

STATUS OF BROWN BEARS
AND OTHER
NATURAL RESOURCES
IN THE
McNEIL RIVER STATE GAME SANCTUARY AND REFUGE

Annual Report to Alaska State Legislature

Frank Rue, Commissioner
Alaska Department of Fish and Game

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Executive Summary

The McNeil River State Game Sanctuary was legislatively established in 1967. The sanctuary was established to provide permanent protection for brown bears and other fish and wildlife populations and their habitats so that these resources may be preserved for scientific, educational and aesthetic purposes.

In May 1991, the Alaska State Legislature passed legislation (AS 16.20.160), which expanded the McNeil River State Game Sanctuary and created the McNeil River State Game Refuge. The legislation became effective on January 1, 1993, when the Commissioner of Fish and Game certified the Paint River fish ladder as operational.

A record number 101 recognizable bears were observed in the sanctuary during the 1997 season. The total number of adult bear-use days for the sanctuary increased only about 4 percent from the previous season. However, the adult bear-use days at McNeil falls increased over 16 percent, reflecting the best chum salmon return in the past 5 years and low water levels which increased predation efficiency.

Public use of the sanctuary averaged 9.2 persons/day, with 210 permittees (standby and drawing combined) visiting the sanctuary. A total of 1,474 applications were received for the 280 permits. All 15 special use permits were issued by the Department.

Estimated sockeye salmon escapement to Mikfik Creek was 8,500 fish. The chum salmon escapement index for McNeil River was 27,495 fish. Limited commercial harvest was directed at these stocks and the entire return, except for a minimal catch of Mikfik sockeye, entered their respective drainages. The McNeil chum salmon escapement goal was achieved for the first time since 1989. Below normal precipitation resulted in low water levels in both Mikfik and McNeil and led to increased fishing success for bears.

A UAF graduate student completed field activities for her research program, investigating the relationship between chum salmon and brown bears in the sanctuary. Information is being analyzed and a final report and analysis will be available in summer 1998. The second year of a research project initiated by sanctuary staff to investigate whether relationships between individual bears can be determined from DNA collected through hair samples was completed. Initial analysis is encouraging, however additional funds need to be secured to provide for laboratory analysis of the hair samples.

Introduction

The sanctuary was established to (1) provide permanent protection for brown bears and other fish and wildlife populations and their habitats so that these resources may be preserved for scientific, aesthetic, and educational purposes; (2) manage human use and activities in a way that is compatible with the permanent protection of brown bears and other purposes described in (1) and, to manage uses and activities that would maintain and enhance the unique bear viewing opportunities within the sanctuary; and (3) provide opportunities that are compatible with (1) for wildlife viewing, fisheries enhancement, fishing, temporary safe anchorage, and other activities.

The refuge was established for similar, but somewhat different purposes. The differences are that human uses and activities in the refuge are to be managed to maintain and enhance the unique bear viewing opportunities within the sanctuary, that opportunities for brown bear hunting shall be determined by the Board of Game, and that mineral entry is allowed.

The statute requires the Commissioner of Fish and Game submit an annual report to the legislature regarding status of brown bears and other fish and wildlife resources within the sanctuary and refuge and effects of fishing and fishery enhancement activities on these resources. This report is provided in response to that requirement.

Land Status

All land in the newly established refuge and sanctuary extensions is state-owned or tentatively approved, except 14 sections that encompass Chenik Lake and Chenik Head. These sections were jointly selected by the state and Seldovia Native Corporation. They are not subject to refuge authority unless they become tentatively approved state land. Litigation between CIRI and Seldovia Native Corporation is still pending, and the Department of Fish and Game is not aware of any new developments in the court case regarding this property.

A private commercial interest was successful in their efforts to obtain a lease for approximately 10 acres of land in the Chenik Head area. This site contains several buildings that serve as headquarters for a private bear watching/wilderness retreat enterprise. The Department of Fish and Game, Divisions of Habitat and Wildlife Conservation, had previously recommended that BLM deny the lease application because of discrepancies in the lease application and until the land ownership question was resolved. Meetings between the private party and the Commissioner's office resulted in staff objections being overruled, and the lease from BLM was granted.

Regulatory Changes and Management Plan

A Board of Game regulation restricting the percentage of visitor use permits issued to nonresidents to no more than 35 % went into effect on July 1, 1995. This regulation did not affect the 1995 permit drawing, as that procedure was completed prior to the effective date;

however, it did influence the 1996 and 1997 application drawing. During 1996, a total of 10 permits, 1 regular and 9 standby, were not issued because an insufficient number of resident applications were submitted for those permit periods. This situation occurred again in 1997, when a total of 24 permits, 1 regular and 23 standby, were not issued. A second lottery was held in-house by staff to provide for distribution of the unissued permits. This effort was very time consuming, operated under a restricted time period, and is potentially open to challenge from dissatisfied members of the public. Efforts should be made to eliminate this problem from the drawing permit process. The most feasible, and easily accomplished, solution would be to eliminate the BOG passed regulation requiring 65% of permits be issued to state residents. The Department should propose a revision to this regulation at the next opportunity, which appears to be the spring 1999 Board meeting.

Public Use

A permit is required for access to the sanctuary from June 7 through August 25. A system in place since 1993 has required that both regular and standby permits be issued through a lottery process. This system was established to reduce staff time required to manage the previous standby system and to reduce the potential for members of the public to receive more than one permit per year.

The number of people taken to a bear viewing area is limited to ten per day. In 1997, from June 7 to August 25, an average of 9.2 people per day visited bear viewing areas in the

sanctuary. A sanctuary goal is to maximize the number of bear viewers within the required permit guidelines. However, all time slots are not always filled despite use of standby permits, primarily because occasional periods of stormy weather dampen visitors' enthusiasm to view bears. Additionally, bear viewing is less reliable at both ends of the season, and some vacancies occur as people cancel their visits to the sanctuary.

In 1997, ADF&G received 1,474 applications for the 280 available permits (185 regular and 95 standby). This represents a slight decrease from 1996, and continues to be lower than the record high number of 2,150 permit applications received in 1993 (Table 1). The 1992-1996 average number of applications was 1,715. Application numbers have fluctuated considerably, especially after a media presentation on the sanctuary. However, the continued declining trend in applications may represent a response to a regulation passed by the Board in 1993, which established a 4 year waiting period for successful permit winners. This regulation may prevent some applicants from applying on a more frequent basis resulting in declining revenues.

All 15 special permits were initially issued for the 1997 season, however some vacancies developed as the season progressed. Permittees that were able to visit the sanctuary included 2 residents of Pakistan, 3 persons from the Yukon Territory, 3 staff members from Katmai National Park, a faculty member from UA Fairbanks, and persons representing the Hunter Education and Project Wild programs. Additionally, the Lt. Governor and staff from the Commissioner's office, visited the sanctuary to obtain personal information regarding management of the sanctuary. Three members of one filming crew, and another film maker

canceled their permits with little advance notice. These vacancies were filled by staff persons that are involved in management of the program.

The demand for special permits continues to be high and the department receives numerous requests each year. The criteria developed by the department for issuing these permits provides consistency during the review of future proposals.

Brown Bear Status

Sanctuary staff record the number and sex of bears observed at Mikfik Creek, McNeil Falls, and other portions of the sanctuary during June, July, and August. The number of recognizable bears, excluding cubs, observed in the sanctuary during 1997 totaled 101 (Figure 1), which is a new record number (Table 2). The previous record number was 90 bears observed in 1993. There were also record high numbers for most single adult males (55), most total adults (93), and most cubs of all ages (43) (Table 2). Most of the identified older bears returned in 1997, and several new ones were also identified.

The number of adult and sub-adult bears using the sanctuary has been relatively stable at high numbers during recent years, averaging 85 during the 1992-96 period, and averaging 82 from 1987-1996. In comparison, the average number of identifiable bears was only 59 during the 1981-85 period.

A method used to determine bear use in the sanctuary is to record the number of bear-use days. A bear-use day is any portion of a day that a recognizable adult or sub-adult bear (cubs are excluded) is observed in the sanctuary. Sightings are summarized by area within the sanctuary, are made on an opportunistic basis, and therefore represent the minimum number of bear-use days for the area. The most useful of these numbers, because of limited variability in data collection, is the bear-use data collected at McNeil Falls. For this area during 1997, there were 1,510 adult bear-use days, making it the highest bear-use observed at the Falls since 1992 (Table 3).

For the entire sanctuary, a total of 2,030 adult and sub-adult bear-use days were recorded for the 1997 season (Table 3). This represents a limited 4% increase in bear use over the 1996 observations, and continues the three-year trend of increasing adult/sub-adult bear use for the sanctuary area. This increasing trend in bear use may be related to increased salmon escapements in Mikfik Creek and McNeil River. Another contributing factor to increased use, especially during the 1997 season, may have been the lower than normal precipitation and associated low stream levels. These conditions combined to make salmon more vulnerable to predation and may have contributed to increased bear use.

Maintaining substantial salmon returns to McNeil River is a critical factor in providing a quality viewing experience. The Division of Commercial Fisheries Management and Development has recognized this situation and is continuing cooperative efforts with the Division of Wildlife Conservation in management of the area.

Maximum Daily Counts

In early 1993, during development of the McNeil River State Game Sanctuary and Refuge Operational Management Plan, the public advisory group determined that a consistent, reliable method of determining fluctuations in bear numbers was needed. To address that concern, a "bear threshold criterion" was established and identified as a predetermined level of change in the population that would trigger an assessment of potential factors that may be adversely affecting the bear population or the sanctuary viewing program. The necessary statistical test, developed by division statistical staff, is based on the proven Shewhart-CUSUM quality control test. The test will detect large, short-term declines and gradual, long-term drift in the average number of bears.

Maximum daily counts, consistently collected at McNeil Falls from 1983 to 1992, were averaged to establish a standard of 48.6 bears as the benchmark for maintaining bear numbers and viewing opportunity. The median maximum count will be compared annually with the predetermined lower level of change to determine whether the number of bears observed is within the range of normal fluctuations. If the median annual maximum count drops below the threshold level of 41 bears, an investigation of probable causes will be initiated. The 1997 median annual maximum count was 58 bears.

Brown Bear Hunting

The sanctuary is closed to brown bear hunting. In October 1995, the Board of Game closed the refuge to brown bear hunting, effective 1 July, 1996.

Bear Mortality

Since 1976 (initial year of record keeping), observed mortality of cubs (of all ages) has been about 1.4 per season. This includes mortality from all causes including infanticide, drowning, and separation from females.

Only one known mortality occurred in the sanctuary during 1997. An adult female identified as Snobear, was first seen at the sanctuary on July 13 with two spring cubs. During the next 2 weeks, one cub became thin and emaciated and died by late July. The carcass was not recovered and staff were unable to determine cause of death.

Bear Movements

An adult female, identified as Fossey, was first seen at McNeil falls on July 5 with 4 spring cubs. She was last observed at the falls on July 20. On July 25, a private bear viewing guide observed a "new" female with 4 spring cubs on Funnel Creek, approximately 26 miles from McNeil falls. A comparison of photographs, a description of the bears' behavior, and timing of the sightings led McNeil staff to conclude that the bear and cubs identified at both locations were the same individuals. Some bears using McNeil falls have been documented traveling 75

miles or more, so this sighting is not surprising, although it is unusual because of the number of cubs involved.

Weather Conditions/Water Levels

The 1997 season exhibited extreme weather conditions. Temperatures were consistently above average and rainfall was a rare occasion. Normally, over 12" of precipitation fall between June and August at the sanctuary, but in 1997 less than 2" fell. Mikfik Creek had extremely low water levels and by mid June was a migration barrier to red salmon. McNeil staff estimated that up to four thousand red salmon were stranded in the inter-tidal area. Bear predation of these fish was extensive, and a reduced number remained to move up Mikfik Creek after fall rains raised water levels. Water levels at McNeil River were also low, affecting available spawning area, increasing vulnerability of spawning salmon and limiting fishing spots for bears at the falls.

Commercial Fisheries

Sockeye salmon returns to the sanctuary were strong enough to provide good spawning escapements and a small harvestable surplus. However, because of strong returns in other districts, and difficulties in support for the fleet, the sockeye return to Mikfik Creek did not attract any commercial fishing effort. The estimated escapement index of 8,500 sockeyes exceeded the desired goal of 5,000-7,000 by 1,500 fish, however extremely low water conditions delayed or precluded upriver migration and increased bear predation.

Overall chum salmon returns to the Lower Cook Inlet management area were poor, and no commercial harvest was recorded in the Kamishak Bay district. The entire chum salmon run to McNeil River escaped into the system to spawn, and the estimated cumulative escapement index was 27,495 chum salmon. This return achieved the escapement goal of 20-40,000 chum salmon for the first time since 1989 (Table 4).

Sport Fishing

Limited sport fishing occurs in McNeil Lagoon and Chenik Creek but is incidental to bear viewing activities. The only area that attracts significant sport fishing interest is the lower Kamishak River. Due to low sampling effort and questionnaire returns, the Division of Sport Fish's annual survey of sport anglers does not accurately portray angler effort on the Kamishak River.

To address this problem, the Department included an angler reporting requirement for lodges receiving special area operating permits for the Kamishak River portion of the sanctuary. Seven lodges operated in the area during July, August, and September. As of this date, six of the lodges have completed their reporting requirements. A total of 483 anglers reported catching and keeping 1,141 coho salmon and 5,929 Dolly Varden during the 1997 season (Table 5). This represents a significant amount of angling effort and may be sufficient to require regulation changes. Division of Sport Fish will be notified of this information.

Fisheries Enhancement

Fisheries enhancement continues to play a major role in Lower Cook Inlet (LCI) salmon production. Enhancement and rehabilitation projects have made substantial contributions to commercial fishing harvests in the Kamishak Bay District. However, sockeye salmon returns to the Paint River enhancement project in 1997 were again poor, as they have been for the past several years. No commercial harvest occurred and only a very limited number of fish returned. The run strength was insufficient to warrant opening the ladder to fish passage for a sixth straight year.

The Paint River Lakes were first stocked with sockeye fry in 1986 in an effort to develop a new sockeye salmon return to the drainage, which is blocked to upstream salmon migration by a steep waterfall at tidewater. From 1991 to 1996, approximately 600,000-750,000 sockeye fry have been stocked annually in the Paint River Lakes. Although construction of the Paint River fish ladder was completed in October 1991, the number of returning adults has only ranged from 200 to 800 fish. Consequently, the structure has never been opened to allow fish passage upstream through the ladder system. The low returns may be related to the current low productivity potential and high predation within both lake systems.

Cook Inlet Aquaculture Association continues to evaluate other suitable sockeye salmon broodstocks from the west side of Cook Inlet as potential replacements for the Tustumena sockeye stock that has been repeatedly released into the Paint River Lakes. Pink and chum

salmon broodstock development is also being evaluated but is currently on hold until an adequate funding source is secured.

Research Activities

Information gathering for the brown bear-chum salmon graduate research program, started in 1995, was completed this season. The primary intent of this research is to improve the quantification and description of chum salmon consumption by brown bears at McNeil River State Game Sanctuary. The primary hypotheses being investigated are:

- 1) Bears catch fewer fish in the morning than in the late afternoon and evening;
- 2) Adult bears catch more fish than subadults, and male bears catch more fish than females;
- 3) The demography of bears fishing at MRS GS has changed from more females during the 1980's to more males at the present time;
- 4) Environmental factors such as tide stage, water level, precipitation, and daylight affect the number of fish caught by bears.

Data analysis is currently ongoing and is anticipated to be completed in spring 1998.

Information reporting will be conducted through the publication of a thesis, anticipated to be completed in fall 1998.

A new research project was initiated at the sanctuary during 1996. The purpose of this study is to genetically identify individual bears from the McNeil sanctuary population, using DNA

fingerprinting techniques, and use this information to determine if social behavior is effected by biological relationships.

Work completed on this project during 1997, included establishing 2 additional scratching posts and collecting more hair samples. Hair samples from known and unknown bears were obtained from these posts and labeled for analysis. The analysis of these samples has proven very problematic. Very few laboratories are available for sample analysis, and there services are expensive. To continue this project, funding sources must be identified to provide for hair sample analysis on a scheduled basis.

Volunteers

The 1997 season marks the fifth year for the non-department volunteer work party program. This program has created an opportunity for volunteers to assist staff in preparing the camp and trails prior to arrival of the first permittees. As in earlier years, the volunteers were from various local conservation groups. Work accomplished included trail upgrades, cabin cleaning, painting, treating cabin exteriors, camp site upgrades and fire wood collection. This program continues to be a very successful cooperative venture.

Land Use Permitting

Seven permits were issued for the establishment of sport fishing guide camps on the Kamishak River within the sanctuary. These camps appear to be operating in a manner compatible with sanctuary guidelines. Reporting requirements regarding number of clients and total fish caught are typically late in arriving at the Anchorage regional office, and none were available at this time. Additional compliance monitoring will be necessary in upcoming seasons.

Bear-Human Conflicts

There were no known adverse interactions between bears and people in the sanctuary or refuge during the 1997 field season.

McNeil River State Game Sanctuary Brown Bear Numbers From 1976 - 1997

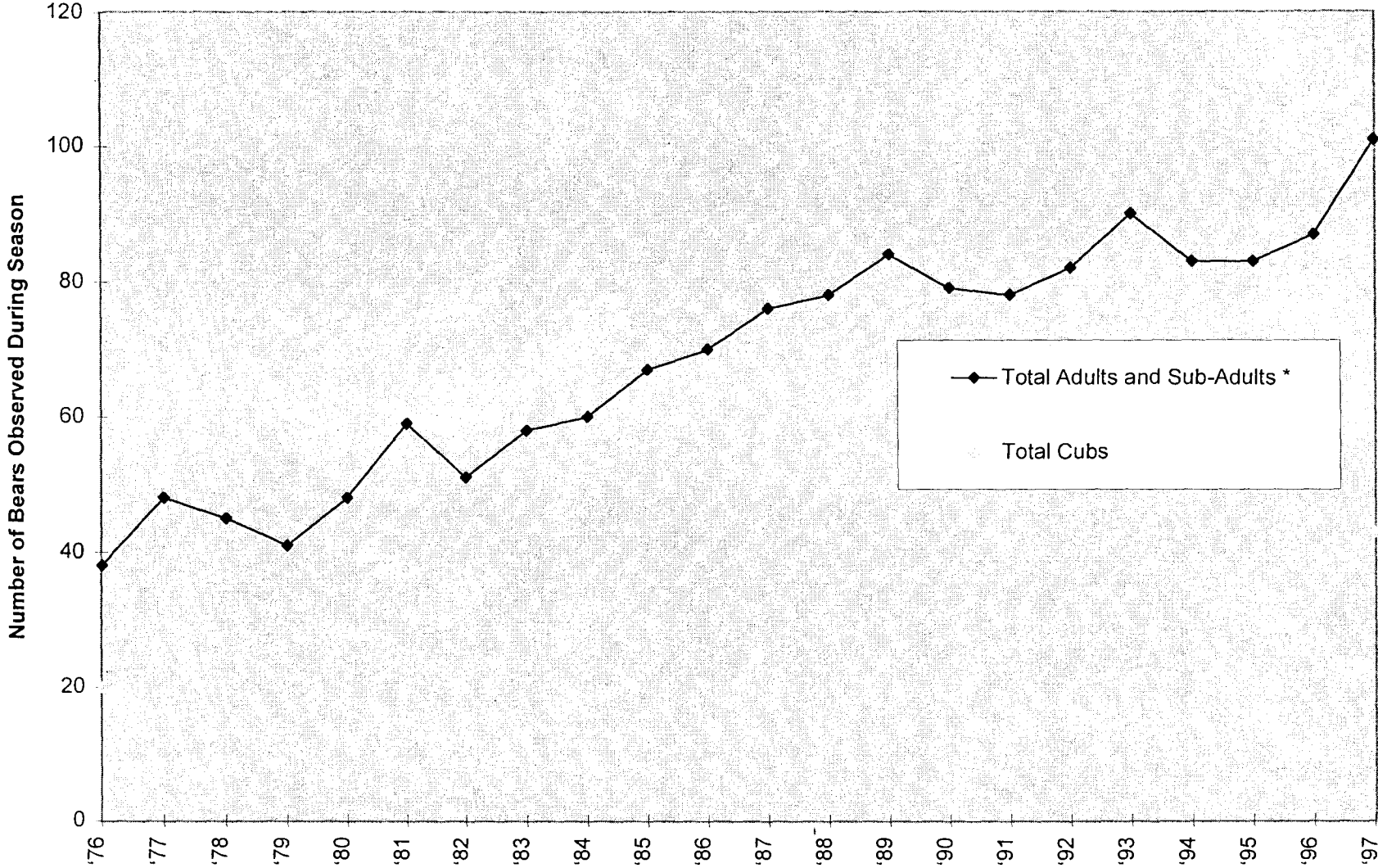


Figure 1

Table 2. Sex and age composition of brown bears at McNeil River State Game Sanctuary: 1976-1997

	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97
Total Females w/cubs	9	10	8	9	6	8	7	7	9	16	14	14	14	19	16	15	16	11	11	14	20	19
Single Adult Females	5	8	6	8	8	10	9	15	16	12	11	13	13	14	16	12	19	19	15	12	14	19
Single Adult Males	16	18	18	19	23	26	20	22	22	27	31	34	34	42	37	41	39	48	45	49	46	55
Adult Sex Unknown	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adults	31	36	32	36	38	44	36	44	47	55	56	61	61	75	69	68	74	78	71	75	80	93
SubAdult Females	4	3	4	2	6	9	11	9	8	2	7	7	9	4	5	6	6	8	9	3	6	5
SubAdult Males	0	5	4	0	0	1	1	4	5	10	7	8	8	5	5	4	2	4	3	5	1	3
SubAdult Sex Unknown	3	4	5	3	4	5	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Sub-Adults+	7	12	13	5	10	15	15	14	13	12	14	15	17	9	10	10	8	12	12	8	7	8
Total Adults and Sub-Adults *	38	48	45	41	48	59	51	58	60	67	70	76	78	84	79	78	82	90	83	83	87	101
Total Cubs	20	21	20	17	12	14	16	12	17	28	26	30	31	42	34	30	31	24	22	25	35	43
Total Bears	58	69	65	58	60	73	67	70	77	95	96	106	109	126	113	108	113	114	105	108	122	144

+ -- defined as 5.5 years old and younger from 1977 through the present

* Only the bears that are recognizable as individuals and given names are included.
Hence these figures represent minimum number of bears present at the sanctuary.

Table 3. McNeil River State Game Sanctuary Bear use totals for June, July, and August. (Does not include May or Sept. use)

	McNeil Falls			Lower McNeil River			Mikfik Creek			All other areas (flats, bluffs, etc.)			Total Bear Use		
	adult/ sub-ad	all cubs	Total	adult/ sub-ad	all cubs	Total	adult/ sub-ad	all cubs	Total	adult/ sub-ad	all cubs	Total	adult/ sub-ad	all cubs	Total
1980	709	140	849	14	15	29	46	21	37	162	56	218	924	218	1142
1981	878	224	1102	-	-	-	18	21	39	77	63	140	973	308	1281
1982	925	142	1067	21	9	30	28	2	30	83	33	116	1054	186	1241
1983	926	172	1098	-	-	-	8	0	8	100	41	141	1032	213	1245
1984	1218	274	1492	50	9	59	43	0	43	123	39	162	1432	322	1754
1985	1514	451	1965	37	31	68	150	56	206	195	100	295	1888	642	2530
1986	1649	494	2143	34	42	76	192	126	318	214	172	386	2061	825	2886
1987	1723	465	2188	9	12	21	235	86	321	161	152	313	2126	715	2841
1988	1515	417	1932	30	40	70	201	28	229	142	48	190	1873	524	2397
1989	1863	699	2562	119	80	199	156	71	227	174	189	363	2300	1032	3332
1990	1606	551	2157	76	57	133	229	159	388	264	251	515	2089	936	3025
1991	1393	388	1781	1	0	1	428	120	548	246	138	384	2039	631	2671
1992	1510	480	1990	3	6	9	385	115	500	178	139	317	2075	738	2813
1993	1240	86	1326	94	57	151	234	26	260	358	164	522	1921	227	2248
1994	1165	125	1290	95	59	154	212	29	241	208	103	311	1661	307	1968
1995	1137	147	1284	113	64	177	229	6	235	298	120	418	1741	329	2070
1996	1301	229	1530	90	40	130	229	105	524	153	75	234	1957	449	2406
1997	1510	454	1964	151	52	203	207	62	269	162	147	309	2030	715	2745

- Each time a recognizable bear is seen in an area of the sanctuary, it is counted as one bear use day for that area. Hence if 10 different bears are seen at McNeil falls 10 days in a row, that equals 100 bear use days for McNeil falls. The total bears column may be less than the sum of the first four columns if a bear is counted using more than one area in the same day. Bears are noted opportunistically and figures reflect not only actual bear use but to some degree the amount of time spent viewing.
- McNeil falls sightings are made from the viewing pad and include any recognizable bear no matter where it is or how far down stream it is.
- Lower McNeil River sightings are made from the mouth of McNeil River, generally from Enders Island. Viewing occurs here in mid to late August after bear activity ceases at McNeil falls. Little or not time was spent viewing here from 1980-1983.
- Mikfik Creek is defined as the area up creek from the last area of tidal influence, including the area referred to as the "riffles".
- All other areas includes anywhere in McNeil cove that is not included in the first three categories. This includes the sedge flats, beach, by camp, or on any of the bluff areas. Through the years notations of bear use in these areas has been very casual as very little time comparatively is spent systematically bear watching away from the first three areas.

Table 4. McNeil River Bear/Chum Salmon Statistics

Year	Actual no. of salmon observed caught by bears ¹	Total hours observed	X salmon caught/human hours of observation	Adjusted number of salmon caught by bears ²	Aerial live counts index ³	Number of bears ⁴	No. of days observations made	Bear use days ⁴	X No. of days recognizable bears are at falls
1985	6,592	310.00	21.3	17,381	8,000	66	51	1,514	22.9
1986	14,527	419.00	34.6	26,019	22,000	70	47	1,649	23.6
1987	15,463	360.75	42.9	35,006	26,000	70	51	1,723	24.6
1989	13,231	286.25	46.0	34,592	34,000	77	47	1,863	24.2
1990	6,851	240.00	28.5	20,520	8,000	77	45	1,606	20.9
1991	5,615	291.75	19.2	15,974	10,000	74	52	1,393	18.8
1992	7,864	274.25	28.7	22,500	19,200	81	49	1,510	18.6
1993	5,786	292.50	19.8	16,474	17,430	85	52	1,240	14.6
1994	4,355	277.50	15.7	11,555	14,955 ⁵	80	46	1,165	14.6
1995	3,563	317.00	11.2	8,960	14,411 ⁵	75	50	1,137	15.2
1996	7,648	334.50	22.9	16,723	16,100 ⁵	84	52	1,301	15.5
1997	13,581	436	31.2	27,456	27,495	100	55	1,510	15.1

¹ This number is influenced by the actual hours we observe which varies year to year.

² (x-fish per hour) x (16 hour day) x (number of days observations are made). The hours 2300 to 0700 are excluded entirely.

³ Provided by Commercial Fisheries Division.

⁴ Includes adult and subadults, (no cubs) seen at least once during the viewing day from the gravel pad at McNeil Falls from July 1 through August 31.

⁵ Aerial live count index is derived, by CFMD staff using the cumulative total count method in 1994 through 1997. This method uses a model based in part on chum salmon stream life and generally provides a higher live count index than earlier methods.

Table 5. McNEIL RIVER SANCTUARY ANNUAL REPORT
 FOR GUIDES, TRANSPORTERS AND LODGES
 (AS OF DECEMBER 3, 1997)

LODGE	# OF ANGLERS	COHOS KEPT	CHUMS KEPT	PINKS KEPT	DOLLYS KEPT	# OF BEARS SEEN
Alaska Rainbow Lodge	85	37	1	0	102	55
Anglers Paradise Lodge-Katmailand Inc.	74	202	0	0	0	99
Bristol Bay Sportfishing Inc.	41	47	0	0	0	7
Iliaska Lodge	28	8	0	0	7	5
Newhalen Lodge	113	555	0	0	5820	143
Point Adventure Lodge	142	292	0	0	0	11
TOTAL	483	1141	1	0	5929	320

Visitor use @ McNeil River State Game Sanctuary

	1993	1994	1995	1996	1997
June 7-30 (24 days)					
\bar{x} permits used daily	8.5	8.0	9.0	8.9	9.7
% with regular permit	74	76	82	85	83
% with standby permit	26	24	18	15	17
Total visitors	64	69	63	68	75
\bar{x} daily visitors in sanctuary ^a	13.0	12.2	13.9	12.8	15.2
\bar{x} overnight visitors at campground	10.9	9.8	11.6	10.5	12.8
July/August 1-25 (56 days)					
\bar{x} permits used daily	9.2	8.6	8.5	9.4	8.7
% with regular permit	67	79	83	84	83
% with standby permit	33	21	17	16	17
Total visitors	161	159	149	151	153
\bar{x} daily visitors in sanctuary ^a	14.6	14.1	13.2	14.3	14.3
\bar{x} overnight visitors at campground	11.5	11.1	10.3	11.4	11.3

All permits (regular and standby) by lottery including June

^a= Includes all visitors (Those who flew out as well as those who stayed overnight)