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Large-Scale Salvage Harvesting: A stewardship dilemma?

presented to:

The Mountain Pine Beetle Epidemic and the Future of Communities and
Ecosystems: Research Synthesis and Strategy Forum Series.

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November 10, 2005

(Note the reader: This is a near *verbatim* copy of the presentation given at the Forum. Minor changes have been made to improve readability.)

The key word in this title, assigned to me by the workshop organisers, is the word dilemma. Dilemmas actually fall into the domain of moral philosophy rather than natural science. In the interests of time I will confine my 'philosophical' ruminations to a strict definition of the word "dilemma": "a choice between two equally undesirable alternatives." When discussing the dilemmas we face in natural resource management we often focus on the desirability, or undesirability, of the alternatives. For a true dilemma, this is irrelevant; the alternatives are, by definition, equally undesirable. However, even for the "real world" dilemmas in natural resource management, I believe that focussing on desirability is a red herring.

Such discussions lead us into the quagmire of environmental ethics. The debate becomes about biocentrism versus anthropocentrism and centers on the concepts of intrinsic versus conferred value (Rolston 1991, Li 1996). I will expose myself as devotedly anthropocentric but I refuse to entertain the debate. In my opinion the discussion is interesting but not particularly useful in informing us about how to act. More importantly, science is, by definition, value neutral. It is not the job of scientists to have an opinion on the desirability of the choices made in natural resource management. However, it is often the job of applied scientists to attempt to expose the consequences of the choices that might be made by their clients.

Therefore the more useful philosophical debate, for scientists working in natural resource management, is about choice itself. In this regard, I rest solidly in the Existentialists camp. My quick summary of Existentialism, from the perspective of our topic: We as individuals exist, separate from the world and the choices we make will have an effect on the world (Sartre said that "when I choose, I choose for the whole world"). Problematically, we can not know, with certainty, what affect our choices will have (Camus said that "a world which can be explained,

even through bad reasoning, is a familiar one”). The conclusion is that “living without certainty and with personal responsibility is a nearly unbearable burden” (Corbett 1985).

What does all of this mean for natural resource management, and more specifically the potential dilemma for forest stewardship posed by large-scale salvaging? We have chosen to act. In order to facilitate expeditious salvaging we have increased the total allowable cut in the affected area of the province by over 30% from 38 million m³ to 52 million m³. In some management units we have more than doubled the allowable cut. More increases in the cut are being contemplated. In addition there is significant interest in harvesting large areas to produce products we have little experience, such as fuel pellets, with using methods we have never encountered, such as slash balers.

We know that the actions will have consequences. Yet, as Bunnell *et al.* (2004) state “for operations of the scale anticipated in BC, there is no literature documenting effects of salvage (on vertebrates).” We are acting in the face of massive uncertainty. We have never seen a forest health problem of this scale and we have never contemplated a forest management reaction of the scale that is proposed. So, what can the natural sciences tell us about choosing to act in the face of uncertainty? There are three important lessons.

Don’t do the same thing everywhere.

For years Bunnell (2002) has been telling us to not do the same thing everywhere. His advice is completely relevant for the issue of large-scale salvage harvesting. We do not know what will happen. The last thing we should do is assume we know what the right thing to do is and try and do that everywhere. We could try and cloak this recommendation in a air of scientific rigor by calling “adaptive management” but really it is just a bet hedging strategy.

Plan at the scale of the problem.

Many people assert that planning has to be done at the scale of the problem. If it is not then the result becomes an unintended sum of the activities at smaller scales. While the advice seems obvious, in this case it is going to be very difficult. The beetle epidemic will affect the entire interior of the province. Unfortunately, we do not have any forest management planning mechanisms to deal with this scale. Attempts are being made to develop such mechanisms but it is a wicked problem in the face of the realities of forest licenses applied over company operating areas and Allowable Annual Cuts applied over Timber Supply Areas and overlaid with existing landuse planning. We are also advised re-plan often. This is good advice under any circumstances but, at the rate we typically plan, I fear that we will be lucky to get one good plan done before it is all over.

Be Cautious.

Finally, it is always good advice to be cautious when one is uncertain. More specifically, I have urged caution in a paper titled “Forest stewardship in the context of large-scale salvage operations” (Eng 2004) and Lindenmayer *et al.* (2004) have urged caution with respect to salvaging in a recent article in Science.

So how might all of this play out on the ground? Let’s go back to a simple example of a stewardship issue that we know a fair amount about and the basic dilemma: salvage or don’t salvage. The case for salvaging is that young forests will be planted immediately minimising the length of time before the area can contribute to future timber supply. The case for not salvaging is that the existing understory and remaining overstory will release in response to the death of the pine and the area will gain volume rapidly. Obviously, neither of these “outcomes” will be the case everywhere. The act of stating an extremely complex problem in the form of a dilemma renders the problem absurd. It is a useful thing to do only for illustrative purposes. Clearly, in the real world, we want to start salvaging in areas of pure pine overstory, with little understory, that are affected by beetles. We do not want to salvage in areas where there is little pine in the overstory regardless of the infestation. Beyond that, the outcomes stated above may be equally plausible. In order to decide what to do in any specific place we need to know about the nature of the forest in the place and how it fits in the broader context – we need good inventory and a plan. And don’t forget that our growth and yield models may not be up to the task particularly of projecting the volumes for beetle killed stands – so don’t do the same thing everywhere.

A second example might be wildlife habitat as a stewardship issue. In the case the simple salvage – don’t salvage dilemma does not exist. It is clear to me that the best thing to do for wildlife habitat is to simply leave well enough alone. So a more relevant “dilemma” is, given that we are going to salvage, should we retain some unharvested area in each salvage block or harvest all of the area in each salvage block?

The arguments are:

- By retaining some unharvested area in large-scale salvage blocks there will be a diversity of age classes and structural elements in the future and this will provide good habitat for a range of species; and
- If we harvest all of the area in large-scale salvage blocks the area that will need to be affected by salvaging and the amount of road that will need to be built will be minimised thus minimising the disruption to wildlife habitat.

Again, we simply do not know what the relative merits of these two choices are when applied over large areas and long time frames. We also can not know the answer in a relevant time frame.

One of the real dilemmas we are dealing with here is can we fit large scale salvaging of beetle killed forests into our “traditional” paradigm of managing to mimic natural disturbances. When we were harvesting “healthy” forests we worked under several assumptions about patch sizes and return intervals of forest fires to develop forestry operations that mimicked the crown fire disturbance. One of the fundamental, but frequently un-stated assumptions was that fires “take” some volume so we can too. A mountain pine beetle epidemic is different kind of disturbance that does not remove any volume. Does this mean that we can’t take any either? No. Everyone implicitly understood that we were not managing to mimic fires exactly as they occurred. We will not manage to mimic mountain pine beetle epidemics exactly as they occur.

It seems to me that the real question we are dealing with here is: when undertaking large-scale salvage operations, how much should be left behind and what should the spatial arrangement of that retention be. Given that we don’t know the answer to this question with any real certainty I go back to the principles for forest stewardship in the face of uncertainty.

Don’t do the same thing everywhere

Salvage operations should vary in their size and the amount removed. I would suggest that there should be places where virtually everything is removed and places where virtually everything is left behind and a complete range of removal, or retention, in between. As an aside, concomitant advice can be given to those undertaking silvicultural operations – don’t plant pine everywhere.

Plan at the scale of the problem

We don’t want to “not do the same thing everywhere” at random across the landscape. We need a provincial scale plan that takes into consideration local values and issues and can be implemented operationally. As mentioned earlier, there are many reason why a provincial scale plan will be difficult but I think it is critical.

Be cautious

In my opinion, this means leaving behind more than we were intending to when we were harvesting a “healthy” forest. If and when a provincial scale plan is produced I believe it should show that, in aggregate, we are retaining more unharvested areas on the landscape that we were originally intending to. Until broad scale planning (provincial or management unit level) has been done I believe that planning for each individual cutblock should incorporate additional retention in the form of wider riparian reserve zone and larger wildlife tree patches than was originally intended. I note that there is some substantial disagreement on whether or not this is necessary.

A final point to make is that all of this is just so much “arm waving” at this point. We have not actually seen very much, if any, large-scale salvage operations so we don’t know what will happen. As the forest industry gears up to salvage it is crucial that we be there to monitor their activities.

Literature Cited

- Bunnell, F. 2002. All the buzz in forestry: Buzzwords, buzzsaws and Buzzards. Fifth lecture: Jubilee Lecture Series UBC Faculty of Forestry.
<http://www.forestry.ubc.ca/events/BunnellMSS.pdf>
- Bunnell, F.L.; K.A. Squires and I. Houde 2004. Evaluating the effects of large-scale salvage logging for mountain pine beetle on terrestrial and aquatic vertebrates. Natural Resources Canada, Canadian Forest Service, Pacific Forestry Centre, Victoria, BC. Mountain Pine Beetle Initiative Working Paper 2004-2. 57 p.
- Corbett, B. 1985. What is existentialism?
<http://www.webster.edu/~corbetre/philosophy/existentialism/whatis.html>.
- Eng, M.A. 2004 Forest Stewardship in the Context of Large Scale Salvage Operations: An Interpretation Paper. B.C. Min. of For., Res. Br., Victoria B.C., Tech. Rep. 019.
<http://www.for.gov.bc.ca/hfd/pubs/Docs/Tr/Tr019.htm>.
- Li, Huey-li. 1996. On the nature of environmental education (Anthropocentrism versus non-anthropocentrism: The irrelevant debate).
http://www.ed.uiuc.edu/eps/per-yearbook/96_docs/li.html
- Lindenmayer, D. B., D. R. Foster, J. F. Franklin, M. L. Hunter, R. F. Noss, F. A. Schmiegelow, and D. Perry. 2004. Enhanced salvage harvesting policies after natural disturbance. *Science* 303 (5662): 303.
- Rolston, H.R. *Environmental ethics: Duties to and values in the natural world*. 408 pages. Temple University Press, Philadelphia PA.