
OPEN DISCUSSION ON PREDATION ISSUES

MODERATOR: TOM RYDER, WYOMING GAME AND FISH DEPARTMENT

RACHELLE HUDDLESTON-LORTON, NEW MEXICO: I have a question for the biologist in California with regards to the mountain lion initiative and removal of mountain lions from management in the State of California. I'm wondering if you see any hope for a change in that situation in the near future?

VERN BLEICH, CALIFORNIA: No. There is a bill currently pending that would alter the status of lions. As written, it is not supportable by our department or most publics. The way it is worded, or is being interpreted, will essentially restore the game animal status for lions. If it's going to be successful, it will have to specifically eliminate that possibility, and speak to those instances where mountain lion control or management by the agency could be implemented. There are hearings next week. We're not optimistic, either.

DICK WEAVER, NEW MEXICO: Vern, to change Proposition 117 which passed in 1990, takes a three-quarters vote in the Legislature. They can't get a simple majority on most bills.

BLEICH: You've got that straight. It's a very political thing that has nothing to do with conservation or wildlife issues, whatsoever.

DUNCAN GILCHRIST, MONTANA: I'm speaking on behalf of FNAWS. I know some of you don't think predators are a problem, but most of you do.

The mission of FNAWS is to put more wild sheep on the mountain. We hear talks like Eric Rominger's, we get discouraged. Many of you have seen these reports, and I pass them on to the board, and we see these tragic numbers. Not just sheep, but antelope and deer and wolves and mountain lions and coyotes.

So what we would like from this group is some policy statement of what you folks believe, because you're the sheep managers in North America. We need something to hang our hat on, so we can head in the right direction. We don't want to keep spending money in putting sheep on the mountain only to have them eaten.

TOM RYDER, WYOMING: This leads to a point I was hoping to make to the group during the discussion period. It's obvious even to me, a person that doesn't work with large predators very much, that they kill prey species. Mountain lions kill bighorns and coyotes kill them on occasion. My initial statement to that is, so what if predators are killing those species? Predation on bighorn sheep, in most instances, does have a measureable population effect.

If predation is a form of mortality and not additive, I don't see predation as a big issue. However, if predation is additive, then humans have to make a choice as to how we're going to allow sheep to be allocated.

In other words, do we allow predators to have an additive effect and just reduce human harvest or do we reduce predators to keep human harvest up? This is the bottom line in putting together this session. It became obvious that there are not a lot of data specifically addressing the issue of predation on bighorn sheep populations.

There's some work going on now. Eric's work, certainly. John Wehausen's work in California sure appears to be that way, and Ian Ross' work in Alberta. But I think there's a real lack of good, solid data that shows interactions between sheep populations and predator populations. With that, I'd throw it out to you all again, especially the researchers and managers in the room that have feelings or data concerning this topic.

RAY DEMARCHI, BRITISH COLUMBIA: I said it before and I'll say it again. I just concluded a couple of status reports and did some work on Stone's sheep in the Northern Rockies, and I tried to sort out this whole predator/prey thing. I wrote some stuff earlier on predators and have a little bit of experience working with the wolf recovery program down into Montana.

I'm as confused now as I ever was. The title of my talk is "Man as part of nature." Game management works. If you want more ungulates, there's ways to do it; improve the habitat, reduce competition for forage, reduce predation, all of the above. If you don't have the habitat and you have predators, you're going to have problems.

I came to a region where I spent 28 years managing 11 species of ungulates and 8 species of animals that eat meat every day. I kept reminding people they didn't eat corn flakes. They ate meat.

We came on the heels of some of the biggest fires we had in the 1930's, but the forests are coming back in. I'm hearing stories about sheep herds that are disappearing up north.

There are herds that are gone. They didn't die this time from *Pasteurella*. They died off from predators and people are blaming the predators.

I look at the habitat and I look at what's happened. As forests move in, the advantage goes to the predator. What happened with the elk and the black bears way back when, it's happening with moose and wolves, it's happening with caribou and cougar, it's happening all over. In some cases, opening up the habitat makes more access for wolves and black-tailed deer. It depends on the situation; every situation is different.

I think that in some places in my beloved province, people are practicing wolf control. I don't know who is doing it but somebody is doing it. It's unfortunate that this has been done behind the scenes, because it's probably not being done right, if there is a right way of doing that kind of stuff.

Still it's a very complex issue. Just sitting here listening to the conversations and the session today, I think I have to go back and rewrite a couple of things that I wrote. One guy is saying coyotes are hard on sheep and lambs and other people say that wolves are hard on Stone's sheep. Why would the wolves be different? Maybe they are, or maybe they aren't. I think the jury is still out.

KEN WHITTEN, ALASKA: I think Ray hit on it and other people have too; predation can be a problem. It's not always a problem and I think often where we get caught up in these political wars is by thinking that the animal rights people are on one extreme, so we'll fight them by going to the other extreme. We don't need to kill wolves everywhere in Alaska in order to reduce problems in the few places where we have them. You don't need to kill mountain lions throughout California to save the Sierra Nevada bighorns. You have to look at these things on a case-by-case basis.

Another point I'd like to make is there can be innovative solutions to predator control. We have, I think, adequate predator control programs on the books. The problem is ballot initiatives basically overrode four of

them. The ballot initiative pretty much closed all loopholes of public taking of wolves with airplanes.

As far as the department goes, we can't do lethal predator control with aircraft and there's a few other conditions on it. The one program we sometimes have going involves capturing wolf packs basically catching the entire pack, sterilizing the adult males, taking the juveniles out, transplanting them to other areas of the state. It's very expensive. Costs much more than shooting them from helicopters would be. The problem is, politically we haven't been able to shoot wolves from helicopters and we are now doing this. It looks like it's working, and it's been successful in that the sterilized males are maintaining their territories.

Transplanted pups, with very few exceptions, are not coming back. We take them far enough away, and they can't find their way home. We've been specifically able to target packs on the feeding ground.

WAYNE HEIMER, ALASKA: There are alternate interpretations of what went on. On this groundbreaking sterilization program, what you end up with when you want to do the research, you want to know which lion it is that's killing the sheep, and you want to know which wolf is the problem.

I think, in trying to express it, you're basically attacking an analog question looking for a digital answer. This also happens with the disturbance studies and some of the other things we do. We look under the microscope at this thing or that thing and it works or doesn't work. Our governor doesn't want to do any wolf control. He doesn't control the Board of Fish and Game which makes the regulations. A number of powerful native communities wanted wolf control because the wolves were eating all the moose they wanted to eat.

Our governor took a third of a million sportsmen dollars to contract with the National Resources Council, to have them review the published work of the Department of Fish and Game to see if it's scientifically valid.

As I understand the report, by the time they had looked at the successful wolf control programs, and those that hadn't been quite so successful, and those that were halfway in between, they basically said, you can't really be sure what you're going to get. Wolf control is like a box of chocolates; you never know what you're going to get.

If I may be allowed a homey analogy from your chemistry lab days. If you take a 250 cc beaker, fill it with water and put 20 grams of sugar in there and take a round stirring rod, and you begin to stir, what happens as you drag the stirring rod through that aqueous environment? You set up little vortices that come off of those and there's a little turbulence at each place. We cannot predict what's going to happen in any individual vortex that comes off the stirring rod. If you stir it, and you taste, it's all going to taste sweet. It's pretty homey and it's to suggest that we use Ohm's law as a management model.

But the point is, you can look at what has happened out there in our 40 mile country and, I'll suggest to you from the planning documents and what I know of the situation, we would never have had few enough wolves that we could approach the sterilization program had not crazed red-necks put a bounty on wolves. They did and the department can go ahead and try that thing. Some folks told you it's working, some folks don't think it is working. I don't know whether it's working or not.

But by the time you take a little snapshot of a vortex in your beaker here and another one over here, and you find them consistent, but you say you don't know what's going to happen, you're asking me to believe that when you stir up the sugar, it isn't going to taste sweet. I have a difficult time chasing those things through the absurd extreme, and they don't seem logical to me.

To say we need a bunch of research looking at individual vortices to see if the beaker will eventually be sweetened I find is strange. I think environmental resistance, as Ray said, comes from a number of components. Some of them we can manage, some of them we can't.

If it's the priority of society to have more game for people, we know how to do that. It isn't that hard if society's priority is more game. If this isn't society's priority, there will be a struggle and it will go the other way.

JEFF DENTON, ALASKA: What I'm interested in, in Alaska where our sheep are, does climate affect those populations, trimming off the old periodically? Do you consider wolves a problem in Alaska within relatively stable situations?

HEIMER: As long as everything is going great, which includes not just a lot of sheep, but includes a lot of caribou and moose, and includes favorable weather. As long as everything is going good, I don't think that wolves are going to beat up on sheep particularly.

They're going to kill them all the time and my observations are probably they will kill adults and not lambs. When caribou go down the tube or moose go down the tube, sheep are going to support those wolves.

Dave Mech's work in Denali Park at one point suggested the major factor associated with successful whelping in wolves in Denali Park was how many sheep they ate. Is that because sheep are an aphrodisiac of some kind? What was probably going on in the park at that time was that moose had been eaten and the caribou were pretty well on the way to being eaten, and wolves that were eating sheep would be okay. When things aren't good with alternate prey, if you want to have sheep, you have to decide whether you want to have an unmanaged ecosystem or whether you want to have sheep.

JEAN CAREY, YUKON: What's happening next door is we just completed a five-year wolf reduction program to enhance a caribou herd. Wolf numbers were reduced by 70 percent over 5 years. Moose populations increased and caribou populations increased, but sheep didn't.

As a follow-up and part of the legal control, we also are doing non-lethal control sterilization. To date, we have six packs that are sterilized. None of the pairs produced pups. They've all maintained their territories, and we feel we're extending the benefits for moose and caribou of wolf control through nonlethal measures.

In addition, a master's thesis done in Yukon suggested that wolves with only sheep to eat were having no pups at all. Wolves surviving on sheep alone seem to be in desperate conditions.

HEIMER: The research option is: which "vortex" do you want to study? (See thimhorn working hypothesis predator section for more detailed review of wolf/sheep studies in U.S. and Canada.)

(Note: During the June 2000 meeting of the Northern Wild Sheep and Goat Council in Whitehorse, Yukon, I had the opportunity to interview R. Hayes (Yukon Territory wolf specialist) about final impacts of the wolf control program on Dall sheep. In discussion of the overall impact, Hayes reiterated no statistically significant changes in lamb: 100 ewes or yearling:100 ewes ratios had been seen. However, he stated the investigators had always suspected their wolf-project sheep count area used to measure the effects of wolf control on sheep was too small. When they finally secured funding to census the entire area affected by wolf control (after the project had ended), they found the number of adult Dall sheep had increased by 35 percent

when compared with the pre-wolf control total count. This finding supports the conclusion that wolf predation focuses on adults, and that assessment of lamb or yearling ratios is an inadequate methodology for assessing wolf control impacts on Dall sheep populations. The finding was too late to include in the monograph reporting on the Yukon project. It had already been accepted for publication.)

RYDER: Just to switch gears slightly to try to accommodate all the various portions of the country represented here today. I'm curious, we've been talking the last ten minutes or so about the large contiguous blocks of habitat in the northern part of the continent. How about the Rocky Mountain or desert states? When we're dealing with sheep populations that are fragmented, most folks I talk to say lion predation is increasing across the western U.S.

What do you folks see in your various states concerning sheep population dynamics and predator populations? Even if you don't have any solid, hard core telemetry data, just feelings and observations you make in the country, please share these.

WALT VAN DYKE, OREGON: We have some bighorn populations in southeast Oregon that were doing quite well up until the winter of 1992-93 which was a very tough winter. It knocked our mule deer populations down by 50 percent. Most of our sheep coinhabit areas with mule deer. We know we've got an increasing lion population. We've not seen any rebound in bighorn sheep since that tough winter. We get lamb production, but we don't get lamb survival. In some cases, we do get good lamb crops, but the adult mortality appears quite high.

We've had 20 percent annual mortality of radio collared ewes in our transplants. In some real good desert habitat that also has sheep in it, we have 20 percent annual mortality of adult mule deer. I think we've got some problems.

We came from a period of drought prior to that tough winter. Drought had a lot to do with the impact of that winter on both mule deer and bighorn sheep, but now we've had five wet summers and mild winters and looking at logically, we expect that things should have really rebounded. We had better recruitment in mule deer and bighorn sheep during the years of drought than we've got now.

There's been some talk about density dependency. When you cut your mule deer population in half, especially going into five wet years, you should see a tremendous response in mule deer production.

Where we've got both species in the habitat and there's the argument that ecologically we've moved towards climax, and we no longer have habitats that can support mule deer, I can buy that. But that means that habitat should be better for bighorn, but there's nothing to suggest this is true. We've got a problem somewhere.

RYDER: Another thing that seems to be concurrent in Wyoming, I observed the same thing in 1992-93; a big decline in our mule deer populations. There were several sheep die-offs at roughly the same time, yet little recovery has occurred in some of those sheep herds. Deer populations generally are also still depressed. With that, we've seen an eruption in our elk herds statewide. That may not be as much of a factor with depressed mule deer numbers, although there may be some competition going on there. If elk increases are occurring in your states, how have they affected your sheep herds?

VAN DYKE: There are no elk here. We can't blame this on elk. Antelope are not doing well at the same time.

VIC COGGINS, OREGON: In our case in Hell's Canyon, as far as transplanted sheep, we have small herds that we think have been held at pretty low levels by predation, but it's an opinion. We don't really have any kind of solid information.

As far as our elk herds, that's another story. We have sheep herds that have been devastated, in my opinion, by predation. We have some at 20 percent of their management objectives, and of course the sheep that are there were involved in the die-off. We have not seen much predation on them, at least at this point, but I don't think any of our problems are related to high elk numbers.

JIM BAILEY, NEW MEXICO: I would like to say you didn't do very good justice by saying that it's based all on spruce budworms. There's evidence to support the two stable states model. Some of it comes from epidemiology (May and Anderson). A lot of it comes from predation and the model really has a lot of concepts in it. One of them is predator/prey relationships are important and it's been around at least since Doug Peinlock and Dave Mech's first book.

Another issue is functional and numerical responses. The concept of territorial among predators is biological information that supports the model.

HEIMER: Can you explain what that is for me?

BAILEY: Well, the rate of predation per wolf varies with the prey, and the number of prey out there also varies, but the plateaus in both cases vary with prey density.

Those are concepts in part of the model. Messier worked on that in eastern Canada with respect to wolves, and lots of other things with species that have shown the same thing. I think it's a good model. I'm not going to base my management on it so much as I'm going to use it as a really valuable thinking tool.

The issue of habitat was brought up here, too, because that alters and puts limits on the functional responses of killing rates of predators and prey. It's a good teaching model. It allows us to put a lot of complexities together and see how it relates; I don't think you did justice to it.

HEIMER: I'm sorry if I didn't do justice to it. I do think of it as a teaching model, a theoretical model, fine, but you have focused the entire responsibility for predator manipulation in the government sector, where it's so readily politicized. My suggestion is that while it may be a wonderful model, it isn't serving us well in management.

BAILEY: It's a good hypothesis of where we are. Where we are with small populations, populations that have been brought into the break point, into the predator pit, where we are today down here in the south, with really small populations. We're in the pit, and we can't get out. We don't have habitat.

HEIMER: Or we've got too many predators. You can take your pick.

BAILEY: The amount of predators is related to the amount of prey. Supporting the predators is the issue. That can be built into the model.

DALE TOWEILL, IDAHO: This is one of those issues that it's really, really critical that we understand

exactly what we're talking about.

When we're talking about the individual, all mortality is additive. It's only nailed once. Predators may switch off prey, going back to the concept of compensatory mortality. It's been generalized but that's the basis of it. Basically, if the prey species of interest produces more young than the habitat will support, other animals will knock them off, with no net effect on the subsequent birth pulse.

Compensatory mortality is time dependent, area dependent, and species dependent. Predators switch off. So while it's a convenient learning tool and we were all taught it, don't let it disintegrate into jargon. Be very specific about your area, your population, your alternate prey, your production and the predators of interest.

RYDER: Thanks, Dale. I want to thank you all for your input and to thank Wayne and Eric for their presentations.