

Habitat & future
trends

History of the Grizzly in Yellowstone

The Congressional Act of 1916 creating the National Park Service, specifies that one of the purposes of the National Parks is to conserve the scenery, natural and historic objects and the wildlife and to provide ways for these to be enjoyed yet left unimpaired for future generations.

Only recently has the magnitude and complexity of this congressional mandate been recognized and generalized guidelines established for carrying out the task. The necessity of changing from an early philosophy of preservation to a modern concept of scientific management of wildlife and habitat has gradually evolved within the Service and was concisely formulated in the report of the Advisory Board on Wildlife Management (Leopold et al, 1963).

In Yellowstone National Park this transition was already well under way in the late 1950's. Progress is now largely dependent upon developing a ^{comprehensive, sustained} research program to obtain vital biological and ecological information and upon getting the necessary funding to support ^{both short and long range} resource management activities. Much of the scientific information obtained through ^{basic term} long-range research projects ^{will be} ~~that produce findings~~ applicable to the management of

specific resources. It is imperative that the National Park Service foster a philosophy and develop a capability of applying such information just as rapidly as it is brought to light.

Management of the black bear (Ursus americanus) and the grizzly bear (Ursus horribilis) has suffered from a lack of fundamental biological information. To help rectify this situation an independent study of the ecology of the grizzly was initiated in 1959. While the biological investigations were under way a critical review was made of the management activities related to both the grizzly and the black bear. The purpose of this report is to review the bear management problems in Yellowstone, to summarize past management practices from a review of National Park Service records, present basic population data for managing the grizzly, and to suggest management procedures and policy guidelines. Biological data presented relates to the grizzly bear (~~Ursus horribilis~~) and has been gathered during eight years of intensive research.

The study of the grizzly bear has been a joint effort between the Montana Cooperative Wildlife Research Unit and the Environmental Research Institute and closely coordinated with the National Park Service.*

The results of this seven-year study will be presented in scientific journals. Normally, management suggestions would follow the publication of the scientific information. However, because the grizzly bear is an endangered species and because time is of the essence, suggestions for protecting and

*Financial Support - Statement. (See Reports)

managing the grizzly in Yellowstone and adjacent areas are being presented here prior to the publication of most of the supporting data. Though unorthodox, this procedure will allow wildlife managers to make immediate use of the information obtained.

To manage and preserve the grizzly bear in ~~our large National Parks~~ *Yellowstone National Park*

and adjacent wilderness and forest areas will require a continuing cooperative effort on the part of agencies managing wildlands and wildlife. *It will involve preservation of an optimum grizzly bear population within the Park as well as protection outside where trophy hunting can be encouraged.* Also

greater public interest and understanding of this large carnivore are essential to success. Management will involve some concessions to man and some to the bear.

Specific objectives of this report are:

1. To review the history of black and grizzly bear management in Yellowstone.
2. To analyze bear control statistics and ascertain the efficiency of present management methods.
3. To summarize population dynamics of the grizzly bear and apply this knowledge to management.
4. To offer specific suggestions and policy guidelines for improving the management of the grizzly in Yellowstone and surrounding area.

It will involve preservation of an optimum grizzly bear population within the Park as well as protection outside where trophy hunting can be encouraged. Also

achievements bear action plan

to prevent overpopulation, we desire to decrease, and

It involves preservation of an optimum grizzly population within the Park as well as protection outside where trophy hunting can be encouraged and used as a tool to prevent overpopulation, undesirable dispersal, and detrimental bear activities.

Since Lewis and Clark first saw grizzly bears on our western prairies in 1805, their numbers have steadily declined. In the United States (with the exception of Alaska) they now exist only as remnant populations in wilderness areas, national parks, and national forests of the Rocky Mountains. (map).

The grizzly, an endangered species, has disappeared from Texas, Kansas, Arizona, New Mexico, Oregon, Utah, and the Dakotas. In California, where it was once numerous, there has been no record of a grizzly for 43 years (Storer and Tevis, 1955). Cooney (1956) reviewed the status of the grizzly in the United States and concluded that the State of Washington may have a few, Colorado possibly 10, Idaho approximately 60, and Wyoming, excluding Yellowstone National Park, not more than 50. Montana lists about 450 exclusive of Glacier National Park. Estimates for Glacier and Yellowstone at that time showed 100 and 125 grizzlies respectively. These very rough estimates indicate the number of grizzlies left in the United States, excluding Alaska, may lie between 500 and 1,000.

Grizzly bears were common in the Yellowstone area prior to 1900, but black bears were apparently scarce. However, loose usage of the term bear for ^{both} grizzlies ~~by the early explorers~~ and ~~for~~ blacks ~~by the early superintendents~~ has made it difficult to hazard a guess as to the relative abundance of the two species. Sightings and encounters with grizzlies were mentioned by Bart Henderson, 1866, by N. P. Langford in 1870 and W. E. Strong in 1876. Bart Henderson in his "Journal of the Yellowstone Expedition of 1866 Under Captain Jeff Standifer" made the following comments:

July 21, 1870	"Here (Buffalo plateau) we found all manner of wild game... buffalo, elk, blacktail deer, bear and moose." "Thousands of bear, elk buffalo and deer" (Lake Abundance).
July 4, 1870	"I killed several deer and three bear" - at Lake Abundance.
July 9, 1870	"We returned to camp after killing five bear, and doing no prospecting".
July 10, 1870	"Killed six bear today".
July 11, 1870	"I was chased by an old she bear today. Climbed a tree and killed under the tree."

July 19, 1870

"Killed three bear".

Apparently grizzlies were so common and blacks so scarce that the term bear was synonymous with grizzly bear. Grinnel, (1876) noted that only one living black bear was seen in Yellowstone and vicinity, but that in the Bridger Mountains and in Yellowstone Park grizzlies were numerous.

In spite of the many historical records of bear killings and sightings there is little factual data concerning the population status of black and grizzly bears in Yellowstone prior to the early 1900's.

Superintendent W. Norris, in his Annual Report for 1880 stated that the grizzly... "is less numerous than some other varieties within the Park". This observation and subsequent ones by later superintendents is contrary to the earlier observations of numerous grizzlies but few if any black bears. Apparently the black bear increased rapidly as Park visitation increased. In 1892, Superintendent G. S. Anderson stated in his Annual Report: "The bears are becoming very numerous and in some places quite troublesome, but as they

are not in the least dangerous and their presence near the hotels is a source of great amusement, I do not recommend the destruction of any." These could only have been black bears.

In 1894, Anderson reported, "Bears are numerous in the vicinity of all the hotels and have become very tame. I recently shipped to the Washington Zoological Park an enormous grizzly bear...".

Superintendent S.B.M. Young reported in 1897, "It is common occurrence to see six to twelve bears any afternoon feeding on the garbage dumps within a few hundred yards of the Fountain Hotel. Among the number is one large grizzly".

Hunting in the Park was permitted until 1886 and Skinner (1925) believed this was responsible for a scarcity of bears at that time. Cessation of hunting was also, no doubt, the cause for the increase in blacks noted by superintendents between 1892 and 1900. By 1900 black bears were so numerous that Park officials considered control measures. In 1899, Superintendent

J. B. Irwin reported that bears were numerous and without doubt increasing.

"It will, undoubtedly, be necessary to kill some..." In 1907 both black and grizzlies were killed in control measures and in 1908 a grizzly was captured and shipped to the National Zoological Gardens in Washington D.C. This control effort was followed up in 1911 with the [?]sacrifice of two grizzlies and _?three blacks that had become troublesome. Ten grizzlies and two blacks were shipped to zoos. The following year fourteen grizzlies were shipped to zoos and this procedure became routine in the years that followed.

Skinner (1925) noted that on August 2, 1916, he had twenty-nine grizzlies in sight - the most he had ever seen at one time. At about this time he estimated a total of forty grizzlies in Yellowstone.

On August 20, 1913, thirty-two grizzlies were counted on the garbage dump at Canyon. Horace M. Albright estimated at least forty grizzlies in the Park in 1920 and at least one hundred black bear. In his Annual Report for 1925, Albright estimated the black bear population at two hundred, of which seventy-five frequented points of interest along the loop road, and the number of

grizzly bears at, "Not less than 75". The Annual Report for 1927 stated,

"Recent counts of bears of this species (grizzlies) are noted as follows:

Canyon 53, Lake 11, Old Faithful 10, Total 74. This total includes 22 cubs.

No recent counts have been had on the bears of this species known to frequent

the more remote districts of the Park. The estimated total for the whole Park

is 100." The population of black bears was estimated at 275. A year later

black bears were counted and Albright listed the counts as follows: Canyon 91,

Lake 60, Tower Falls 12, for a total of 227, including 52 cubs. On a basis of

three counts he estimated a population of 350 for the Park. This estimate was

later revised to 440 and the following year (1930) the population was estimated

at 490. The grizzly bear estimate for the same year was 167. Since these

estimates were based on actual counts in areas where the two species concen-

trated, the figures probably indicate relative abundance of blacks to grizzlies

in the more frequented portions of the Park.

Estimates of both black and grizzly bears appear in Table I. Both

species apparently increased from 1880 to 1958, but the estimates are crude

and are chiefly of value in showing that after 1900, the black bear was more numerous than the grizzly, perhaps in the ratio of about 2 or 3 to 1.

In 1950 Condon estimated 180 grizzlies for the Park and this is perhaps the most accurate estimate prior to 1959 when intensive census techniques were utilized.

Food disposal areas attract bears in Yellowstone, just as the salmon streams of Alaska concentrate the Alaskan brown bear, Ursus middendorffii, during the spawning runs. While feeding at these areas some bears are indifferent to man, but most are alert; and sufficiently shy to run at the least disturbance. Skinner (1925) states, "Out in the wilderness that covers so much of the Yellowstone National Park, they (grizzlies) are just as wild, just as cautious, and just as difficult to find as bears anywhere else". This statement is essentially true today.

TABLE I

EARLY POPULATION ESTIMATES
OF BLACK AND GRIZZLY BEARS IN YELLOWSTONE
NATIONAL PARK

Year	Estimated Number of Black Bears	Estimated Number of Grizzly Bears
Prior to 1880		Grizzly more numerous than black bear
1880		Grizzly less numerous than black bear
1892	Blacks very numerous	
1894	Blacks very numerous	Grizzly bear shipped to zoo
1895	Blacks plentiful & increasing	
1899	Blacks increasing, control measures considered	
1907	Both species numerous Bear control instigated	
1913		32 counted at Canyon
1920	Estimate of 100 in Park	Estimate of 40 in Park
1922		16 seen at Canyon
1925 *	200	75
1926	225	80
1927	275	100
1928	350	140
1929	440	150
1930	490	167
1931	465	180
1932	517	213
1933	525	260
1934 No estimate		
1935	500	250
1936	500	250
1937	621	268-300
1938	520	290
1939	450	270
1940	500	300
1941	510	320
1942	550	300
1943 No estimate		
1944 No estimate		
1945 No estimate		
1946	450	250
1947	450	200
1948 No estimate		
1949	360	200
1950	360	200
1951	360	180
1956-1958 No estimates		

*Population figures from 1925 to 1958 are rough estimates made by National Park Service personnel based on sporadic and incomplete counts.

Early records indicate that grizzly bear populations were concentrated in the foothills of the Rocky Mountains and in the valleys of the larger rivers. Lewis and Clark encountered numbers of grizzlies along the Missouri in the vicinity of the Sun River and at the Great Falls of the Missouri (De Voto, 1953). Grizzlies were associated with the large buffalo herds that furnished an abundant source of food. With the disappearance of the buffalo and the settlement of the valleys and foothill regions the grizzly disappeared and is now found only in the high mountain wilderness areas. This habitat, suitable for the grizzly, has been preserved in the 3,412 square miles of Yellowstone National Park and in the National Forest areas surrounding it. This wilderness habitat has been and is essential to the population.

Grizzlies in Yellowstone move long distances from winter dens to major summer ranges or summering areas. This movement begins in May and early June, reaching a peak about the first of July. Extensive movement at this time is normal. However, in Yellowstone a type of migratory movement has developed in response to "artificial" food at garbage dumps and to an abundance of natural food in the summer range. The garbage sites concentrate the grizzly bears during a four-month period from June through September. Prior to and following the period of concentration, grizzlies frequent the

entire Park and several thousand square miles of adjacent country. The natural trait of bears to congregate where food is abundant is intensified in Yellowstone. Black bears were reported by G. S. Anderson to be concentrating around the hotels in 1892 and as early as 1897 grizzlies were observed at the garbage dumps. In 1913, 32 grizzlies were counted at the Canyon refuse dump. This trait of both grizzlies and blacks led to the establishment of feeding stations at Canyon and Old Faithful as early as 1919. The feeding stations enabled the public to view the grizzly but presented a danger as visitor numbers increased. The stations were discontinued in 1941 and grizzlies long accustomed to feeding at these stations re-established the habit of congregating in numbers at the refuse dumps as they had in the late 1800's and 1900's. To protect visitors these areas were zoned from public use.

In seventy years of close association with man, the grizzlies in Yellowstone have not basically changed their behavior. They have not become "roadside bums" like the black bear. Early in the season the grizzlies are wary. As the season advances and the number of grizzlies at the dumps increase,

they get bolder. This habit of congregating where food is available is characteristic of all North American bears and has been observed and noted for the grizzly from the time its numbers and behavior were first recorded. Innumerable references to this exist in the literature. Storer and Tevis (1955) in citing early writers, quote such phrases as ... "regiment of bears," ... "countless troops," ... "bears are very plentiful" ... "are often seen in herds," ... "not unusual to see fifty or sixty within twenty-four hours" ... "the whole lake and swamp seemed alive with bears." These and numerous similar expressions referred to the California grizzly when it congregated to feed.

Many early accounts tell of the grazing habits of grizzlies, "the bears congregated locally to forage in wild pastures and made seasonal migrations to such places." (Storer and Tevis, op cit.). The same authors summed up the gregarious behavior of the California grizzly in these words, "But when grizzlies congregated with their kind to relish some desirable food - clover, acorns, or whale - they ate together peaceably."

It is the nature of the grizzly bear to congregate wherever food is

available and an understanding of this natural trait and the behavior of the bears when concentrated, is basic to managing them within Yellowstone National Park. The dumps attract and hold the grizzlies in these areas for a longer period of time than does natural food alone. The implications of this in a management program will be discussed later.

The Problem of Managing Bears

Soon after the creation of Yellowstone National Park in 1872 bear-man relationships became a problem. After more than 90 years this relationship is still a problem. The black bear readily adjusted to man and his ways and as early as ¹⁸⁸⁰~~1930~~ had become a frequenter of the roads and refuse dumps. The grizzly also learned to visit garbage dumps but unlike the black bear has never associated closely with man.

Basic management distinctions have not been made between grizzlies and blacks, yet their contact with the public, their behavior, habits, habitat requirements and their population status are vastly different. Therefore to trace the history of grizzly bear management in Yellowstone and to develop policy guidelines it is necessary to briefly review the Yellowstone bear problem as a whole.

As early as 1880 the annual reports of the Superintendents of Yellowstone contained estimates of bear numbers and listed those killed or shipped to zoos.
In 1931 ~~the necessity of managing bears~~ ^{systematic management} in Yellowstone was officially recognized and records were kept on personal injuries and property damage caused by bears as well as the number of offending bears killed. From 1931 to the present time the management of both black and grizzly bears has consisted essentially of warning the visiting public and of capturing and disposing of "nuisance" bears.

(Table 4)

Bear Management Policy

Guidelines for a National Park Service bear management program were prepared and distributed in 1960. The management guidelines were directed toward the black bear and were premised on the concept that a wholly wild population of black bears could be established by removing the "spoiled" bears and by eliminating those practices and conditions that cause the "spoiling". "The result, it was thought, would be a wild population in keeping with the original and fundamental concept of the National Parks."

This idealistic goal could not be attained in Yellowstone without threatening the entire population of black bears. A Yellowstone National Park Bear Policy designed to implement and modify the National policy was clearly needed and such a policy was formulated in the summer of 1960 and has been revised periodically since. The present ^{bear}/management policy for Yellowstone recognizes that drastic control will not solve the problem, that visitors are entitled to view black bears, that this can best be accomplished along the roads and that bear management must be tailored to do this while keeping the ^{damage and} hazards to a minimum.

To implement this, action was taken to remove causes of black bear concentration, to educate the visitors to the danger of bears and to enforce

"bear feeding" regulations. Bear control responsibility was clarified and control action confined to permanent ranger personnel.

The reporting procedures for bear control action, personal injury, and property damage were standardized throughout the Park. Specific instructions for removal of offending black and grizzly bears were prepared with emphasis on the use of drugs. Documentation and approval became mandatory before destroying habitual offenders.

With policy guidelines and a recommended action program established for the black bear it is now imperative to develop separate policy guidelines and an action program for the grizzly. Management of sorts has evolved from administrative decrees that have zoned the dumps where grizzlies concentrated. Also zoning has developed throughout the Park as a result of the recreation-use pattern that in Yellowstone evolved as a sightseeing tour by horse-drawn coaches and motor vehicles rather than as back-country hikes and pack trips. This has tended to keep visitors close to the major roads and away from the wilderness country and the grizzly. Neither packers or hikers have been encouraged in Yellowstone whereas in Glacier National Park, hiking is stressed and a quite different recreational-use pattern has evolved. A result has been proportionately more grizzly bear incidents in Glacier than in Yellowstone.

Table 2

BEAR CONTROL MEASURES IN
YELLOWSTONE NATIONAL PARK PRIOR TO 1931

Compiled from Annual Reports of the Superintendents

Year	Killed	<u>Black Bear</u>	<u>Grizzly Bear</u>	
		Shipped to Zoos	Killed	Shipped to Zoos
1907	1		2	
1908			1	1
1911	3	2	2	10
1912				14
1913			5	5
1914				8
1915				3
1916	6		2	
1918 *				
1920			7	
1930	3			
Totals	13	2	19	41

*9 bears were killed, species not recorded.

Note: Records of bear control were not mandatory and these do not appear for all years in the Superintendent's Reports.

In Yellowstone over the past seven years there has been one personal injury by grizzlies for every 17.5 by blacks and the control kill has been one grizzly for every 12.6 black bears.

In Glacier over a comparable period of time, there has been one personal injury by grizzlies for every 1.8 by blacks with a control kill of 1 grizzly for each 4 blacks (Table ³Y).

Whereas the "close to the road" visitor use pattern in Yellowstone has helped to effectively zone the grizzly from visitors, it has had the opposite effect with regard to the black bear. ^{Since 1800} ~~It has placed~~ this animal

^{have been} and man on intimate terms at the hotels, campgrounds and along the roads. For over 80 years the black bear has been a great tourist attraction but it has been ^{higher in} personal injury, property damage and administrative problems.
Bear Management Action

Death statistics kept by the Park Service clearly illustrate the bear problem and the action that has been taken over the years. ^{TT-7061} The number

of bear incidents and the control exercised in an attempt to keep bear-man contacts (mostly blacks) to a level tolerable to both the public and the

park administrators are recorded in Table ⁴2. The personal injuries and

property damage figures include both black and grizzly bears. Only for the

past 10 years (1956 through 1965) of the 35 years for which records are

available, has a distinction been made between the two species. However,

Table 2 shows that sporadic control of both black and grizzly bears began as early as 1907. During this 23 year period 15 black bears were disposed of and 60 grizzlies. No doubt this record is far from complete but we can logically conclude that in those early years of the Park grizzly bears were a greater problem than black bears.

A more complete record was kept from 1931 to the present.

Table 13

Comparison of Black and Grizzly Bear Incidents in Yellowstone and Glacier
National Parks
1959-1965

Year	Personal Injury				Bears Killed								Total			
	Black		Grizzly		Control				Accidental				Black		Grizzly	
	Y	G	Y	G	Y	G	Y	G	Y	G	Y	G	Y	G	Y	G
1959	41	4	0	1	24	8	6	3	40	0	0	0	64	8	6	3
1960	69	6	0	4	86	10	3	7	17	1	1	0	103	11	4	7
1961	57	3	1	1	58	5	1	0	11	0	0	0	69	5	1	0
1962	40	1	2	1	48	6	4	0	8	2	0	0	56	8	4	0
1963	30	1	6	2	18	3	2	2	15	0	0	0	33	3	2	2
1964	28	1	2	0	10	4	2	0	8	3	0	1	18	7	2	1
1965	33	2	6	1	9	14	2	0	7	2	0	0	16	16	2	0
Totals	298	18	17	10	253	50	20	12	106	8	1	1	359	58	21	13

Yellowstone - Control Kill • 1 grizzly:: 12.6 black bears

Total Mortality= 1 grizzly:: 17.5 black bears

Glacier • Control Kill = 1 grizzly :: 4 black bears

Total Mortality = 1 grizzly :: 4.5 black bears

Table 24

Bear Incidents and Control Measures

Yellowstone National Park - 1931-1965

Year	Personal Injuries	Property Damage	Black ^a Bears Killed for Control	Grizzlies Killed for Control	Black Bears Killed Accidentally	All Bears Killed for Control	Total Bear Mortalities	Park Visitation
1965	39	289	9	2	7	11	18	2,056,198
1964	30	224	10	2	8	12	20	1,962,742
1963	36	278	18	2	15	20	35	1,870,644 ^b
1962	42	112	48	4	8	52	60	1,923,063 ^b
1961	58	247	58	1	12	59	71	1,525,368 ^b
1960	69	358	85	4	17	89	106	1,440,463 ^b
1959	41	269	24	6	40	30	70	1,406,831 ^b
1958	39	117	26	2	12	28	40	1,425,680
1957	91	125	20	1	18	21	39	1,595,875
1956	109	106	14	-	7	14	21	1,457,782
1955	73	121	18	5	-	23	23	1,368,515
1954	43	115	6	5	-	11	-	1,328,893
1953	43	66	10	1	-	9	-	1,326,858
1952	40	84	8	1	-	-	-	1,350,295
1951	38	75	40	4	-	44	-	1,166,346
1950	51	48	20	-	-	20	-	1,109,926
1949	47	26	11	8	-	19	-	1,133,516
1948	36	27	5	3	-	8	-	1,013,531
1947	40	9	8	-	-	8	-	932,503
1946	15	20	4	-	-	4	-	814,907
1945	2	7	2	-	-	2	-	178,296
1944	2	18	9	3	-	12	-	85,347
1943	5	38	14	-	14	14	-	64,144
1942	29	118	54	28	-	83	-	191,830
1941	90	102	26	-	-	26	-	581,761
1940	41	75	12	-	-	12	-	526,437
1939	78	92	23	-	-	23	-	486,936
1938	97	81	46	-	-	46	-	466,185
1937	115	81	41	10	-	51	-	499,242
1936	42	34	10	4 ^c	-	14	-	432,570
1935	36	141	66	3	-	69	-	317,998
1934	25	38	2	-	-	2	-	260,775
1933	22	146	22	-	-	22	-	161,938
1932	34	451	55	-	-	55	-	157,624
1931	78	209	34	-	-	34	-	221,248
TOTALS	1,678	4,347	859	99	144	958	1,102	32,842,267
35 Yr. Average	48	124	25	28	-	27	21	938,350

^a Does not include bears accidentally killed^b Travel only through October 31^c Museum specimens

Note: Data in this table obtained from National Park Service Records

most of the incidents recorded in Table ⁴2 prior to 1956 are attributable to the black bear. Black and grizzly bear incidents from 1959 to 1956 appear in Table ⁵3 and Figure 1. These data illustrate the control problem relative to the two species.

from 1931 to 1965

related to Personal injury and property damage incidents are preponderantly ~~involved with~~ the black bear. Over the 7-year period (Table ⁵3) an average of 36 blacks and 3 grizzlies were annually killed in control measures. In addition 106 black bears are listed as accidental deaths. Many of these deaths resulted from incompetent administration of drugs by rangers attempting to immobilize bears and probably should have been recorded under the control kill. Since records of accidental deaths for earlier years are not available, accidental and control deaths cannot be compared and evaluated. However, each death, whether planned or accidental, has a controlling effect on the population.

The data presented in Table ⁵3 for the period 1959 to 1965 show that the average annual mortality ~~from all causes~~ of 51 black bears per

year is more than double the 35-year average control kill of 25 blacks. (Table 4)

Under the present system this heavy mortality will be offset by a series of years when the control kill will be kept low (Figure 2). When personal injury and property damage incidents increase and administrative concern

Table 3⁵

Yellowstone National Park Bear Incidents

1959-1965

Black Bear

Year	Personal Injury	Property Damage	Bears Killed		Total
			Control	Accidental	
1959	41	267	24	40	64
1960	69	346	86	17	103
1961	57	242	58	11	69
1962	40	107	48	8	56
1963	30	273	18	15	33
1964	28	220	10	8	18
1965	33	283	9	7	16
Totals	298	1,738	253	106	359

Bears Killed - Ave. - 51 per year - all causes
 Ave. - 36 per year - control

Grizzly Bear

1959	0	2	6	0	6
1960	0	12	3	11	4
1961	1	5	1	0	1
1962	2	5	4	0	4
1963	6	5	2	0	2
1964	2	4	2	0	2
1965	6	6	2	0	2
Totals	17	39	20	1	21

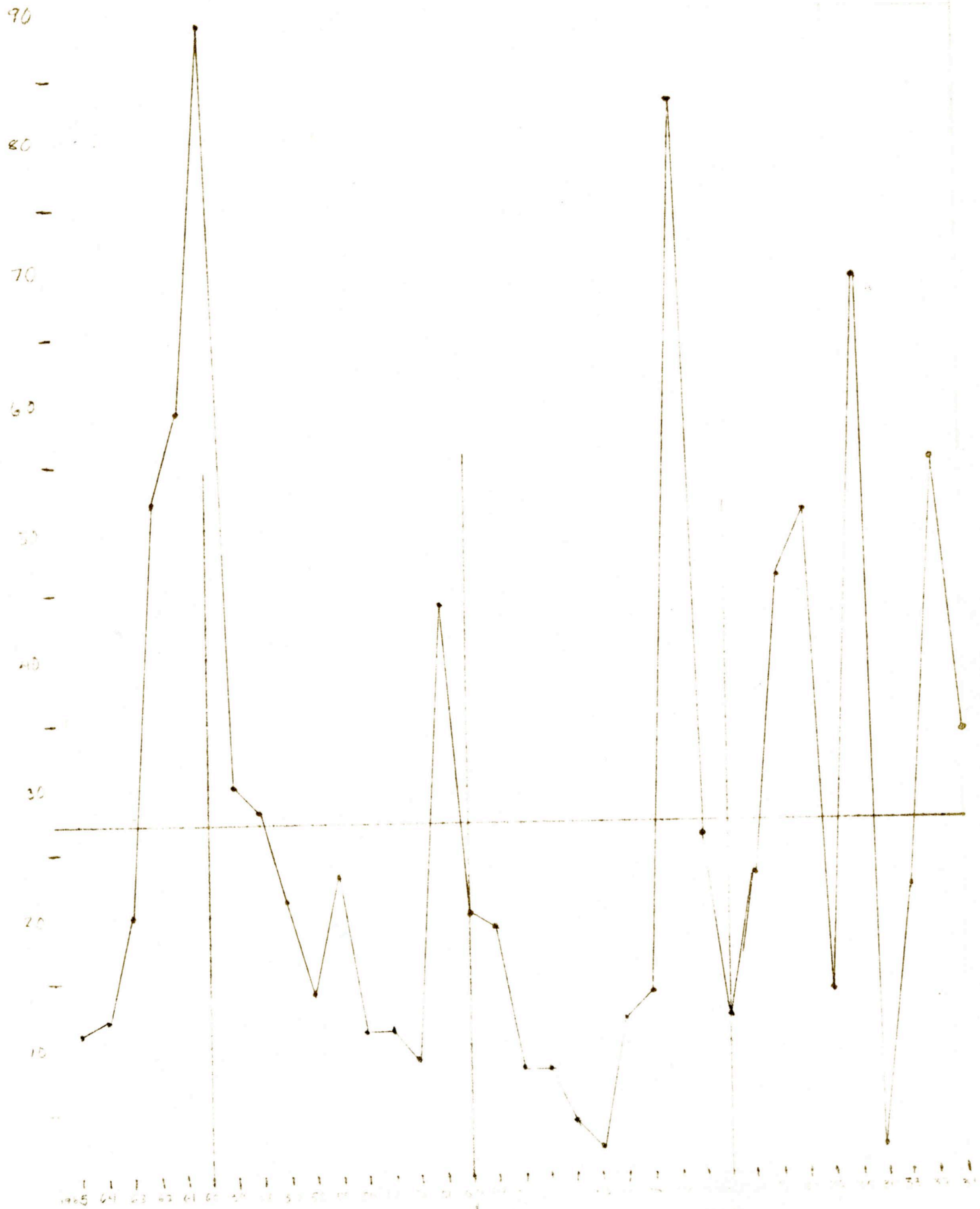
Bears Killed - Ave. - 3 per year - control

Figure 1

Personal Injuries from Black and Grizzly Bears
1959-1965
Yellowstone National Park



Figure 2
Annual Control Measures For Bears
Yellowstone National Park
1931-1965



again rises in response to public complaints, then the control kill will peak again. This erratic type of control responding so directly to public pressure could and should be stabilized.

Personal injuries and property damage in Yellowstone over the past 35 years have been respectively 17 and 45 times more numerous from the black than from the grizzly. The incidence of personal injuries from the black and the grizzly over the past seven years (1959-1965) is shown in Fig. 1.

When grizzlies come in contact with park visitors, nearly half of the incidents involve personal injury whereas in the case of the black bear personal injury occurs in only one-sixth of the incidents. When data for both species are lumped as in Table ⁴~~2~~, it becomes readily apparent that personal injury and property damage from both species of bear have occurred consistently and frequently over a 35-year period with a ratio of property damage to personal injury of about 3 to 1. With many damage incidents of a minor nature unrecorded.

The maximum control measures for black bears occurred in 1960 when 85 were destroyed with an additional 17 accidentally killed. As far back as 1935 and 1932, heavy control was practiced with 66 and 55 blacks

reported sacrificed in the respective years. Some black bears were killed during each of the 35 years for which records are available (Table ⁴2, Fig. 2).

Control of the grizzly has been far less intensive and more erratic with kills reported for only 20 of the 35 years. Maximum control measures occurred in 1942 when 28 grizzly bears were disposed of. The ratio of grizzlies to blacks in the control kill during the 35-year period is approximately 1:8^p whereas in the past 7 years (1959-65) (Table ⁵3) it has been approximately 1:17 if all blacks listed under accidental deaths are considered as part of the control kill. *From 1907 to 1930 the ratio was 1 black bear to 4 grizzlies (Table 2).*

Analysis of Past Management Efforts

Certain conclusions can be drawn from the 35-year record of bear control. For convenience of interpretation the information in Table ⁴2 has been grouped into five-year periods and is summarized in Table ⁶4. These data show that during a 35-year period from 1931 through 1965, the Yellowstone Park administration has reported 1,678 personal injuries resulting from bear-visitor contacts and 4,347 cases of property damage. To counter this situation park rangers killed in control measures 859 black bears and 99 grizzlies (accidental deaths not included) or an average of 27 bears a year. During this period approximately 33,000,000 visitors entered the Park, an annual

Table 46

Summary of Yellowstone Bear Incidents
1931-1965

Period	Personal Injuries	Property Damage	Black Bears Killed for Control	Grizzlies Killed for Control	All Bears Killed for Control	Black Bear Accidental Deaths	Park Visitation	Annual Ave. Park Visitation	Ratio of Black Bears Killed to No. of Visitors	Ratio of Grizzlies Killed to No. of Visitors
1931-35	195	985	179	3	182		1,100,000	220,000	1:6,100	1:366,600
1936-40	373	363	132	14	146		2,411,000	482,000	1:18,300	1:172,200
1941-45	128	283	106	31	137		1,101,000	220,000	1:10,400	1:35,500
1946-50	189	130	48	11	59		5,004,000	1,000,000	1:104,300	1:454,900
1951-55	239	461	82	16	98		6,541,000	1,308,000	1:79,800	1:408,800
1956-60	349	972	169	13	182	94	7,327,000	1,465,000	1:43,400	1:563,600
1961-65	205	1,150	143	11	154	50	9,338,000	1,868,000	1:65,300	1:848,900
1931-65	1,678	4,347	859	99	958	144	32,822,000	938,000	1:38,200	1:331,500

Grand Total Black Bears - 965

Grand Total All Bears - 1,102

average of about 938,000. A numerical relation exists between numbers of bears and numbers of people. Theoretically an increase in either or both should increase the opportunity of contact between the two. Many factors affect the probability of contact and some of these factors can be manipulated for management purposes. A reduction in bear numbers is the most direct way of reducing bear-man contacts. This has been the underlying philosophy guiding the action program in Yellowstone over the years.

Figure 2 shows the annual fluctuation in control kill that has occurred between 1931 and 1965. Figure 3 shows the control kill over five-year periods and the annual average for each period. There appears to be no pattern to the size of the annual control kill or the five-year totals until compared with the incidence of personal injuries (Figure 4). In general, the heavy control kills have either coincided with or immediately followed years when personal injuries were high. Following the heavy control kills, the incidence of personal injuries has dropped and so too have the control measures. Exceptions to this general trend occurred with low personal injury records in 1933 and ¹⁹34 followed by a heavy control kill in 1935. Similarly, high personal injury records in 1955, 56, and 57 elicited only very light control until 1960 when an all time record of 85 black bears were destroyed (102 ^{if} accidental deaths are included). The relationship between control kill

Figure 3

Control Measures For Bears By
Five Year Periods
Yellowstone National Park
1931 - 1965

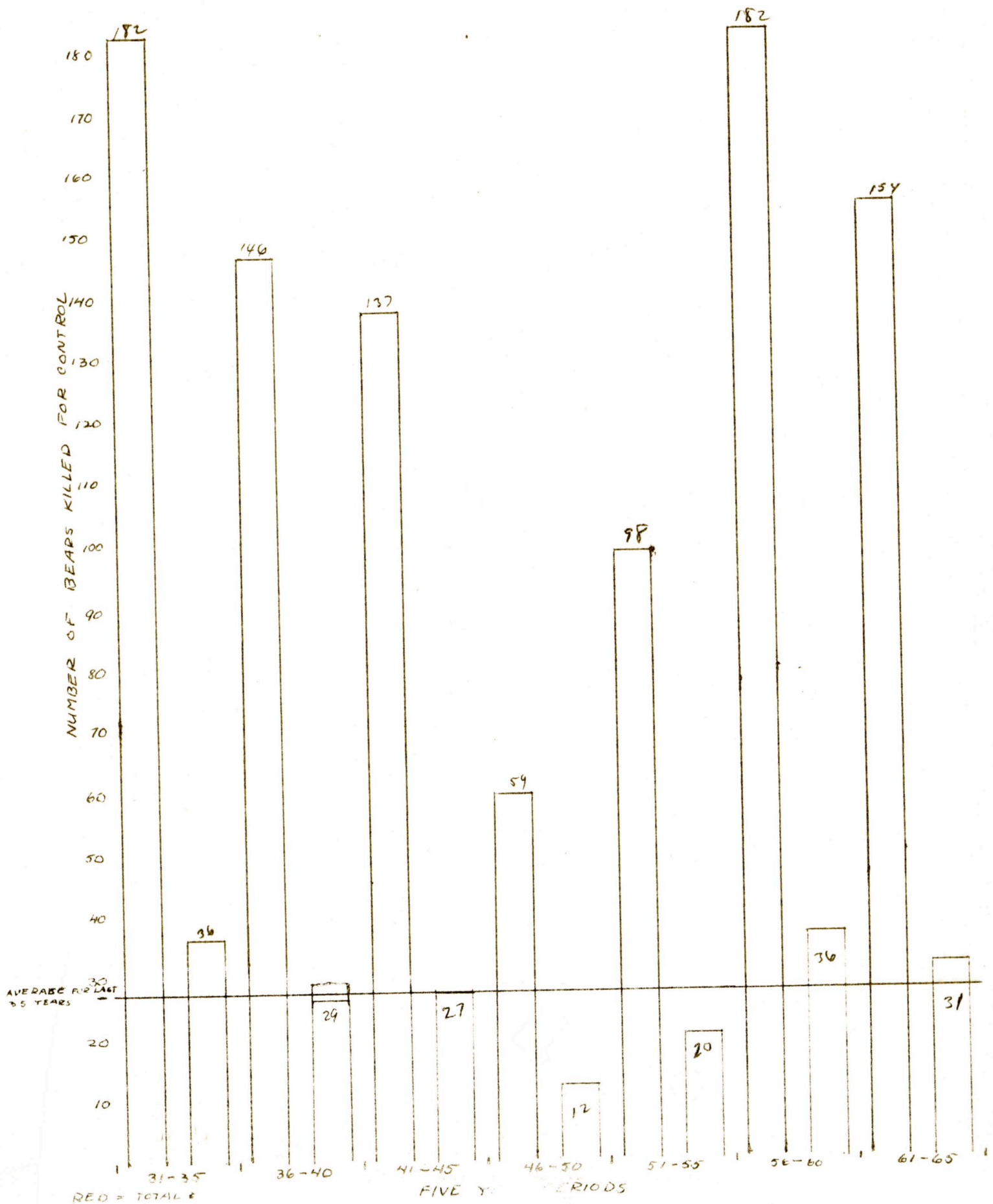
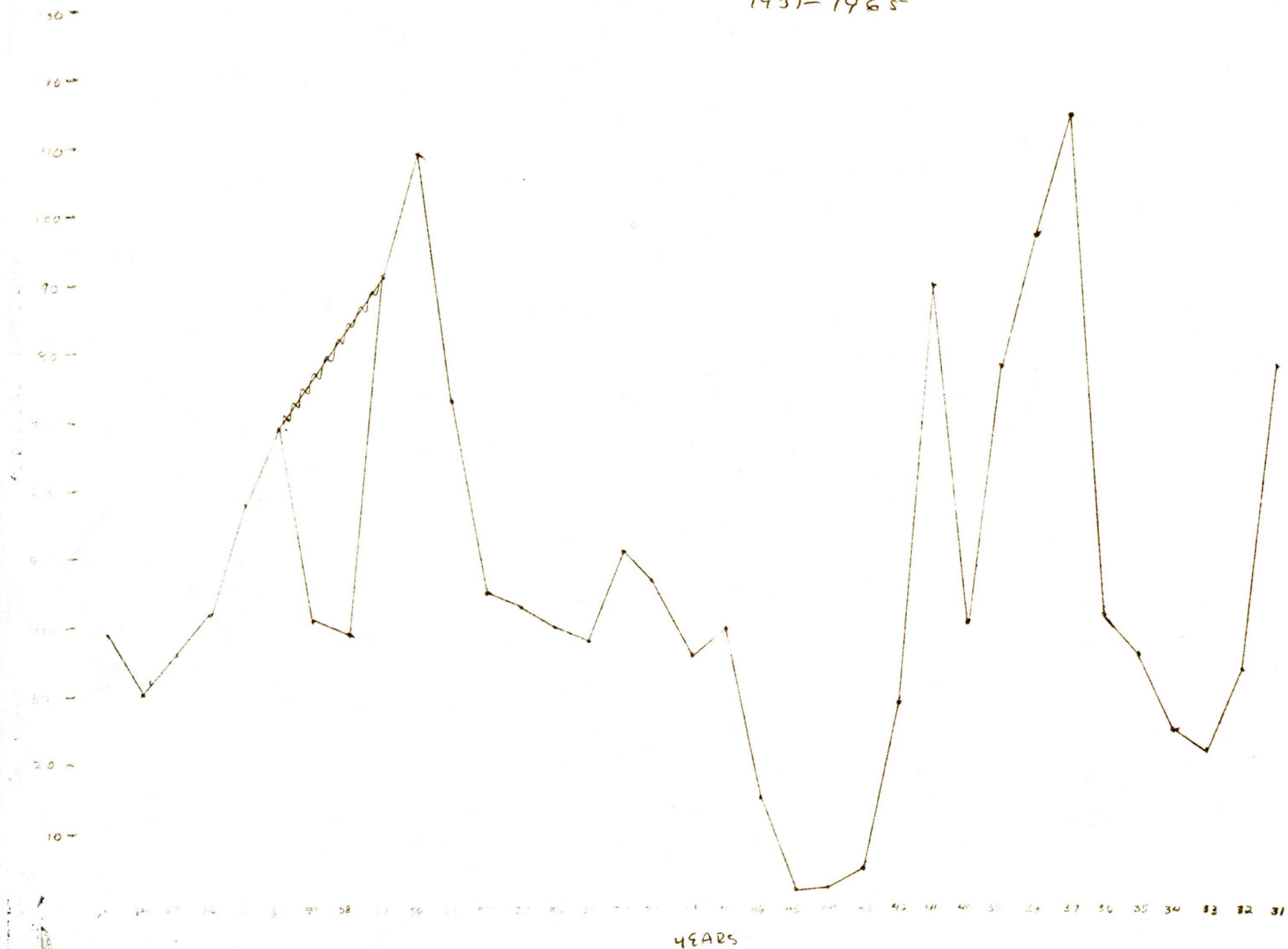


Figure #
Incidence of Personal Injuries From Bears
Yellowstone National Park
1931-1965



and incidence of property damage is not as consistent (Figure 5), but a general trend for the control kill to follow ^{or} ~~be~~ coincide with the incidence of property damage is evident.

High incidence of personal injury and property damage has been the catalyst initiating bear control but the great fluctuations in the annual control kills show that no guidelines exist to determine the level of the kills from year to year. There is little doubt that the amplitude of the kill from year to year reflects visitor complaints and this in turn reflects administrative apprehension.

The record of black bears killed in control measures over the past ten years (1945-65), Table ⁶/₄, is identical to the control kill for the first ten years of record keeping (1931-40). This would indicate that the problem is being kept in hand in spite of increased park visitations and in spite of the erratic annual control kill.

Personal injuries have not increased importantly over the years. There were 195 during the period from 1931 to 1935 and ~~215~~ 205 in the period 1961-1965. The maximum for a five-year interval was 349.

Incidents of property damage have fluctuated widely; however there were 985 recorded incidents in the first five years during which records

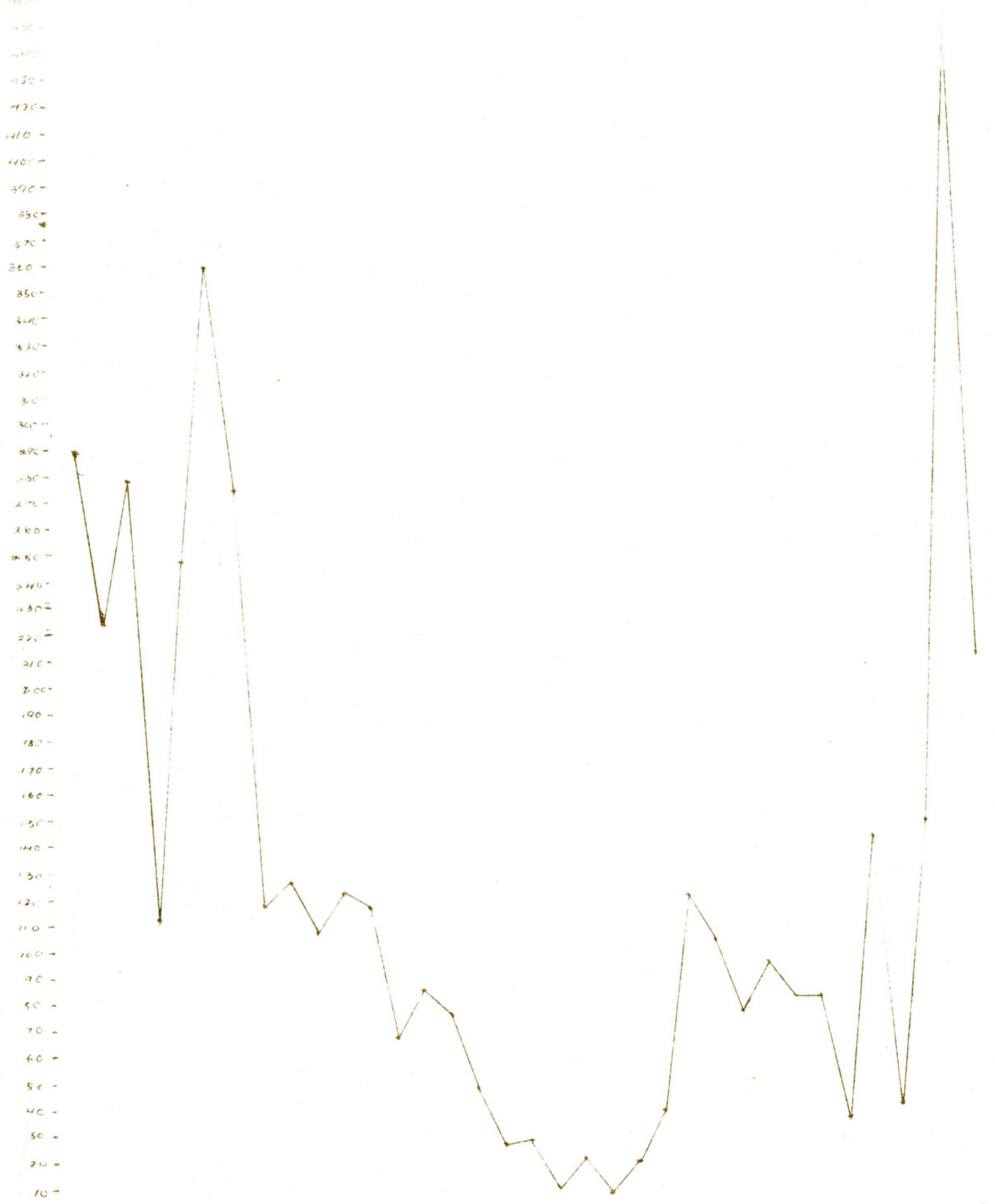
Figure 5
Incidence of Property Damage From Bears
Yellowstone National Park
1931-1965

Incidence of
PROPERTY DAMAGE

500-
480-
460-
440-
420-
400-
380-
360-
340-
320-
300-
280-
260-
240-
220-
200-
180-
160-
140-
120-
100-
80-
60-
40-
20-
10-

65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31

YEARS



were kept and 1,150 during the last. A trend indicating an increase, correlated with annual increases² in visitor use, is not apparent although park visitation has risen steadily with the exception of the 1941-45 period that coincided with World War II (Table 4⁶).

However, a comparison of Figures 6, 7, and 8 shows that between 1959 and 1965 there is a close correlation between the seasonal buildup of park visitors from May to October and the personal injury and property damage from bears for the same period. The maximum potential for bear-visitor contacts occurs in August and this is the month of maximum personal injury and property damage.

The ratio of black bears killed to the increase in number of annual visitors does not show a direct relation (Table 4⁶). It is quite probable that the annual average control kill of 25 black bears has kept the roadside population at a level that in 1965 varies little from the 1931 level of 35 years ago. Unfortunately there are no accurate censuses to support or disprove this supposition. However, official park records show an estimated ⁴⁶⁵525 in 1931 and 517 and 525 (Table 1) in 1932 & 1933 respectively. black bears ~~at about this period (Haynes 1935)~~. From roadside counts of black bears in 1960, 61, and 62 we calculated ^{an annual} a minimum roadside and campground population of 300 to 400 blacks.

Fig. #6
Park Visitation as Related To Season
1959-1965

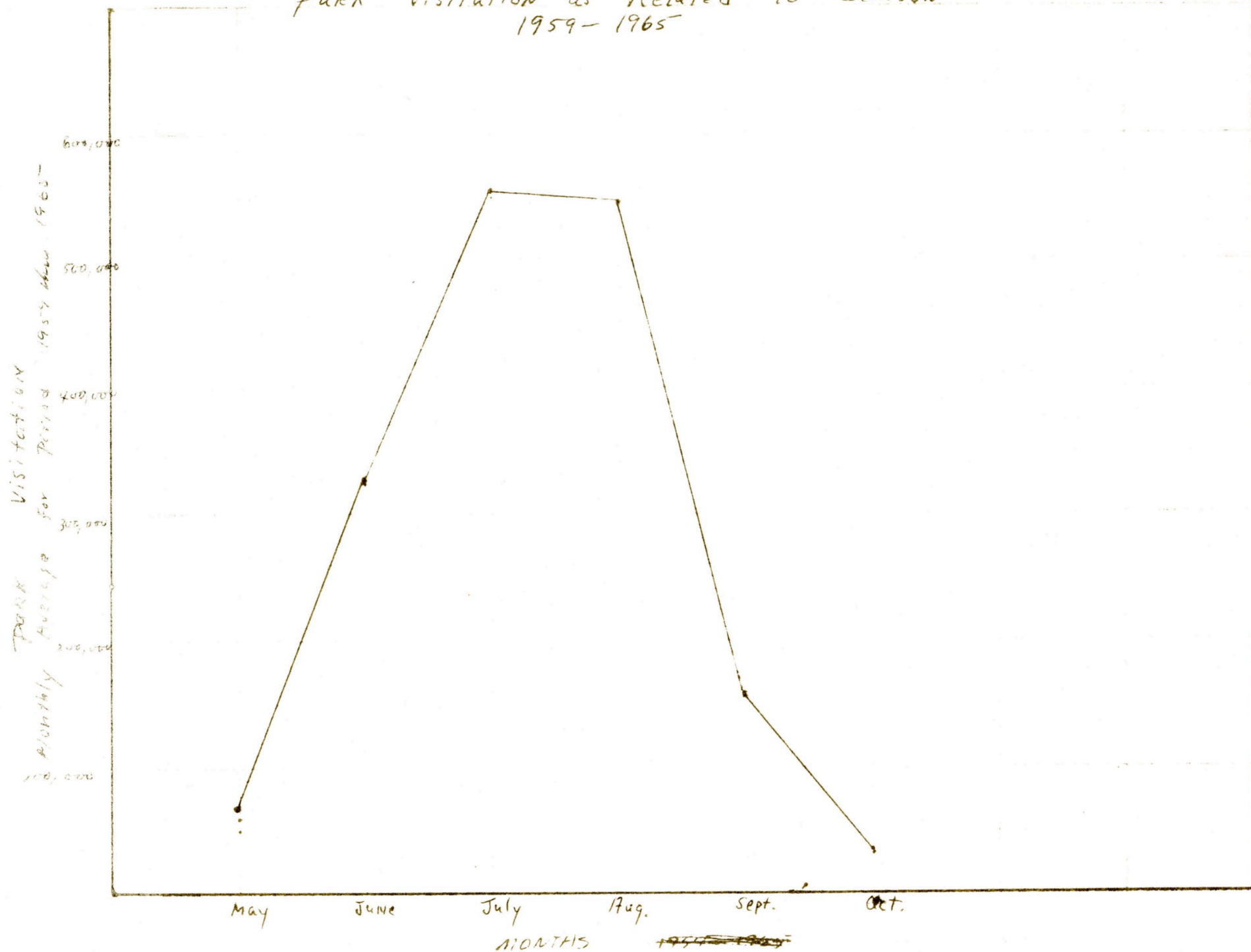
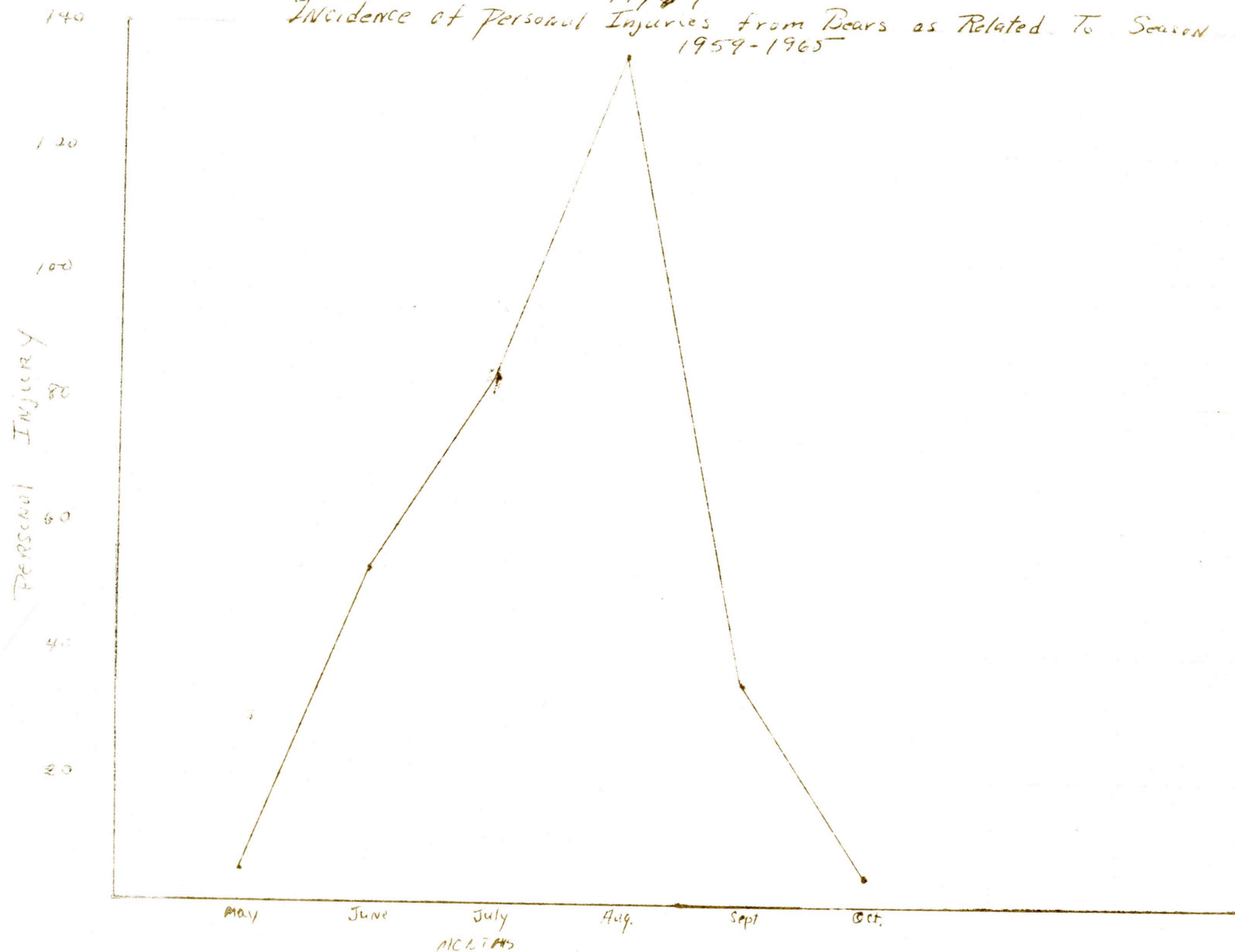
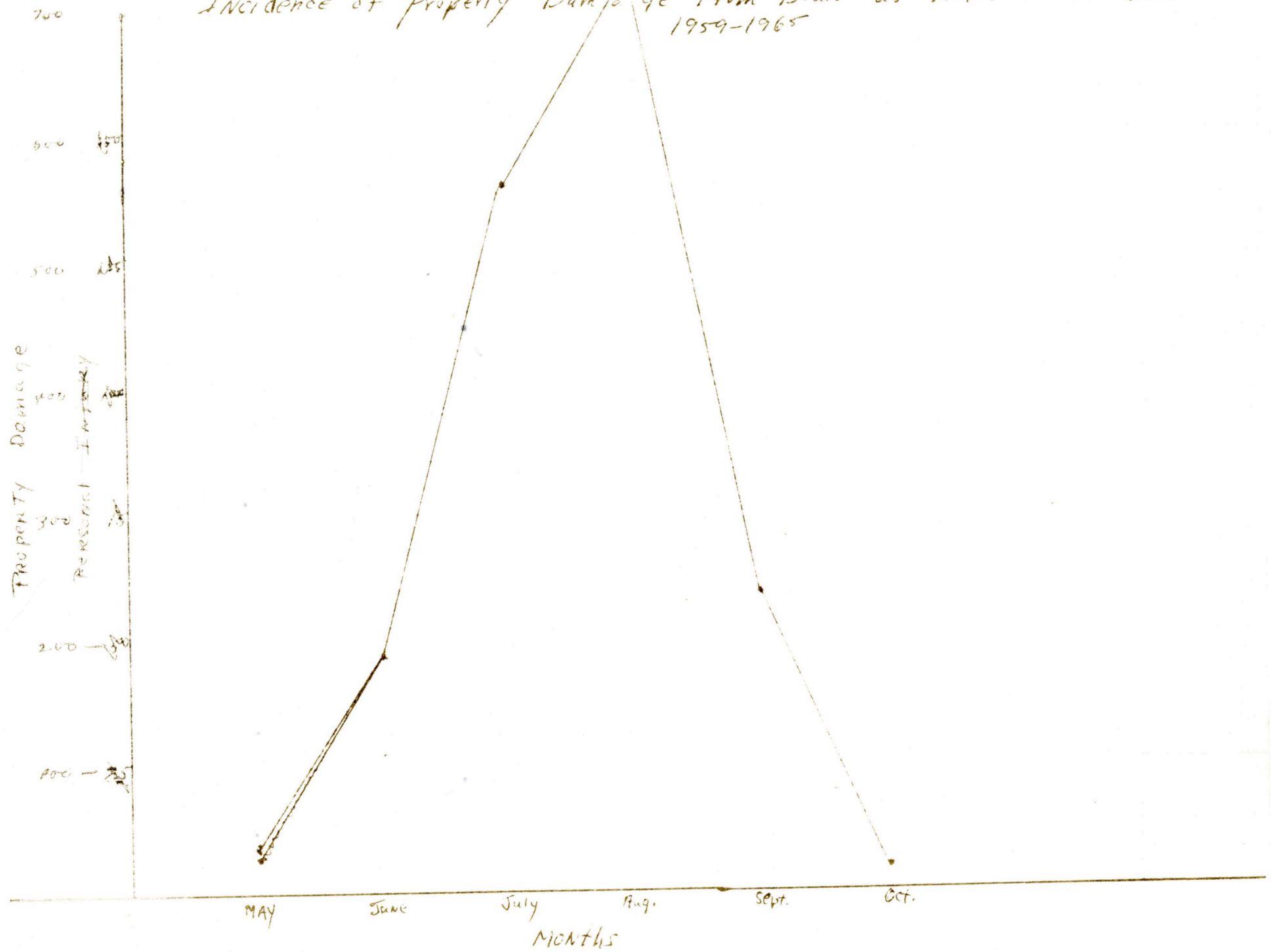


Fig # 7
Incidence of Personal Injuries from Bears as Related To Season
1959-1965



~~1959 - through - 1965~~

Fig. 68
Incidence of Property Damage from Bears as Related to Season
1959-1965



As park visitation has increased, the jamming of vehicles to view roadside bears may have imposed a limit on bear-visitor contacts by limiting the number of viewers and the time they can spend with the bears. This may have inadvertently functioned as a means of zoning black bears and visitors so that in spite of the enormous increase in visitors, there has not been a corresponding increase in annual visitor-bear incidents. More information is needed to support this supposition.

The 35-year personal injury and property damage levels indicate that the Service can expect an annual average of 48 personal injuries and 124 cases of property damage in Yellowstone unless new and effective management techniques are devised.

In general the problem of managing black bears has intensified over the years but the grizzly presents little more of a problem today than in the early 1900's. This can be attributed to the grizzlies habit of avoiding man, of concentrating at a near garbage disposal area and the administrative zoning of the area from public visitation.

Suggestions for Managing the Grizzly

The Yellowstone grizzly bear population of 170 to 200 animals exists because of protection afforded it by the Park. Yellowstone serves as a refuge and as a center of distribution for grizzlies emigrating to areas outside its boundaries. Although protected within the Park, grizzlies can be shot when they wander out. Thus, management must be concerned first with how to protect the base population within the Park and secondly, with how to harvest the overflow.

No integrated plan exists for managing the grizzly throughout Yellowstone National Park and adjacent areas. The state of Montana has accorded the grizzly status as a game animal to be legally hunted only during the big game seasons. In Wyoming it is a predator to be baited and killed at any time.

Yellowstone National Park is not a self-regulatory ecologic unit. However, the Park with adjacent National Forest land does represent a near complete unit and this vast relatively unmodified land area lying in Wyoming and Montana should be cooperatively managed for the welfare of the grizzly. A minimum of 5,400 square miles is involved, most of it wilderness. About 2,000 square miles of this lie in four National Forests. Although the grizzly can be managed and preserved strictly within the 3,400 square miles of Yellowstone

National Park, the margin of safety for the population and the latitude for population manipulation would be greatly enhanced in the larger area.

Clearly a cooperative state and federal effort to manage the grizzly is needed. Such a cooperative program should be based on two broad objectives:

1. Maintenance of the present population level within the Park with management designed to increase it in peripheral areas where there are no serious conflicts with other resource uses.
2. Harvesting of surplus animals in Wyoming and Montana under controlled hunts subject to hunting regulations that recognize the grizzly as a ^{trophy} ~~game~~ animal.

To realize these objectives certain management steps are necessary which in some cases will require legislation. Some management procedures will pertain only to Yellowstone Park and some to the adjacent National Forest areas where management of the habitat and the game animals are a separate responsibility of the U.S. Forest Service and the State Fish and Game Departments respectively. Others will involve the entire management area and the organizations administering these lands.

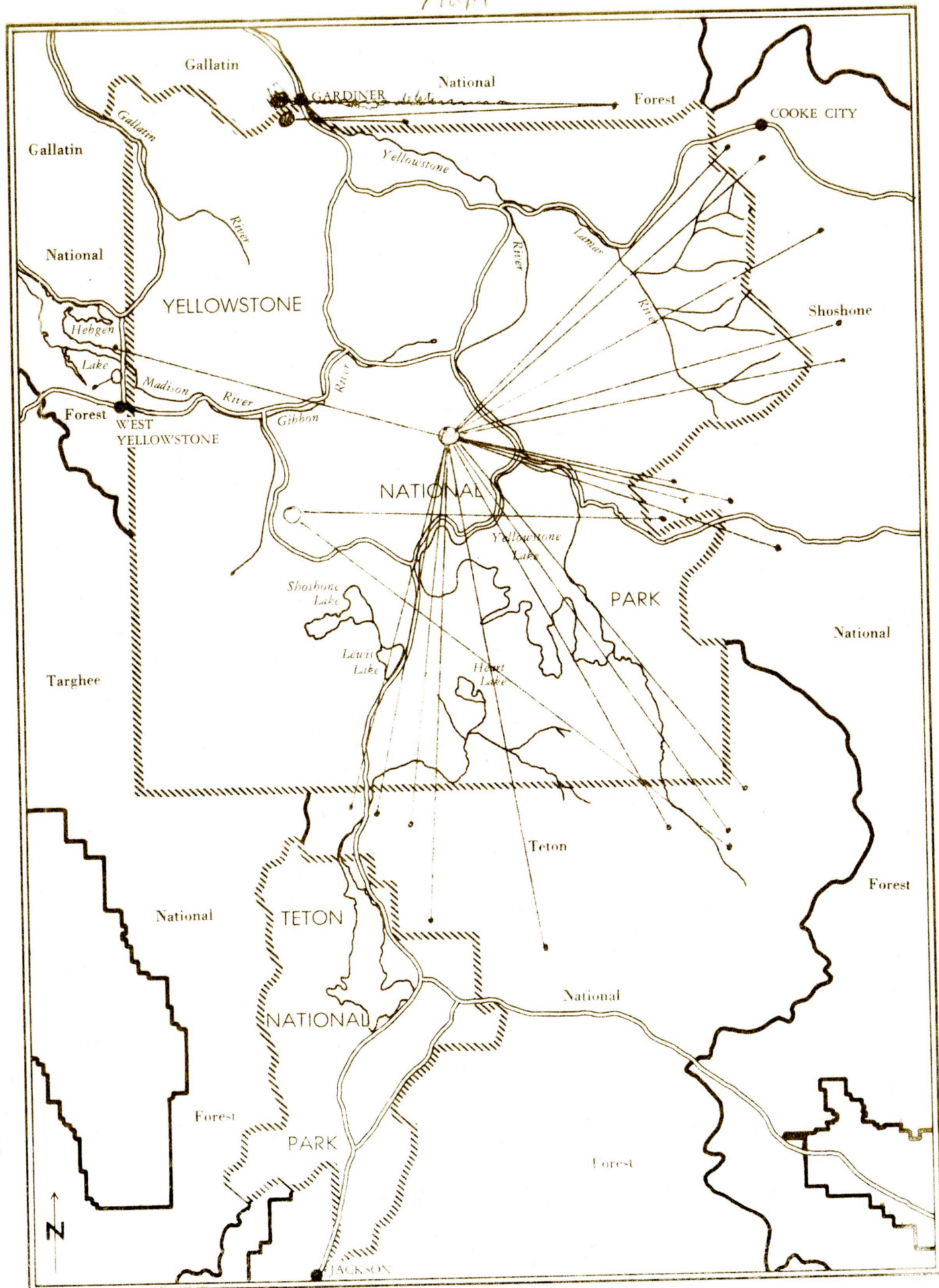
Although the black and the grizzly bear require distinct policy guidelines and management programs, the two species are nevertheless sufficiently interrelated in Yellowstone and adjacent areas that a management

plan for either species must consider the other as well. To this extent the management of the black bear will be considered here; specific suggestions being confined to the grizzly bear only.

Yellowstone National Park and the surrounding area support about 1 grizzly to every 27-32 square miles. At times the animals are widely dispersed (Map 1) and at other times a high percentage are congregated at five concentration sites (Map 2). Individual bears tend to congregate at the same sites year after year with relatively little exchange between these sites. The dispersal pattern in the fall also shows that individuals habitually return to the same wintering areas. By far the largest concentration of grizzlies occurs in Hayden Valley near the geographic center of the Park. About two-thirds of the Yellowstone population lives in this high valley during the summer months attracted by a garbage dump and an abundance of natural foods. The other third is distributed as indicated in Table 4, Map 2; dispersing in fall to all parts of the Park and beyond (Map 1).

Just what an optimum future population level should be will be settled by experimentation and by the results of management practices. We suggest a 30 percent increase as a tentative initial management goal, increasing or decreasing this goal as management knowledge accumulates.

Map 1



To afford optimum protection to this endangered species it is desirable to:

1. Maintain the Yellowstone grizzly bear population at its present level insofar as this can be done without intensifying grizzly bear-man incidents.
2. Increase the population and encourage dispersal into wilderness areas adjacent to Yellowstone.

To effect an increase in size of the overall population will require a lowering of the mortality rate and more protection over a greater area of grizzly habitat. This can be accomplished by:

1. Zoning within the Park to prevent visitor-grizzly bear incidents,
2. Creation of a buffer or protective corridor around the Park,
3. More selective control over grizzlies destroyed within the Park and the development of alternatives to killing,
4. Improved state hunting regulations outside the Park.

Land Classification and Zoning within the Park

Zoning within the Park is essential to maintaining the grizzly bear population and to keeping grizzly bear-man encounters to a minimum. Present zoning has proved quite effective but such zoning has existed more by accident than by planning. A long-range zoning plan for grizzlies integrated with

administrative planning at all levels is needed.

Under the National Wilderness Preservation Act of September 3, 1964, Congress directed the Secretary of the Interior to review every roadless area of five thousand contiguous acres or more in the national parks, monuments, and other units of the National Park system and to report recommendations of this review to the President within ten years after the effective date of the Act.

Since wilderness country is essential to a free-roaming wild population of grizzly bears, the problem of zoning for grizzly bear management should be considered simultaneously with the review and reclassification of wilderness land within Yellowstone National Park.

The Wilderness Act defines wilderness as, "An area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions . . . "

A large proportion of the 3,412 square miles of Yellowstone National Park meets wilderness standards and no doubt will be so classified for the purposes of the act. Because uninhabited land is so essential to the grizzly bear, park administrators should consider these facts when reclassifying wilderness areas within the Park:

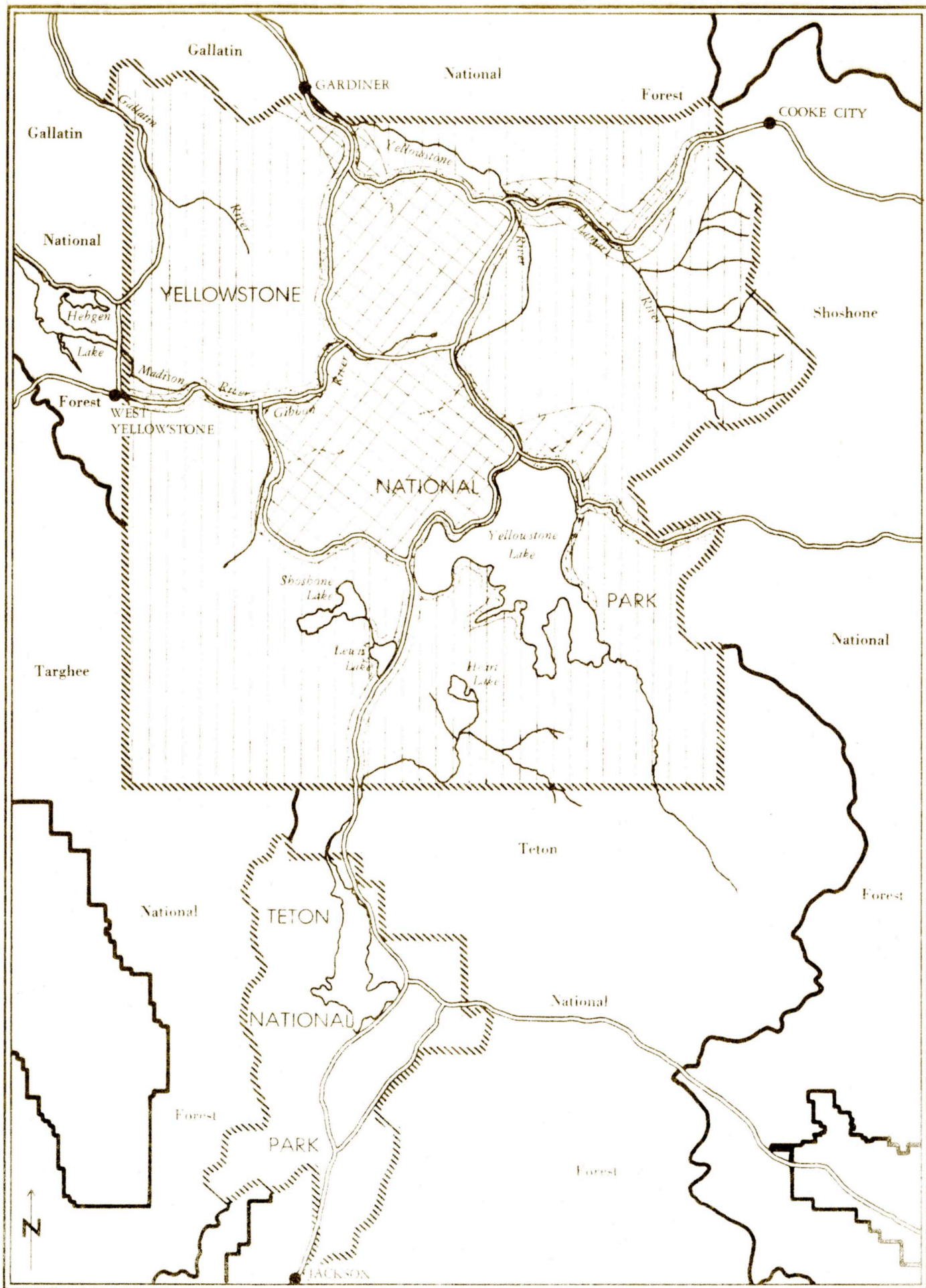
forseeable

1. The grizzly bear population now and in the *forseeable* future will be concentrated within the loop roads during the summer months (Map 2).
2. Grizzlies will be dispersed over the back country and beyond the park borders for 8 to 9 months of the year (Map 1).
3. Concentrations of grizzlies in a limited area during the height of the tourist season has created a highly favorable situation for zoning.
4. Within limitations discussed earlier, the concentration of grizzlies within the geographic heart of the park should be encouraged by specific management practices.
5. The behavior of the grizzly is such that it cannot be preserved where bear and man cohabit unless it can be managed.
6. The very nature of wilderness and the related administrative restrictions impose handicaps in the management of the grizzly as well as other big game species whether these be threatened with extinction or are overabundant.
7. A land classification or zoning plan must consider the need to manage a wide range of animal species within the park for an indefinite period of time.

To simplify the management of grizzlies as well as other game species, certain non-conforming administrative practices must be permitted in wilderness or some areas of the park must be designated as semi-wilderness. The latter appears preferable and map 3 shows the park areas that fall naturally into the two categories of wilderness and semi-wilderness. The semi-wilderness areas would differ from wilderness by retaining existing access roads. Limited use of vehicles and aircraft would be permitted for animal control, enforcement of visitor zoning, and other specific administrative requirements. Because much of the area designated as semi-wilderness is the heart of the grizzly bear summer range, portions or all of it should be off bounds to visitor use except by special permission and except along the major roads.

A one-mile zone on each side of the major roads and campgrounds would border land designated as wilderness. All construction projects should be kept within this area. The vast majority of visitors naturally confine their activities to this zone. In addition a one-mile zone would border Lewis Lake and the non-wilderness portions of Yellowstone Lake (Map 3).

The semi-wilderness designation should not imply that such areas would be more subject to future roading or development of physical facilities than wilderness. On the contrary, these areas because of their animal



concentrations, should be carefully excluded from future development. This is particularly true of the South Loop where grizzlies summer and of the Lamar Valley where elk winter. The important distinction between the wilderness and the semi-wilderness designations should be one of administrative practice. The latter are essentially areas where animal populations can be manipulated and controlled with maximum efficiency; the former constitutes the vast natural habitat where man is a visitor making no purposeful changes and exerting little or no purposeful control. However, we have learned the hard way and over the years that wilderness habitat cannot long exist without a program of animal control. The present intensive management program for elk and bison following years of inadequate management with accompanying overpopulation and severe habitat damage, points up the necessity of a continuing program of animal control. Controlling populations of elk, bison, black bear, and grizzlies as well as other wildlife species within the park is a tremendous cyclic task. The recurrent continuous nature of the job demands that it must be carried out under optimum conditions or it will bog down. The task cannot be done in wilderness country under the restrictive wilderness regulations. Lowering wilderness standards is not desirable; therefore a semi-wilderness designation for some land areas within the Park is essential. Map 3 presents a land zoning plan that

might serve as the basis for later more detailed zoning to meet the requirements of managing the grizzly, the black bear and other species that require continuous control.

Map 4 shows three management areas lying within the semi-wilderness designation. Game management in these areas involves or will involve intensive use of aircraft and over-snow vehicles. The use of such equipment reduces environmental impact and ecological disruptions and for these reasons along^c should be encouraged rather than discouraged. Big game management in the Park has become a reality because of these mechanical aids with saving in money and manpower. It is unrealistic to believe they can be ruled out or that the use of even more proficient machines can long be delayed. Man on foot and on horseback was woefully inadequate to the job. Partly because the task appeared hopeless, a park policy and philosophy of no management persisted long after it was outdated. This in spite of a growing wildlife management profession that claimed it could and must be done. The result of this delay has been habitat damage that will take generations to rectify.

The task of managing wildlife must be realistically faced in long-range planning. An attempt to classify all land within the Park as wilderness that physically meets the requirements of the Wilderness Act could defeat a well-balanced wildlife management program and at best would give sub-standard

Map 24

Spr

Management Area I
Northern Yellowstone Elk Herd

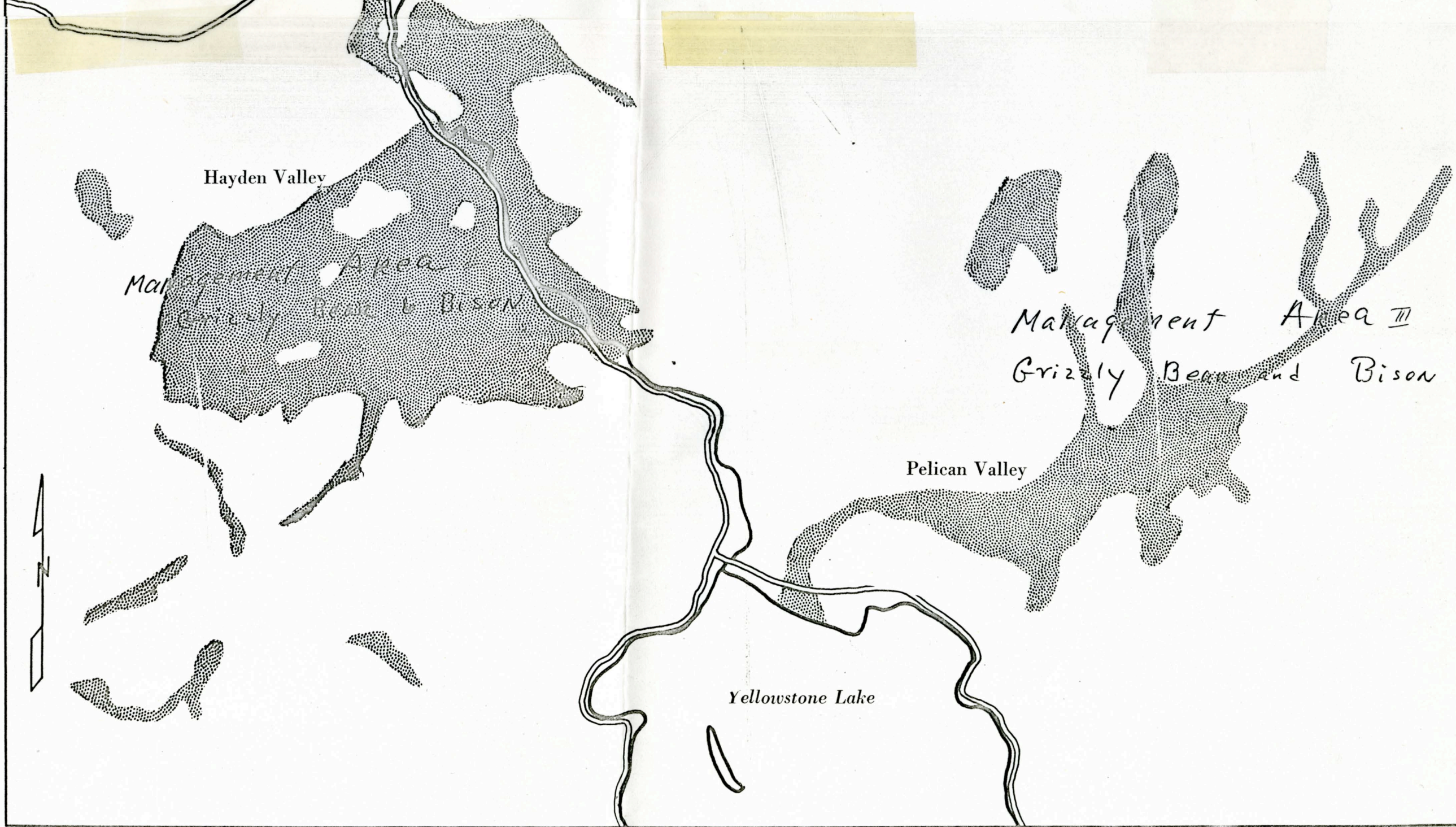
Lamar
Valley

Mount
△
Washburn

River

Yellowstone





wilderness where violation of restrictive regulations could become the rule rather than the exception.

Land Classification and Zoning Outside the Park

Yellowstone is bordered on all sides by National Forests and much of this land is in wilderness status. The major differences between National Forest wilderness and National Park wilderness is that hunting is permitted on the forest wilderness land. Forty-three percent of all grizzly bear mortalities occur on these forest lands adjacent to the park. Zoning of this area to provide protection ranging from complete closure to restrictive hunting regulations, would afford greater protection for the grizzly and allow an increase in the base population. The degree of protection afforded should be regulated to vary in time and with the numerical status of the population. The purpose of such zoning should be to: 1. Provide a larger sanctuary (5,500 square miles) for a larger base population of grizzlies. 2. By providing more grizzlies to in turn provide more huntable animals - the overflow of a larger population. The grizzly must be hunted and harvested while being protected. This concept is basic to scientific management.

To accomplish these objectives it is suggested that either all National Forest Wilderness land adjacent to the Park or a 10-mile protective zone or

corridor be established. A protective corridor consisting of approximately 2,000 square miles (Map 5) would constitute a minimum protective zone. This zone should not be considered a permanent refuge but an area closed to the hunting of grizzly bears during the transition period of "phasing out" National Park Service garbage dumps. Provision should be made to open or close this zone to grizzly bear hunting whenever population data indicate the need.

Enforcement could be accomplished by establishing checking stations 10 miles beyond the five entrances to Yellowstone Park (Map 5) and by mandatory reporting of kills by all ^{outfitters} ~~packers~~ and guides with hunting camps in and adjacent to it. Hunting of other big game species would be permitted in the zoned corridor.

Handling Nuisance Bears

Since 28 percent of all grizzly bear mortalities are the result of control efforts in the Park, any reduction or refinement of this control would benefit the population. The dangerous nature of grizzly bear encounters makes it unwise to take liberties with nuisance bears but practice of certain control procedures should benefit the grizzly without increasing the probability of bear incidents.

Occasionally sows with small cubs become bold and frequent the roads and campgrounds. Generally this is a temporary situation related to seasonal food supply. Since relatively few adult sows constitute the reproductive base of the Yellowstone population, such animals should not be killed in control measures unless no alternative exists. If capturing and releasing at a remote site does not solve the problem, then the cubs should be captured and removed. The adult female freed of her responsibility may exhibit agitated behavior for a day or two. Normally she will retreat to a concentration site or the back country where she no longer presents a problem. To capture and ship a sow and her cubs to a zoo may solve the immediate problem but reduces the reproductive potential of the population. Effort should be made to capture the cubs of an offending grizzly but to spare the sow. Cubs old enough to forage with the sow are old enough to forage for themselves and can survive without the mother. They can be easily raised in zoos.

Weaned yearlings, two-year-olds and other sub-adult bears are more prone to visit campgrounds than the adults. Since such animals are not part of the productive segment, a more liberal control effort can be exercised. Nevertheless no grizzly, unless it has caused personal injury, should be killed or shipped to a zoo until a third offense.

Some young grizzlies become habitual visitors to campgrounds and must be controlled, others may become frequent visitors for a short period of time and then move on. A policy requiring three captures before instigating control measures tends to favor the occasional or infrequent offender.

Grizzlies of both sexes and all age classes are on the move in early spring and late fall. Food demands are high prior to and after hibernation. Grizzlies become particularly troublesome, moving through and foraging in campgrounds. This period is generally short. Many of the bears captured at this time and transported to a remote part of the park will not return and normally give no further trouble.

Garbage Dumps

The unnatural and unesthetic garbage dump environment is not in harmony with National Park objectives or the wilderness nature of the grizzly. Although grizzlies at the dumps are not often viewed by the public, they are frequently visited by dignitaries of our own and foreign governments. The experience of viewing a grizzly under such conditions, though interesting, even thrilling, does not enhance the image of the Park Service or the grizzly.

The concentration of grizzlies during the summer months at refuse dumps has advantages and disadvantages in the management of the species. Where garbage dumps are located within the park (Map 2) they exert a strong

influence on distribution and greatly reduce movement of grizzlies during summer. Mortality records show that many grizzlies are shot when they move out of the Park sanctuary (Map 1). Since the garbage dumps attract and hold grizzlies for extended periods of time, they reduce movement out of the Park and thus lower the mortality rate.

Dumps located outside the Park such as at Gardiner and West Yellowstone (Map 2) have the opposite effect. Grizzlies move out of the Park to feed at these areas and although the bears are closely watched by Montana game wardens, nevertheless illegal shootings occur.

With grizzlies concentrated in the Hayden Valley, Rabbit Creek areas during summer it has been feasible for the Park administration to place these areas off limits to tourists and rangers alike, thus greatly reducing the possibility of personal injury incidents. Zoning of this type would be more difficult and less effective if the dumps are removed and the grizzlies ^{more} widely dispersed.

For years the National Park Service has considered replacing the earth-filled garbage dumps with incinerators. To do this will eliminate the food source and the question is what effect will this have upon the grizzly? There is no doubt that the initial effect will be profound.

The older bears would require some time to adjust to a diet of natural food only. Vast quantities of natural food are available but these are more difficult to obtain and the bears do not show the same preference for these as they do for garbage. Food obtained at the dumps does not appear to be essential to the grizzlies welfare or to maintaining the present population level, however, young bears learn the habit of feeding at the dumps from their mothers and the habit becomes ingrained. They in turn pass it on through the learning process to their offspring. It would require a number of years and a number of generations to break this well established habit.

Phasing out of garbage dumps and replacement with incinerators will disperse the grizzlies by destroying the food source. Thus, this transition must proceed gradually enabling the grizzly bear population to develop new feeding habits. If the garbage dumps are phased out slowly following a recommended procedure, it is unlikely that any drastic change in either population level or distribution would result. However, if a phasing out period and procedure is not followed, the result could be increased grizzly bear incidents in campgrounds, dispersion of bears to areas outside the Park, increased concentrations of grizzlies at the public dumps at Gardiner and West Yellowstone where food would still be available but where adequate protection is not. The net result could be a drastic reduction in numbers of grizzlies.

In the process of replacing earth-filled garbage pits with incinerators, certain steps and procedures should be considered:

1. The first incinerator be installed at Trout Creek as a pilot experiment.
2. That for a period of several years a portion, perhaps half, the garbage be dumped in a pit where it would be available to the grizzlies. The other portion would be incinerated and a graduated program of incineration enacted.
3. An accurate census should be taken of the grizzlies visiting the dump during the phasing out period.
4. Eventually all garbage would be incinerated.
5. All incidents of campground or roadside visitations by grizzlies should be recorded and compared with earlier records.

It is important in the future management of the grizzly bear in Yellowstone to keep the population concentrated within the Park. Since removal of garbage as a source of food will disperse the bears, this must be countered by other means. One practical solution is to utilize surplus elk as a supplementary food for the grizzlies until they have adjusted to the change. This could require many years.

Some of the elk now annually trapped and transplanted could be butchered, frozen and stored. These carcasses properly dispersed during the spring and summer would hold the grizzlies in the Hayden Valley area preventing wide dispersal during the period of phasing out of the Trout Creek dump.

Some elk carcasses could be placed periodically at strategic spots in Hayden Valley east of the Yellowstone River. Grizzlies attracted to the food could be viewed by the public at a safe distance and with the grizzlies in a completely natural environment.

Viewing of grizzlies by the public, however, should be secondary to the major objective of holding the base population within the confines of the Park by providing supplementary food.

Any program for public viewing of grizzlies can easily get out of hand as it has in the past and thus should be initiated with caution. We do not endorse a public viewing program of the grizzly, believing that National Park policy should be to minimize grizzly-visitor contacts - not encourage them. We do wish to emphasize, however, that if surplus elk were distributed on the summer range during the phasing out of the dumps that the opportunity for the public to occasionally view grizzlies would be enhanced over the present situation.

Personnel and Administrative Problems

Control measures for bears as well as other wildlife species are carried out by the ranger staff under the general supervision of the management biologist and the chief ranger. Authorization to destroy a bear rests with the superintendent, but in practice is delegated to the sub-district ranger. The bear management programs have suffered generally from lack of policy and supervision, divided authority, and inadequate financing. Management of bears has been considered a minor ranger activity with few planned objectives or goals.

Many rangers do not understand basic population biology and have conflicting personal feelings regarding control and an outmoded philosophy of complete protection and preservation. For some few individuals, bear incidents mean additional work and problems and they reason that the best bear is a dead bear. Thus bear-ranger conflict as well as visitor-bear conflict is considered sufficient cause for control action, sometimes without recourse to solving the problem short of killing the offender.

Cooperative effort between districts, to pool resources and manpower to capture bears or to release one and two-time offenders in remote areas could be greatly improved. Release of grizzlies far from the place of capture is

frequently effective in disrupting the behavior pattern of a nuisance bear.

This is generally not true of black bears. District rangers, however, are reluctant to release grizzly bears in their districts fearing this may only transfer the problem. A policy of distant release should be mandatory, with a pooling of resources to cope with the grizzly should it remain and become troublesome in the release area.

The administrative aspects of managing bears in Yellowstone could be improved by:

1. Encouraging greater inter-district cooperation,
2. Appointing permanent rangers to bear management duties and providing them with a training course in bear handling techniques and basic concepts of population dynamics,
3. Increasing the bear-capture, bear-handling capability,
4. Rigidly enforcing all regulations pertaining to bear-visitor interactions,
5. Providing an annual operating budget for the management of black and grizzly bears. The budget should be realistic with regard to equipment and manpower requirements.

6. Developing a more comprehensive program of visitor education of the bear management problem through the interpretive service.

7. Encouraging and fostering among Park personnel a philosophy that recognizes the grizzly as a rare and endangered species that requires protection subject to control.

Hunting Regulations

Maintenance of adequate habitat and the operation of a cautious control program within the Park should go hand in hand with more enlightened hunting regulations. The grizzly must be accorded the status of a game animal throughout its range, to be hunted and killed only during legal seasons. It is now a game animal in Montana but should be so designated in Wyoming and Idaho.

The following specific regulations are recommended for the three states of Wyoming, Montana, and Idaho:

1. The grizzly be designated a trophy animal to be hunted by special permit only.
2. No grizzly be killed without a permit except in defense of life or property and that animals taken in this manner be turned over to the state in which they were shot.

3. That special permits be issued only to hunt male grizzlies and females without offspring.

4. No members of a recognizable family unit shall be a legal trophy (sows with cubs and sows with yearlings and these offspring are protected).

5. That the special seasons on grizzly bear coincide with the regular big game seasons.

6. That each trophy animal be reported to Fish and Game authorities.

The annual harvest in the tri-state area surrounding Yellowstone should be jointly determined by cooperative agreement of state and federal authorities. The annual kill including bears taken for control should not exceed the annual recruitment rate of 19 percent and should be considerably below this level to increase the size of the base population.

In order to obtain biological data to base future management, the hide and skull of each animal shot, whether on special permit or otherwise, should be tagged and recorded by proper authorities. A simple biological questionnaire should accompany each permit and it should be mandatory that these be answered by the permittee.

Suggested Policy Guidelines for Future Management

The management of black bears over the past 35 years has been accomplished by direct control of offending animals. In spite of continuous and at times severe control measures the problem of reducing black bear incidents has not been solved. It can probably be kept within tolerable limits by present methods; however, the mutual affinity of black bears and tourists on the roads and in the campgrounds of Yellowstone National Park insures that wherever there are black bears and visitors and food, bear and man are certain to make contacts. The answer lies in reducing bear-man contacts without drastically reducing the black bear population or the opportunity of visitors to view them. The experience of seeing a black bear is a major tourist attraction.

Management can be accomplished by:

1. A highly selective direct control program,
2. A system of zoning bear and visitor,
3. Bear-proof garbage disposal,
4. Visitor education of the problem.

All these approaches are currently in effect but need refinement and must be practiced with knowledge of black bear numbers, distribution, and age structure. The objectives of black bear management should be a more precise

operation based on scientific data.

A program designed to maintain the annual control kill of black bears at a figure closely approaching the 35-year average of 28 would prevent the drastic fluctuation in numbers of bears that occurs under the present system of highly erratic kill. Such management would provide more consistent visitor viewing without increasing visitor hazards.

Grizzly bear management has been accomplished almost entirely by zoning. Some of this has been a conscious effort by Park administrators and some has resulted from the recreation-use pattern that has evolved. Because of its endangered status the management of the grizzly presents a basically different problem than does management of the black bear.

In the case of the grizzly the basic problem is how to provide maximum protection and habitat for a threatened species. Grizzly bear-man contacts have not been numerous in Yellowstone Park over the years. When contact does occur, however, it can be serious and for this reason Park policy should be to minimize such contacts. Management practices should be tailored to maintain the grizzly population at an optimum level wherever possible managing visitor numbers and distribution to prevent contact rather than reducing the number of grizzlies.

Unlike the black bear, the grizzly should not be exploited as a tourist attraction. Whereas the black should be managed to provide visitor viewing with a minimum of incidents; the grizzly should be managed to provide maximum protection for the animal with a minimum of viewing.