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REPORT ON 1973 BROWN BEAR STUDIES

by
Leland P. Glenn

Volume XV
Project Progress Report
Federal Aid in Wildlife Restoration
Project W-17-5, Jobs 4.2R, 4.4R and 4.6R (2nd half)
Project W-17-6, Jobs 4.2R, 4.4R and 4.6R (1st half)

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JOB PROGRESS REPORT (RESEARCH)

State: Alaska

Cooperators: Leland P. Glenn and James B. Faro

Project Nos.: W-17-5 & W-17-6 Project Title: Big Game Investigations

Job No.: 4.2R Job Title: Brown Bear Life History

Period Covered: January 1, 1973 through December 31, 1973

SUMMARY

Data were gathered during the summer 1973 to augment the reproductive histories of known-age female brown bears at the McNeil River Sanctuary. All information previously collected at McNeil River was analyzed and a paper on brown bear reproduction was prepared for the symposium on bear biology to be held in Moscow, U.S.S.R., in July 1974. This paper will serve as a final report for Job 4.2R.

JOB PROGRESS REPORT (RESEARCH)

State: Alaska

Cooperators: Leland P. Glenn

Project Nos.: W-17-5 & W-17-6 Project Title: Big Game Investigations

Job No.: 4.4R Job Title: Distribution and Movements of Alaska Peninsula Brown Bears

Period Covered: January 1, 1973 through December 31, 1973

SUMMARY

This project was largely inactive during 1973, because of lack of funds. Field work will be resumed in 1974. Bear sealing information which will be useful to this study was computerized for analysis.

During a two-week spring and a two-week fall bear hunting season 19 tagged brown bears were killed by hunters. Since the fall of 1970, sixty-three of 229 (28%) bears marked in June 1970, 1971 and 1972 have been killed. The rate of mortality was higher than expected.

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BACKGROUND

There is nationwide interest and a wide range of views about brown/grizzly bear (*Ursus arctos*) management. These views range from total protection of bears and bear habitat to maximum utilization of the resource. The Alaska Department of Fish and Game is responsible for management of the state's brown/grizzly bear resource. Much of the effort by the Department to develop a management program has been directed toward assessment of hunter harvest and the gathering of abundance and composition data. Other studies are designed to test and improve the accuracy of the cementum age determination technique, describe breeding biology and determine growth rates, survival rates and seasonal bear movements. Research studies in progress in Southcentral Alaska are emphasizing these activities in order to provide information which can be used to improve bear management. In recent years the Department has designed studies to determine the effects of industrial activities which may conflict with the well-being of the species. These studies are being conducted in Southeastern Alaska on areas subject to logging and in the interior of Alaska where intensive oil exploration may disrupt bear habitat. Information derived from these studies will be used to aid the development of progressive land classification programs vital to the welfare of the brown/grizzly bear resource.

This report addresses itself to brown bear studies which are in progress in Southcentral Alaska. In 1969 the Alaska Department of Fish and Game chose the Black Lake area as the most suitable location to conduct brown bear research. The area is located on the Alaska Peninsula approximately 475 miles southwest of Anchorage. The background of this investigation has been reported previously (Glenn, 1971, 1972 and 1973). This study was designed to determine the seasonal distribution and movements of brown bears and to determine the effects of bear hunting on that population. Much life history information has been gathered incidental to this study. Previously this information has been reported along with that from the McNeil River study under Job 4.2R. The NcNeil River study is being terminated. The findings of that study will be published separately. Life history information gathered at Black Lake will be reported under this job.

OBJECTIVES

To determine the distribution and movement patterns of Alaska Peninsula brown bears and to test and evaluate new capturing and marking techniques.

PROCEDURES

Procedures for capturing and collecting data on brown bears were described by Glenn (1973).

A computer program was written this year for the purpose of analyzing bear harvest data in relation to research findings. It is anticipated that the data retrieval system will increase our understanding of the dynamics of the Alaska Peninsula brown bear population. To date 15 programs have been written and information contained on 2400 bear sealing certificates has been key punched. It is expected that this system will be operational by June 1974.

Data cards were designed for recording tagged bear information in a form that can be directly keypunched for a computer. The design of a bear collar which can be identified from aircraft was refined. Information was gathered on tagged bears killed by hunters.

FINDINGS

Because funds were not available to support this study in FY 73 no field activities were conducted. Field work will be resumed the spring of 1974 and extended a year to compensate for the lost year. During the report period efforts were directed at some activities which, while not documented under this study, will provide information supplemental to it. These included refinement of the cementum aging technique and computerizing bear sealing records.

A total of 19 tagged bears were killed by hunters during 1973; seven during a 2-week spring season and 12 during a 2-week fall season. These bears represent about 10 percent of the tagged bears believed to be alive at the start of the 1973 bear hunting season. The rate of mortality was higher than expected. Since the fall of 1970, 63 of 229 (28%) tagged bears have been killed by hunters. Table 1 gives the breakdown of this mortality.

Movements of tagged bears killed during 1973 will be summarized in a subsequent report.

RECOMMENDATIONS

No specific management recommendation can be made from data collected this year.

LITERATURE CITED

Glenn, L. P. 1971. Report on 1970 brown bear studies. Alaska Fed. Aid in Wildl. Rest. Rep. Proj. W-17-2.

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_____. 1973. Report on 1972 brown bear studies. Alaska Fed. Aid in Wildl. Rest. Rep. Proj. W-17-4 and W-17-5.

Table 1. The number of tagged bears of all ages on the Black-Chignik Lakes study area at the end of each year and the known numbers harvested in following years. Bears killed during handling are not included. Natural loss from the population has not been quantified.

Year Tagged	Number Tagged	Number of Tagged Bears Killed						Total Hunter Harvest	Percent Mortality	Mortality Period
		1968	1969	1970	1971	1972	1973			
1968	10	2	0	1	0	1[1/]	1	5	50	5.0 years
1969	None		0	0	0	0	0	0	-	-
1970	94			4	10	12[1/]	5	31	33	3.0 years
1971	65				4	9[1/]	7	20	31	2.0 years
1972	70					6[1/]	6	12	17	1.0 years
1973	None						0	0	-	-
Total	239	2	0	5	14	28	19	68	28	

1/ Four tagged bears were killed during the fall 1972 season and not identified to the year captured. The harvest is adjusted by entering one bear in each of the years 1968 and 1970 through 1972.

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JOB PROGRESS REPORT (RESEARCH)

State: Alaska

Cooperators: Leland P. Glenn

Project No.: W-17-5 & W-17-6

Project Title: Big Game Investigations

Job No.: 4.6R

Job Title: Comparison of Brown/ Grizzly Bear Skulls by Size, Age, Sex and Geographic Location

Period Covered: January 1, 1973 through December 31, 1973

SUMMARY

Fifty-two brown/grizzly bear skulls were collected, measured, weighed and photographed. Two premolar teeth from each of these skulls were extracted and await laboratory processing. The skull collection now contains about 500 specimens. Computer programs were written for analysis of bear sealing data. Some of these programs were written so that they can be used for analysis of skull data.

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BACKGROUND

With the exception of work done by Rausch (1963) little information is available on growth characteristics of Alaska brown/grizzly bear *(Ursus arctos)* skulls. Because there exists a need for this information, Game Division personnel began collecting brown/grizzly bear skulls in 1960. The collection remained small until 1967 when a regulation was passed requiring all hunters to present their skulls for sealing. The skull collection grew rapidly after adoption of this regulation. Most skulls were donated to the Department of Fish and Game by hunters and owners of local taxidermy shops who had no further use for these specimens. It wasn't until 1972, however, that the collection was of sufficient size to attempt analysis.

OBJECTIVES

1) To compare skull size by area, sex and age; 2) to establish the rate and duration of skull growth; 3) to investigate the latitude of deciduous and permanent tooth eruption; and 4) to discover any physical characteristics which are common to bears within a specific area.

PROCEDURES

Fifty-two skulls were collected, measured and photographed using procedures described by Glenn (1973).

Computer programs were written for the analysis of bear sealing data. Sealing data include skull measurements, time and location of kill and age. These programs are suitable for analysis of data collected in this study.

FINDINGS

The skull collection now contains about 500 specimens, most of which are from Kodiak Island and the Alaska Peninsula. All of these have been measured and photographed. Due to a complexity of laboratory problems, teeth from the skull collection were not prepared for cementum aging. This made it impossible to analyse the data and complete the

study. The teeth are presently scheduled to be processed by early summer of 1974. Once the ages are available, data analysis will be made. The computer programs prepared this year will be used in the analysis.

RECOMMENDATIONS

The study should be extended for one year for data analysis and final report writing.

ACKNOWLEDGEMENTS

Sincere thanks is given to Charles A. Irvine for his time and effort in processing 52 brown/grizzly bear skulls.

LITERATURE CITED

Glenn, L. P. 1973. Report on 1972 brown bear studies. Alaska Fed. Aid in Wildl. Rest. Rep. Proj. W-17-5.

Rausch, R. L. 1963. Geographic variation in size in North American brown bears, *Ursus arctos* L., as indicated by condylobasal length. Can. J. Zool. 41(1):33-45.

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