

Sitka Black-Tailed Deer Panel

Facilitator Gene Degayner

Panel attended by specialists; Tom Hanley, Chip Leslie, John G. Kie, Don Spalinger

Resource Expert Matt Kirchoff

Silent Observer Max Copenhagen

Scribe Cheri Ford

Traveling Observers; Terry Shaw and Winston Smith

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Introduction by facilitator, start time 1400

See flip chart.

Matt Kirchoff start time 1410

Biology of the deer and how it relates to habitat

Objective to develop an Habitat model

The main overview is to review literature for the panel members. Represented research from ADF&G, etc. need to structure model that will fit into GIS.

7 habitat types will be reviewed which is new from old the old volume class classifications.

Slides

I will concentrate on South East Alaska work done in last 15 years. Deer are important for subsistence use, 16,300 deer were harvested on the Tongass National Forest by subsistence users during the 1994 season.

Sitka Black-Tailed deer extend from north of Vancouver island. Introducing population in Yakutat Bay and Prince William Sound. They are associated with old growth temperate rain forest. Moving north to south on the archipelago it becomes steeper which is important for deer. One third of the forest is productive old growth, greater than 8,000 bf/acre The old growth forest is variable different, some is open canopy, small trees and not much snow interception.

There has been a Peak of timber harvest in 1990 with the majority occurring on Prince of Wales Island both private and FS. Since closure of the mill in Sitka, harvest has dropped off.

? Is most of the harvest by FS or private.

M The majority is on native land in recent years.

Slash persists for a few years after logging. There is then a tremendous response by herb and shrub layers.

15 years post logging you get a dense conifer growth with little ground cover (understory vegetation is shaded out, especially on high sites). Spruce comes in heavier in second growth stands.

Research by John Shoen in 1970 looked at pellet group sites by treatment. Results paired comparison by age class.

Annette Island study by Cathy Rose looked at younger age classes. Snow plays little affect on Annette Island. She also looked at spring use by pellets and numbers were found to be higher in clear cut.

Edge effect-study, deer use of edges, looked at 10 sites and found no difference.

Mean browse use found in 3-10 year old age class, after clear cuts there was higher use than in old growth but by age 15 conifers shaded out understory vegetation.

Relative carrying capacity is high in old growth and high in young clear cuts.

Snow accumulation in clear cuts makes vegetation unavailable for foraging.

The old deer model focuses on winter range and how snow affects forage. How deer use is different for different succession stages (natural)

An early study in 1970 looked at characteristics of ecosystem types. It used track counts of deer use in snow. Little use was documented in muskeg, most in productive old growth.

There was also a radio telemetry deer study of 30 deer over a one year period. They preferred low elevation sites (in big snow years). The deer preferred south facing aspects. Timber volume was rated as non commercial forest land, 8-20mmbf being mid volume and 30mmbf and above as high volume High volume class consisted of 8% of the study area. Use versus availability (see graphs). Preference was for high volume sites even in low snow winters..

In the Prince of Whales island study by Yeo and Peek, use was higher in 1-10 Hemlock had high use, cedar had high available use.

There was also a group of studies of snow interception in Southeast Alaska based on forest characteristics. Juneau study - 3 times more snow in open canopy, forage available in closed canopy, high basal area.

In Southeast Alaska variability in snow fall is very extreme. Snow is an important variable.

Snow also plays an important role in energy expenditure, availability of forage. Deer forage on 4 classes of forage; conifers (poor quality), browse the next most available, forbs or herb layer (bunchberry, skunk cabbage in spring etc.), and lichens (several different species). Concentrate on winter period as biomass increases in spring. Of the 4 categories the highest forage quality is found in forbs.

In fecal analysis studies, it shows deer are selecting for higher food quality and digestibility.

Biomass available in snow free conditions -see graph. With a little snow (12cm), forb availability is reduced in an open canopy.

Forage quality (crude protein) is lower in clear cuts. Digestible protein is even lower in clear cut versus old growth. There is two times more digestible protein in old growth than in clear cut plants.

Established deer habitat capability by habitat type. More open stands are penalized with due to snow accumulation.

Logging patterns; in the early century single tree selection was used through the 30's, in 1970-80 large scale clear cuts were prevalent, 1980-90's there was a shift to patch cutting.

We are not sure what the effect of habitat fragmentation will be, snow could allow for overbrowsing and mortality. 20% higher mortality in beach fringe.

Alternative practices such as a sloppy clear cut have been implemented but we are not sure how useful as there has not been any work done. Single tree and small group selection study in 1994, only twelve plots have been completed. Mimic nature.

Helicopter logging is on the rise especially in south Southeast. Single tree selection will be dependent on helicopter. (upcoming planning process).

DISCUSSION OF BIOLOGY:

In the radio telemetry study deer were selecting high volume (8%) how patchy was it? what % were deer using other polygons?

We were using dot grid. Sites were identified from the air and deer were moving into patches.

Why did classification change? There was a problem with TIMTYP type maps not being accurate. Maps were considered unreliable. Makes it hard to make calls from TIMTYP type versus on the ground. Could tell the difference between The VC 5,6,7; VC 4 hydric VC 5; and hydric VC4. 50,000+ and above could be identified but was so rare that they didn't want to track it. There would be a difference if the Forest Plan went to single tree/group selection.

Habitat types are in the handout.

If each of you can read through conditions and look at differences in responses. Then fill out matrix which is close to the habitat capability model we currently use. You need to rate for low, medium and high snow conditions as well.

Hand out and discussion to follow.

What is the existing TLMP deer model based on? This is it, two hours of analysis?

G The panel process is a peer review of the Forest Service deer modeling thought process, with 4 independent views. We are open to ideas and suggestions.

?-Why not use the previous model, why reinvent? Why not go through the previous model, then start back from scratch.

If individuals take the information and go through the 4 pages and complete the rating, then tonight I will run 4 watersheds based on the new scores. Tomorrow, after looking at the output we can discuss outlook and review and change if you want to. We then may want to take the average of the 4 opinions.

? We don't get to evaluate dispersion.

G That is a weakness of the model and a good point and we are interested in your opinion.

? How to rate?

-lack of confidence. i.e. interspersed, winter range, etc...

As you four independently comment on how you would model deer on the Tongass you can highlight points (based on snow etc..) we can compare your observations with the current model.

? Is this model the most appropriate to analyze? How about the HSI model? As a group of scientists we can only say there are problems without making any scientific endorsement (would take months) best to maybe review the best we have. We could discuss what we like and dislike but as far as the TLMP analysis how does this relate to deer and the alternatives?

M As far as coefficients, scores will be different i.e. uneven aged management.

? I am not in the position to give any better coefficients. I am not sure anything will be any more valid than what is there already.

G The rating form will give you an opportunity to change the current deer model if you think it is needed. Independence is important. Lets refrain now on commenting on the existing model as a group and concentrate on the individual, independent, analysis.

? We only need to deal with this model, should we discuss the model or give you numbers to run?

G I want numbers to document your thought process. We can discuss your 4 thought processes tomorrow.

-We need to recognize change in TIMTYP type map and silvicultural prescriptions and provide input.

-The analysis of alternatives does not exist yet, you are here to analyze and provide input.

- This matrix will help bring about change to the existing model. This is asking you to replicate the thought process and see how model outputs change.

1 You are asking us, in a two hour time span to complete the analyze for the model, when 2 of us have not even been on the ground?

2 Can we go over the model?

M If you go through the process individually and not share your judgment, we want to get your opinion, Could go through the two pages and complete the assessment. At that point, if you think it is impossible, we will drop it.

I You are only one month away from publication.

2 Do you want an endorsement

G No, I just want you to air your concerns.

M Before jumping to conclusion please go through the habitat rating process, it will only take 15 minutes.

? Do you have #'s for snow conditions?

M Brown, yellow, (see map) etc.. I can give you numbers if you want actual numbers. The lighter the color the stronger the maritime conditions.

? Is there some average of 1 and half foot?

M I would say Douglas Island is intermediate snow conditions.

? According to slide there is a great change.

M Unless you have a stochastic model, we cant do that.

M Carrying capacity varies from year to year.

? How about conditions on beach fringe?

M Shouldn't matter. If old growth is an beach fringe, it gets 00 score.

G You need to consider what beach fringe prescription contributes to deer habitat.

M The TLMP small clearcut options give you different spatial ranges, that will change the analysis.

? How are we going to analyze the different alternatives?

G-We will run a model.

G We may end up with two models.

? Do you have a model?

T Yes, it was used in the 1992 alternative P.

G This panel is to give us input on whether the current deer model is credible.

T Did you explain the spatial scale?

G Yes, we discussed the TIMTYP.

T The new model gives you three (statistically valid) TIMTYP types. Its not statistical to use at the mean volume, we don't know how to test.

T That issue will be resolved in three years when the analysis (forest inventory) is complete

G For example, we can tell you something about the Ketchikan area but not on a smaller scale.

T We can't justify if its right or wrong.

M We are getting into forest survey techniques and we don't need to do that

T We are not trying to force consensus , we do want individual analysis.

? How long should we take?

G 15 minutes, we can answer questions if you have any. 1545

1 Is habitat type 2 and 3 different?

G Mid volume is old 4 that is not on hydric soils and is more likely to be a hemlock stand..., etc...

4 I've got two things that struck me. I think we will have the same numbers. I don't think the numbers will change from the original model. the second thing is under what conditions are we? North versus south, there are so many thing that hinge on these numbers the land that is light yellow, those numbers are not going to change. Depending on where we are the spatial variation is captured to some extent.

2 I agree one has to have allot of assumptions. VC 5,6,7 I did not have any reason to have different numbers. ? 1- 4 that dealt with new habitat classification, my guess is closed canopy would be low but how would you rate the intermediate classes and I think that is critical and I think that those numbers will drive the numbers.

3 Agree with 2 previous. My numbers are almost arbitrary. with out specific research knowledge between these different habitat types that putting specific numbers on them will be arbitrary.

1 Agree with others I have near zero confidence in the numbers. I have much more confidence in the original model than numbers I could generate.

3 Comment on picking high and low and linear arrangement in-between are of concern. the results of any habitat cap really depends on how you define habitats. on my ratings you get really high categories and then you get some that are equally bad i.e. second growth canopy. none of them look very good to me. how you rate them pulls some of these pull some low quality habitats . if you pick the top and bottom my scale is not linear. I have high and mostly low bunches.

M Some of the low are classified for specific reasons. An open stand will produce high deer numbers dependent on snow condition for example.

4 That's where having knowledge of various habitat types makes a difference. I did not rank them linear.

G Essentially estimates of deer abundance will be different from model to model.

G If no more questions I would like to asses papers.

M If we generate the spreadsheets by watershed by current number of deer, here's how much each habitat type can support,

G I would like to apply to a landscape level.

M You want me to get productivity data?

G Yes, to provide guidance and information

M The department has a goal of maintaining deep populations at a harvestable level. if we manage for subsistence do we want to harvest what percent of deer each year.

G I want to know what's important.

1 Another thing for example is productivity and abundance.

4 Harvestabilty is also important, stochastic events etc. allot of things need to be considered.

2 In a typical year do residents and migratory deer intermingle?

M For the most part they don't interact .

2 Population curve as it relates to numbers, in extreme snow fall years when residents and migration are both in low lands..

1 Clear cut goes up, dependent on summer range.

G This discussion is good but it revolves around biology. I can take these numbers and input them and we can break up.

1 I'd like to thank Matt for putting together the information sheets.

4 What is the next step for you guys?

G We are making a draft and a final after that.

these 9 alternatives need affects analysis.

4 Would there be any benefit if we discuss the alternatives.

G Anything for the follow up would be useful.

1 Does longer rotation length cut numbers in half?

G Yes, roughly.

End of day 1630

Start 0830 November 8, 1995

Introduction of data by Gene.

G I was wondering why group selection received a 10 here on habitat type, I rated it low because of the uncertainty associated with description of this. It doesn't seem very well-developed, thought out or communicated at this time.

2 The group selection, spatially is very similar to what deer like in the Olympic Peninsula. It struck me as the group selection was close to old growth, the conditions are very similar. When there is not snow the forage would be available.

1 I see them as a large enough scale that the response will be an even age response, To maintain the old growth characteristics they would need to be smaller or components would need to be remained.

3 I think 1 acre and 2 acre patches will act as even age stands, the effects to sunlight will be as big as say this room.

G While we are on group selection I would like to go around the room and see what you think about cc with the legacy trees left. It would be a 2 aged stand. How would you rate a two layer clear cut and two layer 2nd growth. It would have 10-20% of the trees (volume) left. They would not necessarily be big trees.

4 I would like to hear what people on the ground would say, but of the cuff I would score them as 30 and 10.

2 I was thinking under snow condition, there would be more use yesterday before I found out deer don't use these areas. I would give them a 10 and 10.

3 I would give about the same rating for the young I would give it an increase of 5

1 I would give them the same ratings I gave them.

G Lets look at the outliers.

3 My definition of intermediate snow depth was not as severe as most ratings, its dependent on how much snow there is. How much snow is intermediate?

M Throughout southeast the average snow winters would be intermediate.

3 Are we talking 2 feet deep or patchy.

M A Even under a light snow winter the deer avoid low volume old growth and cc.

2 I was thinking snow was very severe, I rated the cc as very low.

M That is the case allot of time.

1 Probable the most important thing is knee deep snow is realistic. In high volume of it will be patchy,

2 That is why I rated old growth the way I did.

3 Given the definition of intermediate snow depth, I would lower my numbers and switch them around accordingly.

G This seems to be capturing the thoughts. This is working out good.

G Lets move on to effected elevation, question number 5.

Does anyone want to talk about 70 or 30

1 It was a wild guess. it depends on how much snow there is.

2 I can talk about my 30. The tone was set of at the start. I interpreted the snow was quite a bit. In the Olympics as you go up the snow increases substantially.

M Those open habitats would get dinged pretty good.

1 I would lower my number.

G Lets look at aspect. Lets look at the outliers, 40 on west

2 I have two outliers, I rated south and east as high vs north and west I treated it as a dichotomy.

1 Aspect interacts with elevation and makes the difference to some degree. Low rating on north because there is no sun there during the winter and it is a long time before the snow melts.

4 Tom has a good point because we need to look at all possible interactions such as aspect and elevation. You really need to look at the model to look for inconsistencies.

G I would like you to look at the model

M I guess it is interaction beyond the straight effect

3 I would rate a north facing cc vs a south facing cc and the same of old growth. The effect of canopy is going to be more important, it will be more severe in cc.

3 Given Toms comment on aspect the number of 50 and 60 on a north facing slope they are probably close.

M In terms of east and west . The early morning sun in the east is not as effective at melting snow as the west slope melting snow.

3 Where are prevailing winds out of?

G Cold winds come from the north and warm wind comes from the south.

M East and West side of Admiralty are the best comparison.

M If you look at hunting surveys or deer pellet transects there are more deer on the west side.

1 I don't think you can attribute that to aspect

M The snow is less in the west side. We have sampled it, it is also affected by maritime influence.

1 If weather and snow are important for deer and you can't go out and take snow data, it should be discussions between people especially those that have been out on the ground.

3 Its also easy to get biased, depending on where you live.

G Lets look at % increase and decrease for each habitat type.

4 Just a comment I had a conceptual problem with the question. Without having a lot more time to look at this it was difficult. Say in question 2 it could have gone other ways, being that I said that I am happy with my numbers.

M I would say effective canopy is extremely low in non CFL, and is reflected in values.

4 In filling out my %'s just looking at this chart there is more variability.

M Looking at the chart it looks like there was some confusion.

2 I had the same conceptual difficulties. It could go from 100 deer to 0 deer. I also think I made other mistakes throughout the question.

4 I would like to go through the numbers again.

G I should not be looking at outliers but looking at the whole column.

4 Looking at high value old growth, I had a 20% decrease and I was wondering if snows are deep and all these other habitats may be more effected. you may actually have a higher rating in old growth.

M the proportion of herd lost is 50% in a deep snow winter. Think in terms of forage availability

2 You said a 50% loss what is that based on.

M Lack of forage.

1 Deep snow winter will lead to a high mortality, as high as 70%.

M We need to look at habitat capability of the areas.

1 Wouldn't the deep snow areas be like Linn canal?

M Deep snow is an average and the model runs that way.

2 Is there a difference in snow.?

M No there has been no input on that. The snow becomes very dense.

1 The deer spend most of there time walking on the snow pac. When its snow of course there sinking,

3 I keep thinking of the variability of the habitat instead of this rating. Thinking about deep snow years versus deep snow areas is completely different.

M Its a spatial model. Lets think of it as low snow vs deep snow areas for this situation.

G We have gone over the elements of the model, so lets move onto the effects of predation.

M Wolves occur on these southern islands... Brown bears exist on the ABC islands.

M In game management area 3 the season was closed for deer for 18 years. Deer got into a predator pit and they were not able to rebound. The deer also had a hard time in GMU2. We currently don't know much about deer and wolf interaction. We do know that in deep snow the deer are more susceptible. To stay consistent with the earlier model we are taking this information. It is a crude part of the model.

4 Where predation is a factor, habitat structure (escape cover) should be factored in.

M The model currently does not address this. The question of habitat structure is very important as the deer will use the leave strips and are susceptible to wolves and hunters. Wolves also chase them onto frozen lakes in the winter.

M This model does not address all these issues and we could try to get to that today.

M Wolves in southeast is a hot topic as there proposal to listing.

4 Wolves could cause a local extinction based on lack of adequate escape cover.

2 I am the anomaly in deep snow, that was an error in recordings on my part. I could change that.

M Predation effect is trying to get at how many deer will become available to hunters, it has nothing to do with the habitat capability.

3 If the deer are more susceptible on POW because of roads, why are the numbers on Kupemoff staying down with few roads.

M That is a good question, it could be the large number of black bears in addition to wolves.

1 One thing I am not familiar with alpine on POW but on Kupemoff does not have the alpine. That might have an affect since POW has the high quality summer range.

M I agree with you Tom.

M On POW the roads may make wolves more accessible to trappers. This helps the deer population recover faster.

G We could go on to the model now. This model is to rank alternatives.

M It might be helpful to see how many deer are produced in a watershed.

G I took 12 WAA's. I tried to pick a wide range of landscapes. I put a couple on the board for an example.

The numbers are relatively close, except 3.

M Cape Pole is in a mild winter snow rating and the land is in a early 2nd growth condition.

G If we take this 100 years out, the young 2nd growth becomes pole timber with a closed canopy, the model would predict deer numbers to decline.

1 Do you have any WAA's in deep snow.

G Yes, 4 146 has some deep snow.

4 Will we be included in the mailing list for the draft?

G We can arrange for that, who would like to get a copy?

Everyone but Tom Hanley.

G This is an example of how this will be applied.

2 Like we said this morning I don't know if I can say anymore looking at these matrixes, without more time. Can you go back to number two, the ranking of the habitat? I think there is an error there. Young clear cut should be 50 and closed second growth 10.

G I think we are to the point we could re-rate.

3 I think it would be good to compare to the existing model.

G I think if you took these numbers, and applied the wolf numbers they would be comparable.

M I am concerned about the errors, could we correct those and rerun.

G No.

G The absolute magnitude will be important.

M You would like to see numbers that are fairly close. I think that is reasonable. I will be important to the next panel.

2 The will have to deal with a mean.

M We will have to give them the numbers (absolute value).

2 Would it be better to give them the range of numbers.

2 Everything has a variation.

1 It makes me wonder how much variation we will get, if we took four people from at random, I believe there numbers will not be dissimilar.

3 I believe that is we gave this information to them they would be similar.

2 I believe the variation reflects our background, it does reflect the biology variation too.

M Lets go to question number 4 and change the label. It should say number of deer increase instead of percent decrease. We will assume 100 is the number you relate change to.

1 They wouldn't start with 100, they would start with the number as above.

4 It could work either way.

G Do it as you want and note it and we will enter it accordingly.

M Think of relative change.

4 I still have a problem with one of the outliers of habitat type 7. I had 10 and everyone else had 70 and two 80's. Those scores are reasonable so I am going to raise my number, not that high though. I am still uncertain.

G You turn over the stand on a 500 year rotation.

M 10% of the block will be in opening sizes of one to two acres.

3 Is this a viable and economical alternative ?

G To group selection it will have to be a helicopter show, or small patches taken out with a yarder. We tend to do more even age management.

M One of the major areas this will affect will be the beach zone 2.

1 In the long run the stand will be in an even age stand.

G yes.

1 Low snow conditions are snow free for most of the winter?

M Yes.

1 On % increase and decrease, thinking about snow free clear cut is worth allot but a snowed clear cut has very little value.

1300

G The number highlighted in orange are the numbers that panel members have modified. We will review each one and if anyone has any comments please speak up so we can get it recorded. OK there will be no changes recorded.

2 At one point I was going to answer zero on number two, its kind of weird, It is captured in the numbers.

M Its very complicated.

2 If you multiply these percents times number of deer that would be good (habitat).

Presentation on Model Results:

G How would you present this to the public? We don't necessarily have to give them numbers, we could give them numbers based on relative decline. We don't have to do anything, if we do it has to be defensible.

3 I can see if we wrote up our assumptions, that would be feasible.

G We may want to display a band

2 I agree with that, I think it misleads the public if it is only one number.

3 There is also a biological variance.

M There is some variance lost on the individual level and I am not sure if there is any way to alleviate that.

G We can display a band of numbers

4 There were some things that we were close on but if there was allot of variation that should raise some concerns with the model.

G we can not represent the numbers of deer, just habitat capability

3 I think they are still going to want to convert the numbers to deer.

4 I would start with your large table and then work down. I'd like to see something with the WAA' s for the whole area.

1 How do we get the numbers

G In this analysis, we used a 100 deer for square mile. We have also used 75 and other numbers and other analysis.

M It was estimated off deer pellet transacts.

3 Its a deer for 6 acres.

M Its based on over winter numbers, taken in the spring. You have to look at if those deer are using the area year round. It has to be calibrated.

3 Do you take all acres on the Tongass times 100 deer.

G It is dependent on location and attributes of the area.

1 What, how long of a season do you call winter.

1 We do not define length.

1 Is it even a reasonable number?

M Yes I have some of the numbers.

2 I have no ideas after being on the ground, I guess I would go with ADf&Gs numbers.

M After we discuss this, its not necessarily the habitat carrying capacity.

4 Our starting point was with intermediate snow.

1 There is the base of 100 deer per square mile but that was based on little snow.

I think these estimates were based on the 20-30,0000 bf per stand.

G I think I heard that no one had any problems with using these numbers. I think we will take some sort of mean or average and use a band. In terms of proportion of % of harvestable deer the subsistence folks want to know how many they can have. Harvest for planning purposes is based on a 10% harvest.

M this 10% harvest was a number that the Department of Fish and Game used and TLMP picked up on.

G The reason there is a panel for deer is because of subsistence.

4 What % can you harvest?

1 Its the kind of question, do you add onto this model. We would have to model the summer range.

M Don mentioned sex ratio harvest, that plays a big role on this.

4 I'm not saying that its good or not, I don't want to give an opinion.

1 This makes the point that we sit here without any data, If I had my data it would be based on numbers.

We have numbers in relations to food supply as in the book we have here (Habitats and the Nutritional ecology of Black-Tailed Deer). The concern is that we are building a model based on no data, when I have access to my own data that I could work on a model with. It makes me realize how inadequate the process is.

G How does everyone else feel about the process?

4 Given the time constraints that we have I believe its working, my approach was to look at the 1992 data, I thought that there was an attempt to validate the model and the information was fairly close to the model numbers. Given that I relied heavily on the 1992 model, this was as good as anything else I've seen. I'm not quite as pessimistic as some

1 TLMP should afford more that a day and half to build a deer model.

2 When I think of the greatest value perhaps when you put it into the alternatives, the relative numbers may be of some value. There was no time to be pensive to analyze all these numbers. Its maybe a concern of how its applied. Concerned with using the absolute numbers?

3 The process of how to reach consensus, the model is totally inadequate based on the time spent, I would be much more comfortable using the Suring model. There is not much point in us developing a new model or criticizing the model at this point of time.

4 This strikes me as a good opportunity is to apply adaptive resource management. This model really has not been tested, people need to continue to validate. We really need to follow up on this stuff and validate or go back and modify the model.

G There is one more question. Is everyone comfortable with the age going to 200 years for habitat type 6? I want to know the value of the habitat type is.

2 I think it gets better as you get closer to 200 years.

M Thing get better as you get beyond to 100 years.

1 At age 60 you begin to get divergence.

G Lets go around the room and based on 100 deer get a habitat coefficient number in intermediate snow numbers.

M You might view it as a straight line. My impression is you can get allot of Vacca after 100- 124 years, the rest of the plants are suppressed. You are not getting gaps.

1 That's assuming there is no wind disturbance.

M I think that trees in old growth situation are predisposed because of age (tree rot).

3 I would give it a 15.

2 I would give it a 20.

4 20.

1 25.

Any final words.

4 I am intrigued by the concept of group selection, I think it has real potential. I think the team has not thought out the prescription very well yet.

M Is there in any single tree selection?

G I believe there is some in the riparian options.

after discussion it sounds like single tree selection will take place on such a small amount of acres it will not affect deer.

4 Group selection is still hard based on application to the habitat types. If the group selection is going to just occur in high volume old growth it should be rated under high volume old growth (high volume growth clear cut and high volume old growth group selection).

M At this time we have not assessed low volume old growth since we have just started harvesting it in the last 5 years.

4 Let me give you a specific concern you cant take low volume old growth and give it the same rating as hi volume old growth that has been clear cut.

M as we carry this out in the future it will need to change.

G Historically it is roughly correct, with proportionality we will change. Not all the Low volume old growth is suitable. I am not sure of the percent. When we do this analysis I will find out how much is in the base and assess it accordingly.