# GRIZZLY BEAR MORTALITY AND MANAGEMENT PROGRAMS IN MONTANA DURING 1972

By

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JOB PROGRESS REPORT

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ABSTRACT:

During 1972, hunters accounted for 14 of the 34 known grizzly bear *(Ursus arctos horribilis)* mortalities in Montana. Two hunting areas provided about 79 percent of the hunter harvest. Age and sex of grizzly mortalities are listed. Some grizzly bears were reported as nuisances and required control procedures in or near 5 towns throughout the State. The 7 grizzlies trapped and transplanted from West Yellowstone during 1972 were about 2/3 less than the number handled in the previous year. Various recommendations are presented.

# TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

# LIST OF TABLES

# LIST OF FIGURES

## OBJECTIVES

To determine the categories and amount of the annual grizzly bear *(Ursus arctos horribilis)* mortality in Montana.

To determine the sex, age and distribution of the known grizzly bear mortality.

To maintain a record of grizzly bear nuisance complaints, control actions, transplant programs and tag or marking records of Montana grizzly bears.

## METHODS

### Licensing

A dual license structure has been in effect for the hunting and harvest of grizzly bears since 1967. A grizzly bear hunting license is required for residents at a $5.00 fee and for non-residents at $35.00. Within ten days after killing a grizzly bear the special Trophy License is required for a fee of $25.00 to resident and non-resident.

These licenses provided reliable data on the number of licensed hunters and the hunter harvest. Current laws and regulations were previously reported (Greer 1970, 1971, 1972).

### Hunting Seasons

The hunting season for grizzly bears coincides with the special and general big game seasons for deer and elk in designated hunting areas.

### Hunting Regulations

Spring hunting season for grizzlies have not been established prior to and since 1967.
Cub grizzly bears or female grizzlies with cubs nearby may not be taken.
Baiting with livestock is prohibited.
Trapping devices are prohibited.
Pursuit with dogs is prohibited.
The grizzly bear license may not be purchased after July 1, 1972.
Successful grizzly bear hunters are not eligible for a similar license for the subsequent 7 years.
Unsuccessful grizzly bear hunters may obtain a license the following year.

### Tagging Regulations

Regulations require that the grizzly bear hide and head must be presented for examination at the time of application for a Grizzly Bear Trophy License. Basic information is obtained and is forwarded and recorded

at the central office; a special trophy certificate is issued by the Director (Greer 1969).

A numbered, metal sealing tag is recorded and affixed to the hide which is immediately returned to the owner.

The grizzly bear heads are tagged and shipped to the Wildlife Laboratory. Skulls are cleaned, examined, measured, recorded and tooth roots are obtained. After processing, the grizzly skulls are returned to their owners.

### Other Mortalities

In addition to hunting, cooperation of various agencies and other personnel report and assist with the recovery of grizzly bear mortalities throughout the year.

### Live Grizzly Bears

A special management program was required to live-trap and transplant nuisance grizzly bears from the vicinity of West Yellowstone. The action of trapping in response to complaints of grizzly bears also occurred in other areas of the state. A new category was evident this year in the form of trapping, holding and disposal of orphaned cubs.

### Age and Sex

From Yellowstone Park and Missoula Wildlife Coop Wildlife Research Unit records some tagged grizzly bears were of known or assigned age.

Ages were established by cementum techniques (Mundy and Fuller 1964 and Craighead et al. 1970) subsequently modified to decalcified methods, and complimented by characteristics of skull features and suture closure.

When necessary, sex was verified or determined by skull features (Greer 1972).

## FINDINGS

### License Fees and Numbers

License structure and fees were unchanged from the previous year (Greer 1972). Grizzly bear hunting licenses issued for 1972 showed a decrease of 9 percent from the previous year for residents and an increase of 18 percent for non-residents. (Table 1).

A deadline for purchasing a grizzly bear hunting license in 1972 was advanced to July 1, rather than a date of September 15 as in the prior year. It is reasonable to assume that the advanced date did curtail resident licensees during 1972. However, the reduced number of residents with grizzly bear hunting licenses may or may not have reduced the hunting

Table 1. Grizzly bear licenses issued in Montana.

| | Grizzly Bear Hunting License | | | | Grizzly Bear Trophy License | | |
|---|---|---|---|---|---|---|---|
| | Resident | Non-Resident | Total | Ratio R:NR | Resident | Non-Resident | Total |
| 1967[1] | 1,022 | 143 | 1,165 | 7.2:1 | 21 | 3 | 24 |
| 1968[1] | 1,149 | 137 | 1,286 | 8.4:1 | 9 | 3 | 12 |
| 1969[1] | 1,474 | 164 | 1,638 | 9.0:1 | 30 | 3 | 33 |
| 1970[2] | 1,769 | 211 | 1,980 | 8.4:1 | 11 | 2 | 13 |
| 1971[3] | 743 | 222 | 965 | 3.3:1 | 15 | 7 | 22 |
| 1972[4] | 673 | 261 | 934 | 2.6:1 | 10 | 4 | 14 |

[1]Hunting license (residents $1.00, non-residents $25.00) available before and during seasons.
[2]Hunting license (residents $1.00, non-residents $25.00) available until the opening day of the early general big game season on September 15.
[3]Hunting license fees increased (to $5.00 for residents, and $35.00 for non-residents) and deadline date of purchase was before September 15.
[4]Hunting license fee same as previous year and deadline date of purchase was before July 1.

pressure on the species. It is likely that some persons planned and arranged for hunting trips after July 1 and consequently could not purchase the necessary license.

## Hunters and Success

The overall hunting success for all grizzly bear hunters has ranged from less than 1 percent to just over 2 percent during the past 6 years. Non-residents harvested 9 to 32 percent of the grizzlies during each year with the greatest number taken in 1971. Non-resident grizzly hunters represented 10 to 12 percent of the total licensees from 1967-1970 and increased to 23 percent in 1971 and 28 percent in 1972 (Table 1). However, this increase is more the result of the 60 percent and 70 percent reduction of resident licenses for 1971 and 1972 respectively, rather than a substantial increase in non-resident licenses.

## Hunting Mortality

A total of 14 grizzly bears harvested by hunters in Montana during 1972 (Table 2) accounted for 41 percent of the known annual mortality of 34 grizzlies (Table 3). The hunting harvest for the past 6 years has averaged 53 percent and ranged from this year's low of 41 percent to the high of 69 percent in 1969. From 12 to 33 grizzlies were taken by hunters during the past 6 seasons. Similar information for hunter harvest for prior years are not available.

Table 2. Some data for the 14 grizzly bears harvested by hunters in Montana during the 1972 season.

| Date | Area[1] | Location | Sex | Age[2] | Size of Skull[3] |
|---|---|---|---|---|---|
| Oct. 29 | 11 | N. Fork Flathead | Female | 8 | 19 3/16 |
| Oct. 22 | 14 | Stanton Cr. | Female | 10 | Broken |
| Oct. 25 | 14 | Wheeler Cr. | Male | 3 | Broken |
| Oct. 25 | 14 | Wheeler Cr. | Female | 18 | 18 8/16 |
| Nov. 4 | 14 | W. Glacier Dump | Male | 6 | Broken |
| Nov. 12 | 14 | Sheep Cr. | Male | 3 | 20 4/16 |
| Sept. 16 | 15 | Inspiration Point | Female | 9 | 18 2/16 |
| Sept. 16 | 15 | Inspiration Point | Female | 1 | Broken |
| Sept. 22 | 15 | Bartlett Cr. | Male | 9 | Broken |
| Oct. 15 | 15 | Cannon Cr. | Female | 16 | 18 12/16 |
| Oct. 20 | 15 | Otter Cr. | Male | 3 | Broken |
| Oct. 21 | 15 | Heart Basin | Female | 4 | 17 13/16 |
| Sept. 15 | 280 | Monture Cr. | Male | 6 | Broken |
| Nov. 7 | 280 | N. Fork Blackfoot | Male | 7 | 21 9/16 |

[1]Hunting area designated on the 1972 hunting map.
[2]In years - fraction of year implied.
[3]Condylobasal length plus the zygomatic width, in inches.

## Early Season

About 58 percent (68 of 118) of the grizzlies harvested by hunters during 6 seasons from 1967-1972 were taken in hunting areas (HA) 15, 280 and 316. These areas have an early season preceding the general season for deer, elk and bear. The early season conventionally opens on September 15 and runs concurrently with the regular big game hunting season opening with variable dates in mid-October and extending to late November (Table 4).

Of the 68 grizzlies harvested from the 3 areas, 63 percent were from HA 15, 25 percent in HA 316 and 12 percent from HA 280 (Table 5). About 88 percent of the grizzlies were taken during the early season with most (54 percent) taken in September. Only 8 were killed during the regular season and included only 3 in November. Not a single grizzly is known to have been harvested during 6 regular hunting seasons from HA 316.

In 1972, 50 percent of the total grizzly bear hunting harvest occurred during the "early" hunting season of September 15 to October 22.

Table 3. Annual known mortality of grizzly bears in Montana and grizzlies processed for adjacent national parks.

| | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 6-Yr. Avg. |
|---|---|---|---|---|---|---|---|
| Hunter Trophy Licenses[1] | 24 | 12 | 33 | 13 | 22 | 14 | 19.5 |
| Other mortalities in Montana | 17 | 16 | 15 | 16 | 22 | 20 | 17.5 |
| Total Mortality in Montana | 41 | 28 | 48 | 29 | 44 | 34 | 37.0 |
| Percent Harvested by Hunters | 59 | 43 | 69 | 45 | 50 | 41 | 53.0 |
| Categories of other Mortalities in Montana | | | | | | | |
| Fish and game personnel (marauders-illegal) | 10 (6-4) | 7 (3-4) | 4 (0-4) | 14 (5-9) | 17 (11-6) | 13 (7-6) | - |
| U. S. Fish and Wildlife Service | 2 | 3 | 4 | 2 | 2 | 3 | - |
| Other illegals | 1 | 0 | 1 | 0 | 0 | 0 | - |
| Blackfeet Indian Reservation | 4 | 6 | 3 | 0 | 3 | 1 | - |
| Flathead Indian Reservation | 0 | 0 | 3 | 0 | 0 | 0 | - |
| Live Cubs of the Year | 0 | 0 | 0 | 0 | 0 | 3 | - |
| TOTAL | 17 | 16 | 15 | 16 | 22 | 20 | 17.5 |
| Glacier National Park | 4 | 2 | 3 | 1 | 0 | 0 | - |
| Yellowstone National Park | 6 | 12 | 11 | 16 | 7 | 9 | - |
| TOTAL IN PARKS | 10 | 14 | 14 | 17 | 7 | 9 | - |

[1]= All hunting seasons are fall, only.

Table 4. Early and regular hunting season dates for various hunting areas in Montana.

| | Early Season | Regular Season |
|---|---|---|
| 1967 | Sept. 15 - Oct. 21 | Oct. 22 - Nov. 19 |
| 1968 | Sept. 15 - Oct. 26 | Oct. 27 - Dec. 1 |
| 1969 | Sept. 15 - Oct. 18 | Oct. 19 - Nov. 30 |
| 1970 | Sept. 15 - Oct. 17 | Oct. 18 - Nov. 29 |
| 1971 | Sept. 15 - Oct. 16 | Oct. 17 - Nov. 28 |
| 1972 | Sept. 15 - Oct. 21 | Oct. 22 - Nov. 26 |

In the 3 hunting areas (15, 280 and 316) with this early season; all of the 6 grizzlies harvested in area 15, 1 of 2 in area 280 and none in area 316 were taken in the early season.

## Hunting Harvest

Until the several grizzly bear ecosystems in Montana are further defined they are considered generally in this report as the: northern grizzly populations, including the Bob Marshall Wilderness Area, Sun River, Missions, all forks of the Flathead River, and the Flathead and Blackfeet Indian Reservations; and the southern grizzly populations in areas of Montana nearby and adjacent to Yellowstone National Park.

Most of the grizzly bears harvested by hunters are from the northern populations. From 1967-1972, this segment of the harvest ranged from 59 to 100 percent annually and averaged 80 percent compared to a 20 percent average for southern areas. The hunter harvest in various hunting areas for the 6 year period appears in Table 6.

Of the 17 hunting areas in which grizzly bears have been harvested by hunters, 2 or 3 areas are more consistent producers than others. In 1972 about 79 percent of the legal grizzly bears were harvested from two hunting areas (14 and 15). These same areas have accounted for 38 to 58 percent of the harvest in previous years. With an exception for 1972 when no grizzlies were harvested, the hunting area of 316 has provided from 2 to 7 grizzlies. The three areas (HA 14, 15 and 316) have averaged 65 percent of the hunting harvest during 1967-1972 with a range of 50 to 83 percent.

## Other Mortality

At least 20 grizzlies, in addition to the 14 by hunting, were known to have been removed from the populations during 1972. These included 7 classified as illegal kills, 9 marauders, 1 taken by natives on their Blackfeet Indian Reservation and 3 live orphaned cubs-of-the-year (Table 7).

Table 5. Hunter harvest of grizzly bears in the three areas having an early hunting season.

| Year | State Harvest | Hunting Area 15 | | | Hunting Area 280 | | | Hunting Area 316 | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Early | Regular | Total | Early | Regular | Total | Early | Regular | Total | Early | Regular | Total |
| 1967 | 24 | 6 | 1 | 7 | 2 | 1 | 3 | 2 | 0 | 2 | 10 | 2 | 12 |
| 1968 | 12 | 7 | 0 | 7 | 0 | 0 | 0 | 3 | 0 | 3 | 10 | 0 | 10 |
| 1969 | 33 | 11 | 1 | 12 | 1 | 0 | 1 | 2 | 0 | 2 | 14 | 1 | 15 |
| 1970 | 13 | 1 | 4 | 5 | 0 | 0 | 0 | 3 | 0 | 3 | 4 | 4 | 8 |
| 1971 | 22 | 6 | 0 | 6 | 2 | 0 | 2 | 7 | 0 | 7 | 15 | 0 | 15 |
| 1972 | 14 | 6 | 0 | 6 | 1 | 1 | 2 | 0 | 0 | 0 | 7 | 1 | 8 |
| TOTAL | 118 | 37 | 6 | 43 | 6 | 2 | 8 | 17 | 0 | 17 | 60 | 8 | 68 |

Table 6. Hunter's harvest of grizzly bears in various hunting areas of Montana during 1967-1972.

| Hunting Area | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 |
|---|---|---|---|---|---|---|
| 11 | 2 | -- | 1 | 2 | -- | 1 |
| 13 | -- | -- | -- | -- | 1 | -- |
| 14 | 3 | -- | 5 | -- | 4 | 5 |
| 15 | 7 | 7 | 12 | 5 | 6 | 6 |
| 101 | 1 | -- | -- | -- | -- | -- |
| 131 | 2 | 1 | -- | -- | -- | -- |
| 21 | -- | -- | 1 | -- | -- | -- |
| 28 | 1 | -- | -- | -- | -- | -- |
| 280 | 3 | -- | 1 | -- | 2 | 2 |
| 281 | 1 | -- | -- | -- | -- | -- |
| 310 | -- | -- | 1 | 1 | 1 | -- |
| 313 | -- | -- | -- | -- | 1 | -- |
| 314 | -- | -- | 1 | -- | -- | -- |
| 316 | 2 | 3 | 2 | 3 | 7 | -- |
| 361 | -- | -- | 1 | -- | -- | -- |
| 41 | -- | -- | 1 | 1 | -- | -- |
| 42 | 2 | 1 | 7 | 1 | -- | -- |
| TOTAL | 24 | 12 | 33 | 13 | 22 | 14 |

About 75 percent of the various mortalities occurred in the northern grizzly bear populations as compared to 25 percent in the southern or Yellowstone and vicinity populations (Fig. 1).

Events and circumstances causing the illegal death of grizzlies were unknown in 6 of the 7 instances that were revealed. The garbage dump at West Glacier usually attracts black and grizzly bears and one illegal (2 years) and one legal grizzly were taken from this area in 1972. Other illegals included one north of Hebgen Lake, one during the hunting season in Tin Cup Basin (HA 14) and four in the Bunker Creek area which included a sow with her two cubs. Ages for 5 of the 7 illegals included; 2 cubs of the year, one 2 year old and two prime adults of 15 and 19 years.

The 9 marauder mortalities were distributed throughout the state: 2 from the North Fork of the Flathead River, 2 from the Blackfeet Indian Reservation, 2 from Alice Creek in the Scapegoat Wilderness Area, 2 from the vicinity of West Yellowstone and one near the town of Big Fork. Ages of these individuals were: 4 immature (2-3 years), 3 young adults (6-9 years) and 2 mature (13-16 years).

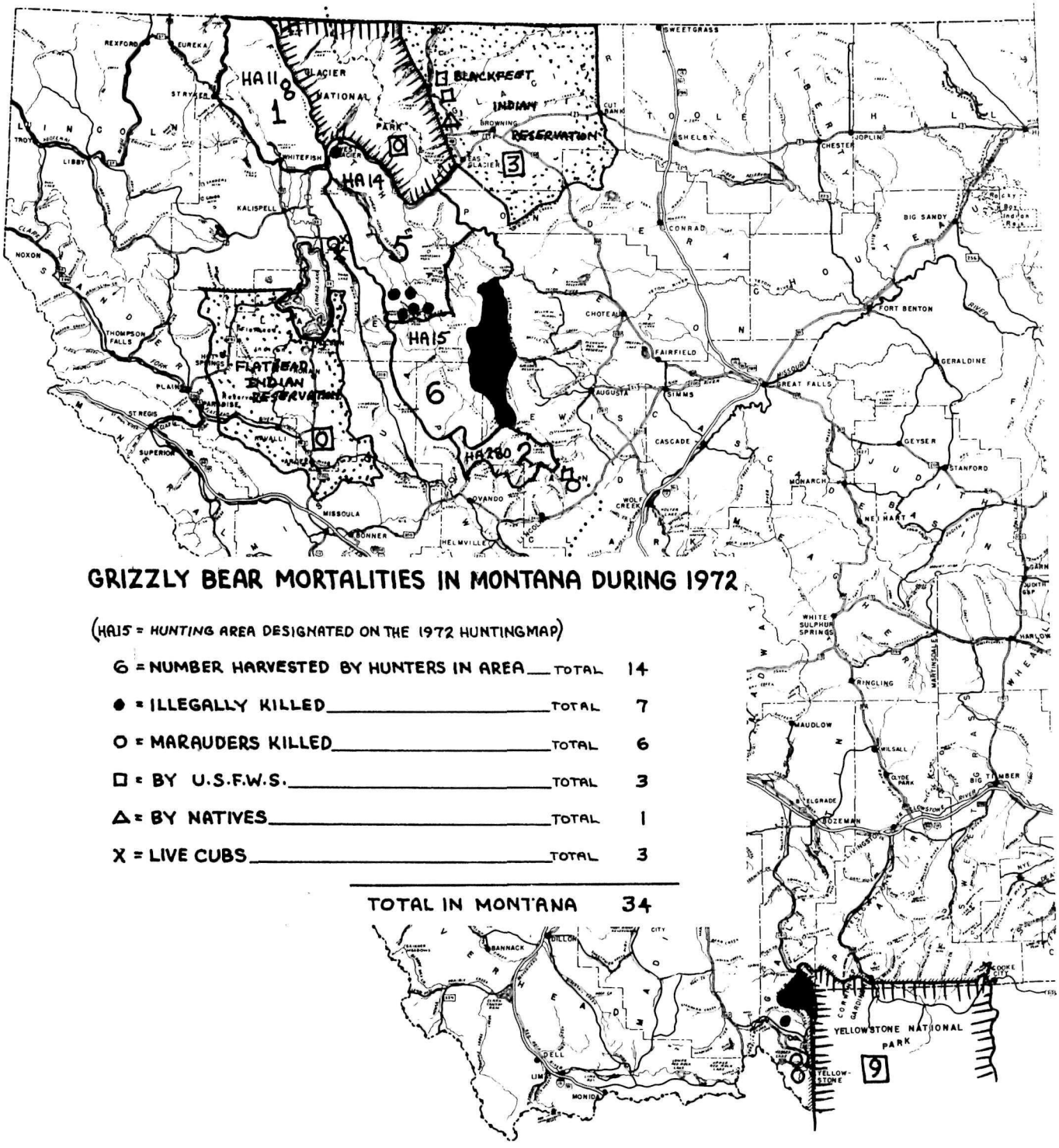


Figure 1. Distribution of known grizzly bear mortalities in Montana during 1972.

Table 7. Limited information from known non-hunting grizzly bear mortalities and live orphaned cubs in Montana during 1972.

| | Date | | Location | Hunting Area | Category[1] | Sex | Age[2] | Whole Weight[3] | Total Length[4] | Size of Skull[5] |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | May | 16 | W. Glacier Dump | 14 | I | ? | 2 | - | - | - |
| 2 | June | 27 | Polebridge | 11 | M | Male | 2 | 135 | 60 | 16-10/16 |
| 3 | June | 27 | Polebridge | 11 | M | Male | 2 | 146 | 59 | 16-11/16 |
| 4 | July | 6 | Bunker & Forge Crs. | 14 | I | Female | 15 | - | - | 19- 5/16 |
| 5 | July | 14 | Blackfeet Indian Res. USFWS | B | M | Female | 6 | 265 | 65 | 19- 4/16 |
| 6 | July | 17 | Hebgen Lake | 361 | M | Male | 16 | 500 | 80 | 24- 2/16 |
| 7 | July | 20 | Alice Creek | 281 | M | Male | 3 | - | - | 18- 9/16 |
| 8 | July | 22 | Crane Mtn. Big Fork | 13 | M | Female | 13 | 212 | 70 | 19- 1/16 |
| 9 | July | 22 | Crane Mtn. Big Fork | 13 | L | Male | Cub | - | - | Live |
| 10 | July | 22 | Crane Mtn. Big Fork | 13 | L | Male | Cub | - | - | Live |
| 11 | July | 28 | West Yellowstone | 361 | M | Male | 9 | 600 | 85 | 23-11/16 |
| 12 | July | 31 | Blackfeet Indian Res. USFWS | B | M | Male | 8 | 465 | 76 | 21- 3/16 |
| 13 | Aug. | 29 | Alice Creek-USFWS | 281 | M | Female | 3 | 205 | 55 | 16-12/16 |
| 14 | Sept. | 15 | N. of Hebgen Lake | 310 | I | Female | - | - | - | No Head |
| 15 | Sept. | 16 | Tin Cup Basin | 14 | I | Male | 19 | - | - | Broken |
| 16 | Sept. | 18 | Bunker Creek | 14 | I | Female | - | - | - | No Head |
| 17 | Sept. | 18 | Bunker Creek | 14 | I | ? | Cub | - | - | No Head |
| 18 | Sept. | 18 | Bunker Creek | 14 | I | ? | Cub | - | - | No Head |
| 19 | Sept. | 26 | Silver Gate | 316 | L | Male | Cub | - | - | Live |
| 20 | Oct. | 7 | Blackfeet Indian Res. | B | N | Male | 3 | - | - | 19- 0/16 |

[1] I = Illegal; M = Marauder; L = Live; N = Natives.
[2] In years - fraction of year implied.
[3] Pounds
[4] Inches
[5] Condylobasal length plus zygomatic width, in inches.

## Cooperative Studies

As in previous years, the grizzly bear mortalities occurring in Yellowstone and Glacier National Parks are submitted and processed at this laboratory for biological data. These findings are associated with areas adjacent to the park and comparable to other grizzly populations in Montana. Partial data for the 9 grizzlies from Yellowstone National Park during 1972 appear in Table 8.

Table 8. Limited information from grizzly bear mortalities in Yellowstone National Park during 1972.

| | Date | Location | Sex | Age[1] | Whole Weight[2] | Total Length[3] | Size of Skull[4] |
|---|---|---|---|---|---|---|---|
| 1 | June 18 | Old Faithful | Female | Cub | 11 | 29 | 9- 7/16 |
| 2 | June 26 | Old Faithful | Female | 19 | 232 | 67 | 21- 1/16 |
| 3 | July 17 | Bridge Bay | Male | 12 | 422 | 77 | 25- 1/16 |
| 4 | July 29 | Bridge Bay | Male | 7 | 375 | 74 | 22- 1/16 |
| 5 | Aug. 4 | Canyon Campground | Male | 9[ε] | 360 | 80 | 22- 5/16 |
| 6 | Aug. 16 | Canyon Campground | Male | 6[κ] | 355 | 76 | 21-10/16 |
| 7 | Aug. 20 | Lake | Female | 13 | 310 | 70 | 20- 6/16 |
| 8 | Aug. 24 | Lake | Female | 13 | 205 | 68 | 20-10/16 |
| 9 | Aug. 24 | Lake | Male | Cub | 42 | 35 | 11-13/16 |

[1] In years - fraction of year implied.
[2] Pounds
[3] Inches
[4] Condylobasal length plus zygomatic width, in inches.

[ε] Established age.
[κ] Known age.

## SEX AND AGE OF GRIZZLY BEAR MORTALITIES

The mortalities of Montana grizzly bears are most frequently without any selectivity for sex and/or age as is usual with most of the other big game species. Techniques for determination of sex and establishing ages of grizzly bears was previously reported (Greer, 1972).

Sex and age information was available for each of the 14 grizzlies taken by hunters in 1972. However, for the 20 other known grizzly bear mortalities, only the sex was established for 16 and a respective sex and age for 14 individuals (Table 7).

The hunter harvest of 7 males and 7 females were below the six year average of 10.6 males and 8.8 females (Table 9). For the past 6 years the hunter harvest of female grizzlies has averaged 45 percent of the total and

Table 9. Sex (if known) of grizzly bear mortalities from Montana and adjacent national parks.

| | 1967 | | 1968 | | 1969 | | 1970 | | 1971 | | 1972 | | Avg. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| Hunting | 15 | 8 | 9 | 3 | 20 | 13 | 6 | 7 | 7 | 15 | 7 | 7 | 10.6 | 8.8 |
| Other | 0 | 0 | 6 | 2 | 1 | 7 | 3 | 5 | 9 | 8 | 10 | 6 | 4.8 | 4.7 |
| Totals | 15 | 8 | 15 | 5 | 21 | 20 | 9 | 12 | 16 | 23 | 17 | 13 | 15.4 | 13.5 |
| Glacier National Park | 0 | 4 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0.5 | 1.0 |
| Yellowstone National Park | 0 | 0 | 8 | 3 | 7 | 4 | 5 | 11 | 4 | 3 | 5 | 4 | 4.8 | 4.2 |

Table 10. Percent FEMALE of total grizzly bear mortalities from Montana and adjacent national parks.

| | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | Avg. |
|---|---|---|---|---|---|---|---|
| Hunting | 35 | 25 | 39 | 54 | 68 | 50 | 45 |
| Other | 0 | 25 | 88 | 63 | 47 | 60 | 49 |
| Totals | 35 | 25 | 49 | 57 | 59 | 43 | 47 |
| Glacier National Park | 100 | 0 | 33 | 100 | 0 | 0 | 67 |
| Yellowstone National Park | 0 | 27 | 36 | 69 | 43 | 44 | 46 |
| | | | | | | | 49 |

ranged from 25 to 68 percent (Table 10). These mortalities are about the same as the 46 percent average female mortality of Yellowstone National Park grizzlies that were processed in the Wildlife Laboratory during the same years.

Ages established for two sub-adult and five adult females reported by hunters in 1972 were: 1 - 1 year; 1 - 4 year; 1 - 8 year; 1 - 9 year; 1 - 10 year; 1 - 16 year and 1 - 18 year. An average age of 9.4 years for females in 1972 is slightly above the 1971 average of 8.5 years (Table 11). The age of male grizzlies harvested by hunters in 1972 averaged 5.3 years and ranged from 3 to 9 years.

The age for grizzly mortalities, other than hunting, during 1972 ranged from 3 to 15 years with an average of 9.3 years for 4 females; and an average of 8.4 years for males having a range of 2 to 19 years for 7 individuals.

Sample sizes were too small from the southern population to permit comparisons between years (Table 11). However, an average age for all mortalities of 6.9 and 9.4 years for males and females respectively were slightly higher in 1972 as compared to the respective male and female average age of 6.8 and 8.5 years in 1971. The southern population is considered the area adjacent to Yellowstone National Park while the northern population includes the Bob Marshall Wilderness area, all forks of the Flathead River and all adjacent habitats.

The grizzly's reproductive performance is characterized by slow maturity, an irregular age for producing a first litter and non-rhythmic, recurring pregnancies for some individuals. Females of productive age are therefore a critical segment in grizzly bear populations. The details of population dynamics, along with sex and age structures of grizzly populations, and parameters for female mortality, are unknown at this time. It is also recognized that a continued high incidence of female mortality may jeopardize the productivity of the species in some areas.

Female grizzly mortality of 43 percent during 1972 was well below the 59 percent of 1971. A total known mortality for 1972 was about 20 percent less than in 1971. Ages of 1972 mortalities in each sex ranged from cubs of the year to 19 years of age and had a scattered distribution throughout the various populations and habitats (Table 12). These mortality features indicate that the grizzly bear mortalities during 1972 were not excessive or hazardous for the various populations of grizzlies in Montana.

## MAIL SURVEY OF ALL GRIZZLY BEAR LICENSEES

Many opinions prevail about grizzly bear trophy hunters as to who hunts, where they hunt, what they see, why they hunt and their knowledge and attitudes about Montana grizzlies. A mail survey was initiated in an attempt to establish some basic information about grizzly hunters. Shortcomings of the initial questionnaire were soon apparent by the multiple

Table 11. Average age of grizzly bear mortalities by hunting and other causes in North, South and Yellowstone populations in 1971 and 1972.

| | 1971 | | 1972 | |
|---|---|---|---|---|
| | M | F | M | F |
| Hunting | 5.7(7)[1] | 8.5(14) | 5.3(7) | 9.4(7) |
| Other | 7.8(8) | 8.5( 6) | 8.4(7) | 9.3(4) |
| TOTALS | 6.8(15) | 8.5(20) | 6.9(14) | 9.4(11) |
| North | 3.8( 4) | 8.0(12) | 5.9(12) | 9.4(11) |
| South | 7.9(11) | 9.3( 8) | 12.5( 2) | -( 0) |
| TOTALS | 6.8(15) | 8.5(20) | 6.9(14) | 9.4(11) |
| Yellowstone National Park | 18.0( 3) | 13.3( 3) | -( 0) | -( 0) |

[1]Age (sample size).

Table 12. Age groups of grizzly bear mortalities from Montana and Yellowstone National Park during 1971 and 1972.

| | MONTANA | | | | | | YELLOWSTONE NATIONAL PARK | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1971 | | | 1972 | | | 1971 | | 1972 | |
| Age Group | M | F | U | M | F | U | M | F | M | F |
| Cub of year | - | 1 | 2 | 3 | - | 2 | 1 | - | 1 | 1 |
| Yearling | - | - | | - | 1 | | - | - | - | - |
| 2-Year | 1 | - | | 2 | - | 1 | - | - | - | - |
| Sub-Adult (3-4 Yr.) | 3 | 7 | | 4 | 2 | | - | - | - | - |
| Young-Adult (5-9 Yr.) | 9 | 7 | | 6 | 3 | | - | 1 | 3 | - |
| Mature-Adult (10-14 Yr.) | 1 | 1 | | - | 2 | | 1 | 1 | 1 | 2 |
| Prime-Adult (15-19 Yr.) | 1 | 3 | | 2 | 3 | | 1 | - | - | 1 |
| Old-Adult (20-24 Yr.) | - | 2 | | - | - | | 1 | 1 | - | - |
| Very-old-Adult (25 and + Yr.) | - | - | | - | - | | - | - | - | - |
| TOTALS | 15 | 21 | 2 | 17 | 11 | 3 | 4 | 3 | 5 | 4 |

replies for areas and dates of hunting and also the areas that bears or bear sign were observed. However, some general information was obtained from this survey.

## Grizzly Bear Hunting Licenses Issued for 1972.

Of the total licenses, 72 percent were residents and 28 percent non-residents, a 2.5 to 1 ratio.

A total of 673 resident grizzly bear hunting licenses were issued for the 1972 season. The residence of licensees were widely distributed throughout the state. The largest registration of license holders was about the same for Kalispell and Great Falls with 62 and 61, respectively. These cities were followed by Whitefish with 39 license holders, Columbia Falls 35, Billings 24, Libby 23, Missoula 23, Bozeman 18, Bigfork 16, Eureka 15, Livingston 14, Choteau 13, Augusta 11, Gardiner 10; less than 10 grizzly bear hunting licensees resided at each of about 100 other locations throughout the state.

The 261 non-residents resided in 36 states, the Virgin Islands, and Italy. Pennsylvania ranked first with 47 licenses followed by Texas 33, Michigan 19, New Jersey 16, New York 15, Illinois 14, Florida 13, Tennessee 12, Ohio 9, California and Oregon 8, Indiana 7, Georgia 6; 22 other states had 1 to 4 licensees each.

## Questionnaire

A questionnaire was mailed to 854 persons that purchased a grizzly bear hunting license during 1972. Several license records had inadequate and incorrect mailing addresses; a second letter was not sent to the non-replies. A regulation in effect required that all grizzly bear hunting licenses be purchased before July 1, 1972 for the succeeding big game seasons opening on September 15 or October 22.

About 62 percent of the residents and 68 percent of the non-residents replied to the letter and questions (Table 13). Circumstances prevented 8 percent of the residents and 4 percent of the non-residents from hunting for grizzly bear during the 1972 season.

Table 13. Number of 1972 grizzly bear hunting licenses sold, letters mailed and replies.

| | Residents | Non-Residents |
|---|---|---|
| Total licenses issued | 673 | 261 |
| Number of questionnaires mailed | 598 | 256 |
| Number of questionnaires returned | 370 | 175 |
| Number who did not hunt | 61 | 8 |
| Number who did hunt | 309 | 167 |

## Hunters Occupation

About 150 different occupations were reported and are generally categorized in Table 14. It was anticipated that the logging, medical and executive professions would have been represented in higher numbers than reported.

Table 14. Occupations of grizzly bear hunters.

| Category | Residents | Non-Residents |
|---|---|---|
| Craftsmen/Manual Labor | 107 | 66 |
| Professional/Technical | 56 | 21 |
| Government/Agencies | 40 | 8 |
| Guide/Outfitter | 38 | 1 |
| Rancher/Farmer | 33 | 10 |
| Businessmen/Management | 32 | 59 |
| Lumber/Logging | 18 | 6 |
| Homemaker/Student | 15 | 1 |
| Retired | 9 | 3 |

## Season

A special elk "bugle" season was open in 34 hunting areas during September 15-19 of 1972. Except for areas 15, 280 and 316, the grizzly season was closed during the special bugle season.

Several returned questionnaires were not fully answered and some were over-answered by indicating more than one time period and hunting area. The replies generally indicated that about 27 percent of the residents with grizzly bear licenses hunted during the elk "bugle" season (September 15-19) and 22 percent during a time that included the early season(September 22-November 26). About 33 percent of the non-residents were afield during each of the bugle, early and regular seasons.

## Hunting Areas

Replies indicate that 64 percent of the residents and 54 percent of the non-residents with a grizzly bear hunting license hunted in northwest Montana (Table 15). Hunting area 15 includes the Bob Marshall Wilderness Area and was favored by both resident and non-residents (Table 16). About 33 percent of the residents and 60 percent of the non-residents hunted in one of the three early season areas. Due to the non-specific question and answers, it is not known whether the 15 percent of the hunters using area 14 were present during the special elk bugle season.

## Observations

The survey inquired as to how many bears were seen, if bear tracks or droppings were observed, or if bears were heard or smelled. Of the 476 hunter

Table 15. Percent of grizzly bear licensees hunting in various administrative regions of Montana.

| Region | Resident | Non-Resident |
|---|---|---|
| 1 | 64 | 54 |
| 2 | 8 | 6 |
| 3 | 16 | 25 |
| 4 | 10 | 11 |
| 5 | 2 | 4 |

Table 16. Percent of grizzly bear licensees hunting some of the 62 hunting areas.

| Hunting Area | Resident | Non-Resident |
|---|---|---|
| 15* | 24 | 46 |
| 280* | 4 | 4 |
| 316* | 5 | 11 |
| 10 | 5 | 0 |
| 12 | 4 | 1 |
| 13 | 5 | 0 |
| 14 | 15 | 5 |
| 101 | 2 | 0 |
| 281 | 1 | 1 |
| 310 | 2 | 1 |
| 313 | 1 | 0 |
| 314 | 2 | 3 |
| 317 | 1 | 2 |
| 41 | 1 | 0 |
| 42 | 5 | 4 |
| 424 | 2 | 3 |

*Early hunting season opening on September 15.

replies, 20 percent of the residents and 12 percent of the non-residents reported seeing one or more grizzly bears during their hunt. About 60 percent of the residents seeing bears observed from 2 to 8 grizzlies during the season. In most cases the replies which recorded seeing grizzlies also indicated they hunted in more than one hunting area and included units 11, 14 and 15. Only a few hunters reported seeing any bear in regions 2, 3 and 4. About 60 percent of the non-residents who observed grizzlies did so in hunting area 15.

While some hunters did see grizzlies, others observed only grizzly tracks or fresh droppings, but many did not see either. About 45 percent of the residents and 53 percent of the non-residents who did not

see a grizzly indicated that they did see bear sign. Since hunters reported being in several areas the information for specific areas was not as precise as desired. Black bears also coinhabit the west half of the state and some question may exist as to the correct identification of the bear species from this sign.

### Hunter Comments

The survey had an open question for comments and 129 residents and 53 non-residents responded. About half of each considered the season and program satisfactory, with several being quite complimentary. Suggestions for seasons by residents and non-residents were quite similar and included 10 percent that would like a spring season; a few wanted an earlier, shorter or later season, or some areas closed.

Some residents (8) and non-residents (6) suggested that the grizzly bear be limited to one per lifetime. While a few non-residents considered the license fee too high, more replies mentioned it was too low. Only a few residents commented that non-residents be excluded from hunting Montana's grizzlies.

### Replies from hunters killing a grizzly

A letter of inquiry was sent to each of the 14 (10 resident, 4 non-resident) hunters who killed a grizzly bear during the 1972 season; and 13 replies provided information about their trophies.

All but one hunter indicated they were primarily after elk and hoped to see a grizzly during the hunt. Only the non-residents were assisted with guides. One resident that shot a grizzly was a guide. Eleven of the hunters did not visit game kill sites for bear activity but two reported they did. Most (10) of the hunters saw a grizzly before locating an elk; 4 were observed in a meadow, 3 on the trail, 1 after following bear tracks, 1 was on a hunter's elk and 1 was shot from camp.

Ten of the hunters encountered only one grizzly while three hunters observed two bears at the time of shooting. While 6 hunters were able to move closer to the grizzly before shooting, 7 did not. The estimated distances of shooting were reported as: 4 at 10 to 30 yards, 5 at 50 to 75 yards and 4 at about 200 yards.

## PARASITE STUDIES

The grizzly heads or the complete carcasses from hunter kills of 31 grizzlies and 6 black bears were examined for parasites in 1972. Viscera were examined for internal parasites. When available, the tongue and masseter muscle from grizzly bear heads were examined for the presence of porkworm larvae *(Trichinella spiralis)*. Examinations were conducted by the Veterinary Research Laboratory at Montana State University, Bozeman.

*Trichinella* larvae were present in 74 percent (23 of 31) of the grizzlies in 1972. This incidence was 11 and 33 percent greater than during 1971 and 1970, respectively (Greer 1970, 1971). Larvae were present in

grizzlies of both sexes from 1 to 19 years of age during 1972. Samples from 2 cubs did not reveal *Trichinella* larvae. However, larva were present in a cub examined in 1970.

Tissues of grizzlies from the S. Fork of Flathead River and the Bob Marshall Wilderness area, HA 14 and 15, revealed 82 percent of the samples contained porkworm larvae. Of nine grizzlies, except cubs, from Yellowstone National Park and adjacent areas in Montana, 67 percent contained *Trichinella* larvae.

Intensities of *Trichinella* ranged from 1 to 260 larvae per gram (LPG) of tissue. Thirty nine percent of the burdens were rated as light (1 to 4 LPG), 17 percent had an intermediate rate (4 to 20 LPG), 17 percent were considered a moderately high rate (20 to 75 LPG) and 27 percent revealed a high concentration of larvae (75 + LPG). Grizzlies with a high intensity of larva included two males of 1 and 7 years and four females of 1 to 9 years of age.

The 6 black bears from Gallatin County and Yellowstone National Park during 1972 did not reveal the presence of *Trichinella* larvae. Likewise, these larvae were not found in the 11 black bears examined in 1971.

The common gastrointestinal parasite, a large ascarid roundworm (*Baylis-cascaris transfuga*), occurred in 65 percent of both sexes of 17 grizzlies examined in 1972. Two of the male grizzlies, 6 and 9 years old, were considered to be heavily infected by the presence of over 51 worms in each. Other infections ranged from 1 to 31 worms.

Tapeworms were present in 10 of 17 grizzlies. Burdens in 4 of the 10 were considered heavy with over 100 tapeworms in each. One 12 year old male had 566 tapeworms, mostly *Diphyllobothrium* sp. with only a few *Taenia* sp. present. The two female grizzlies, each 13 years of age, had burdens of about 250 and 450 tapeworms that were exclusively *Diphyllobothrium* sp. A 2 year old male had about 150 tapes, exclusively *Taenia* sp.

A heavy burden (188) of hookworms *(Uncinaria* spp.*)* were found in the small intestine of a marauding grizzly taken by U. S. Fish and Wildlife Service personnel in the Blackfeet Indian Reservation. From 16 to 65 hookworms were also present in 3 other grizzlies and included one from Alice Creek in the Lincoln-Scapegoat Wilderness area. Previous incidents of hookworms appeared in a few grizzly from Glacier National Park and the Blackfeet Indian Reservation. To date, this parasite has not been found in grizzlies from Yellowstone National Park or the adjacent areas.

A filarial worm *(Dirofilaria ursi)* was recovered in the trachea of two male grizzly bears during 1972. One bear from the North Fork of the Flathead River was 2 years of age and the other from the Blackfeet Indian Reservation was 8 years of age. Each of the males also had two additional parasites present.

## GRIZZLY BEARS AT WEST YELLOWSTONE

During the last several decades grizzly and black bears *(Ursus americanus)* have coinhabited the vicinity of West Yellowstone during the spring, summer and fall seasons. As man's interests and properties increased, the complaints of nuisance bears also increased. While past complaints

usually involved black bears, they have predominantly involved grizzly bears during the past five years. Previous grizzly bear management programs in this area have been reported (Greer 1972).

## Bear-proof dump

Details of this structure and the first summer of service were previously described (Greer 1972). The results of frequent and heavy accumulation of snow were overlooked during the original construction. While the entire top edge of fencing was initially tied down with light gauge wire and appeared substantial during the first summer, this was a shortcoming revealed after the first winter. Further fence damage was also caused in the spring by persons pulling down the top edge of the fence for entry into the area to scavange auto parts.

During the dump's second season of operation, it was found that the facility was not bear-proof as expected. While the damaged fence was rewired where needed the top edge was not completely reinforced. Bears visited the area throughout the summer and on several occasions it was known that some entered over the fence, foraged in the dump, and exited over the fence in the same or different locations. The intermittent observations and investigations by a local observer indicated that from 4 to 8 grizzlies had entered the dump during the summer of 1972. While only 3 grizzlies were captured from this area it is considered that 15 to 25 individual grizzly bears had visited the area one or more times during the period, resulting in more than 50 grizzly visits.

## Bear complaints

When grizzlies appear in the area during late April, their behavior may not be conflicting with man. As bear numbers increase during May and June, their activities may cause them to become a nuisance; a public complaint frequently follows, resulting in a required live-trapping action.

The abrupt relocation of the community (West Yellowstone) dumping area for the 1971 season resulted in an expected increase of grizzly bear complaints (Greer 1972). In 1971 a control program of live-trapping involved 230 culvert trap sets and 25 snare sets from June 23 to September 22, resulting in the capture of 23 grizzly bears. It was anticipated that the two or three years following this initial program would be of a reduced magnitude and thereafter involve only a few animals each year.

The activation of live traps during 1972 was on June 23, precisely the same date as the previous year. About 125 culvert trap sets were required until September 15, resulting in the capture of 7 grizzlies.

In 1971 and 1972, some grizzly bears were present during the same periods of the season and in the same areas. Due to the management program of 1971, and the consequent mortalities of some translocated grizzlies, a fewer number of troublesome grizzlies remained or reappeared around West Yellowstone in 1972. The required 1972 trapping effort was about 50 percent less than in 1971, and the number of individual grizzlies captured in 1972 was about 70 percent less.

## Trapping and Capture

The trapping program was conducted by the same local warden personnel as in 1971. Although several grizzlies avoided the culvert traps the use of snare traps were not employed as in the previous year.

The locations for the 7 grizzlies captured were: 3 at the new dump, 3 around Hebgen Lake and 1 at the airport (Table 17). At capture, 4 of the 7 grizzlies held ear tags and one of the others without a tag had an ear slit that appeared to be due to a lost tag (Table 18). Two of the bears were tagged in Yellowstone Park; one by Craighead in 1966 and subsequently by the Park in 1971, and the other by Craighead in 1968. The other two marked bears were tagged in 1971 at West Yellowstone before translocation.

The 7 grizzlies included 4 males ranging from 10 to 20 years of age, 2 females about 8 and 18 years, respectively, and a sub-adult of undetermined sex.

## Disposition of Captured Grizzlies

Inquiries were sent to several state and out-of-state zoos, agencies and departments asking about receiving grizzlies from Montana. All replies were negative. Landowners and agencies did not favor the introduction of grizzly bears into former unoccupied grizzly habitat or into areas with existing grizzly populations.

Following a precendent established in Montana during the previous year, the U. S. Forest Service again suggested similar transplant sites (Fig. 2) for possible relocation of grizzly bears during 1972. Capture and relocation sites were all within the Gallatin National Forest and included:

Area A. Upper Slough Creek - The east side of Slough Creek drainage including Lake Abundance Creek and northward, outside of the Absaroka Primitive Area.

Area B. Buffalo Fork - The head of Buffalo Fork drainage outside of the Absaroka Primitive Area, starting about 1½ miles above Buffalo Fork Guard Station.

Area C. Pyramid - The top of the Boulder - Yellowstone Divide starting from Crow Mountain, proceeding northward about 6 miles to Silver Pass.

Area D. Hilgard - The heads of North and South Hilgard, Sentinel and Alp Creeks.

Four of the 7 captured grizzlies were translocated by helicopter (Greer 1972) to the areas above; due to extenuating circumstances, one grizzly was released in the upper Gallatin canyon. The 4 grizzlies moved by air were released from 60 to 80 airline miles from their point of capture around West Yellowstone. Two grizzlies were dispatched; one due to the

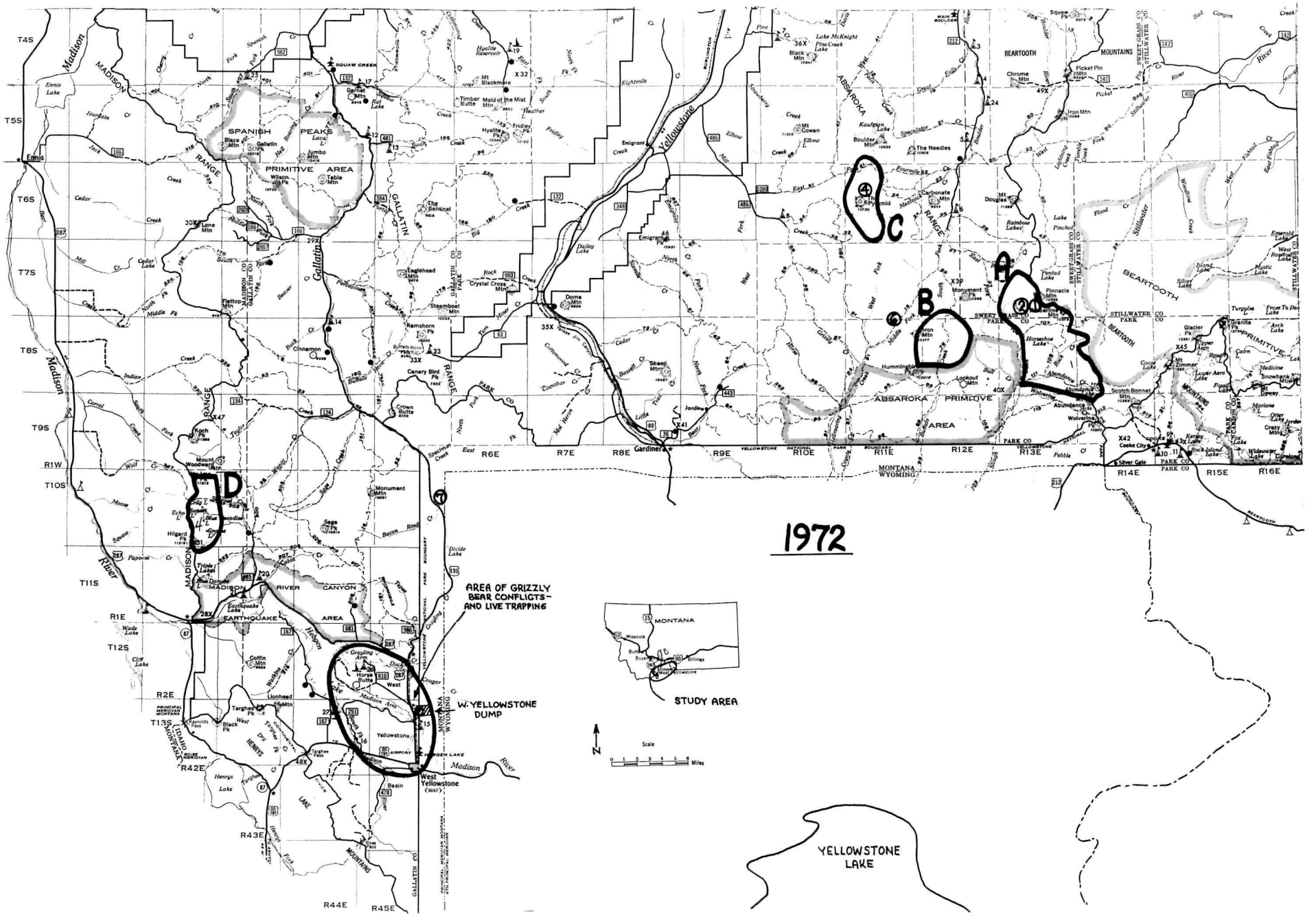


Figure 2. Locations of grizzly bears translocated into or near designated areas in the Gallatin National Forest during 1972. (Descriptions appear in Table 18.)

Table 17. Trapping summary of 7 individual grizzly bears handled near West Yellowstone during the summer of 1972.

| Trapping Number | Date Trapped | Location | Sex[1] | Age[2] | Weight[3] | Previous Tag | Relocation Date | Relocation Area | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 72-1 | July 2 | New Dump | M | A | E-400 | Yes | July 2 | 1 | |
| 72-2 | July 10 | New Dump | M | 0 | E-500 | No | July 10 | 1 | |
| 72-3 | July 17 | Hebgen Lake | M | 16 | S-500 | No | Dispatched | | Large open and running wound on face |
| 72-4 | July 27 | Hebgen Lake | F | A | E-200 | Yes | July 27 | 3 | |
| 72-5 | July 28 | Airport | M | 9 | S-600 | Yes | Dispatched | | Previous transplant |
| 72-6 | Aug. 5 | Hebgen Lake | F | 0 | S-330 | Yes | Aug. 5 | 2 | |
| 72-7 | Sept. 7 | New Dump | U | Y | - | No | Sept. 8 | Local | |

[1]Male, Female, Unknown
[2]Adult, Old, Young
[3]Estimated, Scale

Table 18. Identification markings for grizzly bears captured near West Yellowstone and relocated during the summer of 1972.

| | Tag or marker already present[1] | | Initial or supplement Tag or marker | | |
|---|---|---|---|---|---|
| | Left Ear | Right Ear | Left Ear | Right Ear | Disposition |
| 72-1 | YNP-7127 | MFGD Round Yellow G-235 | None | None | Sec. 35, T7S, R13E |
| 72-2 | None | None | MFGD Square Red G-711 | MFGD Square Red G-712 | Sec. 35, T7S, R13E |
| 72-3 | None-slit ear; tattoo upper lip, 85 | None | None | None | Dispatched |
| 72-4 | MFGD Round Yellow G-222 also; Blue-White braided nylon rope with yellow plastic tag | None | None | None | Sec. 17, T6S, R11E |
| 72-5 | MFGD Round Green G-692 | MFGD Round Green G-693 | None | None | Dispatched |
| 72-6 | MFGD Blue G-462 | MFGD Blue G-675 | None | None | Sec. 32, T7S, R11E |
| 72-7 | None | None | None | None | Fan Creek, Gallatin drainage |

[1]All tags are aluminum unless otherwise designated, and letters indicate agency: YNP Yellowstone National Park; MFGD, Montana Fish and Game Dept.

presence of a festering face wound, all canines broken, and other recent scarring; and the other because of translocation the previous year (Table 18).

Throughout the remaining year no subsequent observations were reported for the 4 relocated grizzlies.

## Hunting areas adjacent to Yellowstone National Park

Prior to 1967 the general big game seasons and licenses were inclusive for either black or grizzly bears and provided little information about the interest, pursuit or harvest of grizzly bears. Since 1967, a special grizzly bear license system has prevailed, providing detailed information on the hunters and the legal harvest of grizzly bears (Greer 1972). A letter of inquiry to each successful grizzly bear hunter has also provided additional information about their trophy. A general survey letter to every holder of a grizzly bear hunting license resulted in over 60 percent of the hunters replying.

A total of 5 administrative hunting areas in Montana are adjacent to the northwest and north boundary of Yellowstone National Park (Fig. 3). One of the 5 areas has an early opening season. Hunting Area 316 is of high elevation and subject to early, heavy snows which usually precludes access during the general season in October and November; this area has traditionally opened to hunting on September 15.

During 1967-1970, hunters harvested 2 or 3 grizzlies each year from Hunting Area 316 (Table 6). Eighty percent of the grizzlies were taken in September and 20 percent in early October,all prior to the opening of the general big game season. The remaining four hunting areas have regular seasons in October and November and have provided none, one or two legal grizzly kills during the same 4-year period.

Although 6 years of data are available for hunting areas adjacent to Yellowstone National Park, only the initial 4-year period of 1967-1970 may be considered to involve undisturbed grizzlies. Prior to the 1971 and 1972 seasons, 17 and 4 grizzlies, respectively, were translocated into sites within hunting areas north of Yellowstone National Park (Greer 1972). During 1971 hunters harvested 9 grizzlies from these five areas, 7 of which were from area 316 where a considerable disturbance must have been caused by the 17 transplants. In 1972, only 4 transplants were introduced into the same areas as 1971, however, not a single grizzly was taken in any of the 5 areas by hunters. While this appeared as an unusual occurrence, it is not considered as an indication that grizzlies were not present.

Repeated relocations of various sex, age and numbers of grizzlies may or may not have a corresponding disturbing effect on each other or on long term residents.

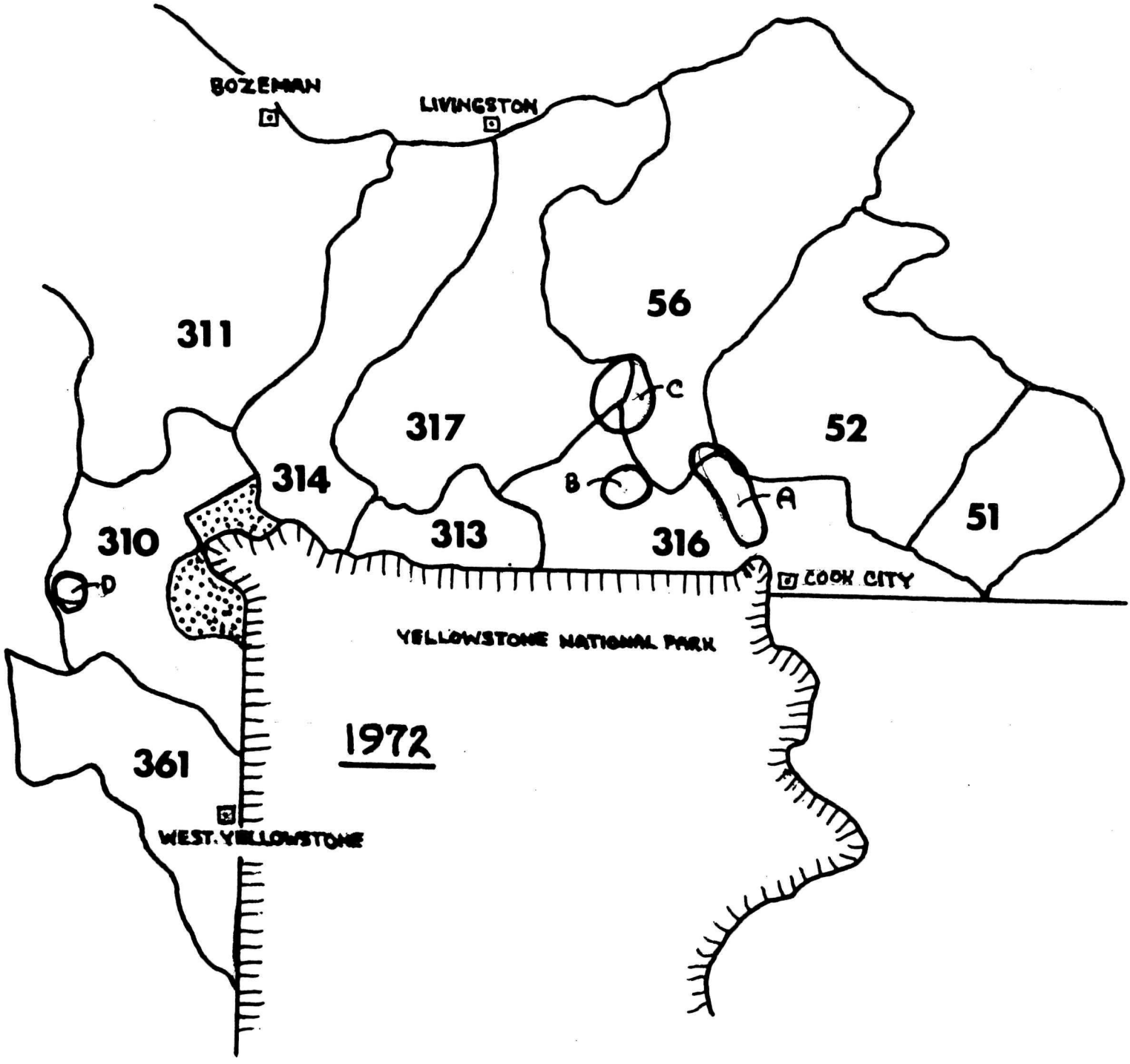


Figure 3. Hunting areas relative to grizzly bear transplant sites A-D in Montana during 1972.

## DISCUSSION

The grizzly bear has different meanings to different people; several views, values and standards may be individually or collectively attached to the grizzly bear, including: as a species to be maintained at maximum densities in maximum habitats for maximum recreation with optimum annual harvests; as part of the western mountain wilderness areas; as an aesthetic wilderness experience; as a coveted big game trophy; as a potential threat to life; as a menace to range sheep and cattle; as a commodity for merchants, guides and taxidermists; as a species heading for extinction; as a species that should be hunted; as a problem when appearing at campgrounds, dumps, cabins, ranch or lakes; or as a subject of controversy involved with various national pressures. Because of the various values placed on the grizzly bear, many considerations must be evaluated by the respective state game department in their responsibility for control and management of the species.

Several grizzly bear populations have prevailed in Montana, providing annual hunting harvest rates that we considered acceptable. Besides hunting, other forms of annual mortality also occur. A total of 934 grizzly bear hunting licenses were issued to residents and non-residents during 1972. An average hunter success of 1.5 percent for 1972 is about the same as the average for the past six-year period. From the information for previous years it does not appear that as many as 2,000 or as few as 1,000 licenses have significantly affected the rate of harvest. Variability of weather conditions and the influence of berry and pine nut crop production on distribution of bears before and during hunting seasons, appear to be a greater influence on the number of grizzly bears harvested than the number of grizzly bear hunting licenses issued.

The annual known mortality of Montana grizzly bears has ranged from 28 to 48 during 1967-1972. It is believed that a few unknown man caused grizzly bear mortalities occur in Montana due to: misidentification between bear species; indifferent attitudes towards all bears; unlicensed kill; self-defense; protection of property; or, illicit traffic of pelts. Most of these various types of mortality that become known at a later date, will upon verification, be recorded for the respective year.

Some individuals, groups and associations assail the hunting of grizzlies and urge their harvest be severely reduced or eliminated, in their view, this misinterpreted conservation action will save the species. These views on hunting only consider the portion of grizzly mortality that is already under control by licenses, seasons and regulations. The other significant portion of annual grizzly mortality is generally uncontrolled. A stringent license and quota harvest system for grizzlies could adversely affect grizzly populations in the immediate or near future. Two ways this could happen are, 1) increased encounters of grizzlies and subsequent mortalities as a threat, marauder or nuisance, of which several may be unreported, and 2) the restricted underlicensing could possibly result in increased risks taken for the highly lucrative clandestine mortality and traffic of grizzly pelts.

In 1972 the known mortality of 35 grizzly bears in Montana included 40 percent (14) by hunting. This harvest was 36 percent less than the 22 grizzlies taken by hunters during the 1971 season. The major grizzly habitat and populations occur in and adjacent to the Bob Marshall Wilderness area (HA 15). As in previous years, several (6) grizzlies were taken by hunters from this hunting area. Not only are the locations of hunter killed grizzly well distributed within and between years on the 1 million acre area, but the sex and age of bagged bears are considered favorable within known parameters. It would appear that this area, in providing about 7 grizzlies a year (ranges from 5 to 12), has not experienced any deleterious effect on resident population numbers or distribution.

Of the 14 grizzly taken by hunters, 13 were from the Bob Marshall Wilderness area and adjacent areas to the north and south including the South Fork of the Flathead River and the Lincoln-Scapegoat Wilderness area.

The mortality for the sex of grizzly during 1972 was about 58 percent males and 42 percent females. With age data available for 30 individuals, 47 percent were sub-adults (cub through 4years) and 53 percent were adults (5 years through 19 years).

Although the incidents are few, it is noted that the complaints of grizzly bears appearing around mans' dwellings and properties have increased in the past few years. Some of the control actions were resolved by the public with an immediate death of the grizzly, some department actions were not successful and some actions resulted in live captures and translocations of grizzly bears. During 1972, control actions of grizzly bears were required in the vicinity of Polebridge, Bigfork, Lincoln, Silver Gate, Blackfeet Indian Reservation and West Yellowstone. Only 1 or 2 grizzlies were involved in five of the areas, while a continuous program was necessary throughout the summer at West Yellowstone.

The community bear-proof dump of West Yellowstone (Greer 1972) remained to be an attraction site for grizzly bears. Several bears visited the area intermittently through the summer. The electric fence and main woven wire fence were not an effective deterrent or barrier to some grizzlies as several culvert trap sets were established around the dump during the season only 3 grizzlies were captured.

The live capture of grizzly bears is only half of the management program for response to nuisance complaints. After capture, there is the problem of disposing of a live grizzly. Many suggestions for disposal of grizzlies were pursued but with negative results. Authorized sites for relocation within the same national forest of capture has provided a favorable solution that has been used during the past two years. All grizzlies are examined before relocation, and injured or incorrigible individuals considered as poor risks are dispatched. It is expected that over a 4 or 5-year period, only an occasional injured bear will of necessity be removed from the populations around West Yellowstone.

The terminology used in regulations are usually understood as presented and intended, but in some instances the words and phrases can be distorted

and misused for cross purposes. A regulation for grizzly bear appeared as; "Season will open October 22, 1972, in all hunting districts except 15, 280 and 316 which will open September 15, 1972. Season shall close with the closing date of the deer and elk season in each hunting district, but not later than November 26, 1972". This regulation could be distorted to imply that grizzly bears may be taken in all 140 hunting districts when the fact is that grizzly bears, while generally distributed, have provided legal kills in only 24 of the hunting districts in the state. Similar distortions have appeared in newspapers as bits of information discrediting the hunting of grizzly bears. Others have been inferred and more are expected.

## RECOMMENDATIONS

1. The harvest, distribution, sex and age data for the 1972 Montana grizzly bear mortalities, by hunting and other reasons, is considered to be within acceptable levels, as in previous years. Therefore, no changes in licensing, seasons or regulations appear to be required for the 1973 season.

2. Individually designate the 24 areas open for hunting of grizzly bears, rather than indicate all hunting areas are open.

3. Continue the program for determining the annual grizzly bear mortality in Montana and to provide information on the cause of mortality, date, location, age, sex, physical condition and parasites of each.

4. Continue cooperative efforts to obtain and process carcasses of grizzlies from the adjacent national parks for comparisons and evaluations with Montana populations.

5. Continue to seek transplant areas for nuisance grizzlies captured at West Yellowstone or other locations. Coordinate and inventory the potential sites with Forest Service personnel. Public hearings may be required for transplanting grizzlies between different forests in the state.

6. Maintain records of all individual grizzly bears involved in an official complaint, live trapping action, capture and disposition location.

7. Generally delineate the grizzly bear ecosystems in Montana and subsequently refine into sub-ecosystems. Establish density levels and distributions of grizzly and black bears in their various habitats.

8. A survey program should be initiated in the vicinity of West Yellowstone to record the presence, movements and behavior of black and grizzly bears in the area, and to establish a base for future comparisons.

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