



PART IV

EXISTING INFORMATION
SUMMARY

BELLINGHAM WILDLIFE AND HABITAT: *Existing Information Summary*

INFORMATION SEARCH and REVIEW

The Bellingham wildlife and habitat assessment is primarily based on existing information. The process of information gathering and review was comprehensive. Information was collected from existing documents, both published and unpublished, reports, notes and maps; from interviews with wildlife experts, naturalists resource agency personnel and law enforcement; review of databases, a variety of species lists and historical records. Additional information from field visits, personal records and incidental observation by the author was also included. The collection, review and application of information for this assessment was completed over an extended period and was exhaustive.

INFORMATION SOURCES

The first phase of the Bellingham wildlife inventory consisted of a thorough review of existing local information including: published and unpublished technical documents from city, state and federal sources, independent publications and private files. All of the existing Environmental Impact Statements in file with the City, Environmental Assessments from Huxley College and student thesis from Western Washington University applicable to the City of Bellingham were reviewed. In addition the following data sources were also reviewed: Bellingham Whatcom County Humane Society records, Washington Department of Wildlife Priority Habitats and Species tabular and mapped data and Nongame data files, Puget Sound Ambient Monitoring Data, Washington Department of Natural Resources Natural Heritage data.

To supplement the written documents, formal interviews were conducted in 1992 with seven area experts. The interviews provided site specific species accounts, the mapping of known wildlife concentrations and critical habitats, and included a discussion of historical wildlife trends locally. The participating experts were:

Herbert Brown, PhD. Department of Biology, WWU
James Johnston, Fisheries Biologist, Washington Department of Fish and Wildlife
David Mason, PhD. Fairhaven College
Mark Schuller, Fisheries Biologist, Washington Department of Fisheries
Clyde Senger, PhD. Department of Biology, WWU
Terence Wahl, Ornithological Consultant, Bellingham, Washington
Bert Webber, PhD. Huxley College of Environmental Studies, WWU (phone interview only)
Ralph Woods, Wildlife Enforcement Agent, Washington Department of Wildlife

In addition to the formal interviews, numerous local citizens were contacted or volunteered pertinent information relating to local wildlife sightings and issues. Lieutenant Dac Jamison of the Bellingham Police Department, Rick Fackler, Sally Manifold and Tim Wahl of Bellingham Greenways, James Luce and Dick Rothenbuhler of Bellingham Parks, Jay Taber private consultant, Jim Wiggins and Vicki Jackson wetlands consultants, Doug Huddle wildlife technician and George Garlick were all particularly helpful with their informational contributions.

To the best of our knowledge, all of the vertebrate wildlife resource material pertinent to Bellingham and written in the past fifteen to twenty years was reviewed and cited in this report. The only known exceptions are some Port of Bellingham documents.

Appendix A of this report provides an annotated bibliography of all local wildlife references published and unpublished, used as source information for this inventory.

PREVIOUS WILDLIFE STUDIES/INVENTORIES

Few systematic wildlife studies have been conducted within the City. These include short term bird related surveys and counts, faunal inventory of Sehome Hill, Padden Creek Estuary and the Chuckanut Ridge development and city wide stream surveys for fish. The majority of scientific field work in the city has involved fish.

Annual surveys of bird species have resulted in the systematic collection of data (species and numerical abundance) over time. These surveys include the Christmas Bird Count sponsored by the North Cascades Audubon Society, and the Breeding Bird Atlas sponsored by the Seattle Audubon Society. The data were collected and recorded by skilled volunteers and then compiled locally by Terence Wahl. The local data contributes to larger state and national studies. Christmas bird counts have been the source of valuable information for more than twenty five years, they are also considered a community tradition by most birders.

A review of the existing planning and other government documents revealed a consistent lack of scientifically based wildlife documentation. Few reports particularly EIA's and EIS's were prepared using empirical data (field generated data) and particularly lacking were scientifically credible wildlife studies. Few site specific, systematic wildlife inventories or field surveys have been conducted in Bellingham and of these studies, survey methods and duration varied greatly. Results and conclusions of these efforts also vary in detail and accuracy. Although these studies do not collectively provide baseline data for the city in toto, the studies do provide, with careful interpretation, valuable area specific habitat and species information.

Another informational gap has resulted from the SEPA process. SEPA requires a full disclosure of potential impacts on "flora and fauna" at project sites. In order to technically assess impacts or even complete a SEPA check list earlier in the process, empirical data is needed. In the absence of such data it is necessary for a experienced professional to conduct the required field work. Casual observations and duplication of lists containing those species expected to occur at the site in question, have sufficed for the majority of EIS's prepared for projects inside the city limits since the promulgation of SEPA in 1976. The lack of on-site investigation or quantified biological assessments in the SEPA process has resulted in the bypass of real impact disclosure for wildlife. Determining impacts on wildlife in the absence of empirical data is purely speculative. This is a serious gap in the SEPA process locally and can be easily remedied with the lead agency requiring an assessment of impacts based on site specific scientific data prior to issuing its threshold determination.

In response to these obvious gaps in information the City of Bellingham could conduct a city wide baseline inventory of wildlife habitat and species. Relying on WWU, Huxley or SEPA's checklists or EIS's for such information is an ineffective approach to data collection and would consequently provide a patchwork of site specific information from varied methods and random timing. An accurate baseline would benefit the city, the development community and wildlife.

SPECIES LISTS

Lists of vertebrate species occurring within the City range from guess work to scientifically based sampling records. Of the vertebrate groups occurring locally, the only complete existing list is for birds. Other groups may have been sampled or observed in specific areas within the City, but have not been the subject of city-wide inventory. With the existing lists and observation records from a variety of sources city-wide, we have constructed a baseline species list, containing all vertebrates known to occur within Bellingham. This list in *Appendix C* contains species common names, scientific names, status, occurrence by watershed (preliminary), abundance, seasonality and habitat association.

The particular life history characteristics and habitat associations of locally occurring species are important factors to consider in the planning and development process. Species specific habitat needs and their limiting factors need to be discussed in detail, particularly for species of concern, and serve as a guide in the community planning process. In addition to the species list, the habitat and management guidelines for some of the local "priority" species are included in *Appendix E Management Guidelines for Select Species*.

Species of Concern (*Appendix D*) are those species which have been identified by resource agencies and scientists to be "at risk" and whose status is currently either under review or has been confirmed to be endangered or threatened and is protected under the Endangered Species Act.

Invertebrates were not disregarded for lack of value or posterity. To the contrary invertebrates form the foundation for the food pyramids of all ecosystems and are important bioindicators for aquatic and terrestrial environments, water quality, air quality and landscape deterioration (Jeffery & Madden 1991). The time and space required to properly address invertebrates was beyond the resources available for this report. It is recommended however, that the city obtain expert direction on this subject and inventory locally significant macroinvertebrates.

SPECIES OCCURRENCE IN BELLINGHAM: a summary

The following summary of vertebrate species known to occur in Bellingham is based on observations, surveys and specimens collected by local experts. The complete list of species compiled from accumulated lists provided by experts is printed in *Appendix C* of this document. Local species list was compiled using several independent sources including:

Amphibians and Reptiles: Herbert Brown, PhD., Bellingham

Birds: Terence Wahl, Bellingham and David Drummond, Bellingham

Mammals: Clyde Senger, PhD., Bellingham

Fish: Jim Johnston, Fisheries Biologist, Washington Department of Fish and Wildlife
Mark Schuller, Fisheries Biologist, Washington Department of Fish and Wildlife

Fish

Over 16 species of fish are found in the fresh water streams and lakes of Bellingham. Of these 12 are resident species and 6 are anadromous (migratory); 13 are native species and 6 have been introduced. Of the native anadromous fish only the pacific lamprey and searun cutthroat populations are completely wild or untainted by hatchery stock, however remanent populations of wild salmon and steelhead may still occur in the Chuckanut watershed.

The economically important fish species of Bellingham Bay include 9 anadromous and 7 marine species (Becker et al 1989). In addition there are over six commercial shellfish species harvested from the bay. A complete list of vertebrate and invertebrate species occurring in Bellingham Bay was not available in the documents reviewed.

Amphibians and Reptiles

There are nine species of amphibians known to occur in Bellingham. All, reside year round and reproduce locally. Of these, seven are native, two are introduced. Local amphibians are either aquatic or terrestrial depending on species and life phase. Distribution and abundance of amphibians in Bellingham is unknown. Site specific observations are reported in the watershed inventory section of this document.

Five species of reptiles are native and known to occur in Whatcom County and Bellingham. All reside year round and reproduce locally. Of these reptiles, there is one lizard and four snakes, and all are terrestrial and non-venomous.

Birds

Based on recorded observations over a thirty year period, 258 bird species are known to occur in Bellingham. Of these, 64 are common year round residents, 43 are summer residents, 63 are winter residents, 45 are seasonal migrants and 43 are casual visitors or vagrants. Of the total, 92 species are known to have bred locally between 1987 and 1991. Few non-native bird species have established breeding populations following introduction. Those introduced species now thriving are familiar by name and include, european starlings, rock doves, ring-necked pheasant and house or english sparrows.

Mammals

Based on the documented observations and specimens collected since 1959, there are 39 commonly occurring mammal species in Bellingham. Of the total species, 34 are native and 3 are non-native or introduced. Local mammals represent 20 families representing eight orders for including: Marsupialia (opossum), Insectivora (shrews and moles), Chirpotera (Bats), Lagomorpha (rabbits), Rodentia (rats, mice, voles, squirrels, muskrat, mt. beaver, porcupine and beaver), Cetacea (whales and porpoise-uncommon locally), Carnivora (seal, otter, raccoon, weasel, mink, coyote, fox, bobcat, bear, cougar), Artiodactyla (deer, moose). Non native species include the opossum, norway rat and the eastern cottontail rabbit.

CRITICAL HABITATS AND SPECIES

Factoring wildlife into the planning process requires baseline species and habitat information as well as specific guidelines that will in effect protect and perpetuate whole biological communities. These guidelines cannot be tailored to every species so a representative group of target species must be identified and their life history and habitat requirements be used to formulate these guidelines. Those species on which to base planning guidelines are identified in GMA as stated, *"..cities should determine which habitats and species are of local importance...and may be classified in terms of their relative importance."* Species of local significance include *"... T&E&S species other species of local concern, species present which are sensitive to habitat manipulation. historic presence of species of local concern..."* The species of local significance or target species may be used to determine the biologically acceptable minimum habitat retention, connectivity, and buffer area necessary to maintain minimum viable populations, as well as the populations of less sensitive species.

Compiling a list of these species complete with their habitat requirements, limitations and management recommendations is needed if the species concerns are to be addressed in the planning process. The WDFW has developed the Priority Habitats and Species (PHS) manual which lists vulnerable species state wide in addition the PHS manual a technical summary and management recommendations for each species. Those species included in PHS fall under one of the following criteria:

-Wildlife species of concern due to their population status and their sensitivity to habitat alteration.

-Species determined to be in danger of failing, declining or vulnerable due to factors such as limited numbers, disease, predation, exploitation or habitat loss or change. These are both state listed and state candidate species for endangered, threatened and sensitive classification .

- Uncommon species, including Monitor species, occurring in forest environments and that may be affected by habitat loss or change and uncommon species occurring in urban growth areas that are vulnerable to urbanizing influences.

- *Species in forest environments for which the maintenance of a stable population and surplus for recreation may be affected by habitat loss or change and for species in urban growth areas with a high public profile that are vulnerable to urbanizing influences.*

Federally designated endangered, threatened and candidate species are also included on the state PHS list.

It is openly admitted by the WDFW that local conditions and habitat availability will likely dictate the consideration of additional locally vulnerable species to complete the target or critical species list. It is the responsibility of local governments to determine and designate those species which are at risk within their jurisdiction.

The obvious target species are those most vulnerable and likely of local extirpation as a result of anthropogenic pressures particularly species with large home range requirements and specialists. Generally the species most vulnerable to environmental change and habitat manipulation is that group known as specialists. Specialist usually have a specific and limited food source, and depend on specific habitat components again which are limiting and human structures or activity function as barriers, disturbances or stress to individuals or entire populations. In contrast, generalists such as raccoons, crows who utilize a broad spectrum of habitats and food sources and actually benefit from human development.

Following an examination of existing habitats, special features, current land use, local species, life history information and consultation with local experts, a list of locally significant species was developed. These species tend to be specialists, historically common and indigenous to the area. Maintenance of the minimum viable populations of these species over time will be the responsibility of the City of Bellingham under GMA. As indicators these species can be used as a gauge to monitor local ecological health/pollution, habitat function/loss, and species diversity/homogenization. Placing our attention on certain target species will, in theory, indicate trends for their associated biological communities. Quantified abundance and distribution of all locally occurring species is needed prior using the selected species for monitoring or gauging planning effectiveness and compliance with the intent of GMA. The many terms used to describe target species by various agencies and that appear in GMA may easily be confusing. In an effort to categorize all habitats and species that are locally significant (for what ever the reason), they will be referred to collectively as Bellingham Significant Habitats and Species.

Bellingham Significant Species

The following preliminary list of species are of local significance in the City of Bellingham and are identified as Bellingham's Significant Species. This list was derived from combining several references, species lists and comments from the local wildlife experts. It is however potentially incomplete and changeable as better, more complete information becomes available. Without local species occurrence, population and distribution data it is difficult to confirm those species or populations that are in need of special consideration. Locally documented observations or existing reports were lacking or unavailable for the following groups which should be reviewed for inclusion as potential significant species:

- all macro invertebrates, particularly beetles, butterflies, moths and others which appear on federal and state lists of concern or are endemic to Bellingham
- marine fishes and macro invertebrates
- fresh water sculpins which are a species are of concern
- other fresh water fish not identified as part of routine stream surveys

The significant species list contains all federal and state endangered, threatened, candidate, proposed, monitor and state PHS species. This list should be used as a preliminary master guide to those species that are at risk and or are protected under law and require special planning and development considerations.

F/e,t,c,p = Federal/endangered, threatened, proposed, candidate

S/e,t,s,c,m = Washington State/ endangered, threatened, sensitive, candidate, monitor

PHS = Washington Department of Wildlife Priority Species and Habitat

LS = locally significant

Fish

Pacific Lamprey (<i>Lampetra tridentata</i>)	LS anadromous native/naturally reproducing
Chum Salmon (<i>Oncorhynchus keta</i>)	LS anadromous native/naturally reproducing
Coho Salmon (<i>Oncorhynchus kisutch</i>)	LS anadromous native/naturally reproducing
Kokanee (<i>Oncorhynchus nerka</i>)	PHS/LS resident/native/naturally reproducing
Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	LS anadromous/native
Searun Cutthroat Trout (<i>Salmo clarki</i>)	PHS/LS anadromous/native/naturally reproducing
Rainbow Trout (<i>Salmo gairdneri</i>)	PHS/LS resident form/native/naturally reproducing
Steelhead (<i>Salmo gairdneri</i>)	PHS/LS anadromous/native/naturally reproducing
Dolly Varden(<i>Salvelinus malma</i>)	PHS/LS anadromous/native
Sculpin (<i>Cottus sps.</i>)	Sc/LS (for five species not yet identified in Bellingham)

Amphibians

Northwestern Salamander (<i>Ambystoma gracile</i>)	LS* vulnerable to habitat disturbance/region declines/limited mobility
Long Toed Salamander(<i>Ambystoma macrodactylum</i>)	LS* same as above
Ensatina (<i>Ensatina eschscholtzi</i>)	LS* same as above

Western red-backed salamander (<i>Plethodon vehiculum</i>)	LS* same as above
Western Toad (<i>Bufo boreas</i>)	LS* decline in local population
Tailed Frog (<i>Ascaphus truei</i>)	Sc/LS
Red Legged Frog (<i>Rana Aurora</i>)	Fc/LS

Reptiles

Rubber Boa (<i>Charina bottae</i>)	LS* rare
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Birds

Common Loon (<i>Gavia immer</i>)	Sc/PHS/LS
Horned Grebe (<i>Podiceps auritus</i>)	Sc/PHS
Western Grebe (<i>Aechmophorus occidentalis</i>)	Sc/LS significant winter density on the bay
Brandt's Cormorant (<i>Phalacrocorax penicillatus</i>)	Sc/PHS
Great Blue Heron (<i>Ardea herodias</i>)	Sc/PHS/LS
Green Backed Heron (<i>Butorides striatus</i>)	Sc/PHS/LS
Trumpeter Swan (<i>Cygnus buccinator</i>)	PHS
Cavity Nesting Ducks	PHS/LS
wood duck (<i>Aix sponsa</i>)	
hooded merganser (<i>Lophodytes cucullatus</i>)	
bufflehead (<i>Bucephala albeola</i>)	
Harlequin Duck (<i>Histrionicus histrionicus</i>)	Fc/PHS/LS
Turkey Vulture (<i>Cathartes aura</i>)	Sc/PHS
Osprey (<i>Pandion haliaetus</i>)	Sc/PHS/LS
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Ft/St/PHS/LS
Northern Goshawk (<i>Accipiter gentilis</i>)	Fc/Sc/PHS
Red Tailed Hawk (<i>Buteo jamaicensis</i>)	PHS/LS
Merlin (<i>Falco columbarius</i>)	Sc/PHS/LS
Peregrine Falcon (<i>Falco peregrinus</i>)	Fe/Se/PHS/LS
Virginia rail (<i>Rallus limicola</i>)	LS* wetland associated, very secretive, lack data
Sora (<i>Porzana carolina</i>)	LS* wetland associated, very secretive, lack data
Snipe (<i>Gallinago gallinago</i>)	LS* wetland associated, secretive, lack data
Caspian Tern (<i>Sterna caspia</i>)	Sc/PHS
Marbled Murrelet (<i>Brachyramphus marmoratus</i>)	Ft/Sc/PHS/LS marine/old growth dependent, feeds near shore, susceptible to oilspills, gillnet entanglement & habitat loss.
Band-Tailed Pigeon (<i>Columba fasciata</i>)	PHS/LS
Great Horned Owl (<i>Bubo virginianus</i>)	LS*
Snowy Owl (<i>Nyctea scandiaca</i>)	Sc/PHS
Barred Owl (<i>Strix varia</i>)	Sc/PHS
Northern saw-whet owl (<i>Aegolius acadicus</i>)	LS*
Vaux's Swift (<i>Chaetura vauxi</i>)	Sc/PHS snag dependent, has adapted to man-

Vaux's Swift (<i>Chaetura vauxi</i>)	Sc/PHS snag dependent, has adapted to man-made chimneys
Pileated Woodpecker (<i>Dryocopus pileatus</i>)	Sc/PHS/LS, snag dependant, primary cavity excavator
Northern flicker (<i>Colaptes auratus</i>)	LS* primary cavity excavator, possible decreasing local population
Purple Martin (<i>Progne subis</i>)	Sc/PHS/ locally rare due to lost habitat
Brown Creeper (<i>Certhia americana</i>)	LS* forest interior indicator
American Dipper (<i>Cinclus mexicanus</i>)	LS* stream dependent/indicator of stream and riparian habitat quality
Rufous-sided Towhee (<i>Pipilo erythrophthalmus</i>)	LS* ground nester/vulnerable to urbanization
Ruffed Grouse (<i>Bonasa umbellus</i>)	LS* ground nester/vulnerable to urbanization

Mammals

Townsend's big-eared bat (<i>Plecotus Townsendii</i>)	Fc/Sc/PHS/LS
Long eared myotis (<i>Myotis evotis</i>)	Sc/LS
Long legged myotis (<i>Myotis volans</i>)	Sc/LS
Columbian black-tailed deer (<i>Odocoileus hemionus columbianus</i>)	PHS/LS
Northern Flying Squirrel(<i>Glaucomys sabrinus</i>)	LS* forest interior indicator/cavity dependent
Mountain Beaver(<i>Aplodontia rufa</i>)	LS* local population decline
Porcupine(<i>Erethizon dorsatum</i>)	LS* limited vagility/large home range requirement
Long tailed weasel(<i>Mustela frenata</i>)	LS* riparian associated
Muskrat (<i>Ondatra zibethicus</i>)	LS* stream/riparian/wetland dependent
Beaver (<i>Castor canadensis</i>)	LS* stream/wetland dependent, requires forested riparian habitat
Harbor Seal (<i>Phoca vitulina</i>)	Sc/PHS/LS
River Otter (<i>Lutera canadensis</i>)	LS* shoreline dependent

-Other locally significant populations are:

- Shorebird concentrations, various species - seasonal PHS/LS*
- Waterfowl concentrations, various species - seasonal PHS/LS*

* denotes native species of local significance based on life history, habitat requirements and the local population vulnerability to habitat alteration or removal

Habitat Classification System: a summary

Wildlife communities are dynamic and complex systems with specific climactic, spatial, structural and nutritional requirements. These requirements are met independently by each species through special adaptations, associations and interactions with components within their environment. Habitat is characterized by those components, singularly and collectively with which a species is associated and likely dependent. Habitats, be it vegetative, geomorphic, aquatic, marine or human structures are also dynamic. Classifying habitat involves characterizing the current conditions of a landscape. Yet, the natural systems influence the landscape to change slowly overtime (in the absence of natural disaster) and when left undisturbed will generally succeed in a predicable fashion. Succession is most notably applied to vegetative communities. Each successional stage of a vegetative community provides a unique set of conditions with which certain wildlife species are adapt. It is therefore a well accepted practice to analyze and classify the landscape cover as a means of predicting species presence in a given area.

Classification systems are used:

- to reliably predict the successional development of habitats and related changes in wildlife communities;
- to identify vegetative conditions with which specific sets of wildlife populations may be associated or dependent;
- to predict responses to habitat conditions and wildlife populations to management activities;
- to serve as precursors to field inventories and enable monitoring;
- to provide a basis for planning and implementing for both research and management activities (Holthausen & Marcot 1991).

In the absence of a state-wide standardized habitat classification system, it is necessary to adapt the best available and most widely used classification systems for local application. Two primary references were used as the basis of the classification system, these are from the USDA Forest Service and USDA Fish and Wildlife Service. Other sources were also consulted for compatibility.

The classification system consists of 35 categories with additional qualifier codes. The complete system appears in *Appendix B* of this document.

Utilizing identical classification systems, the city and county will be at an advantage to share and compare data particularly in the fringe area, when linking corridors and to identify critical habitat areas that span city-county boundaries.

One element in the city's watershed inventory is habitat. The classification system was applied in the inventory as an interpretive tool to identify the vegetation communities and special habitats features within the city. With this preliminary inventory based on aerial photo-

interpretation, the habitat information can be used to identify habitat blocks, corridors, potential critical habitats and their associated species.

Bellingham Significant Habitats

The encroachment of urbanization on wildlife habitats within the city of Bellingham in effect necessitates the designation of all natural habitats as sensitive. However under the GMA and PHS, critical habitat is specified by the following criteria and recommendations, which will be applied in the identification and delineation of Bellingham's critical or significant habitat areas:

- Areas with which endangered, threatened, and sensitive species occur.
- Habitats and species of local importance.
- Shellfish areas
- Kelp and eelgrass beds.
- Naturally occurring ponds over twenty acres.
- Waters of the state.
- Lakes ponds streams and rivers planted with game fish.
- State natural area preserves and natural resource conservation areas.
- Comparatively high wildlife density
- High species richness
- Significant wildlife breeding habitat
- Significant wildlife seasonal ranges
- Significant movement corridors for wildlife
- Limited availability and or high vulnerability

The GMA requires the consideration six factors when classifying and designating local habitat conservation areas or critical habitat. These key considerations will assist in the evaluation of current habitat value and function in addition to habitat viability over time.

- Habitat connectivity between larger habitat blocks and open spaces.
- Level of human activity including roads and recreation activities.
- Protecting riparian ecosystems.
- Evaluating adjacent land uses.
- Establishing buffer zones around these areas to separate incompatible uses.
- Restoring lost salmonid habitat.

The WDFW recommend the following habitats as "priority" or critical habitats:

- Caves
- Cliffs
- Natural Meadows
- Old-Growth Forests
- Riparian Areas
- Snag Rich Areas
- Talus

- Urban Natural Open-Space
- Wetlands

By combining both the significant species and habitat lists with accurately mapped distributional information, one could target the critical wildlife areas of the City. This is the ultimate goal. First, however an inventory of the City's natural resources is in order.