

**Database for Wildlife Diversity in British Columbia:
Distribution and Habitat Use of Amphibians, Reptiles,
Birds, and Mammals in Biogeoclimatic Zones**

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Ministry of Environment, Lands, and Parks Habitat Protection Branch
Ministry of Forests Research Program

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FOREWORD

British Columbia, Canada's most westerly province, has a bounty of biological diversity. Its mountains, lakes and rivers, rain forests, wetlands and arid grasslands, and long rugged coast provide habitats for more species of living organisms than are found anywhere else in Canada. However, this very diversity means that there is much to be discovered about these organisms— their distribution, abundance, habitat requirements, and interrelationships with their environments. Increasing our knowledge of this biodiversity will help us with the complex task of sustainably managing our land and waters.

In 1992 the Provincial Government initiated a co-operative biodiversity research program with funding from the Corporate Resource Inventory Initiative; the British Columbia Ministries of Forests (Research Branch) Environment, Lands and Parks (Wildlife and Habitat Protection Branches), and Tourism and Culture, (Royal British Columbia Museum); and the Forest Resource Development Agreement (FRDA II). One goal of this research program is to extend information to scientists, resource managers, and the public through biodiversity publications. These publications are intended to increase awareness and understanding of biodiversity, promote the concepts and importance of conserving biodiversity, and communicate provincial government initiatives related to biodiversity. We hope that they will be used as tools for the conservation of British Columbia's rich, living legacy.

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All inaccuracies and inconsistencies are my own.

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INTRODUCTION

This document is a companion to "Wildlife Diversity in British Columbia: Distribution and Habitat Use of Amphibians, Reptiles, Birds, and Mammals in Biogeoclimatic Zones." It contains the database on disk that forms the basis for this working paper and a brief description of methods and resources used to compile the database.

Two levels of information are provided. At the first level, a complete list of the 560 species in British Columbia, plus the subspecies and populations at risk, is presented, which shows their presence or absence in each of eight zonal groups (File name: BCSP.P.DBF). In addition, the species, subspecies, and populations in each zonal group are listed along with their presence or absence, and a rough measure of seasonal abundance in each wildlife subzone group (*SP.DBF). At the second level, the species designated at risk (B.C. Ministry of Environment red- and blue-listed species) and those with regionally significant habitat relationships (Stevens 1993) are examined (*LST.DBF or *LIST.DBF).

The total species list presented here differs from Cannings and Harcombe's (1990) in three respects. First, two species (European Wall Lizard and Sprague's Pipit) were added because of their recent arrival or discovery. Second, species that are extinct, extirpated, only found in unprotected offshore waters, or have not been seen more than twice in the last 50 years are not included in this report. This eliminates 72 species for a total of 560. The deleted species are listed in the file BCDEL.DBF. The third difference is that the subspecies or population level for several species is examined separately. In all these cases, species are included at the subspecies or population level because of their appearance on the red or blue lists (Munro 1993).

METHODS

The data were gathered primarily during a series of workshops that took place from November 1989 to January 1993. Each workshop focused on either amphibians and reptiles, birds, or mammals. The participants included at least one expert on the vertebrate class in question and one person with knowledge of the biogeoclimatic zones, subzones, and appropriate habitats within the zones. Appendix 1 gives a complete list of workshop dates and participants. References used during the workshops or subsequently include: Campbell et al. (1990), Cannings et al. (1987), McTaggart-Cowan and Guiguet (1975), Meidinger and Pojar (1991), Nagorsen (1990), Nagorsen and Brigham (1993), Orchard (1984), Stevens and Lofts (1988), and van Zyll de Jong (1983). In addition, the entire series of regional habitat maps (1:500 000) (Fenger et al. 1989; 1990) were coloured to the subzone level and used to identify species distribution. The information collected at the workshops was augmented by conversations with species experts.

Both the ecosection boundaries and the Wildlife Branch lists of species of concern have been in a state of flux during the interval between the original workshops and the final draft of this document. The data were re-analyzed in the spring and fall of 1993 to reflect the new Wildlife Branch red and blue lists (Munro 1993, pp. 222–227), the interim yellow list (Stevens 1993) and the third approximation of the ecosection boundaries (Demarchi 1993).

Definition of
Database Fields

The following information describes and defines the codes used in the database fields and the sources and limitations of the information. Some fields are restricted to certain databases, which appear in square brackets following the field name. If no databases follow the field name, then the field is common to all the databases.

Common and scientific names The species names are from Cannings and Harcombe (1990), and subspecies names are from Nagorsen (1990) and Campbell et al. (1990). The one exception to this rule is the Western Red Bat. It is listed as the Southern Red Bat by Cannings and Harcombe (1990), but has recently been changed to Western Red Bat (Nagorsen and Brigham 1993). In addition, one introduced reptile (European Wall Lizard) and a new bird species found in the summer of 1992 (Sprague's Pipit) were not included in Cannings and Harcombe (1990). Both the common and scientific names of these newcomers are taken from Orchard (1994) for the lizard, and Peterson (1961) for the pipit.

Status The wildlife species of British Columbia are divided into two categories of species *at risk* (red and blue) and one category of species *not at risk* (yellow). The red species are endangered or threatened; the blue are sensitive or vulnerable. This list is continuously updated. Some additional species from the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 1993) are also included. The species listed by COSEWIC (1993) are designated as "endangered" or "threatened." Some species not mentioned on these lists are marked with an "h." These species already had habitat information included in the database. All other species are left blank. Status is indicated by a letter: R = red, B = blue, E = endangered, and T = threatened. A complete explanation of British Columbia's red- and blue-listing system can be found in Wildlife Branch (In prep.).

Seasonal abundance [*SP.DBF] A letter code defines both the season of use and the abundance. Only two abundance classes are used, distinguished by lower- and uppercase letters. "Common" or "abundant" is uppercase and "uncommon," "scarce," or "rare" is lowercase. Abundance was based on actual abundance, not potential abundance. Each species' use of the landscape was evaluated separately (i.e., the same scale was not used for both Deer Mouse and Grizzly Bear use).

Giving each species an abundance rating using just two classes was not a popular exercise at the workshops. A third category, which is mostly applicable to birds, was added in the middle of the process. Therefore, the birds have been updated to incorporate this category. Any

sighting that is well outside the normal range of a species and that could be either a misidentification, an error in data transcription, or an accidental occurrence is indicated by an asterisk (*).

Two special cases require explanation:

1. When a population is cyclical (having periods of abundance, followed by periods of scarcity) it is indicated by Yy. This represents a resident population that is, at different times, both common and uncommon.
2. When a species is generally common, but becomes abundant in response to an environmental event (e.g., rain) it is indicated by Y'.

The season of use designation follows the general guidelines of Campbell et al. (1990) and is indicated by a letter.

- | P = spring (March – May)
- | S = summer (June – August)
- | A = autumn (September – November)
- | W = winter (December – February)
- | M = migratory (spring and autumn)
- | Y = yearlong
- | O = unknown

Some cases do not fit into this scheme. For instance, a species that is known to be migratory, but that has occasionally been seen in December in a particular subzone, would still be listed as “M”.

Biogeoclimatic zones and subzone groups [*LST.DBF or *LIST.DBF]

The codes used within the field names for biogeoclimatic zones indicate the subzone group in which the species or listed taxon is found. The relationship between the biogeoclimatic subzones and the new zonal groups and subzone groups introduced for wildlife is shown in Appendix 2, along with their codes.

Habitat use Broad habitat types were described by Ted Lea and Del Meidinger and defined by Ted Lea (Appendix 3). Each field records (with an “x”) the species presence in the named habitat type.

DATABASE

The data collected from workshops and references were compiled into 18 database files. These are described in Table 1. Each file is described in its own table following Table 1 (Tables 2 – 19).

TABLE 1 *Database files used as a basis for Wildlife Diversity in British Columbia: Distribution and Habitat Use of Amphibians, Reptiles, Birds, and Mammals in Biogeoclimatic Zones and included on the disc.*

Database filename	No. of records^a	Number of fields	Description
1. BCSPP	605	11	A list of all the species in British Columbia and the subspecies and populations at risk. This database indicates the rough distribution by zonal group in the province.
2. COASTSP	500	6	The subset of species in British Columbia and the subspecies and populations at risk that occur in the Coastal Zonal Group: CDF and CWH. This database includes the distribution and abundance of species and subspecies and populations at risk in the subzones of the CDF and CWH.
3. COASTLST	197	38	The broad habitat classes for the taxa at risk in the Coastal Zonal Group, as well as some regionally significant species. This database also indicates all the wildlife subzone groups where the species in question is found and includes a memo field for comments about special habitat elements required and distribution limits.
4. MHSP	182	5	Same as COASTSP except concerning the species in the MH zone.
5. MHLIST	87	31	Same as COASTLST except concerning the species in the MH zone.
6. DRYINSP	428	14	Same as COASTSP except concerning the species in the BG, PP, IDF, and MS zones.
7. DRYINLST	184	34	Same as COASTLST except concerning the species in the BG, PP, IDF, and MS zones.
8. ICHSP	381	8	Same as COASTSP except concerning the species in the ICH zone.

TABLE 1 *Continued*

Database filename	No. of records^a	Number of fields	Description
9. ICHLIST	151	32	Same as COASTLST except concerning species in the ICH zone.
10. CENTPLSP	331	11	Same as COASTSP except concerning the species in the SBPS and SBS zones.
11. CENTLIST	126	32	Same as COASTLST except concerning the species in the SBPS and SBS zones.
12. BOREALSP	357	7	Same as COASTSP except concerning the species in the BWBS and SWB zones.
13. BOREALST	140	36	Same as COASTLST except concerning the species in the BWBS and SWB zones.
14. ESSFSP	212	10	Same as COASTSP except concerning the species in the ESSF zone.
15. ESSFLIST	92	31	Same as COASTLST except concerning the species in the ESSF zone.
16. ATSP	136	5	Same as COASTSP except concerning the species in the AT zone.
17. ATLIST	72	31	Same as COASTLST except concerning the species in the AT zone.
18. BCDEL	72	2	A list of species, included in Cannings and Harcombe (1990), that occur in British Columbia, but that do not appear in any of the above databases.

^a Includes four records used as labels for amphibians, reptiles, birds, and mammals.

TABLE 2 *Structure of BCSP*

Field name	Type	Description
NAME	Character	Common name of the species, subspecies, or population.
SCINAME	Character	Scientific name of the species, subspecies, or population.
STATUS	Character	Provincial or COSEWIC status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
COAST	Character	An x indicates that the taxon is found in this zonal group. More information is available in the databases specific to this zonal group.
MH	Character	An x indicates that the taxon is found in this zonal group. More information is available in the databases specific to this zonal group.
DRYINT	Character	An x indicates that the taxon is found in this zonal group. More information is available in the databases specific to this zonal group.
ICH	Character	An x indicates that the taxon is found in this zonal group. More information is available in the databases specific to this zonal group.
CENTPLAT	Character	An x indicates that the taxon is found in this zonal group. More information is available in the databases specific to this zonal group.
ESSF	Character	An x indicates that the taxon is found in this zonal group. More information is available in the databases specific to this zonal group.
BOREAL	Character	An x indicates that the taxon is found in this zonal group. More information is available in the databases specific to this zonal group.
AT	Character	An x indicates that the taxon is found in this zonal group. More information is available in the databases specific to this zonal group.

TABLE 3 *Structure of COASTSP*

Field name	Type	Description
COMNAME	Character	Common name of the species, subspecies, or population. (See BCSPP for scientific names.)
STATUS	Character	Provincial or COSEWIC status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
CDF	Character	Seasonal abundance in the CDF zone.
CWHHPER	Character	Seasonal abundance in the hypermaritime wildlife subzone group of the CWH zone.
CWHMAR	Character	Seasonal abundance in the maritime wildlife subzone group of the CWH zone.
CWHSUB	Character	Seasonal abundance in the subarctic wildlife subzone group of the CWH zone.

TABLE 4 *Structure of COASTLST*

Field name	Type	Description
COMNAME	Character	The common name of the species, subspecies, or population.
SCINAME	Character	The scientific name of the species, subspecies, or population.
STATUS	Character	Provincial or COSEWIC status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
CWH	Character	A letter code indicates presence (or absence) in each subzone group in these zones.
CDF	Character	
MH	Character	
BG	Character	
PP	Character	
IDF	Character	
MS	Character	
ICH	Character	
SBPS	Character	
SBS	Character	
SWB	Character	
BWBS	Character	
ESSF	Character	A letter code indicates presence (or absence) in each forested subzone group in this zone.
ESSFP	Character	A letter code indicates presence (or absence) in each parkland subzone group in this zone.
AT	Character	A letter code indicates presence (or absence) in each subzone group in this zone.
PROMAR	Character	An x indicates use of these habitat type in the Coastal zonal group.
INTERTIDAL	Character	
SUBTIDAL	Character	
MARINEISL	Character	
MARINECLIF	Character	
ESTUARIES	Character	

TABLE 4 *Continued*

Field name	Type	Description
WETLANDS	Character	
LAKES	Character	
STREAMS	Character	
AVALANCHE	Character	
ROCKY	Character	
TALUS	Character	
AGRICULTUR	Character	
URBANSUBU	Character	
DRYFORESTS	Character	
AVEFORESTS	Character	
WETFORESTS	Character	
RIPFORESTS	Character	
SHORFOREST	Character	
COMMENT	Memo	Additional information about specific habitat elements and range restrictions.

TABLE 5 *Structure of MHSP*

Field name	Type	Description
COMNAME	Character	Common name of the species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
MHHYPER	Character	Seasonal abundance in the hypermaritime wildlife subzone group of the MH zone.
MHMARWIND	Character	Seasonal abundance in the windward maritime wildlife subzone group of the MH zone.
MHMARLEE	Character	Seasonal abundance in the leeward maritime wildlife subzone group of the MH zone.

TABLE 6 *Structure of MHLIST*

Field name	Type	Description
COMNAME	Character	Common name of species, subspecies, or population.
SCINAME	Character	Scientific name of species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
CWH	Character	A letter code indicates presence (or absence) in each subzone group in these zones.
CDF	Character	
MH	Character	
BG	Character	
PP	Character	
IDF	Character	
MS	Character	
ICH	Character	
SBPS	Character	
SBS	Character	
SWB	Character	
BWBS	Character	
ESSF	Character	
ESSFP	Character	
AT	Character	
WETLANDS	Character	An x indicates use of these habitat type in the MH zone.
LAKES	Character	
STREAMS	Character	
AVALANCHE	Character	
ROCKY	Character	
TALUS	Character	
SUBALMEAD	Character	
DRYFORESTS	Character	
AVEFORESTS	Character	
WETFORESTS	Character	
RIPFORESTS	Character	
PARKLNDFOR	Character	
COMMENT	Memo	Additional information about specific habitat elements and range restrictions.

TABLE 7 *Structure of DRYINSP*

Field name	Type	Description
COMNAME	Character	Common name of the species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
BGXH	Character	Seasonal abundance in the very dry hot subzone group of the BG zone.
BGXW	Character	Seasonal abundance in the very dry warm subzone group of the BG zone.
PPXH	Character	Seasonal abundance in the very dry hot subzone group of the PP zone.
PPDH	Character	Seasonal abundance in the dry hot subzone group of the PP zone.
IDFX	Character	Seasonal abundance in the very dry subzone group of the IDF zone.
IDFD	Character	Seasonal abundance in the dry subzone group of the IDF zone.
IDFM	Character	Seasonal abundance in the moist subzone group of the IDF zone.
IDFW	Character	Seasonal abundance in the wet subzone group of the IDF zone.
MSXK	Character	Seasonal abundance in the very dry cool subzone group of the MS zone.
MSXVC	Character	Seasonal abundance in the very dry very cold subzone group of the MS zone.
MSDK	Character	Seasonal abundance in the dry cool subzone group of the MS zone.
MSDM	Character	Seasonal abundance in the dry mild subzone group of the MS zone.

TABLE 8 *Structure of DRYINLST*

Field name	Type	Description
COMNAME	Character	The common name of the species, subspecies, or population.
SCINAME	Character	The scientific name of the species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
CWH	Character	A letter code indicates presence (or absence) in each subzone group in these zones.
CDF	Character	
MH	Character	
BG	Character	
PP	Character	
IDF	Character	
MS	Character	
ICH	Character	
SBPS	Character	
SBS	Character	
SWB	Character	
BWBS	Character	
ESSF	Character	
ESSFP	Character	
AT	Character	
WETLANDS	Character	An x indicates use of these habitat types in the Dry Interior zonal group.
LAKES	Character	
STREAMS	Character	
AVALANCHE	Character	
ROCKY	Character	
TALUS	Character	

TABLE 8 *Continued*

Field name	Type	Description
SHGRSTEPPE	Character	
AGRICULTUR	Character	
URBANSUBU	Character	
DRYFORESTS	Character	
AVEFORESTS	Character	
WETFORESTS	Character	
RIPFORESTS	Character	
PARKLNDFOR	Character	
ASPENCOPSE	Character	
COMMENT	Memo	Additional information about specific habitat elements and range restrictions.

TABLE 9 *Structure of ICHSP*

Field name	Type	Description
COMNAME	Character	Common name of species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993).
ICHDW	Character	Seasonal abundance in the dry warm subzone group of the ICH zone.
ICHDMK	Character	Seasonal abundance in the dry - moist cool subzone group of the ICH zone.
ICHMW	Character	Seasonal abundance in the moist warm subzone group of the ICH zone.
ICHWK	Character	Seasonal abundance in the wet cool subzone group of the ICH zone.
ICHMC	Character	Seasonal abundance in the moist cold subzone group of the ICH zone.
ICHWC	Character	Seasonal abundance in the very wet cold subzone group of the ICH zone.

TABLE 10 *Structure of ICHLIST*

Field name	Type	Description
COMNAME	Character	Common name of species, subspecies, or population.
SCINAME	Character	Scientific name of species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993.) An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
CWH	Character	A letter code indicates presence (or absence) in each subzone group in these zones.
CDF	Character	
MH	Character	
BG	Character	
PP	Character	
IDF	Character	
MS	Character	
ICH	Character	
SBPS	Character	
SBS	Character	
SWB	Character	
BWBS	Character	
ESSF	Character	
ESSFP	Character	
AT	Character	
WETLANDS	Character	An x indicates use of these habitat types in the ICH zone.
LAKES	Character	
STREAMS	Character	
AVALANCHE	Character	
ROCKY	Character	
TALUS	Character	
AGRICULTUR	Character	
URBANSUBU	Character	
DRYFORESTS	Character	

TABLE 8 *Continued*

Field name	Type	Description
AVEFORESTS	Character	
WETFORESTS	Character	
RIPFORESTS	Character	
ALDERSEEP	Character	
COMMENT	Memo	Additional information about specific habitat elements and range restrictions.

TABLE 11 *Structure of CENTPLSP*

Field name	Type	Description
COMNAME	Character	Common name of the species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
SBPSVDC	Character	Seasonal abundance in the very dry cold subzone group of the SBPS zone.
SBPSDC	Character	Seasonal abundance in the dry cold subzone group of the SBPS zone.
SBPSMK	Character	Seasonal abundance in the moist cool subzone group of the SBPS zone.
SBPSMC	Character	Seasonal abundance in the moist cold subzone group of the SBPS zone.
SBSDHW	Character	Seasonal abundance in the dry hot-warm subzone group of the SBS zone.
SBSDK	Character	Seasonal abundance in the dry cool subzone group of the SBS zone.
SBSMHW	Character	Seasonal abundance in the moist hot - warm subzone group of the SBS zone.
SBSMMKC	Character	Seasonal abundance in the moist mild -cool-cold subzone group of the SBS zone.
SBSVWK	Character	Seasonal abundance in the wet cool subzone group of the SBS zone.

TABLE 12 *Structure of CENTLIST*

Field name	Type	Description
COMNAME	Character	Common name of species, subspecies, or population.
SCINAME	Character	Scientific name of species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
CWH	Character	A letter code indicates presence (or absence) in each subzone group in these zones.
CDF	Character	
MH	Character	
BG	Character	
PP	Character	
IDF	Character	
MS	Character	
ICH	Character	
SBPS	Character	
SBS	Character	
SWB	Character	
BWBS	Character	
ESSF	Character	
ESSFP	Character	
AT	Character	
WETLANDS	Character	An x indicates use of these habitat type in the Central Plateau zonal group.
LAKES	Character	
STREAMS	Character	
AVALANCHE	Character	
ROCKY	Character	
TALUS	Character	
SHGRSTEPPE	Character	

TABLE 12 *Continued*

Field name	Type	Description
AGRICULTUR	Character	
URBANSUBU	Character	
DRYFORESTS	Character	
AVEFORESTS	Character	
WETFORESTS	Character	
RIPFORESTS	Character	
COMMENT	Memo	Additional information about specific habitat elements and range restrictions.

TABLE 13 *Structure of BOREALSP*

Field name	Type	Description
COMNAME	Character	Common name of the species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
SWB	Character	Seasonal abundance in the forested zone of the SWB zone.
SWBBR	Character	Seasonal abundance in the shrubby zone of the SWB zone.
BWBSDK	Character	Seasonal abundance in the dry cool subzone group of the BWBS zone.
BWBSMW	Character	Seasonal abundance in the moist warm subzone group of the BWBS zone.
BWBSWK	Character	Seasonal abundance in the wet cool subzone group of the BWBS zone.

TABLE 14 *Structure of BOREALST*

Field name	Type	Description
COMNAME	Character	Common name of species, subspecies, or population.
SCINAME	Character	Scientific name of species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
CWH	Character	A letter code indicates presence (or absence) in each subzone group in these zones.
CDF	Character	
MH	Character	
BG	Character	
PP	Character	
IDF	Character	
MS	Character	
ICH	Character	
SBPS	Character	
SBS	Character	
SWB	Character	
BWBS	Character	
ESSF	Character	
ESSFP	Character	
AT	Character	
WETLANDS	Character	An x indicates use of these habitat type in the Boreal zonal group.
LAKES	Character	
STREAMS	Character	
AVALANCHE	Character	
ROCKY	Character	
TALUS	Character	
SHGRSTEPPE	Character	
SUBALMEAD	Character	
SUBALGRASS	Character	
SUBALSHRUB	Character	
AGRICULTUR	Character	
URBANSUBU	Character	
DRYFORESTS	Character	

TABLE 14 *Continued*

Field name	Type	Description
AVEFORESTS	Character	
WETFORESTS	Character	
RIPFORESTS	Character	
ASPFOREST	Character	
COMMENT	Memo	Additional information about specific habitat elements and range restrictions.

TABLE 15 *Structure of ESSFSP*

Field name	Type	Description
COMNAME	Character	Common name of species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
ESSFXD	Character	Seasonal abundance in the very dry subzone group of the forested portion of the ESSF zone.
ESSFD	Character	Seasonal abundance in the dry subzone group of the forested portion of the ESSF zone.
ESSFM	Character	Seasonal abundance in the moist subzone group of the forested portion of the ESSF zone.
ESSFXW	Character	Seasonal abundance in the wet subzone group of the forested portion of the ESSF zone.
ESSFXDP	Character	Seasonal abundance in the very dry subzone group of the parkland portion of the ESSF zone.
ESSFDP	Character	Seasonal abundance in the dry subzone group of the parkland portion of the ESSF zone.
ESSFMP	Character	Seasonal abundance in the moist subzone group of the parkland portion of the ESSF zone.
ESSFXWP	Character	Seasonal abundance in the wet subzone group of the parkland portion of the ESSF zone.

TABLE 16 *Structure of ESSFLIST*

Field name	Type	Description
COMNAME	Character	Common name of the species, subspecies, or population.
SCINAME	Character	Scientific name of the species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993).An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
CWH	Character	A letter code indicates presence (or absence) in each subzone group in these zones.
CDF	Character	
MH	Character	
BG	Character	
PP	Character	
IDF	Character	
MS	Character	
ICH	Character	
SBPS	Character	
SBS	Character	
SWB	Character	
BWBS	Character	
ESSF	Character	
ESSFP	Character	
AT	Character	
WETLANDS	character	An x indicates use of this habitat type in the ESSF zone.
LAKES	character	
STREAMS	character	
AVALANCHE	character	
ROCKY	character	
TALUS	character	
SUBALMEAD	character	

TABLE 16 *Continued*

Field name	Type	Description
DRYFORESTS	character	
AVEFORESTS	character	
WETFORESTS	character	
RIPFORESTS	character	
PARKLNDFOR	character	
COMMENT	Memo	Additional information about specific habitat elements and range restrictions.

TABLE 17 *Structure of ATSP*

Field name	Type	Description
COMNAME	Character	Common name of species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
ATMH	Character	Seasonal abundance in the AT zone occurring above the MH zone.
ATESSF	Character	Seasonal abundance in the AT zone occurring above the ESSF zone.
ATSWB	Character	Seasonal abundance in the AT zone occurring above the SWB zone.

TABLE 18 *Structure of ATLIST*

Field name	Type	Description
COMNAME	Character	Common name of species, subspecies, or population.
SCINAME	Character	Scientific name of species, subspecies, or population.
STATUS	Character	Provincial status. This designation is only given if the species is at risk (Munro 1993). An "h" in this field does not indicate a status. It tells the database user that the same habitat information as for species at risk is available in the *LIST.DBF.
CWH	Character	A letter code indicates presence (or absence) in each subzone group in these zones.
CDF	Character	
MH	Character	
BG	Character	
PP	Character	
IDF	Character	
MS	Character	
ICH	Character	
SBPS	Character	
SBS	Character	
SWB	Character	
BWBS	Character	
ESSF	Character	
ESSFP	Character	
AT	Character	
WETLANDS	Character	An x indicates use of these habitat types in the AT zone.
LAKES	Character	
STREAMS	Character	
AVALANCHE	Character	
ROCKY	Character	
TALUS	Character	
TUNDRA	Character	

TABLE 18 *Continued*

Field name	Type	Description
HEATH	Character	
ALPGRASS	Character	
ALPSHRUB	Character	
ALPMEAD	Character	
KRUMMHOLZ	Character	
COMMENT	Memo	Additional information about specific habitat elements and range restrictions.

TABLE 19 *Structure of BCDEL*

Field name	Type	Description
NAME	Character	Common name of species deleted from the list (Cannings and Harcombe 1990) of those found in British Columbia.
SCINAME	Character	Scientific name of above species.

APPENDIX 1 Workshop Dates and Participants

Date	Workshop focus	Participants
Fall 1989	CWH, SBS: amphibians and reptiles	Stan Orchard Jim Pojar Victoria Stevens
Fall 1989	CWH: mammals	Vivian Banci Ian McTaggart-Cowan Dennis Demarchi Mike Fenger Alton Harestad Bill Harper Ted Lea Del Meidinger Bill Munro Jim Pojar Victoria Stevens
Fall 1989	SBS: mammals	Ian McTaggart-Cowan Dennis Demarchi Mike Fenger Alton Harestad Bill Harper Ted Lea Del Meidinger Jim Pojar Victoria Stevens
Fall 1989 two sessions	CWH: birds	Wayne Campbell Ted Lea Jim Pojar Victoria Stevens
Fall 1989 five sessions	SBS: nonpasserine birds	Wayne Campbell Ted Lea Del Meidinger Jim Pojar Victoria Stevens

APPENDIX 1 *Continued*

Date	Workshop focus	Participants
Fall 1990	CDF, MH, SBPS, ICH: amphibians and reptiles	Stan Orchard Del Meidinger Victoria Stevens
Fall 1990 two sessions	CDF, MH, SBPS, ICH: mammals	Alton Harestad Dennis Demarchi Ted Lea Del Meidinger Victoria Stevens
Feb. 14–Mar. 14, 1991 five sessions	CDF, MH, SBPS, ICH, BG, PP, IDF, MS, ESSF, AT, BWBS, SWB: nonpasserine birds	Wayne Campbell Ted Lea Del Meidinger Victoria Stevens
June–July 1991 four sessions	CDF, MH, SBPS, SBS, ICH, BG, PP, IDF, MS, ESSF, AT, BWBS, SWB: passerine birds	John Cooper Del Meidinger Victoria Stevens
Nov. 1991	BG, PP, IDF, MS, ESSF, AT, BWBS, SWB: amphibians and reptiles	Stan Orchard Del Meidinger Victoria Stevens
Dec. 1991 two sessions	BG, PP, IDF, MS, ESSF, AT, BWBS, SWB: mammals	Alton Harestad Del Meidinger Victoria Stevens
Jan. 1993	All zones Red- and blue-list update	John Cooper Stan Orchard Alton Harestad (by phone) Victoria Stevens

APPENDIX 2 Zonal Group and Subzone Group of Wildlife

The relationship between biogeoclimatic zones and subzones defined in Meidinger and Pojar (1991) and new categories introduced for wildlife interpretations—zonal group and subzone group of wildlife.

Zonal group	Biogeoclimatic zone	Subzone	Subzone code	Subzone group for wildlife	Wildlife subzone code	
Coastal	Coastal Douglas-fir	CDF	CDF	Coastal Douglas-fir	c	
		Wet Hypermaritime	CWHwh	hypermaritime	h	
	Coastal Western Hemlock	Very Wet Hypermaritime	CWHvh			
		Very Dry Maritime	CWHxm	maritime	m	
		Dry Maritime	CWHdm			
		Moist Maritime	CWHmm			
		Wet Maritime	CWHwm			
		Very Wet Maritime	CWHvm			
		Dry Submaritime	CWHds	submaritime	s	
		Moist Submaritime	CWHms			
Wet Submaritime	CWHws					
Mountain Hemlock	Mountain Hemlock	Wet Hypermaritime Parkland	MHwhp	hypermaritime	h	
		Wet Hypermaritime	MHwh			
		Moist Maritime Parkland	MHmmp	windward maritime and leeward maritime	w & l	
		Moist Maritime	MHmm			
Dry Interior	Bunchgrass	Very Dry Hot	BGxh	very dry hot	h	
		Very Dry Warm	BGxw	very dry warm	w	
	Ponderosa Pine	Very Dry Hot	PPxh	very dry hot	x	
		Dry Hot	PPdh	dry hot	d	
	Interior Douglas-fir	Very Dry Hot	IDFxh	very dry	x	
		Very Dry Warm	IDFxm			
		Very Dry Mild	IDFxm			
		Dry Mild	IDFdm	dry	d	
		Dry Cool	IDFdk			
		Moist Warm	IDFmw	moist	m	
Wet Warm	IDFww	wet	w			

APPENDIX 2 Continued

Zonal group	Biogeoclimatic zone	Subzone	Subzone code	Subzone group for wildlife	Wildlife subzone code	
	Montane Spruce	Very Dry Very Cold	MSxv	very dry very cold	v	
		Very Dry Cool	MSxk	very dry cool	x	
		Dry Cold	MSdc			
		Dry Cool	MSdk	dry cool	k	
		Dry Mild	MSdm	dry mild	m	
Interior Cedar-Hemlock	Interior Cedar-Hemlock	Very Dry Warm	ICHxw	dry warm	d	
		Dry Warm	ICHdw			
		Moist Warm	ICHmw	moist warm	m	
		Moist Mild	ICHmm			
		Wet Cool	ICHwk	wet cool	w	
		Very Wet Cool	ICHxk			
		Dry Cool	ICHdk	dry-moist cool	k	
		Moist Cool	ICHmk			
		Moist Cold	ICHmc	moist cold	c	
Very Wet Cold	ICHvc	very wet cold	x			
Central Plateau	Sub-boreal Pine-Spruce	Very Dry Cold	SBPSxc	very dry cold	v	
		Dry Cold	SBPSdc	dry cold	d	
		Moist Cool	SBPSmk	moist cool	k	
		Moist Cold	SBPSmc	moist cold	c	
	Sub-boreal Spruce	Sub-boreal Spruce	Dry Hot	SBSdh	dry hot -warm	d
			Dry Warm	SBSdw		
			Dry Cool	SBSdk	dry cool	k
			Moist Hot	SBSmh	moist hot-warm	h
			Moist Warm	SBSmw		
			Moist Mild	SBSmm	moist mild-cool -cold	c
			Moist Cool	SBSmk		
			Moist Cold	SBSmc		
			Wet Cool	SBSwk	wet cool	x
			Very Wet Cool	SBSvk		

APPENDIX 2 Continued

Zonal group	Biogeoclimatic zone	Subzone	Subzone code	Subzone group for wildlife	Wildlife subzone code
Engelmann Spruce - Subalpine Fir ^a	Engelmann Spruce-Subalpine Fir	Very Dry Cold	ESSFxc	very dry	x
		Dry Cool	ESSFdk	dry	d
		Dry Cold	ESSFdc		
		Dry Very Cold	ESSFdv		
		Moist Warm	ESSFmw	moist	m
		Moist Mild	ESSFmm		
		Moist Cool	ESSFmk		
		Moist Cold	ESSFwc		
		Moist Very Cold	ESSFmv		
		Wet Mild	ESSFwm	wet	w
		Wet Cool	ESSFwk		
		Wet Cold	ESSFwc		
		Wet Very Cold	ESSFwv		
		Very Wet Cold	ESSFvc		
		Very Wet Very Cold	ESSFvv		
Boreal	Boreal White and Black Spruce	Dry Cool	BWBSdk	dry cool	d
		Moist Warm	BWBSmw	moist warm	m
		Wet Cool	BWBSwk	wet cool	k
	Spruce - Willow - Birch	Dry Cool	SWBdk	forested	s
		Moist Cool	SWBmk		
		Dry Cool Scrub	SWBdks	scrub	b
		Moist Cool Scrub	SWBmks		
Alpine Tundra	Alpine Tundra		AT	above MH	m
				above ESSF	e
				above SWB	s

^a Each ESSF subgroup has a parallel parkland subgroup and subzone group for wildlife.

APPENDIX 3 Definitions of Broad Habitat Classes

Agricultural area	A mixture of farmlands where human influence has resulted in long-term soil or vegetation changes because of plowing, fertilization, livestock use, and non-native crop production.
Alder seep	Moist openings in the forest caused by excessive moisture and dominated by Sitka alder and forbs.
Alpine grassland	A high-elevation, northern, grassland habitat, characterized by lush bunchgrass growth, with forbs, sedges, and terrestrial lichens.
Alpine meadow	A high-elevation, herbaceous community, dominated by moisture-loving herbs and sedges, on wetter sites in alpine areas.
Alpine shrubland	A high-elevation, northern, shrubland habitat, characterized by a dense cover of deciduous shrubs with graminoids, forbs, and terrestrial lichens.
Alpine tundra	A high-elevation, open to dense herbaceous or dwarf shrubland habitat, characterized by cold-resistant vegetation: low dwarf shrubs, graminoids, hardy forbs, and lichens.
Aspen copse	A dense deciduous forest, with a shrub-dominated understorey, including plant communities that succeed through shrub thickets to an edaphic climax of trembling aspen; found in association with shrub/grasslands.
Aspen forest	A dense deciduous forest, with a shrub-dominated understorey, including plant communities that succeed through long-term stages of trembling aspen, often to a white spruce climax.
Avalanche track	A shrubland dominated by alders, or other shrubs where periodic snow and rock slides prevent coniferous forest establishment and where moisture is plentiful for much of the growing season; lower areas may support rich herbaceous growth.
Average forest	Upland forests with average available moisture; gentle to moderate slopes with deep medium-textures soils in middle-slope positions.
Dry forest	Upland forests that are drier than average because of upper-slope position, warm aspect, steep sites, or dry, shallow, or coarse-textured soils.

APPENDIX 3 Continued

Estuary	An unforested tidal wetland dominated by persistent emergent herbaceous species, with open or sporadic access to ocean areas and where seawater is periodically diluted with fresh water from land drainage.
Heath	A high-elevation dwarf shrubland habitat, characterized by cold-resistant vegetation; mountain-heathers, forbs, graminoids, and lichens.
Intertidal marine	A habitat that consists of ocean overlying the continental shelf and its associated high-energy shoreline, with salinities in excess of 30 ppt, and a substrate that is exposed and flooded by tides (includes associated splash zone).
Krummholz	A high-elevation shrubland habitat, characterized by cold-resistant vegetation; stunted subalpine trees, mountain-heathers, forbs, graminoids, and lichens.
Lake	A deep fresh habitat that includes permanently flooded lakes, usually found in a topographic depression; lacks emergent vegetation except along shorelines.
Marine cliff	Steep cliff areas adjacent to the ocean, frequently on islands.
Marine island	Islands in the ocean, small enough to have a marine influence throughout. Typically uninhabited by humans, with a rough coastline, and grass, shrub, or forest cover.
Parkland forest	A high-elevation mosaic of stunted tree clumps and herb or dwarf shrub-dominated openings, occurring above the closed forest and below the alpine.
Protected marine	A habitat that consists of protected waters of the ocean overlying the continental shelf with a substrate that is continuously submerged. Wind frequency and intensity are less than that occurring over the open ocean because of a protecting land mass or bay.
Riparian forest	Moist forested areas affected by seasonal flooding or high water tables associated with streams, rivers, and small creeks.
Rocky cliffs sparsely vegetated rock	A mixture of steep bedrock cliffs, escarpments, and outcroppings with little soil development and relatively low vegetative cover.
Shoreline forest	Forest areas along coastal shoreline that are often affected by saltspray and fog.

APPENDIX 3 *Concluded*

Shrub/grass-steppe	Open to dense, dry shrubland, dominated by drought-tolerant shrubs or perennial grasses and generally lacking trees.
Stream	A freshwater riverine habitat, bounded by banks or upland habitat; may include channels that form a connecting link between two bodies of standing water.
Subalpine grassland	A high-elevation, lush grassland habitat dominated by perennial grasses and forbs, on droughty sites.
Subalpine meadow	A high-elevation herbaceous habitat, dominated by moisture-loving herbaceous species, on wetter sites in subalpine forest areas.
Subalpine shrubland	High-elevation northern habitat, characterized by dense shrubs and bunchgrasses intermixed and dominated by scrub birch, willows, and Altai fescue.
Subtidal marine	A habitat that consists of open ocean overlying the continental shelf with a substrate that is continuously submerged.
Talus	Sparsely vegetated, rubbly or blocky colluvial areas, at the base of rock outcroppings or escarpments.
Urban/suburban	A mixture of human-influenced habitats that includes residential, urban, and commercial/industrial areas, but excludes major agricultural lands.
Wet forests	Upland sites that are moister than average because of lower-slope position, fine-textured soils, high water tables, or location in depressions.
Wetlands	This includes various wetland types, developed under high water tables or other increased moisture conditions; includes fens, bogs, swamps, marshes, shallow open water, meadows, and shrub-carrs; is usually composed of shrub or graminoid vegetation, but sometimes may have open tree cover.

Source: Ted Lea

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