The Yukon Grizzly Bear Harvest 1973-1993

Cor Smits

Final Report

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Cor Smits, Special Projects Biologist, Fish and Wildlife Branch

Yukon Department of Renewable Resources
P.O. Box 2703
Whitehorse, YT Y1A 2C6

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Director, Fish and Wildlife Branch

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Chief, Wildlife Management Section

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Table of Contents

List of Tables

List of Figures

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ABSTRACT

Analyses of reported Yukon grizzly bear mortalities are presented. No trend was detected (p=0.07) in total reported annual grizzly bear mortality for the period 1954 - 1993 ($\overline{X}$=96.88, S.D.=21.18). Non-hunt, native, non-resident, and resident mortalities comprised 12.22%, 0.37%, 55.99%, and 31.42%, respectively, of total mortalities during the period 1978-1993. There was a significant decrease in the total reported annual grizzly bear mortality during 1987-1993 (p=0.0095). Total grizzly bear mortality during 1985-1993 (the 'harvest point' period) was significantly greater than during 1973-1984 (p=0.0036), the non-resident harvest being responsible for this difference. No trend was observed (p=0.16) in the mean annual percentage females ($\overline{X}$=37.46, S.D. = 5.82) in the total reported annual grizzly bear mortality during 1978-1993. Mean annual percentage females during 1985-1993 was greater (p=0.03) than during 1978-1984 in the resident harvest ($\overline{X}$=39.1, S.D.=9.69 and $\overline{X}$=31.6, S.D.=6.08; respectively) but did not increase in the non-resident harvest ($\overline{X}$=37.4, S.D.=5.95 and $\overline{X}$=37.1, S.D.=4.99; respectively), suggesting an effect by the 'harvest point' system. Percentage females in the weekly harvest during 1973-1993 decreased significantly (p=0.003) during autumn season. No trend (p=0.83) was observed in the mean age of total reported mortalities ($\overline{X}$=8.98, S.D.=1.11) during 1973-1993. Mean age in the non-resident harvest during 1978-1993 ($\overline{X}$=9.10, S.D.=1.08) increased significantly (p=0.0089). Mean age in the non-resident harvest was significantly greater (p=0.0001) than in the resident harvest during 1985-1993 suggesting an effect by the 'harvest point' system. Mean annual grizzly bear seal purchases were 499 (S.D.=53.8) for

residents and 287 (S.D.=67.6) for non-residents during 1979-1992 and increased significantly (p=0.0011 and p=0.0062, for residents and non-residents, respectively). No trends in mean number of days hunted per bear killed were observed for residents (p=0.54), non-residents (p=0.51) or combined residents and non-residents (p=0.96). Annual male grizzly bear mortalities during 1973-1988 ($\overline{X}$=33.5, S.D.=22.1) and during 1989-1993 ($\overline{X}$=36.2, S.D.=29.7) were below estimated sustainable yields in all areas in both periods. Annual female mortalities were on average 61.9 (S.D.=43.6) during 1973-1988, and 59.5 (S.D.=51.2) during 1989-1993, with 5 areas, and 6 areas, showing estimated above-sustainable yield mortalities during 1973-1988, and during 1989-1993, respectively.

INTRODUCTION

Without population monitoring information, harvest statistics are important in testing harvest management prescriptions for grizzly bears in Yukon Territory. Although none of the potential indices available from bear harvest data have been adequately tested against known changes in population size, there is a pervasive feeling that 1) some data are better than none, even if they are not always reliable, and 2) several untested indices all pointing in the same direction may provide evidence of population trends (Garshelis 1991).

In Yukon Territory, information on the harvest of grizzly bears has been collected since 1954. Over the years, this information has become increasingly detailed. Harvest analyses have been presented previously, however these involved either earlier periods (Pearson 1975; Lortie and MacDonald 1977) or were done specifically to evaluate changes in the outfitter quota system (Smith 1990).

This report presents analyses of grizzly bear harvest for the period 1973-1993 in order to: 1) determine trends in potential population indices, 2) compare reported grizzly bear mortalities to estimated allowable harvest rates, 3) to evaluate the effects of major changes in regulations on harvest patterns.

METHODS

For the purpose of this report, licenced hunters in Yukon Territory are classified as follows: 1) Residents, being persons residing in the Yukon (as defined in the Wildlife Act). These are generally non-native, however some natives, although not required to do so, purchase resident hunting licences, 2) Non-residents, being persons not residing in Yukon Territory (as defined in the Wildlife Act) (Non-resident big game hunters must be guided through a registered outfitter or by a resident holding a special guiding licence depending on whether they are non-Canadian or Canadian citizens), 3) Natives, being persons of native origin (as defined in the Yukon Act). Natives are not required to purchase hunting licences or report their harvest.

From 1973 to the present, all residents and non-residents hunting on lands under territorial jurisdiction were required to report their grizzly harvest to the Yukon Department of Renewable Resources and submit the bear's skull along with evidence of sex of male bears following the close of each season. Prior to 1973 resident hunters were required to report any grizzly kills upon applying for their next hunting licence; non-resident hunters were required to report their kills following the hunting season. Native hunters were requested to provide harvest information to the Indian Harvest Study, but this was not mandatory (Quock and Jingfors 1987, 1988; Quock 1992, 1994).

Figure 1 lists the information currently requested from successful grizzly bear hunters (note: less information was requested in earlier years). Kill location was reported by zone and subzone, however since bears in Yukon Territory are managed by bear management areas (Fig. 2), kill locations were analyzed by bear management areas. Mortalities were reported as one of five main categories: 1) hunted, 2) animal control, 3) road kill, 4) found in field, 5) other. Age of kills was determined using the cementum annulation technique (Sergeant 1967). Information on hunting effort for grizzly bears was obtained from: 1) the reported number of days hunted per bear killed and 2) the number of grizzly bear seals sold. Trends in mortalities, sex and age composition, hunting effort, were evaluated using the PROC REG procedure of SAS (SAS Institute Inc. 1985). Differences in harvest characteristics between resident and non-residents were evaluated using the Z test as samples constituted the entire population (Pagano 1981). The effects of the point system (1985 - present) on harvest characteristics of non-residents were evaluated using resident harvest characteristics as the control. The level of detail extracted through the harvest monitoring program has expanded over time, with the most detail available since 1978. These changes in levels of detail in the harvest information base are reflected in the analyses.

Hunting Regulations

The following is a general summary highlighting the major Yukon hunting regulations adopted from Pearson (1975) and Yukon Department of Renewable Resources files.

In Yukon Territory, there have been spring (April 15 - June 15/21) and autumn (August 1 - October 31/November 30) seasons for the hunting of grizzly bears. Before 1970, residents were entitled to one grizzly in each of the spring and autumn seasons. After 1970, the limit was reduced to one grizzly per licence year. The non-resident was permitted to kill one grizzly for each licence issued, but after 1970, he/she was limited to one grizzly per calendar year. Before 1971, resident and non-resident hunters were not required to purchase tags before the hunt. Since 1971, resident hunters have to purchase a grizzly tag before shooting a bear; non-residents have to pay a trophy fee specifically for grizzly after the kill. Female grizzly bears with young and the young are protected. All non-resident hunters of big game are required to be accompanied by a licenced guide. Thus the harvest by non-residents is regulated by the management activities of the outfitter. During 1978, non-residents were restricted to harvesting 1 bear per life time. During 1983, residents could only take 1 bear every 4 years, which was changed to 1 bear every 2 years in 1984, and 1 bear every 3 years for 1985 and there after. In much of zones 7 and 9 and part of zone 5 (Fig. 3), residents were allowed to take 1 bear every year.

Grizzly Bear Harvest Management

Before 1980, the grizzly bear harvest was controlled through season lengths, licence/tag/trophy fees. Since 1980, non-residents, the licence class responsible for most of the grizzly bear harvest, became more restricted in their bear hunting activities. In that year, a bear harvest quota system was implemented. Quotas were based on population estimates derived through extrapolation from areas with known bear abundance, estimated allowable harvest, and management objectives (Lortie 1978). This restricted system that typically resulted in 25% unused bear quotas each year was replaced by the harvest point system in 1985 (Smith 1990). The new system is based upon sex-weighted harvest points that restrict harvest rates as the female proportion of the harvest increases. Three to five-year point totals were allocated to individual outfitting areas based on the amount of the estimated sustainable yield, by sex, remaining after allowing for anticipated resident hunter kills and kills in defense of life and property.

RESULTS

Total Mortality

Reported total annual grizzly bear mortality ranged from 50 to 138 ($\overline{X}$ = 96.88, S.D. 21.18) during the period 1954-1993 (Fig. 4). No significant trend in mortality was detected during this period (P=0.07). Detailed breakdowns in licence or kill types of total reported mortalities were available from 1978 on (Figs. 5, 6). Non-hunt (i.e., mortalities other than those by licenced hunters), native, non-resident, and resident mortalities comprised respectively 12.22%, 0.37%, 55.99%, and 31.42% of total mortalities during the period 1978-1993. Native harvest however was available only since 1987 and for that reason and the very low native harvest reported, native harvest will not be used for further analyses. The most important type of non-hunt mortalities was 'defence of life and property' (84.50%) while road kills, kills found in the field, and other kills, accounted for 2.50%, 5.00%, and 8.00% respectively. Although non-hunt mortality made up a relatively small component of all types of mortalities, in some bear management areas non-hunt mortalities comprised all or most of combined mortality types (Fig. 7). This appears to have occurred mostly in the remote areas. Although there was no trend in the total reported grizzly bear mortality during 1978-1993 (p=0.94) nor during 1978-1986 (p=0.56), there was a significant decrease during 1987-1993 (Fig. 8). Both resident and non-resident harvest showed a decrease during this period (Figs 9, 10) whereas they showed no

trend for the period 1978-1986 (p=0.73 for residents, p=0.71 for non-residents). There was no trend (p=0.24) in the non-hunting grizzly bear mortality during 1984-1993, whereas non-hunting mortality increased during 1978-1984 (Fig. 11). Total grizzly bear mortality during 1985-1993 (the 'harvest point' period) was significantly greater than during 1973-1984 (Table 1). The non-resident harvest was implicated as being responsible for this difference.

When trends in mortality are evaluated by bear management areas, three areas show a significant increase in total bear mortality (area 4, 17, 20, Table 2). No trend was observed in the resident harvest in any of the areas, whereas the non-resident harvest showed a significant increase in areas no. 1 and no. 8. Non-hunt mortalities increased significantly only in area no. 12.

Sex and Age Composition

No trend was observed (p=0.16) in the mean annual percentage of females ($\overline{X}$=37.46, S.D.=5.82) in the total reported annual grizzly bear mortality during 1978-1993 (Fig. 12). However when the percentages females are compared between resident and non-resident harvest (Fig. 13) and between the periods 1978-1984 and 1985-1993, some differences were found (Table 3): 1) non-residents harvested proportionally significantly more females than residents, during 1978-1984, and 2) residents harvested significantly more females during 1985-1993 compared to 1978-1984. When percentage females in the weekly total harvest of 1973-1993 was regressed on week there was no trend in percentage females observed during spring

(p=0.79), however there was a significant decrease in the percentage females in the weekly autumn harvest (Fig. 14).

Total male grizzly bear mortality increased in areas no. 1, 4, 8, 17, and 97 (Table 4). No trend was observed in the resident male harvest in any of the areas, whereas the non-resident male harvest increased significantly in areas no. 1 and no. 8, and decreased significantly in area no. 19. Non-hunt male mortalities increased significantly in area no. 96.

Total female grizzly bear mortality decreased significantly in area no. 1 and increased significantly in areas no. 12, 13, 20 (Table 5). The resident female harvest decreased significantly in area no. 10 and increased significantly in area no. 20. The non-resident female harvest decreased significantly in areas no. 1 and no. 22, and increased significantly in area no. 8. No trend in non-hunt female mortalities was observed in any area.

Mean age of grizzly bears in total reported mortalities during 1973-1993 was 8.98 (S.D.=1.11) and no trend was observed in this value (p=0.83)(Fig. 15). Mean age in the resident harvest during 1978-1993 was 7.99 (S.D.=0.78) with also no trend being observed in this value during this period (P=0.92). Mean age in the non-resident harvest during this period ($\overline{X}$=9.10, S.D.=1.08) increased significantly (Fig. 16). When age of grizzly bears in resident and non-resident harvest was compared between the pre-point and point periods, age in the non-resident harvest was

significantly greater than in the resident harvest during 1985-1993 (i.e., the point period)(Table 6).

When trends in grizzly bear age are evaluated by bear management area, no trends in mean annual grizzly bear age in total mortalities are observed in any of the areas (Table 7). Mean age in the resident harvest decreased significantly in area no. 3, whereas mean age in the non-resident harvest increased significantly in area no. 1. No trend was observed in any of the areas for mean age in non-hunt mortalities.

Hunting Effort

Seal Purchases

Mean annual grizzly bear seal purchases were 499 (S.D.=53.8) for residents and 287 (S.D.=67.6) for non-residents during 1979-1992. The number of grizzly bear seals sold to resident and non-resident hunters (Table 8) increased significantly between 1979 and 1992 (Fig. 17). This held also when separate analyses were done for residents and non-residents. Separate analyses for the period 1987-1993 showed no such trend for residents (p=0.84), non-residents (p=0.22), or combined residents and non-residents (p=0.37). The number of bears harvested per seal purchased declined for both resident and non-resident hunters during 1979-1992 (Fig. 18). Non-residents harvested about three times as many bears per seal purchased ($\overline{X}$=0.20) than residents ($\overline{X}$=0.07).

Days hunted per bear killed

The mean number of days hunted per grizzly bear killed during 1978-1993 (Fig. 19, 20, 21) was 5.36 for residents and non-residents combined with non-residents spending about twice the amount of time hunting for bears than residents (Table 9). No trends in mean number of days hunted per bear killed were observed for residents, non-residents, or combined residents and non-residents during the whole period 1978-1993, nor during the period 1987-1993 ($p=0.75$ for residents; $p=0.38$ for non-residents; $p=0.34$ for combined residents and non-residents).

Total vs Allowable Mortalities

Figures 22a-51b present male and female grizzly bear mortalities relative to the estimated allowable mortalities. Mean reported mortality is presented for the periods 1973-1988 and 1989-1993 in order to evaluate changes in the recent past. Male mortalities increased in 13 and decreased in 17 areas, while female mortalities increased in 13, decreased in 14, and remained the same in 3 areas, when the period 1989-1993 is compared to the period 1978-1988. Percentage change in mortalities between these two periods ranged from -100% to +233% for male bears, and from -100% to +250% for female bears (Table 10). Annual male mortalities ($X=33.5$, S.D.=22.1 during 1973-1988 and $x=36.2$, S.D.=29.7 during 1989-1993) were below estimated sustainable yields in all areas in both periods (Table 11). Annual female mortalities were on average 61.9 (S.D.=43.6) during 1973-1988, and 59.5 (S.D.=51.2) during 1989-1993, with 5 areas, and 6 areas,

showing above sustainable yield mortalities during 1973-1988, and during 1989-1993, respectively. Only 2 of these areas showed above estimated sustainable yield mortalities during both periods.

DISCUSSION

The decrease in total bear mortality from 1987 to 1993 was not associated with a trend in hunting effort (i.e., the number of seals sold, and the number of days hunted per bear killed). This suggests a decline in hunting efficiency (i.e., the number of bears killed per unit effort expended).

Non-residents (the only group that had to purchase a bear seal prior to 1971) had a lower success rate (as indicated by the number of bears harvested per seal purchased) hunting grizzly bears during 1979-1992 than during 1954-1972 (Pearson 1975). This downward trend appears to have occurred prior to 1966 when about 4 out of every 10 non-resident hunters killed a bear. After 1966, the success rate of non-resident hunters was about half of this (Pearson 1975; this report). The data for 1979-1992 indicate a continuing decline in success rate for both resident and non-resident hunters. However, hunter success as determined from bears harvested per seal purchased may be a poor indicator of hunting efficiency as hunting patterns have changed over the years (Pearson 1975). Although harvest relative to man days of hunting (i.e. hunting effort) is thought to be the best method of estimating hunting success (Pearson 1975), hunting effort has recently been shown to be a poor indicator of bear population status. In the only study known for which bear population trend and hunting effort information was available, no trend in hunting effort was found when the bear population was reduced by about 50% (Miller 1993).

Hunting effort has also been shown to be a poor indicator of bear population status. In the only study known for which bear population trend and hunting effort information was available, no trend in hunting effort was found when the bear population was reduced by about 50% (Miller 1993).

Notwithstanding the decline in grizzly bear mortality for non-residents during 1987-1993, the annual non-resident harvest during 1985-1993 (the harvest point period) was greater than that during 1973-1984. Since this difference was not found for residents, it would appear that this discrepancy between the two licence classes is attributable to the introduction of the harvest point system. This system allows outfitters much more flexibility in utilizing their multi-year quota (Smith 1990).

Sex and age composition of bear harvest data have been shown to provide ambiguous indicators of population trend both through computer simulation (Harris 1984; Miller and Miller 1990) and by monitoring population abundance (Miller 1993). Trends in sex and age composition may or may not reflect changes in population trend. Similarly, absence of trends in sex and age composition does not preclude population increases or declines. Nevertheless, Miller and Miller (1990) conclude that the insights into population trend that can be potentially gained from these data are worth the effort in collecting them, and that they may be useful as

an additional indicator of trend in helping select between conflicting interpretation. Additional study is necessary to more completely evaluate the usefulness of this data. Unfortunately, no bear population monitoring is currently underway in the Yukon. Therefore, no opportunity exists to learn to interpret the meaning of trends in harvest sex and age composition relative to population trends.

Non-resident harvest did not show a change in percentage females after 1984 when the point system was introduced suggesting no effect from the increased incentive to harvest male bears. However, when the percentage females is compared between residents and non-residents for the periods 1978-1984 and 1985-1993 (i.e., the resident female bear harvest being the control group, assuming all else being equal) the non-resident percentage females did not change after 1984 whereas the resident percentage females did increase. This would suggest that the point system (i.e., the major change in overall hunting regulations after 1984) which provides incentive to increase the harvest of male bears relative to female bears might have been responsible for preventing an increase in percentage females in the non-resident grizzly bear harvest.

The observed decrease in the percentage female bears in the weekly autumn harvest indicates the usefulness of scheduling hunting seasons to manage the harvest of female grizzly bears.

The difference, and absence of difference, in mean age of grizzly bears between the periods 1978-1984 and 1985-1993 in the non-resident harvest, and resident harvest, respectively, suggest an effect by the point system. The increase in mean age of bears harvested by non-residents after 1984 was already noted by Smith (1990) and would appear to be related to the incentive in the point system to harvest larger bears (i.e., bears more likely to be males; Smith 1990).

Under the point system, outfitters are awarded harvest points as long as there is a harvestable surplus after all other projected mortalities have been subtracted. Therefore, the long-term female harvest should be approximately equal to or less than the estimated sustainable harvest as long as resident or non-hunt mortalities do not exceed the sustainable harvest. This appears to be the case for all bear management areas with the exception of area no. 18. The bear harvest in this area has been mainly by residents after 1980, limited by hunting seasons and bag limits only. The latter system of harvest regulation did not control harvests as rigorously for residents as the point system did for non-residents. This, and/or the increase in bag limits may have been causes for the substantial increase in female grizzly bear mortalities.

The estimated levels of sustainable bear harvest in Yukon Territory were derived through computer modeling of bear population parameters (B. Smith, Dept. of Renew. Resources, unpubl. data) extrapolated from former studies in Yukon

Territory or studies from other regions. Hence, the levels of sustainable harvest estimated for the various bear management areas are likely to be crude representations of the actual sustainable harvest levels. Without population monitoring, the Department of Renewable Resources is not in a position to ascertain whether current grizzly bear harvest levels are indeed sustainable. Although it is tempting to use the trend indicators presented here, their interpretation may produce misleading results and there is a risk that major population declines may go undetected for extended periods of time (Miller 1993). It is, therefore, imperative that population monitoring is incorporated as part of grizzly bear management in Yukon. The indicators presented here may be used in determining which areas are likely candidates for monitoring work.

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Table 1. Comparison of mean annual grizzly bear mortality in Yukon by mortality type between the periods 1978-1984 and 1985-1993

Mortality type	Mean Annual Mortality 1978-1984	1985-1993	Z	P (two-tailed)
Resident	33.7	30.9	0.71	0.1187
Non-resident	51.3	61.9	-21.04	0
Total mortality*	88.2	108.1	-2.45	0.0036

* total mortality compared between 1973-1984 and 1985-1993.

Table 2. Mean mortality and regression of mortality on year, by harvest class and area, in Yukon during 1978-1993

Area	Total Mortality				Resident Harvest				Non-resident Harvest				Non-hunt Harvest			
	Mean	S.D.	Regression P(if <.05)	Slope	Mean	S.D.	Regression P(if <.05)	Slope	Mean	S.D.	Regression P(if <.05)	Slope	Mean	S.D.	Regression P(if <.05)	Slope
1	5.95	2.13			0.25	0.45			4.50	0.82	0.0046	0.11	0.13	0.50		
2	3.57	2.23			0.50	0.73			2.31	1.25			0.31	0.87		
3	3.95	2.16			0.44	0.63			3.13	1.82			0.50	0.89		
4	4.86	2.76	0.04	0.07	0.25	0.58			5.25	2.59			0.00	0.00		
5	3.52	2.50			0.25	0.45			3.13	2.33			0.13	0.34		
6	3.86	2.43			0.13	0.34			3.69	2.33			0.19	0.40		
7	5.67	2.63			0.94	0.77			4.63	2.03			0.13	0.34		
8	2.05	1.72			0.31	0.60			1.75	1.73	0.0077	0.23	0.19	0.54		
9	6.48	2.77			2.69	1.92			3.44	1.93			0.56	0.73		
10	2.10	2.07			1.00	1.21			1.06	1.18			0.19	0.54		
11	4.48	2.77			1.13	1.15			3.25	2.38			0.31	0.87		
12	1.81	1.25			0.75	0.86			0.94	1.00			0.44	0.63	0.0083	0.08
13	10.00	4.17			3.81	1.97			6.25	2.67			1.00	1.46		
14	2.81	1.44			1.44	1.15			1.69	1.20			0.13	0.34		
15	4.81	1.83			2.25	1.69			2.31	1.14			0.50	0.97		
16	4.14	2.67			1.75	1.39			1.81	1.47			0.94	1.48		
17	3.19	1.75	0.0352	0.11	1.50	1.03			1.69	1.49			0.44	0.89		
18	3.38	2.77			1.94	1.44			0.88	1.45			0.88	1.63		
19	2.95	2.06			1.13	0.96			1.50	1.15			0.44	0.73		
20	4.48	2.69	0.0375	0.21	2.81	1.94			2.00	1.55			0.25	0.45		
21	0.86	1.01			0.81	0.75			0.00	0.00			0.31	0.48		
22	3.10	1.92			1.63	0.96			1.94	1.12			0.19	0.40		
91	0.29	0.64			0.00	0.00			0.00	0.00			0.38	0.72		
92	0.10	0.30			0.06	0.25			0.00	0.00			0.06	0.25		
93	0.67	1.11			0.50	0.73			0.00	0.00			0.38	0.72		
94	0.24	0.44			0.25	0.45			0.00	0.00			0.00	0.00		
95	0.29	0.78			0.19	0.54			0.00	0.00			0.00	0.00		
96	2.38	1.80			2.19	1.52			0.00	0.00			0.81	1.05		
97	1.81	1.60			1.63	1.67			0.00	0.00			0.69	0.87		
98	1.95	2.09			0.25	0.45			0.13	0.34			1.69	1.89		
99	0.10	0.30			0.13	0.34			0.00	0.00			0.00	0.00		

Total Mortality includes the period 1973-1993.

Table 3. Comparison of percentage females in grizzly bear harvest in Yukon between licence classes and periods.

Period	Percentage Females			
	Resident	Non-resident	Z*	P*
1978-1984	31.6	37.4	-1.8	0.04 (one-tailed)
1985-1993	39.1	37.1	0.57	0.14 (two-tailed)
Z**	-1.91	0.10		
P**	0.03 (two-tailed)	0.23 (two-tailed)		

*comparisons between residents and non-residents
**comparisons between 1978-1984 and 1985-1993

Table 4. Number of males in grizzly mortality and regression of number of males in grizzly mortality on year, by harvest class and area, in Yukon during 1978-1993

Area	Total Mortality				Resident Harvest				Non-resident Harvest				Non-hunt Mortality			
	Mean	S.D.	Regression P(if < 0.05)	Slope	Mean	S.D.	Regression P(if < 0.05)	Slope	Mean	S.D.	Regression P(if < 0.05)	Slope	Mean	S.D.	Regression P(if < 0.05)	Slope
1	4.29	1.27	0.0157	0.11	0.19	0.40			4.13	1.26	0.0012	0.19	0.06	0.25		
2	1.76	1.26			0.38	0.50			1.19	1.05			0.13	0.50		
3	2.62	1.47			0.31	0.48			2.13	1.20			0.25	0.45		
4	2.76	2.07	0.0173	0.07	0.25	0.58			3.13	1.75			0.00	0.00		
5	2.00	1.64			0.19	0.40			1.81	1.33			0.00	0.00		
6	2.67	2.08			0.06	0.25			2.56	1.71			0.06	0.25		
7	3.48	1.83			0.63	0.81			2.88	1.45			0.06	0.25		
8	1.24	1.09	0.0036	0.11	0.19	0.40			1.13	1.09	0.0222	0.13	0.13	0.34		
9	4.43	2.29			1.81	1.52			2.19	1.47			0.50	0.63		
10	1.14	1.68			0.69	0.95			0.50	0.82			1.19	0.54		
11	2.95	2.27			0.81	0.98			2.38	2.33			0.13	0.34		
12	1.24	0.94			0.50	0.63			0.63	0.81			0.25	0.58		
13	6.10	3.33			2.13	1.54			3.88	2.36			0.69	1.14		
14	1.52	1.08			0.69	0.79			1.06	0.77			0.06	0.25		
15	2.71	1.55			1.25	1.00			1.38	1.20			0.31	0.60		
16	2.67	1.62			1.44	1.03			1.00	1.15			0.50	0.82		
17	1.90	1.09	0.0226	0.09	1.00	0.73			1.81	0.75			0.19	0.54		
18	1.67	1.74			0.81	0.91			0.50	0.89			0.31	0.60		
19	1.76	1.37			0.69	0.79			0.81	0.83	0.0187	-0.10	0.38	0.62		
20	2.38	1.56			1.88	1.36			0.63	0.81			0.13	0.34		
21	0.62	0.86			0.56	0.73			0.00	0.00			0.25	0.45		
22	1.76	1.41			1.38	0.81			1.00	0.73			0.06	0.25		
91	0.14	0.48			0.00	0.00			0.00	0.00			0.19	0.54		
92	0.10	0.30			0.06	0.25			0.00	0.00			0.06	0.25		
93	0.52	0.81			0.38	0.62			0.00	0.00			0.31	0.60		
94	0.24	0.44			0.25	0.45			0.00	0.00			0.00	0.00		
95	0.24	0.77			0.13	0.50			0.00	0.00			0.00	0.00		
96	1.57	1.54			1.56	1.46			0.00	0.00			0.44	0.63	0.0400	0.08
97	1.19	1.36	0.0172	0.11	1.06	1.44			0.00	0.00			0.50	0.73		
98	1.29	1.76			0.19	0.40			0.13	0.34			0.94	1.61		
99	0.10	0.30			0.13	0.34			0.00	0.00			0.00	0.00		

Note: Total Mortality includes data for the period 1973-1993.

Table 5. Number of females in grizzly mortality and regression on number of females in grizzly mortality on year, by harvest class and area, in Yukon during 1978-1993

Area	Total Mortality				Resident Harvest				Non-resident Harvest				Non-hunt Mortality			
	Mean	S.D.	Regression P(if < 0.05)	Slope	Mean	S.D.	Regression P(if < 0.05)	Slope	Mean	S.D.	Regression P(if < 0.05)	Slope	Mean	S.D.	Regression P(if < 0.05)	Slope
1	1.62	2.31	0.0002	-0.27	0.06	0.25			0.38	0.62	0.012	-0.08	0.06	0.25		
2	1.57	1.40			0.13	0.34			1.13	1.09			0.13	0.50		
3	1.29	1.19			0.13	0.34			1.00	1.15			0.25	0.68		
4	2.10	1.55			0.00	0.00			2.13	1.67			0.00	0.00		
5	1.48	1.36			0.06	0.25			1.31	1.40			0.07	0.26		
6	1.10	1.04			0.06	0.25			1.06	1.18			0.07	0.26		
7	2.00	1.55			0.31	0.48			1.69	1.45			0.06	0.25		
8	0.76	0.94			0.13	0.34			0.63	0.89	0.0261	0.10	0.00	0.00		
9	2.05	1.72			0.88	1.15			1.25	1.48			0.06	0.25		
10	0.95	0.86			0.31	0.48	0.0009	-0.08	0.56	0.63			0.00	0.00		
11	1.52	1.25			0.31	0.48			0.88	0.72			0.19	0.54		
12	0.52	0.81	0.0195	0.07	0.25	0.45			0.31	0.60			0.13	0.35		
13	3.48	2.36	0.0175	0.19	1.69	1.14			2.31	1.45			0.19	0.40		
14	1.24	0.94			0.75	0.77			0.63	0.72			0.06	0.25		
15	2.05	1.36			0.94	1.06			0.94	0.77			0.19	0.54		
16	1.43	1.80			0.31	0.60			0.81	0.75			0.44	1.09		
17	1.19	1.21			0.50	0.63			0.81	1.05			0.20	0.56		
18	1.71	1.62			1.13	0.96			0.38	0.62			0.56	1.09		
19	1.14	1.15			0.38	0.50			0.69	0.79			0.06	0.25		
20	2.05	1.63	0.0091	0.15	0.94	0.93	0.0025	0.14	1.38	1.36			0.13	0.34		
21	0.19	0.40			0.25	0.45			0.00	0.00			0.00	0.00		
22	1.29	1.01			0.25	0.58			0.94	0.85	0.0143	-0.11	0.07	0.26		
91	0.05	0.22			0.00	0.00			0.00	0.00			0.07	0.26		
92	0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00		
93	0.05	0.22			0.06	0.25			0.00	0.00			0.00	0.00		
94	0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00		
95	0.05	0.22			0.06	0.25			0.00	0.00			0.00	0.00		
96	0.71	1.15			0.63	0.72			0.00	0.00			0.27	0.80		
97	0.60	0.75			0.56	0.73			0.00	0.00			0.19	0.40		
98	0.62	0.74			0.06	0.25			0.00	0.00			0.69	0.79		
99	0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00		

Note: Total Mortality includes data for the period 1973-1993.

Table 6. Comparison of the mean age of grizzly bears in the resident and non-resident harvest during the periods 1978-1984 and 1985-1993.

	Mean Age			
Period	Resident	Non-resident	Z	P
1978-1984	8.05	8.13	-0.14	0.44 (two-tailed)
1985-1993	7.94	9.86	-4.08	0.0001 (one-tailed)

Table 7. Mean age in grizzly mortality and regression of grizzly mortality on year, by harvest class and area, in Yukon during 1978-1993

Area	Total Mortality				Resident Harvest				Non-resident Harvest				Non-hunt Mortality			
	Mean	S.D.	Regression P (if < 0.05)	Slope	Mean	S.D.	Regression P (if < 0.05)	Slope	Mean	S.D.	Regression P (if < 0.05)	Slope	Mean	S.D.	Regression P (if < 0.05)	Slope
1	11.59	3.30			10.50	6.36			11.56	5.29	0.02	0.43				
2	7.30	2.98			6.00	4.87			7.46	5.11			21.00	1.41		
3	7.20	3.20			3.57	1.40	0.03	-0.27	8.36	6.02			5.67	2.08		
4	9.39	3.29			10.50	7.59			7.99	4.90						
5	9.15	4.02			11.00	3.46			9.25	6.39			8.50	7.78		
6	8.79	3.49			7.00	2.83			8.27	6.70			14.00	2.83		
7	10.25	3.80			13.64	7.56			10.19	6.97			21.00	5.66		
8	10.72	6.69			10.75	5.91			11.46	8.23			19.00	15.56		
9	8.96	2.91			8.44	7.45			8.29	5.59			9.00	8.29		
10	8.05	4.98			6.40	4.91			6.00	4.09			8.50	0.71		
11	6.42	2.08			5.06	4.96			7.73	6.33			6.67	8.08		
12	5.91	3.66			5.36	4.65			5.71	5.64			4.00	0.00		
13	8.90	2.27			7.14	5.03			10.47	7.22			7.22	6.06		
14	8.33	3.72			5.62	4.74			10.67	7.55						
15	8.37	3.11			7.41	5.28			9.23	6.23			7.33	4.16		
16	7.89	3.99			10.04	7.13			7.31	6.01			8.57	7.74		
17	8.54	4.55			7.78	6.85			9.04	5.93			27.40	40.58		
18	9.00	4.08			7.00	5.55			9.86	5.78			5.25	5.08		
19	9.76	5.26			10.13	7.67			9.50	6.19			3.00	1.26		
20	8.85	3.74			8.10	5.02			9.93	7.07			3.00			
21	10.10	8.27			9.08	8.27							12.50	13.44		
22	9.62	3.85			9.11	6.41			8.97	5.91			5.67	5.51		
91	3.00												3.00			
92	2.00												2.00			
93	8.60	7.30			8.00	8.72							6.00	3.00		
94	8.25	3.40			9.33	3.21										
95	5.75	3.18			5.00	2.65										
96	9.81	6.28			9.53	7.09							10.67	10.67		
97	6.36	3.80			6.30	3.21							7.29	10.98		
98	6.66	2.90			4.33	0.58			10.00				6.50	5.07		
99	19.00	0.00			19.00	0.00										

Note: Total Mortality includes the period 1973-1993.

Table 8. Hunting effort for grizzly bears by resident and non-resident Yukon hunters as indicated by the number of seals sold.

Year	Resident seals sold	Non-resident seals sold	Res. + Non-res. seals sold
1979	352	311	663
1980	431	229	660
1981	506	217	723
1982	478	183	661
1983	472	191	663
1984	536	240	776
1985	500	260	760
1986	497	290	787
1987	533	365	898
1988	549	361	910
1989	531	382	913
1990	518	341	859
1991	530	304	834
1992	552	349	901

Table 9. Mean hunting effort for grizzly bears in Yukon by licence class, 1978-1993.

Licence Class	Mean annual days hunted/bear (S.D.)	Regression P
Res. + Non-res.	5.36 (0.82)	0.96
Resident	3.44 (1.48)*	0.54
Non-resident	6.22 (0.94)*	0.51

* Z-test, Z=-6.36, p=1.02161E-10.

Table 10. Percentage change in mean male and female grizzly bear mortalities in Yukon bear management areas between the periods 1973-1988 and 1989-1993.

	Male		Female	
Area	Increase	Decrease	Increase	Decrease
1	30			100
2		12		29
3	69			8
4		59	66	
5	80		30	
6	28		40	
7		17		36
8	134		250	
9		28	24	
10		54		83
11		15		10
12		4	287	
13	45		12	
14	45		12	
15		5	10	
16	17			3
17	37		0.8	
18		47		48
19		26		54
20	13		71	
21	100		5	
22		12		44
91		100		100
92		100		
93		29		100
94		100		
95		100		100
96		29	16	
97	24		7	
99	233			

Table 11. Mean annual reported grizzly bear mortality as percentage of estimated allowable mortality in Yukon by bear management area.

	1973-1988		1989-1993	
Area	Male	Female	Male	Female
1	73.30	117.00	95.20	0.00
2	37.70	105.60	33.30	75.00
3	53.60	93.60	90.50	85.70
4	32.10	71.60	13.20	118.60
5	21.80	90.20	39.20	118.60
6	66.70	80.00	85.30	112.00
7	39.40	71.30	32.60	45.60
8	19.60	35.00	45.80	87.50
9	44.00	53.90	31.50	66.70
10	34.90	95.20	16.00	16.00
11	40.60	64.70	34.50	58.10
12	77.20	54.40	74.10	210.50
13	57.70	106.30	83.90	119.50
14	28.00	79.90	40.70	61.00
15	39.30	85.80	37.20	94.40
16	74.20	125.20	87.00	121.70
17	45.60	93.00	62.50	93.80
18	46.80	163.00	24.90	74.60
19	29.40	61.50	21.90	28.20
20	16.70	37.90	18.80	64.90
21	13.70	15.60	27.30	16.40
22	36.10	86.20	31.90	47.90
91	3.20	3.10	0.00	0.00
92	2.60	0.00	0.00	0.00
93	5.70	1.80	4.10	0.00
94	15.10	0.00	0.00	0.00
95	3.70	2.20	0.00	0.00
96	12.40	15.20	8.80	17.60
97	31.90	47.50	39.50	50.80
99	1.80	0.00	6.10	0.00

Yukon
Renewable Resources

YUKON BIOLOGICAL SUBMISSIONS

12352

25

SPECIES: 1 SHEEP; 2 GOAT; 3 GRIZZLY BEAR; 4 BLACK BEAR; 5 MOOSE; 6 CARIBOU; 7 OTHER _____ (SPECIFY)

KILL TYPE: 1 HUNTED; 2 ANIMAL CONTROL; 3 ROAD KILL; 4 FOUND IN FIELD; 5 OTHER _____ (SPECIFY)

OCCURRENCE NO. (IF APPLICABLE) _____

RECORDER'S NAME _____ RECORDER NO. _____ LOCATION _____ YY MM DD

SUBMITTED FOR HUNTER BY _____ NAME (PRINT)

HUNTER INFORMATION

1 RESIDENT LICENCE
2 NON-RESIDENT LICENCE
3 NATIVE (NO LICENCE REQUIRED)

LICENCE NO. _____ SEAL NUMBER _____ OUTFITTER NAME _____ AREA _____

WAS THIS A PERMIT HUNT? 1 YES 2 NO

YUKON PERMIT HUNT AUTHORIZATION NUMBER _____

HUNTER LAST NAME _____

ADDRESS _____

KILL INFORMATION

ZONE _____ SUB ZONE _____ LAND MARK (NAME OF NEAREST MOUNTAIN, LAKE OR RIVER) _____

KILL DATE YY MM DD HOUR (2400) _____ DAYS HUNTED FOR SPECIES IN CURRENT SEASON _____ AGE _____ CONFIDENCE IN AGE 1 GOOD 2 FAIR 3 POOR

SEX OF ANIMAL 1 MALE 2 FEMALE 3 UNKNOWN EVIDENCE OF SEX CONFIRMED 1 YES 2 NO

TOOTH SUBMITTED 1 YES 2 NO

SPECIMEN FATE 1 RETURN TO HUNTER 2 DONATE TO YTG 3 NO SPECIMEN 4 SEIZED 5 FORFEITED TO CROWN

PHOTOGRAPH 1 YES 2 NO OTHER SPECIMENS _____ (SPECIFY)

SHEEP AND GOATS

TOTAL LENGTH _____
BASE CIRCUM. _____
TIP SPREAD _____

MEASURE LONGEST HORN

	LENGTH	CIRCUMFERENCE
TIP TO 1ST		
TIP TO 2ND		
TIP TO 3RD		
TIP TO 4TH		
TIP TO 5TH		
TIP TO 6TH		
TIP TO 7TH		
TIP TO 8TH		
TIP TO 9TH		
TIP TO 10TH		
TIP TO 11TH		
TIP TO 12TH		
TIP TO 13TH		
TIP TO 14TH		
TIP TO 15TH		
TIP TO 16TH		

SHEEP ONLY

HORN MEASURED 1 RIGHT 2 LEFT

BODY COLOR
1 WHITE (FEW BLACK HAIRS)
2 FANNIN (LIGHT GREY)
3 DARK (GREY, DARK SADDLE)

TAIL COLOR
1 WHITE 2 DARK

LENGTH TO THIRD ANNULUS ON SHORT SIDE _____

PLUG NUMBER _____

BEARS ONLY

COLOR OF UPPER SIDE: 1 BLONDE 2 LIGHT BROWN 3 BROWN 4 DARK BROWN 5 BLACK

CONDITION OF PELT: 1 NORMAL 2 RUBBED

RUMP FAT: 1 NONE 2 0" TO 1" 3 OVER 1"

TEETH WEAR: 1 NO WEAR 2 INCISORS ONLY 3 SOME WEAR ON MOLARS 4 HEAVY WEAR ON MOLARS

SKULL MEASUREMENTS (mm)

SKULL LENGTH _____ 1 FLESH ON
ZYGOMATIC WIDTH _____ 2 FLESH OFF

COMMENTS (ALL SPECIES) _____

COPY DISTRIBUTION:
1. YELLOW – HEADQUARTERS
2. WHITE – DISTRICT C.O.
3. BLUE – HUNTER
4. GREEN – OUTFITTER (IF APPLICABLE)

SIGNATURE OF HUNTER OR AGENT _____

YG(1784) NC4 REV. 04/94

HEADQUARTERS

Fig. 1. Information requested by Yukon Department of Renewable Resources for reported harvest or mortalities of wildlife species

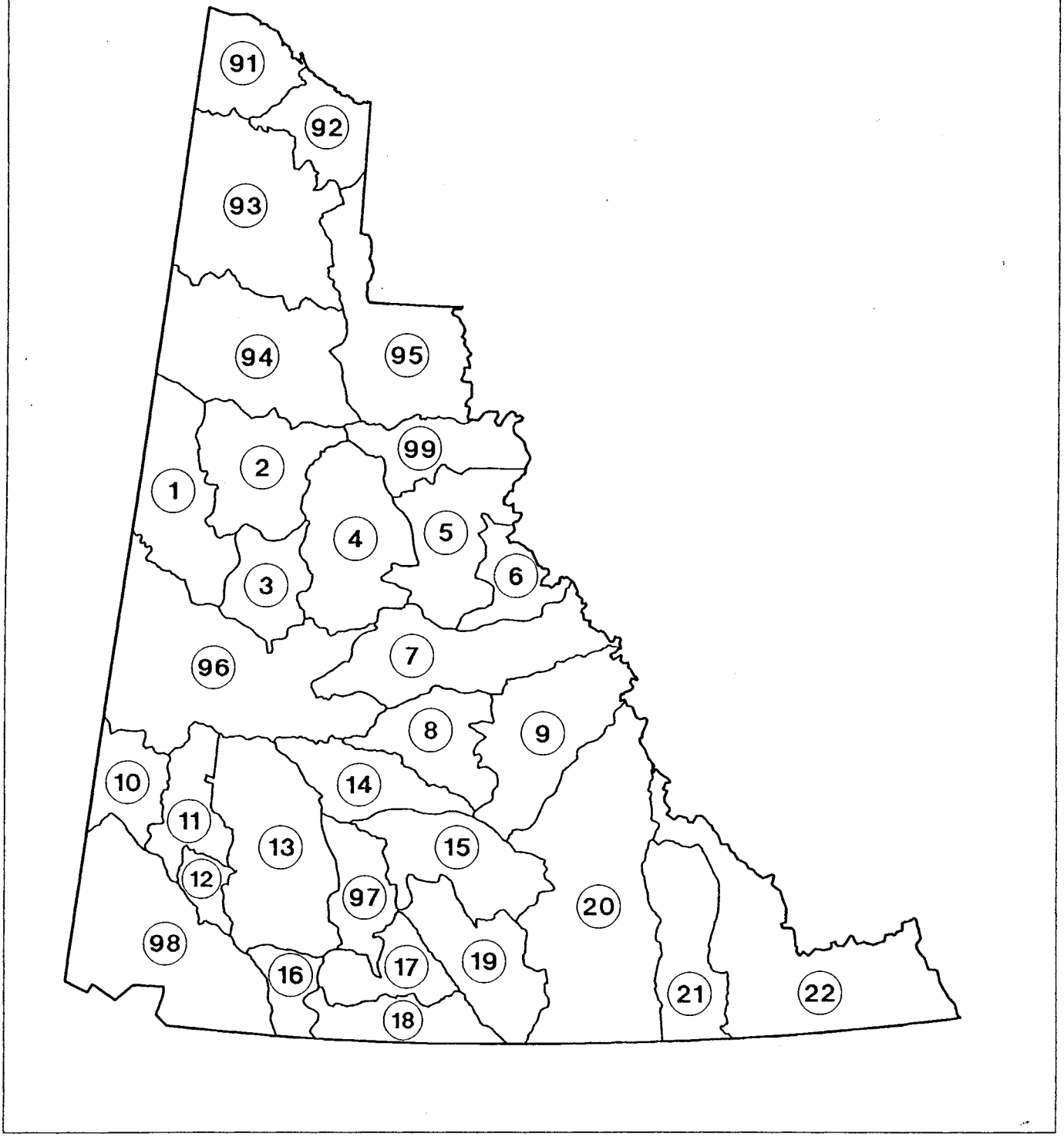

Fig. 2. Bear Management Areas in Yukon

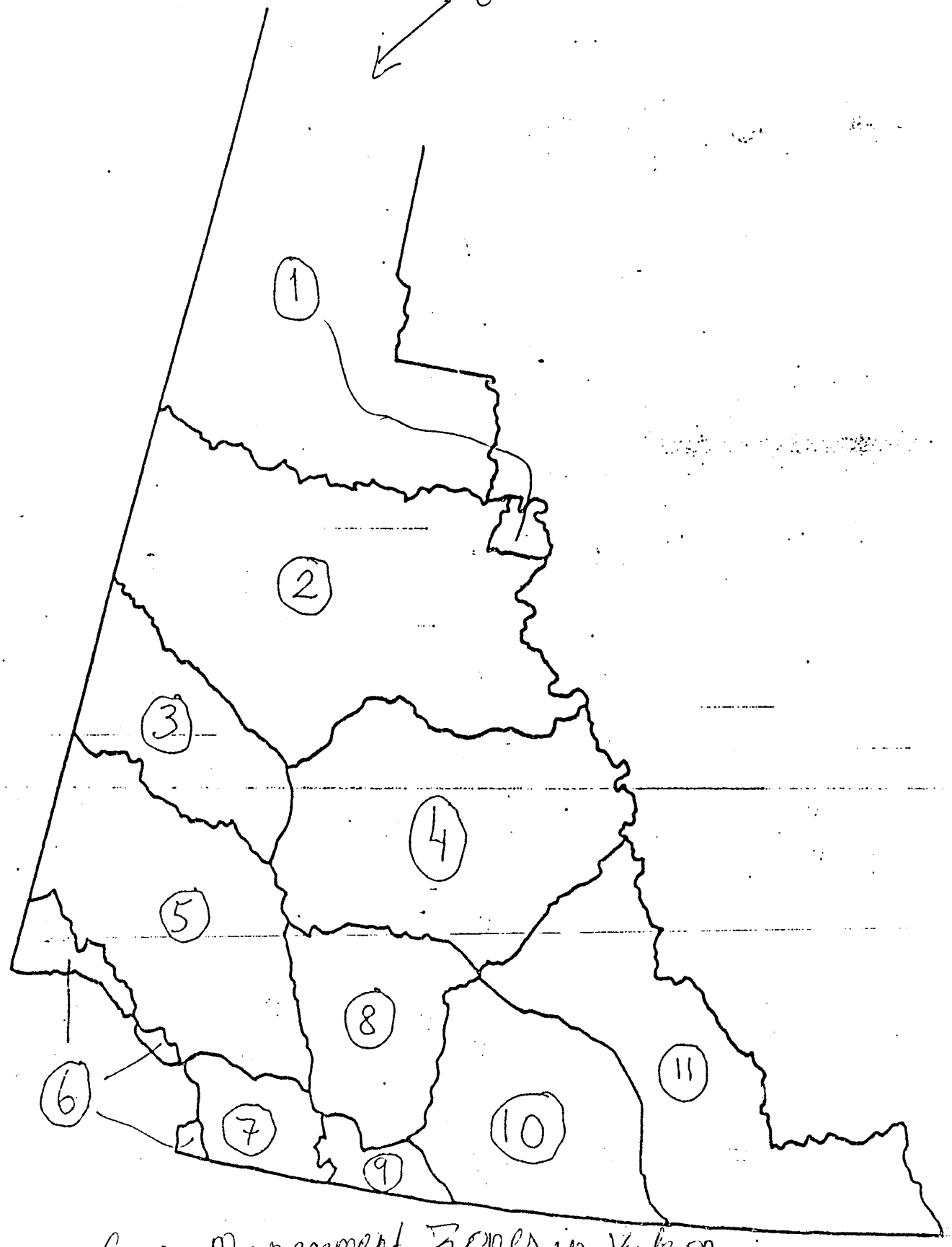

Fig. 3. Game Management Zones in Yukon

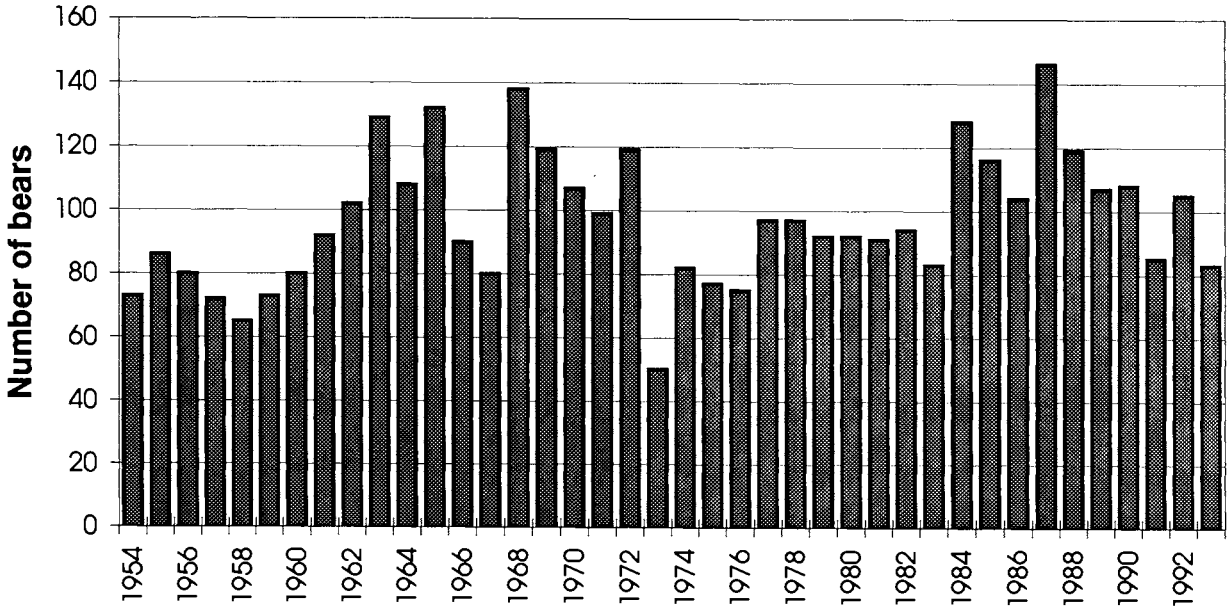

Fig. 4. Total reported grizzly bear mortality in Yukon during 1954-1993

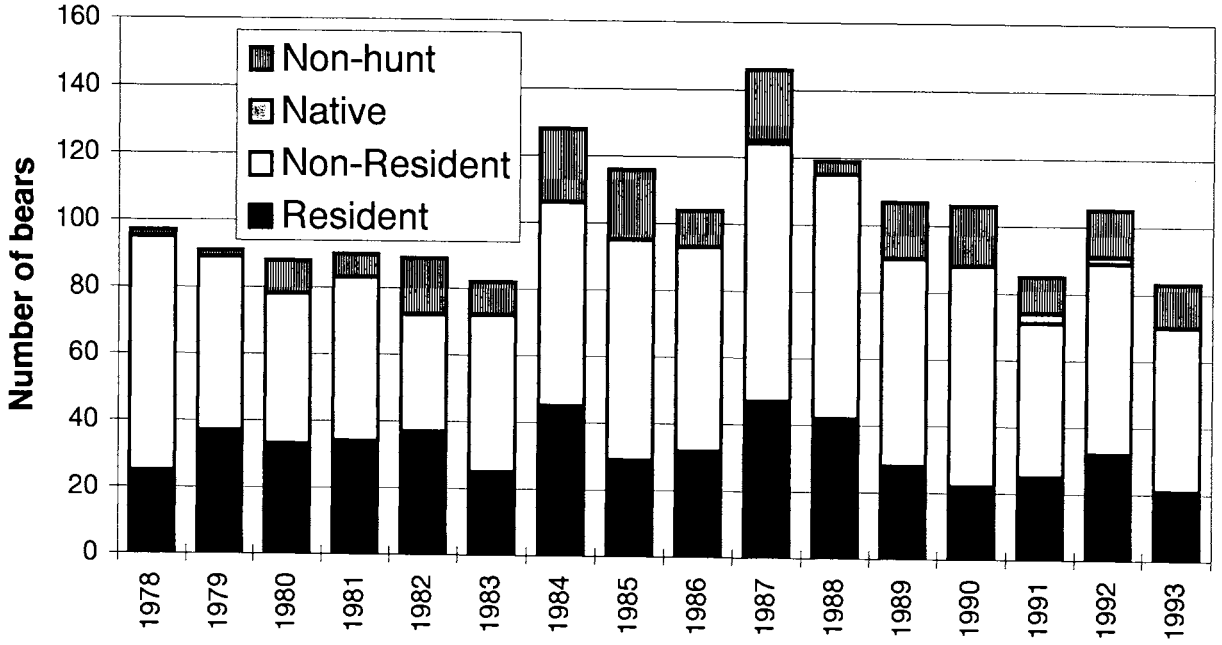

Fig. 5. Total reported grizzly bear mortality by licence class in Yukon during 1978-1993

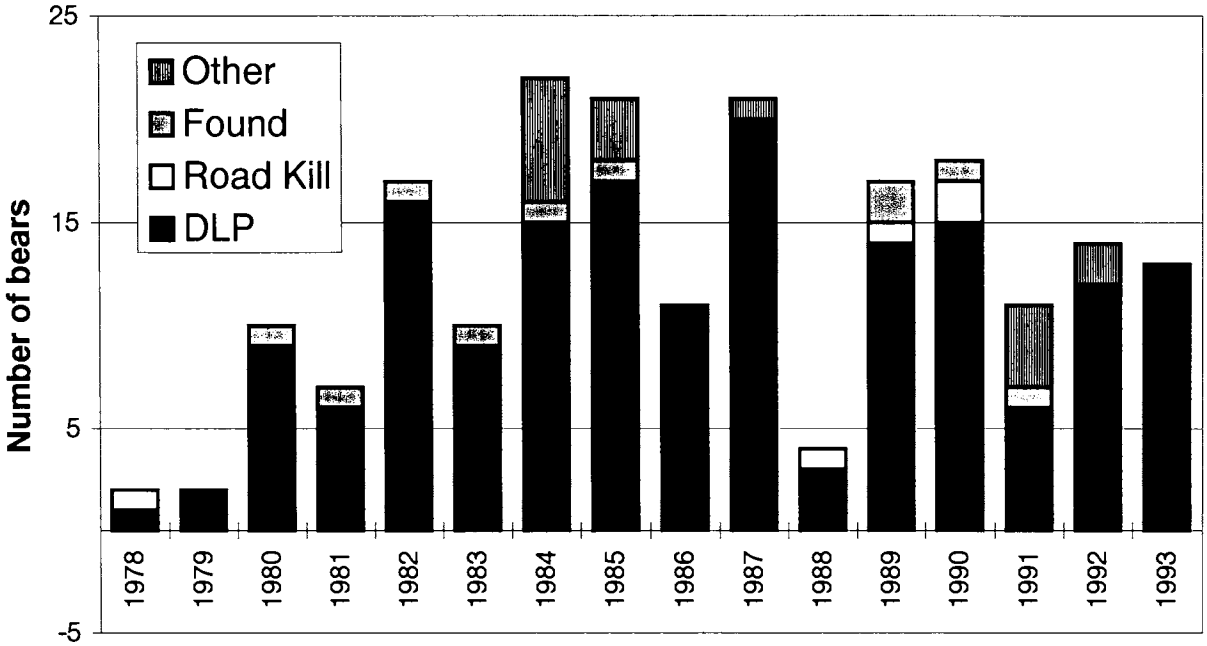

Fig. 6. Total reported non-hunting grizzly bear mortality in Yukon, 1978-1993

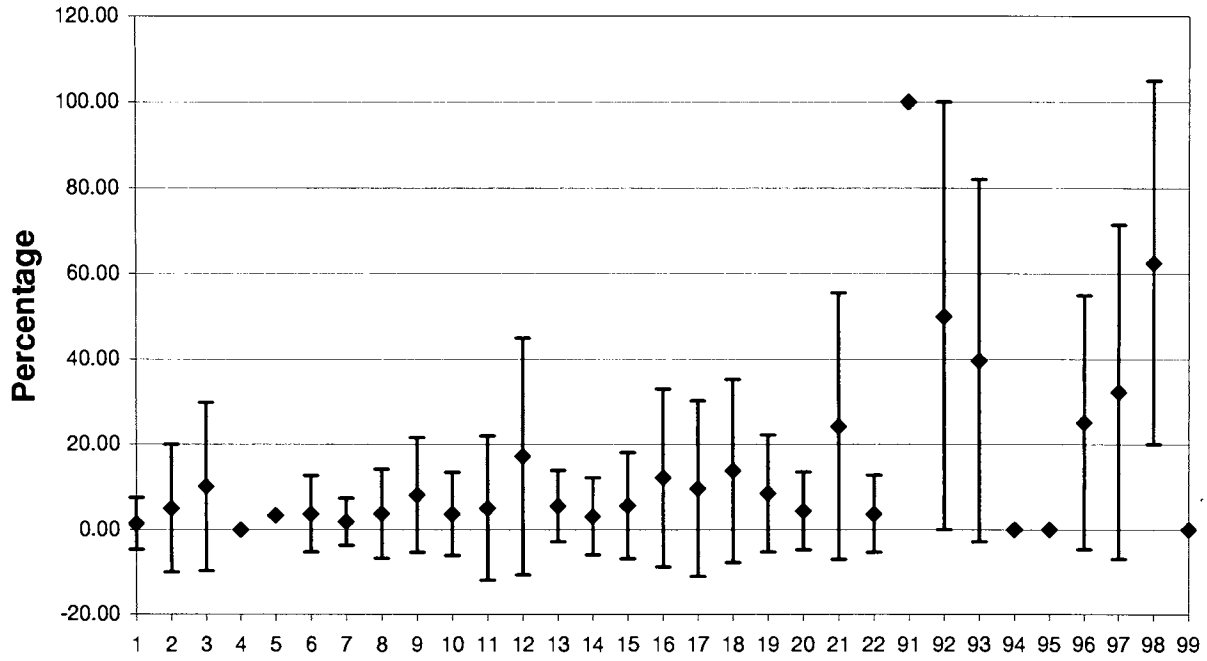

Fig. 7. Mean annual percentage non-hunting mortality (+/- 1 S.D.) of total reported grizzly bear mortality, by area, 1978-1993

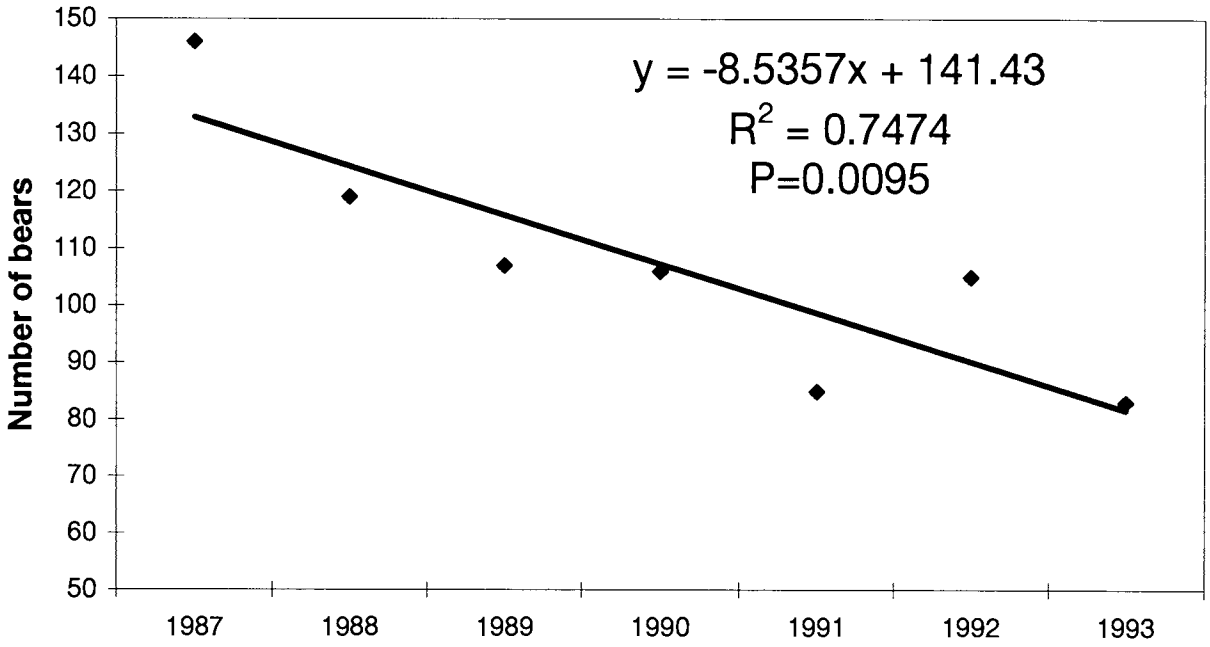

Fig. 8. Total reported grizzly bear mortality in Yukon, 1987-1993

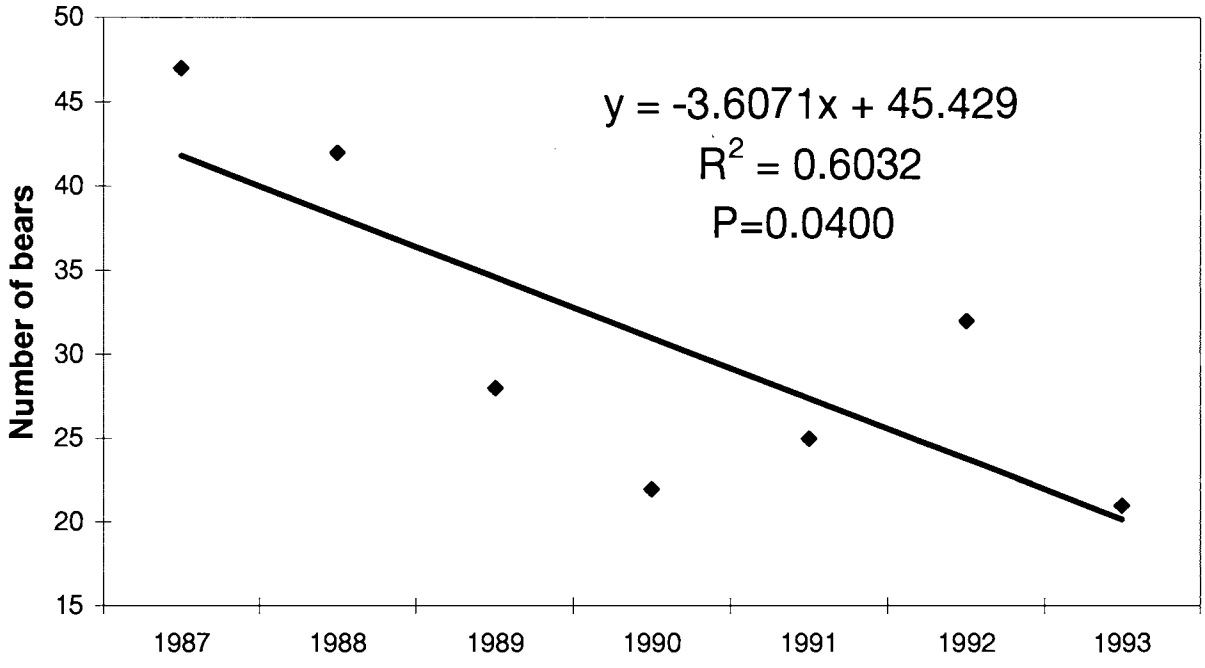

Fig. 9. Reported grizzly bear harvest by resident hunters in Yukon, 1987-1993

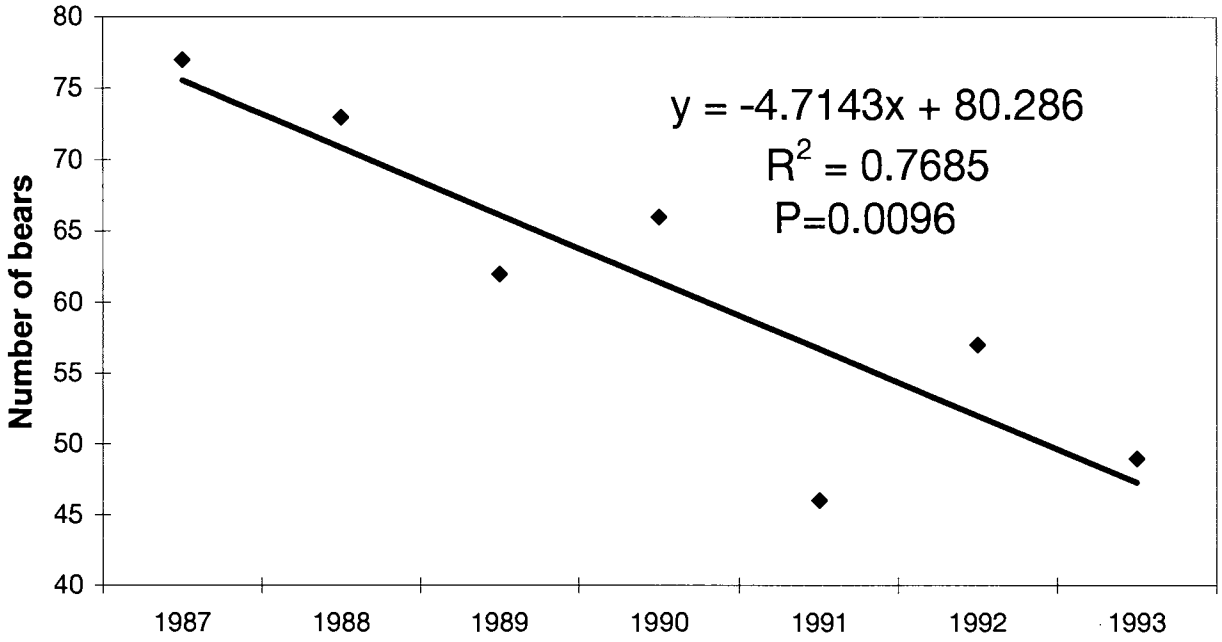

Fig. 10. Reported grizzly bear harvest by non-resident hunters in Yukon, 1987-1993

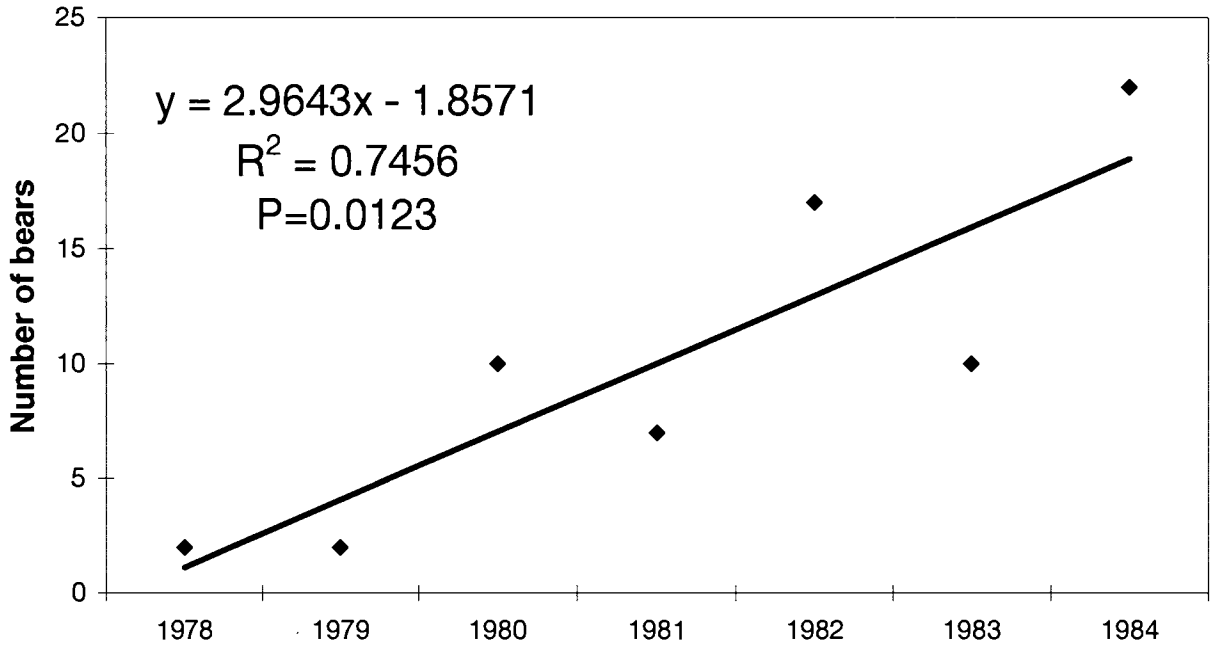

Fig. 11. Total reported non-hunting grizzly bear mortality in Yukon, 1978-1984

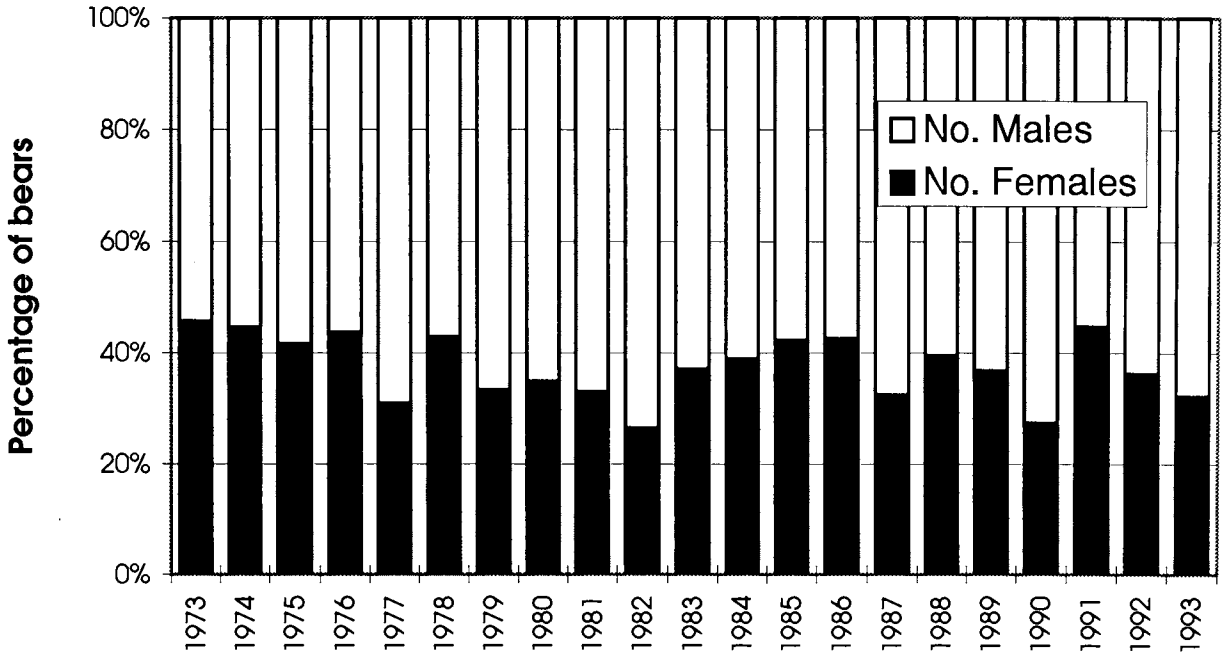

Fig. 12. Sex composition of total reported grizzly bear mortality in Yukon, during 1978-1993

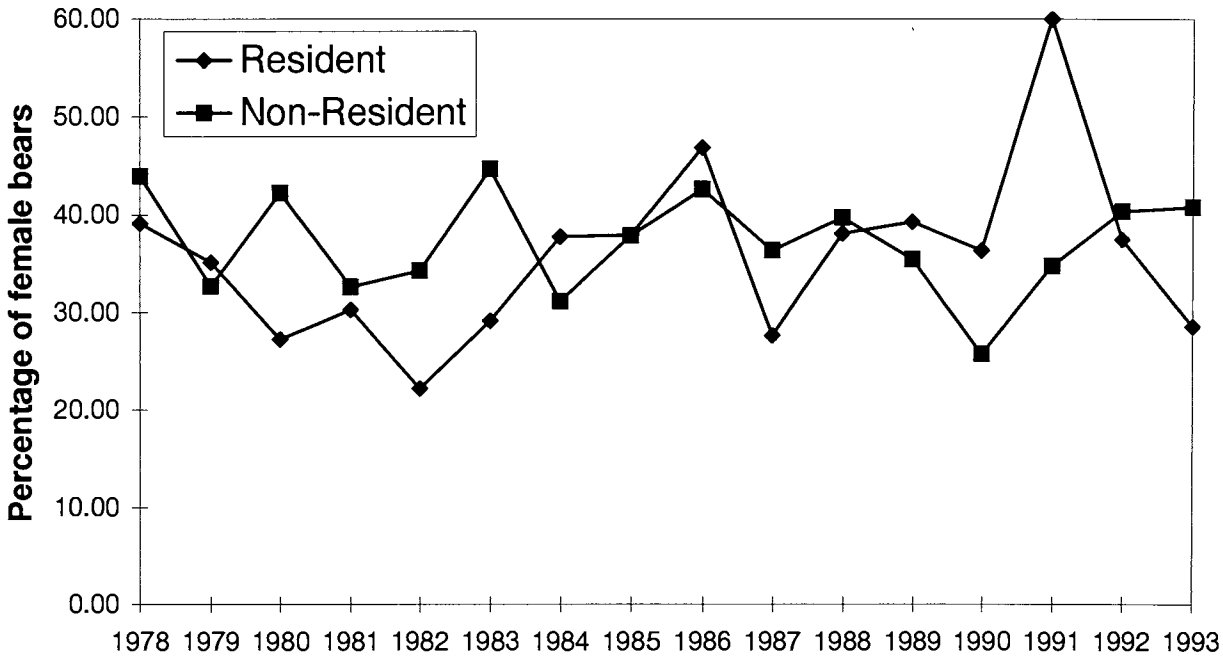

Fig. 13. Percentage females in reported resident and non-resident grizzly bear harvest in Yukon, during 1978-1993

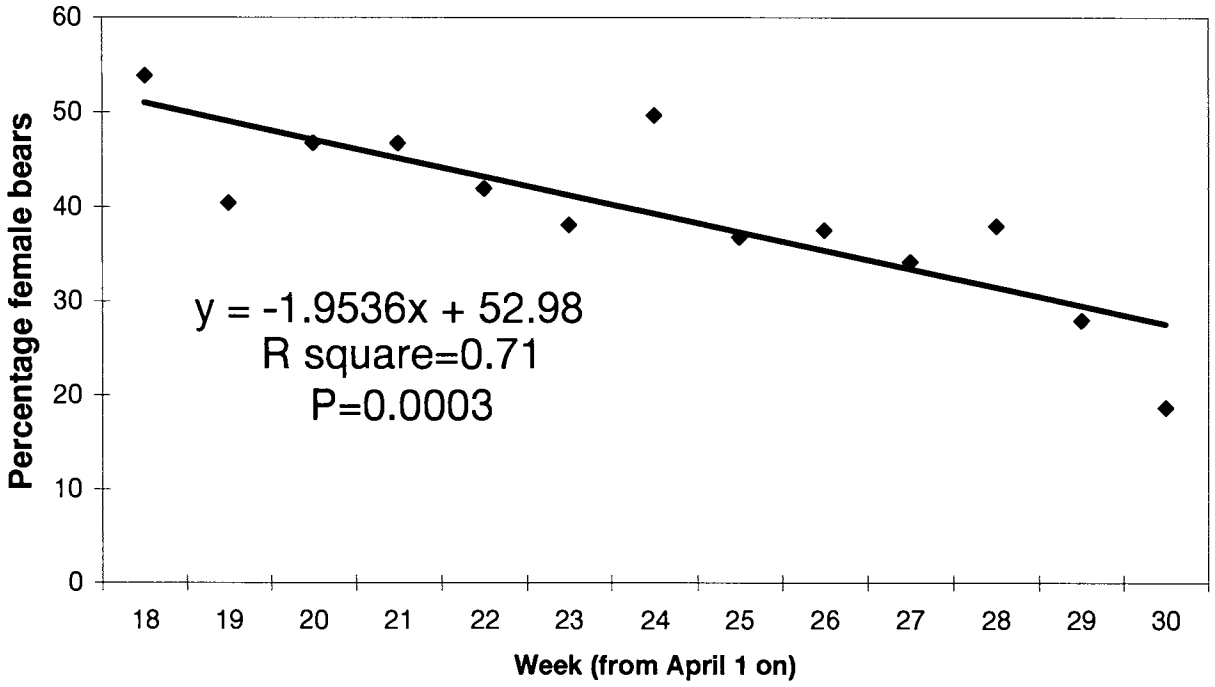

Fig. 14. Percentage female grizzly bears in weekly autumn harvest during 1973-1993 (only weeks with >10 kills were used in the analysis)

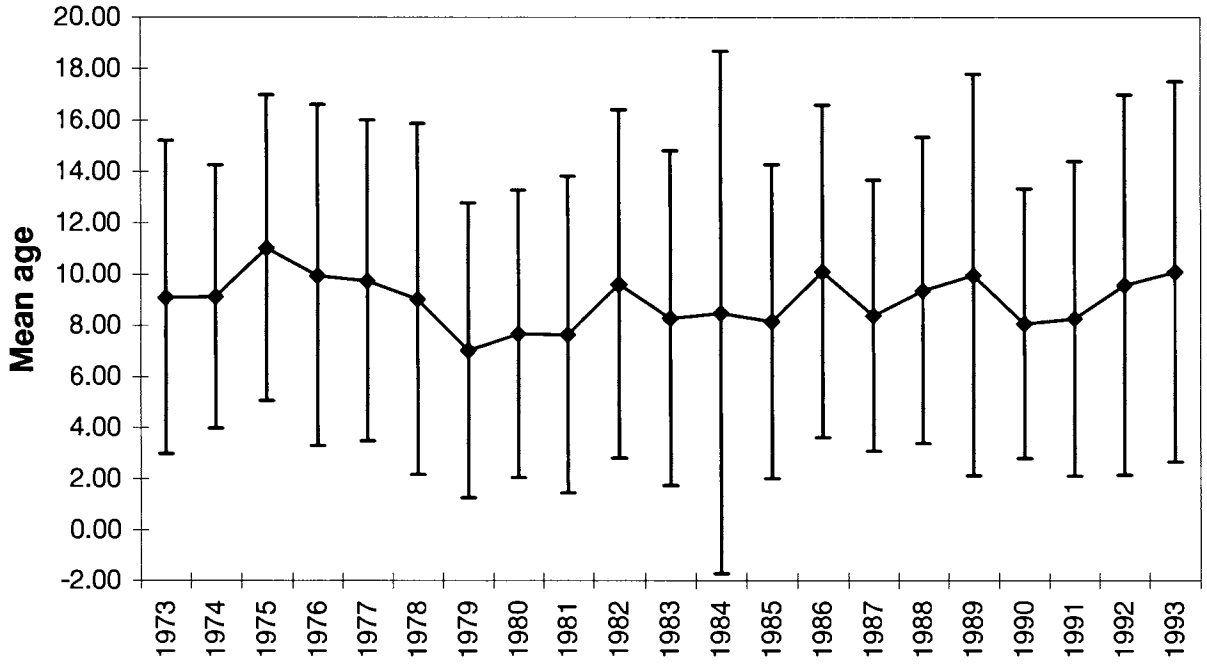

Fig. 15. Mean age (+/- S.D.) of all reported grizzly bear mortalities in Yukon, 1973-1993

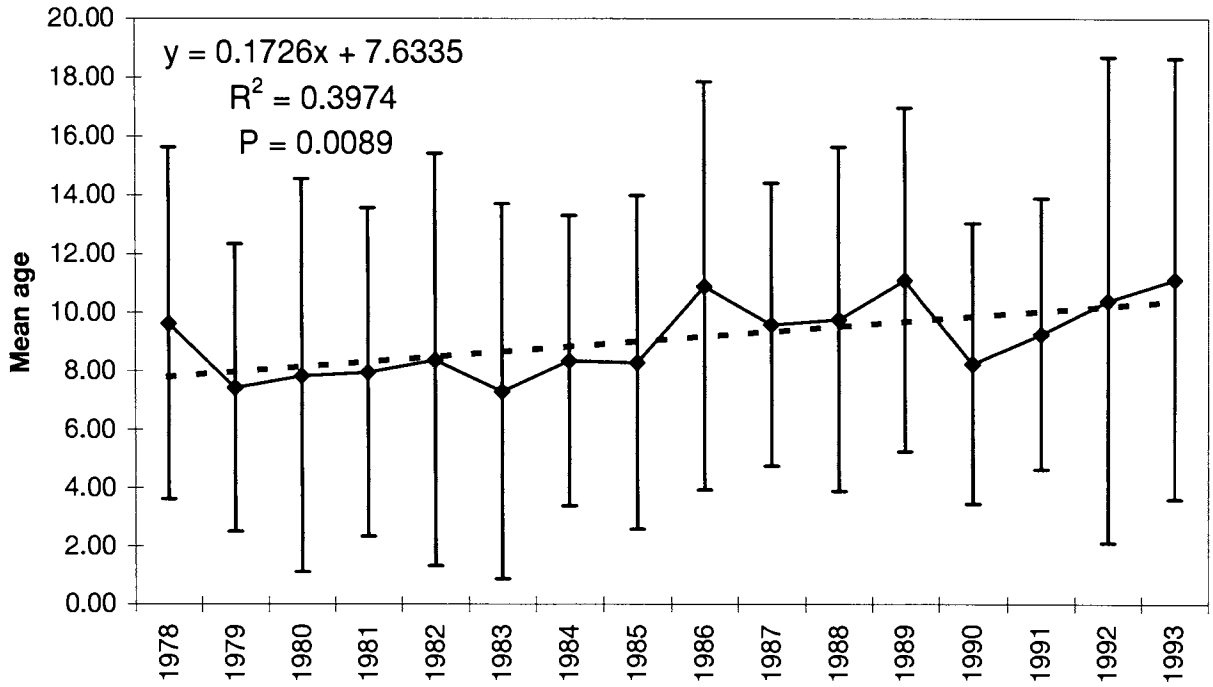

Fig. 16. Mean age (+/- S.D.) of grizzly bears in the non-resident harvest in Yukon, 1978-1993

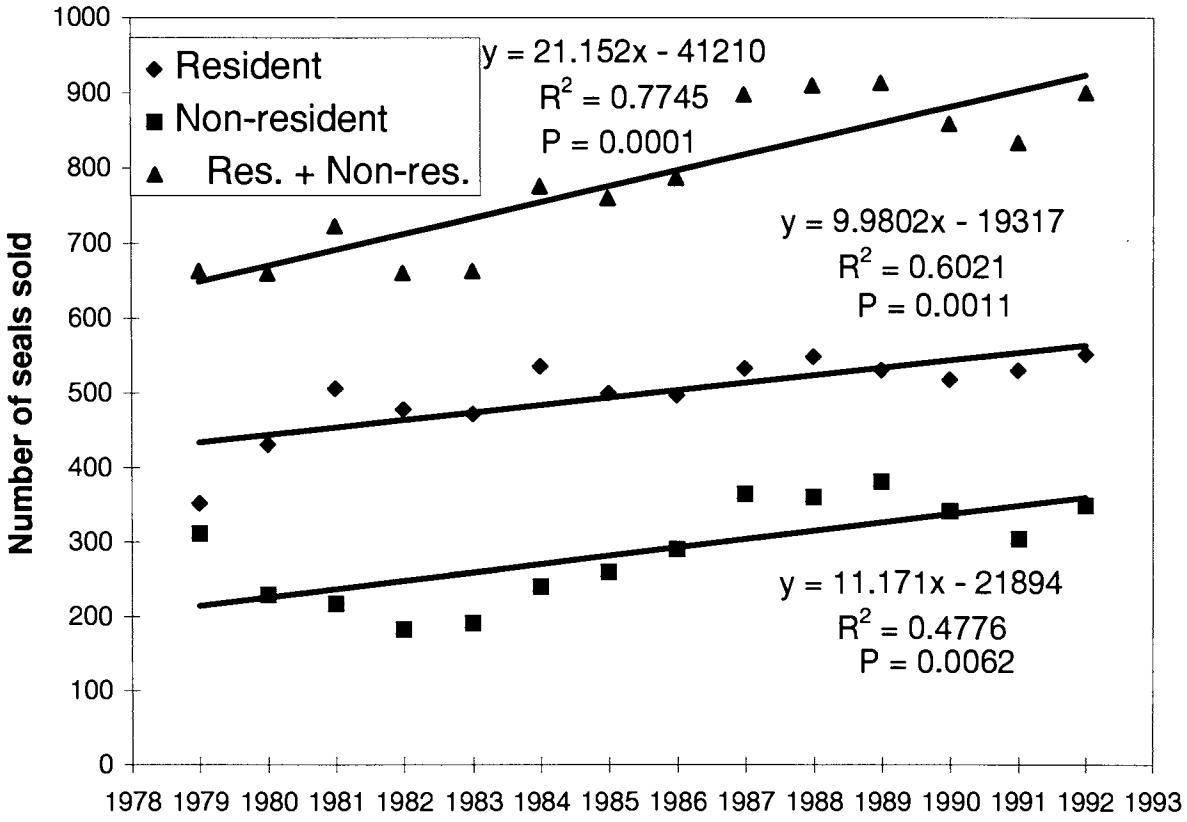

Fig. 17. Hunting effort for grizzly bears by residents and non-residents in Yukon as indicated by the number of seals sold.

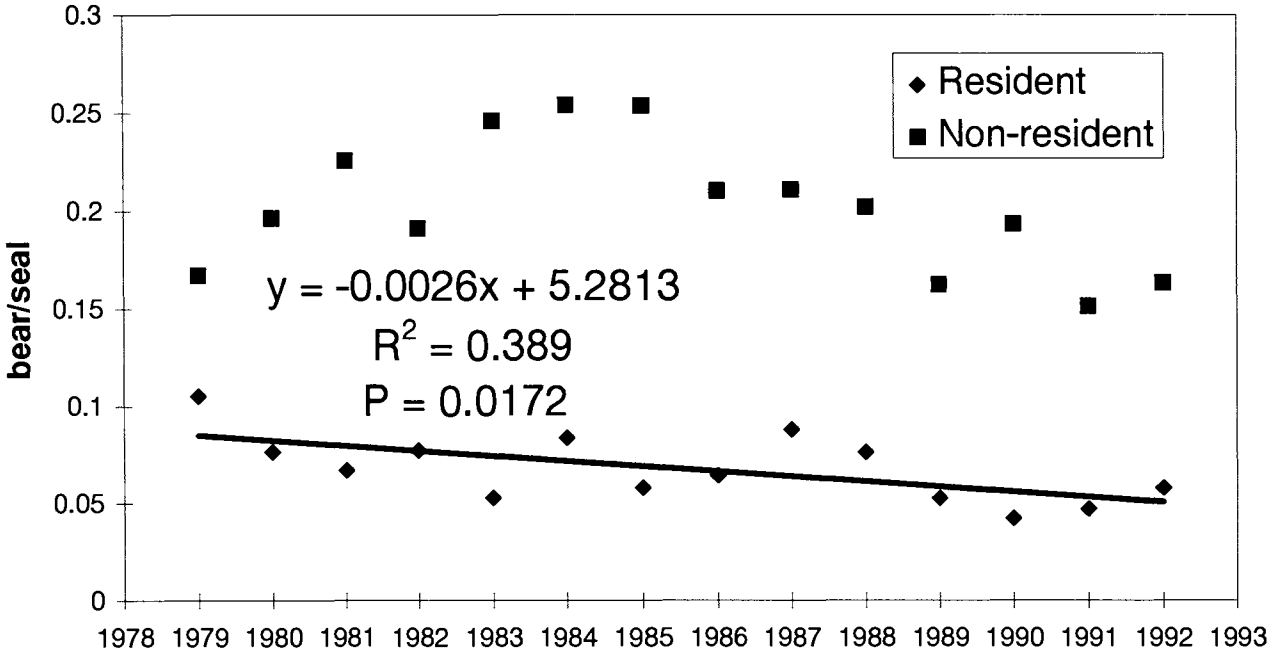

Fig. 18. Hunter success by residents and non-residents in Yukon as determined by the number of grizzly bears harvested per seal purchased, during 1979-1992

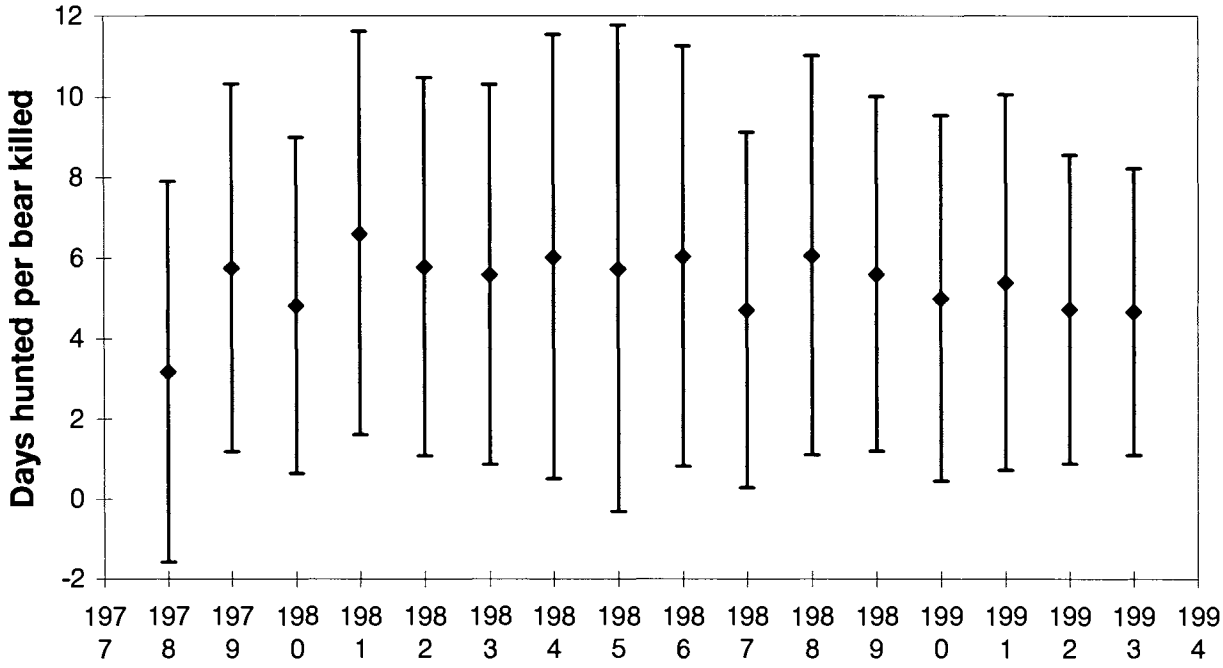

Fig. 19. Mean annual hunting effort (+/- 1 S.D.)for grizzly bears by resident and non-resident hunters in Yukon Territory during 1978-1993

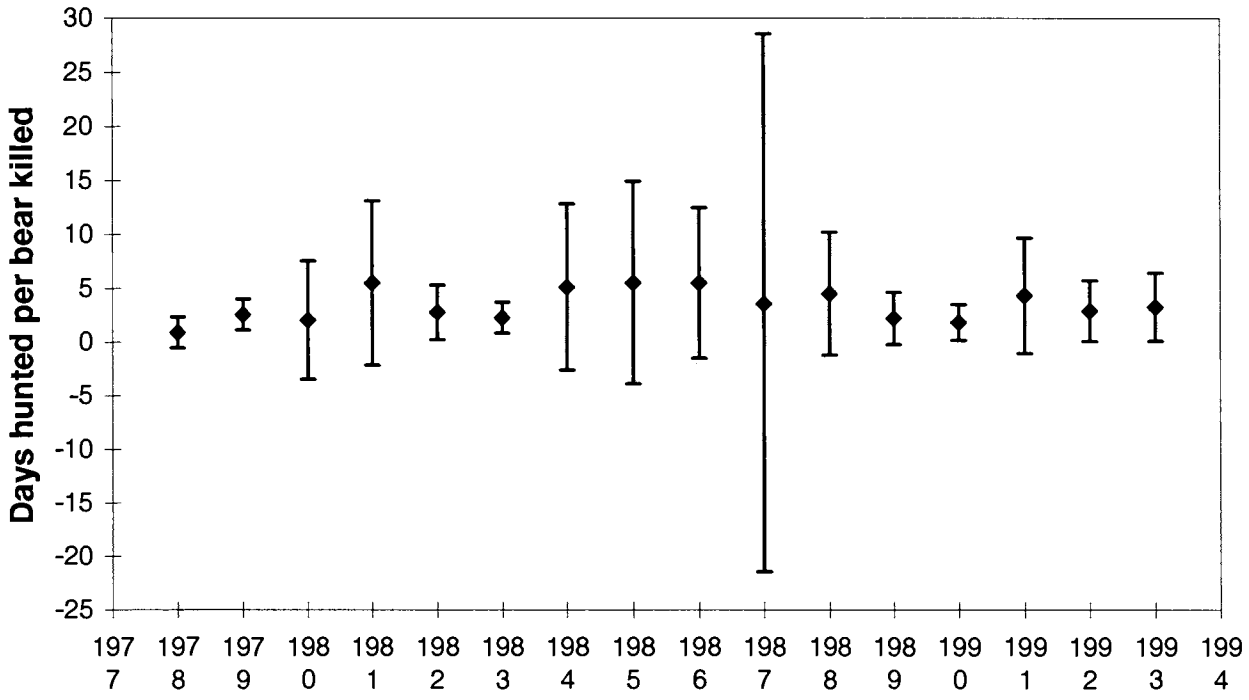

Fig. 20. Mean annual hunting effort (+/- 1 S.D.) for grizzly bears by resident hunters in Yukon Territory during 1978-1993

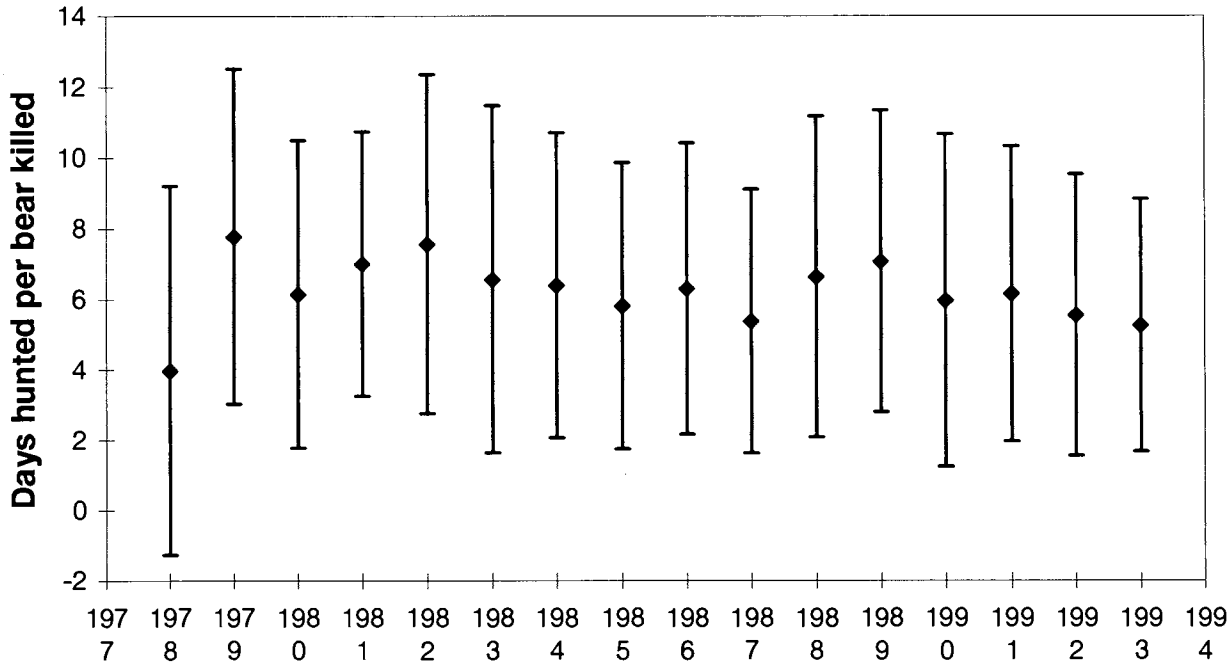

Fig. 21. Mean annual hunting effort (+/- 1 S.D.) for grizzly bears by non-resident hunters in Yukon Territory during 1978-1993

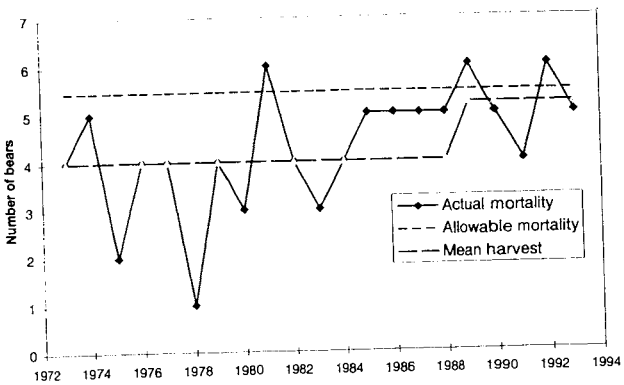

Fig 22a. Reported and allowable annual mortalities of male grizzly bears in management area no.1, during 1973-1993

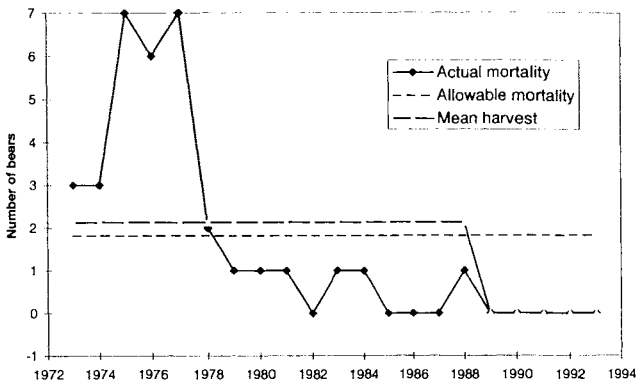

Fig. 22b. Reported and allowable annual mortalities of female grizzly bears in management area no.1, during 1973-1993

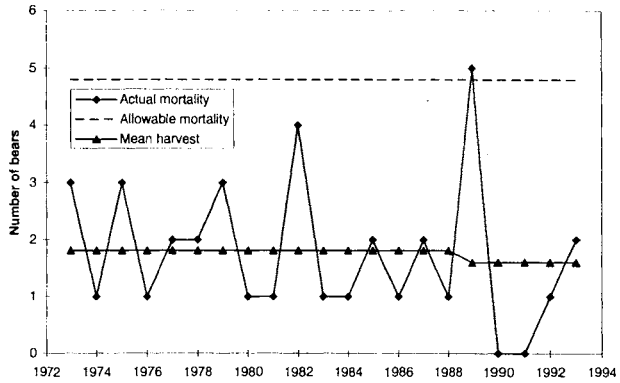

Fig. 23a. Reported and allowable annual mortalities of male grizzly bears in management area no.2, during 1973-1993

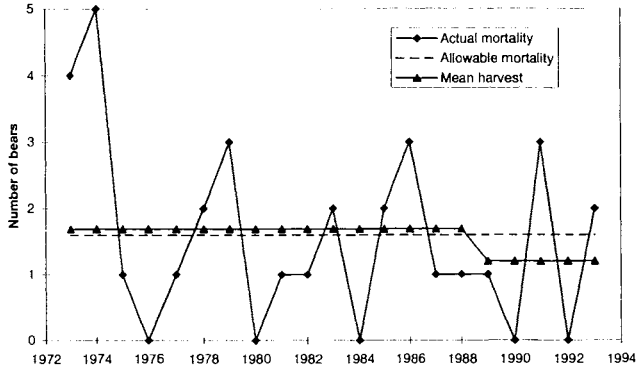

Fig. 23b. Reported and allowable annual mortalities of female grizzly bears in management area no.2, during 1973-1993

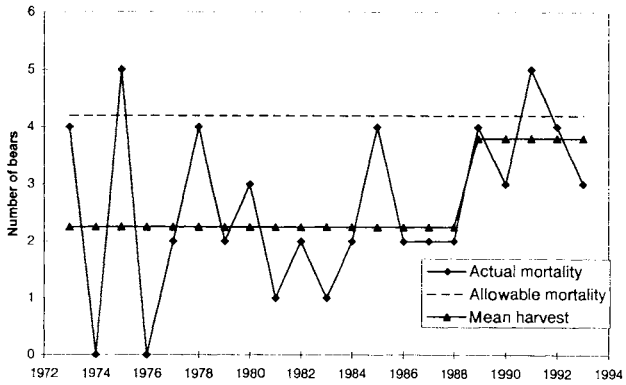

Fig. 24a. Reported and allowable annual mortalities of male grizzly bears in management area no.3, during 1973-1993

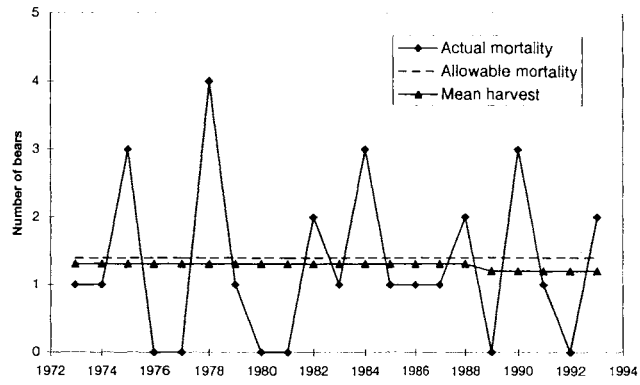

Fig. 24b. Reported and allowable annual mortalities of female grizzly bears in management area no.3, during 1973-1993

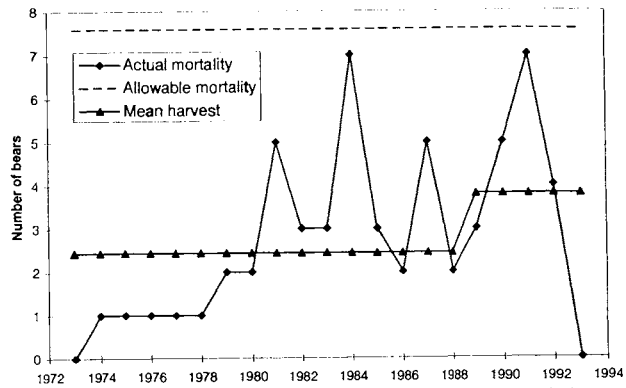

Fig. 25a. Reported and allowable annual mortalities of male grizzly bears in management area no.4, during 1973-1993

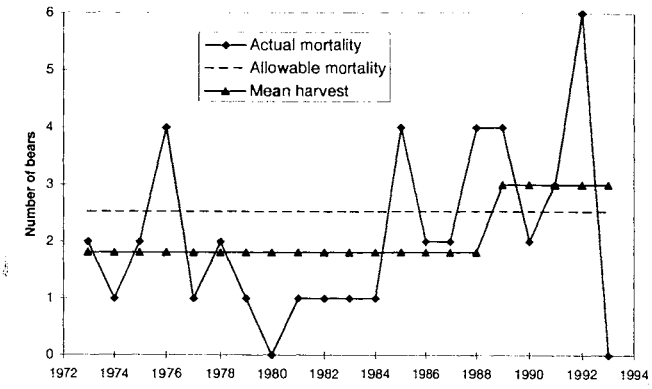

Fig. 25b. Reported and allowable annual mortalities of female grizzly bears in management area no.4, during 1973-1993

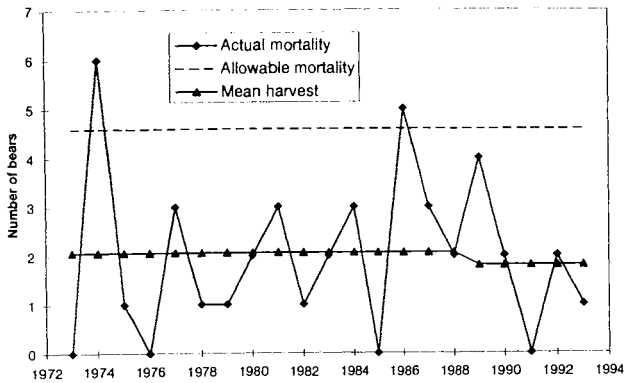

Fig. 26a. Reported and allowable annual mortalities of male grizzly bears in management area no.5, during 1973-1993

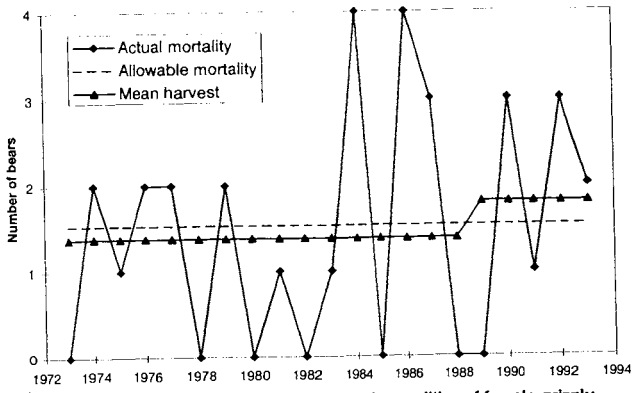

Fig. 26b. Reported and allowable annual mortalities of female grizzly bears in management area no.5, during 1973-1993

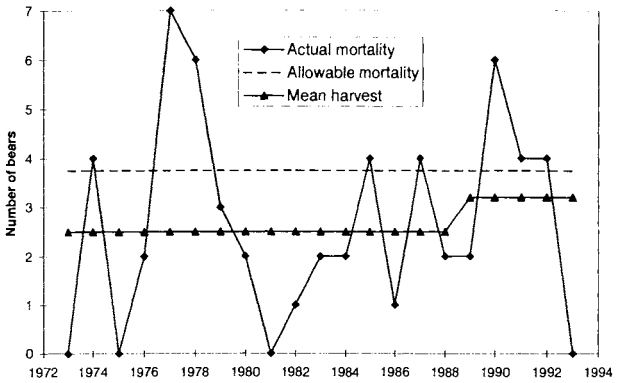

Fig. 27a. Reported and allowable annual mortalities of male grizzly bears in management area no.6, during 1973-1993

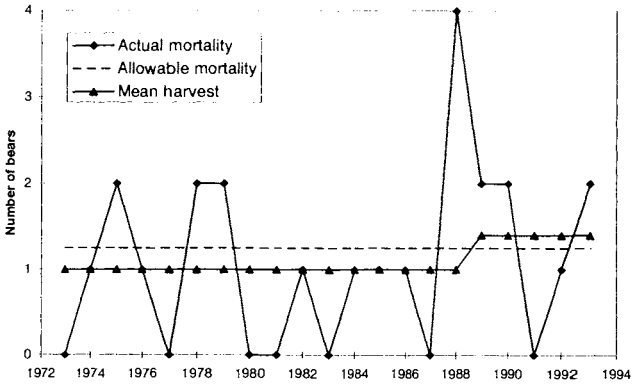

Fig. 27b. Reported and allowable annual mortalities of female grizzly bears in management area no.6, during 1973-1993

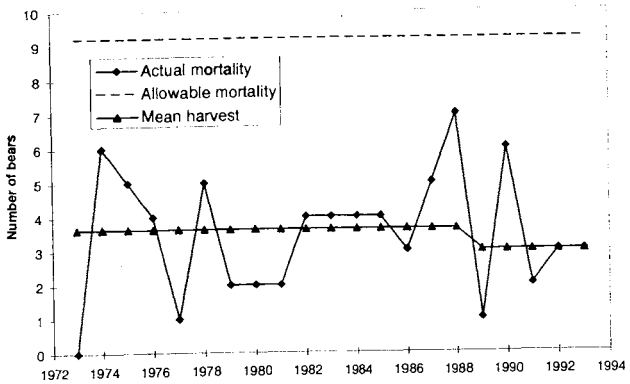

Fig. 28a. Reported and allowable annual mortalities of male grizzly bears in management area no. 7, during 1973-1993

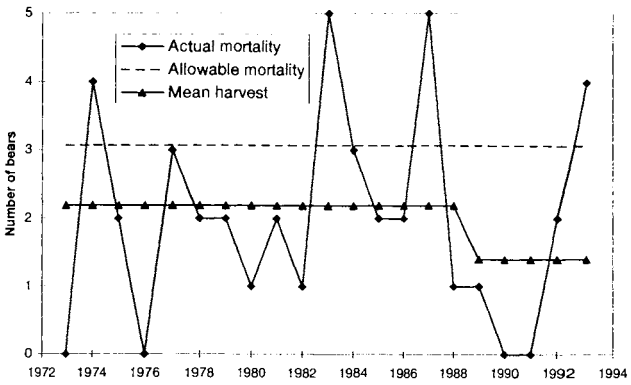

Fig. 28b. Reported and allowable annual mortalities of female grizzly bears in management area no.7, during 1973-1993

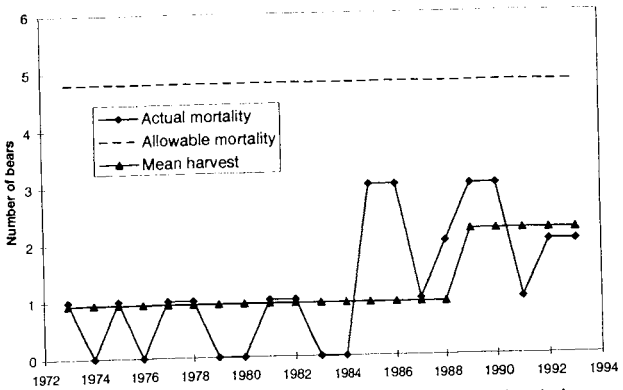

Fig. 29a. Reported and allowable annual mortalities of male grizzly bears in management area no.8, during 1973-1993

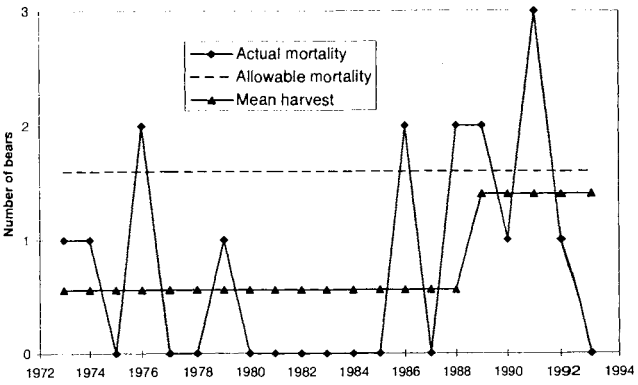

Fig. 29b. Reported and allowable annual mortalities of female grizzly bears in management area no.8, during 1973-1993

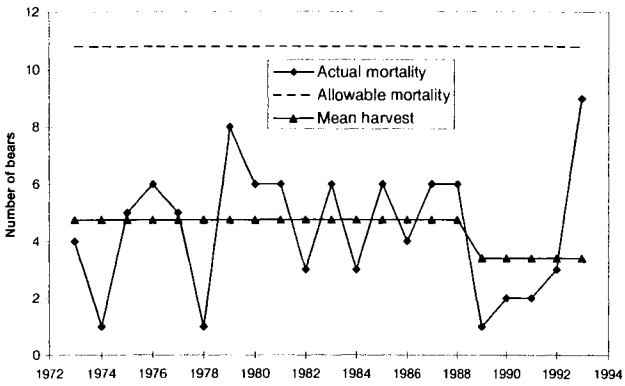

Fig. 30a. Reported and allowable annual mortalities of male grizzly bears in management area no.9, during 1973-1993

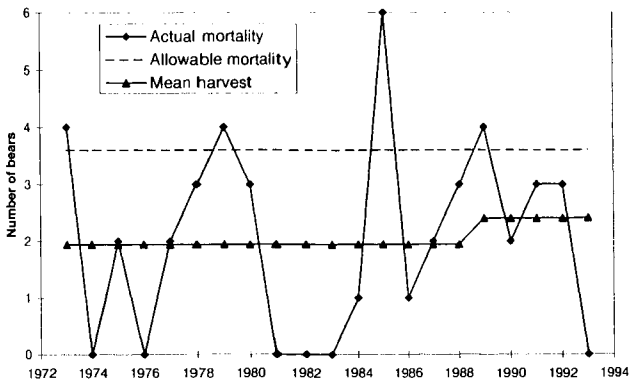

Fig. 30b. Reported and allowable annual mortalities of female grizzly bears in management area no.9, during 1973-1993

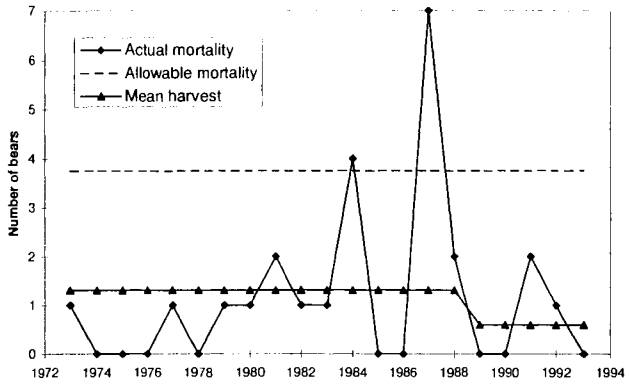

Fig. 31a. Reported and allowable annual mortalities of male grizzly bears in management area no.10, during 1973-1993

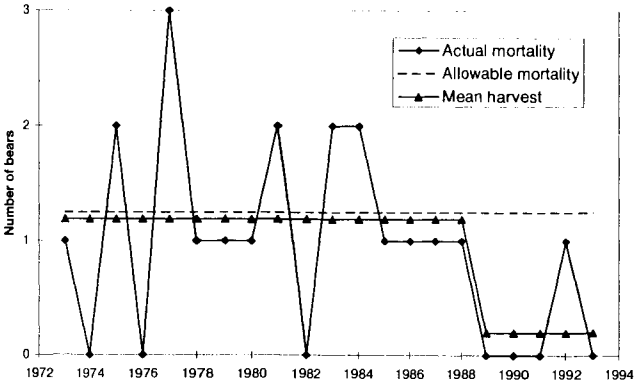

Fig. 31b. Reported and allowable annual mortalities of female grizzly bears in management area no.10, during 1973-1993

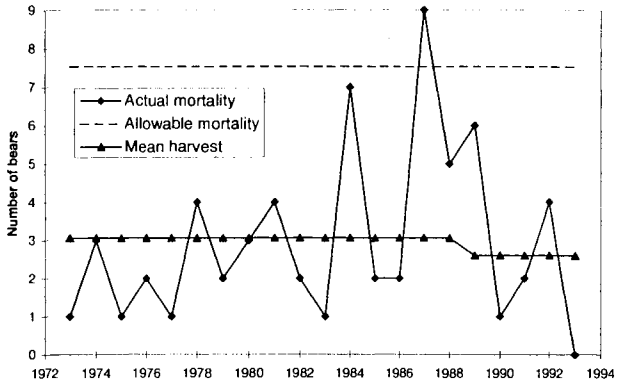

Fig. 32a. Reported and allowable annual mortalities of male grizzly bears in management area no.11, during 1973-1993

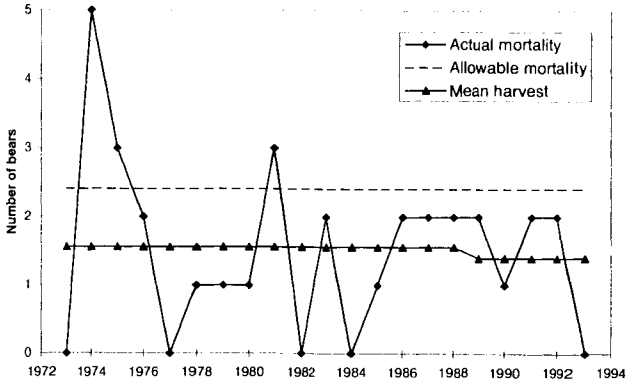

Fig. 32b. Reported and allowable annual mortalities of female grizzly bears in management area no.11, during 1973-1993

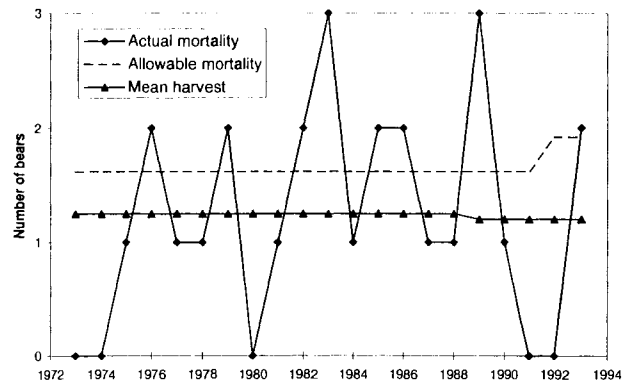

Fig. 33a. Reported and allowable annual mortalities of male grizzly bears in management area no.12, during 1973-1993

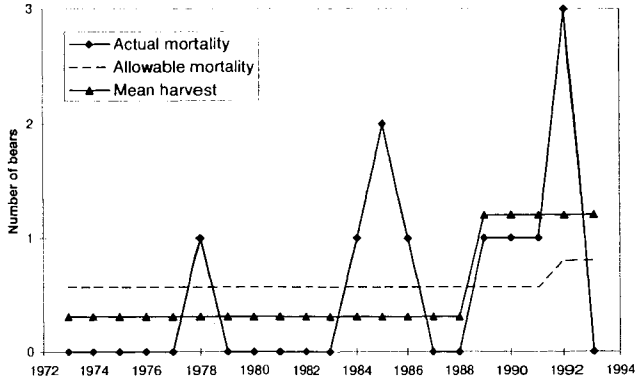

fig. 33b. Reported and allowable annual mortalities of female grizzly bears in management area no.12, during 1973-1993

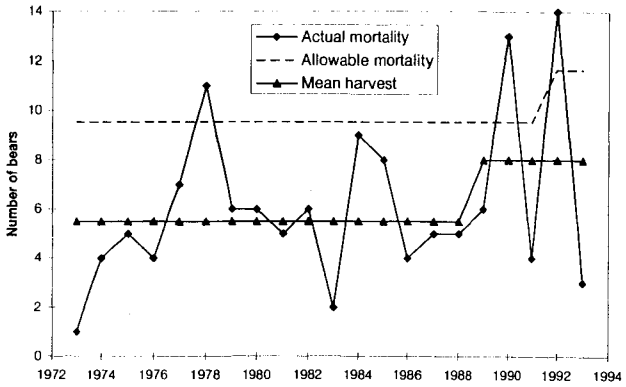

Fig. 34a. Reported and allowable annual mortalities of male grizzly bears in management area no.13, during 1973-1993

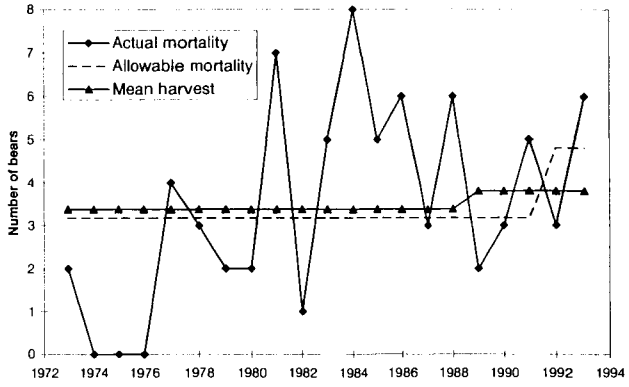

Fig. 34b. Reported and allowable annual mortalities of female grizzly bears in management area no.13, during 1973-1993

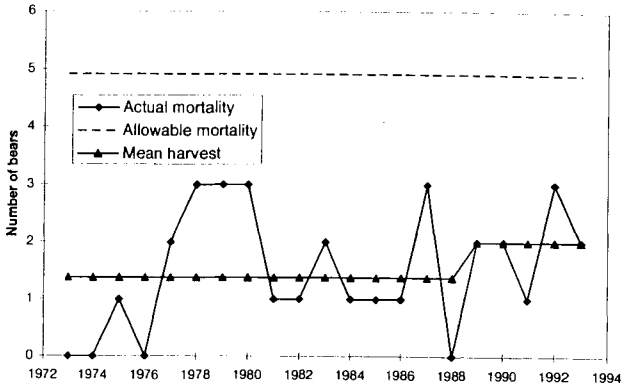

Fig. 35a. Reported and allowable annual mortalities of male grizzly bears in management area no.14, during 1973-1993

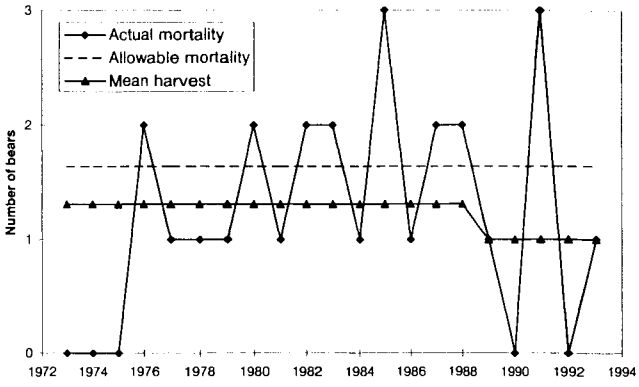

Fig. 35b. Reported and allowable annual mortalities of female grizzly bears in management area no.14, during 1973-1993

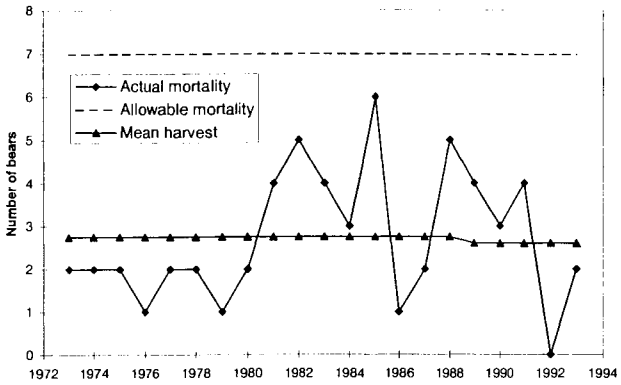

Fig. 36a. Reported and allowable annual mortalities of male grizzly bears in management area no.15, during 1973-1993

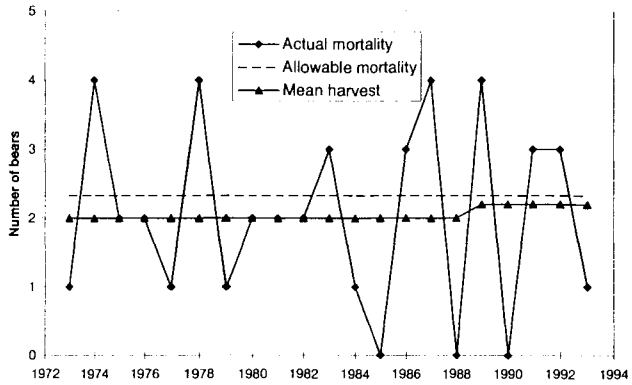

Fig. 36b. Reported and allowable annual mortalities of female grizzly bears in management area no.15, during 1973-1993

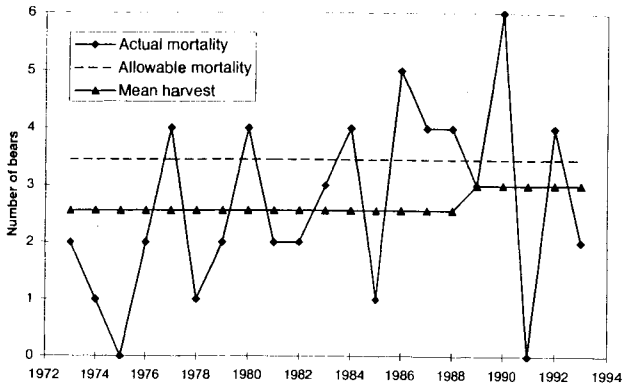

Fig. 37a. Reported and allowable annual mortalities of male grizzly bears in management area no.16, during 1973-1993

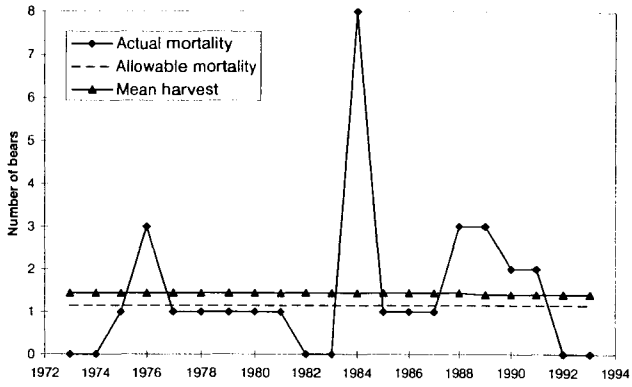

Fig. 37b. Reported and allowable annual mortalities of female grizzly bears in management area no.16, during 1973-1993

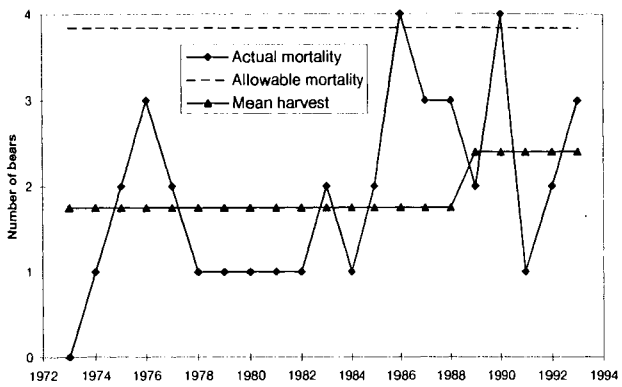

Fig. 38a. Reported and allowable annual mortalities of male grizzly bears in management area no.17, during 1973-1993

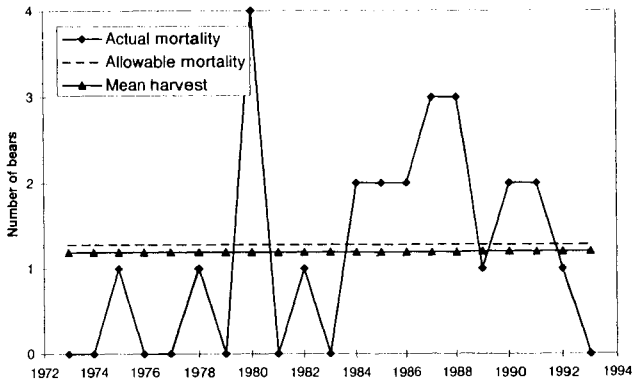

Fig. 38b. Reported and allowable annual mortalities of female grizzly bears in management area no.17, during 1973-1993

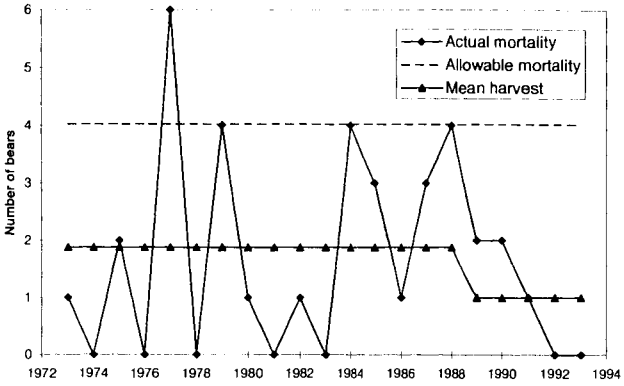

Fig. 39a. Reported and allowable annual mortalities of male grizzly bears in management area no.18, during 1973-1993

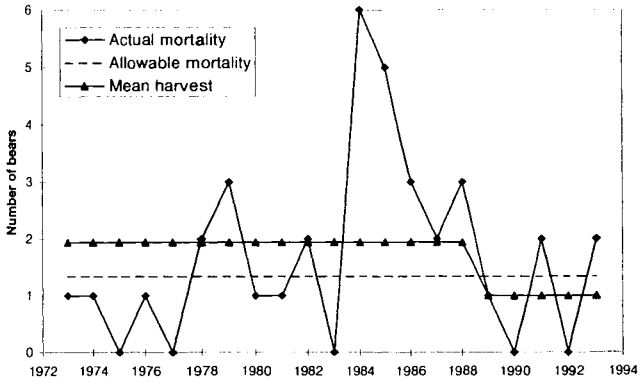

Fig. 39b. Reported and allowable annual mortalities of female grizzly bears in management area no.18, during 1973-1993

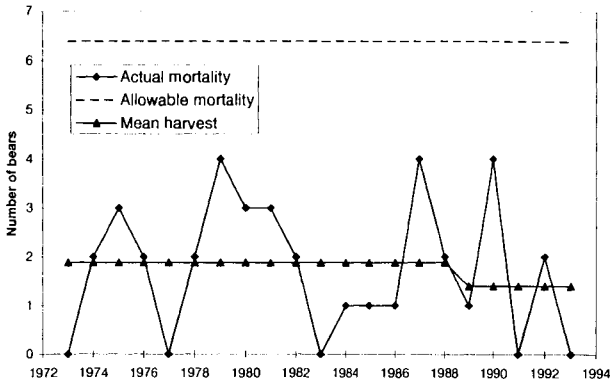

Fig. 40a. Reported and allowable annual mortalities of male grizzly bears in management area no.19, during 1973-1993

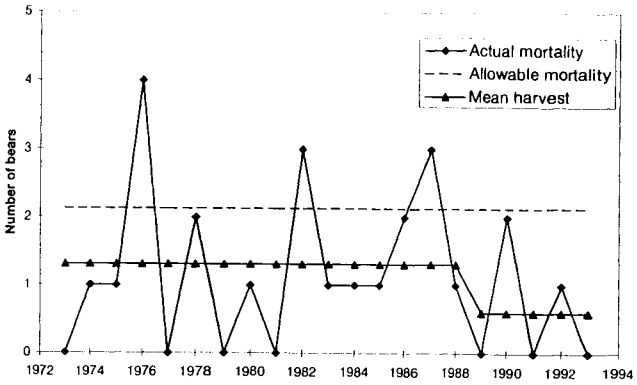

Fig. 40b. Reported and allowable annual mortalities of female grizzly bears in management area no.19, during 1973-1993

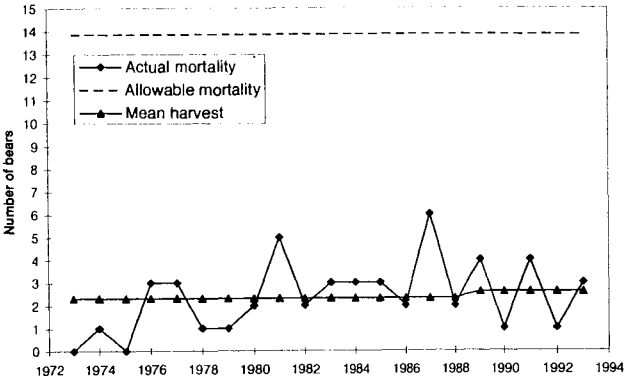

Fig. 41a. Reported and allowable annual mortalities of male grizzly bears in management area no.20,during 1973-1993

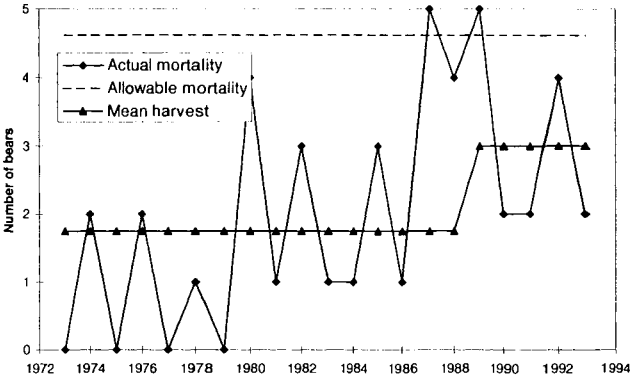

Fig. 41b. Reported and allowable annual mortalities of female grizzly bears in management area no.20, during 1973-1993

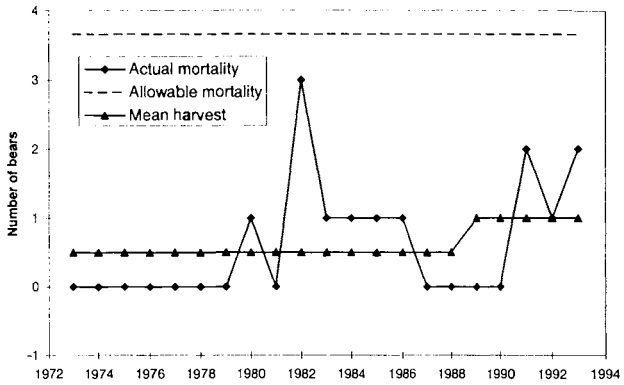

Fig. 42a. Reported and allowable annual mortalities of male grizzly bears in management area no.21, during 1973-1993

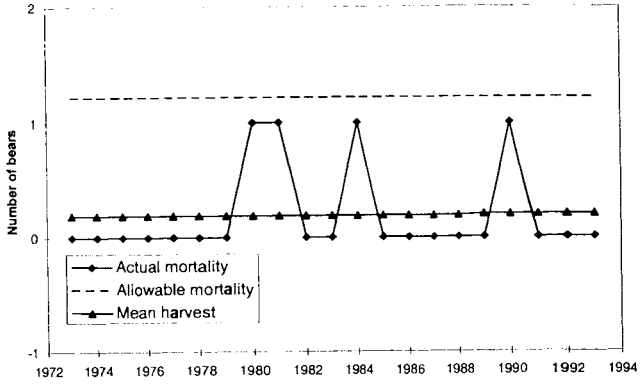

Fig. 42b. Reported and allowable annual mortalities of female grizzly bears in management area no.21, during 1973-1993

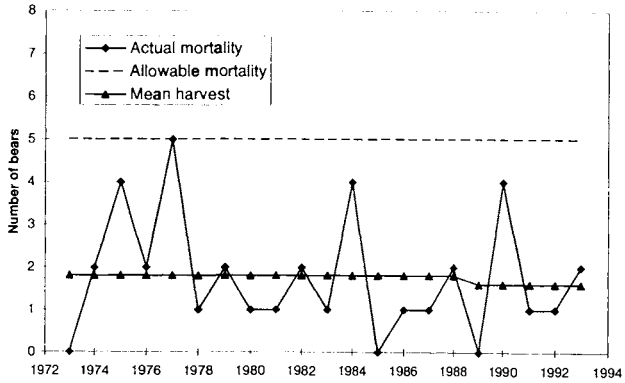

Fig. 43a. Reported and allowable annual mortalities of male grizzly bears in management area no.22, during 1973-1993

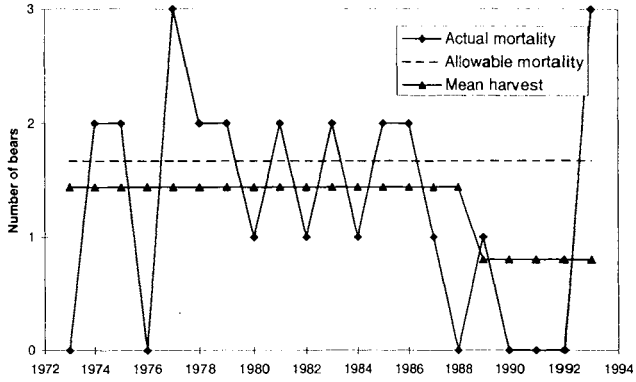

Fig. 43b. Reported and allowable annual mortalities of female grizzly bears in management area no.22, during 1973-1993

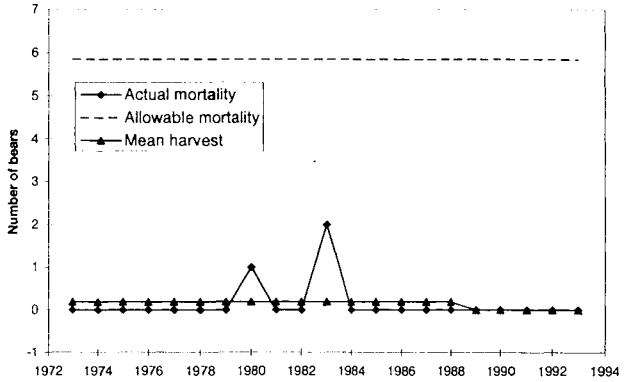

Fig. 44a. Reported and allowable annual mortalities of male grizzly bears in managementa area no.91, during 1973-1993

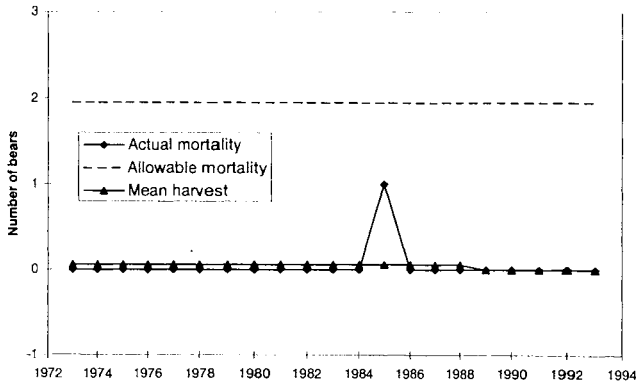

Fig. 44b. Reported and allowable annual mortalities of female grizzly bears in management area no.91, during 1973-1993

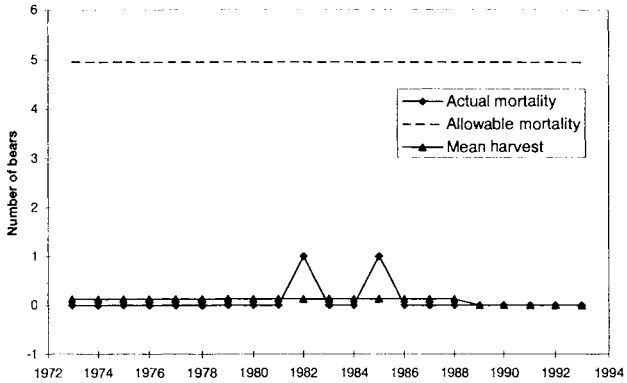

Fig. 45a. Reported and allowable annual mortalities of male grizzly bears in management area no.92, during 1973-1993

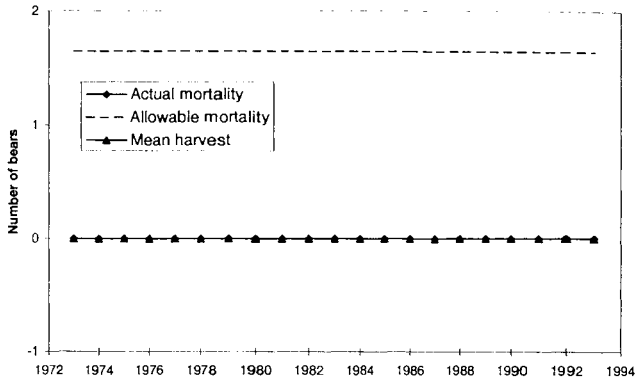

Fig. 45b. Reported and allowable annual mortalities of female grizzly bears in management area no.92, during 1973-1993

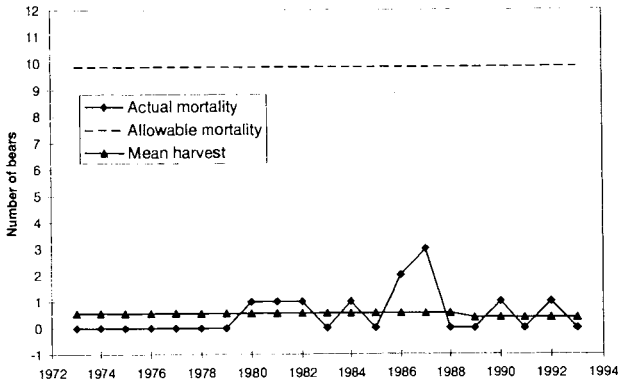

Fig. 46a. Reported and allowable annual mortalities of male grizzly bears in management area no.93, during 1973-1993

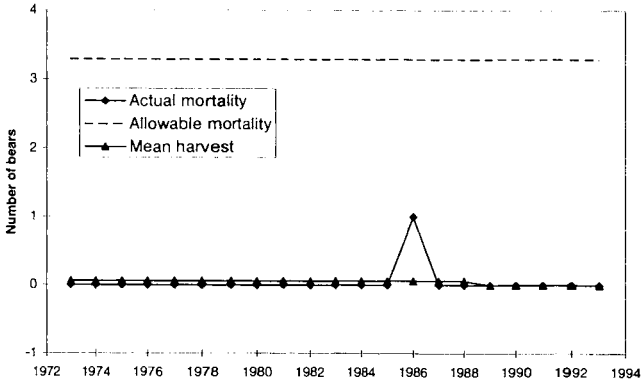

Fig. 46b. Reported and allowable annual mortalities of female grizzly bears in management area no.93, during 1973-1993

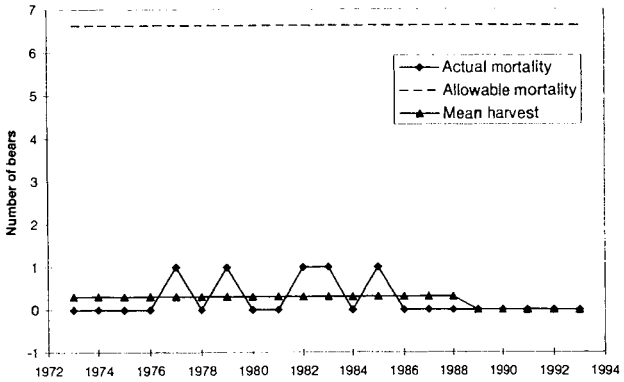

Fig. 47a. Reported and allowable annual mortalities of male grizzly bears in management area no.94, during 1973-1993

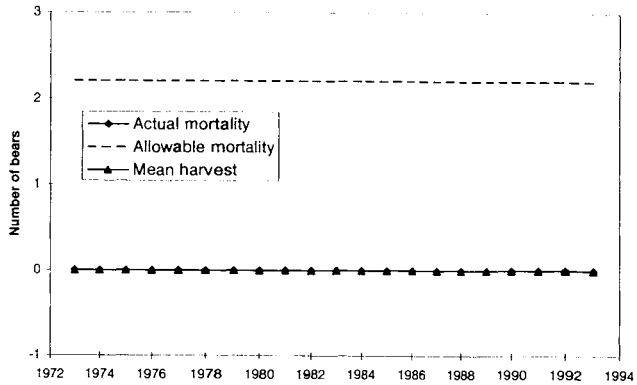

Fig. 47b. Reported and allowable annual mortalities of female grizzly bears in management area no.94, during 1973-1993

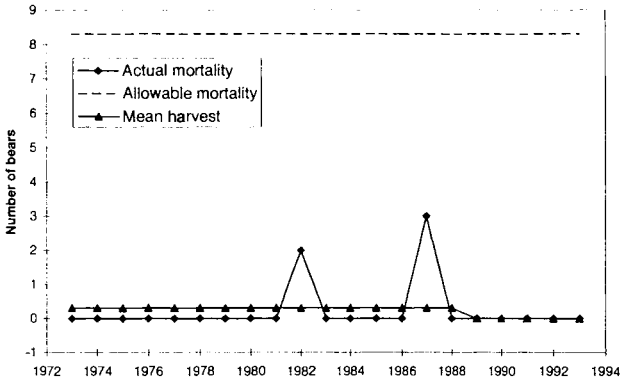

Fig. 48a. Reported and allowable annual mortalities of male grizzly bears in management area no.95, during 1973-1993

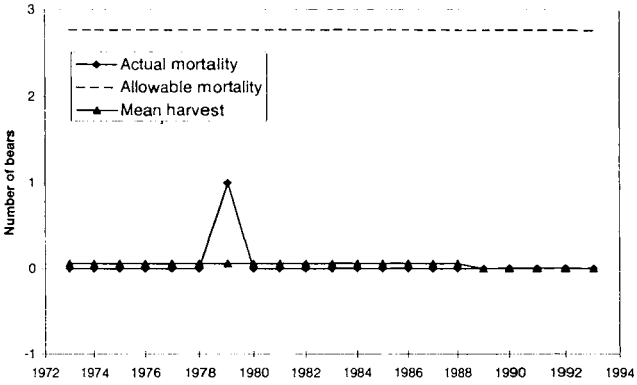

Fig. 48b. Reported and allowable annual mortalities of female grizzly bears in management area no.95, during 1973-1993

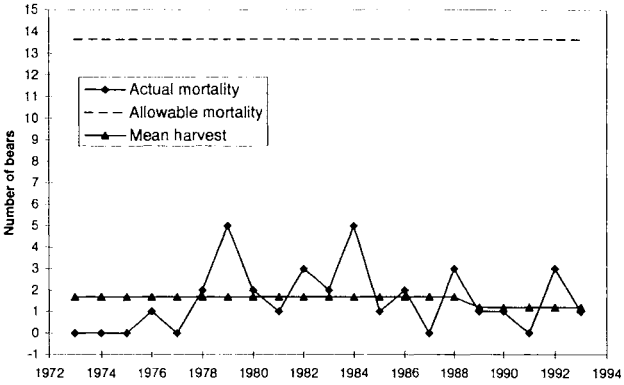

Fig. 49a. Reported and allowable annual mortalities of male grizzly bears in management area no.96, during 1973-1993

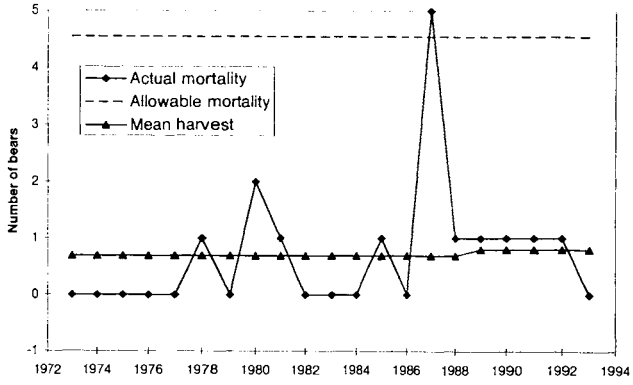

Fig. 49b. Reported and allowable annual mortalities of female grizzly bears in management area no.96, during 1973-1993

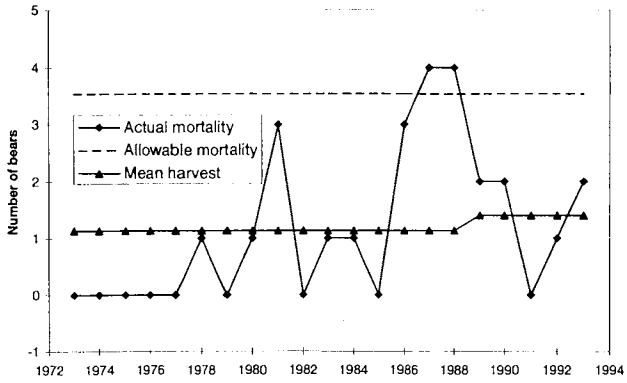

Fig. 50a. Reported and allowable annual mortalities of male grizzly bears in management area no.97, during 1973-1993

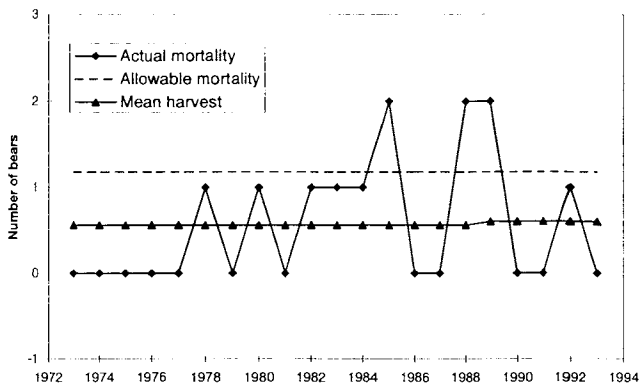

Fig. 50b. Reported and allowable annual mortalities of female grizzly bears in management area no.97, during 1973-1993

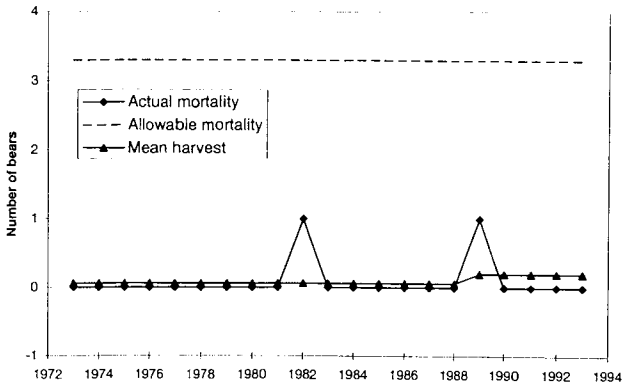

Fig. 51a. Reported and allowable annual mortalities of male grizzly bears in management area no.99, during 1973-1993

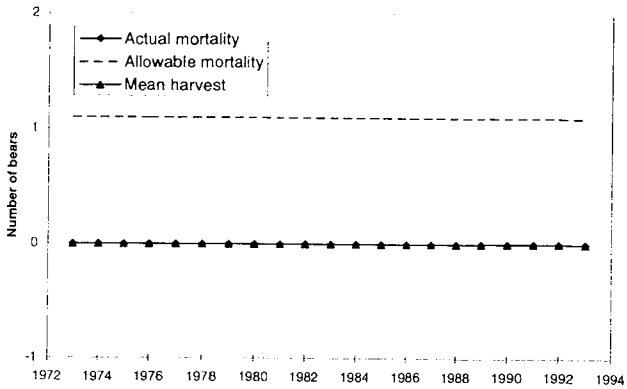

Fig. 51b. Reported and allowable annual mortalities of female grizzly bears in management area no.99, during 1973-1993

Government OF Yukon
Renewable Resources
1994 BEAR KILLS -Zone 5 and 7

	GRIZZLY				BLACK BEAR			
	SPORT		CONTROL	OTHER	SPORT		CONTROL	
	M	F	M	F	M	F	M	UNKNOWN
ZONE								
5	3	5	2	1	8	0	8	1
7	4	1	0	0	10	1	4	0
TOTAL	7	6	2	1	18	1	12	1

Source: Yukon Biological Submission Forms

Note: Control Kills are made by members of the public in defense of life or property as well as Conservation Officers.