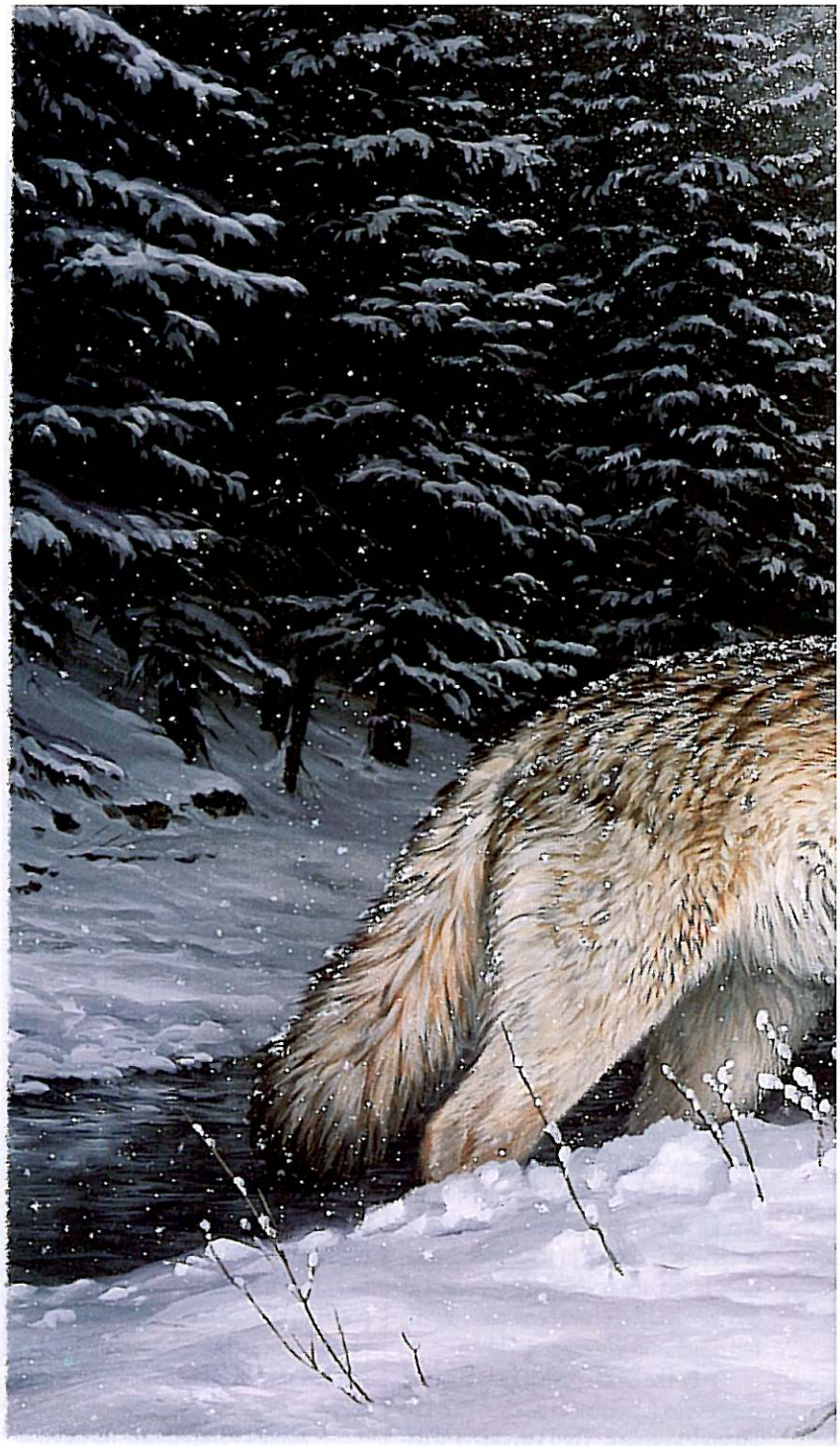
THE WOLVES ARE COMING! THE WOLVES ARE COMING!



By James M. Peek, Ph.D.

With so much interest in wolves these days, it is time to ask just what we know about their interactions with their prey base, and what wolf management and conservation might be like once wolves become common. So let us consider some relevant issues in wolf management as a start towards that goal in full recognition of the highly controversial and emotional nature of the subject. As we, in the northwestern states, watch wolves become ever more present, there is a large amount of information available from Canada, Minnesota and Alaska where wolves and hunters compete for the common big game prey. In the 'lower 48,' where we are trying to recover wolves, management is designed to foster the recovery. However, in areas where wolves are common, their management is at least as difficult and complex, if not more so.

The wolf investigations in northeastern Minnesota and Isle Royale stand out for several reasons. First, they are long-term studies that become more valuable as time goes by. There were times when moose and deer were extremely vulnerable to the wolves, and populations were depressed as a result. These periods were associated with the deep snows that made the prey more vulnerable to wolf predation. Other times, prey populations did not seem to be affected much, illustrating the highly dynamic relationship between wolf and prey, involving a weather-forage interaction, as well as the predator-prey interaction. Each year seems to bring forth something new about the wolf and its relationships with its prey, from these long investigations. When one deals with long-lived prey and predators, whose generation lengths range up to a decade, long-lived studies become essential.

There were wolf investigations ongoing in the late 1960's in Canada as well, particularly in Riding Mountain National Park, and Algonquin Provincial Park. Our first glimmer of how wolves might interact with elk as prey came from the investigations in Jasper and Riding Mountain National Parks. In Riding Mountain, wolves had deer, elk, and moose to prey on. They were trapped and hunted as they followed the prey base outside of the park where the winter ranges occurred. One pack in Jasper was primarily using deer and elk, with moose, bighorn, and caribou less common in their diet. Of course, wolves feed on smaller mammals like beaver, hares, and mice, as well as big game, but they prey predominantly on the larger mammals.

Then in the mid-1970's and early 1980's, a series of investigations concerning the effects of wolf predation in Alaska, the Yukon, and northeastern British Columbia were initiated. These studies came in response to declining big game populations, including moose and caribou in Alaska and the Yukon, and included elk in northeastern British Columbia. These investigations were carried on primarily with big game populations which were hunted either for subsistence, sport, or both, revealing a still more complex relationship of wolves to their prey. The famous Tanana Flats investigations revealed that a wolf re-

moval program could improve chronically low moose calf and yearling survival in an area where sport hunting was especially important. Similar work in the Whitehorse area showed similar results. But in the Nelchina Basin of Alaska, grizzly bears, as well as wolves were important predators on moose populations. Heavy harvest of grizzlies resulted in reduced populations of that species below acceptable levels, so wolf control again became the focus of management until public opinion intervened. In northeastern British Columbia, experimental control efforts resulted in increased moose and elk survival. On Vancouver Island, wolf control was used to benefit blacktail deer populations where timber removal had resulted in concentrating the deer in small patches of suitable winter cover. Control efforts in Alberta were needed to minimize livestock depredations, as well as to reduce predation on elk. Control operations in southwestern Quebec revealed mixed results as far as increasing whitetail deer populations were concerned. A considerable body of evidence has accumulated from the north about the effects of wolves on their prey, and each shows a different relationship.

One major conclusion from all of these investigations is that the wolf has increased in many areas. In Alaska, the increase may have been related to the cessation in 1971 of the broad-scale control program, when President Nixon forbid the use of poison on federal lands because of the damage to non-target species and a tendency to reduce predator populations to needlessly low levels. The ban on poison probably contributed to the increase in other predators and scavengers as well. However, in much of Canada, poison was still legally used, and control measures continue to the present in areas where livestock depredations occur. Most probably, the campaigns to control wolves across the north were diminished enough to allow the species to start increasing and occupying previously unoccupied range. As early as 1980,

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wolves began to appear further south in British Columbia and Alberta than they occurred in previous decades.

Another major conclusion from these investigations is that wolf management programs are essential in areas where prey populations are hunted and numbers have been depressed. If big game population levels are low, and it can be shown that wolf predation is a major reason, then reductions of the predators may be necessary to increase the prey base. Of course, this assumes that hunting pressure can also be adjusted so big game populations can respond as well. But wolf management is now a major concern for northern wildlife management agencies charged with maintaining big game populations.

TOM STEPHENSON, A GRADUATE STUDENT OF JAMES PEEK, ALONG WITH VIC VAN BALLENBERGHE (NOT PICTURED) MARK WOLVES AND MOOSE ON THE COPPER RIVER DELTA, EAST OF CORDOVA, ALASKA. THESE TWO MEN ARE WORKING ON LONG-TERM RESEARCH OF THESE SPECIES ON THE DELTA.

WOLVES IN THE NORTHWESTERN STATES

The wolf now occupies much of the Canadian elk range and appears to be colonizing Montana, Washington, and probably Idaho. Reliable reports now appear to be increasing from Wyoming. First tracks in the Kishaneen drainage of Glacier National Park appeared in the mid-1970s, and the colonization of wolves in the North Fork of the Flathead drainage is now well under way. Given that radio marked individuals have dispersed over 500 miles from where they were marked, wolf populations in southern Canada are obviously close enough to provide dispersers to the northern tier of states. The natural dispersal of individuals is probably what many who see wolves are actually observing. But a single individual cannot be considered the start of a population, and the probabilities of a disperser finding a mate must be low, just as the probabilities of mortality for these individuals who occupy unknown ground are high. Still, as populations build along the border, dispersers obviously are connecting with each other, and packs are formed adjacent to established packs. This process of colonization is in need of further investigation, but it is apparent that the wolf is likely to become established in the western states in the near future, unless current trends change.

WOLF-PREY RELATIONSHIPS

So what might we expect in the way of management for both wolves and their prey after populations are established? The available information provides insights from which we can draw some conclusions. First, kill rates, or the number of days between kills, are available from 14 different investigations. Mean kill rates in winter on a per-wolf basis range from a kill every 13 days to a kill every 42 days, or a total of 9 to 28 deer or elk killed per wolf per year. In Riding Mountain, an elk or whitetail deer was taken every 14-21 days, while in central Alberta, the rate was 25 days. The investigations suggest that a pack will make at least one kill a week in winter, with extensive variation. When prey becomes more vulnerable due to soft, deep snows, or during calving, rates may be high, while when conditions favor the prey, rates will go down. Wolves are highly opportunistic predators, and kill rates will vary extensively.

The four states in question support multiple species of prey, and wolves tend to select the smaller ungulates over the larger ones. Thus mule deer and whitetail deer will generally be selected over elk, and elk over moose. However, if deer populations decline, wolves are entirely capable of switching their attention to the other species. In Yellowstone National Park, where a very dense elk population exists in open habitat, and deer are much less abundant, one would expect elk to be the major prey species. This ability to switch prey species has been offered as the reason why moose populations did not recover from lows in some parts of Alaska, where wolves could prey on caribou and continue to take the occasional moose when circumstances permitted.

Elk calves are the most vulnerable to wolf predation, being taken out of proportion to their occurrence in populations in Alberta and Riding Mountain. The same situation occurs with moose calves and deer fawns. In terms of total numbers, calves and cows will constitute the bulk of the wolf kill, although there will be times when bulls become vulnerable. Older animals that are in poorer condition also are more vulnerable. Wolves do typically cull young, weak, and old animals, but are entirely capable of taking healthy adults. There is a record of one wolf killing a bull moose by itself, on Isle Royale.

There have been several estimates of the effects of wolf predation on the prey base in Yellowstone area and on the East Front south of Glacier National Park in Montana, which provide some contrasts worth considering. The Northern Yellowstone herd, which isn't regulated by sport hunting but rather by a weather-forage interaction, is projected to decline somewhat and then fluctuate much as it does now, if wolves become established. In the Park, there will be little need to worry about the predator or the prey, and management will essentially consist of a monitoring program just as it does now, but extended to include the wolf. Management will have to occur outside of the park, however.

The situation is different for the Sun River and the Gallatin populations in Montana, if our estimates portray the situation accurately. Both of these elk populations have been managed to specific population levels for over 30 years, to assure a balance between population and available forage. Quotas for harvest are established and when these quotas are approached, seasons are ended. Population levels are maintained with a cow harvest. These are among the best examples of sustained yield management of elk populations, keyed to maintain or improve the forage base, and hunter harvest is the major source of mortality on adult elk.

When another significant mortality factor, namely the wolf, is injected into the equation for management of these populations, there will be compensation in survival or production or both of the elk which survive to the next calving season, resulting in high calf production and survival of calves and

older animals. Another option is that wolf predation will be additive to hunter kill, and any compensations will be overridden by the added mortality. From a management standpoint, it is prudent to be conservative and assume the last option, and be prepared to adjust hunter harvest. But since the prey base is already managed to maintain specific population levels with sport hunting, it should be obvious that the wolf harvest of elk will also have to be regulated. In short, we will be in the business of more closely regulating hunter harvest, and we will also be in the business of regulating wolf populations.

MANAGEMENT OF RECOVERED WOLF POPULATIONS

By now, you are thinking, how do we convince those opposed to wolf management in any form that there is a legitimate reason to manage them so a sport hunting opportunity is maintained? First, we are considering management of established wolf populations, after they have recovered to sustainable levels and recovery goals have been met, not about management of wolves which are not recovered, for which a management program is already in force.

Among the best arguments I know of can be obtained by examining the causes of mortality for wolf populations in North America. If the experience further north, as well as in Minnesota and northwestern Montana is any guide, then we must recognize that if management is lax, people who are unwilling to tolerate the wolf will take matters into their own hands. The major mortality factor for virtually all wolf populations is humans. Generally, when less than 30% of a population is taken, it can maintain itself or increase. But wolves are easily trapped and poisoned, and, the mortality is hard if not impossible to stop. In British Columbia, when wolf management isn't prompt and effective, wolves have a way of disappearing anyway. As a practical matter, it makes sense to have well-managed wolf populations around rather than poorly managed populations which fluctuate extensively and are thus highly vulnerable to extirpation. Human mortality is the major source of loss of wolves occupying Montana now, entirely predictable from experiences elsewhere. What this means is that wildlife managers will have to have good records on both prey and predator. Hunters may well be asked to cooperate more fully in providing information and materials to facilitate management. And, of course, hunters would certainly appreciate it if they didn't have to cover all the costs of this sort of intensified program!

How much will the hunter harvest have to be reduced to accommodate the wolf? Our estimates suggest that the antlerless harvests of elk in Montana will likely have to be curtailed at least to some extent where the wolf establishes itself. In Idaho, where antlerless harvest in the wolf recovery areas is not very great, wolves can probably be more readily accommodated. An elk population south of Yellowstone Park in Wyoming which is lightly hunted, may not require any adjustment in hunting opportunity at all, and this may be the case for some of the Idaho wilderness elk and deer as well. It is doubtful that whitetail deer hunting opportunity will be affected much except possibly when populations are reduced following severe winters. Our estimates for mule deer on the East Front suggest that the presence of a reasonable wolf population might affect hunting opportunity for this species when it is at low levels, but not when mule deer are at medium levels or higher. But I emphasize that these estimates are just that, and the wolves, when they arrive, will provide us with the most reliable information!

Public opinion and conflicting views about the wolf will always be with us, but eventually cool heads must prevail and a rational program of integrated management for both predator and prey will be fine-tuned for each situation. So we may as well encourage a management program which allows the legal taking of wolves. Such activities are of course not allowed within the National Parks, but wolves which inhabit parks for a part of their range will undoubtedly be subject to mortality from humans when they come out, as is the case at Riding Mountain. Around Yellowstone, this is the case when elk and moose move beyond the park boundaries, and so it will be with wolves. Cooperative programs to ensure that wolf populations occupying parks and adjacent areas are properly managed will become important if wolves are to be retained in parks and their vicinities.

Another issue centers around where wolves should be. The recovery plans indicate recovery areas centered around the big wilderness areas in northern Montana and central Idaho, plus the Yellowstone. Wolves recovered in these areas will be sources of dispersal to outlying areas where management will have to be applied to reduce risk to livestock and to intensively managed big game populations. I don't envision wolves recolonizing all of their original range, but they can certainly occur in the national parks and wilderness areas which the recovery plans identify.

So what is in wolf restoration for those who focus on their prey? The wildlife resource means many things to many people, so it essentially is a personal matter. My last experience with a wolf provides my own answer. We were sitting on a high windswept ridge, surrounded by three feet of snow, in the range of the 40-Mile caribou herd in east-central Alaska a few years back. The valley below us was a huge unroaded piece of wilderness, and as I watched the darkness close in, I could hear the soft ooo-ooo-ooo of wolf in the distance. There was a lot of satisfaction knowing that I was trying to share those caribou with that wolf, and the fact that I remember that howl attests to how much it meant to me. And I think that, if we are interested in conserving the wildlife resource, we can't be hypocritical and just conserve that portion of it that suits us. We should rise to the opportunity to conserve as much of it as possible, but in appropriate ways, and in appropriate places. This is especially so for those of us who use the wildlife resource for sport. We should recognize that the wolf wouldn't be coming if it weren't for our successes in conserving their prey, and now we may look forward to their presence as a sign that we are willing to share our successes with them.

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