CHUGACH NATIONAL FOREST

Forest Plan Monitoring Report
Fiscal Year 2015

First known Chugach National Forest occurrence of the invasive plant cheatgrass (Bromus tectorum) as observed during 2015 surveys.

United States Department of Agriculture
Forest Service
Alaska Region
Chugach National Forest

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EXECUTIVE SUMMARY

The 2002 Chugach Forest Plan, as amended, established 26 monitoring questions to evaluate the Forest Plan's effectiveness. Sampling protocols have been finalized for 23 of these questions. In fiscal year 2015, information was successfully collected to evaluate 16 of the 26 monitoring questions.

This report summarizes the monitoring activities conducted in FY 2015 and provides results of monitoring efforts. It provides recommendations for remedial action if monitoring identified concerns related to progress toward achieving goals, objectives and desired conditions described in the Forest Plan.

I have reviewed the FY2015 Forest Plan Monitoring and Evaluation Report for the Chugach National Forest and am making the results available to the public. I find that our monitoring and this report meet the intent of the Forest's Monitoring Plan. No need to amend the Forest Plan was identified as a result of this monitoring.

Terri Marceron 12/18/2018

Terri Marceron
Forest Supervisor

Date

INTRODUCTION

This is the annual monitoring and evaluation report for fiscal year 2015 for the Chugach National Forest Revised Land and Resource Management Plan (Forest Plan)(USDA Forest Service 2002). The Forest Plan provides guidance for all resource management activities on the Chugach National Forest (CNF). It does this in part by establishing Forest-wide goals, objectives, and management direction. The monitoring and evaluation process is used to ensure that Forest Plan direction is being implemented, is effective, and is not causing effects that were not predicted in the Forest Plan's Final Environmental Impact Statement (FEIS). The evaluation process is also used to assess progress in achieving desired conditions, goals, and objectives expressed in the Forest Plan, and to verify that assumptions made in the Forest Plan and FEIS are valid.

The overall strategy for this monitoring and evaluation program is described in Chapter 5 of the Forest Plan. The strategy includes a series of monitoring questions and indicators by which Forest Plan effectiveness and implementation progress can be measured. Detailed protocol for collecting and analyzing information needed to address each question has been developed separately and is described in the Chugach Monitoring Guide (USDA Forest Service 2011). The development and revision of these sampling and analysis protocols occurs independently from the Forest Planning process.

The monitoring questions as described in the 2002 Forest Plan have been substantially revised through a series of Forest Plan amendments. As of 2012, there were 26 monitoring questions that form the basis of the monitoring evaluation and are addressed in this annual report (Table 1). For three of these questions the indicators and associated sampling and analysis protocols have not yet been developed and approved, as is noted in Table 1. Therefore, information for these questions was not collected in 2015. Five of the questions were not scheduled for sampling in 2015 and data collection for two questions related to timber harvest was not necessary based on the lack of activity on the Forest.

Monitoring results are summarized and evaluated only for items monitored in FY15 and include (1) recommendations for remedial action, and (2) actions taken in FY15 to respond to previous recommendations. The monitoring strategy specifically calls for these items to be included in the annual reports.

All Forest Plan monitoring questions, including items for which no monitoring occurred, are summarized in Table 1.

Details related to each monitoring question follow the summary provided in Table 1. The presentation of these details is structured such that questions related to similar resource issues or monitoring purpose are grouped together under the same heading.

This detailed information was extracted from individual project reports that were prepared for each of the monitoring questions. These project reports were prepared by those Chugach Forest specialists responsible for collecting and analyzing the relevant monitoring data.

Table 1. Summary of 26 Forest Plan monitoring questions with data collection status for FY 2015.

Category	Monitoring Question	Data Status
Plan Compliance	Q1 - Are projects being implemented consistent with the Forest Plan direction?	Collected
Plan Effectiveness	Q2 - Are management activities achieving their intended outcomes?	Collected
	Q3 - To what extent is ecosystem composition and structure changing and has forest management influenced those changes? How do these changes compare to the expected range?	Collected
Air Resources	Q4 - Are Forest management actions contributing to changes in air quality on the Forest?	No, Not Scheduled
Soil Resources	Q5 -What is the effect of summer OHV use on soils and/or vegetation where OHV use is allowed? Are management practices (standards, guidelines, BMPs, mitigation measures) effective in maintaining soil quality and in meeting the severity limits for selected soil properties?	No Need Protocol
Water Resources	Q6 - Are best management practices (including wetland management) effective in meeting water quality standards?	Collected
Aquatic and Riparian Habitat	Q7 - Are riparian and aquatic habitat protection measures included in project planning and are Revised Forest Plan standards and guidelines being met during project implementation?	No Need Protocol
Sensitive and Exotic Plants	Q8 - What is the abundance and distribution of sensitive plants in areas affected by management activities?	Collected
	Q9 - What is the distribution and abundance of exotic plants, particularly in areas affected by management activities?	Collected
Management Indicator Species	Q10 - Has the Revised Forest Plan direction prevented adverse interactions between bears and humans?	Collected
	Q11 - What are the population trends for brown bear and the relationship to habitat?	No, Need Protocol
	Q12 - What are the population trends for dusky Canada geese and the relationship to habitat?	Collected

Category	Monitoring Question	Data Status
	Q13 - What are the population trends for moose and the relationship to habitat?	Collected
	Q14 - What are the population trends for mountain goat and the relationship to habitat change?	No, Not Scheduled
	Q15 - What are the population trends for black oystercatchers and the relationship to habitat?	Collected
Species of Special Interest	Q16 - Is Forest management maintaining favorable conditions for sustaining Kenai wolverines?	No, Not Scheduled
Forest Products	Q17 - Are forestlands restocked?	Not needed
	Q18 - Have conditions changed that would affect the suitability of timber production lands?	No, No timber harvest
Heritage Resources	Q19 - Are National Register eligible heritage resources being adequately maintained and protected?	Collected, No Summary Available
Recreation	Q20 - Is the revised Forest Plan direction for motorized and non-motorized access working?	No, Not Scheduled
	Q21 - What are the trends in the use of developed recreational facilities and how does it compare to capacity?	No, Not Scheduled
	Q22 - What are the trends in commercial recreation services on the Forest and how does it compare to capacity?	Collected
Scenic Quality	Q23 - Are areas of the Forest being managed in accordance with the Scenery Integrity Objectives (SIO) in Forest-wide Standards and Guidelines?	Collected, No Summary Available
Fire and Fuels	Q24 - What is the pattern of abundance of different fuel types on the Kenai Peninsula?	Collected
Wilderness	Q25 - Is the wilderness character of the Wilderness Study Area (WSA) and areas recommended for Wilderness being maintained?	Collected
Research Natural Areas	Q26 - Are proposed and established Research Natural Areas being maintained in a state unmodified by human activity?	Collected

MONITORING RESULTS

Compliance with Forest Plan

Q1 - Are projects being implemented consistent with the Forest Plan direction?

Status: Monitored in FY 2015

Evaluation: This protocol evaluates whether projects were implemented consistent with Forest Plan Direction and NEPA decision documents. This protocol was coordinated with other monitoring protocols (intended outcomes, water quality, sensitive plants, invasive plants, and scenery integrity objectives). Five projects were examined on the Glacier Ranger District:

- Wood Bison Project (EA),
- Alaska Wildlife Conservation Center special use permit renewal (CE),
- Recreation Roads Reconditioning (CE),
- Granite Vegetation Enhancement Project (EA) ,and
- Portage Valley Waterfowl and Fish Habitat Improvement Project (CE).

Findings: Monitoring shows that the five projects reviewed on the Glacier Ranger District are being implemented consistently with NEPA decision documents.

During the monitoring field trip, cheatgrass, an invasive species, was detected at the feeding location for the wood bison project. It was probably brought on to the site with feed hay for the bison. Mitigation in the EA stated that "the intent is to use hay that is as clean and free of invasive seeds and plant parts as is possible, and if certified weed-free hay is available, it will be used" (DN, p. 8). The AWCC stated that weed-free hay was not consistently available. Though implementation was consistent with the NEPA decision document, an invasive plant species was introduced into the area. The decision called for "biennial monitoring to detect the presence of non-native plant species within both pastures" (DN, p. 8). Thanks to monitoring, this plant was detected when its population was small and easily eradicated. This demonstrates the value of including and implementing these stipulations.

The threshold to trigger a management review has not been surpassed (3 or more projects not fully implementing the relevant forest plan direction in a rolling 5 year period).

Recommendations for remedial action: None

Actions taken in response to previous reports: None

Integrated Effectiveness/Validation Monitoring

Q2 - Are management activities achieving their intended outcomes?

Status: Monitored in FY 2015

Evaluation: This protocol evaluates if management activities achieved their intended outcomes. This protocol was coordinated with other monitoring protocols and specialists. This protocol evaluated the same five projects that were evaluated for monitoring question #1—Forest Plan Compliance:

- Wood Bison Project (EA),
- Alaska Wildlife Conservation Center special use permit renewal (CE),
- Recreation Roads Reconditioning (CE),
- Granite Vegetation Enhancement Project (EA) ,and
- Portage Valley Waterfowl and Fish Habitat Improvement Project (CE).

Finding: Monitoring shows that 12 out of 13 intended outcomes were fully achieved across the five projects evaluated in 2015. The other intended outcome was partially achieved. According to the pilot protocol, if two or more projects only partially achieve intended outcomes over a three year period, a forest leadership team management review should occur.

Two intended outcomes were only partially achieved over the past three years. After reviewing the pilot protocol and the scenario that triggered this threshold (one of the Portage Valley Project's intended outcomes was only partially achieved), it is recommended that thresholds for this protocol be reviewed and revised. A "partially achieved" intended outcome does not necessarily suggest that the project was not overall a success. A partially achieved outcome can be the result of many factors. Based on the circumstances, a management review is not recommended.

The Portage Valley project "partially" achieved the intended outcome of establishing habitat in reshaped ponds because some shorelines were too steep for effective establishment of vegetation in shallow areas. Though this outcome was not optimally achieved, the project overall still provided benefits to wildlife, habitat and people.

Recommendations for remedial action: None

Actions taken in response to previous reports: None

Q3 - To what extent is ecosystem composition and structure changing and has forest management influenced these changes? How do these changes compare to the expected range?

Status: Monitored in FY 2015

Evaluation: This monitoring summarizes trends in ecosystem composition and structural attributes across the Forest to identify if and where there are changes of sufficient magnitude to be of concern to management. Three datasets are used in the analyses, including 1) Forest Inventory and Analysis (FIA) data collected by the Pacific Northwest Research Station (PNW) of the Forest Service, 2) Moderate Resolution Imaging Spectroradiometer (MODIS) satellite imagery, and 3) LANDFIRE data. Under the protocol, reports with interpretations are generated every five years (beginning in 2012) with FIA data collected and summarized annually.

Findings: A complete set of FIA re-measurements became available in 2014. Forest vegetation change across the Chugach will be summarized early in 2016 using the FIA re-measurement data.

Recommendations for remedial action: None

Actions taken in response to previous reports: None

Air Resources

Q4 - Are Forest management actions contributing to changes in air quality on the Forest?

Status: Not scheduled for monitoring in FY 2015

Findings: None

Soil Resources

Q5 - What is the effect of summer OHV use on soils and/or vegetation where OHV use is allowed? Are management practices (standards, guidelines, BMPs, mitigation measures) effective in maintaining soil quality and in meeting the severity limits for selected soil properties?

Status: Not monitored in FY 2015; sampling protocol have not yet been developed

Findings: None

Water Resources

Q6 - Are Best Management Practices (including wetland management) effective in meeting water quality standards?

Status: Monitored in 2015

Evaluation: The forest plan standards and guidelines for soils (USDA Forest Service, Chugach National Forest 2002) require the implementation of best management practices (BMPs) specified in the Soil and Water Conservation Handbook (USDA Forest Service, Alaska Region 2006). BMPs are recognized as the primary control mechanisms for nonpoint source pollution on National Forest System lands. Monitoring of BMP implementation and effectiveness is intended to call attention to areas in which management activities are not following BMPs and/or are contributing to non-point sources of pollution that may lead to State water quality standards not being met. Annual BMP monitoring is required both nationally and by the Forest. The Chugach National Forest Monitoring Guide (USDA Forest Service, Chugach National Forest, 2011) includes annual monitoring of BMPs (Monitoring Question #6- *Are Best Management Practices (including wetland management) effective in meeting water quality standards?*). BMP monitoring is to be conducted in conjunction with monitoring Question #1 (*Are projects being implemented consistent with Forest Plan Direction?*).

The monitoring protocol in the Forest Monitoring Guide was developed between 2007 and 2011 as a pilot protocol to use prior to release of the National Forest Service BMP Handbook and Monitoring Technical Guide. BMP monitoring was conducted prior to 1998. In 2011 BMP monitoring piloted the new Forest monitoring protocol. No monitoring was conducted in 2012 due to a lack of staffing. In 2013 a pilot evaluation was initiated for the new National protocols released in the National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core BMP Technical Guide (USDA Forest Service, 2012). However, the Forest had not yet adopted the National protocol methods for project population pool development. It was not until 2014 that the Forest monitoring projects for Water Quality BMPs were chosen using the National protocol methods for population pool and development rather than the Forest protocol.

A detailed description of the new National protocol/methodology for site selection is provided on the WFW (Watershed, Fish, Wildlife, Air & Rare Plants) National Best Management (BMP) Program website:
http://fsweb.wo.fs.fed.us/wfw/watershed/national_bmps/index.html#recreationmgmt

The basis for BMP monitoring comes from a review of all applicable planning documents and field visits by an interdisciplinary team following project implementation. As noted earlier, the first full year implementing the new National BMP Monitoring protocol was 2014. This report will follow the implementation and effectiveness ratings in accordance

with the National protocol. BMP Implementation monitoring answers the question: “Did we do what we said we would do?”

Implementation monitoring assesses plan effectiveness by evaluating project prescriptions in planning documents and the translation of these prescriptions in to action documents, such as contracts and permits. In addition, operational execution of the project planning is considered. The 2014 National Implementation Rating categories are provided in **Table 2.**

BMP Effectiveness monitoring answers the question: “Did what we do work?” This protocol evaluates BMP application during chemical use near waterbodies related to effectiveness of control of chemicals and fuels. The National Effectiveness Rating Categories for 2014 for each activity are listed in **Table 3.** The Implementation Rating and Effectiveness Rating are combined into an Overall Rating for the National BMP evaluation (**Table 4**).

Table 2 National Protocol BMP ratings definitions for the 2015 BMP implementation monitoring.

Implementation Rating	Interpretation
Fully Implemented (4)	Prescriptions are identified in project planning documents, All prescriptions are translated into action documents, All specified prescriptions are implemented fully, and All necessary corrective actions identified during the project are implemented fully.
Mostly Implemented (3)	Prescriptions are identified in project planning documents, Some prescriptions are translated into action documents, All specified prescriptions are implemented fully, and All or Some necessary corrective actions identified during the project are implemented fully.
Marginally Implemented (2)	Prescriptions are identified in project planning documents, All or Some prescriptions are translated into action documents, and Some specified prescriptions are implemented fully, and All or Some necessary corrective actions identified during the project are implemented fully.
Not Implemented (1)	Prescriptions are identified in project planning documents, No prescriptions are translated into action documents, or No specified prescriptions are implemented fully, or No necessary corrective actions identified during the project are implemented.
No BMPs (0)	Site-specific BMP prescriptions were not developed or identified during project planning.

Table 3 National Protocol BMP ratings definitions for the 2015 BMP effectiveness monitoring.

Effectiveness Rating	Interpretation	
Effective (4)	No pollutants reached in the water and there is no potential threat evident --and-- No adverse effects to waterbody from the project or activity (e.g. physical disturbance)	
Mostly Effective (3)	Minor amounts of pollutants reached the waterbody or there is a potential threat evident --and/or-- Waterbody received minor adverse effects from the project or activity --and— Impacts to water quality are temporary, lasting less than one year	
Marginally Effective (2)	Minor amounts of pollutants reached the waterbody or there is a --and/or-- Waterbody received minor adverse effects from the project or activity --and-- Impacts to water quality are prolonged, lasting more than one year	Major amounts of pollutants reached the waterbody or there is a potential threat evident --and/or-- Waterbody received major adverse effects from the project or activity --and-- Impacts to water quality are temporary, lasting less than one year
Not Effective (1)	Major amounts of pollutants reached the waterbody or are very close to entering the waterbody --or-- Waterbody received major adverse effects from the project or activity --and-- Impacts to water quality are prolonged, lasting more than one year	

Table 4 Combined implementation and effectiveness ratings for the National Composite BMP evaluation.

Combined Scoring		**Implementation Rating (IR)**				
		Fully Implemented	**Mostly Implemented**	**Marginally Implemented**	**Not Implemented**	**No BMPs**
Effectiveness Rating (ER)	**Effective**	*Excellent*	*Excellent*	*Good*	*Good*	*No Plan*
	Mostly Effective	*Good*	*Good*	*Fair*	*Fair*	*No Plan*
	Marginally Effective	*Fair*	*Fair*	*Poor*	*Poor*	*No Plan*
	Not Effective	*Poor*	*Poor*	*Poor*	*Poor*	*No Plan*

The following five projects were chosen for Forest Plan BMP Monitoring in 2015:

- Alaska Wildlife Conservation Center Road Realignment (Road B- Completed Road or Waterbody Crossing Construction or Reconstruction)
- Granite Creek Vegetation Enhancement (Veg C– Mechanical Site Treatments)
- Portage Valley Waterfowl Fish Habitat (Veg C – Mechanical Site Treatments)
- Recreation Roads Recondition (Road F- Completed Road Decommissioning)
- Wood Bison Project – (Veg C- Mechanical Site Treatments)

These five sites are scattered across the Forest and encompass a variety of typical ground-disturbing activities (**Figure 1**).

Findings: Projects were chosen using the Forest Plan Monitoring protocol. A total of six sites were monitored, but only five are included in the report. The data from all six sites has been entered into the National BMP database.

Overall, most of the projects on the Forest rated out as *Mostly for* the *Implementation* rating, with the AWCC and the Wood Bison project rating out as *Not Implemented.* The lack of implementation rating on these projects was a result of the AWCC project having a much larger footprint than was covered in the project NEPA and a poor road design package and the Wood Bison planning document lacking Best Management Practices to protect soil, water and aquatic resources and an erosion control plan for the project area or clear designs or extents for the temp/skid roads. Please refer to the detailed description of the Alaska Wildlife Conservation Center Driveway Relocation and Wood Bison Vegetation projects in this report for more specific details for the lack of implementation. The average implementation rating for all of the projects was *Fair*.

Figure 1. Locations of the Chugach National Forest BMP projects monitored in 2015.

Most of the projects monitored for BMP *Effectiveness* received *Effective* ratings. Two projects received *Marginal* and *Not Effective* ratings. The AWCC driveway relocation received a *Not Effective* rating. This was a result of inadequate drainage structures/culverts to account for the monthly extreme high tides and affects of the high water table and infrequent project inspections by Forest Service personnel to ensure the project specifications/designs meet Forest Service Objectives and that erosion control measures

(i.e. silt fence) are in place and maintained. The average Effectiveness rating for all of the projects was *Good*.

The Overall Composite scores, this includes both the *implementation* and *effectiveness* monitoring, were all over the board from *Excellent* to *Poor.* The average of all of the projects resulted in a rating of *Good*.

The 2015 BMP monitoring was conducted by Interdisciplinary Teams. Project coordinators were involved in each inspection and on site to provide a project summary, answer questions, provide additional reference materials and close the adaptive loop by learning from the results of the monitoring.

Recommendations for remedial action: None

Actions taken in response to previous reports: None

Aquatic Habitat

Q7 - Are riparian and aquatic habitat protection measures included in project planning and are Forest Plan standards and guidelines being met during project implementation?

Status: Not monitored in FY 2015; sampling protocol have not yet been developed

Evaluation: This is a new monitoring question and is intended to replace two monitoring questions related to coho salmon and Dolly Varden char that were removed from the monitoring strategy because they were determined to be not feasible. A decision memo dated 5/29/2012 added this question to the monitoring strategy. The protocol for this new monitoring question is under development at this time.

Sensitive and Exotic Plant Species

Q8 - What is the abundance and distribution of sensitive plants in areas affected by management activities?

Status: Monitored in FY 2015

Evaluation: This monitoring evaluates the likelihood that Forest management activities are contributing to a downward trend in sensitive plant populations. Both effectiveness and implementation monitoring components are included. The effectiveness monitoring is to determine whether sensitive plant population abundance or distribution is changing in areas where management activities are occurring. The implementation monitoring is to

determine the extent to which mitigation measures from biological evaluations (BEs) and other botanical input are carried into NEPA documents, incorporated into decisions and permits, and finally implemented. Under the protocol, reporting occurs every five years (beginning in 2012), data entry to NRIS TESP occurs annually, and once there are at least five populations available for sampling, annual effectiveness monitoring occurs.

For logistical reasons, a selection of projects is surveyed on only one ranger district in a given year. In 2015, the following projects were selected for monitoring on the Glacier Ranger District:

- Alaska Wildlife Conservation Center Special Use Permit Renewal
- Wood Bison Project
- Granite Vegetation Enhancement Project
- Portage Valley Waterfowl and Fish Habitat Project
- Recreational Roads Reconditioning

Findings: No threatened, endangered, or sensitive plant occurrences were found in biological evaluations of the five project areas and in field visits to the areas as part of this monitoring in September 2015. No adverse effects to Forest Service sensitive plants are anticipated.

Recommendations for remedial action: None

Actions taken in response to previous reports: None

Q9 - What is the distribution and abundance of exotic plants, particularly in areas affected by management activities?

Status: Monitored in FY 2015

Evaluation: This monitoring documents the contribution of human-caused disturbance on the distribution and abundance of non-native (exotic) plants. It presents information on the distribution of invasive plants collected during the 2015 field season. Methodology for these surveys is consistent with the CNF forest plan monitoring protocol.

For logistical reasons, surveys to inventory the presence of invasive plants were largely restricted to the same project areas as examined for sensitive species. These project areas, as reported previously were:

- Alaska Wildlife Conservation Center Special Use Permit Renewal
- Wood Bison Project
- Granite Vegetation Enhancement Project

- Portage Valley Waterfowl and Fish Habitat Project
- Recreational Roads Reconditioning

Findings: In 2015, highly invasive plants (i.e. having an invasiveness rank exceeding 70) were observed at two projects; the Alaska Wildlife Conservation Center (AWCC) special use permit renewal area and the Wood Bison project area.

In the case of the AWCC project site, nine non-native plant species were observed along the road edge, but only one, reed canarygrass (*Phalaris arundinacea*), is considered extremely invasive (invasiveness rank 83 on scale of 100). The single reed canarygrass plant observed was likely introduced as a contaminant on the road construction equipment.

For the Wood Bison project area an infestation of highly invasive cheatgrass (*Bromus tectorum)* was observed on gravel substrate in the "holding area" of the access. In addition, a single individual of cheatgrass was observed in the predominantly native vegetation of the pasture. The infestation appears to have been introduced as a contaminant of hay. Both the EA and decision notice for the project express intent "to use hay that is clean and free of invasive seeds and plant parts as possible, and as certified weed-free hay is available, it will be used."

Recommendations for remedial action: Follow-up visits to both the AWCC and Wood Bison projects are recommended in 2016 to ensure that eradication efforts directed at the reed canarygrass and cheatgrass infestations in 2015 were successful.

Actions taken in response to previous reports: None

Management Indicator Species

Q10 - Has the Revised Forest Plan direction prevented adverse interactions between bears and humans?

Status: Monitored in FY 2015

Evaluation: This monitoring documents and evaluates trends in adverse human and brown bear (*Ursus arctos*) encounters through review of "defense of life and property" (DLP) permits. The DLP permits issued for brown bears are tracked by the Alaska Department of Fish and Game (ADF&G) by general location of the incident. The annual total of DLP permits is the total number of brown bears that were killed as a result of humans defending life or property. The total number of bear DLP permits issued within a given year is a subset of overall adverse interactions between brown bears and humans. The ADF&G defines the reporting period for 2015 to coincide with the State's fiscal year (July 2014 to July 2015).

Findings: There were no DLP's recorded by ADF&G on Chugach National Forest lands in FY 2014.

Recommendations for remedial action: None

Actions taken in response to previous reports: None

Q11 - What are the population trends for brown bear and the relationship to habitat?

Status: Not monitored in FY 2015; sampling protocol have not yet been developed

Findings: None

Q12 - What are the population trends for dusky Canada geese and the relationship to habitat?

Status: Monitored in FY 2015

Evaluation: Since 1984, artificial nest islands have been installed on the Copper River Delta (CRD), Alaska to enhance nest success of dusky Canada geese (*Branta canadensis occidentalis*). The average nest success of artificial islands installed on the CRD is approximately 62% (1984-2015), which is nearly double that found on natural sites.

In the past, newly installed nest islands were separated from established nest islands due to potential differences in vegetation cover and use. Vegetation on newly installed nest islands (i.e. in program 1-2 years) requires time to establish, making the nest islands more desirable. In 2013, it was determined that there was little to no difference in the condition (i.e. vegetation cover) or performance of newly installed nest islands and established nest islands (i.e. in program longer than 2 years). In addition, most of the criteria (i.e. vegetation cover, required maintenance) were identical between newly installed and established nest islands. For the purposes of this report, and for simplicity of data analysis and reporting in future reports, all nest islands have been combined (i.e. newly installed and established).

Findings: A total of 386 nest islands were monitored in June 2015. Of the 386 nest islands monitored, 372 were available (96%) for use by dusky Canada geese during the nesting season. Nest islands were used for both nesting (33%) and roosting (49%), by dusky Canada geese. A total of 123 dusky Canada goose nests were found on nest islands in 2015. Of the 123 nests, 102 successfully hatched (apparent nest success = 83%) and yielded approximately 338 goslings. Average clutch size was 3.3 (min = 1, max = 6). A total of 187

(50%) nest islands required maintenance (i.e. landscaping, anchoring, or both) in 2015. No additional nest islands were installed in 2015.

Recommendations for remedial action: Follow-up visits to both the AWCC and Wood Bison projects are recommended in 2016 to ensure that eradication efforts directed at the reed canarygrass and cheatgrass infestations in 2015 were successful.

Actions taken in response to previous reports: None

Q13 - What are the population trends for moose and the relationship to habitat?

Status: Monitored in FY 2015

Evaluation: This monitoring uses survey data collected by ADF&G in game management units (GMU) 6, 7, and 14C to track population trends of moose (*Alces alces*) on the Forest. Survey data compiled and evaluated in FY15 includes available data from 2004 through 2014. The data compiled from ADF&G surveys within GMU 7 and 14C suggests slightly declining population trends of moose. However, these trends should be evaluated with caution as samples sizes in both GMUs are low and data variability is too large to permit reliable statistical analysis. Moose populations trends in GMU 6 seen to be stable according to ADFG survey data.

Findings: Although count data collected in GMU 7 and 14C can be difficult to rigorously examine, it is the best information available given the current resources. The analysis conducted portrays, in a broad sense that populations are declining within both GMU 7 and 14C on the CNF. This correlates with decreasing long term trends seen in foraging habitat due to successional shifts (i.e. early seral habit to mature forest). The declines observed in moose numbers in GMU 7 and 14C appear to be exceeding the 35 % threshold listed in the monitoring protocol, with the exception of Twenty Mile count area which has been stable. Declining trends observed in GMU 7 and 14C should be evaluated with caution due to small sample sizes and large variability within the data.

Currently, the moose population trends observed in Unit 6C are stable to increasing and are within the Forest Plan monitoring threshold of 35%. Although the ADF&G data seems to support the argument for increasing herd size on the west CRD, the threshold level at which moose may begin impacting habitat is unknown for coastal populations.

Recommendations for remedial action: No recommendations for remedial action were made but several recommendations to improve the monitoring program include:

- Consulting with ADFG on population trends within GMU's and count areas showing 35% or greater decrease in moose numbers.

- Considering increasing the sample size (i.e. number of count areas surveyed) within GMU 7 to get more reliable trend estimates.
- Evaluating forest habitat conditions to determine if habitat and/or management decisions are contributing factors to potential population declines.
- Including ADFG harvest success and hunter effort by hunt units.
- Including ADFG twinning survey data to assess habitat quality on the Forest.
- Determining carrying capacities to assess habitat limitations.
- Continuing cooperative moose management studies (i.e. Kenai Mountains Moose Study, Oregon State University) to contribute a more complete picture of how habitat may be affecting moose population trends.

Actions taken in response to previous reports: None

Q14 - What are the population trends for mountain goat and the relationship to habitat change?

Status: Not scheduled for monitoring in FY 2015

Findings: None

Q15 - What are the population trends for black oystercatchers and the relationship to habitat change?

Status: Monitored in FY 2015

Evaluation: Black oystercatchers are listed as a "species of high concern" in the U.S. National Shorebird Conservation Plan, a Focal Species for the U.S. Fish & Wildlife Service (USFWS), a Chugach National Forest (CNF) Management Indicator Species (MIS), and a US Forest Service Alaska Region Sensitive Species. The Chugach Forest Plan (2002) advises monitoring population trends, habitat relationships, and habitat change for nesting black oystercatchers in PWS. The Chugach National Forest has been monitoring black oystercatcher nest locations in PWS since 1999.

By monitoring black oystercatcher populations, we can better assess the effects of human activities on shoreline ecosystems, and we can locate areas that may be sensitive to disturbance. Previous data collected in PWS has been used to analyze interactions between black oystercatchers and human activity. Future analysis will continue to compare populations and human activity effects.

The sampling design was developed in an attempt to retain the historically important survey regions of Harriman Fjord, Green Island, Montague Island, and the Dutch group, while incorporating shoreline segments from the entire PWS. In order to minimize travel time and expense to visit other sampled shorelines we took a regional approach to

sampling, and developed a split-panel rotating design to provide a balance between estimation of trend and estimation of yearly status. A split-panel rotating design also has the advantage of allowing more shorelines to be visited during the life of the monitoring program, which provides more opportunity to detect changes in the spatial distribution of nesting black oystercatchers in PWS.

Findings: A total of 41 potential regions were systematically sampled from all Chugach National Forest shoreline in PWS. Additionally, 5 regions from historically high nesting density areas were added to the sample including: Harriman Fjord, Green Island, the west side of Montague Island, and the Dutch Group. Transect center points were selected randomly from this set of regions. The resulting transects are 20 km in length.

In early June 2015, a total of 8 transects were surveyed in Prince William Sound including: Hawkins Island, Port Chalmers (Montague Island), Flemming Island, Whale Bay, Knight Island, Harriman Fjord, the Dutch Group, and Simpson Bay.

A total of 21 active black oystercatcher nesting territories were identified during the survey and an additional sixteen sites were identified with non-breeding black oystercatchers (Figure 2). The greatest densities of active black oystercatcher territories were located near Port Chalmers (n =12) on Montague Island. In addition, 52 total eggs, 6 chicks, and 91 (breeding and non-breeding) adults were observed during the 2015 survey. Data from the 2015 survey will be entered into the CNF black oystercatcher GIS database. Future analysis will continue to compare black oystercatcher populations and human activity effects across PWS.

Recommendations for remedial action: None

Actions taken in response to previous reports: None

Species of Special Interest

Q16 - Is Forest management maintaining favorable conditions for sustaining Kenai wolverines?

Status: Not scheduled for monitoring in FY 2015

Evaluation: The goals of this monitoring are to estimate wolverine (*Gulo gulo*) abundance and trend in the upper Turnagain Arm/Kenai Mountains area (TAKM) and to compare abundance within and outside areas used for helicopter skiing. Monitoring for this species was not undertaken in 2014, because this year was not scheduled for gathering information.

Forest Products

Q17 - Are forestlands restocked?

Status: No acres requiring monitoring in FY 2015

Evaluation: This monitoring documents if areas where timber has been harvested from National Forest System lands have been adequately restocked within five years after harvest to meet the legal requirements listed in NFMA. Currently the Forest does not have any outstanding acres where timber was harvested that have not been certified as being adequately restocked.

Findings: Since the reforestation needs associated with timber harvest on the Forest were zeroed out at the end of FY2006, no more reports are necessary with regard to this question. In addition, under the Forest Plan of 2002, no areas of the forest are designated for timber production so there are no restocking needs at this time.

Q18 - Have conditions changed that would affect the suitability of timber production lands?

Status: Not needed in FY 2015

Evaluation: The initial evaluation of changes in timber suitability was completed in 2012 (DeVelice 2012) and additional work was not needed in FY 2015.

Heritage Resources

Q19 - Are National Register eligible heritage resources being adequately maintained and protected?

Status: Information collected in FY 2014, but no project summary available at this time.

Evaluation: None reported

Findings: None reported

Recreation Opportunities, Tourism, Access, and Facilities

Q20 - Is the Revised Forest Plan direction for motorized and non-motorized access working?

Status: Not scheduled for monitoring in 2014; next monitoring scheduled for 2016.
Findings: None

Q21 - What is the use of developed recreational facilities and how does it compare to capacity?

Status: Not scheduled for monitoring in FY 2015

Findings: None

Q22 - What are the trends in commercial recreation services on the Forest and how does it compare to capacity?

Status: Monitored in FY 2015

Evaluation: The objectives of this monitoring are to determine the number of people using commercial services to recreate on the Chugach National Forest and to determine whether that use exceeds the capacity set in the Forest Plan. In addition, general trends in the public use of commercial services to recreate on the Forest are sought.

The data were collected from commercial recreation special use permit Final Use Reports provided by the permittees. These are housed at each of the three ranger districts. The special use permit staff entered the data into the forest-wide database used to track guided use. It is assumed that the data received from the permittee is complete and accurate.

Findings: Total reported commercial use of Chugach National Forest for the reporting period from May to September, 2015 was compiled is presented in tabular form showing the breakout for different recreational activities by Ranger District (Table 5). Across all activities, 18,343 commercial-based recreation days were reported for the CNF.

Recommendations for remedial action: None

Actions taken in response to previous reports: None

Table 5 Commercial outfitter/guide based recreational user days on the Chugach National Forest for the period May 23, 2015 to September 7, 2015.

ACTIVITY	Copper River Delta	Kenai Peninsula (includes Portage & Girdwood)	Prince William Sound
ATV Rides	0	19	0
Backpacking	0	693	0
Bird Watching	0	0	0
Camping	12	52	2791
Canoe	0	27	0
Dog Sled Tours	0	1179	0
Fishing	160	905	36
Flightseeing/Glacier Landing	0	63	0
Gold Panning	0	47	0
Hiking	115	1992	1113
Horseback Riding	0	98	0
Hunting	97	49	32
Ice Climbing	0	85	0
Kayak Day Trips	0	172	324
Motorized Boat Tours (jet boat)	0	228	0
Mountain Biking	0	77	40
Mountaineering	0	0	0
Nature Tours (Picnic)	698	202	40
Rafting	30	6,828	0
Packrafting	0	0	0
Photography	0	139	0
TOTAL	1,112 Service Days	12,855 Service Days	4,376 Service Days

Scenic Quality

Q23 - Are areas of the Forest being managed in accordance with the Scenery Integrity Objectives (SIO) in Forest-wide Standards and Guidelines?

Status: Information collected in FY 2015, but no project summary available at this time.

Evaluation: None reported.

Findings: None reported.

Fire Protection and Fuels Management

Q24 - What is the pattern of abundance of different fuel types on the Kenai Peninsula?

Status: Monitored in FY 2015

Evaluation: This monitoring includes both effectiveness and implementation components. The effectiveness monitoring interprets whether changes in fire regime condition class and down wood abundance (based on Forest Inventory and Analysis data) on the Kenai Peninsula geographic area are of sufficient magnitude to be a concern to management. The effectiveness monitoring is reported every five years (scheduled for 2017).

The implementation monitoring evaluates if fire protection and fuels management activities are consistent with the goals, objectives, standards and guidelines specified in the Forest Plan. The implementation monitoring occurs annually.

Findings: In FY 2015, 297 acres of hazardous fuel reduction via pile burning were accomplished. The Forest Plan specifies that 400 acres of hazardous fuel reduction via burning should be completed annually to reduce fuel buildups. The completed 297 acres is 74 percent of the 400 acre goal. Attaining the 400 acre goal may not be consistently feasible since other priorities in the integrated vegetation management program may dictate what treatments, objectives and projects are funded and may impact the available acres to be burned in a given year.

All other fire and fuels management activities were consistent with the Forest Plan.

Recommendations for remedial action: None

Actions taken in response to previous reports: None

Wilderness Study Area

Q25 - Is the wilderness character of the Wilderness Study Area (WSA) and areas recommended for Wilderness being maintained?

Status: Monitored in FY 2015.

Evaluation: This monitoring detects changes and trends in four qualities of wilderness character to determine if the Chugach National Forest is managing the WSA in a way that prevents degradation of wilderness character, in accordance with the Forest Plans "Wilderness Study Area Management Area' prescription. The WSA monitoring protocol is based on direction intended for monitoring designated wilderness areas because (1) the monitoring question is essentially the same as that used for designated wilderness areas (maintain wilderness character), and 2) Alaska Regional policy directs that the management of the WSA will follow the same direction provided for wildernesses established by ANILCA. The four qualities of wilderness character are taken from Landres et al. (2008): Untrammeled, Natural, Undeveloped, and Solitude or Primitive and Unconfined Recreation.

Untrammeled Quality - For the most part, vegetation, soil, fire, and wildlife actions are not being undertaken that would affect this quality of wilderness character in the WSA. However, exceptions exist and include:

- Culling Mink for Pigeon Guillemot Restoration, Naked Island
    - Under special use permit, mink are being culled from the Naked Island group in an attempt to increase pigeon guillemot populations injured during the Exxon Valdez oil spill. Seventy-six mink were killed in 2014 and twenty-three in 2015. Approximately 350 traps were set each year.
    - Audio playback devices are also used to attract pigeon guillemots to potential nest sites.

- Salmon Habitat Enhancement
    - USFS added brush bundles to Jackpot Lakes to enhance salmon rearing habitat. Bundles were created by cutting nearby alder and spruce. The WSA is being managed consistent with direction in ANILCA which provides for fisheries enhancement work. These activities may still affect the untrammeled quality of the area.

- Invasive Species Treatments (Note: invasive species treatments are a control of natural processes, but are undertaken to improve the natural quality of wilderness character. Techniques emphasize non-motorized and non-chemical methods)
    - Hand-collecting of European black slugs in Eshamy Bay

- Hand-pulling non-native dandelions at Port Wells and Harriman Fiord (View, Blacksand, Thirty-mile, and Hobo beaches)
- Hand-pulling of Icelandic poppies in Pigot Bay

Natural - Nonindigenous plant species are estimated to affect a "trace" of WSA lands. However, since 2012 several new occurrences of non-native dandelions have been documented in Harriman Fiord and Port Wells.

Two nonindigenous animal species are known to exist in the WSA (Sitka black-tailed deer, European black slug. Since 2012, a new black slug population has been documented at Eshamy Bay. Sightings have also been confirmed at the Cannery Creek Fish Hatchery in Unakwik Inlet. New black slug populations have also been confirmed at the WSA gateway communities of Chenega Bay and Whittier. Percent of land cover affected is not known, but is assumed to be small.

European Black Slug

No plants or animals are known to have been extirpated from the WSA. However, recent reports from Alaska Department of Fish and Game, along with anecdotal accounts, indicate a potentially sharp decrease in black bears.

At least two dams and two weirs affect streams within the WSA. One dam is at Cannery Creek Hatchery and the other is at a USFS fisheries project at Solf Lake. Several USFS fish ladders and structures are also in place, although none were added in 2015. The WSA is being managed consistent with direction in ANILCA which provides for aquaculture and fisheries enhancement activities within the WSA. The Cannery Creek Fish Hatchery preceded the designation of the WSA by ANILCA.

Undeveloped

Development

The most substantial developments in the WSA are the fish hatcheries at Cannery Creek and Main Bay and the Naked Island Communication Site. The developments are allowable in the WSA under ANILCA provisions. Developments include roads and a variety of buildings and installations. Each site occupies less than ten acres.

Research facilities exist at various locations throughout the WSA. Associated developments range from buildings to equipment installations. The developments occur on a small overall acreage, but their visual and cumulative effects do impact wilderness character. Changes were minimal in 2015.

Unauthorized developments exist within the WSA. In recent years the Forest Service has removed a substantial number of such developments. The largest changes in 2015 were the removal of sixty abandoned fuel drums from the Granite Mine area and an oil-spill era Conex container from Fairmount Point.

Motorized Uses

ANILCA provides for establishing and maintaining certain types of human development (communication sites and navigation aids, aquaculture improvements, public use cabins, structures necessary for the taking of fish and wildlife, and ANILCA privately owned cabins). While provided for by ANILCA, authorized motorized uses can affected the undeveloped character of the wilderness study area. These include automobiles, generators, and heavy equipment at the hatcheries. Generators and helicopters are used at the Naked Island Communication Site. Helicopters are also used to access certain research facilities. Smaller scale uses include generators at research facilities and set-net camps in the vicinity of Main Bay.

Generators, chainsaws, and metal cutting tools were authorized at Granite Mine to remove abandoned fuel barrels, but the actual removal of barrels was accomplished by hand.

Under the provisions of ANILCA Section 1110a, snow machine activity is allowed in the WSA for subsistence, travel between home sites, and traditional activities. Recreational use of snow machines has increased in the last decade in the Kenai Mountains region of the WSA. The Forest Service has performed limited monitoring. The low snow winter of 2014-2015 likely resulted in little to no snow machine activity in the WSA.

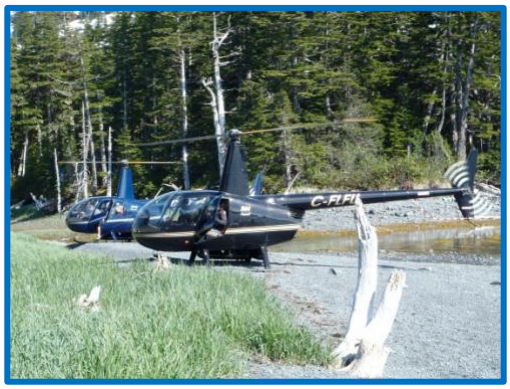
Chainsaws are allowed in the WSA under special use permit or by ANILCA if directly related to the taking of game and fish. Recreation visitors using chainsaws also is occurring in the WSA. Monitoring shows it is possibly increasing and that it has affected potentially hundreds of beaches. It also affects standing dead timber associated with the 1964 earthquake, which is identified as an “Other Feature” of the WSA’s wilderness character.

Unauthorized use of chainsaws to cut live trees, Glacier Island.

Landings of private and commercial flightseeing helicopters along WSA beaches in Harriman Fiord and Columbia Bay also occur. USFS monitoring and independent observations indicate the landings have increased in frequency and location in recent years, generating public complaints to the Forest Service about impacts to wilderness

character. Some of these landings are on intertidal lands managed by the State of Alaska but adjacent to the WSA.

Private helicopters landing within the WSA boundary in Blackstone Bay.



Passengers return to flightseeing helicopter after landing for a swim in Harriman Fiord.

Solitude **-** At the time of this report, data for certain measures of this quality have not been synthesized. In 2016, the data will be assembled and analyzed for trends.

Findings: The qualities of wilderness character remain high in most areas in the WSA, but structures, installations, motorized uses, and other activities have effects in places. Trend analysis will be conducted in 2016 for these four qualities.

Recommendations for remedial action: None

Actions taken in response to previous reports: None

Research Natural Areas

Q26 - Are proposed and established Research Natural Areas being maintained in a state unmodified by human activity?

Status: Monitored in FY 2015

Evaluation: This monitoring documents the ways that each of the Research Natural Areas (RNAs) on the Forest are being managed in a manner consistent with Standards and Guidelines and the RNA Management Area Prescription specified in the Forest Plan. There are two methodologies: 1) database review that occurs annually and 2) visitor effects monitoring that occur once every 5 years (next scheduled for 2017). Reviews of data in corporate databases in 2014 found no cases of non-compliance for any of the five RNAs.

Findings: Database review found no cases of non-compliance with Forest Plan direction for any of the five RNAs on the Forest.

Recommendations for remedial action: None

Actions taken in response to previous reports: None

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