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BLACK BEAR STUDIES

by  
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Volume I  
Project Progress Report  
Federal Aid in Wildlife Restoration  
Project W-17-7, Job 17.1R

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JOB PROGRESS REPORT (RESEARCH)

State: Alaska

Cooperator: Charles A. Irvine

Project No.: W-17-7 Project Title: Big Game Investigations

Job No.: 17.1R Job Title: Black Bear Management  
Techniques Development

Period Covered: July 1, 1974 - June 30, 1975

SUMMARY

Seventy-two black bears were observed during 41 hours of flying in Game Management Units 6, 15 and 16. No heavy fall concentrations of bears were observed on alpine areas in the fall.

Sealing information has been computerized but not analyzed. Sealing data show a fairly constant harvest but a heavy increase in Unit 6 during spring 1975. Sex ratios are very biased toward males which points out a problem of sex identification in the sealing method. A literature review provided only sketchy life history information much of which does not apply to Alaska.

The salmon streams in the north West portion of Prince William Sound were surveyed by boat and on foot for black bear use in preparation for a trapping program. Many excellent trap sites were located in the area between College Fiord and Culross Passage.

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BACKGROUND

Widely distributed black bear (*Ursus americanus*) populations in Alaska provide a variety of experiences for hunters and nonhunters alike. As the availability of other species of trophy animals to a growing hunting population has decreased, the black bear has been subjected to increased hunting pressure (Alaska Department of Fish and Game 1973).

Unfortunately, very little is known about black bears in Alaska except for limited information on harvests, food habits and general life history (McIlroy 1970, Hatler 1967, Erickson 1965). A recently enacted hide and skull sealing program has started providing harvest information but at the present time enough data have not accumulated to be meaningful.

It is clear that intensive management of the black bear will be needed if this species is to continue to provide a variety of recreational experiences. If we are to manage black bears it is also clear that basic information on population identity, life history, population status and dynamics, reproductive potential and effects of hunting pressure is needed. A more basic need is to develop the techniques and tools to obtain the needed information to manage the black bear.

OBJECTIVE

To provide basic life history information required for management of Alaska's black bear populations and to test techniques needed in measuring the status, trend and utilization of black bears and their associated habitat.

PROCEDURES

Surveys were flown between May 14, 1974 and June 12, 1974 with the same pilot, plane and observer except for the June 12 flight which had a new observer. All of the counting was done between 4:00 a.m. and 12:00 a.m. No attempt was made to fly any single type of habitat and bears were observed from sea level to 4,000 feet and in almost all habitat types.

An extensive literature review was done. The library reference service, Federal Aid in Fish and Wildlife and the U.S.D.I. check list on black bears was also utilized.

Fifty-six streams, between College Fiord and Culross Passage in Prince William Sound, were surveyed on foot during the pink salmon (*Oncorhynchus gorbuscha*) run in July and August, to determine the extent of black bear usage. Potential trap sites for the Aldrich foot snare were evaluated.

Information from over 1,200 black bear sealing certificates was entered into the computer program designed for analysis of brown bear (*Ursus arctos*) data (Glenn 1974). This program was designed to be compatible with the black bear sealing program and should facilitate analysis in the future. All of the teeth from bears harvested in Game Management Units 6, 7, 14, 15 and 16 are being sectioned and stained for age determination.

#### FINDINGS

Seventy-two black bears were observed during 41 hours of counting from a Super Cub (PA 18) in Units 6, 15 and 16 during spring 1974 (Table 1).

With only 1.7 bears observed per hour the aerial census technique appeared to be inappropriate. The information obtained was of little value for estimating bear abundance and may have given a biased impression of distribution in some areas. Bears observed were randomly distributed throughout their habitat except in Unit 6, Prince William Sound, where bears were only observed close to the beach. In Prince William Sound snow was deep, except along the beach, causing bears to concentrate and dense vegetation tended to obscure bears which may have been in areas off the beach. In Units 15 and 16 early leaf emergence contributed to poor counts.

It was hoped that bears would congregate on alpine areas in the fall. This is a normal occurrence and as many as 75 black bears have been counted in Unit 15 in alpine areas during the peak of the berry season (James Davis, ADF&G, Pers. Comm.). These concentrations did not occur during fall 1974. If conditions are favorable during fall 1975, alpine areas will be surveyed and the effectiveness of fall surveys evaluated.

The computer program for black bears has proven very useful for fast retrieval of information on individual bears or groups of bears. A final confirmation on sex by checking original sealing forms has to be done and the ages have to be added as that information becomes available.

The literature review turned up very little information that has application to Alaska. McIlroy (1970) studied hunting pressure and its impact on the bear population in Prince William Sound, Hatler (1967) worked on food habits and Erickson (1965) did some life history work. So far very little has been found that is meaningful. The basic life history work will have to be done here in Alaska.

Table 1. Spring 1974 Black Bear Counts by Area

Date	Area	# Bears	# Cubs
May 14	Kenai Peninsula		
	Point Possession	2	
	Moose River Flats	1	
	Coyote Lake	1	
	Timberline Big Indian	1	
	Trout Lake Area	3	
	Indian Creek Between Tustumena & Skilak Lake	1	
	North Shore Tustumena	7	
May 15	Susitna Hayes River		
	Hayes River	1	
	Deshka	1	
May 16	Petersville Hills		
	Kahiltna River	7	2
May 17	Susitna River to Tuxedni Bay		
	Lewis River	2	
	Bachatna Creek	1	
	Drift River	2	
	Wade Lake	1	
	Harrier Point	1	
	Redoubt Bay Area	6	4
May 20	Beluga, Canyon Creek		
	Lower Beluga River	1	
	Middle Beluga River	1	1
		1	2
		1	2
	Upper Beluga River	5	
	Alexander Creek	1	
May 21	Talketna Mtns.	0	0
May 23	Moose River Flats	0	0
May 24	Prince William Sound		
	Hummer Bay	1	
	Bettles Bay	1	
	Tebenkof Glacier	1	
	Upper Carmen River	2	
May 29	Knik - Lake George		
	Lake George	4	
May 31	East Side Peters Hills	0	0
June 12	Kenai Mtns.	3	1

The sealing program started in fall 1973 has provided some interesting information on hunter distribution (Table 2).

One problem with the present sealing system is the indicated preponderance of males in the harvest (Table 2). It is very probable that males and females exist in the population in equal numbers and that hunter selectivity, especially in the fall, does not explain the disproportionate number of males indicated. Sealers are not required to open hides for measuring and consequently they do not verify the sex. This is a very real problem which must be remedied in the future. Unfortunately the trend is to make sealing simpler and less time-consuming.

Sealing information reflects a fairly constant harvest except for the dramatic drop in some units following the same day airborne hunting regulation adopted in Regulatory year 1974-75. Apparently as a result of this regulation the Unit 16 fall harvest decreased from 156 black bears in 1973 to 28 bears in 1975 (Table 2).

Unit 6 had a dramatic increase in harvest during the spring hunt of 1975. The harvest almost doubled from 79 in 1974 to 132 in 1975. Prince William Sound (Unit 6) is experiencing a tremendous increase in recreational boating and it would be advantageous for us to determine the status of the black bear population in that area.

In Prince William Sound hunting pressure seems to be well distributed but tends to be heaviest in the larger bays. Spring hunting is heavier than fall and consequently so is the harvest.

Prince William Sound appears to contain the most vulnerable black bear populations. The area is characterized by a narrow band of relatively flat land covered by spruce, hemlock and alder running from the beach to near-vertical mountains which quickly become alpine and perpetual snow (Viereck and Little 1972). The Sound has numerous glaciers which bisect this narrow band of land forming islands of habitat. These islands may contain distinct black bear populations which do not interact.

During spring the narrow band of habitat is further diminished by deep snow forcing the bears to use the beach areas which are snow free. Black bears are very vulnerable to hunting at this time of year and if we have distinct populations, over harvest could occur. McIlroy (1970) and Frame (1967) have expressed concern over the bears' vulnerability at this time of year and the potential for over harvest on the eastern side of the Sound. Because of the narrower band of suitable habitat on the western side of the Sound and its proximity to Anchorage's population, this area may be in even more danger of over harvest.

Prince William Sound has experienced a tremendous increase in recreational use and this use can be expected to increase as the populations of Anchorage, Whittier, Cordova, Seward and Valdez grow. We can expect this use to put more pressure on the black bear population from hunting and conflicts with sport fishing.

Table 2. Black Bear Harvest Fall 1973 - Spring 1975, as of 7/18/75

Unit	Fall 1973				Spring 1974				Fall 1974				Spring 1975			
	♂	♀	unk	total	♂	♀	unk	total	♂	♀	unk	total	♂	♀	unk	total
1	22	13	0	35	72	14	1	87	14	9	0	23	68	12	1	81
2	0	2	1	3	15	2	1	18	3	1	1	5	24	2	0	26
3	6	3	0	9	18	2	0	20	7	0	0	7	34	3	1	38
5	0	0	0	0	7	2	0	9	0	0	0	0	9	2	2	13
6	12	2	4	18	57	18	4	79	11	10	4	25	93	29	10	132
7	16	21	1	38	14	8	6	28	7	5	0	12	28	6	4	38
11	20	11	0	31	1	1	0	2	3	5	1	9				
12					5	1	0	6	5	11	1	17	5	0	1	6
13	42	25	2	69	6	1	1	8	25	15	2	42	14	5	1	20
14	48	23	2	73	7	1	1	9	7	8	2	17	15	5	5	25
15	38	24	7	69	9	3	0	12	33	19	2	54	19	8	3	30
16	96	47	13	156	23	7	0	30	17	9	2	28	27	6	5	38
20									32	15	1	48	47	14	0	61
26																
Total	300	171	30	501	234	60	14	308	164	107	16	287	383	92	33	508
		60% ♂				75% ♂				57% ♂				75% ♂		

Because of the limited habitat, growing human use of the area and possible distinct black bear populations, there is an immediate need for basic life history, movement, composition and population size information along with harvest information. Adequate information is not available in the literature and aerial surveys did not prove useful. Therefore the prospects of a tagging program were explored.

The Aldrich foot snare has been successfully used to capture black bears in Montana (Jonkel and Cowan 1971), Minnesota (Victor VanBallenberghe, ADF&G, Pers. Comm.) and Washington (Poelker and Hartwell 1973) and brown bears in Alaska (Wood 1973). Stream surveys indicated the west side of Prince William Sound would lend itself to use of this snare. The streams are, for the most part, narrow with well defined trails and fishing spots used by bears during salmon runs. Bears caught in snares could be tattooed, ear tagged, weighed, measured and a premolar pulled. The fiberglass collar developed by Glenn (1974) could be tried along with radio-collars.

The hunter harvest in the Sound is high enough that tag returns by hunters, and resightings and recaptures of collared bears during the study should be sufficient to delineate populations and provide some information on movements. Radio-tracking would give more detailed movement information. Information on the sex and age structure of the population, productivity, survival of cubs and other life history information not available from harvest data could be collected.

#### RECOMMENDATIONS

Capture and marking techniques should be tested in western Prince William Sound. If the techniques are satisfactory a population identity and movements study should be initiated in the Sound and life history information gathered simultaneously. Techniques for capturing and relocating black bears in Units 7, 15 and 16 should be investigated.

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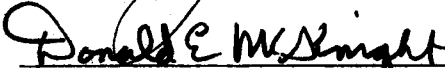
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