

CIT EBM Handbook and Compendium Review

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Introduction

In reviewing these documents I draw on my conceptual understanding, knowledge of the literature, and policy-oriented research over the last twenty years in the subjects of environmental management, policy, and assessment; sustainability; systems; planning; and protected areas and ecosystem-based management. I also draw on my knowledge of the CIT study region based on research and recreational visits over the last decade, and especially the last two years; to northern Vancouver Island, Haida Gwaii, and the Central Coast (in order of decreasing familiarity).

The Instructions to Reviewers request an “objective, technical perspective on the information on which decisions are based” and “to avoid (wherever possible) judgements on management suggestions”. Two main dimensions for the review are highlighted: “to determine whether the relevant data were considered and whether they were used appropriately” and “to evaluate uncertainty” and especially its acknowledgement. Several general questions were provided to guide the review and they are addressed below. In what follows I will address these questions generally and specifically for each of the Handbook and Compendium, followed by additional Concluding Comments.

The Handbook, and even more the Compendium, extensively reference and depend on a dozen or more background reports to the CIT HPG, the North Coast LRMP Table, MSSRM and others (especially and most importantly Holt 2001, Holt & Sutherland 2003, Taylor 2000a, b, Pearson 2003, Dorner & Wong 2003, Dykstra 2003, Prescott-Allen 2003, Pojar 2003, Rumsey, *et al.* 2003). Not all of those were available to me, and to some extent that constrained my ability to answer the first review question, particularly for the Compendium.

The EBM Compendium

General Comments

The Introduction to the Compendium notes it focuses purely on ecological values and does not consider social or economic. My comments on the Compendium generally reflect that exclusion by focusing on the topics included in it, and not those left out, except in the few cases where those topics most explicitly intrude.

In regard to the guiding questions, I feel there is extensive use of scientific information in the Compendium, generally well and specifically chosen to relate to the topics at hand. There is a good effort to be clear, consistent and explicit in use of knowledge, distinguishing of fact, judgement and decision; interpretation of knowledge; and acknowledgement of uncertainty. The Compendium and Handbook draw on a wide range of complex natural science and other concepts, and between these documents and the supporting reports a good and likely representative literature has been drawn on. I would acknowledge that it is near impossible to be comprehensive and difficult to list every (and everybody's different) conceivable uncertainty; what's been done seems overall

good. Specific questions and comments within that broad assessment are noted below, and one or two broader caveats, in conclusions.

Where management direction is given, it is generally clear, concise and practical – sufficiently so that the transition from theory to practice will undoubtedly be contentious, and the specifics open to rather specific debate.

Specific Comments

Section 1 starts with the statement: “Ecosystem management, and its made-in-BC form, ecosystem-based management...”. Neither in the Compendium nor in the referenced report (Holt 2003) is there any justification for this statement – the referenced literature in the report and in Holt is almost wholly American. Slocombe (1993a, b) provided discussions of the nature and origins of ecosystem-based management with more Canadian content. The ecosystem(-based) management literature cited is also strongly natural science in orientation. Without moving to strongly socio-economic or political authors there might be benefit and relevance from including some of the EBM literature from an institutional and policy perspective such as Brunner & Clark (1997), Clark, *et al.* (2001), Gunderson, *et al.* (1995), Slocombe (1998a).

Addressing social (or economic) dimensions in EBM is an ongoing challenge (as in resource and environmental management generally). Within this, gender dimensions have received growing attention generally (e.g. Reed & Mitchell 2003) and within forestry communities in the CIT region (Reed 2003). The final paragraph of Section 1 refers to the inclusion of “real social data”. This is an interesting phrase which could be explained, and how that will address concerns of the EBM critics noted in the report might be clarified. Social and gender critics of EBM and RM generally point to the need for different conceptualizations, and different processes, if such concerns are to be addressed. The recognition that healthy ecosystems provide a context for human wellbeing is an important one.

In section 2 on ecological integrity, the definition section notes that the EBM Handbook definition does not explicitly include a comparison with “natural” conditions. This does beg the question, then, of how “complete or unimpaired” are to be defined. On the other hand, later discussions of thresholds, guidelines and risk largely do go back to some measure of what might be called undisturbed conditions – at least pre-industrial disturbance conditions.

While I do think the provided distinction between biodiversity and ecological integrity is generally accepted, I am not so convinced that ecological integrity and ecosystem health are a “close synonym” (cf. Slocombe 1998b). However it is perhaps not a critical issue in relation to this region given its relatively undisturbed state. Some reference to the interdisciplinary literature on health and integrity might be useful, e.g. Rapport, *et al.* (1998), Pimentel, *et al.* (2000).

Section 3, the first paragraph, includes some counter-intuitive statements regarding cautious and precautionary management and restoration and reserves. These should be explained a bit. At the bottom of that page there is a statement that “the concept of reserves seems fundamentally opposed to an approach that acknowledges the dynamism of ecosystems”. This is an old argument, certainly true forty or fifty years ago, but much less tenable now in the face of new conceptualizations and practice in protected areas

management (cf. even the textbook Dearden & Rollins 2002). That said, the combination of approaches outlined in the rest of the chapter is excellent, and generally good.

While I understand the rationale behind the parenthetical comment to point (iii) at the start of Section 3.8, I must disagree with the second part: in large enough reserves and/or for sufficiently localized species protection and persistence in reserves surely would imply ecological integrity. As they are not common in Canada, the notion of flexible reserves might be expanded on and referenced there too. Section 3.8.1 observes that gap analysis uses “readily available data”. At a coarse scale, in well-studied regions that may be true; but in many other places and/or at finer scales, it is often not. There are several statements in 3.8.4, regarding structural retention and the need for reserves, and the relationship of natural disturbance patterns and resilience to disturbance, which could be contentious and would benefit from more explanation and referencing. In the second paragraph of 3.12 there is a statement that the EBM Handbook “does describe explicit categories” for zoning – I think that should be “does not”. In Section 3.14 the determination of risk curves is clearly a very critical and challenging component with major management implications. Some discussion of the issues and methods there would be useful (beyond that in 3.14.3). In 3.14.3 the connection between Figure 1 and the preceding paragraph statements could be better made.

Section 4 on targets and thresholds does seem to me well-justified and referenced, more so often than 3, and in general follows more closely from lengthier background reports. Which is not to say that some of the numbers and their application will not be controversial. The identification of uncertainties is quite good; the addition of key research questions in all sections would be useful. One or two specific comments: in the Box at the start of 4.1.5, drawn from the Handbook, the final guideline re red/blue listed species is somewhat contrary to the arguments in 3.6. In Table 4 and related text in 4.1.5 some comment on the determination of proportion of forest >250 years old in human modified areas might be useful.

Other Remarks

From a purely editorial perspective, I would encourage the inclusion of a glossary and list of acronyms (as in the Handbook, although the two could be separated rather than combined as they are there). In Sections 3 and 4 I would encourage the inclusion of several diagrams to illustrate the conceptual and practical interrelations of the concepts, targets and thresholds discussed. In addition, especially in 3, the use of hierarchical subsections, rather than the current linear, one-level organization, would better illustrate the conceptual relationship and use of the topics (e.g. Section 3.3 discusses coarse and fine filter approaches, mentioning many of the subjects of succeeding sections as examples of one or the other – these might better be grouped as subsections of 3.3, etc.).

The Compendium Introduction indicates its “intent is that questions about the background to the CIT’s Ecosystem-based Management Handbook can be answered briefly, within a manageable summary document. Specific questions can then be directed to pertinent background reports...”. I can appreciate the intent here, which I must assume is to provide a more accessible document for public consumption, but I feel that the Compendium falls not entirely successfully between two extremes. On the one hand it is certainly too complex a document, and assumes too much scientific and

planning/management background, to be fully understood and assessed without a considerable amount of knowledge and experience. On the other hand many of the critical conceptual and applied Sections refer to other reports for their detailed references, analyses and justifications. That probably will not please the more critical and informed reader. One hundred pages is quite short for a document such as this; double that would certainly still be read by interested parties and would allow for much more in-depth explanation of the meaning, origins, and implications of the EBM concepts, targets and thresholds, and might well lead to less frustration on the part of many readers. A more popularly written, shorter version for the general public will surely also be needed (and I don't think the Handbook is that document either at the moment).

The EBM Handbook

General Comments

The EBM Handbook is a substantially less technical document than the Compendium and as such is not extensively referenced. It does appear to reflect the information and reviews of the Compendium in the presented guidelines, etc. The descriptions of the steps, and data and knowledge sources for the planning functions in Section 4 and elsewhere are quite comprehensive and useful, especially for natural resource, biophysical knowledge. There is a clear effort to link decisions to "objective evaluations of fact".

What is missing from the Handbook (or background documents) is any review of the lessons, experience, general mechanisms even, of broad, regional, multi-party, multi-scale planning processes. It does appear that EBM is envisaged as being implemented through some combination of law, policy, institutional reform, and most of all planning so this does seem a bit of an oversight in terms of background review and knowledge. Certainly implementation of EBM through planning is reasonable and necessary – I have argued for it in print – but there is a literature to learn from, even if BC has at times been an innovator in large-scale regional environmental planning.

In the context of the EBM Handbook and without repeating comments above related to the Compendium, the critical uncertainties must relate to the incorporation of the socio-economic other activities into the planning process, and the nature of the planning process as a whole (technical AND process dimensions).

The Handbook does include some discussion of uncertainty, principally in the context of risks, trade-offs, and decisions. It is reasonable that it includes less discussion of uncertainty in the context of specific technical issues than the Compendium as the latter is meant to serve that purpose, among others. On the other hand, the Handbook could usefully include explicit discussion of uncertainties in planning and decision-making processes, and perhaps in socioeconomic issues and questions which will surely intrude into decision and planning processes, e.g. in costs-benefit analysis, in determining stakeholders, in negotiation processes, in terms of income and gender and other equity contexts.

In my specific comments on the Handbook I have tried to highlight potentially contentious and/or unclear points and topics where additional explanation and/or referencing would likely be beneficial.

Specific Comments

On page 6 there is reference to “reserves, ..., but the land is not formally protected”. There may be a need to clarify whether that means unregulated or simply not protected in a park sense.

The Handbook makes much more reference to socio-economic characteristics, planning and activities than the Compendium, e.g. 2.5.2, and I hope that somewhere there is a scientific compendium related to it. The reference to “removing subsidies” in the list at the end of that section might bear some elaboration as to which are meant.

Table 2.3 providing examples of different levels of management direction would be clearer if all the examples related to, followed through, the same system characteristic.

Akin to some of my comments on the Compendium, here too there would be great benefit to a process diagram that shows the interrelation of the stages and approaches in EBM. Figure 2.3 outlines risk targets across scales, but something more comprehensive and systematic is needed.

In 2.5.6 vulnerability indicators should probably be disaggregated by gender, if possible, to allow identification and response to any differences.

In Section 3.3.1, under the discussion of context assessments, I would favour explicit inclusion of at least the institutional, economic, and ecological context of the planning unit – even at the Territorial/Subregional level. On the next page, in the Institutional Analysis bullet point, capacity gaps could be added to those being identified.

It seems to me that in 3.4 on AM the identified conditions, especially the first two, are very narrow and restrictive. At the least, one of the goals of active AM is to develop new information and learning (to be sure, when the risks of exploring alternatives are not too high). Consequently I am not entirely convinced that AM is necessarily or always high risk (as indicated by Table 3.4).

Sections 4 to 6 provide lists of example planning activities, guidelines, and products at Territory/Subregion, Landscape/Watershed, and Site/Stand levels. In general, the planning components, and guidelines, seem more developed for the upper level, and less so for the lower; and the socio-economic guidelines especially seem little developed (they are very general and nearly identical at all levels) – they would benefit from stronger development. Planning in these sections comes across as a very linear, technical exercise – it even says so at the start of the lower level planning sections (Watershed, Site/Stand), seemingly implying less participation and consultation there. While there are extensive lists of data and analysis steps there is very little clear and substantive about the process: leadership, participation, timeframes: the how as opposed to the what. That may be a matter for later decisions, but some examples, if only from LRMPs and other northern processes, would make this stronger and clearer.

The other major substantive concern raised by these sections, in relation to the Compendium, is the absence of any development of targets, thresholds, and scientific background beyond forestry, fish and wildlife in the region: they are notably absent for mining, and tourism and recreation, both of which are identified as elements in the Planning Guidelines. Hopefully the Socio-Economic CIT documents will allow parallel, related analyses for Well-being etc.

Section 7 seems a quite thoughtful discussion of several key issues and opportunities for transition to EBM. This is an important topic, and Reed (2003) would also provide much specific and general food for thought.

EBM Handbook, Framework and Management

Several specific, additional questions were asked via email regarding the EBM Handbook and Framework. They are addressed here, and provide an opportunity for some summary, synthetic remarks.

Is the Handbook Consistent with the Framework?

The EBM definition and principles are well represented and the general components of the process are in the Handbook. The Handbook's phrasing of the guiding principles is sometimes somewhat different from the Framework, but not excessively so. The handbook has no clear statement of the process key elements equivalent to Framework Section 5.1 of the Framework. Many of the components are mentioned in the Handbook 2.5.1 and elsewhere in 2, but they are scattered and it is harder to determine what's most important. Both Framework and Handbook start off discussing EBM, but then begin referring to ecosystem-based planning, or EBM planning. It might be useful to add an explicit explanation and rationale for the difference. The Framework also includes a good institutional arrangements diagram (Figure 1) that might usefully be included in the Handbook (but note that's not the same as the process diagram I suggest below).

Is the Handbook internally consistent, practical, etc.?

The big question is how the scales and technical parts fit together into an EBM or planning process. The who and when and where. While the lists in Section 3.3 and examples in Sections 4-6 provide many lists of data used and analyses conducted, they don't talk about timeframes, sequences, who was involved, how Tables were chosen, etc. Without this, the technical content is apt to confuse the reader, and cause them concern over non-technical dimensions of planning – especially if they haven't considerable knowledge and experience of these kinds of processes.

In terms of consistency, while I don't think there are internal contradictions – other than the inescapable one of reconciling ecological integrity and human well-being – there certainly are inconsistencies in the treatment of different dimensions and components of planning: notably environmental vs. socioeconomic and technical vs. process.

These latter points, and other comments above, suggest to me that the Handbook isn't very practical; too much is missing, and what's there isn't always interrelated and integrated well. That also goes for the Handbook and Compendium: while the Compendium refers to specific sections of the Handbook a lot, the reverse is not true, but probably should be.

CIT's EBM, EBM Elsewhere, & Other Approaches to Sustainability

The CIT approach to EBM is undoubtedly most similar to that of the US Forest Service, and other American processes strongly influenced by Grumbine and natural-science-based resource management approaches. It clearly strives to build on those approaches with a variety of highly relevant new conservation and ecological research

results and assessment methods; as well as making the most of extensive relevant biophysical research done on systems in or near the study regions.

It is most different, as presented, from EBM approaches such as my own or Tim Clark's which, while they recognize the need for the best possible understanding and natural AND social science to support them, equally highlight the need to clearly define up-front the consultation, participation and decision-making process in which science is used. Indeed it is arguable that the most successful processes pay much more attention to defining those processes first, before they try to define the science, targets, goals etc. My own favourite example is the Australian Alps Cooperative Management programme (see Slocombe 1998a, 2002 for an intro). Parks Canada's recent implementation of ecosystem-based management seem also to lead to such conclusions (see, for example, Feick 2002).

Beyond the applied literature there are approaches more explicitly emphasizing complex systems approaches, the interaction of socio-ecological and biophysical (sub)systems, approaches to fostering resilience and capacity in communities, and institutional dimensions of science and management, e.g. Berkes & Folke (1998); Berkes, *et al.* (2003); Gunderson & Holling (2002); Gunderson & Pritchard (2002); and Westley & Miller (2003). These approaches build consideration of whole system dynamics into the planning process, attend explicitly to institutional and process details, and try to draw on social and natural science more equally. They are strong on lessons from case-studies of what does and doesn't work; and on understanding the interaction of connected biophysical and socio-economic which is weak (or at least not discussed explicitly and in detail) in the documents I have reviewed.

More purely community-based approaches to conservation and resource management are also a major current area of professional and academic interest and, although sometimes viewed through rose-coloured glasses, they are receiving some critical and ultimately more constructive attention, e.g. Agrawal & Gibson (2001).

Concluding Comments

EBM component documents, activities, and processes need to be integrated; there are a lot of them – analyses, frameworks, assessments, guides, and more yet to be defined. They will ultimately be judged on how well they work together, how consistently they are implemented; how well they relate to and reflect each other. Some external review of everything together is probably needed – if only for consistency and because relationships may seem obvious to the team, so obvious as not to need description in some cases, but not necessarily to others.

If there is a conceptual and literature gap in these documents it is the near complete lack of explicit use of environmental and socio-ecological systems concepts and literature. While the term “system” is in the Handbook glossary it is little used in the texts; hierarchy is referenced almost exclusively in a spatial scale context, and dynamics are largely limited to natural disturbance. It is true that systems approaches are not as “hard” natural science as the strictly ecological, hydrological and forestry science literature most often referenced. But it is also true that dimensions beyond the biophysical, and dynamics beyond the linear, are often mentioned in both documents. It is especially unfortunate given the concluding Section of the Handbook which certainly implies and draws on a more interdisciplinary, systems perspective. The following would be an excellent start

with many useful ideas and lessons for EBM in the CIT: Berkes & Folke (1998); Berkes, *et al.* (2003); Gunderson & Holling (2002); Gunderson & Pritchard (2002); and Westley & Miller (2003).

My instructions included not passing judgement on particular policies, rather examining the underlying analysis and how to use it. I have tried to do that. There will undoubtedly be many who jump on the specifics of the Compendium; and indeed I am probably most qualified to comment on the Handbook – the framework for implementing the ideas and principles of the Framework and the conclusions of the Compendium.

American EBM and AM, in a context of greater litigation and, in many places, fundamental opposition to conservation and landuse planning, have been pushed strongly to identify and use “objective” facts and science. While good management certainly depends on good science, and should be based on the best available as is intended by CIT, it is foolish and even counterproductive to seek or even to expect that there is some final “objective” science and facts that will eliminate contention and controversy in resource and environmental management in the Central Coast, or elsewhere. It is foolish because there will always be experts willing to contradict any particular position, even one held by the vast majority of scientists (as in global change research) and counterproductive because it diverts attention and funding from the design of policy, processes, economic tools, and regulations that could create a context in which innovative planning options and people’s differences about them could be explored and resolved. It is a clear lesson of the US experience that big, expensive, science-focused EBM processes, alone, do not resolve land and resource use conflicts.

Don’t mistake me: I think the direction taken by the Compendium and Handbook is excellent. The nature, rationale, and intent of the goals, thresholds, etc. in these documents is innovative, useful and well thought out. But there will always be uncertainty and contention about many of them, especially at finer, more local scales. And science and scientists alone will not be able to resolve that – especially science and scientists from outside the planning area. What this comes down to is how to address (not resolve, as it won’t magically go away) uncertainty, and even more conflict, in planning processes generally and at the Tables specifically.

Clearly the final form of the planning and management processes to implement EBM will be a government decision, but there is a good and large literature on what makes environmental governance, collaborative management, EBM processes, etc. work – and the CIT documents do draw on specific BC coastal examples. What this means for the Handbook is that inclusion of process examples and best practices would be desirable and useful.

Part of the answer is to seek equal depth and breadth in the socio-economic background to planning, as in the biophysical; not just data, but also concepts and controversies and models and research. Another is to draw on experience turning science into management, e.g. Forbes, *et al.* (1999), including the lesson of local involvement in scientific research as well as planning and decision making.

Another part is to recognize that planning and decision-making won’t be able to please everybody, every time, and adhere to the EBM Principles. There will be change, and short- and long-term winners and losers. There *will* be conflict as well as uncertainty.

Dealing with conflict and uncertainty in science and decision making requires a whole range of activities and processes. First it needs long-term commitment and mechanisms and processes to get beyond exclusive, purely representative processes. It requires long-term working together and building knowledge and trust. It requires attention to what is increasingly called governance (see UNDP, *et al.* 2003, and Sonoran Institute/BLM 2000, for excellent, global and local perspectives on environmental governance and collaboration). There are many tools for implementing such processes. Some of the most commonly referenced are interdisciplinary workshops, participatory mapping, on-the-ground experience, exchanges of people, participatory process development, visioning and goal-setting exercises, institutional and policy analyses, incentives, interest-based negotiation. A range of recent works address tools, e.g. Carley & Christie (2000), Dale & English (1999), Rietbergen-McCracken & Abaza (2000).

The most critical need is to use a multiplicity of planning, assessment, and decision-making tools and approaches within the ecosystem-based management framework. Patience, flexibility and adaptability will be essential. And a clear and trusted planning and management framework within which to apply the tools will also be essential.

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