United States Department of Agriculture

# Tongass National Forest
# 2016-17 Biennial Monitoring Evaluation Report


Forest Service Tongass National Forest R10-MB-881 December 2019

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Cover photo: Monitoring Frenchy Timber Sale on Zarembo Island viewed from Sumner Strait NW of Vank Island to determine Scenic Integrity Objectives.

# Contents

## List of Tables

## List of Figures

# Summary of Findings and Results

The 2012 Planning Rule includes eight requirements in 36 CFR 219.12 (a)(5) for plan monitoring programs. The Tongass National Forest Plan Monitoring Program includes the eight requirements and identifies which monitoring questions meet each of those requirements. The body of this report summarizes the monitoring completed in fiscal years (FY) 2016 and 2017 to meet these requirements.

Other questions in the Tongass Plan Monitoring Program do not fall into these requirements but may have been monitored in FY2016 and 2017. A list of Tongass Land and Resource Management Plan (Forest Plan) Monitoring Program questions not discussed in detail is attached as Appendix A.

Table 1 summarizes monitoring results for the requirements in 36 CFR 219.12 (a)(5) including recommendations for needed changes.

**Table 1. Summary of findings and results for the eight required monitoring items in 36 CFR 219.12 (a)(5) for plan monitoring programs.**

| 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. (Plan Question 21.) | 2016 | Yes | No | N/A |
| (ii) The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems. (Plan Questions 3, 6, 7, and 12.) | 2016 | Uncertain, C for terrestrial characteristics.<br>Yes for aquatic characteristics. | Yes for terrestrial characteristics,<br>No for aquatic characteristics. | Monitoring Program |
| (iii) The status of focal species to assess ecological condition required under 36 CFR 219.9. (The Tongass has not yet identified focal species.) | 2016 | Unknown, the Tongass has yet to designate focal species | Yes | 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). The Tongass has not yet identified Species of Conservation Concern.) | 2016 and 2017 | 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. (Plan Questions 33 and 34. | 2017 | Yes | Yes, Need to review ROS class changes | Monitoring Program |
| (vi) Measureable changes on the plan area related to climate change and | 2016 | Yes, The monitoring is based on a 5 year review of FIA data. | Yes, The vulnerability assessments are | 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] |
|---|---|---|---|---|
| other stressors that may be affecting the plan area. (Question 2.) | | The last review was in 2014. | identifying other potential indicators | |
| (vii) Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities. (Plan Questions 19 and 20.) | 2016 and 2017 | Yes | No change needed at this time but, there may be a desire to add more indicators for measuring progress toward meeting desired conditions. | N/A |
| (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))). (Plan Question 19.) | 2016 | Yes | No change needed at this time, but may be needed after more data is collected. | Region 10 Soil Quality Standards |

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

2 See body of the report for more details regarding any specific recommendations/opportunities for change.

# Introduction

## 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 the Tongass National Forest. The biennial monitoring evaluation report is not a decision document—it evaluates monitoring questions and indicators presented in the Plan Monitoring Program for the Forest Plan, in relation to management actions carried out in the Plan area.

Monitoring and evaluation are continuous learning tools that form the backbone of adaptive management. Under the 2012 Planning Rule we will produce an evaluation report every 2 years. This is our first Monitoring Evaluation Report since the 2016 Tongass National Forest Land and Resource Management Plan (Forest Plan) was finalized. This report indicates whether a change to the Forest Plan, management activities, monitoring program or forest assessment may be needed based on the new information. The Tongass National Forest monitoring reports are available at https://www.fs.usda.gov/detail/tongass/landmanagement/planning/?cid=stelprdb5368225.

## Objectives

There are several objectives for this report, including:

- Assess the current condition (i.e., status) and trend of selected forest resources.

- Document implementation of the Plan Monitoring Program including changed conditions or status of key characteristics used to assess accomplishments and progress toward achievement of the selected Forest Plan components.
- 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 and evaluation reports.
- Document any scheduled monitoring actions that have not been completed and the reasons and rationale why it has not.
- 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.

## How to Use this Report

This report is a tool and a resource for the Forest Service to assess the condition of forest resources in relation to Forest Plan direction and management actions. It is also a tool and a resource for the public to learn more about how the Forest Service is managing forest resources.

The biennial monitoring evaluation report is designed to help the public, as well as Federal, State, local government, and Tribal entities anticipate key steps in the overall monitoring program. These steps include upcoming opportunities for public participation and how the public will be informed of those opportunities, and how public input will be used as the monitoring program progresses. The biennial monitoring evaluation report is also intended to help people better understand reported results in relation to past monitoring reports, future monitoring reports and the broader-scale monitoring strategy that is issued at the Forest Service regional level.

## The Importance of Public Participation

We informed the public of the availability of the 2016-17 biennial monitoring report for the Tongass National Forest on December 26, 2019, through the Tongass public webpage at http://www.fs.usda.gov/goto/R10/Tongass/Monitoring and a notice through GovDelivery to those individuals that signed up for updates. These notices include the name and address of a Forest Service contact and the location to submit comments - comments-alaska-tongass@usda.gov. These efforts help "to obtain public feedback on what the monitoring information suggests about the effectiveness of the land management plan" (Forest Service Handbook [FSH] 1909.12_42.14c).

Our intent for public participation is to provide full transparency by giving people access to all information that is developed through monitoring activities, and to obtain public feedback.

## About Our Forest Plan Monitoring Program

### Roles and Responsibilities

The Forest Plan Monitoring Program requires a coordinated effort of many people, from the people who collect the data, to the people outside the Forest Service who provide feedback and assistance, to the decision maker.

For the purposes of this Plan Monitoring Program, the roles and responsibilities within the Forest Service are defined below.

**Regional Office.** The Regional Office (http://www.fs.usda.gov/r10) develops regional policies and directives (http://www.fs.fed.us/im/directives/) on monitoring and evaluation. In addition, the Regional Office works with the Forests to develop a broader scale monitoring program.

**Forest.** The Forest (http://www.fs.usda.gov/tongass/) implements the Forest Plan and conducts implementation monitoring and evaluation. The responsibilities of the Forest include the following:

• Preparing a Plan Monitoring Program (http://www.fs.usda.gov/goto/R10/Tongass/Monitoring);

• Collecting data and information for implementation, effectiveness, and validation monitoring; and

• Analyzing and interpreting implementation monitoring data and information and reporting implementation monitoring results, conclusions and evaluation recommendations to the Regional Office, and making these reports available to the public and other agencies.

**Pacific Northwest Research Station.** The Pacific Northwest Research Station (http://www.fs.fed.us/pnw/) provides scientific and technical expertise to conduct effectiveness and validation monitoring and evaluation relative to specific agreements. The responsibilities of the Pacific Northwest Research Station include advising and assisting the Forest with the following:

• Developing monitoring study plans, including study objectives, sampling designs, methods, quality assurance plans, and budgets in cooperation with the Forest;

• Collecting data and information for effectiveness and validation monitoring (in specific cases relative to agreements with the assistance of the Forest);

• Analyzing and interpreting the data and information relative to specific studies and agreements with the Forest;

• Reporting study results, conclusions, and recommendations to the Forest, and making these reports available to the public and other agencies; and

• Publishing, when appropriate, study results in regional publications, Pacific Northwest Research Station publications, or professional journals.

## 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 Tongass National Forest monitoring program was updated in May of 2016 for consistency with the 2012 planning regulations [36 CFR 219.12 (c)(1)]. For a copy of the current monitoring program go to http://www.fs.usda.gov/goto/R10/Tongass/Monitoring. 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)]. See the Plan Monitoring Program at http://www.fs.usda.gov/goto/R10/Tongass/Monitoring for discussion on how the monitoring questions were selected to be consistent with the 2012 planning regulations 36 CFR 219.12.

Providing timely, accurate monitoring information to the responsible official and the public is a key requirement of the Plan Monitoring Program. This 2016-17 biennial monitoring evaluation report for the Tongass National Forest is the vehicle for disseminating this information. Numerous resource reports that respond to one or more Plan monitoring items were used to build this summary report. Those reports are available upon request.

In the context of forest planning there are three main monitoring goals:

- Are we implementing the Forest Plan properly? Are we meeting our management targets and project guidelines? (implementation monitoring)
- Are we achieving our Forest Plan management goals and desired outcomes? (effectiveness monitoring)
- Does our hypothesis testing indicate we may need to change the Forest Plan? (validation monitoring)

Implementation monitoring is important for tracking progress and accomplishments. However, it is effectiveness and validation monitoring that drive and support the adaptive management process. Effectiveness monitoring evaluates condition and trend relative to desired conditions. Validation monitoring tests hypotheses and provides information that might necessitate changes to desired conditions in the plan (e.g. Are the desired conditions in the plan accurate?).

# Monitoring Evaluation

## Monitoring Activities

The Tongass National Forest Plan Monitoring Program developed in 2008 already addressed many of the requirements of the 2012 Planning Rule. The following modifications of the Plan Monitoring Program were primarily adopted to address the gaps between the 2008 program and the 2012 requirements:

- The monitoring question that addresses Climate Change (Question 2) has been modified to more clearly address the requirement of the 2012 Planning Rule for monitoring measurable changes related to climate change and other stressors that may be affecting the Tongass. It is anticipated that ongoing climate change vulnerability assessments and multi-stakeholder collaborations will result in a suite of monitoring questions related to climate change. Until that work is completed, the monitoring question has been modified to focus on tree species composition and related factors by utilizing estimates based on data that is currently being gathered by the Pacific Northwest Research Station through the Forest Inventory and Analysis (FIA) program. The last summary of this data was in 2014.
- The monitoring question that addresses Federally Listed Threatened or Endangered and Alaska Region Sensitive Species (Question 17) has been slightly modified so as to clearly indicate that it includes all species, not just wildlife. Species of Conservation Concern for the Tongass National Forest have not yet been identified by the Alaska Region; this monitoring question will be modified to include those species once they have been identified.
- The monitoring question that addresses Recreation (Question 33) meets the requirement regarding progress toward meeting recreation objectives. Furthermore, information regarding visitor use and satisfaction is already being gathered as a component of the National Visitor Use Monitoring (NVUM) program. An additional monitoring question (Question 34) has been

added to specifically address visitor use and satisfaction as currently measured by the NVUM program.

- Questions that previously included management indicator species (MIS) have been updated (Question 11 and Question 14). The 1982 planning regulations to implement the National Forest Management Act (NFMA) directed the use of MIS in forest planning to help display the effects of forest management; the 2008 Forest Plan includes identification and analysis of 13 wildlife and 4 fish MIS. The 2012 regulations do not include the requirement for MIS and references to MIS have been removed in this monitoring program revision. Until focal species are identified, some species that were formerly identified as MIS are still included in this monitoring program.

The former MIS species included for monitoring were based on a series of workshops held in 2011 with representatives from Alaska Department of Fish and Game, National Marine Fisheries Service, USDI Fish and Wildlife Service, and the USDA Forest Service. The workshops were convened to evaluate the Tongass National Forest MIS and develop a set of proposed MIS that would more effectively serve the Tongass. After following a structured process used to revise MIS elsewhere on National Forest System lands (Hayward et al 2001), the group recommended retaining deer, marten, brown bear, black bear, mountain goat, and bald eagle for wildlife and coho salmon, Dolly Varden char, and cutthroat trout for fish (Hayward and Jacobsen 2011). These species have been retained in this monitoring program revision. In addition, wolf has been retained for wildlife in compliance with Forest Plan Standard and Guideline WILD1.XIV.A.1(a).

The following section is organized based on the eight required monitoring items in the 2012 Planning Rule (36CFR 219.12 (a)(5). The eight required monitoring items and associated monitoring data are described below.

## Item (i) – The status of select watershed conditions. Question 21

**Table 2. Monitoring collection summary for Item (i)**

| For Monitoring Item i: | Year |
|---|---|
| Data was last collected or compiled in: | 2016 |
| Next scheduled data collection/compilation: | 2021 |
| Results were last evaluated in: | 2017 |
| Next scheduled year for evaluation of data in an evaluation report: | 2021 |

**Table 3. Monitoring Questions for Item (i)**

| Monitoring Question | Plan Component(s) | Associated Indicators | Data collection interval (dates) | Data Source / Partner |
|---|---|---|---|---|
| Question 21: What is the ecological conditions and trend of key characteristics (such as soil productivity, water quality and quantity, invasive species, etc.) of watershed health | Protect or restore water quality (SW4). | 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 Question | Plan Component(s) | Associated Indicators | Data collection interval (dates) | Data Source / Partner |
|---|---|---|---|---|
| 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 I)? | | | | |

## New Science or Other Information for Item (i)

### Question 21:

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.

## Monitoring Results for Item (i)

### Question 21:

Most of the 900 watersheds within the Tongass 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 in the Tongass primarily results from 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's "Tongass 77" watersheds.

## Monitoring Discussion and Findings for Item (i)

Following a review by Tongass staff and stakeholders, the Forest Supervisor established priority watersheds 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 has been restored in four watersheds as of 2017 – Harris River, Twelvemile Creek, Sitkoh River and Sitkoh Creek.

**Table 4. Summary of monitoring evaluation trends for all monitoring questions and indicators in Item (i), Question 21.**

| Current Status | Trend Towards Target | Trend Away from Target |
|---|---|---|
| Within target | All | |
| Outside target | | |

## Adaptive Management Considerations for Item (i)

At this time there is no need to change Forest Plan direction or the Forest Plan monitoring plan for Item (i).

# Item (ii) – The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems. Questions 3, 6, 7, and 12

**Table 5. Monitoring collection summary for Item (ii).**

| For Monitoring Item ii: | Year |
|---|---|
| Data was last collected or compiled in: | 2017 |
| Next scheduled data collection/compilation: | 2019 |
| Results were last evaluated in: | 2017 |
| Next scheduled year for evaluation of data in an evaluation report: | 2019 |

**Table 6. Monitoring Questions for Item (ii)**

| Monitoring Questions | Plan Component(s) | Associated Indicators | Data collection interval (dates) | Data Source / Partner |
|---|---|---|---|---|
| Question 3: Following young-growth treatments, is the change in understory vegetation providing improved habitat for key old-growth associated species? 36 CFR 219.12 (a)(5)ii – Requirement | Habitat for Old-growth Associated Species | Assessment of understory species composition (WILD2) | 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? 36 CFR 219.12 (a)(5)ii – Requirement | Biodiversity Ecosystem | Changes in the amount of old growth in relation to finer scale classification (such as plant association or high volume strata) (WILD1 II.B). 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 |

| Monitoring Questions | Plan Component(s) | Associated Indicators | Data collection interval (dates) | Data Source / Partner |
|---|---|---|---|---|
| Question 7: Are old growth features retained in the matrix consistent with expectations and is it representative of old growth types across VCUs and across the Forest? 36 CFR 219.12 | Biodiversity Ecosystem | 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? 36 CFR 219.12 (a)(5)ii – Requirement | Streams-Fish Habitat | Compliance with Fish Standards and Guidelines (FISH2. IV, FISH3. I.A) | Annual | Field collected data; Forest-wide databases |

## New Science or Other Information for Item (ii)

### Question 3:

**Harris, S.H, Barnard, J.C. 2017**. Understory plant development in artificial canopy gaps in an 81-year-old forest stand on Chichagof Island, southeast Alaska. Res. Pap. PNW-RP-609. Portland, OR. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 26 p.

- Estimates of both understory plant biomass and deer days per hectare in the gaps increased throughout the 23-year monitoring period without reaching an apparent peak. The results from this study suggest that canopy gaps can be a viable treatment option to improve forage in young-growth stands.

**Deal, Robert L.; Orlikowska, Ewa H.; D'Amore, David V.; Hennon, Paul E. 2017.** "Red Alder-Conifer Stands in Alaska: An Example of Mixed Species Management to Enhance Structural and Biological Complexity." *Forests* 8, no. 4: 131

- The inclusion of red alder in young-growth forests of southeast Alaska increased both their structural complexity and significantly improved their understory plant diversity and abundance. Mixed red alder-conifer stands provided different tree size distributions and more complex forest structures than found in even-aged conifer stands that develop after stand replacing disturbances such as clearcutting.

**Eckrich, Carolyn A. 2016**. The Role of Bottom-Up and Top-Down Processes in the Dynamics of Small Mammal Populations in Southeast Alaska. Ph.D., Department of Zoology and Physiology

- Results support earlier studies by Carey and Wilson (2001), Sullivan and Sullivan (2001), Suzuki and Hayes (2003), and Ransome et al. (2009), which concluded that pre-commercial thinning or selective harvesting increased habitat quality and abundance for several species of small mammals. At this juncture, our findings may provide an incentive for accelerating the transition from old-growth clearcut logging to commercial harvest of young-growth stands.

**Hoonah Native Forest Partnership (HNFP) Research (2015-present):** Estimate response[1] in deer and deer habitat following second growth treatments (i.e., thinning).

- Timber slash characteristics: volume and decay rate depends on DBH (diameter at breast height) when thinned
- Deer density: before and after thinning and compared to old growth stands.
- Snow accumulation and melt: between young growth and old growth stands

**Canopy Gap Research on Prince of Wales Island (POW) (2018-present):** The Tongass National Forest also recently started projects to monitor effectiveness of young-growth treatments for deer with the University of Idaho (gaps on POW) and USDI Fish and Wildlife Service (older thinning on Zarembo Island). Results from these studies will be included in the next monitoring report.

### Question 6:

The Tongass National Forest developed new data for Question 6 by querying updated databases. Data is summarized below.

### Question 7:

The Tongass National Forest developed new data for Question 7 by querying updated databases. Data is summarized below

### Question 12:

As part of a multi-year monitoring project, 42 culverts spanning fish streams were monitored in 2016 and 2017 to assess their ability to provide fish passage. These culverts were chosen from 269 culverts which have been installed, reinstalled or retrofitted in fish streams between 1998 and 2017. The culverts monitored in 2016 and 2017 are located on Chichagof, Wrangell, False, Kruzof, Mitkof, and Prince of Wales Islands. Twenty-nine culverts that were installed between 2012 and 2015 using a simplified stream simulation (SSS) design have been monitored annually between 2012 and 2015. In 2016, 13 of these were resurveyed and in 2017, 18 were resurveyed. Monitoring excludes bridges, removed structures and bottomless culverts since they routinely do not impede fish passage. Only non-bottomless culvert installations were evaluated since they are more problematic for fish passage. The 252 unique stream crossings monitored to date as part of this assessment constitute approximately 91 percent of the culverts (excluding bottomless culverts) recently installed, reinstalled or retrofitted in fish streams on the Tongass National Forest. The full fish passage monitoring report is available upon request.

## Monitoring Results for Item (ii)

The following results reflect updates from data collected from the TNF databases for FY16 and FY17.

### Question 3:

The Tongass has been working to improve the value of young-growth stands for wildlife and to improve their value for future harvest. This is accomplished using a wide variety of pre-commercial thinning (PCT), and sometimes pruning, girdling, and small gap-creation treatments, under the guidance of the Tongass Young Growth Management Strategy (USDA 2015). Some of the objectives of this strategy include greater integration in meeting multiple resource needs in managing young

[1] Estimate deer response to a heavily gapped landscape in old second growth

growth and continuing to increase our knowledge of young-growth management treatments through programs such as TWYGS.

### *Data for Item (ii)*

**Table 7. Young growth stand improvements (acres treated) for FY16 and FY17 derived from the FACTS database.**

| Treatment Type | FY16 | FY17 | Total |
|---|---|---|---|
| PCT | 6013 | 4681 | 10694 |
| Wildlife-Create Leave/Uncut Corridors in PCT | 18 | 169 | 187 |
| Wildlife-Create Small Gap Openings (1/8 acre or less) | 7 | 9 | 16 |
| Slash Treatments | 7 | 2 | 9 |

## Question 6:

**Table 8. Acres of Productive old-growth (POG), High volume productive old-growth (HPOG), and Large tree productive old-growth (Size-density class6/7) harvested during FY2016 and FY2017 across biogeographic provinces.**

| Biogeographic Province | POG | HPOG | SD67 |
|---|---|---|---|
| East Chichagof Island #3 | 17 | 9 | 7 |
| Etolin Island & Vicinity #13 | 519 | 256 | 71 |
| Kupreanof – Mitkof Island #10 | 26 | 14 | 0 |
| North Central POW #14 | 2,252 | 937 | 315 |
| Southern Outer Islands #16 | 2 | 2 | 0 |
| **Total** | **2,816** | **1,218** | **393** |

## Question 7:

**Table 9. Status of legacy structure (old-growth trees left in harvest areas) in VCUs where legacy forest structure was required and timber harvest occurred.**

| Timber Sale | Legacy VCU | Original Stand > 20 Acres | Legacy Retained | Legacy Rationale |
|---|---|---|---|---|
| | | **FY2016** | | |
| Frenchie Stewardship | 4570 | Yes | No | ROD Category 1: 2008 FP |
| Big Thorne | 5790 | No | N/A | Unit stand encompassed less than 20 acres of VCU |
| Big Thorne | 5840 | Yes | Yes | 50-75% retention |
| Big Thorne | 5850 | Yes | Yes | Retained 126 acres |
| Big Thorne | 5972 | Yes | Yes | Retained 51 acres |
| | | **FY2017** | | |
| Billy Goat | 5790 | No | N/A | Unit stand encompassed less than 20 acres of VCU |

| Timber Sale | Legacy VCU | Original Stand > 20 Acres | Legacy Retained | Legacy Rationale |
|---|---|---|---|---|
| Big Thorne | 5830 | Yes | Yes | 75% retention cut |
| Big Thorne | 5840 | Yes | Yes | 50-75% retention cut |
| Camelback | 5830 | No | N/A | Unit stand encompassed less than 20 acres of VCU |
| Camelback | 5840 | No | N/A | Unit stand encompassed less than 20 acres of VCU |
| Camelback | 5972 | No | N/A | Unit stand encompassed less than 20 acres of VCU |

## Question 12:

Thirty-four (13 percent) of the 252 culverts monitored to date and assessed via the Alaska Region juvenile fish passage criteria matrix do not meet State of Alaska passage standards and may to some extent impede the passage of juvenile fish. The majority (67 percent) of the 252 stream crossings monitored were installed between 2000 and 2005. The 34 crossings determined not to be consistent with juvenile passage standards can be generally attributed to several different reasons.

1) Five of the 34 culverts were known fish stream crossings requiring passage considerations but were installed without fish passage design considerations due to project implementation personnel apparently being unaware of aquatic passage objective.

2) Seven were installed without passage considerations because they were not identified as crossings requiring fish passage until after construction was completed.

3) Six of the culverts not meeting juvenile passage standards are Simplified Stream Simulation (SSS) designed culverts and have not accumulated enough bedload within them to provide adequate roughness and moderate water velocity. These culverts will potentially continue to accumulate bedload over time which could improve conditions.

4) Two are stream simulated designed culverts that have had sections completely scoured free of bedload.

5) One stream simulated culvert is not providing adequate passage because it is blocked by woody debris.

6) Twelve installed between 1999 and 2000 and in 2014 are not meeting passage standards due to inadequate or unknown fish passage design considerations.

7) One culvert is still not meeting passage standards after being retrofitted.

**Figure 1. A no-slope culvert installation.**

**Table 10. Summary of the 252 Culvert Designs Monitored by Design type and Consistency with State of Alaska Juvenile Fish Passage Standards.**

| Design Type | Percent of Monitored Culverts | Consistent with State of Alaska juvenile fish passage standards |
|---|---|---|
| Stream Simulation Designs | 55 | Two percent of the stream simulated designed culverts are red. |
| Simplified Stream Simulation (SSS) | 12 | Twenty-one percent of the SSS designed culverts are not meeting passage standards due to insufficient bedload accumulation within the culverts or were undersized and are constricting the channel. |
| Hydraulic Designed or Baffled Culverts | 2 | All five of the hydraulic designed culverts require more comprehensive analysis to determine passage status. |
| No-slope Design | 19 | None of the 47 installed no-slope designed culverts were red. |
| Retrofits | 1 | Not meeting passage standards. |
| Incorrectly Designed | 11 | 28 culverts were installed without discernable fish passage design considerations -- 24 of them are not meeting passage standards. |

The data presented is from updated Forest databases or field collected data. The level of confidence is good.

## Monitoring Discussion and Findings for Item (ii)

### Questions 3, 6, and 7:

Table 7 data and other information from published literature shows the Tongass National Forest continues to improve the value of understory in young-growth stands for wildlife. For the 2016-17 monitoring years total of 10,694 acres received per-commercial thinning (an average of 5,347 acres per year). Of those acres, 212 were specifically designed for wildlife improvement by slash treatment, gaps, and corridors. The data is showing that short-term degradation of habitat from thinning caused

by slash lasts about 10 years after which there are long-term benefits of understory production and quicker transition to old-growth characteristics.

The small mammal response to young-growth study (Eckrich 2016) provided evidence that PCT, along with other young-growth treatments including pruning, canopy gaps, etc. can increase understory vegetation in which small mammal prey respond positively. This information may inform future habitat monitoring in young growth, should some of these vegetation features not currently be measured in the TWYGS.

Preliminary findings from the Hoonah Native Partnership are showing that strategically leaving mid to high POG intact across the landscape will improve deer density in managed landscapes. Also, thinning trees with a DBH of less than 12 cm is better than thinning trees with a DBH of greater than 20 cm because the amount of slash decreases and decay increases (Martin and Brinkman unpublished).

Overall, young-growth treatments are improving understory vegetation, which provides improved habitat for species studied (i.e. deer, small mammals, etc.).

All indicators in Table 7 show we are trending towards target of improving young-growth conditions for wildlife.

In preparation of the 2016 Forest Plan Amendment, the system of old-growth reserves (OGRs) was improved following the interagency review by maintaining connectivity and achieving acreage requirements for small and medium OGRs. The only OGR which did not meet the acreage requirement was in VCU 5940. This was due to the lack of National Forest System land left after a land conveyance.

The new Cholmondeley medium OGR combines the previous medium OGRs Old Thoms and Monie Lake to increase connectivity and bring acreage totals to the requirements in the Forest Plan.

The effects on biodiversity shown through the cumulative change in old growth by biogeographic province are consistent with the estimates in the Forest Plan. As predicted in the EIS for the Forest Plan, the greatest effect to biodiversity associated with the removal of POG would be in the biogeographic provinces listed in Table 8. The most acres harvested came out of North Central POW and Etolin biogeographic provinces.

Table 9 data indicates legacy structure has been maintained where it was required. The harvest data by POG class is within the estimates provided in the Forest Plan. Much of the timber harvest on the Forest since implementation of the Forest Plan occurred outside of high-risk VCUs. Where harvest did occur in high-risk VCUs, much of it was exempted from application of the legacy standards and guidelines because of the harvest method used (50 -75 percent retention) and harvest of less than 20 acres within a legacy VCU. Only one VCU did not have legacy retained; this was appropriate and in compliance with the Forest Plan because it was included in the decision for the 2008 Forest Plan.

The old-growth structure retained in the matrix is representative of old-growth types across the Forest. Between the reserve system and the standards and guidelines that apply to the development land use designations, the Forest Plan protects 91 percent of productive old-growth habitat on the Tongass.

## Question 12:

Eighty percent of the 252 culverts monitored via the Alaska Region juvenile fish passage criteria matrix are consistent with State of Alaska juvenile fish passage standards and are assumed to provide unimpeded juvenile and adult fish passage. Seven percent of the culverts require more analysis to

determine passage status. The remaining 13 percent are assumed not to provide adequate passage at all desired stream flows.

Fifty-five percent of the monitored culverts used stream simulation designs, 12 percent were installed using a SSS design, 2 percent are hydraulic designed or baffled culverts, 19 percent utilized a no-slope design, 1 percent were retrofits, and 11 percent were incorrectly designed without adequate fish passage considerations. Two percent of the stream simulated designed culverts are Red (inadequate passage). Twenty-one percent of the SSS designed culverts are not meeting passage standards due to insufficient bedload accumulation within the culverts or were undersized and are constricting the channel. None of the 47 installed no-slope designed culverts were Red. All five of the hydraulic designed culverts require more-comprehensive analysis to determine passage status. Twenty-eight culverts were installed without discernable fish passage design considerations and as a result 24 (86 percent) of them are not meeting passage standards. Seven of those most likely were not identified as crossings requiring passage at time of installation and therefore were not designed appropriately.

**Table 11. Summary of monitoring evaluation trends for all monitoring questions and indicators for Item (ii). Questions 3, 6, 7, and 12.**

| Current Status | Trend Towards Target | Trend Away from Target |
|---|---|---|
| Within target | all | |
| Outside target | None* | |

*Thirteen percent of the monitored culverts are not meeting fish passage requirements. At these specific sites culverts are not meeting target. However, 80 percent of the crossing monitored met the fish passage requirement and therefore met the target. Seven percent of the sites require more comprehensive analysis to determine passage status. Table 11 is reporting results for Questions 3, 6, 7, and 12. Fish passage is a component of Question 12.

## Adaptive Management Considerations for Item (ii)

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). This section is an opportunity to address changes needed in the monitoring program, especially in developing consistency with the 2012 Planning Rule.

### Questions 3, 6, and 7:

Monitoring is needed to ensure that management under the Forest Plan is maintaining or restoring the ecological conditions needed to maintain the diversity and persistence of native plant and animal communities in the Plan area. The old-growth ecosystem was identified by a panel of ecological resource program managers as one of the primary ecosystems of concern on the Tongass (Focal Species Planning Meeting, Ketchikan, August 14-15, 2017). The Old Growth Habitat Conservation Strategy serves as the foundation of old-growth ecosystem management on the Tongass. This strategy includes a network of old-growth reserves and interconnected habitat. The paramount biodiversity concern of expert panelists assessing risk of the strategy when it was developed in 1997 was old-growth habitat connectivity and maintaining well-distributed old-growth wildlife species with limited dispersal capabilities (1997 Forest Plan FEIS Appendix N, page N-10). Risk assessment panels indicated moderate levels of concern and particularly emphasized viability concerns for flying squirrels and distribution concerns for martens, due to their limited dispersal capabilities.

As a result of new information and changes needed as per the 2012 Planning Rule, the monitoring questions and associated indicators listed in Questions 3, 6, and 7 should be reconsidered. Wildlife biologists recommend a list of revised monitoring questions and indicators, and that list is included in Appendix D, Table 34.

### Question 12:

We do not recommend any changes to Forest Plan standards and guidelines in response to preliminary monitoring results.

Recommended actions:

- Continue to monitor all new and recent culvert installations in fish streams including annual monitoring of SSS culvert designs that are Yellow (adequate at this time but potentially insufficient depth of bedload) and Red.
- Continue to train Tongass personnel in stream simulation design as well as getting trained personnel experience in surveying and designing.
- Improve the accessibility of Tongass Aquatic Organism Passage (AOP) data by making data available in ArcGIS Online.
- Improve communications with engineers so installations on fish streams are properly designed.
- Ensure that proper sampling occurs early in the planning stages and prior to contract preparation on any potential fish stream where culvert replacements are to occur.
- Continue using a Tongass AOP interdisciplinary design team for new fish crossing survey, design, and for review of completed designs.

## Item (iii) – The status of focal species to assess the ecological conditions required under 36CFR 219.9.

Focal species have not yet been identified for the Tongass National Forest Plan Area. Therefore, there are no results for Item (iii).

## 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. Question 17

**Table 12. Monitoring collection summary for Item (iv)**

| For Monitoring Item iv: | Year |
|---|---|
| Data was last collected or compiled in: | 2017 |
| Next scheduled data collection/compilation: | 2019 |
| Results were last evaluated in: | 2017 |
| Next scheduled year for evaluation of data in an evaluation report: | 2019 |

**Table 13. Monitoring Question for Item (iv)**

| Monitoring Question | Plan Component(s) | Associated Indicators | Data collection interval (dates) | Data Source / Partner |
|---|---|---|---|---|
| Question 17 - Is current management | Threatened and Endangered Species, species of | Changes in habitats for the listed threatened or | Annual | Wildlife inventory and monitoring; population trend |

| Monitoring Question | Plan Component(s) | Associated Indicators | Data collection interval (dates) | Data Source / Partner |
|---|---|---|---|---|
| providing for ecological conditions to support federally listed threatened or endangered species, and Alaska Region sensitive species? 36 CFR 219.12 (a)(5)iv – Requirement | conservation concern. | endangered species, and Alaska Region sensitive species (PLA1, WILD4); changes to listed species or critical habitat; biological evaluation findings / number of consultations; mitigation measures implemented / number of populations located | | data from various sources (ADFG, Breeding Bird Survey, Alaska Landbird Monitoring); TNF Rare Plant surveys; project BE/BA analyses; NEPA documents – review mitigation measures and S&G implementation; GIS |

## New Science or Other Information for Item (iv)

This section summarizes the effects determinations made in fiscal years 2016 and 2017 to fulfill the section 7 (a) and (c) requirements of the Endangered Species Act. In the case of the Queen Charlotte goshawk, we also report the implementation of goshawk nest surveys. See the Biodiversity Question 7 (covered under Item (ii)) for a report of the implementation of the legacy standard and guideline.

No new science or information collected outside of this monitoring program was considered in the evaluation of this monitoring question.

## Monitoring Results for Item (iv)

The following results reflect updates from data collected for FY 2016 and FY 2017. New information collected or compiled from the last evaluation report FY 2015 has been incorporated.

### Data for Item (iv)

**Table 14. The number of proposed projects on the Tongass National Forest in FY2016/17 for which the biological assessment made a "may affect but not likely to adversely affect", and "likely to adversely affect" determination for federally listed species.**

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

**Table 15. The number of proposed projects on the Tongass National Forest in FY2016/17 for which the biological evaluation made a "may adversely affect individuals" and "likely to result in loss of viability" determination for Region 10 sensitive species.**

| Determination | Queen Charlotte Goshawk | Black Oystercatcher | Kittlitz's Murrelet | Aleutian Tern | Dusky Canada Goose |
|---|---|---|---|---|---|
| May adversely affect individuals, but not likely to result in loss of viability in the planning area, nor cause a trend toward Federal listing | 14 | 2 | 1 | 1 | 1 |
| Likely to result in a loss of viability in the planning area or in a trend toward Federal listing | 0 | 0 | 0 | 0 | 0 |

**Table 16. Surveys conducted for Sensitive Species for FY2016/17 across the Tongass**

| Project | Survey Type | Targeted Sensitive Species | FY | Sensitive Species Detections N=Nest, I=individual |
|---|---|---|---|---|
| Vallenar Young Growth | Inventory | Goshawk | 2017 | None |
| Alaska Landbird Monitoring Surveys | Inventory | Goshawk | 2016, 2017 | None |
| Breeding Bird Survey | Inventory | Goshawk, Aleutian Tern, Black Oystercatcher | 2016, 2017 | None |
| Tracy Arm- Ford's Terror Seabird Colony Survey | Inventory | Black Oystercatcher | 2016 | 20, I |
| Wrangell Island Shorebird Monitoring | Monitoring | Black Oystercatcher | 2016 | None |
| Endicott Arm and Holkham Bay Colony Survey | Inventory | Black Oystercatcher | 2016 | 10, I |

**Table 17. Summary of monitoring evaluation trends for all monitoring questions and indicators in Item (iv)**

| Current Status | Trend Towards Target | Trend Away from Target |
|---|---|---|
| Within target | All | |
| Outside target | | |

Data for Item (iv) come from NEPA documents available in PALS (Planning, Appeals and Litigation System) and known concurrence letters from the National Marine Fisheries Service.

## Monitoring Discussion and Findings for Item (iv)

The Forest Service activities that result in "may affect" determinations are related either to potential disturbance associated with the connected actions of marine traffic (acoustic disturbance and increased potential for vessel strikes) and LTF reconstruction activities (possibility of acoustic disturbance and

pollution). Forest Plan standards and guidelines direct the Tongass to prevent and/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.

None of the projects had significant impacts on threatened and endangered species and did not require formal consultation with USFWS. None of the projects had adverse effects on populations of sensitive species that could lead to federal listing.

### Adaptive Management Considerations for Item (iv)

No changes needed at this time. The Forest Service needs to transition from sensitive species to designated Species of Conservation Concern and include them in this monitoring to meet the 2012 Planning Rule requirements.

## Item (v) – The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives. Questions 33 and 34.

**Table 18. Monitoring collection summary for Item (v)**

| For Monitoring Item v: | Year |
|---|---|
| Data was last collected or compiled in: | 2017 |
| Next scheduled data collection/compilation: | 2019 |
| Results were last evaluated in: | 2017 |
| Next scheduled year for evaluation of data in an evaluation report: | 2019 |

**Table 19. Monitoring questions for Item (v)**

| Monitoring Question | Plan Component(s) | Associated Indicators | Data collection interval (dates) | Data Source / Partner |
|---|---|---|---|---|
| Question 33 - Are areas of the Forest being managed in accordance with the Recreation Opportunity Spectrum (ROS) class in Forest-wide Standards and Guidelines? 36 CFR 219.12 (a)(5)v – Requirement | Recreation and Tourism | Compliance with guidelines: REC3 I, II, III, Appendix I (and other standards and guidelines 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 |
| Question 34 – What is the status and trend of visitor use and visitor satisfaction? 36 CFR 219.12 (a)(5)v – Requirement | Recreation and tourism | Annual visitation estimates, Percent Satisfied, Site types visited, distance travelled. | 5 year/ 5 year | National Visitor Use Monitoring (NVUM) Program |

## New Science or Other Information for Item (v) Question 33 and 34.

The Tongass monitors the amount of permitted outfitter/guide use, the number and development scale of provided developed recreation facilities and trails, the number and condition of non-developed recreation sites in wilderness and social encounter monitoring within wilderness to address this monitoring item.

## Monitoring Results for Item (v) Question 33

**Recreation and Tourism**
ROS settings are routinely considered and evaluated in project planning across the forest. There have been no projects proposed that would require a change in ROS setting based upon effects analyses.

**Outfitters and Guides**
There were 642,661 clients served resulting in 72,283 recreation visitor days of guide services provided on the Tongass National Forest in fiscal year 2016 and 641,219 clients served resulting in 71,642 recreation visitor days of guide services in 2017. Guides provided nature touring, hiking, flightseeing, wildlife viewing, freshwater fishing, wilderness adventures, and big game guiding. 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 the capacity.

**Developed Recreation Facilities and Trails**
The Tongass maintains 335 developed recreation sites across the Forest. These include 31 boating sites/buoys, 12 campgrounds, 7 camping areas, 9 day use areas, 2 group picnic sites, 6 interpretive sites, 2 major visitor centers, 1 minor visitor center, 190 cabins/shelters, 2 observation sites, 33 picnic sites, 2 swimming sites, 28 trailheads and 10 wildlife viewing sites. The Tongass manages more than 400 miles of hiking trails, of which almost 92 miles of trail are within congressionally designated wilderness. Another 400 miles of motorized trails are identified on district motor vehicle use maps.

In 2013, the Tongass completed an environmental assessment to determine whether or not to remove 12 cabins. Most of the cabins were available for public use through the National Recreation Reservation System, but had little to no use for several years. Some of the cabins were in disrepair and were not safe for occupation, as the Forest Service manual required. Removing these facilities allowed funding for cabin operation and maintenance to be used in other locations where public demand was higher. Three cabins were decommissioned on the Ketchikan Misty Fjords Ranger District in 2014. In 2015 one cabin on the Yakutat Ranger District was decommissioned. One cabin on the Admiralty National Monument was converted to a shelter, one cabin on the Craig Ranger District and two cabins on the Sitka Ranger District were decommissioned in 2016. One cabin on the Petersburg Ranger District was decommissioned in 2017. The remaining cabins identified for decommissioning will be removed as funding allows.

In addition to the cabins, one shelter on the Ketchikan-Misty Fiords Ranger District was decommissioned in 2016 and one shelter on the Sitka Ranger District was decommissioned in 2017.

No project plans have been approved that increase the development scale of any facilities or trails.

**Non-developed Recreation Sites**
Approximately 550 non-developed recreation sites have been recorded within Tongass National Forest wilderness areas. Monitoring of 284 non-developed recreation sites took place in 2016 and 2017 within Chuck River, Kootznoowoo, Misty Fjords National Monument, Petersburg Creek – Duncan Salt Chuck, Pleasant/Lemesurier/Inian Islands, Stikine-LeConte, South Baranof, South Etolin, Tebenkof Bay, Tracy Arm – Ford's Terror and West Chichagof-Yakobi Wilderness Areas. Most

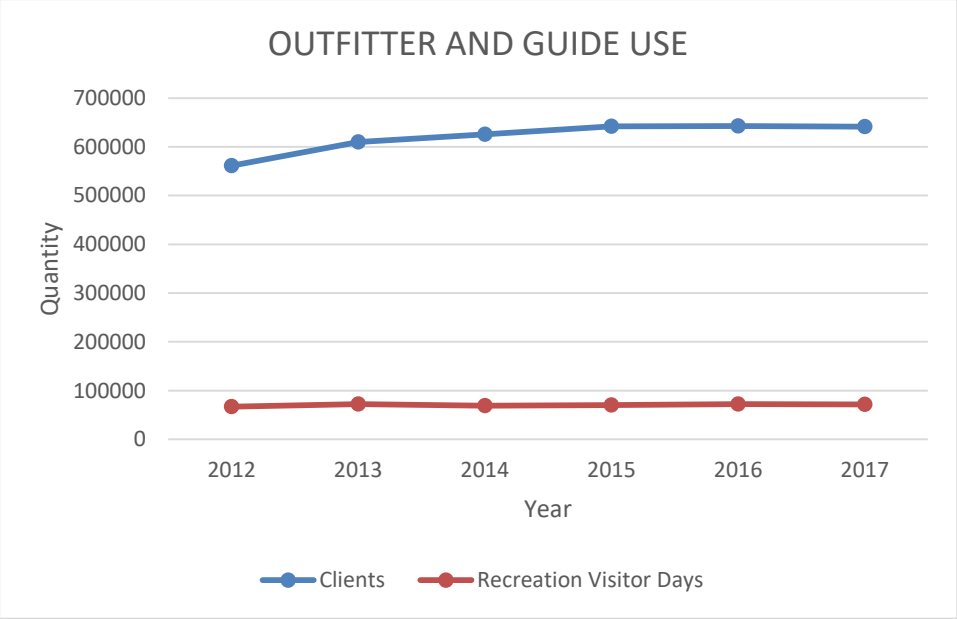
monitored sites have minimal impacts and remain at a development scale of 0 or 1. The number of sites is gradually decreasing.

**Social Encounter Monitoring**

Social encounter monitoring took place in the Chuck River, Kootznoowoo, Kuiu, Misty Fjords National Monument, Petersburg Creek – Duncan Salt Chuck, Stikine-LeConte, South Baranof, South Etolin, Russell Fjord, Tebenkof Bay, Tracy Arm – Ford's Terror and West Chichagof-Yakobi Wilderness Areas. Monitoring took place on 230 days with a total of 58 social encounters (those on National Forest System land or freshwater lakes) and 1,093 aircraft/boat encounters that have an effect on the remoteness indicator.

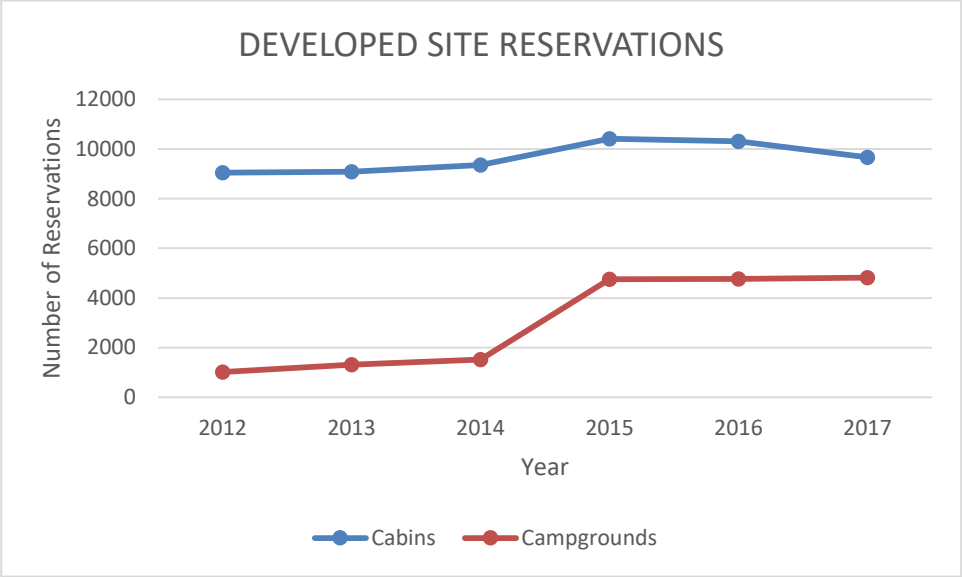
## Data for Item (v)

**Figure 2. Outfitter and Guide Use**




Outfitter and Guide use on the forest shows a level trend. No areas permitted for outfitter/guide use were reported as exceeding the established ROS class.

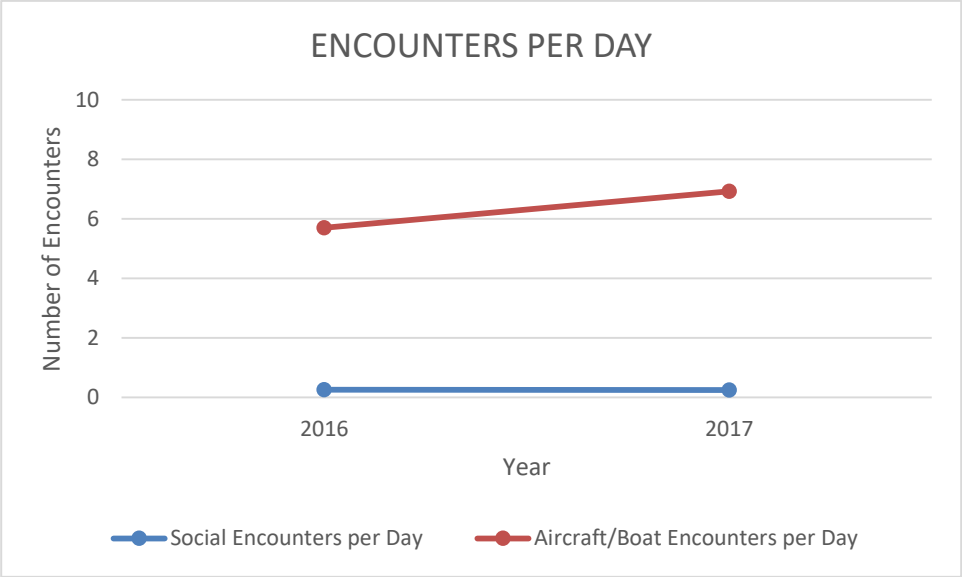
**Figure 3: Developed Recreation Facilities and Trails**




Developed recreation site use on the forest shows a level trend. No areas were reported as exceeding the established ROS class.

**Non-developed Recreation Sites –**
Monitoring indicates that sites are meeting the ROS class with most sites having low impact and the number of sites gradually decreasing.

**Figure 4: Non-developed Recreation Sites monitoring ROS**




Monitoring indicates 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. Social encounters are well within the primitive ROS class. However, within the Chuck River, Kootznoowoo and Tracy Arm-Fords Terror Wilderness areas monitoring indicates that along marine travelways and under flight routes the ROS class being met is closer to Roaded Modified.

**Table 20. Summary of monitoring evaluation trends for Item (v) question 33 indicators**

| Current Status | Trend Towards Target | Trend Away from Target |
|---|---|---|
| Within target | 2 | 1 |
| Outside target | 0 | 0 |

Social encounter monitoring has taken place mostly within the wilderness areas on the Tongass National Forest. Other statistics are gathered from outfitter/guide year-end reporting and reservation information gathered from recreation.gov. There is a high degree of confidence in the information.

## Monitoring Discussion and Findings for Item (v)

The Forest Plan components adequately reflect what is needed to manage the forest in accordance with the ROS class. However, the Forest Plan also allows for changing the ROS class in LUDs where non-recreation resource management activities are emphasized if it is not being met.

National Visitor Use Monitoring is completed in 5 year cycles. The next evaluation will occur in 2020.

## Adaptive Management Considerations for Item (v)

There may be a need to revise this monitoring item within the monitoring plan. 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. This monitoring item should be reviewed for its usefulness and determining if there is a better method to measure ROS class for determining recreation and tourism trends and impacts.

# Item (vi) – Measureable changes on the Plan area related to climate change and other stressors that may be affecting the Plan area. Question 2.

**Table 21. Monitoring collection summary for Item (vi)**

| For Monitoring Item vi: | Year |
|---|---|
| Data was last collected or compiled in: | 2014 |
| Next scheduled data collection/compilation: | Depends on FIA data collection schedule |
| Results were last evaluated in: | New question in 2016 |
| Next scheduled year for evaluation of data in an evaluation report: | Depends on availability of FIA data |

**Table 22. Monitoring questions for Item (vi)**

| Monitoring Item | Plan Component(s) | Associated Indicators | Data collection interval (dates) | Data Source / Partner |
|---|---|---|---|---|
| Question 2 (vi) – What are the measureable changes to climate change and other stressors that may | All | Changes in tree species composition as measured by basal area cover, and other changes | 5 year/ As FIA data is available. | Inventory data from FIA permanent plots established in 1995-2003 and remeasured periodically are |

| Monitoring Item | Plan Component(s) | Associated Indicators | Data collection interval (dates) | Data Source / Partner |
|---|---|---|---|---|
| be affecting the forest? 36 CFR 219.12 (a)(5)vi – Requirement | | including growth, sapling recruitment, harvest, snags, decay, and other relevant measures. See also "Invasive species" and "Insect and Disease" sections as other possible stressors. | | used to provide estimates of tree species composition and other factors. |

## New Science or Other Information for Item (vi)

- Barrett, T. M. 2014. Storage and Flux of Carbon in Live trees, Snags, and Logs in the Chugach and Tongass National Forests. USDA PNW, Gen. Tech. Rep. PNW-GTR-889. Above ground carbon for the Tongass National forest did not change significantly from the 1995 to 2003 time period. On managed lands carbon losses occurred for yellow cedar but there were gains for red alder and Sitka spruce. On unmanaged lands there were gains for western redcedar and red alder.

## Monitoring Results for Item (vi)

The Barrett (2014) report showed modest changes in tree species composition from the 1995 to 2003 time period to the 2004 to 2010 time period. Overall carbon stocks in above ground biomass was not significantly different between the two time periods.

## Monitoring Discussion and Findings for Item (vi)

The revised Question 2 relies on periodic analysis of FIA tree data. The last periodic analysis was in 2014. It takes 6 to 8 years to collect new FIA data across the forest. A new periodic analysis may be conducted after the next inventory is complete. The climate change vulnerability assessments for the Tongass National Forest have identified the need for a more extensive set of indicators to respond to required Item (vi). Those indicators will likely be included in a future revision of the Forest Plan Monitoring Plan. Appendix A, Question 8 describes the status of insect, disease and invasive species populations that may be sensitive to, or indicate climate change.

**Table 23. Summary of monitoring evaluation trends for Item (vi) Question 2.**

| Current Status | Trend Towards Target | Trend Away from Target |
|---|---|---|
| Within target | 1 | 0 |
| Outside target | 0 | 0 |

## Adaptive Management Considerations for Item (vi)

There is a need to review the climate change vulnerability assessments to determine if a more extensive set of indicators should be considered to respond to required item (vi).

# Item (vii) – Progress toward meeting the desired conditions and objectives in the plan, including providing for multiple use opportunities. Questions 19 and 20, Question 19 is covered fully under Item (viii).

**Table 24. Monitoring collection summary for Item (vii)**

| For Monitoring Item vii: | Year |
|---|---|
| Data was last collected or compiled in: | 2017 |
| Next scheduled data collection/compilation: | 2018 |
| Results were last evaluated in: | 2017 |
| Next scheduled year for evaluation of data in an evaluation report: | 2019 |

**Table 25. Monitoring questions for Item (vii)**

| Monitoring Item | Plan Component(s) | Associated Indicators | Data collection interval (dates) | Data Source / Partner |
|---|---|---|---|---|
| Question 20 (vii) - 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? 36 CFR 219.12 (a)(5)vii – Requirement | Soil and Water: State water quality standards | Compliance and implementation of BMPs and the State Water Quality Standards (SW3 I.A.2 and 3). | Annual | Field-collected data; Forest wide data bases; BMP Soil and Water Monitoring; watershed analysis |

## New Science or Other Information for Item (vii)

### Question 20:

**Table 26. Summary of 2016 and 2017 BMP monitoring sites, activity types, ranger district and year monitored.**

| Site/Project Name | Activity/Protocol | Ranger District | Year monitored |
|---|---|---|---|
| St. Johns Administrative Site** | Facilities B – Operation and Maintenance of Non-Corridor Facilities | Wrangell | 2016 |
| Square Lake Cabin* | Facilities D – Completed Facility Reclamation | Yakutat | 2016 |
| Sunset Bluff Fire** | Fire B – Wildfire Management Actions | Juneau | 2016 |

| Site/Project Name | Activity/Protocol | Ranger District | Year monitored |
|---|---|---|---|
| El Cap Cave Interpretive Site Primitive Boat Launch* | Recreation G – Operation and Maintenance of Watercraft Launches | Thorne Bay | 2016 |
| Road 3000000 MP 48.5** | Road C – Road Operation and Maintenance | Thorne Bay | 2016 |
| Zarembo Island Fuel Storage* | Road I – Equipment Refueling or Servicing Areas | Wrangell | 2016 |
| Big Thorne Stewardship Unit 123** | Vegetation Management A – Ground-based Skidding and Harvesting | Thorne Bay | 2016 |
| Big Thorne Stewardship Unit 206** | Vegetation Management B – Cable and Aerial Yarding Operations | Thorne Bay | 2016 |
| Skipping Cow Timber Sale Unit 26* | Vegetation Management B – Cable and Aerial Yarding Operations | Wrangell | 2016 |
| El Cap Drinking Water System DWS8000* | Water Uses B – Operation and Maintenance of Spring-Source Facilities | Thorne Bay | 2016 |
| Shelikof Creek Restoration* | Aquatic ecosystems B – Completed Aquatic Ecosystems Improvements | Sitka | 2017 |
| AEL&P Powerline* | Recreation B – Dispersed Recreation Areas | Juneau | 2017 |
| Situk Nine Mile Bog – Kaats heeni Yanshuk'a** | Recreation B – Dispersed Recreation Areas | Yakutat | 2017 |
| Tolch Rock Trail** | Recreation C – Completed Re-Routing of a Non-motorized trail | Juneau | 2017 |
| Kosciusko Road 1500000 MP 0.06* | Road B – Completed Waterbody Reconstruction | Thorne Bay | 2017 |
| Staney Road 2050000 MP 7.76** | Road B – Completed Waterbody Reconstruction | Thorne Bay | 2017 |
| Staney Road 2050331* | Road D – Stored roads | Thorne Bay | 2017 |
| Big Thorne Stewardship Unit 35* | Vegetation Management A – ground-based Skidding and Harvesting | Thorne Bay | 2017 |
| Big Thorne Stewardship Unit 120* | Vegetation Management A – ground-based Skidding and Harvesting | Thorne Bay | 2017 |
| Big Thorne Stewardship Unit 365* | Vegetation Management A – ground-based Skidding and Harvesting | Thorne Bay | 2017 |
| Tower Unit 305* | Vegetation Management A – ground-based Skidding and Harvesting | Thorne Bay | 2017 |

*Sites randomly selected from forest populations following protocols for national BMP monitoring target.
**Sites not randomly selected from forest populations.

**Figure 5. Exposed mineral soil at a Tolch Rock Trail Stream Crossing.**

## Monitoring Results for Item (vii)

BMP monitoring was conducted in 2016 and 2017 to improve the management of aquatic resources on the Forest. BMP monitoring identifies BMPs that were fully implemented, where corrective actions are needed for full BMP implementation, and where adaptive management actions are recommended to improve BMP implementation on future projects. Corrective actions are those actions needed to fully implement the BMPS on a specific project. Complete 2016 and 2017 BMP monitoring reports are available on request.

## Monitoring Discussion and Findings for Item (vii)

At this time there is no need to change the Forest Plan. BMP monitoring occurred across the Forest in 2016 and 2017 following national protocols. The monitoring identified a few needed corrective actions for the projects monitored and some adaptive management actions to improve future implementation. Most recommended actions are adaptive in nature and the sites are not posing a risk to water quality. Corrective actions were needed to improve water quality at three of the sites monitored over the 2-year time frame. Corrective actions have already been completed at the 2050000 road MP 7.76. At the 300000 road MP 48.5, corrective actions are based on a decades-old road location where pipe replacements occurred in 2016. The pipes are functioning, but the road is poorly located and a fish stream occurs in a ditch on one side of the road. Corrective actions at the 300000 road MP 48.5 are more involved than the pipe replacements. On the Tolch Rock Trail, the corrective actions are recommended for minor erosion at new stream crossings placed on the trail. The District resource staff continue to monitor natural revegetation at the site.

## Adaptive Management Considerations for Item (vii)

The BMP monitoring reports have identified numerous adaptive management actions. The common theme for adaptive management actions in the 2016 and 2017 monitoring include: 1) Update the GIS streams layer, 2) additional monitoring, 3) establishing thresholds for soil disturbance on user-developed trails, 4) better documentation for a variety of activities to facilitate monitoring, and 5) updating the Tongass Hazardous materials response plan.

There may be a desire to add more indicators for measuring progress toward meeting desired conditions under Item (vii).

**Table 27. Summary of monitoring evaluation trends for Item (vii) question 20.**

| Current Status | Trend Towards Target | Trend Away from Target |
|---|---|---|
| Within target | 18 | 0 |
| Outside target | 3* | 0 |

*Three corrective actions, one already corrected, one being monitored and one due to poor road location, not the pipe installation. (See discussion and findings section.)

# Item (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). Question 19.

**Table 28. Monitoring collection summary for Item (viii).**

| For Monitoring Item viii: | Year |
|---|---|
| Data was last collected or compiled in: | 2017 |
| Next scheduled data collection/compilation: | Dependent on young-growth harvest plans. |
| Results were last evaluated in: | 2017 |
| Next scheduled year for evaluation of data in an evaluation report: | 2019 |

**Table 29. Monitoring questions for Item (viii).**

| Monitoring Item | Plan Component(s) | Associated Indicators | Data collection interval (dates) | Data Source / Partner |
|---|---|---|---|---|
| Question 19 (vii and viii) - Are the soil conservation practices implemented and effective in meeting Alaska Regional Soil Quality Standards and maintaining soil productivity? 36 CFR 219.12 (a)(5)vii and viii – Requirement | Soil and Water: Soil Productivity | Compliance and implementation of the Region 10 Soil Quality Standards (SW3 I.A.4) | Annual | Field-collected data; Forest wide data bases; BMP Soil and Water Monitoring; watershed analysis |

## New Science or Other Information for Item (viii)

### Question 19:

In fiscal years 2016 and 2017, soil quality monitoring involved 1) monitoring effects to soils on the Heceta Commercial Thinning Integrated Resource Timber Sale, 2) continuing to monitor the amount of soil disturbance caused by off-highway vehicles (OHV) used for meat (game) retrieval on the Yakutat Forelands, and documenting the natural recovery of those disturbances over time, and 3) documenting vegetation and soil recovery in the Soda-Nick root-wad harvest area. Monitoring reports were written for each of the three projects. Those reports are Landwehr 2016 for the Heceta project,

Catterson and Oehlers 2016, and Oehlers and Catterson 2017 for the Yakutat OHV work, and Landwehr and deMontigny 2016 for the Root-Wad harvest work.

Minimum size criteria for detrimental soil conditions were first defined by Tongass monitoring protocols in 1993 (Landwehr 1993). Since 2007, the Tongass soil scientists have conducted soil quality monitoring in older young-growth stands to improve our understanding of the minimum size of soil conditions that are truly detrimental to the growth of specified plants or plant communities.

As of this writing, the Region 10 Soil Quality Standards are one-size-fits-all. Monitoring data collected over the past 10 years indicates soil quality standards should have different minimum size criteria for different groups of soils. As a result of soil quality monitoring over the past 10 years, the Tongass has justification for increasing the minimum size criteria for most detrimental soil conditions to 100 square feet. Current soil quality monitoring protocols require documenting the size of each soil disturbance encountered on line transects.

## Monitoring Results for Item (viii)

### Question 19:

The data collected on the Heceta Integrated Resource Project indicates that Region 10 Soil Quality Standards were met in both of the stands monitored.

The data collected on the Soda-Nick root-wad harvest area indicates slow vegetation recovery compared to an adjacent conventional harvest stand and the authors recommend revisiting the site in 2020 to determine if vegetation recovery is different than adjacent stands and, if different, to identify a path forward for further monitoring to determine if detrimental soil conditions are the cause.

The data collected from approximately 9 kilometers of off-highway vehicle game retrieval trails at Yakutat shows that most game retrieval trails do not meet the definition of resource damage and the recovery data indicates that the definition of resource damage is too stringent. Disturbed sites are recovering very quickly on some vegetation types and more slowly on other vegetation types.

**Figure 6. OHV trail November 2015.**

**Figure 7. The same OHV trail August 2017.**

## Monitoring Discussion and Findings for Item (viii)

The monitoring data collected over the last 30 years indicates the Region 10 Soil Quality Standards should be specific to specific groups of soils. At this time, there are no plans to refine the Region 10 Soil Quality Standards. As more data is collected in older young-growth stands, the concepts regarding what is and is not a detrimental soil condition will become more refined.

More monitoring data is needed at the Soda-Nick root-wad harvest area to determine if the soil conditions are detrimental to desired vegetation composition and growth rate.

The monitoring of OHV impacts to soils and vegetation on the Yakutat Forelands indicates the definition of resource damage in the Yakutat Ranger District Access and Travel Management Plan may be too stringent. Further monitoring of vegetation and soil recovery should provide the district resource specialists with the data needed to make a recommendation of whether or not to change the definition of resource damage.

**Table 30. Summary of monitoring evaluation trends for Item (viii) Question 19**

| Current Status | Trend Towards Target | Trend Away from Target |
|---|---|---|
| Within target | 2 | 1 uncertain for the Soda-Nick Site. |
| Outside target | | 0 |

## Adaptive Management Considerations for Item (viii)

At this time, the data indicates that there is no need to change management systems to preserve soil productivity. As more data is collected in existing older young-growth stands, there may be a need to change the minimum size criteria of detrimental soil conditions. There may be a desire to modify the Region 10 Soil Quality Standards to be more specific to individual groups of soils versus the current one-size-fits-all standard.

The Yakutat Ranger District resource specialists will consider changing the definition of resource damage in the Yakutat Ranger District Access and Travel Management Plan based on the soil and vegetation recovery data collected on OHV trails used for game retrieval.

# Conclusion

**Table 31. Summary of monitoring evaluation findings for all monitoring questions**

| Changes may be warranted for the: | Yes | Uncertain |
|---|---|---|
| Forest plan | | |
| Management activities | | |
| Plan Monitoring Program | Revised questions or indicators needed for required Item (ii) and possibly Item (v) Question 33. Additional indicators needed for required item (vi). Focal species need to be identified for required item (iii) and species of conservation concern need to be identified for required item (iv). | |
| Forest assessment | | |

# Appendix A – Monitoring Items Not Evaluated in Detail in the Report

Table 32 includes the Tongass National Forest Plan Monitoring Program monitoring questions that do not fall into the requirements in 36 CFR 219.12 (a)(5) but may have been monitored in FY2016 and 2017 on the Tongass National Forest.

**Table 32. Monitoring items not evaluated in detail in the report, results of any monitoring completed in FY2016 and 2017, and an explanation of why some questions were not evaluated.**

| Monitoring Question | Reason for not Evaluating or Results |
|---|---|
| Question 1: Is air quality being maintained? | Lichens in Tongass wilderness areas are monitored for 26 different elements every 10 years with lichen biomonitoring. No new collections were made or evaluated during the 2016-17 monitoring period. |
| Question 4: Are young-growth treatments improving other key habitat components for old-growth associated species? | Same as Question 3 and covered in Required Item (ii) in the body of the report. |
| Question 5: Is the old-growth habitat on the Tongass being maintained to support populations of old-growth associated species and recognized subspecies, as described in the Conservation Strategy? | There is no new science relative to this question for FY16 and FY17 because the Forest Plan was being amended and part of that amendment was to correct acreages in OGRs to reflect requirements in the Conservation Strategy. The Interagency old growth reserve team reviewed the Sealaska Land Conveyance September 2015. This review was incorporated into the 2016 Forest Plan. |
| Question 8: Are destructive insects and disease organisms increasing to potentially damaging levels following management activities? | The Annual Forest Health Conditions Report for the State of Alaska was reviewed for 2016 and 2017. On the Tongass National Forest Plan Area spruce aphid populations were down in 2017. Young-growth monitoring observed yellow cedar decline on Zarembo, Wrangell, Mitkof, Kupreanof, and Prince of Wales Island, porcupine damage on Mitkof and Kupreanof Islands and hemlock canker on Prince of Wales Island. |
| Question 9: What are the status and trends of areas infested by aquatic and terrestrial invasive species relative to the desired condition? | In 2015, several sites across the Tongass were surveyed for invasive plants during the growing season. These sites were identified by ranger district or wilderness invasive plant management plans (or an equivalent process) as having a high risk of impacts due to new infestations and/or spread of existing infestations of invasive plants. The location and areal extent of invasive plant infestations was recorded at each site. As resources and staffing permit, these sites will be revisited during the 5-year monitoring cycle to assess changes in the number and area of the infestations. The set of sites was surveyed in 2015, and these sites will also be revisited in 2020. The future monitoring results will help inform managers about the status and trends of infestation at these sites.<br>In 2015, no monitoring for invasive terrestrial animal species was conducted on the Tongass. No monitoring of these sites occurred in 2016 or 2017 because the interval for monitoring these sites is every five years. The next monitoring survey is not due until 2020. |
| Question 10: How effective were our management activities, including those | In 2016 and 2017 a total of 388 acres of invasive plant infestations were treated. Numerous weed treatments were |

| Monitoring Question | Reason for not Evaluating or Results |
|---|---|
| done through partnerships, in preventing or controlling targeted invasive species? | completed as a result of five different partnerships over the two year evaluation period. |
| 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? | Five watersheds were sampled in 2016 and 5 watersheds were sampled in 2017. The second round of the rotating panel will be completed in 2019 (All watersheds sampled at least twice.) A summary report will be written in 2020. |
| Question 13: Is riparian vegetation maintained or restored to a condition that supports key riparian functions? | Fiscal year 2016 and 2017 were the seventeenth and eighteenth consecutive years that windthrow within stream buffers was monitored. Due to personnel turnover, not all acquired imagery has been analyzed for windthrow amounts or characteristics. |
| 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 | The Alaska Department of Fish and Game (ADF&G) is the state regulatory agency for all game and nongame species in Alaska. The Federal Subsistence Board also regulates subsistence hunting on Federal lands in Alaska. In addition, the U.S. Fish and Wildlife Service (USFWS) regulates populations of migratory birds and bald eagles. Therefore, we rely on these entities for reporting population status and trends when possible.<br>The Breeding Bird Survey, USFWS bald eagle nest surveys (approximately every 5 years) and more recently, the Alaska Landbird Monitoring Survey, are our best sources for monitoring populations of bald eagles.<br>Based on these reports, population and habitat trends are currently consistent with Forest Plan expectations. |
| Question 15: What is the geographic distribution and habitat relationships of mammalian endemic species on the Tongass? | No new data collection or analysis occurred during the 2016 to 2017 sampling and evaluation period. |
| 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 Salmon stocks at Klag Bay, Falls Lake, Kanalku Lake, Klawock River, Neva Lake, Hetta Lake, Kook Lake and Sitkoh Lake were monitored. The decline in sockeye escapement is unrelated to the Forest Plan since no adverse effects to Sockeye Salmon have been identified in NEPA analyses of National Forest management activities in those watersheds. Eulachon returns were monitored in the Unuk and Stikine Rivers. No forest management activities that adversely affect eulachon were implemented in either watershed. Moose surveys were completed in on the Yakutat Forelands in 2016 and 2017. There is steady improvement in the moose population and bull/cow ratios. No National Forest management activities occurred that would negatively affect the moose population. |
| Question 18: What are the cumulative effects of changes to habitats that sustain rare plants? | No new data collection or analysis occurred during the evaluation period. |
| Question 22: Were the wetland conservation practices implemented and effective to avoid and/or minimize impacts to wetlands to the extent practicable? | Following the 2014 M&E report a determination was made that there is adequate data to answer this monitoring question, unless management actions change. The Forest Service continues to avoid and minimize impacts to wetlands to the extent practicable. |
| Question 23: Are the biological, mineralogical, cultural, paleontological components, and recreational values of the karst and caves maintained? | No new data collection or analysis occurred during the evaluation period. |

| Monitoring Question | Reason for not Evaluating or Results |
|---|---|
| Question 24: Are forest lands restocked within 5 years after harvest? | All lands harvested on the forest have been successfully regenerated according to the stocking guidelines and certification standards identified in the Silvicultural Practices Handbook (FSH 2409.17) |
| Question 25: Is the Forest meeting demand for economic timber sales within the limits of the timber sale adaptive management strategy? Is there sufficient volume under contract or awaiting sale? | In FY 2017, the Tongass offered 21.3 MMBF, sold and awarded 21.3 MMBF.<br>In FY 2017, the purchasers harvested 20.01 MMBF and had an ending inventory of 82.73 MMBF. The average annual harvest for the past 5 years is 34 MMBF.<br>In FY 2017 the harvest level was 25 MMBF and a remaining inventory of 118.2 MMBF with 2 years of volume under contract based on a 5 year average annual harvest of 39 MMBF/year.<br>The Tongass has not been able to establish sufficient shelf volume to maintain flexibility and stability in the sale program. |
| Question 26: Are timber harvest activities adhering to applicable timber management standards and guidelines relative to: a) created openings exceeding the maximum size limit for unit harvest, b) harvest on slopes greater than 72 percent slope gradient, or c) within the 1,000 feet beach and estuary buffer? | No openings greater than 100 acres were created as a result of even-aged or two-aged management on the Tongass during the years of FY16 and 17.<br>Steep slopes logged in FY 16 and 17 were logged according to the mitigation required on the unit cards. That mitigation was developed from on-site analysis of slope stability and assessment of risk to downslope resources.<br>No units were harvested within the 1,000 foot beach and/or estuary buffer. |
| Question 27: Is the amount of harvest within the ASQ? What proportion of the harvest is in each non-interchangeable component (NIC) and is the mix accurate compared to the Forest Plan? | The ASQ is divided into two non-interchangeable component (NIC) classifications based on land type and difficulty of harvest. The Forest Plan set a proportional mix set at approximately 89 percent NIC I and 11 percent NIC II. In 2016 and 2017 100% of the harvest was on NIC I component.<br>FY2005 through FY2017, the average annual volume sold was 40.9 MMBF or 15.3% of the annual Allowable Sale Quantity.<br>No action is necessary at this time because the annual volume sold has been, and is expected to continue to remain, well below the ASQ.<br>Economics and the need for the Forest Service to offer positive appraisal timber sales are driving the harvest to the NIC I component. The likelihood of offering the planned mix of NIC I and NIC II components remains in doubt. |
| Question 28: Are the standards and guidelines used for forest development roads and log transfer facilities effective in limiting the environmental effects to anticipated levels? | In 2016-2017, at least 10 percent of recently closed or maintained national forest system roads were evaluated. Log transfer facility (LTF) monitoring was accomplished through field inspection.<br>The monitoring showed that the road maintenance is limiting environmental effects from roads and log transfer facilities. |
| Question 29: Are roads and trails maintained in accordance with management objectives? | The 2016-17 monitoring effort has shown that motor vehicle use maps (MVUMs) have consistently made motor vehicle access prohibitions known.<br>The monitoring shows the roads are being maintained in accordance with their maintenance level objectives. |
| Question 30: Are Federal regulations (36 CFR 228) to ensure surface resource protection implemented and is the administration of this regulation through the Forest Plan effective in limiting soil and water resource impacts? | A BMP monitoring team revisited the Kensington Mine site to ensure corrective actions identified in 2015 were implemented. All corrective actions were implemented. |

| Monitoring Question | Reason for not Evaluating or Results |
|---|---|
| Question 31: Is the wilderness character being maintained? | Efforts have been made over the last several years, to identify the character for each wilderness and how to protect these components. This effort continued in 2016 & 2017 with the implementation of Wilderness Stewardship Performance (WSP), which identifies specific measureable elements for each wilderness.<br>Resource specialists believe they have sufficient data to state that wilderness character is maintained on the Tongass National Forest, however, there are data gaps or missing data which would strengthen the evaluation. The Wilderness Character Monitoring Technical Guide for the Forest Service was revised in 2017 and will be published in 2018. The Tongass Wilderness Monitoring Plan will need to be reviewed for compliance with the national protocols. |
| Question 32: Are Wild, Scenic, and Recreational River Standards and Guidelines effective in maintaining or enhancing the free flowing conditions and outstandingly remarkable values at the classification level for which the river was found suitable for designation as part of the National Wild and Scenic River System? | There were no projects proposed that included effects to proposed Wild, Scenic or Recreational River characteristics and no NEPA documents completed that evaluated impacts to Wild, Scenic or Recreational River characteristics. |
| Question 35: a) Are cultural resources being protected through regularly scheduled monitoring efforts for Priority Heritage Assets?<br>b) Are cultural resources being managed at a project-specific level in accordance with Forest Service policy of avoidance and protection or through achieving a “no adverse effect” to historic properties with a signed Memorandum of Agreement with the State Historic Preservation Officer?<br>c) Are sacred sites identified and protected through regularly scheduled monitoring efforts and/or consultation with affected tribes or Indian Religious Practitioners? | a) Twenty percent of all priority heritage sites received updated condition assessments each year during the evaluation period.<br>b) 103 cultural resources were either avoided, or reached a “no adverse effect” via either Standard Section 106 procedures or through the completion of an MOA with the State Historic Preservation Offices. There were no “adverse effects” to cultural resources recorded in FY16 and FY17 based on project records.<br>c) A total of 44 Sacred Sites were monitored during the reporting year as a result of regular monitoring or consultation with appropriate parties. One site was found to be in a disturbed condition. |
| Question 36: Are the adopted scenic integrity objectives established in the Forest Plan met? | Two timber harvest units, one recreation area and the Tonka Sort Yard were monitored to determine if scenic integrity objectives were met. In all cases the management activities met the scenic integrity objectives. |
| Question 37: What are the numbers and trends of employment in the a) wood products, b) recreation and tourism, c) mining, and d) fishing industries in Southeast Alaska? | No new data collection or analysis occurred during the evaluation period. |
| Question 38: What is the trend in outputs and their associated costs? | No new data collection or analysis occurred during the evaluation period. |

# Appendix D: Monitoring Discussion & Findings and Adaptive Management Findings Work Sheet

In this appendix, a group of 16 questions will be answered for each of the 8 required monitoring items. The questions are designed to help the forest identify need for change in any of the following four areas: monitoring program, plan components, management activities, or assessment [36CFR 219.12(d)(2)]. The 16 questions are grouped by the four areas: monitoring program (questions 1-4), plan components (questions 5-8), management activities (questions 9-12) and assessment (questions 13-16).

## Monitoring Discussion and Findings: Item (i), the status of select watershed conditions

### Monitoring Program (Questions 1-4)

1. Did the monitoring results provide all the information necessary to answer the monitoring question? **Yes**
2. **If yes**, go on to question 5. (Also, mark in Table 33 in the Adaptive Management Considerations section) that no change would be warranted to the Monitoring Program based on this monitoring question). If no, list the information that was missing, incomplete, or was needed to answer the monitoring question.
3. For those items listed in 2) above, **briefly describe why** the information was missing, incomplete, or otherwise not provided in the monitoring results?
4. Based on the responses to 1), 2), and 3) above, may a change be warranted for the Plan Monitoring Program?

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 33 below.

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 33 below.

### Forest Plan (Questions 5-8)

5. Based on the monitoring results, are the Forest Plan components progressing, trending, or maintaining as desired or anticipated? **Yes**
6. **If yes,** briefly describe the success and go on to question 9. (Also, indicate that no change would be warranted for the Forest Plan based on this monitoring question, see Table 33).

   **As of 2017 the Tongass has completed all essential watershed restoration projects in four priority watersheds. The Forest has continued to identify new priority watersheds and continues to work to complete essential projects in those priority watersheds.**

   **If no,** list the monitoring indicators – or other plan components – from the results section that are not progressing, trending, or maintaining as anticipated.
7. For those items listed in 6) above, **briefly describe why** these Forest Plan components may not be progressing, trending, or maintaining as anticipated.

8. Based on the answers to 5), 6), and 7) above, may a change be warranted for the Forest Plan?

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 33 below.

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 33 below.

## Management Activities (Questions 9-12)

9. Did any USFS management activities or other events in the Plan area positively or negatively influence the monitoring results? **Yes**

10. **If no**, go on to question 14. (Also, indicate that no change would be warranted for Management Activities in the Plan area based on this monitoring question, see Table 33).

    **If yes**, list the management activities or other events that may have influenced the monitoring results? **Watershed restoration work has positively changed the status of select watershed conditions.**

11. For those items listed in 10) above, **briefly describe** how those management activities or other events may have influenced the monitoring results? **Watershed restoration activities have positively changed the status of select watershed conditions, specifically through improvements to aquatic habitat, riparian/wetland vegetation, and roads and trails indicators.**

12. Based on the response to 9), 10), and 11) above, may change be warranted for management activities in the Plan area? **No**

    **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 33 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 33 below.

## Forest Assessment (Questions 13-16)

13. Do the monitoring results show trends or values <u>not</u> anticipated or described in the Forest Plan Assessment? **No**

14. **If no,** skip the remaining questions. (Also, indicate that no change would be warranted for Forest Assessment in the Plan area based on this monitoring question, see Table 33.).

    **If yes,** briefly list the unanticipated or poorly described conditions in the Forest Assessment.

15. For those items listed in 14) above, **briefly describe** what in the Forest Assessment was not anticipated or described in the Forest Assessment?

16. Based on the responses to 13), 14), and 15) above, may a change be warranted for the Forest Assessment?

    **If a** change **may be warranted,** briefly describe the opportunities for change here, and mark the respective box in Table 33 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 33 below.

**If change is not warranted**, then the response to 13) above should have been "yes".

## Adaptive Management Considerations

**Table 33. Summary of where change may be warranted based on results for Item (i)**

| Changes may be warranted for the: | Yes | Unsure | No |
|---|---|---|---|
| Forest Plan | | | x |
| Management activities | | | x |
| Plan Monitoring Program | | | x |
| Forest assessment | | | x |

## Monitoring Discussion and Findings: Item (ii), the status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems

### Monitoring Program (Questions 1-4)

1. Did the monitoring results provide all the information necessary to answer the monitoring question? **No for terrestrial questions and indicators, yes for aquatic questions and indicators.**
2. **If yes**, go on to question 5. (Also, mark in Table 34 in the Adaptive Management Considerations section) that no change would be warranted to the Monitoring Program based on this monitoring question). If no, list the information that was missing, incomplete, or was needed to answer the monitoring question.
3. For those items listed in 2) above, **briefly describe why** the information was missing, incomplete, or otherwise not provided in the monitoring results?

   **The current Forest Plan monitoring questions for terrestrial wildlife do not provide indicators that directly respond to the 2012 Planning Rule for the monitoring of terrestrial wildlife under Required Item (ii).**
4. Based on the responses to 1), 2), and 3) above, may a change be warranted for the Plan Monitoring Program? **Yes for terrestrial condition indicators, no for aquatic indicators.**

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 35 below.

   **As a result of new information and changes needed as per the 2012 Planning Rule, the wildlife biologists are recommending new monitoring questions and associated indicators (Draft list in Table 30 below.) These are draft recommendations from Tongass wildlife biologists, pending further discussion and insight from other resource specialists.**

   **The second to last question in Table 34 clarifies Biodiversity Question 5. Threatened and Endangered Species Question 17 (required monitoring item iv) is recommended to remain as currently written, and is included in Table 34. Pending other resource input, these draft questions and indicators (Table 34) may replace existing Biodiversity questions 3-7 and Wildlife Terrestrial Habitat questions 14-15.**

**Table 34. Draft recommendations for monitoring plan changes from TNF wildlife biologists, including Forest Plan components, monitoring questions, indicators, and potential data sources.**

| Forest Plan Component | Required Item number | Monitoring Questions | Indicator(s) | Potential Data Source |
|---|---|---|---|---|
| Functional connectivity of the old growth ecosystem as per the Old Growth Habitat Conservation Strategy<br>Wildlife Goal page 2-6[2]: Maintain the abundance and distribution of habitats, especially old-growth forests, to sustain viable populations in the planning area. | (iii) | What is the trend in occupancy rates of flying squirrels in connective old growth habitat in heavily harvested VCUs? | Occupancy rates of flying squirrels in connective old growth habitat in heavily harvested VCUs as estimated with acoustic detectors and tracked over time. | Wildlife inventory in connective old growth habitat in heavily harvested VCUs. |
| Functional connectivity of the old growth ecosystem as per the Old Growth Habitat Conservation Strategy<br>Wildlife Goal page 2-6: Maintain the abundance and distribution of habitats, especially old-growth forests, to sustain viable populations in the planning area. | (iii) and (iv) | What is the trend in occupancy rates of Pacific marten on Kuiu Island, and the status of ecological conditions that maintain Pacific marten populations on Kuiu Island? | Occupancy rates of Pacific marten on Kuiu Island as estimated with camera and hair traps and tracked over time.<br>Changes in the number of acres of high volume productive old-growth forest, canopy cover and connectivity, and densities of large trees, snags, and logs relative to historic conditions and tracked over time on Kuiu Island below 1,500 feet elevation. | Wildlife and habitat inventory on Kuiu Island. |
| Functional connectivity of the old growth ecosystem as per the Old Growth Habitat Conservation Strategy<br>WILD1 A and B (page 3-63), Wildlife VI A 1 and 2 (page 4-87), Appendix K | (vii) | Do small, medium, and large old growth reserves meet acreage and connectivity requirements? | Reserve location, composition, size, and connectivity criteria detailed in WILD1 B (page 3-63), Wildlife VI A 2 (page 4-87), and Appendix K | OGR Tracking table<br>GIS Inventory<br>Relevant Forest Plan amendments for projects and land exchanges plus individual reserve adjustments made without amendment. |

[2] Unless otherwise specified, page numbers and Appendix references in this table refer to locations in the 2016 Tongass Land and Resource Management Plan (Forest Plan)

| Forest Plan Component | Required Item number | Monitoring Questions | Indicator(s) | Potential Data Source |
|---|---|---|---|---|
| DC-YG-04 (page 5-2), DC-YG-BEACH-01 (page 5-5), DC-YG-WILD-01 (page 5-8) | (vii) | Are commercial young-growth treatments in Old growth Habitat LUD and beach fringe accelerating development of late-seral conditions? | Late-seral structural characteristics are not enhanced or accelerated by commercial young-growth treatments in OGH and beach fringe. | Analysis of prescriptions - Pre vs post-treatment silvicultural inventory. |
| Wildlife VII B (page 4-88), Wildlife VI A (page 4-87) | (vii) | Are projects considering and incorporating movement and landscape connectivity needs for deer and other wildlife? | Percent of PCT and other treatments likely to inhibit wildlife mobility that incorporate elevational or other movement corridors.<br>Characterization of the efficacy of such corridors based on their size, frequency, and landscape position. | Analysis of PCT and other treatment prescriptions. |
| 36 CFR 219.12 (a)(5)vi – Requirement | (vi) | What are the measurable changes in mountain goat population numbers and habitat within the plan area related to climate change and other stressors? | Population trends of mountain goats tracked over time.<br>Acres of suitable summer and winter mountain goat habitat tracked over time. | ADF&G-USFS wildlife inventory and spatial data. |

**If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in 35 below.

## Forest Plan (Questions 5-8)

5. Based on the monitoring results, are the Forest Plan components progressing, trending, or maintaining as desired or anticipated? **Yes**

6. **If yes,** briefly describe the success and go on to question 9. (Also, indicate that no change would be warranted for the Forest Plan based on this monitoring question, see Table 35).

   **Overall, young-growth treatments are improving understory vegetation which provides improved habitat for species studied (i.e. deer, small mammals, etc.).**

   **If no,** list the monitoring indicators – or other plan components – from the results section that are not progressing, trending, or maintaining as anticipated.

7. For those items listed in 6) above, **briefly describe why** these Forest Plan components may not be progressing, trending, or maintaining as anticipated.

8. Based on the answers to 5), 6), and 7) above, may a change be warranted for the Forest Plan?

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 35 below.

**If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 35 below.

## Management Activities (Questions 9-12)

9. Did any USFS management activities or other events in the Plan area positively or negatively influence the monitoring results? **Yes**

10. **If no**, go on to question 14. (Also, indicate that no change would be warranted for Management Activities in the Plan area based on this monitoring question, see Table 35).

    **If yes**, list the management activities or other events that may have influenced the monitoring results? **Vegetation treatments in young growth positively affect terrestrial ecological conditions.**

11. For those items listed in 10) above, **briefly describe** how those management activities or other events may have influenced the monitoring results? **Old-growth timber harvest can negatively affect terrestrial ecological conditions, numerous young-growth vegetation treatments can improve terrestrial ecological conditions. Vegetation treatments in young growth increase the amount of light hitting the forest floor and the additional light stimulates understory vegetation growth providing food for deer and other terrestrial mammals.**

12. Based on the response to 9), 10), and 11) above, may change be warranted for management activities in the Plan area? **No**

    **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 35 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 35 below.

## Forest Assessment (Questions 13-16)

13. Do the monitoring results show trends or values not anticipated or described in the Forest Plan Assessment? **No**

14. **If no,** skip the remaining questions. (Also, indicate that no change would be warranted for Forest Assessment in the Plan area based on this monitoring question, see Table 35.)

    **If yes,** briefly list the unanticipated or poorly described conditions in the Forest Assessment.

15. For those items listed in 14) above, **briefly describe** what in the Forest Assessment was not anticipated or described in the Forest Assessment?

16. Based on the responses to 13), 14), and 15) above, may a change be warranted for the Forest Assessment?

    **If a** change **may be warranted,** briefly describe the opportunities for change here, and mark the respective box in Table 35 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 35 below.

If change is not warranted, then the response to 13) above should have been "yes".

## Adaptive Management Considerations

**Table 35. Summary of where change may be warranted in the Tongass Monitoring Program based on results for Item (ii)**

| Changes may be warranted for the: | Yes | Unsure | No |
|---|---|---|---|
| Forest Plan | | | x |
| Management activities | | | x |
| Plan Monitoring Program | Questions 9-12 | | |
| Forest assessment | | | x |

## Monitoring Discussion and Findings: Item (iii), the status of focal species to assess the ecological conditions required under 219.9.

### Monitoring Program (Questions 1-4)

1. Did the monitoring results provide all the information necessary to answer the monitoring question? **No**
2. **If yes**, go on to question 5. (Also, mark in Table 36 in the Adaptive Management Considerations section) that no change would be warranted to the Monitoring Program based on this monitoring question). If no, list the information that was missing, incomplete, or was needed to answer the monitoring question. **The Tongass has not designated focal species**.
3. For those items listed in 2) above, **briefly describe why** the information was missing, incomplete, or otherwise not provided in the monitoring results? **The Tongass has not designated focal species.**
4. Based on the responses to 1), 2), and 3) above, may a change be warranted for the Plan Monitoring Program? **Yes**

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 36 below. **Opportunity and requirement to designate focal species.**

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 36 below.

### Forest Plan (Questions 5-8)

5. Based on the monitoring results, are the Forest Plan components progressing, trending, or maintaining as desired or anticipated? **Unknown, no results**
6. **If yes,** briefly describe the success and go on to question 9. (Also, indicate that no change would be warranted for the Forest Plan based on this monitoring question, see Table 36).

   **If no,** list the monitoring indicators – or other plan components – from the results section that are not progressing, trending, or maintaining as anticipated.
7. For those items listed in 6) above, **briefly describe why** these Forest Plan components may not be progressing, trending, or maintaining as anticipated.
8. Based on the answers to 5), 6), and 7) above, may a change be warranted for the Forest Plan?

**If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 36 below. **Opportunity and requirement to designate focal species.**

**If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 36 below.

## Management Activities (Questions 9-12)

9. Did any USFS management activities or other events in the Plan area positively or negatively influence the monitoring results? **Unknown**

10. **If no**, go on to question 14. (Also, indicate that no change would be warranted for Management Activities in the Plan area based on this monitoring question, see Table 36).

    **If yes**, list the management activities or other events that may have influenced the monitoring results?

11. For those items listed in 10) above, **briefly describe** how those management activities or other events may have influenced the monitoring results?

12. Based on the response to 9), 10), and 11) above, may change be warranted for management activities in the Plan area?

    **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 36 below. **Opportunity and requirement to designate focal species.**

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 36 below.

## Forest Assessment (Questions 13-16)

13. Do the monitoring results show trends or values not anticipated or described in the Forest Plan Assessment? **Unknown**

14. **If no,** skip the remaining questions. (Also, indicate that no change would be warranted for Forest Assessment in the Plan area based on this monitoring question, see Table 36.)

    **If yes,** briefly list the unanticipated or poorly described conditions in the Forest Assessment.

15. For those items listed in 14) above, **briefly describe** what in the Forest Assessment was not anticipated or described in the Forest Assessment?

16. Based on the responses to 13), 14), and 15) above, may a change be warranted for the Forest Assessment?

    **If a** change **may be warranted,** briefly describe the opportunities for change here, and mark the respective box in Table 36 below. **Opportunity and requirement to designate focal species.**

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 36 below.

If change is not warranted, then the response to 13) above should have been "yes".

## Adaptive Management Considerations

**Table 36. Summary of where change may be warranted based on results for Item (iii)**

| Changes may be warranted for the: | Yes | Unsure | No |
|---|---|---|---|
| Forest Plan | | | x |
| Management activities | | | x |
| Plan Monitoring Program | x | | |
| Forest assessment | | | x |

## Monitoring Discussion and Findings: 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 species of conservation concern.

### Monitoring Program (Questions 1-4)

1. Did the monitoring results provide all the information necessary to answer the monitoring question? **Yes for threatened and endangered species, No for species of conservation concern.**
2. **If yes**, go on to question 5. (Also, mark in Table 37 in the Adaptive Management Considerations section) that no change would be warranted to the Monitoring Program based on this monitoring question). If no, list the information that was missing, incomplete, or was needed to answer the monitoring question. **The Forest has yet to designate species of conservation concern.**
3. For those items listed in 2) above, **briefly describe why** the information was missing, incomplete, or otherwise not provided in the monitoring results? **Species of conservation concern were evaluated for the 2016 Forest Plan amendment, and a list was forwarded to the Regional Forester. A decision was made not to include species of conservation concern in the 2016 Forest Plan Amendment Decision and to designate them at a later date. Other priorities have thus far prevented the forest from designating species of conservation concern.**
4. Based on the responses to 1), 2), and 3) above, may a change be warranted for the Plan Monitoring Program? **Yes**

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 37 below. **Opportunity and requirement to designate species of conservation concern.**

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 37 below.

### Forest Plan (Questions 5-8)

5. Based on the monitoring results, are the Forest Plan components progressing, trending, or maintaining as desired or anticipated? **Yes for threatened and endangered species, unknown for species of conservation concern.**

6. **If yes,** briefly describe the success and go on to question 9. (Also, indicate that no change would be warranted for the Forest Plan based on this monitoring question, see Table 37). **Threatened and endangered species occur in the marine environment surrounding the forest. Plan components follow NMFS recommendations to prevent adverse impacts to threatened and endangered species**.

   **If no,** list the monitoring indicators – or other plan components – from the results section that are not progressing, trending, or maintaining as anticipated.

7. The Forest has an opportunity and requirement to designate species of conservation concern to facilitate monitoring of required Item (iv). For those items listed in 6) above, **briefly describe why** these Forest Plan components may not be progressing, trending, or maintaining as anticipated.

8. Based on the answers to 5), 6), and 7) above, may a change be warranted for the Forest Plan?

   **No**

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 37 below. **The Forest has an opportunity and requirement to designate species of conservation concern to facilitate monitoring of required Item (iv).**

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 37 below.

## Management Activities (Questions 9-12)

9. Did any USFS management activities or other events in the Plan area positively or negatively influence the monitoring results? **No for Threatened and Endangered species, unknown for species of conservation concern.**

10. **If no**, go on to question 14. (Also, indicate that no change would be warranted for Management Activities in the Plan area based on this monitoring question, see Table 37).

    **If yes**, list the management activities or other events that may have influenced the monitoring results?

11. For those items listed in 10) above, **briefly describe** how those management activities or other events may have influenced the monitoring results

12. Based on the response to 9), 10), and 11) above, may change be warranted for management activities in the Plan area? **No**

    **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 37 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 37 below.

## Forest Assessment (Questions 13-16)

13. Do the monitoring results show trends or values <u>not</u> anticipated or described in the Forest Plan Assessment? **No**

14. **If no,** skip the remaining questions. (Also, indicate that no change would be warranted for Forest Assessment in the Plan area based on this monitoring question, see Table 37.).

    **If yes,** briefly list the unanticipated or poorly described conditions in the Forest Assessment.

15. For those items listed in 14) above, **briefly describe** what in the Forest Assessment was not anticipated or described in the Forest Assessment?

16. Based on the responses to 13), 14), and 15) above, may a change be warranted for the Forest Assessment?

    **If a** change **may be warranted,** briefly describe the opportunities for change here, and mark the respective box in Table 37 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 37 below.

If change is not warranted, then the response to 13) above should have been "yes".

## Adaptive Management Considerations

**Table 37. Summary of where change may be warranted based on results for Item (iv)**

| Changes may be warranted for the: | Yes | Unsure | No |
|---|---|---|---|
| Forest Plan | | | x |
| Management activities | | | x |
| Plan Monitoring Program | x | | |
| Forest assessment | | | x |

## Monitoring Discussion and Findings: Item (v), the status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives. Questions 33 and 34.

### Monitoring Program (Questions 1-4)

1. Did the monitoring results provide all the information necessary to answer the monitoring question? **Yes**

2. **If yes**, go on to question 5. (Also, mark in Table 38 in the Adaptive Management Considerations section) that no change would be warranted to the Monitoring Program based on this monitoring question). If no, list the information that was missing, incomplete, or was needed to answer the monitoring question.

3. For those items listed in 2) above, **briefly describe why** the information was missing, incomplete, or otherwise not provided in the monitoring results?

**N/A**

4. Based on the responses to 1), 2), and 3) above, may a change be warranted for the Plan Monitoring Program?

    **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 38 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 38 below. **There may be a need to revise this monitoring item within the monitoring plan. 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 resource specialists recommend reviewing this monitoring item for its usefulness and determining if there is a better method to measure ROS class for determining recreation and tourism trends and impacts.**

## Forest Plan (Questions 5-8)

5. Based on the monitoring results, are the Forest Plan components progressing, trending, or maintaining as desired or anticipated? **Yes**

6. **If yes,** briefly describe the success and go on to question 9. (Also, indicate that no change would be warranted for the Forest Plan based on this monitoring question, see Table 38). **No change to the Forest Plan components would be warranted for question 33 – Are areas of the Forest being managed in accordance with the Recreation Opportunity Spectrum (ROS) class in the Forest-wide Standards and Guidelines? The Forest Plan components adequately reflect what is needed to manage the forest in accordance with the ROS class. However, the Forest Plan also allows for changing the ROS class if it is not being met**.

   **If no,** list the monitoring indicators – or other plan components – from the results section that are not progressing, trending, or maintaining as anticipated.

7. For those items listed in 6) above, **briefly describe why** these Forest Plan components may not be progressing, trending, or maintaining as anticipated.

8. Based on the answers to 5), 6), and 7) above, may a change be warranted for the Forest Plan?

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 38 below.

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 38below.

   **N/A**

## Management Activities (Questions 9-12)

9. Did any USFS management activities or other events in the Plan area positively or negatively influence the monitoring results? **No**

10. **If no**, go on to question 14. (Also, indicate that no change would be warranted for Management Activities in the Plan area based on this monitoring question, see Table 38).

    **If yes**, list the management activities or other events that may have influenced the monitoring results?

    **N/A**

11. For those items listed in 10) above, **briefly describe** how those management activities or other events may have influenced the monitoring results?

    **N/A**

12. Based on the response to 9), 10), and 11) above, may change be warranted for management activities in the Plan area?

    **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 38 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 38 below.

**N/A**

### Forest Assessment (Questions 13-16)

13. Do the monitoring results show trends or values not anticipated or described in the Forest Plan Assessment? **No for ROS, NVUM results will not be available until 2020.**

14. **If no,** skip the remaining questions. (Also, indicate that no change would be warranted for Forest Assessment in the Plan area based on this monitoring question, see Table 38.)

    **If yes,** briefly list the unanticipated or poorly described conditions in the Forest Assessment.

15. For those items listed in 14) above, **briefly describe** what in the Forest Assessment was not anticipated or described in the Forest Assessment?

**N/A**

16. Based on the responses to 13), 14), and 15) above, may a change be warranted for the Forest Assessment?

    **If a** change **may be warranted,** briefly describe the opportunities for change here, and mark the respective box in Table 38 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 38 below.

    **N/A**

## Adaptive Management Considerations

**Table 38. Summary of where change may be warranted based on results for Item (v)**

| Changes may be warranted for the: | Yes | Unsure | No |
|---|---|---|---|
| Forest Plan | | | x |
| Management activities | | | x |
| Plan Monitoring Program | | x | |
| Forest assessment | | | x |

## Monitoring Discussion and Findings: Item (vi) Measureable changes in the Plan area related to climate change and other stressors that may be affecting the Plan area. Question 2.

### Monitoring Program (Questions 1-4)

1. Did the monitoring results provide all the information necessary to answer the monitoring question? **No**

   **If yes**, go on to question 5. (Also, mark in Table 39 in the Adaptive Management Considerations section) that no change would be warranted to the Monitoring Program based on this monitoring question). If no, list the information that was missing, incomplete, or was needed to answer the monitoring question. **The revised Question 2 relies on periodic analysis of FIA tree data. The last periodic analysis was in 2014. Updated FIA data is available every 6 to 8 years. The climate change vulnerability assessments for the Tongass National Forest have identified the need for a more-extensive set of indicators to respond to**

**Required Item (vi). Those indicators will likely be included in a future revision of the Forest Plan Monitoring Plan. Appendix A, Question 8 describes the status of insect, disease and invasive species populations that may be sensitive to or indicate climate change.**

2. **If yes**, go on to question 5. (Also, mark in Table 39 in the Adaptive Management Considerations section) that no change would be warranted to the Monitoring Program based on this monitoring question). If no, list the information that was missing, incomplete, or was needed to answer the monitoring question.
3. For those items listed in 2) above, **briefly describe why** the information was missing, incomplete, or otherwise not provided in the monitoring results? **No data was collected in this reporting cycle.**
4. Based on the responses to 1), 2), and 3) above, may a change be warranted for the Plan Monitoring Program? **Yes**

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 39 below. **The climate change vulnerability assessments for the Tongass National Forest have identified the need for a more-extensive set of indicators to respond to Required Item (vi).**

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 39 below.

## Forest Plan (Questions 5-8)

5. Based on the monitoring results, are the Forest Plan components progressing, trending, or maintaining as desired or anticipated? **Unknown**
6. **If yes,** briefly describe the success and go on to question 9. (Also, indicate that no change would be warranted for the Forest Plan based on this monitoring question, see Table 39).

   **If no,** list the monitoring indicators – or other plan components – from the results section that are not progressing, trending, or maintaining as anticipated.
7. For those items listed in 6) above, **briefly describe why** these Forest Plan components may not be progressing, trending, or maintaining as anticipated.
8. Based on the answers to 5), 6), and 7) above, may a change be warranted for the Forest Plan? **Change is not warranted at this time.**

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 39 below.

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 39 below.

## Management Activities (Questions 9-12)

9. Did any USFS management activities or other events in the Plan area positively or negatively influence the monitoring results? **No**
10. **If no**, go on to question 14. (Also, indicate that no change would be warranted for Management Activities in the Plan area based on this monitoring question, see Table 39).

    **If yes**, list the management activities or other events that may have influenced the monitoring results?

11. For those items listed in 10) above, **briefly describe** how those management activities or other events may have influenced the monitoring results?

12. Based on the response to 9), 10), and 11) above, may change be warranted for management activities in the Plan area?

    **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 39 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 39 below.

### Forest Assessment (Questions 13-16)

13. Do the monitoring results show trends or values not anticipated or described in the Forest Plan Assessment? **No**

14. **If no,** skip the remaining questions. (Also, indicate that no change would be warranted for Forest Assessment in the Plan area based on this monitoring question, see Table 39.)

    **If yes,** briefly list the unanticipated or poorly described conditions in the Forest Assessment.

15. For those items listed in 14) above, **briefly describe** what in the Forest Assessment was not anticipated or described in the Forest Assessment?

16. Based on the responses to 13), 14), and 15) above, may a change be warranted for the Forest Assessment?

    **If a** change **may be warranted,** briefly describe the opportunities for change here, and mark the respective box in Table 39 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 39below.

If change is not warranted, then the response to 13) above should have been "yes".

## Adaptive Management Considerations

**Table 39. Summary of where change may be warranted based on results for Item (vi)**

| Changes may be warranted for the: | Yes | Unsure | No |
|---|---|---|---|
| Forest Plan | | | x |
| Management activities | | | x |
| Plan Monitoring Program | x | | |
| Forest assessment | | | x |

## Monitoring Discussion and Findings: Item (vii) Progress toward meeting the desired conditions and objectives in the plan, including providing for multiple use opportunities. Question 20.

### Monitoring Program (Questions 1-4)

1. Did the monitoring results provide all the information necessary to answer the monitoring question? **Yes**

2. **If yes**, go on to question 5. (Also, mark in Table 40 in the Adaptive Management Considerations section) that no change would be warranted to the Monitoring Program based on this monitoring question). If no, list the information that was missing, incomplete, or was needed to answer the monitoring question.
3. For those items listed in 2) above, **briefly describe why** the information was missing, incomplete, or otherwise not provided in the monitoring results?
4. Based on the responses to 1), 2), and 3) above, may a change be warranted for the Plan Monitoring Program?

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 40 below.

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 40 below.

## Forest Plan (Questions 5-8)

5. Based on the monitoring results, are the Forest Plan components progressing, trending, or maintaining as desired or anticipated? **Yes**
6. **If yes,** briefly describe the success and go on to question 9. (Also, indicate that no change would be warranted for the Forest Plan based on this monitoring question, see Table 40). **BMP monitoring has increased awareness and continually strives to improve forest management for the protection of water quality.**

   **If no,** list the monitoring indicators – or other plan components – from the results section that are not progressing, trending, or maintaining as anticipated.
7. For those items listed in 6) above, **briefly describe why** these Forest Plan components may not be progressing, trending, or maintaining as anticipated.
8. Based on the answers to 5), 6), and 7) above, may a change be warranted for the Forest Plan?

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 40 below.

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 40 below.

## Management Activities (Questions 9-12)

9. Did any USFS management activities or other events in the Plan area positively or negatively influence the monitoring results? **No**
10. If no, go on to question 14. (Also, indicate that no change would be warranted for Management Activities in the Plan area based on this monitoring question, see Table 40).

    **If yes**, list the management activities or other events that may have influenced the monitoring results?
11. For those items listed in 10) above, briefly describe how those management activities or other events may have influenced the monitoring results?
12. Based on the response to 9), 10), and 11) above, may change be warranted for management activities in the Plan area?

**If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 40 below.

**If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 40 below.

### Forest Assessment (Questions 13-16)

13. Do the monitoring results show trends or values not anticipated or described in the Forest Plan Assessment? **No**
14. If no, skip the remaining questions. (Also, indicate that no change would be warranted for Forest Assessment in the Plan area based on this monitoring question, see Table 40.)

    **If yes,** briefly list the unanticipated or poorly described conditions in the Forest Assessment.
15. For those items listed in 14) above, briefly describe what in the Forest Assessment was not anticipated or described in the Forest Assessment?
16. Based on the responses to 13), 14), and 15) above, may a change be warranted for the Forest Assessment?

    **If a** change **may be warranted,** briefly describe the opportunities for change here, and mark the respective box in Table 40 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 40 below.

If change is not warranted, then the response to 13) above should have been "yes".

## Adaptive Management Considerations

**Table 40. Summary of where change may be warranted based on results for Item (vii)**

| Changes may be warranted for the: | Yes | Unsure | No |
|---|---|---|---|
| Forest Plan | | | x |
| Management activities | | | x |
| Plan Monitoring Program | | | x |
| Forest assessment | | | x |

## Monitoring Discussion and Findings: Item (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)(30(C)). Question 19.

### Monitoring Program (Questions 1-4)

1. Did the monitoring results provide all the information necessary to answer the monitoring question? **Yes**
2. **If yes**, go on to question 5. (Also, mark in Table 41 in the Adaptive Management Considerations section) that no change would be warranted to the Monitoring Program based on this monitoring question). If no, list the information that was missing, incomplete, or was needed to answer the monitoring question.

3. For those items listed in 2) above, **briefly describe** why the information was missing, incomplete, or otherwise not provided in the monitoring results?

4. Based on the responses to 1), 2), and 3) above, may a change be warranted for the Plan Monitoring Program?

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 41 below.

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 41 below.

## Forest Plan (Questions 5-8)

5. Based on the monitoring results, are the Forest Plan components progressing, trending, or maintaining as desired or anticipated? **Yes**

6. **If yes**, briefly describe the success and go on to question 9. (Also, indicate that no change would be warranted for the Forest Plan based on this monitoring question, see Table 41). **Soil quality monitoring over the past 30 years has shown that typical management systems practiced on the forest are capable of maintaining the productivity of the land.**

   **If no**, list the monitoring indicators – or other plan components – from the results section that are not progressing, trending, or maintaining as anticipated.

7. For those items listed in 6) above, **briefly describe why** these Forest Plan components may not be progressing, trending, or maintaining as anticipated.

8. Based on the answers to 5), 6), and 7) above, may a change be warranted for the Forest Plan?

   **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 41 below.

   **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 41 below.

   **N/A**

## Management Activities (Questions 9-12)

9. Did any USFS management activities or other events in the Plan area positively or negatively influence the monitoring results? No

10. If no, go on to question 14. (Also, indicate that no change would be warranted for Management Activities in the Plan area based on this monitoring question, see Table 41).

    **If yes**, list the management activities or other events that may have influenced the monitoring results?

    **N/A**

11. For those items listed in 10) above, **briefly describe** how those management activities or other events may have influenced the monitoring results?

    **N/A**

12. Based on the response to 9), 10), and 11) above, may change be warranted for management activities in the Plan area?

    **If change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 41 below.

**If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 41 below.

**N/A**

### Forest Assessment (Questions 13-16)

13. Do the monitoring results show trends or values not anticipated or described in the Forest Plan Assessment? **No.**
14. **If no**, skip the remaining questions. (Also, indicate that no change would be warranted for Forest Assessment in the Plan area based on this monitoring question, see Table 41.)

    **If yes,** briefly list the unanticipated or poorly described conditions in the Forest Assessment.
15. For those items listed in 14) above, **briefly describe** what in the Forest Assessment was not anticipated or described in the Forest Assessment?

    **N/A**
16. Based on the responses to 13), 14), and 15) above, may a change be warranted for the Forest Assessment?

    **If a change may be warranted**, briefly describe the opportunities for change here, and mark the respective box in Table 41 below.

    **If unsure**, briefly discuss why the response was not "change may" or "change is not" warranted, and mark the respective box in Table 41 below.

    **N/A**

## Adaptive Management Considerations

**Table 41. Summary of where change may be warranted based on results for Item (viii)**

| Changes may be warranted for the: | Yes | Unsure | No |
|---|---|---|---|
| Forest Plan | | | x |
| Management activities | | | x |
| Plan Monitoring Program | | | x |
| Forest assessment | | | x |