

Visitor Experience and Social Science Indicators of NPS-Alaska Coastal Resources

Kenai Fjords National Park

Final Project Report

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Abstract

This report describes a program of research designed to identify indicators of quality and formulate associated standards of quality for social and recreation resource conditions for the coastal backcountry of Kenai Fjords National Park (KEFJ). It includes a summary of results from two backcountry visitor surveys, as well as a discussion integrating these data with information from an ongoing backcountry campsite monitoring effort.

Information in this report can help park managers to:

- Identify indicators of quality for social and biophysical aspects of the visitor experience
- Develop management objectives related to the backcountry visitor experience and conditions of related recreation resources
- Establish management standards for indicator variables
- Assess the acceptability of current conditions from the perspective of backcountry visitors
- Evaluate the effectiveness of future management actions to minimize impacts to the visitor experience or resource conditions

A successful monitoring program should be based on specific management objectives established by the park. This report also provides managers and staff at KEFJ with baseline information and considerations that may be useful in helping initiate the formulation of specific objectives.

Introduction

Purpose and Goals

This program of social science research is designed to identify indicators of quality for social conditions and recreation resources in coastal backcountry areas of Kenai Fjords National Park (KEFJ).

Specific objectives for this program of research are as follows:

- Provide baseline data on visitors to the coastal backcountry and their trip characteristics
- Identify visitor-based indicators of quality for backcountry social and recreation resource conditions
- Formulate visitor-based standards of quality for selected indicator variables
- Examine current conditions based on visitor standards

Key questions that will be answered by an ongoing program of monitoring are as follows:

1. What indicators are important to the quality of a backcountry experience in Kenai Fjords?
2. Are social and resource conditions acceptable to visitors?
3. Are social and resource conditions changing over time?
4. Are management actions effective in maintaining high quality visitor experiences and resource conditions?

Scientific Background

Recent trends in outdoor recreation in the United States suggest that public demand for nature-based recreation opportunities and appreciation of natural areas continues to grow (Cordell 2008). In the presence of recreational use, some change in conditions is inevitable (Hammitt and Cole 1998, Leung and Marion 2000). Such use can impact environmental resources, the quality of the recreation experience, and the kind and extent of management (Manning 2007). Managing the impacts of visitor use is often addressed through the concept of carrying capacity (Stankey and Manning, 1986, Shelby and Heberlein 1986, Manning 2011). Carrying capacity refers to the amount and type of recreation that can be accommodated without unacceptable impacts to the quality of the visitor experience and natural resources. Research on carrying capacity in outdoor recreation suggests that it can most effectively be defined, planned, and managed in the context of specific management objectives of individual parks and protected areas. Several management-

by-objectives frameworks have been developed, including Limits of Acceptable Change (LAC), developed by the U.S. Forest Service (Stankey et al., 1985) and Visitor Experience and Resource Protection, developed by the U.S. National Park Service (National Park Service 1997, Manning 2001). These frameworks rely on the formulation of indicators and standards of quality for social/experiential and resource conditions. Indicators are measurable, manageable variables that represent management objectives or desired resource and experiential conditions. Standards define the minimum acceptable condition of indicator variables. Indicator variables are monitored over time, and management actions can be taken to ensure that standards are maintained. This indicators and standards-based approach to planning and management of outdoor recreation has proven effective in several diverse NPS units and other protected areas (e.g. Manning et al. 1996, Manning 2007), and has become a formal part of the NPS general management planning process (National Park Service 1997, Manning 2001).

Standards of quality for indicator variables can be formulated through the application of normative theory and methods. Developed in sociology, the concept of norms has attracted considerable attention as a theoretical and empirical framework in outdoor recreation research and management, particularly in the application of helping to formulate standards for recreation experiences. As applied to outdoor recreation, norms are generally defined as standards that individuals and groups use for evaluating behavior and social and environmental conditions (Donnelly et al. 1992, Shelby and Vaske 1991, Vaske et al. 1986). If visitors possess normative standards for relevant aspects of recreation experiences, these norms can be measured and used as a basis for formulating standards of quality. Thus outdoor recreation can be managed within a more empirically informed carrying capacity.

The application of the normative approach to formulating visitor-based standards in parks has relied on the work of Jackson's (1965) return-potential methodology to measuring norms. Such application is most fully described in Shelby and Heberlein (1986), Vaske et al. (1986), Shelby et al. (1996), Manning (2011), and Vaske and Whittaker (2004). Individual norms can be measured by asking visitors to evaluate the acceptability of a range of conditions that could be found within a park. These data are then aggregated and graphed to form a social norm curve and test for the existence of social norms or the degree to which norms are shared across groups. Normative research in outdoor recreation has been applied to several social, ecological, and managerial issues, including crowding (e.g. Heberlein et al. 1986, Manning et al. 1999, Manning et al. 2000, Manning and Valliere 2002), ecological impacts on campsites (Shelby et al. 1988), ecological impacts on trails (Goonan et al. 2009), wildlife-management practices (Vaske and Donnelly 1988), fire management (Kneeshaw et al. 2004), and minimum stream flows (Shelby and Whittaker 1995). Recent applications of normative research have utilized visual methods to simulate a range of resource and social impacts (Manning and Freimund 2004). Visual research methods have a number of advantages over narrative/numerical techniques for measuring social norms. For example, visual methods can help standardize research on standards of quality by presenting a constant series of images to all respondents, can be useful in studying standards of quality for indicator variables that are too technical or complex to communicate in a narrative format, and images can be manipulated to show a range of conditions, including conditions that currently exist or could potentially exist at a recreation area in the future.

A hypothetical social norm curve is shown in Figure 1 to illustrate the methodology described above. The norm curve traces the average acceptability of recreationists for encountering a range of groups along a trail. The highest point on the curve might be interpreted as the preferred or optimal condition. The point at which the norm curve crosses the zero point on the acceptability scale is the minimum acceptable condition, or standard, for the indicator variable being investigated. The range of acceptable conditions includes all points on the curve above the zero point on the acceptability scale. The dispersion around the points defining the norm curve, or crystallization, reveals the level of consensus or agreement among respondents. Finally, the amplitude of the curve, or distance between the highest and lowest points of the curve, can indicate the salience of a particular indicator of quality. In other words, a large amplitude suggests that the indicator variable under study is important to visitors, while a smaller amplitude suggests that it is not a very important indicator of quality. The information provided by norm curves can be useful in defining recreation-related indicators and standards of quality for resource and experiential conditions.

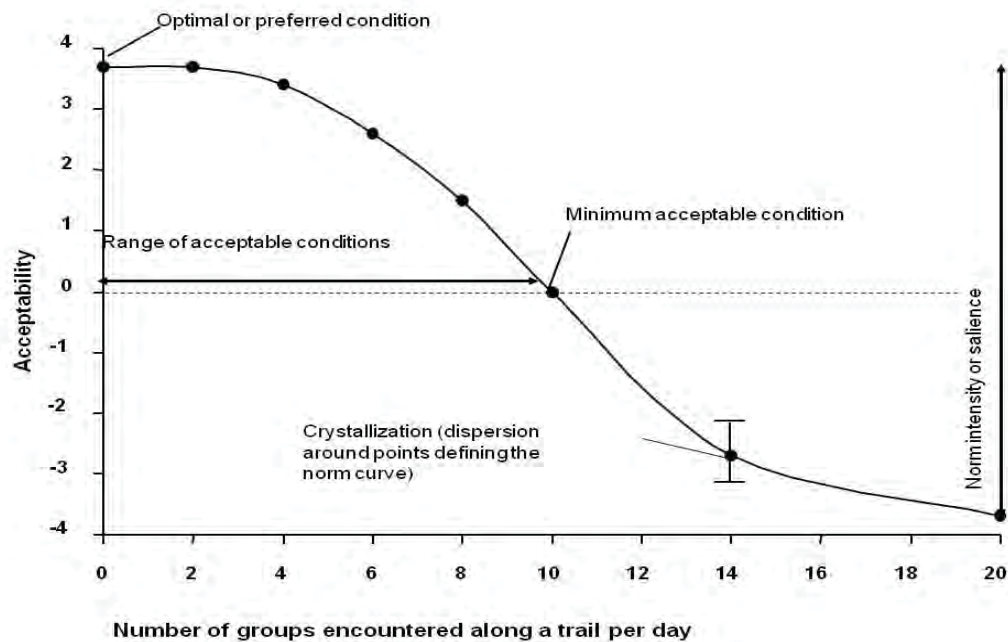


Figure 1. Hypothetical social norm curve for hiking encounters per day (Manning 2007).

This research examined the nature of the backcountry visitor experience at Kenai Fjords National Park (KEFJ) to identify indicators of quality and standards of quality for selected social and biophysical indicator variables. Kenai Fjords National Park includes approximately 400 miles of remote coastline accessible only by boat or floatplane. The availability of suitable landing beaches and camping areas is limited by the steep fjord topography, thus concentrating visitor use in more accessible areas. This higher density of users in specific areas yields the potential for more rapid and severe impacts to both biological and social values. Protecting natural resources and maintaining a high quality visitor experience are integral to the mission and purpose of KEFJ. To this end, park managers need clearly defined management objectives and threshold levels to determine when management action should be taken to protect resources. In addition,

KEFJ recently completed a study to revise the methodology used to assess resource conditions at coastal backcountry campsites with the goal of creating a revised protocol and sampling design for continued monitoring and analysis of trends in campsite condition (Monz et al. 2011). When integrated with an established set of indicators of resource condition and associated standards, managers can utilize these monitoring data to protect visitor experience and park resources in these coastal areas. With specific indicators identified and standards for the acceptable conditions of the resources defined, KEFJ will be better equipped to manage recreational use and natural resources in sensitive coastal areas.

The findings discussed in this report should be viewed in the context of informing the development of management objectives and standards for the KEFJ coastal backcountry. Visitor-based indicators and standards can be valuable in informing the development of management objectives, the selection of indicator variables, and the establishment of quality standards. However, this information should be one of several components (e.g. the tolerance of recreation resources to use, presence of sensitive species, park mission and enabling legislation, etc.) considered while establishing management objectives and monitoring standards.

Approach

This work was conducted in two phases following the revision of the backcountry campsite monitoring protocol (Monz et al. 2011). In 2010 visitors were interviewed and surveyed with both qualitative and quantitative approaches in an indicator elicitation study. An on-site survey was administered from July 15 to August 30 to adult visitors who had participated in a trip to the coastal backcountry of KEFJ. Both day and overnight visitors were included in the study. The first phase of research yielded 13 completed questionnaires. Surveys were administered in the field as well as at kayak shops following a trip. The survey included open-ended questions asking visitors what they enjoyed most about their visit, what they enjoyed least, what they would ask managers to change, what they valued most about KEFJ, and what they considered to be the most important qualities of KEFJ (Appendix I). Responses were coded to identify potential indicators of quality of interest to visitors. Close-ended questions asked respondents to rate the importance of several potential issues or problems they perceived within the KEFJ backcountry. Items included in the survey were derived from indicators monitored in the updated campsite protocol and discussion with park managers concerning potential indicators of interest. Information regarding trip characteristics and visitor demographics was also collected.

This was followed by quantitative approaches in 2012 where visual research was used to develop numerical standards. Results from phase 1 were incorporated into a second survey designed to formulate standards of quality for selected indicator variables (Appendix II). Adult visitors returning from a backcountry trip were contacted at local kayak outfitters and asked to participate in the study. Although intercepting visitors in KEFJ turned out to be quite problematic, 46 useable surveys were obtained. Open-ended questions asked visitors what they enjoyed most about their visit, what they enjoyed least, and what they would ask managers to change. Close-ended questions asked respondents to rate the extent to which they perceived several items to be problems. Respondents were also asked to evaluate the acceptability of various resource and social conditions that could be encountered in the coastal backcountry. Visual simulations and narrative/numerical formats were used to determine respondents' tolerance of various conditions. Trip information and visitor demographics were also collected.

Results and Discussion

Visitors to Kenai Fjords National Park

Thirteen visitors were interviewed in 2010, and 46 surveys were collected in 2012. Overall, the majority of respondents were male (54%) and the average age was 37 years. The vast majority of respondents (89.8%) were first-time visitors to KEFJ, and approximately 80% of respondents visited the coast as part of a commercial tour or with a guided group. Visits were primarily day trips (62.7%), and multi-day trips ranged from 2 to 19 days in length with a mean duration of 4 days. Visitors to KEFJ tend to be well-educated, with nearly 78% holding a college or graduate degree. Most respondents identified as white (88%), with four visitors identifying as Asian (7%) and two Hispanic/Latino (3%). About 73% of respondents lived in the United States, while international visitors came from Canada (64%), Germany (21%), England (7%) and Austria (7%). Sea kayak (58.7%), chartered water taxi (50%), and helicopter (23.9%) were the most popular methods used to access the coast. While most respondents who spent the night in the backcountry were unable to name specific sites at which they camped, eight groups reported camping in Northwestern Fjord and seven reported camping in Aialik Bay. No respondents to this survey stayed at the Kenai Fjords Glacier Lodge located near Pedersen Lagoon.

Phase I: Indicators of Quality

Visitors who participated in the 2010 survey (n=13) were asked to respond to open-ended questions asking what they enjoyed most about their visit, what they enjoyed least, what they would ask the National Park Service to change about how KEFJ is managed, what they valued most about KEFJ, and what they considered to be the most important qualities of KEFJ. Responses given were coded, and the proportion of visitors indicating a specific item are reported here. Respondents could indicate more than one item for each question, so totals may not equal 100%. Things visitors enjoyed most included wildlife (46.2%), scenery/beauty (30.8%), viewing the glaciers (23.1%), and experiencing solitude (23.1%). Bad weather was the most often cited thing that respondents enjoyed least (76.9%); the only other item listed was noise from tour boats (7.7%). Most respondents stated that they would not ask the NPS to change anything about the way it manages KEFJ (30.8%), while suggestions for management changes included limiting development in the area (7.7%), increasing access (7.7%), allowing fewer tour boats (7.7%), and increasing visitor services such as lodging and view points (15.2%). When asked what they valued most about their visit to KEFJ, visitors responded with being in nature (38.5%), wildlife (30.8%), and the sense of wildness/freedom (23.1%). Respondents considered wildlife (38.5%) and solitude/serenity (30.8%) to be the most important qualities of KEFJ.

Respondents were also asked to evaluate several issues and report how much of a problem they perceived each to be at KEFJ. Visitors were able to report that the issue was “Not a problem (1),” a “Small problem (2),” a “Big problem (3),” or that they did not know. Issues evaluated by visitors included the number of people at beaches, the number of kayaking groups, the presence of large kayaking groups, environmental impact to beaches caused by visitor use, environmental impact to campsites from visitor use, damage to ghost trees caused by visitors, the presence of tour boats, the speed of tour boats, noise from tour boats, air quality, visitors making too much noise, and visitors harassing wildlife (Table 1). The only issue to be considered a “small

problem” was noise from tour boats (mean rating = 2.31). None of the issues were considered by respondents to be a “big problem” (Table 1). Respondent ratings also indicate that the speed of tour boats (mean rating = 1.9) and the presence of tour boats (mean rating = 1.85) may be emerging problems from a kayaker perspective.

Table 1. Respondent ratings of potential problems within the KEFJ coastal backcountry

Item	N	Mean	SD
Noise from tour boats	13	2.31	0.86
Speed of tour boats	10	1.90	0.99
Presence of tour boats	13	1.85	0.99
Damage to ghost trees	7	1.57	0.79
Environmental impact to campsites	9	1.56	0.73
Presence of large kayaking groups	12	1.50	0.67
Visitors making too much noise	13	1.46	0.78
Environmental impact to beaches	9	1.44	0.73
Visitors harassing wildlife	12	1.33	0.65
Air quality	12	1.25	0.62
Number of people at beaches	11	1.18	0.41
Number of kayaking groups	13	1.15	0.38

1 = Not a problem; 2 = Small problem; 3 = Big problem

Indicators are defined as measureable, manageable variables that serve as proxies for management objectives. Good indicators of quality are specific, objective, reliable and repeatable, are related to visitor use, sensitive, manageable, can be measured efficiently and effectively, and are significant to the visitor experience (Manning 1999). Based on these criteria and the results described above, opportunities for experiencing solitude, the scenic quality of the natural environment, wildlife-viewing opportunities, kayak/tour boat interactions, and natural soundscapes appear to be important to the quality of the visitor experience.

Phase II: Standards of Quality

A second phase of research was conducted in August 2012 (n = 46). Indicators from the campsite monitoring protocol and indicators identified from 2010 survey results were incorporated into a second visitor survey. Respondents were presented with a list of possible reasons for visiting KEFJ and asked to indicate how important each was to them (Table 2). While most of the potential reasons for visiting that were presented to visitors received a rating of “moderately important” or higher, the three most important reasons for visiting KEFJ were to view the natural scenery, to view glaciers, and to view wildlife.

Table 2. Respondent ratings of the importance of potential reasons for visiting KEFJ

Item	N	Mean	SD
To view natural scenery	44	4.80	0.51
To view glaciers	43	4.60	0.73
To view wildlife	44	4.48	0.73
To be with family and/or friends	45	4.27	1.10
To learn about the natural environment of this area	45	4.20	0.82
To experience peace and tranquility	44	3.82	1.04
To get exercise	45	3.42	0.99
To experience solitude	44	3.18	1.30
To learn about the cultural history of this area	45	2.78	1.06

1 = Not at all important; 2 = Slightly important; 3 = Moderately important
 4 = Very important; 5 = Extremely important

Table 3. Respondents' level of agreement with statements pertaining to social and biophysical conditions in the KEFJ backcountry

Item	N	Mean	SD
Opportunities to view wildlife are sufficient	43	4.65	0.57
The number of boats allowed to access backcountry areas should be limited	44	2.95	1.16
Managers should restrict the use of backcountry campsites (e.g. establish group size limits, limit the number of groups allowed to camp in an area each night, require backcountry permits)	39	2.79	1.24
There is too much noise from motor boats	45	2.62	1.19
There are too many tour boats	45	2.51	1.24
Trampled vegetation is a problem at backcountry campsites	34	2.15	1.08
Soil erosion is a problem at backcountry campsites	29	2.14	0.92
Soil erosion is a problem at landing beaches	40	2.05	0.96
The presence of tent rocks/rock piles left by visitors is a problem at backcountry campsites	32	2.00	0.84
Trampled vegetation is a problem at landing beaches	40	1.93	0.80
Visitors are damaging ghost trees	34	1.91	0.90
There are too many kayak groups on the coast	45	1.91	0.85
Litter is a problem at landing beaches	40	1.87	0.76
Visitors are harassing wildlife	41	1.85	0.82
There is too much noise from visitors	45	1.84	0.74
Litter is a problem at backcountry campsites	31	1.81	0.87

1 = Strongly disagree; 2 = Disagree; 3 = Neither disagree nor agree; 4 = Agree; 5 = Strongly agree;
 *6 = Don't know/Doesn't apply (not counted in means presented above)

Respondents were also asked to indicate their level of agreement with a number of statements regarding conditions in the KEFJ coastal backcountry (Table 3). Respondents were also given

the option to indicate that they did not know or that the item did not apply to their experience. Overall respondents did not indicate any problems with social or resource conditions that they encountered while participating in a trip to the KEFJ coastal backcountry.

The final section of the survey asked respondents to indicate the acceptability of various social and biophysical conditions that could be observed in the coastal backcountry. Narrative/numerical methods and visual simulations were used to evaluate the acceptability of the number of other kayak groups seen per day during a trip, the number and kind of boats seen at one time, and the condition of backcountry campsites. Respondents were also asked to indicate their condition preference, the point at which they would discontinue visiting the coastal backcountry, and the condition for which the NPS should manage.

Respondents were first asked to evaluate how acceptable it would be to see certain numbers of kayak groups per day. The results are displayed graphically in Figure 2.

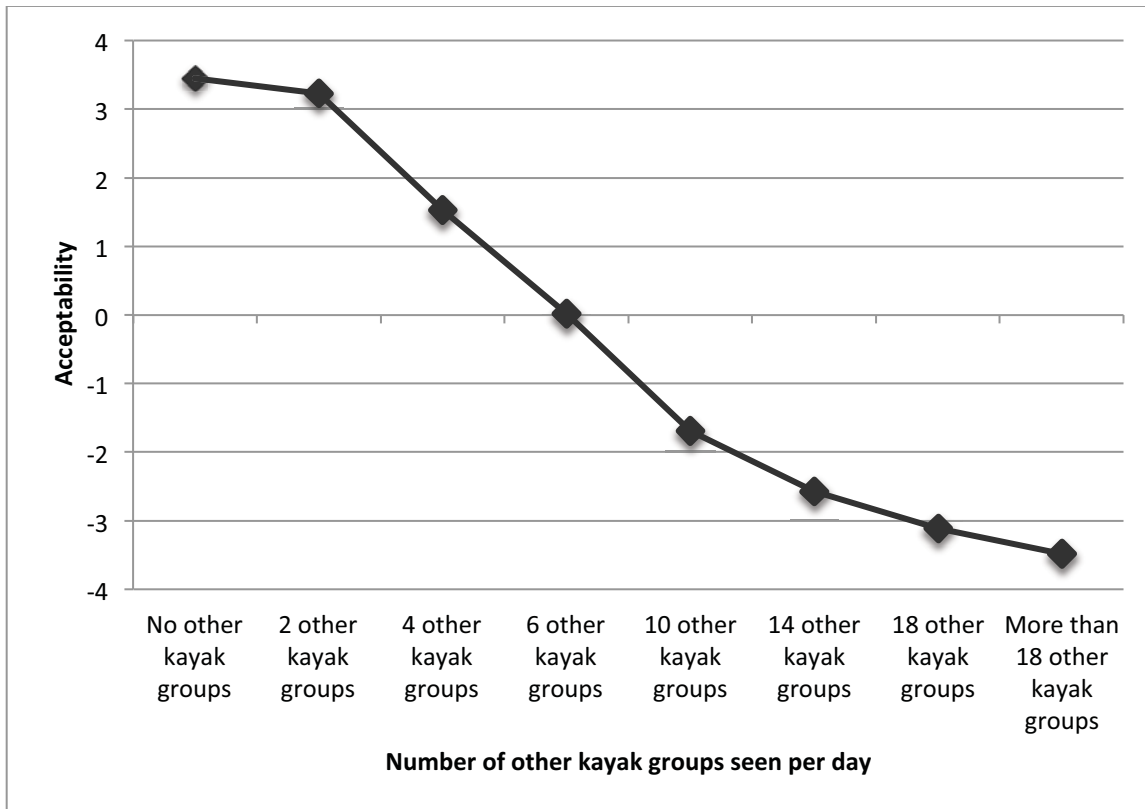


Figure 2. Acceptability of number of kayak groups seen per day by visitors to KEFJ coast.

Respondents indicated that it was acceptable to see a maximum of 6 other kayak groups per day without causing them to feel too crowded. Respondents preferred to see an average of 1.41 other kayak groups per day (n = 37; min = 0, max = 6) during their trip. The maximum number of other kayak groups respondents indicated they could see before they would no longer visit the coast was 10.84 (n = 25; min = 4, max = 50). In other words, visitor displacement would occur when visitors saw approximately 11 other kayak groups per day during their trip to the coast.

However, 41.3% of respondents indicated that they would continue to visit the backcountry regardless of the number of other kayak groups seen. Respondents also indicated that the maximum number of other kayak groups seen per day that the NPS should allow on the coast was 9.76 (n = 29; min = 4, max = 48), with 32.6% of respondents indicating that the number of kayak groups allowed to access the coast should not be restricted. On average, respondents reported seeing 1.73 other kayak groups per day during their trip (n = 44; min = 0, max = 12).

Next, respondents were shown a series of photographs showing different numbers and combinations of kayaks and tour boats and asked to rate the acceptability of each. Photographs were presented to respondents in a random order. The results are depicted below in Figure 3.

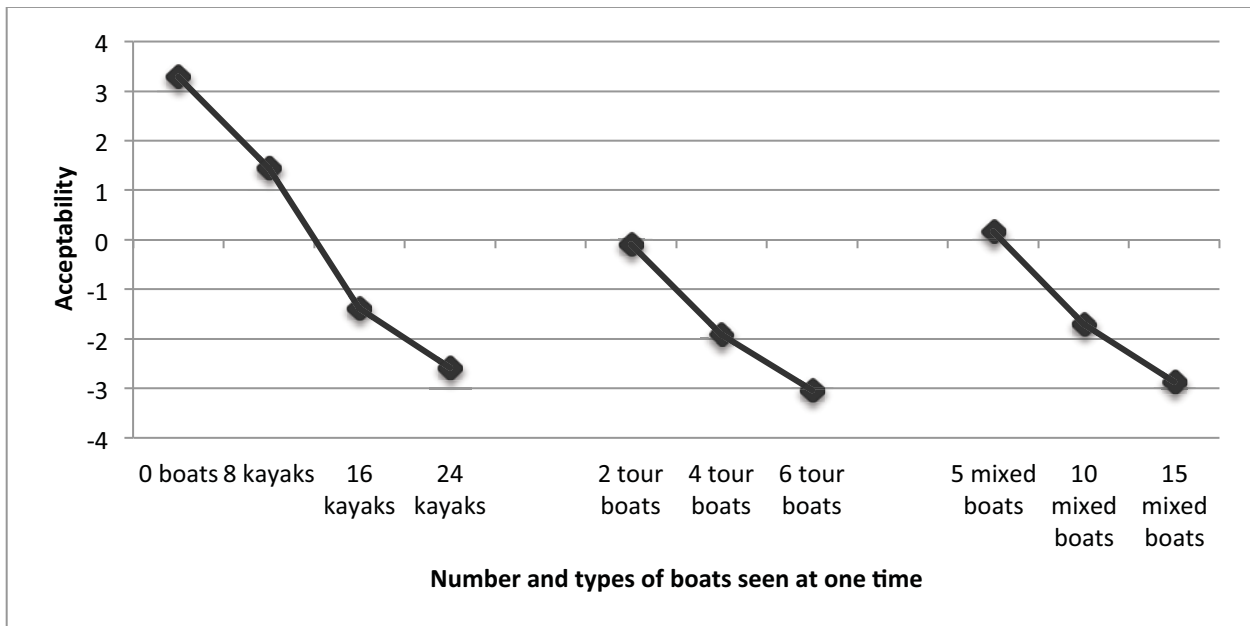


Figure 3. Acceptability of number and kinds of boats seen at one time

Respondents found a maximum of 12.09 kayaks, 1.95 tour boats, and 5.43 mixed kayaks and tour boats acceptable to see at any one time in the fjords. When asked to indicate which photo showed the number and types of boats respondents would prefer to see, the majority (60.5%) selected Photo 3, showing 0 boats, and 20.9% selected Photo 9 showing 8 kayaks. Respondents were also asked to indicate which photo showed the number and types of boats that was so unacceptable they would no longer visit the fjords. Photo 8 showing 6 tour boats was selected by 60.5% of respondents; Photo 1 showing 15 mixed boats (12 kayaks and 3 tour boats) was selected by 30.6% of respondents; and 16.7% of respondents selected Photo 4, showing 24 kayaks. Thirteen percent of respondents indicated that none of the photos was so unacceptable that they would no longer visit the fjords.

When asked which photo showed the condition at which management action should be taken to limit boats within the fjords, 31.6% of respondents selected Photo 8 (6 tour boats), 21.1% selected Photo 4 (24 kayaks), and 21.1% selected Photo 1 (12 kayaks and 3 tour boats). Two respondents (4.3%) indicated that none of the photos showed a condition as which boats should be restricted from accessing the fjords, and three respondents (6.5%) indicated that boat access to

the fjords should not be limited. When asked which photo looked most like the number and type of boats visitors typically saw during their backcountry trip, 46.2% selected Photo 1 (0 boats), 23.1% selected Photo 5 (4 kayaks and 1 tour boat), and 15.4% selected Photo 7 (8 kayaks and 2 tour boats).

Respondents were asked to indicate how crowded they felt during their trip to the fjords using a nine-point scale (1-2 = Moderately Crowded, 3-4 = Somewhat Crowded, 6-7 = Moderately Crowded, 8-9 = Extremely Crowded). Overall crowding in the fjords appears to be quite low, with respondents indicating an average level of perceived crowding of 1.59 on the crowding scale (n = 44; min = 1, max = 5).

Finally respondents were shown a series of photographs showing campsites of 13m², 36m², and 100m² with 12%, 55%, and 88% vegetation cover. Results are depicted below in Figure 4.

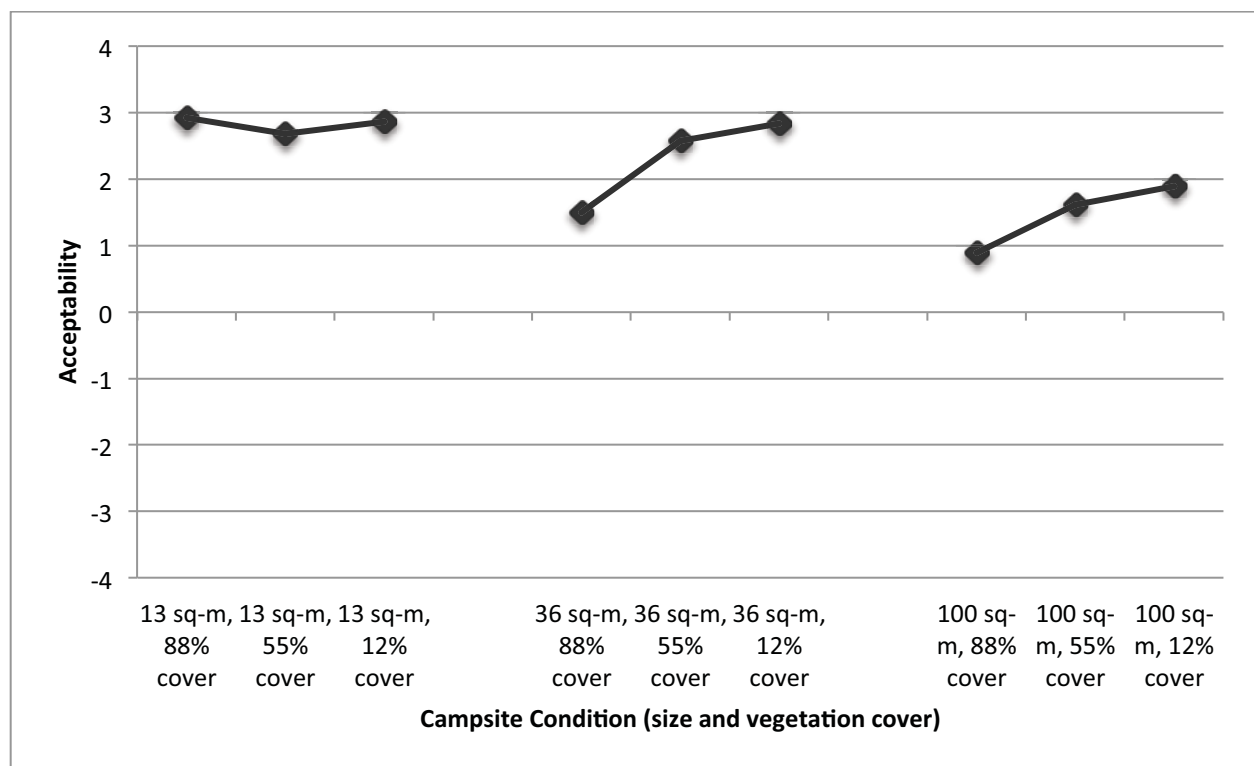


Figure 4. Acceptability of coastal campsite condition to KEFJ visitors

None of the conditions was rated as being unacceptable to visitors. However, it appears that campsites with less vegetation cover are more appealing to visitors, as in most cases mean acceptability increased as vegetation cover decreased.

When asked which photograph showed conditions they would prefer to see, 24% of respondents selected Photo 6 (13m² campsite with 88% vegetation cover), 13% selected Photo 4 (36m² campsite with 88% vegetation cover), and Photos 1 (100m² campsite with 55% vegetation cover), 2 (13m² campsite with 55% vegetation cover), and 3 (13m² campsite with 12% vegetation cover) were each selected by 9% of respondents. When asked to indicate which

photograph showed the condition at which they would no longer camp at backcountry campsites, 9% of respondents selected Photo 8 (100m² campsite with 12% vegetation cover). The vast majority of respondents (67%) indicated that none of the photographs were so bad as to cause them to stop camping at backcountry campsites in the fjords.

Respondents were also asked to indicate which photograph showed a condition at which management action should be taken to limit impacts to backcountry campsites. Thirteen percent of respondents indicated Photo 8 (100m² campsite with 12% vegetation cover), while 39% responded that none of the photos showed a high enough level of environmental impact to justify management action. One respondent indicated that no management intervention should be taken at backcountry campsites. Finally, respondents were asked which photograph looked most like the conditions they typically encountered at backcountry campsites. Fourteen respondents indicated they had visited backcountry sites. Of the respondents that visited campsites:

- 4 (29%) chose Photo 1 (100m² campsite with 55% vegetation cover)
- 3 (21%) chose Photo 6 (13m² campsite with 88% vegetation cover)
- 2 (14%) chose Photo 3 (13m² campsite with 12% vegetation cover)
- 2 (14%) chose Photo 4 (36m² campsite with 88% vegetation cover)

Nineteen survey respondents (41%) stated that they did not visit any backcountry campsites and 13 did not respond.

Day trips were most common, with 29 respondents (63%) indicating they participated in a day trip to the coast and 17 respondents (37%) describing their trip as multi-day, or consisting of at least one night spent in the backcountry. Of the respondents participating in a multi-day trip, 12 listed campsites or areas where they had camped, 2 stayed at the Aialik Public Use Cabin, 2 stayed at the Kenai Fjords Glacier Lodge, and 1 respondent stayed at the Aialik Public Use Cabin and a backcountry campsite.

Overall, the current quality of the visitor experience in the KEFJ coastal backcountry appears to be quite high. Respondents to the 2010 and 2012 surveys did not indicate any “problem” conditions, and report encountering social and resource conditions that are well within what they consider to be acceptable. The one exception to this is that 15% of respondents did report typically seeing conditions that approximated eight kayaks and two tour boats within sight at one time. This condition received a mean -1.71 acceptability rating, falling within the unacceptable range for visitors, and is approaching a level at which some visitors indicated they may be displaced from the fjords (12 kayaks and 3 tour boats seen at one time).

Integration with Campsite Monitoring Data

Visitor-based indicators and standards data can be integrated with campsite monitoring data in a complementary manner that informs management and supports visitor experience and resource protection objectives. While it is important to collect objective information about camping resource conditions in the field, it is also useful to explore how the people using those resources perceive the conditions they encounter. Indicators from the campsite monitoring protocol were incorporated into the survey administered to backcountry visitors. Survey results can be viewed alongside resource monitoring data to evaluate existing conditions from a visitor perspective.

The updated campsite monitoring protocol (Monz et al. 2011) was extensively applied to KEFJ coastal backcountry sites in 2010. A summary of variables measured is presented in Table 4, a

summary of current (2010) conditions is presented in Table 5, and a summary of the frequency of impact problems at KEFJ coastal campsites is presented in Table 6.

Table 4. KEFJ site attributes, assessment methods and measurement scales for coastal backcountry campsites.

Site Attribute	Method Used	Measurement Scale
Campsite area	Radial transect	Square meters
Landing substrate	Observation	Bedrock, cobble, sand, soil, sand/cobble, soil/cobble
Camping site substrate	Observation	Bedrock, cobble, sand, soil, sand/cobble, soil/cobble
Tree canopy cover	Observation	Presence/absence
Vegetation cover on-site	Ocular estimation	Six level cover scale (0-5%, 6-25%, 26-50%, 51-75%, 76-95%, 96-100%)
Vegetation cover off-site	Ocular estimation	Six level cover scale (0-5%, 6-25%, 26-50%, 51-75%, 76-95%, 96-100%)
Mineral soil exposure	Ocular estimation	Six level cover scale (0-5%, 6-25%, 26-50%, 51-75%, 76-95%, 96-100%)
Tree damage	Observation	Three level damage scale (1 = None/slight; 2 = Moderate; 3 = Severe; 4 = Not applicable)
Ghost tree damage	Observation	Three level damage scale (1 = None/slight; 2 = Moderate; 3 = Severe; 4 = Not applicable)
Root exposure	Observation	Three level damage scale (1 = None/slight; 2 = Moderate; 3 = Severe; 4 = Not applicable)
Number of stumps	Counts	Number of cut stumps within 5 meters of campsite and/or site trails
Number of ghost stumps	Counts	Number of cut ghost tree stumps within 5 meters of campsite and/or site trails
Number of fire sites	Counts	Number of fire sites within 5 meters of campsite
Number of trails	Counts	Number of trails leaving campsite in any direction
Number of tent rocks	Counts	Four level tent rock scale (1 = None; 2 = 1-5 rocks; 3 = 6-15 rocks; 4 = > 15 rocks)
Trash	Ocular estimation	Four level trash scale (1 = None to a handful; 2 = More than handful to a gallon; 3 = Gallon to 5 gallons; 4 = > 5 gallons)
Human waste	Counts	Three level waste scale (1 = None; 2 = 1 to 3 sites; 3 = 4 or more sites evident)
Condition class	Ocular estimation	Six level condition class scale, 0 to 5

Table 5. Summary of current (2010) campsite conditions in KEFJ. Values are means \pm SD for continuous measures and medians \pm range for ordinal measures

Site Attribute	KEFJ Study Area ¹
<i>Continuous Measures</i>	
Area of observable impact (m ²)	28.27 \pm 30.31
Condition class	2.4 \pm 1.0
Fire sites (#)	0.11 \pm 0.35
Informal trails (#)	2.27 \pm 1.32
Mineral soil exposure (%)	59.8 \pm 37.2
Stumps/cut shrubs (#)	0.11 \pm 0.5
Ghost stumps (#)	0.21 \pm 0.89
Vegetation cover loss (%)	55.7 \pm 39.5
<i>Ordinal Measures</i>	
Human waste	1 \pm 0
Litter/trash	1 \pm 2
Root exposure	1 \pm 2
Tree damage	1 \pm 1
Ghost tree damage	1 \pm 2

¹N = 81

Table 6. Frequency of impact problems at campsites in KEFJ in 2010. Values are the percentage of sites¹ that exhibit the indicated impact parameter and severity.

Impact Parameter	Frequency	Percent
\geq moderate tree/shrub damage	13	16.0
\geq moderate ghost tree damage	6	7.4
\geq moderate root exposure	12	14.8
Presence of cut tree stumps/ cut shrubs	4	4.9
Presence of cut ghost tree stumps	6	7.4
Multiple trailing	59	72.8
Fire impacts present	8	9.9
Significant presence of camping trash	0	0
Observable human waste	0	0
Campsites larger than 50 m ²	5	6.2

¹N = 81

Overall average campsite conditions at KEFJ in 2010 compare favorably to other studies conducted in coastal Alaska (e.g. Twardock et al. 2010). Average campsite size is 28m², with an average relative vegetation cover of approximately 45%, and large sites exceeding 50m² in size are uncommon. Multiple trailing is the most commonly observed resource change, occurring at 73% of sites. However other impacts are fairly minimal, with observations at fewer than 20% of sites measured. The campsite monitoring data collected in the field support the survey results, in which respondents indicated no problems or concerns related to backcountry resource conditions around camping areas. While none of the campsite conditions presented to respondents were judged to be unacceptable, campsite monitoring data suggest that current campsite conditions are similar to those visitors would prefer to see: respondents most frequently chose photos depicting smaller campsites with moderately high levels of vegetation cover as what they would prefer to see (13m² with 88% vegetation cover and 36m² with 88% vegetation cover), and monitoring data show an average size of 28.27m² and 44.3% vegetation cover as the current conditions of KEFJ backcountry sites.

Conclusions and Recommendations

Objectives-based management frameworks supported by indicators and standards of quality can be an effective approach to supporting visitor experience and resource protection goals (Manning 2011). Supported by a program of ongoing monitoring, such frameworks can provide managers with information concerning the status and acceptability of recreation resource conditions and social factors, the effectiveness of management actions, and provide an early warning if conditions begin to deteriorate and approach established standards.

Information from visitor surveys such as those discussed in this report can be useful in identifying indicators of quality and establishing associated standards (Manning 2007). According to the results of the 2010 visitor survey, opportunities for experiencing solitude, the scenic quality of the natural environment, wildlife-viewing opportunities, kayak/tour boat interactions, and natural sounds appear to be significant indicators of quality for the backcountry visitor experience at KEFJ. Results from the 2012 survey indicate that visitors are currently receiving a high-quality backcountry recreation experience, although kayak/tour boat interactions may be approaching a point at which some management intervention may be necessary.

Visitor-based standards for resource and social conditions can be useful in informing the establishment of management standards for indicators of quality (Manning 2007). The 2012 visitor survey formulated visitor standards for the number of other kayak groups seen per day, the number and types of boats visible at one time, and resource conditions at backcountry coastal campsites. Information regarding visitor preferences, the point at which visitors may be displaced, and the point at which visitors feel management intervention could be necessary to address conditions was also collected for those three variables. These data provide managers with a range of information to inform the establishment of management standards.

This report also demonstrates how a program of social-science research can complement a program of biophysical resource condition monitoring. The revised campsite monitoring protocol has established a condition “baseline” at KEFJ, and further monitoring will enable managers to view trends in conditions over time and evaluate the effectiveness of management actions aimed at minimizing recreation-related impacts to campsite resources. Results from surveys of

backcountry visitors can tell managers if visitors are encountering conditions they find acceptable, if a particular issue is becoming a problem from a visitors' perspective, and inform management strategies based on their acceptability to visitors.

Implementation Recommendations and Next Steps

The success and utility of any monitoring program depends on the identification of specific management questions and objectives. KEFJ has a responsibility to articulate the kinds of resource and social conditions it wishes to maintain within the park. The information contained within this report provides insight into desirable or acceptable park conditions from the perspective of coastal backcountry visitors, primarily sea kayakers. Such information should be considered in concert with other information available to park managers to inform the development of specific management objectives, the selection of indicator variables, and the establishment of standards for minimum acceptable conditions.

One limitation to this study is the small sample size of backcountry visitors who participated in the 2010 and 2012 visitor surveys. Contacting visitors to participate in the study was difficult given the manner of access to the coast. Most visitors access the coast via private water taxis owned or hired by private outfitting and guide service providers. Time constraints and physical conditions make contacting visitors in the field during a trip difficult. In 2010, attempts were made to administer surveys via kayak shops and on water taxis at the conclusion of a trip when visitors traveled back to Seward. This approach yielded very few completed surveys. In 2012, a letter was sent to local kayak shops informing them of the study and asking permission for research staff to contact visitors at the shops after they had returned from a trip to the coast. Of the six outfitters contacted, two agreed to allow researchers to contact visitors. This limited contact raises concerns over the ability to generalize study findings, as a representative sample of backcountry visitors may not have been achieved. We suggest that if KEFJ seeks to conduct a similar study of backcountry visitors in the future, alternative means of contacting visitors should be considered to ensure a larger and more representative sample of visitors.

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Appendix I. 2010 Indicators Survey

OMB CONTROL #: 1024-0224 (NPS 10-029)
EXPIRATION DATE: JUNE 30, 2011

KENAI FJORDS VISITOR SURVEY NATIONAL PARK SERVICE



Location Survey Administered: _____

Commercial or Private Group: _____

Tour Company: _____

Date: _____

Time: _____

Attendant: _____

Weather: _____ Warm
_____ Cool
_____ Sunny
_____ Partly sunny
_____ Cloudy
_____ Foggy
_____ Rain

Dear Kenai Fjords National Park Visitor:

The National Park Service is conducting this survey to learn more about our visitors so that we can improve our service to you. You are one of a select number of people randomly chosen for this survey, so your opinions are important to us. The survey takes about 10 minutes to complete, and all of the information collected will be anonymous. Please read each question carefully.

1. How many people, including you, are in your personal group today? Your “personal group” is anyone you are visiting the park with, such as spouse, family, or friends. It doesn’t include the larger group you may be traveling with, such as a tour group or school groups.

Number of people: _____

2. On this visit, what kind of personal group (not guided tour/school group) were you with? Please circle only one.

- a. Alone c. Family
b. Friends d. Family and friends
e. Other (Please describe: _____)

3. On this visit, were you and your personal group with any of the following types of groups? (Circle all that apply.)

- a. Guided tour group
b. School/educational group
c. Commercial tour
d. Other organized group (Please describe _____)

4. Have you visited the Park Information Center (in downtown Seward) during your visit?

- a. Yes b. No

5. How did you access the coast? (Circle all that apply.)

- a. Sea kayak
b. Chartered water taxi
c. Commercial outfitter service
d. Sea plane
e. Private watercraft
f. Other (Please specify: _____)

6. How would you describe your trip to the coast?

1. Day trip (did not spend the night in the backcountry) → Question 9
2. Multi-day trip (spent 1 or more nights in the backcountry)

7. What was the length of your trip in days?

Length of trip: _____ days

8. Did you spend the night at any of the following areas? (Circle all that apply.)

1. Aialik Public Use Cabin
2. Holgate Cabin
3. North Arm Cabin
4. Kenai Fjords Glacier Lodge
5. Backcountry campsite (Please specify area(s): _____)

9. Have you visited Kenai Fjords National Park before? (Circle one number.)

- a. Yes
- b. No → Question 10

If YES, approximately how many times have you visited Kenai Fjords National Park before this trip?

Number of previous visits: _____

10. Below is a list of possible reasons for visiting Kenai Fjords National Park. For each item, please indicate how important the reason for visiting is to you. (Circle one number for each item.)

	Not Important	Somewhat Important	Moderately Important	Very Important	Extremely Important
a. To learn about the cultural history of this area	1	2	3	4	5
b. To see and learn about the natural environment of this area	1	2	3	4	5
c. To participate in a recreational activity (e.g. kayaking, hiking)	1	2	3	4	5
d. To be with family and/or friends	1	2	3	4	5
e. To get some exercise	1	2	3	4	5
f. To experience solitude	1	2	3	4	5
g. Other (please specify: _____)	1	2	3	4	5

11. Which of the following activities did/will you participate in during your trip? (Circle all that apply.)

- a. Viewing wildlife
- b. Photography
- c. Bird watching
- d. Saltwater fishing
- e. Freshwater fishing
- f. Sea kayaking
- g. Hiking
- h. Other (Please specify: _____)

These questions ask about things that made your visit more or less enjoyable.

12a. What did you enjoy most about your visit?

b. What did you enjoy least about your visit?

13. If you could ask the National Park Service to change some things about the way it manages Kenai Fjords, what would you ask it to do?

14. If you have visited these areas of Kenai Fjords before, please note any things that have changed for the better or for the worse since your last visit.

OR

a. This is my first visit to these areas.

15. Do you think visitors are having any negative effects on the natural and/or cultural resources of this area or the quality of the visitor experience?

- a. Yes
- b. No

If YES, please explain: _____

16. What do you value most about your visit to Kenai Fjords National Park?

17. What do you consider to be the most important qualities of Kenai Fjords National Park?

18. How much of a problem do you think the following issues are at Kenai Fjords National Park? (Circle one number for each item.)

	Not a Problem	Small Problem	Big Problem	Don't Know
a. The number of people at beaches	1	2	3	4
b. The number of kayaking groups	1	2	3	4
c. The presence of large kayaking groups	1	2	3	4
d. Environmental impact to beaches from visitor use	1	2	3	4
e. Environmental impact to campsites from visitor use	1	2	3	4
f. Damage to ghost trees caused by visitors	1	2	3	4
g. Presence of tour boats	1	2	3	4
h. Speed of tour boats	1	2	3	4
i. Noise from tour boats	1	2	3	4
j. Air quality	1	2	3	4
k. Visitors making too much noise	1	2	3	4
l. Visitors harassing wildlife	1	2	3	4

19. Do you live in the United States?

- a. Yes (If so, what is your zip code? _____)
- b. No (If not, what country do you live in? _____)

20. In what year were you born?

Year born: _____

21. What is your gender? (Circle one number.)

- a. Male
- b. Female

22. What is the highest level of formal education you have completed? (Circle one number.)

- a. Less than high school
- b. High school graduate/GED
- c. Vocational/trade school certificate
- d. Some college
- e. Two-year college degree
- f. Four-year college degree
- g. Graduate degree

23. Are you Hispanic or Latino?
- Yes, Hispanic or Latino
 - No, not Hispanic or Latino
24. What is your race? (Please circle one or more.)
- American Indian or Alaska Native
 - Asian
 - Black or African American
 - Native Hawaiian or other Pacific Islander
 - White
25. Does anyone in your group have a physical condition that made it difficult to access or participate in park activities?
- Yes
 - No

If YES, because of the physical condition, what specific problems did the person have? Please circle all that apply.)

- Hearing (difficulty hearing ranger programs, guides, audiovisual exhibits or programs, or information desk staff, even with a hearing aid)
- Visual (difficulty in seeing exhibits, directional signs, visual aids that are part of a program, even with prescribed glasses or due to blindness)
- Mobility (difficulty in accessing facilities, services, or programs, even with walking aid and/or wheelchair)
- Other (Please explain) _____

26. Is there anything else you would like to tell us about your visit to Kenai Fjords National Park?

Thank you for your help with this survey! Please return this completed questionnaire to the surveyor.

PRIVACY ACT and PAPERWORK REDUCTION ACT statement:

16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary and anonymous. No action may be taken against you for refusing to supply the information requested. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. BURDEN ESTIMATE STATEMENT: Public reporting burden for this form is estimated to average 10 minutes per response. Direct comments regarding the burden estimate or any other aspect of this form to Laura Phillips, Ecologist, Kenai Fjords National Park, (907) 422-0540, Laura_Phillips@nps.gov.

Appendix II. 2012 Standards Survey

KENAI FJORDS VISITOR SURVEY 2012

NATIONAL PARK SERVICE

COASTAL BACKCOUNTRY



Survey ID: _____

Date: _____

Time: _____

Location Survey Administered: _____

Commercial or Private Group: _____

Tour Company: _____

Attendant: _____

Weather: _____ Warm

_____ Cool

_____ Sunny

_____ Partly Sunny

_____ Cloudy

_____ Foggy

_____ Rain

OMB Control Number: 1024-0224
Current Expiration Date 8/31/2014

Dear Kenai Fjords National Park Visitor:

The National Park Service is conducting this survey to learn more about our visitors' experiences in the backcountry coastal areas of the park and the conditions they encounter so that we can improve our service to you. You are one of a select number of people randomly chosen for this survey, so your opinions are important to us. The survey takes about 15 minutes to complete and all of the information collected will be anonymous. Please read each question carefully.

Section A: Trip Characteristics

We would like to know more about your backcountry experience in Kenai Fjords National Park. Please answer the following questions to the best of your ability.

1. How many people (including you) are in your personal group today? Your "personal group" is anyone you are visiting the park with, such as spouse, family, or friends. It doesn't include the larger group you may be traveling with, such as a tour group or school groups.

Number of people: _____

2. On this visit, what kind of personal group (not guided tour/school group) were you with? Please circle only one.

- a. Alone
b. Friends
c. Family
d. Family and friends
e. Other (Please describe: _____)

3. On this visit, were you and your personal group with any of the following types of groups? Please circle all that apply.

- a. Guided tour group
b. School/educational group
c. Commercial tour
d. Other organized group (Please describe: _____)

4. How did you access the coast? (Please circle all that apply.)

- a. Sea kayak
b. Chartered water taxi
c. Commercial outfitter service
d. Sea plane
e. Helicopter
f. Private watercraft
g. Other (Please specify: _____)

5. How would you describe your trip to the coast?

- a. Day trip (did not spend the night in the backcountry) → Proceed to Question 8
b. Multi-day trip (spent 1 or more nights in the backcountry)

6. What was the length of your trip in days?

Length of trip: _____ days

7. Did you spend the night at any of the following areas? (Circle all that apply.)

- a. Aialik Public Use Cabin
- b. Holgate Cabin
- c. North Arm Cabin
- d. Kenai Fjords Glacier Lodge
- e. Backcountry campsite (Please specify areas: _____
_____)

8. Have you visited Kenai Fjords National Park before this trip?
- a. Yes
 - b. No → Proceed to Question 10

If YES, approximately how many times have you visited Kenai Fjords National Park before this trip?

Number of previous visits: _____

- 9a. What did you enjoy most about your visit?
- b. What did you enjoy least about your visit?
- c. If you could ask the National Park Service to change some things about the way it manages Kenai Fjords, what would you ask it to do?

10. Below is a list of possible reasons for visiting Kenai Fjords National Park. For each item please indicate **1) how important the reason for visiting is to you**, and **2) the extent to which you were able to achieve each motivation**. (Circle one number under IMPORTANCE and one number under ACHIEVED for each item.)

	IMPORTANCE					ACHIEVED			
	Not at all important	Slightly	Moderately	Very	Extremely important	Not at all achieved	Slightly	Moderately	Fully achieved
a. To learn about the cultural history of this area	1	2	3	4	5	1	2	3	4
b. To learn about the natural environment of this area	1	2	3	4	5	1	2	3	4
c. To be with family and/or friends	1	2	3	4	5	1	2	3	4
d. To get exercise	1	2	3	4	5	1	2	3	4

	Not at all important	Slightly	Moderately	Very	Extremely important	Not at all achieved	Slightly	Moderately	Fully achieved
e. To experience solitude	1	2	3	4	5	1	2	3	4
f. To experience peace and tranquility	1	2	3	4	5	1	2	3	4
g. To view wildlife	1	2	3	4	5	1	2	3	4
h. To view natural scenery	1	2	3	4	5	1	2	3	4
i. To view glaciers	1	2	3	4	5	1	2	3	4
j. Other (please specify: _____)	1	2	3	4	5	1	2	3	4

Section B: Perceptions of Experience

We would like to know how you feel about your experience in the backcountry at Kenai Fjords National Park.

11. The following statements relate to your backcountry experience at Kenai Fjords. Please indicate the degree to which you agree or disagree with each statement. (Circle one number for each item.)

Statement	LEVEL OF AGREEMENT					
	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree	Don't Know / Doesn't Apply
a. Opportunities to view wildlife are sufficient	1	2	3	4	5	6
b. There are too many kayak groups on the coast	1	2	3	4	5	6
c. There are too many tour boats	1	2	3	4	5	6
d. There is too much noise from motor boats	1	2	3	4	5	6
e. There is too much noise from visitors	1	2	3	4	5	6
f. Visitors are harassing wildlife	1	2	3	4	5	6
g. Visitors are damaging ghost trees	1	2	3	4	5	6
h. Trampled vegetation is a problem at backcountry campsites	1	2	3	4	5	6
i. Soil erosion is a problem at backcountry campsites	1	2	3	4	5	6
j. Litter is a problem at backcountry campsites	1	2	3	4	5	6

Statement	LEVEL OF AGREEMENT						
	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree	Don't Know/ Doesn't Apply	
k. The presence of tent rocks/rock piles left by visitors is a problem at backcountry campsites	1	2	3	4	5	6	
l. Trampled vegetation is a problem at landing beaches	1	2	3	4	5	6	
m. Soil erosion is a problem at landing beaches	1	2	3	4	5	6	
n. Litter is a problem at landing beaches	1	2	3	4	5	6	
o. Managers should restrict the use of backcountry campsites (e.g. establish group size limits, limit the number of groups allowed to camp in an area each night, require backcountry permits)	1	2	3	4	5	6	
p. The number of boats allowed to access backcountry areas should be limited	1	2	3	4	5	6	

Section C: Visitor Standards of Backcountry Social and Resource Conditions

We would like to know more about your view of *social and resource conditions* in the coastal backcountry of Kenai Fjords National Park. To help judge this, please rate each of the following conditions by indicating how acceptable you find them. A rating of “-4” means the condition is “highly unacceptable,” and a rating of “+4” means the condition is “highly acceptable.” (Circle one number for each condition)

12a. We would like to know how many other kayak groups you think it is acceptable to see each day without causing you to feel too crowded. Please rate the acceptability of each of the following numbers of other kayak groups seen per day. A rating of -4 means the time is “highly unacceptable”, and a rating of +4 means the time is “highly acceptable”. (Circle one number for each line.)

	Very Unacceptable	Unacceptable	Neutral	Acceptable	Very Acceptable				
No other kayak groups	-4	-3	-2	-1	0	1	2	3	4
2 other kayak groups	-4	-3	-2	-1	0	1	2	3	4
4 other kayak groups	-4	-3	-2	-1	0	1	2	3	4
6 other kayak groups	-4	-3	-2	-1	0	1	2	3	4
10 other kayak groups	-4	-3	-2	-1	0	1	2	3	4
14 other kayak groups	-4	-3	-2	-1	0	1	2	3	4
18 other kayak groups	-4	-3	-2	-1	0	1	2	3	4
More than 18 other kayak groups	-4	-3	-2	-1	0	1	2	3	4

b. What is the number of other kayak groups per day that you would prefer to see during your trip?

Preferred number of other kayak groups seen per day: _____

c. What is the maximum number of other kayak groups per day that you think you could see before you would no longer visit the coast? If you would continue to visit the coast regardless of the number of other kayak groups seen, you may indicate that.

Maximum number of other kayak groups seen per day before you would no longer visit the coast:

OR

I would continue to visit the backcountry regardless of the number of other kayak groups seen

d. What is the maximum number of other kayak groups seen per day that you think the National Park Service should allow on the coast? In other words, at what point do you think visitors should be restricted from accessing the coast? If you think the number of kayak groups should not be restricted, you may indicate that.

Maximum number of kayak groups seen per day that should be allowed: _____

OR

The number of kayak groups should not be restricted.

e. What is the approximate number of other kayak groups you saw per day during your trip?

Approximate number of kayak groups seen: _____

Photo number: _____

OR

None of the photographs are so unacceptable that I would no longer camp at backcountry campsites.

- d. Which photograph shows the highest level of impact that you think the National Park Service should allow at backcountry campsites? In other words, at what point do you think management action should be taken to limit the amount of environmental impact at campsites? If you think management action should not be taken at any point represented in the photographs, or no management action should be taken at all, you may indicate that.

Photo number: _____

OR

None of the photographs show a high enough level of environmental impact to justify management intervention at backcountry campsites.

OR

There should be no management intervention at backcountry campsites.

- e. Which photograph looks most like the amount of environmental impact you typically saw at backcountry campsites?

Photo number: _____

OR

I did not visit any backcountry campsites.

Section D: Background

We would like to collect some background information. Please answer the following questions to the best of your ability.

16. Do you live in the United States?

- a. Yes (if so, what is your ZIP code? _____)
- b. No (If not, what country do you live in? _____)

17. In what year were you born?

Year born: _____

18. What is your gender?

- a. Male
- b. Female

19. What is the highest level of formal education you have completed? (Circle one number.)

- a. Less than high school
- b. High school graduate/GED
- c. Vocational/trade school certificate
- d. Some college
- e. Two-year college degree
- f. Four-year college degree
- g. Graduate degree

20. Are you Hispanic or Latino?

- a. Yes, Hispanic or Latino
- b. No, not Hispanic or Latino

21. What is your race? (Please circle one or more.)

- a. American Indian or Alaska Native
- b. Asian
- c. Black or African American
- d. Native Hawaiian or other Pacific Islander
- e. White

22. Does anyone in your group have a physical condition that made it difficult to access or participate in park activities?

- a. Yes
- b. No

If YES, because of the physical condition, what specific problems did the person have? (Please circle all that apply.)

- a. Hearing (difficulty hearing ranger programs, guides, audiovisual exhibits or programs, or information desk staff, even with hearing aid)
- b. Visual (difficulty in seeing exhibits, directional signs, visual aids that are part of a program, even with prescribed glasses or due to blindness)
- c. Mobility (difficulty in accessing facilities, services, programs, even with walking aid and/or wheelchair)
- d. Other (Please explain) _____

23. Is there anything else you would like to tell us about your visit to Kenai Fjords National Park?

**Thank you for your help with this survey!
Please return this questionnaire to the surveyor.**

Paperwork Reduction Act Statement: The National Park Service is authorized by 16 U.S.C. 1a-7 to collect this information. We will use this information will be used by park managers to learn more about our visitors' experiences in the backcountry coastal areas of the park and the conditions they encounter. Your responses are voluntary and completely anonymous. A Federal agency may not conduct or sponsor and you are not required to respond to, a collection of information unless it displays a currently valid OMB Control Number and expiration date.

BURDEN ESTIMATE STATEMENT: We estimate that it will take an average of 15minutes to complete this questionnaire. Please direct any comments that you have concern this collection to Laura Phillips, Ecologist, Kenai Fjords National Park, (907) 422-0540, Laura_Phillips@nps.gov (email).

Appendix III: Boat Study Photographs

0 boats



16 kayaks



2 tour boats



6 tour boats



10 mixed boats



8 kayaks



24 kayaks



4 tour boats



5 mixed boats



15 mixed boats



Appendix IV: Campsite Study Photographs

