GAME HARVEST REPORT

and

SUMMARY OF THE QUESTIONNAIRE

ANALYSIS

February 1977

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INTRODUCTION:

This report, produced in its fourth consecutive year, presents the 1976 big game harvest estimates taken under each licence class except for trappers. The statistics presented for General Licence holders are for the 1975-76 licence year.

3,791 licenced resident sport hunters were each mailed a questionnaire in mid-December 1976. Of the total marked, 1,450 or 38.2% were returned and 190 or 5.0% were returned undelivered.

Included in this report is a comparison of harvest report results over the past four seasons:

- numerical trend of the resident hunter population
- numerical trend of the non-resident hunter population (10 yr.)
- trends in species specific hunting pressure
- resident hunter success rates on each species
- non-resident hunter success rates on each species (10 yr.)
- age and sex trends of the grizzly harvest
- the trend in the mean age of harvested sheep

RESIDENT SPORT HUNTERS:

Of the 1,450 questionnaire respondents, 83 or 5.7% bona fidely did not hunt big game.

As in keeping with the three previous years, estimates on the harvest of moose, caribou and black bear are derived directly from the questionnaire and tag sales. The estimates on sheep, goat and grizzly are derived from legislated hunter trophy submissions.

Table I: 1976 Harvest Estimates & Success Rates - Resident Sport Hunters

Total Licence Sales: 3791 Questionnaire Return (n= 1450)

Species	Tags	Kills	% Success	Total Tag Sales	Harvest Estimate	Species Specific Pressure
Moose	1332	383	28.8%	3359	967	88.6%
Caribou	627	166	26.4%	1644	434	43.4%
Goat			5.3%	132	7*	3.5%
Sheep			6.1%	816	50*	21.5%
Grizzly			4.5%	380	17*	10.0%
Black Bear	187	15	8.0%	734	59	19.4%

*These figures represent trophy submissions and are minimums which are likely within 5% of the actual harvest.

Table II: The Kill Composition of the Resident Big Game Harvest

Moose:	85% bulls, 15% cows and antlerless moose	(n= 383)
Caribou:	67% bulls, 33% cows	(n= 165)
Goat:	36% males, 64% females	(n= 8)
Grizzly:	70% males, 30% females	(n= 10)
Black Bear:	67% males, 33% females	(n= 15)

THE STATUS NATIVE HARVEST:

Evaluating the status native harvest of big game as noted last year presents administrative problems. Further complicating the issue is the fact that many of these people are trappers, which raises the possibility of double reporting for those living in group area.

Included among respondents this year were 48 status natives who reported taking: 30 moose, 14 caribou and 1 sheep. These figures are too small a sample to extrapolate to the total number of registrants on band lists and are not included in the Harvest Summary.

Unlike average winters, 1976-77 being unusually mild with low precipitation, moose are wintering at higher elevations. All district C.O.'s report a much reduced winter havest of moose by status natives.

Pending the final outcome of a Land Claims Settlement - if status Indians retain their hunting rights on unoccupied Crown Land - a serious public relations program should be planned to involved status natives in some sort of harvest reporting system.

HUNTING PRESSURE - the temporal distribution and recreational value.

During the 1976 fall hunting season: 561 contributing hunters spent an average of 5.72 days afield for a total of 3207 man days effort in August; and in September, 1062 respondents spent an average of 6.32 days hunting for a total of 6712 days of effort. In October, 653 contributors averaging 5.18 days hunting, spent a total of 3384 man days afield.

These averages, when applied to the total of 3601 resident hunters that hunted, results in the following recreational value:

August: $\frac{561}{1450} = \frac{x}{3601}$ = 1393 hunters x 5.72 days = 7969 man-days

September: $\frac{1062}{1450} = \frac{x}{3601}$ = 2637 hunters x 6.32 days = 16,668 man-days

October: $\frac{653}{1450} = \frac{x}{3601}$ = 1622 hunters x 5.18 days = 8,400 man-days

TOTAL: 33,037 man-days

At a hunter-day value of $75.00/day, recreational sport hunting in 1976 was worth $2,477,775.00.

This value figure and the man-days of hunting effort represent an increase of 30% in the time spent hunting by the average Yukon hunter over 1975.

RESIDENT HUNTER POPULATION AND HARVEST TRENDS (1973-76 incl.)

Table III: Resident Licence Sales

1973	1974	1975	1976	% Total Increase*
3568	3536	3714	3791	6.3

*Increase between first and last years.

Table IV: Resident Seal Sales

	1973	1974	1975	1976	% Change*
Moose	3193	3437	3331	3359	5.2
Caribou	1517	1636	1601	1644	8.4
Sheep	706	733	743	816	15.6
Goat	159	141	140	132	-17.0
Grizzly	195	206	305	380	94.9
Black Bear	554	567	598	734	32.5

*Change between first and last years.

Table V: Species Specific Pressure: (% resident hunter population purchasing the respective tag.

	1973	1974	1975	1976	% Change*
Moose	89.4	97.2	89.7	88.6	0
Caribou	42.5	46.3	43.1	43.4	0
Sheep	19.8	20.7	20.0	21.5	8.6
Goat	4.5	3.9	3.8	3.5	-22.2
Grizzly	5.4	5.8	8.2	10.0	85.2
Black Bear	15.5	16.0	16.1	19.4	25.2

*Change between first and last years.

Table VI: Resident Hunter Success (% successful tag holders)

	1973	1974	1975	1976
Moose	33.8	33.8	26.4	28.8
Caribou	21.0	21.0	15.0	26.4
Sheep	10.5	8.0	7.1	6.1
Goat	9.4	7.0	5.7	5.3
Grizzly	11.4	11.4	3.3	4.5
Black Bear	12.6	12.6	5.8	8.0

Table VII: The Harvest of Sheep, Goat & Grizzly Bear (1973-76 incl-)

	1973	1974	1975	1976	% Change*
Sheep	74	59	53	50	-32.4
Goat	17	10	8	7	-58.8
Grizzly	22	24	10	17	-22.7

*Between first and last years.

An examination of Tables IV to VIII reveals a number of interesting trends:

(i) Based on licence sales, the hunter population increased at the mean rate of 2.1% per year over the three years.

(ii) Tag sales for moose and caribou are roughly proportional to the increase in the hunter population, while hunter success rates vary around 30% and 20% respectively.

(iii) Tag sales for sheep (Table VI) are increasing only slightly faster than the growth in the hunter population (Table IV), but the success rate is declining at the rate of about 1% per year (Table VII). This decline in the success rate for sheep is fully attributable to recent changes in zone regulations.

(iv) Tag sales for goat are decreasing absolutely, and in relation to the growth in the hunter population by approximately 7% per year. Over the four years the success rate on goat has exhibited a steady decline and may stabilize near 5.0%. Goat harvests have declined 59% in the last few years due to new zoning regulations.

(v) Tag sales for grizzly have increased an incredible 95% with a total hunter population increase of 6.3%. In spite of this apparent doubling of effort (demand), the harvest remains between 1/2 and 2/3 of that of the 1973 hunting season. As the harvest regulations have remained unchanged over the sample years, the decline in harvest is a reflection of both the increase in resident demand for grizzly and population declines in accessible grizzly populations.

(vi) Tag sales for black bear have dramatically increased in the last two years - 33% over 1973. Success rates and the harvests however vary greatly over the sample years.

BIG GAME TAKEN BY GENERAL LICENCE HOLDERS

The following table presents the estimated harvest of big game taken by Yukon trappers during the 1975-76 licence year.

Table VIII: Estimates based on the 1975-76 General Licence Affidavits

	Lic. Sold	Lic. Ret'd.	% Ret.	Moose	Caribou	Sheep	Goat	Grizzly	Black Bear
South of Peel R.*	331	231	69.8%	246	93	11	-	9	34
Old Crow	66	51	77.3%	26	964	-	-	3	4
Ft. McPherson	36	20	55.6%	31	58	5	-	-	4
Aklavik	63	45	71.4%	7	38	-	-	-	-
TOTALS:	496	347	70%	310	1153	16	-	12	42

*Includes the Ross River group area.

THE NON-RESIDENT HARVEST

Table IX: The 1976 Non-Resident Harvest (338 hunters).

Species	Tags Sold	Kills	% Success	Species Specific Pressure
Sheep	275	197	71.6	81.4
Moose	201	142	70.6	59.5
Caribou	240	130	54.2	71.0
Goat	44	8	18.2	13.0
Grizzly	264	63	23.9	78.1
Black Bear	210	16	7.6	62.1

1976 was the first year in which non-residents were required to purchase tags before commencing their hunt. This requirement has led directly to the generation of success rate and pressure statistics. An examination of Table IX reveals that non-residents are primarily interested in sheep and grizzly bear (species specific pressure). More will be said of these two big game species later, but it is a safe assumption to say that sheep and grizzly bear have been the two Yukon big game species in priority demand for two decades.

A 1976 HARVEST SUMMARY

Table X:

Licence Class	Moose	Caribou	Sheep	Goat	Grizzly	Black Bear
3791 Resident	967	434	50	7	17	59
338 Non-resident	142	130	197	8	63	16
496 Trappers	310	1153	16	-	12	42
TOTALS:	1419	1717	263	15	92	117

A P P E N D I X I: A thirteen-year Analysis of Sheep Harvests in the Yukon Territory.

This discussion is directed primarily at the sheep harvest by non-resident hunters, which represents not less than 70% of sheep harvested in any year over the years being discussed.

The following table is a thirteen-year record of non-resident hunter activity in the Yukon from 1964 to 1976 inclusive:

Table XI: Harvest Records of Non-Residents Hunting with Outfitters 1964 - 1976.

Year	No. of Hunters	Man Days Hunted	Moose	Caribou	Sheep	Goat	Grizzly	Black Bear	Wolf	Total Big Game
1964	210		75	106	147	9	61	7	5	410
1965	260	3679	108	106	168	17	83	14	2	498
1966	265	3617	110	116	153	17	57	13	8	474
1967	278	3592	103	134	159	26	51	4	7	484
1968	285	4019	112	117	167	6	81	6	7	496
1969	350	4745	157	124	183	19	74	13	19	589
1970	375	5143	161	161	225	19	78	16	14	674
1971	384	5366	176	186	210	42	79	15	20	728
1972	389	5465	147	139	207	32	83	13	34	655
1973	423	6070	189	171	224	27	95	26	40	772
1974	435	6137	189	173	235	20	86	8	39	760
1975	358	4990	150	140	192	16	75	8	33	623
1976	338	4855	142	130	197	8	63	16	19	586

While 1976 is the only year in which an accurate assessment of success rates is possible, relative success rates over these years are possible by graphically comparing the number of hunters in a year with the kill for a given species.

Graph I:

(a) Non-resident success rates on sheep adjusted to a 1976 base (i.e. an 81.4% species specific pressure constant - from Table IX).

(b) Mean ages of sheep taken by non-residents - 1973-76 incl.

(c) Mean rate of decline in non-resident success ± 1%/year.

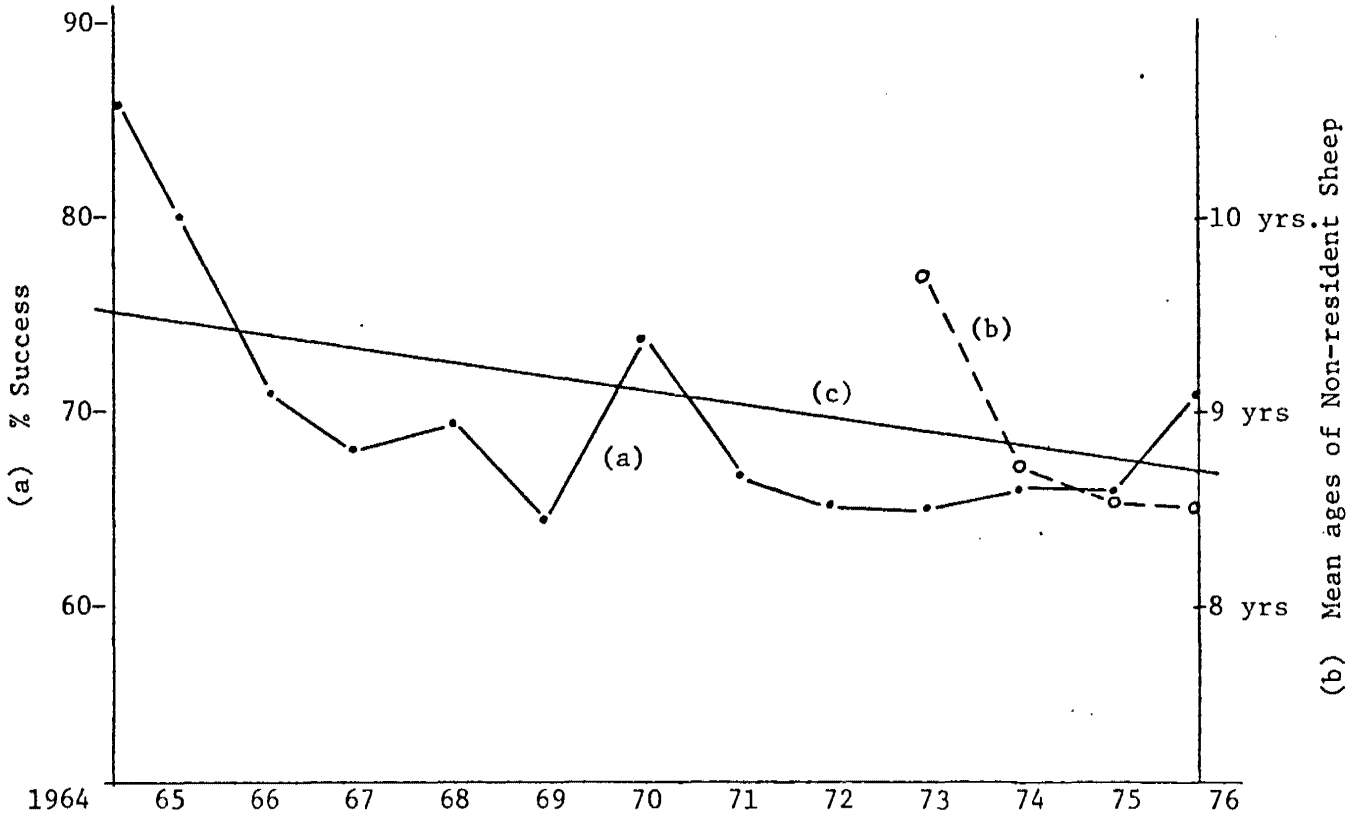

Table XI: Non-Resident % of Total Sheep Harvest (1973-76)

	Total Sheep Harvest	Non-Res. Sheep	% of Total
1973	315	228	72.4
1974	306	241	78.8
1975	265	194	73.2
1976	247	197	79.8

DISCUSSION

The preceding tables and graphs indicate several revealing trends:

(i) Non-resident hunters have a priority demand for mountain sheep (Table IX).

(ii) Non-residents kill 75 between 73% and 80% of the sheep in the Yukon in any year (Table X).

(iii) Commensurate with a slowly-increasing number of non-resident hunters from 1964 (210) with a 1974 (435) peak, with a 22% decline in the last two years 1976 (338) (Table XI), their success rate has declined from a 1964 high of 86% to a plateau of 65 - 70% in the last four years. (Graph I (a) and (c)).

(iv) Over the last four years, the mean age of non-resident sheep has declined from 9.718 years to 8.480 years. (Graph I (b)).

CONCLUSIONS

With these data and trends in mind, it would appear that with regard to Yukon sheep populations:

(i) Generally, non-resident hunters enjoy a constant share of the sheep harvest (Table X) at the expense of sheep populations (Graph I (b)) and the resident hunter (Table VI) whose success rate on sheep has declined from 10.5% in 1973 to 6.1% in 1976. Decreases in the resident success rate however are thought to be only indirectly influenced by non-resident sheep hunting. Most residents will take a Class III (3/4 curl sheep) under a 3/4 curl rule whereas most non-residents have the outfitting resources to better assure success on Class IV or full-curl rams. As stated previously, the decline in the resident success rate on sheep is largely influenced by the full-curl or nine-year minimum rule applied in G.M.Z. #7 in 1975.

RECOMMENDATIONS

(i) The Game Branch must, as top priority, establish zone specific sheep management policy. Which areas should be managed under differing harvest regulations in keeping with various management philosophies? Management policy formulation and resulting management planning must however incorporate the concept of real Branch input into land use priority planning for areas of critical lambing, breeding and wintering areas.

(ii) For the present, the manipulation of harvest and regulation enforcement are the only real management tools at our disposal. In consequence, I seriously suggest the universal application of a full-curl - 9-year minimum rule for sheep taken by <u>non-resident</u> hunters.

This provision, until the maturation and implementation of management policy and planning, gives qualitatively declining sheep populations the short-term benefits of any management doubt.

APPENDIX II: A Twenty-Three Year Analysis

of Grizzly Harvests in the Yukon Territory

Grizzly Bear Legislation:

(1) No closed season, no limit

from: An Ordinance Respecting the Preservation of Game, 28 April 1920.

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(2) No closed season, no limit

from: The Yukon Game Ordinance 2 May 1938.

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(3) Residents: No closed season - no limit

Non-Residents: 1 May - June 30 1 grizzly bear

1 Aug. - Nov. 30 2 grizzly bears

from: Game Ordinance of the Yukon Territory 1 January 1952.

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Note:

(i) As most grizzly bears are killed opportunistically by all classes of hunters during fall hunts - the non-resident total annual kill has been related to the total number of non-resident hunters in each year to derive the annual success rate.

(ii) All non-resident annual kills over the sample year period may be considered reliable. Resident and trapper grizzly harvest figures prior to 1973 must be considered as approximate only.

(iii) The data gathered by the Y.T.G. Game Branch between 1972 and 1976 has been presented in a format conforming as closely as possible to that presented by Dr. A.M. Pearson (C.W.S. Report Series, No. 34, 1975) in order for the reader to relate the more recent data to that of ten years ago.

Table XII: Yukon Grizzly Kill 1954-76 incls. (adapted from Pearson, 1975) and appended.

Year	Kill by Non-Res.	No. of Non-Res. Hunters	(%) Success	Hunter Days	Hunter Days Per Grizzly	Kill of Illegal or Nuisance Bears	Kill by Permit	Kill by Residents	Kill by Trappers	Total Kill
1954	30	61	49.2	-	-	0	0	25	18	73
1955	43	81	53.1	-	-	0	0	32	11	86
1956	33	84	39.3	-	-	0	0	26	21	80
1957	44	101	43.6	-	-	0	0	16	12	72
1958	42	83	50.6	-	-	0	0	18	5	65
1959	40	116	34.5	-	-	0	0	27	6	73
1960	48	133	36.1	2162	45	0	0	23	9	80
1961	58	198	29.3	2984	51	0	1	24	9	92
1962	51	159	32.1	2396	47	0	0	32	19	102
1963	72	173	41.6	2467	34	0	1	34	22	129
1964	58	206	28.2	3075	53	2	1	33	14	108
1965	81	254	31.9	3724	46	0	2	30	21	132
1966	57	256	22.3	3595	63	0	0	15	18	90
1967	51	270	18.9	3582	70	0	0	19	10	80
1968	81	285	28.4	4043	50	8	2	24	23	138
1969	73	338	21.6	4748	65	5	2	25	14	119
1970	78	371	21.0	5253	67	0	0	23	6	107
1971	80	384	20.8	5349	67	0	0	8	11	99
1972	83	389	21.3	5465	66	-*	-*	19	17	119
1973	95	423	22.5	6066	64	-*	-*	22	31	148
1974	86	435	19.8	6137	71	-*	-*	24	8	118
1975	75	358	20.9	4990	67	-*	-*	10	15	100
1976	63	338	18.6	4855	77	-	-	17	12	92

*Included in the resident kill.

Percent success and hunter days per grizzly may be argued as not being truly representative in an absolute sense. The percent success decline may be partly influenced by more hunters taking shorter hunts during the more recent of the sample years. However, hunter-days afield increased steadily between 1966 and 1974 (Table XI) declining in 1975 and 1976 only with a sharp decrease in the number of hunters. The hunter days per grizzly statistic is much more realistic as an expression of hunter success. Even if the hunter days per grizzly figure in Table XII were not accurate absolutely, it is very difficult not to recognize that in a relative sense, it is taking nearly twice as much effort to take a grizzly now than it did fifteen years ago.

Table XII amply demonstrates the decline in non-resident hunter success and the corresponding increase in the effort required to kill a grizzly on a guided hunt.

Dr. Pearson's statement (p.66, Pearson 1975) that some of the decrease in non-resident success is caused by a decrease in the demand for grizzlies, I don't feel is valid in view of the 78% of non-residents buying grizzly tags in 1976. (Table IX). This sustained demand for grizzly bears as trophies by non-residents coupled with a 95% increase in the demand for grizzlies in the last four years by residents - in the face of declining success rates for both licence classes poses a serious management problem - particularly for accessible grizzly populations.

The following two tables present the distribution of the grizzly harvest by zone and licence class in the years for which we have reliable records.

Table XIII: The Distribution of the Grizzly Harvest by GMZ (non-residents). (Adapted from Table 17, Pearson 1975 and appended.

Year	Total Kill	2		4		5		7		8		9		10		11	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1968	81	24	29.6	14	17.3	16	19.8	6	7.4	5	6.2	2	2.5	14	17.3		
1969	73	20	27.4	7	9.6	20	27.4	4	5.5	7	9.6	1	1.4	14	19.2		
1970	78	34	43.6	1	1.3	14	17.9	4	5.1	4	5.1	1	1.3	14	17.9		
1971	80	24	30.0	9	11.3	17	21.3	4	5.0	4	5.0	0	0	12	15.0		
1972	83	14	16.9	16	19.3	24	28.9	5	6.0	6	7.2	1	1.2	17	20.5		
1973	95	38	40.4	21	22.3	11	11.7	6	6.4	3	3.2	2	2.1	3	3.2	10	10.6
1974	86	36	41.9	15	17.4	16	18.6	3	3.5	4	4.7	0	0	6	6.9	4	4.7
1975	75	30	39.5	14	18.4	10	13.2	1	1.3	6	7.9	2	2.6	6	7.9	6	7.9
1976	63	21	33.3	13	20.6	6	9.5	4	6.3	6	9.5	0	.6	10	15.9	3	4.8
TOTAL	714	241		110		134		37		45		9		97			
MEANS			33.8		15.4		18.8		5.2		6.3		1.3				
TREND			Stable		Stable		Decreasing		Stable		Stable		Stable		Decreasing		Decreasing

Table XIV. The Distribution of the Grizzly Harvest by Licence Class
(From Table 15 of Pearson 1975 and appended)

Year	Non-Resident Kill		Resident Kill		Trapper Kill		Permit	Total Kill
	No	%	No.	%	No.	%		
1960	48	60.0	23	28.8	9	11.2	-	80
1961	58	63.0	24	26.1	9	9.8	1	92
1962	51	50.0	32	31.4	19	18.6	-	102
1963	72	55.8	34	26.4	22	17.1	1	129
1964	58	53.7	33	30.1	14	13.0	1	108
1965	81	61.4	30	22.7	21	15.9	2	132
1966	57	63.3	15	16.7	18	20.0	-	90
1967	51	63.8	19	23.8	10	12.5	-	80
1968	81	58.7	24	17.4	23	16.7	2	138
1969	73	61.3	25	21.0	14	11.8	2	119
1970	78	72.9	23	21.5	6	5.6	-	107
1971	80	80.1	8	8.0	11	11.1	-	99
1972	83	69.7	19	16.0	17	14.3	-	119
1973	95	64.2	22	14.9	31	20.9	-	148
1974	86	72.9	24	20.3	8	6.8	-	118
1975	75	75.0	10	10.0	15	15.0	-	100
1976	63	68.5	17	18.5	12	13.0	-	92
TOTALS:	1190		382		259			1853
17-YEAR MEAN		64.2		20.6		14.0		
TREND	Increasing*		Declining*		Stable*			

*In each licence class, the mean of the harvest in the first 9 years compared to the last 8 years.

An examination of Tables XIII and XIV illustrate the following:

(i) Over the last seventeen years, non-resident hunters are accountable for 50 - 75% of the annual grizzly harvests, with a mean of 64.2%.

(ii) Non-residents have maintained an increasing share of the harvest over the seventeen-year period. Residents, however, in spite of an increasing demand (nearly double over last four years) share proportionally less in annual grizzly harvests. The proportion of the harvest attributed to trappers is generally stable.

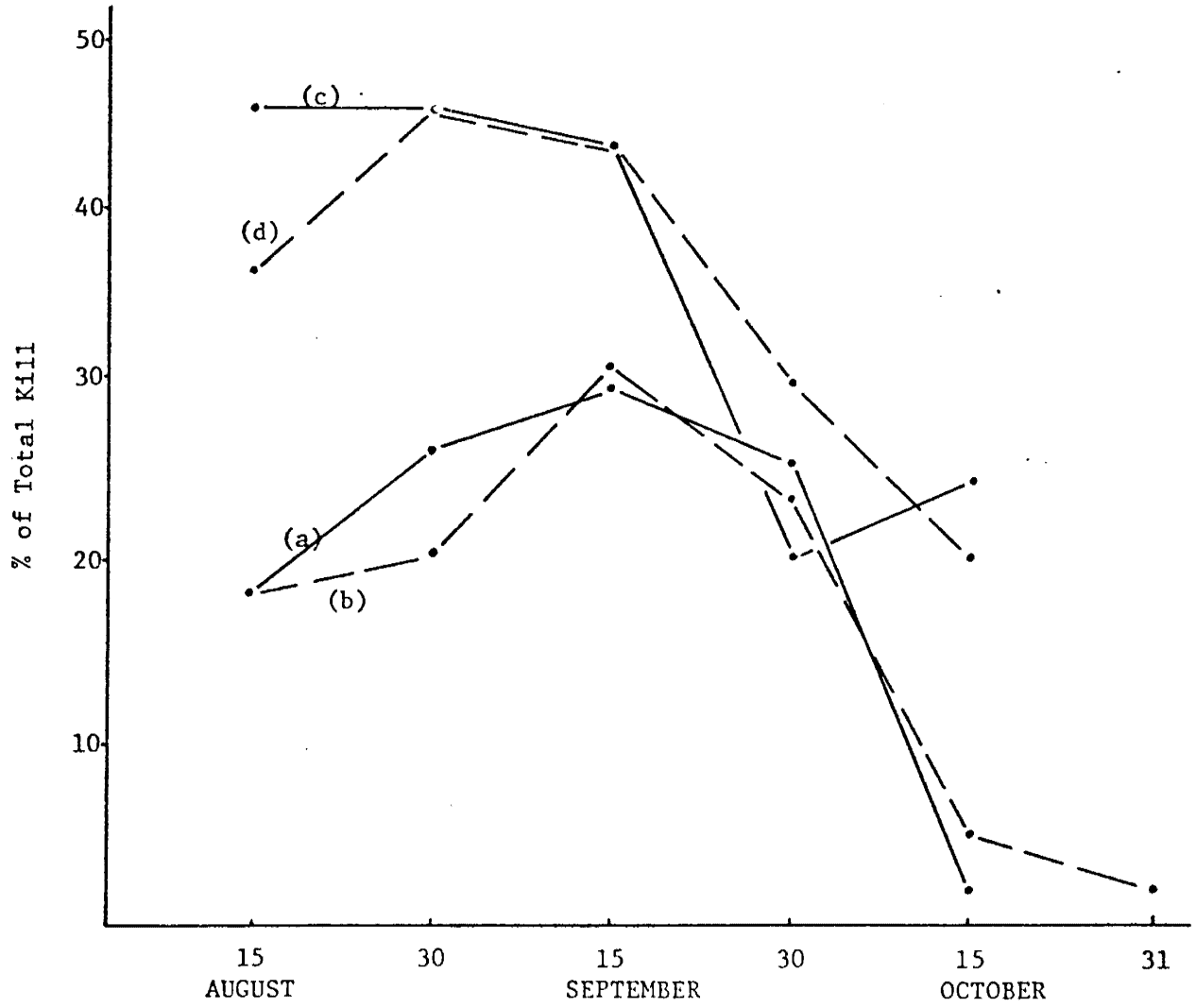
(iii) G.M.Z.'s 5, 7 and 9 in the south central and south western Yukon have been subject to a long period of non-resident hunting. Proximity to population centres and main road and river access further subjects grizzly bear in these zones to resident hunting pressure. These three zones exhibit either a decreasing proportion of the harvest or a stable but low percentage of the harvest. This condition is solely attributable to a sustained period of overharvesting resulting in reduced populations.

(iv) G.M.Z.'s 8, 10 and 11 contribute stable or decreasing numbers of grizzlies to the annual harvest. This trend is not thought to be a result of general overharvesting but due to a much lower overall level of hunting pressure. However, within G.M.Z. #8, that portion lying west of the Teslin River and the Yukon River below Hootalinqua, suffers local overharvesting because of the popular access afforded by these waterways and the Klondike Highway.

(v) G.M.Z. #2 has produced an average of 1/3 the total annual grizzly harvest (Table XIII), and this situation appears to be remarkably stable. With only the rare exception, this harvest is entirely attributable to guided hunters.

(vi) G.M.Z. #4 has contributed an average of 15% to the total annual grizzly harvest. Variability among years is much higher than that of Zone 2. With the probable exception of an area along the road access from Stewart Crossing to Silver City and laterals, and the immediate vicinity of Faro, the inaccessible hinterlands support huntable numbers of grizzly bear.

Graph II: The Temporal Distribution of the Harvest (Non-Residents) (from Pearson 1975 and appended).



(a) % of Total Kill (1954-1972; from Pearson) 18,26,29,25,2.
(b) % of Total Kill (1973-76 incl.) 18, 20, 31, 23, 5, 2.
(c) GMZ #2 Kill as % of Total (1954-1972; from Pearson) 46,46,43,20,24.
(d) GMZ #2 Kill as % of Total (1973-1976 incl.) 37, 46, 43, 29, 20.

An examination of Graph II indicates that the temporal distribution of the harvest from 1973 - 76 inclusive (b) differs only slightly from that found by Pearson for the period 1954 - 72, (a).

Within G.M.Z. #2, however, line (d) departs from Pearson's long-term average (c) for the first half of August. In the last four years, the G.M.Z. #2 August harvest has shifted more into the last two weeks and the August mode of Pearson's figure 30 would move to the right. Pooling the data of all years (1954 - 1976) would however minimize this difference and the bimodal harvest distribution as portrayed by Pearson (fig. 30) is accepted as typical.

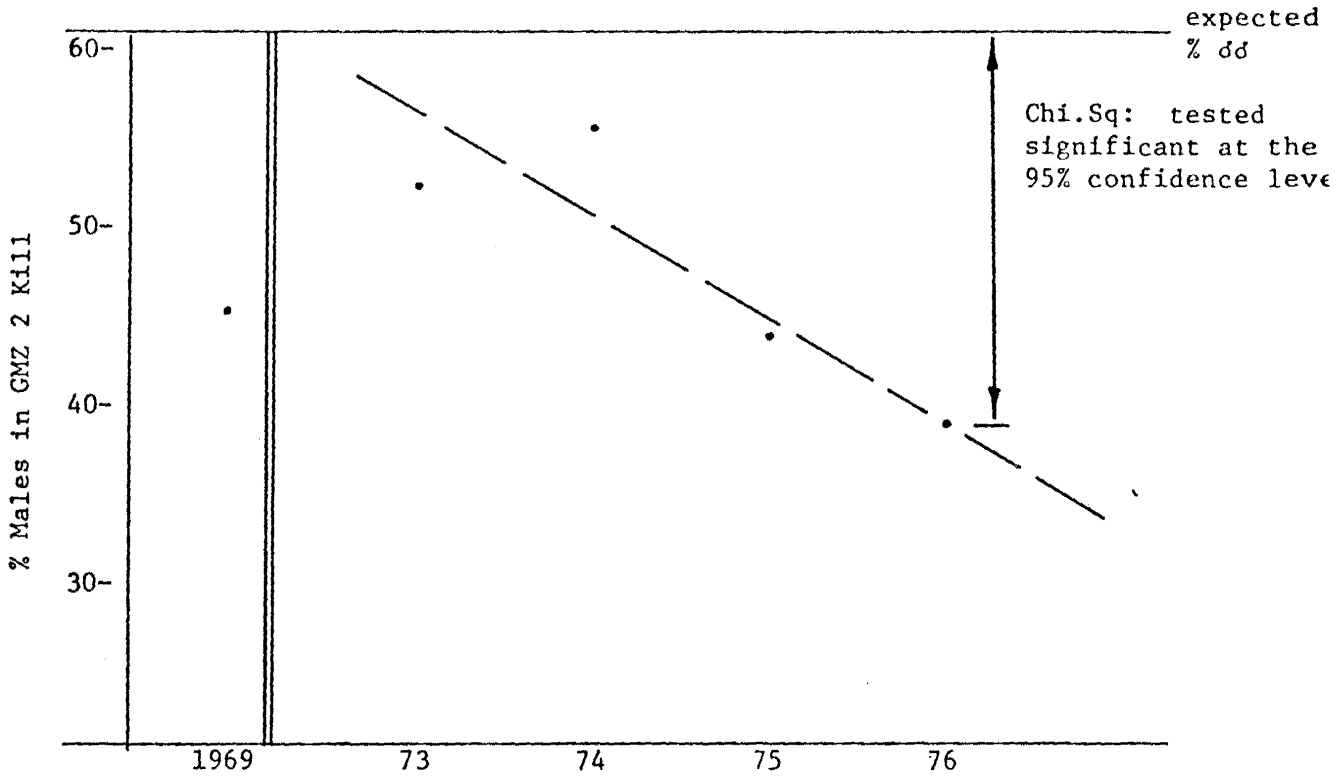
Further, data for the last four years concur with Pearson's statement, "For the region north of 64°N, the harvest is significantly earlier in the season." Between 30% and 50% of the grizzlies harvested in Zone 2 were taken in August (73-76 incl.).

A SEX AND AGE ANALYSIS OF THE G.M.Z. #2 GRIZZLY HARVEST.

By expanding Pearson's life table (Table 12, p.61) to zero for both sexes, the expected sex ratio of the total Yukon grizzly kill was calculated. The expected sex ratio of the grizzly harvest should be 61% ♂♂ and 39% ♀♀.

In his analysis of the sex ratio of the kill, Pearson reported a preponderance of ♀♀ in the 1969 kill. This anomalous situation was due to a heavy harvest of females in the northern and eastern Yukon for reasons unknown.

Graph III. The Sex Ratio of the Kill in G.M.Z. #2 (73-76 incl.)



In 1976, significantly more ♀♀ were harvested than expected, and the plotted percentages indicate a trend rather than an isolated case as was possible in 1969.

This situation would suggest one of the following explanations:

(i) ♀♀ are more susceptible to harvest

(ii) hunter preference for ♀♀ (non-random sampling)

(iii) an altered population structure

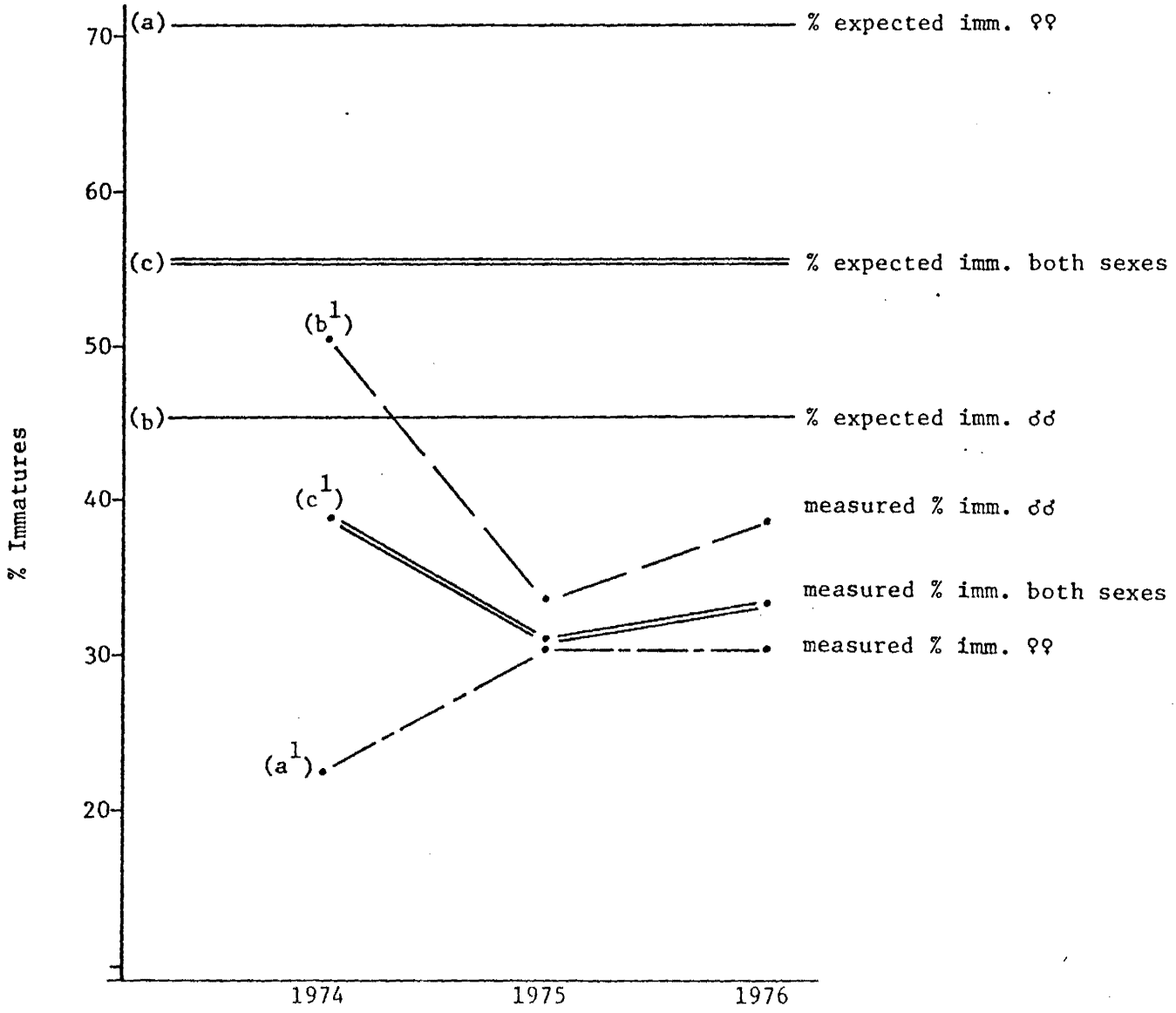
Option (i) is rejected on the basis that female behaviour would make them less susceptible to harvest and (ii) is rejected on the basis of the non-selective nature of the hunter (i.e. most hunters shoot a bear at the first opportunity).

This leaves Option (iii) as a valid explanation to the reversal of the G.M.Z. #2 harvest sex ratio. Indeed, even if Graph III does not with subsequent data, illustrate a trend, it is noteworthy that in five of the last eight years (data from 1970, 71 and 72 unavailable) females have proportionally dominated the harvest in G.M.Z. #2.

The expanded life table from Pearson allows insight into the expected proportion of mature to immature animals in the harvest for each sex. Among females, the expected ratio is 71 immature ♀♀ to 29 mature ♀♀ 7 years of age and older. For males, the expected ratio is 46 immatures to 54 mature animals 7 years of age and older.

Graph IV illustrates the immature:mature ratio for both sexes for 1974, 75 and 76 in G.M.Z. #2.

Graph IV.



This figure illustrates that among harvested males, immatures vary around the expected value for the three sample years. The case for females is vastly different however. The actual harvest of immature ?? is less than half of what could be expected (line (a) compared to (a^1). This situation indicates that the preponderance of ?? in the Zone 2 harvest are from the mature segment. Possible causes for this imbalance are:

(1) Reduced productivity in northern grizzly populations due to:
   (a) over exploitation of mature males, negatively influencing pregnancy rates, thus exposing mature ?? to harvest, or
   (b) poor survival of young, exposing females of bearing age to harvest.

(2) If productivity is normal or nearly so, then the harvest, inadvertent or otherwise, of females accompanied by young.

(3) A combination of the above factors.

Whatever the cause(s), it appears that the hypothesis of an unbalanced population structure is likely.

The following histograms (figures 1 and 2) clearly indicate the age class structure of the G.M.Z. #2 grizzly harvest for both sexes, from 1974 - 76 inclusive. Among females, aside from illustrating again the heavy harvest among the sexually mature age classes, it is noteworthy that no female exceeding 14 years of age has been harvested in the last four years. Pearson's pooled sample histograms (figure 24, p. 60) show females having lived at least twenty years.

For males, the age class distribution of the harvest more closely approximates that published by Pearson, conforming more or less to the expected ratio of mature to immature animals. As in the case of the females, however, the oldest males taken in Zone 2 fall several years short of those taken eight or ten years ago. Whether or not Pearson's oldest examples of both sexes came from Zone 2 is another matter.

MANAGEMENT OPTIONS:

At this time, the Game Branch has a number of management options:

(a) a quota system delegated on an outfitter basis

(b) zoning regulations

(c) modifying the non-resident licencing scheme

The approach to grizzly management discussed here will be one of two alternatives based on combinations of these options. Option (a) will apply to non-residents only, each outfitter having a grizzly quota based on these criteria:

(i) the nine-year record of area specific grizzly harvests

(ii) the surface area of each outfitting area

(iii) the desired management objective.

Option (b) is addressed to all licence classes. As expressed in the section on management recommendations, it essentially curtails fall hunts by cutting back on the harvest of grizzly in August - and places more emphasis on spring hunts.

Option (c) is directed to the non-resident hunter, and is intended primarily to eliminate the opportunistic killing of grizzly bear while preserving an element of choice in his selection of desired species.

MANAGEMENT RECOMMENDATIONS FOR 1978-79:

Alternative One: Outfitter Quotas.

Pending a computer study of Zone 2 harvest records, the quotas for northern outfitters have not been established. Nor have quotas for southern outfitters, save for those in zones 7 and 9. In keeping with the proposed fall closure for these two zones, fall outfitter quotas on areas 16, 18 and the zone 7 portion of area17 will be zero.

Figure 1.

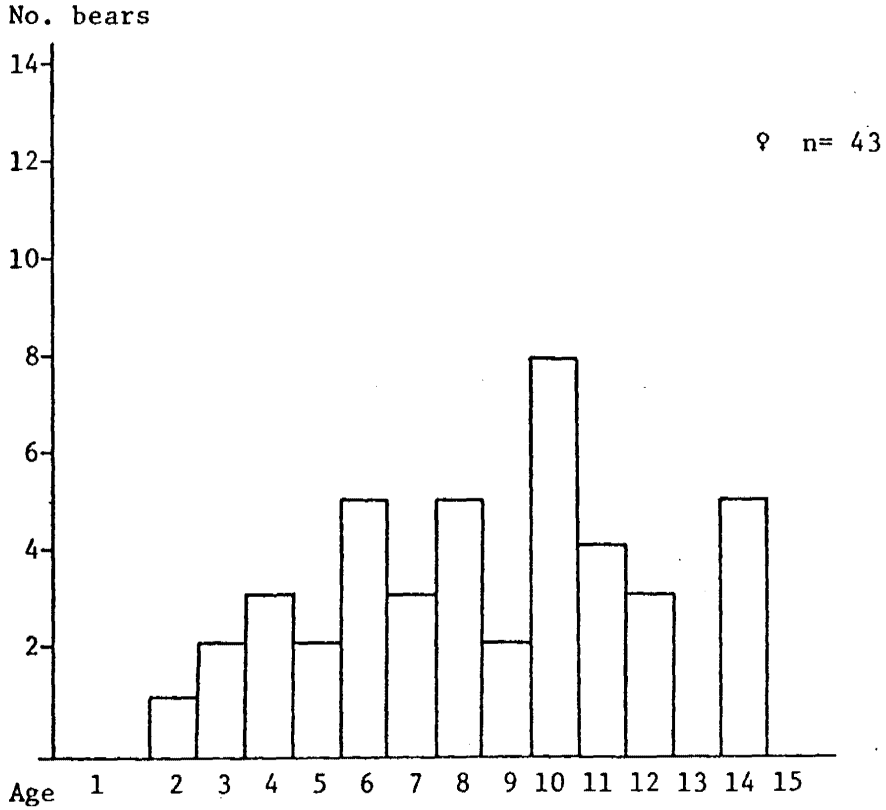
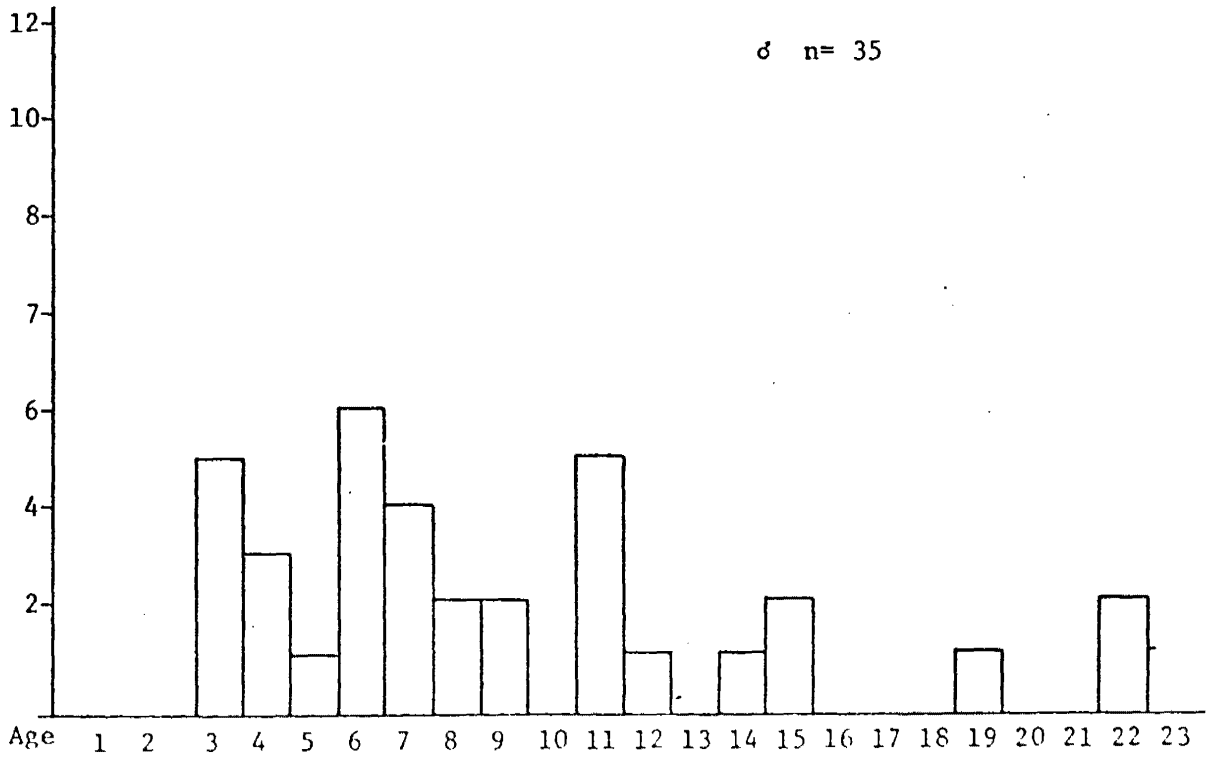


Figure 2



It is possible that the life expectancy of grizzlies in Zone 2 is much less than that of southern populations. Whichever the case, with regard to females, it appears that the reproductive portion of the population is less than expected. This factor, coupled with poor female recruitment into the breeding component appears ominous.

SUMMARY:

In summary, the following points are pertinent.

(i) There is a high sustained demand for grizzly bears as trophies by non-resident hunters. The resident hunter demand for grizzlies has nearly doubled in the last four years.

(ii) Non-resident hunters harvest between 50 and 75% of the grizzlies in any year. This segment of the harvest has increased proportionally over the last seventeen years.

(iii) Grizzly populations in south-central and south-western Yukon are much reduced by sustained hunting pressure.

(iv) The sex ratio of the Zone 2 grizzly harvest has been predominantly female in at least five of the last eight years. A disproportionate number of harvested females are in their productive years. These points indicate either a severely altered population structure or poor harvest practices by some Zone 2 outfitters - or both.

(v) G.M.Z. #2 has provided one-third of the total Yukon grizzly harvest since 1968 and possibly longer.

A quota for a spring hunt on these areas has not been established.

In conjunction with the quota system the following zone regulations are recommended. It is directed to all licence classes and as noted earlier places more emphasis on spring hunts.

Zoning Regulations:

G.M.Z. #2:

Fall Season: 15 August - 31 October
Spring Season: 1 May - 15 June

G.M.Z. #4:

Fall Season: 15 August - 31 October
Spring Season: 1 May - 15 June

G.M.Z. #5:

Fall Season: 15 September - 31 October
Spring Season: 15 April - 30 May

G.M.Z. #7:

Fall Season: Closed
Spring Season: 15 April - 30 May

G.M.Z. #8:

Fall Season: 20 August - 31 October
Spring Season: 15 April - 30 May

G.M.Z. #9:

Fall Season: Closed
Spring Season: 15 April - 30 May

G.M.Z. #10:

Fall Season: 20 August - 31 October
Spring Season: 15 April - 30 May

G.M.Z. #11:

Fall Season: 20 August - 31 October

Spring Season: 15 April - 30 May

Alternative Two: A split non-resident licence.

An alternative to the quota system is the following non-resident licencing proposal -

Non-resident hunters shall have the choice of an A or B option on their licence. These options cannot be held concurrently in a licence year.

Option A: *1 full curl ram and any 4 other big game species exclusive of grizzly*

OR

Option B: *1 legal grizzly and any 4 other big game species exclusive of sheep.*

Splitting the licence into the two species in priority demand accomplishes the following:

(i) Removes opportunistic grizzly hunting by a large segment of the non-resident hunter population - those opting to hunt sheep. This hopefully will have real meaning in the alpine and subalpine habitats comprising most of Zone 2.

(ii) Places stronger emphasis on spring bear hunts for which there are a number of strong biological arguments.

In conjunction with the split licence alternative, zone regulations would be modified to the extent of a 1 September fall opening in all zones with these exceptions:

Zone 5 - 15 September; Zone 7 & 9 - closed.

Either alternative has within it the latitude required to respond to short-term management problems and longer term problems related to

the demand for grizzly bear.

Any future management considerations should stress spring bear seasons in support of which are the following biological arguments:

(i) Sows with young will generally have cubs of the year and yearlings in close attendance during a time of minimum cover, helping to eliminate the possibility of overlooking the attendant young.

(ii) Sows unattended by young are likely to enter estrus the following June and July. Removal of these mature females before the breeding season does not waste the breeding effort of the boar, and with much reduced fall seasons, restricts the killing of pregnant sows.

Aside from such biological arguments, the hides of spring-harvested grizzlies are invariably much finer trophies than those of the latest fall hunts.