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# ALASKA DEPARTMENT OF FISH AND GAME

## JUNEAU, ALASKA

STATE OF ALASKA  
William A. Egan, Governor

DEPARTMENT OF FISH AND GAME  
Wallace H. Noerenberg, Commissioner

DIVISION OF GAME  
Frank Jones, Acting Director

## REPORT ON 1970 BROWN BEAR STUDIES

By

Leland P. Glenn

Vol. XII  
Project Progress Report  
Federal Aid in Wildlife Restoration  
Project W-17-2, Jobs 4.1R, 4.2R, and 4.3R (2nd half) and  
Project W-17-3, Jobs 4.2R and 4.4R (1st half)

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(Printed June 1971)

JOB PROGRESS REPORT (RESEARCH)

STATE: Alaska

COOPERATORS: Leland P. Glenn

PROJECT NO.: W-17-2 PROJECT TITLE: Big Game Investigations

JOB NO: 4.1R JOB TITLE: Brown Bear Census  
Techniques

JOB NO: 4.3R JOB TITLE: Brown Bear Harvests

PERIOD COVERED: January 1, 1970 through June 30, 1970

Job No. 4.1R was discontinued at the end of Project W-17-2 until more basic information on brown bear movements can be gathered.

Job No. 4.3R was also discontinued at the termination of Project W-17-2 and brown bear harvest analyses are now being conducted as part of brown/grizzly bear S & I activities.

JOB PROGRESS REPORT (RESEARCH)

STATE: Alaska

COOPERATORS: Leland P. Glenn

PROJECT NO: W-17-2 PROJECT TITLE: Big Game Investigations  
W-17-3

JOB NO: 4.2R JOB TITLE: Brown Bear Life History  
Study

4.4R JOB TITLE: Distribution and Movement  
of Alaska Peninsula Brown  
Bear

PERIOD COVERED: January 1, 1970 through December 31, 1970

SUMMARY

One-hundred and two brown bears were captured, marked and released at Black-Chignik Lake on the Alaska Peninsula in 22 days of tagging effort which began on 16 June. In the spring, bears were moving from the mountains to the low rolling coastal plain and it was here that tagging effort was concentrated. Apparently no mortality or permanent separation of family group members resulted from capture or handling procedures. Capture success was considered high, averaging 1.4 bears per hour of helicopter flight time.

Bears were immobilized with a combination of Sernylan, Sparine and Hyaluronidase. Hyaluronidase, an enzyme which promotes absorption of fluids into muscle tissue, was used for the first time and was effective in reducing the latent period required to capture brown bears. The mean induction time necessary to anesthetize 62 bears receiving only one drug injection was seven minutes. The mean dosage of Sernylan administered to 35 weighed bears was 0.76 milligrams/pound body weight. When the dosage of Sernylan approached or exceeded 1.0 milligrams/pound, the bear experienced convulsions and breathing difficulty.

Movement data were obtained from July through November on 70 marked brown bears which were observed one to five times each. However, the data collected from observation of these bears are presently not sufficient to warrant conclusions about seasonal movements and population identity.

Poor production or survival of cubs is indicated for 1970 by the comparison of seven years (1962 and 1965 through 1970) of composition data. The percent of cubs in the sampled population this year was 15; in previous years it has ranged from 30 to 45 percent. The percent of young (cubs, yearlings and two-year-olds) which were accompanied by sows continued to make up 47 percent or more of the population.

The sex composition of captured adult and sub-adult bears (3-year-old and older age classes) was 22 males and 44 females. Of young bears (cubs, yearlings and two-year-olds) in family groups, 15 were males and 19 were females. The small sample size precludes conclusions regarding population sex ratios.

A sow with five young has been observed on the same stream during July and August for three consecutive years. Observations and photographs of this family group suggest that all of the cubs were siblings and were the same bears observed each year.

Bear observations were made at McNeil River, and 12 animals including 10 marked in previous years were immobilized and tagged. McNeil River received 174 man-days of public use during July 1970. In contrast, only 45 man-days of use were recorded during July 1969.

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## BACKGROUND

Alaska has widely distributed populations of brown/grizzly bears (*Ursus arctos*) which furnish trophies desired by many hunters. This species also has a significant if not equal attraction for tourists, naturalists and photographers, who live in or come to Alaska to photograph and observe bears. The brown/grizzly bear has become the subject of nationwide public concern in recent years. A large part of this concern is associated with industrial development which conflicts with the well-being of the species. Intensive oil development on Alaska's North Slope, mineral exploration on the Alaska Peninsula, large-scale pulp logging in southeast Alaska, and the possible expansion of livestock ranching forecasts a changing environment for brown/grizzly bears. The legal and illegal use of the bear resource by the guide industry has also attracted considerable attention. The Alaska Department of Fish and Game is responsible under the State Constitution to manage the wildlife resources. Research must therefore be conducted on brown/grizzly bears to aid in the development of progressive game management and land classification programs so vital to the welfare of the bear resource.

During the past nine years 45 percent of the Statewide brown/grizzly bear sport harvest has come from only 2 of 26 Game Management Units (Glenn, 1969). Game Management Unit 8, the Kodiak Island group, contributes an average annual harvest of 20 percent (130 bear) and Game Management Unit 9, the Alaska Peninsula, contributes just over 25 percent (160 bear) of the total harvest. Region II research activities, therefore, will be concentrated on the Alaska Peninsula to take advantage of high bear densities and bear harvests. Studies during the next five years will emphasize brown bear population dynamics, life history and distribution and movements. Additional brown/grizzly bear studies are being conducted in Alaska on the arctic North Slope (Region III) and are scheduled to resume this year in southeastern Alaska (Region I).

## OBJECTIVES

To utilize tagged bear observations in recording information on breeding biology, growth, survival of young and time of family break-up.

To determine seasonal and daily movement patterns which influence bear densities.

To determine the extent of seasonal and annual reuse of denning, fishing and other areas by observation of tagged bears.

To investigate the possibility of applying population index methods to determine actual bear abundance in relation to observed abundance and to apply available population data to a population model.

To test new drugs which will improve capturing and handling capabilities. To test new marking equipment which will allow periodic observation of tagged bears.

#### PROCEDURES

During 1969, Alaska Peninsula areas including Ugashik Lake, Black-Chignik Lakes and Moffet Bay were evaluated as possible locations in which to conduct brown bear research studies. The Black-Chignik Lakes area was chosen as the most suitable location (Glenn 1969). This area, described by Erickson and Siniff (1963), is located approximately 475 miles southwest of Anchorage. The study area is remote and can be reached only by aircraft or a combination of boat and aircraft. For this reason, logistical planning must be carried out well in advance of major field activities.

Brown bears were located and captured during 1970 with the aid of a Bell 206A turbo helicopter on skids and a Piper PA-18 (Supercub) aircraft on large tires. Five persons including the helicopter and supercub pilots made up the tagging team and worked out of a camp located on the northwest side of Black Lake. The supercub was used as a "spotter plane". Radio communication between the two aircraft provided a means for directing the helicopter pilot to located bears. When a bear was sighted, its weight was estimated and Sernylan (0.75 milligrams/pound body weight) was injected into the ham muscles with Palmer "Cap-Chur" equipment. Darting was done from the helicopter. When a sow with young was encountered the sow always received the first drug injection. The helicopter then moved off a short distance but herded the family group to keep them together and away from thick vegetative cover. After the sow was immobilized, young, other than cubs of the year, were captured using the same procedure. Sernylan (Park, Davis and Co., Detroit, Michigan) in concentration of 100 milligrams/milliliter was used to immobilize, Hyaluronidase (Haver-Lockhart Laboratories, Kansas City, Mo.) in concentration of 150 N.F. units was used to speed induction time and Sparine (Wyeth Laboratories, Inc., Philadelphia, Pennsylvania) in concentration of 50 milligrams/milliliter was used as a tranquilizer. In some instances Acepromazine (Ayerst Laboratories Inc., New York, N.Y.) in concentration of 10 milligrams/milliliter was substituted for Sparine. Adult bear were given a standard dosage of 2.00 cc of Sparine or Acepromazine while yearlings and sub-adults were given 1 to 1.5 cc. All drugs were mixed and administered together. Cubs of the year were not immobilized and were captured by hand. This procedure involved jumping out of the helicopter as it hovered above a cub, catching the cub and placing it in a burlap sack. The same drugs and dosages used at Black Lake were also used to capture and handle bears at McNeil River. Here, however, bears were captured from the ground with the aid of a "Cap-Chur" gun. No direct effort was made to hunt bears; instead they were captured when the opportunity presented itself.

Small yearling bears were weighed with a hand held Chatillon spring scale. Heavier bears were slung beneath the helicopter in a cargo net attached to a Martin Decker Hydraulic load cell (Martin Decker Industrial Division, Long Beach, California) with a hydraulic line leading to a hand-held scale readout dial.

All bears captured at Black Lake were ear marked with a numbered nylon Rototag (Oberach Patents, Ltd., London, England) in one ear and a nylon King Tuff-Tex ear tag (Agri-Industries, St. Paul, Minnesota) in the other ear. At McNeil River only the King Tuff-Tex ear tags were used during 1970. Adult bears were also marked with a four-inch wide canvas collar to which nylon flagging had been sewn for color coding. Affixed to the top of the collar was a plastic plate, 1/8 inch thick, 5-1/2 inches long and 4-1/2 inches wide. Numbers 3-1/2 inches in height etched on the outer surface of the plastic plate could be read by observers flying in fixed-wing aircraft. The numbers were white on a red background which further improved visual identification. Neck collars were made by Denver Tent Co., Denver, Colorado, and the large numbered plastic plates were custom ordered from Salt Lake Stamp Company, Salt Lake City, Utah. A 1-1/4-pound lead weight was affixed to the underside of the collar to keep the position of the number on top of the collar where it could be seen from the air. The collar was attached by fastening overlapped ends with bolts which passed through grommets. The neck fur was trimmed in order to obtain a proper fit for the collars. The inside of each upper lip was tattooed with standard tattoo pliers (Stone Manufacturing and Supply Co., Kansas City, Missouri). Various designs were clipped into the fur with sheep shears and colored with a waterproof paint stick (Ketchum Manufacturing, Ontario, Canada) to provide temporary identification. These markings remained identifiable until the end of July, when bears had molted.

Standard body measurements (Table 9) and head length and width (measured between the widest portion of the zygomatic arches and between the most anterior surface of the upper first incisors and the posterior protrubance of the parietal crest) were recorded on all captured bears. Photographs of each bear showed pelt coloration, size and in some cases dentition of specific interest. The size and lactating condition of teats and condition of vulva of females; and baculum size and location of testes of males were recorded for information on breeding biology.

Blood samples were taken from the femoral artery of 81 brown bears. Donor tubes were used in conjunction with heparinized vacuum bottles of 150 ml. capacity to draw the blood. Each sample was centrifuged and both serum and red blood cells were sent to U. S. Seal, Ph.D., Research Biochemist, Veterans Administration Hospital, Minneapolis, Minnesota for analysis. A PM<sub>1</sub> tooth was extracted from each bear captured. All teeth were decalcified, sectioned longitudinally, and stained (Luna 1968); cementum was examined with the aid of a Bausch and Lomb zoom dissecting microscope. Two premolar teeth were extracted from bears captured at McNeil River. One tooth was longitudinally sectioned and the other cross sectioned for comparative purposes.

The brown/grizzly bear sealing program provided the means by which tag recovery data were collected from hunter harvested bears. By regulation, brown and grizzly bear hides and skulls must be presented to a member of the Department for examination and sealing within 30 days after the date of kill. The regulation also allows Department personnel to obtain a rudimentary premolar tooth for age determination. Therefore, when tagged bears are sealed, a tooth is pulled and the date and location of kill and skull and hide size are

recorded. The condition and identification numbers of ear tags, neck collars and tattoos are also noted.

## FINDINGS

### Black-Chignik Lake Brown Bear Studies

#### Capture and Marking Success

On the Black-Chignik Lake study area between 16 June and 7 July, 1970, 102 brown bears were captured, marked and released, after collecting specific background data.

The tagging area (Fig. 1), approximately 45 miles long by 20 miles wide, is located in the foothills and coastal plains between the Aleutian Mountain Range and the Bering Sea coast. Within this area, capture success was high, averaging 1.4 bear per hour of helicopter flight time. Good capture success was partially attributed to spotting bears from fixed-wing aircraft prior to calling in the helicopter tagging team. This procedure worked well and was used to reduce unproductive helicopter charter costs. Summarized in Table 1 is the marking history of those bears captured and tagged.

Bear abundance within the study area was greater than previously estimated. This fact was evident toward the end of the 22-day tagging period when many untagged bears remained available.

Capture of entire family groups required considerable skill on the part of the helicopter pilot and "gunner." High capture success was dependent on hazing bear away from dense vegetative cover and keeping family groups from scattering during the capture attempt. Success in accomplishing this was excellent. Only 4 bears (all young, 1.5 and 2.5 years old) escaped after a capture attempt was made.

Little or no permanent separation of bears within family units resulted from helicopter tagging disturbance. Of 19 family groups (containing 34 young) captured, 18 were later observed with all members present. In my opinion there is less chance of family separation when all members of family units are immobilized and allowed to recover together and undisturbed. Lentfer (1968) expressed concern over separation of cubs from their mother and from each other when sows only were captured. Similar problems were encountered this year when a sow with cubs of the year was captured. In this instance the sow was immobilized and the cubs were captured by hand. After completion of work on the two cubs they were released, whereupon they ran off and became separated from each other. Noise made by the departing helicopter further separated the cubs from each other and from their mother. Two unsuccessful attempts were made to reunite the family by herding the bears with the helicopter. Subsequent observations showed that the family was not reunited until mid-morning of the second day following capture.

In order to reduce instances of cub separation next year, cubs will be

caught by hand and immobilized with M99, Etorphine (synthetic morphine). When work is completed on the family group the morphine antagonist M50-50 Diprenorphine will be administered. The cubs should recover together and near their mother within a few minutes.

Sparine when added to Sernylan appeared to prevent or reduce severity of convulsions which sometimes occur with Sernylan. The mean dosage given to 35 bears (which were subsequently weighed) receiving only one dart injection was 0.76 milligrams of Sernylan per pound body weight. Breathing difficulty and convulsions occurred when drug dosages approached or exceeded 1.0 milligrams per pound body weight. The mean latent period required to immobilize each of 62 brown bears (given only one dart injection) was seven minutes (range 1-15 minutes). The induction time was reduced when the dosage of Sernylan was increased. For example, eight bears received an average injection of 1.2 milligrams/pound which reduced the latent period to 4.4 minutes. All but one of these bears had difficulty breathing and five out of eight experienced convulsions. The addition of Hyaluronidase, an enzyme which promotes diffusion and consequently absorption of fluids in tissue, is believed responsible for shortening the period required to capture bears. Past capture experience at McNeil River has shown induction time to be longer in the absence of Hyaluronidase. Allen (1970) reports that when Hyaluronidase was added to succinylcholine chloride and administered to penned white-tail deer the latent period was reduced from 5.1 minutes without hyaluronidase to 2.3 minutes with the enzyme added.

Bears captured in June and early July were considerably lighter in weight than those captured in August, 1968. Lentfer (1968) commented that thick fat deposits in August may have prevented 1 1/2 inch syringe needles from penetrating the fat layer to allow complete injection of the drug into muscle tissue. In contrast, 1 1/2 inch needles were used on bears this spring with excellent results.

#### Evaluation of Marking Equipment

On the study area, 47 color coded and numbered neck collars were attached to adult brown bears. Of these, 44 were designed specifically to allow identification by observers flying in fixed-wing aircraft. Success in aerial identification of these collars was satisfactory. Sixteen of 22 collars seen on three fall reconnaissance flights, were positively identified. Collar identification was dependent on the following factors: 1.) By November hair had grown so that it interfered with the observers' view of collar numbers and color code; 2.) Tagged bear close to or in thick vegetation cover usually allowed observers only one chance to identify neck collar markings. On subsequent aerial passes the bear usually hid from the viewer; 3.) Wind direction and velocity and terrain contour influenced the distance to which observation aircraft could approach tagged bear.

The durability of attached collars cannot be determined until next year when marked bears are recaptured and the equipment examined. Some marking equipment, however, is being redesigned and artificially tested to determine if aerial identification and life span of collars can be improved.

Three surveys (Table 2) totaling 79.6 hours were flown during September, October and November to monitor movements of tagged bears. All surveys were flown in a Piper PA-18 (Supercub) aircraft operating out of the Black Lake camp. The survey area extended on the Pacific side from Aniakchak Bay southwest to Ramsey Bay and on the Bering Sea side from Cinder River southwest to Bear River. Within this area all major drainages were flown. Surveys were productive to the extent that 37 (11.5%) of 321 bears seen were marked bears.

#### Movement and Composition

Between July and November, 70 percent of all bears marked on the study area were sighted, some as many as five times. Observers included Department employees, game guides, pilots and residents of the area. Recovery information, however, is not sufficient to draw conclusions regarding seasonal bear movements and population identity. Recovery data which include location and distance traveled of captured, killed and observed tagged bears are summarized in Table 3.

Five tagged bears were killed by hunters (Nos. 702, 715, 737, 763 and 801) on the Black-Chignik Lakes study area during 1970. One was killed in the spring and four during the fall bear hunting seasons.

In late May and June, there was a definite spring movement of some bears from the mountains to the low, rolling coastal plain. This movement became apparent from observations made prior to and during the tagging operation. Eight bears, in fact, were captured as they moved past the Black Lake camp heading in the direction of lowland areas. No estimate of the population segment participating in this movement can be made at this time.

On the coastal plain, only two sows with cubs of the year were seen during spring tagging. The absence of this population segment was at first believed to be natural. It was reasoned that in the spring sows with cubs may elect to stay in the mountains for a variety of reasons. Further study weakened this theory. After comparing the percentage of cubs in the population this year with that of previous years, it became apparent that low cub production and/or survival was a contributing factor which influenced the abundance of cubs on the coastal plain. An aerial composition count completed on 27 July (Table 4) showed that cubs of the year comprised only 15 percent of the sampled population. In contrast, six years of prior mid-summer composition data (Table 5) reveal that cubs normally made up 30 to 45 percent of the population sample. Aerial surveys conducted in September, October and November (Table 2) support the accuracy of the July, 1970 cub count. It is interesting to note that two lactating sows without young (No. 769 and 773, Table 8) were captured this spring. The reason for low cub production and/or survival is not known. Cubs and juveniles (accompanied by sows) combined, however, continued to make up 47 percent or more of the population (Table 5). The average litter size for the years 1965 through 1970 is summarized in Table 6.

The sex composition of captured bears three years of age or older was 22 males and 44 females, and of young (cubs, yearlings and two year-olds) was 15 males and 19 females (Table 7). Noticeable among captured bear was the low representation of males in the seven year plus age classes. Ages obtained from reading annuli of sectioned PM1 teeth showed only three males as compared

to 18 females which were in these age classes. Small sample size precludes conclusions regarding population sex and age ratios.

Two trend counts, one by fixed-wing aircraft and one by helicopter, were completed on the Black-Chignik Lake study area when bears were concentrated along salmon streams. Only the count made from fixed-wing aircraft is reliable (Table 4). The high pitch of the helicopter turbine engine caused some bears to go into cover before they could be classified. The slow forward speed of the helicopter probably prevented some bears from being sighted before they had concealed themselves. Comparing the two counts on a cost basis, the fixed-wing aircraft was almost five times cheaper.

#### Life History

The importance of ungulates as a spring food source for brown/grizzly bears is unknown. Bears on the Black-Chignik Lake study area were taking advantage of lowland moose and caribou calving areas in the spring of 1970. Bears appeared to be quite successful at catching calves and finding dead or dying animals. Bears were also observed along the beach between the Meshik and Sandy Rivers feeding on whale and seal carcasses which had washed ashore. Salmon were not generally available to bears until after mid-July.

A sow (No. 703) with two yearlings was observed catching a moose calf on 18 June. The incident was apparently initiated when these bears reacted to noise made by approaching aircraft. While running from the aircraft, the sow came within 50 feet of a cow moose and her calf. Upon seeing the moose, the bear responded with a 4-minute chase which resulted in the capture of the moose calf. The calf, weighing approximately 75 pounds, was caught when it became separated from the cow. Examination of the moose calf was made after the sow and yearling bears were captured. In addition to tooth puncture wounds in the skull, the calf had a broken back and was eviscerated. The sow was sharing the calf with her cubs just before capture.

A similar incident was also observed on 16 June with different results. A three-year-old sow (No. 701) which was running from the approaching aircraft ran within fifty feet of a cow and calf moose. The sow saw the moose, stopped and stood up whereupon the cow and calf started chasing the bear. The moose chased the bear continuously for 13 minutes, 9:01 a.m. to 9:14 a.m., and at times the calf was leading the chase. At 9:13 the bear was given a drug injection with the moose still in pursuit. At 9:14, the moose was forcibly driven away from the bear with the aid of the helicopter as the bear was beginning to show the effects of the immobilizing drug.

In mid-October an observation of interest occurred two miles up Bear River from Bear Lake. A large bear was seen eating a cub of the year on the river bank. While making several flight passes over the dead cub a female bear with a cub of the year was observed in an alder patch approximately 100 yards away. The cub acted very nervous and was clinging to the back of the female. About 200 yards away in another alder patch was another female bear with three cubs of the year. This group seemed less nervous. The circumstances leading to the incident are unknown.

Summarized in Table 8 are the age and reproductive status of adult and

sub-adult female brown bears captured on the study area. Presented in Table 9 are weights and measurements taken from all captured bears.

A sow with five young was observed on Fan Creek, a tributary of Black Lake, for the third year in succession. On 5 August 1968, while we were conducting aerial bear surveys on salmon streams, the sow was observed with five cubs of the year. The family group was seen again in July of 1969 and July of 1970 with five 1.5 and 2.5-year-old cubs, respectively. Observations and comparisons of color photographs taken each year indicate the same family group was seen during the three year period. Photographs of cubs taken in 1968 also show the young to be of similar size, suggesting all cubs were from the same litter.

Of interest also was an observation reported by a game guide who observed a sow abandon her two cubs of the year. The sow was first observed on 8 May 1970 near her den, which was located at approximately the 1500-foot contour level above Kulik Lake (200 miles north of Katmai National Monument). On 10 May tracks of a single adult bear were followed by aircraft and found leading away from the den. Six days later the guide noticed something moving near the den site and upon investigation found one dead and one live cub. The live cub was captured, taken back to camp and bottle fed. The guide stated that the cub weighed about 6.5 pounds and was starving to death judging by his poor physical condition and his tremendous appetite. Speculating on the reason for cub abandonment, the guide mentioned human smell and track vehicle noise as possible reasons. The cub survived, gained weight and was later released by the Alaska Department of Fish and Game.

#### McNeil River Brown Bear Studies

Between 5 July and 4 August 1970, Department personnel continued field investigations of brown bear at McNeil River. Bears did not begin fishing at McNeil River Falls until 13 July. A maximum of 29 bears was observed at the falls at one time, but concentrations of over 20 were common. Ten sows were observed with 23 young, giving an average litter size of 2.3 young per sow. Table 10 summarizes 1969 and 1970 population compositions at McNeil River.

Ten of 12 bear captured during the field investigation had been tagged in previous years. Four of these still wore 1 and 3/4 inch-wide neck collars which had been attached in 1967. These collars were removed and examined for wear; irritation to the animal was also assessed. Results of this examination showed most of the plastic colors sewn to the nylon web collars were worn off. The base material however was found to be in excellent condition. The neck area which was in contact with the collars showed no sign of skin irritation or hair rubbing. The marking history of bears captured at McNeil River since 1963 is summarized in Table 11.

A nylon "Tuff-Tex" ear tag and various types of color-coded and numbered neck collars were attached this year in an effort to evaluate both durability of equipment when subjected to bear abuse and readability of the attached markers. Results of this equipment testing follows.

The "Tuff-Tex" ear tags were more conspicuous with larger identification numbers than either the "Monel" or the "Roto-Tags" which were used in past years. It was possible, therefore, to read these numbers to a distance of 150 feet with the aid of seven-power binoculars. Of 18 "Tuff-Tex" tags attached, only 16 were observed to rotate on the bear's neck in spite of the lead weights. Therefore, it was difficult for air and ground observers to identify numbers. Three of the wide canvas collars had lost the large plastic identification numbers by the end of July. Similar problems were noted with this equipment at Black-Chignik Lake. The color code, however, provided proper collar identification. One bear was fitted with a two-inch wide plastic collar and three sub-adults were fitted with loose-fitting string collars bearing a numbered tag. All ten collars were still attached to the bears when field observations terminated.

Tables 12 and 13 summarize growth and reproductive history of bears captured or observed more than one year at McNeil River.

Bear abundance and fishing success are presented in Table 14 and allow comparison with the previous years. The "Number of Bear Groups" column represents the actual singles or families at the falls. A sow with three cubs would represent one group and a single bear would represent another group. "Bear Hours" represents the sum of the time spent by all bear groups at the falls during the period of observation. A group was not considered to have stopped fishing unless it was absent from the stream for more than 20 minutes; this allowance was necessary because bear frequently left to eat fish but returned and continued fishing within 15 minutes.

Twenty-five photographic parties visited McNeil River for a total of 174 man-days use during 1970. In comparison, during July 1969, nine parties observed and photographed bears for 45 man-days. In 1970, not only were there more photographic parties, but the length of each visit was longer and caused congestion at camping and photographic sites. This increase in human activity may have had an effect upon brown bears utilizing the falls. In 1969, bears were present at all hours of the day, but in 1970 they were scarce during morning hours and concentrated during the later afternoon and evening (Fig. 2). Some bears were intolerant to the actions of some photographers and apparently abandoned the falls or fished only at night. One photographer provoked a sow into a charge that resulted in the destruction of the sow and her yearling. Unrestricted public use of the McNeil River Brown Bear Sanctuary during 1970, reached the point where it endangered those intrinsic values which attract observers and photographers.

#### RECOMMENDATIONS

Collecting of bear teeth and processing and reading cementum ages should continue, especially in Game Management Units where a significant number of bears are taken. Persons sealing bears should be made aware of the importance of age composition data and instructed on proper procedures for tooth selection and extraction.

We should continue to obtain and assess brown/grizzly bear harvest information. Statewide harvest data on sex and age composition, trends in hide and skull size and comparisons of harvest by year and season should be maintained and evaluated annually for management purposes.

The McNeil River State Game Sanctuary was established to maintain a high number of bears for the public to observe and photograph. Unrestricted public use of the McNeil River Brown Bear Sanctuary has reached a point where it endangers those values which attract observers and photographers. The Department should therefore manage public use in an effort to perpetuate those intrinsic values which make the Sanctuary unique for public enjoyment.

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R. A. Rausch provided technical assistance.

L. Miller conducted fall bear reconnaissance flights and participated in all phases of the Black Lake tagging operation.

J. Faro was responsible for the McNeil River field investigation and its reporting.

B. Wolf was instrumental in designing bear collars and participated in bear tagging activities at Black Lake.

Sincere thanks is given all the above.

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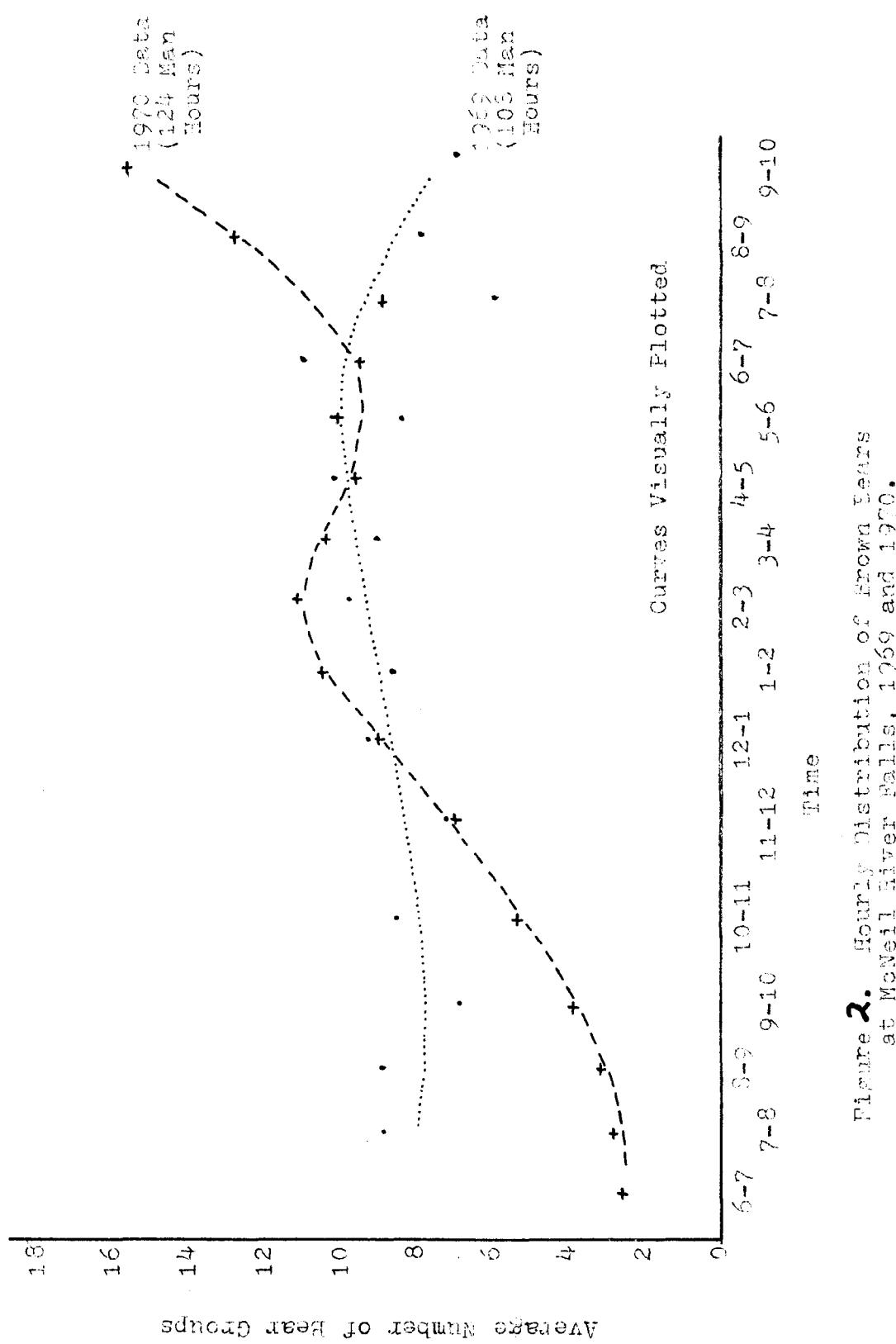


Figure 2. Hourly distribution of brown bears at McNeil River Falls, 1959 and 1970.

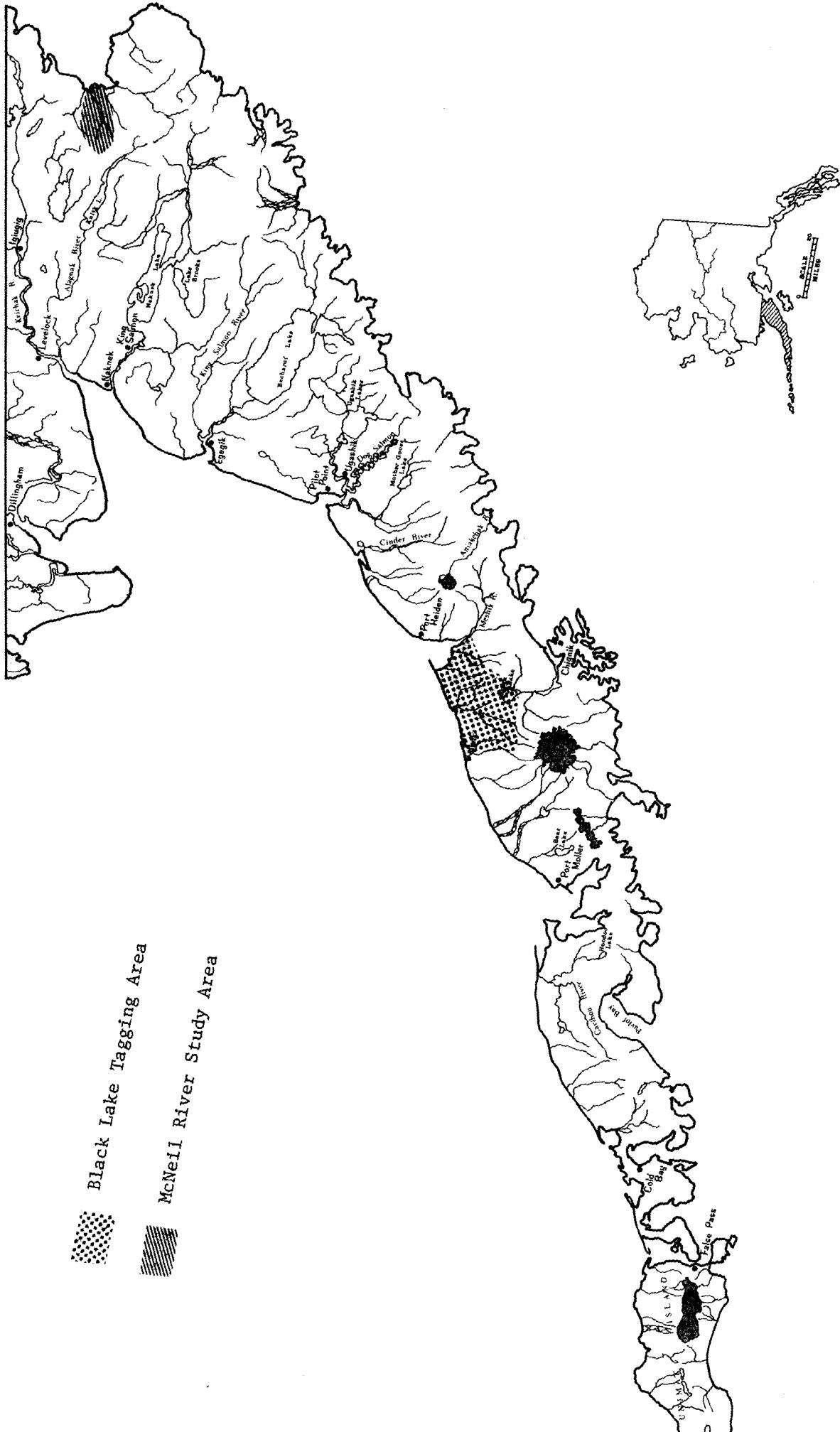


Table 1. Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag	Ear and Collar Marker Color Code				Collar Color Design			
M = Metal K.T. = King Tuff-Tex Roto = Rototag Rt = Right L = Left	F = Front B = Back Miss = Missing Pres = Present Unk = Unknown	Blk = Black Y = Yellow P = Pink W = White R = Red	Blu = Blue O = Orange Glo Gr = Green	H.H. = Half and Half H.B. = Horizontal Bars	St = Stripe			
Bear	Sex	Captured or Observed	Ear Tag Number Right	Ear Tag Number Left	Ear Tag Color Right	Ear Tag Color Left	Collar No. and Color	Tattoo Condition
No. 701 6/16/70	F	Captured	Roto-1900	K.T.-1	F(Y), B(P)	Blk	None	701
No. 702 6/17/70	M	Captured Recaptured Hunter Kill	Roto-1899 Pres Pres	K.T.-2 Pres Miss	F(P), B(Y)	Blk	None	702
12 6/29/70 10/1/70							None	
No. 703 6/18/70	F	Captured	Roto-1898	K.T.-1	F(P), B(Y)	W	No. 1, all Y	703
704/703 <sup>1/</sup>	M	Captured	Roto-1897	K.T.-9	F(P), B(Y)	Blk	None	704
705/703	F	Captured	Roto-1896	K.T.-7	F(P), B(Y)	Blk	None	705
No. 706 6/18/70	F	Captured	Roto-1802	K.T.-2	F(Y), B(Y)	W	No. 2, all W	706
No. 707 6/19/70	F	Captured	Roto-1803	K.T.-3	All Y	All Blk	No. 3, all Blu	707
708/707	F	Captured	Roto-1895	K.T.-3	F(P), B(Y)	All W	None	708

1/ Virgule between bear accession numbers indicate offspring first and sow last.

Table 1. (cont.). Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag	Ear and Collar Marker Color Code				Collar Color Design	
Bear	Sex	Captured or Observed	Ear Tag Number	Ear Tag Color	Collar No. and Color	Tattoo Condition
		Right	Left	Right	Left	
No. 709 6/19/70	F	Captured	Roto-1804	K.T.-4	All Y	All W
710/709	M	Captured	Roto-1893	F(P),B(Y)	All Blk	None
No. 711 8/10/68	F	Captured	M-804	Roto-804	Metal	All P
6/19/70		Recaptured	Miss K.T.-5	No. broken off Roto-1805	All W	All Y
712/711	F	Captured	Roto-1894	K.T.-5	F(P),B(Y)	All Blk
713/711	M	Captured	Roto-1892	K.T.-8	F(P),B(Y)	All Blk
No. 714 6/19/70	M	Captured	Roto-1806	K.T.-6	All Y	All W
7/26/70		Captured	Pres	Pres	No. 6 Blu(F)W(B)	
					No. broken off Collar twisted & worn	Unk

M = Metal      F = Front      Blk = Black      St = Stripe  
 K.T. = King Tuff-Tex      B = Back      Y = Yellow      O = Orange Glo  
 Roto = Rototag      Miss = Missing      P = Pink      H.H. = Half and Half  
 Rt = Right      Pres = Present      W = White      H.B. = Horizontal Bars  
 L = Left      Unk = Unknown      R = Red

Table 1. (cont.). Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag	Ear and Collar Marker Color Code				Collar Color Design
Bear	Sex	Captured or Observed	Ear Tag Number	Ear Tag Color	Collar No. and Color
No.			Right	Left	Tattoo Condition
No. 715 6/20/70	M	Captured	Roto-1807	K.T.-7	All W No. 7-H.H. W(L)O(Rt)
6/21/70 10/5/70		Observed Hunter kill	Unk Pres	-	Miss None Unk Read as 125
No. 716 6/20/70	F	Captured	Roto-1886	K.T.-10	F(P)B(Y) All Blk None 716
No. 717 6/20/70	F	Captured	Roto-1808	K.T.-8	All W No. 8-H.H. Y(L)O(Rt) Pres
6/30/70		Observed			
No. 718 6/20/70	M	Captured	Roto-1810	K.T.-10	All W No. 10-H.H. W(L)Y(Rt)
No. 719 6/20/70	F	Captured	Roto-1811	K.T.-11	All W No. 11-H.H. Y(L)Blu(Rt)
No. 720 6/20/70	F	Captured	Roto-1820	K.T.-20	F(P)B(Y) All Blk None 720

Table 1. (cont.). Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag		Ear and Collar Marker Color Code				Collar Color Design	
Bear	Sex	Captured or Observed	Ear Tag Number Right	Ear Tag Number Left	Color	Collar No. and Color	Tattoo Condition
No. 721 6/20/70	M	Captured	Roto-1821	K.T.-21	F(P)B(Y)	All Blk	None
No. 722 6/20/70	F	Captured	Roto-1812	K.T.-12	All Y	All W	No. 12 St O(F)W(B)
15							722
723/722	F	Captured	Roto-1887	K.T.-11	F(Y)B(P)	All Blk	None
724/722	F	Captured	Roto-1888	K.T.-12	F(P)B(Y)	All Blk	None
No. 725A 6/20/70	F	Captured	Roto-1813	K.T.-13	All Y	All W	No. 13 St O(F)Y(B)
No. 725B 6/21/70	F	Captured	Roto-1814	K.T.-14	All Y	All W	No. 14 W(L)P(R)
726/725	F	Captured	Roto-1870	Roto-1871	F(P)B(Y)	F(P)B(Y)	None
727/725	M	Captured	Roto-1873	Roto-1872	F(P)B(Y)	F(P)B(Y)	None
							727
							725
							726

M = Metal      F = Front      Blk = Black  
 K.T. = King Tuff-Tex      B = Back      Y = Yellow  
 Roto = Rototag      Miss = Missing      P = Pink  
 Rt = Right      Pres = Present      W = White  
 L = Left      Unk = Unknown      R = Red

St = Stripe      H.H. = Half and Half  
 H.B. = Horizontal Bars

Table 1. (cont.). Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag			Ear and Collar Marker Color Code			Collar Color Design		
Bear No.	Sex	Captured or Observed	Ear Tag Number	Ear Tag Color	Collar No. and Color	Tattoo Condition		
No. 728 6/21/70	F	Captured	Roto-1815	K.T.-15	All Y	All W	No. 15-St Y(F)Blu(B)	728
729/728	F	Captured	Roto-1874	K.T.-14	F(Y)B(P)	All Blk	None	729
730/728	F	Captured	Roto-1875	K.T.-13	F(Y)B(P)	All Blk	None	730
No. 731 6/22/70	F	Captured	Roto-1816	K.T.-16	All Y	All W	No. 16-H.H. Gr(R)O(L)	731
732/731	M	Captured	Roto-1878	K.T.-15	F(P)B(Y)	All Blk	None	732
733/731	F	Captured	Roto-1877	Roto-1876	F(P)B(Y)	All Blk	None	733
No. 734 6/22/70	F	Captured	Roto-1817	K.T.-17	All Y	All W	No. 17-H.H. W(L)Gr(Rt)	734
735/734	M	Captured	Roto-1879	K.T.-17	F(P)B(Y)	All Blk	None	735
No. 736 6/22/70	F	Captured	Roto-1809	K.T.-18	All Y	All W	No. 18-H.H. P(L)Y(R)	736

Table 1. (cont.) Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag		Ear and Collar Marker Color Code				Collar Color Design	
Bear	Sex	Captured or Observed	Ear Tag Number	Ear Tag Color	Collar No. and Color	Tattoo Condition	
No.			Right	Left	Left		
No. 737 6/23/70	M	Captured Killed by hunter	Roto-1880 Pres	K.T.-18 Miss	F(P)B(Y)	All Blk	None Excellent
No. 738 6/23/70	F	Captured	Roto-1869	K.T.-20	F(P)B(Y)	All W	No. 20-H.H. O(L)Blu(Rt)
739/738	F	Captured	Roto-1891	K.T.-19	F(P)B(Y)	All Blk	None
740/738	F	Captured	Roto-1881	K.T.-22	F(P)B(Y)	All Blk	None
741/738	F	Captured	Roto-1882	K.T.-23	F(P)B(Y)	All Blk	None
No. 742 6/24/70	F	Captured	Roto-1819	K.T.-19	All Y	All W	No. 19-St O(F)Gr(B)
No. 743 6/24/70	F	Captured	Roto-1801	K.T.-21	All Y	All W	No. 21-St O(F)Blu(B)
No. 744 6/24/70	M	Captured	Roto-1883	K.T.-100	F(P)B(Y)	All W	None

Table 1. (cont.) Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag	Ear and Collar Marker Color Code			Collar Color Design	
M = Metal K.T. = King Tuff-Tex Roto = Rototag Rt = Right L = Left	F = Front B = Back Miss = Missing Pres = Present Unk = Unknown	Blk = Black Y = Yellow P = Pink W = White R = Red	Blu = Blue O = Orange Glo Gr = Green	St = Stripe H.H. = Half and Half H.B. = Horizontal Bars	
Bear	Sex	Captured or Observed	Ear Tag Number	Ear Tag Color	Collar No. and Color
			Right	Left	
No. 745 6/24/70	F	Captured	Roto-1822	K.T.-22	All W W(F)Gr(B)
18	No. 746 6/24/70	Captured	Roto-1884	K.T.-90	F(P)B(Y) None
	No. 747 6/24/70	Captured	Roto-1823	All Y	All W No. 23-H.H. Gr(L)P(R)
	No. 748 6/24/70	Captured	Roto-1890	K.T.-92	F(Y)B(P) None
	No. 749 6/24/70	Captured	Roto-1824	K.T.-24	F(P)B(Y) All W No. 24-H.H. Gr(L)Y(R)
	No. 750 6/25/70	Captured	Roto-1825	K.T.-25	All Y All W No. 25-St Y(F)W(B)
	751/750	M	Captured	Roto-1861	K.T.-97 F(P)B(Y) All W None
					751

Table 1. (cont.) Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag	Ear and Collar Marker Color Code				Collar Color Design	
	Sex	Captured or Observed	Ear Tag Number Left	Ear Tag Number Right	Ear Tag Color Left	Ear Tag Color Right
No. 752 6/25/70	M	Captured	Roto-1864	K.T.-84	F(Y)B(P)	All W
No. 753 6/26/70	F	Captured	Roto-1826	K.T.-26	F(P)B(Y)	All W
754/753	M	Captured	Roto-1890	K.T.-98	F(P)B(Y)	All W
755/753	F	Captured	Roto-1889	K.T.-96	F(P)B(Y)	All W
No. 756 6/26/70	F	Captured	K.T.-27	Roto-1827	All W	F(P)B(Y)
No. 757 6/26/70	F	Captured	Roto-1828	K.T.-28	F(P)B(Y)	All W
758/757	F	Captured	Roto-1866	K.T.-85	F(P)B(Y)	All W
759/757	F	Captured	Roto-1865	K.T.-88	F(P)B(Y)	All W
760/757	F	Captured	Roto-1862	K.T.-87	F(P)B(Y)	All W

St = Stripe

H.H. = Half and Half

H.B. = Horizontal Bars

O = Orange

Glo

Gr = Green

P = Pink

W = White

R = Red

L = Left

Miss = Missing

Pres = Present

Unk = Unknown

Table 1. (cont.). Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag	Ear and Collar Marker Color Code				Collar Color Design
M = Metal K.T. = King Tuff-Tex Roto = Rototag Rt = Right L = Left	F = Front B = Back Miss = Missing Pres = Present Unk = Unknown	Blk = Black Y = Yellow P = Pink W = White R = Red	Blu = Blue O = Orange Glo Gr = Green	Blu = Blue O = Orange Glo Gr = Green	St = Stripe H.H. = Half and Half H.B. = Horizontal Bars
Bear No.	Sex	Captured or Observed	Ear Tag Number	Ear Tag Color	Collar No. and Color
6/28/70	F	Captured	Roto-1832	Right	Left
No. 761 6/28/70	M	Captured	Roto-1829	K.T.-32	F(P)B(Y)
20					All W
No. 762 6/28/70	M	Captured	Roto-1829	K.T.-29	F(P)B(Y)
					All W
No. 763 6/27/70	F	Captured	Roto-1830	K.T.-30	F(Y)B(P)
10/5/70		Killed by hunter	Press	Miss	
No. 764A 6/28/70	M	Captured	Roto-1867	K.T.-76	F(P)B(Y)
					All W
No. 764B 6/28/70	F	Captured	Roto-1831	K.T.-31	F(P)B(Y)
765/764	M	Captured	Roto-1858	K.T.-77	F(P)B(Y)
766/764	F	Captured	Roto-1859	K.T.-76	F(P)B(Y)
					All W
					None
					764
					No. 31-H.H. Blu(L)R(Rt)
					764
					None
					765
					None
					766

Table 1. (cont.). Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag	Ear and Collar Marker Color Code				Collar Color Design			
Bear	Sex	Captured or Observed	Ear Tag Number Right	Ear Tag Number Left	Ear Tag Color Right	Ear Tag Color Left	Collar No. and Color	Tattoo Condition
No. 767 6/29/70	M	Captured	Roto-1856	K.T.-82	F(P)B(Y)	All W	None	767
No. 768 6/29/70	M	Captured	Roto-1853	K.T.-80	F(P)B(Y)	All W	None	768
No. 769 6/30/70	F	Captured	Roto-1833	K.T.-33	F(P)B(Y)	All W	No. 33-Solid gr	769
No. 770 6/30/70	F	Captured	Roto-1834	K.T.-34	F(Y)B(P)	All W	No. 34-H.H. Gr(L)Blu(Rt)	770
771/770	M	Captured	Roto-1855	K.T.-94	F(Y)B(P)	All W	None	771
772/770	M	Captured	Roto-1857	K.T.-95	F(P)B(Y)	All W	None	772
No. 773 6/30/70	F	Captured	Roto-1835	K.T.-35	F(P)B(Y)	All W	No. 35-St Blu(F)Gr(B)	773
No. 774 6/30/70	M	Captured	Roto-1854	K.T.-79	F(P)B(Y)	All W	No. 122-Solid yellow-plastic	774

Table 1. (cont.). Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag	Ear and Collar Marker Color Code			Collar Color Design				
	Sex	Captured or Observed	Ear Tag Number	Ear Tag Color				
			Right	Left				
M = Metal	F = Front	Blk = Black	Blu = Blue	St = Stripe				
K.T. = King Tuff-Tex	B = Back	Y = Yellow	O = Orange	H.H. = Half and Half				
Roto = Rototag	Miss = Missing	P = Pink	Gr = Green	H.B. = Horizontal Bars				
Rt = Right	Pres = Present	W = White						
L = Left	Unk = Unknown	R = Red						
No. 775 6/30/70	M	Captured	Roto-1836	K.T.-36	F(P)B(Y)	All W	No. 36-St W(F)P(B)	775
No. 776 7/1/70	F	Captured	Roto-1818	K.T.-93	F(P)B(Y)	All W	None	776
No. 778 7/1/70	F	Captured	Roto-1852	K.T.-83	F(P)B(Y)	All W	None	778
No. 779 7/2/70	F	Captured	Roto-1838	K.T.-38	F(P)B(Y)	All W	No. 38-St P(F)Gr(B)	779
No. 780 7/2/70	M	Captured	Roto-1837	K.T.-37	F(P)B(Y)	All W	No. 37-H.H. P(L)Blu(Rt)	780
No. 781 7/2/70	F	Captured	Roto-1839	K.T.-39	F(P)B(Y)	All W	No. 39-H.H. O(L)P(Rt)	781
No. 782 7/2/70	F	Captured	Roto-1840	K.T.-40	F(P)B(Y)	All W	No. 40-St Y(F)Gr(B)	782

Table 1. (cont.). Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag	Ear and Collar Marker Color Code				Collar Color Design	
	Bear	Sex	Captured or Observed	Ear Tag Number	Ear Tag Color	Tattoo Condition
	No.			Right	Left	
M = Metal K.T. = King Tuff-Tex Roto = Rototag Rt = Right L = Left	783 7/2/70	M	Captured	Roto-1860	Roto-1841	F(P)B(Y) F(P)Blu(B)
Miss = Missing Pres = Present Unk = Unknown	784 7/3/70	M	Captured	Roto-1863	Roto-1846	F(P)B(Y) F(P)Blu(B)
23						
No. 785 7/4/70	F	Captured	K.T.-41	Roto-1868	A11 W	F(P)B(Y) F(P)Blu(B)
						No. Number W with 1" W webbing
No. 786/785 788/785	M	Captured	Roto-1844	Roto-1843	F(Y)B(P)	785 O.D. webbing
						No. Number W with 1" strips of
No. 789 7/4/70	M	Captured	K.T.-42	Roto-1849	F(P)B(Y)	786 O.D. webbing
						No. Number W with 1" strips of
No. 790 7/6/70	F	Captured	Roto-1842	K.T.-43	F(P)B(Y)	788 O.D. webbing
						No. Number 1-1/2" webbing
						with tan color
						790

Table 1. (cont.). Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag	Ear and Collar Marker Color Code				Collar Color Design
Bear	Sex	Captured or Observed	Ear Tag Number	Ear Tag Color	Collar No. and Color
			Right	Left	Tattoo Condition
M = Metal K.T. = King Tuff-Tex Roto = Roto-tag Rt = Right L = Left	F = Front B = Back Miss = Missing Pres = Present Unk = Unknown	Blk = Black Y = Yellow P = Pink W = White R = Red	Blu = Blue O = Orange Gr = Green	Blu = Blue O = Orange Gr = Green	St = Stripe H.H. = Half and Half H.B. = Horizontal Bars
No. 791 7/6/70	M	Captured	Roto-1847	K.T.-44	F(P)B(Y)
No. 792 7/6/70	M	Captured	Roto-1850	K.T.-45	F(P)B(Y)
No. 794 7/6/70	F	Captured	K.T.-46	K.T.-47	All W
795/794	M	Captured	Roto-1851	K.T.-50	F(Y)B(P)
796/794	M	Captured	K.T.-48 or 49	K.T.-48 or 49	All W
No. 798 7/7/70	F	Captured	K.T.-52	K.T.-51	All W
No. 799 7/7/70	M	Captured	K.T.-54	K.T.-53	All W
No. 801 8/9/68 5/2/70	M	Captured Hunter Kill	M-801 Unk	Roto-801 Pres	All P -

Table 1. (cont.). Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag	Ear and Collar Marker Color Code				Collar Color Design			
Bear	Sex	Captured or Observed	Ear Tag Number Right	Ear Tag Number Left	Ear Tag Color Right	Ear Tag Color Left	Collar No. and Color	Tattoo Condition
No. 802 9/10/68	F	Captured	M-802	Roto-852	Metal	Pink	Red	802
No. 805 8/10/68 9/24/68	F	Captured Hunter kill	M-805 Pres	Roto-805 Pres	Metal	Pink	None	805 Unk
No. 806 8/10/68 9/15/68	F	Captured Hunter kill	M-806 Pres	Roto-806 Pres	Metal	Pink	None	806 Readable
No. 808 8/11/68	M	Captured	M-808	Roto-808	Metal	Pink	None	808
No. 809 8/11/68	F	Captured	M-809	Roto-809	Metal	Pink	Red	809
No. 810 8/12/68	M	Captured	M-810	Roto-810	Metal	Pink	None	810
No. 811 8/12/68	F	Captured	M-811	Roto-811	Metal	Pink	Red	811
No. 812 8/13/68	M	Captured	M-812	Roto-812	Metal	Pink	None	812

Type, Location and Status of Ear Tag

M = Metal      F = Front  
 K.T. = King Tuff-Tex      B = Back  
 Roto = Rototag      Miss = Missing  
 Rt = Right      Pres = Present  
 L = Left      Unk = Unknown

Blk = Black      Blu = Blue  
 Y = Yellow      O = Orange Glo  
 P = Pink      Gr = Green  
 W = White      R = Red

Ear and Collar Marker Color Code

St = Stripe      H.H. = Half and Half  
 H.B. = Horizontal Bars

Table 1. (cont.). Marking History of Brown Bear Captured or Harvested on the Black Lake Study Area.

Type, Location and Status of Ear Tag		Ear and Collar Marker Color Code				Collar Color Design	
Bear No.	Sex	Captured or Observed	Ear Tag Number Right	Ear Tag Number Left	Ear Tag Color Right	Ear Tag Color Left	Collar No. and Color
900 7/7/70	F	Captured	K.T.-56	K.T.-55	A11 W	A11 W	No. Number- Canvas Y with 1" W Stripes
901/902	F	Captured	K.T.-59	None-Ear deformed	A11 W	None	None
902/900	M	Captured	K.T.-58	K.T.-57	A11 W	A11 W	901 902

Table 2. Three Aerial Surveys of Brown Bear Conducted on the Black-Chignik Lake Study Area, 1970.

Date Type Aircraft	Survey No. 1		Survey No. 2	
	September 13-19 PA-18		October 12-19 PA-18	
	No.	%	No.	%
Females w/young	24	19.7	27	21.4
Cubs	17	13.9	19	15.1
Young 1 & 2 yrs. old	33	27.0	33	26.2
Young combined	50	41.0	52	41.3
Single bears	48	39.3	47	37.3
<hr/>				
No. of bear groups	72		74	
Total bears	122		126	
Total collared bears	7		5	
Total tagged bears	14		10	
Hours flown	27.2		30.9	
Bears per hour	4.5		4.1	
<hr/>				
Date Type Aircraft	Survey No. 3		Cumulative Total	
	November 16-24 PA-18			
	No.	%	Total No.	% Average
Females w/young	19	26.0	70	21.8
Cubs	17	23.3	53	16.5
Young 1 & 2 yrs. old	18	24.7	84	26.2
Young combined	35	47.9	137	42.7
Single bears	19	26.0	114	35.5
<hr/>				
No. of bear groups	38		184	
Total bears	73		321	
Total collared bears	6		18	5.6
Total tagged bears	13		37	11.5
Hours flown	21.5		79.6	
Bears per hour	3.4			4.0

Table 3. Movement Data Recorded from Captured, Observed or Killed Alaska Peninsula Tagged Brown Bear

DATA RECORDED

1. Captured (cap), Observed (obs), Killed (kil)
2. Direct Distance (Miles) From Location of First Capture
3. Direct Distance (Miles) From Previous Location
4. Number of Young Accompanying Each Adult Sow
5. Other Adult Bear Present

Bear No.	Sex	Age	Date	Location	1	2	3	4	5
701	F	3.5	6/16/70 7/3/70	159°20'W 56°30'N 159°10'W 56°38'N	cap cap	- 12	- 12	0	0
702	M	2.5	6/17/70 6/29/70	159°00'W 56°30'N 159°27'W 56°31'N	cap cap	- 17	- 17	0	0
28 SS 17345 3/			7/27/70 10/1/70	160°12'W 56°15'N 158°58'W 56°32'N	obs kil	49 4	34 51	0	0
703	F	7.5	6/18/70 7/26/70 8/1/70 11/18/70	159°45'W 56°33'N 159°37'W 56°27'N 159°37'W 56°27'N 159°38'W 56°27'N	cap obs obs obs	- 9 9 8	- 9 0 1	2 2 2 0	No. 785
704/7032/	M	1.5	6/18/70 7/26/70 8/1/70 11/18/70	159°45'W 56°33'N 159°37'W 56°27'N 159°37'W 56°27'N 159°38'W 56°27'N	obs obs obs obs	- 9 9 8	- 9 0 1	0 0 0 0	No. 785
705/703	M	1.5	6/18/70 7/26/70 8/1/70 11/18/70	159°45'W 56°33'N 159°37'W 56°27'N 159°37'W 56°27'N 159°38'W 56°27'N	obs obs obs obs	- 9 9 8	- 9 0 1	0 0 0 0	

1/ Observed by Commercial Fish Division personnel  
 2/ Virgule between bear accession numbers indicate offspring first and sow last.  
 3/ Skull seal number if bear was killed.

Table 3. (cont.). Movement Recorded from Captured, Observed or Killed Alaska Peninsula Tagged Brown Bear

Bear No.	Sex	Cem. Age	Date	Location	1	2	3	4	5
706	F	3.5	6/18/70	159°33'W 56°32'N	cap	-	-	-	0
707	F	5.5	6/19/70 6/29/70 10/12/70	159°20'W 56°32'N 159°03'W 56°23'N 159°05'W 56°34'N	cap obs obs	- 15 10	- 15 13	1 1 0	0 0 0
708/707	F	1.5	6/19/70 6/29/70 10/12/70	159°20'W 56°32'N 159°03'W 56°23'N 159°05'W 56°34'N	cap obs obs	- 15 10	- 15 13	0 0 0	0 0 0
709	F	10.5	6/19/70 6/28/70 11/17/70	158°58'W 56°48'N 159°00'W 56°45'N 159°00'W 56°40'N	cap obs obs	- 4 9	- 4 6	1 1 0	0 0 0
710/709	M	1.5	6/19/70 6/28/70 11/17/70	158°58'W 56°48'N 159°00'W 56°45'N 159°00'W 56°40'N	cap obs obs	- 4 9	- 4 6	0 0 0	0 0 0
711	F	5.5	8/10/68 7.5 6/19/70	158°47'W 56°23'N 158°50'W 56°28'N	cap cap	- 6	- 6	0 2	0 0
712/711	F	1.5	6/19/70	158°50'W 56°28'N	cap	-	-	0	0
713/711	M	1.5	6/19/70	158°50'W 56°28'N	cap	-	-	0	0
714	M	6.5	6/19/70 6/22/70 7/26/70	159°02'W 56°34'N 158°42'W 56°43'N 159°48'W 56°28'N	cap obs cap	- 16 30	- 16 45	0 0 0	0 0 0
715 SS 157443/	M	4.5 10.5	6/20/70 10/5/70	159°00'W 56°37'N 158°59'W 56°34'N	cap kil	- 4	- 4	No. 717 0	0 0
716	F	2.5	6/20/70 6/26/70	159°00'W 56°30'N 159°57'W 56°28'N	cap obs	- 2	- 2	0 0	0 0
717	F	7.5	6/20/70 6/30/70	159°00'W 56°37'N 159°00'W 56°37'N	cap obs	- 0	- 0	No. 715 0	0 0

3/ Skull seal number if bear was killed

Table 3. (cont.). Movement Recorded from Captured, Observed or Killed Alaska Peninsula Tagged Brown Bear

Bear No.	Sex	Cem. Age	Date	Location	1	2	3	4	5
718	M	3.5	6/20/70 6/24/70 7/27/70	158°58'W 56°46'N 159°12'W 56°30'N 158°07'W 56°36'N	cap obs obs	- 21 34	- 21 42	- 0 0	0 742/743 0
719	F	8.5	6/20/70 6/24/70	158°58'W 56°47'N 159°03'W 56°47'N	cap obs	- 3	- 3	0 0	0 0
720	F	2.5	6/20/70	160°04'W 56°15'N	cap	-	-	No. 721	
721	M	4.5	6/20/70	160°04'W 56°15'N	cap	-	-	No. 720	
722	F	12.5	6/20/70 6/23/70 6/24/70 9/18/70	158°56'W 56°47'N 158°53'W 56°47'N 158°53'W 56°47'N 159°30'W 56°23'N	cap obs obs obs	- 2 2 35	- 2 0 36	2 1 0 2	0 0 0 0
723/722	F	1.5	6/20/70 6/23/70 6/24/70 9/18/70	158°56'W 56°47'N 158°53'W 56°47'N 158°53'W 56°47'N 159°30'W 56°23'N	cap obs obs obs	- 2 2 35	- 2 0 36	0 0 0 0	0 0 0 0
724/722	F	1.5	6/20/70 6/23/70 6/24/70 9/18/70	158°56'W 56°47'N 158°53'W 56°47'N 158°53'W 56°47'N 159°30'W 56°23'N	cap obs obs obs	- 2 2 35	- 2 0 36	0 0 0 0	0 0 0 0
725A	F	6.5	6/20/70 7/1/70 9/18/70	158°55'W 56°38'N 158°42'W 56°45'N 158°49'W 56°37'N	cap obs obs	- 11 4	- 11 10	0 0 0	0 0 0
725B	F	Unk	6/21/70 7/1/70 7/2/70	158°44'W 56°45'N 158°43'W 56°46'N 158°17'W 56°42'N	cap obs obs	- 1 18	- 1 17	2 2 2	0 0 0

Table 3. (cont.) Movement Recorded from Captured, Observed or Killed Alaska Peninsula Tagged Brown Bear

Bear No.	Sex	Age	Date	Location	1	2	3	4	5
726/725B	F	Cub	6/21/70	158°44'W 56°45'N	cap	-	-	0	0
			7/1/70	158°43'W 56°46'N	obs	1	1	0	0
			7/2/70	158°17'W 56°42'N	obs	18	17	0	0
727/725B	M	Cub	6/21/70	158°44'W 56°45'N	cap	-	-	0	0
			7/1/70	158°43'W 56°46'N	obs	1	1	0	0
			7/2/70	158°17'W 56°42'N	obs	18	17	0	0
728	F	10.5	6/21/70	159°00'W 56°30'N	cap	-	-	0	0
			7/3/70	158°58'W 56°31'N	obs	2	2	0	0
			7/6/70	158°58'W 56°29'N	obs	3	2	0	0
			9/7/70	158°56'W 56°27'N	obs	4	2	0	0
			10/15/70	158°56'W 56°40'N	obs	12	15	2	0
729/728	F	1.5	6/21/70	159°00'W 56°30'N	cap	-	-	0	0
			7/3/70	158°58'W 56°31'N	obs	2	2	0	0
			7/6/70	158°58'W 56°29'N	obs	3	2	0	0
			9/7/70	158°56'W 56°27'N	obs	4	2	0	0
			10/15/70	158°56'W 56°40'N	obs	12	15	0	0
730/728	F	1.5	6/21/70	159°00'W 56°30'N	cap	-	-	0	0
			7/3/70	158°58'W 56°31'N	obs	2	2	0	0
			7/6/70	158°58'W 56°29'N	obs	3	2	0	0
			9/7/70	158°56'W 56°27'N	obs	4	2	0	0
			10/15/70	158°56'W 56°40'N	obs	12	15	0	0
731	F	12.5	6/22/70	158°53'W 56°37'N	cap	-	-	2	0
			7/25/70	158°41'W 56°24'N	obs	17	17	2	0
			7/28/70	158°41'W 56°24'N	obs	17	0	2	0
			9/14/70	158°52'W 56°37'N	obs	1	16	2	0
			9/18/70	158°49'W 56°37'N	obs	3	2	2	0

Table 3. (cont.). Movement Recorded from Captured, Observed or Killed Alaska Peninsula Tagged Brown Bear

Bear No.	Sex	Cem. Age	Date	Location	1	2	3	4	5
732/731	M	1.5	6/22/70	158°53'W 56°37'N	cap	-	-	-	0
			7/25/70	158°41'W 56°24'N	obs	17	17	0	0
			7/28/70	158°41'W 56°24'N	obs	17	0	0	0
			9/14/70	158°52'W 56°37'N	obs	1	16	0	0
			9/18/70	158°49'W 56°37'N	obs	3	2	0	0
733/731	F	1.5	6/22/70	158°53'W 56°37'N	cap	-	-	-	0
			7/25/70	158°41'W 56°24'N	obs	17	17	0	0
			7/28/70	158°41'W 56°24'N	obs	17	0	0	0
			9/14/70	158°52'W 56°37'N	obs	1	16	0	0
			9/18/70	158°49'W 56°37'N	obs	3	2	0	0
734 32	F	6.5	6/22/70	158°53'W 56°32'N	cap	-	-	-	0
			7/6/70	158°57'W 56°27'N	obs	6	6	1	0
			7/25/70	158°42'W 56°24'N	obs	12	10	0	0
			9/18/70	158°49'W 56°24'N	obs	9	4	1	0
									0
735/734	M	1.5	6/20/70	158°53'W 56°32'N	cap	-	-	-	0
			7/6/70	158°57'W 56°27'N	obs	6	6	0	0
			9/18/70	158°49'W 56°24'N	obs	9	6	0	0
736	F	5.5	6/22/70	159°10'W 56°25'N	cap	-	-	0	0
									0
737 SS 13321 3/	M	2.5	6/23/70	158°58'W 56°47'N	cap	-	-	0	0
			10/13/70	158°35'W 56°43'N	kil*	15	15	0	0
738	F	13.5	6/23/70	158°30'W 56°39'N	cap	-	-	4	0
			9/21/70	158°32'W 56°36'N	obs	4	4	0	0
739/738	F	2.5	6/23/70	158°30'W 56°39'N	cap	-	-	4	0
			9/21/70	158°32'W 56°36'N	obs	4	4	0	0
740/738	F	2.5	6/23/70	158°30'W 56°39'N	cap	-	-	4	0
			9/21/70	158°32'W 56°36'N	obs	4	4	0	0

\* Skull collected  
3/ Skull seal number if bear was killed

Table 3. (cont.). Movement Recorded from Captured, Observed or Killed Alaska Peninsula Tagged Brown Bear

Bear No.	Sex	Age	Date	Location	1	2	3	4	5
741	F	3.5	6/23/70	158°40'W 56°38'N	cap	-	-	-	0
742	F	3.5	6/29/70	159°12'W 56°30'N	cap	-	-	-	0
			6/29/70	159°17'W 56°35'N	obs	7	7	0	0
			7/4/70	159°04'W 56°31'N	obs	5	9	0	0
			9/7/70	158°54'W 56°32'N	obs	12	7	0	0
743	F	3.5	6/24/70	159°12'W 56°38'N	cap	-	-	-	0
744	M	2.5	6/24/70	159°50'W 56°25'N	cap	-	-	-	0
			6/30/70	159°50'W 56°27'N	obs	2	2	No. 775	No. 746
745	F	15.5	6/24/70	160°22'W 56°15'N	cap	-	-	0	No. 745
746	M	3.5	6/24/70	160°22'W 56°15'N	cap	-	-	-	
33	F	5.5	6/24/70	158°58'W 56°47'N	cap	-	1	0	
			9/26/70	158°50'W 56°27'N	obs	24	1	0	
748/747	F	1.5	6/24/70	158°58'W 56°47'N	cap	-	-	-	0
			9/26/70	158°50'W 56°27'N	obs	24	24	0	
749	F	3.5	6/24/70	159°00'W 56°47'N	cap	-	-	0	
			6/30/70	158°52'W 56°47'N	obs	5	5	0	
			7/2/70	158°30'W 56°40'W	obs	21	16	0	
750	F	9.5	6/25/70	160°02'W 56°12'N	cap	-	-	2	0
751/750	M	1.5	6/25/70	160°02'W 56°12'N	cap	-	-	-	0
752	M	3.5	6/25/70	160°02'W 56°12'N	cap	-	-	-	0
753	F	14.5	6/25/70	159°02'W 56°26'N	cap	-	-	1	0
			7/6/70	159°02'W 56°25'N	obs	1	1	2	0
754/753	M	2.5	6/26/70	159°02'W 56°26'N	cap	-	-	-	0
			7/6/70	159°02'W 56°25'N	obs	1	1	1	0

Table 3. (cont.). Movement Recorded from Captured, Observed or Killed Alaska Peninsula Tagged Brown Bear

Bear No.	Sex	Cem. Age	Date	Location	1	2	3	4	5
755/753	F	2.5	6/26/70 7/6/70	159°02'W 56°26'N 159°02'W 56°25'N	cap obs	- 1	- 1	- 0	0 0
756	F	5.5	6/26/70	159°02'W 56°26'N	cap	-	-	0	0
757	F	13.5	6/26/70 9/27/70	159°02'W 56°26'N 159°04'W 56°33'N	cap obs	- 8	- 8	3 3	0 0
758/757	F	1.5	6/26/70 9/27/70	159°02'W 56°26'N 159°04'W 56°33'N	cap obs	- 8	- 8	0 0	0 0
759/757	F	1.5	6/26/70 9/27/70	159°02'W 56°26'N 159°04'W 56°33'N	cap obs	- 8	- 8	0 0	0 0
760/757	F	12.5	6/28/70 9/27/70	159°10'W 56°40'N 159°04'W 56°33'N	cap obs	- 8	- 8	0 0	0 0
761	F	12.5	6/28/70 8/25/70	159°10'W 56°40'N 159°27'W 56°25'N	cap obs <sup>1</sup> /	- 20	- 20	0 0	No. 785
762	M	6.5	6/28/70 7/7/70	158°58'W 56°48'N 158°39'W 56°46'N	cap obs	- 12	- 12	0 0	0 0
763 S.S. 15745 3/	F	3.5	6/27/70 10/5/70	159°45'W 56°33'N 159°32'W 56°23'N	cap kill*	- 14	- 14	0 0	0 0
764A	M	3.5	6/28/70	159°45'W 56°27'N	cap	-	-	0	0
764B	F	5.5	6/28/70 11/18/70	159°45'W 56°27'N 159°43'W 56°29'N	cap obs	- 3	- 3	2 2	0 0
765/764B	M	1.5	6/28/70 11/18/70	159°45'W 56°27'N 159°43'W 56°29'N	cap obs	- 3	- 3	0 0	0 0
766/764B	F	1.5	6/28/70 11/18/70	159°45'W 56°27'N 159°43'W 56°29'N	cap obs	- 3	- 3	0 0	0 0

1/ Observed by Commercial Fish Division  
 3/ Skull Seal Number if Bear was Killed  
 \* Skull Collected

Table 3. (cont.). Movement Recorded from Captured, Observed or Killed Alaska Peninsula Tagged Brown Bear

Bear No.	Sex	Cem. Age	Date	Location	1	2	3	4	5
767	M	2.5	6/29/70 7/26/70	159°17'W 56°35'N 159°15'W 56°39'N	cap obs	- 5	- 5	0	0
768	M	-	6/29/70	159°32'W 56°30'N	cap	-	-	0	0
769	F	6.5	6/30/70 9/18/70	158°58'W 56°48'N 158°50'W 56°25'N	cap obs	- 27	- 27	0	0
770	F	10.5	6/30/70 7/1/70	158°58'W 56°48'N 158°58'W 56°48'N	cap obs	- 0	- 0	2	0
771/770	M	1.5	6/30/70 7/1/70	158°58'W 56°48'N 158°58'W 56°48'N	cap obs	- 0	- 0	0	0
772/770	M	1.5	6/30/70 7/1/70	158°58'W 56°48'N 158°58'W 56°48'N	cap obs	- 0	- 0	0	0
773	F	9.5	6/30/70	159°16'W 56°37'N	cap	-	-	0	0
774	M	2.5	6/30/70	159°42'W 56°27'N	cap	-	-	0	0
775	M	5.5	6/30/70	159°50'W 56°27'N	cap	-	-	0	0
776	F	3.5	7/1/70	158°58'W 56°32'N	cap	-	-	0	0
778	F	3.5	7/1/70 7/29/70	159°58'W 56°27'N 160°12'W 56°22'N	cap obs	- 11	- 11	0	0
779	F	5.5	7/2/70 7/27/70	158°35'W 56°47'N 158°08'W 56°33'N	cap obs	- 23	- 23	0	0
780	M	10+ <sup>4/</sup>	7/2/70 7/14/70	158°35'W 56°47'N 158°30'W 56°54'N	cap obs	- 9	- 9	0	0

<sup>4/</sup> Estimated Age

Table 3. (cont.). Movement Recorded from Captured, Observed or Killed Alaska Peninsula Tagged Brown Bear

Bear No.	Sex	Age	Date	Location	1	2	3	4	5
781	F	3.5	7/2/70	158°35'W 56°47'N	cap	-	-	-	0
782	F	5.5	7/2/70	158°28'W 56°47'N	cap	-	-	0	0
783	M	10 <sup>4/</sup>	7/2/70	158°15'W 56°43'N	cap	-	-	0	0
784	M	13.5	7/3/70	158°55'W 56°23'N	cap	-	-	0	0
785	F	6.5	7/4/70 7/26/70 8/25/70 11/18/70	159°10'W 56°32'N 150°40'W 56°25'N 159°27'W 56°25'N 159°40'W 56°25'N	cap obs obs obs	- 21 13 21	- 21 8 8	2 2 2 2	No. 761
786/785	M	1.5	7/4/70 7/26/70 8/25/70 11/18/70	159°10'W 56°32'N 159°40'W 56°25'N 159°27'W 56°25'N 159°40'W 56°25'N	cap obs obs obs	- 21 13 21	- 21 8 8	0 0 0 0	
788/785	F	1.5	7/4/70 7/26/70 8/25/70 11/18/70	159°10'W 56°32'N 159°40'W 56°25'N 159°27'W 56°25'N 159°40'W 56°25'N	cap obs obs obs	- 21 13 21	- 21 8 8	0 0 0 0	
789	M	2.5	7/4/70	160°12'W 56°22'N	cap	-	-	0	0
790	F	4.5	7/6/70	159°00'W 56°30'N	cap	-	-	0	0
791	M	7.5	7/6/70	158°46'W 56°25'N	cap	-	-	0	0
792	M	2.5	7/6/70	158°50'W 56°25'N	cap	-	-	0	0
794	F	12.5	7/6/70 7/28/70	159°02'W 56°22'N 159°05'W 56°20'N	cap obs	- 3	- 3	3 3	0 0

<sup>4/</sup> Estimated Age

Table 3. (cont.). Movement Recorded from Captured, Observed or Killed Alaska Peninsula Tagged Brown Bear

Bear No.	Sex	Cem. Age	Date	Location	1	2	3	4	5
795/794	M	2.5	7/6/70	159°02'W 56°22'N 159°05'W 56°20'N	cap obs	- 3	- 3	- 0	0
796/794	M	2.5	7/6/70	159°02'W 56°22'N 159°05'W 56°20'N	cap obs	- 3	- 3	- 0	0
798	F	3.5	7/7/70	158°50'W 56°27'N	cap	-	-	0	0
799	M	3.5	7/7/70	158°50'W 56°27'N	cap	-	-	0	0
801	M	4.5 <sup>4/</sup>	8/9/68 9/6/68 5/2/70	158°46'W 56°26'N 158°46'W 56°26'N 158°34'W 56°43'N	cap obs kill*	- 0 21	- 0 21	0	0
802	F	7.5	8/10/68	158°42'W 56°27'N	cap	-	-	3	0
37 805	F	2.5	8/10/68 9/24/68	158°56'W 56°20'N 158°52'W 56°18'N	cap kill*	- 3	- 3	0	0
S.S. 13881 <sup>3/</sup>									
806	F	4.5	8/10/68 9/15/68	158°48'W 56°27'N 158°52'W 56°27'N	cap kill	- 3	- 3	0	0
S.S. 14660 <sup>3/</sup>									
808	M	2.5	8/11/68	158°50'W 56°22'N	cap	-	-	0	0
809	F	10.5	8/11/68	158°42'W 56°27'N	cap	-	-	2	0
810	M	3.5	8/12/68 8/17/68	158°47'W 56°26'N 158°42'W 56°24'N	cap obs <sup>1/</sup>	- 4	- 4	1	0
811	F	14.5	8/12/68	158°49'W 56°24'N	cap	-	-	3	0
812	M	3.5	8/13/68	Boulevard Creek	cap	-	-	2	0

<sup>1/</sup> Observed by Commercial Fish Division Personnel  
<sup>3/</sup> Skull Seal No. if Bear was Killed  
<sup>4/</sup> Estimated Age

Table 3. (cont.). Movement Recorded from Captured, Observed or Killed Alaska Peninsula Tagged Brown Bear

Bear No.	Sex	Cem. Age	Date	Location	1	2	3	4	5
900	F	10.5	7/7/70	158°50'W 56°27'N	cap	-	-	2	0
			7/28/70	158°47'W 56°22'N	obs	6	6	2	0
			9/18/70	158°50'W 56°25'N	obs	2	4	2	0
901/900	F	2.5	7/7/70	158°50'W 56°27'N	cap	-	-	0	0
			7/28/70	158°47'W 56°22'N	obs	6	6	0	0
			9/18/70	158°50'W 56°25'N	obs	2	4	0	0
902/900	M	3.5	7/7/70	158°50'W 56°27'N	cap	-	-	0	0
			7/28/70	158°47'W 56°22'N	obs	6	6	0	0
			9/18/70	158°50'W 56°25'N	obs	2	4	0	0

Table 4. Two Replicate Aerial Surveys of Brown Bear Conducted at Black-Chignik  
Lake, July, 1970

Observer Date Type Aircraft	Survey No. 1		Survey No. 2	
	Miller July 27 PA-18 PM <sup>1/</sup>		Glenn, Miller July 28 Helicopter AM <sup>2/</sup>	
	No.	%	No.	%
Females w/young	30	28.3	21	23.3
Cubs	16	15.1	9	10.0
Young 1 & 2 yrs. old	43	40.6	37	41.1
Young combined	59	55.7	46	51.1
Single bears	17	16.0	23	25.6
No. of bear groups	47		44	
Total bears	106		90	
Total collared bears	5		5	
Total tagged bear	14		15	
Hours flown	2.6		2.9	
Bears per hour	40.8		31.0	

<sup>1/</sup> Morning counts conducted between 6:00 and 9:00 AM

<sup>2/</sup> Evening counts conducted between 6:00 and 9:00 PM

Table 5. Black-Chignik Lakes Brown Bear Composition Data as Derived from Aerial Survey Trend Counts.

Year	PERCENT OF POPULATION					Total Sample Size	<sup>1/</sup> Number or Replicate Counts
	F w/young	Cubs	Young Years Old	Young 1 & 2 Combined	Single Bears		
1962	26	30	22	52	23	1718	27
1965	28	32	25	57	15	236	2
1966	22	34	13	47	31	108	1
1967	27	45	10	55	17	157	2
1968	23	43	14	57	19	129	3
1969	22	30	22	51	26	663	6
1970	28	15	40	56	16	106	1

1/ Figures based upon cumulative total of all replicate counts.

Table 6. Unit 9 Black-Chignik Lake Brown Bear Aerial Survey Average Litter Size.

YEAR	CUB (Less than 1 yr.)	YOUNG (1 and 2 yr.)
1965	2.3	2.5
1966	2.2	2.0
1967	2.1	1.7
1968	2.5	2.3
1969	2.4	2.2
1970	2.2	1.8

Table 7. Composition of Brown Bear Captured on the Black-Chignik Lake Study Area 1970.

	<u>No.</u>	<u>%</u>
Females w/young	19	18.3
Cubs	2	1.9
* Young 1 & 2 yrs. old	32	34.6
Young combined	34	36.5
Cubs and yearlings	34	36.5
Single bear	47	45.2
Total Bears	104	

\* Includes four yearlings that escaped in the capture attempt.

Table 8. Reproductive Status, Age and Weights of the Female Brown Bears Captured on the Black-Chignik Lakes Study Area.

Bear No.	Captured or Observed	Cementum Age	Number of Cubs	Number of Young 1.5 yrs.	Number of Young 2.5 yrs.	Vulva Condition	Weight	Comments
No. 728 6/21/70	Captured	10.5	None	2	None	Normal	Est'd-550	
No. 731 6/22/70	Captured	12.5	None	2	None	—	Est'd-425-450	No milk obtained
No. 734 6/22/70	Captured	6.5	None	1	None	Normal	Est'd-450	
No. 736 6/22/70	Captured	5.5	None	None	None	Turgid	Est'd-325	
No. 738 6/23/70	Captured	13.5	None	None	2 & 2 unk	—	Est'd-500	Mammae large
No. 741 6/23/70	Captured	3.5	None	None	None	Normal	Est'd-325	
No. 742 6/24/70	Captured	3.5	None	None	None	Turgid	Est'd-350	
No. 743 6/24/70	Captured	3.5	None	None	None	Turgid	Est'd-450	No indication of ever having cubs
No. 745 6/24/70	Captured	15.5	None	None	None	Turgid	Est'd-500	Mammae swollen No milk obtained
No. 747 6/24/70	Captured	5.5	None	1	None	Normal	Est'd-450	Mammae large
No. 749 6/24/70	Captured	3.5	None	None	None	Normal	—	

Table 8. (cont.) Reproductive Status, Age and Weights of the Female Brown Bears Captured on the Black-Chignik Lakes Study Area.

Bear No.	Captured or Observed	Cementum Age	Number of Cubs	Number of Young 1.5 yrs.	Number of Young 2.5 yrs.	Vulva Condition	Weight	Comments
No. 750 6/25/70	Captured	9.5	None	1 & 1 unk	None	Normal	Est'd-350	No milk obtained
No. 753 6/26/70	Captured	14.5	None	None	2	Normal	Est'd-500	
No. 756 6/26/70	Captured	5.5	None	None	None	Turgid	Measured-525	
No. 757 6/26/70	Captured	13.5	None	3	None	Normal	Measured-380	Mammae large
No. 761 6/28/70	Captured	12.5	None	None	None	Turgid	Measured-510	
No. 763 6/27/70	Captured	3.5	None	None	None	Turgid	Measured-410	
No. 764(B) 6/28/70	Captured	5.5	None	2	None	-	Measured-425	
No. 769 6/30/70	Captured	6.5	None	None	None	Turgid	Measured-485	Milk obtained from mammae
No. 770 6/30/70	Captured	10.5	None	2	None	-	Measured-510	No milk obtained
No. 773 6/30/70	Captured	9.5	None	None	None	Turgid	Est'd-400	Milk obtained from mammae
No. 776 7/1/70	Captured	3.5	None	None	None	Turgid	Est'd-275	

Table 8. (cont.) Reproductive Status, Age and Weights of the Female Brown Bears Captured on the Black-Chignik Lakes Study Area.

Bear	Captured or Observed	Cementum Age	Number of Cubs	Number of Young 1.5 yrs.	Number of Young 2.5 yrs.	Vulva Condition	Weight	Comments
No. 778 7/1/70	Captured	3.5	None	None	None	Normal	Est'd-275	
No. 779 7/2/70	Captured	5.5	None	None	None	Turgid	Est'd-425	
No. 781 7/2/70	Captured	3.5	None	None	None	Turgid	Est'd-325	No indication of ever having cubs
No. 782 7/2/70	Captured	5.5	None	None	None	Turgid	Est'd-400	
No. 785 7/4/70	Captured	6.5	None	2	None	Normal	Measured-410	No milk obtained
No. 790 F 7/6/70	Captured	4.5	None	None	None	Turgid	Measured-360	
No. 794 7/6/70	Captured	12.5	None	None	2 & 1 unk.	—	Measured-430	A few drops of milk obtained
No. 798 7/7/70	Captured	3.5	None	None	None	Normal	Measured-255	No indication of ever having cubs
No. 802 8/10/68	Captured	7.5	3	None	None	Normal	Est'd-375	
No. 809 8/11/68	Captured	13.5	2	None	None	Normal	Measured-570	
No. 811 8/12/68	Captured	15.5	3	None	None	Normal	Est'd-700	
No. 900 7/7/70	Captured	10.5	None	None	2	Normal	Measured-510	No milk obtained

Table 8. (cont.) Reproductive Status, Age and Weights of the Female Brown Bears Captured on the Black-Chignik Lakes Study Area.

Bear	Captured or Observed	Cementum Age	Number of Cubs	Number of Young 1.5 yrs.	Young 2.5 yrs.	Condition	Vulva Weight	Comments
No. 701 6/16/70	Captured	3.5	None	None	None	Turgid	Measured	-375
No. 703 6/18/70	Captured	7.5	None	2	None	-	Measured	-460
No. 706 6/18/70	Captured	3.5	None	None	None	Turgid	Est'd	-325
No. 707 6/19/70	Captured	5.5	None	1	None	Normal	Est'd	-375
No. 709 6/19/70	Captured	10.5	None	1	None	Normal	Est'd	-500
45 No. 711 8/10/68 6/19/70	Captured	5.5	None	None	None	Normal	Est'd	-640
	Recaptured	7.5	None	2	None	Normal	Est'd	-450
No. 717 6/20/70	Captured	7.5	None	None	None	Turgid	Est'd	-450
No. 719 6/20/70	Captured	8.5	None	None	None	Turgid	Est'd	-500
No. 722 6/20/70	Captured	12.5	None	2	None	Normal	Est'd	-400
No. 725(A) 6/20/70	Captured	5.5	None	None	None	Turgid	Est'd	-400
No. 725(B) 6/21/70	Captured	-	2	None	None	Normal	Est'd	-350
						Milk obtained		

Table 9. Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area 1968 and 1970

Bear	Sex	Cem. Age	Weight		BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)					
			Meas.	Est.	(1)	(2)	(3)	(4)	(5)	(6)
No. 701 6/16/70	F	3.5	375	300	194.3	116.8	34.3	66.0	120.6	116.8
										20.6
No. 702 6/17/70	M	2.5	290	-	161.9	99.0	31.1	55.9	97.1	100.3
										17.5 <sup>1/</sup>
10/1/70 Killed by Hunter										31.9 <sup>1/</sup>
No. 703 6/18/70	F	7.5	460	-	209.6	113.7	35.6	69.9	127.0	111.7
										21.9
No. 704 6/18/70	M	1.5	140	100	136.5	76.2	25.4	41.9	80.3	80.0
										14.5
No. 705 6/18/70	F	1.5	85	-	117.8	61.0	21.6	40.9	73.6	64.8
										12.7
No. 706 6/18/70	F	3.5	425	325	203.8	109.8	35.9	68.6	138.4	106.7
										21.1
No. 707 6/19/70	F	5.5	-	375	189.2	113.0	33.7	69.8	141.0	104.1
										21.1
No. 708 6/19/70	F	1.5	140	100	147.3	86.4	28.6	49.5	96.5	73.6
										15.9
										27.5

1/ Skull measurement taken after the hide was removed.

Table 9. (cont.) Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)								
		Cem.	Age	Weight Meas.	Est.	(1)	(2)	(3)
No. 709 6/19/70		F	10.5	-	500	213.4	113.3	38.1
No. 710 6/19/70		M	1.5	200	250	174.6	97.8	34.3
No. 711 <sup>2/</sup> 8/19/68		F	5.5	-	640	213.3	119.4	33.7
			7.5	-	450	212.7	121.9	33.0
No. 712 6/19/70		F	1.5	-	200	151.1	90.2	29.2
No. 713 6/19/70		M	1.5	-	200	143.5	91.4	29.2
No. 714 6/19/70		M	6.5	-	550	224.8	136.5	39.4
No. 715 6/20/70 10/5/70		M	5.5	400	300	186.7	107.3	34.3
				Killed by Hunter				
						68.6	143.5	108.6
							20.3	19.1 <sup>1/</sup>
								34.0 36.2 <sup>1/</sup>

1/ Skull measurement taken after the hide was removed.

2/ Original tattoo number 804. Retattooed in 1970, No. 711.

Table 9. (cont.). Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)								
Bear	Sex	Cem. Age	Weight Meas. Est.	(1)	(2)	(3)	(4)	(5)
No. 716 6/20/70	F	2.5	-	250	175.3	101.6	28.0	57.8
No. 717 6/20/70	F	7.5	-	450	203.2	111.1	31.1	76.2
No. 718 6/20/70	M	3.5	-	300	192.4	108.0	34.3	67.3
No. 719 6/20/70	F	8.5	-	500	209.6	119.4	35.5	86.3
No. 720 6/20/70	F	2.5	-	300	191.8	104.8	33.7	59.1
No. 721 6/20/70	M	4.5	-	350	191.8	118.1	38.8	71.1
No. 722 6/20/70	F	12.5	-	400	207.0	114.3	36.2	72.4
No. 723 6/20/70	F	1.5	150	150	149.9	89.5	26.7	45.7
No. 724 6/20/70	F	1.5	192	150	160.0	92.1	30.5	57.8

Table 9. (cont.). Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

Bear	Sex	Cen. Age	Weight Meas. Est.	BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)							
				(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
No. 725A 6/20/70	F	5.5	-	400	213.4	114.3	34.9	71.1	121.9	116.8	20.5
No. 725B 6/21/70	F	-	-	350	201.9	109.2	34.3	69.2	137.2	116.8	20.6
No. 726 6/21/70	F	Cub	45	-	-	-	-	-	-	-	35.6
No. 727 6/21/70	M	Cub	49	-	-	-	-	-	-	-	-
No. 728 6/21/70	F	10.5	-	550	203.2	121.9	34.9	71.8	125.7	113.0	23.8
No. 729 6/21/70	F	1.5	120	150	148.6	82.6	26.7	41.3	73.7	77.5	13.5
No. 730 6/21/70	F	1.5	147	150	156.2	85.7	28.6	45.7	86.4	75.6	16.2
No. 731 6/22/70	F	12.5	-	440	197.5	111.7	47.3	66.0	146.0	116.8	21.1
No. 732 6/22/70	M	1.5	130	-	143.2	85.7	29.2	41.9	82.6	77.5	15.6

Table 9. (cont.). Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)								
Bear	Sex	Cem. Age	Weight Meas.	Est.	(1)	(2)	(3)	(4)
No. 733 6/22/70	F	1.5	109	-	139.7	85.1	27.9	40.6
No. 734 6/22/70	F	6.5	-	450	209.5	115.6	36.2	69.8
No. 735 6/22/70	M	1.5	189	-	161.3	97.1	31.8	47.0
No. 736 6/22/70	F	5.5	-	325	196.8	115.5	36.8	68.6
No. 737 6/23/70 10/13/70	M	2.5	-	275	182.9	99.1	33.7	55.9
No. 738 6/23/70	F	13.5	-	500	193.4 <sup>3/</sup>	114.9	35.9	76.2
No. 739 6/23/70	F	2.5	-	200	157.5	94.0	30.5	54.0
No. 740 6/23/70	F	2.5	-	225	180.3	97.8	33.0	55.9

1/ Skull measurement taken after the hide was removed.

3/ Measured to base of tail.

Table 9. (cont.). Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)								
Bear	Sex	Cem. Age	Weight Meas. Est.	(1)	(2)	(3)	(4)	(5)
No. 741 6/23/70	F	3.5	-	325	166.4 <sup>3/</sup>	105.4	32.4	66.4
No. 742 6/24/70	F	3.5	-	350	178.4	107.9	35.6	69.8
No. 743 6/24/70	F	3.5	-	450	198.1	114.9	37.5	68.6
No. 744 6/24/70	M	2.5	-	275	163.2	88.9	26.7	50.8
No. 745 6/24/70	F	15.5	-	500	208.3	102.2	34.3	69.2
No. 746 6/24/70	M	3.5	-	350	200.7	120.0	39.7	76.9
No. 747 6/24/70	F	5.5	-	450	217.8	113.0	34.3	64.8 <sup>4/</sup>
								123.2
								103.5
								20.3
								38.4

<sup>3/</sup> Measured to base of tail.

<sup>4/</sup> Measurement taken after hair was clipped.

Table 9. (cont.). Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

Bear	Sex	Cem. Age	<u>Weight</u> <u>Meas.</u>	<u>Est.</u>	BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)							
					(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
No. 748 6/24/70	F	1.5	135	-	146.1	80.7	26.7	47.3	83.8	74.9	15.1	26.4
No. 749 6/24/70	F	3.5	-	-	195.6	94.0	33.7	69.2	-	114.3	21.1	35.9
No. 750 6/25/70	F	9.5	-	350	208.9	110.5	29.2	69.2	118.7	102.9	21.9	34.9
No. 751 6/25/70	M	1.5	-	240	161.3	84.4	31.8	-	100.3	81.9	16.5	28.6
No. 752 6/25/70	M	3.5	-	300	193.1	116.2	35.6	61.0	121.9	119.4	19.4	34.8
No. 753 6/26/70	F	14.5	-	500	205.8	121.9	35.6	72.4	154.9	119.4	23.7	37.8
No. 754 6/26/70	M	2.5	-	150	161.6	86.4	27.9	49.5	91.4	81.3	-	-
No. 755 6/26/70	F	2.5	120	-	137.2	78.7	26.0	44.4	71.1	78.7	14.6	26.7
No. 756 6/26/70	F	5.5	525	-	208.3	114.3	34.9	64.8	119.4	120.6	20.5	36.7

Table 9. (cont.) Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

Bear	Sex	Cem. Age	<u>Weight</u> Meas. Est.	BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)						
				(1)	(2)	(3)	(4)	(5)	(6)	(7)
No. 757 6/26/70	F	13.5	380	-	185.4	110.5	34.3	68.6	121.9	114.3
No. 758 6/26/70	F	1.5	-	80	116.8	71.1	22.9	35.6	74.9	59.7
No. 759 6/26/70	F	1.5	86	-	128.3	78.8	24.8	39.4	72.4	73.7
No. 760 6/26/70	F	1.5	74	-	124.5	71.1	21.6	39.4	63.5	71.1
No. 761 6/28/70	F	12.5	510	650	210.8	115.2	35.6	73.7	132.1	121.9
No. 762 6/28/70	M	6.5	620	650	238.8	120.0	39.4	73.7 <sup>4/</sup>	137.2	148.0
No. 763 6/27/70 10/5/70	F Killed by Hunter	3.5 410	350	201.9 198.1	114.3 106.6	35.6	68.6	121.9	116.8 18.8 <sup>1/</sup>	20.2 35.8 <sup>1/</sup>
No. 764A 6/28/70	M	3.5	340	325	196.8	113.0	34.3	69.8	107.9	111.7
										20.5
										35.4

<sup>1/</sup> Skull measurement taken after the hide was removed.

<sup>4/</sup> Measurement taken after hair was clipped.

Table 9. (cont.). Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)								
Bear	Sex	Cem. Age	Weight Meas. Est.	(1)	(2)	(3)	(4)	(5)
No. 764B 6/28/70	F	5.5	425	400	201.9	118.1	34.9	63.5 <sup>4/</sup>
No. 765 6/28/70	M	1.5	185	-	128.2	97.2	32.4	50.8
No. 766 6/28/70	F	1.5	158	-	144.8	89.5	30.5	48.3
No. 767 6/29/70	M	2.5	340	325	198.1	109.2	38.1	63.5
No. 768 6/29/70	M	-	270	-	189.9	109.9	36.2	61.6
No. 769 6/30/70	F	6.5	485 <sup>5/</sup>	350	206.4	110.5	36.5	72.4
No. 770 6/30/70	F	10.5	510	500	226.1	120.6	38.1	76.2
No. 771 6/30/70	M	1.5	172	180	139.7	94.0	33.0	53.3

<sup>4/</sup> Measurement taken after hair was clipped.

<sup>5/</sup> Bear soaked with water.

Table 9. (cont.). Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

Bear	Sex	Cem. Age	Weight Meas.	BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)								
				(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
No. 772 6/30/70	M	1.5	174	175	138.4	92.7	31.7	50.8	106.7	86.4	16.1	29.7
No. 773 6/30/70	F	9.5	-	400	218.4	115.6	34.9	74.9	129.6	119.2	23.2	37.5
No. 774 6/30/70	M	2.5	-	350	188.6	117.5	38.1	71.1 <sup>4/</sup>	121.9	116.8	22.4	37.8
No. 775 6/30/70	M	5.5	-	650	223.5	125.7	39.1	73.7	132.1	127.0	21.9	40.5
No. 776 7/1/70	F	3.5	-	275	173.3	102.9	31.1	56.5	-	90.8	18.7	34.3
No. 778 7/1/70	F	3.5	-	275	182.9	108.6	34.9	66.0	106.7	99.1	18.6	33.0
No. 779 7/2/70	F	5.5	-	425	186.7	110.5	36.8	73.6	120.0	120.6	24.4	35.6
No. 780 7/2/70	M	10 <sup>4/</sup> 6/	-	800	228.6	117.5	41.3	83.8	145.0	134.6	24.8	41.9

4/ Measurement taken after hair was clipped.

6/ Estimated Age.

Table 9. (cont.). Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)								
Bear	Sex	Cem. Age	Weight Meas.	Est.	(1)	(2)	(3)	(4)
No. 781 7/2/70	F	3.5	-	325	188.0	99.7	31.7	62.2
No. 782 7/2/70	F	5.5	-	400	191.8	115.6	35.6	72.4
No. 783 7/2/70	M	10 <sup>6/</sup>	-	900	232.4	142.2	43.2	81.3
No. 784 7/3/70	M	13.5	800-860	950	264.2	152.4	44.4	90.2
No. 785 7/4/70	F	6.5	410	375	205.7	121.9	34.9	70.5
No. 786 7/4/70	M	1.5	85	100	152.4	88.9	29.2	49.5
No. 788 7/4/70	F	1.5	192	150	130.8	87.6	28.0	53.3
No. 789 7/4/70	M	2.5	-	275	157.5	92.7	31.7	55.9
No. 790 7/6/70	F	4.5	360	350	186.7	116.8	35.6	68.6

6/  
Estimated Age.

Table 9. (cont.) Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)							
Bear	Sex	Cem. Age	Weight Meas.	Est.	(1)	(2)	(3)
No. 791 7/6/70	M	7.5	590	500	217.2	135.9	40.6
No. 792 7/6/70	M	2.5	220	325	190.5	104.1	34.3
No. 794 7/6/70	F	12.5	430	400	-	-	-
No. 795 7/6/70	M	2.5	280	275	181.6	102.9	35.6
No. 796 7/6/70	M	2.5	300	-	195.6	111.8	34.3
No. 798 7/7/70	F	3.5	255	250	162.5	104.1	30.5
No. 799 7/7/70	M	3.5	260	265	161.3	99.1	33.0
No. 801 8/19/68 5/2/70	M	4.55/ Killed by Hunter	-	450	180.3	113.0	39.3
No. 802 8/10/68	F	7.5	-	375	175.2	111.8	35.6

4/ Measurement taken after hair was clipped.

5/ Estimated Age

Table 9. (cont.). Weights and Measurements Taken From Brown Bear Captured on the Black-Chignik Lake Study Area  
1968 and 1970.

BODY MEASUREMENTS TAKEN (MEASUREMENTS GIVEN IN CENTIMETERS)								
Bear	Sex	Cem. Age	Weight Meas.	Weight Est.	(1)	(2)	(3)	(4)
No. 805 8/10/68	F	2.5	-	275	154.9	88.8	26.6	55.8
9/24/68	Killed by Hunter							
No. 806 8/10/68	F	4.5	-	200	177.8	101.6	34.2	63.4
9/15/68	Killed by Hunter							
No. 808 8/11/68	M	2.5	-	175	160.0	85.1	31.2	50.8
No. 809 8/11/68	F	13.5	-	570	213.3	129.5	38.2	73.6
No. 810 8/12/68	M	2.5	-	350	162.6	106.7	36.8	63.5
No. 811 8/12/68	F	15.4	-	700	157.4	127.0	40.0	91.4
No. 812 8/13/70	M	2.5	-	360	172.1	106.7	34.3	63.4
No. 900 7/7/70	F	10.5	510	500	212.7	105.4	35.6	74.9
No. 901 7/7/70	F	2.5	220	250	175.9	99.7	34.0	54.6
No. 902 7/7/70	M	3.5	220	260	172.7	107.3	36.8	57.1

Girth  
Body Length  
Width of Skull  
Length of Skull

(5)

(6)

(7)

(8)

(5)

(6)

(7)

(8)

(5)

(6)

(7)

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(6)

(7)

(8)

Table 10. Composition of Brown Bear Observed at McNeil River. July, 1969-70

	<u>1969</u>		<u>1970</u>	
	No.	%	No.	%
Females w/young	15	21	10	15
Cubs	3	4	3	5
Young 1 & 2 yrs. old	30	42	20	31
Young combined	33	46	23	35
Single Bears	24	33	32	49
Total	72		65	

Table 11. Marking History of Brown Bear Captured or Observed More Than One Year at McNeil River.

Location and Status Code of Ear Tags and Collars				Tag Color and Code			
Bear	Sex	Captured or Observed	Monel Ear Tag	Tuff-Tex or Rototag Number	Colored Ear Marker	Collar	Tattoo Condition
No. 124	F	Captured	1818	1819	----	----	----
1963		Recaptured	Miss	Pres	9	F-Red, B-Green	Olive drab
1967		Observed	----	Unk	Pres	----	Present
1968		Observed	----	Unk	Pres	----	Present
1969		Recaptured	----	Miss	----	Present	Removed
1970				2	2	Rt-Y, L-R	No. 81R
No. 19	F	Captured	4236	----	8	F-Red, B-Green	----
1967		Observed	Pres	----	Pres	Present	Red
1968		Observed	Pres	----	Pres	Present	Present
1969		Recaptured	Pres	----	Miss	Present	Removed
1970				19	L-R	No. 27-Y-1/ Not tattooed	No. 19
No. 22	F	Captured	4214	----	32	F&B-Green	OD w/blue
1967		Observed	Unk	----	Pres	Present	Present
1968		Observed	Unk	----	Pres	Present	Unk
1969		Recaptured	Miss	----	Rt-Y, L-G	----	Unreadable
1970				22	Pres		Readble
No. 126	F	Captured	4211	----	3	F&B Green	----
1967		Captured	Miss	----	15	Removed	No. 1 String
1970				15	Rt-Y, L-R	Missing	Unreadable
							R & W No. 126

1/ Plastic two inch belt.

All ear tags attached in 1970 are of the King-Tuff type.

Table 11. (cont.) Marking History of Brown Bear Captured or Observed More Than One Year at McNeil River.

Bear	Sex	Captured or Observed	Moneg Ear Tag Right	Moneg Ear Tag Left	Tuff-Tex or Rototag Number Right	Tuff-Tex or Rototag Number Left	Ear Tag Color	Colored Ear Marker	Collar	Tattoo Condition
No. 03	F	Captured	1806	1807	----	----	Rope(Y)Rt	----	----	----
1963		Recaptured	Pres	Pres	----	----	Rope Missing	----	----	No. 03
1965			1855	1855	----	----	Rope (P)Rt	----	----	
1967		Recaptured	Pres	Pres	----	----	Present	Tan	Present	Readable
1968		Recaptured	Pres	Pres	----	----	Present	Present	Present	Readable
1969		Observed	Pres	Pres	----	----	Present	Present	Present	Unk
1970		Recaptured	Miss	Miss	21	21	Rt-Y,L-R	Miss	Removed	Readable
							No. 91-HH	No. 91-HH	No. 91-HH	
							O(R)-R(L)	O(R)-R(L)	O(R)-R(L)	
No. 13	F	Captured	1808	1809	----	----	Rope(Blk-W)Rt	----	----	----
1963		Recaptured	Pres	Miss	----	----	Rope missing	----	----	No. 13
1966			1884	1883	----	----	Rope(Y)Rt	----	----	
1967		Observed	Unk	Unk	----	----	Present	----	----	
61		Recaptured	1808	Miss	----	----	Missing	Green	Green	Unk
1968		Observed	Unk	----	513/	----	----	Miss	Miss	Readable
1969		Recaptured	Pres <sup>2/</sup>	----	513/ Pres	----	----	No. 98-St	No. 98-St	Unk
1970					13	L - Y	----	0 and R	0 and R	Readable
No. 17	F	Captured	4227	----	----	4	Red, Green	Flag(G)Rt	----	----
1967		Recaptured	Miss	Miss	----	Pres	Present	Missing	----	No. 17
1968			----	----	62	Pres	F&B-Yellow	Flag(O)Rt	----	Unreadable Retattoed
No. 14	F	Captured	1824	1822	----	----	Rope(O)L	----	----	----
1963		Recaptured	Pres	Pres	----	----	Missing	----	----	No. 14
1966			1885	Unk	----	----	Flag(C)L	----	----	Unk
1968		Recaptured	Miss	Miss	----	----	Missing	----	----	Readable
61			----	----			F&B-Yellow	Flag(W)Rt	----	Readable
1970		Recaptured	Miss	----	23	Pres	Rt-R,L-Y	Missing	No. 9-St	Readable
								Blu & R	Blu & R	

2/ Tag Number 1808 present only      3/ Observer Identified Tag Number

Table 11. (cont.) Marking History of Brown Bear Captured or Observed More Than One Year at McNeil River.

Bear	Sex	Captured or Observed	Monel Tag Right	Ear Tag Left	Tuff-Tag or Rototag Number Right	Left	Ear Tag Color	Colored Ear Marker	Collar	Tattoo Condition
No. 05 1965	F	Captured Observed	1861 Unk	1859 Pres	— —	— —	— —	Rope (W) Rt Present	— —	No. 05 Unk Readable
1966 1967		Mortality	Miss	Pres	— —	— —	— —	Missing	— —	
No. 57 1968	F	Captured Observed	57 Pres	— —	— —	57/ 57/	F&B-Yellow Pres	Flag (O) Rt Present	— —	No. 57 Unk
1969 1970		Recaptured	Pres	— —	10 —	— Rt-Y, L-Y	F&B-Yellow Pres	Missing	No. 4 String Readable	
No. 23 1967	M	Captured Observed	4237 Unk	— —	— —	10 Pres	F&B-Green Present	— —	Blue Present	No. 23 Unk
1968 1970		Recaptured	Pres	— —	— —	— 23	Miss L-Y	— —	Miss No. 61 St P & R	Unreadable Retattooed
No. 4231 1967	M	Captured Observed	4231 Unk	— —	— —	1 Pres	F-Green, B-Red Present	Flag (R) Rt Present	— —	— —
1968 1969		Observed	Unk	— —	— —	— Pres	Present	Missing	— —	— —
No. 4226 1967	M	Captured Observed	— —	4226 Unk.	3 Pres.	— —	Red, Green Unk.	Flag (G) L Present	— —	— —
1968										
No. 21 1967	M	Captured Observed	— —	4212 Unk	34 Pres	— —	F&B-Green Present	Flag (Blu) L Present	— —	No. 21 Unk
1968 1970		Recaptured	— —	Miss	Broken 20	— 20	Removed Rt-R, L-Y	Miss —	No. 2-String Readable	

Table 12. Growth History of Brown Bear Captured More Than One Year at McNeil River.

Table 12. Growth History of Brown Bear Captured More Than One Year at McNeil River.

Bear No.	Sex	Cem.	Age	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	Weight Meas. Est.
No. 126 1967 1970	F	2.5 5.5	173.9 101.6	95.8 30.5	31.7 72.4	61.0 —	109.2 17.8	23.5 12.7	13.0 17.1	16.5 15.8	14.6 10.2	10.2 11.4	10.2 11.4	250 400	
No. 19 1967 1970	F	4.5 8.5	184.2 193.1	119.3 109.2	35.2 33.0	71.1 76.3	120.6 130.8	27.9 21.6	15.9 15.9	20.3 15.8	16.5 12.0	16.5 12.0	16.5 8.8	350 350	
No. 21 1967 1970	M	3.5 5.5	180.3 190.5	104.2 109.2	34.8 36.8	61.0 74.9	110.4 134.6	25.7 22.2	14.8 17.2	16.5 17.2	14.9 12.7	14.9 12.7	14.9 7.6	275 400	
No. 23 1967 1970	M	13.5 16.5	215.8 226.2	124.4 124.4	35.6 35.6	91.4 90.1	137.2 137.2	30.5 21.6	20.3 16.5	18.7 19.0	20.3 19.0	20.3 12.7	20.3 15.2	650 750	
No. 57 1968 1970	F	3.5 5.5	187.9 208.2	104.2 105.4	35.6 30.4	67.8 71.1	109.2 124.4	25.4 17.8	15.2 15.9	17.1 15.9	15.2 15.2	15.2 12.7	15.2 11.4	300 400	
No. 22 1967 1970	F	17.5 20.5	210.7 218.3	121.2 127.0	36.2 35.5	78.6 81.2	142.2 137.2	28.5 20.2	17.4 16.5	18.4 20.3	18.1 13.9	18.1 13.9	18.1 11.4	300 600	

Table 13. Reproductive Status, Age and Weights of Female Brown Bears Captured or Observed More Than One Year at McNeill River.

Bear	Captured or Observed	Est'd Age	Cementum Age	Number of Cubs	Number of Yearlings	Vulva Condition	Weight	Alizarin Red S Injected
No. 124								
1963	Captured	3	—	None	None	Turgid	Measured-325	---
1967	Recaptured	—	7.5	None	None	Turgid	Est'd-350	Yes
1968	Observed	—	—	Two	—	—	—	---
1969	Observed	—	—	None	Two	—	—	---
1970	Recaptured	8	10.5	None	None	Normal	Est'd 375	---
No. 19								
1967	Captured	6-8	4.5	None	None	Turgid	Est'd-400	Yes
1968	Observed	—	—	Three	None	—	—	---
1969	Observed	—	—	None	One	—	—	---
1970	Recaptured	8	8.5	None	None	Normal	Est'd-350	---
No. 22								
65	Captured	7	17.5	None	None	Turgid	Est'd-500	---
1968	Observed	—	—	None	None	—	—	---
1969	Observed	—	—	None	None	—	—	---
1970	Recaptured	12	20.5	None	None	Normal	Est'd-600	---
No. 03								
1963	Captured	3	—	None	None	Turgid	Measured-280	---
1965	Recaptured	5	—	Two	None	—	—	---
1967	Recaptured	7	7.5	None	None	Turgid	Est'd-400	Yes
1968	Recaptured	—	9	Three <sup>1/</sup>	None	—	—	---
1969	Observed	—	—	None	Two	—	—	---
1970	Recaptured	10	10.5	None	None	Normal	Est'd-350	---
No. 126								
1967	Captured	3	2.5	None	None	Turgid	Measured-250	Yes
1970	Captured	5	5.5	None	None	Normal	Est'd-400	---

1/ Loss of one cub observed.

Table 13. (Cont.) Reproductive Status, Age and Weights of Female Brown Bears Captured or Observed More Than One Year at McNeil River.

Bear	Captured or Observed	Est'd Age	Cementum Age	Number of Cubs	Number of Yearlings	Vulva Condition	Weight	Alizarin Red S Injected
No. 13								
1963	Captured	2	---	None	None	Not turgid	Measured-275	---
1966	Recaptured	5	---	None	None	Turgid	---	---
1967	Observed	---	---	None	None	---	---	---
1968	Recaptured	7	8.5	One	None	---	Est'd-300	Yes
1969	Observed	---	---	None	One	---	---	---
1970	Recaptured	10	10.5	None	None	Normal	Est'd-350	---
No. 17								
1967	Captured	2	---	None	None	Not turgid	Est'd-200	Yes
1968	Recaptured	4	---	None	None	Turgid	Est'd-325	Yes
No. 14								
1963	Captured	7	---	None	None	Turgid	Measured-420	---
1966	Recaptured	10	---	None	None	Turgid	---	---
1968	Recaptured	---	10	None	None	Turgid	Est'd-500	---
1969	Observed	---	---	Three	None	---	---	---
1970	Recaptured	10	13.5	None	Three	Normal	Est'd-600	---
No. 5								
1965	Captured	---	---	Two <sup>2/</sup>	None	---	---	---
1966	Observed	---	---	None	None	---	---	---
1967	Recaptured <sup>3/</sup>	7+	6.5	Two	None	---	Measured-302	---
No. 57								
1968	Captured	---	3.5	None	None	Turgid	Est'd-300	Yes
1969	Observed	---	---	None	None	---	---	---
1970	Recaptured	5	5.5	None	None	Normal	Est'd-400	---

2/ One cub of each sex.      3/ Drug mortality.

Table 14. McNeil River Brown Bear Fishing Effort, 1969-1970.

	<u>1969</u>	<u>1970</u>
Dates of Observation	14-30 July	13 July-4 August
Man Hours of Observation	107.6	124.3
Bear Groups	39	40
Total Bears	72	65
Bear Fishing Hours	737.9	720.8
Number of Salmon Caught	1,599	1,685
Fish Caught per Bear Hour	2.2	2.3

PREPARED BY:

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