p. 4-3), Invasive Species (Forest Plan p. 4-22) | Changes in tree species composition as measured by basal area cover, and other changes including growth, sapling recruitment, harvest, snags, decay, and other relevant measures (TIM2)<br><br>See also the "Invasive Species" and "Insects and Disease" sections as possible "other stressors" | 5 year                                  | Inventory data from FIA permanent plots established in 1995–2003 and remeasured periodically are used to provide estimates of tree species composition and other factors. |

### **Monitoring summary and results for item (vi)**

Question 2 of the Forest Monitoring Plan was not monitored for FY 2018-2019 because it is measured every 5 years. The climate change vulnerability assessments are identifying other indicators that may be appropriate for Forest Plan climate change monitoring. During the next monitoring plan revision those indicators should be considered for inclusion in the Forest Plan Monitoring program.



## Monitoring items (vii): Progress toward meeting the desired conditions and objectives in the plan, including providing for multiple use opportunities

**Table 13: Monitoring questions for item (vii)**

| Monitoring Item  | Plan Component(s)  | Associated Indicators   | Data collection interval (dates) | Data Source / Partner   |
|--|--|---|----------------------------------|---|
| Question 20:<br>Are the soil and water conservation practices as described through the Best Management Practices and site-specific prescriptions implemented and effective in minimizing soil erosion and maintaining the State Water Quality Standards? | Soil and Water: State water quality standards (SW3 I.A, Forest Plan p. 4-61) | Compliance and implementation of BMPs and the State Water Quality Standards | Annual                           | Field-collected data; Forest wide data bases; BMP Soil and Water Monitoring; watershed analysis |

### Monitoring summary and results for items (vii)

The Forest Plan emphasizes BMP monitoring of timber harvest, roads, and recreation activities. In addition to Forest Plan monitoring, the Tongass National Forest was assigned a national BMP program target for FY 2018 and FY 2019 to monitor at least one protocol in each of the activities identified in the National Core BMP Technical Guide

([https://www.fs.fed.us/naturalresources/watershed/pubs/FS\\_National\\_Core\\_BMPs\\_April2012.pdf](https://www.fs.fed.us/naturalresources/watershed/pubs/FS_National_Core_BMPs_April2012.pdf)), with the exception of Rangeland Management and Wildland Fire Chemical Use, Minerals, and Water Uses Management were evaluated in FY 2018. Annual BMP monitoring reports were completed for FY 2018 and 2019 and are available upon request.

FY 2018 monitoring efforts evaluated 11 sites across 5 Ranger Districts representing 7 activities and 9 monitoring protocols. For the national target, 10 sites were randomly selected from Forest populations following national protocols. Random sample selection is required to provide statistically valid inferences about BMP implementation and effectiveness at the national scale. The additional Camp Coogan Bay site was intentionally selected for review of the current special uses permit and the Sitka Ranger District's interest and concern of resource impacts.

Best management practices (BMP's) were evaluated at the project level for implementation and effectiveness. Most required BMPs were implemented and effective in FY 2019. Exceptions are described in this report along with associated corrective and adaptive management actions and their completion status (Table 14).

Corrective actions respond directly to problems or deficiencies observed during evaluations. They may be either immediate or longer term, and usually apply specifically to the evaluation site. Adaptive management actions apply more broadly to changes in procedures to improve and maintain nonpoint source pollution control and the protection of water quality.

FY 2019 monitoring efforts evaluated four sites across four Ranger Districts representing four different activities. Three sites were randomly selected from Forest activity sites following national protocols. The fourth site, Dude Mountain Trail, was intentionally selected for review of the current trail condition and the Ketchikan Misty Fjords Ranger District's concern for resource

impacts. Evaluations for aquatic ecosystems and roads were planned for FY 2019 however they were slightly delayed and were completed in the first month of FY 2020.

**Table 14: Corrective actions identified through BMP monitoring in FY 2018 and 2019**

| Site                    | Actions   | Monitoring Year | Status   |
|-------------------------|---|-----------------|--|
| Kensington<br>JU17_036  | The minerals shop will document the turbidity and further evaluate the need to instill corrective actions/establish a means of diverting the turbid sediments.  | 2018            | Hydrology and Minerals specialists are working to address the action item.     |
| Lava Falls<br>Fish Pass | Two drainage gates are to be installed, one at the end of the upper raceway and another in the resting pool to allow for flushing the system of accumulated sediment. This will replace the existing drainage outlet in the resting pool. | 2018            | Installed in 2019 season.  |
| Dude<br>Mountain Trail  | Implement 2019 TRACS maintenance list items, specifically those identified to improve water quality BMP effectiveness   | 2019            | KMRD working to identify alternative sources of funding for survey and design. |

#### Monitoring Discussion and Findings for Items (vii)

*Based on the monitoring results, are Forest Plan components progressing, trending, or maintaining as desired or anticipated? Is there a need to change the Forest Plan?*

- Forest plan components related to this monitoring item are progressing as anticipated.
- There is no need to change Forest Plan direction related to this monitoring item (vii) at this time.

*Did any Forest Service management activities or other events in the plan area positively or negatively influence monitoring results? Is there a need to change management activities?*

- Forest Service management activities did not influence the monitoring results.
- There is no need to modify management activities at this time.

*Did monitoring results provide all the information necessary to answer the monitoring question? Is there a need to change the Plan Monitoring Program?*

- Monitoring results provided the necessary information.
- There is no need to modify the Plan Monitoring Program at this time.

*Do the monitoring results show trends or values not anticipated? Is there a need to develop an assessment related to this monitoring item?*

- The monitoring results do not show any unanticipated trends or values. There is no need to develop an assessment at this time.

## Monitoring Item (viii): The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land

**Table 15. Monitoring questions for item viii**

| Monitoring Item   | Plan Component(s)                                       | Associated Indicators   | Data collection interval (dates) | Data Source / Partner   |
|---|---|---|----------------------------------|---|
| Question 19: Are the soil conservation practices implemented and effective in meeting Alaska Regional Soil Quality Standards and maintaining soil productivity? | Watershed Resources Planning (SW3, Forest Plan p. 4-61) | Compliance and implementation of the Region 10 Soil Quality Standards | Annual                           | Field-collected data; Forest wide data bases; BMP Soil and Water Monitoring; watershed analysis |

### Monitoring summary and results for items (viii)

In fiscal years 2018 and 2019, soil quality monitoring involved (1) monitoring effects to soils on the Ocean Boulevard Wildlife habitat Improvement Project (Foss 2018), (2) continuing to monitor the amount of soil disturbance caused by off-highway vehicles (OHV) used for meat (game) retrieval on the Yakutat Forelands (Catterson and Oehlers 2018, and 2019) and documenting the natural recovery of those disturbances over time, and (3) An inventory of landings and rock quarries associated with 70 miles of road in three watersheds on Prince of Wales Island (Reynolds and Landwehr 2019). The soils group also summarized soil quality monitoring data and landslide inventory data in two reports for estimating the effects of proposed activities on soils and slope stability (Landwehr 2018a and 2018b).

The three treated stands on the Ocean Boulevard Wildlife Habitat Improvement Project met Soil Quality Standards.

The OHV trail monitoring at Yakutat continues to find that vegetation and soil recovery is rapid (less than a year) on most sites. Resilient sites are those with some woody vegetation that prevent rutting by OHV. A few sites where soils and vegetation did not recover fully are sites with sensitive soils (soils that are wet and lack woody vegetation). The district has tried signing those sites, recommending hunters pack out their moose rather than use OHVs on sensitive soils. More hunter education is recommended.

The Landing and Rock Quarry inventory provided a refined estimate of the aerial extent of landings and rock quarries to address concerns that the Forest Service was not adequately accounting for these disturbed areas in effects analyses for NEPA documents. The report also documented wood waste associated with landings, which is generally considered detrimental to underlying soils.

The first report created by Landwehr in 2018 summarized existing soil quality monitoring data and developed estimates of detrimental soil conditions resulting from the implementation of a variety of ground disturbing activities proposed for the two large landscape assessment projects on the Tongass National Forest. The second report summarized existing landslide inventory data

and developed estimates for future landslide activity associated with the activities proposed for the large landscape assessment projects.

## Monitoring Discussion and Findings for Items (viii)

*Based on the monitoring results, are Forest Plan components progressing, trending, or maintaining as desired or anticipated? Is there a need to change the Forest Plan?*

- Forest plan components related to this monitoring item are progressing as anticipated.
- There is no need to change Forest Plan direction related to this monitoring item (viii) at this time.

*Did any Forest Service management activities or other events in the plan area positively or negatively influence monitoring results? Is there a need to change management activities?*

- Specific monitoring studies related to land management activities contributed additional information for this item.
- There is no need to modify management activities at this time.

*Did monitoring results provide all the information necessary to answer the monitoring question? Is there a need to change the Plan Monitoring Program?*

- Monitoring results provided the necessary information.
- There is no need to modify the Plan Monitoring Program at this time.

*Do the monitoring results show trends or values not anticipated? Is there a need to develop an assessment related to this monitoring item?*

- The monitoring results do not show any unanticipated trends or values. There is no need to develop an assessment at this time.

## Monitoring Evaluation Recommendations

The Forest Plan monitoring program is meant to “enable the responsible official to determine if a change in plan components or other plan content that guide management of resources on the plan area may be needed” (36 CFR 219.12, Table 16).

**Table 16: Summary of findings and results for the eight required monitoring items in 36 CFR 219.12 (a)(5) for the Plan Monitoring Program.**

| Monitoring Item and Plan Questions                           | Year Updated | Do monitoring results demonstrate intended progress or trend toward Plan targets?1 | Based on the evaluation of monitoring results, may changes be warranted? | If a change may be warranted, where may the change be needed? 2 |
|--|--------------|--|--|---|
| (i) The status of select watershed conditions. (Question 21) | 2019         | Yes  | No   | N/A   |

| Monitoring Item and Plan Questions  | Year Updated | Do monitoring results demonstrate intended progress or trend toward Plan targets? <sup>1</sup> | Based on the evaluation of monitoring results, may changes be warranted?               | If a change may be warranted, where may the change be needed? <sup>2</sup> |
|---|--------------|--|--|--|
| (ii) The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems. (Questions 3, 6, 7, and 12)  | 2019         | Yes  | No   | N/A  |
| (iii) The status of focal species to assess ecological condition required under 36 CFR 219.9.   | N/A          | C-The Tongass National Forest has not yet designated focal species                             | Yes, need to designate focal species.  | Monitoring Program   |
| (iv) The status of select ecological conditions required under 36 CFR 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. (Question 17) | 2019         | Yes  | Yes, Need to designate species of conservation concern.                                | Monitoring Program   |
| (v) The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives. (Questions 33 and 34)   | 2019         | Yes  | Yes, need to review ROS class changes. And include NVUM evaluation results in FY 2020. | Monitoring Program   |
| (vi) Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area. (Question 2)  | 2016         | A-Yes, the monitoring is based on a 5-year review of FIA data. The last review was in 2014.    | Yes, the vulnerability assessments are identifying other potential indicators          | Monitoring Program   |
| (vii) Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities. (Plan Questions 19 and 20)   | 2019         | Yes  | No   | N/A  |
| (viii) The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land. (Plan Question 19)  | 2019         | Yes  | No   | N/A  |

<sup>1</sup> (A) Interval of data collection is beyond this reporting cycle; (B) more time/data are needed to understand status or progress of the plan component; (C) methods/results are inadequate to answer monitoring question (C).



## Appendix- Summary of other Monitoring Questions

### **Question 1: Is air quality being maintained?**

Juneau has continued its maintenance status for coarse particulate matter (PM<sub>10</sub>) since 2013 and fine particulate matter (PM<sub>2.5</sub>) since 2010. New regulations for both particulates were strengthened in 2006 by the Environmental Protection Agency. Mendenhall Glacier Visitor Center was monitored for PM<sub>10</sub> in 2019 and PM<sub>2.5</sub> in 2018 using an Environmental Beta-Attenuation Mass Monitor. Particulate measurements were below National Ambient Air Quality Standards.

### **Question 11: Are the trends in abundance of Dolly Varden char, Cutthroat trout, and Coho salmon related to changes in habitat associated with forest management, climate change or other factors?**

In 2018, Coho salmon escapements met or exceeded the desired escapement objectives for 10 of the 12 monitored systems in Southeast Alaska with formal escapement goals in 2018 (ADF&G 2019). Auke Creek dropped to its lowest spawner escapement on record (since 1980) at 146, well outside of the minimum base escapement goals range of 200-500 spawners. Berners River was just below the base escapement goals range of 3,600-8,100, with 3,550. The Tsiu/Tsivat Rivers, Ketchikan and Sitka Survey Index areas exceeded their respective base escapement goals.

In 2019, Coho salmon escapements met or exceeded desired objectives for 10 of the 12 currently monitored systems in Southeast Alaska with formal escapement goals. Montana Creek escapement came in at an all-time low, well below the minimum goal. No survey was completed on Peterson Creek in 2019 due to weather conditions. In 2017, spawner escapement dropped to its lowest recorded with 20 adult Coho recorded, well below the seasonal escapement goal of 100-250 spawners, and the 2018 count was just inside the minimum goal range for the first time since 2015. Sitka Survey Index areas Situk and Berners River exceeded their respective base escapement goals.

Longer term monitoring data including fish numbers, in-channel habitat measures, and landscape scale measures in sample watersheds are currently being analyzed by statisticians at the U.S. Forest Service Pacific Northwest Research Station. Analysis and reporting is expected to be complete in 2021. No changes to Forest Plan standards and guidelines are recommended at this time. Future monitoring of focal species will be determined as described in Monitoring Item iii.

### **Question 13: Is riparian vegetation maintained or restored to a condition that supports key riparian functions?**

Fiscal years 2018 and 2019 were the 19th and 20th consecutive years that windthrow within stream buffers was monitored. There are 261 monitored stream buffers generally located in the southern half of the Forest where most recent timber harvest has occurred. Monitored buffers are located on 5 ranger districts and are associated with 35 timber sales and 130 harvest units that were harvested between 2000 and 2007. The sample population includes the majority of riparian management areas (RMAs) associated with harvest activity on the Tongass National Forest during this period. Monitoring protocol stipulates that buffers be monitored annually for the first

5 years after harvest and then again 10 and 15 years after harvest. During 2018 and 2019, the 38 buffers associated with units harvested in 2003 and 2004 were resampled.

The orientation of buffers is well represented and varies from 16 buffers with northwest exposure orientations to 41 each with a west and east exposure orientation. Approximately 58 percent of the buffers are adjacent to Class III streams (non-fish bearing, water quality concern streams). The remaining 42 percent of the buffers are adjacent to Class I or II streams (anadromous and resident fish bearing streams). Approximately 35 percent of the buffers are associated with streams that have buffers on both sides of the stream and 65 percent are associated with streams that only have a buffer on one side of the stream. To date, 94 of the 261 buffers have had windthrow analyzed for the first 5, 10, and 15 years post-harvest.

Results from the 94 buffers have shown that post-harvest windthrow is present in 52 (55%) of the 94 buffers. The distribution of the cumulative amount of windthrow is not normally distributed and is heavily skewed toward the left tail or toward zero percent windthrow. The mean amount of windthrow in the buffers is 5.3% and the median is 0.6%. The amount of windthrow is expressed as the cumulative number of trees windthrown divided by the original number of standing trees in the buffer. The cumulative windthrow mortality in the buffers range from 0 to 70 percent. Forty-five percent of the buffers have no windthrow, 77 percent have 5% or less, 83 percent have 10% or less, and 99 percent of buffers have 35% or less windthrow.

The windthrow mortality measured in buffers adjacent to harvest units has not been compared to that found naturally within riparian areas adjacent to un-harvested forest stands (control sites). Low elevation aerial images of unharvested forest stands up and downstream of many of the monitored buffers have been obtained and will be used as control stands. Upon completion, this comparison will help determine if windthrow has been exacerbated beyond that found within the natural range of variability. cursory observations of these control stands suggest that significantly less windthrow is present within them than in the treatment stands.

**Question 14: What are the population and habitat trends for the following species, and do the trends appear to be related to forest management, climate change, or other factors? Sitka Black-tailed Deer, Marten, Alexander Archipelago Wolf, Brown Bear, Black Bear, Mountain Goat, Bald Eagle?**

Population and habitat trends are currently consistent with Forest Plan expectations (Table 17). Forest Plan standards and guidelines maintain productive old-growth habitats in non-development land use designations (LUDs) and development LUDs (which include portions of the Tongass National Forest open to potential timber harvest). Habitat retained in beach, estuary, and riparian buffers is important to many species, especially the bald eagle, brown bear, black bear, deer, and marten. In addition, thinning activities have the potential to improve wildlife habitat.

The reduction in productive old growth habitat in development LUDs has been less than projected in the Forest Plan. Since 2008, total volume harvested has averaged 32 MMBF annually, only 12 percent of the allowable harvest level of 267 MMBF. The 2008 Forest Plan Record of Decision (USDA Forest Service 2008a, page 20) states that there is no expectation that timber will be harvested at a continuous rate of 267 MMBF over the next planning cycle of 15 years (reference the Biodiversity Ecosystem section). Even if management occurs at maximum allowable levels for 100 years, the implementation of the Forest Plan would result in a moderate to very high

degree of assurance that there would be sufficient habitat to support long-term viability of wildlife species. The conservation strategy provides a good to very good distribution of high quality old-growth reserves over the long term (USDA Forest Service 2008a, page 47).

**Table 17: Summary of population status from the most recently available ADF&G management and harvest reports, breeding bird surveys, and deer pellet counts.**

| Species    | Ketchikan, Prince of Wales and vicinity (GMUs 1A & 2) | Petersburg, Wrangell, Kupreanof, and vicinity (GMUs 1B & 3) | Juneau, Douglas, Haines, Yakutat (GMUs 1C, 1D, & 5) | Admiralty, Baranof, and Chichagof (GMU 4) | Tongass-wide Population Trend |
|------------|---|---|---|---|-------------------------------|
| Wolf       | Stable to increasing                                  | Stable  | Stable  | Not present                               | Stable                        |
| Deer       | Stable to Increasing                                  | Stable  | Stable  | Stable                                    | Stable                        |
| Marten     | Stable  | Stable  | Stable  | Stable                                    | Stable                        |
| Black Bear | Stable  | Stable  | Stable  | Not present                               | Stable                        |

## **Question 16: Are the effects of management activities on subsistence users in rural Southeast Alaska communities consistent with those estimated in the Forest Plan?**

### **Sockeye Monitoring and Escapement Trends**

Sockeye Salmon stocks at Klag Bay, Falls Lake, and Klawock River have been monitored since the beginning of the Fisheries Resource Monitoring Program in 2001. Monitoring on Neva and Hetta Lakes began in 2002 and 2005, respectively. Sitkoh Lake was added to the program in 2010 and Eek Lake was added in 2015. These systems are used to identify long-term trends in Sockeye escapement. Except for Falls and Klawock Lakes, annual Sockeye escapement across these systems has shown a downward trend over the past 5 years compared to the last 10 years (2010-2019).

The decline in sockeye escapement is unlikely to be related to Forest Plan implementation since riparian protections in the Forest Plan have prevented adverse impacts.

### **Other Subsistence Resource Monitoring**

Eulachon returns were monitored in the Unuk and Stikine Rivers in 2018 and 2019. The return of Eulachon to the Unuk River was characterized as low in 2018 and 2019. The return to the Stikine River in both years was likely healthy. No National Forest ground disturbing activities occurred in either drainage since they are designated as wilderness.

A moose survey was conducted in cooperation with ADF&G on the Yakutat Forelands in 2019 and showed a steady population. No National Forest management activities occurred in this area that would negatively impact the moose population.

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs).

Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [http://www.ascr.usda.gov/complaint\\_filing\\_cust.html](http://www.ascr.usda.gov/complaint_filing_cust.html) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992.

Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: [program.intake@usda.gov](mailto:program.intake@usda.gov).

USDA is an equal opportunity provider, employer and lender.

---