EBMWG Project Close-Out Report

Project #:   EI03.

Project Title: Ecological Baseline

Steering Committee Members: Jody Holmes, Glenn Dunsworth/Sally Leigh Spencer, Steve Gordon/Buck Tanner, Dennis Crockford with input from Dan Cardinall, and Wally Eamer

1.0 FUNDING
The estimated total cost of the project is approximately $ 50,000. Final billings are outstanding but the project will be completed under budget..

2.0 PURPOSE
The purpose of this project was to assess the current and potential future state of ecological integrity in the Central and North Coast using key ecological indicators and best available information.

The project objectives were to: 1) assess the current and potential future state of ecological integrity in the Central and North using key ecological indicators; and 2) provide regional scale information from the assessment to the DSP process.

Specifically, the project assessed the current and potential future state of ecological integrity using the following indicators:
- Age class in each ecosystem type (by site series surrogate)
- Focal/fine filter species habitats (e.g. grizzly bear, mountain goat, marbled murrelet, northern goshawk, tailed frog)
- Landform features (e.g. wetlands, estuaries etc.)

An additional project was undertaken for the purpose of compiling all of the focal species datasets required for a series of EBMWG projects, and to create an inventory/catalogue of all the inventory/analysis complete or currently underway on the North and Central Coast.

3.0 EXTENT TO WHICH PROJECT OBJECTIVES WERE ACHIEVED

Objective	Description	Evaluation (Text)	Summary*
1	Compile focal species datasets and all other datasets required for the following projects: EI 02, EI03a and DS04 Deliverable: Defined datasets compiled, organized, and accessible in one location	Summary database outlining all datasets and their location has been completed. Focal species datasets and models have been compiled and are available from MoE FTP site. As additional focal species datasets become available, they will be added to this site.	Fully met
2	Catalogue (to be available on EBMWG FTP site) of ecological inventory and analysis work completed or underway on the coast of BC (to complete only if deliverables #1 has been successfully	Catalogue has been provided by contractor	Fully met

	completed)		
	Deliverable: EBM ecological inventory catalogue is organized and accessible in one location		
3	EI03 Workplan listing defined tasks developed and agreed to by PSC and the contractor	Completed to the satisfaction of the PSC. Some difficulties related to moving from workplan to ATF which slowed down the process.	Fully Met
4	Complete first draft baseline analysis and report incorporating any feedback from peer reviewers as appropriate	Minimal feedback received from peer reviewers Focal species and landform features information not available to complete this section	Substantially Met
5	Incorporate feedback from PSC and peer reviewers to finalize final report	All peer review comments either incorporated and/or rationale provided for why they were not incorporated. Fully met workplan for the coarse filter biodiversity component. Still incomplete for the focal species and landform features component because incomplete dataset availability.	Fully met for coarse filter biodiversity component. Not met for focal species and landform features component.
6	Provide sub-regional context related to distribution and condition of key ecological indicators for individual DSPs	Map and associated tables and spreadsheets/data bases available.	Fully met

* Use: Fully met (100%), Substantially met (>75%), Partially met (25-75%), Marginally met (0-25%), Not met (0%)

4.0 MAJOR TASKS COMPLETED

Task	Description[1]	Date
1a	Compile focal species datasets and all other datasets required for the following projects: EI 02, EI03a and DS04	March 7th '08
1b	EBM ecological inventory catalogue is organized and accessible in one location	March 7th '08
2a	EI03 Workplan listing defined tasks developed and agreed to by PSC and the contractor	Feb 21st '08
2b	Draft Methods (Appendixes) sent to peer reviewers.	May '08

---

[1] These tasks are drawn directly from the EI03 ATF dated March 31, 2008.

Task	Description[1]	Date
2c	First draft report to the Project Steering Committee (PSC)	Sept 5th '08
2d	Presentation of draft results to EBMWG	Sept 11th '08
2e	Draft incorporating PSC input (after PSC conference call)	Sept 30th '08
2f	All peer review input received	Oct 29th '08
2g	Final report submitted to PSC and EBMWG	Oct 30th '08

5.0 KEY PRODUCTS

Item #	Description	Completion date	Location
1	First draft report	September 2nd	
2	Presentation to EBMWG	September 11 '08	EBMWG Website
3	PSC comments on report	September 17 '08	To be posted to EBMWG Website
4	Peer review comments on report	October 29th '08	To be posted to EBMWG Website
5	Final report	October 30 '08	EBMWG Website
6	Associated maps and database	TBD	TBD

6.0 PEER REVIEW

This project was designed and managed by an EBM WG steering committee, and reviewed by additional EBM WG representatives with relevant backgrounds and qualifications. Both the methods and the draft report were reviewed **by external peer reviewers.** However, because of summer research season, only one of the originally identified peer reviewers actually reviewed the methods (Appendices) of the report before the draft report was finalized. Because the methods were essentially similar to previous reports by the lead author, final peer review was focused specifically on changes to original methodology as outlined in the Appendices. All three identified peer reviewers were able to provide peer review comments on the draft appendices which were considered to be most critical for review by the author and steering committee because the methodology included was a departure from previous peer-reviewed methods used by the author. Only 2 reviewers (McKinnon and Todd) were available to provide comments on the full draft document. Comments from steering committee members were also received. The report author(s) collated and incorporated as they deemed appropriate all comments received and provided a rationale outlining how comments were incorporated or not.

7.0 CAVEATS RELATED TO UNDERLYING DATA

The authors used "best available information" to inform these analysis. However, there are a number of caveats to be aware of:

1. the data used is forest cover and uses site series surrogates as an assessment of ecosystems – a number of analyses have already indicated that there is not high correlation between site series and site series surrogates. Since EBM was intended to meet representation targets for site series, it remains unclear whether using site series surrogates will actually accomplish this goal.
2. the data layers underlying this analysis are still subject to discussion regarding several outstanding issues (definitive list of SSS, associated RONVs etc.) and as such, small changes in analysis outcomes may result

3. the analysis includes many assumptions about current and future land use/forest management that are uncertain and;
4. accordingly, the analysis will need to be updated as better inventory becomes available, management changes (i.e. new land use objectives come into play), and monitoring reveals what's actually happening on the ground (as opposed to what happens in simulation models and speculation related to this).

8.0 MAJOR FINDINGS/CONCLUSIONS

The major findings of the report are as follows (for exact wording and specifics see reports):

Scenarios explored:
- Spatial **Basecase** – which reflects the latest TSR for each management unit within the coastal region;
- **Current SLUO (3b)** – which reflects the implications from the current Strategic Land Use Objectives (July 2008) which are the legal agreements currently in place;
- **Full EBM Risk management (4d)** – which is the 'risk managed' version of EBM. Note this is not the same as 'full EBM' as outlined by the Coast Information Team (CIT 2004a; see Methods).

Current Condition of the landbase: For a full description of current condition, please see the original report. An overview is provided in the report, see Figure 1:Landscape Units that contain Site Series Surrogates at High Risk) and the following tables:

Table 1: Number and area of ecosystems in each risk category currently (derived from Table 5 and Table 8 in report)

Deviation from natural OG	Risk Category	Year 0	Area (ha)
>70	H	45	1,351,733
50-70	HM	23	895,357
30-50	LM	35	67,952
<30	L	64	223,490

Table 2: Number of ecosystems at high and high moderate risk by productivity class currently (subset of Table 6, see Table 7 in the report for specifics by individual SSS)

Productivity Class	Risk Level	Total #	Current
Good Productivity	High	42	26
Mod Productivity	High	55	5
Poor Productivity	High	70	14
Good Productivity	High + High-Mod	42	28
Mod Productivity	High + High-Mod	55	11
Poor Productivity	High + High-Mod	70	29

1) **The Current SLUO significantly reduces risk to ecological integrity over Basecase scenario. The lowered risk comes from a variety of sources and has different levels of certainty:**
   i.   **% of landbase in PA/BAs has increased** from 7% to almost 32% over the region
   ii. **network of PA/BA** is large and well distributed
   iii. an additional 137,000 ha **additional old growth forest** exists after 250 years compared to the basecase

iv. the number of **ecosystems at high risk** drops (11 out of 167 SSS at 250 yrs (33,733 ha) as compared to 34 out of 167 (82,455 ha) but ecosystems at high and high moderate risk remains relatively high at 250 years (43 SSS out of 167)

2) **The Full EBM scenario results in additional lowering of risk compared to the Current SLUO. Again, the lowered risk comes from various sources, and has different levels of certainty:**
   i. **% of landbase in PA/Bas** is the same as the SLUOs and contributes to lower risks to ecological integrity
   ii. **additional old growth forest** almost doubles from the SLUOs (to 214,000ha) after 250 years
   iii. the number of **ecosystems at high and moderate risk** drops relative to the SLUOs
      • the area in high risk is reduced by half from 33,773 ha to 17,000 ha
      • the rate at which ecosystems move to lower risk status increases under full EBM
   iv. **certainty** is higher with full EBM because required protection levels are higher and outcomes are less dependent on defacto protection from the "inoperable" landbase or discretionary differences of implementation approach.

3) **Based on the modeled implementation of the scenarios, the current SLUO significantly reduces future ecological risk compared with the Basecase as outlined. There remain potential gaps and these tend to be more significant under the current legal objectives:**

Identified Areas of potential opportunity
   i. **Alternate land use not reflected yet** - new SLUO proposals may end up having more positive effects than the existing SLUOs and would need to be reanalyzed using the same methodology
   ii. **Stand level retention** – timber supply model assumes 15%. If actual retention is higher (some studies suggest as high as 26%) this would result in actual risk levels being lower[2]

Identified Areas of Ongoing Concern
   ▪ **Under-representation of ecosystems in protection** - 99 of 212 SSS that have less than 20% protection and in particular some southern biogeoclimatic variants (e.g. CWHxm2 and CWHdm) which have additional concerns because they have very low levels of protection in the neighbouring region to the south, have high risk retention targets in the current LUOs and have very little old-growth remaining.
   ▪ **Effectiveness of Protection areas** – there is operational uncertainty regarding proposed developments and their potential impact on ecological integrity which could increase the overall risk to ecological integrity.
   ▪ **Types of SSS[3] at high risk -** The vast majority of SSS at risk presently tend to be higher productivity ecosystems which are associated with a disproportionate amount of the biodiversity values on the coast. Current number of ecosystems at high risk = 45 out of 167 SSS (223,490 ha), with 25 of these (60,000ha) having less than 10% of natural old growth remaining. The full EBM scenario most quickly recovers these ecosystems. The SLUO scenario allows a significant number to continue to remain at high risk.
   ▪ **The distribution of risk on the landbase is not random** - Concentrations of areas of high risk today correspond to areas with high concentrations of high productivity SSS and larger diversity of SSS (Landscape Units with more than 10 SSS at high risk) include: Thurlow, Franklin, Estero, Dean, Gray, Fulmore, Lower Klinaklini, Saloompt, Owikeno, Middle Klinaklini, Bella Coola, Knight East and Phillips
   ▪ **Inoperable areas and protection certainty** – in timber supply modeling only THLB is identified as available for harvest; so risk levels could increase if ecosystems that are outside of the THLB (i.e. particularly moderate productivity common and very common

---

[2] However, there is equal uncertainty related to landscape level retention. And, it may also be accurate to assume that site series will not be logged right down to established targets in the THLB.
[3] See also section 6.1 – data uncertainties

SSS with high risk targets in the SLUOs) during implementation[4]. This risk decreases in the full EBM scenario.

4) Additional Uncertainties
    a. Risk Thresholds
        i. Low risk – the intention of this threshold is to maintain a natural distribution of all older forest types (i.e. 250 – 500; 500 – 1000, 1000-2000 etc.). However, in smaller units or where the majority of the SSS is in the THLB, specific management direction may be needed to ensure this intention is met.
        ii. High risk: this analysis uses the original CIT EBM Handbook definition of high risk (30% RONV) to report risk levels associated with scenarios. An outcome from an EBMWG workshop suggests that 30% total is a more ecologically appropriate high risk threshold. *This would result in a significant increase in the numbers and hectares of ecosystems at high risk in all scenarios.*

    b. Defining Ecosystems – present site series surrogates do not have a high correlation with site series, based on TEM analysis. EBM was intended to manage to site series the results of ongoing management to SSS targets may not reach the intended goal for site series.
    c. Climate change – is a significant[5] uncertainty and may affect both risk levels to ecological integrity and timber supply (because of assumptions about future growth rates). The broad effect of climate change is as an additional stressor that would exacerbate stresses incurred by development.

9.0 BASELINE REPORT RECOMMENDATIONS

The author recommends the following related to key information and inventory (see also similar recommendations from the 2nd Old Growth Closeout Report)**:**

    a. **Data Sets**
        i. Create a single dataset that is used by all parties for all coastal analysis.
        ii. Apply specific age classification fixes related to known or suspected age classification problems as suggested in Appendix 4 and outlined in the Executive Summary.
        iii. Prioritize updating forest cover information for the whole coast so that no 'fixes' are required.

    b. **SSS List**
        i. In the short term, create a comprehensive and definitive list of SSS. If this excludes small areas of 'apparent' SSS, provide guidance as to how to practically deal with mapped site series surrogates that don't exist in the SLUO targets tables. Align the list of SSS so that there are clear criteria for inclusion / exclusion within the SLUOs, based on the definitive list created above.

    c. **Rarity Rankings**
        i. Provide rationale and check for how the 'rarity' categories are assigned in each region. (There appear to be discrepancies in the LUOs).
        ii. **Reassess approach** to **rarity categories** in SSS – in particular, consider issue that many units are included that are not being directly managed for old seral forest (e.g. deciduous units), may be largely non-forest (AT), and cover areas of land inappropriate for management at this scale (e.g. SSS that cover tiny numbers of hectares – 17 SSS with targets in the SLUOs cover less than 100ha on the entire coast).

    d. **RONV**
        i. Provide rationale or fix for the 16 SSS in the LUOs which appear to have lower RONV than those found in the Price 2003 report used to generate targets.
        ii. Generate a 'final' RONV list and post on the web as a resource to all parties undertaking coastal analysis.

    e. **Inventory/TEM**

---

[4] Again, this assumption should be balanced by a similar assumption that real operations don't harvest all the THLB either.

[5] Note, author did not provide any reference to indicate the scope of this uncertainty.

Formatted: English (U.S.)

Formatted: English (U.S.)

       i.   **Where TEM/ PEM are available, these should be used immediately in both target-setting and implementation of EBM.**

      ii.   Where site series information is unavailable, prioritize development of these data.

10.0 STEERING COMMITTEE RECOMMENDATIONS

The steering committee recommends the following actions to the EBMWG and LRF:

1. Unless already completed, request that the authors provide an addendum to the report which includes an additional assessment of the ecological implications of using 30% total rather than 30% RONV as high risk threshold
2. Communicate the document with a cover page describing caveats via:
    a) EBMWG ftp site
    b) digital copy to LRFS, DSP chairs and PIMCs
3. Convene a technical workshop to review existing datasets and baseline report recommendations for the purpose of:
    a) assessing and describing data limitations,
    b) reviewing and confirming recommended fixes for data gaps and errors, and
    c) confirming a definitive dataset to support ongoing analysis and implementation.
4. Undertake further analysis to assess the timber supply and ecological implications of:
    a) revising the age classifications and RONV estimates as recommended in this report
    b) using 30% total rather than 30% RONV as high risk threshold
    c) new land use objectives that may emerge from G2G discussions
5. Initiate a project to produce:
    a) A definitive listing of SSS and rarity classes to guide implementation (as per b. i. and c. i. above); and
    b) A definitive list of RONV estimates for both site series and site series surrogates to guide implementation
5   Subject to the outcome of #3 and 4, use the coarse filter baseline "current state" as the starting place for implementation monitoring, recognizing that the analysis may need to be revised if land use objectives, land use zones, knowledge and/or data change in the future.
6   Undertake an assessment of the amount of actual harvesting inside and outside the THLB.
7   Develop a glossary of EBM terms for clarification of terminology and definitions used in EBMWG reports more broadly

11.0 RELEVANCE/SIGNIFICANCE FOR EBM IMPLEMENTATION

The primary objective of the Ecological Baseline was to provide a methodology and a starting place from which to monitor progress on maintenance of ecological integrity via adaptive management. Knowledge of the current state and the potential risk that management activity may pose to ecological integrity is fundamental to decisions on EBM implementation, particularly when combined with analysis of the HWB implications. In addition, the authors highlight a number of inventory and data issues relative to implementation which need to be resolved to improve decision support in the future. Finally, the authors have proposed recommendations and fixes to create a detailed database which can be utilized by those implementing EBM[6]. The data set will allow queries on the current status of specific site series surrogates at multiple scales. This database, if maintained, can also provide decision support in the future.

---

[6] The dataset may be subject to revision based on outputs of Steering Committee recommendation #3 (data resolution workshop)