

**ACCOMMODATING WILDLIFE IN FOREST MANAGEMENT PLANS
AND PRACTICES - IS IT POSSIBLE?**

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Forest Industry Lecturer

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THE FOREST INDUSTRY LECTURERS

The forest industry in western Canada cooperates with Alberta Environmental Protection to provide funds to enrich the Renewable Resources program at the Faculty of Agriculture, Forestry and Home Economics at the University of Alberta through sponsorship of noteworthy speakers.

The Forest Industry Lecture Series was started during the 1976-77 term as a seminar course. The late Desmond I. Crossley and Maxwell T. MacLaggan presented the first series of lecturers. The contribution of these two noted Canadian foresters is greatly appreciated.

Subsequent speakers in the series have visited for periods of up to a week, with all visits highlighted by a major public address. Visitors have come from throughout North America, Europe, Africa and Asia. Their talks have dealt with a wide range of topics, such as forest ecology, forest science, silviculture, wildlife, forest management, ecosystem management, industry, services and trade, economics and social issues. Speakers have been drawn from among scientists, industry and business leaders, senior government officials, academics and forestry alumni. A full list of these lecturers and speakers is included at the end. Copies of most of their papers are available on request.

This paper contains R. Max Peterson's major public address given on 7 March 1996.

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R. Max Peterson

Mr. R. Max Peterson has over 40 years of dedicated service in the field of natural resources management. The first 37½ years were spent in a variety of positions with the U.S. Forest Service and culminated with his appointment as Chief, a position he held for 7½ years. Upon retirement, Mr. Peterson was designated Chief Emeritus of the Forest Service by the Secretary of Agriculture. On 1 January 1989, Mr. Peterson assumed his present position as Executive Vice-President of the International Association of Fish and Wildlife Agencies, in Washington, D.C. This Association represents the state and provincial fish and wildlife agencies of the United States, Canada, and Mexico.

Mr. Peterson is a native of Missouri, and a graduate of the University of Missouri. In 1959, he earned a Master's Degree in Public Administration from Harvard University where he attended on a Rockefeller Foundation Fellowship.

Introduction.

Dr. Beck:

They tell me that I need this thing, but at least I can dominate you with it right now. I hate to stop all the good discussion and everything, but I do want to get the festivities started. I would like to welcome everybody to the 36th Forest Industry Lecture. I am Jim Beck, Chair of the Renewable Resources Department and before I turn it over to Rich Rothwell to introduce the guest speaker today I would like to just represent here to the people here that this is funded by industry. The University does not put a single dollar into this - this is all funded by industry and by the Provincial Government. So I would like to, at least at this point, to recognize the donors this last year:

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And I know there is a lot of special guests in the room, but there is one special guest that I do want to introduce and I would ask him to stand because he is responsible for the starting of this particular thing. At the time he was the Minister of Lands and Forests, the fledgling Forestry Department in 1971 and had an offer from him that he would fund half of a position in Forest Management if we could get industry to fund the other half. Industry at that time was in one of the doldrums and they couldn't come anywhere near funding half a position, so we convinced the then Minister Alan Warrack (please stand Alan) to match whatever we could get from industry and to go on with this series. And we have never looked back since, and I think it has been a wonderful enrichment to students and to the University and this is what it is all about. The person comes here not to just give this talk, but the person comes here and gives lectures in different classes as well as the major talk here. So, without any more I think I will turn it over to Rich Rothwell to introduce our speaker for today.

Rich Rothwell.

Thanks Jim. In making the introduction I will start off with a few prefatory remarks. In Forestry over the last twenty to thirty years we have seen management evolve from sort of a single resource bias to multiple use management, integrated resource management and today we are talking about ecosystem management. It has been an evolutionary process where we have gone from more of a single focus on given resources - now we are looking at resources in a much more broad and integrative way and all along that evolution wildlife has been one of the prime and prominent resources that we have looked at. And I think today our speaker we have is well qualified to address the issue. His talk for today is entitled "Accommodating Wildlife in Forestry Management Plans and Practices - Is It Possible". Our speaker is Max Peterson, who is currently the Executive Vice-President of the International Association of Fish and Wildlife and prior to taking that position, he worked about forty years with the US Forest Service finishing off as Chief of the Forest Service for 7¹/₂ years. And his assignments with the US Forest Service have been broad and wide over most of the United States. His assignments started out as Deputy Chief, he was Deputy Regional Forester for the Southern Region in a variety of field assessments in the Pacific Southwest and the Northern Regions; he spent some time in California off and on with the Forest Service there. Max is a native of Missouri and a graduate of the University of Missouri. He began his Forest

Service career in 1949 in California and during that time worked for nine years on three different national forests. He was awarded in 1958 the Rockefeller Foundation Fellowship to water resource and land use planning at Harvard University where he obtained a Master's degree in public administration in 1959. Chairman of the National Conservation Committee of the Boy Scouts of America; the Vice-Chairman of the Board of the Graduate School of the USDA and member of the US Delegation of the World Forestry Congresses in 1960, 1971, 1978 and 1986.

And he has received numerous other awards and honors which I won't go into detail with - I would like to ask you now to help me welcome Max Peterson, please.

Max Peterson.

You must be thinking at this point that he must be an old rascal to have been around that long. Well, it hasn't been very long; it doesn't take very long to live a fairly whole life in this country. Thanks for that introduction - I am grateful it wasn't any longer. I was in speaking at the 75th anniversary of a Forestry School one time and they had three different people introduce me. And I kept getting smaller and smaller as this introduction went on and I thought what in the world am I going to do with that kind of introduction. So, finally I thought - you heard of a speaker that needs no introduction - that is an introduction that needs no speaker. Because there is only one way that you can go and that is down hill when you receive that kind of introduction.

I am grateful for the opportunity of being here. As indicated I did spend actually 37¼ years with the Forest Service all around the country and had an abiding interest in wildlife during those years. I told somebody when I went to work in my current job they said, "How come you are working in wildlife now?" And I said, "If I thought when I first went to work I could make a living working in wildlife I would work in wildlife then, but I didn't know you could make a living doing that." Then I see people like my friend Bob Andrews up here who is from

the Province here, and he was smarter earlier than I was. He started out earlier working with Fish and Wildlife.

Let me try to first kind of take us on a fast cruise through some of the evolving theory related to Fish and Wildlife and the thesis of this is that they both evolved along similar paths. The whole theory of Fish and Wildlife Management along with Forest Management. And now we are saying in truth you really can't measure one without the other. You really can't manage forests or wildlife as separate things. They are intertwined. And it has taken us quite a while maybe to make that judgment. But if you start out looking at the evolution of Forest Management we say the exploitation phase when we simply harvested what was there - it looked like a bountiful resource that was inexhaustible. And that was true in Canada and in the United States.

We did the same thing with wildlife when we first came to the North American continent while wildlife looked like it was everywhere and it was abundant and so we went through this great exploitation phase of wildlife and with forests. There really wasn't much attention given to conservation at that point because there wasn't any apparent need to conserve. In fact, it was probably in the late 1800's in the United States before we even came across the theory that forests could be perpetuated. When we cut one of our forests we just moved over the hill and there was some more and we cut there, and we finally ran into the Pacific Ocean and we said, "Well we better figure out how to perpetuate this." And the same thing happened in wildlife somewhat later we decided that we could perpetuate. In between this whole business of exploitation and perpetuation was an age of protection where you just said, "Well we better protect some of the forests and we better protect some wildlife. In the United States, it was done and somewhat in Canada was the idea of saving trees that were good for ship's masts for sailing. We had brands on trees that said that you can't cut these trees because they are too valuable for ship's masts. So, there was an exploitation phase, then a beginning of a protection stage, and then a stage in which we said we really can perpetuate forests or wildlife. We can regenerate. We can manage. We can harvest. We can bring back. I call that the beginning of the age of the idea professional management. In other words, we need professional managers and if you look back then everybody was willing to give the professional management the responsibility to do the job - just hire the professional manager and they will do good things. That period in the United States, and it is a little bit different here but a somewhat similar time frame started about 1890 and lasted until about 1960, by the way, which was the age

of the professional manager. The manager knows best. In 1960, they suddenly found a time when they said our problem is those managers. They don't know what the hell they are doing, plus they are in the pocket of whatever industry is involved. And so they are making decisions out there that are not in our long term best interest and so we have gone since 1960 through an age what might be called the "Age of Agonizing Reappraisal". I don't know if that is a good term or not, but it certainly fits. We have gone from 1960 to now. Beginning in 1960 though we did in most cases put in the law of the theory of multiple purpose management that forests didn't exist out there just for timber or just for game, or just for one other thing; that there should be a theory of multiple purpose management. And, in fact, in the US system we put that into law and the uses were stated alphabetically so that there would be no priority of uses for the public forest. And it would be managed to what were eloquently stated at that time for the accommodation of uses that best meet the public need over time and ever since then we are trying to figure out what that means. Beginning though about thirty years before that and sort of coming to a climax in the 1960's was a whole idea that there were certain areas that should be set aside not to be managed at all in the classical sense. These areas are called wilderness and statutory wilderness; ought not be managed in terms of manipulating the forest or in terms of providing a lot of access or otherwise making the lands available, and so this error of preservation of forest, or in some cases wildlife, creating sanctuaries and other sorts of things for - and part of that is part of the feeling that - we have to have some areas that we don't let those managers screw around with. That they are really inclined to do things without really knowing the consequences of what they are doing. And, so we are going to have some areas that we are not going to let them have their play, and then the next phase that I see coming into this whole thing, and then I want to move to the question of how you put this package together. And I think that it is important that we see this evolutionary sweep of changing ideas about forests and wildlife management, because I think it is going to affect what you do in your career, in probably ways that none of us have figured out yet. But is what I call the anti-management phase. A very active anti-management phase of saying not only don't we think they know what they are doing, we don't think that their theories are even right. We don't think the public interest is really embedded very deeply in those theories.

That is not a really large group probably in either country; I think it is larger in the United States, but that is not a very large group, but it is a very local group. And it relates to both forest management and fish & wildlife management. It is

expressed in anti-honey and anti-manipulation of vegetation to grow more deer or turkey, or those types of things. Anti-management to accomplish certain, what they say as, never ends. And to me that is the same basic theory as to don't manage the forest to plantations and other things that produce a limited range of crops that may be detrimental to some values.

Now, coming at about the same time though, and I think gathering steam is a new thing called sustainable use. And following on the heels of that are all these new things that are called bio-diversity, ecosystem management, adaptive management, land-scape level management - whatever new theory of the week that comes along. And some of those theories have been around for a long time and I am not saying that they all have validity, but part of this is all this potpourri of trying to decide what are the theories that are going to govern the future of management of forest and wildlife. It is part of the, I hope, is creative ferment as we try to sort things out. I think ecosystem management, for example, has been around since at least 1900. It has come back at least every twenty years or so, and disappeared and then it came back again. No question that the theory has some excellent ideas behind it, but in the 1990's I see the Brundlund Commission, the IUCM and so on all working on the idea of sustainable development. The theory there is why don't we think of a way to manage things so that we not only can we partake of the forest and wildlife today, but we can sustain it over time. There is a strong stewardship element in there.

So one of the things that I want to lay on you today is that probably in the future forest management or wildlife management will have to meet three tests. And two of the tests have been around for a long time. One is that "Is it financially feasible?"; second is that "Is it technically feasible?", and the third one "Is it more difficult, is it socially acceptable?" Now if you are going to hear anything else that I say to you this afternoon, write those three words down, because you are going to live with those three words, I think.

The first two of those is it financially or economically feasible and is it technically feasible are fairly analytical, and you are probably real comfortable with those - you think that you have had a lot of learning behind those and you think that you are pretty comfortable in moving into those arenas. The third one is it socially acceptable is much more difficult for us that don't have that kind of background, because the public who ultimately determine whether something is socially acceptable or very fickle. What they think today maybe different that what they think thought last year and what we are hearing in the popular press

may be not what people really think.

Let me walk through a little bit further now. There are some similarities between forest and wildlife management we have to look at if we answer this question: "Accommodating wildlife and forest management plans and practices - is it possible?" Of course, the short answer is "yes", but it ain't easy. At one time there was one famous statement made in the United States, "Whatever is good for General Motors is good for the country." I have heard people say good forest management is good wildlife management. Partly true. But it is not entirely true. Somewhat people consider good forest management maybe lousy forest management for some kinds of wildlife depending on what their needs are. But let me take us to about six or seven points of what I would say are similarities between the two that would give us a common ground. We both start from the theory that forest and wildlife are both renewable, which means that you can both use and perpetuate. A lot of resources that we deal with are not renewable. Both forest and wildlife are renewable. But they are renewable over different time periods which has quite a bit to do with how we manage things. The populations of wildlife may vary substantially and the time periods may be fairly short where the forests tend to be very long term and they are managed on a much different time frame.

The second part of this package, if you put them together, is that both are complex even though the public may be an expert on both. Both are really complex. If you really set down; I was looking at some of the posters that you are going to see later and you just look at the complexity of trying to figure out what to do in an area if you are really try to manage the forest and wildlife together.

The third piece of this pie is that both are greatly affected by natural elements including weather, fire and climate. We sometimes think that we manage these forests and wildlife and sometimes natural events that are taking place out there may overwhelm everything that we are trying to do. In fact, I am not sure if we have sufficiently included in a lot of our planning this random element sometimes of weather, fire and climate that is affecting what we do. We tend to plan as if what we are going to do is what is going to happen in the next thirty to forty years. It may not be what we are going to do is the main thing that happens in here; it may be what Mother Nature is going to do in that area that may overwhelm what else we have to do. So when somebody came up with a theory of adaptive management a few years ago I said that means that you look here to

see here if your assumptions are correct. Or see what happens actually is matched is what you thought was going to happen.

The fourth thing about wildlife and forest that had to be considered are that both are substantially affected by human population pressures. As we move into areas like - where I come from now - where there are about as many people in southern California as there are in all of Canada now. So as populations change, the relationship between people and forest & wildlife change.

The fifth thing in this list of things that we probably don't understand enough is that people, whether urban or rural, have a passionate relationship of both forest and wildlife. There is a lot of passion associated with people's relationship to trees in forest and wildlife. I had the misfortune of going back to where I grew up a few years ago when I was Chief of the Forest Service to try to explain to some people I grew up with why we made this big timber stay rotten here where they lived. They thought that this was a personal front, because they watched those trees grow up and they were like their children growing up. And they had this beautiful forest there and then somebody came along and cut it down. And they said, "why did you do that?". But I didn't do that; I was several thousand miles away, somebody else did that, but they considered that a personal front. And so as people become more urban, they want to go back to the forests and see things like they were. They want to see wildlife there. They want to see clean streams. They want to see some constancy in their lives. And as we become more urban, that may become more important to people as they go back and try understand where they came from.

Now before, we conclude the tour quite equal let me point out some great differences that we have to consider if we are really going to take seriously the idea of managing forests and wildlife together. First is that trees stay in one place and are much affected by the specific site that they are in while wildlife move all around. Wildlife may breed and nest in northern Canada and spend the summer in Central or South America. Therefore, you can't address the problems of wildlife on small sites maybe, particularly if they are migratory. One of the major things that we have been working on for a number of years now since 1916 when Canada and the United States had a treaty which relates to migratory water fowl is to try and understand that this is a continental resource that takes a great deal of cooperation if you are going to be successful in managing it. This is both an opportunity and a problem. And in the area that you are looking at may be a forest, that maybe only important for two weeks of

foraging of a certain kind of bird, but it may be critical for the survival of it. And you may be hard pressed to know that this is the case without having information on that particular animal.

The next difference is that obvious is that the trees have a really long live span and we look at them over a really long live while most wildlife has a very short life span - most less than 25 years and some one year less. In fact, one thing that blew my mind when I first learned about it was the Monarch butterfly that lives down in Mexico and makes it way north and then goes back there for the winter, and many of you know that is not the same butterfly that left. It may be two or three generations later. You might explain to me how they know where to go since they have never been there before and they return to the same few acres; I am not quite sure how they pass on the information - they must have some sort of system that is beyond the Internet I guess that tells them how to figure out. I don't think I could tell my kids how to get anywhere and they would remember, so I am not sure how these Monarch butterflies do it with pretty small brains. And obviously the population dynamics of wildlife cause fairly large natural swings and therefore when you manage those critters you have to deal with those swings. Some of which are habitat related, some of which are climate related, some of which are people related. So, in some respects, the wildlife side of this equation is more difficult.

Another factor that I think makes our job more difficult is that trees are generally considered the property of the land owner on the land where it stands, if it is on public land, the public. And wildlife is considered owned by the people whether on public or private land in the United States and somewhat similar in Canada. So, ownership of the resources is quite different at least in theory which has some important implications in terms of the economics.

Now, after I have thoroughly confused you that there is any hope in managing these together let me list about four or five practical things that I think we can do and I am going to stop and we will have some dialogue. Because I never thought that it was a good idea to spend an hour and forty-five minutes lecturing you people - I said this morning in the group that a lecture has been defined as a process by which information get from the notes to the speaker to the notes of the student without going through the brain of either. And I think that there is much truth in that.

I think first we recognize that in many cases it is possible to simultaneously meet

wildlife and other forest management, social and economic objectives, but you probably can't maximize either. So, maximizing theories, either on forest or wildlife, if you try to mesh the two together there are some tradeoffs generally speaking. And they may not be great - depends on the area and so on.

The second part of this is that this whole management considering both won't just happen by somebody issuing a policy statement. Or even issuing these new things we call visions and goals and objectives. And all those grand things that we put together in a statement. We put it on a wall and say, "Look we have changed our management". And the person out there in the field says, "Well that sounds good, but it doesn't mean anything to me." So, recognize that this won't happen, it takes some practical things being done in the field to make it happen. Recognizing the fact that wildlife moves around while forests stand still gives some opportunities that may not be obvious. For example, since you may be able to have a range of age types, a range of species and so on that meet wildlife needs where they can move to at least some extent to accommodate forest management. So we are not talking in many cases about managing every acre for every thing; this is probably impossible. We are talking about managing over an area which may be an ecosystem, or whatever you want to call it, but it is managing over an area that accommodates both different kinds of types and so on. In fact I would suggest that probably managing any small area or all species at one time is probably impossible, because if you can't do something in one area probably without benefiting one species of wildlife or forests/trees over another one. There is an interaction there.

There is a couple of emerging theories of wildlife that I think might be helpful. In fact, I am going to list about four or five and hope that that starts you thinking about some of the theories that are now evolving on wildlife that can be helpful in dealing with this.

One is the theory of adaptive and non-adaptive wildlife. And I recognize when I say that it is a descriptive term but the theory would be something like this. If you took adaptability here there is probably no species that is 100% adaptable. Although the cows may come close to it. So there is some species like the cow, or maybe the raccoon, or maybe the skunk in some areas where there is practically nothing you can do to that area that would change that population that much. They are very, very adaptable. On the other end of the spectrum you probably don't have any species that can't adapt a little bit but down here you have the non-adaptable species. Now, this theory says well maybe in

looking at this thing you call a coarse filter or something, maybe you meet all of these critters that fall over here, maybe you don't take a lot of effort in coordination and so on. It is these critters here that fall down here particularly that may end up becoming threatened or endangered if you change their habitat because they are not adaptable that have to take a lot of attention in management. This would be probably the spotted owl, probably the California condor; some of those species that may have been low in population size and their dependents on certain kinds of areas may be such that there is not much that you can do in an area that won't end up imperiling those species. So, at least since in some places you are dealing with several hundreds species, heaven help us if we have to figure out how to handle all hundred of those species individually.

There is also a theory that I don't particularly like, but it is being used as the theory of indicator species that you would have a species that would be a proxy for several species that would sort of give you the quality of the aquatic habitat, or the quality of the other habitat. I don't like that in terms - I think you would have to be pretty careful in selecting an indicator species. If you select an indicator species up here somewhere, you would obviously have trouble down here. So the indicator - there may not be one indicator species, but there may be four or five or something like that. So, that I think that is a theory that will simplify forest management if that proves out by research.

There is another theory of what I call limiting factors. What are the limiting factors in an area that relate to this species down here. Maybe the limiting factor is cavity nesting areas. Or maybe the limiting factor is thermal cover. Or maybe some other limiting factor that can be identified and then approached in management. Because unless we understand those limiting factors we may go in with very good intentions in an area and find out that everything that we wiped out what we thought we were handling because we didn't understand those limiting factors. And among those limiting factors are related to the idea of limiting factors is that some principles of looking at adequate foraging, nesting, breeding or birthing areas that are very critical for the life cycle of species.

And then there is a theory of certain important elements in an area. We now know, if you look at an area of land, it may well be that wetlands are a critical element of that area for a lot of species, and therefore unless particular attention is given to wetlands or riparian areas what we do may not be satisfactory. So, the theory of - I guess what I call - what some people call areas of special

importance to certain types of wildlife and so on, have to be inventoried and have to be looked at in terms of what are the management practices.

Let me stop there - I have got a few other points, but I think they can wait. Let me ask you to ask questions or - one of the things that I said today this morning, since I am just a visitor you don't have to agree with me, because I don't grade you - I don't decide whether you pass or fail - whether you get a job and all those unimportant things. So you have the privilege of disagreeing with me or saying - "That didn't make any sense to me", or you can ask questions. You can do a combination of any of those. So shoot. Not literally.

Question: I wonder if you could expand on the experience of wilderness areas in the United States, either by leaving them alone they work.

Answer: The question about wilderness areas if you leave them alone they work; it is like everything the answer is yes, but. Wilderness areas because there is limited use in that area you can get over population of certain kinds of wildlife in the area that cause some significant ups and downs of wildlife, which may be somewhat unnatural. Wilderness areas, I think, serve an important purpose of giving you some areas to compare and there is probably not been enough done of wilderness of using those as controls for other kinds of research to see what has happened. I think wilderness areas provide a type of experience that you can't find anywhere else. I used to spend about a week a year in some wilderness areas. It is wonderful place until they invented cellular phones. You can kind of get away from it all and kind of clear your head and think about whether some things that are important. Yes, I think they fill an important niche. The only question is how much, how big and where. In the United States, there is something over a hundred million acres of wilderness.

Question: Agency?

Answer: Yes, it is like everything else. Every time it comes around we have some more science and some more things to relate to it and so I think every time it has come around with more scientific information behind it. And I think at some point whether we call it ecosystem management or whether it is this coarse filter or fine filter or some of those concepts, you recognize you can't just concentrate on one small area to make some kind of decision - you have to look

at it in an overall context. We used to call that regional planning and when we did the National Forest Management Act in 1976 the theory of a regional guide was an idea of looking at a whole region. Because some kind of decisions you need to look at a whole region - you shouldn't just be looking at a one little forest or something. No - so I think it is a good theory, it is just a question to some people that it suddenly popped up in the 1990's and it suddenly became the new paradigm - the new God that is going to solve all of our problems not recognizing that it is not a new theory - it has been around a long time. I think it is a good theory; it is a little bit like democracy - it means whatever someone thinks it means. Which is not bad - I mean. But I have a little problem when somebody laces together and says we are going to practice in our forests - we are going to practice biodiversity on a landscape scale using ecosystem principles so that we have a healthy environment. And I say - Man, let us set that to music. They are all good objectives, but it is easier to say that mouthful, than it is to figure out what you are going to do about it. There isn't anything wrong it; there isn't anything wrong with any of those, but it is a little hard to explain to your next door neighbour what that means. And we are in a world now of if what we do in the future is going to be socially acceptable we have to talk to people and terms they understand. We can't talk to them in gibberish. We can't talk to them in concepts that don't mean anything. I say, can you imagine Winston Churchill when he faced the great threat to Britain coming up with some list of things that nobody understood. He came up with short terms that meant something to the guts of the people in terms of their values. And the whole question of forest management is going to be won or lost based on a value question, not technical questions or theories. What do people really want; what are people in a province, what are they willing to tolerate in terms of you screwing around with their forests.

Question: It is nice to hear someone from south of the border talking about wildlife and you have already mentioned the traveling great distances. Now we have a free trade developing, we have got a global economy, the European Common Market is mushrooming - we are thinking of that in North America and for South America is connected as well. What types of wildlife problems and solutions do you see coming because of this bigger economic picture? There should be more cooperation.

Answer: The question is what type of wildlife and forest management do I see because of the world wide relationships we are now looking at. I think that will

be both an opportunity and a challenge. I think we will learn from each other. I think we will see organisms arriving in places that we don't really want them. We have already seen that in ballasted water ships where organisms start up somewhere in the Far East and they get transported across the equator and across the ocean and they get dumped in the Great Lakes and we suddenly have the Zebra Mussel. I think insect disease is going to be a major problem when it gets transported around the world. I think you are going to see evolving theories in other countries spill over in the United States. You are going to find some cute non-tariff barriers to trade erected, and somebody says, "Well, we don't like trees that have been clear-cut and we are not going to import any more trees that have been clear-cut areas; or we don't like fur caught with leg-hold traps." We are going to try to influence U. S. or Canadian policy by these cute non-tariff barriers to trade. You can't put a tax on, but you can come up with these non-tariff barriers, and I think countries are going to try to influence the behavior of other countries through those kinds of things. So it is going to be a mixed bag. I think the world economy is here to stay. I don't see the erection of barriers is likely to occur anytime in the near future or very large ones. But it is going to be a challenge; it is not going to be all plus or minus.

Question: Socially - scientifically based.

Answer: I don't think that is true. I think what we do - I think if we get to the point if what we are doing is not scientifically based I think we would be in a lot of trouble. But I think there are equally sound scientifically alternatives that maybe the selection will be a social decision and not a scientific decision. For example, I can conjure up a dozen ways to manage a forest all that are scientifically sound. But they result in a different outcome. Now the mix that is there is not a scientific decision. The mix there is a social decision.

Question:

Answer: That is probably true. But the scientific model is probably better than the social model at this point. There is probably more instability in the social model than there is in the scientific model. I think we can predict with fairly scientific basis how fast a tree is going to grow and what are some of those other things, but what the public sees is its needs in the future for its goods and services for forests have undergone radical changes in my lifetime and it may change again in the next ten years. And one thing to keep in mind - I do a little management policy seminar up in Great Towers, which is a historical home of Gifford Penchall. And at the beginning of every decade I ask the class to tell me what they think this decade is going to be like. So we list their predictions for the decade. And we have done this since 1970 - we did it for 1970, 1980 and 1990. So I went backwards and picked up the predominant view of 1960 and 1950 and 1940. And guess what. The only thing that we were batting a thousand on is that we were wrong in the beginning in every one of those decades. Going back to 1940. In 1940, both the Presidential candidates in the United States ran against the involvement of U. S. in foreign wars. The predominant opinion was we weren't going to be engaged in foreign wars. In 1950, we were absolutely sure we were going to return to the Great Depression. Nobody saw the big civil rights movement that was just around the corner. In 1990, by the way, to tell you what the predominant opinion was in 1990; in 1990, the predominant opinion was that we were going to spend the peace dividend, since we were going to see the end of the cold war we were going to have lots of money to invest in natural resources. But nobody argued with that, that was the predominant view. So our view of the future is I think, Mark Twain said, "the only trouble about predicting the future it is largely unknown".

There is a positive thing, at least in the short run, is there is more attention being given as to who benefits whose pace for certain programs. We right now in the United States are looking at an excise tax on outdoor recreation equipment and so on to create a fund for so called non-game wildlife. And if that happens, some of that money will be spent on private land incentives and so on. I think we are also seeing that regulations may not be the best long term answer to change behaviour of private land owners that may be technical assistant incentives or superior and I think that has a lot to do with what may happen on private land. In many of the states now private land owners have figured out they can make a whole lot more money accommodating hunters and fishermen and other tourists than they can trying to raise cows and sheep, for example. So you are seeing a major change there that is being pushed by the economics of it, not by something that the government is doing. And I suspect that will continue.

Question: The question is about the endangered species act - has it been a benefit to wildlife?

Answer: I would say yes, it has. I think it has been a benefit - it certainly has been a very blunt instrument though. Because if we continue with the same amount of economic dislocation that as we have seen associated with the endangered species act over the last ten years, we probably won't have an endangered species act in another decade. Because when we decided in 1972 that whatever the cost, whoever had to bear it, we were going to protect every endangered species from becoming extinct. We said that the value of the species is infinitive regardless of the consequences of that, except for some for something called the "Wise man on hooker" which has not really been used. Now, we are trying to look more at preventing the species from reaching that point and there has been a fair amount of success if you look at what is happened to species that were classified as threatened and endangered. Many of them have been stabilized - the population has been stabilized - and some recovery having been made, but the controversy associated with that is about to sink the ship, so I hope you all learn from this and develop a little more user friendly endangered species act. I think the theory behind is fine, but if you end up bearing all the cost of an endangered species as a private land owner in a place and you go to your member of congress and say, "Look I just happen to have a hundred acres of trees that I was planning to grow to send the kids to college, and suddenly the government comes along and says that is critical habitat, I can't do anything with it". That sounds to me like a taking. So now

we got this big taking legislation that is alive and well. And it is also causing some perverse behavior where in the southeast now people are simply not letting their trees get old enough to be accommodating to the red cockeyed woodpecker. They want to cut them before they get that old. Now that is not the kind of behavior that we are trying to promote with endangered species act. So, there need to be some reform - we are working on that, but I think the earlier reformers were going to throw it out and I don't think the American public - at least at this point - is ready to throw it out. In fact, one of the more recent things is there is some religious people that say, "it is contrary to the Ten Commandants to throw out a species". You remember that Noah was told to take all the species aboard the ark and they said throwing one of them overboard is contrary to the Bible. That is a new group of people that have been heard from.

Question: Nature of popularity shortcomings

Answer: I think the problem when we put the theory in place. The first time that I really became real familiar with it was in the late 1960's and early 1970's when it went to all these short courses on ecosystem management, ecological theories and so on, and when we got back we really didn't know what we were going to do different than what we were doing before. So it never became an operational theory and therefore it kind of got discarded. I think now we are much closer to making some of the theories operational and I think when that happens then it will probably catch on. But the other part of that that is causing problems in the States where we have two-thirds of the land is in private ownership it is fighting words to put a circle around somebody's land and say that it is an ecosystem and Uncle Sam is going to tell you how to manage it. Because if you read that, it covers everything there. It covers the vegetation, the soils - there isn't anything that it doesn't cover. Then you say what about me who owns the land - don't I have anything to say about it. So there is a lot of fear to this term ecosystem management on the part of private land owners. And that has been a barrier to it. But I think probably it will be - I don't think if it will be this time or the next time it comes back, there will be enough support behind it to do something. I don't know what the next theory is going to be but there will be one in another couple of years that you are going to say, this is another paradigm shift that makes the ecosystem management absolute - I am not sure what it will be - but it will be something. We tend to invent new theories about every other year. Particularly in forest management.

Question:

Answer: I think the habitat suitability models were a good start to try to understand the relationship between species and their habitat. I think the limitations on them have been that there has been insufficient information in some cases. In some cases I think we are building suitability models way up here in the left for species that were pretty adaptable who probably didn't need them and we probably didn't have enough information to build some down here in the corner where we had non-adaptable species. You know you can build an elk model but some of the recent research indicates that elk are pretty adaptable and we had theories at one time that they wouldn't cross the road. The elk didn't know about that theory by the way. No, if you read a lot of earlier research that says that elk just won't cross the road - it is the same theory that says that ostrich don't like people. Until they found that they were nesting above the boat lanes on all the rivers where boats were running underneath them - about 30 feet above the boat - and they were nesting fine because that was close to the grocery store. And they didn't mind people there at all, as long as they were in boats. They didn't care about people walking around too much. But anyway - we have not really at times in building a suitability models - and I am being a critic of myself too there - we try to build models on things that we have information on. You can't build a model on something that you don't have information on. So - since there is several hundred species you can't build a suitability model for all hundred species. And if you did, how would you try to relate them.

Question

Answer: It is pretty hard to solve a hundred simultaneous equations. You have a model that would do that for you. But I think that was a good first effort. But it was an effort to try to say, well wildlife relates to habitat which we all know - what kind of habitat would it relate to and what are the limiting factors and so on. So I think that early effort was good effort. But I think we would overwhelm ourselves if we thought we could develop those model for every species that is out there.

Question

Answer: I think someone has to decide what are the more important species to model. No-It think is more than that. I think more attention needs to be

Question: What field would you advise your favorite niece to go into?

Answer: Consider being a doctor.

I have had this question. And I would say, as difficult as it is, probably the future of forestry is really wrapped up as to how we solve some of the wildlife problems and so I think that is a field that needs a lot of work. And I would encourage people with a forestry and a wildlife background to try to look at it together at some of these solutions and grapple - we somehow have to simplify these models - they just keep getting more and more complex and the information requirements are so great that we simply can't handle a hundred different models with a hundred simultaneous equations that all demand different inputs on every piece of ground. I mean - that is not a feasible way to approach it. So we have to got to look at some simplifying models and there probably are some out there. You know - Einstein looked at the great theory of nuclear physicist and finally wrote a very simple formula on the board. And there are probably some relationships out there that we don't tend to see because we are too close to it and we have got too much information. So I think the world is going to belong to some people who can simplify these things. And not just make them become more complicated. Now, with Alio Leopold without as near as much information as we got now came up through sheer powers of observation with some fairly simple theories of wildlife management that stood up for about fifty years.

Closing Remarks.

Mr. Peterson I think you can tell from the turn out here and from the enthusiasm

of the questions that this Forest Industry Lecture Series is a high point for those of us here at the University of Alberta interested in forests and how they are managed. you have come to at a time when there is lots of activity in this particular area and some stress here at the University here ...but you have given us some things to think about a topic that is very timely and important to all of us here and I would like to thank you very much on behalf of the assembled folks for coming and bringing us your message. And I would ask you all in joining me in thanking.

Mr. Peterson.

Let me say thank you both for your attention and for some really good questions. I would much rather be sitting up there asking some of the questions. Thank you.

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