Comments from Members and Consultants of the SAB Committee on Valuing the Protection of Ecological Systems and Services (C-VPESS) on the 3/09/07 draft report for discussion at the 3/27/07 C-VPESS public teleconference call
Comments received as of 8:00 am 3/27/07

Comments Received

A. Habitat Equivalency Analysis (Part 3, Section 7.3, pp. 304-310)-

Comments from Terry Daniel

This is generally a well written section, aside from a significant number of minor typos and missed words, etc. The sentence on p 305, line 21-22, seems to end in mid thought. An important strength of this method that does not get sufficient emphasis is that it seems to allow relevant experts to come to a comparative value for lost and replaced ecosystem services in terms of the services (and perhaps underlying supporting services) themselves. Within a given (constrained) context, it seems that HEA (or similar methods) could be effectively applied by relevant experts to arrive at convincing trades or compensations for damaged or lost services. If this method were opened up to systematic input and participation by non-expert public stakeholders (along the lines of the Mediated Modeling or Deliberative Group methods), more widely accepted trade/compensation decisions could be determined for otherwise intractable ecosystem value situations.

Comments from Rick Freeman

This whole section needs some rewriting and careful editing to make the main points more clear.

Comments from Dennis Grossman

The text itself shows the effects of first drafts and has many small editorial errors which need to be addressed – e.g. lots of incomplete thoughts and sentences.

I struggle to clarify how this section contributes to this report. It does not provide any guidance or clarity relative to the Committee's charge – valuing ecosystems and their services – but points out a historical way that coarse surrogate values (habitat acre equivalents and the like) have been used to mitigate environmental damages. I think that it points more to the shortcomings of prior efforts than a guiding light – not that it is presented as such. The underlying challenge is to present methods that better represent the 'real' values of these ecosystems and their services and have that information available for decision-making.

Comments from Lou Pitelka

Page 305, lines 1-2 and 4-5. Something appears to be missing. These sentences do not make sense.

Page 305, lines 21-22. Not a complete sentence; something is missing.

B. Comments on Implementing the Concept of Ecosystem Services (Part 2, Section 2, pp. 47-52)

Comments from Jim Boyd

"Endpoint" language for CVPESS discussion for a new subsection in Part 2, Section 2.?

draft by Jim Boyd
3/23/07

One of the Committee's fundamental conclusions – and one commonly voiced elsewhere -- is that the coordination or full integration of ecological and social analysis is necessary. The analytical challenge facing this committee is the translation of agency actions and decisions into, first, biophysical outcomes. Then a second translation must occur: from biophysical outcomes to social outcomes. If there is no coordination between the biophysical and social assessments the total analysis is likely to be more difficult, flawed, and unsatisfying to both scholars and professionals asked to follow the experts' recommendations.

The methods and examples described in this report do not themselves always live up to this standard, largely because there is no standard. The organization of this report is yet another example of the distinctions drawn between biophysical and a social analysis

(refer to the separate “biophysical” and “social” sections). The Committee hopes for a day when reports of this kind will feature truly integrated biophysical and economic analysis.

A specific need – and one we think deserves much more attention – is the development of ecological endpoints for social science analysis.

Ecological endpoints are concrete statements, intuitively expressed and commonly understood, about what matters in nature.

Technical expressions or descriptions meaningful only to experts are not ecological endpoints.

The success EPA has had with the translation of human health impacts into social, legal, and regulatory analysis is due in large part to the development of health endpoints 15 years ago [check date].

Prior to the development of health endpoints, the health sciences expressed health problems and outcomes in technical terms meaningful within the scientific community, but not outside it. The search for health endpoints – the linkage between health and social sciences – thus was a search for a “common man” translation of medically complex outcomes.

The social sciences demand these “common man” units of success and failure because the social sciences tend to assume that people are reasonably well informed when they make choices. [Though cite the vast literature that does not assume this.]

If changes in the world – good things and bad – cannot be expressed in terms society understands it is nearly impossible for social scientists to say anything about how society values those changes.

The point is this: consistently defined endpoints were instrumental in the government’s (and science’s) ability to bridge the gap between technical medical outcomes and understandable social outcomes. They will be even more important to the assessment of ecological conditions.

One can easily argue that the ecological assessment problem is more difficult than the health assessment problem – it is certainly more multi-dimensional. For one thing, ecological systems are very broad in space and time. All the more reason that consistent endpoints are necessary.

While the Committee has not delivered a coherent, practical set of such ecological endpoints, we are optimistic about their development (Boyd, 2007). Further, we urge the development of such endpoints as the next logical step for the agency to take.

[NOTE: I have zero personal knowledge of the health endpoints history. This story should be reviewed by those in the know. On the Committee, I know Kerry Smith was involved. At EPA, the name that comes to mind is Rob Wolcott. But I am sure there are many others with reflections on the health experience. We should verify my journalistic understanding with those who were there.

Comment from Terry Daniel

p. 48-14 ", it reduces the potential for double-counting."

In this context, somewhere between page 48 and 49 the admonition to avoid double counting runs pell-mell into the complexity of the ecological networks that "produce" the endpoints that are of interest in a given analysis. For the balance of the section it is clear that we not only can't avoid double counting (and perhaps triple and quadruple), but we will frequently not know exactly what elements of the network (or even functional groups) are responsible for what measure of the end product, nor what other end products that are valuable somewhere else or at some other time to some other humans might also be supported to some extent by those same elements/groups. How far down and up and inward and outward in the ecological net and how far forward and backward in time do we have to go to avoid double counting of ecosystem values?

This double counting problem may not be especially problematic if we are focusing on a particular end-point service to particular humans at a particular place over a reasonably circumscribed time, and seek only to determine the value of (or just skip more directly to a decision about protecting or not) those parts of the neighboring ecosystem that most directly and importantly support the targeted end-points. It is much more problematic, and likely intractable altogether, when we seek to claim some valuation or decision that is "optimal" and orthogonal over a much larger (even universal) space encompassing other values for other humans from other ecosystems that are almost surely interrelated with the targeted system, and with each other.

Comments from Rick Freeman

p. 49, lines 1-17: This is important material about avoiding double counting and determining what people are valuing and why. But I think that there is an issue that perhaps hasn't been recognized that complicates things. At lines 8-8, it says "Do individuals care about about insects for their own sake, or ... [as] a food source ..." Suppose the answer is "Both." Then I think that there is what I would call a "joint value allocation problem" (analogous to the joint cost allocation problem in accounting). And it is further complicated by the possibility that to the extent that insects contribute to fish, there are fewer insects for people to care about for their own sake.

Figure 3: I am comfortable with this.

p. 51, line 17: I can't find an earlier mention of nematodes.

Comments from Dennis Grossman

The concept of double counting as providing the rationale for accounting for products as compared to process is overly stressed and redundantly stated. It misses the main point that we are sorely under-equipped to value end products and understand/quantify the specific processes that lead to them. So we need to simultaneously address our inability to account for everything as products – so we can't just look at this as a panacea.

The next discussion sells the concept of functional groups as a surrogate for most ecosystem services. This is not well integrated with the Boyd/Banzaf approach that precedes it. These functional groups are more in the process that products category, so it appears that we are arguing against ourselves. Or that we are currently missing the final few paragraphs that will complete this session with additional synthesis across these approaches.

Comments from Lou Pitelka

Page 47, line 25 to Page 48, line 29. I am a little concerned about recommending a definition of ecosystems services that is narrower than that of the MEA. Does this encourage EPA to limit the services they consider. While I see the appeal of the "end products" approach, what are the trade-offs? In that context, and at the least, this section should explicitly explain what types of services would be missed by this approach.

Page 50, Figure 3. I still don't like this figure because the horizontal arrows don't make sense. The boxes on the right are simply definitions of the terms in the boxes on the left. The figure could be revised to be a single column of boxes. In each box there would be a heading such as "Functional Groups" or "Ecosystem Function" in bold font, and then underneath in parentheses would be the definitions, from the corresponding box on the right. This would seem more logical and conceptually cleaner.

Page 51, line 17. The sentence refers to "the array of nematodes mentioned earlier", but I think this is the first mention of nematodes. The paragraph on pages 49-50 just refers to "soil organisms" which include nematodes but lots of other things as well.

Page 52, lines 10 and 12. Kathy asks Hal for references or something more specific. I am not sure references would be helpful here. I assume that Kathy wants something more to indicate that there are methods for the quantification of the properties listed in Figure 3. I think that methods are so abundant and standard that it could even be misleading to cite specific references other than maybe text books on ecological methods. Perhaps a could of sentences such as the following would do:

> There are statistically rigorous sampling methods for determining the distribution and abundance of virtually any kind of plant and animal. There also are well-established methods for tracing links between organisms and the fluxes of energy and nutrients through an ecosystem, i.e., ecosystem processes.

C. Prediction of Ecological Effects (Part 2, Section 3, pp. 53-70)

Comments from Terry Daniel

P 53, L 20 "guide the process and to incorporate …"

The conceptual model should not be overly constrained by current ecological (or economic or social or whatever) knowledge, but even the general model should be built with an eye to eventually incorporating the more detailed ecological models (production functions)—especially those that are relatively well-known and might be expected to be applied.

P 53, L 25 "and the public with legitimate interests (standing) in the outcome."

The question here is whether there is any US citizen who would not have a "legitimate interest" in a regulatory action of the EPA. If the idea here is that some regulations and actions have restrictions on who has (legal) "standing" to make filings or register concerns and opinions, then this needs to be made more clear.

P 59, L 9-15

This section makes it very clear that "eliminating double counting" in valuations of ecosystems/services is an unrealistic goal.

P 62, section 3.5

This section repeats some of the material from Part 2, Section 2, and it could well incorporate much of that discussion as well as the economic/valuation issues (especially double counting) that lead off the earlier section. The advantage of treating these issues here (instead of in the earlier section) is that the ecological context, and the limitations imposed by that context has been well established, allowing the economic issues to be addressed more realistically. Indeed this section, as billed, does a good job of discussing the interface between ecology and value assessment. The statements on P 62, L 14-21 present a useful characterization of the situation and set the stage for appropriate two-way negotiations between ecological and value assessment systems. The discussion in 3.5 could be extended to cover the material from the beginning of Section 2 (especially double counting), but with greater acceptance of the compromises that will surely be required. As it is now in Section 2 the goal (or perhaps even requirement) of orthogonal partitioning in the valuations of ecosystems/services seems to clash with the "butterfly in Brazil" complexity and interconnectedness of ecosystems, and with the current lack of complete knowledge of either the ecological or human-social components of most important ecosystems/services problems.

Comments from Rick Freeman

p. 53, line24/p. 4, line 19/p. 55, line 15: These are places that it might be appropriate to mention mediated modeling as a technique. See the discussion during last week's conference call.

p. 60, lines 6-8: It says, "EPA could mandate that models ... should meet the following seven conditions." This is a pretty stringent set of conditions (esp. d)). Do we think that there is a set of models out there now that meet these seven conditions? I am skeptical partly on the basis of Section 3.4). Or is it an empty set? If the latter, how long will it be before we have such a set of models? What needs to be done to close the gap?

Section 3.4: This section (and probably other parts of Section 3) needs to be revised to be consistent with the discussion of defining ecosystem services in a consistent manner in Section 2.

p. 67, line 29: Is the Barbier reference his 2001 Note in Ecological Economics? Cite it.

p. 67, line 11/p. 68, line 3: Hoagland and Jin, 2006 is not in the reference list.

I just realized that the article by Claire Kremen ("Managing Ecosystem Services: What Do We Need to Know About Their Ecology?") was not cited in this section. I think that it should be and that there should be some discussion of the issues she raises and of the research needs that she identifies. Probably the best place for this is Section 3.4 & 3.5 where a "gap" is identified and suggestions made for closing the gap. My sense is that the present text doesn't go quite far enough in emphasizing the gap and explaining the role it has played in EPA's difficulties in valuing ecosystem services in the recent past.

Comments from Dennis Grossman

Fix the numbering of 3.1, 3.2, etc.

We need to be clear about what we mean when we say “value assessment”. In many cases we are talking about the assessment of ecosystem values through a various number of approaches. In this section, the phrase is used to refer to impact of certain actions, therefore the changes to the earlier usage of “value assessment” resulting from specific actions (or lack thereof). We should figure out how to clearly refer to these two conceptual subjects.

Comments from Lou Pitelka

Page 55, line 21. Perhaps mention more than nematodes or bacterial types, since these already have been used as an example. “…functional groups present as exemplified by nematode or bacterial types, or guilds of birds or insects.”

Page 58, line 13. Insert “possible” before “outcomes” to make it clear that the models do not predict the future.

Page 66, lines 8-16. This example was discussed in essentially the same words and detail in an earlier section, so at most it should just be referred to.

Page 67, line 2. The term “meta-analysis” means different things to different people. To some, it has a very precise definition with regard to statistical methods that are used. To others it simply means looking at a lot of different studies to see what common results emerge. I wonder if we should use the term.

Page 67, lines 14-26. I think another and perhaps better reference is the Heinz report on The State of the Nation’s Ecosystem (2002). This report built on the NRC report but involve many more people and much more effort invested in identifying workable indicators and discussing the availability of data.

Page 70, line 4. I think “six” should be “seven.