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Forest Service

Alaska Region

Chugach National Forest

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CHUGACH NATIONAL FOREST

FY 2006 Forest Plan Monitoring and Evaluation Report

Table of Contents

EXECUTIVE SUMMARY

The Forest Plan and subsequent documents established 43 general monitoring questions for the Chugach National Forest. Included are three questions added after the Plan was published: one left out inadvertently and two added as a result of appeal decisions. In fiscal year 2006 (FY06), four of the 43 questions were monitored (black oystercatchers, trumpeter swans, mountain goats, and off-highway vehicle effects on soils). Results and recommendations for these monitoring questions are displayed in the following report. The remaining 39 questions were not monitored due to monitoring questions undergoing review, monitoring protocols that had not been completed or approved, lack of funding, or monitoring schedules that did not require monitoring to occur in FY06.

CERTIFICATION

I have reviewed the FY 2006 Forest Plan Monitoring and Evaluation Report for the Chugach National Forest. Under laws and regulations in effect at the time the Forest Plan was revised (May 31, 2002) a forest plan is generally revised every 10 to 15 years, or whenever the Forest Supervisor determines that conditions or demands have changed. This is the fourth year implementing the Revised Land and Resource Management Plan. Based on the monitoring results in this document, I am satisfied that the revised Forest Plan is sufficient to guide management of the Forest and that there is no need for change of the plan at this time.

This report is approved.

Robert L. Simmons

for JOE L. MEADE
Forest Supervisor

AUG. 8, 2008
Date

INTRODUCTION

This is the annual monitoring and evaluation report for fiscal year 2006 (FY06) for the Chugach National Forest Revised Land and Resource Management Plan (Forest Plan). The Forest Plan provides guidance for all resource management activities on the Chugach National Forest. 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 the desired conditions, goals, and objectives, and to verify that assumptions made in the Forest Plan and FEIS are valid.

The Forest's monitoring and evaluation strategy is found in Chapter 5 of the Forest Plan. The strategy outlines the basic elements of the monitoring program, establishes a Monitoring and Evaluation Interdisciplinary Team (MEIT), and defines 40 key monitoring questions. Three questions were added after the Plan was published, raising the total number of monitoring items to 43. The three additional questions include one left out inadvertently (monitoring of mountain goat, a management indicator species), and two added as a result of appeal decisions (air quality and summer OHV use). All Forest Plan monitoring is directed toward answering these 43 questions, which are termed "general monitoring questions."

The MEIT has developed protocols that provide specific monitoring details for many of the general questions. Some protocols that were previously completed are currently being revised. Until this effort is complete, monitoring efforts may be minimal or non-existent for many items. Protocols are documented in the Monitoring Guide, which occurs outside of the Forest Plan in order to be responsive to best available science. A copy of the most current Monitoring Guide can be requested from the Supervisor's Office.

The Record of Decision (ROD) for the Forest Plan acknowledged a need for obtaining information about the effects of winter snowmachine use on ungulates and bears. The Forest regards this as a study to address specific informational needs, not as Forest Plan monitoring; therefore, no information is presented in this document on that subject.

MONITORING ITEMS

All Forest Plan monitoring questions are presented below with a summary of results for FY 2006, including items for which no monitoring occurred. Reasons precluding monitoring were: (1) monitoring question under review; (2) monitoring protocol under development; (3) lack of funding; and (4) monitoring schedules that did not require monitoring to take place in FY 2006. Please see Evaluation of the Chugach Forest Plan Monitoring and Evaluation Strategy for the ranking criteria and process.

The general monitoring questions are grouped by monitoring purpose or applicable resource category (e.g., Soil Resources), and are in the same order as presented in Chapter 5 of the Forest Plan. The three items that were added after the Plan was published are found at the end of the list in a category termed "Additional Questions."

For each general monitoring question, the frequency (i.e., schedule) of data collection and evaluation are displayed as presented in Chapter 5 of the Forest Plan. The schedules represent expectations under maximum funding levels. In some cases, the collection and evaluation frequencies are different than what is documented in the Monitoring Guide. Although the schedules in the Monitoring Guide are more appropriate, they have not yet formally replaced the schedules established in the Forest Plan, so are not displayed here. A table displaying the history of monitoring by fiscal year begins on page 18.

Monitoring results are displayed and answered only for items that were monitored in FY 2006. Items monitored in FY 2006 also show (1) recommendations for remedial action, and (2) actions taken in FY 2006 to respond to previous recommendations. The monitoring strategy specifically identifies that these two items be included in the annual reports.

Compliance with Revised Forest Plan

Are projects being implemented consistent with the Forest Plan direction?

- Frequency of Collection: Once every 5 years
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

Integrated Effectiveness/Validation Monitoring

Are management activities achieving their intended outcomes?

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (monitoring question under review)

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?

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

Soil Resources

What is the level of ground disturbing activity?

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

Water Resources

What is the existing water quality?

- The MEIT assigned very low priority to this item because it is more appropriate as a research item and not a monitoring question. The Forest Leadership Team agreed with the MEIT, and decided that no monitoring effort would occur in FY 2006.

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

- Frequency of Collection: As Scheduled
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

Sensitive and Exotic Plant Species

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

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

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

- Frequency of Collection: Annual
- Frequency of Evaluation: Annual
- Status in FY 2006: Not monitored (protocol being developed)

Management Indicator Species

What are the population trends for Management Indicator Species (MIS) and their relationship to habitat? Are MIS truly reflective of all fish and wildlife species on the Forest?

- The MEIT assigned low priority to this item because: (1) the first component is redundant with the general monitoring questions for specific MIS, and (2) the second component is more appropriate as a research item than a monitoring question. The Forest Leadership Team agreed with the MEIT, and decided no monitoring effort would occur in FY 2006.

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

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

What are the population trends for brown bear and the relationship to habitat[1]?

- Frequency of Collection: Every third year
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored[1]

[1] Populations of these species are being monitored by other agencies. Chugach National Forest will use these data rather than duplicating monitoring efforts.

What are the population trends for dusky Canada geese and the relationship to habitat? [1]

- Frequency of Collection: Every third year
- Frequency of Evaluation: 3 years
- Status in FY 2006: Not monitored[1]

What are the population trends for moose and the relationship to habitat[1]?

- Frequency of Collection: Annual
- Frequency of Evaluation: Annual
- Status in FY 2006: Not monitored[1]

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

- Frequency of Collection: 3 years of each 5 year period
- Frequency of Evaluation: 5 years
- Status in FY 2006: Monitored

The Forest Service has been monitoring oystercatchers in two regions of Prince William Sound for several years, including FY 2006. The monitoring areas are named Harriman Fiord and Eastern Prince William Sound (EPWS). The original FY 2006 data reports for these two studies are found in Spiegel et al. (2006) and Burcham (no date), respectively, and are summarized below.

Populations: Population densities averaged 1.5 birds per shoreline mile in Harriman Fiord, and 2.7 birds per mile in Eastern Prince William Sound. Densities were higher in shoreline habitats having a substantial gravel component, and lower in other habitats.

Use of nesting beaches: In FY 2006, nesting beaches supported an average of 0.6 territorial pairs per mile in Harriman Fiord, and 1.0 pairs per mile in EPWS. The EPWS average was higher than densities reported by Andres and Falxa (1995) for other parts of Alaska, but lower than areas of Washington and British.

Specific characteristics of nesting beaches: Of 39 nests found in Harriman Fiord, most were on gravel beaches; see Figure 1. Figure 2 shows the proportions of shoreline types available. Comparing these figures shows that gravel beaches and mixed sand/gravel beaches were used more than their proportionate availability, whereas all other shoreline types were used less. This is similar to findings in EPWS, where over half (54%) of all nests were located in small patches of gravel. Beach slopes were measured at the EPWS site, and were typically gentle with an average of less than 11% slope.

Overlapping use of beaches by nesting black oystercatchers and recreationists: Over 150 people were observed on the beaches of Harriman Fiord during FY 2006. One airplane was seen landing in EPWS. No conflicts were observed between these recreationists and oystercatcher nest success.

Figure 1

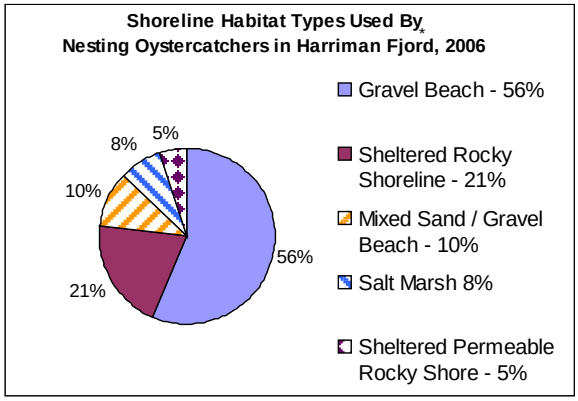
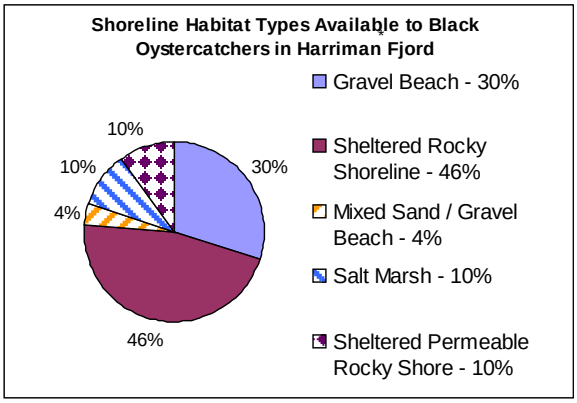


Figure 2



*see Peterson et al. 2002 for a description of shoreline types

Evaluation: FY 2006 monitoring data supports the Forest Plan assumption that oystercatchers prefer nesting on the same types of beaches used by recreationists (e.g., non-rocky, relatively flat). Although concurrent use of nesting beaches by recreationists did not appear to affect nest success in FY 2006, further monitoring is needed to discern long-term effects. This is partly because FY 2006 represents only one year of data on nest success. Secondly, it is possible that recreational use could discourage oystercatchers from re-occupying established territories or defining new ones, and these behaviors are not captured by monitoring nest success. However, this information will likely become clearer as territories and banded birds are monitored through time.

Both the Harriman Fiord and EPWS monitoring areas provide multiple years of population and habitat data that will be evaluated for trends and Forest Plan consistency in the upcoming 5-year evaluation report.

***Recommendations of remedial action*:** None.

***Actions taken in response to recommendations identified in previous reports**:* None.

Other Recommendations: The MEIT reinterpreted general monitoring questions from the Revised Forest Plan when they were not clearly stated as a Forest Plan monitoring question. Based on the information presented for this question in Table 5-1 of the Forest Plan, MEIT rephrased it to "What are the population trends for black oystercatchers and the relationship to habitat change? It is recommended to change monitoring question to reflect MEIT interpretation. Furthermore, as protocols are finalized, the evaluation and recommendations presented here will be reconsidered.

What are the population trends for Dolly Varden char and the relationship to habitat?

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (monitoring question under review)

What are the population trends for Coho salmon and the relationship to habitat?[1]

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (monitoring question under review)

Species of Special Interest

Is Forest management maintaining favorable conditions for sustaining gray wolves?

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (not funded)

Is Forest management maintaining favorable conditions for sustaining Kenai wolverines?

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (not funded)

Is Forest management maintaining favorable conditions for sustaining Townsend warblers?

- Frequency of Collection: 5 years
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (not funded)

Is Forest management maintaining favorable conditions for sustaining northern goshawks?

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (not funded)

Is Forest management maintaining favorable conditions for sustaining Sitka black-tailed deer?

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (not funded)

Is Forest management maintaining favorable conditions for sustaining the Montague Island marmot?

- Frequency of Collection: 1 time
- Frequency of Evaluation: Five years
- Status in FY 2006: Not monitored (not funded)

Is Forest management maintaining favorable conditions for sustaining cutthroat trout?

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (not funded)

Threatened, Endangered and Sensitive Animal Species

What are the status and trends of trumpeter swans?

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Monitored on Kenai, not funded on Copper River Delta

In FY 2006, the Seward Ranger District completed their third consecutive year of swan surveys in order to gather baseline data on swan abundance, distribution, and trends on the Kenai Peninsula. Objectives, methods, and results summarized below are fully described in Dragoo and Benoit (2006).

Efforts revealed 29 swans during spring surveys, and 23 swans during fall. Approximately 435 miles (700 km) were surveyed. This equates to a density of 0.07 swans per mile in spring, and 0.05 swans per mile in fall. These data will be combined with survey data from previous monitoring to evaluate trend in the 5-year monitoring and evaluation report.

Swans were observed in all but three areas where they had been observed in previous years. This could be due to the later survey date in FY 2006, which might have resulted in fewer counts of transient birds migrating through the area.

Number of nesting swans: During spring of FY 2006, ten pairs of swans were observed on Seward Ranger District. Three pairs showed evidence of nesting. These data will be combined with nesting data from previous monitoring efforts to evaluate trend in the 5-year monitoring and evaluation report.

Characteristics of trumpeter swan breeding habitat: Swans on the Seward RD appear to be using wetlands, slow-moving channels, and small lakes during the summer breeding season. More specific characteristics of nesting and brood rearing habitat have not been analyzed.

Evaluation: Trumpeter swans occur in very low densities on the Kenai Peninsula. Not all areas with swan detections in previous years appeared to have swans present in FY 2006. Further monitoring is required to understand if this represents normal population variation, a decreasing population, or an artifact of survey timing.

***Recommendations of remedial action for this monitoring item*:** None.

***Actions taken in response to recommendations identified in previous reports**:* None.

Other Recommendations: The MEIT reinterpreted general monitoring questions from the Revised Forest Plan when they were not clearly stated as a Forest Plan monitoring question. Based on the information presented for this question in Table 5-1 of the Forest Plan, MEIT rephrased it to "What are the population trends for trumpeter swans and the relationship to habitat change? It is recommended to change monitoring question to reflect MEIT interpretation. Furthermore, as protocols are finalized, the evaluation and recommendations presented here will be reconsidered.

Forest Products

Are forestlands restocked?

- Frequency of Collection: Annual sample of selected areas
- Frequency of Evaluation: Annual
- Status in FY 2006: Not monitored (protocol being developed)

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

- Frequency of Collection: 10 years
- Frequency of Evaluation: 10 years
- Status in FY 2006: Not monitored (not due yet, due FY 2012)

Minerals

Are mining plans of operations consistent with Revised Forest Plan direction?

- Frequency of Collection: One time
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

Heritage Resources

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

- Frequency of Collection: Annual
- Frequency of Evaluation: Annual
- Status in FY 2006: Not monitored (protocol being developed)

What is the status and condition of heritage resources on the Forest?

- Frequency of Collection: Annual
- Frequency of Evaluation: Annual
- Status in FY 2006: Not monitored (protocol being developed)

Recreation Opportunities, Tourism, Access, and Facilities

What are the characteristics of recreational visitors? What is their pattern of recreational use? What are their perceptions of opportunities and settings?

- Frequency of Collection: Once every 5 years

- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (monitoring question under review)

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

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

Are areas of the Forest being managed in accordance with the prescribed Recreation Opportunity Spectrum (ROS) class in Forest-wide standards and guidelines?

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (not funded)

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

- Frequency of Collection: Annual
- Frequency of Evaluation: Annual
- Status in FY 2006: Not monitored (protocol being developed)

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

- Frequency of Collection: Annual
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

Scenic Quality

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

- Frequency of Collection: Annual sample of selected areas
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

Fire Protection and Fuels Management

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

- Frequency of Collection: Once every 5 years
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

Wilderness

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

- Frequency of Collection: Annual sample of selected areas
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored (protocol being developed)

Research Natural Areas

Are proposed and established Research Natural Areas (RNA) being maintained in a state unmodified by human activity?

- Frequency of Collection: Once in 10 years
- Frequency of Evaluation: 10 years
- Status in FY 2006: Not monitored (protocol being developed)

Community Effects

What are the trends in local economies?

- Frequency of Collection: Annual
- Frequency of Evaluation: 3 years
- Status in FY 2006: Not monitored (not funded)

What are the effects of National Forest management on lands, resources and communities adjacent to the Forest?

- Frequency of Collection: Once every 5 years
- Frequency of Evaluation: 5 years
- Status in FY 2006: Not monitored

Added Questions

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

Note: This general question was added to comply with the 1982 planning regulations regarding MIS (36 CFR 219.19), and to meet the intent of the general MIS monitoring question on page 5-8 of the Forest Plan (also listed on page 5 of this report). The mountain goat is an MIS on Chugach National Forest, and therefore, population and habitat trends are subject to monitoring.

- Frequency of Collection: Annual
- Frequency of Evaluation: 3 years
- Status in FY 2006: Monitored

The Cordova Ranger District surveyed 232 mi^2 for mountain goats on winter range. Twenty-two goats and 17 goat trails were observed, which equates to a density of approximately 0.09 goats and 0.07 tracks per mi^2. All goats were between 700 and 3,500 feet in elevation, and most were on southerly aspects. Not all seemingly-suitable habitat revealed goats or their sign.

Evaluation: The FY 2006 surveys replicated previous efforts in the same area to assist trend analysis scheduled to occur in the upcoming 5-year monitoring and evaluation report. This method will also help the Forest identify high goat use areas and implement the Forest Plan.

Locations of goats and tracks generally agreed with the habitat model currently used to make management decisions. However, absence of goats from predicted habitat suggests that other factors may also influence goat distribution. For this reason, continued mapping of occupied winter range is recommended rather than relying solely on habitat models. This will allow the Forest to maximize management opportunities while minimizing effects on goat population trends.

***Recommendations of remedial action*:** None

***Actions to recommendations identified in previous reports**:* None

Other Recommendations: The MEIT reinterpreted general monitoring questions from the Revised Forest Plan when they were not clearly stated as a Forest Plan monitoring question. Based on the information presented for this question in Table 5-1 of the Forest Plan, MEIT rephrased it to "What are the population trends for mountain goats and the relationship to habitat change? It is recommended to change monitoring question to reflect MEIT interpretation. Furthermore, as protocols are finalized, the evaluation and recommendations presented here will be reconsidered.

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

- This general question was added in response to the Revised Forest Plan appeal decision.
- Frequency of collection: Annual
- Frequency of evaluation: Annual
- Status in FY 2006: Not monitored (protocol in development)

What is the effect of summer OHV use on soils and/or vegetation where OHV use is allowed?

Note: This general question was added in response to the Revised Forest Plan Appeal Decision.

- Frequency of collection: Not defined
- Frequency of evaluation: Not defined
- Status in FY 2006: Monitored on Cordova Ranger District

In FY 2006, the Forest Service monitored off-highway vehicle (OHV) use on the Cordova Ranger District. The report "Off Highway Vehicle use and its effects on portions of Hawkins and Hinchinbrook Islands" (Hodges 2006) is summarized here.

In FY 2006, Cordova Ranger District personnel surveyed areas on Hawkins and Hinchinbrook Islands most heavily used by OHV to determine their effects on water, vegetation, fish, and other resources. Areas surveyed included the Anderson Bay and Boswell Bay areas on Hinchinbrook Island and the Canoe Pass area on Hawkins Island. The report displays the 8 objectives for the project.

Six trail systems totaling 14.3 miles of OHV trail and 49 stream crossings were surveyed. Overall, 98% of the trails were in wetland areas, with all having at least 95% of their length crossing wetlands.

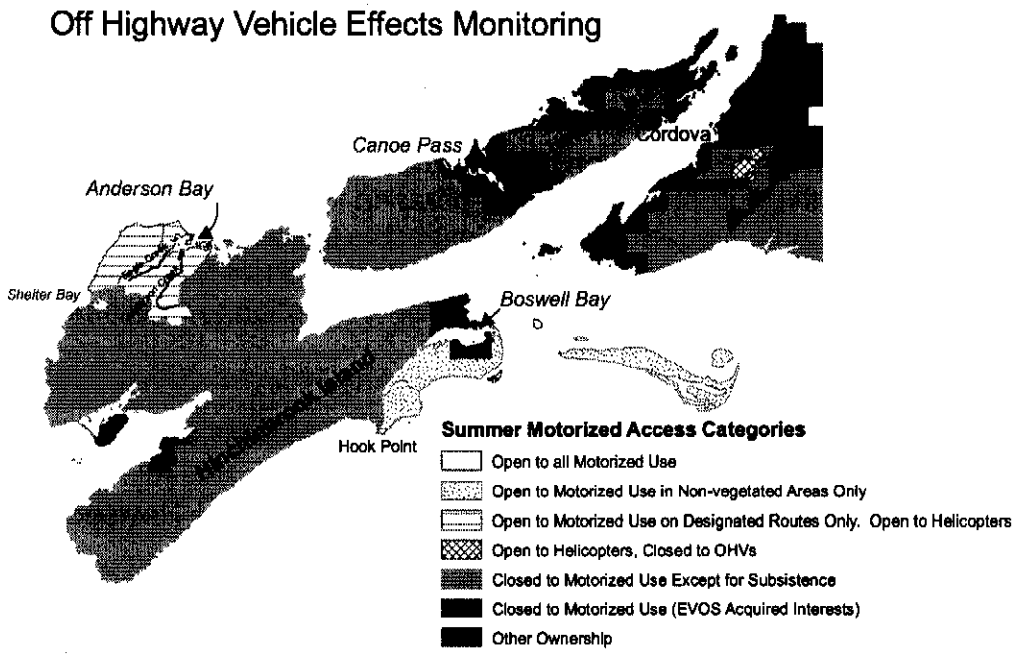


Figure 3. OHV trail survey locations in the Anderson Bay, Boswell Bay, and Canoe Pass areas.

Five types of data were collected on the routes. These categories included OHV-caused soil and vegetation disturbance, plant community types, upland or wetland classification, stream crossings, and invasive/sensitive plant surveys. The OHV trails were divided into segments based on the dominant disturbance level (descriptions in report). A new segment was delineated when the disturbance level changed.

OHV trail data collected included the UTM location, level of surface disturbance, width of track or rut, depth of track or rut, photos taken, and comments. The trail gradient was recorded for all trails surveyed after the Canoe Pass Main Trail.

The stream data collected at OHV route crossings included: UTM location, channel gradient upstream and downstream, channel type, stream class, presence or absence of fish and species, method and time of fish detection (visual or baited trap), presence and type of bank damage, presence and type of channel damage, channel substrate composition, and comments.

Vegetation and plant community information was collected as point data at the beginning of the route, at systematic plot sites approximately every kilometer along the trail, at points where vegetation changed, and at "subjective" sites where there was potential habitat for invasive or sensitive species. The data collected included UTM location, plant community type, wetland classification, and comments.

The vegetation survey plots were 100 m^2, shaped to roughly conform to the trail width. The dominant plant species throughout a plot were examined and their percent cover was visually estimated to determine the community type (DeVelice et al. 1999). Vegetation was further classified as wetland or upland using the descriptions by Cowardin et al. (1979). Crews also looked for sensitive and invasive species along the entire route.

Results: Detailed findings of the monitoring that occurred in FY 2006 are available in the report prepared by the Cordova Ranger District (Hodges 2006).

In FY 2006, on the Eagle Creek and Anderson Creek trails in Anderson Bay on Hinchinbrook Island, damage was observed at sites other than those areas where damage was observed in FY 2002. The damage, 640 feet of level 2 & 3 disturbance types with ruts up to 3.5 inches deep, was relatively minor given the 3.8 miles of trail. The FY 2006 survey crew did not locate any evidence of OHV use heading toward Shelter Bay, the site where ruts were observed in the forested area, or any sign of a trail crossing from Anderson Creek to Eagle Creek as reported by crews in FY 2002.

The Snake Creek Trail in the Boswell Bay area on Hinchinbrook Island had the least amount of undisturbed ground, probably because it is located on wetter soil types than the other trails and the fact that it may get more use due to the number of private homes nearby. The sweet gale/sedge plant communities, which are indicative of wetter wetlands, are abundant along this trail. In these areas, it may not take much vehicle use to have a major effect. The people who have homes in Boswell Bay do not have to transport their OHVs and unload them from a boat for every outing. Use is more likely to occur throughout the year rather than only in the fall for hunting deer, which is the main OHV use at the other sites.

The Canoe Pass Main Trail and Half Mile One and Two Trails on Hawkins Island are heavily used by OHVs due to the fact that it is close to Cordova, there are several private cabins in the area, and that Canoe Pass inlet provides a sheltered

anchorage for boats. Although large sections of these trails are not damaged, more disturbances were observed on other sections than in 2002. In FY 2006, Level 3 disturbances up to 429 ft long and Level 2 disturbances up to 33 ft wide were observed compared to disturbances 328 feet long and 26 feet wide in FY 2002.

Some areas may have revegetated since use in prior years, but substantial trail sections haven't recovered. Trail damage appears to be worse where the OHV traffic is funneled into small gaps in the forested stringers. It is possible that these sites, and perhaps some of the stream crossings, are the only practical routes in the area, so the continued use doesn't allow recovery.

Evaluation: The FY 2006 survey work provided an inventory of OHV impacts at Anderson Bay, Boswell Bay, and the Canoe Pass areas. Some user-identified trails were not found due to the lack of evidence of use. Surveys in FY 2007 can cover these areas and complete the inventory, but major damage is not expected to be observed.

Current OHV use levels and trends are not known. Because four years had passed between the FY 2002 and FY 2006 surveys and the fact that the database from FY 2002 was not extensive, it is difficult to determine if disturbances are increasing over time, disturbed areas are revegetating naturally, or disturbance and healing have reached an equilibrium.

There are several stream crossing sites where extensive damage has occurred. Mitigation measures such as hardening the surface or rerouting the trail should be implemented as soon as possible at the Canoe Pass sites and possibly at the Boswell Bay site. Alternate routes and other possible mitigation measures should be investigated at lower priority sites in case conditions get worse in the future.

At stream crossings and areas where damage is increasing, a more prompt response may be necessary.

No invasive plant species were found during the surveys. This is often a concern in areas with OHV use because seeds or plant parts are often stuck in the mud on the tires and can then be transported to new sites. No Forest Service designated sensitive plant species were found.

The overall effect on streams is limited because most of the stream crossings are on small Class 4 streams that have little flow and are incapable of transporting sediment. The damage to these streams is confined to the banks and vegetation at the crossing site. Only a few fish-bearing streams were affected in this manner.

***Recommendations of remedial action for this monitoring item*:** For the Anderson Bay trails, monitoring should occur yearly to see if new impacts are

occurring. Another attempt to locate the route toward Shelter Bay and the rutted area observed in FY 2002 should be made to complete the inventory. The lack of knowledge about the use levels prevents us from determining whether the problem is ongoing or increasing and if damage was a result from past use by Valdez hunters. The general impression is that current OHV use is minimal in this area and the damage may heal itself.

The survey of trails in the Boswell Bay area needs to be completed, especially for the trail leading to Hook Point. Much of the area toward Hook Point appears to be seasonally flooded and could be particularly sensitive to OHV use. It may be preferable to conduct surveys in early to mid-May before the vegetation has grown too thick so the trails are easier to spot from the air. The Class 3 stream could also be surveyed farther downstream to determine whether fish habitat is present that might be affected by erosion at the crossing and if immediate restoration work is needed. Given the higher damage levels and the wetter soils, this area should be monitored more frequently than it is now. It would be advantageous to survey the Snake Creek Trail in October after deer season has begun to see if new use has occurred and to note any changes from FY 2006.

If monitoring shows that increasing damage, some preventive actions may be needed. A meeting with OHV users in the Boswell Bay area or a letter reminding users of the regulations and requesting them to minimize their impacts could be the first step. The resource damage at this point does not appear to be great enough to warrant closures, but should be regularly monitored over the next five years.

OHV users on the Canoe Pass trails tried to minimize damage by placing logs, culverts, boards, or other materials at most of the stream crossings and on some of the steeper slopes. These efforts helped, but were not entirely successful. If continued monitoring shows that damage is increasing, the Forest Service may need to close specific stringer or stream crossing sites, create alternate routes, restore damaged areas, or create hardened paths. Some of the crossings at fish-bearing and Class 3 streams may need immediate restoration work to prevent damage to fish habitat. Once sediments are washed into the streams, it is difficult to undo the damage. Cooperative planning and implementation with the State will be required to address most of the highly impacted sites. The FY 2006 report provides more detailed recommendations for restoration (Hodges 2006).

Actions taken in response to recommendations identified in previous reports*:* It is possible that the use at Anderson Bay, and perhaps Boswell Bay, is low enough that disturbances can heal naturally, as indicated by the crew's inability to find evidence of the trails. In these cases it may not be necessary to manually restore Level 3 disturbances as proposed in the monitoring plan by Davidson (2004), at least until we know what factors besides level of OHV use impede natural recovery.

Other Recommendations: Monitoring on an annual or biennial basis for the next five years would determine extent and trends of OHV use. The FY 2006 report provides more detailed recommendations for areas to monitor (Hodges 2006). Furthermore, as protocols are finalized, the evaluation and recommendations presented here will be reconsidered.

STATUS OF FOREST PLAN MONITORING BY FISCAL YEAR

Status of Forest Plan monitoring program & frequency of data collection and evaluation. (no = not monitored; NF = not funded; OA = monitored by other agencies; PD = protocol being developed; n/a = not applicable)						
#	**Monitoring Question & How often data collected**	**How often evaluated**	**FY03**	**FY04**	**FY05**	**FY06**
	Compliance with Revised Forest Plan Direction					
1	Are projects being implemented consistent with the Forest Plan direction? (5 years)	Every 5 yrs	n/a	n/a	n/a	No – protocol being developed (PD)
	Integrated Effectiveness/Validation Monitoring					
2	Are management activities achieving their intended outcomes? (Annual)	Every 5 yrs	No - PD	No - PD	No - PD	No - PD
3	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? (annual)	Every 5 years	Yes – Report	Yes - Report	No	No - PD
	Soil Resources					
4	What is the level of ground disturbing activity? (annual)	Every 5 years	Yes Report	No	No	No - PD
	Water Resources					
5	What is the existing water quantity? (As scheduled)	Every 5 years	Yes Report	No	No	No - PD
6	Are Best Management Practices (including wetland management) effective in meeting water quality standards? (As scheduled)	Every 5 years	No	No	No	No - PD
	Sensitive and Exotic Plant Species					
7	What is the abundance and distribution of sensitive plants in areas affected by management activities? (Annual) As of 2007, done on a project- by-project basis, (TE&S surveys) no forest-wide report or evaluation.	Every 5 years	No	No	No	No - PD

Status of Forest Plan monitoring program & frequency of data collection and evaluation. (no = not monitored; NF = not funded; OA = monitored by other agencies; PD = protocol being developed; n/a = not applicable)						
#	**Monitoring Question & How often data collected**	**How often evaluated**	**FY03**	**FY04**	**FY05**	**FY06**
8	What is the distribution and abundance of exotic plants, particularly in areas affected by management activities? (Annual) As of 2007, done on a project- by-project basis, (TE&S surveys) no forest-wide report or evaluation.	Annual	no	no	no	No - PD
	Management Indicator Species					
9	What are the population trends for Management Indicator Species (MIS) and their relationship to habitat? Are MIS truly reflective of all fish and wildlife species on the Forest? (not shown) *The FLT decided this question is redundant with specific MIS monitoring questions*.	not shown	No	No	No	No – NF, FLT decided question is redundant with specific MIS monitoring questions.
10	Has the Revised Forest Plan direction prevented adverse interactions between bears and humans? (Annual)	Every 5 years				No - PD
11	What are the population trends for brown bear and the relationship to habitat? (Every 3rd year)	Every 3 years	n/a	No	Report	Status Report; No evaluation. Not monitored – OA)
12	What are the population trends for dusky Canada geese and the relationship to habitat? (Every 3rd year)	Every 3 years		Report	No	No - OA
13	What are the population trends for moose and the relationship to habitat? (Annual)	Annual			2 Survey Reports	No - OA
14	What are the population trends for black oystercatchers and the relationship to habitat? (3 yrs of each 5 yrs)	Every 5 years	Yes - Survey & Report;	Yes - Report	Yes - Report	Monitored, report did not address Forest Plan question.
15	What are the population trends for Dolly Varden char and the relationship to habitat? (Annual)	Every 5 years	Yes - Report	Yes - Report		No - PD

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#	**Monitoring Question & How often data collected**	**How often evaluated**	**FY03**	**FY04**	**FY05**	**FY06**
16	What are the population trends for coho salmon and the relationship to habitat? (Annual)	Every 5 years	No	Yes Report	No	No - PD
			Species of Special Interest			
19	Is Forest management maintaining favorable conditions for sustaining gray wolves? (Annual)	Every 5 years	No	No	No	No - NF
18	Is Forest management maintaining favorable conditions for sustaining Kenai wolverines? (Annual)	Every 5 years	Report	No	No	No - NF
19	Is Forest management maintaining favorable conditions for sustaining Townsend warblers? (Every 5 years)	Every 5 years	n/a	n/a	n/s	No - NF
20	Is forest management maintaining favorable conditions for sustaining northern goshawks? (Annual)	Every 5 years	No	No	No	No - NF
21	Is Forest management maintaining favorable conditions for sustaining Sitka black-tailed deer? (Annual)	Every 5 years	No	No	No	No-NF
22	Is forest management maintaining favorable conditions for sustaining the Montague Island marmot? (1 time) *If marmots are found, adjustments will be made to the schedule.*	Every 5 years	No	No	No	No-NF
23	Is Forest management maintaining favorable conditions for sustaining cutthroat trout? (Annual)	Every 5 years	2 Reports	1 Report	No	No - NF
			Threatened, Endangered and Sensitive Animal Species			
24	What are the status and trends of trumpeter swans? (Annual)	Every 5 years	Yes - 1 Report	Yes - 1 Report	Yes - Report	Yes – Kenai, No – NF on CR Delta

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#	Monitoring Question & How often data collected	How often evaluated	FY03	FY04	FY05	FY06
			Forest Products			
25	Are harvested forestlands restocked? (annual of selected areas)	Every 5 years	No	No	No	No – PD (done in FY07)
26	Have conditions changed that would affect the suitability of timber production lands? (every 10 years)	Every 10 years	No	No	No	No – PD (done in FY07)
			Minerals			
27	Are mining plans of operations consistent with Revised Forest Plan direction? (once)	Every 5 years	No	No	No	No - PD
			Heritage Resources			
28	Are National Register eligible heritage resources being adequately maintained and protected? (Annual)	Annual	No	No	No	No - PD
29	What is the status and condition of heritage resources on the Forest? (Annual)	Annual	No	No	NO	No - PD
			Recreation Opportunities, Tourism, Access, and Facilities			
30	What are the characteristics of recreational visitors? What is their pattern of recreational use? What are their perceptions of opportunities and settings? (Once every 5 years)	Every 5 years	Yes - Survey Report	No	Report	No
31	Is the Revised Forest Plan direction for motorized and nonmotorized access working? (Annual)	Every 5 years	No	No	No	No - PD
32	Are areas of the Forest being managed in accordance with the prescribed Recreation Opportunity Spectrum (ROS) class in Forest-wide standards and guidelines? (Annual)	Every 5 years	No	No	No	No - NF

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#	Monitoring Question & How often data collected	How often evaluated	FY03	FY04	FY05	FY06
33	What is the use of developed recreational facilities and how does it compare to capacity? (Annual)	Annual	No	No	No	No - PD
34	What are the trends in commercial recreation services on the Forest and how does it compare to capacity? (Annual)	Annual	No	No	No	No - PD
	Scenic Quality					
35	Are areas of the Forest being managed in accordance with the Scenery Integrity Objectives (SIO) in Forest-wide standards and guidelines? (annual sample of selected areas)	Every 5 years	No	No	No	No - PD
	Fire Protection and Fuels Management					
36	What is the pattern of abundance of different fuel types on the Kenai Peninsula? (once every 5 years)	Every 5 years	n/a	n/a	n/a	No - PD
	Wilderness					
37	Is the wilderness character of the Wilderness Study Area (WSA) and areas recommended for Wilderness being maintained? (Annual sample for selected areas)	Every 5 years	No	No	No	No - PD
	Research Natural Areas					
38	Are proposed and established Research Natural Areas (RNA) being maintained in a state unmodified by human activity?(Once every 10 years)	Every 10 years	n/a	n/a	n/a	No - PD

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#	**Monitoring Question & How often data collected**	**How often evaluated**	**FY03**	**FY04**	**FY05**	**FY06**
			Community Effects			
39	What are the trends in local economies? (annual)	Every 3 years	No	No	No	No - NF
40	What are the effects of National Forest management on lands, resources and communities adjacent to the Forest? (Once every 5 years)	Every 5 years	No	No	No	No - NF
			Added questions			
41	What are the population trends for mountain goat and the relationship to habitat change?(Annual)	Every 3 years	Yes - CRD	Yes - CRD	Yes - CRD	Yes - CRD
42	Air Quality (Appeal Decision) Are Forest management actions contributing to changes in air quality on the Forest? (annual)	Annual	No	No	No	No - PD
43	OHV Impacts (Appeal Decision) What is the effect of summer OHV use on soils and/or vegetation where OHV use is allowed? (not defined)	Not Defined	No	No	No	Yes – on Hawkins and Hinchinbrook

LITERATURE CITED

Andres, B.A., and G.A. Falxa. 1995. Black oystercatcher (*Haematopus bachmani*). In A. Poole and F. Gill [eds], The Birds of North America, no. 155. The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Burcham, M. No date. Black oystercatcher surveys of eastern Prince William Sound, 2006 Final Report. Unpublished report, USDA Forest Service, Chugach National Forest, Cordova, AK.

Dragoo, M. A. and M. A. Benoit. 2006. 2006 trumpeter swan surveys. USDA Forest Service, Chugach National Forest, Seward, AK.

Hodges, K. (editor). 2006. Off highway vehicle use and its effects on portions of Hawkins and Hinchinbrook Islands, 2006 Survey Report. Unpublished report. USDA Forest Service, Chugach National Forest, Cordova, AK.

Spiegel, C.S., B.A. Brown, M.I. Goldstein, D.F. Tessler, and S.M. Haig. 2006. Population monitoring, video nesting documentation, and breeding success of Black Oystercatchers (*Haematopus bachmani*) in Harriman Fiord, Prince William Sound, AK 2006. Unpublished report, USDA Forest Service, Chugach National Forest, Girdwood, AK. 28pp.