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Population and Habitat Ecology of Brown Bears on Admiralty and Chichagof Islands

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RESEARCH PROGRESS REPORTS

STATE: Alaska **STUDY:** 4.22

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STUDY TITLE: Population and Habitat Ecology of Brown Bears on Admiralty and Chichagof Islands

PERIOD: 1 July 1994 - 30 June 1995 (with additional data collected through October 1995)

SUMMARY

We continued to monitor brown bears on 2 study areas including a 344 km^2 northern Admiralty Island study area and a 1112 km^2 Chichagof Island study area. We recaptured 8 brown bears on the Admiralty Island study area in 1995, including 4 recaptures of adult females for recollaring. Only 1 radiocollared brown bear was killed during the hunting season, a 22-year-old female that we had been monitoring for 10 years.

We captured 17 bears on the northeast Chichagof Island study area during this reporting period, including 4 recaptures of marked females. We monitored 35 female and 3 male bears with radiocollars during this period. A total of 108 bears have been captured 135 times from October 1989 through October 1995 on the northeast Chichagof study area. Two radiocollared male brown bears were legally killed during the hunting season.

We examined brown bear dispersal using time and location data from radiotelemetry capture locations and from the bear's subsequent death site. Males moved greater distances than females. We found that Admiralty Island bears dispersed greater distances than bears from Chichagof Island and that juveniles on Admiralty Island dispersed greater distances than bears in other sex, age, or study area groups.

Key words: Admiralty Island, brown bear, Chichagof Island, dispersal, grizzly bear, population ecology, Southeast Alaska, Tongass National Forest, *Ursus arctos*.

CONTENTS

INTRODUCTION

Conservation of brown bears (*Ursus arctos*) is a difficult task for regulatory and land management agencies because this species is most often associated with large, pristine areas free from major land use activities. Alaska has healthy brown bear populations across most of the state, yet in a few areas land management activities will probably affect brown bear populations. The area undergoing the most habitat change in Alaska is in Southeast, where bear populations are affected indirectly through habitat change (loss of old-growth forest via logging) and the subsequent increase in human access via road construction (e.g., Titus and Beier 1993). Much of this habitat change is caused by the harvest of old-growth coniferous forests associated with the US Forest Service's Tongass Land Management Plan and its subsequent revision (USDA Forest Service 1996). This habitat change lowers the capability of managed forest lands to support brown bear populations into the future (Schoen et al. 1994).

For successful long-term management of brown bears, we need to address and find solutions for a number of complicated social and biological issues relative to species conservation (Mattson et al. 1996). In Southeast Alaska, social issues associated with brown bear conservation include public needs and desires associated with roads, road closures, and road management, subsistence and cultural desires for brown bears and access to other resources that may affect brown bears, prioritizing the competitive uses of natural resources (e.g., timber harvest versus bear conservation), and hunting regulations and public views about the hunting or nonhunting of brown bears. Biological issues associated with brown bear conservation include the ability to determine survival and mortality rates to evaluate population trends, to develop monitoring programs, and understand long-term declines associated with habitat change and loss of old-growth forest. One link between the social and biological issues associated with brown bear

conservation is that bear numbers usually decline slowly, making it difficult to instill public awareness of a biological problem difficult to detect in the short-term. Doak (1995) felt that brown bear habitat degradation, caused by a slow transformation from optimal to suboptimal to unsuitable conditions for a species' survival is a serious conservation concern. We agree and there are various studies that support this concern (see McLellan 1990).

Understanding and documenting these habitat and access changes to the landscape is the focus of this long-term brown bear study. The current program has elements of both research and monitoring, with the information potentially leading to changes in brown bear hunting regulations, illegal harvest enforcement, and forest management in a multiple-use setting. Our goal is to have sufficient information to ensure that brown bears are conserved in Southeast Alaska and that hunting and viewing opportunities are maintained, especially on forest lands managed for multiple use.

In this reporting period we evaluated dispersal and movements of brown bears from their radiocollaring locations to the locations of their subsequent deaths. These results are of immediate use in understanding the size of areas for management purposes, especially Admiralty, Baranof, and Chichagof islands, each of which seems to have distinct brown bear populations. This movement and dispersal analysis also meets objective number 7 in determining the isolation of the northeast portion of Chichagof Island, a land area that may be isolated relative to brown bear dispersal.

OBJECTIVES

The scope of our project remained similar to that of the previous reporting period (Titus and Beier 1994). The main emphasis was to evaluate short- and long-term changes in brown bear populations as influenced by human-induced changes to their habitat and demography. Objectives include:

1. Evaluate long-term changes in the home ranges and centers of activity of selected brown bears in the vicinity of Greens Creek, Admiralty Island.

2. Evaluate the degree of site tenacity by female brown bears and their offspring to developed areas of Greens Creek.

3. Determine the extent to which brown bears exhibit short-term changes in home ranges or centers of activity as a result of logging activity on northeast Chichagof Island.

4. Determine seasonal and annual home ranges of selected brown bears, particularly in areas where data can be acquired both before and after roadbuilding and intensive logging activities.

5. Evaluate the interagency brown bear habitat capability model with independent data from northeast Chichagof Island.

6. Estimate annual survival and reproduction rates for brown bears on northeast Chichagof Island.

7. Determine the degree of population isolation of brown bears on northeast Chichagof Island.

8. Estimate the types of brown bear mortality on northeast Chichagof Island.

9. Use population projection models for evaluating the future status of brown bears on northeast Chichagof Island given differing demographic parameters.

10. Assess the seasonal distribution and habitat use patterns of brown bears on northeast Chichagof Island.

11. Determine the assocation between logging, logging camps and associated development, and attributes of annual brown bear harvest in Southeast Alaska.

12. Develop management guidelines for intensive land development within Southeast Alaska brown bear range.

METHODS

Bear capture, aerial telemetry, study area descriptons and data collection methods followed those of Schoen and Beier (1990) and Titus and Beier (1992). Methods specific to this report follow.

LONG-TERM MONITORING

One method for long-term monitoring of a brown bear population entails the recapture of individual bears and replacement of their radio collars. We recaptured adult female brown bears on the Admiralty Island study area every 2 to 4 years to replace their radio collars. This allows continuous monitoring to collect information on cause of mortality, reproductive status, and pattern of spatial and habitat use. Using a helicopter, we captured bears opportunistically in alpine habitat or sought specific radiotagged bears when their location allowed a recapture attempt. Untagged adult and subadult female bears were captured opportunistically. Male bears were not radiocollared.

The emphasis on capturing bears on the northeast Chichagof study area was wider than that of the Admiralty Island study area. On the northeast Chichagof study area, we recaptured bears opportunistically and sought the recapture of specific females when possible. This opportunity occurred when certain individuals were in avalanche slopes, clearcuts, subalpine or alpine habitats where recapture is possible. We also continued to radiocollar all subadult males and females in appropriate helicopter tagging areas on the Chichagof study area to gather information on all sex and age segments of the population.

BROWN BEAR DISPERSAL AND MOVEMENTS

Some bears travel considerable distances from their maternal home range before establishing their own home range (Craighead and Mitchell 1982). This type of dispersal information is useful for bear managers in understanding the size of areas that should be considered for management. This information is also useful for viability analyses where knowledge of dispersal is a key component

to the modeling process (e.g., Pulliam and Danielson 1991, Doak 1995) to determine minimum population size. Dispersal information is also useful for managers in their development of management areas that receive hunting regulations. Our objective in reviewing brown bear sealing records and knowledge of the locations of dead bears previously radiocollared provides one of the best means to understand movements apart from home range analyses.

Mortality records for research bears captured in Game Management Unit 4 since 1983 provide data that is independent of radiotelemetry information on individual animals. The search for radio-instrumented bears was generally conducted inside study area boundaries and did not document the presence of bears outside those boundaries. Further, the loss of a radio-frequency signal within a study area cannot be assumed to represent dispersal. Radio frequencies could be "lost" because of transmitter failure, animals occupying locations that resulted in weak signal strength, or because of problems with the search pattern or receiver equipment. Mortality records (sport harvest, illegal kills, defense of life or property kills, or other situations where the death of a marked animal was confirmed by physical evidence) document the final location of an animal regardless of its telemetry status. Using the distance between the original capture point and the mortality location, we pooled and examined data for patterns associated with sex, age, or study area.

Bear sealing records (sport harvest, illegal kills, and defense of life or property kills) were reviewed to obtain the locations and dates of dead bears. Additionally, we reviewed research records to identify mortality of research animals not found in the sealing data. From 1981 through October 1995, 239 brown bears were captured (Tables 1-2) and radiotagged on Admiralty and Chichagof islands for future recovery. All but 4 of these bears were captured and marked on 3 study areas including a northern Admiralty Island study area, a Kadashan study area on Chichagof Island, and a northeast Chichagof Island study area. The 4 additional bears were captured and marked at Pack Creek on Admiralty Island.

From the research data we determined location, identity code, sex, and age of each bear at first capture. Using USGS 1:63,360 scale topographic maps, we measured a straight-lined distance between the original capture area and the mortality location. The data was then broken into "classes" of bears (subsets based on various combinations of sex, age, and study area) to determine if significant differences in the mean distance occurred between mutually exclusive "classes" of bears.

Statistical methods

We examined variation in the distance between a bear's original capture location and the location where it died using analysis-of-covariance (ANCOVA). In the ANCOVA, the elapsed time between original capture and death was used as a continuous explanatory variable and age (<7 subadult, ≥ 7 adult), study area (Admiralty, NE Chichagof, Kadashan), and sex were used as categorical explanatory variables. Based on preliminary analyses, we combined the NE Chichagof and Kadashan study areas for juveniles, and we combined adults from all areas.

RESULTS AND DISCUSSION

The primary emphasis of the work accomplished during 1994 and 1995 was to monitor adult female brown bears on the Admiralty Island study area and to evaluate dispersal of brown bears from capture locations to subsequent death.

ADMIRALTY ISLAND STUDY AREA

Bears Captured and Radiocollared

We captured 8 brown bears in the summer of 1995; all were females and 4 were recaptures of previously radiocollared animals (Table 1). During this reporting period we monitored 5 male and 19 female brown bears with active collars. Only 1 radiocollared brown bear was killed during the hunting season, a 22-year-old female that we had been monitoring for 10 years. The autumn brown bear hunting season on Admiralty Island is from September 15-December 31, and the spring season is from March 15-May 20. No other mortalities were documented.

A total of 111 brown bears have been radiocollared on the Admiralty Island study area from 1981 through 1994. Of this total number of radiocollared bears, hunters have legally killed 19 (17%). We documented that 9 of the 111 bears died of natural causes from 1981 through 1995. These represent minimum known mortalities because some bears left the study area, many bears lost their radio collars, or collars stopped functioning.

Reproduction

We monitored 7 adult females >10 years; the age of these females varied from 15 to 28 years (mean = 21; Table 2). During this reporting period we monitored 11 male and 21 female brown bears with active radio collars (Table 1). Two radiocollared male bears were legally killed during the hunting season in the spring of 1994. No other mortalities were documented.

The oldest of these bears, no. 43, had a single cub-of-the-year (COY) in 1993, no cubs in 1994, and a single COY in 1995. For the 15 years for which this bear has been monitored, she has been seen with cubs-of-the-year 4 times. Other examples included female bears nos. 39 and 95 that were monitored 13 years. We estimate that no. 39 was seen with COY 4 times and that no. 95 was seen with COY 3 times. We were able to record or estimate the interval between successful litters (from weaning to weaning) for 6 of these 7 adult females for which we have more than a decade of reproductive performance. The mean interval between successful litters was 4.1 years and varied from 3 to 7 years (n = 6 bears and 11 intervals). When pooling their available data, Schoen and Beier (1990) estimated a successful breeding interval of 3.9 years. Like Schoen and Beier's (1990), our weaning interval times represent minimums for the entire adult female bear population. Our calculations did not include females that failed to produce young over a number of years. Sellers (1994) estimated a mean minimum weaning interval of 4.6 years for a coastal brown bear population on the Alaska Peninsula.

For the period from 1990-1994 we observed adult sows (> age 7) with cubs for a total of 51 adult sow-years. We found from this sample that 24% had COY, 6% were with 1-year-old cubs, 6% were with 2-year-old cubs, 8% were with 3-year-old cubs, and 45% were without cubs. From 1990-1994 we found the mean litter size for COY to be 1.8 (mode = 2, range = 1-3). Mean litter

size has not changed from that reported by Schoen and Beier (1990). The mean litter size for COY on Admiralty Island may be lower than that reported from other coastal regions such as the Alaska Peninsula where Sellers (1994) found an early summer mean litter size of 2.54 for a recent 6-year period and a long-term mean of 2.2 COY.

CHICHAGOF ISLAND STUDY AREA

Bears Captured and Radiocollared

We captured 17 brown bears in 1995 including 4 recaptures of previously marked females (Table 3). Three of the recaptures were made in October with others occurring in late June and early July.

During this reporting period we monitored 43 bears with active radio collars, including 8 males and 35 females. We have had difficulty keeping radio collars on male bears, making their recapture difficult. For example, 6 large male bears (170-450 kg) were captured at least once at the Hoonah dump. Four of these bears removed their radio collars once and 2 of these bears removed their collars twice.

Of the 93 brown bears followed from 1989 to 1994, we know that 11 of these bears are dead, including 5 killed legally by hunters, 1 killed illegally, 2 killed in defense of life or property, and in 3 cases the cause of death could not be determined. We conclude that at least 8 of the 11 deaths were human-induced. Our results support the overall pattern of human-caused brown bear mortality on the northeast portion of Chichagof Island in recent years (Figure 1). The nonhunting component of reported bear mortality continues to occur with the community of Hoonah and the associated road system. In the 3 cases we could not determine the cause of death for the radiocollared bears, the cause of death remains suspicious because 1 bear was found dead near a beach and 2 were found dead < 200 m from a road.

Reproduction

We are unable to make complete comparisons of the reproductive performance of female bears between the 2 study areas because of the short duration of study on the Chichagof Island study area (Table 4). Through 1994 we have no complete intervals of 2 successful litters. We also have more difficulty observing radiocollared bears on the Chichagof Island study area because of the limited alpine habitat and the high percentage of relocations in avalanche slopes and forest. This hinders data acquisition on the presence or absence of cubs with their mothers.

For the period from 1990-1994, we observed adult sows (> age 7) with cubs for a total of 81 adult sow-years. We found that 21% had COY, 21% were with 1-year-old cubs, 9% were with 2-year-old cubs, none was with 3-year-old cubs and 49% were without cubs. From 1990-1994 the mean litter size for COY was 1.9 (n = 16, mode = 2, range = 1-3). Schoen and Beier (1990) found a mean litter size for COY of 2.6 for their Chichagof Island study area with a sample size of 5.

We conclude the pattern of human-induced mortality on the northeast Chichagof Island study area has resulted in a decline in the male segment of the bear population. Interpretation of our mortality data and knowledge of the patterns of legal and illegal harvest indicate this type of

mortality was occurring during the mid-1980s with extensive roadbuilding and timber harvest activities. The legal take of brown bears declined in 1989 when the fall hunting season was closed. The legal take and DLP harvest of brown bear has increased since 1989 and the known bear kill through 1994 was approximately equal to that of the pre-1989 period that had a spring and fall hunting season.

Brown Bear Dispersal and Movements

We documented the death of 44 previously tagged bears for the purposes of estimating dispersal and movements (Table 5). Some trends appear evident. Mean distance for all male bears (n = 25) between their original place of capture and place of death was 9.4 miles; for females (n = 19) the distance was 5.4 miles (Table 6). The fact that males have larger home ranges than females (Schoen and Beier 1990) is a factor in this higher mean. For adult bears (age ≥7 years at first capture), the mean distance for males (n = 6) was 5.7 miles and only 1.9 miles for females (n = 10). However, for subadult bears (6 years or younger at first capture) the mean distances of both sexes were higher. For young males (n = 14) the mean was 11.1 miles and 10.6 miles for females (n = 7). Dispersal from their maternal home ranges seems to be a reasonable explanation for the higher means of bears first captured before age 7.

Bears from the Admiralty Island study area (n = 24) had larger mean distances between original capture locations and place of death, 8.1 miles compared to 6.7 for the NE Chichagof sample (n = 13, Table 6). This probably reflects differences in the topography of the 2 areas (Figure 1). Dispersal from the Admiralty study area is easier because the southern boundary is not a barrier to bear movements. Five research bears were documented to have died outside the southern boundary of the Admiralty Island study area (Figure 1) and others have been observed alive. Northeast Chichagof, however, is nearly an island with only a single, narrowly restricted land connection to the remainder of Chichagof. On the northeast Chichagof Island study area, no bear has been recovered dead outside the study area. We have documented that 1 brown bear with an active collar moved from the northeast Chichagof study area across Tenakee Inlet to the Kadashan study area. Given the distance moved by some Admiralty Island bears, the larger size of the northeast Chichagof study area by itself does not explain this lack of exodus. We believe that the island-like area of the northeast portion of Chichagof Island may present a greater barrier to short-term bear dispersal than is found anywhere else on Admiralty, Baranof or Chichagof (ABC) islands. Results from analysis of mitochondrial DNA from ABC island bears indicate there is considerable genetic divergence from all other Alaskan brown bear populations, including those from the nearby mainland (Cronin et al. 1991, Talbot and Shields 1996).

We found that study area-age (P = 0.026) and elapsed time (P = 0.024) were related to the distance moved between capture and death. The effect of elapsed time differed among the study area-age categories (P = 0.011, Figure 2). The effect of sex and its interactions was not significant; however, sex and age were somewhat confounded. Nine of 14 juveniles on Admiralty and 11 of 15 juveniles on Chichagof were males and 10 of 15 adults were females. The sex of the bears could have been related to some of the differences between adults and juveniles. The relationship between elapsed time between capture and death was most evident for Admiralty Island juveniles (Figure 2); slopes of the lines for the other 2 groups are not different than 0 (P>0.50), indicating juveniles on Admiralty disperse greater distances than bears in the other

groups. On the average, juvenile brown bears on Chichagof Island disperse farther than adults (7.5 vs 4.4 miles, respectively).

Although brown bears are strong swimmers, water barriers such as those surrounding northeast Chichagof seem significant obstacles to movements. Restricted interchange of animals between adjoining areas has important population level management implications. Bears must continue to have access across the land bridge that connects the subpopulation with bears on the remainder of Chichagof Island. Since current interchange appears minimal, management of the northeast Chichagof brown bears should recognize this isolation. We suggest that harvest levels not exceed 4% of the most recent population estimate of about 360 animals (Titus and Beier 1993). Because large scale immigration from adjoining areas is unlikely, reduced numbers of bears from human-induced mortality or habitat alteration could place this subpopulation at risk.

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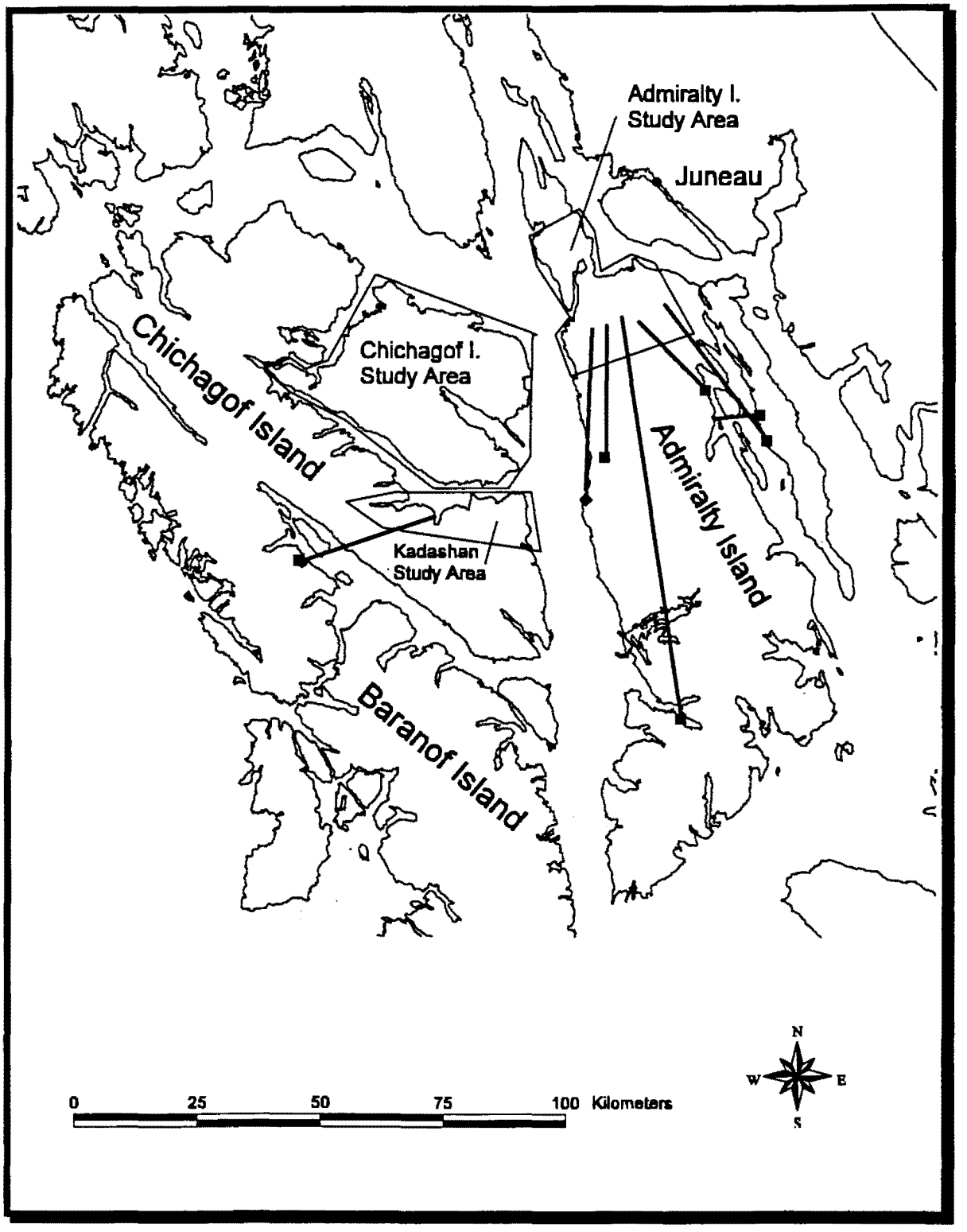


Figure 1. Locations of brown bears initially radiocollared in 3 study areas on Admiralty and Chichagof islands and subsequently recovered dead outside those study areas, 1981 - 1996. Solid lines indicate males and cross-hatch line indicates a female. One brown bear was radiocollared at Pack Creek on Admiralty Island and subsequently recovered on Glass Peninsula. No brown bear has been recovered dead from outside northeast Chichagof study area originally marked on that study area.

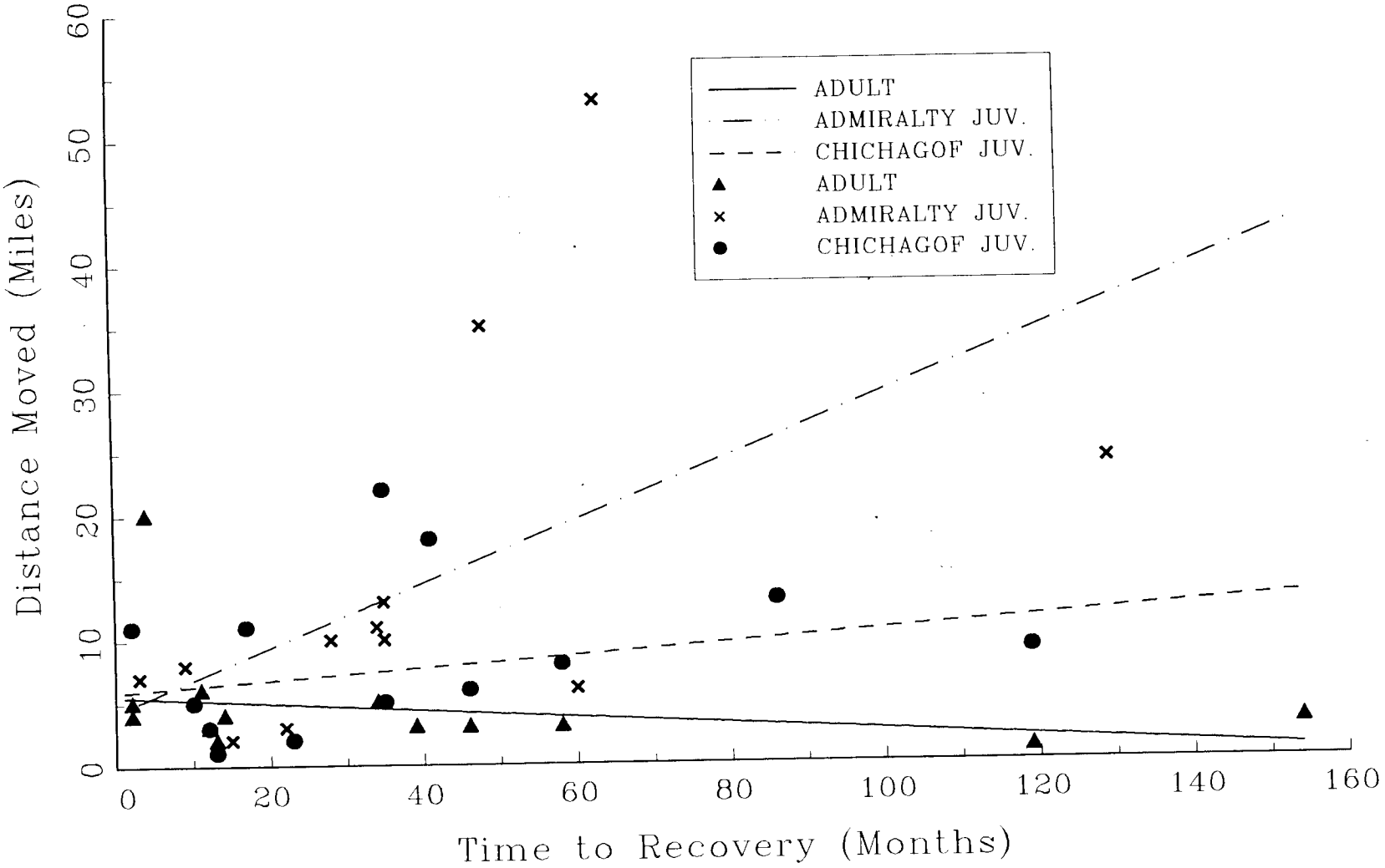


Figure 2. Recovery distance of brown bears on Admiralty and Chichagof islands.

Table 1. Summary and Status of brown bears captured on Admiralty Island, 28 August 1981 through 31 October 1995.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
01	Wheeler Mountain	F	8	159	7/15/91	H	--
01	Wheeler Mountain	F	9	154	(7/22/92)	H	--
01	Wheeler Mountain	F	12	134	(7/02/95)	H	transmitting
02	Greens Creek Drainage	M	18	290	6/14/93	H	unknown, lost radio
03	Upper King Salmon Creek	M	7	181	7/22/92	H	unknown
04*	Greens Creek Drainage	F	6	214[d]	9/29/83	H	sport harvest 9-87
05	Upper King Salmon Creek	M	12	204	6/16/93	H	transmitting
06	Upper King Salmon Creek	F	8	150[d]	9/27/81	H	--
06	Wheeler Creek	F	10	153[d]	(6/14/83)	H	unknown, lost radio 5-86
07	Pack Creek	F	11	150	8/26/82	D	unknown, no radio
08	Pack Creek	F	10	150	8/26/82	T	--
08	Pack Creek	F	16	120	(7/19/88)	D	unknown, removed radio
09[f]	Pack Creek	F	(1)	54	8/26/82	D	observed at Pack Creek 1982-95
09	Upper King Salmon Creek	M	7	170	7/22/92	H	unknown
10	Greens Creek Drainage	M	11	280[d]	7/2/82	H	--
10	Greens Creek Drainage	M	13	288[d]	(7/06/84)	H	--
10	Hawk Inlet	M	15	315	(6/09/86)	S	unknown, lost radio 5-87
11*	Pack Creek	M	4	120	8/28/82	T	sport harvest Winning Cove 5-83
12*	Greens Creek Camp	M	2	68	5/18/92	D	ore truck killed 6-92
13	Greens Creek Drainage	M	15	284[d]	6/14/83	H	--
13	Greens Creek Drainage	M	16	270[d]	(7/06/84)	H	--
13*	Hawk Inlet	M	18	270	(6/11/86)	S	sport harvest 5-88
14	Greens Creek Drainage	F	6	120	9/26/81	H	--
14	Greens Creek Drainage	F	7	90	(7/02/82)	H	--
14*	Greens Creek Drainage	F	10	95[d]	(7/08/85)	H	bear kill 9-88

Table 1. Continued.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
B14*	Upper King Salmon Creek	F	5	100	9/26/81	H	mortality
15	Robert Barron Peak	F	4	129	7/21/92	H	transmitting
16[i]	Greens Creek Drainage	F	4[1]	90[d]	6/16/83	H	--
16[i]	Wheeler Mountain	F	8[2]	170[d]	(6/28/87)	H	--
16[i]	Greens Creek Drainage	F	10[3]	195	(7/21/92)	H	unknown, lost radio
17	Greens Creek Drainage	M	(3)	68	7/13/90	H	--
17	Upper King Salmon Creek	M	(6)	91	(6/16/93)	H	unknown
18	Greens Creek Drainage	M	6	214[d]	6/17/83	H	unknown, last located 8-85
19*	Upper King Salmon Creek	F	13	191	9/29/83	H	mortality
20	Greens Creek Drainage	M	4	100	7/30/82	S	--
20*	Upper King Salmon Creek	M	5	135	(5/01/83)	H	mortality
21	East Eagle Peak	F	10	143	6/15/93	H	unknown
22	Greens Creek Drainage	M	8	195	6/22/93	H	transmitting
23	Upper King Salmon Creek	M	13	249[d]	6/27/92	H	unknown
24	Upper Greens Creek Drainag	F	3	82	6/14/93	H	unknown, sighted Greens Ck. 8-95
25[i]	Greens Creek Drainage	M	(2)	68	6/26/87	H	unknown, last located 9-89
26	Robert Barron Peak	F	17	168	7/22/92	H	--
26	Robert Barron Peak	F	18	181	(7/10/93)	H	unknown, lost radio
27[g]	Greens Creek Drainage	M	3	77	6/11/86	S	--
27[g]	Greens Creek Drainage	M	4	154[d]	(6/28/87)	H	--
27[g]	Lake Florence	M	5	159	(7/06/88)	H	unknown, removed radio
28*	Greens Creek Drainage	M	14	260	6/11/86	S	--
28	Wheeler Mountain	M	14	260	(7/10/86)	H	sport harvest 5-87
29	Wheeler Mountain	F	13	158	7/5/84	H	unknown, last located 11-84
30	Head Greens Creek Drainage	F	(10)	147	6/19/95	H	transmitting
31	Greens Creek Drainage	F	5	154	7/14/91	H	--

Table 1. Continued.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
31	Young's Bay Dome Mt.	F	9	170	7/7/95	H	transmitting
32	Head Fowler Creek	F	6	159	7/21/92	H	transmitting
33	Greens Creek Drainage	M	6	125	6/22/92	H	unknown, believe lost radio
34*	Mansfield Peninsula	F	2	70	7/8/82	H	sport harvest 9-83
35	Wheeler Creek	F	8	135[d]	6/17/83	H	mortality
36	Robert Barron Peak	F	14	230	9/26/81	H	unknown, lost radio 5-82
37*	Mansfield Peninsula	F	10	270	8/3/82	S	sport harvest 10-83
38	Greens Creek Drainage	F	23	280	7/2/82	H	--
38*	Greens Creek Drainage	F	16	180[d]	(7/08/85)	H	natural mortality picked up 5-86
39	Mansfield Peninsula	F	9[1]	270	7/8/82	S	--
39	Robert Barron Peak	F	9[2]	171[d]	(7/09/85)	H	--
39	Robert Barron Peak	F	15	181[d]	(6/16/89)	H	--
39	Robert Barron Peak	F	18	172	(7/15/91)	H	--
39*	Robert Barron Peak	F	21	170	(7/12/94)	H	sport harvest Hawk Inlet 5-95
40	Greens Creek Drainage	M	10	180	6/21/83	H	unknown, last located 8-85
41*	Mansfield Peninsula	M	3	135	6/21/84	H	sport harvest 9-86
42	Greens Creek Drainage	M	7	154	7/15/91	H	unknown, lost radio
42	Head Wheeler Creek	M	8	186	(6/19/92)	H	unknown
43	Upper King Salmon Creek	F	15[1]	250	9/27/81	H	--
43	Upper Greens Creek	F	9[2]	114	(7/03/86)	H	--
43	Upper King Salmon Creek	F	23	136[d]	(6/20/89)	H	--
43	Upper King Salmon Creek	F	25	127	(7/1/91)	H	--
43	Upper King Salmon Creek	F	28	126[d]	(6/30/94)	H	transmitting
44*	Greens Creek Drainage	M	9	243	6/22/93	H	sport harvest Hawk Inlet 5-94
45	Greens Creek Drainage	M	7	186	7/1/91	H	unknown
46	Greens Creek Drainage	M	12	248[d]	6/26/86	H	unknown, last located 1988

Table 1. Continued.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
47	Wheeler Mountain	M	15	218[d]	7/3/90	H	unknown
48	Greens Creek Drainage	M	17	300	8/3/82	S	unknown, lost radio 6-83
49	Mansfield Peninsula	M	(3)	100	6/16/84	H	unknown, no radio
50	Greens Creek Drainage	M	(3)	120	9/26/81	H	--
50	Greens Creek Drainage	M	(5)	146	(6/17/83)	H	unknown, lost radio 5-85
51	Greens Creek Drainage	M	(1)	60	8/28/81	S	unknown, lost radio 9-81
52	Greens Creek Drainage	M	6	190	6/26/86	H	unknown, last located 9-89
53	Upper King Salmon Creek	F	12	147	6/22/92	H	transmitting
54[j]	Eagle Peak	M	3	73	6/26/87	H	unknown, lost radio 1988
55	Greens Creek Drainage	F	7	124	6/21/83	H	--
55	Greens Creek Drainage	F	10	155[d]	(7/10/86)	H	--
55	Greens Creek Drainage	F	11	113	(6/26/87)	H	radio failure, last located 1988
55	Greens Creek Drainage	F	18	132	(7/11/94)	H	transmitting
56	Greens Creek Drainage	F	13[1]	170	7/30/82	S	--
56	Greens Creek Drainage	F	15[2]	158[d]	(7/08/85)	H	--
56	Greens Creek Drainage	F	20	181	(6/16/89)	H	--
56	Greens Creek Drainage	F	22	172	(7/14/91)	H	--
56	Head of Fowler Creek	F	26	170	(6/20/95)	H	transmitting
57	Greens Creek Drainage	F	11	203[d]	9/28/83	H	unknown, last located 7-85
58	Eagle Peak	M	4	180	9/21/81	H	--
58	Hawk Inlet	M	5	194	(8/08/82)	S	unknown, sighted Hood Bay 9-84
59[e]	Greens Creek Drainage	M	3	80	9/21/81	H	--
59[e]*	Upper King Salmon Creek	M	5	113[d]	(5/01/83)	H	mortality
60	Greens Creek Drainage	F	19	160	9/21/81	H	--
60	Greens Creek Drainage	F	20	135[d]	(7/02/82)	H	--
60	Greens Creek Drainage	F	23	125[d]	(7/08/85)	H	--

Table 1. Continued.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
60	Greens Creek Drainage	F	24	125	(7/03/86)	H	--
60*	Greens Creek Drainage	F	25	163	(6/28/87)	H	natural mortality, picked up 10-91
61	Hawk Inlet	M	11	215	6/12/86	S	--
61*	Hawk Inlet	M	13	215	(6/27/88)	H	sport harvest Hawk Inlet 5-89
62	Young Bay	F	14	150	6/16/82	S	unknown, last located 9-86
63	Greens Creek Drainage	F	17	160	7/8/82	H	unknown, last located 10-84
64	North of Bear Trail	F	14[l]	190[d]	6/24/83	H	--
64	North of Bear Trail	F	17	159	(7/03/86)	H	unknown, last located 1988
64	North of Bear Trail	F	22+7[2]	177	(7/15/91)	H	transmitting
65	Wheeler Mountain	F	(16)	150	6/22/93	H	unknown, believe lost radio at den
66	Greens Creek Drainage	M	4	180[d]	6/22/83	H	unknown, last located 8-85
67	Greens Creek Drainage	F	(2)	60	8/2/82	S	no radio, sighted L.Florence 9-85
68*	Greens Creek Drainage	F	5	146[d]	9/28/83	H	sport harvest 9-88
69[k]	Eagle Peak	M	(2)	59	7/9/85	H	unknown, lost radio 5-86
70[e]	Greens Creek Drainage	F	(3)	77	7/16/87	H	--
70[e]	Upper King Salmon Creek	F	(4)	118	(9/16/88)	H	unknown, lost radio
71	Wheeler Mountain	F	4	148	6/29/87	H	unknown, lost radio 8-87
72*	Eagle Peak	M	6	200	7/8/82	H	sport harvest Winning Cove 5-93
73[l]	Robert Barron Peak	M	3	79	6/15/93	H	--
73[l]	Robert Barron Peak	M	4	100[d]	(6/30/94)	H	transmitting, last located 8-95
74*	Greens Creek Drainage	F	10	172	7/1/91	H	sport harvest 5-92
74N[m]*	Upper King Salmon Creek	M	3	160	6/28/91	H	sport harvest 9-91
75	Wheeler Mountain	F	9	159	7/3/90	H	--
75*	Greens Creek Drainage	F	10	159	(6/28/91)	H	sport harvest 5-92
76[h]	Greens Creek Drainage	M	3	130[d]	7/10/86	H	--
76[h]*	Lake Florence	M	5	168	(7/06/88)	H	sport harvest Hood Bay 10-92

Table 1. Continued.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
77[n]*	Greens Creek Drainage	M	3	115	6/26/86	H	sport harvest King Salmon 5-89
78[n]*	Greens Creek Drainage	F	(3)	91	7/10/86	H	natural mortality 8-86
79*	Hawk Inlet	F	6	124	6/11/86	S	sport harvest 9-87
80	Greens Creek Drainage	F	3	127	7/3/90	H	--
80	Greens Creek Drainage	F	5	136	(7/21/92)	H	--
80	Bear Valley	F	8	136	(6/19/95)	H	transmitting
81*	Robert Barron Peak	F	15[1]+17[2]	200	6/21/84	H	natural mortality, picked up 11-92
82	West of Bear Trail	M	9	347	6/22/93	H	unknown, lost radio
83	Greens Creek Drainage	M	7	193	6/28/91	H	transmitting
84	Wheeler Mountain	F	12	147	7/9/86	H	last located 4-90
84	Wheeler Mountain	F	21	147	(6/19/95)	H	transmitting
85	Wheeler Mountain	F	12	150	7/11/86	H	unknown, last located 1988
86	Wheeler Mountain	F	(adult)	170	7/16/87	H	unknown, last located 1988
87*	Greens Creek Drainage	M	4	136	6/28/91	H	sport harvest Lake Kathleen 4-94
88	Head of Fowler Creek	F	(8)	150	7/7/95	H	transmitting
89[o]*	Admiralty Cove	F	16	150	7/9/86	H	DLP 8-87
90	Upper King Salmon Creek	M	6	170	6/16/93	H	unknown, lost radio
91	Pack Creek	F	19	162[d]	6/21/83	H	unknown, lost radio 1984
92	Pack Creek	F	16	159[d]	6/21/83	H	unknown, lost radio 5-86
93	Pack Creek	M	5	158[d]	6/21/83	H	--
93	Pack Creek	M	10+12[2]	170	(6/27/88)	H	unknown, removed radio
94	Pack Creek	F	10	156[d]	7/13/83	T	--
94	Pack Creek	F	15	114	(7/19/88)	D	unknown, removed radio
95	Robert Barron Peak	F	8	170	7/8/82	H	--
95	Robert Barron Peak	F	14	200	(9/16/88)	H	--
95	Robert Barron Peak	F	19	147	(6/14/93)	H	--

Table 1. Continued.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
95	Robert Barron Peak	F	20	134[d]	(6/30/94)	H	transmitting
96	Robert Barron Peak	F	7	148	7/3/86	H	radio failure, last located 10-87
96	Robert Barron Peak	F	15	148[d]	(6/21/94)	H	transmitting
97	Greens Creek Drainage	M	12	293[d]	7/10/86	H	unknown
98	Greens Creek Drainage	M	19	315[d]	6/26/86	H	unknown, last located 4-90
99	Greens Creek Drainage	F	17	200	7/8/82	H	--
99	Greens Creek Drainage	F	19	158	(6/21/84)	H	unknown, lost radio 9-85
100	Wheeler Mountain	F	4	79	7/7/95	H	transmitting
101	Robert Barron Peak	M	8	177	6/23/93	H	transmitting
102	Robert Barron Peak	F	18	159	6/23/93	H	transmitting
103	Upper King Salmon Creek	M	3	95	6/23/93	H	unknown, no radio
104	Robert Barron Peak	F	9	163	6/23/93	H	unknown, believe lost radio
105	Robert Barron Peak	F	13	186	6/26/93	H	transmitting
106	Wheeler Mountain	F	8	168	6/26/93	H	unknown, believe lost radio at den
107	Robert Barron Peak	F	2	122	6/26/93	H	transmitting
108	Robert Barron Peak	M	5	209	6/26/93	H	unknown, lost radio

[a] Age determined by tooth sectioning or (estimated).

[#] Age determined by tooth sectioning at different years.

[b] Weight estimated.

[c] S = snare; H = helicopter; D = darted, free ranging; T = trap.

[d] Actual weight.

[e] Offspring of No. 60.

[f] Offspring of No. 07 (Pack Creek bear called "Pest")

[g] Offspring of No. 56, sibling of No. 76.

[h] Offspring of No. 56, sibling of No. 27.

[i] Offspring of No. 55, however No. 16 and No. 25 are not siblings.

Table 1. Continued.

Bear No. Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)

[j] Offspring of No. 64.

[k] Offspring of No. 99.

[l] Offspring of No. 39.

[m] Offspring of No. 43.

[n] Siblings, No. 77 & No. 78.

[o] DLP = defense of life or property.

* Bear confirmed dead.

Table 2. Reproductive history of radiocollared female brown bears on Admiralty Island, 28 August 1981 through 31 October 1995.

Bear No.	Age at Capture (yrs)	1981	1982	1983	1984	1985	1986	1987	1988	1989
01	8									
04*	6			0	2 coy	2 1-yr	no[s]	no[l]		
06	8	0	no	1 coy[t]	0	0	no	no	no	no
07	11		1 1-yr	1 2-yr	no	no	no	no	no	no
08	10		0	0	2 coy	2 1-yr	2 2-yr	2 3-yr[b]	1 coy	no
09[p]	1		0	0	0	0	0	0	0	0
14*	7	0	0	0	2 coy	0[d]	0	2 coy	2 1-yr[e]	
15	4									
16[n]	4			0	no	no	0	0	0	0
21	10									
24	3									
26	16									
29	13				3 1-yr[l]	no	no	no	no	no
30	(10)									
31	5									
32	6									
34	2		0	0[l]						
36	14	2 coy	no	no	no	no	no	no	no	no
37*	10		0	1 coy[l]						
38*	23		0	0	0	0	0	no[m]		
39*	9		0	0	2 coy	0[f]	1 coy	?	1 coy	1 1-yr
43	15	0	2 coy	2 1-yr	no	no	no	2 coy	2 1-yr	2 2-yr
53	6									
55	7			0	no	no	1 1-yr	1 2-yr	1 3-yr[b]	?
56	13		2 2-yr	2 3-yr[b]	2 coy	2 1-yr	2 2-yr[b]	1 coy	0[f]	0[g]
57	11			2 2-yr	2 3-yr	2 coy	no	no	no	no
60*	20	1 2-yr	1 3-yr[b]	2 coy[c]	1 coy	1 1-yr	1 2-yr	1 3-yr	1 4-yr[b]	0
62	14		0	0	0	0	0	no	no	no
63	17		2 cubs	0	0	2 coy	no	no	no	no
64	14			1 1-yr	1 2-yr[b]	2 coy	2 1-yr	2 2-yr	1 3-yr[b]	0
65	(16)									
67	2		0	no	0[s]	no	no	no	no	no
68*	5			0	0	0	0	?	0[l]	

Table 2. Continued.

Bear No.	Age at Capture (yrs)	1981	1982	1983	1984	1985	1986	1987	1988	1989
70[r]	3							0	0	0
71	4							0	no	no
74*	10									
75*	10									
78*	3						0			
79*	6						0	0[hl]		
80	3									
81*	15				0	0	0	no	no	no
84	12						2 coy	2 1-yr	2 2-yr	2 3-yr[b]
85	12						1 coy	1 1-yr	1 2-yr	no
86	adult							2-2-yr	2 3-yr	no
88	(8)									
89*	16						2 coy	2 1-yr[k]		
91	19		0	0	no	no	no	no	no	no
92	16			0	2 coy	no	no	no	no	no
94	10			0	2 coy	2 1-yr	2 2-yr[b]	2 coy	2 1-yr	2 2-yr
95	8		2 1-yr	2 2-yr	0	2 coy	2 1-yr	no	2 coy	2 1-yr
96	7						3 coy[t]	2 1-yr	no	no
99	17		2 3-yr	2 coy	2 1-yr	1 2-yr[t]	no	no	no	no
100	(4)									
102	18									
104	9									
105	13									
106	8									
107	2									

Table 2. Continued.

Bear No.	Age at Capture (yrs)	1990	1991	1992	1993	1994	1995
01	8		2 2-yr	0[o]	no	no	2 1.5-yr
04*	6						
06	8	no	no	no	no	no	no
07	11	no	no	no	no	no	no
08	10	no	no	no	no	no	no
09[p]	(1)	2 coy	0[t]	0	0	0	3 coy
14*	6						
15	4			2 2-yr	2 3-yr	no	no
16[n]	4	no	no	no	no	no	no
21	10				0	no	no
24	3				0	0	0
26	16			2 3-yr	0	no	no
29	13	no	no	no	no	no	no
30	(10)						2 1.5-yr
31	5		0	no	0	no	2 coy
32	6			0	1 coy	1 1-yr	no
34*	2						
36	14	no	no	no	no	no	no
37*	10						
38*	23						
39*	9	no	3 coy	3 1-yr	0	0	0
43	15	2 3-yr	0[q]	0	1 coy	0	1 coy
53	12			0	no	no	no
55	7	no	no	no	no	1 coy	no
56	13	no	1 coy	no	1 2-yr[l]	0[t]?	?[g]
57	11	no	no	no	no	no	no
60*	19	no	no[m]				
62	14	no	no	no	no	no	no
63	17	no	no	no	no	no	no
64	14	no	3 coy	no	2 2-yr[b]	no	no
65	(16)				0	no	no
67	(2)	no	no	no	no	no	no
68*	5						

Table 2. Continued.

Bear No.	Age at Capture (yrs)	1990	1991	1992	1993	1994	1995
70	(3)	no	no	no	no	no	no
71	4	no	no	no	no	no	no
74*	10		1 2-yr	1 3-yr[ql]			
75*	9	2 coy	2 1-yr	2 2-yr[ql]			
78*	(3)						
79*	6						
80	3	0	0	0	0	1[t?]	2 1.5-yr
81*	15	no	no[m]				
84	12	2 coy	no	no	no	no	2 2.5-yr
85	12	no	no	no	no	no	no
86	adult	no	no	no	no	no	no
88	(8)						2 coy
89*	16						
91	19	no	no	no	no	no	no
92	16	no	no	no	no	no	no
94	10	no	no	no	no	no	no
95	8	no	no	no	0	3 coy	3 1.5-yr
96	7	no	no	no	no	2 coy	2 1.5-yr
99	17	no	no	no	no	no	no
100	(4)						0
102	18				2 1-yr	no	no
104	9				0	no	no
105	13				2 coy	no	no
106	8				1 1-yr	no	no
107	2				0	0	no

Table 2. Continued.

[a] Female observed with:
coy = cub of year
1-yr = yearling
2-yr = 2-year-old
3-yr = 3-year-old
4-yr = 4-year-old
cub = cub older than coy
0 = no cubs observed
no = no observation of marked bear
[b] Cubs disappeared over summer.
[c] Male killed cubs in June.
[d] Female ate cubs in den.
[e] Female killed by marked male, fate of cubs unknown.
[f] Cubs disappeared over winter.
[g] Female lactating but no cubs present.
[h] Observed breeding.
[i] One cub disappeared over summer.
[k] Female killed in DLP by deer hunter 8/87.
[l] Sport harvested.
[m] Natural mortality.
[n] Offspring of No. 55.
[o] Cubs kicked out 2 weeks prior to capture of No. 01.
[p] Offspring of No. 07.
[q] Cubs kicked out this spring.
[r] Offspring of No. 60.
s Ear tagged, no collar. (No. 67 sighted L.Florence Ck. 9/84 by LB)
(No. 04 sighted Jims's Ck. 9/86 & 9/87 by LB)
t Aerial observation, poor visibility because of vegetation.
* Bear confirmed dead.

Table 3. Summary and status of brown bears captured on Admiralty Island, 28 August 1981 through 31 October 1995.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
101	Mt. head Seal Ck.	F	10	284[d]	(6/24/94)	H	transmitting
102	Repeater Mountain	M	13	345[d]	6/12/90	H	unknown, lost radio
102	Hoonah Dump	M	13	374	(7/28/90)	S	unknown, lost radio 8/90
102	Hoonah Dump	M	13	374	(8/14/90)	S	Hoonah Dump 10/90
102*	Hoonah Dump	M	14	363	(10/10/91)	S	illegal harvest 9/93
103	Mt. S. False Bay	M	2	170	10/13/89	H	unknown
104	Mt. head Seal Ck.	F	3	113[d]	10/13/89	H	unknown, lost radio
105	Repeater Mountain	F	13	127	6/12/90	H	unknown, lost radio
106	Den Mountain	F	8	172	6/13/90	H	transmitting
107	Den Mountain	F	8	154[d]	6/13/90	H	unknown, lost radio at den sight
108	3 foot Mountain	M	11	318[d]	6/13/90	H	unknown, lost radio
109	Den Mountain	F	4	91	6/13/90	H	unknown, lost radio
110	Repeater Mountain	F	3	73	6/19/90	H	unknown, lost radio 4/91
110	Repeater Mountain	F	4	73	(6/26/91)	H	unknown, lost radio
111	Repeater Mountain	M	(3)	82	6/19/90	H	unknown, lost radio
112*	Mt. N. Fk. Freshwater C	M	4	136	6/19/90	H	sport harvest 5/92
113	Mts. E. Indian River	F	10	172	6/19/90	H	unknown
114	Mt. N. Fk. Freshwater C	F	(3)	73	6/21/90	H	unknown, lost radio
115*	Mts. E. Salt Lake Bay	F	24	127	6/21/90	H	unknown mortality
116	Mt. S. of 3 Foot Mt.	F	6	136	6/21/90	H	unknown, lost radio
117	Repeater Mountain	F	9	159	6/21/90	H	unknown, lost radio
118	Repeater Mountain	F	4	64	6/21/90	H	unknown, lost radio
118	Repeater Mountain	F	6	118	6/30/92	H	unknown, radio expired
119	Mts. E. Indian River	F	(3)	68	6/22/90	H	unknown, lost radio
120	Mts. E. Indian River	F	12	163	6/22/90	H	lost radio

Table 3. Continued.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
120	Mts. E. Indian River	F	16	143[d]	(6/24/94)	H	transmitting
121	Mts. E. Indian River	M	4	170	6/22/90	H	unknown, left study area
122	Mts. E. Indian River	M	11	295	6/22/90	H	unknown, lost radio
123	Tenakee Mts. mile 20	M	(18)	249	6/22/90	H	unknown, lost radio
124	S. Fk. Freshwater Ck.	M	8	267	6/22/90	H	unknown, lost radio 5/93
125	Tenakee Mts. mile 20	M	8	193	6/25/90	H	unknown, lost radio
126	Mts. E. of Narrows	F	16	159	6/25/90	H	lost radio
126	Mts. E. of Narrows	F	20	136[d]	(7/1/94)	H	unknown
127	Mts. E. of Narrows	F	26	204	6/25/90	H	unknown, lost radio 8/90
128	Mt. South Den Mt.	F	9	136	6/26/90	H	unknown, lost radio 4/91
129*	Tenakee Mts. mile 20	M	21	295[d]	6/26/90	H	DLP 10/90 Hoonah
130*	Tenakee Mts. mile 20	F	(3)	73	6/26/90	H	sport harvest 5/93
131	Mt. S. of 3 Foot Mt.	F	23	147	6/26/90	H	unknown, lost radio 5/93
132	Mt. South Den Mt.	F	12	159	6/26/90	H	unknown, lost radio 5/93
133	Tenakee Mts. mile 20	F	11	147	6/28/90	H	unknown, lost radio
134	Mt. South Den Mt.	F	8	170	6/28/90	H	unknown, lost radio
135	Den Mountain	F	16	143	6/28/90	H	
135	Mt. W. Ten Mile Ck.	F	22[2]	227	(10/2/94)	H	transmitting
136	Mts. E. of Narrows	F	2	68	6/28/90	H	
136	Tenakee Mts. mile 20	F	4	70	(6/26/92)	H	lost radio
136	Tenakee Mts. mile 20	F	6	105[d]	(6/24/94)	H	transmitting
137*	Spasski Creek	M	4	136	7/17/90	S	sport harvest 5/95
138	Spasski Creek	M	(20)	227	7/17/90	S	unknown, lost radio 6/91
139[f]	Spasski Creek	M	(1)	27	7/20/90	S	unknown, lost radio at den 4/92
140*	Spasski Creek	M	4	136	7/25/90	D	sport harvest 5/91
141	Spasski Creek	F	5	147	7/26/90	S	

Table 3. Continued.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
141	Spasski Creek	F	9	249	(10/1/94)	H	transmitting
142	Hoonah Dump	M	4	170	7/27/90	D	Hoonah Dump
142	Hoonah Dump	M	5	170	(8/10/90)	D	Hoonah Dump
142	Hoonah Dump	M	7	272	(9/9/91)	D	Hoonah Dump
142*	Hoonah Dump	M	7	454	(10/13/93)	D	sport harvest 5/94
143	Hoonah Dump	M	8	306	7/27/90	S	Hoonah Dump 10/90
143	Hoonah Dump	M	8	306	(8/14/90)	S	Hoonah Dump 10/90
143*	Hoonah Dump	M	9	318	(10/10/91)	S	sport harvest 5/95
144	Game Creek	M	9	159	8/13/90	S	lost radio
144	Hawaiian Moving Basin	F	10^2	204	(7/12/94)	H	unknown
145	Game Creek	F	5	159	8/13/90	S	--
145	Long Is. Rd. Clearcut	F	10^2	249	(10/1/94)	H	transmitting
146	Hoonah Dump	M	5	272	8/13/90	S	--
146*	Hoonah Dump	M	6	249	(8/8/91)	S	unknown mortality 10/91
147	Hoonah Dump	M	20	340	8/14/90	S	sighted Hoonah Dump 8/92
147	Hoonah Dump	M	21	318	(9/11/91)	S	sighted Hoonah Dump 10/93,94,95
148	Game Creek	F	6	147	8/14/90	S	unknown, lost radio
149*	Repeater Mountain	F	13	136	6/26/91	H	unknown mortality
150	Repeater Mountain	F	5	147	6/26/91	H	unknown, lost radio den sight
151	Mts. E. Indian River	M	4	125	6/26/91	H	--
151	Mts. E. Indian River	M	5	136	(6/29/92)	H	unknown, lost radio
152	Repeater Mountain	F	15	154	7/5/91	H	unknown, lost radio
153	Mt. head Seal Ck.	F	9	147	7/5/91	H	--
153	Head Seal Ck.	F	13	181	(9/4/95)	H	transmitting
154	Mts. E. Indian River	F	12	125	7/5/91	H	--
154	Pass Pavlov-Indian Rive	F	15	152	(7/10/94)	H	transmitting
155	Bear Creek	F	6	127	7/25/91	S	unknown, lost radio

Table 3. Continued.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
156	Mt. head Seal Ck.	F	16	159	6/23/92	H	transmitting
157*	Bear Creek	F	4	132	7/25/91	S	sport harvest 5/92
158	Mt. head Seal Ck.	F	16	170	6/23/92	H	transmitting
159	Tenakee Mts. mile 20	F	11	150	6/23/92	H	unknown, last located 4/95
160	Tenakee Mts. mile 20	M	4	91	6/23/92	H	unknown, last located 5/93
161	3 foot Mountain	F	22	170	6/24/92	H	transmitting
162	Mts. E. Indian River	F	21	193	6/24/92	H	transmitting
163	Mts. E. Indian River	F	11	159	6/24/92	H	transmitting
164	Mts. E. Indian River	M	5	227	6/24/92	H	unknown, lost radio 9/92
165	Mt. head Seal Ck.	F	8	136	6/25/92	H	--
165	165's Mt.	F	11	145	(6/29/95)	H	transmitting
166	Virgin Mts.	M	3	102	6/25/92	H	unknown, lost radio
167	Virgin Mts.	F	13	170	6/25/92	H	--
167	SW fork head Spasski C	F	16	215	(9/4/95)	H	transmitting
168	Virgin Mts.	M	2	73	6/25/92	H	unknown
169	Head Gypsum Ck.	F	13	209	6/25/92	H	unknown, lost radio
170	Mts. E. Salt Lake Bay	M	5	163	6/26/92	H	unknown
171	Ridge S. Gypsum Ck.	F	4	125	6/26/92	H	unknown
172	Mts. E. Indian River	F	2	70	6/26/92	H	unknown, lost radio
173*	Whitestone Ck. clearcut	M	4	167	6/28/92	H	DLP 8/92 Kennel Ck.[e]
174	Tenakee Mts. mile 8	F	13	145	6/29/92	H	unknown
175	Tenakee Mts. mile 8	F	16	141	6/30/92	H	--
175	175's Mt.	F	19	145	(9/4/95)	H	transmitting
176	Tenakee Mts. mile 8	F	10	159	6/30/92	H	unknown
177	3 foot Mountain	F	11	154	6/30/92	H	unknown, lost radio
178	Seagull Creek	F	14	193	8/30/92	S	transmitting
179	Bear Creek	F	10	265	8/31/92	S	unknown, lost radio

Table 3. Continued.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
180	Hoonah Dump	F	6	238	10/13/93	D	transmitting
181[g]*	Hoonah Dump	F	(.8)	59	10/13/93	D	unknown mortality 10/14/93
182[g]*	Hoonah Dump	M	(.8)	68	10/13/93	D	bear kill mortality
183	Mt. head Seal Ck.	F	4	108	7/1/94	H	transmitting
184	Hoonah Dump	M	5	254	10/13/93	D	transmitting
185	Mt. head Destruction Va	F	5	113[d]	6/24/94	H	transmitting
186	Tenakee Mts. mile 20	M	15	290[d]	7/1/94	H	transmitting
187	Bob's Par 3	F	4	124[d]	7/9/94	H	transmitting
188	Mt. head Spasski	M	1	91	7/9/94	H	transmitting
189*	Mt. head Spasski	F	8	130[d]	7/9/94	H	BIA research mortality
190	E. fork Seal Ck.	F	8	132	7/10/94	H	unknown
191	Repeater Mt.	F	(7)	132	6/20/95	H	transmitting
192	Mt. above Columbia Co	F	9	175	7/10/94	H	transmitting
193	Mt. head Seal Ck.	M	2	91	7/11/94	H	unknown
194	Tenakee Mts. 10 mile C	F	3	68	7/11/94	H	unknown
195	Mt. head SW fork Spass	F	17	181	7/11/94	H	transmitting
196	Across from Saltery Bay	M	2	68	7/12/94	H	transmitting
197	Head S. fork Seal Ck.	F	(8)	138	6/26/95	H	transmitting
198	Den Mt. Pass	F	(7)	132	6/26/95	H	transmitting
199	167's Mt.	M	(12)	249	6/26/95	H	transmitting
200	Mt. N. Salt Lake Bay	F	(8)	136	6/27/95	H	transmitting
201	Hawaiian Moving Basin	F	(7)	116	6/27/95	H	transmitting
202	West fork Indian River	F	(8)	191	6/29/95	H	unknown, lost radio
203	Mt. head Destruction Va	F	(11)	118	6/30/95	H	transmitting
204	Kennel Ck.	F	(.5)	32	8/5/95	S	transmitting
205	Game Ck. Tributary	M	(16)	295	8/13/95	S	transmitting

Table 3. Continued.

Bear No.	Location	Sex	Age[a]	Weight (kg)[b]	Capture Date (recapture)	Capture Techniques[c]	Current Status (31 October 1995)
206	Kennel Ck.	F	(7)	136	8/16/95	S	transmitting
207	Kennel Ck.	F	(1)	54	8/16/95	S	transmitting
208	Game Ck. Tributary	F	(10)	136	8/17/95	S	transmitting

[a] Age determined by tooth sectioning or (estimated).

[#] Age determined by tooth sectioning at different years.

[b] Weight estimated.

[c] S = Snare; H = helicopter; D = darted, free ranging.

[d] Actual weight.

[e] DLP = Defense of life or property.

[f] A male coy, no sow observed, family status unknown.

[g] Offspring of No. 180.

* Bear confirmed dead.

Table 4. Reproductive history of radio-collared female brown bears on Chichagof Island, 13 October 1989 through 31 October 1995.

Bear No.	Age at capture (yrs)[a]	1989	1990	1991	1992	1993	1994	1995
101	6	0	0	no	no	no	2 coy	2 1.5-yr
104	9	0	0	no	no	no	no	no
105	13		0	no	no	no	no	no
106	8		0	no	0	no	no+	2 ?-yr
107	8		0	no	2 coy	no	0	no
109	4		0	0	no	no	no	no
110	(3)		0	0	no	no	no	no
113	10		0	no	no	0	no+	no+
114	(3)		0	no	no	no	no	no
115*	24		0	no[g]				
116	6		0	no	no	no	no	no
117	9		1 coy	no	no	no	no	no
118	4		0	no	0	0[i]	0	no
119	(3)		0	no	no	no	no	no
120	12		0	no	no	no	2 1.5-yr	0
126	16		0	no	no	no	0	no
127	26		0	no	no	no	0	no
128	10		0	no	no	no	no	no
130*	(3)		0	no	no	no[f]		
131	23		1 1-yr	no	0	no	no	no
132	12		1 1-yr	no	no	no	no	no
133	11		0	no	no	no	no	no
134	8		0	no	0	no	no	no
135	16		3 coy	1 coy[b]	0	no	no	no
136	4		0	no	2 1-yr	no	0	1 coy
141	5		1 coy[e]	no	0	no	0	no
145	5		0[e]	0	1 1-yr	no	2 2.5-yr	2 3.5-yr[l]
148	6		0[e]	no	2 1.5-yr	1 2.5-yr	3 coy	3 1.5-yr
149*	13			2 1-yr[g]	no	no	no	no
150	5			0	0	no	no	no
152	15			1 1-yr	0	no	no	no
153	9			1 2-yr	0	no	1 2-yr	0
154	12			2 1-yr	no	no	1 coy	no

Table 4. Continued.

Bear No.	Age at capture (yrs)[a]	1989	1990	1991	1992	1993	1994	1995
155	6			0	0	no	no	no
156	16				1 1-yr	1 2.5	2 coy	2 1.5
157*	4			0	no[f]			
158	16				1 1-yr	1 2-yr	3/2 coy[k]	?
159	11				2 1-yr	no	no+	no
161	22				1 1-yr	1 2-yr	no+	no+
162	21				2 coy	2 1-yr	no+	no+
163	11				1 coy	no	no+	no+
165	8				2 1-yr	no	no+	no+
167	13				3 1-yr	no	0	0
169	13				0	no	no	no
171	4				0	0	no	no
172	2				0	no	no	no
174	13				2 1-yr	no	no	no
175	16				0	0	2 coy	2 1.5-yr
176	10				0	no	0	no
177	11				0	no	no	no
178	14				2 2.5-yr	2 3.5-yr	no+	no+
179	10				0[e]	no	no	no
180	6				no[h]	2 coy	0	3/1 coy[m]
183	4						0	no+
185	5						0	no+
187	4						0	no+
189*	8						2 coy[J]	
190	8						0	no+
191	(7)							2 1.5-yr
192	9						3 coy	2 1.5-yr[b]
194	3						0	no+
195	17						1 coy	1 1.5-yr
197	(8)							2 coy
198	(7)							0
200	(8)							2 coy
201	(7)							0
203	(11)							2 coy
204	(0.5)							0[c]
206	(7)							0

Table 4. Continued.

Bear No.	Age at capture (yrs)[a]	1989	1990	1991	1992	1993	1994	1995
207	(2)							0
208	(10)							0

[a] Female observed with:

coy = cub of year

1-yr = yearling

1.5-yr = 1.5-year-old

2-yr = 2-year-old

2.5-yr = 2.5-year-old

3.5-yr = 3.5-year-old

0 = no cubs observed.

no = no observation of marked bear.

no+= located, no obsevation of marked bear.

[b] Aerial observation, poor visibility because of vegetation.

[c] # 204 is one of two sibling accompanied by their mother.

[e] Snared along salmon stream, limited visibility. If cubs present may not be visible.

[f] Sport harvested.

[g] Unknown mortality/picked up.

[h] Observed mating with #142.

[i] Observed with another bear.

[j] Mortality as a result from BIA weighing process.

[k] 6/6/94 Bear observed with 3 coy.
8/17/94 Bear observed with 2 coy.

[l] Cubs kicked out prior to mating.

[m] 5/95 Bear observed at dump with 3 coy.
6/95 Bear observed at dump with 1 coy.
9/95 Last remaining coy injured by other bears.

* Bear confirmed dead.

Table 5. Distances moved by brown bears from date of capture to date of death on Admiralty and Chichagof islands study areas, 1981 - 1996.

BEAR ID	SEX	CAPTURE DATE	CAPTURE LOCATION	AGE AT CAPTURE	KILL DATE	ESTIMATED AGE AT DEATH	KILL LOCATION	DISTANCE MOVED IN MILES	STUDY AREA
74	F	070191	GREENS CREEK	10	051692	21	HAWK INLET	5	Admiralty
75	F	070390	WHEELER CREEK	9	051493	12	HAWK INLET	5	Admiralty
79	F	061186	HAWK INLET	6	091687	7	GREENS CREEK	2	Admiralty
81	F	062184	ROBERT BARRON MT	16		unknown	ROBERT BARRON MT	1	Admiralty
60	F	092181	GREENS CREEK	19	100091	29	GREENS CREEK	1	Admiralty
89	F	070986	ADMIRALTY COVE	16	080887	17	YOUNG BAY	2	Admiralty
34	F	070882	MANSFIELD PENINSULA	2	050284	4	FUNTER BAY	3	Admiralty
39	F	070882	MANSFIELD PENINSULA	9	051595	22	HAWK INLET	3	Admiralty
14	F	091783	GREENS CREEK	6	090084	7	WHEELER CREEK	3	Admiralty
38	F	070282	GREENS CREEK	23	050086	27	WHEELER CREEK	3	Admiralty
37	F	080382	MANSFIELD PENINSULA	10	100483	11	BEAR CREEK	4	Admiralty
68	F	092883	GREENS CREEK	5	092788	10	YOUNG BAY	6	Admiralty
4	F	092983	GREENS CREEK	6	091587	10	JIMS CREEK	35	Admiralty
12	M	051892	GREENS CREEK	2	060092	2	GREENS CREEK	0	Admiralty
44	M	062293	GREENS CREEK	9	051494	10	ZINK CREEK	6	Admiralty
61	M	061288	HAWK INLET	13	052089	14	HAWK INLET	0	Admiralty
74N	M	062891	UPPER KING SALMON	3	092291	3	GREENS CREEK	7	Admiralty
11	M	082882	PACK CREEK	4	051783	5	GLASS PENNINSULA	8	Admiralty
41	M	062184	MANSFIELD PENINSULA	3	101286	5	WHEELER CREEK	10	Admiralty
103	M	062393	UPPER KING SALMON	3	051896	6	HAWK INLET	10	Admiralty
87	M	062891	GREENS CREEK	4	042794	7	LAKE KATHLEEN	11	Admiralty
77	M	062686	GREENS CREEK	3	051789	6	KING SALMON BAY	13	Admiralty
72	M	070882	EAGLE PEAK	6	042693	17	WINNING COVE	24	Admiralty
76	M	071086	GREENS CREEK	3	100991	8	HOOD BAY	53	Admiralty

Table 5. Continued.

BEAR ID	SEX	CAPTURE DATE	CAPTURE LOCATION	AGE AT CAPTURE	KILL DATE	ESTIMATED AGE AT DEATH	KILL LOCATION	DISTANCE MOVED IN MILES	STUDY AREA
115	F	062190	E SALT LAKE BAY	24	062091	25	BEAR CREEK	3	NE Chichagof
149	F	062691	REPEATER MT	13	080091	13	SUNTAHEEN CREEK	4	NE Chichagof
157	F	072591	BEAR CREEK	4	051592	5	SALTLAKE BAY	5	NE Chichagof
130	F	062690	TENAKEE MT	3	051993	6	PORTAGE	22	NE Chichagof
137	M	071790	SPASSKI CREEK	4	050595	9	SPASSKI FLATS	0	NE Chichagof
146	M	081390	HOONAH	5	090091	6	HOONAH	1	NE Chichagof
112	M	061990	FRESHWATER BAY	4	051592	6	FRESHWATER BAY	2	NE Chichagof
143	M	072790	HOONAH	8	050595	13	SPASSKI FLATS	3	NE Chichagof
102	M	061290	REPEATER MT	13	090093	16	SEAL CREEK	3	NE Chichagof
142	M	072790	HOONAH	4	051194	8	GRASSY ISLAND	6	NE Chichagof
140	M	072590	SPASSKI CREEK	4	051595	9	FRESHWATER BAY	8	NE Chichagof
173	M	062892	WHITESTONE CREEK	4	081892	4	KENNEL CREEK	11	NE Chichagof
129	M	062690	TENAKEE MT	21	100890	21	HOONAH	20	NE Chichagof
44	F	091783	KADASHAN BAY	5	090084	6	KADASHAN BAY	3	Kadashan
22	F	100884	KADASHAN BAY	3	092994	13	KOOK LAKE	9	Kadashan
18	M	091683	KADASHAN BAY	4	050984	5	KADASHAN BAY	0	Kadashan
88	M	062383	KADASHAN BAY	5	052286	8	CORNER BAY	5	Kadashan
2	M	062485	CRAB BAY	6	113086	7	ROGERS POINT	11	Kadashan
5	M	061885	CRAB BAY	4	081892	11	KENNEL CREEK	13	Kadashan
30	M	062483	KADASHAN BAY	3	110086	6	FICK COVE	18	Kadashan

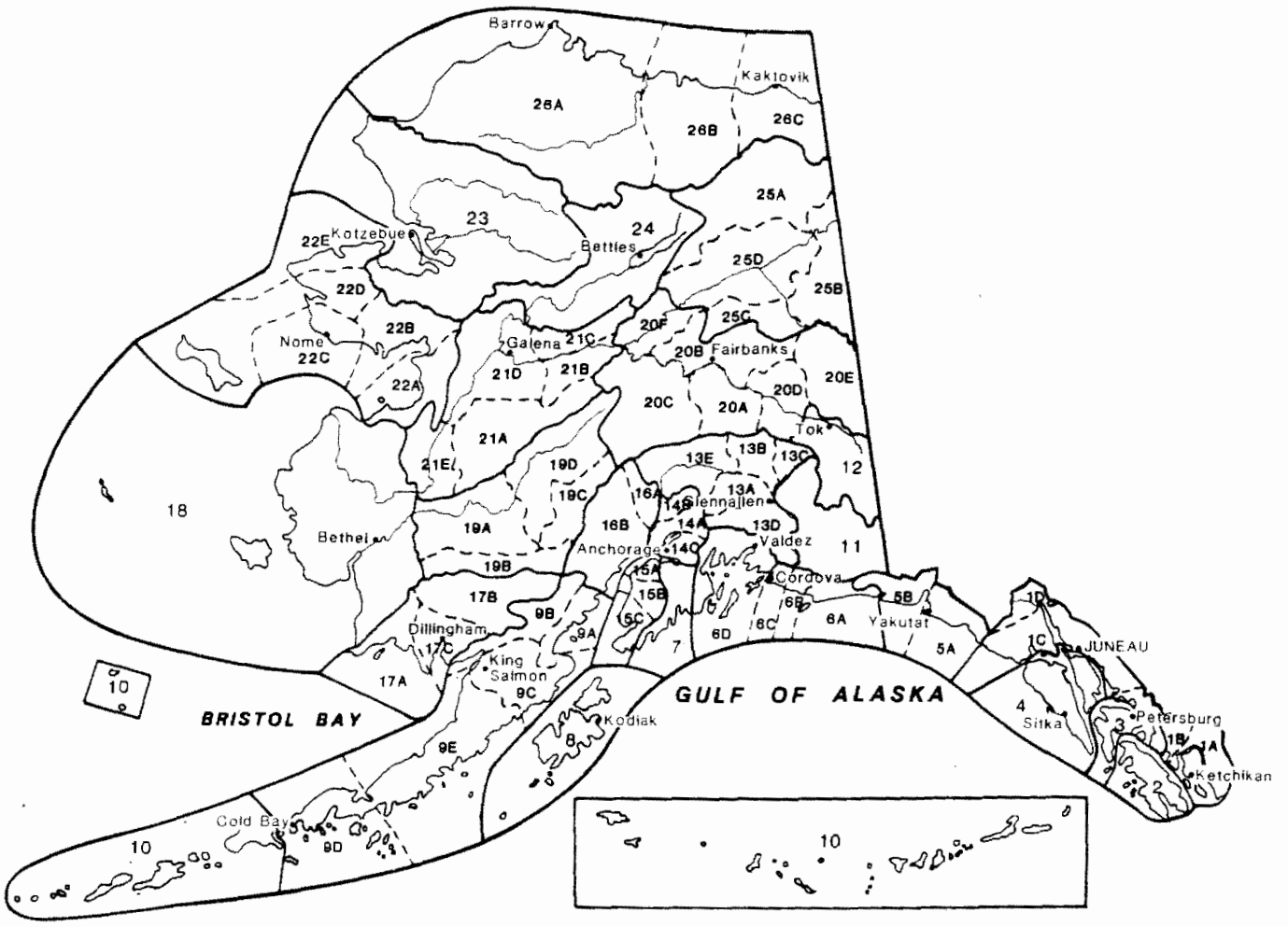
Table 6. Mean distance, count (number of recoveries), and maximum distances (miles) moved by brown bears from point of capture and tagging to location of death for three study areas on Admiralty and Chichagof islands, 1981-1996.

Average of DISTANCE MOVED IN MILES	STUDY AREA			
SEX	Admiralty	Kadashan	NE Chichagof	Grand Total
F	5.6	6.0	8.5	6.3
M	13.0	9.4	5.9	9.7
Grand Total	9.0	8.4	6.7	8.2

Count of DISTANCE MOVED IN MILES	STUDY AREA			
SEX	Admiralty	Kadashan	NE Chichagof	Grand Total
F	13	2	4	19
M	11	5	9	25
Grand Total	24	7	13	44

Max of DISTANCE MOVED IN MILES	STUDY AREA			
SEX	Admiralty	Kadashan	NE Chichagof	Grand Total
F	35	9	22	35
M	53	18	20	53
Grand Total	53	18	22	53

Alaska's Game Management Units



The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition, and archery equipment. The Federal Aid program allots funds back to states through a formula based on each state's geographic area and number of paid hunting license holders. Alaska receives a maximum 5% of revenues collected each year. The Alaska Department of Fish and Game uses federal aid funds to help restore, conserve, and manage wild birds and mammals to benefit the public. These funds are also used to educate hunters to develop the skills, knowledge, and attitudes for responsible hunting. Seventy-five percent of the funds for this report are from Federal Aid.

Ken Whitten