Forest Productivity Council
of British Columbia

Biodiversity/Habitat Working Group

Five-year Strategy
2002 - 2006

for incorporating biodiversity in forest management planning in British Columbia

Implementation Plan

November 2001

Secretariat
c/o Ministry of Forests Executive
4th Floor, 595 Pandora Street
Victoria, BC

Executive Summary

The Implementation Plan for the Biodiversity Working Group (BWG) Strategy was developed in the fall of 2001. It should always be considered within the context of the full BWG Five-year Strategy. The Implementation Plan is focused on turning the BWG Strategy into a coordinated set of actions over the next three years (fiscal year 2002-03 to 2004-05). The set of strategic actions outlined in the plan are intended to put in place some important foundation components and processes in a manner similar to what was done for timber supply analysis information, knowledge and processes only a few years ago. This initial three-year plan concentrates largely on bringing together a number of currently disparate sets of information, knowledge, tools and procedures.

In developing the Plan, the BWG considered the government's New Era Agenda and in particular, the objectives for the Ministry of Sustainable Resource Management (MSRM), the Ministry of Forests (MoF), and the Ministry of Water Land and Air Protection (MWLAP). It is evident that many significant changes in the government are imminent, particularly regarding the devolution of government functions to the industry and the private sector. The BWG Strategy and this Implementation Plan therefore are important and timely for providing strategic direction in this area over the next three years.

The Implementation Plan is based on a set of BWG-developed Action Plans related directly to the four primary strategic objectives. Highlights from these Action Plans are provided within the Plan and further details are available on file with the BWG Secretariat.

The estimated level of funding required to implement the Action Plans over the next three years (starting in the fiscal year 2002-03) is $1.5 million.

With the completion of the current BWG Strategy and its Implementation Plan, the BWG believes that future investments and activities in habitat supply and biodiversity analysis in the province will be better directed and coordinated, and will ultimately lead to better informed decisions regarding the sustainable management of British Columbia's forest resources.

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Introduction & Context

The Biodiversity Working Group (BWG) developed this implementation plan (the Plan) in the fall of 2001. It is based on the BWG Five-year Strategy and an associated Strategic Objectives Matrix (Biodiversity Working Group 2001) approved by the Forest Productivity Council. This plan should always be considered within the full context of the current BWG Strategy. Consistent with the government's current fiscal planning horizons, this plan is focused on turning the strategy into a coordinated set of actions over the next three years — i.e., fiscal year 2002-03 to 2004-05.

The set of actions outlined in the Plan are focused first on putting in place some important foundation components and processes in a similar manner to what was done for timber supply analysis information, knowledge, and processes a few years ago. This initial three-year plan will concentrate largely on bringing together what are currently a number of disparate sets of information, knowledge, tools and processes.

The actions identified within the plan are focused mainly at the strategic level and address important provincial needs regarding coordination; information and knowledge assembly, synthesis and integration; the development of analysis criteria, frameworks and processes; and, promotion and demonstration of analysis tools like habitat supply models. In addition to these activities, the implementation plan recognizes that there are several other strategic studies and projects ongoing, and that collectively, these efforts will result in a more coordinated set of actions over the next three years.

This document starts with a brief examination of the government's New Era Agenda and how this sets a new context for the BWG Strategy and this implementation plan. The next section outlines the relationship between the BWG's strategic objectives and the associated Action Plans. Highlights from the eight Action Plans are then summarized in Table 1. Table 2 in the following section provides a general budget estimate over a three-year period for each Action Plan. The final section provides a summary of some key strategic activities that are already underway which support the BWG strategy. In developing this implementation plan, the BWG prepared several interim documents that are available on file with the BWG Secretariat[1] and can be used to develop more detailed work plans in the future

With the completion of the current strategy and implementation plan, the BWG anticipates that future investments and activities in habitat supply and biodiversity analyses will be more directed and conducted in a more coordinated manner throughout the province. More strategic and targeted effort in these important areas will ultimately lead to better informed decisions regarding the sustainable management of British Columbia's forest resources.

[1] Contact Bev Lytton, 1238 Quebec St. Vancouver, BC V6A 4G7; 604-633-1264; bev.lytton@telus.net.

New Era Agenda

A recent and important contextual consideration with implementing the BWG strategy is the New Era Agenda of the provincial government. Specifically, the BWG considered the New Era Agenda items for the Ministry of Sustainable Resource Management (MSRM), the Ministry of Forests (MoF), and the Ministry of Water Land and Air Protection (MWLAP). To the extent possible, the BWG also considered related changes in organizational structures and functions particularly in MSRM.

While still in its formative stages, there are some clear directions being set regarding the economy, government renewal, and innovation. These new priorities will influence implementation tactics and resources and underscore the importance of having a strategy in place and putting it into action in a practical manner. While posing some uncertainties, the New Era Agenda also offers some opportunities for changing practices so they are more effective and efficient.

The new ministry structures have been created to combine programs where there is common purpose and where there are opportunities for efficiency, economy, and synergy. Some of the principles of the new government that are germane to the BWG strategy and implementation plan include:

- ensuring open government and accountable decision-making;
- ensuring effective and sustainable use of the provincial land base; and
- enhanced focus on customer service.

Regarding forest and environmental management, there is a clear move in government, with the support of the forest industry, towards a results-based model such that the current regulatory environment is used only when it can be justified on the basis of good public policy. There is also an emphasis being placed on "performance" and its monitoring using understandable and quantifiable objectives and measures. With respect to the mandate of deregulation, the ministries and agencies have been asked under the new government to adopt an attitude that is conducive to challenging the status quo.

On the topic of environmental values, the new government has stated that its program of economic development must maintain "the highest environmental standards," that "environmental stewardship is exemplary," and that it "respects the strong environmental concerns of British Columbians." This stewardship function is to be provided together by the Ministries of Water, Land and Air Protection (MWLAP) and Sustainable Resource Management (MSRM). These two ministries have been directed to "adopt a scientifically-based, balanced and principled approach to environmental management that ensures sustainability, accountability and responsibility." MSRM is further directed to provide faster approvals and greater access to Crown land and resources, establish a working forest land base to provide greater stability for working families, and enhance long-term forestry management and planning. The BWG Strategy and Implementation Plan help to provide a basis for addressing the habitat and biodiversity needs within the new mandates of the three natural resource ministries.

The government vision for the forest sector is: **A leading edge forest industry that is globally recognized for its productivity and environmental stewardship.** The Ministry of Forest's (MOF) New Era Agenda is directed to:

- streamline the Forest Practices Code to establish a workable, results-based Code with tough penalties for non-compliance;
- increase AAC over time through scientific forest management, proper planning, and incentives to promote enhanced silviculture;
- invest in research to promote forest stewardship;
- work to develop an internationally acceptable standard for "eco-labelling" of forest products;
- cut the regulatory burden by one-third within three years without compromising environmental standards; and
- develop a market-based timber pricing regime and tenure reform package which will include fair value for the Province's timber resource.

While some of these directions were in-play prior to the New Era Agenda, it is nonetheless clear that more significant changes are imminent, particularly regarding the devolution of government functions to the industry and the private sector. In this regard, the BWG strategy and implementation plan can provide important and timely guidance.

Strategy Components & Relationships

The BWG Strategy identifies four primary strategic objectives (SO 1, SO 2, SO 3…) along with a number of supporting sub-objectives (sSO 3.1, 3.2, 3.3 …). To support the needs of resource managers, all of the components of the habitat and biodiversity "system" — i.e., strategic objectives — need to be worked on more or less concurrently and all are roughly of equal importance.

For better informed resource management decisions it is important to determine the specific information and knowledge needs (SO 1). The identified priority needs will in turn direct the effort to acquire important information and knowledge on species and disturbance relationships to habitat (SO 2). This relationship information and knowledge is critical for the use of existing and future habitat modeling tools (sSO 3.1 + sSO 3.2). To increase the use and accessibility of habitat models there is a need to promote and demonstrate their use (sSO 3.3 + 3.4), and to catalogue them into a registry and provide a means to evaluate which model(s) is most suited for what type of resource management decision (sSO 3.5). Ultimately, by using (running) the right models with their appropriate supporting information resource practitioners and policy makers will be able to assess the consequences of current management practices on the sustainability of habitat supply (SO 4).). Figure 1 shows the interrelationships of these strategic objectives and their associated action plans.

It is important that resource practitioners and policy makers be able to assess the consequences of management practices and policies on habitat supply (SO 4). Habitat supply models offer effective tools to initiate this assessment, however, their value in is not well understood and needs to be demonstrated and promoted (sSO 3.3 + 3.4). The BWG can play an important role in ensuring that these particular strategic objectives/sub-objectives are addressed. It is also important that some effort be focused on cataloging existing models and in helping resources managers evaluate what model is best suited to the kinds of questions they need to address (sSO 3.5). This in turn will help in directing future information, knowledge and model development towards important gaps and opportunities (sSO 3.1 + 3.2). This cataloguing activity may also lead to a

more formal process for model accreditation. Finally, on an annual basis, there will be a regular need to update the information and knowledge needs of clients (SO 1) and in turn the current state of information and knowledge on species and disturbance relationships (SO 2).

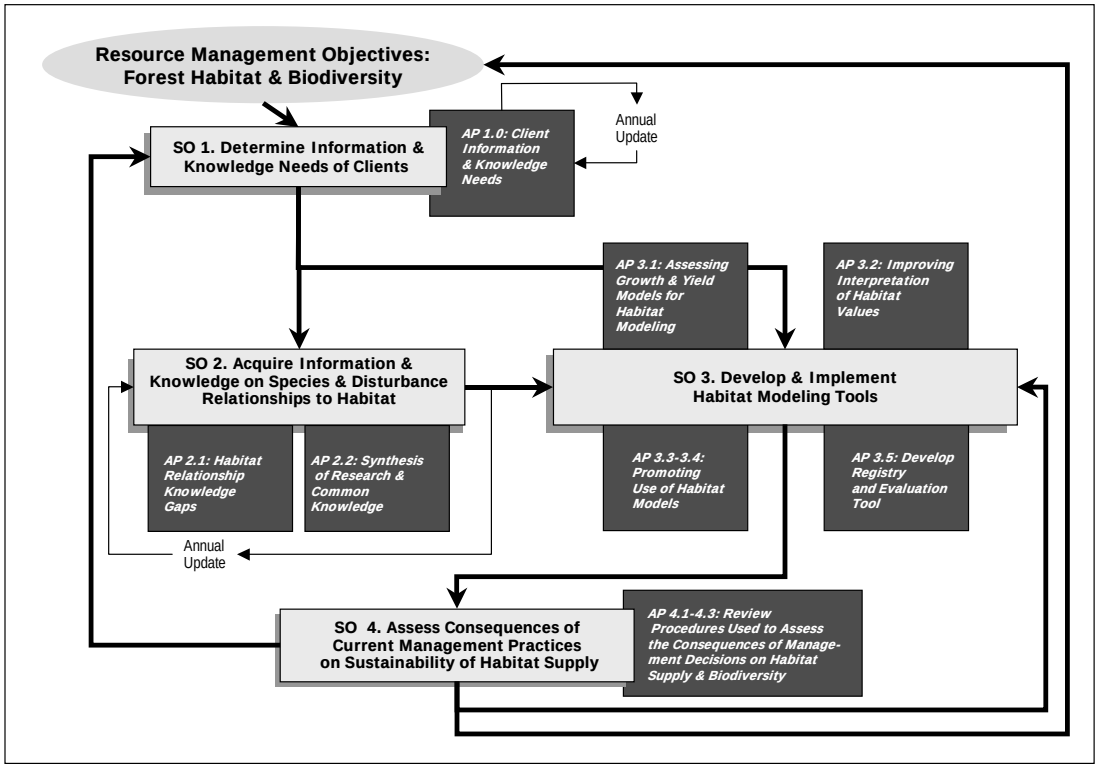

Figure 1. Action Plans in relation to the four BWG Strategic Objectives.

Action Plans

The Implementation Plan was prepared via the development of eight individual Action Plans. The BWG Objective Matrix of Strategic Objectives (4) and Sub-objectives (11) provided the structure for developing the Action Plans. For practical reasons, the strategic objectives and sub-objectives in this matrix were divided into eight logical "blocks" of work activity as follows.

1. Action Plan 1.0: Strategic Objective 1 including both Sub-objectives 1.1 and 1.2
2. Action Plan 2.1: Strategic Objective 2, Sub-objective 2.1
3. Action Plan 2.2: Strategic Objective 2, Sub-objective 2.2
4. Action Plan 3.1: Strategic Objective 3, Sub-objective 3.1
5. Action Plan 3.2: Strategic Objective 3, Sub-objective 3.2
6. Action Plan 3.3+3.4: Strategic Objective 3, Sub-objectives 3.3 and 3.4
7. Action Plan 3.5: Strategic Objective 3, Sub-objective 3.5
8. Action Plan 4.0: Strategic Objective 4 including all Sub-objectives 4.1, 4.2 and 4.3

Figure 1 shows graphically the eight Action Plans in relation to BWG Strategic Objectives (SO 1, SO 2…) and to the key business driver: resource management objectives for forest habitats and biodiversity. Each Action Plan was developed separately and addressed a standard set of components, the key ones being summarized in Table 1. While in total they comprise the Implementation Plan, individually they provide useful information for initiating activities across the full range of strategic areas. For example, in addition to what is shown in Table 1, each Action Plan outlines a strategy and major tasks for how the work can be addressed, primary and secondary clients, key stakeholders, expertise and contacts.

The following table provides highlights for each Action Plan.

Table 1. Highlights of individual Action Plans (8).

Action Plan Title	Problem Statement	Clients	Deliverables	Related Initiatives[2]	Potential Support
1.0 **Determine client information and knowledge needs.**	Improving the consideration of habitat values in plans and decision processes in BC through model development, and increased capacity to use those models, must be predicated on a clear articulation of information and knowledge needs. Information and knowledge development for priority decision processes must be given a context within a management framework that links decisions across the full spectrum, from international to local scales. Current emphasis is on the sub-regional strategic level (e.g., LRMP, TSR). Emerging needs will arise as certification requirements change or planning emphases shift.	Model developers (private sector, academics, research branches of ministries, industry), inventory managers and those that need the models and hire model developers – i.e., the people involved in the decision processes (LRMP, RMP, TSR).	1. A report comprising a ranked list of regular habitat supply modeling needs. The report will be updated as new surveys of client needs are undertaken to post and keep track of current needs.	Habitat Supply Analysis Modeling Strategy Review of Indicators of Sustainable Forestry Analysis, Information and Modeling Toolkit Environmental Baselines	MSRM 100% MoF staff MWLAP staff Industry staff
2.1 **Compile and perform a gap analysis on existing knowledge of species/habitat and disturbance/habitat relationships and prepare a plan outlining options for filling gaps, action steps and potential funding sources.**	There is an increasing desire to include habitat considerations as a fundamental element of sustainable resource management. Knowledge is not consistently available to model alternative habitat scenarios (habitat supply) for incorporation of habitat objectives into forest management decision processes (e.g. AAC determinations).	Those that will benefit from the use of valid models: forest industry on TFLs or those involved in certification activities, IFPAs, and government resource management agencies. These are the also the organizations most likely to fund the effort.	1. Prioritized list of knowledge gaps 2. Options for filling knowledge gaps	Review of Indicators of Sustainable Forestry Habitat and Biodiversity Project Registry Problem Analysis – Provincial Wildlife Habitat Monitoring Plan	MSRM 25% MoF 25% MWLAP 25% Industry 25%

[2] See Appendix 1 for initiative descriptions.

Action Plan Title	Problem Statement	Clients	Deliverables	Related Initiatives[2]	Potential Support
2.2 **Synthesize research and common knowledge — the development of a process and infrastructure to synthesize, document, organize (knowledge base with meta data) and disseminate current information on species- and disturbance-habitat relationships.**	At present, research and anecdotal observations by field staff have generated an extensive but poorly documented and often uncoordinated picture of species- and disturbance-habitat relationships. The potential utility of this information is widespread, but inconsistencies in the availability, documentation or standards applied in the collection limit its usefulness. If synthesized and managed correctly, current information would provided a suitable working hypothesis to facilitate the development of habitat supply models across a range of temporal and spatial scales.	Habitat supply model groups; initiatives that address sustainability and certification indicators; habitat research groups (universities, MoF, WLAP), land use planning initiatives.	1. Standard template format 2. Completed database for the assembled information and knowledge 3. Habitat/species and habitat/disturbance information synthesis report 4. Mechanism to provide for the broad dissemination of the information	Review of Indicators of Sustainable Forestry Habitat and Biodiversity Project Registry Wildlife Habitat Ratings system Columbia Basin Initiative Terrestrial Ecosystem Mapping (TEM) expanded legends	MSRM 40% MoF 30% MWLAP 30%
3.1 **Assess existing models used in forest management for their potential to predict changes in stand and landscape habitat indicators for use in habitat modeling.**	Models currently used in forest management in BC have mostly been developed to address timber supply issues. Although some of these models represent a synthesis of the ecological relationships between tree growth and forest harvesting, they are unfamiliar to the habitat modeling community. There is a pressing need for assessing and cataloguing the existing individual BC models and models applicable to BC for their current and potential ability to predict and project attributes necessary for habitat oriented decisions. Where existing models can not adequately address habitat modeling issues, shortcomings need to be identified. The development of new models or modifications to existing models can then be initiated to address these shortcomings.	Decision makers - planning processes, MSRM–Business Information Services Division, model builders (logic, structure, projection), researchers (relationships), inventory custodians (improving inventories).	1. List of key habitat attributes 2. List of candidate models 3. Evaluation report regarding model use and development recommendations 4. Models that address current habitat supply modeling issues.	Habitat Supply Analysis Modeling Strategy	MSRM 60% MoF 20% MWLAP 20%

Action Plan Title	Problem Statement	Clients	Deliverables	Related Initiatives[2]	Potential Support
3.2 **Improve interpretation of habitat values through appropriate model selection and model improvement.**	At present we don't have models that adequately forecast effects of management decisions on future habitat supply with any degree of confidence. It is difficult for clients to determine the relative strengths and weaknesses of existing models for a specific application. Currently there are a variety of models that interpret wildlife habitat value from current inventories – some models look at habitat value at a point in time, others project through time. Model development is ad hoc and does not build incrementally. It is important to select the appropriate model for each specific decision process and to improve the models over time. These models can be improved by improving the input inventories, improving relationships between inventories and habitat values (species accounts, ratings tables), and improving means of projection through time (succession, interactions with harvest patterns); improving model structure (logic/ model structure); or improving linkages with other supported models. Improvements could be gained from increasing confidence in model outputs or increasing the kinds of useful model outputs.	Decision makers - planning processes, MSRM–Business Information Services Division, model builders (logic, structure, projection), researchers (relationships), inventory custodians (improving inventories).	1. evaluation of models for high priority applications and indicators 2. recommendations to modelers, researchers, and inventory custodians	Habitat Supply Analysis Modeling Strategy Analysis, Information and Modeling Toolkit	MSRM 70% MoF 10% MWLAP 10% Industry 10% Possible collaboration with the US Forest Service
3.3-3.4 **Promote use of habitat models by extension, demonstration and training.**	Available habitat models, which would benefit resource decision-making, are not being fully utilized. Promotion of these models by extension, training, incentives and provision of resources is needed for potential key users. (The assumption is that model development and improvement will be ongoing – addressed in 3.1.2, 3.1.3 and 3.2.2.)	Resource decision-makers and supporting staff in government and industry.	1. Website 2. White paper 3. Workshops	Habitat Supply Analysis Modeling Strategy Habitat Supply Model Registry & Evaluation Tool Project Analysis, Information and Modeling Toolkit Habitat Supply Web Site BC Ecosystems and Wildlife Habitat Inventories Extension Columbia Basin Initiative	MSRM 50% MWLAP 50%

Action Plan Title	Problem Statement	Clients	Deliverables	Related Initiatives[2]	Potential Support
3.5 **Design and develop registry of habitat supply models and evaluation tool for describing, cataloguing and evaluating models.**	Model developers have no consistent or accredited procedures for documenting and evaluating habitat supply models and practitioners have no reliable means to know when or where specific models can be applied. This uncertainty may translate into unnecessary costs to users, lost opportunities or inappropriate applications. Benefits in having a standard protocol can lead to management decisions that are more readily accepted and approved (e.g., operational plans, certification, results-based, recovery plans, conservation assessments). This effort will support the goal of having a functional Registry for habitat supply models. Once in place, the Registry will serve an identified need of the habitat supply modeling community (modelers, users of models, decision-makers, resource planners and managers, etc.). Once populated, the Registry will provide the habitat supply modeling community with an awareness of what models exist, what their key features are and what model(s) is best suited to particular resource management application needs and circumstances.	Line agencies, public planning "tables," and certification boards who monitor and audit decisions about resource management (i.e., strategic and/or operational plans) are the primary clients. Secondary clients are the model developers, planners, policy developers, and management decision-makers because these people can all benefit from a structured approach to model documentation, testing, and evaluation.	1. Design objectives for a Registry of habitat models in use or under development in BC and selected adjacent areas. 2. A Registry structure that will allow for the characterization of current and future model features so Registry users can compare, contrast and evaluate these features on a consistent basis against their own particular decision and modeling needs. 3. An evaluation tool that will allow a Registry user to assess what models are best suited to particular resource management decision requirements (i.e., business applications). 4. Improved catalogue of models.	Habitat Supply Analysis Modeling Strategy Habitat Supply Model Registry & Evaluation Tool Project	MSRM 20% MoF 10% MWLAP 10% FRBC 60%
4.1-4.2-4.3 **Rreview procedures used to assess the consequences of management decisions on the supply of habitat and biodiversity in BC.**	There are differing opinions about the sustainability of habitat and biodiversity under current management practices (e.g., conservation assessments). An accepted procedure is required to make quantitative, scientifically based, and principled assessments of the sustainability of habitat and biodiversity. The current process for doing resource sustainability assessments needs clarification and the capacity to undertake the process should be determined.	MSRM is a primary client. Other line agencies, public planning "tables", and certification boards who monitor and audit decisions about resource management are secondary clients.	Recommendations for improving management procedures to ensure sustainability of habitat and biodiversity.	Habitat Supply Analysis Modeling Strategy Forest Renewal BC Biodiversity Study	MSRM 33% MoF 33% MWLAP 33%.

Budget Estimate

Table 2 provides an estimate of the approximate level of funding required to implement the main elements of the BWG strategy over the next three years starting in the fiscal year beginning in April 2002. This time horizon was chosen in order to be consistent with the current balanced budget horizon of three years for the provincial government. The total budget is estimated to be $1.5 million. Over the course of this initial three-year period, these more formative "ramp-up" investments would create a substantially more stable base of information, knowledge and updating procedures to support habitat and biodiversity objectives for resource management across the province. With this more organized base in place, current and future habitat and biodiversity project investments will improve in quality and efficiency. They will also be able to contribute more effectively to increase overall capacity in the province for habitat and biodiversity management.

Table 2. Budget estimate by year and totals for groupings of Action Plans, fiscal 2002-03–2004/05.

Action Plan #	$ Total Estimate (3 years)	$ Year 1 2002/03	$ Year 2 2003/04	$ Year 3 2004/05	Comments
1.0	**$180,000**	$80,000	$50,000	$50,000	
2.1					
2.2					
3.1	**$750,000**	$250,000	$250,000	$250,000	Model development
3.2					
3.5	**$120,000**	$100,000	$10,000	$10,000	Front end contract to build registry, annual update
3.3-3.4	**$450,000**	$150,000	$150,000	$150,000	Travel budget for BWG and HMSC plus targeted consulting assignments
4.0					
Totals:	**$1,500,000**	**$580,000**	**$460,000**	**$460,000**	

Appendix 1: Current Related Initiatives

Habitat Supply Analysis Modeling Strategy

In August 2001 a contract was initiated by the Ministry of Water, Land and Air Protection to develop a Habitat Supply Modeling Strategy for the province. This assignment, being conducted under the direction of the Habitat Modeling Steering Committee, will be completed in March 2002. The strategy involves nine areas of investigation (steps):

1. Establishing Context and Current Setting
2. Determining the Nature and Kinds of Questions and Decisions (Interviews)
3. Determining the Nature and Kinds of Models Being Used or Under Development (Interviews)
4. Analysis: Linking Decisions and Models
5. Determine Problems and Barriers
6. Strategy Development by Theme
7. Develop Recommendations
8. Develop Near Term Implementation Plan
9. Reporting

The main deliverables from the assignment are a State of Modeling Report and a final Strategy Report.[3] This project will provide supporting strategic analysis and recommendations across most of the BWG Strategic Objectives and in particular SO 1, 3 and 4.

Forest Renewal BC Biodiversity Study

Forest Renewal BC is currently sponsoring a study to assess how biodiversity is being used as an explicit objective in forest management in BC. The plan is to probe how different groups — foresters (government or industry), biologists, First Nations, environmentalists, and the general public — define and perceive biodiversity. More specifically, the project will assess from these groups:

- how biodiversity is interpreted, and how differing interpretations may underlie various conflicts over forest management,
- what actions are felt to be necessary to conserve biodiversity, and
- what tradeoffs should be made to protect biodiversity.

Overall the consulting team[4] aims to explore how improved understanding can help policy makers balance the various initiatives that might be undertaken. The project has three phases:

1. Background literature review and interviews to establish the current status of biodiversity initiatives in BC; identification of appropriate case studies.
2. Small group workshops (likely built around case study examples) that will highlight and probe how competing interpretations of biodiversity can lead to conflict over forest management actions, and where the solutions may lie.
3. Synthesis of findings; design of a comprehensive decision pathways survey.

[3] For more information contact Tory Stevens, Ministry of Water, Land and Air Protection.
[4] Robin Gregory and Dan Ohlson are conducting the study. Robin Gregory can be contacted at: Value Scope Research, Vancouver, BC; (604) 980-0346; rgregory@unixg.ubc.ca.

The assignment will be completed by March 2002. This project will provide important strategic input to several of BWG Strategic Objectives, particularly SO 4.

Habitat Supply Model Registry & Evaluation Tool Project

This project is to support the goal of the Habitat Modeling Steering Committee[5] of having a functional Registry for habitat supply models. In large part, it addresses sub-objective 3.5 of the BWG Strategy. Once in place, the Registry will serve an identified need of the habitat supply modeling community (modelers, users of models, decision-makers, resource planners and managers, etc.). Once built and populated, the Registry will provide the habitat supply modeling community with an awareness of what models exist, what their key features are and what model(s) are best suited to particular resource management application needs and circumstances.

In addition to the above cataloguing function and the ability to compare and contrast model features in using a standard characterization template, the Registry will also need to have an evaluation tool. Based on selected criteria and a procedure to apply these criteria, the evaluation tool will allow a Registry user to assess what models are best suited to particular resource management decision requirements (i.e., business applications).

The purpose of this assignment is to design and develop the Registry structure and to develop an evaluation tool, not to populate the Registry. Work being done under the Habitat Supply Analysis Modeling Strategy (see above) will help significantly with both the design and the development of the evaluation tool. Once the Registry is developed, the habitat supply modeling community can populate the Registry with the array of existing habitat supply models.

This project will provide supporting strategic analysis particularly relevant to BWG Strategic Sub-objective 3.5, and to a lesser extent, Sub-objectives 3.4.

Problem Analysis for Provincial Wildlife Habitat Monitoring Plan

The Terrestrial Information Branch (Wildlife and Wildlife Habitat Inventory Section) is undertaking a problem analysis as a precursor to the preparation of a Provincial Wildlife Habitat Monitoring Plan.[6] In 1996, a significant effort was undertaken to develop and publish procedures for environmental monitoring in range and wildlife habitat management. However, since this RIC-sponsored initiative, a number of circumstances have changed including an expanded need for this kind of monitoring information.

The scope of the problem analysis is province-wide and will be undertaken within the context of the Corporate Environmental Baseline Project being led by the Business Services Division, Ministry of Sustainable Resource Management. In this regard, the problem analysis represents a subset of this effort and has a focus on:

- environmental monitoring of terrestrial wildlife habitat,
- forested ecosystems,
- understanding forest ecosystem dynamics (disturbance, succession, pathways, etc.), and
- effectiveness monitoring to assess the impacts of forest management activities.

The analysis will identify the business drivers that require habitat monitoring, review current monitoring programs, consider the role and use of existing stratification frameworks (e.g., BEC, TEM, PEM, BEI) and inventory systems, identify information gaps, and make recommendations that will lead to the development of a provincial wildlife habitat monitoring plan. The development of the actual habitat monitoring plan is not part of this project.

[5] For more information contact Tory Stevens, Ministry of Water, Land and Air Protection.
[6] For more information contact Lynne Bonner, Ministry of Sustainable Resource Management.

This project will provide supporting strategic analysis and recommendations that are particularly pertinent to BWG Strategic Objectives 3 and 4.

Skeena Habitat Supply and Indicator Monitoring Strategy

This planned study will assess the current state of habitat supply modeling and the selection of indicators to monitor sustainable forest management by government agencies and licensees in the region. Government agencies need to gain a better understanding of industry developments and how government initiatives can assist. Some of the current obstacles that have been identified include: 1) the need for habitat supply analysis to be spatially explicit; 2) the prevalence of aspatial timber supply analyses yet having the largest impact on habitat supply projections; and, 3) the need for a common habitat supply modeling environment. This project will provide supporting strategic analysis and recommendations of a regional nature relevant to BWG Strategic Objectives 3 and 4.

Columbia Basin Initiative

A large body of work on wildlife-habitat relationships for 593 vertebrate species has been organized in a framework of seven interacting matrixes for Oregon and Washington.[7] Because of concerns about salmon populations in the Columbia River system, this work was extended, first, to cover the entire drainage south of the 49th, and more recently, into the Canadian portion. Efforts are currently underway to capture data and expert knowledge for the few species and few habitats that occur in Canada and not in the United States. This project will provide supporting strategic analysis and recommendations of a regional nature particularly relevant to BWG Strategic Objective 2.

Analysis, Information and Modeling Toolkit

The Analysis, Information and Modeling Toolkit (AIM) has produced a framework to describe how modeling and other analytical tools will be used to develop key information for strategic planning from RIC-standard baseline inventories.[8] An indicator-based approach will enable assessments of habitat supply, ecosystem representation, and rarity. A problem analysis will determine information needs, particularly with regards to interpreting resource values from ecosystem inventories at a variety of scales. This project will provide supporting strategic analysis and recommendations that will be particularly useful to BWG Strategic Sub-objective 3.2 and Strategic Objective 1.

Tracking Biodiversity

This project will provide a web-based tool to allow users to generate area summaries of any attributes from the Broad Ecosystem Inventory (BEI) for a number of administrative units, including regions, districts, management units (TFLs, TSAs), and landscape units.[9] Some of the potential uses are the development of information on ecosystem representation and species richness.

The BEI is the most detailed level of ecosystem mapping that covers the entire province. Broad Ecosystem Units represent groups of related site series, mapped within biogeoclimatic units (subzone, variant and phase) and ecosection. All of these units have been rated for their capability

[7] by David Johnson and Thomas O'Neil (Managing Directors). 2001. Wildlife-Habitat Relationships in Oregon and Washington). Oregon State University Press: Corvallis. For more information on the Columbia Basin initiative contact Brian Nyberg, Ministry of Forests.
[8] For more information contact Ron Kot, Ministry of Sustainable Resource Management.
[9] For more information contact Tory Stevens, Ministry of Water, Land and Air Protection.

and suitability as habitat for big game species, and for 25 avian species. Additional ratings for small carnivores have been proposed. This project will provide supporting strategic analysis and recommendations that will be particularly useful to BWG Strategic Sub-objective 3.2 and Strategic Objective 2.

Environmental Baselines

The BC corporate Environmental Baseline is intended to be the standard digital atlas of resource inventories and other information that supports the various environmental monitoring processes carried on in the province. This project will assess current baseline coverage for the indicators of sustainability and enable priority gaps to be identified.[10] It will build on a report titled: Environmental Monitoring: Business and Information Needs Study[11] that catalogued indicators currently used in BC. There is a need to rationalize this broad spectrum of criteria and indicators to facilitate information development and the transferability of information between monitoring, planning and decision processes. This project will support strategic analysis and provide recommendations that are particularly pertinent to BWG Strategic Objectives 4 and Strategic Sub-objective 3.2.

Review of Indicators of Sustainable Forestry

This project[12] will investigate the extent to which sustainable forests indicators are already being used by organizations both inside and outside the provincial government and analyze how those indicators currently portray BC forests. This analysis will serve to coordinate efforts at different scales in BC and to allow for resolution of data issues where conflicting information is presented.

A report will review existing work on criteria and indicators for sustainable forest management, evaluate effectiveness of indicators, analyze this information for compatible and conflicting portrayals of sustainable forests in BC, identify missing and inadequate indicators and provide recommendations on data and monitoring needs to resolve conflicting information. This project will provide supporting strategic analysis particularly relevant to BWG Strategic Objective 1, and to a lesser extent, Strategic Objective 2.

Habitat and Biodiversity Project Registry

Info to be added

This project will provide supporting strategic analysis particularly relevant to BWG Strategic Objective 1, and to a lesser extent, Strategic Objective 2.

[10] For more information contact Dave Clark or Evert Kenk, Ministry of Sustainable Resource Management.
[11] Prepared for the Land Information and Inventory Coordinating Committee by Daryl Brown Associates Inc. and Sustainable Visions, March 2001.
[12] For more information, contact Risa Smith, State of Environment Reporting, Ministry of Water, Land and Air Protection.