# BC's Coast Region Species & Ecosystems Of Conservation Concern: Factsheet User's Guide

**January 2011**

## Cover images:

Top row left to right: Johnson's Hairstreak – David Nunnallee, Northern Red-legged Frog – Ryan Durand, Townsend's Big-eared Bat – Dave Bunnell (Wikipedia)
Bottom row left to right: Pacific Waterleaf - Caroline Astley, Cultus Pygmy Sculpin – Sylvia Letay, Quatsino Cave Amphipod – Paul Griffiths [* Only images from creative commons sources e.g. Wikipedia, Flickr, US Government, may be used without permission and for non-commercial purposes only.]

Prepared for the South Coast Conservation Program: The South Coast Conservation Program (SCCP), established in 2005 is a multi-partner, landscape-level conservation program. The primary objective of the SCCP is to coordinate and facilitate the maintenance and recovery of species and ecosystems at risk in the Lower Mainland eco-region of the South Coast of British Columbia. http://www.sccp.ca/

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## Project Partners:

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South Coast Conservation Program

TLC The Land Conservancy of British Columbia

E-Flora BC Electronic Atlas of the Plants of British Columbia

E-Fauna BC Electronic Atlas of the Wildlife of British Columbia

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Species at Risk & Local Government: A Primer for British Columbia

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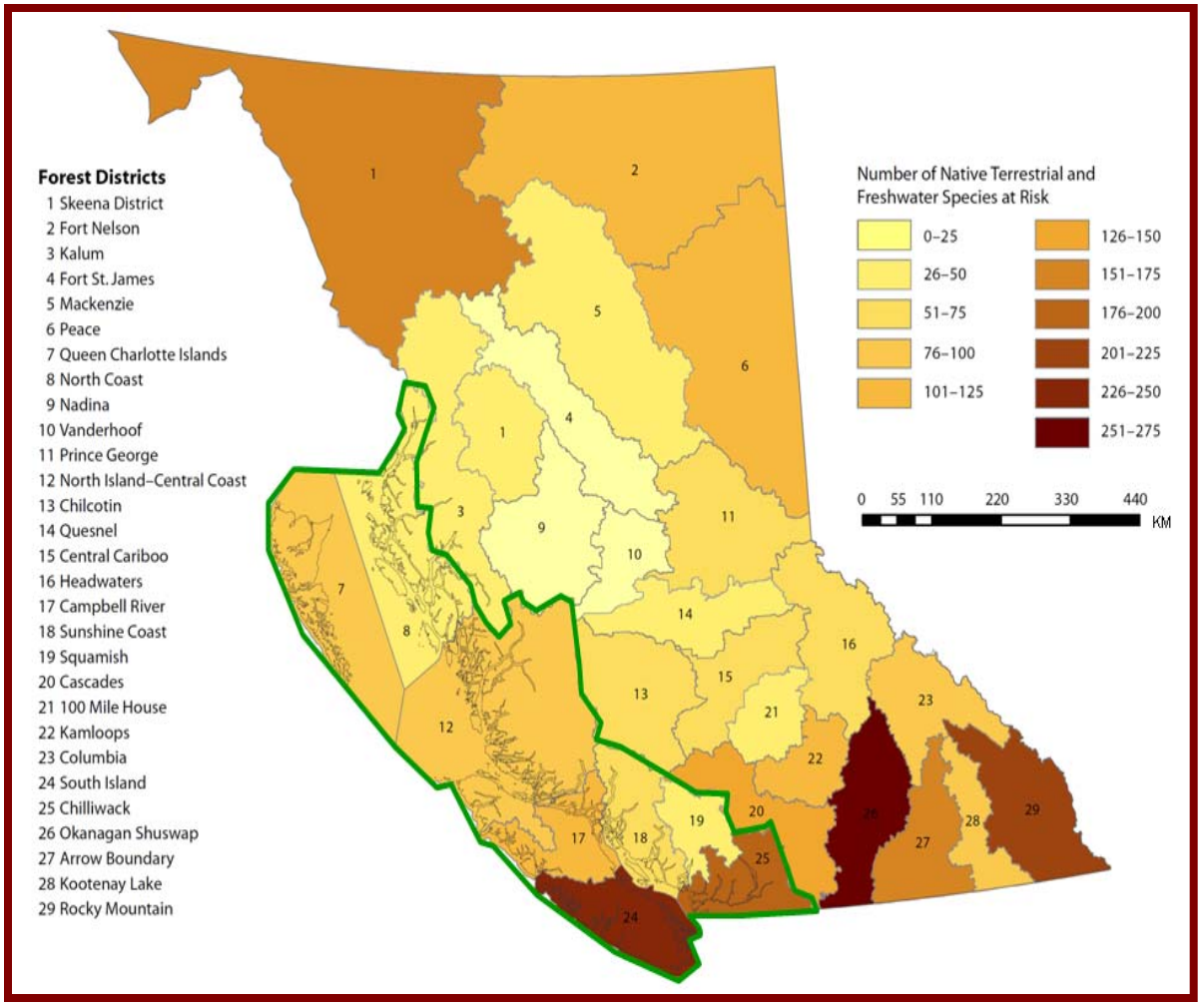
## Executive Summary

The species and ecosystem factsheets referred to in this guide were developed to provide a comprehensive summary of information on the identification, biology, distribution and conservation approaches for regionally, provincially and federally significant species of the Coast Region.

British Columbia is one of the most biologically rich provinces in Canada. Many of our species and ecosystems are naturally rare for a number of reasons. Low dispersal capability (due to physiology or geographic barriers), association with specific environmental conditions or ecologically rare communities, or human activities are all contributing factors. Such limitations and pressures make these species increasingly vulnerable to extinction or extirpation. The result has been that an increasing number of species and ecosystems in BC have become of conservation concern.




**Hotspots of species at risk in BC by forest district (Coast Region outlined in green).** Map Source: ***"Rich Wildlife, Poor Protection: The urgent need for strong legal protection of British Columbia's biodiversity."*** David Suzuki Foundation 2007.

To address this, resource managers, policy makers, environmental professionals, land use authorities, and the public require an ever expanding array of up to date resources and tools to ensure decision making is effective, informed and conservation based.

Based on the previous publication *"A Field Guide to Species at Risk in the Coast Region of British Columbia"*, the new factsheets for BC's Coast Region focus on a range of species from Barn Owl to Western Painted Turtle. Also included are priority (provincially red-listed), plant communities. Each represents a range of ecological associations across wilderness, urban, suburban, rural and agricultural landscapes.

Key to each factsheet are the references and resources found at the end directing users to more detailed, regulatory based requirements, science based resources and research for specific compliance and management information.

Whether exploring your own backyard or conducting research or assessments, this resource is intended to assist the private and public sector towards improved protection of the Coast Region's incredible natural capital.

Image credits: Top left – Random Truth (Flickr), Middle left – Canada Parks Agency, Bottom Left – Calypso Orchid (Flickr), Top right – Pamela Zevit, Middle Right – Province of BC, Bottom right – Teero Laakso (Wikipedia)

**The Coast Region of BC supports some of the most biodiverse landscapes in the province – with arguably some of the greatest challenges to conserving species at risk and their habitats.**

## Background

In 2003, a partnered publication, *"A Field Guide to Species at Risk in the Coast Region of British Columbia"* was produced by the provincial government and International Forest Products (Interfor).

In 2008 the South Coast Conservation Program (SCCP) began development of an updated version of the guide, with a specific focus on species of conservation concern for the South Coast area of BC. In late 2009 International Forest Products approached the SCCP about a joint application with the BC Ministry of Environment and Capacity Forest Products to secure funds, finalize and publish the work. The project was funded by the Sustainable Forestry Initiative (SFI) in spring 2010.

*"BC's Coast Region: Species & Ecosystems of Conservation Concern"* factsheets are the product of that partnership. The SCCP expanded the project scope from the South Coast to the original area of interest – the Coast Region. The product went from being a hardcopy field guide compilation to individual, downloadable factsheets.

A Field Guide to Species at Risk in the Coast Forest Region of British Columbia

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International Forest Products Limited and
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2003

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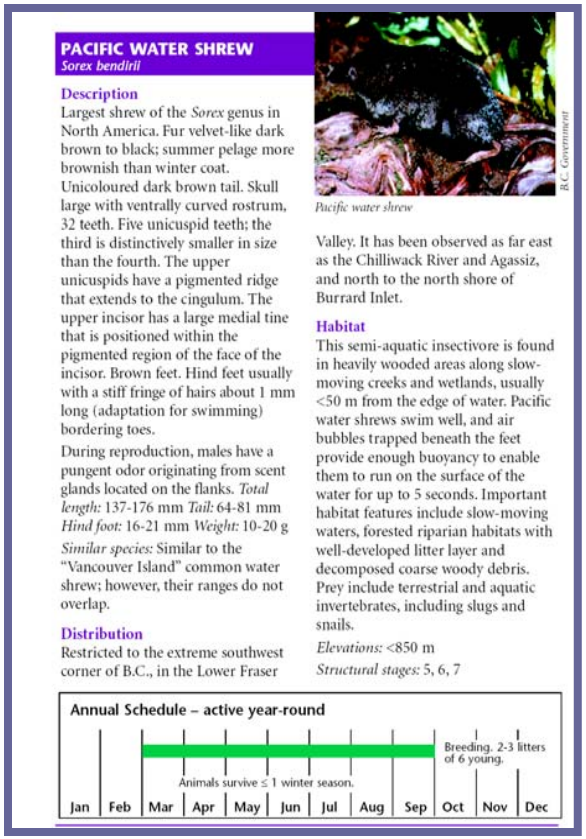


PACIFIC WATER SHREW
*Sorex bendirii*

**Description**
Largest shrew of the *Sorex* genus in North America. Fur velvet-like dark brown to black; summer pelage more brownish than winter coat. Unicoloured dark brown tail. Skull large with ventrally curved rostrum, 32 teeth. Five unicuspid teeth; the third is distinctively smaller in size than the fourth. The upper unicuspids have a pigmented ridge that extends to the cingulum. The upper incisor has a large medial tine that is positioned within the pigmented region of the face of the incisor. Brown feet. Hind feet usually with a stiff fringe of hairs about 1 mm long (adaptation for swimming) bordering toes.

During reproduction, males have a pungent odor originating from scent glands located on the flanks. *Total length:* 137-176 mm *Tail:* 64-81 mm *Hind foot:* 16-21 mm *Weight:* 10-20 g

*Similar species:* Similar to the "Vancouver Island" common water shrew; however, their ranges do not overlap.

**Distribution**
Restricted to the extreme southwest corner of B.C., in the Lower Fraser Valley. It has been observed as far east as the Chilliwack River and Agassiz, and north to the north shore of Burrard Inlet.

*Pacific water shrew*

**Habitat**
This semi-aquatic insectivore is found in heavily wooded areas along slow-moving creeks and wetlands, usually <50 m from the edge of water. Pacific water shrews swim well, and air bubbles trapped beneath the feet provide enough buoyancy to enable them to run on the surface of the water for up to 5 seconds. Important habitat features include slow-moving waters, forested riparian habitats with well-developed litter layer and decomposed coarse woody debris. Prey include terrestrial and aquatic invertebrates, including slugs and snails.

*Elevations:* <850 m
*Structural stages:* 5, 6, 7

Annual Schedule – active year-round

Breeding. 2-3 litters of 6 young.
Animals survive ≤ 1 winter season.
Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

**The 2003 publication *"A Field Guide to Species at Risk in the Coast Region of British Columbia"* was a hardcopy limited-distribution product that compiled species and ecosystem information in short, one and two-page style synopses.**

Each factsheet provides a comprehensive menu of information relative to the up to date status of a given species, its biology, habitat associations and a more in-depth summary of conservation objectives and management practices. In comparison to the 2003 product, the new factsheets incorporate a wider range of local expert knowledge and occurrence data as well as recent research from BC and beyond.

By moving to an online format, using open access sources, the information can be easily updated and distributed to a wider range of audiences. User's will be able to focus on the species information they want for their area and can access the information anywhere either online or off by printing or digitally archiving the factsheets.

## Who is this Product For?

The factsheets are designed to be a resource for a wide range of audiences. They are not designed as technical documents. More importantly, the factsheets are not a replacement for legal or professional responsibilities and due diligence in respect to regulatory requirements, applying comprehensive best management practices or inventory standards.

Ideally, qualified professionals (e.g. Biology Professionals, Engineers, and Foresters), resource managers and operational staff will find the factsheets as a quick, easy to read reference for field or desktop use. Senior Agency and municipal staff involved in land use policy or reviewing or evaluating environmental assessments will find them useful in the same way. As well, they can be printed out and provided to the public as support information in conjunction with development permitting, environmental reviews, or outreach on local or regional land use and conservation activities. For non-government organizations working on issues related to species and ecosystems at risk, the factsheets can be used as part of environmental education, or for citizen science and community outreach efforts.

## What Species are Included?

The majority of species and ecosystems covered are federally and or provincially listed. Non federally-listed species have been included as well. All of the species selected are not just individual priorities for conservation. Collectively they form part of broader ecoregional, multi-species conservation and recovery efforts.

Each of the species and ecosystems profiled has associated conservation challenges and may be suffering population declines regionally or across their known range. Some are already considered extirpated. By raising their profile we may become informed of unknown occurrences or local populations yet to be identified.

In some instances, species and their subspecies have been grouped together into one factsheet. In other instances, two or more species in the same genus or with similar ecological associations, life histories and conservation requirements have been grouped together. The web-based drop down lists for downloading the factsheets displays links to each species or subspecies individually, even if they form a multi-species factsheet.

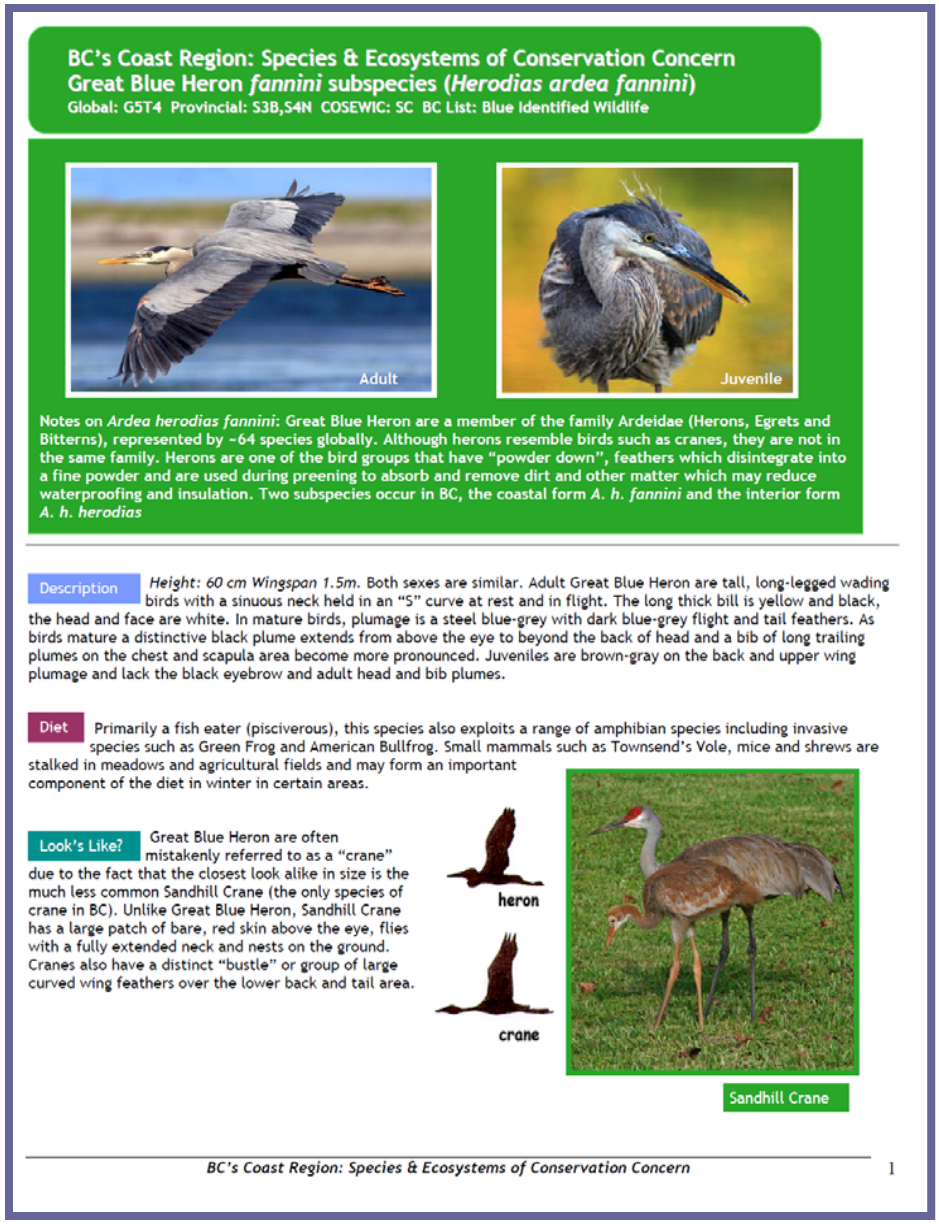
Image credits: Left - top to bottom: Oregon Spotted Frog, William P. Leonard, Indra Swallowtail, Wayne Whaley, Pacific Sideband, Ryan Duran, Pacific Waterleaf, Caroline Astley
Right - top to bottom: Pacific Water Shrew, Denis Knopp, Streaked Horned Lark *Strigata ssp,* Rod Gilbert, Mountain Beaver, Dr. Lloyd Glen Ingles, Salish Sucker, Mike Pearson

## What Information is included?

Each account provides species conservation ranking, field identification tips and ecology including:

- High resolution photo of the species, distinguishing features and similar species.
- Distribution information and occurrence mapping.
- Lifecycle and life history timing.
- Ecological associations, habitat preferences and important features.
- Conservation objectives, management practices, assessment standards and options.
- Legal requirements and caveats.

The information is designed to assist users in determining 'who's who' and the potential for habitat suitability and occurrence. Specialists and peer reviewers have contributed significant input to the project. The information represents the best available science regarding the species, its conservation and management, from as many (mainly open access) sources as possible.



**BC's Coast Region: Species & Ecosystems of Conservation Concern**
**Great Blue Heron *fannini* subspecies (*Herodias ardea fannini*)**
**Global: G5T4 Provincial: S3B,S4N COSEWIC: SC BC List: Blue Identified Wildlife**



Notes on *Ardea herodias fannini*: Great Blue Heron are a member of the family Ardeidae (Herons, Egrets and Bitterns), represented by ~64 species globally. Although herons resemble birds such as cranes, they are not in the same family. Herons are one of the bird groups that have "powder down", feathers which disintegrate into a fine powder and are used during preening to absorb and remove dirt and other matter which may reduce waterproofing and insulation. Two subspecies occur in BC, the coastal form *A. h. fannini* and the interior form *A. h. herodias*

**Description** *Height: 60 cm Wingspan 1.5m.* Both sexes are similar. Adult Great Blue Heron are tall, long-legged wading birds with a sinuous neck held in an "S" curve at rest and in flight. The long thick bill is yellow and black, the head and face are white. In mature birds, plumage is a steel blue-grey with dark blue-grey flight and tail feathers. As birds mature a distinctive black plume extends from above the eye to beyond the back of head and a bib of long trailing plumes on the chest and scapula area become more pronounced. Juveniles are brown-gray on the back and upper wing plumage and lack the black eyebrow and adult head and bib plumes.

**Diet** Primarily a fish eater (pisciverous), this species also exploits a range of amphibian species including invasive species such as Green Frog and American Bullfrog. Small mammals such as Townsend's Vole, mice and shrews are stalked in meadows and agricultural fields and may form an important component of the diet in winter in certain areas.

**Look's Like?** Great Blue Heron are often mistakenly referred to as a "crane" due to the fact that the closest look alike in size is the much less common Sandhill Crane (the only species of crane in BC). Unlike Great Blue Heron, Sandhill Crane has a large patch of bare, red skin above the eye, flies with a fully extended neck and nests on the ground. Cranes also have a distinct "bustle" or group of large curved wing feathers over the lower back and tail area.



Sandhill Crane

*BC's Coast Region: Species & Ecosystems of Conservation Concern* 1

## What's in a Name – Taxonomic Classification

The following hierarchy is used for each species based on the most recent taxonomic classifications. Names are based on those found through the BC Conservation Data Center database[1]:

- English name: The common name that is generally used for a particular animal or plant. In some cases there is also a commonly used but 'unofficial' alias. This is referenced in the "Notes on" section in the factsheets.

- Scientific name: The scientific name of a species consists of the genus (*Capitalized and in italics*) and the species (*lower case* and also *in italics*). If an organism is further classified as a subspecies, a third *lower case italicized* word indicating the subspecies is added. This can be prefixed with "*ssp.*", or for plants "*var.*" For example, the scientific name of Washington Long-tailed Weasel is *Mustela (genus) frenata (species) altifrontalis (subspecies)*.

**BC's Coast Region: Species & Ecosystems of Conservation Concern**
**Long-tailed Weasel *altifrontalis* subspecies (*Mustela frenata altifrontalis*)**
**Global: G5NTR, Provincial: SH, COSEWIC: N/A BC List: N/A**

Notes on *Mustela frenata altifrontalis*: This member of the family Mustelidae (ermine, weasels) includes numerous species from badgers to wolverines. The Mustela genus includes ermine, weasels, ferrets and mink. Also referred to as "Washington long-tailed Weasel" this is the only subspecies of Long-tailed Weasel in BC and one of three Mustela subspecies. Extremely rare it is uncertain if this species continues to persist in BC. Much of its biology is inferred from the somewhat more common *M. frenata*.

[1] While all species have been checked against the most recent BCCDC classifications, the provincial database is generally only updated annually (i.e. June of each year). With the advent of refined DNA analyses it is expected that changes to species and subspecies classifications will occur frequently.

## Species Status and Ranking Information

Up to date status and conservation ranking at the provincial, federal and international levels is also included for each species. Risk is assigned to plant and animal species and plant communities by various international, national and provincial bodies. In order to assess the degree of conservation risk for a given wildlife population and its habitat, The Nature Conservancy and the Natural Heritage network jointly established "*NatureServe*" in July 1999 to rank species according to a standardized set of criteria. NatureServe represents an international network of biological inventories in Canada, United States, Latin America and the Caribbean. These ranks are scientifically based, but have no legal implications.

**Global conservation status ranks are based on a 1 to 5 scale, ranging from critically imperiled (G1) to demonstrably secure (G5):**

- 1 = critically imperiled
- 2 = imperiled
- 3 = vulnerable
- 4 = apparently secure
- 5 = secure.
- GX = extinct,
- GH = Presumed eliminated

**National conservation status is further designated by an "N" (national) ranking using the same 1 – 5 criteria:**

- NX = Presumed extirpated at a national level
- NH = Possibly extirpated at a national level

**At the sub-national (i.e. provincial) status is further designated by an "S", again using the same 1 – 5 criteria:**

- SX = Presumed extirpated at a sub-national level
- NH = Possibly extirpated at a sub-national level

The Committee on the Status of Endangered Wildlife in Canada ("COSEWIC"***)*** assigns a national status to species designated at risk in Canada. COSEWIC consists of representatives from federal, provincial, territorial and private agencies, First Nations, and independent experts; it is given legal status under the *Species at Risk Act (SARA)*. In B.C., the *Conservation Data Centre (CDC)*, in the BC Ministry of Environment assigns the provincial rank, which is based solely on the status of the species within the province. Many species are protected under various provincial acts or regulations (e.g. BC Wildlife Act, Identified Wildlife, and Federal Fisheries Act) as well as SARA.

Provincially species are also given similar designations. Red listed species include any ecological community, and indigenous species and subspecies that is extirpated, endangered, or threatened in BC. Blue listed species include any ecological community, and indigenous species and subspecies considered to be of special concern (formerly vulnerable) in BC. However these designations are not legally binding as far as regulatory protection goes, at least not directly the same way that a SARA listing is. They are designed however to inform potential legal designations.

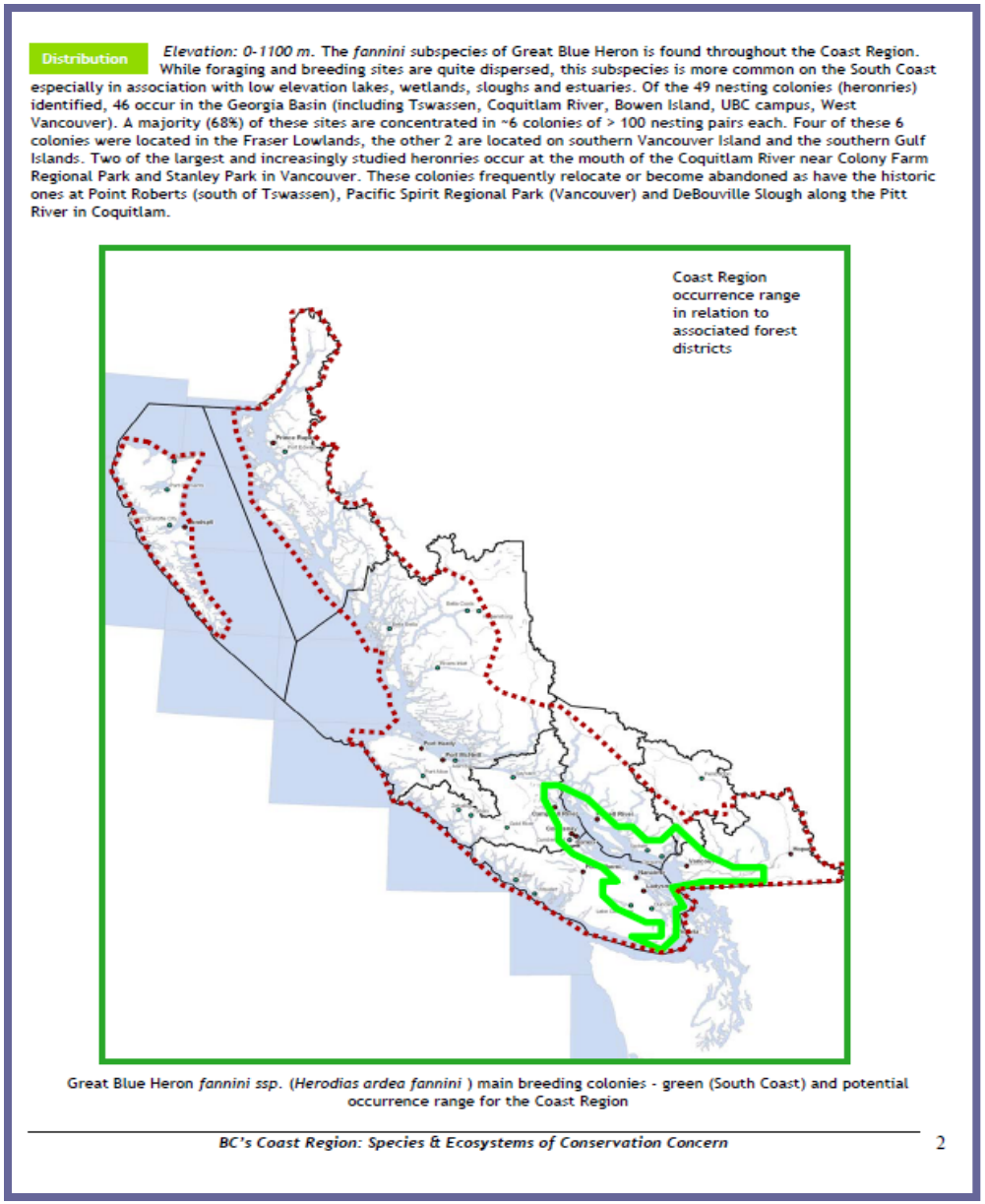
An example of the complete listing for a species like Marbled Murrelet (*Brachyramphus marmoratus*) would be: Global: G3G4 Provincial: S3B S3N COSEWIC: T BC List: Blue, Identified Wildlife

## Mapping

A coarse scale map for a species "known" or "potential" occurrence range (sometimes both when subspecies are grouped together), is included. Where information is available, specific current, historic and/or breeding site information has been provided.

The maps developed for the factsheets represent a broad overview of distribution. They are not designed to be precise. Rather they integrate areas where suitable habitat may potentially support individuals or populations.

The most important thing to remember is that "absence of evidence is not evidence of absence"[2]. Simply because the map does not include an area does not mean the species could not be present there (or conversely it occurs throughout the entire area mapped). Our knowledge of range and distribution for many species requires improved approaches in suitability modeling and enhanced and expanded ground level inventory. As well, factors such as climate change may prove significant in changing distribution of many species. Users have a due diligence responsibility to consult all available resources to ensure they are working with the most recent occurrence information.




[2] Carl Sagan on *Argumentum ad Ignorantiam*: ("appeal to ignorance"), the fallacy that a proposition is true simply on the basis that it has not been proved false or that it is false simply because it has not been proved true.

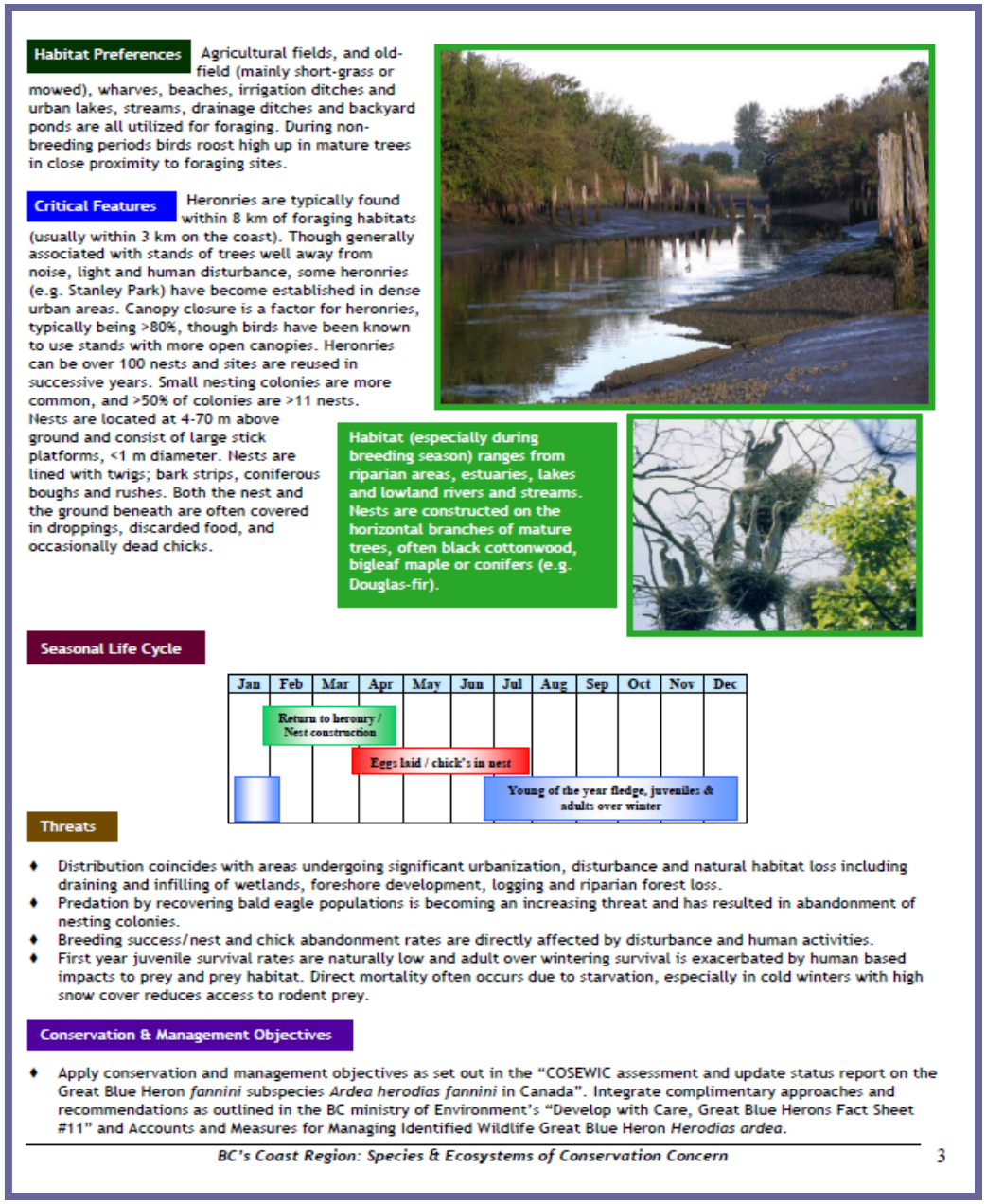
## Habitat Associations and Conservation Issues

Each factsheet has a breakdown of key information on general habitat preferences as well as critical features. These may include nesting or denning requirements, home range and dispersal patterns.

Representational images of typical habitat associations, for a range of life history requirements are included. However as with distribution information, patterns in seasonal use, foraging or breeding can vary between populations and so can associated habitat used. Many species located in urban and rural interface areas show adaptation behavior to atypical habitats; or due to limited dispersal capabilities can become isolated in marginal habitat due to fragmentation from development.

A landscape approach is essential to assessing habitat suitability, as is consideration of historic habitat quality when evaluating whether "preferred" features exist in a given location.

Understanding seasonal life history patterns (courtship, breeding, juvenile dispersal, hibernation times etc.) is also integral to effective conservation. Many of these periods reflect when a species may be most vulnerable or sensitive to anthropogenic impacts and land use activities. Inventories should also be timed accordingly to reflect these varying seasonal patterns.



**Habitat Preferences** Agricultural fields, and old-field (mainly short-grass or mowed), wharves, beaches, irrigation ditches and urban lakes, streams, drainage ditches and backyard ponds are all utilized for foraging. During non-breeding periods birds roost high up in mature trees in close proximity to foraging sites.

**Critical Features** Heronries are typically found within 8 km of foraging habitats (usually within 3 km on the coast). Though generally associated with stands of trees well away from noise, light and human disturbance, some heronries (e.g. Stanley Park) have become established in dense urban areas. Canopy closure is a factor for heronries, typically being >80%, though birds have been known to use stands with more open canopies. Heronries can be over 100 nests and sites are reused in successive years. Small nesting colonies are more common, and >50% of colonies are >11 nests. Nests are located at 4-70 m above ground and consist of large stick platforms, <1 m diameter. Nests are lined with twigs; bark strips, coniferous boughs and rushes. Both the nest and the ground beneath are often covered in droppings, discarded food, and occasionally dead chicks.

Habitat (especially during breeding season) ranges from riparian areas, estuaries, lakes and lowland rivers and streams. Nests are constructed on the horizontal branches of mature trees, often black cottonwood, bigleaf maple or conifers (e.g. Douglas-fir).

**Seasonal Life Cycle**



**Threats**

- Distribution coincides with areas undergoing significant urbanization, disturbance and natural habitat loss including draining and infilling of wetlands, foreshore development, logging and riparian forest loss.
- Predation by recovering bald eagle populations is becoming an increasing threat and has resulted in abandonment of nesting colonies.
- Breeding success/nest and chick abandonment rates are directly affected by disturbance and human activities.
- First year juvenile survival rates are naturally low and adult over wintering survival is exacerbated by human based impacts to prey and prey habitat. Direct mortality often occurs due to starvation, especially in cold winters with high snow cover reduces access to rodent prey.

**Conservation & Management Objectives**

- Apply conservation and management objectives as set out in the "COSEWIC assessment and update status report on the Great Blue Heron *fannini* subspecies *Ardea herodias fannini* in Canada". Integrate complimentary approaches and recommendations as outlined in the BC ministry of Environment's "Develop with Care, Great Blue Herons Fact Sheet #11" and Accounts and Measures for Managing Identified Wildlife Great Blue Heron *Herodias ardea*.

*BC's Coast Region: Species & Ecosystems of Conservation Concern* 3

## Conservation Actions Required

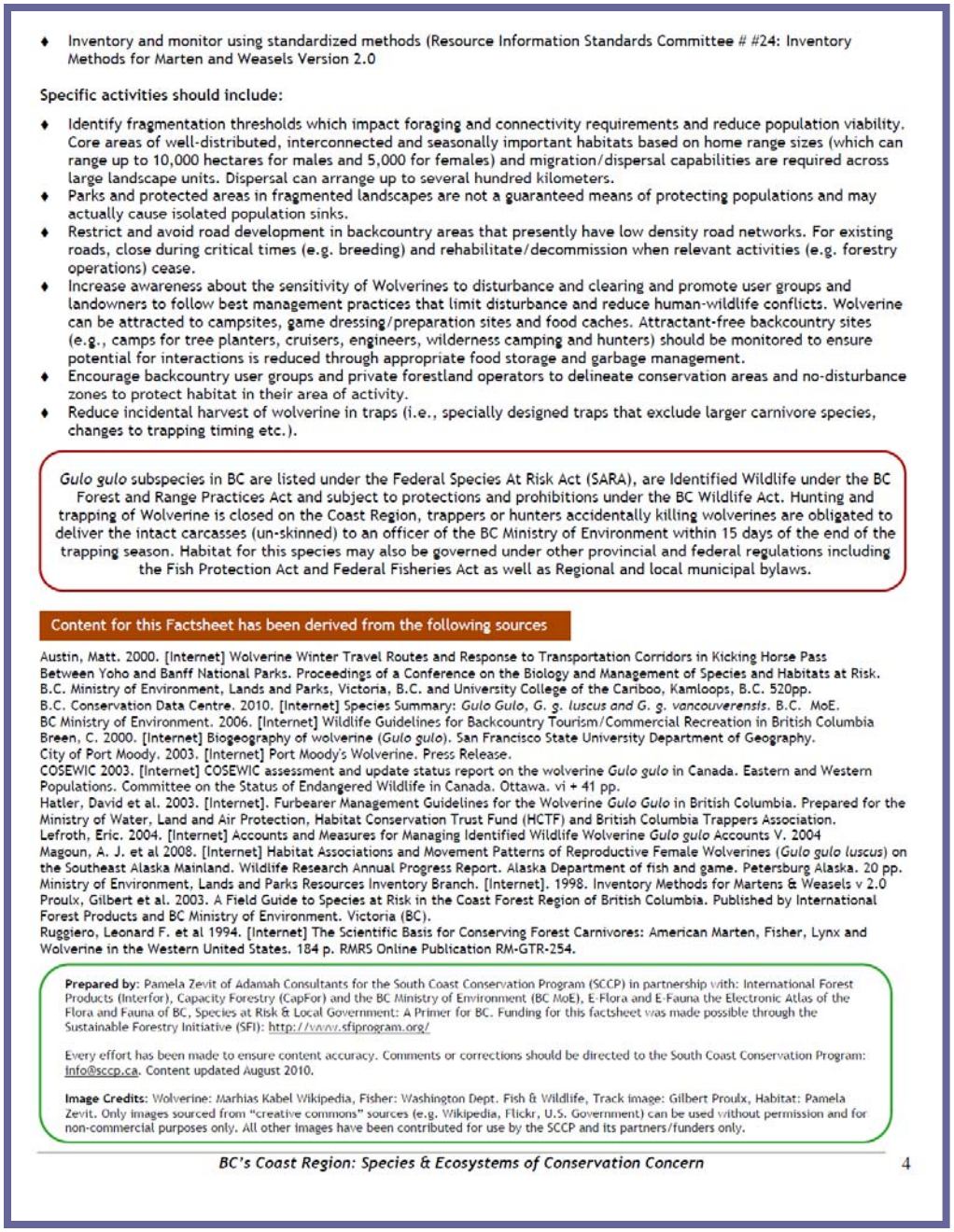
Many species and ecosystems at risk in BC have a number of previous or ongoing recovery strategies or management plans developed. These are listed, but the factsheets are not designed to repeat this information in detail.

A suite of specific 'boiler plate' conservation actions is included, many of which will be common for a number of species. Wherever possible, species-specific actions have been identified.

## Regulatory 'Caveats'

A summary of relevant and potential federal, provincial and regional legislative information is provided at the end for each species. Some species, like Wolverine and its subspecies (*Gulo gulo & ssp.)* have numerous 'layers' of regulatory requirements which must be recognized and adhered to.

It is important to remember that species protection is an evolving process. Many species may become listed or de-listed, or their status changed as new information becomes available. Users of the factsheets are strongly urged to familiarize themselves with all municipal or senior agency regulatory guidelines or requirements that may govern the protection or management of a given species or its habitat. Consultation with senior agency staff (provincial and federal) is strongly recommended to ensure full understanding of regulatory and legal responsibilities.



- Inventory and monitor using standardized methods (Resource Information Standards Committee # #24: Inventory Methods for Marten and Weasels Version 2.0

Specific activities should include:

- Identify fragmentation thresholds which impact foraging and connectivity requirements and reduce population viability. Core areas of well-distributed, interconnected and seasonally important habitats based on home range sizes (which can range up to 10,000 hectares for males and 5,000 for females) and migration/dispersal capabilities are required across large landscape units. Dispersal can arrange up to several hundred kilometers.
- Parks and protected areas in fragmented landscapes are not a guaranteed means of protecting populations and may actually cause isolated population sinks.
- Restrict and avoid road development in backcountry areas that presently have low density road networks. For existing roads, close during critical times (e.g. breeding) and rehabilitate/decommission when relevant activities (e.g. forestry operations) cease.
- Increase awareness about the sensitivity of Wolverines to disturbance and clearing and promote user groups and landowners to follow best management practices that limit disturbance and reduce human-wildlife conflicts. Wolverine can be attracted to campsites, game dressing/preparation sites and food caches. Attractant-free backcountry sites (e.g., camps for tree planters, cruisers, engineers, wilderness camping and hunters) should be monitored to ensure potential for interactions is reduced through appropriate food storage and garbage management.
- Encourage backcountry user groups and private forestland operators to delineate conservation areas and no-disturbance zones to protect habitat in their area of activity.
- Reduce incidental harvest of wolverine in traps (i.e., specially designed traps that exclude larger carnivore species, changes to trapping timing etc.).

*Gulo gulo* subspecies in BC are listed under the Federal Species At Risk Act (SARA), are Identified Wildlife under the BC Forest and Range Practices Act and subject to protections and prohibitions under the BC Wildlife Act. Hunting and trapping of Wolverine is closed on the Coast Region, trappers or hunters accidentally killing wolverines are obligated to deliver the intact carcasses (un-skinned) to an officer of the BC Ministry of Environment within 15 days of the end of the trapping season. Habitat for this species may also be governed under other provincial and federal regulations including the Fish Protection Act and Federal Fisheries Act as well as Regional and local municipal bylaws.

Content for this Factsheet has been derived from the following sources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**Prepared by**: Pamela Zevit of Adamah Consultants for the South Coast Conservation Program (SCCP) in partnership with: International Forest Products (Interfor), Capacity Forestry (CapFor) and the BC Ministry of Environment (BC MoE), E-Flora and E-Fauna the Electronic Atlas of the Flora and Fauna of BC, Species at Risk & Local Government: A Primer for BC. Funding for this factsheet was made possible through the Sustainable Forestry Initiative (SFI): http://www.sfiprogram.org/

Every effort has been made to ensure content accuracy. Comments or corrections should be directed to the South Coast Conservation Program: info@sccp.ca. Content updated August 2010.

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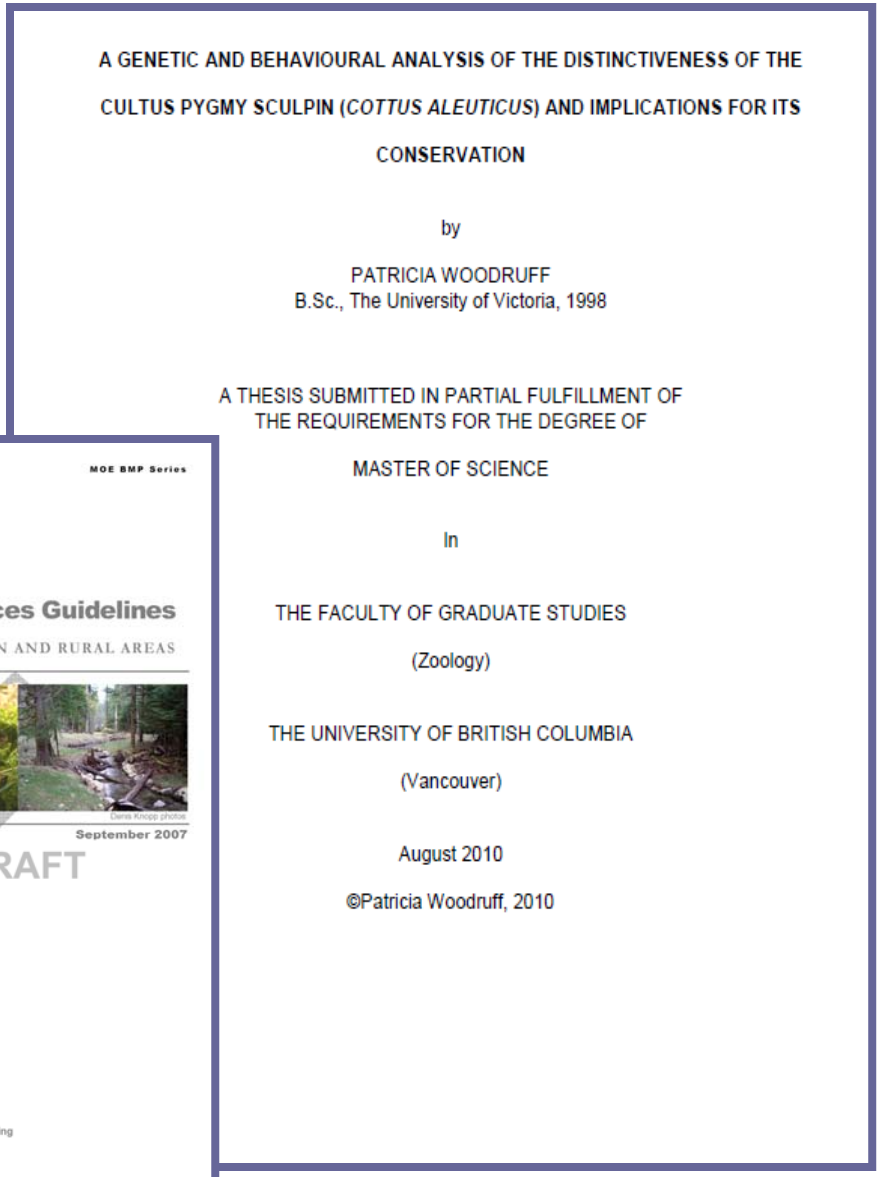
## Resources and References

At the end of each factsheet is the summary of all resources used for content development. It is recognized that there is ongoing research, new policies being developed and a wealth of local information and expertise out there. The best available and, preferably most openly accessible information on conservation science about each species has been used. Web links are not included as they are subject to frequent change. Citations are provided and each reference indicates whether it can be found on the internet for a quick search. In some instances certain information is only available through the paper's author or via senior agencies.

The references are the key point from which investigation of detailed management, regulatory and conservation requirements should occur.

Familiarity and understanding of the range of recovery strategies, research, best management practices etc. is an essential component of required due diligence.



A GENETIC AND BEHAVIOURAL ANALYSIS OF THE DISTINCTIVENESS OF THE CULTUS PYGMY SCULPIN (*COTTUS ALEUTICUS*) AND IMPLICATIONS FOR ITS CONSERVATION

by

PATRICIA WOODRUFF
B.Sc., The University of Victoria, 1998

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE

In

THE FACULTY OF GRADUATE STUDIES

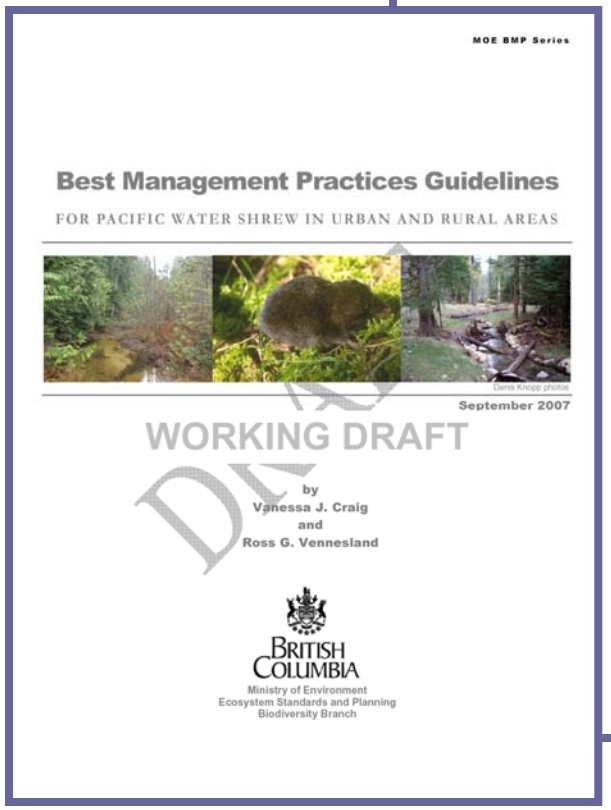
(Zoology)

THE UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

August 2010

©Patricia Woodruff, 2010



MOE BMP Series

Best Management Practices Guidelines

FOR PACIFIC WATER SHREW IN URBAN AND RURAL AREAS

Denis Knopp photos

September 2007

WORKING DRAFT

by
Vanessa J. Craig
and
Ross G. Vennesland

BRITISH COLUMBIA
Ministry of Environment
Ecosystem Standards and Planning
Biodiversity Branch

## Next Steps - Building the Knowledge Base

Effective conservation of species and ecosystems at risk requires extensive knowledge and information about where a species occurs, its habits and life history. To inform ongoing efforts, the most up to date information must be available to land use decision makers, professionals and the public. This requires a concerted effort in data gathering and sharing that ensures credible, verifiable information is available in the most accessible formats.

There are a number of mechanisms to achieve this, however one of the first steps is to ensure that reporting happens and those gathering the data know where it can best be made openly available. In BC some of the main web-based data portals information can be contributed to, and checked for, are:

- The BC Conservation Data Center
- E-Flora
- E-Fauna
- Species at Risk and Local Governments a Primer for British Columbia
- Birding in British Columbia – Rare Bird Alert

The BCCDC provides one of the most centralized and widely used data warehouses. However information is only as good as what is provided. The volume of information received by many data providers often outstrips the resources to enter and purvey it in a timely manner. Work is underway to improve linkages between individual systems so that information is updated more seamlessly. However users should check all sources as regularly as possible.

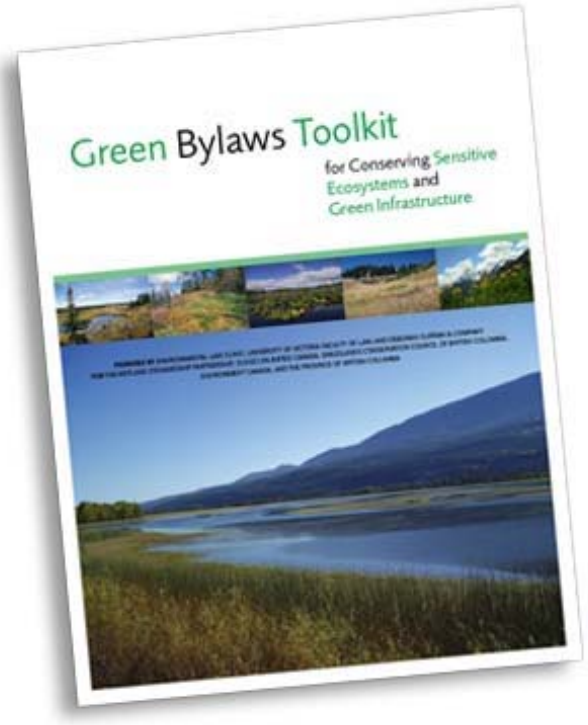
### Tips for contributing information

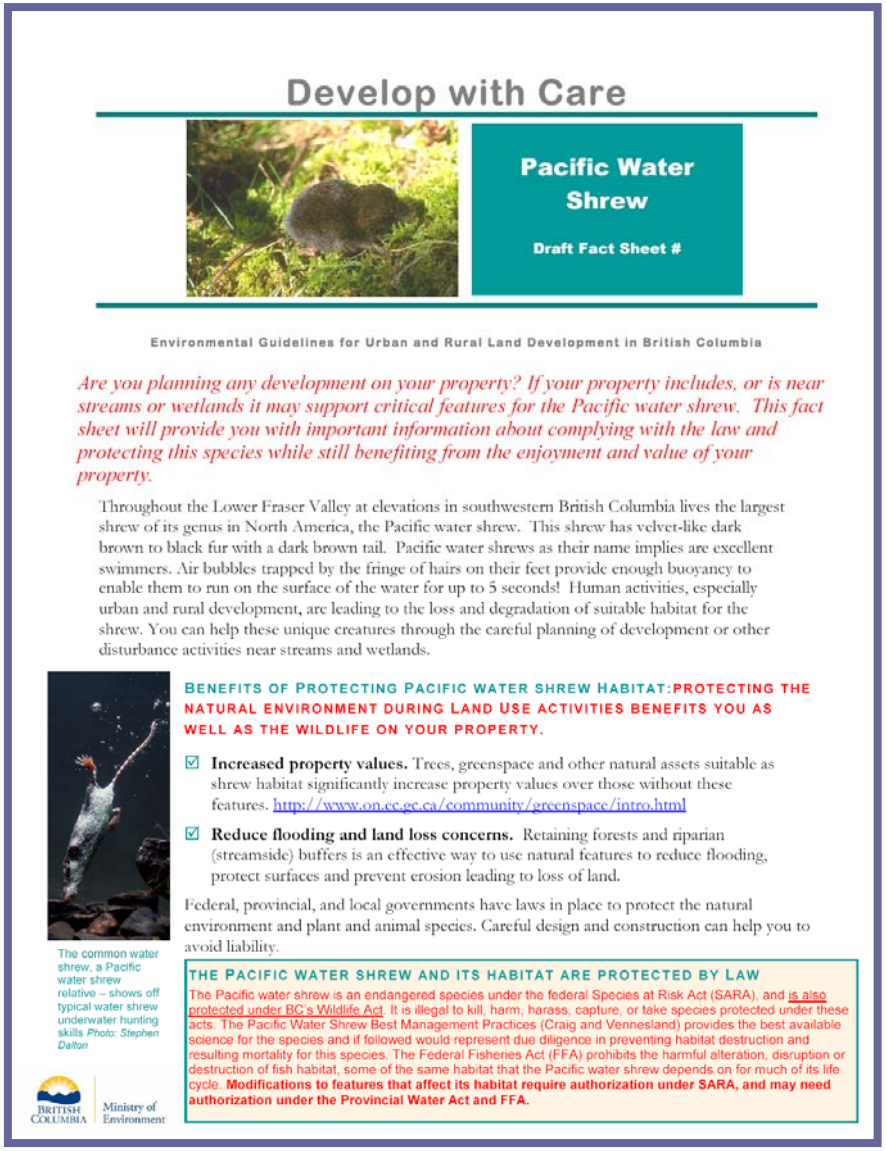
Once an occurrence or identification has been confirmed, the following information is suggested for reporting:

- General description of the habitat, noting any special features; include dominant plants, moisture (inundated, mesic, xeric, etc.); in the case of plants and plant communities, estimate abundance and landscape context, elevation in meters, slope gradient (%) and aspect (degrees) biogeoclimatic zone, subzone and variant.
- Geo-referenced location (e.g. through Google Earth, from an air photo, map, or GPS reading).
- Revisit the area where you encountered the species, and search for signs such as tracks or feathers that may confirm identification.
- Reading field signs (nests, tracks, droppings, claw marks, trails) are not easy. For example, some birds may use the old nests of other species. If there is evidence of an old nest being reused, one must see eggs, nestlings or birds to be sure of the 'resident'.

## Other Tools and Resources

This project is part of an evolving suite of tools to improve protection and management of species and ecosystems of conservation concern for the Coast Region and BC. There is a range of resources and guidance documents that users should familiarize themselves with. Many, such as the provincial "Develop with Care" series, "Species at Risk & local Government – A Primer for British Columbia" and the "Green Bylaws Toolkit" are complimentary resources that can be used in concert with the Coast Region factsheets. All of these tools have been developed as living documents. They will evolve with our knowledge and understanding of what is needed to effect conservation of BC's species and ecosystems for the long-term.



Develop with Care

Pacific Water Shrew

Draft Fact Sheet #

Environmental Guidelines for Urban and Rural Land Development in British Columbia

*Are you planning any development on your property? If your property includes, or is near streams or wetlands it may support critical features for the Pacific water shrew. This fact sheet will provide you with important information about complying with the law and protecting this species while still benefiting from the enjoyment and value of your property.*

Throughout the Lower Fraser Valley at elevations in southwestern British Columbia lives the largest shrew of its genus in North America, the Pacific water shrew. This shrew has velvet-like dark brown to black fur with a dark brown tail. Pacific water shrews as their name implies are excellent swimmers. Air bubbles trapped by the fringe of hairs on their feet provide enough buoyancy to enable them to run on the surface of the water for up to 5 seconds! Human activities, especially urban and rural development, are leading to the loss and degradation of suitable habitat for the shrew. You can help these unique creatures through the careful planning of development or other disturbance activities near streams and wetlands.

The common water shrew, a Pacific water shrew relative – shows off typical water shrew underwater hunting skills *Photo: Stephen Dalton*

BENEFITS OF PROTECTING PACIFIC WATER SHREW HABITAT: PROTECTING THE NATURAL ENVIRONMENT DURING LAND USE ACTIVITIES BENEFITS YOU AS WELL AS THE WILDLIFE ON YOUR PROPERTY.

- ☑ **Increased property values.** Trees, greenspace and other natural assets suitable as shrew habitat significantly increase property values over those without these features. http://www.on.ec.gc.ca/community/greenspace/intro.html
- ☑ **Reduce flooding and land loss concerns.** Retaining forests and riparian (streamside) buffers is an effective way to use natural features to reduce flooding, protect surfaces and prevent erosion leading to loss of land.

Federal, provincial, and local governments have laws in place to protect the natural environment and plant and animal species. Careful design and construction can help you to avoid liability.

THE PACIFIC WATER SHREW AND ITS HABITAT ARE PROTECTED BY LAW

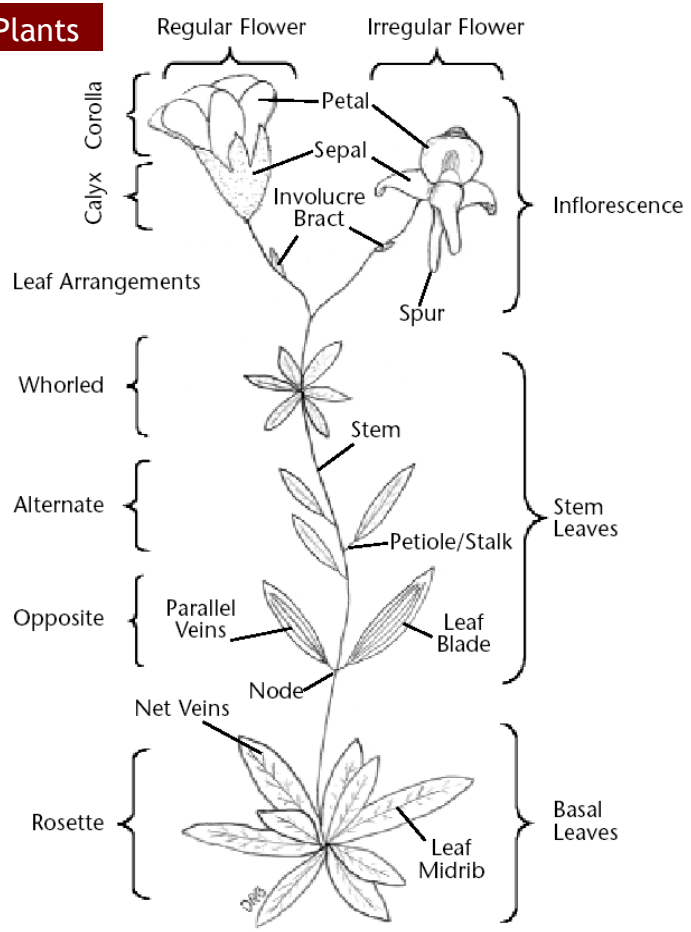
The Pacific water shrew is an endangered species under the federal Species at Risk Act (SARA), and is also protected under BC's Wildlife Act. It is illegal to kill, harm, harass, capture, or take species protected under these acts. The Pacific Water Shrew Best Management Practices (Craig and Vennesland) provides the best available science for the species and if followed would represent due diligence in preventing habitat destruction and resulting mortality for this species. The Federal Fisheries Act (FFA) prohibits the harmful alteration, disruption or destruction of fish habitat, some of the same habitat that the Pacific water shrew depends on for much of its life cycle. **Modifications to features that affect its habitat require authorization under SARA, and may need authorization under the Provincial Water Act and FFA.**

BRITISH COLUMBIA Ministry of Environment

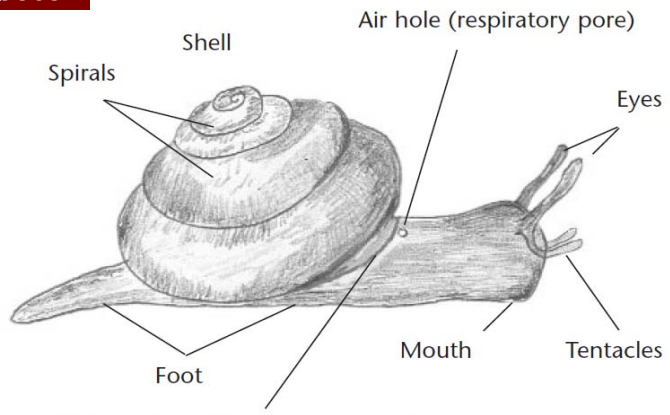
## Appendix – Flora and fauna field identification tips

The following diagrams provide simplified anatomical features and characteristics referred to in the factsheets, individual anatomy diagrams are provided in some factsheets for some species.

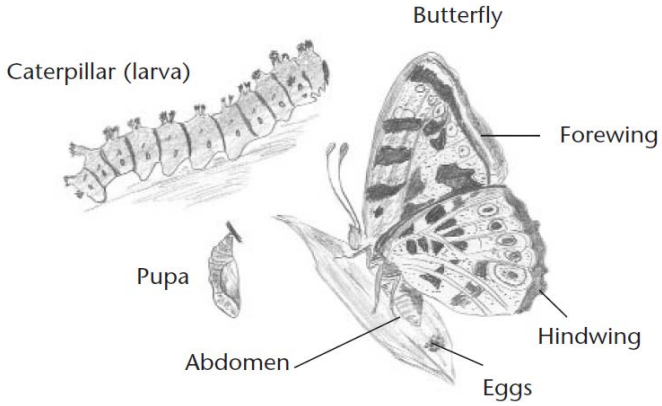
### Vascular Plants




### Gastropods

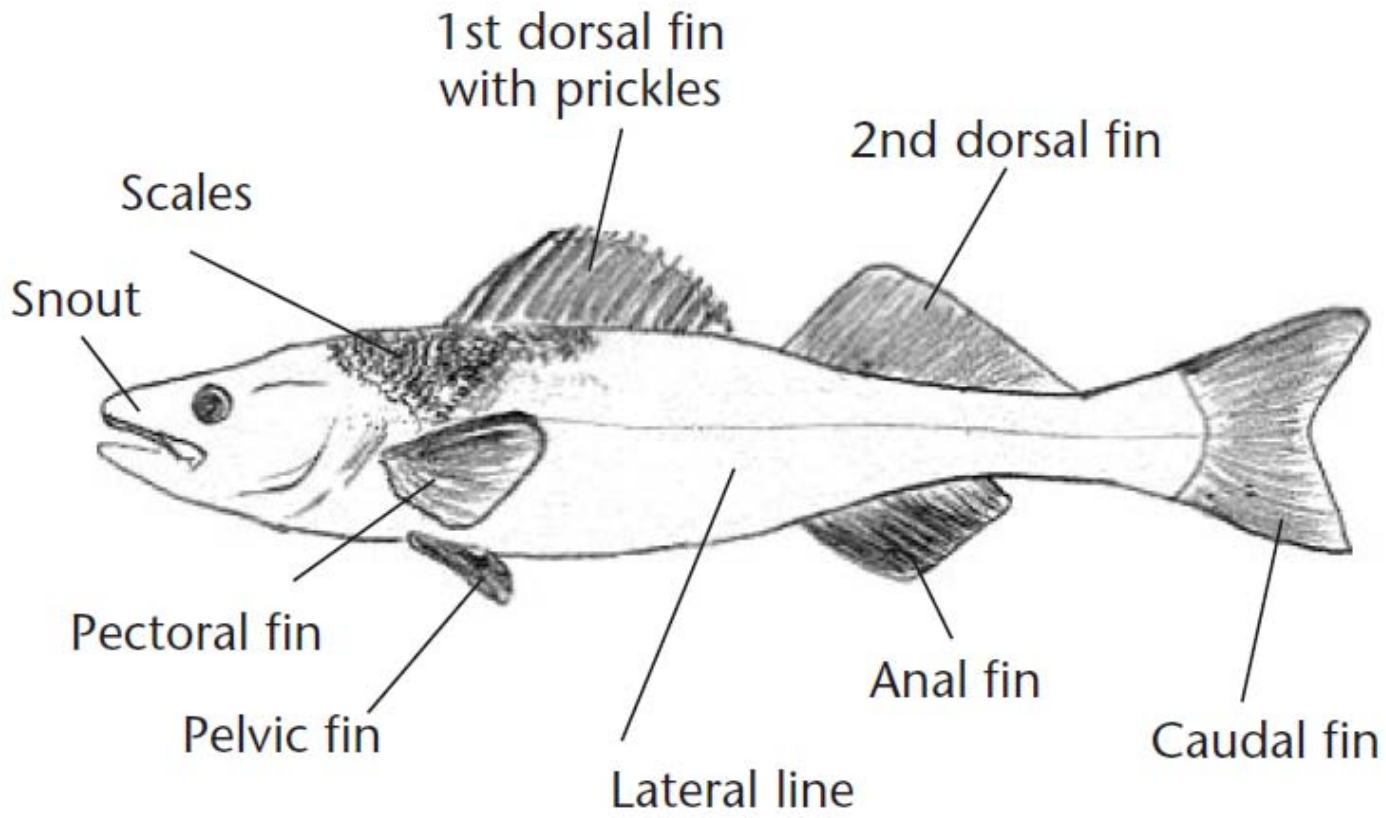



### Insects

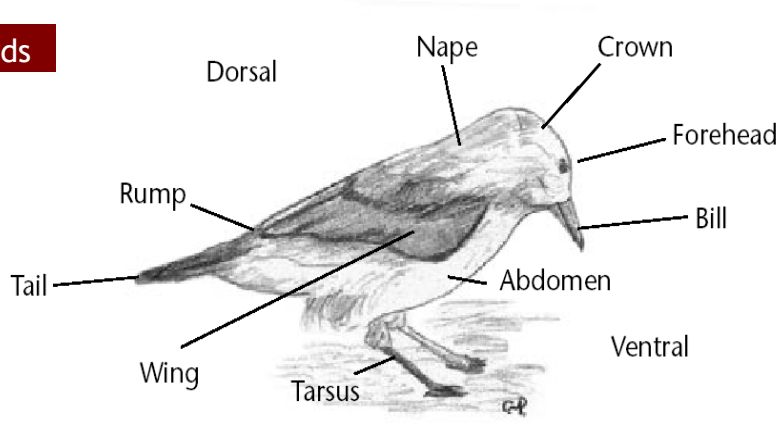


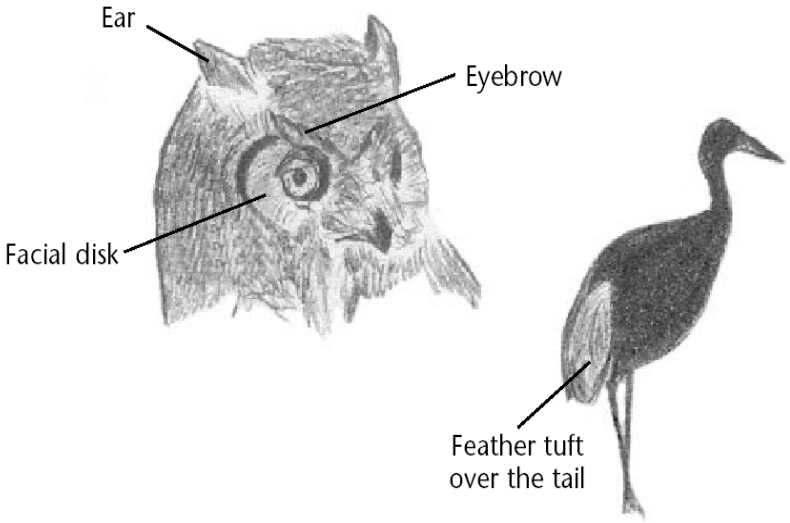

Source: A Field Guide to Species at Risk in the Coast Forest Region of British Columbia. Published by: International Forest Products Limited and Ministry of Water, Land and Air Protection. 2003.

## Fish

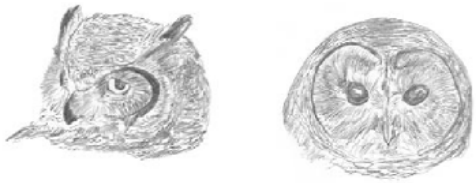

1st dorsal fin
with prickles
2nd dorsal fin
Scales
Snout
Pectoral fin
Pelvic fin
Lateral line
Anal fin
Caudal fin

## Birds




**Large owls** (>43 cm tall)



Great horned owl



Barred owl

Great gray owl

Spotted owl

**Small owls** (17-23 cm tall)

Pygmy-Owl

Saw-whet owl

Screech owl

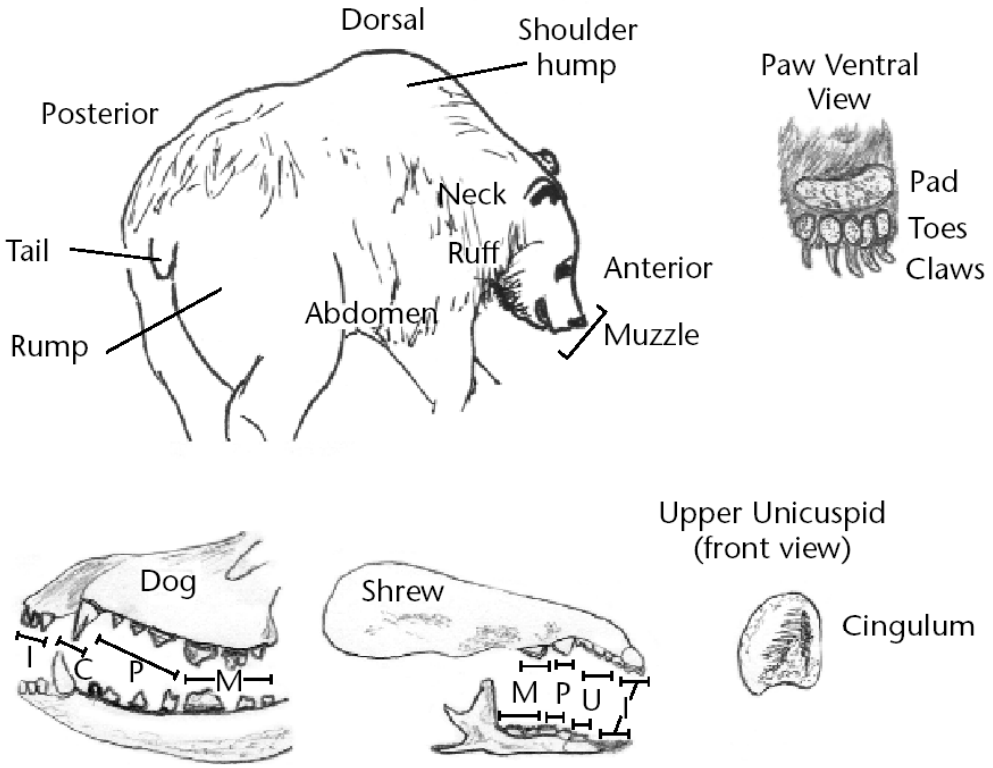
**Medium owls** (>23-53 cm tall)

Short-eared owl

Barn owl

Long-eared owl

Mammals




I: Incisors; C: Canines; P: Premolars; M: Molars; U: Unicuspids