ALASKA DEPARTMENT OF FISH AND GAME

JUNEAU, ALASKA

STATE OF ALASKA Keith H. Miller, Governor

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BISON AND ELK STUDIES

by

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Volume X Annual Project Segment Report Federal Aid in Wildlife Restoration Project W-13-R-3 & W-17-1, Work Plan Q

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(Printed July, 1969)

WORK PLAN SEGMENT REPORT

FEDERAL AID IN WILDLIFE RESTORATION

| STATE: | Alaska | | |
|---------------|------------------------------|----------|---|
| PROJECT NO.: | <u>W-15-R-3 & W-17-1</u> | TITLE: | Big Game Investigations |
| WORK PLAN: | Q | TITLE: | Bison, Elk, Goat, and Muskox Studies |
| JOB NO.: | 2 | TITLE: | Bison Hunts and Introductions |
| PERIOD COVERE | D: January 1, 1968 to 1 | December | 31, 1968 |

ABSTRACT

A partial census of the Big Delta herd in June revealed 148 bison, 40 of which were calves. This gives a 27% calf production.

A managed hunt at Big Delta resulted in the harvest of ten mature males.

Twenty bison were transplanted from Big Delta to Farewell on August 14 and 15. These animals consisted of 12 females, two of which were calves and eight males, five of which were calves.

Mortality in addition to the ten killed on the hunt was at least eight bison. Six of these were road kills, one an illegal kill and the other was collected by the Alaska Department of Fish and Game.

A census of the Copper River herd revealed 102 bison, 19 of which were calves. This was the highest count yet made of this herd.

A managed hunt on the Copper River resulted in the harvest of 13 bison, seven of which were females.

A census of the Healy Lake herd in February revealed 25 animals.

A census of the Farewell herd in August before the transplant revealed 25 animals, seven of which were young calves.

On July 26, an aerial census of the Chitina herd revealed 16 bison, two of which were calves.

RECOMMENDATIONS

An annual managed hunt should be continued at Big Delta and Copper River. A managed hunt of the Healy Lake herd should be considered. Investigations to determine losses from all causes should be intensified.

Herd composition, calf production, and herd movement studies should be continued.

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| JOB NO.: | 2 | TITLE: | Bison Hunts and Introductions |

PERIOD COVERED: January 1, 1968 to December 31, 1968

OBJECTIVES

To determine population structure and production, and implement management of the bison herds in Alaska.

TECHNIQUES

Aerial surveys with a PA-18 and Cessna 180 aircraft were made of the bison herds at Big Delta, Healy Lake, Copper River, Chitina River and Farewell.

A controlled hunt was conducted at Big Delta on September 28 through September 30, 10 mature bison were harvested. A controlled hunt from October 12 through October 18 on the Copper River resulted in the harvest of 13 bison.

Four areas were surveyed to determine the feasibility of transplanting bison from the Big Delta herd. The surveys were general and designed to obtain information on (a) the general size of the winter and summer ranges, (b) the plant cover and condition, (c) possible problems that might arise as a result of a transplant. The four areas surveyed were:

- 1. Nabesna River
- 2. Stampede Airstrip
- Unalakleet
- 4. Farewell

Farewell was chosen as the release site and on August 14 and 15, twenty bison were released. Eight males, including five calves, and twelve females, including two calves were released.

FINDINGS

Big Delta Herd

An aerial survey of the Big Delta herd was made on June 7. Observations on the Big Delta River from Black Rapids to the Tanana River were made. The Fort Greely area east of the Big Delta River was observed as well as the Delta-Clearwater farming area. The area west of the Big Delta River was not surveyed.

A total of 148 bison were counted, 40 of which were young calves. This was a partial census. It exceeds the counts made in June and July in 1966 and 1967. (See Tables 3 and 4) The calf count of 40 compares favorably with counts made for the years 1964 and 1967. The largest calf count made was 46 calves in 1966. Calf production in June 1968, which was 27%, was much higher than the calf production in June 1967.

A census planned for November was cancelled because of inclement weather. This census will be conducted in January or February 1969 to obtain a total count of bison.

Based upon past and present census figures the 1968 fall population of the Big Delta herd is estimated to be 250 animalss.

Harvest

A permit hunt for 10 mature male bison was approved for the Big Delta herd. Ten persons were selected to hunt and five selected as alternates from 1907 applicants. The public drawing was held on September 23, on Channel 11 television in Fairbanks. The organization of the hunt was similar to one held in 1965. Four people hunted on each of the first two days and the remaining two hunted the last day. All hunters succeeded in getting a mature male bison.

Transplant

On August 14 and 15, twenty bison were transplanted from the Big Delta herd to the airstrip at Farewell. All yearling and adult animals were tested for brucellosis by Dr. Smith of the United States Department of Agriculture. All test results were negative. The animals appeared to be in good physical condition when released.

A census prior to this transplant revealed a total of 25 bison at Farewell, seven of which were young calves. With the addition of this transplant, a total of 45 bison are at Farewell.

| | | Approximate | Ear S | ſag |
|---------|--------|---------------|---------|---|
| | Sex | Age | left | right |
| 1. | Male | 2 yrs. | 7612 | 7613 |
| 2. | Male | 2 yrs. | 7614 | 7615 |
| 3. | Male | 2 yrs. | 7630 | 7631 |
| 4. | Male | Calf | 7640 | 7639 |
| 5. | Male | Calf | 7621 | 7620 |
| 6. | Male | Calf | 7618 | 7619 |
| 7. | Male | Calf | 7616 | 7617 the mother of this calf was crippled and not trans- |
| Q | Mala | Calf | 760.2 | |
| 0. Q | Foralo | 0a11 Adu1+ | 7603 | 7602 broken left bern |
| 10 | Female | Adult | No. Tag | No Tag |
| 11 | Female | Adult | 7609 | 7600 |
| 12 | Female | Adult | 7611 | 7610 |
| 13 | Female | Adult | 7625 | 7624 |
| 14 | Female | Adult | 7625 | 7627 |
| 15 | Female | Adult | 7632 | 7633 |
| 16. | Female | Adult | 7634 | 7635 |
| 17. | Female | Adult | 7638 | 7637 |
| 18. | Female | Yearling | No Tag | 7636 broken left horn |
| 10 | Femalo | Calf | 7606 | 7607 |
| 20. | Female | Calf | 7623 | 7622 |

The sex, age and ear tag numbers of the released animals are as follows:

Mortality

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In addition to the ten animals killed on the managed hunt, eight were killed as follows:

| Date | <u>Sex</u> | Age | Where Killed | How Killed | Condition of Animal |
|----------|------------|-------|----------------|--------------|------------------------|
| 1/14/68 | М | Calf | Delta Junction | Road kill | ? |
| 1/14/68 | М | Adult | Delta Junction | Road kill | ? |
| 1/20/68 | F | Calf | Delta Junction | Road kill | ? |
| 7/ /68 | М | Adult | Ft. Greely | Shot by F&G | good |
| 9/19/68 | М | Adult | Delta Creek | Illegal kill | good |
| 10/21/68 | F | Adult | 271 Rich. Hwy. | Road kill | lactating |
| 11/15/68 | F | Calf | Delta Junction | Road kill | good |
| 11/30/68 | М | Calf | Delta Junction | Road kill | good |

Copper River Herd

Two aerial surveys were made of the Copper River herd. One conducted on March 21 revealed 55 animals on the Copper River between the Chetaslina and the Chitina Rivers. Some of these bison were found up the Chetaslina River within five miles of the Copper River. Others were scattered east of the Copper River around the shallow lakes in the area.

The second survey made on July 26 and 27 revealed 102 bison, 19 of which were young calves. These animals were found at the headwaters of the Dadina River. This is the largest number of bison ever observed in this herd.

The 1968 fall population of bison in the Copper River herd is estimated to be 125 animals.

Harvest

A managed hunt was conducted on the Copper River herd from October 12 through October 18, 1968. The hunt was a registration hunt requiring hunters to check in and out of the hunting area.

A total of 75 hunters registered. Conditions were poor for landing aircraft and not all registered hunters participated in the hunt.

By October 18, 13 bison had been killed and the hunt was terminated. Seven females and six males were harvested.

One of the original 17 bison transplanted to this area was killed on this hunt. The ear tagged bison was 20 years old this fall.

Farewell Herd

An aerial survey early in August revealed a total of 25 bison at Farewell. Seven of these were young calves. With the addition of the 20 transplanted bison, the Farewell herd consisted of 45 animals on August 15, 1968. This is a complete census, in all probability.

Chitina Herd

On July 26, an aerial survey revealed a total of 16 bison on the Chitina River. Two of these were young calves. This count is believed to be a complete census of this herd.

Healy Lake Herd

On February 22, 1968 an aerial survey was made in the vicinity of Healy Lake. Bison tracks and signs of feeding activity were found on the frozen lake and throughout the immediate area surrounding the lake. However, only 25 bison were observed. Eighteen of these were observed on the Volkmar River, five miles north of Healy Lake, and six bison were found on the northern reaches of Healy Lake. One lone animal was found near the center of Healy Lake. Another aerial survey was conducted on June 7. A total of seven bison was found near the mouth of the Gerstle River. One was a young calf. The animals are extremely difficult to count after the ice melts on Healy Lake because of the large areas of spruce forest throughout this range.

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The total population at Healy Lake is estimated to be 60 bison. (See Table 4.)

| Area & Herd | Date 1964 | Total Number Bison Observed | Adults | Calves | Percent Calves in the Total Number Observed |
|---------------------|--------------|--------------------------------|--------|--------|---|
| | | | | | |
| Healy Lake Herd- | | | | | |
| Tanana River | June 2 | 63 | 48 | 15 | 24 |
| Big Delta Herd- | | | | | |
| Delta River | June 3 | 149 | 121 | 28 | 19 |
| Big Delta Herd- | | | | | |
| Delta River and | Julv 28 and | 1 | | | |
| Jarvis Creek | August | 265 | 221 | 44 | 17 |
| Copper River Herd- | | | | | |
| Dadina River | July 29 | 97 | 80 | 17 | 17.5 |
| Chitina River Herd- | | | | | |
| Chitina River | July 30 | 12 | 7 | 5 | 42 |

Table 1. 1964 Calf Production Counts

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Table 2. 1965 Calf Production Counts

| Area & Herd | Method of Count | Date 1965 | Total Number Bison Observed | Yearlings or Older | Calves | Percent Calves in the Total Number Observed |
|------------------------------------|--------------------|--------------|--------------------------------|-----------------------|--------|---|
| Big Delta Herd Delta River | Aircraft | June 29 | 185 | 152 | 33 | 17.8 |
| | 11 | July 26 | 180 | 142 | 38 | 21.1 |
| | Ground | July 29 | 14 | 10 | 4 | 28.6 |
| 11 | 11 | Aug. 3 | 42 | 28 | 12 | 28.6 |
| 11 | " | Aug. 9 | 10 | 8 | 2 | 20.0 |
| Copper River Herd- Dadina River | Aircraft | July 2 | 84 | 65 | 19 | 22.6 |
| Copper River Herd- Copper River | " | Sept.24 | 71 | 58 | 13 | 18.3 |
| 11 | Ground | July 22 | 6 | 5 | 1 | 16.7 |

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| Table 5. 1900 Call Production Coun | Table | 3. 1966 | 6 Calf | Production | Count |
|------------------------------------|-------|---------|--------|------------|-------|
|------------------------------------|-------|---------|--------|------------|-------|

| Area & Herd | Method of Count | Date 1966 | Total Number Bison Observed | Yearlings or Older | Calves | Percent Calves in the Total Number Observed |
|-------------------|--------------------|--------------|--------------------------------|-----------------------|--------|---|
| Big Delta Herd- | | | | | | |
| Delta River | Aircraft | April 5 | 93 | 78 | 15* | |
| 11 | 11 | July 19 | 138 | 103 | 35 | 25.4 |
| | T | Aug. 2 | 205 | 159 | 46 | 22.4 |
| Healy Lake Herd | " | April 5 | 58 | 43 | 15* | |
| п | " | May 23 | 50 | 40 | 10 | 20.0 |
| Copper River Herd | 11 | April 6 & 7 | 27 | 20 | 7* | |
| 11 | " | Aug. 5 | 79 | 72 | 7 | 0.1 |
| 11 | " | Aug. 31 | 15 | 10 | 5 | 0.3 |
| Chitina River | 11 | Apri1 6 & 7 | 9 | 9 | 0 | |

* Calves born in 1965.

| Table 4 | 4. 196 | 7 Calf | Production | Counts |
|---------|--------|--------|------------|--------|
| | | | | |

| Area & Herd | Method of Count | Date 1967 | Total Number Bison Observed | Yearlings or Older | Calves | Percent Calves in the Total Number Observed |
|--------------------|--------------------|--------------|--------------------------------|-----------------------|--------|---|
| Big Delta Herd | PA-18 aircraft | March 24 | 56 | 56* | - | - |
| | " | April 3 | 66 | 66* | - | _ |
| " | 11 | June 9 | 122 | 100 | 22 | 18 |
| 11 | | Oct. 4 | 162 | 131 | 31 | 19 |
| Healy Lake Herd | 11 | April 3 | 62 | 62* | - | - |
| " | 11 | June 9 | 12 | 10 | 2 | 17 |
| Copper River Herd | 11 | Aug. 9 | 51 | 37 | 14 | 27 |
| Farewell Herd | " | June 26 | 17 | 16 | 1 | 6 |
| Upper Chitina Herd | ? | Early Aug. | 12 | 10 | 2 | 17 |

* Includes animals born previous to 1967 calving season.

| Area & Herd | Method of Count | Date 1968 | Total Number Bison Observed | Yearlings or Older | Calves | Percent Calves in the Total Number Observed |
|---------------|--------------------|--------------|--------------------------------|-----------------------|--------|---|
| Big Delta | PA-18 aircraft | June 7 | 148 | 108 | 40 | 27 |
| Healy Lake | Cessna 180 | Feb. 22 | 25 | 25 | - | - |
| 11 | PA-18 | June 7 | 7 | 6 | 1 | 14 |
| Copper River | | March 21 | 55 | 55 | - | _ |
| 11 | 11 | July 26 & | 27 102 | 83 | 19 | 19 |
| Farewell | 11 | Aug. 1st we | ek 25 | 18 | 7 | 28 |
| 11 | | Aug. 15 | 45 | 31 | 14 | 31* |
| Upper Chitina | 11 | July 26 | 16 | 14 | 2 | 14 |

Table 5. 1968 Calf Production Counts

* Abnormal figure because of transplant of seven cows with calves.

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| PROJECT NO: | W-15-R-3 and W-17-1 | TITLE: _ | Bison, Elk, Goat, Musk Ox Studies |
| WORK PLAN: | <u>Q-5</u> | TITLE: | Elk Studies |
| JOBS: | | | |

PERIOD COVERED: January 1, 1968 through December 31, 1968

ABSTRACT

One hundred and fifty-eight hunters harvested 72 elk on Afognak Island during the 1968 season. The number of hunters decreased 34 percent from the previous year.

The peaks of hunting pressure and harvest, 35 percent and 30 percent respectively, occurred in September. Hunter success, 45 percent, was up slightly from 1967. Twenty-one percent of the total harvest was female; down almost half from 1967. Population trends appear to be going down in all major herds except that of the Interior which is still increasing.

Range studies in the Southwestern area of Afognak indicate very light browsing during the 1967 winter. Ninety-four percent of the plants showed only a trace of browsing. Eighty-two percent were progressive and leader use averaged only 2 percent.

Ruman analyses indicate a high preference for willow through the season. Willow averaged 41 percent by volume of the plant species present. Grasses were preferred in early fall and were replaced by elderberry bark in December.

RECOMMENDATIONS

Develop more effective methods of assessing magnitude and characteristics of harvest, particularly hunter effort.

Obtain more detailed information on productivity and sex and age composition of major elk herds.

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PERIOD COVERED: January 1, 1968 through December 31, 1968

OBJECTIVES

To determine population levels and trends of elk.

To assess annual elk mortality, including hunter harvest.

To determine elk range condition and utilization with emphasis on winterspring use of browse.

TECHNIQUES

Elk harvest data including hunting effort, distribution, and success were obtained from in-the-field checks and by hunter interviews.

Systematic aerial surveys, utilizing Piper PA-18 aircraft, were conducted on elk summer ranges to obtain herd size, distribution, sex, and age composition.

Aerial flights were made along Afognak and Raspberry Island coastlines in February and March to determine areas of winter utilization by elk.

Elk range studies were conducted in the Afognak Lake area utilizing the closest-plant techniques. The Point-Frame Method was used to determine percentage of plant species in rumen samples.

FINDINGS

Characteristics of Harvest

Harvest Composition and Distribution

As in past years, all harvest data were collected during personal interviews with hunters as they arrived at Kodiak via air charter or boat. One hundred and fifty-eight hunters were interviewed during the 1968 season, 34 percent less than in 1967.

Of this number 96, or 61 percent, utilized aircraft and 62, or 39 percent, utilized boats as a means of transportation. Of the 72 elk harvested, 17 were from Malina, 19 each were from Afognak and the Interior, and 17 were from Tonki.

Season length and bag limits for 1968 remained the same as 1967, except that Raspberry Island was closed to elk hunting. Harvest figures for each of the major herds are summarized in Table 1.

Malina Lakes

The Malina Lakes area continues to be the most popular hunting location. Its popularity, which is shared with Afognak Lake, is due to its close proximity to Kodiak and also to the U.S. Forest Service shelters that are available there. During 1968, 32 percent of the total known hunters hunted this area. The harvest of 14 males and 3 females constituted 24 percent of the total harvest. Hunter success for the Malina Lakes area was 34 percent. The number of elk harvested, number of hunters, and hunter success are down from 1967. The percentage of harvest in relation to other areas and the female segment of the harvest are also down.

Afognak Lake, Raspberry Strait

Interviews indicated that 25 percent of the hunters took 26 percent of the harvest from the Raspberry-Afognak Lake area. Hunter success was 46 percent; up slightly from 1967. Total kill, percent harvest, and number of hunters were down from the previous year. Of 19 elk harvested, four were females; down considerably from 1967.

Interior

The most notable increase in elk harvest came from the Interior herd. Twenty-five percent of the hunters took 26 percent of all elk harvested from the expanding Interior Herd. Hunter success, 55 percent, was the highest recorded for all areas.

Tonki Cape

Twenty-one percent of the total hunters harvested 17, or 24 percent, of the elk; up slightly from 1967. Only 5, or 29 percent, of the total kill were females. Hunter success was 53 percent.

Summary of All Areas

A minimum of 72 elk were harvested by 158 hunters from four major hunting areas on Afognak Island. The overall increase in hunter success can be attributed to the increase in hunting success from the Interior herd. Overall harvest of females was 15, or 21 percent; down nearly 50 percent from 1967.

Hunting pressure and harvest were more equally distributed over the four major hunting areas than in past years. All areas except the Interior showed a decrease in hunting pressure and harvest. The southwest section, comprised of Afognak and Malina hunting areas, received 57 percent of all the hunters. This area also produced 50 percent of the harvest with a hunter success figure of 39 percent. The northeastern section of Afognak, comprised of Tonki and Interior herds, received 43 percent of the hunters and 50 percent of the harvest with 55 percent hunter success.

Table 1. Number and percent of elk harvested by area, number and percent of hunters by area, percent of hunter success by area, and percent of female harvest for 1968.

| Area | Harvest Number Killed | % Total of | Hunters Number | % Total of | % Overall Hunter Success | % Female Haryest |
|----------|-----------------------------|------------------|-------------------|------------------|--------------------------------|------------------------|
| Malina | 17 | 24 | 50 | 32 | 34 | 24 |
| Afognak | 19 | 26 | 40 | 25 | 46 | 26 |
| Interior | 19 | 26 | 35 | 25 | 55 | 21 |
| Tonki | 17 | 24 | 33 | 21 | 53 | 29 |
| TOTAL | 72 | | 158 | | 45 | 21 |

Chronological Distribution of the Harvest

Chronological distribution of the harvest varied significantly from 1967. The peak of hunting and harvest came in September and decreased steadily until the end of the season. The harvest in 1967 did not peak until November. Fifteen percent of the kill occurred in August, 35 percent in September, 22 percent in October, and 15 percent each for November and December. Hunting pressure was evenly distributed throughout the major hunting areas.

Nine percent of the hunters went afield in August, 30 percent in November and 25 percent each for the months of October and November. Only 11 percent hunted in December, which is normally considered the best hunting period. Figure 1 presents distribution of hunting pressure and harvest by month.



FIGURE 1: Distribution of hunting pressure and harvest by month.

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Composition and Population Trend

Productivity, Sex and Age Composition and Population Trend.

During the summer of 1968 a "Supercub" was used in surveying elk on Alpine ranges. Six hundred and ninty-three elk were observed and classified as to age and sex. Ten elk were observed and classified on Raspberry Island, 147 in the vicinity of Afognak Lake and Raspberry Straight, 259 in the Interior, and 136 were classified on Tonki Cape.

Herd composition data are summarized in Table 2 and trend information is illustrated in Figures 2 and 3.

Raspberry Island

Ten elk were observed on Raspberry Island; 7 cows and 3 bulls. Size and productivity of this herd have steadily decreased since 1965.

Malina Lakes

One hundred and forty elk were classified in the Malina herd; 24 percent were bulls, 17 percent were calves and 58 percent were cows. The calf to cow ratio was 29:100, down slightly from 1967. This herd has shown a steady decline in total numbers since its peak of 220 in 1961. However, the male to female ratio is the highest of the five herds, 41:100.

Raspberry Strait - Afognak Lake

Of 147 elk classified from this herd, 101, or 70 percent, were cows, 33, or 23 percent, were calves and 13, or 9 percent, were bulls. A sex ratio of 13 bulls to 100 cows was noted; this being considerably lower than that found in the Malina Lake herd. The Afognak herd has remained relatively stable over the past four years.



Population trend and harvest of Afognak elk, Years 1961 - 1968



Interior

The largest herd was found in the Interior area. Of the 259 elk classified, 58, or 22 percent, were bulls, 52, or 20 percent, were calves and 149, or 54 percent, were cows. The calf to cow ratio of 35:100 was the highest among the five herds. The bull to cow ratio of 39:100 was the second highest found. Interior Afognak has the only herd that has shown progressive increases in number over the past four years. This herd now equals the number of elk found in the Raspberry Island, Tonki Cape and Malina herds prior to their decrease. Whether the Interior is capable of supporting a greater density of elk than the other areas, or whether this herd has reached a peak and will soon decline like those of the other areas will be known within the next year or two.

| | | | | | | · · |
|---------------|--------|-----------------------|-----------------|---------------|--------------------|-------------------|
| Area | Totals | $\frac{Bulls}{No. %}$ | Calves No. % | Cows No. % | Calves/100 Cows | Bulls/100 Cows |
| Raspberry Is. | 10 | 3 30 | 0 0 | 7 70 | | |
| Malina Lake | 140 | 34 24 | 24 17 | 82 0 | 2 9 | 41 |
| Raspberry St. | 147 | 13 9 | 33 23 | 101 0 | 33 | 13 |
| Interior | 259 | 58 22 | 52 20 | 149 54 | 35 | 39 |
| Tonki | 136 | 16 12 | 27 20 | 93 67 | 29 | 17 |
| TOTAL | 692 | 124 18 | 136 20 | 432 64 | 31 | 29 |

Table 2. 1968 elk herd composition counts.

Tonki Cape

Elk numbers were down from their 1966 high of 284 by 48 percent. Of the 136 elk classified, 16, or 12 percent, were bulls, 27, or 20 percent, were calves, and 93, or 67 percent, were cows. The Tonki herd had the lowest productivity figure of all, 29 calves per 100 cows. According to trend data, this herd is also decreasing.

Summation of All Areas

Counts made of elk on four distinct ranges during August of 1968 produced 692 animals that were catagorized according to sex and age class. Of this number, 124, or 18 percent, were calves. Elk numbers were down in all areas except the Interior. Elk numbers have been decreasing since 1966, and in 1968 were 23 percent lower than the 1966 high.

The calf to cow ratio (32:100) and the bull to cow ratio (29:100) are up considerably from those reported by Batchelor (1963). The percentage of cows remained nearly the same. Since both male and female yearlings are included in the female segment of the count, further counts should be conducted on foot to make this data more meaningful.

Migrations and Concentrations

Migrations to Shuyak and Whale Island have occurred. Considerable sign has been noted on both islands. However, at present, no estimate of elk inhabiting these areas can be made.

Surveys conducted over the past two winters have failed to find the winter concentrations described by Batchelor (1961). Never have more than 100 elk been observed on a survey, as compared to the maximum count of 720 in 1961 op cit. It appears that the elk are now distributed over large areas along beach fringes.

In general, elk are found in small bands numbering between three and twenty; with the larger bands being observed on tide flats near the heads of bays and small valleys near salt water.

Winter Range Analysis

Range studies to determine utilization of willow by elk during the previous winter were conducted in late May. Only wintering areas located on the southern portion of the island were examined. Eighty-five percent to 97 percent were lightly browsed. The trend varied from 79 to 83 percent progressive and 17 to 21 percent retrogressive. Vigor of plants ran 50 to 60 percent fair and 17 to 25 percent good. Leader use was light for all areas, ranging from 1 to 3 percent. Light use of willow reflects mild winter conditions which existed during the winter of 1968. Results of range transects are summarized by areas in Table 3. Transect data for all areas for 1961-1968 were summarized and combined. However, they have not been completely analyzed as of this date.

Food Habits

Rumen samples collected during the 1967 hunting season were analyzed by the Point Frame Method (Chamrad and Box 1964). Willow comprised the largest percentage by volume of plant material, averaging 41 percent from September through December. Grasses constituted almost half of the rumen contents in September and decreased to 15 percent in December. Elderberry bark, used only slightly in September, increased to 36 percent in December (Table 4).

Table 3. Browsing, trend, vigor, and leader use, southwest Afognak, 1968.

| | % | % | | % | | % | |
|-----------------|-------------------|--------------------|---------------------|--------------|-------------------|-------------|---------------|
| Location | Browsing Trace | Intensity Light | <u>Tre</u> Retro | end o/Pro | <u>Vi</u> Fair | gor Poor | Leader Use |
| Muskomee Valley | 85 | 10 | 21 | 79 | 55 | 24 | 3 |
| Malka Valley | 95 | 1 | 19 | 81 | 18 | 60 | 1 |
| Afognak Lake | 97 | 2 | 17 | 83 | 51 | 18 | 1 |
| AVERAGE | 94 | 4 | 18 | 82 | 41 | 34 | 2 |

Table 4. Percentage by volume of plant material found in rumen samples, September and December, 1967.

| Sex of | | % | % | % | % |
|--------|-----------|-----------|------------|-----------|-----------|
| Animal | Month | Willow | Elderberry | Grasses | Equisetum |
| v | 0 1 | 07 | , | <i>.</i> | |
| M | September | 27 | 6 | 48 | 15 |
| F | September | 42 | 16 | 35 | 1 |
| Unk | September | 41 | 12 | 47 | |
| Unk | September | 31 | 21 | 43 | |
| Unk | September | <u>48</u> | _6 | 46 | |
| | AVERAGE | 38 | 12 | 44 | |
| M | December | 45 | 35 | 15 | |
| Unk | December | 48 | 38 | 14 | |
| Unk | December | 42 | 36 | <u>17</u> | |
| | AVERAGE | 45 | 36 | 15 | |

Literature Cited

Batchelor, Ronald F., R. A. Rausch, and J. A. Nava, Jr. 1961. Elk investigations. Alaska Fed. Aid in Wildl. Res. Rpt. Proj. W-6-R-2. 39pp.

., A. M. Courtright, and R. A. Rausch. 1963. Elk investigations, wildlife data collection. Alaska Fed. Aid in Wildl. Res. Rpt. Proj. W-6-R-3. 65pp.

Chamrad, Albert D. and Thadis W. Box. 1964. A point frame for sampling rumen contents. J. Wildl. Mgt. 28(3).

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