

ARCHIVE: Report on the Alexander Archipelago Wolf Conservation Assessment, to the Board of Game, 28-Oct-1996

Presentation by **Dave Person (UAF doctoral student)** at 4pm.

Apparently an overhead projector was used; there is no powerpoint in the archives.

Board of Game members present: Dick Burley, Mike Fleagle, Larry Holmes (Chair), Ernie Polley, Greg Roczicka, Walter Sampson, and Greg Streveler.

Transcription from the official recordings. Underlined text indicates original verbal emphasis. In the Q-&-A section, each item is numbered for easy reference.

Tape 12-A at 20:45, continuing to next tape.

Chairman: The next report is the Conservation Assessment for the Alexander Archipelago Wolf. Dave Person, you're going to do that? [Resuming @21:20, after mic setup.] We have with us Mr. Dave Person who is the senior author of the Archipelago wolf conservation assessment.

Person: Let me just first introduce myself. I'm Dave Person. I'm the senior author of conservation assessment. Does the board have copies? [Verified that they have the most recent copy]. Just realize it is a draft, but I don't believe there are many changes, anything substantial in the final document. Let me just quickly tell you about myself. I'm a PhD. Student at the Univ. of Alaska Fairbanks. My advisor is Terry Bowyer, and I think Dr. Bowyer has made presentations in front of the board; some of you may be familiar with Terry. My background – I've been working either in wildlife management or wildlife research since 1978. I worked as an animal damage control agent in the state of New Jersey, back in the mid to late '70s. I worked as a deer manager for the state of New Jersey for 4 or 5 years, and then moved up to get my masters at the University of Vermont, working on coyotes and foxes. After working in Vermont I got a minor in mathematics and statistics, and actually spent a 3 or 4 year stint as a statistician for the Health Department, for the State of Vermont, dealing with things such as modeling AIDs and doing population projections and things such as that. When I finally got around to enrolling in a PhD program here at the Univ. of Alaska Fairbanks, it was a project that really allowed me to work in the area of my expertise, which is not a wolf expert – I don't call myself a wolf expert. There's enough David Mechs, Warren Ballards and Bill Gassaways in the world for years to come.

I just happen to be working on wolves – I could be working on banana slugs. I really don't care that much. My interest is in populations, and population ecology. Maybe that seems a little obscure to you, but it really is very relevant to this population of wolves. Because the one unique factor in these wolves – these wolves do pretty much everything that other wolves do – but these wolves live on a series of islands. And as you can see on a map here, a very complex series of islands.

And that poses some problems. This is not Unit 20 – this is a very different kind of environment for wolves. And there are some ramification of the fragmentation of the habitat, or the fragmentation of the environment, in terms of how wolves are going to behave in terms of population dynamics, their relationship to deer, and their relationship to the habitat. If you took for example Unit 20 [in Interior Alaska] and put a fence around it, and then flooded

everything outside that fence, you'd get an idea of the complications might be in terms of population dynamics. Perhaps wider fluctuations in deer, or in the case of Unit 20-A, in moose and caribou and wolves – it would be a more erratic system. And this is kind of what we're dealing with here in Southeast.

You've got some good maps, so I'll just quickly go over this map here. Wolves in SE Alaska are pretty well distributed throughout the archipelago, with the exception of the ABC islands. This shows you the range of the Archipelago wolf. It's pretty much restricted to the large islands in the south part of the archipelago central and the ribbon of mainland going up to Yakutat Bay and of course as far south as Dixon Entrance. The majority of wolves in the archipelago exist on the big islands GMU2, GMU3 and GMU 1A. That's the bulk of the wolf population in Southeast -- primarily due to prey density. Those areas they are preying primarily on deer, and deer densities are actually quite good, quite high. So the major part of the wolf population is existing in these areas here. They are also the areas that have been targeted for the most timber harvesting.

I want to just make a quick, brief discussion of the taxonomic and genetic situation, which is part of the Conservation Assessment, which is also part of the reason why it is considered a distinct population, which has ramifications for ESA. Wolves were subdivided during the Pleistocene glaciation into three major groups – perhaps as far back as 20, 25, 30,000 years ago. A major group here, up in western Alaska; a group south of the ice sheets; and then a group way up near Greenland on Ellesmere Island, which was actually ice-free during the height of the glaciers. When the glaciers retreated, those groups started to fold back together again, started to communicate again in terms of migration and gene flow between the groups.

Currently the situation appears, at least from the morphological data – based on mainly skulls – that there may be as many as four different subspecific groups of wolves in North America. The arctic wolf up here at the very top; the Mexican wolf down here; what we call the eastern timber wolf would be this area in southeastern Canada and the northeastern United States; then you had a Alaska and northern Canada population; and then you would have had this large population that originated during the Pleistocene when the ice sheets separated these wolves in the south part of the ice sheet from the wolves let's say in Alaska and perhaps as far north as northern Greenland. So this current taxonomy sort of reflects what existed during the Pleistocene, or at least we suspect it reflects that. An ice-free corridor probably existed very early, as the ice retreated up the coast.

It is much more likely, and this is borne out by the genetic evidence, that wolves entered Southeast Alaska from the south and coming in from the north, because the heavy-glaciated coast mountains as well as the river valleys would have been blocked by ice for many, many centuries. And it's much more likely that wolves came up from the south, following Sitka black-tailed deer. So when we look at wolves morphologically in Alaska as well as in North America, we're looking at a current situation in which we have 4 major groups, and the Archipelago wolf may in fact be more closely related to wolves in Minnesota than say wolves in northern Alaska or interior northern Canada. The genetic data that we have suggests that this may be the case. It's not definitive at this point – we're still needing samples from coastal British Columbia, Vancouver Island, to see if in fact there is a connection between the Alexander Archipelago wolf and wolves from those parts of the Pacific Northwest. But currently now, it does appear that these wolves are genetically different from wolves at least in Interior Alaska, the Yukon, and northern Canada. But that work is still a work in progress.

My work took place on Prince of Wales Island. [Gave credit to people and agencies for help and funding.] Currently I am working on funding from the FWS to do a population viability analysis of the Archipelago wolf, a preliminary analysis. Primarily we are concentrating on GMU2. I'm doing this in collaboration with scientist names Dr. Barry Noon. All the federal

and state agencies deserve some credit for getting this going and keeping it going, and I thank them for making this work possible.

My work took place mostly on Prince of Wales Island, primarily the north-central portion. These show the home ranges of some of the wolves we radiocollared 24 wolves over a 3-year period. [Describing home ranges on a projected map.] There are probably anywhere between 25 and maybe 27 packs on Prince of Wales and Kosciusko Island. We don't really know, in terms of number of packs on islands such as Dall and some of these outside islands – Baker, Lulu and Noyes. Heceta probably has one pack on it. So, some outside islands are unknowns in terms of dynamics and the population. But we can make pretty good estimates for Prince of Wales and Kosciusko Island, and from now on I will consider Kosciusko to be part of Prince of Wales because Dry Pass here is trivial at low tide – it really functions as one continuous land mass.

For an idea of some of the pack size and structure that we had. We started collaring wolves in early '93, but I had some preliminary early data on packs from '92. As you can see the Honker Divide pack has remained relatively stable over the four years that I worked there. Some of the other packs, however, have not been quite so fortunate. The Twin Spurs pack has been reduced considerably over two years. We have some packs that have been completely eliminated, with recolonization by dispersing wolves establishing new packs. So there has been quite a bit of variability.

But the interesting thing here is that the packs that have shown a great degree of variability are the ones that are accessible by road to hunting and trapping. And the reason why the packs changed was primarily due loss of wolves to hunting and trapping. The Honker Divide is one of the most protected packs on the island, and it has remained relatively stable through this time period. Which indicates the potential importance, in the long-term, of having roadless areas that provide perhaps sanctuary, or at least source populations to resupply areas that are perhaps more managed and where wolves may be disappearing periodically, due to whatever – loss of habitat or perhaps hunting and trapping.

A brief picture of a wolf home range. The point I want to make with this – these are 1,000 foot topographic contours. Each one of these dots is a radio relocation. And what you see here is that most of the radio relocations are fairly low elevation. For example, they're all along Luck Creek in this case; they're along Trumpeter Creek; and they're along Sal Creek in here. Mostly wolves spend their time at lower elevation, particularly in wintertime. They're not up in wintertime because the deer are at low elevation. So when we look at wolf habitat, we are really looking at habitat through deer, and we are really looking at habitat that is critical in wintertime. That is the most important component – and of course that's the same habitat that's targeted for timber harvest.

A quick picture of what's going on. Each of these dots is a radio location for a wolf pack. What we call the Staney Creek or Twin Spurs pack. The hatched areas are areas in second growth – they may be young clearcuts or old clearcuts; beyond say 25 or 30 years old. The point is, you notice that most of these relocations are lining up in areas between those cut-over landscapes. There's a good reason probably for this, and that is specifically that when some of those cut-over areas reach a stage of 25 to 30 years old, it's no longer good habitat for deer. And wolves are going to be where their prey source is. They are going to spend most of their time where prey are available.

And just one more here to show you a similar pattern. This is perhaps a little clearer. This is Kosciusko Island. Again, notice where the radio relocations are falling out. These are basically falling out in places in which timber harvesting – where second growth is not the predominant habitat type. And again, it's probably a prey-related response.

One of the interesting things in terms of comparing Archipelago wolf home ranges to other home ranges where deer are primary prey. In terms of home range size based on deer density – and this is a rough estimate of deer density mainly based on habitat capability. We don't know really the absolute density, but we can make some estimate of carrying capacity based on habitat capability – although it's a rough one. But we can see, where up here, for a density of deer around 5 to 6 per square kilometer. Our home ranges are huge, in comparison to other studies in which deer are the primary prey. However, if you remove the areas of second growth within those home ranges, we're now at B. OK? It's much more close to being comparable to other studies where deer are the primary prey. Again, this is not conclusive by any means. We have to do some more sophisticated analysis of these data, but it does indicate there may be a habitat component here related to the prey base.

Just to give you an idea of the movements of wolves within GMU2. We've had a considerable amount of dispersal. We've had 13 wolves that we radio-collared disperse. They did tend to pretty well cover most of the GMU. In other words, the wolves in the GMU, it's probably one big interbreeding population. However, we didn't have any wolves cross Clarence Strait or go to any other major island groups in the archipelago. They pretty well remained on Prince of Wales Island, or some of the immediately adjacent islands. The genetic information we have, while it doesn't indicate any geographically-correlated populations, I think on the basis of just logic in terms of the ability of wolves to swim – they can swim fair distances up to 2 miles in the open ocean – but the probability is low. So even if they can do it, it doesn't mean that they do it with sufficient frequency to affect population dynamics. You don't have to eliminate all wolves traveling in and out, but if you restrict it enough it will tend to cause the population dynamics of one area to become somewhat independent from the population dynamics of wolves in another island group. OK, so they don't have to be completely isolated to be somewhat independent, but they do tend to show, perhaps, independent population dynamics because of barriers of water – water restricting that movement or lowering the probability of movement between different areas, different major island groups.

The point is, we're probably not dealing with one large population in Southeast Alaska. We may be dealing with several populations.

To reiterate the issue of deer carrying capacity. During the first stages of logging, deer carrying capacity probably declines almost to zero, to maybe 1 to 3 years. Then you get regeneration of forage as well as seedling regeneration – in SE Ak it's natural regeneration, good regeneration -- and you actually have a pick-up in carrying capacity, in which there are conditions at least during snow-free periods of the year that the clearcuts provide forage for deer. However, when the stem-exclusion stage occurs at about 25-30 years – when the canopy of trees, the second growth regeneration – crowds out or shades out all the forage on the forest floor. Then you enter a stage at which there is no forage. The carrying capacity declines tremendously. And that stage probably lasts – we don't really know how long – it could be at least 150 years, it might be 200 years, it could be 300 years. We really don't know how long that stage lasts.

Under current management regimes, in terms of timber harvest, it doesn't really matter. Because once it's been cut from that old growth stage, it's going to go into a 100 year rotation and be cut again, and then you're going to start this process all over again. And it's going to be cut again after another hundred years, so it's never going to regain those old growth characteristics. Which are very important for deer, particularly in winter in Southeast Alaska.

So when we look at deer carrying capacity, especially on these second growth parcels, we're really looking at perhaps almost a complete loss of carrying capacity in the long term. Now, that wouldn't be a problem if in fact you were looking at harvesting on a very small scale. But when you're talking about perhaps 30, 40% of the valuable timber on a particular area such

as GMU2 or GMU3, that's a substantial loss. And it will have ramifications ultimately for wolves.

OK. The first issue of course is deer carrying capacity and the loss of deer carrying capacity. That's the first issue we pointed out in the Conservation Assessment. The point is, that's the most important issue. It's the most important long-term issue. It's the one that creates a – I won't call it a crisis now – it creates a situation now that we need to be proactive. Because the silvicultural and forestry practices that occur now are going to have ramifications in 25 to 30 years. For example, there is almost nothing we can do for the clearcuts that already exist now. Those are basically beyond our ability to do much about. Even with thinning; even with some other silvicultural treatments, the benefits are very short-lived, and you run into a situation where you really can't hold back that stem-exclusion stage. It's going to occur at some point in time. You may delay it a little bit, but it's going to occur.

So even if you didn't do anything further, in terms of any more timber harvesting on the Tongass, you're still going to have a loss of deer carrying capacity. Now the point is, what do you do from here on in? At this point in time I haven't seen the latest ramifications of the Tongass Land Management Plan; I don't really know what we're looking at in terms of harvest levels or where the harvest is going to be, where they're going to target it, but we are looking at a potential of losing in some areas up to 40, 50% of deer carrying capacity.

And there's also one other concern, in that most of that carrying capacity -- or in terms of the effects of timber harvesting – are being monitored using modeling. They're not really being monitored all that closely with on-the-ground surveys. So in other words, when we look at figures that are being presented say in TLMP – those figures are based a habitat suitability or habitat capability models. Those are not real deer on the ground. And there's very good reason to be concerned about that, because those deer do not reflect the dynamic between wolves and deer. In no way do they reflect the dynamic. They are strictly a number that is generated because for a certain percentage loss of habitat, there is an assumption there will be a certain percentage loss in deer. And that's not necessarily the case, because wolves will play a part in this dynamic – for good and for problems, for bad.

So you want to keep that in mind when you are looking at some of the provisions in the Tongass Land Management Plan, and try to understand what that might really mean in terms of deer on the ground.

The other main issue is the issue of roads. And I think you've heard probably I think at least 4 different numbers for road density. A lot of road density numbers depend on whether you're talking about temporary roads, or specified or permanent roads. It's my experience on Prince of Wales Island that whether it's a temporary road or a permanent road, it's likely to be used. Whether it's being used by a pickup truck or it's being used by an ATV or a snowmobile, they're being used, even when they're water barred. When I work on road density calculations, I conclude that all roads – and in fact the information you're going to see here in the Conservation Assessment and that I'll give you here – is based on total roads, not just permanent roads. And on Prince of Wales Island in GMU2, we're looking at about 3,000 miles of road on both federal and private lands. Remember that a wolf doesn't give damn about whether it's Forest Service land or Native corporation lands, or state land. And you have roads on all of those lands. So when you total them all up, you're looking at 3,000 miles or more on POW.

Looking at the effect of roads on wolves, we have an increase in reported wolf mortality. These are harvest rates. This doesn't include natural mortality. It doesn't include non-reported mortality, which is also a component. But, we're looking at reported mortality as we increase road density. You'll notice that at about 0.3 kilometers of road to one square kilometer of area ... << TAPE SWITCH >>.

Tape 12-B: ... in exactly the wrong place for wolves or deer. Because remember, the roads are going to be where the best timber is. The best timber is where the most deer are going to be. And therefore that is probably where the wolves are going to be as well. If you remember the slide earlier, showing wolves at low elevations, primarily, that's again where the roads are going to be.

So the linear miles or kilometers of road is probably a more sensitive indicator of the effect on wolves than actually [road] density. As we look at the kilometers of road in this case, when we look at the square root of the harvest from 1990 to 1995, there is a significant linear relationship between the increasing road mileage or kilometers and reported mortality, in this case harvest rates. And this is again GMU 2, GMU 3, and then a combination of GMUs 2 and 3. The interesting thing here is that, independently, when you look at GMU2, GMU3 and then you look at the model here, the regression – you look at the coefficients – they're not terribly different. They are fairly close together, using independent data, which is about as compelling a case as you can get in regression analysis. And when we combine them together, the coefficients don't change all that much. It is a pretty compelling argument that there is a strong relationship there.

Now, you also notice, however, that there is a lot of variability around that line. In other words, road density or road mileage doesn't explain all the mortality. There are a lot of other factors. This is just one of them that explains a portion of the harvest rate that we observed. Another would be closeness of a road to a dense population of people. And the thing to understand about GMU2 – GMU2 has a rapidly increasing human population. That population has increased, based on census population figures between 1990 to 1995 by 13%. Bruce or Doug [Denniford or Larsen, of ADF&G] presented the Prince of Wales Island population based on permanent fund dividend receipts. The thing you also have to consider is there are a fair number of people on Prince of Wales Island who are not permanent population. They are residents of Washington or Oregon. The population of Prince of Wales and immediately adjacent islands is somewhere in the neighborhood of 6,000 to 7,000 people. Considerably more than you see with the Permanent Fund figures, and primarily because not everyone living there is a permanent fund recipient. So, you have an increasing human population, and you have a projection of increasing road density.

Granted, this graph is based on some older data. The new Tongass Land Management Plan may have some significant differences in terms of the projections for road mileage or road kilometers. But you can see that with GMUs 1B and 3, we're looking at a fairly substantial increase, but a whopping increase in 1A and 2. I don't know, base on the new plan, how far these projections are going to go, but this is a substantial amount of road building. Just to give you an idea of what it may look like on the ground – this again is older information, and I apologize to the Forest Service if they think it's a misrepresentation – but it gives you an idea of what it may look like in 100 years.

This is from the old Tongass Land Management Plan, which is being updated as we stand, but is what we are looking at in terms at least in the old plan of what road density may look like. And that is a substantial density of roads. This is just one small area on Prince of Wales. These areas in here also would be roaded as well – it's just not showing the road construction on that part of the map.

So we are looking at potential density that is going to be quite high. And in the discussion of roads earlier, there are real problems in managing access to roads. But if you don't build them, you don't have that problem. So there may be ways to reduce the amount of roads that are being built, by perhaps more helicopter logging. Maybe there are some other ways to get around this incredible density, which could likely have very adverse consequences for wolves. So, the management problem to a certain extent goes away when you don't have the roads to argue over to begin with.

I'm going to let Doug Larsen talk more about trapping mortality.

The third issue is exploitation and hunting and trapping mortality. I want to make a few comments about that really quickly, but would rather defer to Doug on that issue. I had significant mortality to my radio-collared wolves the first year. I had 61% mortality, almost all from hunting and trapping; 85% from hunting and trapping. The second year was only 38%,¹ which is still quite high for a population, but it was certainly a shift lower in the second year. The data that I collected for the north-central part of Prince of Wales would suggest that there is a very, very high, perhaps unsustainable, mortality rate. And in fact an average rate of 50% is unsustainable.

The question is whether it represents all of GMU2. It certainly represents a good chunk of GMU2, and I believe the harvest intensity recently in GMU2 has been close to at least that 35-35% level that I mentioned in the Conservation Assessment as perhaps the maximum desirable level. So again, I'll defer to Doug, but I believe we are harvesting at close to the maximum, with very little margin for error, currently in GMU2.

Finally, I just wanted to mention real quickly one of the recommendations we made in the Conservation Assessment was to create a number of reserve areas. The reason we did that, and I think it's a logical train of thought, we have three issues here. *We have* carrying capacity. We have road density. And we have exploitation. All right? None of those issues is infinitely controllable by any means. When we cut an area, log it, there is no fix to bring back deer carrying capacity at this time. There may be in the future, but at this point in time there is no fix. *Two*, when we build roads, we create this management nightmare; this big problem of how do we close it, how do we deal with the public, how do we deal with violations when they tear down the gate, when they put rocks in the water bars and drive over them? What do we do with it? *The third thing is*, certainly we can change regulations, but in the State of Alaska where we've got some pretty remote areas, the enforcement of those regulations is a logistic nightmare. The Fish & Game Trooper on Prince of Wales Island does a great job, but he's only one person. He's got to do commercial fish in the spring time. He's got a tough job to enforce regulations. He does the best he can, but he's only one person. He only can do so much. So regulation changes will have an effect; they will have a marked effect; but it's certainly going to be limited by the willingness of the public to comply with regulation changes. So what's our option here?

The option is, well OK, if we can see that we have, at the very best, only limited control over these three factors, then maybe the solution is – at least until we can have better control over these three factors – is to create a series of areas in which there just isn't easy access, there isn't the loss of deer carrying capacity, and there isn't the problem with uncontrolled trapping and hunting because it isn't accessible. ... People need access to some of these areas. But they don't need access to every alpine area. They don't need access to every roadless area. On Prince of Wales Island, the way the habitat has been fragmented to date, there aren't a lot of roadless areas left. And the proposal we made was to say, 'alright, enough is enough; we've reached that balance point; this is what we suggest would be an alternative means to create these reserves, which would at least partially solve these three issues, until we know better.' Solving these three issues will at least allow for a number of individual packs of wolves to exist, if in fact wolves outside those areas lose – because of loss of deer carrying capacity, exploitation that cannot be controlled or access that cannot be adequately managed. That's the logic behind that prescription. All right?

¹ Apparently this is total mortality, given the 50% average below it.

With that, I'll turn it over to questions. ... And I hope you had a chance to read the Conservation Assessment, and I would urge you to do so at some point in time if you haven't already. (@09:58 on tape.)

1. Chairman: Questions?

2. Polley: I want to go back to some of the introductory comments about the population. You mentioned that there may be, genetically speaking, several different populations in Southeast. I see very frequently, any time I go into the Whiting River, I see wolves, and I know they're coming down through that drainage from Canada. The same is true on the Stikine; they're coming down from the Canadian side, and the Taku River, a fair number of wolves. If you took a – and I assume somebody has – taken a sample from some of those drainages that do cross the mountain range. Are they the same DNA as the wolves that you're finding here?

3. Person: There's a very few samples we have. The only area, I think maybe we've got a sample out of the Taku, and we have one or two samples out of the Stikine. And they show no differences from wolves in the islands or along the mainland. So, no, the answer to your question is, they do still appear to be somewhat distinct. But let's understand something here. There's a lot of confusion about this whole issue of gene flow, you know, a population migration. What does it mean if we have one or two dispersers that we know of that have moved into a population. Does that mean that they are all one big population? No it doesn't, because number one, a disperser has to reproduce to have an effect. Alright? Well, dispersers are notorious for dying. They have very high mortality. So for a disperser to have an effect on a population, or demographically, it's got to reproduce. So you've got a certain loss there, even if they do make the migration. It doesn't necessarily mean they are going to reproduce or survive in that new population. Number two, it has to be quite a bit of migration to have an effect. Because think of it this way. We have what is, apparently right now and probably always has been in the past, a relatively healthy wolf population in Southeast Alaska. It is a wolf population that, if anything, is probably pumping out migrants, rather than sucking them in. Now, when you have that kind of flow outward, the ability of an in-migrant to have much of an effect on that population may be very limited. Do you see the point I'm making? In that, yeh, there may be back and forth, but it doesn't necessarily mean that you have a lack of distinction between populations.

4. Polley: Yeh, if I might follow-up. My question was particularly my curiosity over whether this is in fact a quote 'unique species'? To be honest with you, I have some real question about that. A unique subspecies?

5. Person: OK. I can go into this with a little detail if you want me to. It's up to you, I could probably bore you to death. But ...

6. Polley: I understand the point you were making that they're not out there swimming in great numbers. They're not across Snow Passage out of the Stikine in large numbers into this population. So if I go up on the Stikine, and take a wolf there. And if I take one off of Unit 2, are they different animals?

7. Person: No. No. When you say 'up the Stikine,' what do you mean; way up to Telegraph Creek? It probably would be different, that far up. But if you took one off the mouth of the Stikine, or somewhere down closer to the ocean, probably not that different. I mean they would be different – they would be different from the interior population. Yes, they would be. Understand this. There is probably some overlap, some – I won't call it hybridization because they're all the same species – there's probably some admixture going on, between the populations of wolves in Interior Alaska and the Yukon and British Columbia, and wolves in Southeast. I don't have any doubt that there's probably some. But it's probably small; not enough to really have a major influence on the structure genetically and demographically of

wolves in Southeast. They can still be distinct, but still have some communication. They don't have to be completely isolated to be distinct. It's a matter of probabilities.

8. Holmes: Not to get into the debate of splitting and lumping, taxonomically speaking, and I've read some of the reviews that reference that. But isn't the issue really, is this an isomorph? Is this a population that is separated, therefore my virtue of its separation is vulnerable, whether we do eventually determine it is in fact a subspecies, or just unique. I mean, isn't the issue just really its vulnerability and its geographic location? (Person: Yes, yes.) And does that not kind of set the stage for – and this is a stretch – but I'm curious because I think there is a possibility of affecting other species or potentially subspecies or isomorphs in Alaska? Could it not affect the status of, for example, ABC bears, and/or tundra grizzlies, or Louisiana black bears, or other critters that may or may not be taxonomically unique, but in fact are separate and potentially vulnerable geographically?

9. Person: Larry, that's a really good question. And the answer is yes. The whole issue of taxonomy is one of semantics. A name, whether it's *Canis lupus ligoni* or *Canis lupus linguini* – it doesn't matter. It's just a taxonomic name. It's referencing a difference, in this case initially a difference in morphology, that would suggest it is a distinct population because it has some level of isolation. Not complete isolation, but some level of isolation from the mainstream wolves, let's say in the interior of North America. The issue in terms of management of a population, well, you're looking at a population regardless of whether this is the Archipelago wolf or just another gray wolf from interior Alaska. You're looking at a population that probably is independent of others, or relatively independent of other populations in North America; and number two, has some distinct issues related to it. I mean this isn't the management of any wolf population, regardless of whether we call it *ligoni* or *occidentalis*, or *nubilus*. There are still some issues that won't go away just because we call it something different. Alright? But from an evolutionary standpoint – and maybe, I'm sure in terms of the Game Board you're not interested in the evolutionary perspective on this – but let me just say this. There's been a lot of speculation on wolves in North America, the genetics of wolves in North America, that suggests wolves show very little genetic diversity. OK? And that there has been a lot of hand-wringing about the Archipelago wolf because, the comment is, well there's so little diversity in wolves in North America, why are we worried about this little bit of diversity here in Southeast Alaska? That's like saying like, well diamonds are real rare, so why bother valuing them? If there's so little variability in wolves in North America and we're finding a little variability here in Southeast Alaska, we should value that – from a management as well as a scientific perspective. And in terms of what it means from a scientific perspective, is that genetic variability in a population affects that population's evolution. For a species, the rate of evolution is based on the proportions of two things: the degree of environmental selectivity on that organism. In other words the characteristics of the environment that force that organism ultimately to take a form which is best suited to that environment. OK? That's called selection. But that acts on genetic diversity. In other words, the genetic diversity is the raw material to build the kind of organism that is best adapted to a specific environment. OK? You have those two functions. Selection limits the number of possibilities; genetic diversity expands the number of possibilities. What does man do? Man does two things to animal populations. It decreases and intensifies the level of selection, it decreases the options. It says these animals are only going to live in this narrow range of options, environments. But on the other hand we also limit the genetic diversity by cutting off populations. So we hit them from both ends. OK? Am I making some sense, from an evolutionary perspective? OK? So in terms of that issue, it is important to have these distinct populations. It is important, in terms of the long-term viability of wolves. And when I say long-term, I can't say a hundred years five hundred years. I might say a thousand, I might say two thousand years. And to some that might seem trivial

and kind of ridiculous, but the fact is, when you close that door now, you wipe away all those options in the future. Period. It's gone. OK?

10. Fleagle: I'd like to direct a question to Kim, on the state report on the wolves. And then I'm gonna ask a question probably back to you. I'm confused on the population of wolves on this island. The State's report we were looking at earlier says one wolf per 22 square miles on Prince of Wales Island. What does that extrapolate out to be for that island?

11. Background talk: ... 2,400 square miles ...

12. Person: So it would be about 2,400 divided by 22, what did you say, 22 square miles? That would be for Prince of Wales and Kosciusko. For the outside islands it's going to be a few more.

13. Fleagle: There's obviously some differences in the methods of estimating this population. I was just trying to get a better handle on it.

14. Person: Mike, the estimate on population for GMU2 that we give in the Conservation Assessment is between 300 and 340 wolves.

15. Fleagle: Didn't you say there were 27 packs?

16. Person: It's probably between 25 and 27 packs.

17. Fleagle: OK. And your average pack size is 9 wolves. That equates to 243.

18. Person: No, no. The average pack size is between 8 and 9 wolves, but you also have to count the dispersers in the population, which are about 30% of the population. So if you have 27 packs at 8-9 wolves per pack, and inflate that by another 30%, you're looking at the total population.

19. Roczicka: That one graph you put up, showing the number of individuals per pack and how it has varied over time. That's the only one that isn't in the Assessment? If you go back, is the harvest consistent over time back through the years?

20. Person: No, no. There is no data on pack sizes prior to that. In terms of the harvest, the reported harvest has increased through the 1980s. There was a peak in I think '69, '70 of about 120 wolves, something in that range, and then it declined through the 1970s and picked up in the '80s and reached a new series of peaks in the early 1990s.

21. Streveler: Dave, I'm going to ask you for a judgment call here. Given your best understanding of the present level of mortality on wolves on Prince of Wales, are we not at risk of precipitating -- let's assume that that level persists -- are we at the risk of precipitating a population decline with that level? And if so, how much do you think mortality would have to be lowered to lower the probability to something you consider reasonable?

22. Person: I think the harvest -- and of course you've always got to consider there is a certain margin of error here, and there's also a certain amount of serendipity in terms of the environment and everything else. I believe the harvest currently on Prince of Wales is at about the maximum that could be sustained. So in other words, there isn't much margin for error. It's about the maximum that could be sustained.

23. Fleagle: A follow-up on my last question. I'm still confused on the State's estimate. Is the state in concurrence with these estimates of population for the wolves on this island?

24. Chair: Mike, we're going to get into this discussion. Does the board want to have the state join in with Mr. Person?

25. Polley: I'm really interested in Mike getting a response to that. But if we could do it under proposal 12, I think it would keep things straightened out.

26. Chair: Go ahead Dr. Titus.

27. Kim Titus (Region-1 Supervisor, ADF&G WLC Div.): I have a short answer. That number probably came from the Conservation Assessment, in which it's reconfigured in a different arithmetic way of looking at it.

28. Chair: Other questions? Thank you very much Dave. **(Tape at 25:23).**

ADF&G's report, Status of AA Wolves, spoken to the Board of Game, 29 October 1996.

Presentation by **Doug Larsen**, with introduction by **Kim Titus**, 8:20am.
(Respectively, the Ketchikan Area biologist and the Region-1 Supervisor)

Also called to the mic during questions & answers were: wolf and deer researchers **Matt Kirchhoff** (ADF&G) and **Dave Person**, and **Chris Smith** (ADF&G Assistant Dir. of Wildlife Conservation).

Apparently an overhead projector was used; there is no powerpoint in the archives.

Board of Game members present: Dick Burley, Mike Fleagle, Larry Holmes (Chair), Ernie Polley, Greg Roczicka, Walter Sampson, and Greg Streveler.

Discussions that occur in the Q&A section following the report are the Board of Game's principal factual and conceptual deliberations leading to actions taken on the subsequent tapes (13-B through 14-B) which are transcribed in a separate file.

Transcription from the official recordings. Underlined text indicates original verbal emphasis. In the Q-&A section, each item is numbered for easy reference.

Tape12-B at 26:57, continuing to 13-B:

Kim Titus (Region-1 Supervisor, ADF&G WLC Div.): "We will present ADF&G's Wolf Status Report. Most of it will be presented by Area Biologist Doug Larsen. That's in the best interest of everyone; he is the most knowledgeable on-the-ground person on that, bringing his thoughts and impressions of the local trappers and residents, better than other staff at this forum. A few remarks first. First, how we got to where we're at, relative to the staff input on this. First of all staff used, and the department is in agreement with, the Conservation Assessment. That's an important note here, that most of our technical and biological information, aside from harvest, has come from that Conservation Assessment. So that's what the staff relied on, and we agree with the results that are in that assessment. The department is in fact one of the authors of that assessment, along with the other three agencies and Mr. Person. I think it's important note we went through a consensus-building process among staff, from the regional supervisor down, pretty much. It involved the area biologists, management coordinator in particular, through a number of conference calls and in-person meetings to develop some shared understanding of what data – what we know

and what don't know about wolves, especially in Unit 2. Through that process I think it's important to note there is healthy debate among biologists about how to implement these measures. And that's when we go from the data we do know, to what seasons and bag limits and other measures might be appropriate in this situation. And that's the art of wildlife management, not the science of wildlife management. Because we have to leave the data behind to take those measures. So we went through a consensus-building process, and that's largely what you are going to hear this morning."

"To introduce some of the things that are potential options we looked at is, first reducing the seasons and bag limits for hunting; shortening the trapping season; establishing a personal bag limit for trapping; restricting the use of motorized land vehicles for trapping; and establishing harvest quotas for units or islands in the region; and using emergency orders to close seasons when quotas are reached. Those are just some of the options that will be before you. Certainly there are a whole number of other options that the land management agency, particularly the Forest Service has control of. Most of those won't be before you today, because you don't have the ability to control those. Those are under the purview of another agency. With that I will turn the technical aspects of this discussion in terms of wolf harvest, trapper survey results, and how they relate to some of our recommendations – and that will be presented by Area Biologist Doug Larsen.

Doug Larsen (at 30:50): "My name is Doug Larsen. I'm the Ketchikan Area Wildlife Biologist. I'm responsible for sub-Unit 1A and Unit 2. I've been with the department for 11 years, and this is my first opportunity to attend a board meeting. And I'd like to thank you for the opportunity to be here and the opportunity to present some information. I hope the information we present will help you in your deliberations."

"I'm going to focus on two areas this morning. I'm going to focus on the harvest – and that's going to be reported harvest that we get through sealing records. And then I'm going to talk about the trapper survey that we undertook last June and July to get more input from the consumptive users in Unit 2. I'd like to say up front that the information the trappers provided is in my estimation extremely valuable. And as I get into that topic I'll try to you understand why I think it's valuable, and why I think it's credible. With regard to harvest, I think it's probably a good idea to start with a very simple overview of historical regulations in the region. And Bruce has put an overhead up that outlines those. Within that, I'll just concentrate on Unit 2, because that's the area that we're most concerned with at this point. At the top there, you'll see that Units 1 through 4, under hunting, had no closed season and no bag limits between 1959 (and statehood) and 1992. And then you'll see that in 1993 there was a hunting season implemented. That says October 1; it should say August 1. The season is August 1st through April 30th, and there is a 5 wolf bag limit. I think it's important to address the rationale behind why that came to be. Obviously, this body promulgated that regulation. The reason it was brought before the board in 1993 by the department was that, as we know historically, wolves have been under the gun, under poisons. A number of ways have been implemented in the past to try to limit the number of wolves. In 1993, and I don't think any too soon, the department felt that the message being sent to the public was that we didn't really care about wolves, and that there wasn't a concern about wolves. As a result, the change was suggested and passed, so now we have the August 1st to April 30th season, with a limit of 5 wolves.

Trapping season, again in Unit 2 from 1959 to 1969 had no closed season and no bag limit. Again, extremely liberal. In 1970 there was a change in response to severe declines in deer numbers, to reduce the trapping season to November 1st through April 30th. And then subsequently in 1983, more as a result of desiring to be consistent throughout the region, it was changed to what we have now – an November 10th through April 30th season, again with no bag limit.

The next overhead Bruce will put up for you shows the historical harvest back to 1977. On the histogram before you, you'll see that the harvest went from lows in the early 1970s up through 1989-90, and then it increased fairly substantially in 1990-91, and then to a peak of 105 wolves in the 1992-93 season, stayed there for one year, dropped, and this last season was back to 99. The average for the last 6 seasons is 95. The average for the last four seasons is 98.

There is one thing I want to address I probably should have done early-on, and I'll do it now not to overlook it. And that is, last night Mr. Fleagle – just as we were getting ready to recess – pointed out that in the paper we presented to the board, that we indicated that there was an estimated density of 1 wolf per 22 square miles. That is an incorrect number. Even at our best guess, which we have done in the past at the request of various directors to come up with an estimate or best guess for numbers of wolves in the various subunits and units, our best guess was 200-250 wolves for Unit 2. That has since, in the presence of Dave Person's quantitative and I think more sensible data, has been increased to 300 to 350 wolves. The point is that from that – even with 200-250 wolves as our estimate, or our guess – we would be looking at a wolf for every 14 to 18 square miles. But I think realistically, as Dave has shown through his work, it is more like 1 wolf per 10 to 11 square miles. I just wanted to get that cleared for the record, and I appreciate Mr. Fleagle pointing that out for us, because that was a mistake.

Before we jump off of the harvest, I just want to mention that the increase in harvest we have seen in the last 4-6 years has come as a result of one primary factor. And that was that until that time period, people were going out and hunting deer. They were pretty successful at hunting deer, and it came a point when some very capable individuals – capable in terms of their trapping abilities – went to their areas that they enjoyed hunting deer in, and remarked that they saw more wolf sign than they did deer sign. As a result, they took it upon themselves to go out and reduce wolf numbers. And I think that is exactly what you have seen the last 6 seasons, and that's what precipitated that increase. Again, it was a perception that wolves were high, and it was addressed through increased trapping efforts.

The next overhead is a table that breaks the game management unit down into 29 wildlife analysis areas. These are areas, that I will show you in a minute on a map, that allow us to better define actual locations of harvest. They are pretty large areas, up to a little over 100 square miles, but it's much finer than getting data just for the game management unit. And it can help us understand where harvest is occurring, relative year-to-year. The highlighted numbers you see in the columns represent harvest for the season, within WAAs that accounted for 10% or more of that particular season's harvest. In the totals column at the far right, what I've done there is I took those WAAs that had 5% or more of the harvest and highlighted those. I could have done the 10%, but thought it was better to take it down to the 5%. You'll notice that the WAA 1529, next to the bottom, 69 wolves have been taken there in the last 6 seasons.

Now let's look at some maps and I'll show you how the distribution falls out on the units. In 1990-91, the primary area was around Klawock. We heard yesterday some testimony about population centers often times influencing the amount of harvest. Well, in this case Craig and Klawock are both within WAA 1318, and that was the area that back in 1990-91 – again with a fairly small harvest compared to some of these more recent years – saw the bulk of the harvest come from.

In 1991-92, we saw the bulk of the harvest occur on the northwest corner of the island. And this was in response to one individual trapper who, again as I mentioned earlier, felt that deer numbers had declined substantially and wolf numbers were very high. As you saw in that table, 69 wolves out of there in 6 seasons certainly does suggest that there were a lot of

wolves in that area, and that that individual was responding to a very real presence of wolves in WAA 1529.

1992-93, again, the single individual on the north end of the island – who incidentally was able to by himself take 48 wolves in one season – continued to trap that area. Also there was some effort put down in the Craig-Klawock area, and that was by a couple of trappers who use the area for a deer hunting area. And again, the wolf numbers were high and they were addressing that. The other area over to the right, the east, 1315 – I think the reason we saw the increased harvest over there, that was an area that was opened up, the private lands were opened up for timber extraction. And in the course of doing that I think it just increased the access, and also I think the people working on that crew were able to take some of those animals.

1993-94, we see the bulk of the harvest come from south of Craig and Klawock. This was an area where a single individual, again, had a favorite hunting area – it's down in Trocadero, the name of the area – and he addressed what he saw as high wolf numbers by putting a lot of effort into trapping that particular WAA.

1994-95, we again – and you'll notice the bulk of the harvest at this point has gone away from the north end of the island, and is more towards the central portion of the island – and now you see there's a whole band basically across the unit, and actually (1211, which is over to the east there should also have been included and it's not), but that's the band (come down Bruce right across from 1213 – right there, thank you) – that one also was one of the WAAs that had 10% or more of the harvest. But you can see the shift from the north end to the central, the more southerly, and it's bouncing around.

I think the point we need to make here is that trappers are responding to what they see as a very real presence of wolves, and their distribution throughout the unit. In other words, while numbers may be very high at one time in one WAA, as those numbers decrease through trapping effort, deer number start to come back perhaps, as some trappers have suggested. Other areas are targeted. What happens as a result of that, and our experience is, is that places like WAA 1529, that was heavily harvested, now – in the absence of any effort – we're seeing wolf numbers come up. And prior to that we've had indications that deer numbers have increased up there.

Last season 1995-96, and again you'll see that the bulk of the harvest was in that band across central Prince of Wales Island. << **Tape change.** >>

TAPE 13-A

(... Larsen presentation, continued):

The two primary access methods are by highway vehicle – that includes cars, trucks, ORVs – and by boat. As you'll see in this table, the majority of harvests subsequent to 1990-91 has been by boat despite, as we saw yesterday, the increasing and large number of roads and road miles on the unit. The trappers who are the most effective, from my experience, tend to be individuals who spend a lot of time fishing, and as a result they have access to boats. And they have good boats to get places where small boats, skiffs, can't get. And I think that's the reason that we're seeing so much of the harvest occurring from the water.

The next table I'd like to show you, again trying to give you a feel for harvest, is the chronology of the harvest. You'll see the bulk of the wolf harvest occurs during December through March. 19% in December, 21% in January, 16% in February and 17% in March. This is over the past 6 seasons. One of the proposals before you would remove November and April from the trapping season. If you look at the numbers on paper, that would result in a 10-12% reduction in the harvest of wolves. If hunting seasons were changed, which as you

might recall opens August 1st, then we're looking at about 19% reduction on paper in the number of wolves that would be harvested. That's all I wanted to share with you on harvest.

The next thing I wanted to talk with you about is the trapper survey. This to me is a very important component. Whatever regulations are implemented, are only going to as good as how they are received or perceived by the users. We heard yesterday that law enforcement presence on Prince of Wales is limited. There's a lot of back country where things can go on that are never reported. So I really think we need to consider how any changes will affect these individuals who are actually doing the harvesting of wolves in the unit. I'm not saying they should dictate for us what we do, but I really believe we need to make them an integral component in the process.

Because of that, last June and July I took it upon myself to go to Unit 2, Prince of Wales Island, and spend time talking individually with trappers. I should say too that the department has had a trapper survey that we send statewide. When I was in Kotzebue, I limited my survey to northwest Alaska, the villages around Kotzebue, and I did that on a more personal basis. As a result of that I found that people were really willing to share their thoughts about furbearer populations. When I got to Ketchikan I took the same philosophy. The information I got in Kotzebue, based on aerial work we were able to do – track counts, in country where you can actually see tracks and animals -- jibed very, very well with what trappers were telling us they were seeing and experiencing on the ground. When I came to Ketchikan I didn't have a way to really verify, through quantitative means like I did in Kotzebue, whether or not what the trappers were telling me was indeed accurate. But I've talked to enough of these trappers now, and having had that experience in Kotzebue, I feel very good about the information I'm able to receive from and have received from the trappers in Unit 2.

When I went to Prince of Wales Island I targeted those individuals who I knew had historically taken a fair number of wolves and were good at it. There were several things I wanted to know. What was driving them? Why did they want to catch wolves, why did they want to kill wolves? How were they doing it? What were their perceptions about wolf numbers? What were their recommendations if changes needed to be implemented? Those are the things I'd like to share with you.

The table Bruce has on the overhead now shows several things. It's got more on it than we need to address right now. What I'd like you to key-in on is the central part of the table, which shows up there what I've called the Wolf Abundance Index. The indices of abundance was actually developed by Brandon Keith, from some lynx work they did in 1979. I have used that in analyzing trapper surveys, and have found that to be pretty reliable. The way it works is I talk to trappers and I ask them, do you think wolves in Unit 2 at this time are scarce, common or abundant? That was one of several questions. Their responses then were tallied, and on a scale of zero to 100 – 100 being super abundant, 50 being average or common, and zero being scarce – the number I got from those trappers was 62. That was right in the ballpark with what I had gotten earlier from the statewide trapper survey. That to me says that trappers believe wolves are on the slightly abundant side of average or common.

The other thing I asked them was how wolf numbers compared with last season? And the response I got was that it was pretty much the same. That's indicated by the number 50 you see on the table. Pretty stable. Then I asked them, how do you feel about wolf numbers over the last 5 years, or 5 seasons? And they felt there was perhaps a slight decrease in overall numbers in a 5 year period, decrease.

The other thing that obviously needs to be asked, if you are going to talk about wolves, is to talk about their prey. So I asked trappers how they felt about prey abundance over the past

5 years. And similar to the wolves in the past 5 years, they said they felt they were slightly down.

Another question I asked was, do you think there is any need to make changes to the season and bag limits for wolf regulations in general at this time. All but one trapper said 'no.' The one trapper that did say no said, 'you I really don't think pelts are very prime in November and we really ought to make the season opening in December.' Biologically, though, he didn't feel there was any reason to change anything. Not wanting to be too naïve, I thought it was important to pursue 'what if.' This was before the proposal book had come out with the proposals listed, but in anticipation of the issue with threatened, perhaps proposals that would come before this body with proposed changes, I asked trappers, 'here's some what ifs.' If some regulatory changes are necessary – not necessarily biological, now, but for other reasons. What would you say to having individual bag limits? They didn't like it – too easy to get around. It wouldn't really affect anything. Then I asked them, how do you feel about overall unit quotas? They said, well, seems like a strange thing to implement – again talking with people who feel there is a particular need that needs to be addressed – they said, 'but if it was high enough, we wouldn't have a problem.' And I asked them, what's high enough? They said, 'well maybe the average of the last 4 to 6 seasons.' That equates to about 95 wolves. I said, 'OK'.

The other thing I asked them about was shortening the season. That was the one area where I got unanimous consent, if you will, or at least people were willing to accept reductions in the season. I asked them, 'well what parts of the season could be reduced?' They said, 'pelts in November really aren't that great; we can live without a November season. In April, we're starting to get black bears out. They conflict with wolf traps. We could live without April.' That's where we came then with the proposal to do away with November and April, which again on paper would result in a 10-12% reduction in harvest.

Let me say just one more thing, and then I'll open it up for questions. Dave Person, in his work, has estimated the population on Prince of Wales Island at 340 animals. That's the best, most quantitative, defensible number that we have. And frankly, in the past when I was asked to come up with a guess, I hated it. When I would say 200, 250 – for a trapper to say, 'no way, Doug, it's a thousand,' who was I to argue. I didn't have any more information than he did, and as a matter of fact, those guys that said there was 1,000 spent more time on the ground than I did. But Dave spent several years tagging wolves, following wolves. I believe the estimate he has is as good as we can get.

Using Dave's number, and the number he has generated from that number, Dave has told us that we are – right now, with a 98 wolf harvest – at the limit of where we want to be, from a harvest standpoint. This is reported harvest – this does not include natural or unreported harvest. What that tells me is, if we are right on the line then a slight increase in harvest could cause a reduction in population. A reduction in harvest could cause an increase in population. I think all of us realize wolf populations are capable of reproducing pretty quickly.

Given that we are on that fine line, it seems reasonable to me to reduce the harvest enough to take us out of that uncertain zone without over-reacting. And again I'd emphasize that by limiting the season by 2 months, we're addressing that concern biologically.

We are also taking into consideration trapper input, very credible trapper input. And I'd insert here that the cooperation of trappers in Unit 2 has been incredible, and it's largely because of Dave. When Dave went to Prince of Wales Island he included all those people in the process that he developed for studying wolves. There's a great deal of respect between the trappers and Dave, and that's why I think we're in a position to take the information from

these trappers and use it as a very important component of our decision. Thank you.

(Done (@ 13:24).

1. Chairman: Dr. Titus.

2. Titus: I'd like to summarize those points again, with Doug's help. I think Doug touched on most if not all of these in his fine presentation. I think it's important to go through some of these options again, so that they become clear in everyone's mind. This is just a take-off of the status report you have been provided, and have had for a week or more.

The first option has to do with reducing the season and bag limit for hunting. And as Doug emphasized, that is not our current proposal before you. However, if adopted it would result in about a 12% reduction of the wolf harvest that occurs in the months of August, September and October, when only the hunting season is open. We do not recommend that at this time, although that is certainly an option.

The next major option we have before us was to shorten the trapping season, and that is in fact what we proposed for the reasons Doug put forward, and we prepared Proposal 14A that reduces the wolf season in Unit 2 by a total of about 50 days, when those pelts are not prime. And from the work Doug has done, it appears we could get buy-in by the trappers for that sort of proposal.

The third item is establishing an individual bag limit for trapping, and perhaps I'll let Chris articulate his experience with that type of proposal. And let me say that that is not something that we're advocating or recommending at this time. Chris?

3. Smith (ADF&G): Mr. Chairman, in general we do not use individual bag limits as a tool for regulating take by trapping, under normal circumstances. As Doug mentioned, it's relatively easy for a trapper who wants to circumvent a conservative bag limit to do so. In most cases, if you review the trapping regulations, beavers are the only species for which we have bag limits, almost across the board. And those bag limits range from 25 to 50, so they're relatively liberal. Other cases are exceptions are in cases like foxes in the Kenai Peninsula, where we don't have very many foxes, but occasionally they are taken incidentally to wolf or coyote trapping. In order to accommodate that incidental take, we have a conservative bag limit. But generally speaking, trapping is a commercial use and bag limits are a less effective tool than adjusting the season lengths or establishing an overall quota for an area. And then closing an area once that quota is reached – regardless of how many trappers are actually involved in taking those animals. The other specific reason in this particular case is that, in looking in the distribution of the number of wolves caught by individual trappers, the vast majority of trappers are taking a relatively small number. So to be meaningful, a bag limit would have to be fairly small – in the range of 2-4 wolves per trapper. And that would be one that we would see some problems in trying to enforce that sort of a bag limit.

4. Titus: The next item that we gave consideration to and had extensive discussions about is restricting the use of motorized land vehicles for trapping. In Southeast Alaska we have one well-known controlled use area – that's on NE Chichagof Island, that has been successful in limiting the take of marten and brown bear harvests. There are some significant differences, I think, with imposing across an areas the size of NE Chichagof – where everyone focuses through Hoonah – versus a number of different communities and places where people live across Prince of Wales Island. We believe that would be difficult to enforce, and I'd like to ask Doug a little bit about buy-in from that for trappers.

5. Larsen: When I mentioned that I had gone to the communities and talked to trappers, I had a list of things I was interested in discussing with them, the what-ifs. One of those was not limitations on the use of motorized vehicles. Perhaps that was an oversight, but the bottom line is, I don't know how trappers feel about that. If that was something that was

implemented, it would have to be something that I take the responsibility to go back and explain to people why that was implemented. But at this point I don't have any feedback from users about how they feel about that kind of restriction, should it occur.

6. Titus: The final area that we looked at, and I think we are making some progress on, is establishing harvest quotas for units or islands within the region, and using emergency orders to close seasons when quotas are reached. There has been a lot of talk about developing quotas relative to trapping and wolves on Prince of Wales. The difficulty we face is basically the committee, when we've gone through that, is to develop a process and a process over time for how we would establish quotas, given that our current information is based on a good estimate from Dave Person. That estimate, every day that goes by, that estimate may change over time. And we're not currently monitoring wolves to the degree that Dave did. So if those numbers change, and if we want to change a quota – the biologists have been in a lot of discussions about how do we come up with that quota and make it biologically based, not just based on what conservation groups may want or what trappers may want, but what is the biology of the situation. And that's a difficult problem in Unit 2. But we're going to continue to explore those management options.

One of the things we would like to institute through Proposal 14B, and the proposal is before you, is to continue to get better information about the wolves both in Unit 2 and across the region – in terms of changing some of the reporting requirements, and having the foreleg turned in with the wolf carcass – so we can begin to monitor these populations better in terms of getting the biological information we need to establish quotas in future years.

If no other members of the staff have further information, that concludes our report to you. **(Tape @ 21:36).**

7. Chair: Thank you Dr. Titus. For the record, what – before we get into questions, just curious – what information do you gain from harvesting the foreleg?

8. Larsen: Mr. Chairman, when we harvest bears, one of the things we require is that hunters bring in the skull to have it measured, and we extract a tooth for aging. One of the things we discussed among biological staff was requiring hunters to bring in skulls of wolves, so we could similar kinds of data collection from those. What we learned, was to extract a tooth from a wolf, on the spot, is very difficult to do without breaking it. And to get an accurate age you have to have the root. As a result, we felt that was something we didn't want to subject trappers to, frankly, because there was another alternative we learned about from staff who are more familiar with wolves. And that is to use the leg bone to give us an idea what proportion of the harvest is young of the year, versus adult. And the information we get from that of course has to do with population structure. The health of the population can be monitored based on the percentage of young in the harvest.

9. Chair: Thank you. Board members? Mr. Streveler, then Mr. Residska.

10. Streveler: For a moment, just to follow up on that thought – so, you're not going to be able to get sex ratios from that then, or any age structure of the adult population, with your decision to take leg bones instead of skulls.

11. Larsen: Mr. Streveler, yes we do get sex structure from the pelts that are brought in. We do sex those and determine male versus female. But you're right, we would not be able to differentiate a 2-year old, from a 3-year old, from a 4-year old, etc.

12. Roczicka: Doug, you kind of alluded to it during your presentation there, that certain areas have focused trappers' attention. They perceived high numbers of wolves and went in and, with concerted effort, lowered those numbers, culled the population. You did mention that in the northern section the wolf packs appear to be rebounding from that quite naturally

and quite helpfully. Have you seen that consistently? Or have you followed-up on that throughout the other areas?

13. Larsen: Mr. Roczicka, actually, no. The only place I have gotten that feedback was from that north end. That's not to say it's not occurring other places, it's just that that is a place that's heavily used on the island, and recently people have been up there hunting deer, have noticed more deer in the area, and more wolf sign. I might mention that just a couple of years ago there was some Forest Service staff working in that area. This is an area, remember, that a trapper took 69 wolves out of, and the individuals who were working up there said they could not find any wolf sign. And here it its 2 years later and the reports we are getting is that the wolves are there. Whether or not they moved in from outlying areas, or their productivity there in that particular area is responsible for that, I can't say, but we have seen through observations that that has occurred.

14. Roczicka: So that northern area, then, of those you have looked at is the most intense trapping effort?

15. Larsen: Yes, to date that was the highest area for wolf harvest. It might be worth pointing out here that the individual who trapped that northern end has relocated from Point Baker to Wrangell, and as a result has directed his wolf trapping efforts in other areas, including Etolin Island. So to a large extent now that area is not, wolves in that area are not being harvested.

16. Fleagle: I'd like to ask Doug, about this amended proposal for the foreleg and the hide. How is that going to affect the trapper's preparation of that pelt? Are you talking about leaving the bone in the hide, while he's drying the pelt, for that process?

17. Larsen: Yes, Mr. Fleagle. My first concern when I learned of that as an option for getting age structure was that it would be an inconvenience to trappers. So what I did was I contacted a couple of local taxidermists and I also contacted trappers to ask them what their thoughts were. And I also talked with staff that had longer experience than me in wildlife management. A couple of things came out. Number one was that it would not be an inconvenience to leave that leg bone in the pelt. You can skin it out and leave it attached. The other was that, it was pointed out to me that there was a time in Alaska history when that was a requirement of trappers. I know exactly where you're coming from, because the last thing I as a manager want to do is to do something that inconveniences individuals in the field. At the same time, I think they recognize that if there is some information that will be useful in helping to better manage the population, they're willing to cooperate with that.

18. Smith: I was just going to reiterate and elaborate on one of Doug's points. I've been around long enough to have sealed wolves when the requirement of having the leg bone attached was in effect. This is reinstating a former requirement. Generally what is done by a trapper is the leg bone is not left in the hide. They'll skin the leg down, and leave just one or two of the digits attached – skin it right down to the paw or normally you would separate the hide at the point of the last joint. You just leave one or two of those joints attached. You take the flesh off the bone, and it dries just fine without problem.

19. Sampson: Under the appendix of the report you gave on Unit 2, which is historical wolf harvest, from 1977 to about 1990 wolf take has been from 10 to 55 per year. Then from 1991 through 1996, it looks like it has doubled. In Unit 2. Is this because of economics, or is it because of access that doubled the take of wolves?

20. Larsen: Mr. Sampson, I don't think it was economics. Most of the trappers who are concentrating on wolves are not really into it for the money. I think it's a combination of, as I mentioned earlier, the perceptions that wolves were very abundant in some areas, that deer

numbers were low – and a willingness or desire to change that situation somewhat. And then the other thing is indeed related to access – I think that certainly has had an effect.

21. Fleagle: Thank for clearing up the leg bone. One report you showed, your survey results on harvest methods. I don't have that in the book. Can I get a copy before we leave today?

22. Larsen: Certainly, for all members.

23. Streveler: A couple questions. I want to preface the first one by saying that I've lived in a rural area most of my life, and I have the highest respect for the people such as you mentioned, such as the trappers. One comment you made sticks in my mind, and I'd like to discuss it. I applaud for going to these guys and getting their feelings for estimates of population abundance and stuff like that – it's often the best information we have to go on. One thing that concerns me as I listen is that the best trappers, as you describe them, are not into it at the moment for the express purpose of harvesting the hides and making a living off it. They're in it for the express purpose of reducing the wolf population. And given that that's their motivation, casting no aspersions on these guys at all, are you worried that when they assess the population they have a vested interest, in suggesting it's a high level so they can really go after them?

24. Larsen: Mr. Streveler, thank you for that question. Something that came up within staff is the comment that you're asking the foxes to guard the hen house. I think that's certainly a valid thing to consider. I would say again that my experience with these individuals is that they are indeed interested in harvesting deer, and as a sidelight to that are interested in harvesting wolves, to ensure that they can harvest deer. There's also, though, a component within these particular individuals – for the most part, this is not entirely across the board, but the bulk of these people – do have a concern about wolves. They do have a genuine concern for being able to go out and trap wolves. Because as much as these guys enjoy harvesting deer and therefore harvest wolves, they also find it challenging to go out and harvest wolves. So for them, the economics isn't the big issue; it's two fold. One is the recreational opportunity, the other is the desire for an increase in deer numbers.

Having talked with these guys, I honestly believe that they are cooperative and willing to work with us to ensure that harvests are not too high. In fact, we've seen that in the dispersal of effort, when areas are perceived to be low for wolf numbers we see other areas targeted. It's almost like a farmer and his fields, I suppose. And it makes sense, when you consider that they have fuel, time invested in going out, and in doing this exercise if they aren't getting any return for their efforts, they are going to reduce their efforts. And I think that is exactly what we have seen.

So I think that is a good point. Again my feeling from dealing with these guys is that that isn't a concern for me personally.

25. Streveler: My second question has to do with one of the options, which is putting a bag limit for trapping. It is mentioned in your writing and you reiterated, as I think Mr. Smith did, that you'd have to set the bag limit really low to have an effect, because so many trappers catch so few wolves, and a few catch a lot. I'd like to examine the other side of that coin for a minute before I reject that possibility. If you have a few trappers that are catching a lot of wolves – and collectively between them they may even catch the majority – and you cap the take so that their take is substantially reduced, it seems to me you would have quite an effect on the number of wolves taken. I'd like your comment on that.

26. Larsen: I think what we would see, and in talking to trappers it seemed real obvious them, was that a couple of things. One was that they could seal wolves under their kids, their wives, their uncles, their aunts. I mean there's ways to get around that. The other thing,

and a comment a trapper made to me, was that he was concerned that if it went to an individual bag limit, that that might create the perception among trappers that they might have to help educate yet other individuals to take their quota, or their bag limit. Which may or may not be the case. It was a concern that was expressed by a single trapper. And I thought about that, and it seemed to make some sense.

Again, if the interest is to see wolf numbers reduced, and if the person is wanting to comply with that bag limit, then it would make sense to help others learn the trade and thereby perhaps even increase the harvest ultimately.

27. Streveler: Yeh, I can understand that too, but I'm sure these people are pretty perceptive about the political situation that they are in with wolves. I wonder if it were the opinion of this body and you folks that we really need to make a clear statement to the public of our concerns for the wolves – would they voluntarily kind of swallow their opinion and help you implement a closure, or a bag limit. If it were presented in that light.

28. Larsen: I think, Mr. Streveler, that these trappers are concerned about the long-term wellbeing of the wolf population, and ultimately their opportunity to harvest wolves. Within that framework I think that they would be very willing to cooperate in being willing to do what was necessary to achieve that. At the same time, having spoken with these individuals, and looking at the options on the table, the response I have gotten is that that is not high on their list of alternatives for dealing with the situation as it exists.

29. Burley: I guess the intent of reducing the season is to maintain a viable population of wolves? And what constitutes a viable population? Does it have to be at this level; could it be at a reduced level of overall wolves? Does it have to be higher? Maybe you could address that.

30. Larsen: That's a good question, Mr. Burley, and I think it's one that's dynamic. It fluctuates. I think the bottom line, though, is that what we don't want to have happen is for things to get out of balance. A harvest of 100 wolves, given specific habitat characteristics and food availability and so forth, may be appropriate. I guess the ultimate thing is that we don't want to see an overall, through time, decline in productivity or recruitment relative to harvest. So what I think we are looking at right now is a situation where we are right at – according to Dave's work – right at that limit. Where if we were to reduce the harvest we could increase population, if we increase harvest we could see a reduction in population. Ultimately, where that population ends up is as I said dictated by habitat capability to support the deer food source and other environmental characteristics.

31. Burley: That's the whole purpose of my question. If logging continues in the Tongass, habitat is reduced for deer. Do we maintain the same population of wolves?

32. Larsen: Again, good question. That leads into this whole concept of where do we manage wolves, knowing that down the road we anticipate fully that wolf numbers will decline as a result of decline in the prey source, as a result of habitat loss?

We can do one of two things, I guess. One is to say we see this coming in the future, and therefore we need to curb harvest, or reduce harvest – or increase harvest. The bottom line though is that, the best policy I believe, is to manage for what we have today, with plans for how to adjust that plan or plans for tomorrow's circumstances. And that's where having a monitoring program, where you see where that is relative to populations, and your carrying capacity and so forth, makes a lot more sense than jumping either into some very liberal changes or very restrictive changes which are premature.

33. Burley: I'm still not sure in my own mind what establishes this level? Is it done on the prey basis? How do you establish this viable population of wolves?

34. Larsen: I think it's got to be done on a continuing basis. I mean, at this particular point in time, with the estimates we have for wolf numbers, knowing what we do about productivity and recruitment, we can allow a reported harvest of 90 to 98 wolves, according to Dave's work. In 5 years, as second growth habitat develops, and deer numbers are reduced, and thereby the carrying capacity for the predators is reduced, then that would need to be adjusted. I guess it's difficult for me to say that the number we want to shoot for is 200 or 150 or whatever that is, because again, I think it's going to be a stepwise thing that's going to occur over time as a result of the changing and developing habitat characteristics.

35. Smith: I want to elaborate on Doug's response, and refer back to the linkage we talked about yesterday between the management of harvest and the management of the habitat and the forest through the decisionmaking process the Forest has, and the Forest management planning. They discussed at some length yesterday, the Conservation Assessment clearly identifies the concerns that we have as a state wildlife management agency, about the long-term impacts of forest management on the viability of deer, and therefore wolves. Issues of forest fragmentation, reduced carrying capacity – all of those are factors that play into determining what will be a viable population, or what sort of management actions either the State, in managing harvest, or the Forest Service in managing the habitat is going to have to do to maintain a viable population of wolves in the area. We spend a tremendous amount of time and effort participating in that Forest management planning process. Because ultimately we see the changes to that habitat as being the most significant driving factor in maintaining the viability of wolf populations. We could take whatever actions – we could completely close the hunting and trapping of wolves within Unit 2, and yet if there is not regard for the needs of deer and wolves in the management of forest habitat, ultimately you could result in such a fragmented system, with small patches of habitat, that wolf populations would not be viable. Even in the absence of any hunting and trapping, simply because of habitat impacts. We don't foresee that as likely, but that's the potential, and we spend a lot of time and effort working with the Forest Service to try to affect their management of the habitat to avoid that.

36. Wayne Regelin: << Tape Change. >> **Tape 13-B.**

... extinct. We certainly don't want to manage for viable populations, we want to manage for useable populations. And that's all of our efforts working at the policy level working with the Forest Service. I don't want to manage ever for viable, because that may mean there is no 'use,' but there's a few animals out there that are going to continue.

37. Burley: I don't want to beat this dead horse, but I want to be sure in my own mind that we're not sending a message that we have to manage for 300, 350 wolves in Unit 2. Because that is what the estimated population is now. Have there been times when there were fewer wolves than that? Have there been times when there were greater numbers than that? Because maybe 300 to 350 is more than the island can sustain right now. I don't know. But that's why I am asking, 'what's a viable population?' And what kind of a message are we sending?

38. Titus: Maybe we should entertain Mr. Kirchhoff and Mr. Person to engage in that, who have given those questions more thought than some of us in the policy realm.

39. Chairman: I'm willing if the board is, and I'll entertain Mr. Polley's question before we do so.

40. Polley: I'm sure that would be fascinating information, but I don't think it makes a bloody bit of difference. That's not the question. The question is, if we've got third parties involved directly and indirectly with the management of wolves and deer in Unit 2. And it's primarily the Forest Service. And we've got questions of habitat, and we've got all kinds of other questions. This is a strange situation, Mr. Chairman. I was looking through the tables

they showed us. This has got to be the only place in Alaska where when the prey population dropped, we reduced the harvest on the predators. We spend all our time in McGrath trying to do the opposite. I don't think the hang-up about whether it's 300 or 3,000, or 100 – I don't think it's relevant at all.

41. Regelin: Mr. Polley, we have fourth and fifth parties involved. We have a species that's threatened, that's threatened with a threatened listing on the ESA, and those factors are, I think, what's driving this. Everybody recognizes – I'm not pontificating to the board – but that there's probably not a biological problem at this point in time with wolves and/or deer. But from what I heard from the individual from the US Fish & Wildlife Service on the ESA, the criteria he gave this board, that they're going to use for listing – the conclusions that are in the Conservation Assessment, and the recommendations from the department's own surveys indicate that we have to do something substantive. So we are trying to work through that. And that's why I'm hoping some of these individuals will help us get there.

42. Polley: I think this is a CYA drill. I don't have any problem with that. We're in a defensive posture here. I don't think it's going to be a value to the board now or the future to get tangled up in our own feet about whether or not it's 300; whether or not 98 is enough or 95 or 105. I suggest that is the wrong focus at this time.

43. Chairman: Board members, do we want to try to establish a record for the action we are about to take regarding wolves in GMU2? It's up to you. What do you want to do.

44. Burley: I agree with Mr. Polley.

45. Streveler: I'd have to say I agree to a point, but I do think the biology is germane, if not only for the obvious reasons, but for the fact that when this is all thrown into the court of public opinion, we are going to have to have gone through the biology and, in my personal view, to have made a concerted decision in light of the biology, if it's going to have a chance of standing up in court.

46. Roczicka: At this point in time, trying to establish anything as far as numbers goes, is basically we are dealing with intangibles, given that we don't know what the Forest Service is going to come out with for habitat control, maintenance, whatever. I guess we need to look at whatever speculations are there.

47. Chairman: Let's step down for 10 minutes. ... Back in session. It's 10:05, and we are going to have Mr. Doug Larsen, Mr. Matt Kirchhoff and Mr. Dave Person step forward to the mic, please, to continue the discussion on Archipelago wolves. We do not have a proposal on the table, this is just a general discussion. Board members, any questions, any discussion?

48. Streveler: Mr. Kirchhoff, it seems to me there is an element missing in our conversation so far, on the record. At least as we look ahead on the island, it seems that at some point we are going to trigger concerns that you could consider viability concerns. We're not just going to be talking about the equilibrium between deer and wolves, we're going to be talking about how many wolves does it take to constitute a population that will persist. And that can be looked at as kind of a red zone. If you think of a wolf population that is going up and down, within those troughs they are going to approach a certain number, and somewhere just below or above that, depending on how lucky we are, there is going to be a red zone below which the wolves could not persist and come out of that trough and back to a peak again. Would you discuss the viability question from that point of view?

49. Kirchhoff: I'll give it a try, Greg. It's a very difficult concept; I mean what constitutes a viable population is something we really don't know. In general we can say, as the population becomes smaller, the risk to viability increases. Very small populations don't persist as long as larger populations. So what we want to guard against in terms of minimizing the risk of

losing wolves is minimizing the number of times they reach those low points in the cycle, and minimizing the depth of those low points.

One of the problems with the planned habitat change on Prince of Wales, GMU2, for example is that we anticipate that we are going to have fewer deer, we are going to have fewer wolves, and more importantly the cycles are going to be more frequent and deeper, in terms of the oscillations. So I think how long it takes for wolves, or if they ever get to a point where they just disappear completely, is very difficult to predict. But I think we can predict with some confidence that we are going to have a greater risk to those viability questions in the future.

50. Streveler: What's the commonly accepted procedure for us accessing the level of risk that is acceptable?

51. Kirchhoff: I don't know the answer to that. Maybe. Dave is working under contract with the Fish & Wildlife Service on a population viability analysis, and he might be better able to answer that.

52. Person: The viability issue is one where you are really looking less at the actual population level and more at the variability in that population. And in terms of procedures, we generally look at what are called 'time to extinction' or the alternative called 'persistence time.' And the time depth you are looking at there, in my work for example I'll calculate persistence time for 100 years, 200 years – those correspond nicely with forest rotations. So in other words the Forest Service is planning a 100 year rotation or cutting cycle, so we'll fit that in with our persistence time. But then we'll go beyond that and look at, for example, what it would be under current conditions for 500 years. We'll carry it out that far. But you have to realize that when you go beyond 50 or 100 years, you're confidence intervals just become astronomical.

53. Streveler: Given what you've just said about the theoretics of it, let's look at the next 100 years and ask the question then, how you suggest we approach the population question for that time.

54. Person: OK, I have to wear two hats, Greg. One hat would be the empirical scientist, the other would be the management side of things. In terms of the population that would be sustainable, I believe there is some serious concern in that it's not a current concern. The population right now is fairly dense. I know a lot of numbers have been bandied about here, but a population density of around 39 wolves per 1,000 square kilometers – which if you kept up with some of the data from Interior Alaska was quite high – but it's consistent with what you would find normally with wolves that are preying on deer. Deer have a higher reproductive capacity. Therefore they tend to support more wolves at, let's say, equilibrium. Their densities generally are higher when they are preying on deer. But it is consistent around North America with wolves preying on deer. So from that standpoint, I'd say we have a healthy population, at the moment. The concern is 25, 30, 40 years down the road, and there you are looking at a situation where carrying capacity is declining for deer. Wolves are going to respond to that, and the issue becomes not only in terms of the population level of wolves, but just how those fluctuations are going to occur. How that adjustment period is going to manifest itself. And I have serious concerns about Prince of Wales, GMU2. Less concern about the rest of the archipelago. In GMU2, because there are very many unknowns right now, in terms of what the deer populations are going to be; how much they are going to decline; and the growth of the human population. All three of those things together cause me concern about a sustainable population. Now, as a viable population, in terms of actual population viability genetically – in other words is it so low that we're having trouble with inbreeding and loss of genetic heterozygosity, whatever – I'd have even more concern, because that population could be quite a lot higher than what is a sustainable population.

55. Chairman: I have a question, Dave, regarding your work on the multi-agency document, the Conservation Assessment and some of the population numbers there, I think I heard from the department that they're pretty comfortable with those numbers. That they felt they were very representative and as accurate we can get, and the best data we have had ever in Southeast on wolves. Is that number, or that range, that you presented adequate to try to do a calculation to try to establish some harvest quota, for the take of wolves?

56. Person: (Just as an aside, let me acknowledge something I didn't acknowledge yesterday. I not the only one who has done research in Southeast. Mr. Chris Smith has also done some very valuable research in Southeast.) Again, back to your question, about the figure. It's an adequate figure for Fall 1994. It is perhaps not an adequate figure for the current situation, because we don't know what that population level is this year, this Fall for example. It could be higher, it could be a little lower. My suspicion is that it is a bit lower than it was. I believe the population peaked about 1992, 93, and has declined somewhat over the years I have worked there. What it is now, this year, I don't really know. So I would say that figure is good in terms of being in the ballpark, but its precision could be improved considerably by some current monitoring of that population. I think that would be necessary, ultimately, to continue with setting bag limits and managing that population. Larry, I think it is an adequate figure to make a start at. OK? That answers your question.

57. Chairman: Yeh, that was the point I was going to make to follow-up; whether it was adequate to make a start, and assuming that the status of the Alexander Archipelago wolf in regards to a threatened listing on the ESA I would assume we would be working towards some monitoring program, and some review – chronological review – every year or so, of the regs to determine if there needs to be some sort of adjustment. At least in the short term until we get through, you know, the political aspects of discussion.

58. Smith: I think your observation is correct. Kim mentioned in his summary of our Status Report how we submitted a proposal to the board to shorten the length of time trappers would have to present hides for sealing so that we can better monitor harvest in-season. Once we are able to establish a biological based quota for an area, we'll be in a position to issue an emergency order and manage in a fashion that you are alluding to.

59. Chairman: The question I have, I guess is, if I were working toward establishing the database to get a biological quota, can we not have a start with the best information available at this point? Maybe for example establishing a cap using arithmetic determinations that might be derived reductions in seasons for hunting and trapping, and starting with maybe a more recent 5-year average of wolf harvests? You know, getting a cap from that? Would that be helpful for the wolf population, and the people who are hunting and trapping, and assist the State in its work with the feds on this ESA review?

60. Smith: Mr. Chairman, I think establishing a quota – I know there are a number of ways that we could approach doing that. I suspect that having a quota that was established with some rational process would certainly be viewed favorably by the Fish & Wildlife Service. I would be more comfortable if, rather than establishing that simply based on historic harvest or anticipated reduction in harvest, based on certain changes in hunting and trapping seasons, that we did that on a biological basis. I think as Mr. Person has indicated, the data we have from his research on Prince of Wales is probably the best information that we have in hand, and could be used as a rational starting point for development of some total harvest guideline level for Unit 2. That would give us direction for management until we gathered more current information. At that point we could adjust that guideline level with new information.

61. Roczicka: The main concern I have with putting in some kind of flat number as a quota, was raised earlier. Once you have a number down there, some trappers may cause a

redirecting of effort, that my god we had better go out there and get that quota. Whereas if we could structure it in such a way that it wasn't a set number, and within the trappers' perspective we're pretty much dealing with the status quo. I wonder if we can come up with some kind of creative language, perhaps a guideline harvest level with a range, where trappers can see we're trying to maintain that average over the recent years based on what the average harvest has been. But without putting an absolute number in there, and also satisfy some of the other political concerns that we're looking at, keeping the harvest from going over whatever the current level may be that we want to try to keep the harvest to – 30% to 35%, something of that nature.

62. Polley: Maybe you can clarify this for me. Chris, I'm interpreting your comment to indicate that you don't want to be caught with a finite number if you run into some kind of a situation that would dramatically – let's say a catastrophic winter, on the prey species. You don't want to be caught with a finite number that would cause trappers to believe that, because the reg has been issued, they proceed to harvest that number even when it no longer makes any sense to do so. You want to be able to adjust that based on the biology at the time, and deal with it that way. Did I hear that right?

63. Smith: I believe so. Yes. If we were to establish a quota at this time, based on our best estimate of sustainable rates of harvest, whether that's 30 or 35% or whatever percentage harvest rate, and our current best estimate of the population size, that through simple arithmetic could give us a quota that we would use for the time being. If, however, we found that – and if the direction or guidance to the department is to use that formula to determine what the quota is – that's direction then that we can use and be flexible if we find out that the population is much larger or much smaller – for whatever reason – than what we currently believe it to be. Then you plug that number in the formula and the harvest quota is adjusted and our management is adjusted.

If on the other hand we adopt a quota that says the quota is 95, and we find out that something has changed, then we've got to come back through the whole process to change that quota, rather than the way by which we would determine what that quota is on an annual basis, or as we're moving through a trapping season.

64. Saxby: Does not the board have authority to give the department discretionary authority in these kinds of situations where can give them, as he so aptly described, the formula and the ability to adjust based on some guideline or range?

65. Smith: Mr. Chairman, the season an bag limit regulation could state something like, the bag limit is a follows (whatever), harvest not to exceed 30% of the population as estimated by the department, or something like that.

66. Saxby: I'm just curious about the ESA box round-up, would that be helpful to the State, do you think?

67. Smith: I'm finding myself wishing that Dr. Lindell hadn't left because we could ask him directly. I may defer to the director on speculating on how the Fish & Wildlife Service would do that.

68. Regelin: I've had quite a few discussions with people in the Fish & Wildlife Service, and I'm sure they would view that as a positive action.

69. Burley: Doug, in your interviews with trappers, did they seem to indicate that the present population of wolves was at a high level, a low level, a historic high?

70. Larsen: Actually, Mr. Burley, what I learned through the interview process was that the wolves they felt were relatively more abundant than they had been last season, and that they

were about the same as what they had been – either right at about the same or slightly lower than what they had been in the last 5 years.

71. Burley: Put it in a bigger context; 20 year picture.

72. Larsen: You're talking about a longer time period? We really didn't address that. I guess the general impression I got from trappers was that in the last 5 years they've seen wolf levels about as high as they could remember. A lot of these guys are not all that old, and have not been exercising trapping activities for a long time.

73. Burley: When I look at that chart, and it shows 12, 15, 25, 60 years of experience, it looks to me like they've been trapping a long time.

74. Larsen: I stand corrected. I guess I should limit my comment to saying the impression I got was that in the recent 5 years these individuals felt numbers were high relative to their experiences in the field.

75. Fleagle: I know we're not discussing the specific proposals yet, but I just want to address my observation on this entire discussion to this point, and then it seems to come to a philosophy of management. Based on what the trappers are saying and what the department is saying, that there is not a problem here. It seems like the big question here is that we are on the verge of taking a stand based on fears of what might happen due to political pressures and public opinion. In my opinion we should remain responsible in the management of wildlife. That's just a statement; I don't require an answer.

76. Streveler: Funny you should mention that, Mike. That's what was on my mind too. It leads to a question for you, Chris. If one of our goals is to maintain maximum flexibility for the trappers, and I think we all respect them, by setting a unit-wide cap it seems to me to still give those guys a chance to do their surgical strikes where they think it needs to be done, and to address the population problem in their own way. It still, however, allows the department the overview authority to decide whether it's getting out of hand or not, on a broader, more population-level basis.

77. Smith: I think that's correct. And in addition, while we would probably establish a total unit quota, that doesn't preclude us from in addition addressing things on an even finer scale if that were necessary.

78. Roland Young (ADF&G): I just want to make one statement on the unit quota, and that would be there are other species of animals open at the same time that would use similar trap sets. Specifically I'm thinking otter. Otter are taken with both large traps and snares. And we'd have the same problem with the individual bag limit. The dishonest trapper could take advantage of the system.

79. Polley: Thank you Roland, because I for one had forgotten about that. The figure I've heard for the last several years every time wolves have come up – it seems that it's fairly – would I be correct in assuming it's fairly well agreed upon that given the biology of wolves and reproductive rates of wolves, and all that good stuff – regardless of where they are in the state of Alaska – the harvest levels in the 30-35% range, under most circumstances, don't pose a threat to a population, a regional population of wolves. Is that correct?

80. Person: Probably not, no. But you've got to remember there's a little bit more of an impact here because if you overharvest an area in say Interior Alaska, you'll have dispersal and reproduction replacing those individuals. In a place like GMU2 that may not happen. You may have reproduction, but you won't have dispersal in. So, if you want to have a sustainable yield, you have to harvest at the level of recruitment, not what would also be buffered by in-migration.

81. Roczicka: Dave, something that struck me yesterday when you were giving your presentation was that there was a dispersal out from [indistinguishable].

82. Person: No, within GMU2. In other words the population in GMU2 is probably one interbreeding population, but going from Unit 2 going into 1A or 1B or Unit 3, is probably very, very infrequent, if at all. Dispersal data, if you noted, was all within Unit 2.

83. Polley: We could certainly consider this when we finally get around to taking up one of these proposals, but if there is going to be support for the notion that percentage quota throughout the unit, I think it's important to realize that the percentage we're talking is not dramatically different – I don't know if that is an arbitrary or subjective term – not dramatically different than the percentages I heard elsewhere, for other GMUs. Meaning that when we pick out a hypothetical 30% or 31.5% or whatever the hell it's going to be, that this is not supposed to send a signal that there is something dramatically wrong in this unit. That was what I was trying to pursue – Chris didn't give me the right answer.

84. Smith: Let me try again to give you the right answer, although I think Dave does make a good point. 30 to 35% harvest levels are typically sustainable by wolves, in Alaska. I think Dave does make a good point though, that given that we are dealing with an insular population, that we may want to be somewhat more conservative than if we were conducting the same conversation with respect to a portion of a contiguous population over a larger area. But I agree that establishing a harvest level, a guideline level, in the 30-35% range should not be interpreted as sending any sort of a signal to anybody that this is an unusual or special problem.

85. Streveler: I want to follow-up on the general drift of what we're talking about here, a not so theoretical proposition. Given the degree of functional insularity on Prince of Wales now because of the roading system and clearcutting system there, if we establish a limit and we allow the trappers the flexibility we are talking about, are we running in any of these subareas that are surrounded by roads and clearcuts? If, number one, the wolves tend to congregate in places away from roads and clearcuts, and if a certain group of trappers decide they have to work on a group of wolves in that area, do you know of any places on Prince of Wales where we are running a risk of knocking wolves down to too low a level in an area like that?

86. Person: Greg, yeh. Particularly in areas let's say around Big Salt, around the Kasaan Peninsula, areas around right adjacent to Thorne Bay; mostly near population centers. Our data show that resident packs had been eliminated from those areas and then replaced by dispersers from adjacent packs in areas that were not harvested so heavily. What I think would happen ultimately though on Prince of Wales is that if enough of the roadless areas are maintained, they would act as sources. And even if populations were eliminated from neighboring areas where there's accessibility, I think dispersal would take care of it within the island as long as there were still some refuge areas within the island that were not accessible.

87. Chairman: Any other discussion? Thank you, gentlemen, you were very helpful.

(@34:52)

Q&A with Kirchhoff & Person, following Larsen's AA Wolf Status report

Ak Board of Game meeting, 10/29/96. On tape 13-B.

48. Streveler: Mr. Kirchhoff, it seems to me there is an element missing in our conversation so far, on the record. At least as we look ahead on the island, it seems that at some point we are going to trigger concerns that you could consider viability concerns. We're not just going to be talking about the equilibrium between deer and wolves, we're going to be talking about how many wolves does it take to constitute a population that will persist. And that can be looked at as kind of a red zone. If you think of a wolf population that is going up and down, within those troughs they are going to approach a certain number, and somewhere just below or above that, depending on how lucky we are, there is going to be a red zone below which the wolves could not persist and come out of that trough and back to a peak again. Would you discuss the viability question from that point of view?

49. Kirchhoff: I'll give it a try, Greg. It's a very difficult concept; I mean what constitutes a viable population is something we really don't know. In general we can say, as the population becomes smaller, the risk to viability increases. Very small populations don't persist as long as larger populations. So what we want to guard against in terms of minimizing the risk of losing wolves is minimizing the number of times they reach those low points in the cycle, and minimizing the depth of those low points.

One of the problems with the planned habitat change on Prince of Wales, GMU2, for example is that we anticipate that we are going to have fewer deer, we are going to have fewer wolves, and more importantly the cycles are going to be more frequent and deeper, in terms of the oscillations. So I think how long it takes for wolves, or if they ever get to a point where they just disappear completely, is very difficult to predict. But I think we can predict with some confidence that we are going to have a greater risk to those viability questions in the future.

50. Streveler: What's the commonly accepted procedure for us accessing the level of risk that is acceptable?

51. Kirchhoff: I don't know the answer to that. Maybe. Dave is working under contract with the Fish & Wildlife Service on a population viability analysis, and he might be better able to answer that.

52. Person: The viability issue is one where you are really looking less at the actual population level and more at the variability in that population. And in terms of procedures, we generally look at what are called 'time to extinction' or the alternative called 'persistence time.' And the time depth you are looking at there, in my work for example I'll calculate persistence time for 100 years, 200 years – those correspond nicely with forest rotations. So in other words the Forest Service is planning a 100 year rotation or cutting cycle, so we'll fit that in with our persistence time. But then we'll go beyond that and look at, for example, what it would be under current conditions for 500 years. We'll carry it out that far. But you have to realize that when you go beyond 50 or 100 years, you're confidence intervals just become astronomical.

53. Streveler: Given what you've just said about the theoretics of it, let's look at the next 100 years and ask the question then, how you suggest we approach the population question for that time.

54. Person: OK, I have to wear two hats, Greg. One hat would be the empirical scientist, the other would be the management side of things. In terms of the population that would be sustainable, I believe there is some serious concern in that it's not a current concern. The population right now is fairly dense. I know a lot of numbers have been bandied about here, but a population density of around 39 wolves per 1,000 square kilometers – which if you kept up with some of the data from Interior Alaska was quite high – but it's consistent with what you would find normally with wolves that are preying on deer. Deer have a higher reproductive capacity. Therefore they tend to support more wolves at, let's say, equilibrium. Their densities generally are higher when they are preying on deer. But it is consistent

around North America with wolves preying on deer. So from that standpoint, I'd say we have a healthy population, at the moment. The concern is 25, 30, 40 years down the road, and there you are looking at a situation where carrying capacity is declining for deer. Wolves are going to respond to that, and the issue becomes not only in terms of the population level of wolves, but just how those fluctuations are going to occur. How that adjustment period is going to manifest itself. And I have serious concerns about Prince of Wales, GMU2. Less concern about the rest of the archipelago. In GMU2, because there are very many unknowns right now, in terms of what the deer populations are going to be; how much they are going to decline; and the growth of the human population. All three of those things together cause me concern about a sustainable population. Now, as a viable population, in terms of actual population viability genetically, in other words it's so low that we're having trouble with inbreeding and loss of genetic heterozygosity, whatever, I'd have even more concern, because that population could be quite a lot higher than what is a sustainable population.

55. Chairman: I have a question, Dave, regarding your work on the multi-agency document, the Conservation Assessment and some of the population numbers there, I think I heard from the department that they're pretty comfortable with those numbers. That they felt they were very representative and as accurate we can get, and the best data we have had ever in Southeast on wolves. Is that number, or that range, that you presented adequate to try to do a calculation to try to establish some harvest quota, for the take of wolves?

56. Person: (Just as an aside, let me acknowledge something I didn't acknowledge yesterday. I not the only one who has done research in Southeast. Mr. Chris Smith has also done some very valuable research in Southeast.) Again, back to your question, about the figure. It's an adequate figure for Fall 1994. It is perhaps not an adequate figure for the current situation, because we don't know what that population level is this year, this Fall for example. It could be higher, it could be a little lower. My suspicion is that it is a bit lower than it was. I believe the population peaked about 1992, 93, and has declined somewhat over the years I have worked there. What it is now, this year, I don't really know. So I would say that figure is good in terms of being in the ballpark, but its precision could be improved considerably by some current monitoring of that population. I think that would be necessary, ultimately, to continue with setting bag limits and managing that population. Larry, I think it is an adequate figure to make a start at. OK? That answers your question.

.....

79. Polley: Thank you Roland, because I for one had forgotten about that. The figure I've heard for the last several years every time wolves have come up – it seems that it's fairly – would I be correct in assuming it's fairly well agreed upon that given the biology of wolves and reproductive rates of wolves, and all that good stuff – regardless of where they are in the state of Alaska – the harvest levels in the 30-35% range, under most circumstances, don't pose a threat to a population, a regional population of wolves. Is that correct?

80. Person: Probably not, no. But you've got to remember there's a little bit more of an impact here because if you overharvest an area in say Interior Alaska, you'll have dispersal and reproduction replacing those individuals. In a place like GMU2 that may not happen. You may have reproduction, but you won't have dispersal in. So, if you want to have a sustainable yield, you have to harvest at the level of recruitment, not what would also be buffered by in-migration.

81. Roczicka: Dave, something that struck me yesterday when you were giving your presentation was that there was a dispersal out from [indistinguishable].

82. Person: No, within GMU2. In other words the population in GMU2 is probably one interbreeding population, but going from Unit 2 going into 1A or 1B or Unit 3, is probably very, very infrequent, if at all. Dispersal data, if you noted, was all within Unit 2.

.....

85. Streveler: I want to follow-up on the general drift of what we're talking about here, a not so theoretical proposition. Given the degree of functional insularity on Prince of Wales now because of the roading system and clearcutting system there, if we establish a limit and we allow the trappers the flexibility we are talking about, are we running in any of these subareas that are surrounded by roads and clearcuts? If, number one, the wolves tend to congregate in places away from roads and clearcuts, and if a certain group of trappers decide they have to work on a group of wolves in that area, do you know of any places on Prince of Wales where we are running a risk of knocking wolves down to too low a level in an area like that?

86. Person: Greg, yeh. Particularly in areas let's say around Big Salt, around the Kasaan Peninsula, areas around right adjacent to Thorne Bay; mostly near population centers. Our data show that resident packs had been eliminated from those areas and then replaced by dispersers from adjacent packs in areas that were not harvested so heavily. What I think would happen ultimately though on Prince of Wales is that if enough of the roadless areas are maintained, they would act as sources. And even if populations were eliminated from neighboring areas where there's accessibility, I think dispersal would take care of it within the island as long as there were still some refuge areas within the island that were not accessible.