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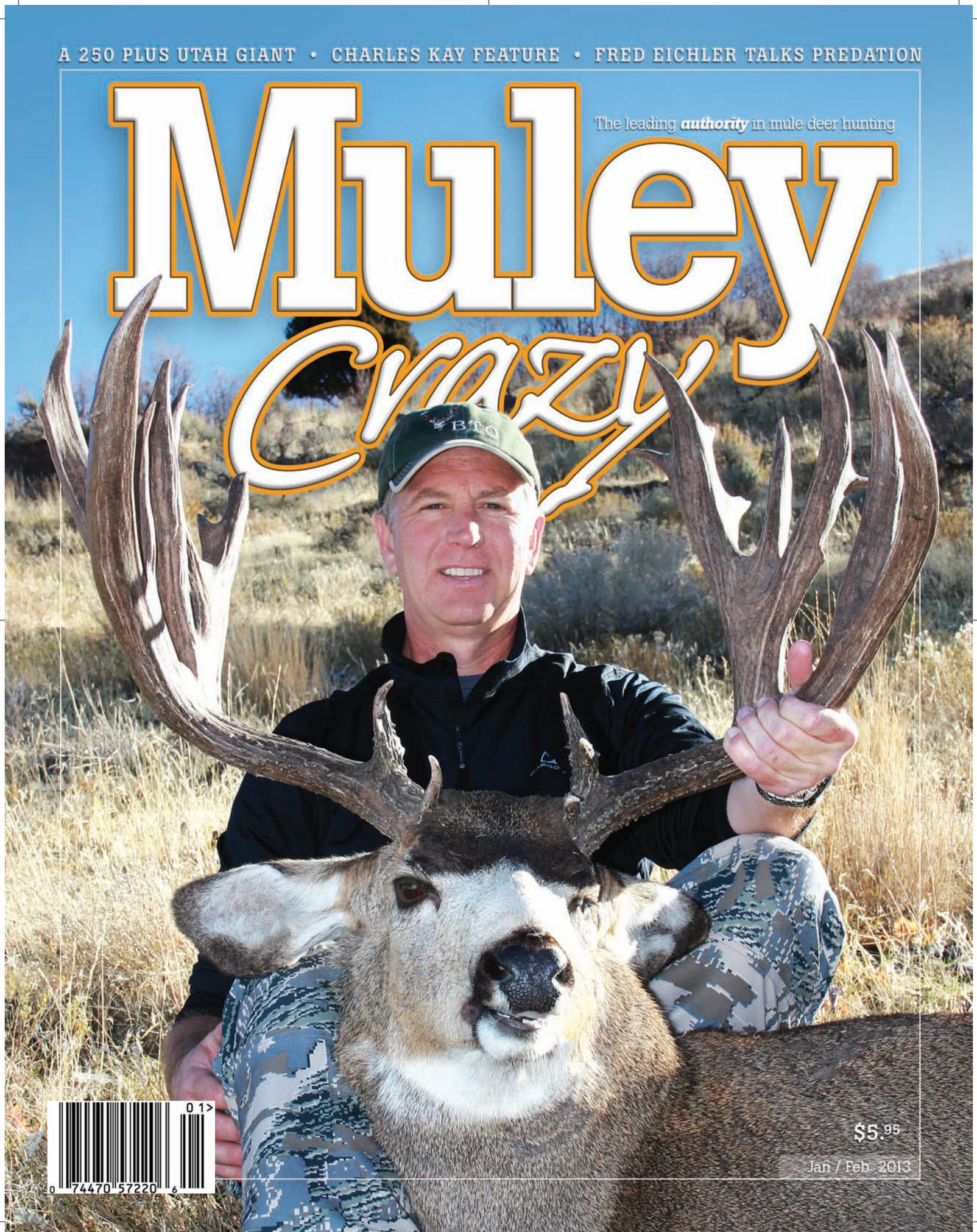

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Do Predators Always Kill *Substandard Individuals?*

By Dr. Charles E. Kay

Photos - Daryl Hunter

It has been long-claimed that predators not only have no effect on prey numbers, but that predation actually makes the prey population healthier or fitter. It is also commonly claimed that predators improve the health of the herd by preying disproportionately on diseased animals. But is any of this true? Or is this just another myth used to justify **the protection and reintroduction of predators, such as the wolf?**

It has long been asserted that wolves and other predators only kill the lame, the sick, or otherwise infirm members of a prey population. Stated another way, "predators are commonly thought to capture substandard individuals—those in poorer condition than the average individual—in higher than expected proportions." Based on this oft-stated belief, it is then claimed that predators not only have no effect on prey numbers, but that predation actually makes the prey population healthier or fitter. In other words, by killing inferior members of a prey species, predators create higher-quality prey. Think of it as prey eugenics where inferior individuals are sentenced to death for the greater good of the prey population. But is any of this true? Or is this just another myth used to justify the protection and reintroduction of predators, such as the wolf?

Interestingly, this very question was addressed by Dr. Stanley Temple of the University of Wisconsin in a 1987 paper that appeared in the scientific journal 'Ecology', a publication of the Ecological Society of America. Dr. Temple had a trained red-tailed hawk that he flew against three prey species—eastern chipmunks, cottontail rabbits, and gray squirrels. Dr. Temple also collected a random sample of each prey species. Postmortem examinations were performed on all the animals killed by the hawk, as well as those shot by Dr. Temple. This allowed Dr. Temple to compare the condition of the predator-killed prey, with normal members of each prey species. As you might expect, chipmunks were the easiest for the hawk to kill and the predator did not select for substandard individuals of that prey species. Cottontail rabbits were intermediate in their difficulty for the hawk to capture, and 21% more substandard cottontails were selected than occurred in the general population. Gray squirrels were the most difficult of the three prey species for the hawk to kill, with the predator capturing 33% more substandard squirrels than occurred in the overall population.

The results of Dr. Temple's experiments can be summarized as follows, "… the degree to which substandard individuals of a particular prey species will be captured disproportionately by a predator, is a function of how difficult it normally is for a predator to capture and kill individuals of that species of prey. Accordingly, when hunting a prey species that is easily captured and killed, a predator will take substandard individuals in proportion to their occurrence in the prey population. On the other hand, when hunting prey that are progressively more difficult to capture and kill … the predation should take an increasingly disproportionate number of substandard individuals." That is to say whether or not a predator kills a disproportionate number of substandard prey items, depends on the size and killing ability of the predator versus the size and defense capabilities of the prey. All else being equal, a large predator will kill members of a relatively small prey species without regard to the age, sex, or physical condition. While the same predator, preying on a larger species that is more difficult to capture and kill, will tend to select for substandard members of the prey population.

In Europe, lynx prey upon both roe and red deer. Roe deer are less than half the size of mule deer, while red deer are the same species as our elk. As predicted by Dr. Temple's work, lynx do not select for substandard roe deer, but lynx do select for the smallest-sized red deer, that is calves. Wolves, on the other hand, do not select for either substandard roe deer or red deer. On Minnesota's Isle Royale, however, wolves do tend to select for substandard moose, because moose are very difficult for wolves to kill—moose, in fact, have been known to kill wolves. While on Alaska's Coronation Island, wolves killed black-tailed deer irrespective of that prey's age, sex, or condition.

Photo - Daryl Hunter

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Whether or not a predator selects for substandard individuals also depends on how the predator hunts, as well as environmental conditions. Research has shown that ambush predators, such as mountain lions and other cats, generally do not select for substandard prey. While cursorial or coursing predators that run their prey down, like wolves and African hunting dogs, generally tend to take a disproportionate number of infirm individuals, especially of large-sized prey. This makes perfect sense, because substandard animals are more likely to give out when chased than are individuals in prime condition.

In addition, under certain environmental conditions, such as deep, crusted snow, even relatively small-sized predators, like coyotes, can kill large-size prey, such as mule deer, at will and without regard to sex, age, or physical condition of the prey. Then too, there is the question of whether the prey animals are naturally substandard, or are they substandard because they are constantly being chased and harassed by wolves and other predators? As I explained in an earlier article on "Predation and the Ecology of Fear" [see Muley Crazy 10(5): 23-28; 2010], if humans harassed wildlife the way predators do, the people would be in jail. In a recent study in Canada's Jasper National Park, a radio-collared calf elk switched wintering areas at least eight times during one two-month period to avoid wolves.

As to bears and other predators that commonly prey on fawns and calves, I know of no data, which suggests that those newborn animals would not have lived to become adults, if their young lives had not been prematurely terminated. Fawns and calves are killed not because they are unfit, but because they are vulnerable and so easy to kill. Wolves on caribou calving grounds have been observed to kill 20 or more calves in a matter of minutes because the young simply cannot escape. Few of the calves are actually fed upon by the marauding wolves, which is true of all surplus killing. Surplus killing can also occur when ungulates are hindered by deep, crusted snow. Under the right conditions, even coyotes, let alone wolves, can wipe out an entire year's fawn or calf crop in just a matter of days.

By preying primarily on the young of the year, bears and wolves can limit ungulate numbers to 10% or less of what the habitat would support in the absence of predators. Just because a predator concentrates on fawns or calves does not mean that the predator has little or no impact on the prey population. In fact, predators that prey just on fawns or calves, can, over time, wipe out a prey population, especially if the predators, such as bears, have alternative foods, like berries or salmon. If a significant number of new animals are not recruited into a prey population each year, ultimately that prey species is doomed. I first explained this is a 1993 article I wrote on wolf recovery and it is as true today, as it was then.

It is also commonly claimed that predators improve the health of the herd by preying disproportionately on diseased animals. The available data, however, does not support that assumption. Wolf predation has not lowered the incidence of brucellosis in elk within the

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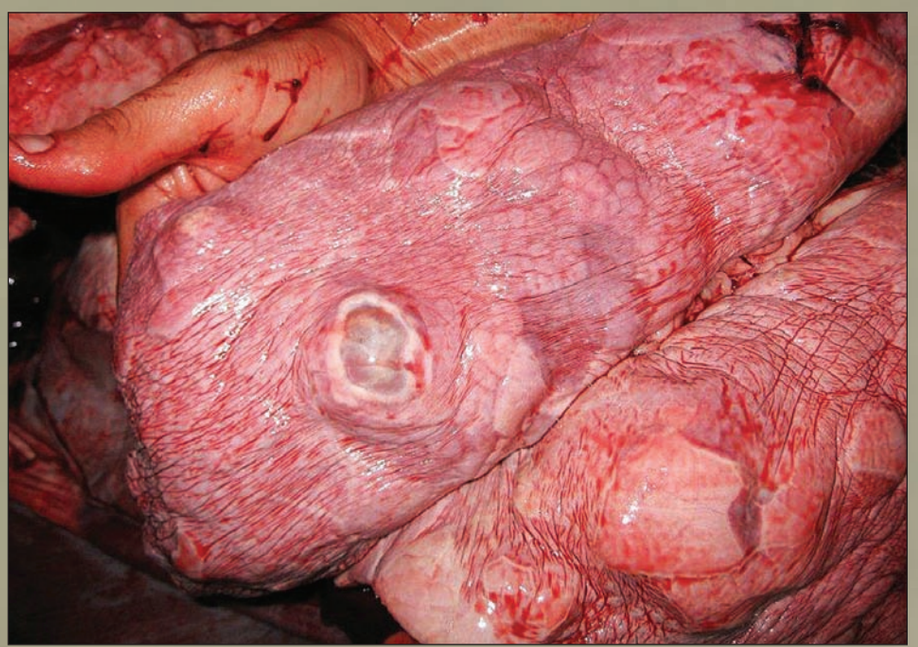
Yellowstone ecosystem. To avoid being killed in the predator-rich park, elk are starting to form large herds on low-elevation private lands, which actually 'increases' the risk of disease transmission, both to other elk and to cattle. In Canada's Wood Buffalo National Park, bison are infected with both brucellosis and bovine tuberculosis. Yet more than 50 years of wolf predation has not lowered the incidence of either disease. That is to say, if wolves were selecting diseased bison, the percentage of infected bison in the herd should decline over time, but that has not happened. Similarly, if predators selected for diseased prey animals, then it is logical to expect predation to limit the spread of any newly introduced disease. Where data are available, though, that has not been the case.

In South Africa's Kruger National Park, cape buffalo have recently become infected with bovine tuberculosis. Cape buffalo are preyed upon by African lions and spotted hyenas, both formidable predators, yet predation has not slowed the spread of bovine tuberculosis in Kruger's cape buffalo population. Similarly, here in the West, predation by black bears, mountain lions, and coyotes has not slowed the spread of chronic wasting disease (CWD) in mule deer and other cervids. CWD is a very debilitating and deadly disease, yet predation has neither slowed its spread or lowered the incidence of the disease. Not in mule deer, nor elk, nor whitetails. In a recent South Dakota study, mountain lion predation did not lower the incidence of CWD in elk and elk killed by cougars, "typically were in good physical condition and not infected with CWD."

Now, there was one study, which contended that compared to sport hunters, mountain lions selected for CWD infected deer—that is mountain lions killed a higher percentage of CWD infected mule deer than hunters. However, that study was flawed because it was based on the false assumption that hunters kill infected and non-infected deer in proportion to the number of infected and non-infected mule deer in the entire population. That is to say, the study assumed that hunters killed deer at random, which is not true because state game departments warn hunters about CWD and advise hunters not to kill deer that appear to be sick or acting abnormally. In other words, hunters actually select for non-infected deer, which invalidates the entire study. Since no one knows what the incidence of CWD is in the total population, as the disease can be correctly diagnosed only after an animal is dead, just because mountain lions kill more CWD infected mule deer than hunters, does not mean that cats select for CWD infected animals.

Moreover, not only is there no evidence to support the notion that predators reduce the incidence of disease in ungulate populations, but scientific data indicate just the opposite. Namely that predators 'spread' a whole host of dis-

eases both to ungulates and to humans. Rabies is the best known example, but predators also spread a number of parasitic diseases. For instance, the Canadian wolves released in Idaho and Yellowstone were not properly quarantined and those animals have now spread a new, potentially deadly parasite throughout their range. Echincoccus granulosus is an intestinal wolf parasite, a tapeworm. The tapeworm's eggs pass in the wolf's feces whereby they contaminate the ground and vegetation. Deer, elk, and other ungulates eat the contaminated vegetation, but since the ungulates are not the proper host, the tapeworms encyst in various body tissues where they weaken the prey animals, making them easier for wolves to kill. Once killed and eaten by wolves, the encysted tapeworms are not digested but instead reinfect the predator. Echincoccus granulosus also encysts in domestic sheep.



Not only is there no evidence to support the notion that predators reduce the incidence of disease in ungulate populations, but scientific data indicates the exact opposite! The above photo shows a set of lungs from an elk harvested in Idaho. The lungs show hydatid cysts, caused by the elk ingesting forage that had held the microscopic eggs of the Echinococcus granulosus tapeworm–a parasite that is now being widely spread by an excessive number of wolves roaming the northern Rockies; creating a health hazard for most other wildlife, livestock, pets and even humans.

Humans can become infected in at least three ways. First, by eating improperly cooked wild game or domestic sheep that contains the tapeworm cysts; second, by handling infected wolves, (if you kill a wolf you must be careful how you treat the dead animal, as it is very easy to inhale the microscopic tapeworm eggs that cling to the animal's fur); and third, by contact with dogs, your pets, or someone else's. Dogs, like wolves, are a primary host for this parasite and are easily infected by smelling, or rolling in, wolf droppings. This, of course, includes sheep herding and guarding dogs, as well as hunting dogs. After which the infected dogs can easily spread the parasite to humans. Think of the last place your beloved pet licked before licking your child's face!

People, like ungulates, though, are not the correct host for this tapeworm, so the parasites encyst in humans, just like they do in deer or elk. In humans, the cysts are generally painless, and a person usually has no idea he, or she, is infected until the cysts burst or rupture. Then, depending on where in the body the tapeworm encysted, a person can become seriously ill or even die. Moreover cysts can lie dormant for more than 20 years, like a time bomb waiting to detonate.

All this, of course, was never mentioned, let alone properly discussed, in the federal wolf EIS or explained to the public before the Canadian wolves were turned loose by the federal government, over state objections. It should come as no surprise then that federal officials and their pro-wolf allies, including various state fish and game biologists, have downplayed the effects of Echincoccus granulosus on an unsuspecting public. Finally, unless you opt for a full body scan, it is impossible to tell whether or not the tapeworms have encysted in your body, or the bodies of your family members, because the cysts cannot reliably be diagnosed by other means. Since this is a new disease here in the West, most doctors will not have a clue what is going on even after a cyst or cysts rupture, which can lead to misdiagnosis, with all the associated consequences, including death.

So the next time some wolf biologist or pro-wolf advocate tries to tell you that predators only kill the lame, the sick, and the infirm, or that predators help control disease, listen politely, or not, and then have a good laugh! What you do next is up to you, but remember, the federal government has warned all its employees, who normally handle wolves or wolf scat, about Echincoccus granulosus, but has yet to pass a similar warning on to the general public.

Editor's Note:
Since Dr. Kay submitted his manuscript, a lady in Idaho has been confirmed as having Echincoccus granulosus cysts. Half her liver had to be surgically removed and she incurred $65,000 in medical expenses. Local doctors misdiagnosed her condition and it was only after she saw a specialist in Seattle that she received proper care and treatment. She had suffered for years with a disease unknown to local doctors.