

Wildlife and Wildlife Habitat Inventory Planning to Meet Land-Based Program Planning Needs in British Columbia

Dennis A. Demarchi

Wildlife Inventory Section, Resources Inventory Branch
British Columbia Ministry of Environment, Lands and Parks
P.O. Box 9377 STN PROV GOVT, Victoria, BC, V8W 9M1, Canada

Richard P. Thomas

Wildlife Inventory Section, Resources Inventory Branch
British Columbia Ministry of Environment, Lands and Parks
P.O. Box 9377 STN PROV GOVT, Victoria, BC, V8W 9M1, Canada

Bruce A. Pendergast

Wildlife Inventory Section, Resources Inventory Branch
British Columbia Ministry of Environment, Lands and Parks
P.O. Box 9377 STN PROV GOVT, Victoria, BC, V8W 9M1, Canada

ABSTRACT

Wildlife and wildlife habitat inventory in British Columbia is designed for multi-scales of both planning and inventory. Planning processes can vary from international (cooperation on grizzly bear management), provincial (Protected Areas Strategy), regional (Land and Resource Management Planning), subregional, landscape unit planning, or forest development planning, to local (operation resource allocation planning). To accommodate that level of complexity many resource inventories have been standardized through the multi-agency Resources Inventory Committee. Most of the ecosystem-based inventories and classifications currently being recommended in British Columbia are not stand alone; in fact, they accommodate portions of classifications or information from many other inventories.

Key words: inventory, Terrestrial Ecosystem Mapping, Vegetation Resource Inventory, wildlife habitat planning.

Wildlife habitat value is the result of interpreting the ecological or site series information from Terrestrial Ecosystem Mapping (TEM) products or surrogate site series products to assign values for select wildlife species (Resources Inventory Committee 1998*a,b,c,d,e*). Such habitat value may be a measure of the current suitability of the habitat to support a given species' living requirements, or of the potential capability of the habitat in the correct successional stage or under specific management to meet a given wildlife species' living requirements (Resources Inventory Committee 1998*d*).

Wildlife and wildlife habitat inventories in British Columbia provide information about wildlife distribution, status, and abundance, and relative information on the ecology of supporting habitats. Those inventories provide data for ecological maps and for various planning agencies whose resource management impacts on wildlife species' habitat characteristics, distributions, and relative abundance, as well as on ecological data for interpretations of habitat sensitivity, current habitat (suitability), and potential habitat

(capability) for wildlife production or support. Intensive inventories generate additional information needed for the designation and management of specific wildlife populations, and species and habitats at risk, and for the development of detailed operational plans, guidelines, and practices to meet the requirements in various provincial and regional resource development planning processes.

Wildlife and wildlife habitat inventory projects must be balanced between scale and level of survey intensity and the planning level in which the inventories will be used. To be useful, inventory projects must also meet the planning horizon of the intended plan, and a prioritized planning schedule for input into various plans (assuming that all planning is being generated from the broad to site-specific levels).

STRATEGIC GOAL

The overall goal of the wildlife species and wildlife habitat inventory program in the Resources Inventory Branch is to provide site-specific inventories of those resources across the province to meet operational and higher level planning requirements.

Wildlife and wildlife habitats occur everywhere in the province; however, only where there are competing uses for resource extraction and management is it necessary to have a complete detailed inventory. The inventory requirements can be considered within various planning levels from the national, through provincial, regional, subregional, landscape, and operational levels (Fig. 1). Just as not all areas of the province will be covered under subregional or Land and Resource Management Planning (LRMP), not every area will have forest development or resource extraction. Therefore, not every area in the province needs the most detailed wildlife and wildlife habitat inventories.

At the national and provincial levels, ecoregion (Demarchi 1995, 1996) and biogeoclimatic zonation classifications (Pojar et al. 1987, Meidinger and Pojar 1991, B.C. Ministry of Forests 1994) provide enough wildlife and wildlife habitat information for resource planning. At the regional and subregional (LRMP) levels, overview ecosystem classifications that incorporate ecosections, biogeoclimatic subzone/variants, and broad ecosystem classes (Resources Inventory Committee 1998a) provide the most meaningful information. At the landscape unit level, general ecosystem classifications (Resources Inventory Committee 1998b) that provide some detail on landforms, terrain and site series, while incorporating ecosections and biogeoclimatic subzone/variant information, supply meaningful information for resource planning. Finally, at the logging or cutblock level, detailed ecosystem information is required to make sound resource management decisions.

NEEDS AND DRIVERS

Specific business requirements include:

- Information that will enable the Ministry of Forests (MOF) District Managers to be satisfied that an operational plan is

both in accordance with the Forest Practices Code (FPC), and that its implementation will adequately manage and conserve the wildlife resources.

- Information about a species at risk and its habitat requirements for inclusion in the *Species and Plant Community Accounts for Identified Wildlife* (B.C. Ministry of Environment, Lands and Parks 1997): information for Wildlife Habitat Area (WHA) establishment at levels of detail suitable for decisions about both where and how to log with minimal negative impact on wildlife species and to optimize positive effects. (A Wildlife Habitat Area [WHA] is a mapped area of land that the Deputy Minister of Environment, Lands and Parks [MELP], or a person authorized by that Deputy Minister, and the Chief Forester, has determined is necessary to meet the habitat requirements of one or more species of identified wildlife.)
- Input to landscape unit plans through the development of wildlife management objectives or the accommodation of “identified wildlife” (animals and plants) in forest development plans, including sensitive area and WHA mapping and preparation and application of species’ accounts for the *Species and Plant Community Accounts for Identified Wildlife* (B.C. Ministry of Environment, Lands and Parks 1997).

ELIGIBILITY CRITERIA

The following wildlife and wildlife habitat inventories are critical to meet land-based resource management objectives.

DETAILED WILDLIFE HABITAT IDENTIFICATION

This inventory addresses forest licensee responsibilities for the identification and mapping of site series classification (at 1:5,000 or 1:10,000) of habitats for “stand level” operational planning under the FPC. Content includes presence of any of

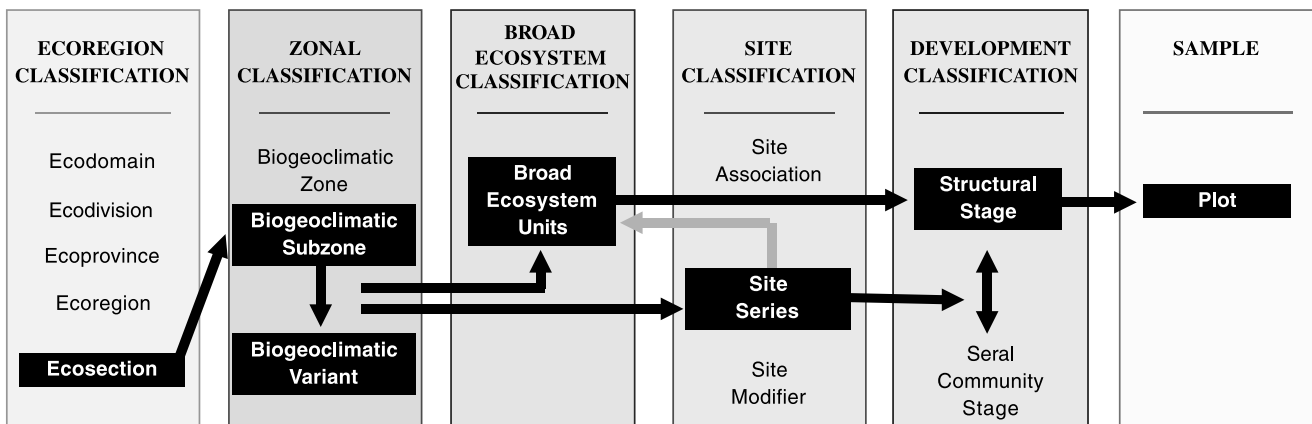


Figure 1. Relationship among the various ecosystem classifications used for land-based resource management in British Columbia (modified from Resources Inventory Committee 1998b).

the wildlife species defined in the FPC Operational Planning Regulation, and WHA identification. Coverage is limited to habitats that will be affected by active access developments and forest harvesting.

WILDLIFE HABITAT INVENTORY AND ABSOLUTE ABUNDANCE WILDLIFE INVENTORY (1:20,000)

The sample-based 1:20,000 inventory is required for all forest management areas that within the next 10 years will be undergoing active forest development planning. Detailed 1:20,000 wildlife habitat inventories and absolute abundance wildlife species surveys provide information about the characteristics and distribution of wildlife species and their habitats and about potential locations of WHAs. This level of information contributes to decisions in the early stages of forest development planning about where to log, and to the establishment of landscape-level biodiversity objectives. They also provide the framework for limiting and focusing the detailed habitat requirements in logging plans and silviculture prescriptions.

GENERAL-LEVEL WILDLIFE HABITAT INVENTORY AND RELATIVE ABUNDANCE WILDLIFE SPECIES INVENTORY (1:50,000)

The sample-based 1:50,000 inventory is required for forest management areas having high wildlife values that will not be undergoing forest development within the next 10 years. The 1:50,000 general-level habitat inventories and relative abundance wildlife species surveys provide information about the characteristics and distribution of wildlife species and their habitats and about approximate and potential locations of WHAs. This level of information contributes to decisions in the early stages of landscape-level planning about sensitive habitats and to the establishment of some landscape-level biodiversity objectives. They also provide the framework for limiting and focusing the detailed habitat information requirements in logging plans and silviculture prescriptions.

WILDLIFE SPECIES AND POPULATION INVENTORIES

These inventories further address government's responsibility under the FPC to provide landscape-level biodiversity objectives, to identify and characterize species at risk, and to determine the measures required to protect critical habitats of those species at risk that have been designated as identified wildlife in the *Identified Wildlife Management Strategy*.

OVERVIEW WILDLIFE HABITAT INVENTORY AND PRESENCE/ABSENCE WILDLIFE SPECIES SURVEYS (1:250,000)

These surveys add field information on wildlife species presence where little is known or documented. They will occasionally be required, primarily for broad area strategic planning and for prioritizing landscape units for more detailed assessments. Overview species surveys provide data for habitat management options over broad areas—more

intensive work is used for defining cutblock activities, identifying WHAs, and determining the scope of general wildlife habitat conservation measures within the *Identified Wildlife Management Strategy*, and Wildlife, Biodiversity and Riparian Management Area guidebooks.

STANDARDS AND QUALITY ASSURANCE DELIVERY

Standards have been developed for all wildlife species and habitat inventories through the Resources Inventory Committee. These include standards for data collection (B.C. Ministry of Environment, Lands and Parks and B.C. Ministry of Forests 1998), terminology, classification, mapping, and reporting. Training courses are being developed and delivered to assure competency, to clarify standards, and to support their consistent application.

Quality assurance procedures have been developed for ecosystem field plot measurements, both small- and large-scale terrestrial ecosystem mapping (TEM) wildlife habitat capability and suitability assessments, and wildlife species inventories. These procedures include contract specifications, and pre-field, field, and post-field monitoring. For TEM products, quality assurance is a formalized 13-step process done jointly by MELP and MOF specialists (Resources Inventory Committee 1998b). Habitat assessment ratings of capability and suitability values will also have a similar, formalized multistep process conducted by MELP Victoria and regional experts (Resources Inventory Committee 1998c). For inventories of wildlife species, including identified wildlife and other significant species, quality assurance will be delivered through spot checks by MELP species' experts (Resources Inventory Committee 1998d).

The first step in quality assurance is done by regional MELP Wildlife and Habitat Inventory Specialists (WHISs). For many inventories (e.g., bats) quality assurance will be done centrally in Victoria, at the discretion of the WHISs.

Database data entry and storage standards are being developed for species and habitat inventory. These will include standards control, contract monitoring, and guidance.

LINKAGES TO OTHER INVENTORIES

Through the Resources Inventory Committee the Province of British Columbia has defined a hierarchical ecosystem classification that has 4 levels: regional, local, vegetation development, and field data collection (Fig. 2). Each of those levels can be further subdivided. For example, the regional ecosystem level is composed of the ecoregion and the zonal classifications, and each of those classifications can be further subdivided into classes: 5 for the ecoregions and 4 for the zonal classification.

Wildlife species and wildlife habitat inventories are often

directly or indirectly linked to other resource inventories. This can mean in some cases supplying required data or being an interim step in a more detailed inventory. In other cases, such as the highest level of habitat inventory, ecoregion mapping is partly based on a product (biogeoclimatic ecosystem classification) that has been developed and mapped by the MOF. So, even though the 2 classifications are mutually exclusive, they support each other.

Vegetation Resources Inventory (VRI) is enhanced forest cover mapping, whereby understory vegetation, structural features, and soils are used to define the mapped units (Resources Inventory Committee 1997, 1998e). The VRI is designed to gather information on tree species, height, age, and productivity, which is vital information in determining structural stages for TEM. The VRI is also used to gather physiognomic information about non-treed areas, such as grasslands, wetlands, alpine, and recently clearcut. Such information is useful in determining general land classes for Broad Ecosystem Inventory (BEI), and as a surrogate product to TEM for assigning habitat values to identified wildlife.

Terrain mapping is a requirement for determining slope stability, road location, and terrain hazards. This mapping can be

used as the first step in TEM and VRI to delineate landscape polygons for assigning site series or vegetation classes.

Species and habitat inventory are also linked; for example, habitat inventory is a stratification tool for species' surveys, such as stratified random sampling. Also, habitat inventory is used to support species population estimates. Species inventories are essential in providing quantified data for fine tuning capability and suitability habitat assessment ratings.

Land and Resource Management Planning (LRMP) and Commission on Resources and Environment (CORE) areas are higher level plans that will be developed for 22 areas, covering most of the province. They form a bridge between national and provincial strategic resource use plans and landscape unit, forest development, and resource use plans. Wildlife species and wildlife habitat inventories for LRMP and CORE areas are at a broad level, but provide guidance for prioritizing areas requiring more detailed inventories.

Native land claim and other resource allocation issues often require spatial as well as tabular information about the distribution, abundance, and status of wildlife species. Such information can be gathered at a broad or general inventory

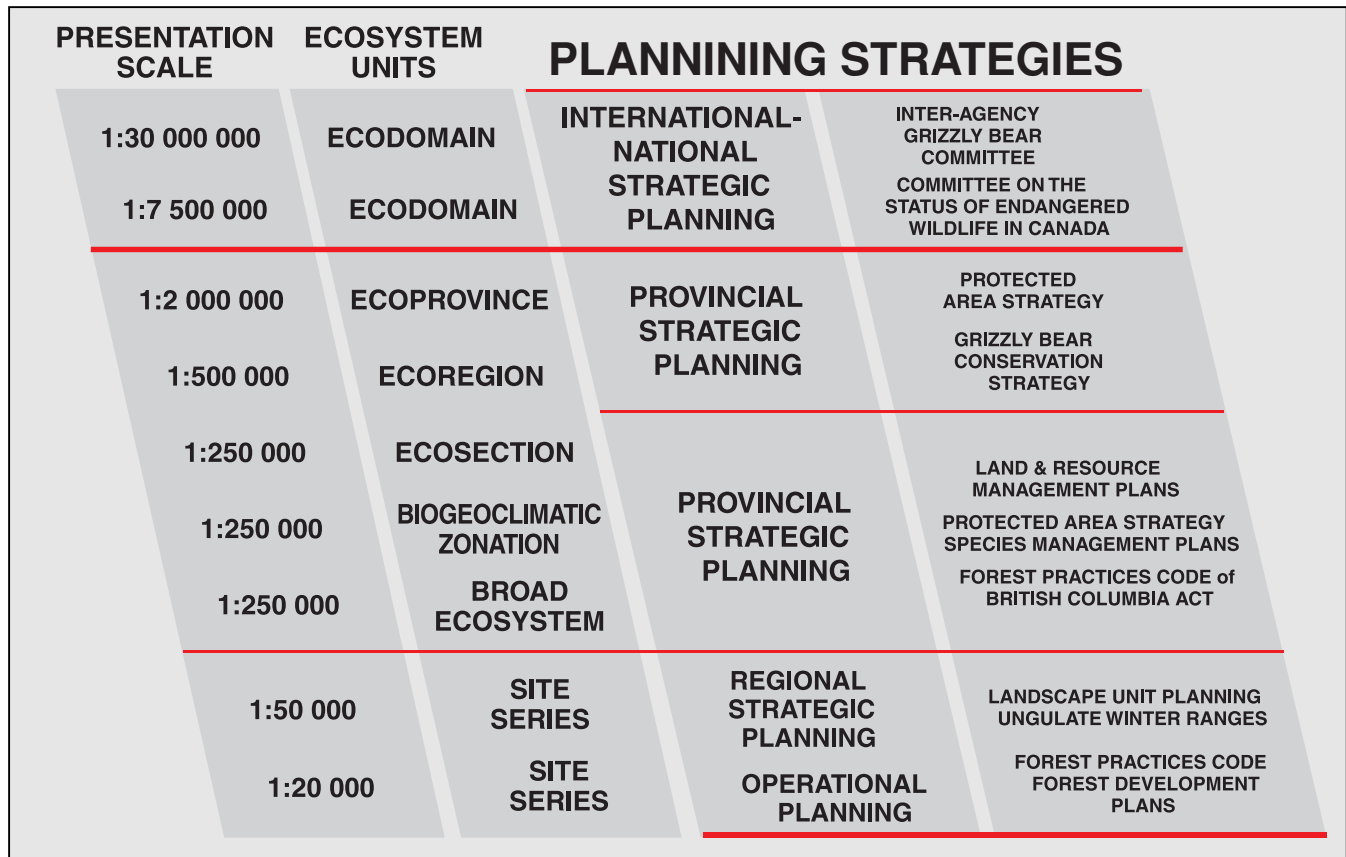


Figure 2. Ecosystem identification level and map scale used in various land-based planning strategies that have been initiated in British Columbia.

level, but specific issues for protection, conservation, or resource sharing may require detailed (1:20,000 TEM and absolute abundance inventory of a species) inventories for transferring resource or management responsibilities.

ACKNOWLEDGEMENTS

We thank Diana Demarchi for preparing the figures.

LITERATURE CITED

- B.C. Ministry of Environment, Lands and Parks. 1997. Species and plant community accounts for identified wildlife: Vol. 1. Forest Practices Code of British Columbia, Victoria, BC. 171pp.
- _____, and B.C. Ministry of Forests. 1998. Field manual for describing terrestrial ecosystems. 3rd ed. Victoria, BC. Land Manage. Handb. No. 25. In 8 sections.
- B.C. Ministry of Forests. 1994. Biogeoclimatic zones of British Columbia [map]. Victoria, BC. Scale 1:2,000,000.
- Demarchi, D. A. 1995. Ecoregions of British Columbia [map]. B.C. Minist. Environ., Lands and Parks, Wildl. Branch, Victoria, BC. Scale 1:2,000,000.
- _____. 1996. An introduction to the ecoregions of British Columbia. Author's draft. BC. Minist. Environ., Lands and Parks, Wildl. Branch, Victoria, BC. 46pp. plus appendix and map (scale 1:5,000,000).
- Meidinger, D., and J. Pojar. 1991. Ecosystems of British Columbia. B.C. Minist. For., Res. Branch, Victoria, BC. Spec. Rep. Ser. 6. 330pp.
- Pojar, J., K. Klinka, and D. V. Meidinger. 1987. Biogeoclimatic ecosystem classification in British Columbia. For. Ecol. Manage. 22:119–154.
- Resources Inventory Committee. 1997. Vegetation resources inventory: photo interpretation procedures manual. Terrestrial Ecosystems Task Force - Vegetation. Victoria, BC.
- _____. 1998a. Standards for broad terrestrial ecosystem classification and mapping for British Columbia. Version 2.0. Terrestrial Ecosystems Task Force, Ecosystems Working Group. Victoria, BC. 174pp. plus appendices.
- _____. 1998b. Standards for terrestrial ecosystem mapping in British Columbia. Ecosystems Working Group. Victoria, BC. 73pp. plus appendices
- _____. 1998c. British Columbia wildlife habitat rating standards. Review draft. Wildlife Interpretations Subcommittee. Victoria, BC. 57pp. plus appendices.
- _____. 1998d. Species inventory fundamentals: standards for components of British Columbia's biodiversity. No. 1. Version 2.0. Terrestrial Ecosystems Task Force, Prepared by B.C. Minist. Environ., Lands and Parks, Resour. Inventory Branch, Victoria, BC. 75pp. plus appendices.
- _____. 1998e. Vegetation resources inventory: ground sampling procedures. Version 3.0. Terrestrial Ecosystems Task Force - Vegetation. Prepared by B.C. Minist. For., Resour. Inventory Branch, Victoria, BC.

