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**WILDLIFE HIGHWAY MORTALITY
ANNUAL REPORT - 1988**

KOOTENAY NATIONAL PARK

PREPARED BY: B. R. SHEEHAN
WARDEN SERVICE
KOOTENAY NATIONAL PARK
JANUARY 21, 1989.

DISCUSSION

1988, in terms of wildlife highway mortality, recorded the highest number of road kills (72), since monitoring began in 1978; a 124% increase over 1987 (72/58). The previous high (68) was recorded in 1986. Refer to Appendix A for mortality statistics.

Whitetail deer, for the second year, were the species group having the greatest number of mortalities (23 or 31.9%), followed by elk (17 or 23.6%), and mule deer (14 or 19.4%). Coyotes (8), moose (5), and bighorn sheep (5), made up the remainder of the species normally monitored. For the first time in eleven years two timber wolves and a lynx were also highway mortalities. (Not recorded in total).

Three large ungulates species (elk, mule deer, whitetail deer) continue to be the groups sustaining the greatest number of mortalities; however, the number of individuals killed per species has changed. Prior to 1987, elk made up the majority of road kills, followed by whitetail deer and mule deer. 1987 and 1988 found whitetail deer as the species leading in road kills, followed by elk and mule deer.

Over the eleven years of monitoring, 543 mortalities were located, with elk (236 or 43.5%), whitetail deer (137 or 25.2%), and mule deer (74 or 13.6%) making up 82% of the road kills.

Four wildlife species recorded their highest number of mortalities since the monitoring program began. Mule deer showed a dramatic increase for 1988 (14), with moose (5), bighorn sheep (5), and coyote (8). Black bear were the only species not having any road kills. There were two individuals hit and not located so their status is an unknown. It should be noted that only one bighorn sheep was killed within the park. The other four were within the Radium Hot Springs townsite and included in with the statistics as they were members of the park herd.

Elk and whitetail deer showed a decline from 1987 (17 and 23 respectively); however, whitetails recorded their second highest number of road kills. The number of elk road kills was below their eleven year mean of 21. The reason for this decline is currently unknown.

With the exception of March, all months recorded at least one mortality. July topped all months with 14 road kills, followed by June (12), and August and November with 11 roads kills each. It is expected that the summer months should record the greatest number of highway mortalities, as it is the period when the Banff/Windermere sustains the highest number of vehicles - refer to Appendix B. An exception to this general rule was September. Over one hundred thousand vehicles were recorded (105072); however, there were only four mortalities during that month. (NOTE: Traffic statistics are inaccurate, vehicle counter at West Gate not functioning properly - 1987/1988, pers. com. K.Fisher, Visitor Services) The traffic statistics for November are currently unknown, although they

normally fall within the thirty thousand vehicle range (mean 32758). November is also the period when many wildlife species undertake their annual migrations to winter habitats. During this period elk, bighorn sheep, and whitetail deer accounted for 8 of the eleven road kills (4 - 3 - 1 respectively). The remaining mortalities were coyotes (2), and moose (1).

SUMMARY

1988 saw the greatest number of wildlife mortalities since the monitoring program began in 1978. For the second year in a row, whitetail deer were the species recording the highest number of road kills, a trend that started in 1986. Elk have exhibited a similar two year trend, although in a reverse direction, as their total mortality number was below the eleven year mean of 21 (17). Two conclusions that might be inferred from this change in mortality numbers are:

1. Elk are in a decline, and
2. Whitetail and Mule deer are increasing in numbers.

Further monitoring of populations and mortalities is required to prove or disprove this assumption.

APPENDIX A

WILDLIFE MORTALITY STATISTICS

1978 - 1988

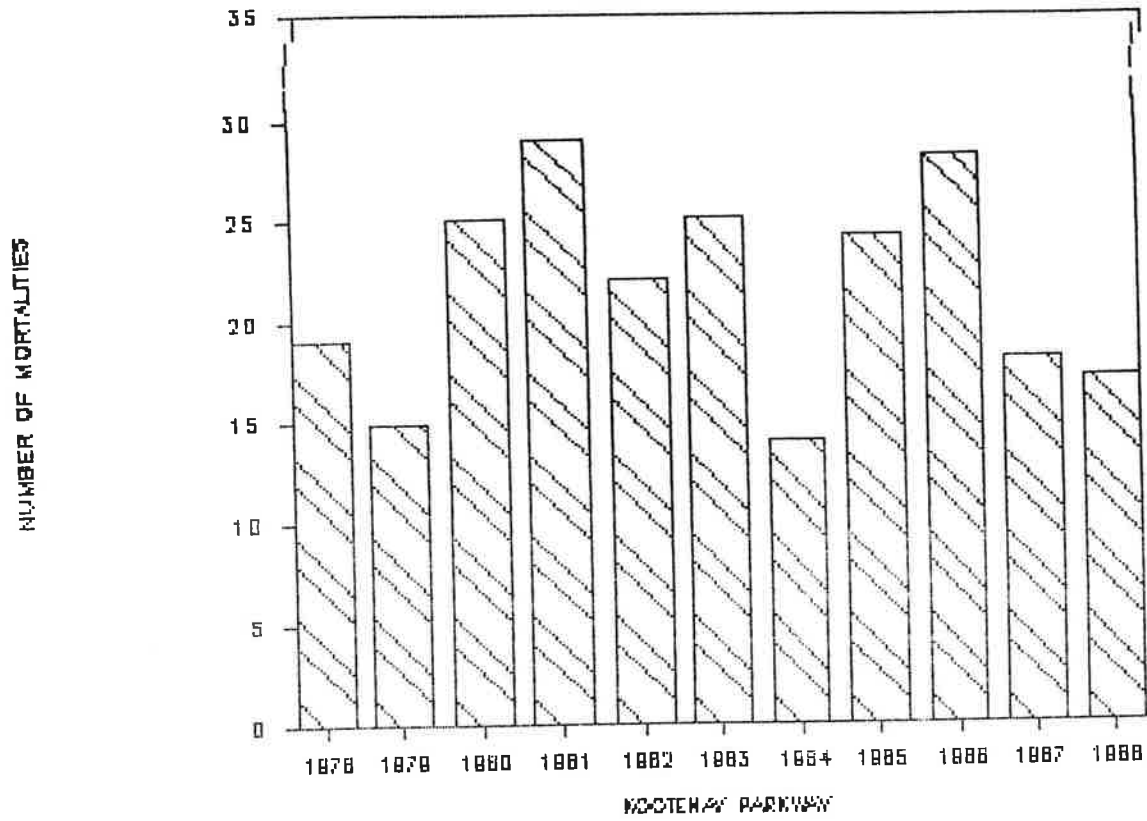
WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1988

MONTH	ELK											TOTAL	MEAN
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		
JANUARY	0	0	0	1	2	0	1	0	4	0	3	11	1.0
FEBRUARY	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MARCH	0	1	0	5	1	1	1	2	2	0	0	13	1.2
APRIL	1	0	1	2	1	2	1	2	3	0	0	13	1.2
MAY	1	0	5	3	1	2	1	1	1	1	0	16	1.5
JUNE	0	2	3	4	1	3	0	2	1	1	3	20	1.8
JULY	2	1	3	4	1	1	1	1	2	0	2	18	1.6
AUGUST	2	0	3	2	2	1	0	1	0	0	0	11	1.0
SEPTEMBER	2	2	3	0	2	2	1	1	0	2	1	16	1.5
OCTOBER	7	3	4	2	0	5	2	4	7	2	2	38	3.5
NOVEMBER	3	4	1	4	8	3	6	1	5	8	4	47	4.3
DECEMBER	1	2	2	2	3	5	0	9	3	4	2	33	3.0
TOTAL	19	15	25	29	22	25	14	24	28	18	17	236	21.5
REPORTED/NOT FOUND	0	6	0	0	2	5	0	5	3	1	3	25	
SUSPECTED MORTALITY	19	21	25	29	24	30	14	29	31	19	20	261	

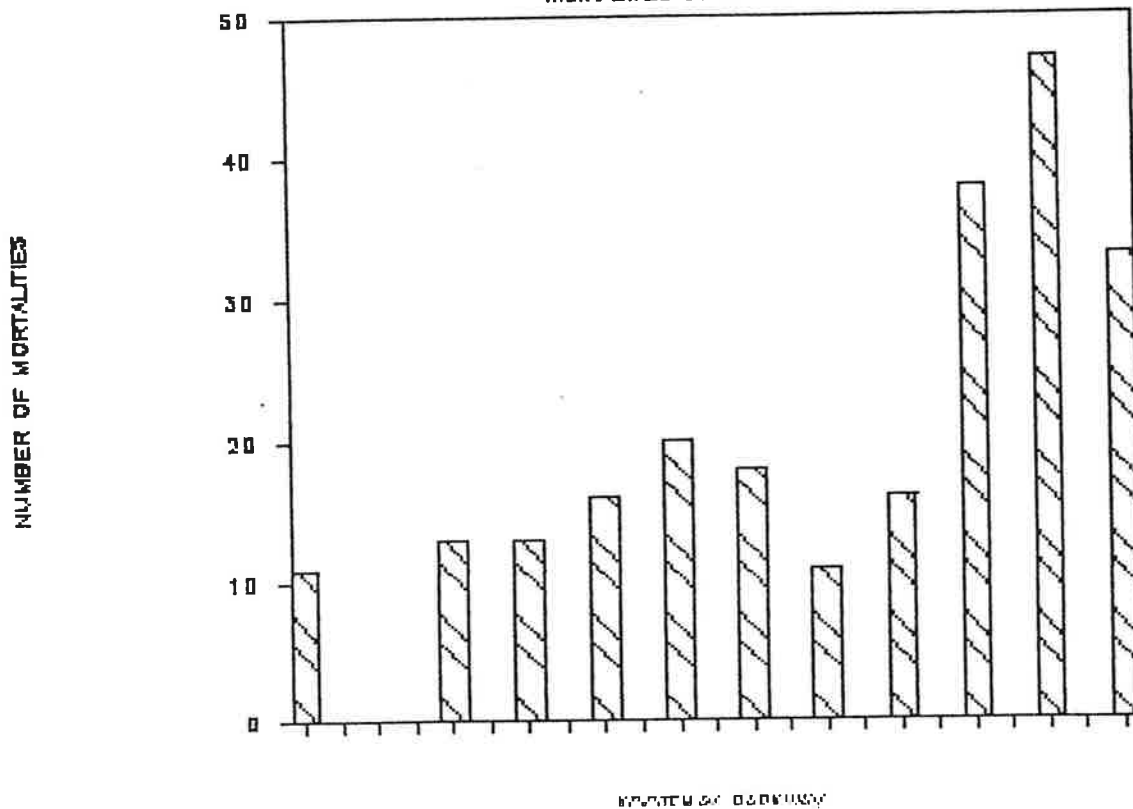
KOOTENAY NATIONAL PARK

ANNUAL SUMMARY - ELK



KOOTENAY NATIONAL PARK

MORTALITIES BY MONTH - ELK



WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1988

MONTH

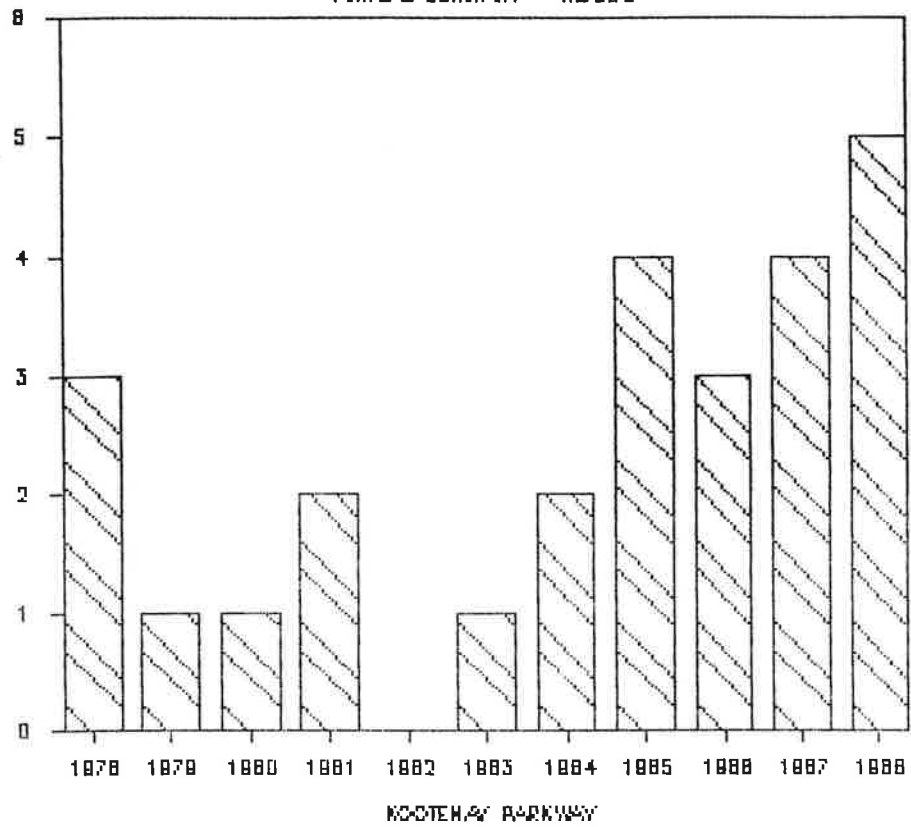
MOOSE

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	0	1	0	0	0	1	0.1
FEBRUARY	0	0	0	0	0	0	0	0	0	0	1	1	0.1
MARCH	0	0	0	0	0	0	0	0	0	0	0	0	0.0
APRIL	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MAY	0	0	0	0	0	0	0	0	0	0	0	0	0.0
JUNE	0	0	0	0	0	0	0	0	1	0	1	2	0.2
JULY	3	0	0	0	0	1	0	0	0	3	1	8	0.7
AUGUST	0	0	0	0	0	0	1	1	1	0	1	4	0.4
SEPTEMBER	0	0	0	0	0	0	0	0	0	0	0	0	0.0
OCTOBER	0	0	0	0	0	0	1	1	0	0	0	2	0.2
NOVEMBER	0	0	1	0	0	0	0	1	0	0	1	3	0.3
DECEMBER	0	1	0	2	0	0	0	0	1	1	0	5	0.5
TOTAL	3	1	1	2	0	1	2	4	3	4	5	26	2.4
REPORTED/NOT FOUND	0	0	0	0	0	0	0	1	0	0	2	3	
SUSPECTED MORTALITY	3	1	1	2	0	1	2	5	3	4	7	29	

KOOTENAY NATIONAL PARK

ANNUAL SUMMARY - MOOSE

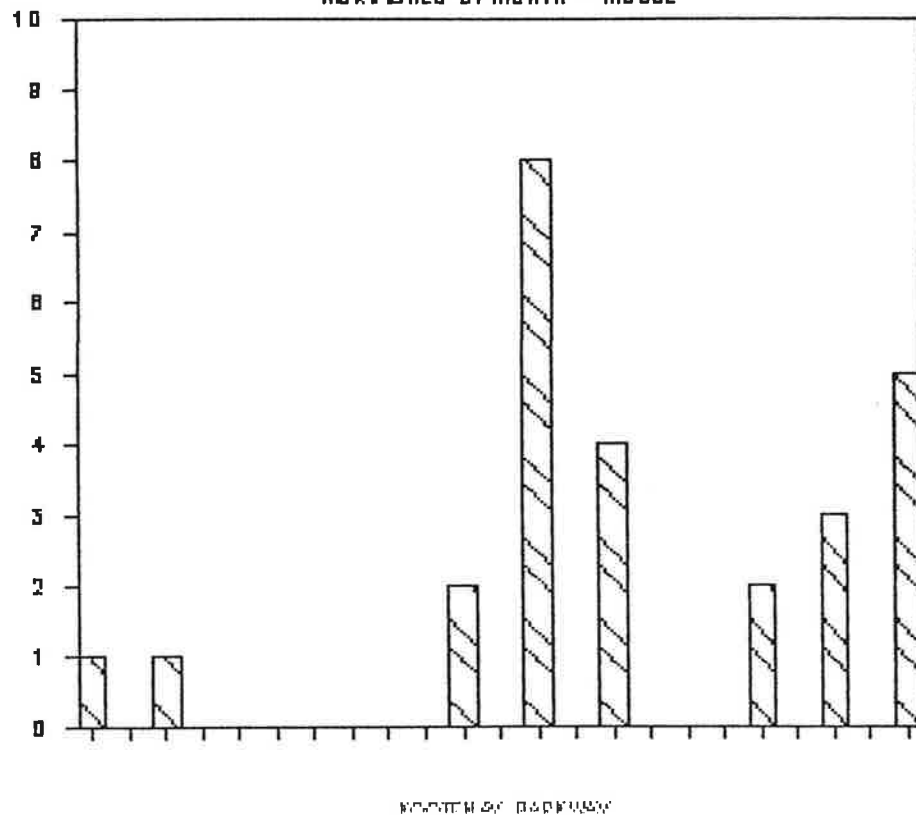
NUMBER OF MORTALITIES



KOOTENAY NATIONAL PARK

MORTALITIES BY MONTH - MOOSE

NUMBER OF MORTALITIES



WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1988

MONTH

MULE DEER

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	2	0	0	0	0	2	0.2
FEBRUARY	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MARCH	0	2	0	0	0	0	0	0	0	0	0	2	0.2
APRIL	0	0	1	0	0	0	1	0	0	0	0	2	0.2
MAY	3	0	2	0	0	1	1	1	1	0	0	9	0.9
JUNE	0	2	4	0	1	1	0	4	4	0	2	18	1.5
JULY	1	0	1	2	0	1	1	0	1	3	6	16	1.5
AUGUST	0	0	1	1	0	0	0	2	1	0	5	10	0.9
SEPTEMBER	1	0	0	1	0	0	0	0	0	1	1	4	0.4
OCT	0	1	1	0	1	1	1	0	0	0	0	5	0.5
NOVEMBER	1	0	0	0	0	0	1	1	0	0	0	3	0.3
DECEMBER	1	0	1	0	0	0	0	0	0	1	0	3	0.3
TOTAL	7	5	11	4	2	4	7	8	7	5	14	74	6.7
REPORTED/NOT FOUND	2	2	0	2	0	0	1	0	0	0	1	8	
SUSPECTED MORTALITY	9	7	11	6	2	4	8	8	7	5	15	82	

WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1988

MONTH

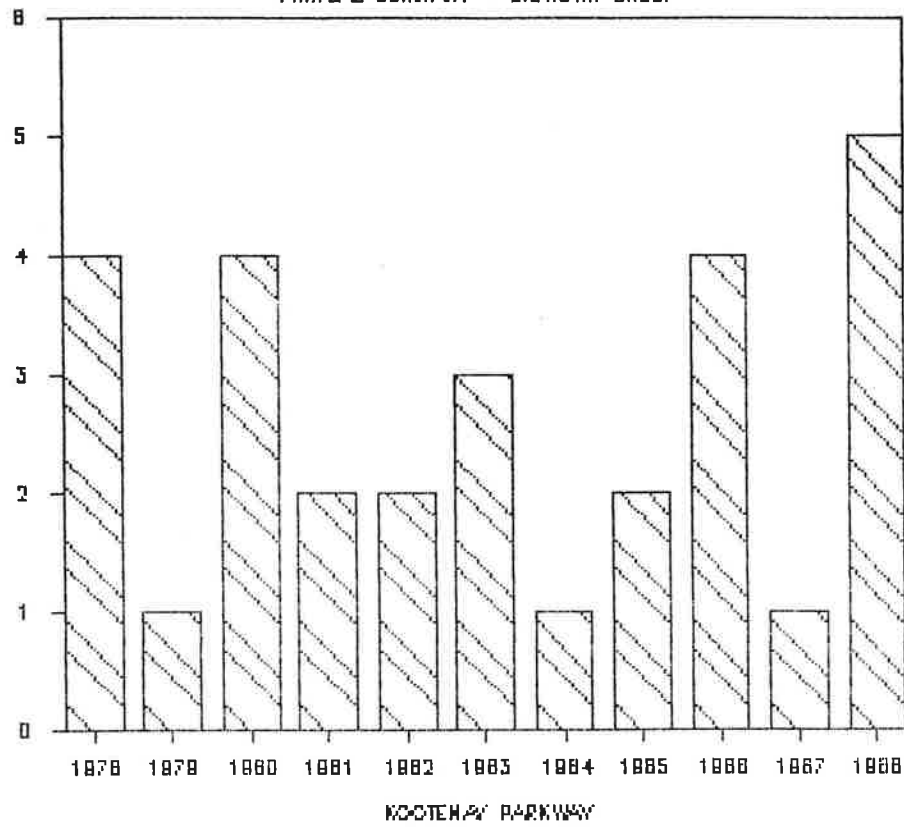
BIGHORN SHEEP

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	0	0	0	0	0	0	0.0
FEBRUARY	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MARCH	0	0	1	0	0	1	0	0	0	0	0	2	0.2
APRIL	0	0	1	0	1	0	0	0	0	0	0	2	0.2
MAY	1	0	0	0	0	0	0	0	0	0	0	1	0.1
JUNE	0	0	1	0	1	0	0	0	0	0	0	2	0.2
JULY	0	0	0	0	0	0	0	0	0	0	0	0	0.0
AUGUST	1	1	0	0	0	2	0	0	2	0	1	7	0.8
SEPTEMBER	0	0	0	0	0	0	0	0	1	0	0	1	0.1
OCTOBER	1	0	1	1	0	0	1	0	0	0	0	4	0.4
NOVEMBER	0	0	0	0	0	0	0	2	0	1	3	6	0.5
DECEMBER	1	0	0	1	0	0	0	0	1	0	1	4	0.4
TOTAL	4	1	4	2	2	3	1	2	4	1	5	29	2.6
REPORTED/NOT FOUND	0	1	1	0	0	0	0	1	0	1	0	4	
SUSPECTED MORTALITY	4	2	5	2	2	3	1	3	4	2	5	33	

KOOTENAY NATIONAL PARK

ANNUAL SUMMARY - BIGHORN SHEEP

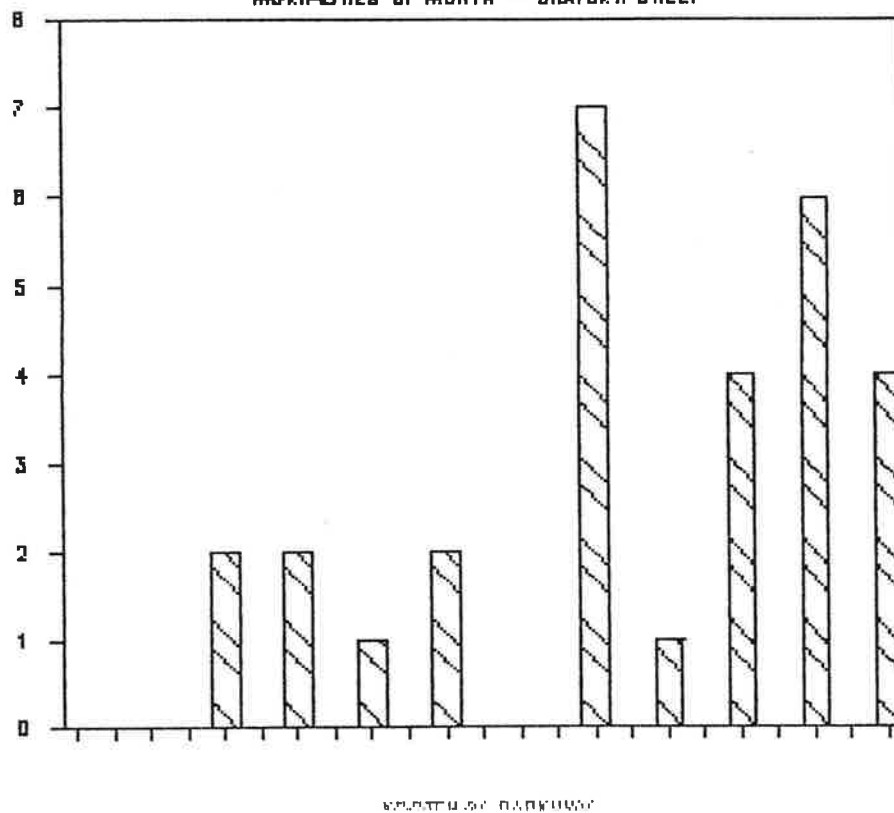
NUMBER OF MORTALITIES



KOOTENAY NATIONAL PARK

MORTALITIES BY MONTH - BIGHORN SHEEP

NUMBER OF MORTALITIES



WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1988

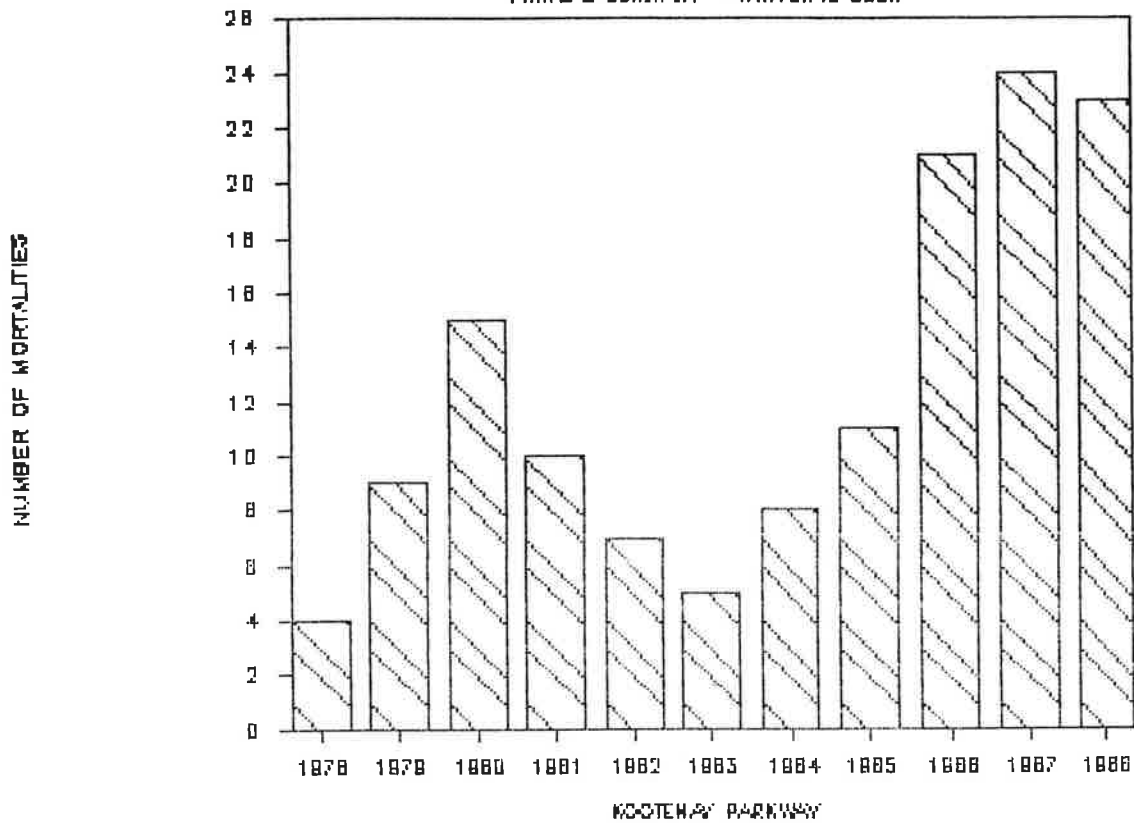
MONTH

WHITETAIL DEER

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	0	0	0	0	0	0	0.0
FEBRUARY	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MARCH	0	0	0	0	0	0	0	0	1	0	0	1	0.1
APRIL	0	0	2	0	0	0	0	0	4	4	2	12	1.1
MAY	0	1	2	1	0	0	2	1	4	3	3	17	1.5
JUNE	1	1	1	0	2	0	2	1	6	1	6	21	1.5
JULY	1	5	4	7	3	3	1	4	2	2	5	37	3.4
AUGUST	1	1	2	2	1	1	1	1	2	2	2	16	1.5
SEPTEMBER	1	1	2	0	1	1	0	2	0	7	0	15	1.4
OCTOBER	0	0	1	0	0	0	1	1	1	1	2	7	0.6
NOVEMBER	0	0	0	0	0	0	1	0	1	2	1	5	0.5
DECEMBER	0	0	1	0	0	0	0	1	0	2	2	6	0.5
TOTAL	4	9	15	10	7	5	8	11	21	24	23	137	12.5
REPORTED/NOT FOUND	0	0	0	0	0	0	0	0	0	1	3	4	
SUSPECTED MORTALITY	4	9	15	10	7	5	8	11	21	25	26	141	

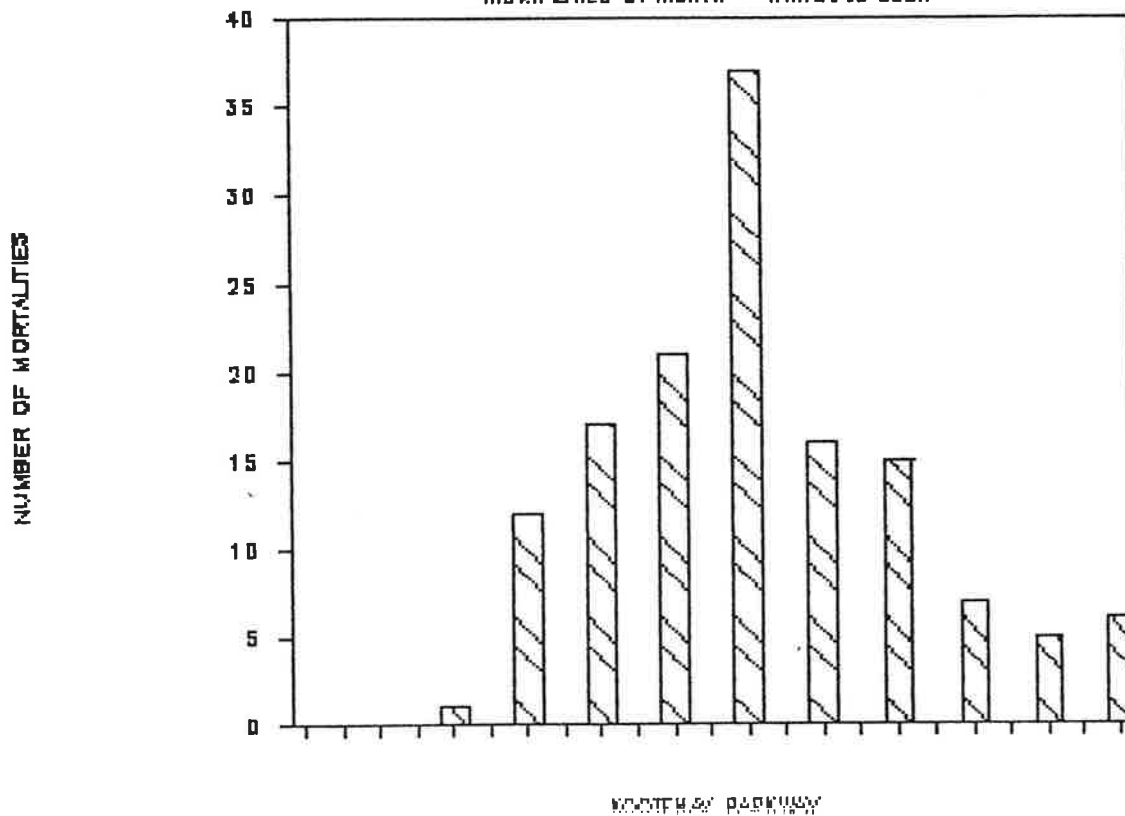
KOOTENAY NATIONAL PARK

ANNUAL SUMMARY - WHITETAIL DEER



KOOTENAY NATIONAL PARK

MORTALITIES BY MONTH - WHITETAIL DEER



WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1988

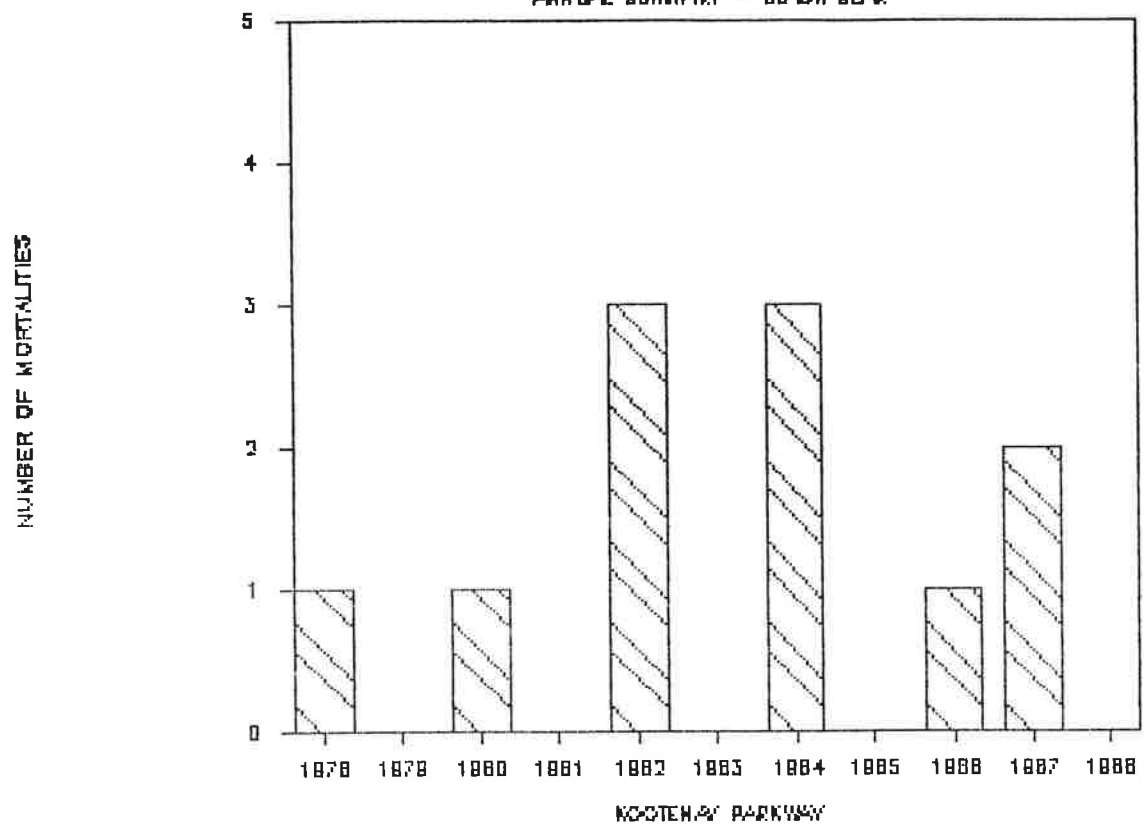
BLACK BEAR

MONTH

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	0	0	0	0	0	0	0.0
FEBRUARY	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MARCH	0	0	0	0	0	0	0	0	0	0	0	0	0.0
APRIL	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MAY	0	0	0	0	0	0	3	0	0	0	0	3	0.3
JUNE	0	0	0	0	1	0	0	0	0	0	0	1	0.1
JULY	0	0	0	0	2	0	0	0	0	2	0	4	0.4
AUGUST	1	0	1	0	0	0	0	0	1	0	0	3	0.3
SEPTEMBER	0	0	0	0	0	0	0	0	0	0	0	0	0.0
OCTOBER	0	0	0	0	0	0	0	0	0	0	0	0	0.0
NOVEMBER	0	0	0	0	0	0	0	0	0	0	0	0	0.0
DECEMBER	0	0	0	0	0	0	0	0	0	0	0	0	0.0
TOTAL	1	0	1	0	3	0	3	0	1	2	0	11	1.0
REPORTED/NOT FOUND	0	0	0	0	0	0	0	1	1	0	2	4	
SUSPECTED MORTALITY	1	0	1	0	3	0	3	1	2	2	2	15	

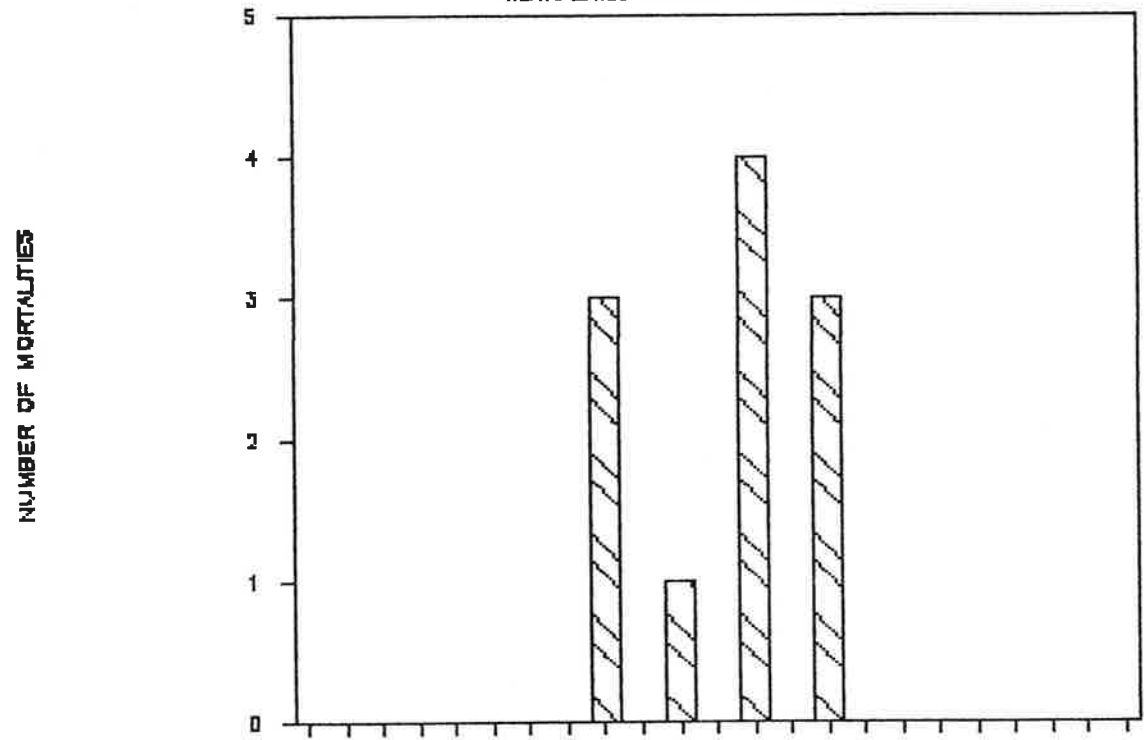
KOOTENAY NATIONAL PARK

ANNUAL SUMMARY - BLACK BEAR



KOOTENAY NATIONAL PARK

MORTALITIES BY MONTH - BLACK BEAR



WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1988

MONTH

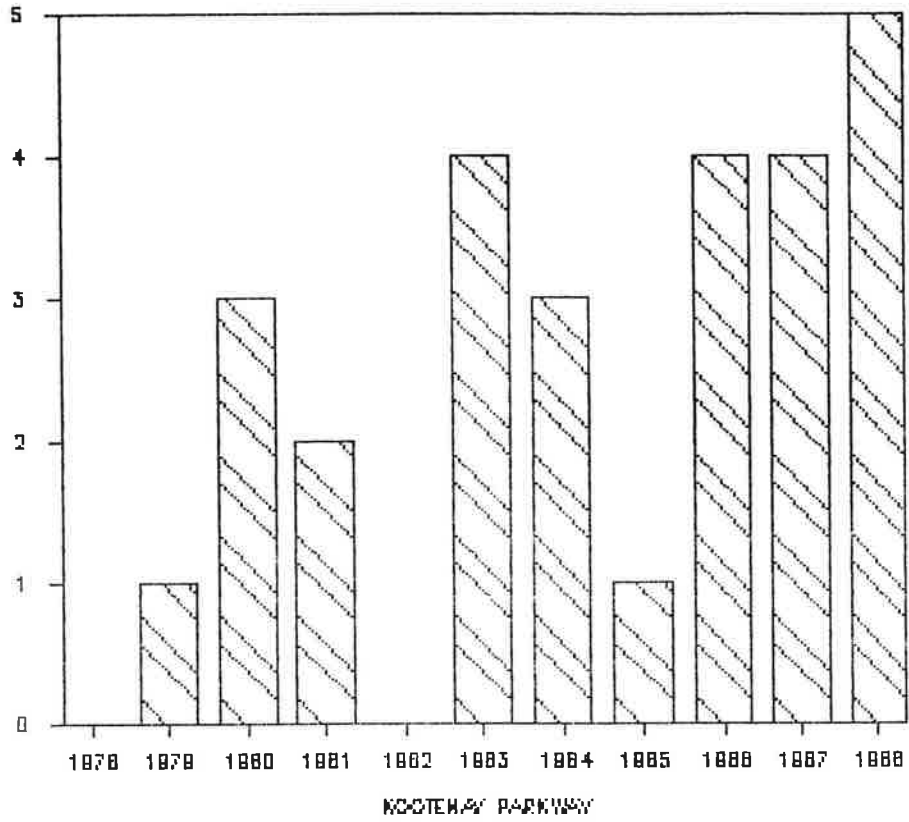
COYOTE

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	0	0	0	0	1	1	0.1
FEBRUARY	0	0	1	0	0	0	0	0	0	0	0	1	0.1
MARCH	0	0	0	0	0	0	0	0	0	0	0	0	0.0
APRIL	0	0	0	0	0	0	1	0	1	0	0	2	0.2
MAY	0	0	0	0	0	0	0	0	1	0	0	1	0.1
JUNE	0	0	0	1	0	0	0	1	0	0	0	2	0.2
JULY	0	0	0	0	0	2	0	0	0	1	0	3	0.3
AUGUST	0	0	1	0	0	2	1	0	1	0	2	7	0.8
SEPTEMBER	0	0	1	0	0	0	0	0	0	0	2	3	0.3
OCTOBER	0	0	0	1	0	0	1	0	0	2	0	4	0.4
NOVEMBER	0	0	0	0	0	0	0	0	1	1	2	4	0.4
DECEMBER	0	1	0	0	0	0	0	0	0	0	1	2	0.2
TOTAL	0	1	3	2	0	4	3	1	4	4	8	30	2.7
REPORTED/NOT FOUND	0	0	0	0	0	0	0	0	0	0	0	0	
SUSPECTED MORTALITY	0	1	3	2	0	4	3	1	4	4	8	30	

KOOTENAY NATIONAL PARK

ANNUAL SUMMARY - COYOTE

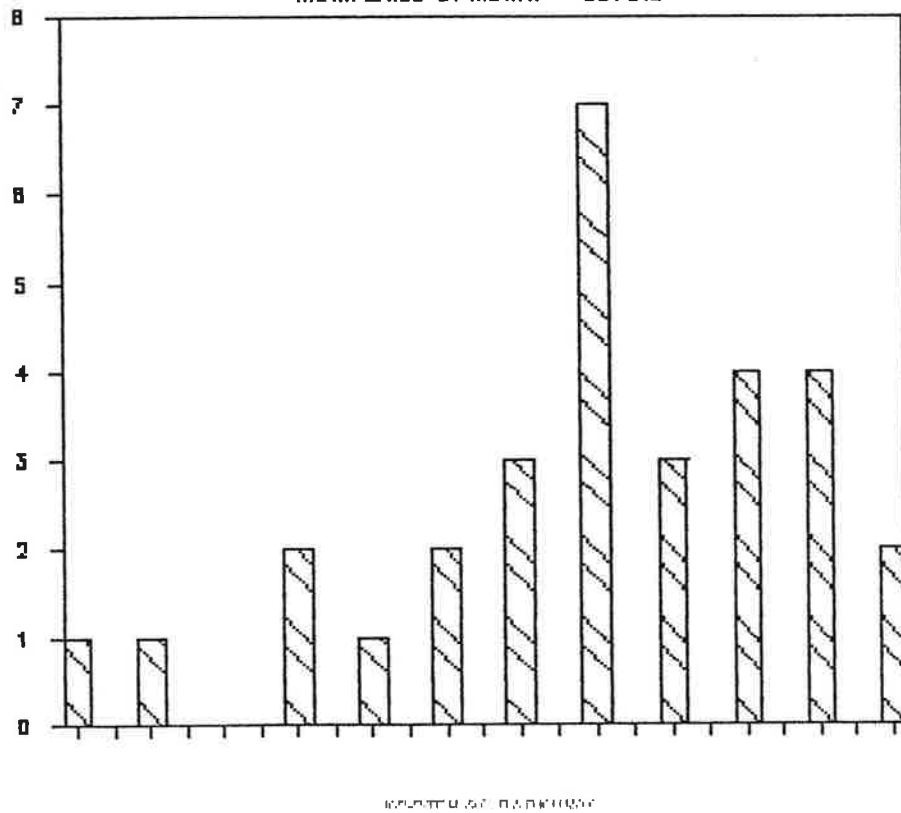
NUMBER OF MORTALITIES



KOOTENAY NATIONAL PARK

MORTALITIES BY MONTH - COYOTE

NUMBER OF MORTALITIES



WILDLIFE HIGHWAY MORTALITY STATISTICS

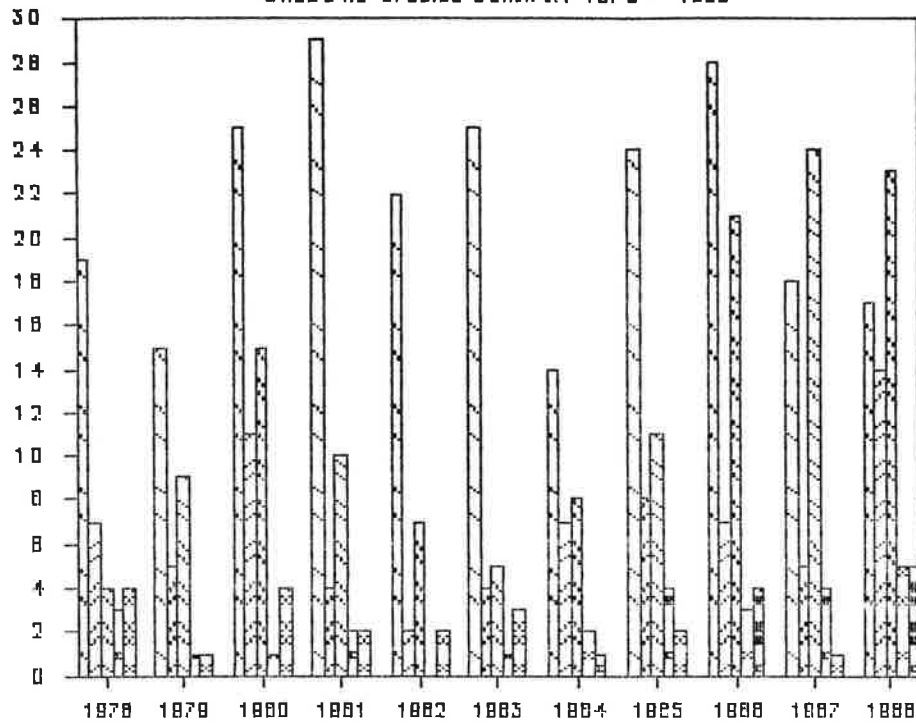
1978 TO 1988 SUMMARY

SPECIES	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	TOTAL	MEAN
ELK	19	15	25	29	22	25	14	24	28	18	17	236	21.5
MULE DEER	7	5	11	4	2	4	7	8	7	5	14	74	6.7
WHTTAIL DEER	4	9	15	10	7	5	8	11	21	24	23	137	12.5
MOOSE	3	1	1	2	0	1	2	4	3	4	5	26	2.4
BIGHORN SHEEP	4	1	4	2	2	3	1	2	4	1	5	29	2.6
BLACK BEAR	1	0	1	0	3	0	5	0	1	2	0	11	1.0
COYOTE	0	1	3	2	0	4	3	1	4	4	8	30	2.7
YEAR TOTAL	38	32	60	49	36	42	38	50	68	58	72	543	49.4

KOOTENAY NATIONAL PARK

UNDEULATE SPECIES SUMMARY 1978 - 1988

NUMBER OF MORTALITIES



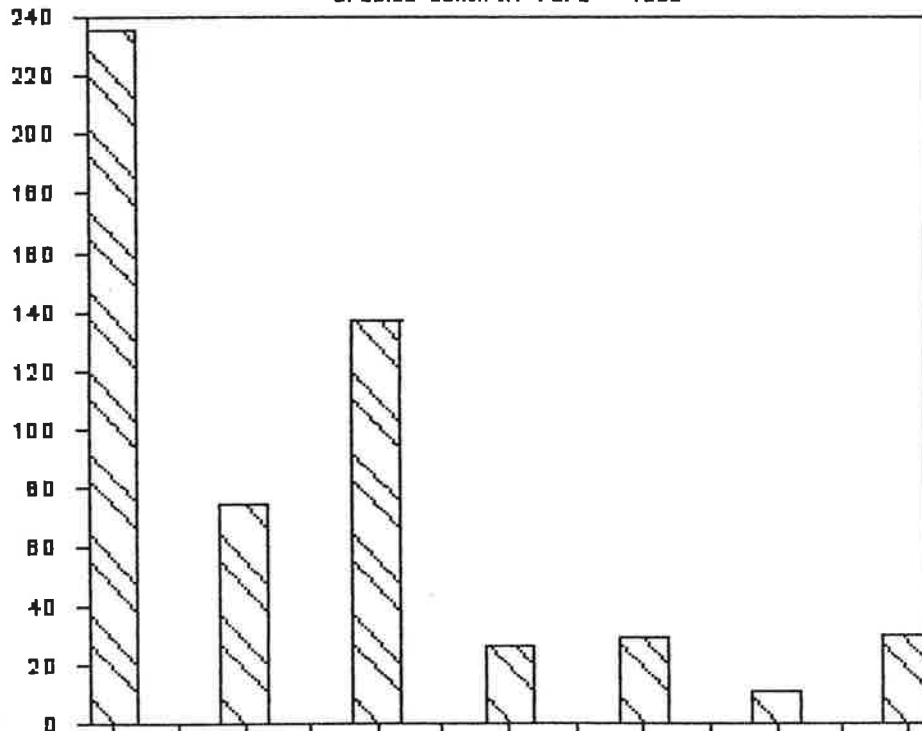
KOOTENAY PARKWAY

ELK	MULE DEER	WHITETAIL DEER
MOOSE	BIGHORN SHEEP	

KOOTENAY NATIONAL PARK

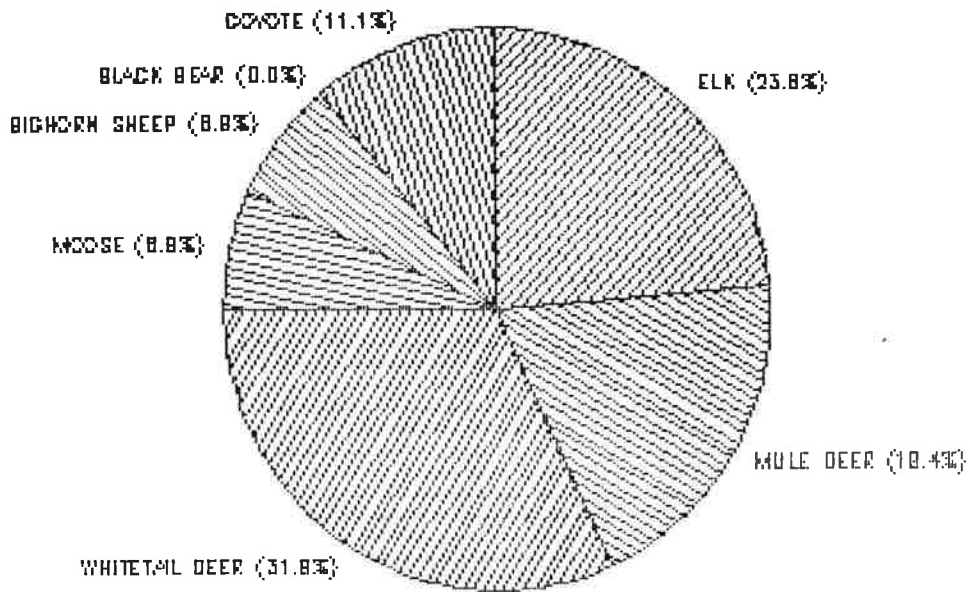
SPECIES SUMMARY 1978 - 1988

NUMBER OF MORTALITIES



KOOTENAY PARKWAY

KOOTENAY NATIONAL PARK
PERCENT MORTALITY - 1888



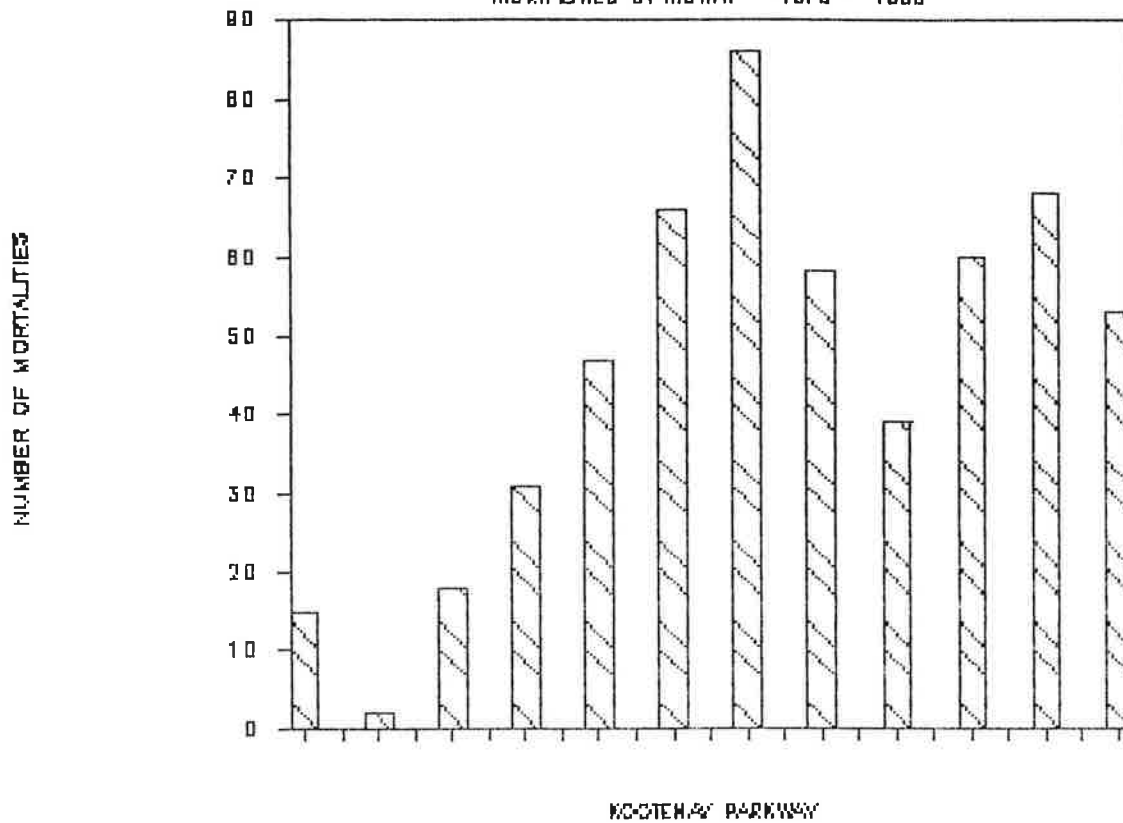
WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1988 SUMMARY BY MONTH

MONTH	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	TOTAL	MEAN
JANUARY	0	0	0	1	2	0	3	1	4	0	4	15	1.4
FEBRUARY	0	0	1	0	0	0	0	0	0	0	1	2	0.2
MARCH	0	3	1	5	1	2	1	2	3	0	0	18	1.6
APRIL	1	0	5	2	2	2	3	2	8	4	2	31	2.8
MAY	5	1	9	4	1	3	7	3	7	4	3	47	4.3
JUNE	1	5	9	5	6	4	2	8	12	2	12	66	6.0
JULY	7	6	8	13	6	8	3	5	5	11	14	86	7.8
AUGUST	5	2	8	5	3	6	3	5	8	2	11	58	5.3
SEPTEMBER	4	3	6	1	3	3	1	3	1	10	4	39	3.5
OCTOBER	8	4	7	4	1	6	7	6	8	5	4	60	5.5
NOVEMBER	4	4	2	4	8	3	8	5	7	12	11	68	6.2
DECEMBER	3	4	4	5	3	5	0	10	5	8	6	53	4.8
TOTAL	38	32	60	49	36	42	38	50	68	58	72	543	49.4

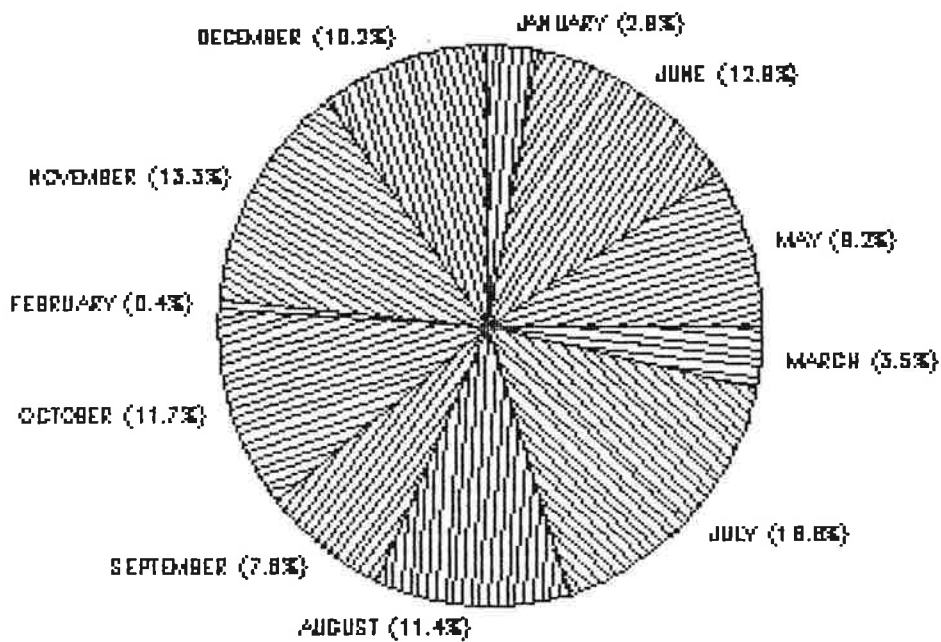
KOOTENAY NATIONAL PARK

MORTALITIES BY MONTH 1978 - 1988



KOOTENAY NATIONAL PARK

PERCENT MORTALITY 1978 - 1988



APPENDIX B

ANNUAL VEHICLE STATISTICS

1978 - 1988

ANNUAL COMMERCIAL TRAFFIC

BANFF - WINDERMERE HIGHWAY NORTHBOUND

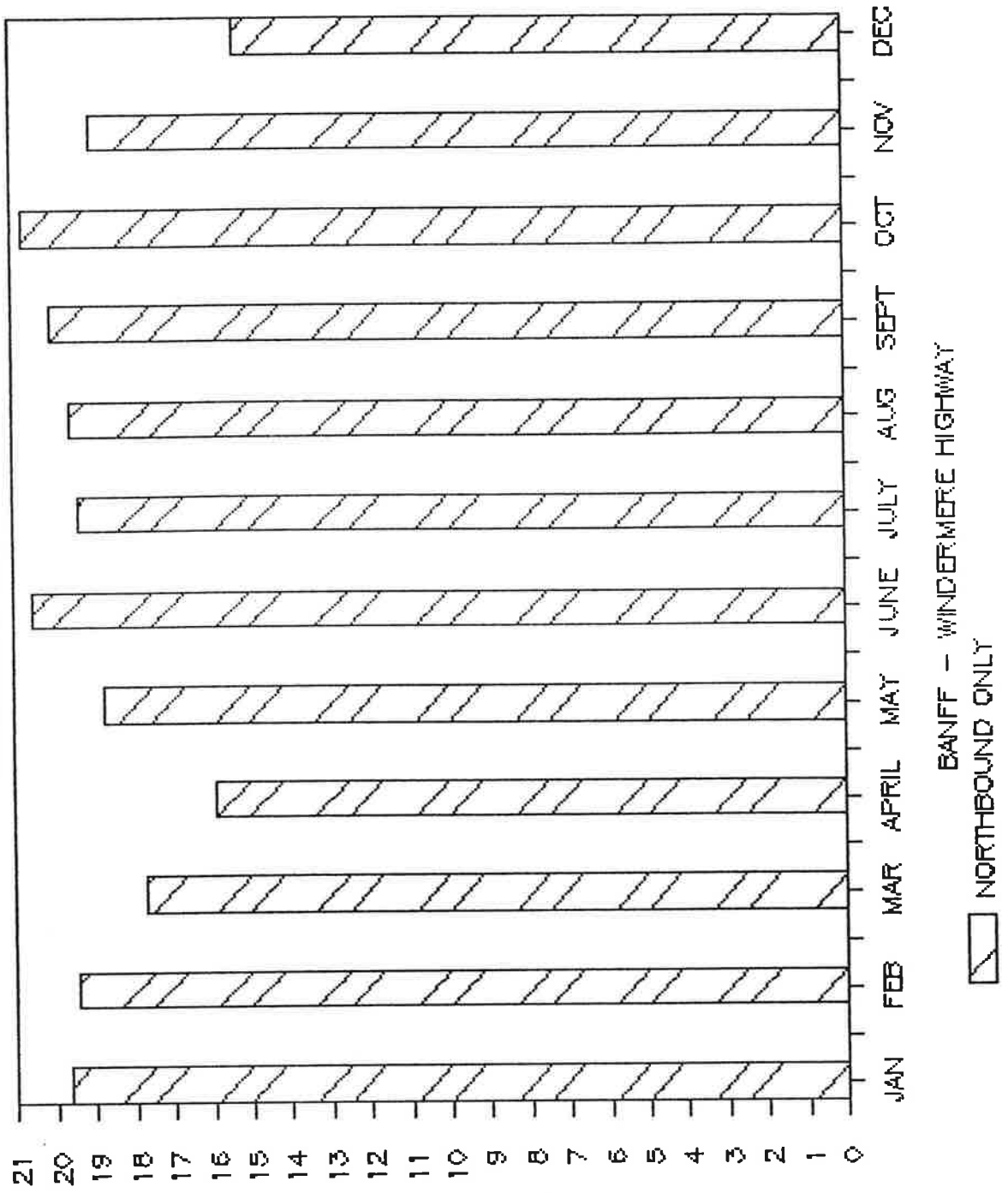
1978 - 1988

MONTH	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	TOTAL	MEAN
JANUARY	2246	1614	2270	2899	1414	1994	1708	1648	1784	1197	868	19642	1785.6
FEBRUARY	2185	1643	2194	2420	1742	1980	1871	1615	1476	1261	1052	19439	1767.2
MARCH	1781	2048	1806	2542	1543	1306	1568	1427	1391	1217	1047	17676	1606.9
APRIL	1507	1791	1851	2017	1435	1190	1219	1111	1326	1407	1027	15881	1443.7
MAY	2074	2211	1974	1927	1282	1770	1512	1524	1581	1443	1429	18727	1702.5
JUNE	2324	2352	1875	2362	1400	1788	1669	1770	1738	1616	1648	20542	1867.5
JULY	1905	2063	1773	1927	1507	1834	1645	1567	2016	1607	1562	19406	1764.2
AUGUST	1736	2015	1960	1667	1885	1785	2004	1796	1282	1622	1813	19565	1778.6
SEPTEMBER	2255	2182	2255	1802	1791	1724	1477	1711	1534	1706	1637	20074	1824.9
OCTOBER	1990	2674	2526	2227	1829	1731	1599	1736	1736	1392	1334	20774	1888.5
NOVEMBER	1921	2705	2248	1967	1731	1336	1609	1777	1228	1276	1226	19024	1729.5
DECEMBER	1680	1627	2027	1469	1603	1275	1121	1370	1190	869	1075	15306	1391.5
TOTAL VEHICLES **	23604	24925	24759	25226	19162	19713	19002	19052	18282	16613	15718	226056	21525.0
AVERAGE PER MONTH	1967.0	2077.1	2063.3	2102.2	1596.8	1642.8	1583.5	1587.7	1523.5	1384.4	1309.8		

** NOTE: TRAFFIC FIGURES ARE AN ESTIMATE ONLY BY GATE STAFF
 TRAFFIC CLASSIFIER NOT CURRENTLY IN OPERATION AT THE GATE
 HOURS OF OPERATION - MONDAY TO THURSDAY: 09:00 - 17:00 HRS
 - FRIDAY TO SUNDAY: 07:00 - 23:00 HRS

KOOTENAY NATIONAL PARK

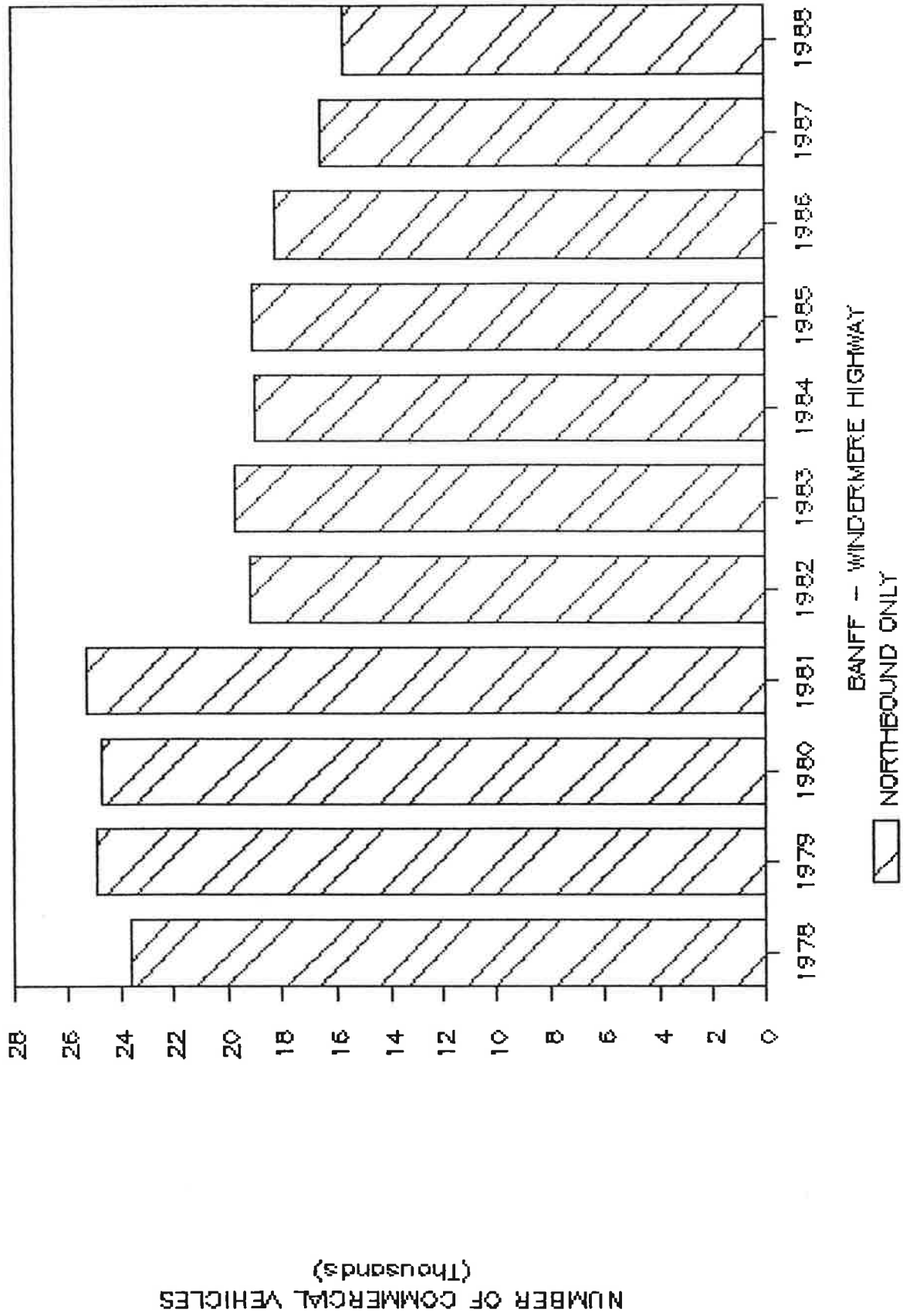
COMMERCIAL VEHICLE SUMMARY



NUMBER OF COMMERCIAL VEHICLES
(Thousands)

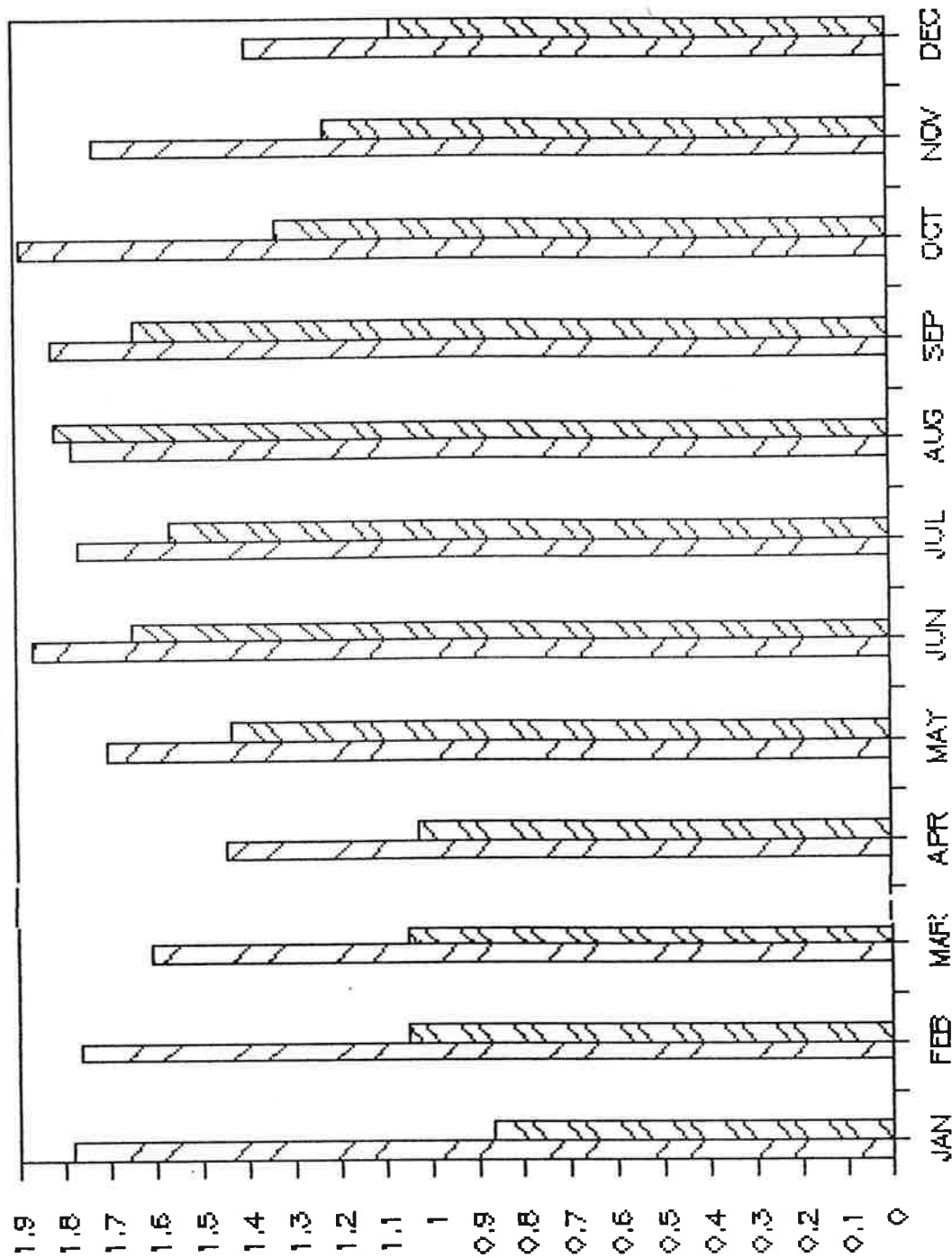
KOOTENAY NATIONAL PARK

COMMERCIAL VEHICLE SUMMARY



KOOTENAY NATIONAL PARK

COMMERCIAL COMPARISON: MEAN/1988



BANFF - WINDERMERE HIGHWAY

MEAN: 1978 - 1988

TOTAL: 1988

NUMBER OF PRIVATE VEHICLES
(Thousands)

ANNUAL VEHICLE TRAFFIC

BANFF - WINDERMERE HIGHWAY

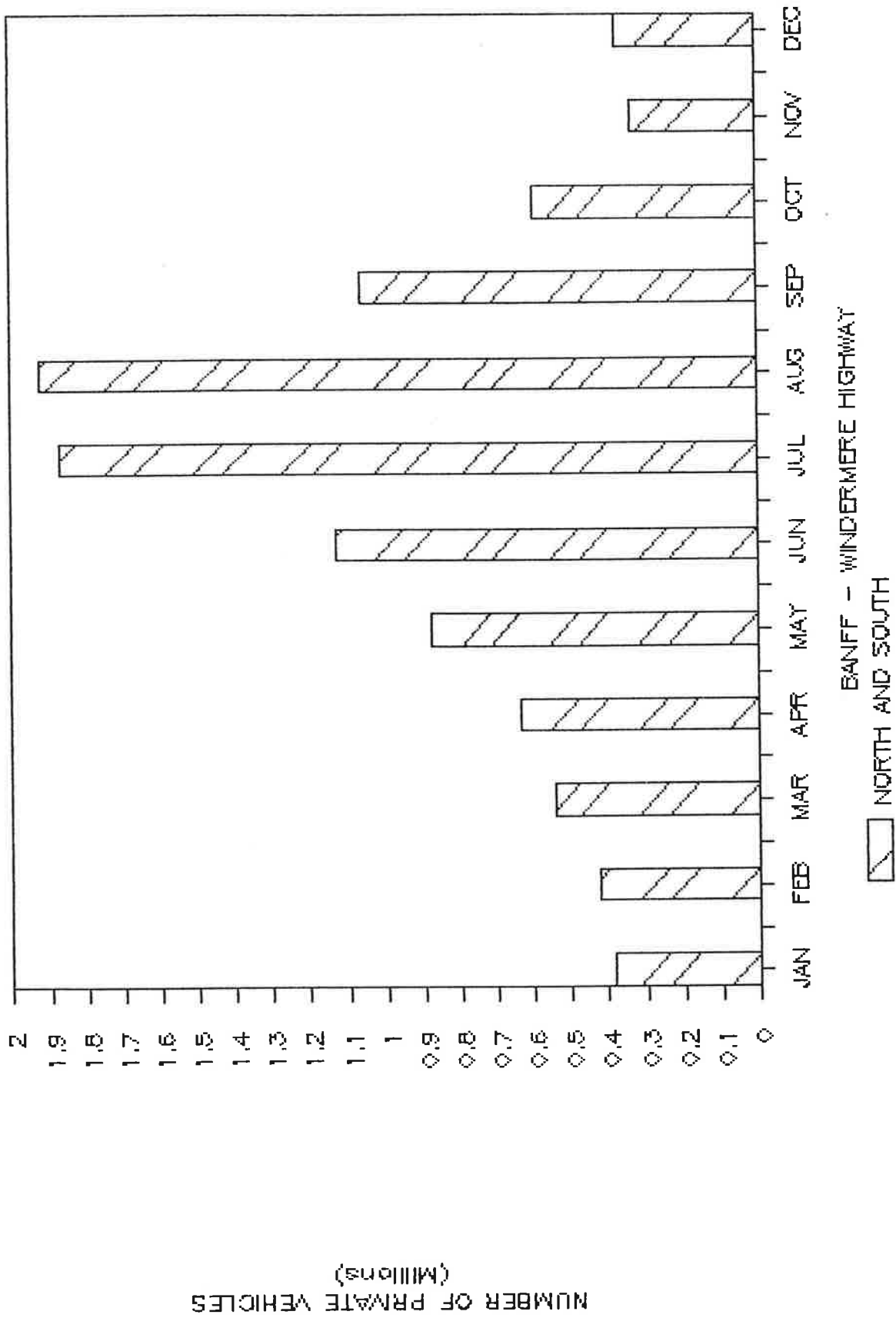
1978 - 1988

MONTH	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	TOTAL	MEAN
JANUARY	31030	28881	34735	44062	34694	37554	33110	33200	32995	35675	34417	380353	34577.5
FEBRUARY	34883	31082	42597	46852	42031	43176	40124	34939	32683	38843	34246	421456	38314.2
MARCH	54843	46487	49203	57175	49293	44990	45877	50837	52809	43846	45384	540744	49158.5
APRIL	42293	53573	67285	68077	63687	60907	62422	58072	44130	61031	55603	637080	57916.4
MAY	75665	80353	91624	87908	85965	83347	72161	77593	66947	78319	78952	878834	79894.0
JUNE	95740	106876	114626	109248	104358	100677	99554	106501	97523	95811	96045	1126959	102450.8
JULY	179625	181171	177612	182477	179944	187016	164043	142947	148969	156417	170345	1870566	170051.5
AUGUST	165674	178211	191588	184925	179089	168510	184774	168825	167848	166252	166809	1922505	174773.2
SEPTEMBER	96606	102301	93155	108095	102881	102040	93039	82302	81489	98595	105072	1065575	96870.5
OCTOBER	56027	65207	68460	65102	61361	59495	52763	48841	56316	61320	**	594892	54081.1
NOVEMBER	30276	37839	40214	38503	31859	31714	27627	28147	27683	33724	**	327586	29780.5
DECEMBER	35761	37296	38799	41020	38730	35028	32981	35927	38600	38677	**	372819	33892.6
TOTAL VEHICLES	898423	949277	1009898	1033444	973892	954454	908475	868131	847992	908510	786873	10139369	938220.7
AVERAGE PER MONTH	74868.6	79106.4	84158.2	86120.3	81157.7	79537.8	75706.3	72344.3	70666.0	75709.2	65572.8		

* NOTE: FIGURES NOT ACCURATE AS COUNTER NOT FUNCTIONING PROPERLY

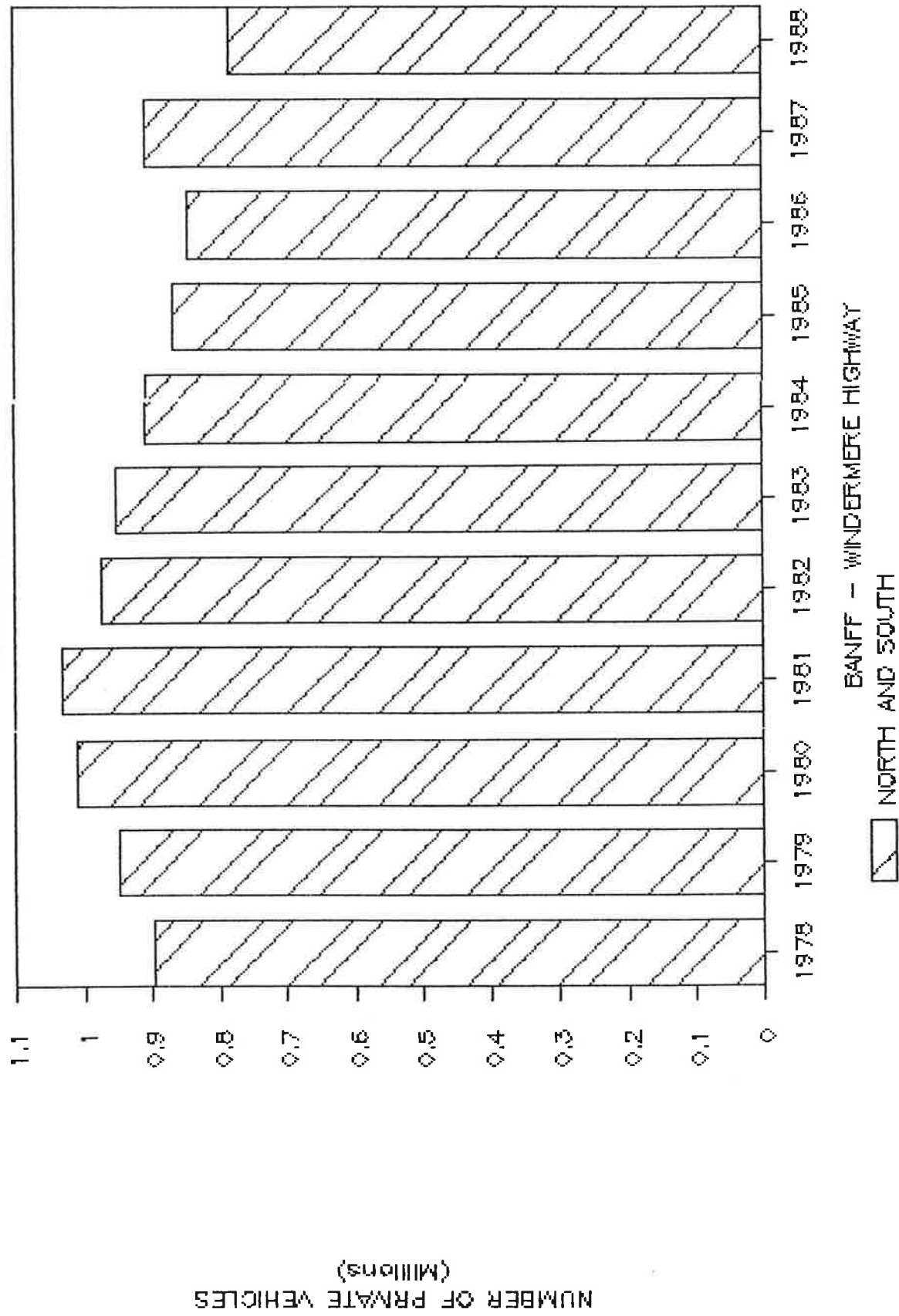
KOOTENAY NATIONAL PARK

ANNUAL VEHICLE SUMMARY



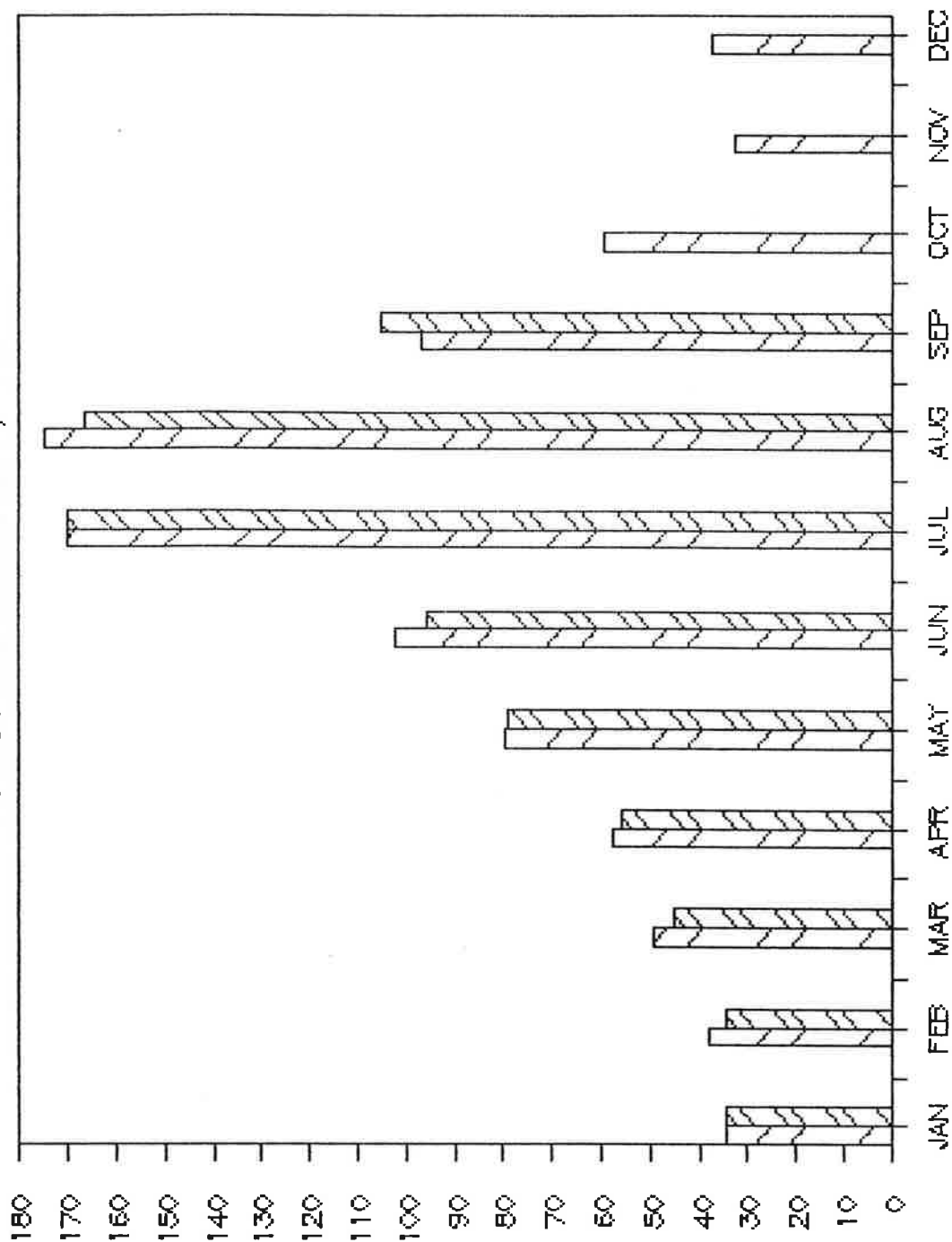
KOOTENAY NATIONAL PARK

ANNUAL VEHICLE SUMMARY



KOOTENAY NATIONAL PARK

VEHICLE COMPARISON: MEAN/1988



BANFF - WINDERMERE HIGHWAY

MEAN: 1978 - 1988

TOTAL: 1988

NUMBER OF PRIVATE VEHICLES
(Thousands)

WARDEN SERVICE KOOTENAY NATIONAL PARK

WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1990

ELK

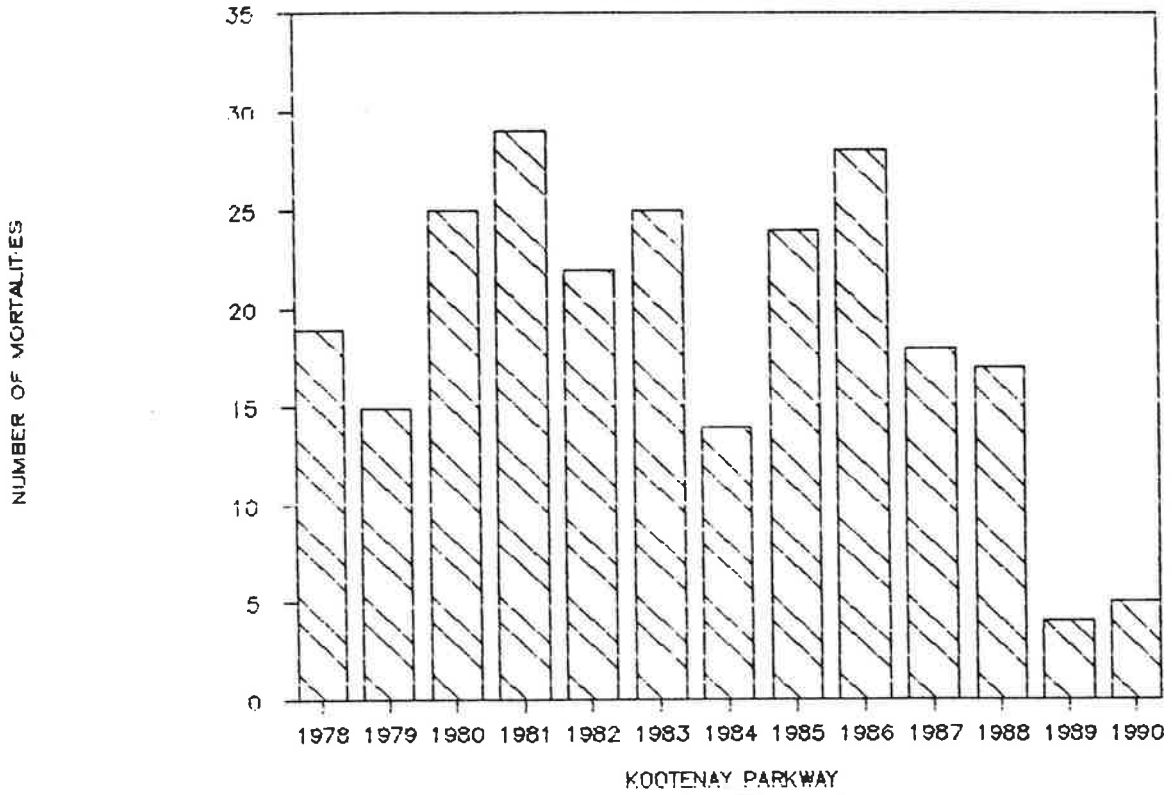
MONTH	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	MEAN
JANUARY	0	0	0	1	2	0	1	0	4	0	3	0	1	12	0.9
FEBRUARY	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.1
MARCH	0	1	0	5	1	1	1	2	2	0	0	0	2	15	1.2
APRIL	1	0	1	2	1	2	1	2	3	0	0	0	0	13	1.0
MAY	1	0	5	3	1	2	1	1	1	1	0	0	0	16	1.2
JUNE	0	2	3	4	1	3	0	2	1	1	3	1	1	22	1.7
JULY	2	1	3	4	1	1	1	1	2	0	2	1	1	20	1.5
AUGUST	2	0	3	2	2	1	0	1	0	0	0	0	0	11	0.8
SEPTEMBER	2	2	3	0	2	2	1	1	0	2	1	0	0	16	1.3
OCTOBER	7	3	4	2	0	5	2	4	7	2	2	1	1	39	3.3
NOVEMBER	3	4	1	4	8	3	6	1	5	8	4	4	0	47	3.9
DECEMBER	1	2	2	2	3	5	0	9	3	4	2	0	0	33	2.8

TOTAL	19	15	25	29	22	25	14	24	28	18	17	4	5	245	18.8
REPORTED/NOT FOUND	0	6	0	0	2	5	0	5	3	1	3	4	1	30	

SUSPECTED MORTALITY	19	21	25	29	24	30	14	29	31	19	20	8	6	275	
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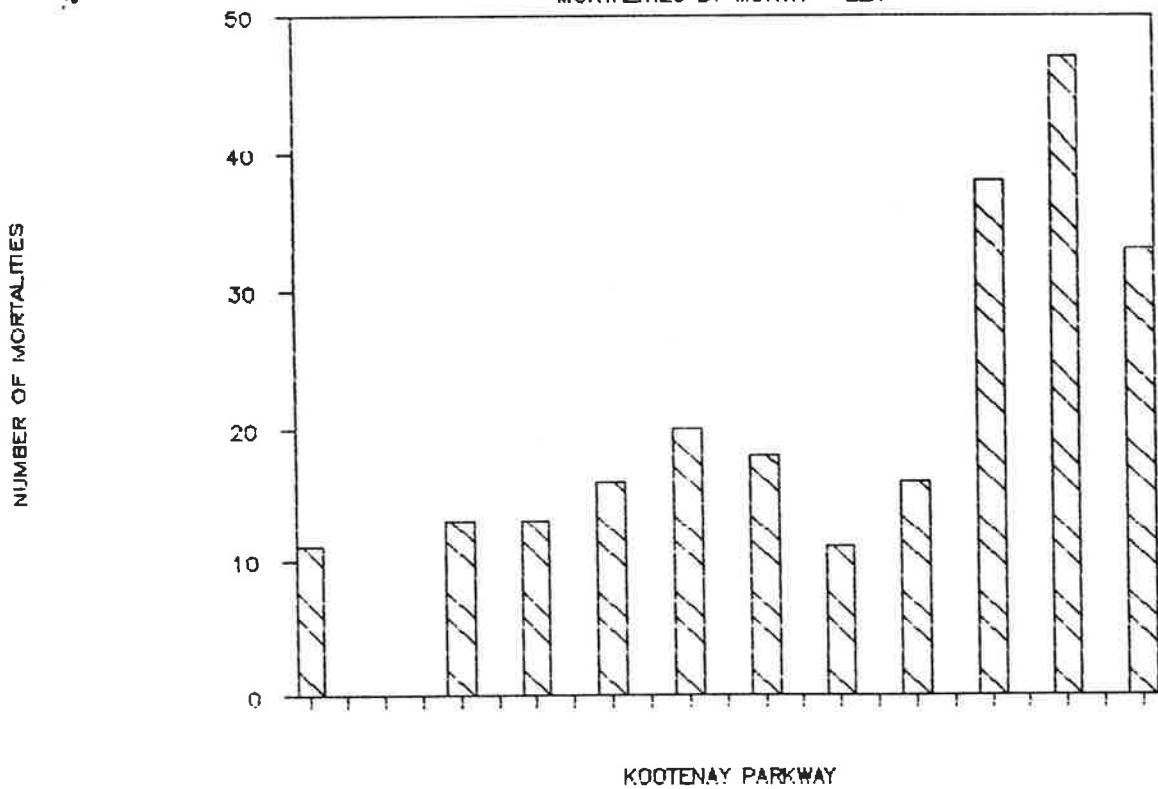
KOOTENAY NATIONAL PARK

ANNUAL SUMMARY - ELK



KOOTENAY NATIONAL PARK

MORTALITIES BY MONTH - ELK



WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1990

MOOSE

MONTH	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0.2
FEBRUARY	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0.1
MARCH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
APRIL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
JUNE	0	0	0	0	0	0	0	0	1	0	1	0	0	2	0.2
JULY	3	0	0	0	0	1	0	0	0	3	1	0	1	9	0.7
AUGUST	0	0	0	0	0	0	1	1	1	0	1	0	2	6	0.5
SEPTEMBER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
OCTOBER	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0.2
NOVEMBER	0	0	1	0	0	0	0	1	0	0	1	0	0	3	0.3
DECEMBER	0	1	0	2	0	0	0	0	1	1	0	0	0	5	0.4
TOTAL	3	1	1	2	0	1	2	4	3	4	5	1	3	30	2.3
REPORTED/NOT FOUND	0	0	0	0	0	0	0	1	0	0	2	1	1	4	
SUSPECTED MORTALITY	3	1	1	2	0	1	2	5	3	4	7	2	3	34	

WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1990

MULE DEER

MONTH	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0.2
FEBRUARY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MARCH	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0.2
APRIL	0	0	1	0	0	0	1	0	0	0	0	0	0	2	0.2
MAY	3	0	2	0	0	1	1	1	1	0	0	0	3	12	0.9
JUNE	0	2	4	0	1	1	0	4	4	0	2	3	0	21	1.6
JULY	1	0	1	2	0	1	1	0	1	3	6	0	0	16	1.2
AUGUST	0	0	1	1	0	0	0	2	1	0	5	3	1	14	1.1
SEPTEMBER	1	0	0	1	0	0	0	0	0	1	1	1	1	5	0.4
OCTOBER	0	1	1	0	1	1	1	0	0	0	0	1	1	6	0.5
NOVEMBER	1	0	0	0	0	0	1	1	0	0	0	0	0	3	0.3
DECEMBER	1	0	1	0	0	0	0	0	0	1	0	1	1	4	0.3
TOTAL	7	5	11	4	2	4	7	8	7	5	14	9	4	87	6.7
REPORTED/NOT FOUND	2	2	0	2	0	0	1	0	0	0	1	0	0	8	
SUSPECTED MORTALITY	9	7	11	6	2	4	8	8	7	5	15	9	4	95	

3

KOOTENAY NATIONAL PARK

WARDEN SERVICE

WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1990

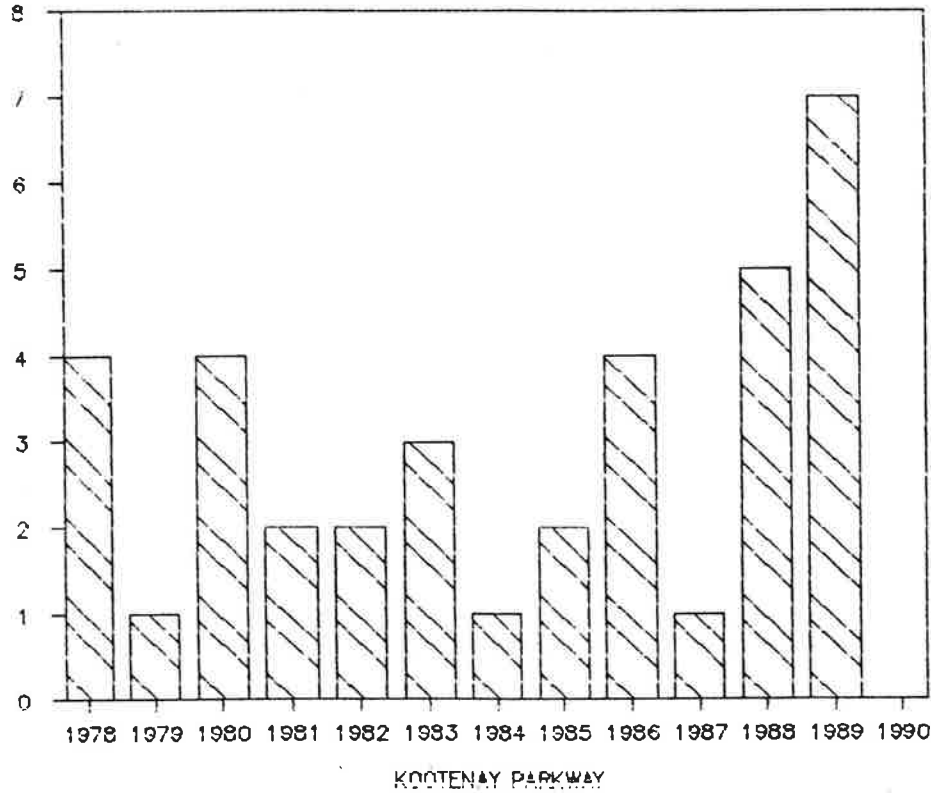
BIGHORN SHEEP

MONTH

MONTH	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
FEBRUARY	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.1
MARCH	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0.2
APRIL	0	0	1	0	1	0	0	0	0	0	0	0	0	2	0.2
MAY	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
JUNE	0	0	1	0	1	0	0	0	0	0	0	1	0	3	0.2
JULY	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0.2
AUGUST	1	1	0	0	0	2	0	0	2	0	1	1	0	8	0.6
SEPTEMBER	0	0	0	0	0	0	0	0	1	0	0	1		2	0.2
OCTOBER	1	0	1	1	0	0	1	0	0	0	0	0	0	4	0.3
NOVEMBER	0	0	0	0	0	0	0	2	0	1	3	1	1	7	0.6
DECEMBER	1	0	0	1	0	0	0	0	1	0	1	0	0	4	0.3
TOTAL	4	1	4	2	2	3	1	2	4	1	5	7	0	36	2.8
REPORTED/NOT FOUND	0	1	1	0	0	0	0	1	0	1	0	0	0	4	
SUSPECTED MORTALITY	4	2	5	2	2	3	1	3	4	2	5	7	0	40	

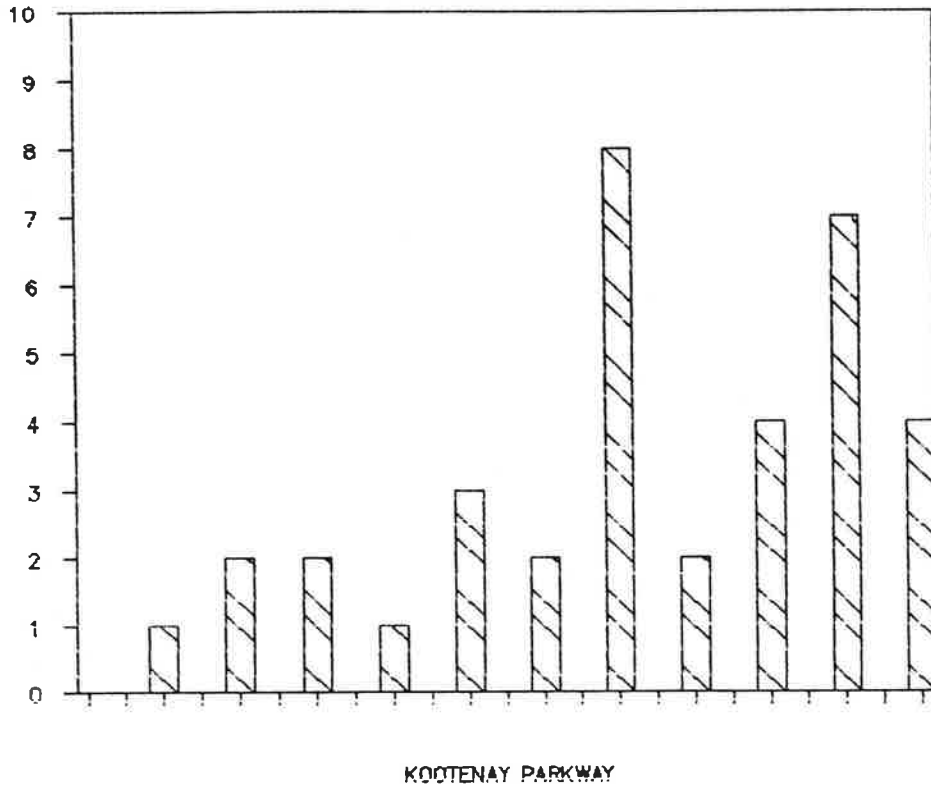
KOOTENAY NATIONAL PARK
ANNUAL SUMMARY - BIGHORN SHEEP

NUMBER OF MORTALITIES



KOOTENAY NATIONAL PARK
MORTALITIES BY MONTH - BIGHORN SHEEP

NUMBER OF MORTALITIES



WILDLIFE HIGHWAY MORTALITY STATISTICS

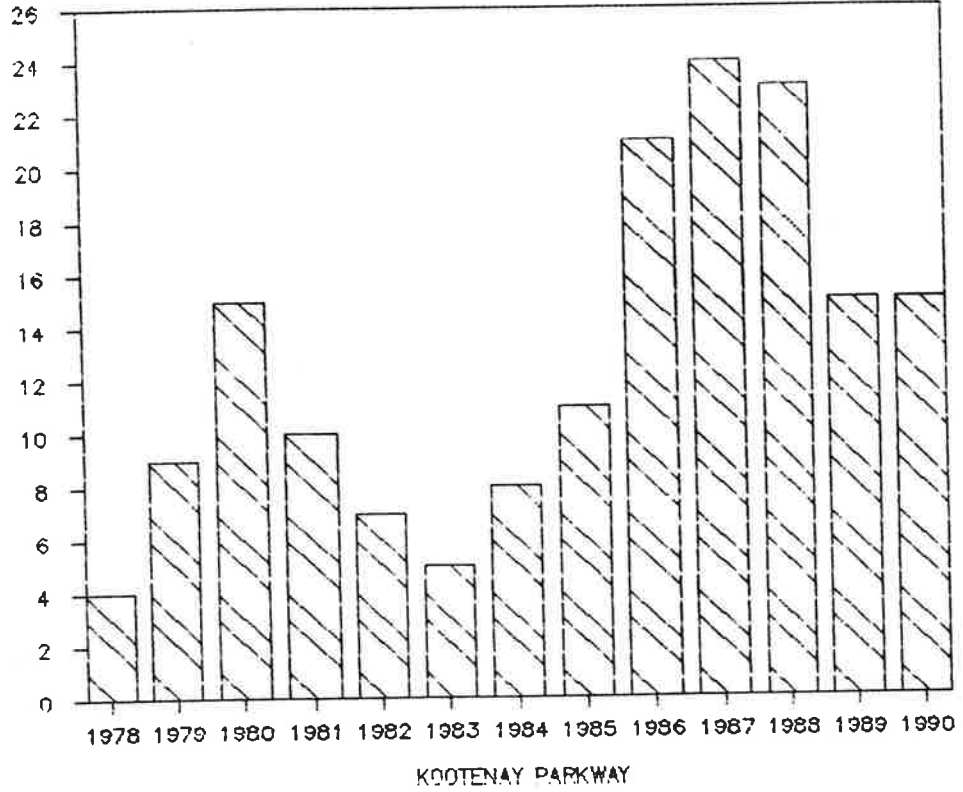
1978 TO 1990

WHITETAIL DEER

MONTH	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
FEBRUARY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MARCH	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0.1
APRIL	0	0	2	0	0	0	0	0	4	4	2	0	1	13	1.0
MAY	0	1	2	1	0	0	2	1	4	3	3	2	3	22	1.7
JUNE	1	1	1	0	2	0	2	1	6	1	6	1	2	24	1.8
JULY	1	5	4	7	3	3	1	4	2	2	5	4	3	44	3.4
AUGUST	1	1	2	2	1	1	1	1	2	2	2	5	6	27	2.1
SEPTEMBER	1	1	2	0	1	1	0	2	0	7	0	1		16	1.3
OCTOBER	0	0	1	0	0	0	1	1	1	1	2	2	2	9	0.8
NOVEMBER	0	0	0	0	0	0	1	0	1	2	1	0	0	5	0.4
DECEMBER	0	0	1	0	0	0	0	1	0	2	2	0	0	6	0.5
TOTAL	4	9	15	10	7	5	8	11	21	24	23	15	15	167	12.8
REPORTED/NOT FOUND	0	0	0	0	0	0	0	0	0	1	3	0	0	4	
SUSPECTED MORTALITY	4	9	15	10	7	5	8	11	21	25	26	15	15	171	

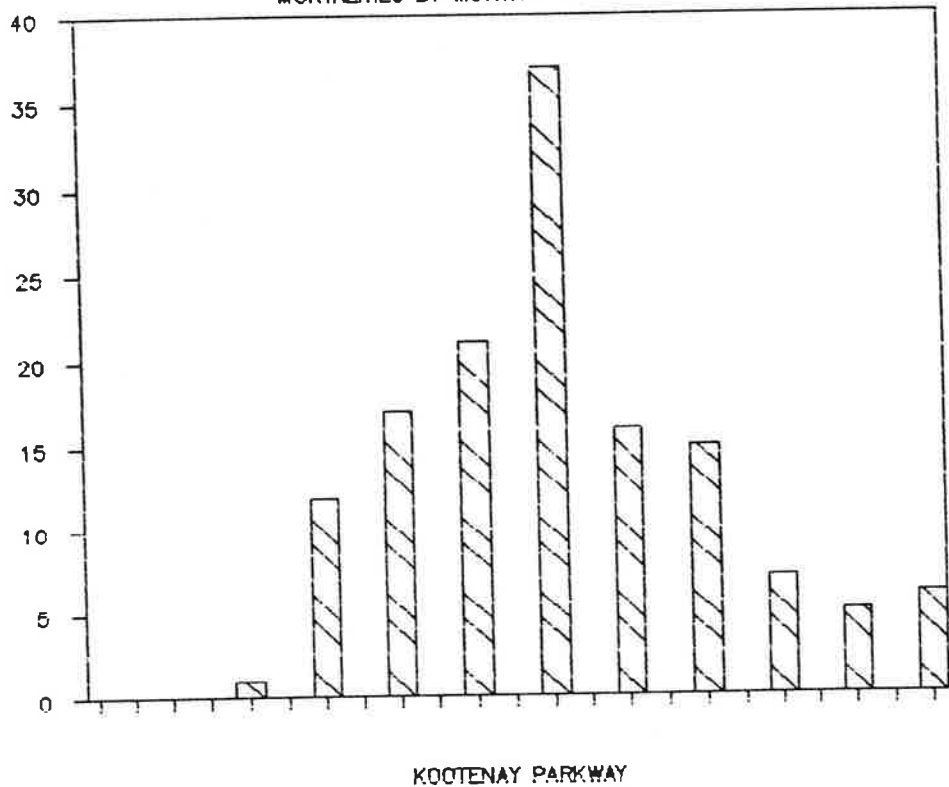
KOOTENAY NATIONAL PARK
ANNUAL SUMMARY -- WHITETAIL DEER

NUMBER OF MORTALITIES



KOOTENAY NATIONAL PARK
MORTALITIES BY MONTH -- WHITETAIL DEER

NUMBER OF MORTALITIES



WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1990

BLACK BEAR

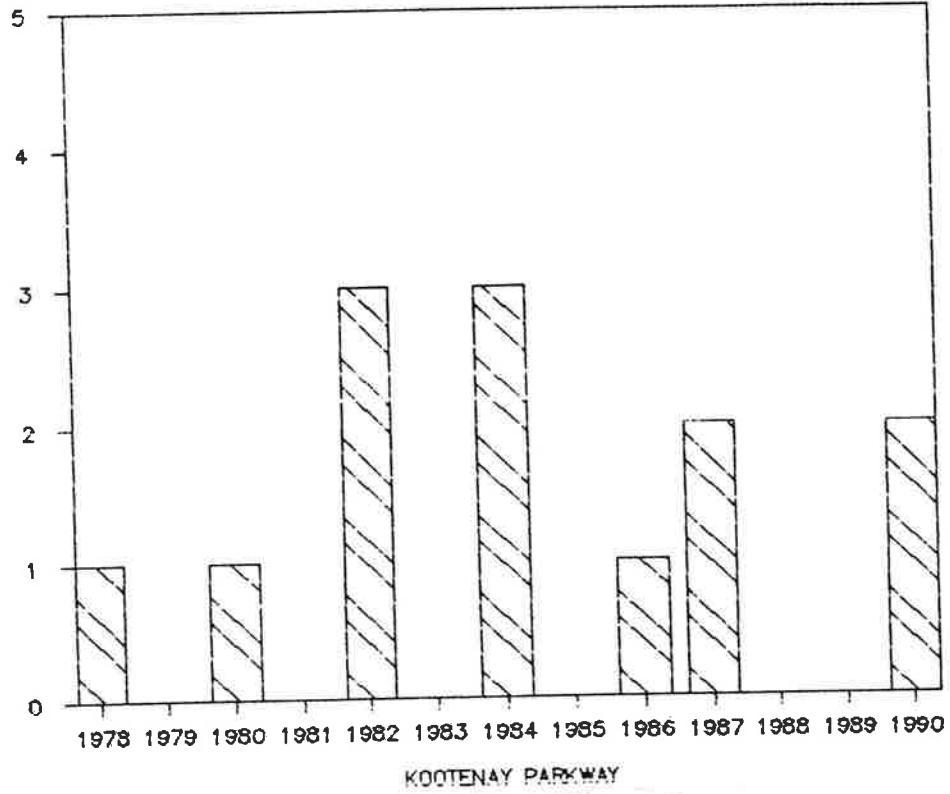
MONTH

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
FEBRUARY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MARCH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
APRIL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MAY	0	0	0	0	0	0	3	0	0	0	0	0	0	3	0.2
JUNE	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0.1
JULY	0	0	0	0	2	0	0	0	0	2	0	0	1	5	0.4
AUGUST	1	0	1	0	0	0	0	0	1	0	0	0	1	4	0.3
SEPTEMBER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
OCTOBER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
NOVEMBER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
DECEMBER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
TOTAL	1	0	1	0	3	0	3	0	1	2	0	0	2	13	1.0
REPORTED/NOT FOUND	0	0	0	0	0	0	0	1	1	0	2	0	0	4	
SUSPECTED MORTALITY	1	0	1	0	3	0	3	1	2	2	2	0	2	17	

KOOTENAY NATIONAL PARK

ANNUAL SUMMARY - BLACK BEAR

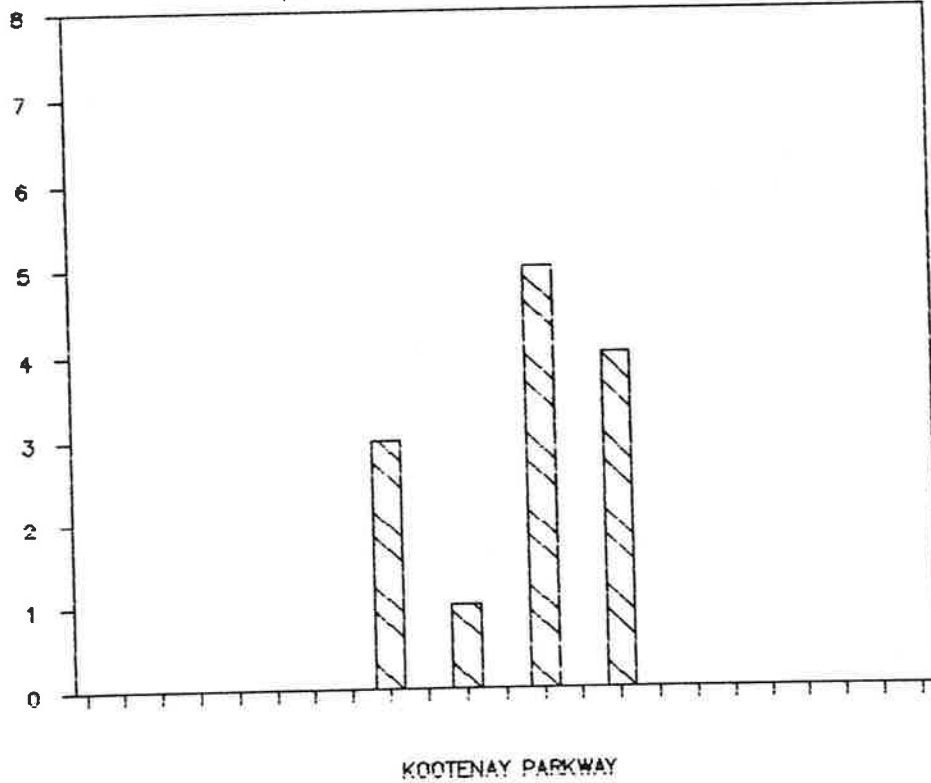
NUMBER OF MORTALITIES



KOOTENAY NATIONAL PARK

MORTALITIES BY MONTH - BLACK BEAR

NUMBER OF MORTALITIES



WARDEN SERVICE KOOTENAY NATIONAL PARK

WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1990

COYOTE

MONTH

MONTH	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	MEAN
JANUARY	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0.1
FEBRUARY	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0.1
MARCH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
APRIL	0	0	0	0	0	0	1	0	1	0	0	0	0	2	0.2
MAY	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0.2
JUNE	0	0	0	1	0	0	0	1	0	0	0	0	0	2	0.2
JULY	0	0	0	0	0	2	0	0	0	1	0	2	0	5	0.4
AUGUST	0	0	1	0	0	2	1	0	1	0	2	0	1	8	0.6
SEPTEMBER	0	0	1	0	0	0	0	0	0	0	2	0	0	3	0.3
OCTOBER	0	0	0	1	0	0	1	0	0	2	0	0	0	4	0.3
NOVEMBER	0	0	0	0	0	0	0	0	1	1	2	1	1	5	0.4
DECEMBER	0	1	0	0	0	0	0	0	0	0	1	0	0	2	0.2

TOTAL 0 1 3 2 0 4 3 1 4 8 4 1 35 2.7

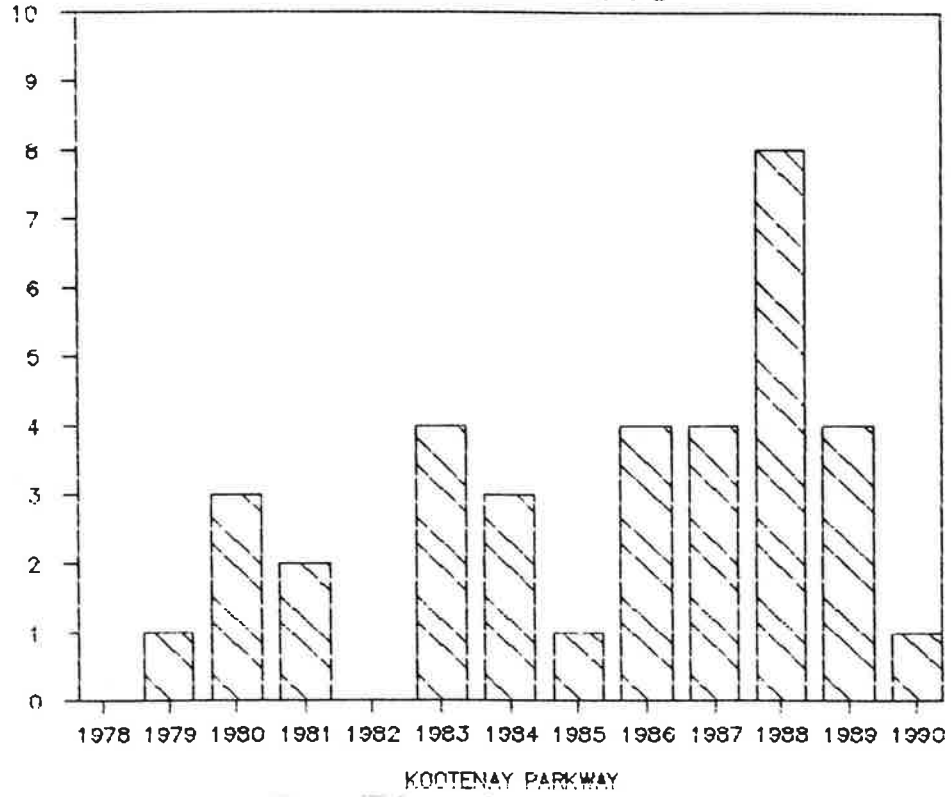
REPORTED/NOT FOUND 0 0 0 0 0 0 0 0 0 0 0 0 0 0

SUSPECTED MORTALITY 0 1 3 2 0 4 3 1 4 8 4 1 35

KOOTENAY NATIONAL PARK

ANNUAL SUMMARY - COYOTE

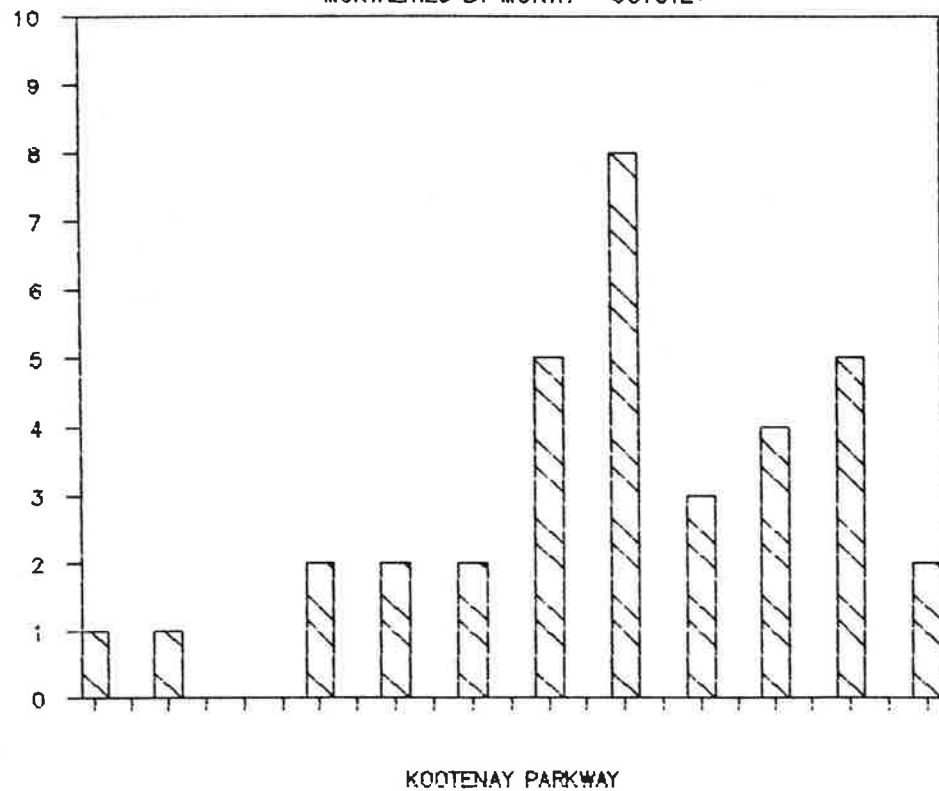
NUMBER OF MORTALITIES



KOOTENAY NATIONAL PARK

MORTALITIES BY MONTH - COYOTE

NUMBER OF MORTALITIES



WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1990

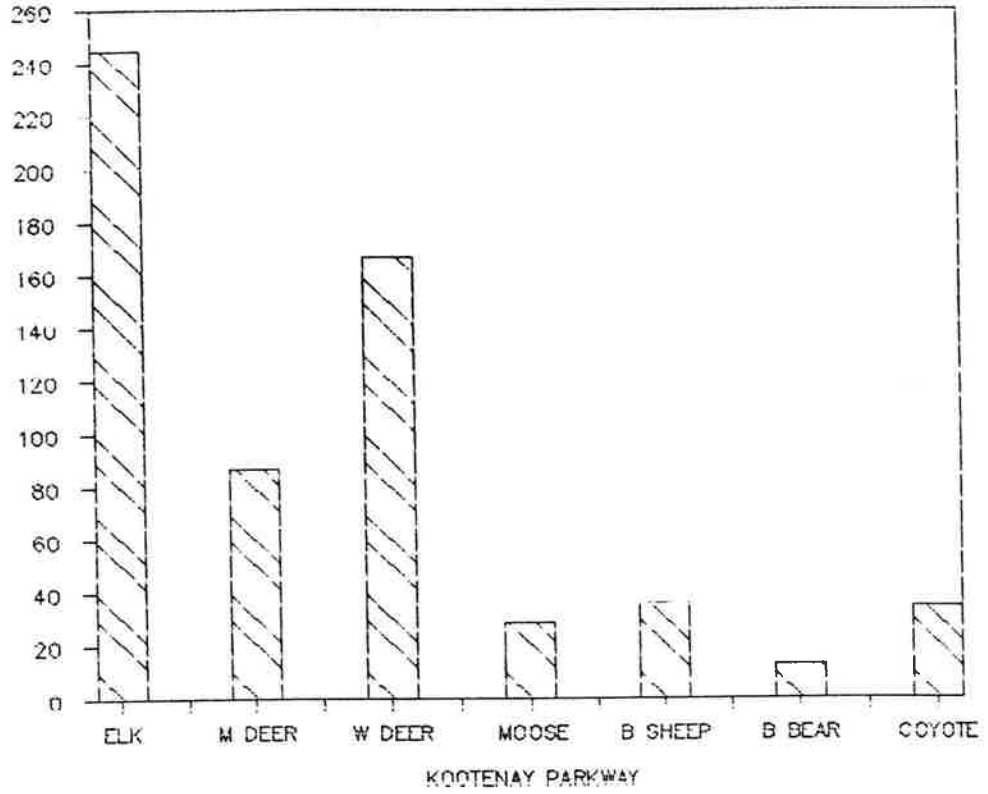
SUMMARY

SPECIES	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	MEAN
ELK	19	15	25	29	22	25	14	24	28	18	17	4	5	245	18.8
MULE DEER	7	5	11	4	2	4	7	8	7	5	14	9	4	87	6.7
WHITETAIL DEER	4	9	15	10	7	5	8	11	21	24	23	15	15	167	12.8
MOOSE	3	1	1	2	0	1	2	4	3	4	5	1	3	30	2.3
BIGHORN SHEEP	4	1	4	2	2	3	1	2	4	1	5	7	0	36	2.8
BLACK BEAR	1	0	1	0	3	0	3	0	1	2	0	0	2	13	1.0
COYOTE	0	1	3	2	0	4	3	1	4	4	8	4	1	35	2.7
YEAR TOTAL	38	32	60	45	36	42	38	50	68	58	72	40	30	613	47.2

KOOTENAY NATIONAL PARK

SPECIES SUMMARY 1978 1990

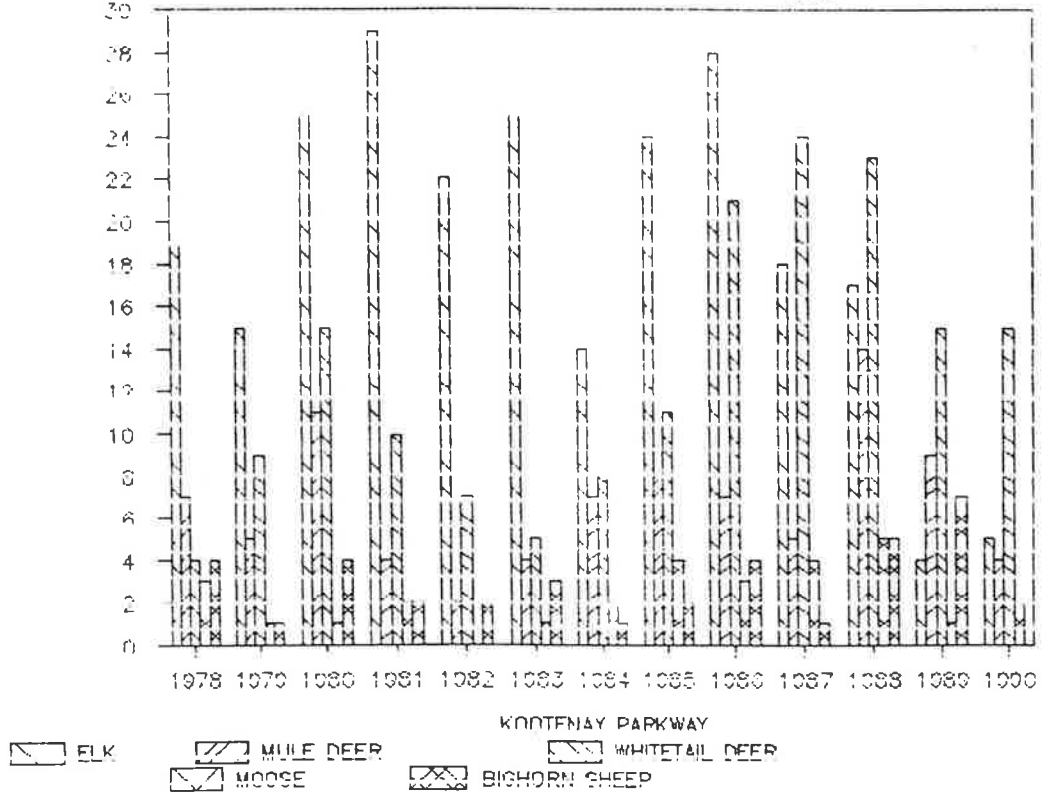
NUMBER OF MORTALITIES



KOOTENAY NATIONAL PARK

UNICULATE SPECIES SUMMARY 1978 - 1988

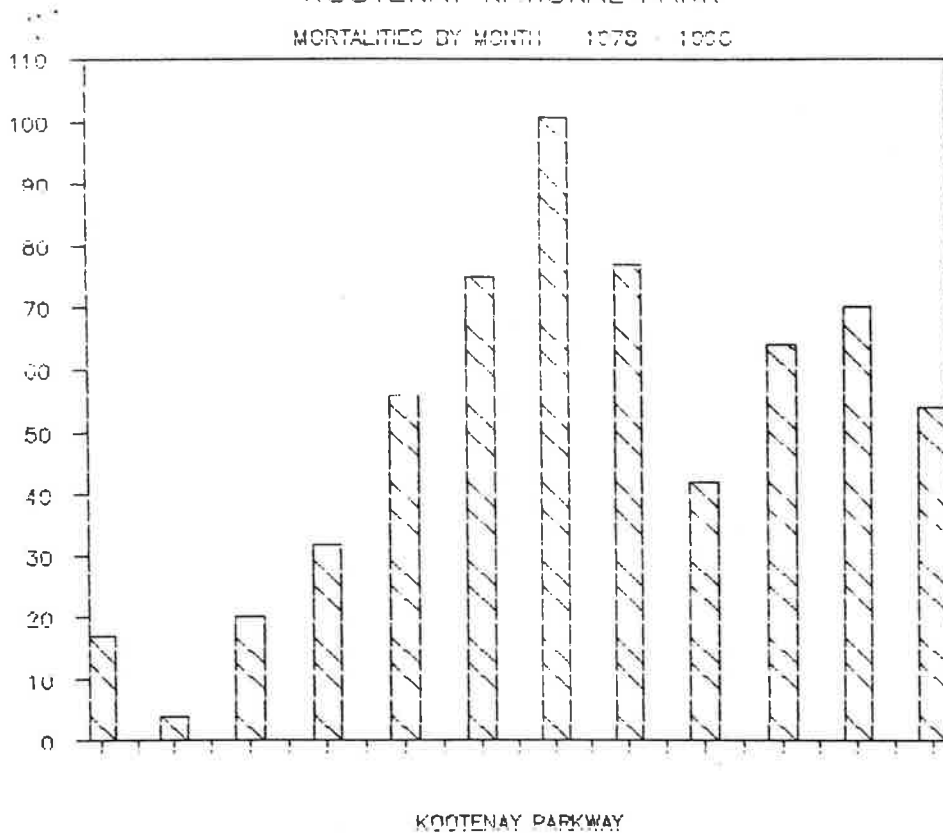
NUMBER OF MORTALITIES



KOOTENAY NATIONAL PARK

MORTALITIES BY MONTH 1978 - 1988

NUMBER OF MORTALITIES



KOOTENAY NATIONAL PARK

WARDEN SERVICE

WILDLIFE HIGHWAY MORTALITY STATISTICS

1978 TO 1990

SUMMARY BY MONTH

MONTH	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	MEAN
JANUARY	0	0	0	1	2	0	3	1	4	0	4	1	1	17	1.3
FEBRUARY	0	0	1	0	0	0	0	0	0	0	1	2	0	4	0.3
MARCH	0	3	1	5	1	2	1	2	3	0	0	0	2	20	1.5
APRIL	1	0	5	2	2	2	3	2	8	4	2	0	1	32	2.5
MAY	5	1	9	4	1	3	7	3	7	4	3	3	6	56	4.3
JUNE	1	5	9	5	6	4	2	8	12	2	12	6	3	75	5.8
JULY	7	6	8	13	6	8	3	5	5	11	14	9	6	101	7.8
AUGUST	5	2	8	5	3	6	3	5	8	2	11	9	11	78	6.0
SEPTEMBER	4	3	6	1	3	3	1	3	1	10	4	3	0	42	3.2
OCTOBER	8	4	7	4	1	6	7	6	8	5	4	4	0	64	4.9
NOVEMBER	4	4	2	4	8	3	8	5	7	12	11	2	0	70	5.4
DECEMBER	3	4	4	5	3	5	0	10	5	8	6	1	0	54	4.2
TOTAL	38	32	60	49	36	42	38	50	68	58	72	40	30	613	47.2