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Ugashik Narrows Public Use Field Camp
Alaska Peninsula National Wildlife Refuge
15 June - 22 September 1988

by

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ABSTRACT

The Ugashik Narrows public use camp, first established in the summer of 1987, continued a seasonal site specific collection of public use data during the summer of 1988. Following recommendations from the 1987 field season report, the camp survey period was extended into September in an attempt to get a more complete picture of use at the Narrows. During the 98 day survey period 89 parties, of which 86 were interviewed, brought a total of 393 visitors to the Narrows. Fishermen, visiting on a day use only basis, accounted for 74% of the total parties using the Narrows. Thirteen lodges brought 61 guided parties accounting for 69% of the parties visiting the Narrows in 1988. The average length of stay for guided day use visitors increased from 4.1 hours in 1987 to 5.3 hours in 1988. Peak use occurred the week ending 31 August when 101 use days were documented.

36pp

TABLE OF CONTENTS

Abstract.....	Forward
Introduction.....	1
Study Area.....	1
Methods.....	3
Data Analysis.....	3
Results.....	4
Discussion.....	13
Recommendations.....	13
Literature Cited.....	15
Appendices	
Appendix 1. Public use survey data form.....	16
Appendix 2. Public use survey Ugashik Narrows 1988....	17
Appendix 3. Species accounts-birds-1988.....	26
Appendix 4. Species accounts-Mammalia.....	32
Appendix 5. Plant list Ugashik Narrows and Outlet-1988	33
Tables	
Table 1. Total client and guide use categorized by day use fishermen, overnight use fishermen and other use	5
Table 2. Use days for Ugashik Narrows, 1988.....	6
Table 3. Use hours of fishing, 1988, Ugashik Narrows..	8
Figures	
Figure 1. Alaska Peninsula National Wildlife Refuge and Ugashik Narrows.....	2
Figure 2. Total use days, Ugashik Narrows, 1988.....	10
Figure 3. Use days by category and survey week, Ugashik Narrows, 1988.....	11

Introduction

The Ugashik Narrows, located in the Alaska Peninsula National Wildlife Refuge (Figure 1), has a long tradition of use by the sport fishing industry. The Ugashik Narrows fishery is widely known to provide world class fishing opportunities for arctic grayling (Thymallus arcticus), coho (silver) salmon (Oncorhynchus kisutch), sockeye (red) salmon (O. nerka), arctic char (Salvelinus alpinus), dolly varden (S. malma) and lake trout (S. namaycush). Access to the Narrows is limited to float-equipped aircraft or boat. The primary starting point for most Narrows visitors is the community of King Salmon, approximately 80 air miles north-northwest. Since King Salmon is served by regularly scheduled airline service from Anchorage, disembarking visitors are generally met by one of the numerous local and fly-out fishing lodges who provide guided fishing opportunities on the Alaska Peninsula.

The documentation of regular use at the Narrows began in the summer of 1987, after intermittent investigations by the Alaska Department of Fish and Game expressed concern over the stability of the arctic grayling population (Minard 1988). Similar concerns have often been expressed by fishing guides who frequent the Narrows with clients. As a result of the apparent instability of the arctic grayling population most fishermen have been directed, by their respective guides, to utilize catch and release fishing techniques.

Results of the 1987 Narrows study indicated that continued monitoring of public use at the Narrows, along with a coordinated effort with the Alaska Department of Fish and Game on a creel survey would result in greater quantitative documentation of use at the Narrows. The goals of the 1988 study were primarily the same as those in 1987: 1. record all visits, by the public, to the Narrows, the purpose of each visit and document lodge use trends. 2. conduct a saturation creel survey by interviewing each person fishing at the termination of their visit.

Study Area

The Ugashik Narrows is a short river connecting the Upper and Lower Ugashik Lakes with the rivers flow being from north to south (a complete, detailed, property description is found in Savery et al 1988). Within the river is an island creating a west and east branch of the river. On the eastern side of the Narrows is a riffle at the north end of the island where the water slows and is in excess of three meters in depth near the southeastern bank. This area also has a small sedge dominated lagoon. On the west side of the island the river is more shallow and generally more swift. At the south end of the Narrows, two gravel bars constrict the flow of water, causing two, ever changing, sand and gravel spits to extend some distance into Lower Ugashik Lake.

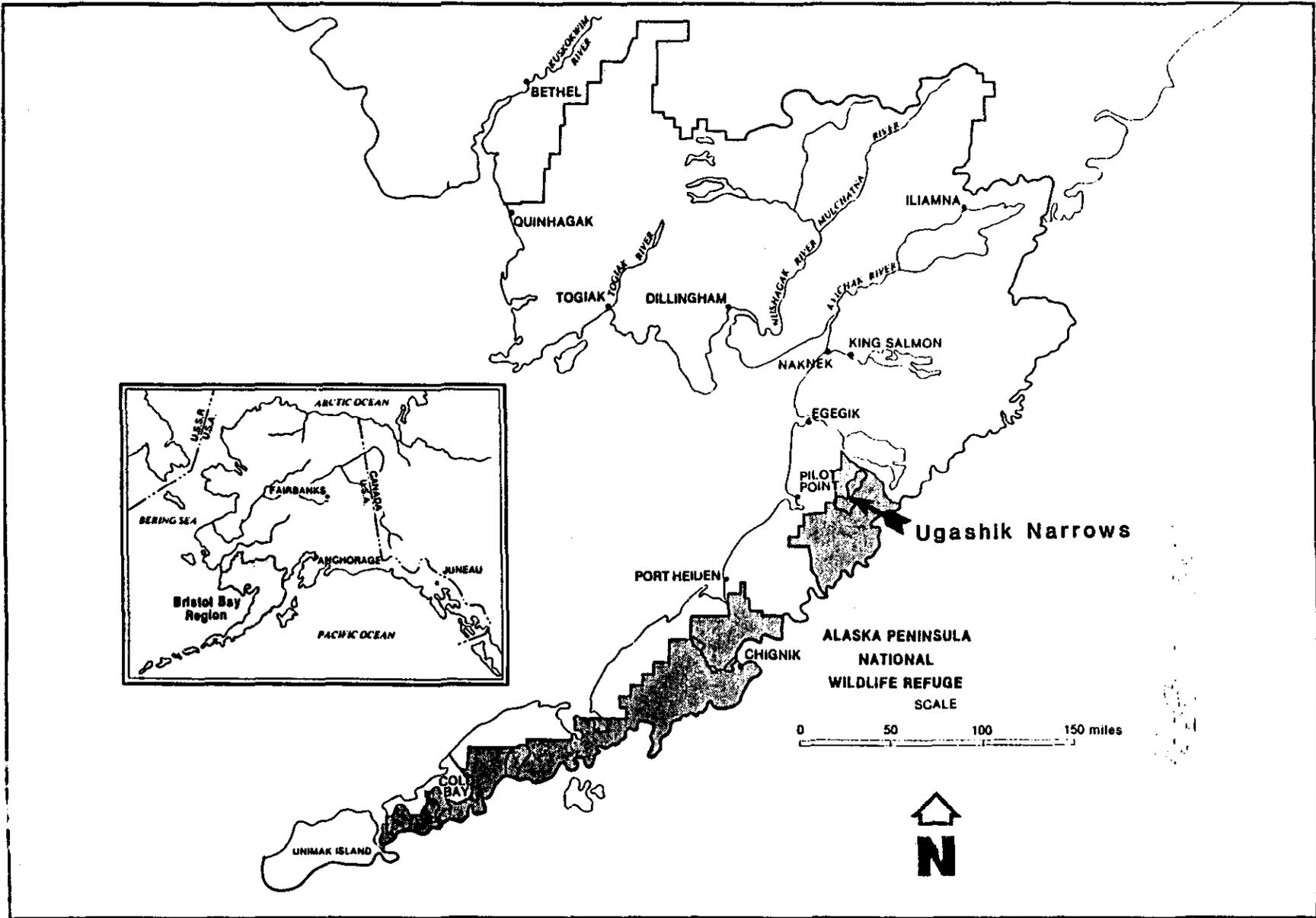


Figure 1. Alaska Peninsula National Wildlife Refuge and Ugashik Narrows

Methods

The location of the Narrows field camp was retained from 1987 to 1988, but the cabin utilized in 1987 was not available for use in 1988. Two 12 x 20 and one 12 x 10 weatherports were erected behind the cabin and utilized as sleeping, cooking and office quarters. One biological technician and from one to three Student Conservation Association volunteers staffed the camp from 15 June through 22 September. Throughout the season a total of five individual Student Conservation Association and two Fish and Wildlife Service volunteers helped with the data collection. Additional manpower was volunteered by personnel of the King Salmon Air Force Station to aid in the camp establishment and removal. Data was collected from 16 June through 21 September.

When a party arrived at the Narrows they were greeted by members of the staff, offered refuge and fishing brochures and interviewed for specific information. If the party's purpose was to fish, they were asked to participate in the creel survey when they had completed their fishing activities. Approximate departure time was determined so each party member could be "exit interviewed." Data was recorded on Public Use Survey forms (Appendix 1). Members of the public use staff served as a primary information source to visitors concerning National Wildlife Refuges and the Alaska Peninsula/Becharof refuges specifically. Many visitors were unaware they were utilizing refuge resources.

In conjunction with the Alaska Department of Fish and Game, the creel survey for 1988 was conducted seven days a week, as opposed to four days per week in 1987. The purpose of the seven day surveys were to obtain a complete survey of all users of the Narrows throughout the season, providing for greater accuracy in final data analysis. The creel census data will be analyzed during the winter of 1988-89 by the Sport Fisheries Division, Alaska Department of Fish and Game, Dillingham, Alaska.

Data Analysis

Survey entries were grouped in three general use categories: 1. day use fishermen; 2. overnight fishermen; and 3. other. To further aid in data analysis fishermen were also categorized as to whether they were guided or unguided. Visitors were also examined on the basis of mode of transportation to the Narrows (eg aircraft or boat). Since day fishermen contributed the greatest number of parties these are further analyzed as to the actual number of hours that they visited the Narrows. (Note: total use hours are not comparable to "Fishing Hours" recorded on the creel survey. Fishing hours are those hours fishermen were actually engaged in the sport. Use hours are inclusive of arrival time to departure time, without regard to activity pursued.) Overnight visitors and others were examined in terms of Use Days. A use of any part of a day constitutes a Use Day, eg if a party arrives on August 8 and departs on August 9, it was recorded as two use days. Day use fishermen can be compared to overnight use fishermen by examining the "Number of Users" category since each client or guide utilized the Narrows one day.

Table 1. Total client and guide use categorized by day use fishermen, overnight use fishermen and other use.

Category/ Method of Arrival	Number Parties	Number Clients	Number Guides	Total Visitors	Days Average Stay	Client Use Days	Guide Use Days	Total Use Days
Day Use Fishermen								
Guided/ Aircraft	41	146	54	200	1	146	54	200
Guided/ Boat	19	50	21	71	1	50	21	80
Total Guided	60	196	75	271	1	196	75	271
Unguided/ Aircraft	5	16	--	16	1	16	--	16
Unguided/ Boat	1	5	--	5	1	5	--	5
Total Unguided	6	21	--	21	1	21	--	21
TOTAL DAY USE	66	217	75	292	1	217	75	292
Overnight Use Fishermen								
Guided/ Aircraft	5	33	9	42	2.1	66	24	90
Guided/ Boat	--	--	--	--	--	--	--	--
Total Guided	5	33	9	42	2.1	66	25	90
Unguided/ Aircraft ¹	6	24	--	24	11.5	178 ²	--	178
Unguided/ Boat	1	5	--	5	2.0	10	--	10
Total Unguided	7	29	--	29	9.9	188	--	188
TOTAL NIGHT USE	12	62	9	71	--	254	24	278
TOTAL FISHERMEN USE DAYS - OVERALL								570
OTHER								
fish/other ²	--	--	--	--	--	94	--	94
other	8	30	--	30	--	82	--	82
TOTAL USE DAYS AT THE NARROWS IN 1988								746

¹ Mt. Peulik Lodge included in this category.² If an individual visited the Narrows and stated the primary purpose of the visit was fishing, but did not fish, then their use was placed in the fish/other category.

Table 2. Use days for Ugashik Narrows, 1988.

Category/Lodge	Month								Total Client Use Days	Total Guide Use Days	Total Sum Use Days	Number of Parties
	June		July		August		September					
	Clt	Gui	Clt	Gui	Clt	Gui	Clt	Gui				
Day Use - Guided												
Adv Unltd/Fox Bay Ldg	-	-	-	-	-	-	8	3	8	3	11	2
Alagnak Ldg	-	-	3	1	-	-	-	-	3	1	4	1
Bears Den Ldg	-	-	27	8	5	2	9	4	41	14	55	14
Crystal Creek Ldg	-	-	4	2	-	-	-	-	4	2	6	1
Cusaks King Salmon Ldg	8	4	-	-	-	-	4	1	12	5	17	3
Enchanted Lake Ldg	-	-	9	4	12	5	16	5	37	14	51	9
Iliamna Lake Resort	-	-	-	-	11	5	3	2	14	7	21	5
Kulik Ldg	-	-	8	2	6	1	-	-	14	3	17	3
Kvichak Ldg	-	-	-	-	3	2	-	-	3	2	5	1
Lamoureux Ldg (air)	-	-	-	-	4	3	-	-	4	3	7	2
(boat)	-	-	-	-	9	7	-	-	9	7	16	5
No-See-Um Ldg	4	1	-	-	8	2	18	5	30	8	38	8
Quinnat Hotel	3	1	14	5	-	-	-	-	17	6	23	6
Total Day Use - Guided	15	6	65	22	58	27	58	20	196	75	271	60
Day Use - Unguided												
Blue Mountain Ldg	-	-	3	-	-	-	-	-	3	-	3	1
Private Interests	-	-	13	-	2	-	3	-	18	-	18	5
TOTAL DAY USE - UNGUIDED	-	-	16	-	2	-	3	-	21	-	21	6
TOTAL COMBINED - DAY USE	15	6	81	22	60	27	61	20	217	75	292	66

Table 2. Continued.

Category/Lodge	Month								Total Client Use Days	Total Guide Use Days	Total Sum Use Days	Number of Parties
	June		July		August		September					
	Clt	Gui	Clt	Gui	Clt	Gui	Clt	Gui				
Overnight Use - Guided												
Diamond Ldg	-	-	4	1	42	5	-	-	46	6	52	3
Iliamna Lake Resort	-	-	-	-	12	12	8	6	20	18	38	2
Total Overnight Use - Guided	-	-	4	1	54	17	8	6	66	24	90	5
Overnight Use - Unguided												
Mt. Peulik Ldg	-	-	78	-	66	-	3	-	147	-	147	4
Private Interests	-	-	9	-	32	-	-	-	41	-	41	3
Total Overnight Use - Unguided	-	-	87	-	98	-	3	-	188	-	188	7
TOTAL COMBINED OVERNIGHT USE	-	-	91	1	152	17	11	6	254	24	278	12
Other Use												
Mt. Peulik Ldg (other)	-	-	38	-	41	-	-	-	79	-	79	-
Overnight (other)	-	-	9	-	6	-	-	-	15	-	15	-
Business	-	-	5	-	-	-	-	-	5	-	5	2
Sightseeing	-	-	14	-	-	-	-	-	14	-	14	3
Hunting/Fishing	-	-	-	-	-	-	63	-	63	-	63	3
Total Other	-	-	66	-	51	-	63	-	176	-	176	8
TOTAL COMBINED - ALL USES	15	6	238	23	259	44	135	26	647	99	746	86

Table 3. Use hours of fishing, 1988, Ugashik Narrows.

Category/Lodge	June Hours		July Hours		August Hours		September Hours		Total Client Hours	Total Guide Hours	Overall Total Hours
	Clt	Gui	Clt	Gui	Clt	Gui	Clt	Gui			
Guided											
Adv Unltd/Fox Bay Ldg	--	--	--	--	--	--	53.7	19.8	53.7	19.8	73.5
Alagnak Ldg	--	--	12.0	4.0	--	--	--	--	12.0	4.0	16.0
Bears Den Ldg	--	--	117.5	35.3	12.0	4.5	32.3	12.3	161.8	52.0	213.8
Crystal Creek Ldg	--	--	12.0	6.0	--	--	--	--	12.0	6.0	18.0
Cusaks King Salmon	32.0	16.0	--	--	--	--	32.0	8.0	64.0	24.0	88.0
Enchanted Lake Ldg	--	--	64.3	28.5	78.3	32.7	100.7	31.7	243.3	92.8	336.1
Iliamna Lake Resort	--	--	--	--	51.0	19.3	13.5	9.0	64.5	28.3	92.8
Kulik Ldg	--	--	35.7	8.9	22.3	3.8	--	--	58.2	12.7	70.8
Kvichak Ldg	--	--	--	--	9.0	6.0	--	--	9.0	6.0	15.0
Lamoureux Ldg (air)	--	--	--	--	17.8	10.1	--	--	17.8	10.1	27.9
(boat)	--	--	--	--	39.8	28.3	--	--	39.8	28.3	68.1
No-See-Um Ldg	22.0	5.5	--	--	54.3	5.5	106.0	29.8	182.3	48.9	231.2
Quinnat Hotel	10.5	3.5	71.8	24.5	--	--	--	--	82.3	28.0	110.3
Total Hours - Guided	64.5	25.0	313.3	107.2	254.5	118.3	338.2	110.6	1000.7	360.8	1361.4
Unguided											
Blue Mountain Ldg	--	--	12.0	--	--	--	--	--	12.0	--	12.0
Private Interests	--	--	42.8	--	4.0	--	3.5	--	50.3	--	50.3
Total Hours - unguided	--	--	54.8	--	4.0	--	3.5	--	62.3	--	62.3
TOTAL COMBINED - USE HOURS	64.5	25.0	368.1	107.2	258.5	118.3	341.7	110.6	1063.0	360.8	1423.7

∞

Thirteen lodges brought 61 guided parties to the Narrows and one lodge dropped off their clients without a guide (Table 2). These lodges and their respective guides accounted for nearly one-half of the total use days at the Narrows (Figure 2). As in 1987, Bear's Den Lodge contributed the greatest number of guided parties (14) which resulted in 14% of the use hours (Table 3). Compared with Bear's Den activities in 1987 (21 visits), their total visits in 1988 were significantly lower. This may be due to the highly unfavorable weather which occurred in August 1988, which prevented boat trips across Lower Ugashik Lake. Although Bear's Den Lodge contributed the most visits and the most day use visitors, Enchanted Lake Lodge, in nine visits contributed 51 use days and 25% (336) of the day use hours. No-See-Um Lodge, with eight visits, 38 use days and 17% of the total use hours was also a major user of the Narrows resources.

Overnight use, by fishermen, contributed to 37% of the 1988 use days. As in 1987, the majority (68%) of overnight use was by unguided fishermen. Two lodges, Diamond and Iliamna Lake Resort, provided guided overnight trips to the Narrows and combined accounted for 90 use days. Mt. Peulik Lodge, located at the Narrows, provides clients with meals and lodging, but does not provide fishing guides. Thus, Mt. Peulik Lodge provided 78% of the unguided fishing use days (Table 2). Only three parties, independent of any lodge, visited the Narrows during 1988. Combined they contributed 41 overnight fishing use days. Overall, 57 individuals remained overnight at the Narrows, over 75% of these visitors were either European or Japanese.

In addition to the overnight fishing use by Mt. Peulik Lodge, their clients contributed 79 use days to the 176 days of "other" use and 12 of the 63 hunting/fishing use days (Table 2). Fifty-one use days were contributed by a hunting party that camped 1.5 miles west of the Narrows in mid-September. Members of this party, on occasion, utilized the Narrows for fishing. Two separate parties visited the Narrows by boat from the village of Ugashik and Pilot Point for sightseeing. Two parties arrived by aircraft to conduct business at the property owned by Iliamna Lake Resort adjacent to the Narrows.

Several other visitors either briefly stopped at the Narrows on the way to other areas of the Alaska Peninsula or were on official travel in relation to resource management. These parties included hunters passing through the Narrows on the way to more productive game areas, a Bureau of Indian Affairs archeology investigations team, Fish and Wildlife Service administrators and Special Agents and Alaska Department of Fish and Game personnel conducting the arctic grayling survey.

To examine seasonal use of the Narrows, use days were divided into 14 one week periods. Utilizing this method, peak use occurred during the week ending on 31 August (Figure 3). The use in this time period paralleled the silver salmon and arctic char runs. Overnight unguided use contributed a relatively constant number of use days over a seven week mid-season period. The peak use period is heavily weighted by guided day and guided overnight use.

Figure 2. Total use days, Ugashik Narrows, 1988.

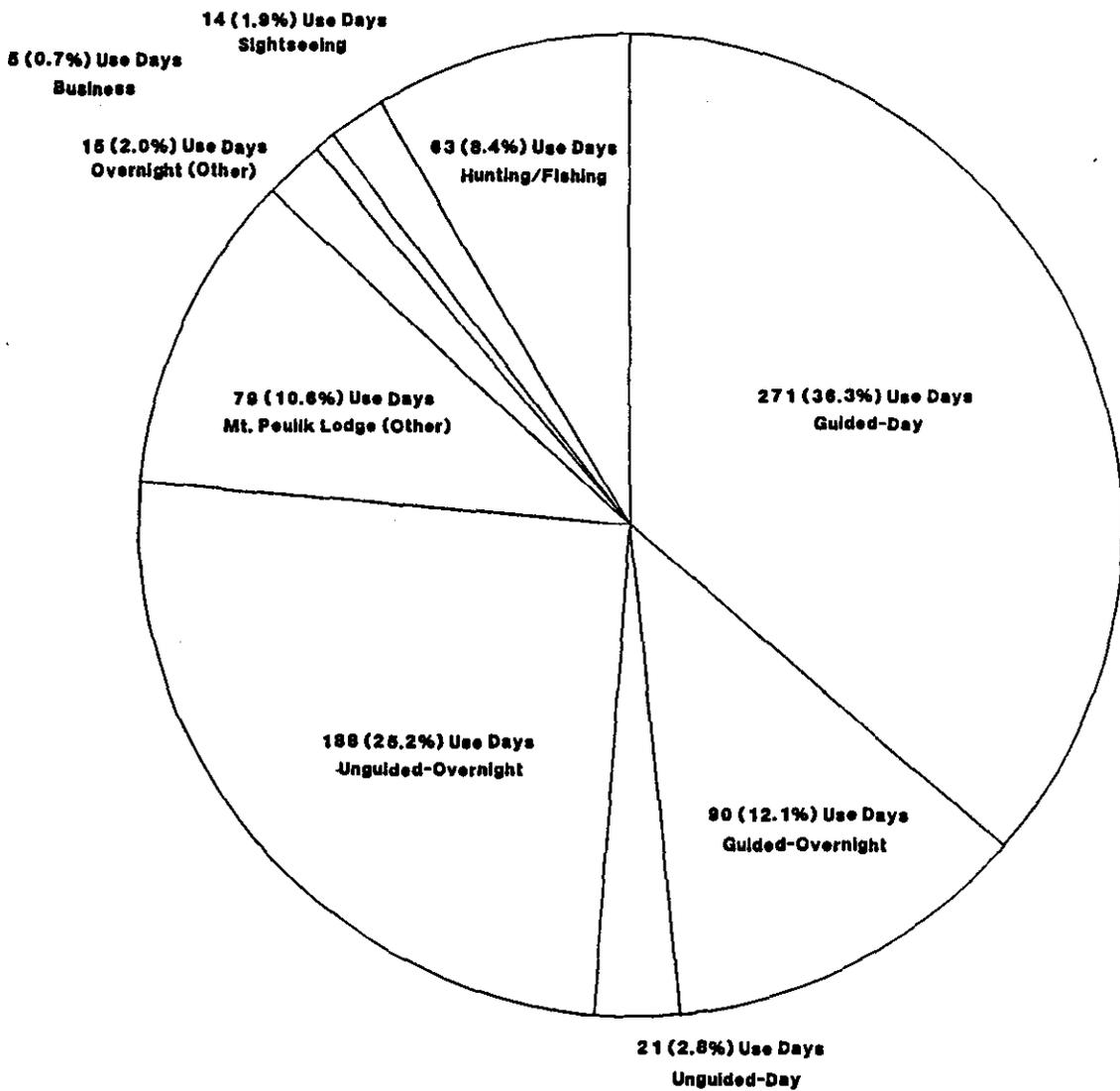
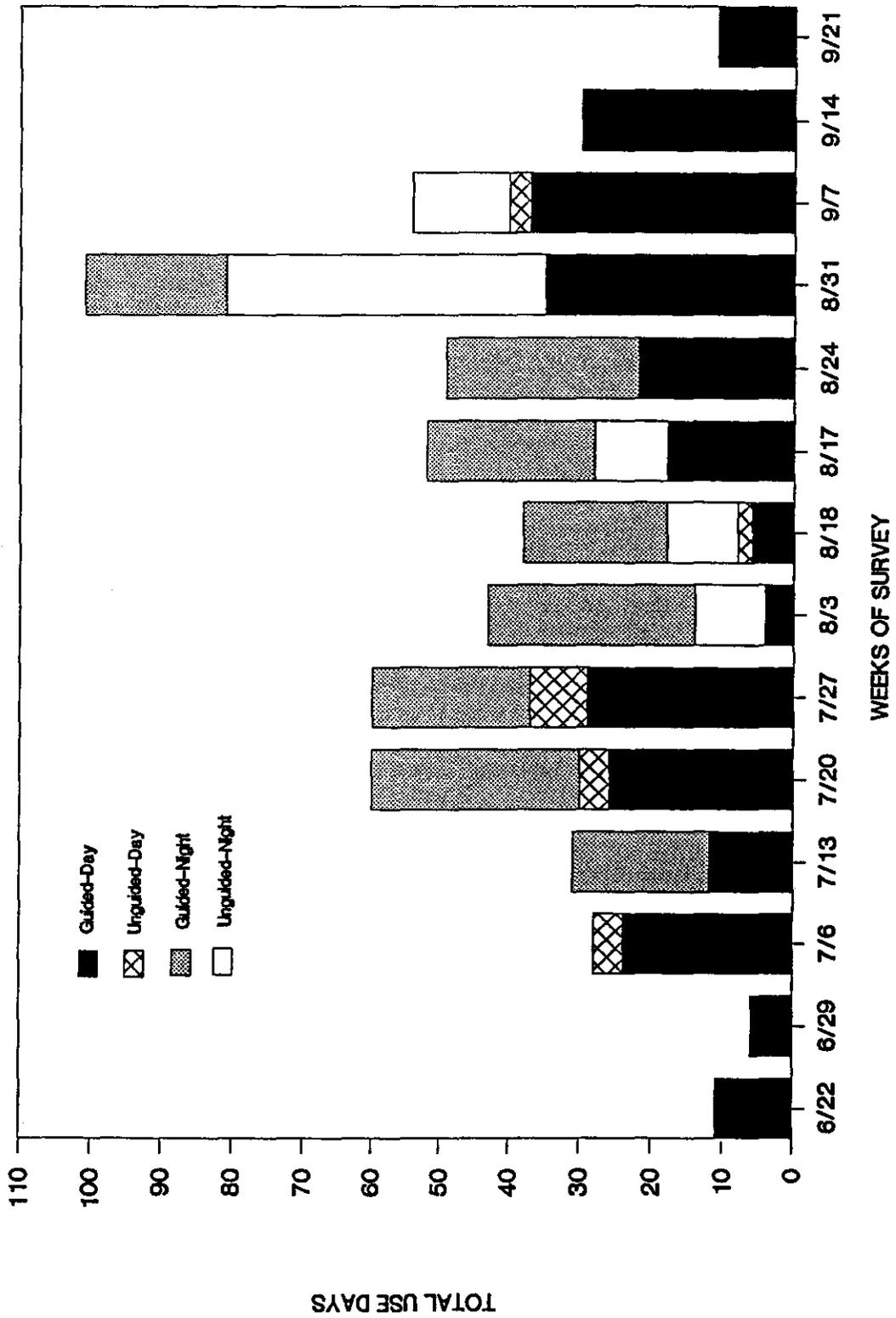


Figure 3. Use days by category and survey week, Ugashik Narrows, 1988.



Day use appears to be heavily influenced by both the peninsula weather and the overall availability of fish. During July and late August, wind was either calm or light and flight visibilities good. In contrast, the last survey week in September, weather made access by aircraft or boat marginal. Fishing pressure, from Mt. Peulik also appears to be weather dependent. Often, during periods of good boating weather, clients from Mt. Peulik would leave the Narrows to fish other areas, but with inclement weather, clients would remain at the Narrows to fish. The availability of targeted fish species has a definite impact on use days. In June and early July the targeted fish species was generally arctic grayling, while in July and August, overnight users seemed more catholic in their fishing goals. In late August and through September large arctic char migrate to the Narrows to feed on salmon spawn and begin their own spawning.

A substantial number of comments were received from some lodge pilots/guides that they made a "fly-over" of the Narrows, but did not attempt to land because of the amount of activity occurring. Many lodges appear to attempt to offer their clients a quality "wilderness experience." With the activity of Alaska Department of Fish and Game in conducting the arctic grayling survey, the presence of the refuges public use camp and, on occasion, several aircraft, the pilots/guides left the Narrows to seek greater solitude.

Each lodge had its particular approach to fishing the Narrows and sometimes had to modify their approach due to the presence of other fishing parties. Fly-in lodges most often utilized the west bank of the Narrows, mooring the aircraft on a gravel spit at the north end of the Narrows or at the beach adjacent to the refuge camp. Mt. Peulik clients generally utilized the east bank of the Narrows. Later in the season, when the arctic char began their run, several lodges utilized the large island for both fishing and mooring of their aircraft. This enabled the clients more direct access to the arctic char concentrating in the backwashes around the island.

Illegal fishing activities continue to be observed at the Narrows. Two violations which occur with regularity include intentional snagging, especially of sockeye salmon, and exceeding personal bag limits. To help curtail these activities, an Alaska Fish and Wildlife Protection Officer was detailed to the Narrows to observe. The officers' visit netted one citation and loss of fishing gear to one of Mt. Peulik Lodge's clients.

Parties were made up of people from wide geographic locations. Twenty-eight states and seven countries were represented, with California contributing the most individual visitors (50). Alaska residents were second in visitation with 26 fishermen and 19 individuals engaged in other recreation orientated sports. Visitors came from Germany, Italy, Austria, Switzerland, Great Britain, South Africa and Japan.

Discussion

In general, use of the Narrows did not change significantly between 1987 and 1988. The average visitors/day remained at 7.6, equal to 1987. Fishing continued to be the predominate reason for visiting the Narrows. Guided, one-day fly-in or boat-in parties contributed the largest number of parties and the largest number of individuals. Comparing guided versus unguided use for 1988 we find 63% (361 use days) was guided. This figure is not comparable to 1987 data since for 1988, "other" use by overnight visitors was separated from the unguided fishing use category. If "other" use is added back to the 1988 overnight fishing then the guided percentage becomes 54% as compared to 52% for 1987.

The proximity of Mt. Peulik Lodge to the Narrows resulted in the lodge being the single dominate user. The fly-in, No-See-Um Lodge, and the boat-in, Bears Den Lodge, continued to utilize the Narrows on a regular basis. In 1988, a newcomer to the Narrows, Enchanted Lake Lodge, brought in a substantial number of clients. Lake Iliamna Resort contributed to both day use and overnight use, but with fewer parties than 1987.

The public use survey crew found the public to be generally receptive of refuge activities at the Narrows. Most were interested in the operation of the camp and the refuge and were cooperative with both the public use and creel surveys. Several lodges or guides seemed unaware of the Fish and Wildlife Service Special Use Permit legal requirements under Title 50 Code of Federal Regulations.

Recommendations

1. Establish the Narrows field camp and have it fully operational by the 15th of June and extend the camps operation through the month of September. After the end of September, lodges generally do not book clients and access by float equipped aircraft becomes limited due to the potential for early freeze-up. Visitors were present at the Narrows during camp removal on September 22nd and information gathered from two lodges represented, indicated use of the Narrows through the end of September. If subsequent years follow 1988's base, then September could easily become the highest use month for the Narrows.

2. Increase law enforcement presence at the Narrows. This would help deter illegal fishing activities and provide immediate access to an officer when needed. Combining this recommendation with number one would also increase the law enforcement presence during the peak of caribou and moose hunting seasons.

3. Continue to operate the Narrows Public Use Camp as a visitor contact and information center. The majority of the public requested additional information on the refuge system and specific requests were made for refuge and fishing brochures as well as hunting and fishing regulations.

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Appendix 2. Public use survey Ugashik Narrows 1988.

Visitor Number	Visit Purpose	Arrival Time	Date	Departure Time	Date	Craft Type/Number	Lodge/Guide Name	Number Clients	Number Guides	Client Origin State/Country
1	Fishing	0745	6/16	1315	6/16	C-206 N6405X	No-See-Um Lodge Jack Holcolm	4	1pg ¹	1-ID, 1-CO, 1-NY, 1-OH
2	Fishing	1020	6/16	1620	6/16	Beaver N777T	Iliamna Lake Resort	4		Not Interviewed ²
3	Fishing	1030	6/16	1210	6/16	C-206 N9644G	Katmai Air Service	5		Not Interviewed ²
4	Fishing	1200	6/20	1600	6/20	Beaver N311NR	Cusaks King Salmon Ldg Dan Huel	4	1/1 ³	4-CA
5	Fishing	1100	6/24	1500	6/24	C-206 N4839U	Cusaks King Salmon Ldg	4	1/1	2-TX, 1-ID
6	Fishing	1015	6/30	1345	6/30	C-206 N35937	Quinnat Hotel Larry Suiter	3	1pg	2-MA, 1-NY
7	Business	1100	7/3	1415	7/3	Supercub	Win Condit	-	-	2-AK
8	Fishing	0845	7/3	1600	7/3	C-206 N35937	Quinnat Hotel Larry Suiter	4	1pg	2-CA, 1-MN, 1-Japan
9	Fishing	0945	7/4	1700	7/4	Boat	Bears Den Lodge Ben John	3	1	3-CA
10	Fishing	after 1100	7/4	1800	7/4	C-206 N7032Q	Unguided	4	-	4-Germany

¹pilot served dual duties as guide

²party not interviewed, crew in process of establishing camp

³pilot and separate guide for clients

Appendix 2. Continued.

Visitor Number	Visit Purpose	Arrival Time	Date	Departure Time	Date	Craft Type/Number	Lodge/Guide Name	Number Clients	Number Guides	Client Origin State/Country
11	Fishing	1145	7/5	1645	7/5	Boat	Bear Den Lodge Ben John	3	1	3-CA
12	Fishing	0945	7/5	1530	7/5	C-206 N35937	Quinnat Hotel Larry Suiter	3	1pg	3-Switzerland
13	Fishing	1045	7/6	1530	7/6	Boat	Bears Den Lodge Ben John	2	1	2-CA
14	Fishing	1400	7/9	1800	7/9	C-206 N35937	Quinnat Hotel Larry Suiter	2	1pg	2-AZ
15	Fishing	1900	7/9	1000	7/19	Beaver N67207	Mt. Peulik Lodge	5	-	5-Germany
16	Fishing	0930	7/10	1330	7/10	Boat	Bears Den Lodge Ben John	3	1	2-NV, 1-MA
17	Fishing	1000	7/10	1430	7/10	Boat	Bears Den Lodge Mitch Coe	4	1	3-NV, 1-CA
18	Fishing	1000	7/14	1300	7/14	Boat	Bears Den Lodge Mitch Coe	4	1	2-NV, 1-CA, 1-MA
19	Fishing	1600	7/15	1830	7/15	C-185 N61388	Unguided	4	-	1-AK, 3-KS
20	Fishing	1800 1800	7/17 7/17	2100 ----- ⁵	7/30 ⁴ 7/26	Wigeon	Mt. Peulik Lodge	6	-	5-Germany, 1-Austria
21	Business	1400	7/18	1545	7/18	C-206 N9644G	BLM Survey Crew	3	1	4-AK

⁴three members of this party left the Narrows on 7/20 and returned 7/23, three additional members left 7/21 and returned 7/23

⁵times not recorded - aircraft landing on Upper Ugashik Lake are not always audible due to weather

Appendix 2. Continued.

Visitor Number	Visit Purpose	Arrival Time	Date	Departure Time	Date	Craft Type/Number	Lodge/Guide Name	Number Clients	Number Guides	Client Origin State/Country
22	Fishing	0900	7/19	1600	7/19	Beaver N97EL	Enchanted Lake Lodge	4	1/1	2-FL, 1-CA, 1-employee
23	Fishing	0920	7/19	1600	7/19	C-206 N9644G	Kulik Lodge Chris	4	1pg	3-OK, 1-CO
24	Fishing	0845	7/20	1600	7/20	Beaver N97EL	Enchanted Lake Lodge Steve Mathew	5	1/1	2-MI, 1-MO, 2-S. Africa
25	Fishing	1130	7/20	1630	7/20	C-206 N35937	Quinnat Hotel Larry Suiter	2	1pg	2-MA
26	Fishing	1430	7/21	1615	7/21	Boat	Unguided	5	-	5-AK
27	Boating	2040	7/21	2330	7/21	Boat	Unguided	3	-	2-AK, 1-WA
28	Fishing	1045	7/22	1515	7/22	Boat	Bears Den Lodge Ben John	5	1	5-OK
29	Camp/Fish	1400	7/23	1030	7/24	Boat	Unguided	5	-	5-AK
30	Picnic	1400	7/23	1500	7/23	Boat	Unguided	8	-	7-AK, 1-VT
31	Fishing	0900	7/24	1300	7/24	C-185 N61387	Blue Mt. Lodge Gene Nettles	3	- ⁶	2-AR, 1-TX
32	Fishing	1015	7/24	1230	7/24	Boat	Bears Den Lodge Mitch Coe	3	1	2-MN, 1-AK
33	Fishing	1000	7/26	1230	7/26	C-206 N35937	Quinnat Hotel Larry Suiter	3	1pg	3-CA

⁶clients were dropped off at the Narrows but the guide did not stay

Appendix 2. Continued.

Visitor Number	Visit Purpose	Arrival Time	Date	Departure Time	Date	Craft Type/Number	Lodge/Guide Name	Number Clients	Number Guides	Client Origin State/Country
45	Fishing	0915	8/12	1700	8/12	C-185 N21832	Lamoureux Lodge Gus Lamoureux	2	1	2-TX
46	Fishing	1515	8/12	1815	8/12	Boat	Bears Den lodge Mitch Coe	3	1	1-AK, 1-WA, 1-IL
47	Fishing	1800	8/12	---- ⁵	8/26	Beaver	Mt. Peulik Lodge	2	-	2-Germany
		1800	8/12	---- ⁵	9/1	N67207		3	-	3-Germany
48	Fishing	0900	8/13	1245	8/13	C-206 N73835	Kulik Lodge Sonny Peterson	4	1pg	1-AK, 1-SC, 1-CA,1-England
49	Fish/Camp	1500	8/13	1200	8/14	C-185 N61522	Unguided	1	-	1-AK
50	Fishing	0930	8/17	1430	8/17	Boat	Lamoureux Lodge Gus & Frenchy Lamoureux	2	2	2-CA
51	Fishing	0945	8/19	1600	8/19	Boat	Lamoureux Lodge Gus Lamoureux	2	1	2-CA
52	Fishing	1200	8/20	1310	8/19	C-185 N21832	Lamoureux Lodge Gus & Frenchy Lamoureux	2	1/1	2-CA
53	Fishing	1100	8/21	1720	8/21	C-185 N87802	Iliamna Lake Resort Marty Olson	3	1pg	1-AK, 2-WA
54	Fishing	1500	8/21	1730	8/21	Beaver N777T	Iliamna Lake Resort	2	1pg	1-AK, 1-CA
55	Fishing	1400	8/21	---- ⁵	8/27	Beaver N67207	Mt. Peulik Lodge	3	-	3-Switzerland

Appendix 2. Continued.

Visitor Number	Visit Purpose	Arrival Time	Date	Departure Time	Date	Craft Type/Number	Lodge/Guide Name	Number Clients	Number Guides	Client Origin State/Country
56	Fishing	1215	8/24	1745	8/24	C-206 N9752Z	Iliamna Lake Resort Marty Olson	4	1pg	3-Japan, 1-AK
57	Fishing	1900	8/24	2115	8/24	Boat	Lamoureux Lodge Gus & Frenchy Lamoureux	1	2	1-CA
58	Fishing	0900	8/25	1530	8/25	Beaver N97EL	Enchanted Lake Lodge Gary	4	1pg	4-CA
59	Fishing	0840	8/26	1500	8/26	Beaver N97EL	Enchanted Lake Lodge Steve Mathews	4	1/1	4-CA
60	Fishing	0900	8/26	1730	8/27	Wigeon	Diamond Lodge Hans	10	1	1-Austria, 4-Italy, 5-Germany
61	Fishing	0840	8/27	1530	8/27	C-206 N5120X	No-See-Um Lodge Harley	4	1	3-CA, 1-NY
62	Fishing	1300	8/27	---- ⁷	8/27	Beaver	Iliamna Lake Resort	-	1	6-Japan
		1300	8/27	----	8/29	N777T	Bill	-	1	
		1300	8/27	----	8/30		Will Kitsoz	-	1	
	Fishing	1100	8/28	----	8/29	Beaver	Iliamna Lake Resort	6	1pg	
	Transport	1800	8/29	1900	8/29	N777T	Iliamna Lake Resort	-	1	
	Transport	1130	8/30	1330	8/30	C-206 N9752Z	Iliamna Lake Resort	-	1	
63	Fishing	0845	8/30	1530	8/30	Beaver N97EL	Enchanted Lake Lodge Steve Mathews	4	1/1	4-CA

⁷ lodge employees made several trips to transport supplies and employees prior to and after client arrival.

Appendix 2. Continued.

Visitor Number	Visit Purpose	Arrival Time	Date	Departure Time	Date	Craft Type/Number	Lodge/Guide Name	Number Clients	Number Guides	Client Origin State/Country
64	Fishing	1300	8/30	1600	8/30	Helio N6468V	Kvichak Lodge	3	1/1	3-VT
65	Fishing	0915	8/31	1600	8/31	C-206 N5120X	No-See-Um Lodge Harley	4	1pg	2-TX, 1-OK, 1-AK
66	Fishing	1200	8/31	1330	8/31	Boat	Bears Den Lodge Mitch Coe	2	1	2-CA
67	Fishing	1215 1215	9/1 9/1	1300 1615	9/2 9/4	Beaver N777T	Iliamna Lake Lodge Will Kitzos	4 -	1pg 1	3-KY, 1-AR
68	Fishing	1100	9/2	1620	9/2	C-206 N6405X	No-See-Um Lodge Jack Holcolm	3	1pg	1-OK, 2-AK
69	Fishing	1100	9/2	1415	9/2	C-206 N5120X	No-See-Um Lodge Harley	4	1pg	3-TX, 1-OK
70	Fishing	1650	9/3	1800	9/3	Maule N5647Y	Unguided	3	-	2-AK, 1-WA
71	Fishing	1145	9/4	1615	9/4	Beaver N777T	Iliamna Lake Resort	3	-	Employees
72	Fishing	1000	9/5	1400	9/5	Boat	Bears Den Lodge Mitch Coe	3	1	1-CA, 1-CO, 1-IN
73	Fishing	0910	9/6	1600	9/6	Beaver N97EL	Enchanted Lake Lodge Gary	4	1pg	2-MO, 2-TX
74	Fishing	1030	9/6	1415	9/6	Boat	Bears Den Lodge Mitch Coe	3	1	1-CA, 1-CO, 1-IN

Appendix 2. Continued.

Visitor Number	Visit Purpose	Arrival Time	Date	Departure Time	Date	Craft Type/Number	Lodge/Guide Name	Number Clients	Number Guides	Client Origin State/Country
75	Fishing	1230	9/6	1400	9/6	Boat	Bears Den Lodge Ben John	-	1	
76	Fishing	0900	9/7	1600	9/7	Beaver N97EL	Enchanted Lake Lodge Gary	4	1pg	2-ND, 2-IL
77	Fishing	1100	9/7	1400	9/7	Boat	Bears Den Lodge Mitch Coe	3	1	1-CA, 1-CO, 1-IN
78	Fishing	0900	9/8	1500	9/8	C-206 N6405X	No-See-Um Lodge Jack Holcolm	4	1pg	4-CA
79	Fishing	1000	9/11	1700	9/11	T-Beaver N911CC	Adventures Unltd. Fox Bay-Mike Branham	6	1/1	3-CO, 2-TX, 1-LA
80	Fishing	1040	9/11	1630	9/11	Helio N47055	Adventures Unltd. Fox Bay	2	1pg	2-CA
81	Fishing	1950	9/11	2040	9/11	C-185 N21832	Lamoureux Lodge	2	1pg	Not Interviewed
82	Fishing	0830	9/13	1630	9/13	C-206 N6405X	No-See-Um Lodge Jack Holcolm	3	1	3-CA
83	Fishing	1030	9/13	1830	9/13	Beaver N5338G	Cusaks King Salmon Ldg	4	1	2-CT, 2-MD
84	Hunt/Fish	1145	9/13	1230	9/19	C-208 Mark Air	Jim Hansen, Outfitter Wm. Morgan	7	-	6-CA, 1-AK
85	Fishing	1010	9/14	1200	9/14	Beaver N97EL	Enchanted Lake Lodge Gary	4	1pg	4-NY

Appendix 2. Continued.

Visitor Number	Visit Purpose	Arrival Time	Date	Departure Time	Date	Craft Type/Number	Lodge/Guide Name	Number Clients	Number Guides	Client Origin State/Country
86	Hunt/Fish	1520	9/16	1730	9/21	Beaver King Air	Mt. Peulik Lodge Bob Hicks ⁸	2	-	2-AK
87	Hunt/Fish	0915	9/18	1200	9/19	C-185 N9496H	Mt. Peulik Lodge	1	-	1-AK
88	Fishing	0900	9/21	1615	9/21	C-206 N6405X	No-See-Um Lodge Jack Holcolm	4	1pg	4-CA
89	Fishing	0930	9/21	1600	9/21	Beaver N97EL	Enchanted Lake Lodge Craig Siegler	4	1/1	1-OR, 2-MI, 1-CA

⁸Bob Hicks is the business partner of Ludwig Brod and was utilizing Mt. Peulik Lodge for personnel use.

Appendix 3. SPECIES ACCOUNTS - BIRDS - 1988

Sixty-five species of birds were observed at Ugashik Lakes (mostly at Ugashik Narrows). Observations began on June 15 and ended on September 21, excluding June 16 and 17. This allows for 97 observation days. Birds categorized as to frequency of occurrence as follows: 1-4 observations - Rare, 5-14 observations - Uncommon, 15 to 34 observations - Fairly Common, 35 to 64 observations - Common, and 65 or more observations - Frequent. A brief summary of observations by species follows:

Red-throated Loon: Common, observe 47 days, from 6/15 until 8/29. Frequently seen or hear in singles or pairs flying over the Narrows. Known to nest successfully in the area (one nest and one brood found). Adults observed carrying small fish. Occasionally seen resting on the lower lake.

Pacific Loon: Rare, 1 observed on 6/23 flying over Narrows

Common Loon: Common, observed 41 days. Regularly seen from 6/20 to 7/10, but not again until 8/3. Frequently seen and heard after 8/18 (accounts for 62% of observations). Activities seen limited to fly overs and resting on lakes. No breeding activities observed.

Red Necked Grebes: Uncommon, 7 observations. Large numbers seen near Island on Lower Ugashik Lake (6/29). Occasionally seen in Narrows and on large ponds during brood surveys-possibly breeding. Last seen 9/4.

Double Crested Cormorant: Frequent, observed 69 days, regularly through the summer. Frequently seen resting or feeding on Lower Lake. Sometimes seen in feeding groups with gulls. Largest concentrations seen near Islands. Possible nesting sites on Island cliffs.

Pelagic Cormorant: Fairly common, observed 17 days, all after 9/1. Birds resting and feeding on Lower lake and resting on shore. Birds in mixed groups with Double Crested Cormorants.

Tundra Swan: Uncommon, observed 10 days, several fly overs, but also on small lakes near the Narrows. Usually singles or pairs. No nests observed near the Narrows.

Canada Goose: Rare, one observation on 8/29 - approximately 25 fly over the Narrows heading NE. (Geese observed in September, but too high to ID).

Emperor Goose: Rare, one observation on 8/31 - 2 birds flying N over the Narrows.

Mallard: Rare, 4 observations between 6/15 and 7/10. Two fly overs and two observations on brood surveys including female with 5 ducklings.

SPECIES ACCOUNT - BIRDS - 1988, con't_

Green-winged Teal: Rare, two observations, one brood on brood surveys (7/14 - 3 class IA ducklings) and one fly over Narrows on 8/28.

Northern Pintail: Rare, two observations, one female with 3-class III brood on 7/14 and 1 fly over on 9/3.

American Wigeon: Uncommon, 13 Observations. Three males on the Narrows on 6/15 and one brood on brood surveys along with mixed sex flock. Flock seen near Blue Mountain on 9/4. Six birds regularly observed in the Narrows after 9/12.

Greater Scaup: Fairly common, 23 observations, seen regularly from 6/18 until 7/11 usually 2 pair on small pond W of Narrows. One female with 7 ducklings lower lake near this pond on 7/11. One nest also found on brood surveys - 9 eggs. After 7/11 only 2 more observations of 3 bird each.

Oldsquaw: Uncommon, 5 Observations. 4 observations from 6/15 until 6/25. Males and females seen on Lower Lake. Eight birds seen near the Islands on 6/25. Two birds seen at Ugashik Outlet on 7/24.

Black Scoter: Fairly common, 31 observations, seen from 6/15 until 9/5. Birds usually in groups of 5-8 seen floating on the lower or upper lake. Groups of 2-6 females often seen floating on small ponds during brood surveys. Observed most frequently in July, infrequently in August and September.

White-winged Scoter: Common, most frequently observed duck, seen 39 days. Regularly seen between 6/21 and 8/20 then irregularly from 9/4 to 9/17. Seen in groups of 1 to 10 at first mixed sex, then females. Unidentified sex birds seen after July 10 (eclipse beginning?).

Harlequin Duck: Rare, - 4 observations. Single males observed resting on the water on 7/5 and 9/3 near camp and 9/4 near the islands. One group of 10 and one group of 5 seen on 9/21 (females or eclipse males).

Red-breasted Merganser: Fairly common - seen 22 days. Pairs or mixed groups seen regularly from 6/20 until 7/1, then from 7/17 to 7/24, and unidentified birds seen from 9/5 until 9/21. One female with 5 class I ducklings seen in the Narrows on 7/21. (One female with class I ducklings seen at the Outlet in mid August-not included in notes).

Common Goldeneye: Rare, one observations from the Outlet, unknown sex.

SPECIES ACCOUNT - BIRDS - 1988, con't_

Northern Harrier: Common, 14 observations, second most common raptor. Seen throughout season. Eleven observations at camp, 2 observations in SE arm of lower lake, one in Upper Lake. All observations of single birds generally soaring over ridge near camp, twice flushed female out of willows near camp.

Osprey: Rare, 4 observations. Single birds or pairs fly over Narrows or near camp.

Golden Eagle: Rare, 2 observations. One pair on 3 Bear Mountain, and one bird on lake shore.

Peregrin Falcon: Rare, 2 observations. Single bird over ridge above camp, single bird over peak of 3 Bear Mountain.

Bald Eagle: Common, most common Raptor - 54 observations. Singles or pairs commonly seen sitting on gravel spit at Lower Narrows, flying over camp, roosting in trees at bluff east side of lake. Often being mobbed by gulls, seen eating carrion or dead salmon on shore west of camp. Adults seen on 52 days and immature on 6 days. Pair observed to nest by archeology crew in SE corner on island. Two dead adults found and reports of one additional dead adduct, all on eastern side of lake.

Merlin: Rare, 4 observations from 9/2 to 9/19, single birds or pairs fly over camp area.

Sandhill Crane: Uncommon, 9 observations from 7/9 to 9/12. Usually single birds or pairs through August heard calling near camp. In September, groups of 3 are more common and 1 flock of 9 seen near Islands. One pair thought to be nesting on Section 24.

Willow Ptarmigan: Fairly common, 30 observations. Birds heard calling frequently. Flying young first flushed July 3. Greatest numbers seen on 3 Bear Mountain in September.

Least Sandpiper: Fairly common, 26 observations. Seen frequently on brood surveys associated with tundra ponds (early July). Displaying nest defense behaviors. In late July through August 15, groups of 4-20 seen along Lower Lake shore feeding or flying over.

Wandering Tattler: Fairly common, 19 observations. One observation on 8/8, then remaining observations after 8/30. Single to three birds observed feeding along lower lake shore west of camp. One bird seen in the Narrows.

Red-necked Phalarope: Rare, 2 observations. One observed at the Outlet. One observation on brood survey-adult changing to Non-breeding plumage.

SPECIES ACCOUNT - BIRDS - 1988, con't.

Short-billed Dowitcher: Rare, 1 observation. One bird flushed from sedge area during brood survey.

Greater Yellow Legs: Frequent, 66 observations. Two to four birds seen almost every day in Narrows until 9/2. Probable nesting on island in Narrows. Frequently flushed and defensive. Later in August and September more common along lower lake shore.

Black Turnstone: Uncommon, 6 observations. 1-11 birds seen feeding along lower lake shoreline from 7/29 through 8/23. Some changing into non-breeding plumage.

Common Snipe: Fairly Common, 21 observations. Males heard winnowing regularly from 6/15 to 7/19 near camp or on brood surveys. Only 3 sightings after this date.

Rock Sandpiper: Rare, 1 observation, on 9/20 2 birds feeding along lower lake shore.

Mew Gull: Frequent, 97 observations. Three to 55 seen every day. Known breeding colony at Outlet. Birds at Narrows seen feeding, flying over, resting on spit, and associating with other gulls and cormorants.

Glaucous-winged Gull: Frequent, 68 observations. Seen nearly every day from 6/15 to 7/1 and then from 7/13 to 9/21. Known breeding colony on islands in SE corner lower lake (12 nests found on 6/29). Birds seen flying over Narrows, resting on spit, feeding and harassing Bald Eagles. Immatures commonly seen after 8/24.

Bonapart's Gull: Rare, 4 observations. Seen from 9/18 to 9/21, winter plumage birds and first year birds. Resting on spit and flying/feeding in the Narrows.

Arctic Tern: Common, 38 observations. Common from 6/18 to 8/9. Usually 1 - 3 birds seen feeding outside of Narrows spit. Known breeding colony at Outlet. One bird seen on 9/20 feeding.

Parasitic Jaeger: Uncommon, 10 observations. Singles or pairs of birds fly over or forage over camp, irregularly from 6/24 to 8/9.

Long-tailed Jaeger: Rare, one observation on 9/4 seen flying west of camp.

Belted Kingfisher: Rare, one observation, on 6/24 flying over camp.

Tree Swallow: Fairly common, 16 observations from 6/15 to 7/8. 1-15 birds seen per day flying and feeding over camp.

SPECIES ACCOUNT - BIRDS - 1988, con't_

Bank Swallow: Common, 36 observations. Frequently seen from 6/15 until 8/12 feeding and flying over camp. Common around bluffs east and west of camp. Seen to enter bank cavities, probable nesting.

Common Raven: Common, 54 observations. One to four observed per day regularly through season. Fly over camp, frequently calling, often chased by Glaucous-winged gulls, seen trying to feed on carrion with eagles.

Northwestern Crow: Rare, one observation on 6/18 flying over camp.

Black-billed Magpie: Uncommon, 7 observations. Seen twice in June and 5 times in September. Most commonly seen on east side of lake, only once in camp.

Northern Shrike: Fairly common, 27 observations. Irregularly seen in June and July, more frequently in August and September. Most observations of immature birds. Seen resting on antennae, calling, causing alarm in passerines. Three immatures caught in mist net on 9/5. Possible migration of immatures in September.

Hermit Thrush: Uncommon, 13 observations. Seen occasionally in June and July and once in September. Observations generally of singing males. On July 3 one male observed singing and carrying insects - probable nesting.

Gray-checked Thrush: Uncommon, 5 observations. Usually detected by song or calling in Narrows area in June and early July.

American Robin: Uncommon, 8 observations. One observation in June and remainder in July. Birds observed flying or heard singing. Half of the observations were in camp and the other half on brood survey sections.

Black-capped Chickadee: Fairly common, 21 observations. Seen occasionally from 7/11 to 8/17 and more commonly from 8/31 to 9/19. Usually 1 or 2 birds heard calling from willows. Seen near camp or in Narrows.

Water Pipit: Rare, two observations. One observed west of camp along shore and one seen at islands. Both observations in September. Also observed at Outlet in August on 3 days.

Orange-crowned Warbler: Fairly common, 16 observations. Observed from 6/17 to 7/24. All observations by detection of singing males in camp or the Narrows. Two banded at the Outlet in August.

SPECIES ACCOUNT - BIRDS - 1988, con't_

Yellow Warbler: Common, 35 observations. Singing males detected almost daily in camp and Narrows from 6/15 to 7/8 and from 7/14 to 7/23. Unidentified sex birds seen foraging from 8/3 to 8/13. Two banded at the Outlet in August.

Wilson's Warbler: Fairly common, 20 observations. Singing males most common daily observation. Known breeders - nest with 6 eggs found on 6/19, known to hatch, but probably not fledged. Observed almost daily from 6/18 to 6/27 and less frequently from 7/3 to 8/4. One observation in September. Probable migration route through the Outlet; eleven banded in August.

American Tree Sparrow: Common, 43 observations. Singing males detected regularly from 6/15 to 7/25, less frequently detected foraging in willows from 8/4 to 9/16. Twice heard singing in September. Probable breeding. Twenty-three birds banded at the Outlet in August and 3 in September at Narrows, approx. 10 of these hatching year birds.

Savannah Sparrow: Common, 39 observations. Singing males detected almost daily from 6/15 to 7/10 and then birds seen chipping (nest defense) from 7/11 to 8/4 regularly. Only three observations from 8/18 to 9/7. Eight birds banded at the Outlet in August.

Fox Sparrow: Uncommon, 5 observations. Heard singing in the Narrows, usually on the island from 6/18 to 6/28.

Golden-crowned Sparrow: Common, 45 observations. Most commonly observed sparrow. Singing males frequently heard from 6/15 to 7/29. Last observed on 8/22. Adults often seen foraging around camp. First seen feeding fledglings on 6/30. Possible double clutching, as another group of fledglings seen on 7/13 in camp. None caught in mist net.

White-crowned Sparrow: Fairly Common, 31 observations. Singing males detected from 6/15 to 7/24, sometimes seen foraging in willows. Adult carrying insects, flushed adult on nest or with fledglings. Observed foraging on 7/25 and 7/26. Only one observation in August on 8/29.

Common Redpoll: Common, 36 observations. Groups of 2-6 birds regularly heard singing and flying over camp from 6/15 to 7/24. Less commonly detected between 7/30 and 9/5.

Lapland Longspur: Uncommon, 9 observations. Seen regularly during brood surveys in tundra areas in early July. Twice observed in September away from camp. Breeding in tundra areas - fledglings observed.

Snow Bunting: Rare, one observation. Flock of 20 flushed on 3 Bear Mountain - 1400' elevation on 9/8.

Appendix 4. SPECIES ACCOUNTS - MAMMALIA

LAGOMORPHA

LEPORIDAE

Lepus americanus? - Snowshoe hare (or L. othus-tundra hare)
Observed on 6 days

RODENTIA

SCIURIDAE

Spermophilus parryii - Arctic Ground Squirrel (Parka)
Observed on 3 days

CASTORIDAE

Castor canadensis - Beaver
Observed on 17 days

CRICETIDAE

Clethrionomys rutilus - Northern Red-backed Vole
Observed on 2 days

ZAPODIDAE

Zapus hudsonius - Meadow Jumping Mouse
Observed on 7 days

ERETHIZONTIDAE

Erethizon dorsatum - Porcupine
Observed on 29 days alive and many days dead

CARNIVORA

CANIDAE

Canis lupus - Arctic Wolf
Seen tracks and possibly heard on 2 occasions

Vulpes vulpes - Red fox
Observed on 7 days

URSIDAE

Ursus arctos - Brown Bear
Observed on 2 days, tracks and scat on many other days

MUSTELIDAE

Mustela erminea - Short-tailed Weasel (Ermine)
Observed on 2 days

Lutra canadensis - River Otter
Observed on 6 days

ARTIODACTYLA

CERVIDAE

Alces alces - Moose
Observed on 5 days

Rangifer tarandus - Caribou
Observed on 12 days

	Collected
EQUISETACEAE	
<u>Equisetum fluviatile</u> L.	7/23
CYPERACEAE	
<u>Eriophorum angustifolium</u> Honck.	7/3, 7/23
<u>E. russoelum</u> E. Fries	7/3
LILIACEAE	
<u>Tofieldia coccinea</u> Richards	6/22, 8/8
<u>Fritillaria camschatcensis</u> (L.) Rehb.	6/18, 6/22, 7/13
IRIDACEAE	
<u>Iris setosa</u> Pall.	7/3
ORCHIDACEA	
<u>Platanthera dilatata</u> (Pursh) Lindl.	7/6, 7/13, Aug
<u>Spiranthes Romanzoffiana</u> Cham.	8/4, 8/6
SALICACEAE	
<u>Salix reticulata</u> L.	6/18
<u>S. stolonifera</u> Cov.*	6/18
<u>S. glauca</u> L. *	6/18
<u>S. pulchra</u> Cham.	6/23
MYRICACEAE	
<u>Myrica gale</u> L.	6/22 & 7/3
BETULACEAE	
<u>Betula nana</u> L.	6/18
<u>Alnus crispa</u> (Ait.) Pursh	6/30
POLYGONACEAE	
<u>Rumex fenestratus</u> Greene	7/22
<u>Polygonum viviparum</u> L.	7/9, 7/21
CARYOPHYLLACEAE	
<u>Cerastium Beeringianum</u> Cham. & Schlecht.	6/23 & 7/13
<u>Minuartia macrocarpa</u> (Pursh) Ostenf.	8/8
NYMPHAEACEAE	
<u>Nuphar polysepalum</u> Engelm	7/22
RANUNCULACEAE	
<u>Caltha palustris</u> L.	6/23
<u>C. natans</u> #	7/14
<u>Aconitum delphinifolium</u> DC.	7/21, 7/23

CRUCIFERAE

Barbarea orthoceras Ledeb.
Arabis arenicola

6/18 & 6/22
6/22

DROSERACEAE

Drosera rotundifolia L.

6/18, 7/25

CRASSULACEAE

Sedum rosea (L.) Scop.

8/8

SAXIFRAGACEAE

Saxifraga serpyllifolia Pursh

8/8

S. hirculus L.*

7/23, July

S. flagellaris Willd.

8/8

S. punctata L.

6/24 & 7/3

S. bronchialis

8/8

Chrysosplenium tetrandrum (Lund) T. Fries

Parnassia palustris L.

July, 7/21, 7/25

ROSACEAE

Spirea Beauverdiana Schneid.

7/3

Rubus chamaemorus L.

6/18 & 6/22

R. arcticus L.

6/18 & 6/22

Potentilla palustris (L.) Scop.

7/9

P. hyperctica Malte

6/29

Geum Rossii (R.BR.) Ser.

8/8

Sanguisorba stipulata Raf.

7/9, 7/13

LEGUMINOSAE

Lupinus nootkatensis Donn

6/30, 7/13

Oxytropis nigrescens (Pall.) Frisch.

6/22, 8/8

Lathyrus maritimus L.

6/18 & 6/22

L. palustris L.

July

GERANIACEAE

Geranium erianthum DC.

6/18

VIOLACEAE

Viola epipsila Ledeb.

6/18

ONAGRACEAE

Epilobium angustifolium L.

7/22

E. latifolium L.

6/29, 7/13

E. leptocarpum

8/26

E. adenocaulon Haussk *#

7/13

HALORAGACEAE

Hippuris vulgaris

7/27

UMBELLIFERAE

Conioselinum chinense

7/22

CORNACEAE

Cornus canadensis L.

6/18, 7/13

PYROLACEAE	
<u>Pyrola asarifolia</u> Michx.	7/14
EMPETRACEAE	
<u>Empetrum nigrum</u> L.	6/18
ERICACEAE	
<u>Ledum palustre</u> L.	6/18
<u>Rhododendron camtschaticum</u> Pall.	8/8
<u>Andromeda polifolia</u> L.	6/22
<u>Vaccinium vitis-idaea</u> L.	6/18 & 6/22
<u>V. uliginosum</u> L.	6/22
<u>Oxycoccus microcarpus</u> Turcz.	6/18
PRIMULACEAE	
<u>Trientalis europaea</u> L.	6/18, 7/21
PLUMBAGINACEAE	
<u>Armeria maritima</u> (Mill.) Willd	7/22, July
GENTIANACEAE	
<u>Gentiana algida</u> Pall.	8/8
<u>G. amarella</u> L.#	8/14
<u>Swertia perennis</u> L.	7/21
<u>Menyanthes trifoliata</u> L.	6/22
POLEMONIACEAE	
<u>Polemonium acutiflorum</u> Willd	6/24, 7/13
SCROPHULARIACEAE	
<u>Mimulus guttatus</u> DC.	7/14 & 7/22
<u>Rhinanthus minor</u> L.	6/30
<u>Pedicularis verticillata</u> L.	6/23, 7/8
<u>P. labradorica</u> Wirsing	7/6
<u>P. parviflora</u> J.E. Sm.	7/6
<u>P. sudetica</u> Willd.	6/22, 6/23
<u>P. capitata</u> Adams	6/18
LENTIBULARIACEAE	
<u>Pinguicula villosa</u> L.	6/18
RUBIACEAE	
<u>Galium boreale</u> L.	7/21
CAPRIFOLIACEAE	
<u>Sambucus racemosa</u> L.	6/29
<u>Viburnum edule</u> (Michx.) Raf.	6/22
VALERIANACEAE	
<u>Valeriana capitata</u> Pall.	6/18, July

CAMPANULACEAE

Campanula lasiocarpa Cham.
C. uniflora L.

7/8, 7/22
 7/6

COMPOSITAE

Solidago multiradiata Ait.
Aster sibiricus L.
Achillea borealis Bong.
Artemisia globularia Bess.*#
A. arctica Less.
A. Tilesii
Arnica Lessingii Green
Senecio resedifolius Less.
S. pseudo-Arnica Less.
Chrysanthemum arcticum

7/9 & 7/23
 7/21
 6/30, July
 8/8
 7/23
 7/27
 7/10
 7/6, 7/14, 7/22
 7/21
 7/13

93 species identified

* Indicates preliminary identification

Indicates a new addition to the Alaska Peninsula Herbarium