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REVIEW OF MANAGEMENT AND RESEARCH OF WOLF-BIG GAME
PREDATION IN ALBERTA

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Abstract

This report summarizes management and research of wolf predation of big game in Alberta as background information for planning future management of wolves in the province. Widespread build-up of wolves occurred in Alberta during the 1930s and 1940s and concern for big game populations became common. Control of wolves was ineffective until the anti-rabies program of 1952-56 when numbers of wolves were drastically reduced. Resource personnel, trappers and hunters who were active during that period report increases in big game calf survival and populations following the wolf removal. Big game populations continued to increase during the 1960s partly because of beneficial changes to their habitat by logging and fires. Moose populations were not adversely affected by the very severe winter of 1964-65 when wolf populations had only partially recovered. As wolves increased during the 1960s so did hunting pressure because of improved access, use of all-terrain vehicles and more hunters. By the mid to late 1970s moose were declining in many areas. Primary factors in this decline were ticks, hunting and predation. Research results suggest wolves removed more big game than hunters in most populations studied.

INTRODUCTION

The role of wolves (Canis lupus) in the regulation of big game populations has been reasonably well clarified in recent years (Gasaway et al. 1983, Keith 1983). In a review of major studies in North America (J. Gunson, 1983, Fish and Wildl. Div., unpubl. rep.), wolf predation was the major source of mortality for some big game populations and, in combination with a variety of environmental circumstances, resulted in population declines. Key contributing factors were winter severity (Gasaway et al. 1983), prey habitat deterioration (Mech and Karns 1977) and human harvest (Davis et al. 1980, Thomas 1981).

The understanding of the role of wolf predation in big game populations has provided justification for wolf control in recent years in several jurisdictions in northwestern North America. In Alaska, debate over wolf management has been bitter and control programs have often been restricted or delayed by legal injunctions from animal welfare groups and conservation organizations (Harbo and Dean 1983). In the Yukon and northern British Columbia control has elicited much public controversy and debate.

In order to effectively plan wolf management in Alberta, I decided to review wolf-big game trends and management philosophies and programs beginning in the early 1940s during the first major increase in wolf abundance in the 1900s (Stelfox 1969, Gunson 1983a). The purpose of this report is to provide a historical perspective and understanding of this problem so future management may benefit from past experiences.

STATUS AND MANAGEMENT (for a summary see Table 1)

Prior to the 1940s

Because of extensive strychnine poisoning during the late 1800s and low prey abundance wolves were uncommon in Alberta during the first three decades of this century. Taking of wolves for bounty by shooting, trapping and poisoning was likely important in keeping the low density wolf population of this early period in check. Bounty payments began as early as 1899 (Pimlott 1961). Regulations in 1917 set bounties of 20, 10 and 1 dollars for females, males and pups respectively (Todd and Geisbrecht 1979) although these values changed often during ensuing years. By 1932 prey numbers had improved and wolf populations, in response to removal of the bounty in 1931 and little fur demand and prices, were increasing according to S. Clark, Game Commissioner. The bounty was reinstated in 1935 and payments were increased in 1937 and 1939 (Lewis 1979) in response to complaints by hunters.

1943-47

By the mid 1940s wolves were quite abundant in most forested areas of western and northern Alberta (Stelfox 1969) as far south as Banff National Park (Green 1951). Soper (1948) interviewed many Indians and whites in the Peace River-Grande Prairie area of northwestern Alberta in 1944. They reported abundant wolves still on the increase and severe predations on livestock. These local residents told Soper the wolves "are heavy killers of mule deer and, to a lesser extent, moose".

A review of Annual Reports of the Fisheries and Game Administration during the 1940s indicated a growing concern that wolves were reducing big game stocks. Although there was no mention of predator problems in 1943, Game Superintendent G. Forsland mentioned wolf predation of deer (Odocoileus

spp.) and moose (Alces alces) calves in 1944. In 1945, E. Huestis, the Fish and Game Commissioner, conceded that wolves had made inroads on these two species. Attempts were made to determine the best methods of reducing wolves. The use of snares was allowed on registered traplines, although apparently few wolves were taken in this way. A peak of about 700 wolf pelts were marketed in Alberta in 1944, but with a decline in price from about 18 to 3 dollars by 1947, production declined abruptly for several years (Todd and Geisbrecht 1979).

Although poisons were ruled out by government after consultation with authorities in the USA some trappers, at least in northeastern Alberta, were poisoning wolves with strychnine (J. Doonanco pers. comm.). Doonanco, who was an active trapper during this period, reports that carcasses of poisoned wolves were often burned in order to eliminate secondary poisoning.

In 1946, Forsland observed that elk (Cervus elaphus) and deer were increasing in the southwest and that moose were in good numbers south of Rocky Mountain House. In parts of northern Alberta year-round hunting by natives and wolves was thought to have depleted moose populations. Mortality from ticks (Dermacentor albipictus) was important too as Doonanco recalls heavy die-offs of moose in northeastern Alberta in 1946-47. By 1947, caribou (Rangifer tarandus) had all but disappeared from Willmore Wilderness Park following the development of logging operations on their winter range, two severe winters, 1945/46 and 1946/47, and very high wolf populations (Edmonds and Bloomfield, in prep.). In 1946 hunters reported a scarcity of bull and calf moose in the same area and Forsland, in the 1947 Annual Report, related this to persistent trophy hunting by non-residents and wolves.

1948-51

By the late 1940s, concern over numbers of moose and caribou had intensified. Forsland (1949:99) reported moose were "barely holding their own" and "Big game outfitters and guides inform me that large numbers of Timber Wolves in the foothills are killing most of the moose calves and preventing an annual increase". Forsland mentioned tick infestations might have been involved in the moose decline. The hunting season for moose was closed during 1950 and 1951. The caribou season was closed in 1948, but reopened in 1950 because of a belief that many caribou had temporarily migrated into neighbouring British Columbia. However, Edmonds and Bloomfield concluded caribou remained at a very low level.

J. Williams, a Fish and Wildlife Officer at Rocky Mountain House, recalls many big packs of wolves in the area in 1951 and that the game was being "cleaned out by wolves" many of which were mangy (pers. comm.). By 1950-51 cyanide-ejecting "coyote getters" were distributed to field staff to reduce numbers of coyotes and wolves in forested areas (Huestis 1951) although some were apparently being tested as early as 1948 or 1949 (LaFoy pers. comm.). Huestis reported that big game predators remained a problem in 1951 and that necessary ammunition, poison, snares and traps were supplied for control.

Local concern about wolf predation on big game in the Clearwater Forest was a major reason for the formation of the Dickson club of the Alberta Fish and Game Association (AFGA) in 1948 (E. Kure pers. comm.). After several public meetings in the area the club took up the challenge of E. Huestis to do something about the perceived wolf problem. Conditions were that local trappers be informed and a report be provided upon completion. This agreement resulted in a wolf control program during winter 1951-52 in

which 15 poison sets were established using quarters of horse for draw bait and powdered or cubed strychnine. During the 1 week of bait setting a trapper reported seven bull elk recently killed by wolves and the party located a cow moose killed by about 20 wolves. Deer sign was virtually non-existent in the area. A pack of 13 wolves was taken on one bait, and in all 17 poisoned wolves were counted although the total kill was likely higher.

Depredations of livestock by wolves occurred throughout most forest/settlement fringe areas during this period. Few, if any, records of control are available because landowners had easy access to strychnine and removed wolves when necessary (J. Doonanco, F. LaFoy, T. Loblaw pers. comm.).

1952-56

The appearance of rabies in foxes (Vulpes vulpes), coyotes (Canis latrans) and wolves in 1952 accelerated wolf control programs. Rabies was laboratory diagnosed in one wolf, and two hogs bitten by wolves in the Fort Vermillion area were confirmed as rabid (E. Ballantyne, 1957, Alberta Agric., unpubl. rep.). Traplines to control carnivores were established along fringe agricultural-forest areas and in the vicinity of some northern communities. A double trapline, 8,000 km (5,000 mi) in length and employing 170 trappers, was established on forest edges surrounding settled areas (Heustis 1953). Control methods included snaring, trapping and denning, but most wolves were removed by poisoning. W. MaGee of the Hinton area, found wolves very abundant when the program commenced in 1952 and took 64 wolves the first winter (pers. comm.).

The estimated kill of wolves by February, 1956 was 5,461 (Ballantyne 1958). This estimate included a correction of 3-4 wolves dying up to several

km from baits for every dead wolf at baits as determined by selected trappers. Based on more recent observations of strychnine poisoning and on discussions with several of the rabies program trappers this correction was likely too liberal and actual number of wolves taken was probably somewhat less. However, poisoning by some fur trappers continued during this period and 2,443 wolves were bountied during the final 3 years of that program which ended in November, 1954 {the wolf bounty was discontinued by agreement of wildlife administrators in western Canada at a time when all jurisdictions were developing wolf management programs}. The provincial wolf population may have been reduced to between 500-1,000 (Stelfox 1969).

Trappers and others involved in the rabies program reported an increase in moose and deer populations in many areas as early as the fall of 1953. Ballantyne and O'Donoghue (1954:324) observed "Normally, few sets of twins of either species are seen during the fall months, but in the fall of 1953, twins were common in all forested areas." LaFoy (pers. comm.) believes the rabies program "saved the calf {moose} crop" and ultimately allowed a great increase in moose numbers in northwestern Alberta. Kure and Loblaw report major increases in big game in the Clearwater Forest and MaGee similarly recalls moose and elk increased in the Berland River area following the control program.

The moose season was reopened in 1952, closed again in 1953 and 1954 and reopened in 1955. Stelfox (1955, Alberta Fish and Wildl. unpubl. rep.), in reporting a successful big game harvest in 1955 in western Alberta, concluded, "Predator control coupled with a few favourable years {weather} has produced a terrific come-back in the big game in this area."

Wolf control was stepped up in the Willmore area in 1954 when caribou numbers were still scarce and estimated at 200 to 300 in 1956 (Stelfox, 1956, Alberta Fish and Wildl. Div., unpubl. rep.). This control continued until 1964 and may have almost eliminated predation on the caribou population (Edmonds and Bloomfield in prep.).

1957-66

Reports of wolves during the early part of this period were not common, but could provoke controversy and control. D. Dekker (pers. comm.) recalls one such incident in 1961. The sighting by a pilot of several wolves and their kills along the Brazeau River was reported by the Calgary news media. Because of his interest in wolves Dekker investigated and confirmed the presence of five wolves near the forest reserve/settlement boundary which he reported to Fish and Wildlife. On a subsequent trip to the area he discovered a bait had been established.

Extensive fires during 1950-55 and continued logging improved range conditions for big game during this period. A series of mild winters during 1956-60 further assisted big game numbers to increase dramatically (Stelfox pers. comm.). In 1957, despite 2 years of hunting, Huestis reported decided increases in both moose and deer over the last few years and numerous moose calves were being observed. Although severe weather and ticks were common in winter 1961-62 and fairly severe weather recurred in 1962-63 moose densities were high in 1962 and 1963 and moose harvests increased annually in western Alberta until 1963 (J. Stelfox, 1964, 1966, Alberta Fish and Wildl. Div., unpubl. reps.). According to Stelfox (pers. comm.) the implementation

of the first split season (eg. 1961 Sept. 18-27 and Oct. 17-Dec. 10) for big game in northwestern Alberta in 1961 encouraged harvests.

Wildlife managers considered big game numbers, range conditions wolf populations and hunter harvests and distributions when planning predator management. Stelfox (1958, Alberta Fish and Wildl. Div., unpubl. rep.) wrote "It should not be the design of the predator control manager to exterminate the wolf in a big game area but rather to keep a close watch on the wolf and big game populations, the big game range and human hunting pressure and then to take control action when it is required."

Generally, control was recommended where wolf packs exceeded five per pack in heavily hunted areas, and where they exceeded eight per pack in moderately hunted areas. Control was not recommended in sparsely hunted areas or where browse conditions had deteriorated in the face of excessive big game numbers. Most wolves taken during 1957-65 were in western and northwestern Alberta as numbers of wolves in other forested areas were minimal following the rabies program. Cahalane (1963) estimated 1200+ wolves in Alberta in 1962-63. Stelfox (1964, 1965, Alberta Fish and Wildl. Div., unpubl. rep.) reported 88 wolves poisoned during three winters 1962-63 to 1964-65.

The winter of 1964-65 was very severe and the 1965 Annual Report of the Fish and Wildlife Director stated "Excessive snowfall, sub-zero temperatures and high winds combined to cause severe stress to wild ungulates and upland birds." Despite this, the 1966 Report concluded "The severe winter of 1964-65 appeared to have little effect on moose populations in most regions of Alberta." Stelfox (1966) estimated an average of 0.50

moose/km² (1.3/mi²) or about 106,000 moose in western Alberta by the end of this period. Elk populations were reported as holding their own and spreading northward and eastward in the northwest district. In the Willmore, caribou had increased dramatically during this period and Stelfox (1966, Alberta Fish and Wildl. Div., unpubl. rep.) estimated 800-1000 caribou in 1961 and 1200 to 1600 by 1966. Hunting success on caribou began to increase in 1960 with a mean annual harvest of 26 from 1960 to 1965 compared to a mean of 12 during 1955 to 1959 (Edmonds and Bloomfield in prep.).

During the latter portion of this period, wolves began appearing in areas where few or none had been observed since the early 1950s. Average market value of a wolf pelt increased from about 2 to 20 dollars, but annual production was less than 350 pelts except for 1959 and 1964 when 600-700 pelts were marketed each year. By 1966, Stelfox, in establishing hunting regimes, stressed the importance of considering the "high bear and wolf populations in the Peace River - Slave Lake Region as well as the high moose kill by white and Indian residents." More effort was directed to wolf control in areas of substantial big game harvests that winter and 73 wolves were taken (1966, Alberta Fish and Wildl. Div., Ann. Rep.; Kemp, 1966, Alberta Fish and Wildl. Div. unpubl. rep.). This was the last year of wolf control for big game management in Alberta.

1967-71

Moose populations in the foothills and other areas of Alberta remained high during this period. Recreational hunting increased dramatically and the use of all-terrain vehicles made remote areas accessible. In 1967, attempts

were made to increase non-resident hunting by advertisements in newspapers in the northwestern USA and 9,927 non-resident moose licences were sold with a subsequent estimated harvest of 3,605 animals (Smith 1968). That level of response was unexpected and fewer licences were offered in subsequent years. Total moose licences sold annually during 1968-71 were 48,000-57,000 (G. Lynch, 1973, Alberta Fish and Wildl. Div. unpubl. rep.) and total harvest by all recreational moose hunters was likely about 22% or 12,000 moose per year (Lynch pers. comm.).

Consensus of game biologists during 1967-69 was that wolves were increasing but wolf predation was not suppressing big game numbers. Stelfox (1969) estimated a provincial population of 3,550 wolves in 1969. According to the 1967 Annual Report, predator control was conducted only where occasional livestock depredations occurred and that policy was reaffirmed in ensuing reports.

By the end of this period, however, hunters were reporting ever increasing signs of wolves in the Nordegg - Edson - Swan Hills area and in 1971 a resolution requesting a wolf management program was submitted at the annual meeting of the AFGA. It was defeated partly because members were reluctant to reinstate poisoning in the Green Area.

1972-83

Wolves likely reached their highest levels in recent times throughout northern and western Alberta during the early part of this period. Provincially, wolves probably exceeded 5,000 for several years; Lynch (1973 rep.) calculated a provincial population of 8,417 based on potential densities

of 1 wolf/24-48 km² (15-30 mi²). Despite a dramatic increase in market value to over 80 dollars per wolf pelt (\$124 in 1979) during this period, production averaged only about 500 pelts annually. The greatest number of wolves taken in annual control programs in livestock areas was 144 in 1975-76 and sarcoptic mange, an ectoparasite infection associated with high numbers of wolves was most common in 1974-75 (Todd et al. 1981).

Packs of wolves occupied permanent territories south of the Bow River with depredations on livestock occurring in the vicinities of the Highwood River by 1974 and the Oldman River by 1976-77. In more northern and western areas, depredations were occurring annually and in excess of 100 complaints were investigated each year. A program to indemnify ranchers for losses was implemented in 1974. Control by strychnine poisoning removed an average of 76 wolves/year during this 11-year period.

During the mid 1970s, resolutions were submitted annually to the AFGA convention concerning the effects of wolves on big game. Beginning in 1974-75, the Association was asked for an investigation into an "apparent wolf population explosion" and by 1977-78 the resolution requested an "effective wolf control program" (Appendix I). Sportsmen may have decided not to wait for government action as covert poisoning programs were reported from areas north of Athabasca (F. Neumann pers. comm.) and west of Rocky Mountain House (E. Bruns pers. comm.). Although charges were not laid investigations of these successful but illegal poisonings of wolves indicated involvement of hunters and registered trappers.

Other illegal poisonings of wolves occurred during this period. For example in the Simonette River area where wolf predation of cattle on remote

pastures was being evaluated by the Division (Bjorge and Gunson 1983) cases of illegal strychnine poisoning were observed. In this and other areas ranchers occasionally remove poison baits from Divisional poison sites and reset them at other locations. Strychnine baits intended for coyote control in settled areas and available through the Department of Agriculture have been utilized to remove wolves.

During the 1970s and early 1980s big game, especially moose, declined throughout much of northern and western habitats despite mild winters. G. Lynch, who has worked on moose management in Alberta since the late 1960s contributes this decline to loss of habitat to agriculture and industrial development, intensive recreational hunting, wolves, and infestations of ticks. Lynch (1980, Alberta Fish and Wildl. Div., unpubl. rep.) listed human pressures that tend to discourage moose populations as including more hunters, both native and recreational, harassment from snowmobiling, trail biking, etc., improved hunters access often on seismograph lines and oil and gas roads, and widespread use of all-terrain vehicles. Organized illegal harvest of big game occurred during this period as well. In one case in southern Alberta 78 charges were laid.

Heavy tick loads on moose first became evident in 1977 and infestations continued in ensuing years especially where deciduous forests dominated (W. Samuel pers. comm.). Mild weather during the late 1970s allowed greater exposure to ticks in fall and better survival of gravid female ticks in spring thus ensuring rapid growth of tick populations. Tick-related deaths were particularly severe during winter-spring 1981-82, a winter of heavy snowfall in northern Alberta, when mortality may have reached 45% in some

areas (B. Rippin pers. comm.). Estimates of numbers of ticks per dead moose were as high as $90,000 \pm 31,000$ in 1981-82 (W. Samuel unpubl.).

Following the severe winter of 1981-82 wolf complaints from trappers, hunters and ranchers during 1982 were more common than in previous years (J. Gunson, 1983, Alberta Fish and Wildl. Div., unpubl. rep.). Several Fish and Wildlife Districts in west-central Alberta reported significant increases in reports of wolves in 1982. Of special interest were observations of wolves in or near several townsites that year. Hunters recorded wolf observations on big game questionnaires distributed by the Fish and Wildlife Division (S. Schurman pers. comm.) or wrote letters of concern to the Government (eg. Appendix II).

RESEARCH

The effect of wolves on big game on provincial lands in Alberta has been investigated in five locations since 1969 (Table 2). More detailed results are described below.

The first project was initiated in the Rock Lake area, near and within Willmore Wilderness Park. Caribou were reported to be declining in the area since the mid to late 1960s (Edmonds pers. comm.) and mortality from wolves was thought to be important. Caribou remains occurred in 31% of 133 winter wolf scats collected during this project, the highest of any prey species (J. Edmonds pers. comm.). This preliminary effort was not sufficient in detail or length to permit an evaluation of predation effect.

A more intensive project to investigate caribou in the area of Willmore Park and adjacent foothills was carried out during 1979-83 when the population was about 1 caribou/48 km² and still declining (Edmonds and Bloomfield, in

prep). Although caribou remains occurred in only 2% of 91 winter scats wolves were implicated in at least 2 of 6 summer deaths. Edmonds believes mortality from wolves and bears may be limiting this population.

In the Alberta Oil Sands Environmental Research Program (AOSERP) area of northeastern Alberta wolves were monitored by radio-telemetry during 1975-78 and their effect on moose was recorded (Fuller and Keith 1980). One pack in a low-density, but increasing population of 1 wolf/151 km² consumed about 15% of moose older than calves, while sport and native hunters and trappers harvested 9%. The Muskeg River pack, which was monitored daily during mid-late winters, 1977 and 1978, killed a moose every 4.7 days or 0.021 moose/wolf/day. Moose occurred at 0.18 moose/km² or 28 moose/wolf and based on surveys dating back to 1972, the population was thought to be slowly declining or stationary (Hauge and Keith 1981). Fuller and Keith concluded that wolves were the major limitation on that population. More recent moose surveys during 1982-84 indicated this moose population was at about the same level or somewhat lower (Ripin pers. comm.).

The same investigators observed moose/wolf predation in the Swan Hills area of central Alberta during 1975-76. Wolf densities of 1 wolf/83 km², or about twice the density of AOSERP, were likely not limiting moose that occurred at about 1.1/km² (Lynch unpubl.) or 99 moose/wolf; despite the fact the one pack studied consumed moose at a slightly greater rate than the Muskeg River pack in AOSERP. The wolf population in the general area had been reduced in numbers by trapping and shooting and a serious infestation of sarcoptic mange.

Wolf predation of big game was observed during 1976-81 in the Simonette River area of northwestern Alberta during an evaluation of cattle mortality on remote grazing leases (Bjorge and Gunson 1983). Moose were abundant at 0.7-1.6 moose/km² or 50-74 moose/wolf and represented 64% of 61 big game kills examined. Numbers of wolves during the preliminary phase without wolf control continued to increase to 1 wolf/42 km². Following 2 years of wolf control, during which 93% of the wolves were removed or died or left the area, numbers of moose did not increase noticeably. We concluded that wolves were not limiting moose although the long-term predation effect of an unexploited wolf population was not determined.

The effect of wolf predation on elk in this area was examined as well. Elk, which occurred at lower densities than moose (about 0.04/km²), represented 28% of the 61 kills and were killed at about 3 times the rate of moose in relation to availability. Although local residents thought the elk population increased during the study period we could detect no changes based on winter aerial surveys. Calf/cow ratios during three winters averaged 35/100 cows suggesting good survival despite a selection of calves over older elk during winter; 11 of 16 kills were calves. We concluded that combined mortality from wolves and hunters was about equal to recruitment, with wolves removing more elk than hunters in this population.

A project to determine the effect of wolves on elk and moose was initiated in the Nordegg area of western Alberta during 1983-84. The Baldy pack of 4 wolves, located in foothills habitat, consumed moose (7 of 12 kills) and deer (46% of 46 scats) during winter. The Blackstone pack of 9, located in more mountainous terrain including a portion of Jasper National Park, consumed mostly elk (16 of 22 kills) and deer (59% of 86 scats) during

winter. Despite occurrences of elk within the range of the Baldy Pack and several observations of this pack near them, elk were not consumed (0% of 46 scats and no elk kills found). Summer-fall diet of the Baldy pack as determined from scats was comparable to the above winter diet with moose in 30% and elk in 3% of 124 scats. Wolves were at very low density (1 wolf/204 km² throughout this area partly because of trapping and hunting. Numbers of elk taken by the Blackstone pack was suggestive of effective limitation, but after only 1 year of study this conclusion is tentative. Wolves were taking more elk than recreational hunters in this trophy-only (5 antler points or better) zone.

CONCLUDING DISCUSSION

The importance of factors other than wolf predation to big game abundance must be recognized. Increases in big game, especially moose, during the 1950s and 1960s were undoubtedly amplified by improvements in habitat from logging and fires. The depreciating effects of hunting and ticks must be considered in the decline of moose during the 1970s. Of special concern should be the undetermined effect of native and illegal hunting.

This review suggests that predation by wolves has been an important limitation to some big game populations in Alberta. When wolves were abundant during the late 1940s-early 1950s and again during the 1970s, big game declined. On the other hand when wolves were scarce during the late 1950s and early 1960s big game increased. It is especially noteworthy that moose increased between 1955 and 1957 despite 2 years of hunting and again following the severe winters of 1961-62 and 1964-65 when wolves were

rare or uncommon. Similarly, caribou increased dramatically from 200-300 to 1200-1600 in the Willmore during the period of wolf scarcity between 1957 and 1966 and then declined once again during the late 1960s and 1970s when wolves were common and harvests by humans were low.

Further insight on the importance of wolf predation to big game populations was provided in research results. Wolves were the major source of mortality for moose in northeastern Alberta during 1976-78 and were the primary cause of low moose populations despite relatively low wolf densities. In the Simonette and Nordegg areas, where wolves had not attained maximum densities because of human exploitation, wolves were killing more elk than were recreational hunters.

This review supports evidence from investigations in other areas that wolf predation must be considered in big game management. Long-term maintenance of big game populations, in areas where recreational hunting or extensive habitat alteration occurs and/or where severe winters or other debilitating factors such as moose ticks occur, may require management of predation. Management systems need to be identified.

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Erratum

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Table 2. Summary of wolf/big game research in Alberta (excluding National Parks).

Area	Year	Major Prey	Prey Populations	Winter Wolf Density	Wolf Food Habits		Source
					Method	Results	
Willmore Wild. Park (Rock Lake)	1969-70	Caribou Moose/Deer/Elk	Declining	Unknown	Winter scats, N=133 Scats	31% ¹ 24%/23%/14%	Edmonds, pers. comm.
Willmore and adjacent foothills	1979-83	Caribou Moose/Deer/Elk	Low (declining) (1/4B km ²)	Unknown	Winter scats, N=91 Summer kills, N=6 Winter scats	2% 2/6 19%/10%/11%	Edmonds and Bloomfield, in prep.
AOSERP, NE Alta. Muskeg River pack	1975-78	Moose	Low (stable or declining) (1/4-33 km ²)	1/151 km ²	Summer scats, N=1524 Winter kills, N=39	21-55% Occ. 0.021/w/day	Fuller and Keith 1980, Hauge and Keith 1981
Swan Hills Foley pack	1976-77	Moose	High (slightly increasing) (1/0.5-1.0 km ²)	1/83 km ²	Summer scats, N=77 Winter kills, N=4	75% 0.027/w/day	Lynch, pers. comm., Fuller and Keith 1980
Simonette River Muskeg Lake pack	1975-81	Moose Elk	High (stable) (1/0.6-1.4 km ²) Stable (7% of total Ung's)	1/42-90 km ²	Winter kills, N=61 Winter kills, N=7	64% 0.020/w/day 28% of 61 kills	Bjorge and Gunson in prep.
Nordegg	1983-84						
Blackstone pack		Elk/Deer/Moose	Elk (stable or declining)	1/202 km ²	Summer scats, N=67 Winter scats, N=86	18%/27%/37% 22%/59%/8%	Clarkson, Schmidt and Gunson, unpubl.
Baldy pack		Elk/Deer/Moose	Stable?	1/209 km ²	Winter kills, N=22 Summer scats, N=124 Winter scats, N=46 Winter kills, N=12	73%/18%/5% 3%/16%/30% 0%/46%/39% 0%/33%/58%	

¹Scat results are % scats unless indicated otherwise.

Appendix I

1974-75

Resolution No. 21 — Investigation of Wolf Population Explosion

Our Association has asked for an investigation into the apparent wolf population explosion.

1975-76

Resolution No. 27 (as amended)

That continuing efforts be made to control predators, such as wolves in the Province's forest areas by the most efficient means available except poison. Carried as amended.

1976-77

RESOLUTION NO. 27/76

That continuing efforts be made to control predators such as wolves in the province's forest areas by the most efficient means other than poisons.

- a) Biologists report the wolf populations peaked in 73-74 and fewer animals have been seen in the past two years. A similar situation exists with coyotes.
- b) Some control measures are in effect now in some areas and all use of poisons will be phased out by 1978.
- c) If left alone wolves will regulate themselves. High predation periods are in the summer months. Predation has little effect on areas of high game populations but is of concern in areas of low game populations.
- d) Recent studies completed in the Westlock area indicate coyote populations can be reduced to minimum levels if all agricultural carrion is removed. Clubs could do a great deal to ensure carrion is removed from range or grazing areas and properly disposed. A pamphlet is available on this subject from the division (complete).

1977-78

RESOLUTION NO. 4

BE IT RESOLVED THAT: The Alberta Fish & Game Association put vigorous pressure on the Government's Fish and Wildlife Division to have them start an effective wolf control program in the green area immediately.

BRIEF: In recent years there seems to have been a virtual population explosion among Timber wolves in the green area of Zones 3, 4 and 6. Our big game populations are suffering badly by these large predators, sign and tracks are found everywhere throughout the green area and hills area. It is very evident that a wolf control program is urgently needed in some areas. We cannot ignore this situation any longer.

1982-83

Zone 4 — Pembina River**Resolution No. 31**

BE IT RESOLVED THAT: The Alberta Fish & Game Association continue to urge the provincial government to institute a wolf study and control program.

BRIEF: Whereas there is heavy pressure on our big game and their habitat from industry, lumbering and agriculture.

And whereas recreational pressure is ever increasing from more access and more hunters with modern mechanization and A.T.V.'s.

And whereas the AF&GA has passed resolutions in the past requesting a wolf study program and control measures, as it is understood that at the present time there is no study on wolves or control going on anywhere in the province.

And whereas many hunters returning from hunting Willmore Wilderness and other areas in the province, have reported little sign of antlered game and considerable sign of wolves.

And whereas one of the proposals of the new Wildlife Policy states that, "The primary consideration of government is to ensure that viable Wildlife populations be maintained and protected from severe decline."

Appendix II

George & Joan E. Mitchell
Box 20 - SR 71
Carvel, Alta. T0E 0H0

Director,
Energy and Natural Resources
Fish and Wildlife Division
P.O.Box 1390
Edson Alberta
T0E 0P0.

Dear Sir:

I write you to ask your assistance in a pressing wild-
life problem in the Luscar- Cadomin-Mountain Park and Grave Flats
country of your Division. During the past few years I have not-
iced a dramatic increase in the wolf population in this area that
is having a very drastic impact on the antlered game in this ar-
ea.

Let me give you an example, between the 25 th of May and the 5 th
of June 1982 I was at my cabin at Cadomin looking for a Grizzly
bear, During all this time the ground was snow covered between
Cadomin and the top of the Cardinal divide I observed six fresh
wolf kills along the road. One was a mule deer doe, One was a
yearling bull elk (Prospect) One wolf killed this elk and was
feeding on it when my son and I surprized him. He had ate less
than ten pounds of meat before we scared him from the carcass
he never returned to it, even though we watched it for three da-
ys. The other five elk were all cows. During the second week
of October 1982 fourteen wolves killed three elk on the old me-
untain Park Townsite, two of these were adult cows, and one was a
calf of this year.

My son who is an R.C.M.P. Officer at Dawson Creek.B.C. came to
hunt for a Bighorn (I had a Guiding Authority for him) in two
weeks of steady hunting we saw a total of nine adult cows and
one calf elk, and one Bull elk that was spotted by your game
Officer "Ron Hansen", east of the townsite of Cadomin, we saw no
moose, and three mule deer does. We made a three day trip into
the Ruby country, and saw no one head of antlered game or a track
of one while in there (Ground Snow covered) neither did we see
a wolf track in there.

The majority of the wolves appear to travel from Grave Flats, along
the Red Cap range, cross over at Mountain park and travel over to the
head of Drummond creek and into the head of the whitehorse creek,
while others come out of the head of the McKenzie (North side of
the Red Cap Range) cross over north of Cadomin and then travel up
into the head of Trapper Creek. During the past three winters
they have killed four horses at Cadomin.

I have spoken to Bob Kazmir and his Brother Mack who both work at
Luscar, but also have the Trap line at Red Cap Cabin and they say
that they are not smart enough to Trap them. Bodenchuk who works
at Hinton and has the line up the whitehorse creek, traps very litt-
le and to my knowledge has only taken one in the past five years.

While I realize that there is a long season on them for hunters with
a wildlife certificate, no one hunts them, except if they see them
while looking for other game. They are very elusive animals, and
if you do see them in this area, it is usually at great distance
offering no chance for a sure shot at them. I have had my cabin
at Cadomin since 1967 and have never shot an elk in this area, nei-
ther has any of my family, the reason is simply this, there are very
few trophy bulls there. We occasionally see spikes and small point-
ers (A) but rarely one big enough to shoot. At one time this was
the prime elk area in Alberta. The wolves now take all the repre-
duction, plus many of the older animals.

They are also working on the sheep, for I see sheep hair in their
droppings, I do not know if they caught these sheep, or if they died,
however, they travel right along the top of the Red Cap Range, even
have a trail in the winter right along the top of Red Cap. While
my wife and I were tearing down the sheep trap at Cadomin in June
your wildlife technician "John Taggart" came along and while he was
talking to us, two black ones were observed traveling along above
timberline, obviously looking for sheep. That same evening while
we were hammering and pulling nails, there were five rams right
besides us when two grey wolves rushed out of the bush and tried
to get the sheep, within fifty yards of us. The sheep escaped by
running into the pit, but the wolves showed no fear of us, and stayed
for ten minutes, before heading west towards Cadomin.

I spoke with the previous Game Officer Ralph Sivold and he said then
that he was glad to see the Kazmirs take over the Trap line in the
Red Cap, and then maybe they could get some control of the wolves
as you see in my previous comments, they have done nothing. In
discussing this with Ron Hansen, he suggested that this letter be
sent.

I realize that this letter probably should of been sent to the Min-
ister, however, I will leave it to you to send a copy if you se wish.
I hope that some steps will be taken to reduce the wolf population
in this area, so that the antlered game would have a chance to pick
up to an huntable level. It would not help to close the hunting ses-
sion for antlered game in this area, it would only further an increase
in the wolf population.

Yours Truly
George Mitchell
George Mitchell.