# From here to eternity: The perils of policy analysis

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## INTRODUCTION

Technical and scientific support for decision making in the forest policy arena is becoming increasingly important. Policy makers often ask researchers to advise them about what is, or what would be, the impact of alternative resource management policies on a variety of forest values. We present the results of a project that provided scientific support to a policy analysis and some conclusions about how to design research to serve the needs of policy makers.

## METHODS

We led a study (Eng and Hamilton 1999) designed to answer the following question posed by policy makers:

> *What is the risk to biodiversity of representing old seral forests at the [Biogeoclimatic Ecosystem Classification]* BEC *variant level, when establishing landscape unit objectives under the B.C. Forest Practices Code?*

We selected 11 landscape units, throughout British Columbia, that represented a range of ecological and previous forest management conditions, and for which suitable data were available.

We assumed that the procedures outlined in the Landscape Unit Planning Guide (B.C. Ministry of Forests 1999) would be followed when "establishing landscape unit objectives under the Forest Practices Code." Information on the amount of old seral forest that was removed from the timber harvesting land base (e.g., inoperable, low site potential) in each variant, and in each site series in each variant, was compiled.

Given this information and the direction in the planning guide, we determined the extent to which gaps occurred in site series representation, relative to the guide's target levels, when applying the policy of representing old forests at the variant level (referred to as "the policy").

We conducted a pilot risk assessment in two of the landscape units using a two-stage Delphi approach (Richey et al. 1985). In this approach, expert panels of four members used a well-defined process to rate risks to biodiversity.

## RESULTS OF THE CASE STUDY

We examined 38 combinations of landscape units and variants. The results fell into four categories of gaps in site series representation that would occur when applying "the policy" (Figure 1).

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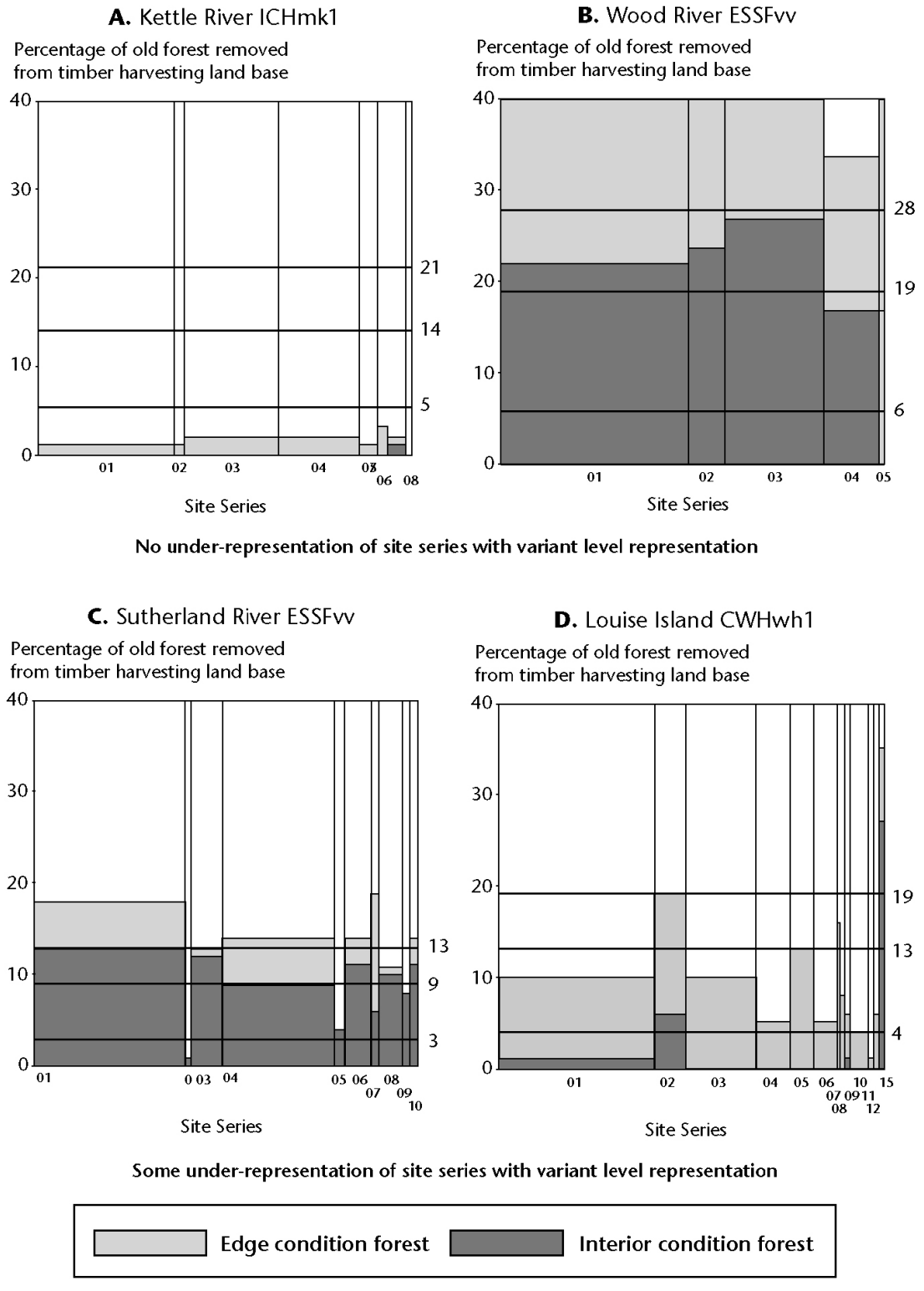


FIGURE 1 *Examples of the four categories of results. Each box represents 40% of the forested area of the variant in the landscape unit (named above the box). The vertical lines separate site series in proportion to their abundance. The three horizontal lines represent percentage targets for old seral representation for each of three biodiversity options. The shaded areas show the amount of each site series that has been removed from the timber harvesting land base.*

In two of the categories (26 of 38 cases), *no* gaps would occur in site series representation if "the policy" was applied. The old forest removals from the timber harvesting land base in these cases were evenly distributed among site series (see Figure 1A and 1B). In one of the categories (6 of 38 cases), some site series with small areas would be under-represented by "the policy" (Figure 1C). Planning options would be limited when dealing with this under-representation since the amount of old forest removed from the harvesting land base would exceed the higher biodiversity-emphasis option target for the variant. Finally, in another 6 of 38 cases, some site series would receive a slight under-representation if "the policy" were applied because some site series are "over-represented" in the areas removed from the harvesting land base (Figure 1D). In these cases, however, planners could decide which site series would be under-represented in a final plan, under some biodiversity emphasis options. This is because the amount of old forest removed from the harvesting land base is less than the target for some options.

The pilot risk assessment did not achieve a consensus on the risk to biodiversity of "the policy" in the two landscape units that were examined. We discuss the reasons for this below.

## CONCLUSIONS

The results of this case study (Eng and Hamilton 1999), and the process of conducting the study, highlight conclusions that we believe are generally applicable when providing science support for the analysis of natural resource management policy.

### Clearly Specify the Compared Policy Alternatives

The analysis of a given policy's impact requires that it be compared to some other clearly defined policy. However, new policies are often specified because the existing policy environment is uncertain. In this case, the task was "to assess the risk that this direction [variant level representation] poses to biodiversity values" (Pedersen 1998). This begs the question: compared to what *other* direction? Specifying exactly what the policy was compared against and how that comparison was framed was difficult "because of lack of clarity on how to consider representativeness" (Pedersen 1998) before the issuance of the direction. Numerous discussions were required with policy makers to specify an acceptable alternative with which to compare to the existing policy.

### Place the Policy Alternatives in Their Appropriate Context

Individual policies invariably exist in a complex policy matrix. It is difficult, and may be impossible, to assess the effect of single policies out of context. When the expert panel attempted to assess the incremental risk of the policy of variant level representation, the result varied widely among the assessors. No consensus on the risk was achieved. We believe that this occurred in part because the panel lacked a common view of the risk to biodiversity of all other current forest management practices. Consequently, assessors were starting from different "baseline" conditions when they assessed the incremental risk.

This contributed to the lack of consensus since there is no reason to suspect that risk to biodiversity increases in a linear fashion with increasing management impact. In fact, the metaphor of "straw that broke the camel's back" represents a commonly held belief about management impact. Therefore, depending on where one believes we are on the management impact continuum, relative to some threshold, very different assessments of incremental risk can result from identical "additions" to management impact.

### Identify Meaningful and Measurable Response Variables

Analysis of natural resource values is complicated by the fact that many are "concept clusters" (*sensu* Peters 1991). We had to extract a measurable response variable from one of the largest concept

clusters—biodiversity. We chose site series representation because, as one method of defining ecosystems (Meidinger and Pojar 1991), site series are explicitly part of the definition of biodiversity (B.C. Ministry of Forests 1999) and a reasonably well-understood relationship exists between site series and other aspects of biodiversity. This choice was the result of an iterative process conducted with policy makers and stakeholders during which a number of variables were examined. We note that the choice of a response variable is not a purely objective exercise; the choice, itself, influences the outcome.

In conclusion, we expect that the most difficult parts of developing a study design for scientific support to policy analysis will be:

- defining clearly the policy alternatives to be compared;
- placing them correctly in the context of the overall policy environment; and
- identifying meaningful and measurable response variables.

These steps may require several iterations with policy makers and possibly with interested stakeholders.

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