

City of Portland, Oregon

**TERRESTRIAL ECOLOGY
ENHANCEMENT STRATEGY**

SUMMARY AND UPDATE



June 28, 2011

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Executive Summary

Portland City Council adopted the *Portland Watershed Management Plan* and its supporting scientific foundation document, the *Framework for Integrated Management of Watershed Health* in March 2006. These established a definition of healthy urban watersheds; scientific principles and guidelines; a science-based watershed management approach; citywide watershed health goals and objectives for hydrology, physical habitat, water quality and biological communities; and strategies and actions for the next 2-5 years. The goals and objectives included both aquatic and terrestrial environments, but were aquatic-focused. Development of a Terrestrial Ecology Enhancement Strategy (TEES) was subsequently embarked upon in 2006. A multi-bureau city team coordinated the TEES work, with assistance from a technical advisory group--the Terrestrial Ecology Enhancement Strategy Advisory Group (TEESAG).

The purpose of the TEES is to have a common body of information and agreed-upon priorities for conservation and restoration of terrestrial plant and animal species and habitats in Portland within a regional and state context. The TEES is designed to help achieve the watershed health goals and objectives in the *Portland Watershed Management Plan*.

The main elements of the TEES include:

- Identification of plant and animal species and terrestrial habitats needing protection, conservation, and/or restoration
- Identification of key management issues
- Articulation of watershed-specific objectives for terrestrial habitats and biological communities
- Identification and implementation of priorities and actions for the next 2-5 years
- Guidance to city bureaus and citizens for improving habitat and addressing plant and wildlife management issues
- Selection of species and habitats to be monitored over time to determine the health of biological communities in Portland's urban watersheds

This *Summary and Update* summarizes the TEES and provides updated information as of June 2011 for each of these elements. It also identifies future work that will help the City achieve its watershed goals and objectives.

SECTION 1

Background

WHY DOES PORTLAND NEED A TERRESTRIAL ECOLOGY ENHANCEMENT STRATEGY?

Portland's City Council adopted the *Portland Watershed Management Plan (PWMP)* (<http://www.portlandonline.com/bes/index.cfm?c=38965>) and its supporting scientific foundation document, the *Framework for Integrated Management of Watershed Health (Framework)* (<http://www.portlandonline.com/bes/fish/index.cfm?c=33528>) in March 2006 (Resolution 36384). Together, these established a definition of healthy urban watersheds in Portland; scientific principles and guidelines; a science-based watershed management approach; citywide watershed health goals and objectives for hydrology, physical habitat, water quality, and biological communities; and strategies and actions for the next 2 to 5 years.

Watershed Health Goals

Hydrology—Move toward normative stream flows conditions to protect and improve watershed and stream health, channel functions, and public health and safety.

Physical Habitat—Protect, enhance and restore aquatic and terrestrial habitat conditions and support key ecological functions and improved productivity, diversity, capacity, and distribution of native fish and wildlife populations and biological communities

Water Quality—Protect and improve surface water and groundwater quality to protect public health and support native fish and wildlife populations and biological communities.

Biological Communities—Protect, enhance, manage and restore native aquatic and terrestrial species and biological communities to improve and maintain biodiversity in Portland's watersheds.

Although the City's watershed health goals include both the aquatic and the terrestrial environments, the objectives and actions in the *PWMP* are largely focused on the aquatic environment. The *PWMP* identified as a high priority the development and integration of a terrestrial component into watershed management. A Terrestrial Ecology Enhancement Strategy (TEES) was subsequently embarked upon in 2006. Work accomplished or underway was previously summarized in *TEES Summary and Update* documents dated August 2007 and

June 2010. This June 2011 *TEES Summary and Update* presents the most recent information for the TEES and supersedes the August 2007 and June 2010 versions.

The purpose of the TEES is to have a common body of information and agreed-upon priorities for conservation and restoration of terrestrial plant and animal species and habitats in Portland, within a regional and state context. The TEES is designed to help achieve the watershed health goals and objectives in the *PWMP*.

The information assembled during the development of the TEES (see “Main Elements” below) is available to BES watershed teams to supplement existing watershed characterizations; inform the selection and prioritization of actions; add value to projects and other actions; determine monitoring priorities; and support and inform the Grey to Green (G2G) project.¹ The TEES work also supports and informs an array of other City programs, plans, activities, projects, and decision-making processes, including the *Portland Plan* update, environmental regulatory improvement, parks and natural area management, and local bond share land acquisition.

In addition, the TEES supports efforts of Metro (e.g., Nature in Neighborhoods, Intertwine and the Regional Conservation Strategy), the U.S. Fish and Wildlife Service, the Oregon Department of Fish and Wildlife (e.g., the *Oregon Conservation Strategy*), the Oregon Watershed Enhancement Board, and the Northwest Power and Conservation Council’s sub-basin planning.

MAIN ELEMENTS

The main elements of the TEES include:

- Identification of plant and animal species and terrestrial habitats needing protection, conservation, and/or restoration (Special Status Species and Habitats)
- Identification of key management issues (e.g., invasive species)
- Articulation of watershed-specific objectives for terrestrial habitats and biological communities
- Identification and implementation of priorities and actions for the next 2 to 5 years, as well as identification of long-term actions
- Guidance to City bureaus and citizens for improving habitat and addressing plant and wildlife management issues
- Selection of species and habitats to be monitored over time to determine the health of biological communities in Portland’s urban watersheds

¹ Grey to Green is a 5-year effort that will complement ongoing BES implementation of the *Portland Watershed Management Plan* and the City’s *Stormwater Management Manual*. Key components of Grey to Green are:

- Acquiring land for habitat enhancement and watershed health.
- Increasing pervious surfaces through ecoroofs and green street facilities.
- Increasing the tree canopy by planting street and yard trees.
- Removing invasive weeds and increasing revegetation and restoration planting.
- Replacing culverts that block fish passage.

This *TEES Summary and Update* provides updated information as of June 2011 for each of these elements. A new section was added to this 2011 Summary and Update—Outreach and Education.

TEAMS

A multi-bureau team coordinates the citywide TEES work, with occasional assistance from a technical advisory group.

City TEES Team

- Claire Puchy, Bureau of Environmental Services (BES) – Science, Fish and Wildlife Division (lead)
- Chris Prescott, BES – Science, Fish and Wildlife Division
- Cindy Studebaker, BES – Science, Fish and Wildlife Division (through 2009)
- Melissa Brown, BES – Science, Fish and Wildlife Division
- Shannah Anderson, BES – Science, Fish and Wildlife Division
- David Helzer, BES – Columbia Slough Watershed
- Jennifer Devlin, BES – Fanno/Tryon Watershed
- Paul Ketcham, BES – Willamette Watershed
- Mary Bushman, BES – Willamette Watershed
- Ali Young, BES – Johnson Creek Watershed
- Jennifer Antak, BES – Johnson Creek Watershed
- James Allison, BES – Revegetation Program (through 2010)
- Roberta Jortner, Bureau of Planning and Sustainability
- Deborah Lev, Bureau of Parks and Recreation (through 2008)
- Emily Roth, Bureau of Parks and Recreation
- Lynn Barlow, Bureau of Parks and Recreation

Technical Advisory Group

The Terrestrial Ecology Enhancement Strategy Advisory Group (TEESAG) is a technical working sub-group of the City's Watershed Advisory Committee (formerly called the Watershed Science Advisory Group). It also includes several additional members with expertise in terrestrial ecology, especially as it applies to urban areas in general and Portland in particular. The TEESAG meets on an as-needed basis. Members have included:

- Jennifer Thompson, U.S. Fish and Wildlife Service
- Lori Hennings and Paul Ketcham, Metro, Nature in Neighborhoods
- Tom Calabrese, EnviroLogic Resources, Inc.; Tryon Creek Watershed Council
- Bob Sallinger, Audubon Society of Portland
- Susan Barnes, Oregon Department of Fish and Wildlife
- Bruce McClelland, Multnomah County Drainage District
- Elaine Stewart, Metro, Parks and Greenspaces Science Team
- Dorothy Sperry (Christy Galen, alternate), Port of Portland

SECTION 2

Updated Information

SPECIAL STATUS SPECIES—WILDLIFE

As part of the TEES work, the City has refined Metro’s comprehensive wildlife species list to include those vertebrate wildlife species that are known to occur in Portland or that could occur, given their natural ranges and habitat requirements (Attachment A). Special Status Species were identified as those wildlife species whose range includes Portland *and* that are officially listed or identified in one or more of the following ways by various entities:

- U.S. Fish and Wildlife Service: Candidate, Listed Threatened or Endangered, Species of Concern
- Oregon Department of Fish and Wildlife: Listed Threatened or Endangered, State Sensitive, or State Strategy (*Oregon Conservation Strategy*)
- Oregon Natural Heritage Information Center: Ranked or Listed
- Oregon Watershed Enhancement Board: Priority
- Partners In Flight: Focal Species
- Northwest Power and Conservation Council *Willamette Basin Subbasin Plan*: Focal Species
- National Audubon Society: Watch List

The City’s Special Status Species list is informational and is provided to help land managers and planners identify actions that will help protect, restore, and enhance the identified wildlife species.

The original Special Status Species list was updated in 2009, primarily to reflect changes in the Oregon Department of Fish and Wildlife’s Sensitive Species list (Attachment B). As of the date of this report, there are 76 wildlife Special Status Species in Portland: 2 amphibians, 2 reptiles, 58 birds, and 14 mammals, as identified below.

AMPHIBIANS

Clouded salamander	<i>Aneides ferreus</i>
Northern red-legged frog	<i>Rana aurora aurora</i>

REPTILES

Western pond turtle	<i>Actinemys marmorata</i>
Western painted turtle	<i>Chrysemys picta bellii</i>

BIRDS

American bittern	<i>Botaurus lentiginosus</i>
American kestrel	<i>Falco sparverius</i>
American white pelican	<i>Pelecanus erythrorhynchos</i>

Bald eagle	<i>Haliaeetus leucocephalus</i>
Band-tailed pigeon	<i>Columba fasciata</i>
Black-throated gray warbler	<i>Dendroica nigrescens</i>
Brown creeper	<i>Certhia americana</i>
Bufflehead	<i>Bucephala albeola</i>
Bullock's oriole	<i>Icterus bullockii</i>
Bushtit	<i>Psaltriparus minimus</i>
Chipping sparrow	<i>Spizella passerina</i>
Common nighthawk	<i>Chordeiles minor</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Downy woodpecker	<i>Picoides pubescens</i>
Dunlin	<i>Calidris alpina</i>
Great blue heron	<i>Ardea herodias</i>
Green heron	<i>Butorides virescens</i>
Hammond's flycatcher	<i>Empidonax hammondii</i>
Hermit warbler	<i>Dendroica occidentalis</i>
Hooded merganser	<i>Lophodytes cucullatus</i>
House wren	<i>Troglodytes aedon</i>
Hutton's vireo	<i>Vireo huttoni</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Long-billed curlew	<i>Numenius americanus</i>
Merlin	<i>Falco columbarius</i>
Nashville warbler	<i>Vermivora ruficapilla</i>
Northern harrier	<i>Circus cyaneus</i>
Olive-sided flycatcher	<i>Contopus cooperi</i>
Orange-crowned warbler	<i>Vermivora celata</i>
Pacific-slope flycatcher	<i>Empidonax difficilis</i>
Peregrine falcon	<i>Falco peregrinus</i>
Pileated woodpecker	<i>Dryocopus pileatus</i>
Purple finch	<i>Carpodacus purpureus</i>
Purple martin	<i>Progne subis</i>
Red crossbill	<i>Loxia curvirostra</i>
Red-eyed vireo	<i>Vireo olivaceus</i>
Red-necked grebe	<i>Podiceps grisegena</i>
Rufous hummingbird	<i>Selasphorus rufus</i>
Short-eared owl	<i>Asio flammeus</i>
Sora	<i>Porzana carolina</i>
Streaked horned lark	<i>Eremophila alpestris strigata</i>
Swainson's hawk	<i>Buteo swainsoni</i>
Swainson's thrush	<i>Catharus ustulatus</i>

Thayer's gull	<i>Larus thayeri</i>
Varied thrush	<i>Ixoreus naevius</i>
Vaux's swift	<i>Chaetura vauxi</i>
Vesper sparrow	<i>Pooecetes gramineus</i>
Western meadowlark	<i>Sturnella neglecta</i>
Western sandpiper	<i>Calidris mauri</i>
Western wood-pewee	<i>Contopus sordidulus</i>
White-breasted (slender-billed) nuthatch	<i>Sitta carolinensis aculeata</i>
White-tailed kite	<i>Elanus leucurus</i>
Willow flycatcher (little)	<i>Empidonax traillii brewsteri</i>
Wilson's warbler	<i>Wilsonia pusilla</i>
Winter wren	<i>Troglodytes troglodytes</i>
Wood duck	<i>Aix sponsa</i>
Yellow warbler	<i>Dendroica petechia</i>
Yellow-breasted chat	<i>Icteria virens</i>

MAMMALS

American beaver	<i>Castor canadensis</i>
California myotis	<i>Myotis californicus</i>
Camas pocket gopher	<i>Thomomys bulbivorus</i>
Fringed myotis	<i>Myotis thysanodes</i>
Hoary bat	<i>Lasiurus cinereus</i>
Long-eared myotis	<i>Myotis evotis</i>
Long-legged myotis	<i>Myotis volans</i>
Northern river otter	<i>Lontra canadensis</i>
Red tree vole	<i>Arborimus = Phenacomys longicaudus</i>
Silver-haired bat	<i>Lasionycteris noctivagans</i>
Townsend's big-eared bat	<i>Corynorhinus townsendii townsendii</i>
Western gray squirrel	<i>Sciurus griseus</i>
White-footed vole	<i>Arborimus = Phenacomys albipes</i>
Yuma myotis	<i>Myotis yumanensis</i>

The City has established a searchable database that includes all of these wildlife species and the entities that have listed them (Attachment C). Information about the species' habitat associations, life history information, and limiting factors (where known) are being added to the database. City staff are exploring the potential for populating the database with information about Special Status Species documented during TEES-related field assessments.

“SPECIAL STATUS” SPECIES—PLANTS

The City has compiled a Special Status Species list for plants that comprise species in Multnomah County that are designated as Ranked or Listed by the Oregon Natural Heritage Information Center (except those species that are demonstrably widespread, abundant, and secure) (Attachment D). The list will be reviewed by botanists and ecologists familiar with the Portland area and updated as needed. The City’s Special Status Species list is informational and is provided to help land managers and planners identify actions that will help protect, restore, and enhance the identified plant species.

Species currently on the City’s Special Status Species plant list are:

Howell’s bentgrass	<i>Agrostis howellii</i>
Tall bugbane	<i>Cimicifuga elata</i> var. <i>elata</i>
White rock larkspur	<i>Delphinium leucophaeum</i>
Peacock larkspur	<i>Delphinium pavonaceum</i>
Water howellia	<i>Howellia aquatilis</i>
Columbian yellowcress, Columbia cress	<i>Rorippa columbiae</i>
Columbian white-top aster	<i>Sericocarpus rigidus</i> (syn <i>Aster curtus</i>)
Oregon sullivantia (coolwort)	<i>Sullivantia oregana</i>
Golden Indian-paintbrush	<i>Castilleja levisecta</i>
Northern wormwood	<i>Artemisia campestris</i> var. <i>wormskioldii</i>
Bristly sedge	<i>Carex comosa</i>
Long-bracted knotsheath retrorse sedge	<i>Carex retrorsa</i>
Upland Nuttall’s larkspur	<i>Delphinium nuttallii</i>
Indian rice/black lilly	<i>Fritillaria camschatcensis</i>
Salt heliotrope	<i>Heliotropium curassavicum</i>
Toothcup	<i>Rotala ramosior</i>
Columbia water-meal	<i>Wolffia Columbiana</i>
Sierra mock-stonecrop	<i>Sedella pumila</i>
Grand redstem (loosestrife family)	<i>Ammannia robusta</i>
Nuttall’s waterweed	<i>Elodea nuttallii</i>
Holy grass	<i>Hierochloa odorata</i>
Dotted smartweed	<i>Polygonum punctatum</i>
Pale bulrush	<i>Scirpus pallidus</i>
Golden Alexanders	<i>Zizia aptera</i>
Texas bergia	<i>Bergia texana</i>
Oregon bolandra	<i>Bolandra organa</i>
Mountain lady’s slipper	<i>Cypripedium montanum</i>
Western wahoo	<i>Euonymus occidentalis</i>
Howell’s montia	<i>Montia howellii</i>
Loose-flowered bluegrass	<i>Poa laxiflora</i>
Weak bluegrass	<i>Poa marcida</i>
Meadow checker-mallow	<i>Sidalcea campestris</i>

SPECIAL STATUS HABITATS

A variety of habitat classification systems are in use in the Pacific Northwest. City staff decided to use a classification system developed by Johnson and O'Neil (1999) because it has been widely used by Metro, as well as by state and federal agencies. All habitat types in Portland were identified. Following that, habitat types considered as having special significance (because they are State Strategy Habitats in the *Oregon Conservation Strategy* http://www.dfw.state.or.us/conservationstrategy/read_the_strategy.asp or are of particular importance in Portland and the Metro area) were identified as Special Status Habitats. These are:

- Herbaceous wetlands
- Upland prairie and native grasslands
- Oak woodlands
- Interior forests
- Late successional conifer forests
- Bottomland hardwood forests and riparian habitats

These habitat types are described in a separate document, along with their status, threats and limiting factors (Attachment E).

The TEES team is in the process of identifying the historic and current locations of Special Status Habitat types in Portland, starting with oak woodlands and interior forest habitats.

LANDSCAPE AND URBAN HABITAT FEATURES

Some features—both natural and human-made—are not habitat types based on vegetation classification systems. Nonetheless, they are important to wildlife for feeding, resting, roosting, nesting, etc. (see Attachment F). For example, natural landscape features are important for wildlife (e.g., tidal mudflats are important for shorebirds; rock outcrops are important for certain birds and reptiles). Some human-constructed urban habitat features provide important functions for wildlife (e.g., certain bridges serve as roosts for bats and nesting sites for peregrine falcons).

Natural Landscape Features include:

- Beaches, mudflats and intertidal areas
- Buttes
- Riverine islands and river deltas
- Rock habitats

Urban Features include:

- Bridges
- Channel markers, utility poles and utility towers
- Chimneys
- Corridors between patches or habitats
- Ecoroofs

- Neighborhood tree canopy and backyard habitats
- Structural habitat features such as nest boxes, platforms and bat boxes
- Wildlife crossings (typically under roads)

THREATS AND LIMITING FACTORS

Threats are the human actions that cause adverse changes in the habitat; the changes may be severe enough to become limiting factors. Limiting factors are environmental elements that limit the growth, abundance, or distribution of a population. For example, the absence of old, hollow trees is a limiting factor for some bat species; the cutting of such trees for human safety reasons may comprise the threat. Identifying the key limiting factors for particular species is very important in determining what actions are most needed and will be most effective in restoring biological communities.

The City has developed a list of limiting factors, grouped by major categories and numbered (Attachment G). These limiting factors are linked to species and habitat tables, matrices, and databases. The main categories of limiting factors are:

- Biological Stressors
- Climate Change
- Disruption of Natural Disturbance Regimes
- Habitat Change
- Degradation and Loss
- Habitat Fragmentation and Access
- Human Disturbance
- Pollution

KEY MANAGEMENT ISSUES

Urban and rural areas share similar challenges—habitat fragmentation and invasive species, for example. However, urban areas face some unique wildlife and habitat management issues that require unique actions and partnerships. The Terrestrial Ecology Enhancement Strategy Advisory Group (TEESAG) helped City staff identify such issues in the Portland area and possible actions and partnerships to address them. The issues are organized according to the *Oregon Conservation Strategy* categories (below):

- Land Use Changes
- Invasive Species
- Disruption of Natural Disturbance Regimes
- Access/Barriers to Fish and Wildlife Movement
- Water Quantity and Quality
- Institutional Barriers to Voluntary Conservation
- Wildlife Disturbances and Hazards

The City added an additional category (“Other”) to accommodate several identified issues that do not fall within the *Oregon Conservation Strategy* categories (for example, the illegal collecting of native plants and animals).

Some ways in which the City is addressing some of these key management issues include:

Land Use Changes: TEES staff provide input on a variety of individual land use decisions, as well as broader efforts such as the *Portland Plan* and *Airport Futures*.

Invasive Species: This is discussed in greater detail under “Species of Management Concern”.

Disruption of Natural Disturbance Regimes: A TEES site assessment will inform future restoration of Oregon white oak, madrone and grassland types, and address plant and animal Special Status Species on Elk Rock Island. Because natural disturbances (e.g., fire) have not recently occurred on the island, this experimental project involved thinning in 2010 and may include burning. The City hopes to learn more about how such techniques can be used to help restore oak habitats. In addition, the TEES team developed guidelines for how habitat may be enhanced for a variety of species (e.g., salmon, red-legged frogs) through beaver activities in appropriate locations, and is testing these guidelines in 2011.

Access/Barriers to Fish and Wildlife Movement: The City is considering providing passage beneath a trail at a stormwater discharge drain from a treatment swale (which may provide some nesting habitat for painted turtles) just east of NE 181st Avenue in the Columbia Slough (Big Four Corners area). At the Oaks Bottom Wildlife Refuge, an existing culvert will be replaced with a larger box culvert to enhance fish and wildlife passage and significantly improve the flow of Willamette River water in and out of the refuge. Elsewhere in the City, fish passage projects are also considering wildlife passage issues.

Water Quantity and Quality: The City is addressing this management issue through implementation of numerous actions under the hydrology, physical habitat, and water quality goals and objectives of the *PWMP*.

Wildlife Disturbances and Hazards: The TEES team supported a citywide campaign aimed at reducing disturbance to wildlife in parks and other sensitive areas. TEES information informed the development of a city “Dogs for the Environment” brochure; a “Portland’s Sensitive Wildlife and Your Dog” brochure and poster focused on keeping dogs on-leash in sensitive areas; identification of sites needing protection; employment of rangers to patrol priority areas; and placement of physical structures (e.g., fencing) at select sites. Keeping dogs on leashes, and keeping cats indoors were messages in a “Wildlife of Portland” poster produced in 2010.

The TEES team also developed guidelines for minimizing impacts on, and improving habitats for, nesting birds. “Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects” were issued in March 2010, and beta-tested that year. The voluntary guidelines were refined in October 2010, and are being used by BES watershed and revegetation teams

These documents and products are described in more detail in other sections of this Summary (“Guidance for Improving Terrestrial Habitat” and “Outreach and Education”).

SPECIES OF MANAGEMENT CONCERN

The TEESAG identified invasive species (plants and animals, native and non-native) as one of the key management issues that is of management concern. Invasive species such as garlic mustard, English and Irish ivies, red-eared sliders, and nutria are just a few examples of plants and animals that have negative effects on biological communities and watershed health. Because this issue is so important, it is the focus of a significant amount of staff and volunteer time and deserves a separate section in this report.

In addition, changes to the landscape and ecosystem processes since European settlement have altered the population dynamics and survival strategies of many native species, resulting in behaviors (such as foraging strategies) that little resemble those of the pre-settlement landscape state. For example, increased human interactions with opossums, raccoons and coyotes as a result of altered habitat, human activities and modified wildlife behavior, are examples of management issues of concern in an urban environment.

Plants

The City has developed an invasive plant strategy in response to City Council Resolution 36360 (adopted in November 2005). The resolution directed the City to develop a 3-year work plan and 10-year goals that incorporate invasive plant management into existing programs. In response to Resolution 36360, an Invasive Species Coordinator position was established, and the City of Portland *Invasive Plant Strategy* (Strategy) was developed in October 2008 <http://www.portlandonline.com/bes/index.cfm?a=332727&c=47815>. The Strategy is administered by the Invasive Species Program of BES.

In August 2009, the City Council established the Strategy as the City’s management plan for invasive plants, and adopted the 10-year management goals that are outlined in the strategy report. The goals fall within the following categories:

- Policy and Code Changes
- Outreach and Education
- Coordination
- Control and Restoration

The City has been implementing the following elements of the Strategy’s 3-year work plan, which will lead to achievement of the 10-year goals:

- BES has worked with the Bureau of Planning and Sustainability (BPS) and the Bureau of Development Services (BDS) to evaluate and implement policy and code changes and enforcement requirements to improve the management of invasive plants on public and

private property. The Invasive Plant Policy Review and Regulatory Improvement Project was unanimously adopted by the Portland Planning Commission on November 10, 2009. City Council then approved the project with a unanimous vote on February 10, 2010, noted as Ordinance No. 183534. Most provisions took effect on July 1, 2010.

- BES has developed and implemented additional outreach and education programs targeted at gardeners in addition to the GardenSmart publication <http://www.portlandonline.com/bes/index.cfm?c=47570&a=197414>. BES is also providing technical guidance and training in weed identification to City employees, partners and public at no cost.
- BES is coordinating invasive plant control efforts with City bureaus, the public, regional agencies, and non-profit groups.
- BES has assisted the Portland Bureau of Parks and Recreation (PP&R) with the updating and development of Habitat Management Plans and Desired Future Conditions, and assists each bureau with identifying invasive plant control priorities.
- BES has developed and implemented a highly effective and respected Early Detection/Rapid Response (EDRR) program to control small populations of invasive plants before they become large infestations.
- BES has coordinated with the Comprehensive Plan (Portland Plan) to ensure that invasive species are addressed in the update. Through the Portland Plan, the City should establish clear and ambitious policies regarding invasive species management in the context of public health, safety, environment, and economy.
- BES continues to work with BPS to improve invasives policy and provide clear regulatory guidance to citizens, City employees, and those conducting relevant business within the City.
- BES continually assists the City with securing funding sources for implementation of invasive plant control efforts.

Council Resolution 35726 also identified the need to conduct an invasive animal assessment (see next section for details).

Animals

The TEES team developed a draft matrix of non-native animal species of management concern and presented it at a Regional Invasive Species Summit held in November 2008. One outcome of the summit was recognition of the need for the City to prepare an invasive animal assessment to define the City's role in addressing this issue locally and to support State efforts to implement invasive animal management, as outlined in the *Oregon Conservation Strategy*. Consequently, the City signed an Intergovernmental Agreement with the Oregon Department of Agriculture to

prepare an invasive animal assessment to determine the status and threats and to identify and guide management actions.

City Council's 2009 Resolution 36726 identified the need to conduct an invasive animal species assessment to determine status and threats and to identify and guide management actions. BES developed an interagency agreement with the Oregon Department of Agriculture to conduct this City-specific invasive animal assessment as part of a larger statewide assessment of invasive species. The invasive animal assessment report was completed in March 2010, and presented to City of Portland scientists, as well as the Oregon Invasive Species Council <http://www.portlandonline.com/bes/fish/index.cfm?a=284002&c=31006>.

The Assessment accomplishes several important tasks:

- Identifies invasive terrestrial and aquatic invasive wildlife species present in the City of Portland.
- Identifies invasive terrestrial and aquatic invasive wildlife species that might be likely to invade habitats in the City of Portland in the next 5 to 10 years.
- Identifies likely existing regulatory authority.
- Assesses current roles and responsibilities of entities involved with invasive terrestrial and aquatic invasive species management and education in Portland.
- Incorporates elements of the statewide assessment into the Portland assessment to establish context.
- Provides recommendations that prioritize invasive terrestrial and aquatic species.

Further, the Assessment includes the following recommendations from the Oregon Invasive Species Council:

- Develop performance measures to track progress in preventing the introduction of invasive animal species and controlling/eradicating existing invasive animal species in the City of Portland.
- Conduct a year-long awareness and engagement campaign, targeting specific audiences with key messages about prevention and control.
- Expand partnerships created by Audubon Society of Portland and the Feral Cat Coalition to enhance awareness and education about abandonment and feral pet issues and reduce numbers of animals in the City over time.
- Broaden the scope of entities that work on invasive animal issues by reaching out to organizations.

- Develop a prioritized list of species in the City and a steering committee of entities with authority for management to develop a long-range plan.
- Focus on vectors of species threatened to invade the City, and develop priority strategies to lessen the threat of invasion.
- Increase work with landowners, soil and water conservation districts, watershed councils, and other groups.
- Consider local ordinances and regulations that both discourage the spread of animal invasives and provide incentives for people to take action to lessen their spread.

The Assessment also proposes action items for other state, national, and local partners that would address these threats within the City of Portland.

A public review draft of the Assessment was presented to the Oregon Invasive Species Council early in 2010. TEES and TEESAG participated in a one-day workshop in November 2010 to discuss the Assessment, including refinements to the draft species lists and priority actions. A final report issued to the City of Portland will be the basis for an Invasive Animals Strategy.

Based on input from the TEES/TEESAG workshop, and discussions with regional and national experts and stakeholders, invasive animal lists for the City of Portland were developed.

Invasive Animal Lists for the City of Portland*

Present and established in the City of Portland	Present, but not yet established, in the City of Portland	Likely to establish in the City of Portland in the next 10 years
<p><u>Amphibians</u></p> <ul style="list-style-type: none"> ▪ American bullfrog <p><u>Birds</u></p> <ul style="list-style-type: none"> ▪ Feral, domestic duck and goose species ▪ European starling ▪ House sparrow ▪ Monk parakeet ▪ Peafowl ▪ Rock pigeon ▪ Eurasian collared dove <p><u>Invertebrates, Aquatic</u></p> <ul style="list-style-type: none"> ▪ Asian clam ▪ Siberian prawn <p><u>Invertebrates, Terrestrial</u></p> <ul style="list-style-type: none"> ▪ Bronze birch borer ▪ Brown marmorated stink bug ▪ Spotted wing drosophila ▪ Black stem borer ▪ Cherry bark tortrix ▪ Brown garden snail ▪ Banded European woodsnail ▪ Grey garden slug ▪ Three-band garden slug ▪ Yellow slug ▪ Leopard slug ▪ Greenhouse slug ▪ Dark-bodied glass snail ▪ Garlic snail ▪ Shelled slug ▪ Red slug complex ▪ Dusky arion <p><u>Mammals</u></p> <ul style="list-style-type: none"> ▪ Eastern cottontail ▪ Feral rabbit ▪ Feral cat ▪ House mouse ▪ Black rat ▪ Norway rat ▪ Eastern fox squirrel ▪ Eastern gray squirrel ▪ Virginia opossum ▪ Nutria <p><u>Reptiles</u></p> <ul style="list-style-type: none"> ▪ Red-eared slider 	<p><u>Birds</u></p> <ul style="list-style-type: none"> ▪ Mute swan <p><u>Invertebrates, Terrestrial</u></p> <ul style="list-style-type: none"> ▪ Japanese beetle ▪ Alder flea beetle <p><u>Reptiles</u></p> <ul style="list-style-type: none"> ▪ Soft-shelled turtle ▪ Box turtle ▪ Yellow-bellied slider ▪ Common snapping turtle 	<p><u>Invertebrates, Aquatic</u></p> <ul style="list-style-type: none"> ▪ Rusty crayfish ▪ Ringed crayfish ▪ New Zealand mudsnails <p><u>Invertebrates, Terrestrial</u></p> <ul style="list-style-type: none"> ▪ Light brown apple moth ▪ Oak ambrosia beetle ▪ Emerald ash borer ▪ Vibernum leaf beetle ▪ European chafer ▪ Asian longhorned beetle ▪ Wrinkled dune snail ▪ Apple snails (various species) ▪ Chinese mystery snails ▪ Alder leaf beetle ▪ European gypsy moth
Possible future colonization in the City of Portland based on current distribution, behavior and vectors		
	<p><u>Invertebrates, Aquatic</u></p> <ul style="list-style-type: none"> ▪ Virile crayfish ▪ Zebra mussel ▪ Quagga mussel <p><u>Invertebrates, Terrestrial</u></p> <ul style="list-style-type: none"> ▪ Rosy gypsy moth ▪ Asian gypsy moth ▪ Nun moth ▪ Asian ambrosia beetle ▪ Woodwasps (various species) ▪ Oak splendour beetle ▪ Alder leaf beetle <p><u>Mammals</u></p> <ul style="list-style-type: none"> ▪ Feral swine 	
	<p>* Invasive Animal Lists for the City of Portland are based on the results of the 2010 “City of Portland Terrestrial and Aquatic Invasive Animal Assessment” discussions with regional and national experts and stakeholders, and recommendations of the City’s Terrestrial Ecology Enhancement Strategy Advisory Group.</p> <p><i>Note:</i> Several taxonomic groups were not included in either the Assessment or the Lists: planktonic crustaceans, annelids, polychaetes, and fish. These taxa contain numerous invasive species and may be included in future versions of the Lists.</p>	

The City also participated in a pilot project in 2009 (along with PP&R, Metro, and other entities) with the Oregon Department of Agriculture and U.S. Department of Agriculture. The project involved citizen surveying for two Early Detection/Rapid Response invasive insect pests (the emerald ash borer and the Asian longhorned beetle) in Forest Park, Smith & Bybee Lakes Natural Area, Kelly Point Park, and Powell Butte. Plans are underway to conduct field surveys for these species in 2011, focusing on Forest Park and the Columbia Slough. Forest Park and the Columbia Slough are particularly vulnerable to introduction of new exotic forest pests, since they are located along an industrial corridor and near major port activity. The Asian longhorned beetle (which is not attracted to any known trap or lure) has not yet been detected in the City, so conducting surveys is the best defense against a future unintended introduction.

BES watershed teams and project teams are now using TEES site assessment forms (see the “Guidance for Improving Terrestrial Habitat” section of this report) for recording terrestrial elements on sites. The forms include a section for plant and animal Species of Management Concern that are observed, including EDRR species. If these species are observed, their occurrence is reported to appropriate authorities within the City and state/federal governments.

In 2010, the City expanded the duties of its Invasive Species Coordinator to include animals as well as plants. This significant decision will enable the City to move forward on actions to address invasive animals.

TEES MAPPING

Because comprehensive inventories and GIS layers did not exist for terrestrial ecology elements, the City’s TEES coordinating team and TEESAG held several mapping workshops in spring 2007. Information was gleaned regarding the location of:

- Anchor habitats
- Connectors
- Gaps within or between important habitat patches or connectors
- Vulnerable best remaining high-quality habitat areas
- Areas with high restoration value
- Key urban features
- Sites of importance to Special Status Species or species assemblages (e.g., stopover areas for migrating waterfowl)
- Significant wildlife crossings and barriers
- Attractive nuisances and other known wildlife hazards
- Areas with concentrations of invasive plant or animal species, and sites and pathways for possible introduction of invasive species
- Sites of social and/or cultural importance
- Places where people make (or potentially could make) connections with nature

The results were compiled in matrices, reviewed by watershed teams and external experts, and used to develop recommendations for watershed-specific objectives. GIS map layers were

developed depicting anchor habitats and some connectors and gaps. These layers were further refined as part of the Grey to Green Initiative (described below).

The TEES team conceptually and spatially mapped some of the key areas to be protected, connected, and/or restored in order to achieve the non-aquatic Biological Communities Goal and its objectives in the *PWMP*. The resulting Grey to Green Terrestrial Priorities Map, a component of the Grey to Green Initiative, provided the foundation for a citywide vision of a “system” of connected habitats that support native plant and wildlife species.

The Grey to Green Terrestrial Priorities Map was the precursor to the development of two main GIS component layers:

- The Portland Ecological Assets (PEA) Layer
<http://www.portlandonline.com/bes/fish/index.cfm?c=51052&a=354721>.
- The Priority Habitat Enhancement (PHE) Area Layer
<http://www.portlandonline.com/bes/fish/index.cfm?c=51052&a=354720>

The Portland Ecological Assets (PEA) Layer: Based on the Scientific Principle, “Protect and restore the best existing habitats,” in the City’s *Framework for Integrated Management of Watershed Health*,² this layer includes:

- Anchor habitat and connector habitats
- Special Habitat Areas (SHAs) from the Bureau of Planning and Sustainability’s Natural Resource Inventory (NRI)
- High- and medium- quality Combined Relative Resource Value sites from the NRI
- Natural area parks
- Key urban features, including golf courses and cemeteries that are of high quality for wildlife
- Existing canopied riparian areas
- Vulnerable high-quality habitat areas
- Areas with high restoration value
- Sites of importance to Special Status Species or species assemblages (e.g., stopover areas for migrating waterfowl)
- Significant wildlife crossings

The Priority Habitat Enhancement (PHE) Area Layer: Based on another important Scientific Principle in the City’s *Framework*, “Build outward from existing rare and high-quality habitats, and consider connectivity of habitat patches,” this layer includes:

- Areas along streams without existing closed canopy
- Expanded riparian areas to 300 feet
- Existing public parks (non Natural areas) with habitat value

² The *Framework for Integrated Management of Watershed Health* was adopted by the Portland City Council in March 2006 as the scientific foundation for planning and decision-making related to watershed health, including the *Portland Watershed Management Plan*.

- Key urban features, including low-quality cemeteries, golf courses, and water treatment plants
- Low-quality Combined Relative Resource Value sites from the NRI
- Desirable anchor habitat expansions
- Desirable connectors between anchor habitats
- Desirable cross-watershed and cross-jurisdictional connections

The PEA and PHE layers are being used to develop priority maps for specific Grey to Green program elements: land acquisition, canopy, green roofs, green streets, and invasive plants. They are also being used for updating the Portland Plan, City Green element.

Metro is in the process of identifying existing and desirable wildlife corridors throughout the region, including Portland. Once this information becomes available, it will be incorporated into the Terrestrial Priorities Map. In addition, the TEES team is developing maps that designate special habitat types throughout the City, separate from the Grey to Green work.

Watershed-Specific Objectives

INTRODUCTION

The *Portland Watershed Management Plan (PWMP)* establishes citywide goals and objectives for hydrology, physical habitat, water quality, and biological communities. The goals and objectives that address terrestrial ecosystems in particular are:

Citywide Goal for Physical Habitat: Protect, enhance, and restore aquatic and terrestrial habitat conditions and support key ecological functions and improved productivity, diversity, capacity, and distribution of native fish and wildlife populations and biological communities.

Citywide Objectives for Physical Habitat:

Terrestrial Habitat: Protect and improve upland habitat extent, quality, and connectivity that supports the persistence of native terrestrial communities and connectivity to aquatic and riparian habitat.

Aquatic Habitat: Protect and improve aquatic, riparian, and floodplain habitat extent, quality, and connectivity that supports the persistence of native fish and wildlife communities.

Citywide Goal for Biological Communities: Protect, enhance, manage and restore native aquatic and terrestrial species and biological communities to improve and maintain biodiversity in Portland's watersheds.

Citywide Objective for Biological Communities:

Terrestrial Wildlife and Vegetation: Implement watershed actions to restore populations of terrestrial organisms to healthy, self-sustaining levels, protect and restore the composition and structure of native vegetation communities, and reduce populations of non-native plants and organisms to levels that do not compete with native species.

To help identify more specifically how these citywide goals and objectives can be achieved in each of the City's watersheds, watershed-specific objectives are needed. As a first step, the Terrestrial Ecology Enhancement Strategy Advisory Group (TEESAG) identified some general concepts that are important to incorporate into the watershed-specific objectives for *all* of the City's watersheds:

1. Anchor Habitats³
 - Protect, expand, enhance, and restore anchor habitats.
 - Enhance and restore areas adjacent to anchor habitats.
2. Patch Habitats⁴
 - Protect, expand, enhance, and restore patch habitats.
 - Enhance and restore areas adjacent to anchor habitats.
3. Special Status Habitats
 - Protect, expand, enhance, and restore wetlands.
 - Protect, expand, enhance, and restore upland prairie and native grasslands.
 - Protect, expand, enhance, and restore oak woodlands.
 - Protect, expand, enhance, and restore interior forests.
 - Protect, expand, enhance, and restore late successional conifer forests.
4. Corridors and Connectivity
 - Protect, enhance, and restore corridors to connect anchor and patch habitats.
 - Protect, enhance, and restore corridors to connect anchor and patch habitats to streams.
 - Enhance and restore areas adjacent to corridors.
 - Establish corridors between habitats.
5. Urban Features
 - Protect natural non-vegetation-based urban habitat features important for wildlife (e.g., rock outcrops, snags).
 - Protect key human-made urban habitat features important for wildlife (e.g., bridges, street trees).
 - Create additional urban habitat features where appropriate (e.g., ecoroofs, bird boxes).
6. Special Status Species
 - Protect, enhance, and restore sites important for Special Status Species (both plants and animals).
 - Protect, enhance, and restore for other identified priority species (both plants and animals).
7. Assemblages of Species
 - Protect, enhance, and restore sites for assemblages of species.
8. Management Issues
 - Address significant wildlife management issues, including attractive nuisances, hazards, and invasive animal species.

³ Anchor habitats are sites that are relatively large (e.g., generally over 30 acres) and currently provide conditions and functions favorable to biological communities.

⁴ Patch habitats are ecologically important, but are smaller than anchor habitats. The quality of patch habitats may be lower than anchor habitats because of size, isolation, location, or condition.

- Address significant invasive plant issues, including impact of vegetation removal timing on wildlife.

9. Community Engagement

- Create opportunities where people can learn, recreate, restore, and monitor terrestrial species and habitats with minimal negative impacts.

In addition, the TEESAG recommended that the City develop objectives that address the importance of developing a network or system of habitat anchors and connectors across watersheds within the City and of coordinating with other jurisdictions to create a larger-scale system that connects habitats in other jurisdictions.

Terrestrial ecology watershed-specific objectives were drafted following the 2007 TEESAG mapping workshops, and were refined as part of the Grey to Green/TEES mapping work. They will be integrated into the *PWMP* during the future update of the *PWMP*. The watershed-specific TEES objectives are provided on the following pages.

WILLAMETTE WATERSHED

OBJECTIVE: Protect anchor habitats currently functioning for Special Status Species (wildlife and plants), including:

- Forest Park and Washington Park
- Oaks Bottom and Ross Island Complex
- Willamette Bluffs Escarpments—North and South
- Mt. Tabor
- Harborton Forest and Wetland Complex
- Elk Ross Island and Elk Rock
- South Portland Riverbank
- Rose City Golf Course
- Waverly Golf Course
- Laurelhurst Park
- Burlington Bottoms
- Westside Wildlife Corridor, including:
 - Council Crest and the tree canopy north to Highway 26
 - Marquam Nature Park
 - Terwilliger Wilds
 - Stephens Creek Canyon (and Riverview Mausoleum)
 - George Himes Park
 - Riverview Cemetery

OBJECTIVE: Restore sites with high restoration value, including:

- Ross Island—enhance habitat
- Elk Rock Island—enhance diverse habitats; protect the best (TPB)

- Willamette River riparian and bottomland forests—daylight streams at culverts; address wildlife passage to river; enhance habitat diversity; reconnect to floodplain; restore wetlands:
 - Tributary confluences: Doane, Miller, Stephens, Balch, Saltzman
 - Powers Marine Park—improve connectivity with Riverview Cemetery
 - Willamette Park
 - Cathedral Park
 - Willamette Cove
 - Oaks Bottom
 - Wapato patch and riparian and floodplain area at Swan Island Lagoon
 - South Waterfront
- Willamette River Bluffs—oak/madrone habitats on both sides of river, to the north and south:
 - Mocks Crest
 - University of Portland
 - Willamette Cove
 - Baltimore Woods
 - Marquam Oaks
 - Dunthorpe Oaks
 - Oaks Bottom Bluffs
 - Elk Rock/Bishops Close
- Westside Wildlife Corridor—tree canopy and habitat diversity (locations as described in anchor concept list)
- Rocky Butte bluffs, forest, and potential future prairie habitat at N.E. 82nd landfill
- Mt. Tabor Park—enhance habitat diversity

OBJECTIVE: Protect existing corridors between anchor habitats and between anchor habitats and streams, including:

- Doane Lake and Creek—connects Forest Park to the Willamette River
- Miller Creek—connects Forest Park to Sauvie Island
- Forest Park to the north—connects Forest Park to the Coast Range (for elk, deer, bear, wildcats and other wildlife species)
- South Waterfront—connects to Oaks Bottom, Westside Wildlife Corridor, and Ross Island
- Willamette Park—connects flyway from Oaks Bottom/Ross Island to Westside Wildlife Corridor
- Westside Wildlife Corridor to Forest Park and Tryon State Park
- Powers Marine Park to Riverview Cemetery
- Riverview Cemetery to Tryon Creek
- NW Willamette River Forested Wetland
- Harborton Forest and Wetland Complex
- Mt. Tabor—neotropical bird flyway to other bluffs
- Marquam Woods and Council Crest, south to Riverview Cemetery and Tryon Creek State Natural Area and north to Forest Park
- Washington Park (tree canopy) south to Westside Wildlife Corridor, north to Forest Park

- Oak habitats along the Willamette River—for oak-associated avian species
 - University of Portland
 - Willamette Cove
 - Baltimore Woods
 - Marquam Oaks
 - Dunthorpe Oaks
 - Oaks Bottom Bluffs
 - Elk Rock/Bishops Close
 - Mocks Crest

OBJECTIVE: Restore and establish corridors between anchor habitats and water bodies where there are gaps or barriers.

- Restore 1.1 miles along South Waterfront to complete the connection with Oaks Bottom and Ross Island.
- Restore Mocks Crest terrestrial connection to the Willamette River.
- Establish a connection to Forest Park across the Willamette River from Time Oil Road area. (Highway 30 is a barrier, as is industrial land.)
- Enhance the connection between Riverview Cemetery and the Willamette River at Powers Marine Park. (Highway 43 and culverts are barriers.)
- Enhance connectivity between Westside Wildlife Corridor and the Willamette River:
 - Corbett Bluffs to Willamette Park
 - Riverview Cemetery to Powers Marine Park
 - Stephens Creek Canyon to Stephens Creek Confluence
 - Marquam Nature Park to South Waterfront
 - George Himes Park to Willamette Park and the Willamette River
- Look for opportunities to increase the canopy connectivity between Forest Park and the Willamette River:
 - Balch Creek
 - Doane Creek
 - Saltzman Creek
- Look for opportunities to connect Baltimore Woods with the Willamette River by increasing tree canopy and building ecoroofs in the north industrial areas.

OBJECTIVE: Coordinate with adjacent jurisdictions to maintain anchor habitats and other important habitat areas, as well as maintain and/or restore linkages and corridors between them.

- Coordinate with Multnomah County, Washington County, and Tualatin Basin jurisdictions to maintain existing anchor habitats and other important habitat areas in the headwater areas of the Forest Park Corridor, as well as linkages and corridors between them.
- Coordinate with Multnomah County regarding Sauvie Island.
- Coordinate with Oregon State Parks, Riverview Cemetery, and Lewis and Clark College to protect and restore corridors between Riverview Cemetery and Tryon State Park.
- Coordinate with Clackamas County regarding Elk Rock Island.

- Coordinate with West Multnomah Soil and Water Conservation District (SWCD) and East Multnomah SWCD to encourage stewardship on large private properties critical to maintaining important anchor habitats and connectivity corridors.

OBJECTIVE: Encourage ivy removal and other invasive species control methods (including revegetation) in private properties adjacent to anchor habitats and corridors.

- Support the West Willamette Restoration Partnership Program to aggressively reduce invasive species (and replant native species) on private properties in the Westside Wildlife Corridor.
- Support the Backyard Habitat Certification Program to promote wildlife stewardship in all areas of the City of Portland.
- Support Friends of Baltimore Woods to promote stewardship of private properties in the oak woodland habitat.
- Work with PP&R, Portland Water Bureau, Friends of Mt. Tabor, and the BES Watershed Revegetation Program (WRP) to promote the removal of non-native invasive species and replanting of native species in Mt. Tabor Park and on adjacent private properties.
- Support the Forest Park Conservancy’s work to promote the removal of non-native invasive species and replanting of native species in Forest Park and on adjacent private properties.

OBJECTIVE: Protect key urban habitat features important for wildlife, and create additional features where appropriate.

- Protect and manage large street trees in the Westside Park Blocks, Ladds Addition, and other older neighborhoods.
- Enhance street and neighborhood trees throughout the developed portions of the watershed, particularly in older eastside commercial, industrial, and residential neighborhoods.
- Protect the Chapman School chimney for Vaux’s swifts.
- Create bat habitat when repairing or replacing bridges.
- Protect bridge nest sites and Elk Rock for peregrine falcons.
- Promote bird and pollinator-friendly ecoroofs in densely developed portions of the watershed, including:
 - Industrial areas (north and east)
 - Downtown
- Protect Waterfront Park cherry trees, which provide stopover habitat for songbirds.

OBJECTIVE: Protect and restore sites of importance to Special Status Species and other identified priority species, including:

- Great blue heron rookeries on Ross Island, Oaks Bottom (and elsewhere)—protect from human disturbance
- Interior conifer forest in Forest Park—for Douglas squirrels
- Osprey nesting sites along the Willamette River
- Bald eagle nests and peregrine falcon eyries along the Willamette River

- Mt. Tabor—for neotropical migratory birds
- Elk Rock Island—for oaks and other native and rare plant species
- Elk Rock—for native rare plant species
- Doane Lake and all westside streams—for red-legged frogs
- Swan Island Lagoon and Wapato Wetland—for wapato
- Butterfly Park—for key sparrow habitat
- Willamette mudflats—for shorebirds
- Oak habitats along the Willamette River—for oak-associated avian species, including:
 - University of Portland
 - Willamette Cove
 - Baltimore Woods
 - Marquam Oaks
 - Dunthorpe Oaks
 - Oaks Bottom Bluffs
 - Elk Rock/Bishops Close
 - Mocks Crest
- Willamette River riparian and bottomland forests (daylight streams at culverts; address wildlife passage to the river; enhance habitat diversity; reconnect to the floodplain; restore wetlands), including:
 - Tributary confluences: Doane, Miller, Stephens, Balch, Saltzman
 - Powers Marine Park—improve connectivity with Riverview Cemetery
 - Willamette Park
 - Cathedral Park
 - Willamette Cove
 - Oaks Bottom
 - Wapato patch and riparian and floodplain area at Swan Island Lagoon
 - South Waterfront

OBJECTIVE: Protect and restore sites of importance to assemblages of species, including:

- Harborton Forest and Wetland Complex
- Balch Creek
- Doane Lake
- Willamette Park mudflats—for waterfowl and songbirds
- Powers Marine Park and Riverview Cemetery
- Swan Island Lagoon Beach and Wapato Wetland –foraging mudflats for migratory and resident shorebirds
- Oaks Bottom and Ross Island Complex (wetlands, riparian forest, oak bluffs)—for birds and other species
- Mudflats at Cottonwood Bay along the Willamette River—stopover habitat for migratory and resident shorebirds
- Mt. Tabor—for neotropical migratory birds
- Forest Park—for interior and late successional forest species
- Stephens Creek Confluence (wetlands)

- Oak habitat along the Willamette River—for oak-associated species, including:
 - University of Portland
 - Willamette Cove
 - Baltimore Woods
 - Marquam Oaks
 - Dunthorpe Oaks
 - Oaks Bottom Bluffs
 - Elk Rock/Bishops Close
 - Mocks Crest

OBJECTIVE: Address significant plant and wildlife management issues, including:

- Broadway Bridge (starling populations)
- Laurelhurst Park (nutria, ducks, and geese)
- South Portland riverbank (purple loosestrife)
- Oaks Bottom (purple loosestrife)
- Forest Park and Westside Wildlife Corridor (ivy and other invasive plant species)
- Swan Island (snapping turtles)
- Forest corridor along Highway 26 (ivy and clematis)
- Terrestrial Superfund sites
- Waterfront Park geese
- South Waterfront (new, tall, reflective glass buildings)
- Sites known to be sources of stormwater runoff/non-point source pollution
- Willamette Cove (exposure of humans and animals to pollutants, and safety hazards)

OBJECTIVE: Create opportunities where people can make connections with nature where they do not negatively impact wildlife or their habitats, including:

- Provide interpretive opportunities along Forest Park trails, including the Wildwood Trail.
- Provide interpretive opportunities on trails and in educational buildings at the Audubon Society of Portland complex and elsewhere in the Balch Creek subwatershed.
- Provide interpretive opportunities about diverse wildlife and habitats at Oaks Bottom.
- Provide interpretive opportunities about diverse wildlife and habitats at Mt. Tabor Park.
- Provide interpretive and viewing opportunities of peregrine falcons that nest on the Marquam, Fremont, and St. John’s bridges.
- Assist Baltimore Woods citizens in their involvement in oak habitat restoration and other terrestrial enhancements.
- Provide Marquam Nature Park (south) interpretive signage.
- Provide interpretive opportunities and trails at Elk Rock Island (e.g., information about the unique habitat features, rocky outcrops, oak woodlands, alcove, and mudflats).
- Provide interpretive opportunities at Powers Marine Park, and promote information about beach habitats (e.g., large wood function, litter, fish consumption).
- Provide interpretive information at Cathedral and Willamette parks, and increase visibility of signage concerning invasive aquatic organisms.

OBJECTIVE: Protect Special Status Habitats, including:

- Northwest Willamette River Forested Wetland near Oregon Steel Mill (bottomland hardwood forest, wetlands)
- Willamette Bluff Complex (oaks and prairies)
- Willamette Cove (diverse habitats)
- Baltimore Woods (diverse forest habitats, including oaks)
- Forest Park (interior coniferous forest and oaks)
- Doane Lake and Wetlands (wetlands)
- Powers Marine Park (bottomland forest and wetlands)
- South Sellwood Bluff (oaks)
- Dunthorpe Oaks (oaks, madrone, and other native plant species)
- Marquam Oaks (interspersed in Westside Wildlife Corridor)
- Elk Rock Island (diverse habitats)
- Elk Rock (peregrine eyrie and rare plants)
- Swan Island Lagoon (wapato patch, wetlands)
- Riverview Cemetery (interior forest)
- Willamette Park (very old riparian oaks)
- Stephens Confluence (wetlands and bottomland forest)
- Tryon Confluence wetlands (future) and terrestrial features
- Oaks Bottom (bottomland forest)
- Mt. Tabor Park (flyway, forest)
- Escarpment near Adidas (grasslands)

COLUMBIA SLOUGH WATERSHED

OBJECTIVE: Protect, expand, enhance, and restore anchor habitats; and enhance and restore areas adjacent to anchor habitats, including:

- Columbia Slough confluence with the Willamette River/Kelley Point Park
- Smith & Bybee Wetlands, including Ramsey Wetlands, the St. John's Landfill, and the vegetated south shore of the Columbia Slough to the railroad bridge
- Vanport Wetlands, Force Lake, Heron Rookery, Portland International Raceway (PIR) restoration areas
- Rocky Butte
- Fairview Creek headwaters
- Big Four Corners
- Golf courses and cemeteries
- Columbia Boulevard Wastewater Treatment Plant natural area and Triangle Lake
- Rivergate Fields
- Chimney and Pier parks
- Delta Park/Walker Slough

OBJECTIVE: Protect, expand, enhance, and restore patch habitats; and enhance and restore areas adjacent to anchor habitats, including:

- Wilkes Creek
- NE 143rd cross levee natural habitat area / NE 148th water quality facility (WQF) / NE 138th WQF
- Little Four Corners / Inverness wetlands
- Johnson Lake
- Whitaker Ponds
- Peninsula Canal
- Peninsula Crossing trail
- Developed public parks
- Water Bureau sites (tanks, groundwater stations, etc.)
- School yards
- NE 158th WQF
- NE 162nd WQF
- Thomas Cully Park
- Port Buffalo mitigation site
- Children's Arboretum/Brandwein/Jubitz
- Wright Island
- Moore Island
- Parcel A

OBJECTIVE: Protect, expand, enhance, and restore imperiled habitats—wetlands, upland prairie and native grasslands, oak woodlands, interior forests, late successional conifer forests, beaches, and rocky outcrops—including:

- Big Four Corners oaks
- Columbia Slough oaks
- Big Four Corners interior forest
- Rocky Butte interior forest and rocky outcrops
- Banks of Slough bottomland hardwood forest

OBJECTIVE: Protect, expand, enhance, and restore corridors to connect anchor and patch habitats; protect, expand, enhance, and restore corridors to connect anchor and patch habitats to streams; enhance and restore areas adjacent to corridors; and establish corridors between habitats, including:

- Peninsula Crossing Trail between Willamette River and Columbia Slough
- All of the waterways and ponds (including Pen 1, Pen 2, Peninsula Canal, Wilkes Creek)
- West Wye/T-5 powerline corridor between Willamette River and Columbia Slough
- Undeveloped corridor between Rocky Butte and Johnson Lake
- NE 143rd cross levee natural habitat area between Sandy Blvd. and Columbia River
- Columbia River levee
- Recreational trails (40-mile loop, Slough Trail)

OBJECTIVE: Protect natural non-vegetation-based urban habitat features important for wildlife (e.g., rock outcrops, snags); protect key human-made urban habitat features important for wildlife (e.g., bridges, street trees); and create additional urban habitat features where appropriate (e.g., ecoroofs, bird and bat boxes), including:

- Natural non-vegetation-based urban habitat features, including:
 - Rocky Butte cliffs
 - Alice Springs springs
 - Winmar snag
- Human-made urban habitat features (with documented use by wildlife), including:
 - Cell tower by Whitaker Ponds
 - I-5 bridge
 - I-205 bridge
 - Lombard bridge
 - Pedestrian bridge at wastewater treatment plant
 - Power pole at Smith & Bybee Wetlands
 - Chimneys used by Vaux’s swifts
- Human-made urban habitat features likely to be used by wildlife
- Features similar to those listed above (bridges, cell towers, power poles)

OBJECTIVE: Protect, enhance, and restore sites important for Special Status Species and for other identified priority species (both plants and animals), including:

- Big Four Corners oaks
- Columbia Slough oaks
- Big Four Corners interior forest
- Rocky Butte interior forest, rocky outcrops
- Banks of Slough bottomland hardwood forest
- Rocky Butte cliffs
- Alice Springs springs
- Winmar snag
- Cell tower by Whitaker Ponds
- I-5 bridge
- I-205 bridge
- Lombard bridge
- Pedestrian bridge at wastewater treatment plant
- Power pole at Smith & Bybee Wetlands
- Chimneys used by Vaux’s swifts
- All mapped imperiled habitats for their associated Special Status Species
- Additional sites that are important to Special Status Species, but not identified as an imperiled habitat, including:
 - Open water
 - Mixed coniferous/deciduous forest
 - Golf courses
 - Parks with mature conifer groves
 - Cemeteries with mature trees

- Beaches
- Mudflats

OBJECTIVE: Protect, enhance, and restore sites important for assemblages of species, including:

- Big Four Corners oaks
- Columbia Slough oaks
- Big Four Corners interior forest
- Rocky Butte interior forest, rocky outcrops
- Banks of Slough bottomland hardwood forest
- Rocky Butte cliffs
- Alice Springs springs
- Winmar snag
- Cell tower by Whitaker Ponds
- I-5 bridge
- I-205 bridge
- Lombard bridge
- Pedestrian bridge at wastewater treatment plant
- Power pole at Smith & Bybee Wetlands
- Chimneys used by Vaux's swifts

OBJECTIVE: Address significant wildlife management issues, including attractive nuisances, hazards, and invasive animal species; and address significant invasive plant issues, including impact of vegetation removal timing on wildlife, including:

- Limitation of project impacts during wildlife breeding seasons (turtles, amphibians, birds)
- Coordination with project partners (Multnomah County Drainage District, Port of Portland, PP&R)
- Water management (beavers, shore birds, invasive plants)
- Co-existence with urban wildlife (coyotes, beavers)
- Human/wildlife conflicts (airport wildlife)
- Recreation/wildlife conflicts (snags on trails)
- Habitat-healthy levees

OBJECTIVE: Create opportunities where people can learn, recreate, restore, and monitor terrestrial species and habitats with minimal negative impacts, including:

- Columbia Slough Watershed Council events
- Canoe the Slough Week
- Explorando el Columbia Slough
- Columbia Slough Regatta
- Slough 101
- Wetlands 101
- Stewardship Saturdays

- Subs on the Slough
- Brew on the Slough
- Soup on the Slough
- Moonlight Paddle
- Eyes on the Slough
- Audubon field trips
- Metro school trips
- Friends of Trees watershed tree plantings

COLUMBIA RIVER WATERSHED

OBJECTIVE: Protect, expand, enhance, and restore anchor habitats; and enhance and restore areas adjacent to anchor habitats, including:

- West Hayden Island
- Government Island

OBJECTIVE: Protect, expand, enhance, and restore patch habitats; and enhance and restore areas adjacent to anchor habitats, including:

- East Hayden Island beach segments
- Broughton Beach
- Port mitigation site next to T-6
- Tri-Club Island

OBJECTIVE: Protect, expand, enhance, and restore imperiled habitats—wetlands, upland prairie and native grasslands, oak woodlands, interior forests, late successional conifer forests, beaches, and rocky outcrops—including:

- Government Island interior forest
- Hayden Island interior forest
- Columbia River beaches

OBJECTIVE: Protect, expand, enhance, and restore corridors to connect anchor and patch habitats; protect, expand, enhance, and restore corridors to connect anchor and patch habitats to streams; enhance and restore areas adjacent to corridors; and establish corridors between habitats, including:

- Columbia River beaches
- Columbia River waterway
- Columbia River levee

OBJECTIVE: Protect natural non-vegetation-based urban habitat features important for wildlife (e.g., rock outcrops, snags); protect key human-made urban habitat features

important for wildlife (e.g., bridges, street trees); and create additional urban habitat features where appropriate (e.g., ecoroofs, bird and bat boxes), including:

- Natural non-vegetation-based urban habitat features, including:
 - West Hayden Island snag
- Human-made urban habitat features with documented use by wildlife, including:
 - Cell tower at Broughton Beach
 - I-5 bridge
 - I-205 bridge
 - Platform on pier near Salty's
 - Platform on pier in Oregon Slough at east end of Bridgeton neighborhood
 - Platform on pier off Marine Drive west of railroad bridge
- Human-made urban habitat features likely to be used by wildlife
- Features similar to those listed above (bridges, cell towers, piers)

OBJECTIVE: Protect, enhance, and restore sites important for Special Status Species and for other identified priority species (both plants and animals), including:

- All mapped imperiled habitats for their associated Special Status Species
- Additional sites that are important to Special Status Species, but not identified as an imperiled habitat, including:
 - Open water
 - Beaches
 - Mudflats

OBJECTIVE: Protect, enhance, and restore sites important for assemblages of species, including:

- Columbia River islands

OBJECTIVE: Address significant wildlife management issues, including attractive nuisances, hazards, and invasive animal species; and address significant invasive plant issues, including impact of vegetation removal timing on wildlife, including:

- Limitation of project impacts during wildlife breeding seasons (turtles, amphibians, birds)
- Co-existence with urban wildlife (coyotes, beavers)
- Habitat-healthy levees

OBJECTIVE: Create opportunities where people can learn, recreate, restore, and monitor terrestrial species and habitats with minimal negative impacts, including:

- West Hayden Island tours

TRYON CREEK WATERSHED

OBJECTIVE: Protect, expand, enhance, and restore anchor habitats. Enhance and restore areas adjacent to anchor habitats.

- Tryon Creek State Natural Area
- Marshall Park
- The confluence of Tryon Creek and the Willamette River and surrounding habitats such as the Tryon Creek Wastewater Treatment Plant
- Jensen Park and the Foley Balmer property
- Upstream habitats such as Spring Garden Park and Headwaters Park

OBJECTIVE: Protect, expand, enhance, and restore patch habitats. Enhance and restore areas adjacent to anchor habitats.

- Encourage ivy removal and other invasive species control methods (including revegetation) in private properties adjacent to anchor habitats and corridors (e.g., to help identify where to focus outreach efforts and community/neighborhood Backyard Habitat programs).
- Prioritize land for acquisition that expands protected anchor habitats and corridors.

OBJECTIVE: Protect, enhance, and restore corridors to connect anchor and patch habitats. Protect, enhance, and restore corridors to connect anchor and patch habitats to streams. Enhance and restore areas adjacent to corridors. Create new corridors.

- Protect private riparian property, Marshall Park, Jensen Park, and the Foley Balmer property as connectors to Tryon Creek State Park.
- Connect the Tryon Creek Confluence area with Tryon Creek State Natural Area (via providing a wildlife corridor across/under Highway 43 as part of the culvert replacement project).
- Provide both fish and wildlife passage within the Tryon Creek State Natural Area as part of the Boones Ferry culvert replacement project.
- Establish a corridor between Tryon Creek State Natural Area and public and private properties along both Arnold Creek and Tryon Creek mainstem.
- Coordinate with Washington and Clackamas counties and the City of Lake Oswego to maintain anchor and other important habitat areas, as well as maintain and/or restore linkages and corridors between them.

OBJECTIVE: Protect key urban habitat features important for wildlife (bridges, ecoroofs, street trees, snags, bird boxes, etc.), and create additional features where appropriate.

- Create bat habitat in Tryon Creek Natural Area on existing bridges.
- Create bat habitat as culverts are replaced by bridges.
- Protect riparian and upland snags on public and private property when they pose no threat to human safety.
- Install or create snags in restoration projects.

OBJECTIVE: Protect, enhance, and restore sites important for Special Status Species. Protect, enhance, and restore for other identified priority species.

- Encourage the protection/creation of bat habitat in Tryon Creek State Natural Area (older, hollow trees and snags).
- Create bat habitat in Tryon Creek Natural Area on existing bridges.
- Create bat habitat as culverts are replaced by bridges.
- Protect and restore habitat for pileated woodpeckers.
- Protect riparian snags for olive-sided flycatchers.
- Protect and restore habitat for purple martins at Tryon Creek's confluence with the Willamette River.

OBJECTIVE: Protect, enhance, and restore sites for assemblages of species.

- Protect mixed conifer forests within anchor habitats, including Tryon Creek State Natural Area and Marshall Park.
- Restore cottonwood/willow forest habitat at the confluence of Tryon Creek and the Willamette River.
- Restore ash wetland forest habitats at Headwaters and Spring Garden Park and Jackson Middle School.

OBJECTIVE: Address significant wildlife management issues, including attractive nuisances, hazards, and invasive animal species. Address significant invasive plant issues, including impact of vegetation removal timing on wildlife.

- Encourage ivy removal and other invasive species control methods (including revegetation) in public and private properties adjacent to anchor habitats and corridors.

OBJECTIVE: Create opportunities where people can learn, recreate, restore, and monitor terrestrial habitat with minimal negative impacts.

- Support opportunities for interpretive signage and wildlife viewing in Tryon Creek State Natural Area, Marshall Park, and other Tryon Creek Watershed parks.
- Provide connections to Fanno Creek watersheds.
- Support opportunities for interpretive signage in conjunction with the Highway 43 culvert replacement project.

FANNO CREEK WATERSHED

OBJECTIVE: Protect, expand, enhance, and restore anchor habitats. Enhance and restore areas adjacent to anchor habitats.

- Woods Creek riparian zone in Woods Memorial Park, April Hill Park, and private properties
- Vermont Creek (Gabriel Park and private riparian zone)

- Red Tail Golf Course
- South Ash Creek (including BES properties and Dickenson)
- Pendleton Woods (private)
- Fanno main stem riparian areas (including Albert Kelley Park, Thomas & 53rd)
- Fanno Natural Area Park—aka Columbia Creek, SW 62nd property, Hillsdale
- PP&R, BES, and private properties along Fanno main stem)

OBJECTIVE: Protect, expand, enhance, and restore patch habitats. Enhance and restore areas adjacent to anchor habitats.

- Encourage Naturescaping projects in small forested patches in private ownerships near the headwaters of Fanno Creek.
- Increase street tree canopy in partnership with Friends of Trees.

OBJECTIVE: Protect, expand, enhance, and restore Special Status Habitats, including wetlands, upland prairie and native grasslands, oak woodlands, interior forests, and late successional conifer forests.

- Support PP&R efforts to enhance wetlands at April Hill Park, Gabriel Park, Maricara Natural Area, and Headwaters Natural Area.
- Support PP&R efforts to enhance oak woodland at Dickenson Park and protect oaks throughout the South Ash Creek Watershed.
- Support efforts to expand and enhance interior forests at Tryon Creek State Natural Area, Marshall Park, Woods Memorial Park, West Portland Park, and others.

OBJECTIVE: Protect, enhance, and restore corridors to connect anchor and patch habitats. Protect, enhance, and restore corridors to connect anchor and patch habitats to streams. Enhance and restore areas adjacent to corridors. Create new corridors.

- Protect all small tributaries draining into Fanno Creek.
- Protect upland forests (especially conifers on private and public properties).
- Support local “Friends” groups to protect natural areas.
- Add wildlife passage and greenway corridors when replacing culverts and doing stormwater retrofits.
- Encourage Naturescaping projects along small, intermittent streams in private ownerships near the headwaters of all tributaries to Fanno Creek.
- Coordinate with the State of Oregon to reduce noxious weeds.
- Coordinate with Clean Water Services, the cities of Tigard and Beaverton, and Metro to protect anchor habitats and maintain and restore connectors.

OBJECTIVE: Protect key urban habitat features important for wildlife (bridges, ecoroofs, street trees, snags, bird boxes, etc.), and create additional features where appropriate.

- Consider replacing or creating bat habitat features when bridges are replaced (e.g., Stephens Creek and Fanno Creek bridge at Capitol Highway and Hillsdale).

OBJECTIVE: Protect, enhance, and restore sites important for Special Status Species. Protect, enhance, and restore for other identified priority species.

- Protect large conifers in Woods Memorial Park, April Hill Park, and private properties for the pileated woodpecker.
- Protect riparian snags in Woods Memorial Park and other locations for the olive-sided flycatcher.

OBJECTIVE: Address significant wildlife management issues, including attractive nuisances, hazards, and invasive animal species. Address significant invasive plant issues, including impact of vegetation removal timing on wildlife.

- Reduce road hazards for wildlife by creating appropriate corridors.
- Provide technical assistance to citizens for guarding trees against beaver damage; provide financial and other incentives to citizens for replanting beaver-damaged trees.

OBJECTIVE: Create opportunities where people can learn, recreate, restore, and monitor terrestrial habitat with minimal negative impacts.

- Connect anchor habitats with trails. Support efforts (SW Trails, Friends groups, etc.) to redesign trails and close trails to minimize impacts on habitat fragmentation.
- Support the Friends of Tryon Creek State Parks and the Tryon Creek Watershed Council's education and monitoring efforts at Tryon Creek State Natural Area and other properties.
- Support restoration activities through PP&R Friends groups at Maricara, Marshall, April Hill, Gabriel, and Woods parks.
- Support BES's Clean Rivers Education Program's work with area schools and natural areas.

JOHNSON CREEK WATERSHED

OBJECTIVE: Protect and restore anchor habitats, including:

- Johnson Creek itself
- Powell Butte
- Clatsop Butte
- Reed College Canyon
- East Moreland Golf Course
- Errol Creek and Errol Heights wetlands
- Tideman Johnson Park/Tideman Johnson Target Area
- Springwater Wetlands Complex (including Zenger Farms and Beggars Tick)
- The headwaters of Mitchell Creek
- The confluence of Kelley and Johnson creeks
- The confluence of Johnson Creek and the Willamette River
- The confluence of Clatsop and Kelley creeks

OBJECTIVE: Restore habitats with high restoration value, including:

- Flavel Ridge Wetland
- Brookside Wetlands
- Willamette National Cemetery
- The confluence of Johnson Creek and the Willamette River and surrounding habitat
- The confluence of Mitchell Creek and Kelley Creek and surrounding habitat
- Crystal Springs Creek
- East Powell Butte Target Area
- East Lents Target Area
- West Lents Target Area

OBJECTIVE: Protect existing corridors between anchor habitats, and between habitats and streams, including:

- Kelley Creek Refuge
- Circle Avenue Wetlands
- East Buttes riparian areas and upland habitat
- East Powell Butte Restoration Area

OBJECTIVE: Restore and establish corridors between anchor habitats and water bodies where there are gaps or barriers, including:

- Restore and establish habitat along Johnson Creek where there are gaps and opportunities to fill them.
- Restore and establish habitat between Errol Wetlands and Errol Confluence.
- Restore and establish habitat to connect the Crystal Springs Complex (i.e., Reed College Canyon, East and West Moreland Parks) and the Willamette River.
- Restore and establish habitat between the Powell/Kelley confluence and the East Buttes.
- Coordinate with other jurisdictions to restore and establish corridors with Scouter Mountain Uplands (East and West), Flavel Ridge Wetland, Upper Mitchell Creek, Clatsop Butte (to the south) and East Buttes (to the east).
- Restore and establish habitat along Mitchell, Clatsop, and Kelley creeks, within the City of Portland urban growth boundary, where there are gaps and opportunities to fill them.
- Restore and establish corridors between the Willamette National Cemetery and Johnson Creek via multiple tributaries, such as Deardorff Creek, Wahoo Creek, and Veterans Creek
- Restore and establish habitat to connect Kelly Butte to East Buttes and Mt Tabor.
- Restore and establish habitat connectivity along the length of the Springwater Corridor Trail.

OBJECTIVE: Restore areas adjacent to anchor habitats and corridors to increase their size and functionality, including:

- Encourage ivy and blackberry removal and other invasive species control methods (including revegetation) in private properties adjacent to anchor habitats and corridors (to help identify where to focus outreach efforts and community/ neighborhood Backyard Habitat programs), including:
 - Foster Place Wetlands
 - Private property on Powell Butte
 - All streamside properties
- Encourage ivy and blackberry removal and other invasive species control methods (including revegetation) by home owners' associations in environmental tracts that are adjacent to anchor habitats and corridors, including:
 - Clatsop Butte Home Owners' Association
 - Environmental tract at end of SE 108th

OBJECTIVE: Protect key urban habitat features important for wildlife, and create additional features where appropriate, including:

- Create bat habitat when repairing or replacing bridges.
- Create underpasses for terrestrial species when repairing or replacing bridges.

OBJECTIVE: Protect and restores sites of importance to Special Status Species and other identified priority species, including:

- Encourage the protection/creation of habitat at Reed College Canyon. Focus on green herons, bitterns, rails, and northern red-legged frogs.
- Protect Kelly Butte's rare plant species.

OBJECTIVE: Protect and restore sites of importance to assemblages of species, including:

- Protect primary anchor habitats, including Powell and Kelly buttes (for native grassland species, rare plant species, mammals, reptiles, and migratory birds).
- Protect the North and South Circle Avenue Wetlands for amphibians and plant assemblages.
- Protect Alsop Wetland for Oregon ash forested wetland habitat for amphibians (including red-legged frogs), reptiles, mammals, and birds.
- Protect native sedges and rushes along the Springwater Trail.
- Protect the Springwater Wetlands Complex, including:
 - Beggars Tick Marsh for wintering waterfowl, neotropical migratory birds, and other species
 - Zenger Farm and the North and Central Wetlands for frogs (including red-legged frogs), salamanders, and migratory birds
- Protect bottomland hardwood forests along Johnson Creek and at Reed College Canyon and Tideman-Johnson Park.
- Protect the relatively undisturbed forest at East and West Scouter Mountain uplands for sensitive species such as pileated woodpeckers and red-legged frogs.

OBJECTIVE: Address significant wildlife management issues, including attractive nuisances, hazards, and invasive plant and animal species, including:

- Encourage ivy and blackberry removal and other invasive species control methods (including revegetation) in publicly owned anchor habitats.
- Encourage ivy and blackberry removal and other invasive species control methods (including revegetation) on private properties adjacent to anchor habitats and corridors.
- Discourage trespassing and off-leash dog walking in natural areas.

OBJECTIVE: Create opportunities for people to make connections with nature where they do not negatively impact wildlife or their habitats, including:

- Support efforts to provide interpretive signs and wildlife-viewing opportunities at Tideman-Johnson Park, Reed College Canyon/Crystal Springs, Powell Butte, and along the Springwater Trail.
- Establish interpretive signs and wildlife viewing opportunities in conjunction with projects at Springwater Wetlands Complex, East Powell Butte Restoration Area, and the East and West Lents restoration areas.
- Provide interpretive signs and opportunities for the public to view salmon migrating at East Moreland Golf Course, Tideman-Johnson Park, and at the bridge at the confluence of Kelley and Johnson creeks.

SECTION 4

STRATEGIES AND PRIORITY ACTIONS

INTRODUCTION

The *Portland Watershed Management Plan (PWMP)* laid out six Watershed Improvement Strategies. These provide the link between watershed goals and objectives and the work of the City. The six strategies are:

- Stormwater Management
- Revegetation
- Aquatic and Terrestrial Enhancement
- Protection and Policy
- Operations and Maintenance
- Education, Involvement and Stewardship

All of these strategies (and many of the actions identified in the *PWMP* for each of the strategies) relate in some way to improving terrestrial biological communities. However, the *PWMP* also called for additional terrestrial enhancement actions. For that, the Terrestrial Ecology Enhancement Strategy Advisory Group (TEESAG) provided input on a draft matrix of key management issues, and possible actions and partnerships to address the issues. These were organized according to the key conservation issues in the *Oregon Conservation Strategy*. They were then regrouped according to the *PWMP* strategies.

Further refinement, based on citywide and watershed-specific objectives, resulted in priority TEES actions, which are presented below by watershed.

WILLAMETTE WATERSHED

- Protect Riverview Cemetery to enhance important interior forest habitat and connectivity between the Westside Wildlife Corridor, Tryon State Park, and the Willamette River at Powers Marine.
- Restore diverse terrestrial habitats at Willamette Cove and the Mocks Crest escarpment. Actions include restoration of oak, madrone, bottomland hardwood forests, and wetlands.
- Protect islands in the Willamette River. Actions include oak release at Elk Rock Island and enhancing wetlands and riparian habitats on Ross Island.

- Protect the best of Portland’s interior and late successional forest habitats in Forest Park. Actions include control of invasive species and investment in protection of the forest from wildfire risk.
- Restore Oaks Bottom Wildlife Refuge habitat. Remove non-native invasive plants to enhance wetlands and oak and riparian habitats, and plant native plants
- Restore and enhance terrestrial habitats in the heavily developed Eastside through the Tabor to the River Brooklyn Creek Basin Program. Actions include planting street trees, building green streets, and enhancing diverse forest habitats for neotropical migratory birds on Mt Tabor.
- Improve connectivity between the Willamette River and upland forest habitat anchors in the Westside Wildlife Corridor and Forest Park. Actions include enhancing connectivity at key corridors such as Doane Creek, Balch Creek Powers Marine Park, and Stephens Creek.
- Restore and enhance oak and bluff habitats in the heavily developed North Portland. Support neighborhood involvement and City investments through grants and Grey to Green investments in the Baltimore Woods/St. Johns area.

COLUMBIA SLOUGH WATERSHED

- Columbia Slough Confluence: Add wood to the channel to increase complexity for turtles, amphibians, and birds. Manage invasive plant species. Enhance terrestrial habitat through revegetation. Install bird and bat boxes. Educate and involve the public through signs and revegetation work parties.
- Kelley Point Park Restoration: Conduct ongoing invasive plant species management and revegetation.
- Ramsey Stormwater Wetlands: This stormwater wetland retrofit project includes installing verticals snags and downed wood for bird, amphibian, and turtle habitat. Manage invasive plant species. Enhance terrestrial habitat through revegetation.
- Smith and Bybee Wetlands Natural Resource Management Plan Update: Advocate for upland prairie habitat on the St. John’s Landfill and management/protection of wetland habitat.
- Lower Slough Refugia: Add wood to the channel to increase complexity for turtles, amphibians, and birds. Manage invasive plant species. Enhance terrestrial habitat through revegetation. Install bird and bat boxes. Educate and involve the public through signs and revegetation work parties.

- NE 33rd Culvert Improvement: Add terrestrial wildlife passage to the culvert. Improve connectivity.
- Whitaker Ponds Culvert to Bridge: Improve habitat for turtles, shorebirds, and amphibians by allowing water levels to fluctuate. Manage invasive plant species. Enhance terrestrial habitat through revegetation, including native emergent wetland plant communities. Improve connectivity between west pond and Whitaker Slough.
- Metro Metals Mitigation: Enhance turtle habitat. Manage invasive plant species. Enhance terrestrial habitat through revegetation.
- NE 112th Culvert Removal: Create nesting and basking habitat for turtles. Manage invasive plant species. Enhance terrestrial habitat through revegetation, including native emergent wetland plant communities. Improve connectivity along Whitaker Slough.
- Airport Middle Slough Plan District and E-Zone Update: Focus on a variety of terrestrial habitats, and elevate the understanding of grassland species.
- Rocky Butte Revegetation: Manage invasive plant species, including English ivy, clematis, and weedy trees. Enhance terrestrial habitat through revegetation, and restore second growth Douglas fir/big leaf maple forest.
- NE 148th Water Quality Facility: Manage invasive plant species. Enhance terrestrial habitat through revegetation. Implement recommendations of the *NE 148th WQF TEES Assessment*.
- Winmar (Mason) Flats: Modify topography to enhance habitat for amphibians, reptiles, and birds, including red legged frog, painted turtle, and willow flycatcher. Manage invasive plant species. Enhance terrestrial habitat through revegetation.
- Big Four Core Habitat Restoration: Manage invasive plant species. Enhance terrestrial habitat through revegetation. Habitat restoration includes oak woodland, cottonwood/willow forest, herbaceous wetland, bottomland hardwood forest, and cedar/alder forest.
- Property Acquisition: Acquire properties to increase/buffer anchor and patch habitats, and conduct invasive plant species management and revegetation on acquired properties.
- Develop a beaver management policy.
- Develop a coyote management policy.
- Protect, enhance, and expand the entire Slough riparian buffer.
- Move NE Cornfoot Road north to expand the riparian buffer.
- Work with the Multnomah County Drainage District to increase in-channel wood in the main-stem Slough and Peninsula Canal for wildlife habitat, including turtles.

- Work with the Multnomah County Drainage District to enhance terrestrial riparian habitat along the secondary drainageways, including but not limited to Pen 1, Pen 2, and Elrod Slough.
- Track revegetation potential on the federally regulated levee.
- Enhance turtle habitat on the north levee where revegetation is not possible.
- Increase vegetative understory in hybrid parks.

COLUMBIA RIVER WATERSHED

- Acquire Property: Increase/buffer anchor and patch habitats, and conduct invasive plant species management and revegetation on acquired properties.
- Plant the toe of the levee to create shallow water and riparian habitat.
- West Hayden Island: Increase anchor habitats; conduct invasive plant species management and revegetation; enhance shallow water/riparian, wetland, interior forest, and grassland habitats.
- East Hayden Island: Conduct revegetation. Plant in rip-rapped areas to enhance riparian habitat.

TRYON/FANNO CREEK WATERSHEDS

- Acquire property adjacent to Woods Memorial Park to expand anchor habitat and interior forest.
- Support Metro in acquiring property between Tryon Creek State Natural Area and the Boones Ferry Road culvert to protect and enhance connectivity between anchor and patch habitats.
- Install nest boxes for Special Status Species (wood duck and downy woodpecker) and common species (black-capped chickadee and tree swallow) at the Tryon/Willamette Confluence prior to construction of the Tryon Confluence Phase 2 Project.
- Support the Tryon Creek Watershed Council's Mentor Program with a Community Watershed Stewardship grant to enhance patch habitats and areas adjacent to anchor habitats.
- Enhance wetlands at April Hill Park for amphibians.
- Support Pendleton Creek revegetation with students and staff from Hayhurst Elementary School and AmeriCorps members to restore patch habitat.

- Install food plants for resident American beaver along upper Fanno Creek
- Protect wetlands, interior forests, common habitat types, Special Status Species, and common species in Woods Park and April Hill Park natural areas by minimizing impacts from off-leash dogs through increased enforcement and dog owner education by park rangers.
- Support Friends of Vermont Creek with a Community Watershed Stewardship grant to enhance bird nesting habitat in Gabriel Park.
- Support the Portland Community College Habitat Team with a Community Watershed Stewardship grant to enhance patch habitats at Portland Community College Sylvania Campus and Sylvania Natural Area.
- Protect existing snags during South Ash outfall enhancement construction in Dickenson Park.

JOHNSON CREEK WATERSHED

- Acquire, enhance, and protect upland anchor habitat in the East Buttes.
- Restore high-value habitat by working with Jameson Partners to enhance terrestrial habitat and habitat connectivity to Johnson Creek on the Freeway Land Property.
- Acquire, enhance, and protect riparian buffers around tributaries to Johnson Creek (working with Willamette National Cemetery).
- Improve terrestrial connectivity from headwaters of tributaries to Johnson Creek through subwatershed planning, conservation, and stewardship.
- Mitigate and treat stormwater runoff to Johnson Creek from I-205.
- Implement the Crystal Springs Restoration Partnership with partners such as Metro, Reed College, PPP&R, SMILE, and TriMet to remove culvert barriers and restore stream, riparian, and terrestrial habitat through conservation easements and stewardship of private and public properties.
- Work with the Johnson Creek Green Spaces Partnership (Johnson Creek Watershed Council, City of Gresham, Metro, PP&R, Audubon Society, and the Trust for Public Lands) to develop a watershed-wide land acquisition plan.
- Acquire, enhance, and restore areas of high restoration value, such as West Lents Wetlands and Flavel Ridge Wetlands.
- Protect Special Status Species by acquiring, enhancing, and restoring areas such as Springwater Wetlands Complex.

SECTION 5

GUIDANCE FOR IMPROVING TERRESTRIAL HABITAT

The Terrestrial Ecology Enhancement Strategy (TEES) is informing many City projects and efforts. Some of the key ways in which this is occurring are described below.

TEES SITE ASSESSMENT FORMS

TEES Site Assessment Forms were developed as tools that are used to integrate terrestrial ecology elements into City projects. They are intended to be used in the field to capture information about a site's biological communities and physical features and to develop preliminary recommendations for possible actions. Orientation sessions about the use of these forms were held for City staff in spring 2009.

There are two versions of the TEES Site Assessment Form—a short form <http://www.portlandonline.com/bes/fish/index.cfm?c=51052&a=308970> (Attachment H) and a longer, more detailed form (Attachment I). The short form is intended for use in the field in the early stages of project planning and design. The longer form (under development) can be used for large, complex, or diverse sites; for follow-up site visits to further document site conditions; or to refine restoration opportunities.

TEES Site Assessment Forms have been completed for a number of City projects, including Oaks Bottom, Tryon Confluence, Marshall Park Habitat Management Plan, Elk Rock and Elk Rock Island, Willamette Cove, Riverview Cemetery, TGD-12 and TDG-14 (Taggart D Basin), April Hill Park, Bishop's Close, NE 148th Water Quality Facility, Columbia Blvd. Water Treatment Plant Support Facility, Stephens Creek Confluence Project, East Moreland Golf Course, Errol Confluence, South Ash Creek Stream Enhancement and Sewer Protection Project, Tryon Creek Wastewater Treatment Facility, South Ash Sewer Repair, Luther Road Restoration Area (Lents II), and a number of potential land acquisition sites.

The following two documents are companions to the TEES Site Assessment Forms:

Using the Terrestrial Ecology Enhancement Strategy (TEES) Site Assessment Forms: (Attachment J)

This document answers questions such as: who should use the forms, when to use the short form vs. the long form, and the types of projects that are high priority for using the forms.

<http://www.portlandonline.com/bes/fish/index.cfm?c=51052&a=272863>

TEES Site Report Template:

(Attachment K)

This document can be used when developing written reports to summarize information collected during site visits and to present preliminary recommendations for actions.

<http://www.portlandonline.com/bes/fish/index.cfm?c=51052&a=308971>

GUIDANCE DOCUMENTS

Information about identifying and managing specific terrestrial habitats and species is being assembled and synthesized. The intended audiences currently include BES watershed and project teams and PP&R, but some of the information could potentially be useful to other bureaus, non-profit organizations, and private landowners. The top priority—identified by BES watershed teams, the Bureau of Planning and Sustainability, and PP&R—was to develop guidelines for minimizing impacts on, and improving habitats for, nesting birds. Guidelines for “Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects” were issued in March 2010 <http://www.portlandonline.com/bes/fish/index.cfm?a=322164&c=31006>. Subsequently, three training sessions for BES employees were held in March, and the guidelines were beta-tested in 2010. The guidelines were refined in October 2010 and presented at a regional conference that month (Attachment L).

Guidelines for another priority management issue—“Living with American Beaver”—were developed in 2011 <http://www.portlandonline.com/bes/fish/index.cfm?c=55195&a=354182> (Attachment M). This keystone species is also a species of management concern, particularly in this urban setting.

Other guideline priorities (at various stages of development) will address:

- Wildlife Trees, Down Wood and Brushpiles for Wildlife (to be completed in 2011)
- Oak Habitat (to be completed in 2011)
- Turtles
- Amphibians
- Wetlands
- Living with Coyotes
- Bio-roofs for Wildlife

SPECIFIC REQUESTS

As needed and as time allows, the TEES team assists watershed and project teams with specific requests (e.g., document reviews, guidelines for trail location, wildlife-friendly building design, proper construction of brushpiles for wildlife). Examples of work that has used TEES information and guidance include:

- Grey to Green
- West Hayden Island Annexation
- Siltronic Site
- Grassland/Prairie Calculator

- Airport Futures
- Marine Drive Interchange
- Harbor Oil Baseline Ecological Risk Assessment Review
- Pedestrian Bridge Design
- Milwaukie Light Rail
- Ross Island
- Local Recovery Plan
- Natural Resource Inventory
- Portland Plan
- Colwood Golf Course rezoning decision
- Brandywein Wetlands and other land decisions
- PDOT walking maps
- Local share bond measure expenditure prioritization
- Forest Park planning

DESIRED FUTURE CONDITIONS

PP&R is using TEES information to inform the development of Desired Future Conditions for natural area parks and other sites (e.g., Mount Tabor, Clatsop Butte, Oaks Bottom, Ross Island, Elk Rock Island, Forest Park).

SECTION 6

MONITORING

HABITATS AND BIOLOGICAL COMMUNITIES

Watershed functions and conditions need to be described in ways that are measurable so that changes in watershed health can be detected and progress assessed over time. Citywide goals and objectives, along with watershed-specific objectives, “paint the picture” of what the City would like to achieve. The City’s Physical Habitat and Biological Communities goals and objectives are the most relevant for the TEES. Identification of what should be monitored (at various scales and at various times) in order to provide clear feedback on the conditions of our urban watersheds and the effectiveness of implemented actions is a key step. Selecting a suite of meaningful measures, including targets and benchmarks, is vital.

It will not be practical to monitor all Special Status Habitats or Species. A combination of species and habitats that are easy to monitor and that provide feedback on the effectiveness of implemented actions and conditions of habitat and biological communities over time is needed.

The concept of “focal species and habitats” is useful and appears in numerous scientific publications. Focal species are species selected for use as surrogate measures in the assessment of ecological integrity. Their distribution and abundance over time provide insights into the integrity of the larger ecological system to which they belong. Focal species selected represent the range of environments within the City, serve an umbrella function, or play key roles in maintaining community structure or processes.

Focal species are those 1) whose habitat associations represent the range of habitats associated with a wildlife group⁵, 2) whose human impact-associated factors are representative of the range of the group, 3) whose populations or habitats could be monitored, 4) for which viability concerns are known such as federally-listed or federal or state “sensitive” species, and 5) that are relatively well-studied relative to the effects of various human actions on their habitat use.⁶

TEES uses the term, “focal wildlife species” broadly to include:

- **Keystone Species:** Species that are representative of entire ecosystem health; their absence is detrimental to functioning of the ecosystem. Example: American Beaver
- **Indicator Species:** Species whose presence indicates healthy conditions of Special Status Habitat types. Example: White-breasted Nuthatch for Oak Woodland
- **Umbrella Species:** Species whose presence means that sufficient habitat exists for a variety of other species as well. Example: Bald Eagle

⁵ Wildlife groups may be such things as “late-successional forest habitat-associated species, riparian-associated species, waterfowl and colonial nesting birds, primary cavity excavators, etc.

⁶ The City also recognizes the importance of a 6th “criteria—species that are “emblematic” or that have social or cultural importance (e.g., great blue heron).

- **Flagship Species:** Charismatic, iconic or emblematic species or other species having cultural importance. Example: Great Blue Heron (Portland’s City Bird)

WATERSHED HEALTH MONITORING

The City’s *Framework for Integrated Management of Watershed Health* identifies four essential types of monitoring:

- **Implementation monitoring** assesses whether activities or projects have been carried out as planned.
- **Effectiveness monitoring** determines the extent to which the completed actions are functional and working.
- **Compliance monitoring** determines whether specific performance standards are being met.
- **Validation monitoring** measures the extent to which implemented actions are successful at achieving benchmarks, objectives and goals—and ultimately, the overall health of Portland’s watersheds.

BES has embarked upon an effort to develop a validation monitoring program that addresses all four watershed health goals, and that fulfills as many compliance monitoring requirements as possible (the “Measures” Project), as part of PWMP implementation. The Portland Area Watershed Monitoring and Assessment Program (PAWMAP) was established in 2011. The monitoring program is aimed at assessing the status and long-term trends in watershed health, using a probabilistic survey design. The survey design unites monitoring for stream hydrology, water quality, aquatic habitat, riparian habitat, and aquatic organisms into a single monitoring program. A similar monitoring program and survey design has been developed for terrestrial plant communities, upland habitats, and terrestrial organisms. Indicators and metrics have been selected that will provide meaningful trend data over time. Monitoring for terrestrial communities currently focus on plant communities, birds and may possibly include pond-breeding and terrestrial-breeding amphibians in the future.

Breeding birds are included in the City’s PAWMAP Program. This is a watershed health monitoring effort based on the EPA’s nationwide methodology. Starting in 2011 and continuing annually, birds are sampled for PAWMAP as an indicator of riparian habitat health. A *Riparian Bird Integrity Index* for the Willamette Valley is used to generate a relative score for Portland’s watersheds as part of the data analysis. By incorporating birds as an upland indicator, the City is both directly monitoring birds, and assessing terrestrial habitat for a holistic look at watershed health.

PROJECT-LEVEL AND SPECIES-LEVEL MONITORING

In addition to the PWMP Monitoring Program described above, project-level monitoring of various terrestrial elements to determine the effectiveness of actions taken is taking place, or will be initiated.

Monitoring is also conducted to determine the presence/absence of certain species, along with other parameters important to understanding the status of those species. The City of Portland not

only has a role to play in the conservation of several Special Status Species, but also has an interest in helping to avert species from becoming listed as threatened or endangered by the state and/or federal governments.

Streaked Horned Lark

The streaked horned lark is a federal candidate for listing. Portland potentially will play an important role in improving the status of the species, since some of the last remaining habitat and breeding populations between Puget Sound and the Upper Willamette Valley are in Portland. This project is a City partnership with the U.S. Fish and Wildlife Service and other members of the Streaked Horned Lark Working Group. All known sites in Multnomah County were monitored in 2009, 2010 and 2011. Habitat management guidelines are being developed for the lark and other grassland-associated bird species.

Western Painted Turtle and Western Pond Turtle

Both turtle species are federal Species of Concern and State Sensitive Species, and both historically occurred in Portland. Surveys were conducted by the Northwest Ecological Research Institute (NERI) in the Columbia Slough and Johnson Creek watersheds in 2009 <http://www.portlandonline.com/bes/fish/index.cfm?c=55193&a=287691>. No turtles were detected in the Johnson Creek Watershed, but populations of the western painted turtle were found in the Slough Watershed, and site-specific management recommendations were made, supplementing general guidelines developed by the Oregon Department of Fish and Wildlife and the Lower Willamette Native Turtle Working Group.

The TEES and other participants of the working group provided funding for statewide assessments of both the painted turtle <http://www.portlandonline.com/bes/fish/index.cfm?c=55193&a=273016> and the pond turtle. <http://www.portlandonline.com/bes/fish/index.cfm?c=55193&a=273018>. The assessment for the western painted turtle is of particular importance for the City, since the species' range in Oregon is relatively small, and many areas where the species occurs in abundance are within or adjacent to urban areas, including Portland. Some of the key concerns identified in the assessment that are of importance to Portland are:

- Elevated mortality of adult turtles from road mortality
- Limited nest site availability
- Releases of pet turtles to natural areas (a growing threat), which may result in increased competition and disease transmission
- Recreational use adjacent to and within aquatic habitats, which affects turtles' behavior and likely causes harm
- Effects of climate change on the aquatic habitats of turtles, which need to be considered in long-term conservation planning

In 2011, the working group developed a draft Action Plan for the Lower Willamette Valley, and identified priority tasks. The assessments are playing a critical role in the development of the plan. Key action items identified being implemented in the summer of 2011 include surveys at

specific sites in Portland, and establishment of a pilot program in Portland for development of local (i.e., site-specific) conservation plans.

Amphibians

Monitoring of amphibians has taken place at a number of parks and project sites over the past several years, including Oaks Bottom

<http://www.portlandonline.com/bes/fish/index.cfm?c=55193&a=273024>, Whitaker Ponds, Ramsey Wetlands, Winmar Flats, Alice Springs, Big Four Corners, Schlesinger, Circle Avenue Wetlands, Powell Butte, Leach Gardens, Zenger Farm, Brookside, Beggars' Tick Marsh, Flavel Ridge, Errol Heights, Tideman-Johnson, Forest Park, Hoyt Arboretum, Marshall Park, Tryon Creek Headwaters, Foley-Balmer Park, Maricara Park, and April Hill

<http://www.portlandonline.com/bes/fish/index.cfm?c=55193&a=273021>;

<http://www.portlandonline.com/bes/fish/index.cfm?c=55193&a=354897>. Priorities have focused on collecting baseline information at project sites slated for construction in 2009 and 2010. Information about species' use of sites resulted in recommendations for habitat protection measures and, in some cases, project modifications. Further monitoring will take place at selected sites in 2011.

Bats

Several bat species that occur in Portland are on the Oregon Sensitive Species list and are considered Oregon Conservation Strategy Species (and therefore TEES Special Status Species). During summer 2008, presence/absence monitoring occurred at several City parks and surrounding neighborhoods

<http://www.portlandonline.com/bes/fish/index.cfm?c=55195&a=354192>. Using an Anabat device, species were identified. In 2009, professional bat biologists surveyed selected sites in the Columbia Slough Watershed. Several bat boxes of various designs were installed at Oaks Bottom Wildlife Refuge in 2009, and bat usage was monitored in 2010. Additional bat monitoring occurred at select sites in 2010 and will occur on West Hayden Island in 2011.

Birds

Point-count bird monitoring is being conducted for specific projects, including Elk Rock Island, Mt. Tabor, Stephens Creek Confluence, Columbia Slough Confluence, Winmar Wetlands, Ramsey Lake Natural Area, and Big Four Corners.

Several types of bird monitoring will begin in 2010 for the Oaks Bottom Habitat Enhancement Project, including: waterfowl monitoring at select monitoring stations (as part of a grant from the U.S. Fish and Wildlife Service), and continuation of breeding bird point count surveys (in partnership with the Audubon Society of Portland). Monitoring at the Mason Flats Wetland Enhancement Project, and on Powell Butte and Ross Island, identified as highly desirable by TEES, is taking place in 2011.

Oak Habitats

Oak woodlands provide important food, shelter, and cover for several TEES wildlife Special Status Species. The prevalence of oak woodlands, widespread in the 1850s, has diminished, and the health of existing oak woodlands is believed to be in decline. To protect remnant trees and woodlands and to develop a strategy for restoring these important areas, a monitoring protocol and management guidelines for oak woodlands are being developed. A citywide survey of historic and current oak woodlands was conducted through GIS mapping. Onsite surveys are being conducted at Elk Rock Island, Bishops Close, Baltimore Woods, and at Chase Washburne on Mocks Crest. These surveys will assist in the development of TEES oak management guidelines.

SECTION 7

PROJECTS

A number of City projects are focusing on “Special Status Species,” restoring Special Status Habitat types or incorporating terrestrial elements, using TEES information. Some have taken place, and others will be implemented in the next few years. Examples of these projects are provided below.

CITYWIDE

Urban Conservation Treaty for Migratory Birds and the Portland Bird Agenda

Over 209 species of birds are regularly observed and recorded in the Portland/Vancouver metropolitan region. Some are “resident” species, meaning they are non-migratory. Others spend winters in Central and South America, but breed here. Others pass through on their migratory routes and use local habitats for feeding and resting during their journeys. Twenty-three of the migratory species that occur here have been designated with some type of state or federal status for being at-risk due to population decline and threats.

In 2003, the City of Portland was selected by the U.S. Fish and Wildlife Service as an Urban Conservation Treaty for Migratory Birds Program Partner. In May of that year, Portland City Commissioner Jim Francesconi and USFWS Regional Director Dave Allen officially signed a Treaty, making a long-term commitment to help protect and conserve migratory birds through habitat creation, protection and restoration; reducing hazards; invasive species management; and education and outreach. At that time, 21 other entities and organizations signed on as Treaty partners. In May 2006, City Mayor Tom Potter and the USFWS renewed the Treaty commitment and ten new organizations signed on as partners.

The intent of signing the Treaty is to:

- Raise awareness of migratory birds in Portland’s urban ecosystems,
- Share and increase knowledge of the needs and ecological functions of migratory birds,
- Recognize and promote existing efforts to conserve and enhance the health of migratory bird populations,
- Identify and pursue new actions to maintain the diversity of migratory birds through time,
- Instill a sense of stewardship and responsibility in the City and its citizens, and
- Identify specific measure the City and its citizens can take to ensure migratory birds remain an important element in the urban landscape.

Since 2003, the Portland Parks & Recreation Bureau has been the lead entity for coordinating the City’s Treaty activities. Because many of the objectives and actions of the TEES support the intent of the Treaty, BES and Portland Parks & Recreation decided in February 2011 to coordinate the technically-based Portland Bird Agenda activities under the TEES “umbrella”.

Portland's Parks & Recreation Bureau has been coordinating the annual Migratory Bird Festival and other outreach efforts, and it will continue to do so in the future.

A plan of action for the City's bird conservation efforts was completed in June 2011. This plan—the "Portland Bird Agenda"—will be presented to City Council in 2011. (Attachment N) <http://www.portlandonline.com/bes/fish/index.cfm?c=55194&a=354681>

The Portland Bird Agenda summarizes some of the challenges that birds face locally, some of the City's accomplishments to date that benefit migratory birds, and specific actions that the City is committed to. The Bird Agenda also includes suggestions for actions that Treaty Partners and citizens can take to benefit birds. In the future, the Portland Bird Agenda can be broadened to include accomplishments and future actions of all Treaty partners.

Natural Resources Inventory (NRI)

Portland's Bureau of Environmental Services and Bureau of Planning and Sustainability have updated and refined species lists used in the City's NRI methodology. These lists highlight rare and declining birds and other species in our region. "Special Habitat Areas" (SHAs) are an element of the Wildlife Habitat Model in the NRI. Updated "At Risk" species and "Grassland Associated" species lists have been completed for the SHA criteria. These criteria are currently being applied in four area-specific NRIs: Airport/Middle Slough, North Reach, Central Reach, and Hayden Island.

WILLAMETTE WATERSHED

Mock's Crest Oak Restoration (Chase-Washburn Project)

Non-native invasive species were removed, funded by a FEMA grant. This was followed by planting of native trees and shrubs associated with oaks and madrones, using TEES funds. Oak is a TEES Special Status Habitat. This project will also establish connectivity between other oak patches.

Stephens Creek Headwaters to Confluence

Stephens Creek is the location of a number of stream restoration projects that include terrestrial habitat restoration. At the headwaters, the Texas Wetland has been enhanced through stormwater retrofits and wetland vegetation. In Stephens Creek Canyon, stream restoration was coupled with a large-scale project to remove non-native invasive plants and replant with native riparian trees and shrubs. The Stephens Creek Confluence included enhancement of Willamette River wetland habitats, removal of non-native invasive plants, and replanting of riparian trees and shrubs.

Elk Rock Island Oak Restoration Project

Oregon white oak (*Quercus garryana*) and oak savannah prairie were recorded in the core of the Portland metropolitan area in the early 1850's. Few stands remain, and the State and City of Portland consider oak habitats as having special status; oaks, and their associated plants and animals, are now high priorities for conservation and restoration. A 2008 assessment of oak woodland conditions on Elk Rock Island, a 13-acre Parks managed natural area, revealed that:

Douglas fir and grand fir were overtopping and shading oaks resulting in oak mortality, and poor mast production and seedling survival. Conifer shading was also resulting in the conversion of oak associated shrubs and native groundcover grasses and forbs to a conifer associated plant community.

“Oak release” work (i.e., conifer removal, girdling, topping) was performed in September 2010. Initial project planning began in 2004 with annual surveys of the island’s vegetation and the initiation of invasive species control. In the spring of 2010 a baseline avian survey was conducted and all recent vegetation survey data were compiled and compared to records from vegetation surveys of oak woodlands conducted locally in the early 1900’s. The records of species that once grew beneath the oaks provided clues about historic site conditions (i.e., oak spacing, understory light and species composition) and guided preparation of long term restoration and monitoring plans for the woodland.

Ross Island Natural Area

This 44.83-acre upland property is a refuge for migrating birds and is home to bald eagles, blue herons, deer, and other wildlife. Restoration here focuses on removing invasive shrubs and trees and encouraging the growth of a native cottonwood-ash forest. Project actions include removing invasive species, restoring native vegetation, and providing opportunities for education.

South Portland Riverbank Projects

The beaches, rocky outcrops, and shallow waters along the Willamette River in Portland’s South Riverbank are the focus of terrestrial elements that support the aquatic restoration that is also underway. Project actions include removing invasive species, restoring native vegetation, placing large wood complexes in the river, enhancing connectivity to tributary streams, and providing opportunities for education.

Oaks Bottom Wildlife Refuge Projects

At 170 acres, Oaks Bottom is one of the largest remaining natural areas in the lower Willamette River floodplain. BES and Portland Parks & Recreation are working together on a large-scale habitat enhancement project that will enhance 75 acres of wetland by:

- Replacing an existing culvert with a larger box culvert to enhance fish and wildlife passage and significantly improve the flow of Willamette River water in and out of the refuge.
- Excavating tidal slough channels and enhancing wetland habitats to provide off-channel refuge for federally-listed salmon.
- Removing invasive vegetation, such as purple loosestrife and revegetating with native species to improve wildlife habitat.
- Enhancing opportunities for environmental education and interpretation.

Amphibian monitoring and bat monitoring and resulting recommendations have also informed project design. Five species of bats were identified, emphasizing the importance of the wildlife refuge for bats. To benefit amphibians, additional vegetation will be placed in Salamander Slough; a split rail fence will be continued along the bluff trail (to minimize human disturbance); downed branches will be added in the pond along the bluff trail; invasive plant species

eradication will continue in Wapato Lake; and additional vegetation will be placed in the small pond near the bike path.

Tabor to the River

The Tabor to the River project will restore watershed functions through green stormwater projects, terrestrial enhancement (including planting over 4,000 street trees), and enhancement of diverse forest habitats for neotropical birds on Mt Tabor. The project includes a large-scale outreach component to educate the public about the watershed improvements.

The Mt. Tabor Revegetation Project is part of the larger Tabor to the River Program, and is particularly focused on improving stormwater management, ecological conditions and wildlife habitat for birds. Thus far, invasive shrubs and vines have been removed on 19.5 acres, and nuisance trees have been removed on over 70 acres (fall 2010). Over 1,000 native shrubs and trees were planted (February 2011).

The project recently received additional funding from the East Multnomah Soil and Water Conservation District Partners in Conservation Grant, Portland Parks & Recreation, and the Bureau Environmental Services. These funds will be used to remove invasive shrubs and vines and plant native plants on an additional 37 acres of natural area (starting in summer 2011).

Breeding bird surveys and winter bird surveys have taken place at the project site for three years (2009, 2010, 2011) and will continue annually. This will help BES avoid impacts to bird species, provide baseline and effectiveness monitoring data, and track any changes in bird species use of the park with changes in vegetation.

Baltimore Woods Connectivity Corridor

Baltimore Woods is a unique habitat corridor in North Portland consisting of remnant oak woodlands. Oregon white oaks are increasingly rare in the Willamette Valley and provide valuable habitat for a variety of regionally declining native wildlife species, including the Western gray squirrel, Western bluebird and acorn woodpecker. The Baltimore Woods corridor provides a natural buffer between the Willamette River's industrial activities and its residential neighbors, and acts as a north-south wildlife corridor for birds and other oak-dependent animals. BES, Friends of Baltimore Woods, PP&R, Metro, Columbia Land Trust and SOLV are partnering to acquire vacant parcels to protect the native landscape from development and restore oak woodland and savannah to the corridor.

City of Portland Water Quality Test Laboratory

Amphibian monitoring and resulting recommendations may inform the management of this site.

Hoyt Arboretum

Amphibian monitoring and resulting recommendations may inform the management of this area.

COLUMBIA SLOUGH WATERSHED

Columbia Slough Confluence

Wood will be put in this site for reptiles and amphibians; bird boxes will be installed on the banks; and bat boxes will be added to the bridge. These decisions were informed by the amphibian and turtle monitoring efforts.

Ramsey Stormwater Wetlands Retrofit Project

Amphibian monitoring and turtle monitoring resulted in recommendations that informed this project. Specifically, wood was added to the site for cover (for both amphibians and turtles) and breeding structure (for amphibians). Large logs were placed at the site to enhance basking opportunities for Western painted turtles. Standing snags were put up for birds. Bird point-counts have been conducted at this project site.

Winmar Wetlands/Mason Flats/Big Four Corners/Alice Springs

Monitoring in 2009 determined that this is currently the only breeding population of western painted turtles known in this section of the Slough. The project design was therefore modified to benefit this Special Status Species, as well as other Special Status Species, including the red-legged frog. Specifically, the project design was changed significantly to protect turtle habitat (by not making the connection to the mainstem to keep carp out of the turtle ponds). In addition, reed canarygrass will be removed to improve turtle and bird habitat. Amphibian surveys are also informing decisions about this site; specifically, the possible removal of garbage and tires from the pond at Alice Springs will be investigated. Bird point-counts have been conducted at this site, and it is hoped that the project will benefit willow flycatchers and yellow warblers.

Kelley Point Park

Bat monitoring has documented use by several species, which may inform management of this park. Bird point-counts have also been conducted.

NE 148th Water Quality Facility

A TEES Site Assessment resulted in a decision to avoid removing specific trees and girdling some trees to create snags.

Whitaker Ponds

Amphibian, turtle, and bat monitoring and resulting recommendations have informed management of this site. Specifically, the maintenance schedule will be examined to determine whether the pollution reduction facility (PRF) hydroperiod can be extended for the amphibian breeding season. Non-native iris will be removed in the summer, and an effort will be made to remove non-native bullfrogs. The revegetation project will also probably be modified to enhance the habitat for the western painted turtle population using the site, rather than planting vegetation on the site as previously planned.

Whitaker Slough

Bat monitoring determined the presence of several species in this area. The turtle surveys documented that this site is not used for nesting, but is used as a pathway for turtles.

Inverness Wetland/112th (including “Turtle Bar” nesting habitat)

The turtle survey revealed that this is currently a low-value site for turtles; however, recommendations were made that informed project design (e.g., removal of reed canarygrass to provide possible nesting habitat).

Airport Futures Project and Natural Resources Inventory

The streaked horned lark monitoring project information is informing this project. Bat surveys conducted at sites on and near the Portland Air Guard Base (including Broadmoor and Colwood golf courses, Middle Columbia Slough, and Whitaker Ponds Natural Area) documented use by several bat species. This information will support a natural resources inventory the City is developing for the Middle Columbia Corridor/Airport in northeast Portland; the inventory is also aimed at meeting state and regional planning obligations (Goal 5, Title 13). This information will also support revised environmental zoning that affects how, and if, development will occur in this area over the next few decades.

Pier Park

Bat monitoring documented use by several species, which may inform management of this park.

TRYON/FANNO CREEK WATERSHEDS

Marshall Park Natural Areas Habitat Management and Trail Plan

This PP&R Plan (which includes Marshall Park as well as the Foley-Balmer, Jensen, and Arnold Creek natural areas) focuses on habitat management, trails, access, and connectivity between areas and Tryon Creek State Park. Amphibian monitoring and resulting recommendations informed development of the plan. Specifically, wood will be added to uplands to benefit terrestrial species. The plan notes the results of the bat monitoring and recommends additional surveys to pin down habitat enhancements to be considered. Recommendations for the 37 acres include reducing habitat fragmentation, rerouting recreational activities away from sensitive habitats, removing invasive species, and enhancing habitat for shrub and cavity-nesting birds and for bats.

Tryon Creek Headwaters

Amphibian monitoring resulted in a completed PP&R/BES pond-deepening project. The possibility of adding more plants and wood will be considered.

Maricara Park

Amphibian monitoring and resulting recommendations may inform management of this park in the future.

April Hill Park

Amphibian monitoring and resulting recommendations to deepen the pond have informed the management of this park and the development of a Desired Future Conditions Plan. BES and PP&R are working on permits for pond deepening.

JOHNSON CREEK WATERSHED

Crystal Springs Restoration Partnership

The Grey to Green Culverts Program identified the removal of eight fish passage barriers on Crystal Springs. Phase I focuses on three culverts on the lower river to open up most of the habitat in the short term. One of these culverts carries flow under a carport on SE 21st. Rather than rebuilding the carport, the entire property has been acquired to daylight the stream and improve riparian as well as instream habitat. The banks will be planted and maintained with native vegetation. Currently, the property is surrounded by mature invasive holly trees, which will be removed and replaced with a fence to minimize and limit public access to the natural area. However, the public will be able to view the restoration and learn about Crystal Springs at an overlook where the driveway currently exists.

Willing Seller Program

Five properties totaling 2.8 acres have been purchased to support the East Lents Floodplain Restoration Project, which targets upland and riparian habitat as well as instream species. Two properties totaling 3 acres have been acquired in the East Powell Butte Target area, which will be land banked for future restoration efforts.

Zenger Farm

Amphibian monitoring revealed that this site supports the healthiest populations of native amphibian species in the City. Furthermore, it was the only site monitored that did not have non-native, invasive bullfrogs. Because of this information, the Army Corps of Engineers project may be modified to provide minimal impact to the site, while still achieving other project objectives.

Circle Avenue Horse Pasture Pond

Amphibian monitoring and resulting recommendations may lead to removal of non-native iris, the addition of downed branches, and plantings of *Juncus* and *Eleocharis*.

Pompelly Property

Amphibian monitoring and resulting recommendations were provided to the private landowner of this site and hopefully will inform management decisions.

Powell Butte

Amphibian monitoring and resulting recommendations will inform management of this natural area park and the development of Desired Future Conditions. Specifically, fencing (either vegetated or actual fencing) will be added around the vernal pond, and the possibility of

constructing additional ponds will be investigated (i.e., hydrological conditions). Bird surveys began in 2011, coordinated by PP&R.

East Buttes Preservation Strategy

BES, PP&R and Metro have partnered to acquire and restore parcels in the City's East Buttes, often referred to as Forest Park East. These areas provide a welcome, "wild" respite from an otherwise urban setting. They also serve as critical green infrastructure that manages rainwater runoff and moderates flooding; recharges groundwater; prevents property damage due to flooding and landslides; supports native plants and wildlife; and serves as a recreation corridor that physically and socially connects Portland, suburban communities and rural areas. Since 2007, 197 acres have been acquired in the East Buttes, and the City of Portland has a goal of acquiring an additional 150 acres through the Grey to Green Land Acquisition Program.

Leach Gardens

Amphibian monitoring and resulting recommendations will inform management of this site. Specifically, additional vegetation (through organized plantings) will occur.

Brookside

Amphibian monitoring and resulting recommendations will inform management of this site. The possibility of invasive vegetation removal and replacement with native cover will be investigated.

Beggar's Tick Marsh

Amphibian monitoring and resulting recommendations (i.e., adding vegetation, particularly sturdy-stemmed plants, and replacing grass with woody debris and shrubbery) will inform management of this site.

Flavel Ridge

Amphibian monitoring and resulting recommendations will inform this project. Specifically, the feasibility and desirability of constructing new ponds and adding downed woody material will be investigated.

Errol Heights

Amphibian monitoring and resulting recommendations may inform management of this site.

Tideman-Johnson Park

Amphibian monitoring and resulting recommendations may inform management of this site.

Westmoreland Park

Bat monitoring results have informed management of this park. Specifically, the clusters of large Sequoia trees near the casting pond were identified as important night roosts that are worthy of protection.

Additional information about these projects and others can be found in the BES Watershed Services Update Program (WSUP) Database.

SECTION 8

OUTREACH AND EDUCATION

In addition to on-the-ground projects, a number of other efforts are occurring that are aimed at improving conditions for wildlife and their habitats through outreach and education.

Wildlife of Portland Poster

Many people who live in Portland are not aware of the fact that Portland is home to over 300 species of fish and wildlife and untold numbers of invertebrates. To address this, in 2010 TEES developed a poster that features some of the habitats and species found in the City, along with a list of actions that citizens can take to help wildlife and watersheds

<http://www.portlandonline.com/bes/fish/index.cfm?c=31006&a=307484> (Attachment O).

Nearly 4,000 posters have been distributed to schools and at conferences and lectures.

Website

BES maintains a website that includes TEES documents and information regarding terrestrial ecology <http://www.portlandonline.com/bes/fish/index.cfm?c=51052>.

<http://www.portlandonline.com/bes/fish/index.cfm?c=31006>

Urban Conservation Treaty for Migratory Birds and the Portland Bird Agenda

As noted earlier, the City of Portland was selected by the U.S. Fish and Wildlife Service as an Urban Conservation Treaty for Migratory Birds Program Partner in 2003. A major emphasis of the Program is to raise awareness of migratory birds in Portland’s urban ecosystems and instill a sense of stewardship and responsibility in the City and its citizens.

Since 2003, the Portland Parks & Recreation Bureau has been the lead entity for coordinating the City’s Treaty activities. Because many of the objectives and actions of the TEES support the intent of the Treaty, BES and Portland Parks & Recreation decided in February 2011 to coordinate the technically-based Portland Bird Agenda activities under the TEES “umbrella”. Portland’s Parks & Recreation Bureau has been coordinating the annual Migratory Bird Festival and other outreach efforts, and it will continue to do so in the future.

A plan of action for the City’s bird conservation efforts was completed in June 2011. This plan—the “Portland Bird Agenda”—will be presented to City Council in 2011 (Attachment N). The Portland Bird Agenda summarizes the public outreach efforts to date, as well as outreach and education “next steps” to further achieve the intent of the Treaty.

Managing Land with Minimal Impact to Birds Conference

In October 2010, a one-day regional workshop—“Managing Land with minimal Impact to Birds”—was held at the Oregon Zoo. Over 200 people, representing regional municipalities, state and federal resource agencies, soil and water conservation districts, parks and recreation

managers, private landowners, and others, attended. The impetus for the workshop was the City's guidelines, "Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects" (Attachment L).

Elk Rock Island Habitat Restoration

Elk Rock Island in the Willamette River is one of the last remaining oak habitats in the vicinity of Portland, and hosts oaks, madrones, a number of rare plants, and Special Status Species. The island is owned by the City of Portland and managed by Portland Parks & Recreation. Over time, Douglas firs had begun overtopping and outcompeting the shade-intolerant oak community. To benefit this community, the City of Portland performed an "oak release" project in September 2010. Forty firs were felled, girdled, or made into snags. Prior to project implementation, plant, bird and acorn mast surveys were conducted to establish baseline information. Subsequent monitoring will reveal responses to this BES/PP&R project.

Portland's Sensitive Wildlife and Your Dog

The City of Portland recognizes that responsible pet ownership means more than licensing and vaccinating dogs; it means controlling dogs' interactions with wildlife and natural areas. Unleashed dogs can harm birds and other wildlife, disturb breeding areas, or harass wintering birds, causing them to use valuable energy reserves. Dogs running loose also trample plants and habitat. Portland City Code requires that all dogs in parks must be kept on a leash unless in one of 31 designated off-leash areas. City Code also requires that all poop be picked up and disposed of in proper receptacles. Violation of either leash or scoop laws results in a \$150 fine. To educate the public about these problems and City Codes, several brochures and informational pieces were created:

The "Dogs For the Environment" Brochure and Pledge Form (Attachment P) includes basic information about responsible pet ownership and City Code requirements. It also includes a pledge form for owners, signifying they will keep their dog on leash and on trails in natural areas; scoop and properly dispose of poop; and avoid contact with streams and wildlife. In recognition of signing the pledge form, owners are sent a green bandana for their pet to wear.

A "Portland's Sensitive Wildlife and Your Dog" Brochure and poster were developed to inform people about the importance of keeping dogs on-leash in natural areas to reduce disturbance to birds and other wildlife (Attachment Q). A number of native birds nest on, or near the ground, and are particularly susceptible to harm by off-leash dogs. Ranger patrols were established to educate the public, and to help enforce City Codes.

Bird Checklists

In 2010, bird checklists for two of Portland's premier bird areas—Oaks Bottom Wildlife Refuge (Attachment R) <http://www.portlandonline.com/bes/fish/index.cfm?c=55194&a=280023> and Mt. Tabor Park (Attachment S) <http://www.portlandonline.com/bes/fish/index.cfm?c=55194&a=280021>—were developed by Christopher and Adrian Hinkle, respectively. These teen-aged twin boys volunteered many hours to develop these lists and accompanying bird illustrations. The lists were developed based on personal observations over the years, and vetting by other birders in the State or Oregon. The checklists have been posted in the City's BES website.

Historical Information

Achieving healthy biological communities not only depends on knowing about current conditions of fish and wildlife and their habitats; it should also be informed by knowing about historic conditions and decisions made by our predecessors. In 2008, several TEES team members conducted informal interviews, and held brown-bag presentations and conversations with Portlanders David B. Marshall and Tom McAllister--men in their 80's who have a wealth of knowledge and experience. Marshall had a long career as a biologist with the U.S. Fish and Wildlife Service, and wrote the first *Oregon Nongame Plan*. McAllister worked for the State Fish and Game Commission and was the outdoor writer and editor for the *Portland Journal* and later the *Oregonian*. All interviews, brown-bags and conversations were video-taped and transcripts posted on the BES/Science, Fish and Wildlife website.

<http://www.portlandonline.com/bes/fish/index.cfm?c=51343&a=279528>,

<http://www.portlandonline.com/bes/fish/index.cfm?c=51343&a=269478>,

<http://www.portlandonline.com/bes/fish/index.cfm?c=51343&a=269475>.

SECTION 9

FUTURE WORK

Much progress has been made regarding all of the main elements of the Terrestrial Ecology Enhancement Strategy (TEES), as summarized in this report. Implementation of the *Portland Watershed Management Plan (PWMP)* and the TEES (as part of the *PWMP*) is ongoing, but there are some elements that have defined end-products.

Some of the key work items for the TEES over the next several years are identified below, organized under the main TEES elements (as identified on page 2 of this Summary).

Identification of plant and animal species and terrestrial habitats needing protection, conservation, and/or restoration (Special Status Species and Habitats):

- Revise the City's lists if changes in the status of species or habitats occur and are officially recognized by the agencies and organizations the City bases its lists on.
- Map the locations of Special Status Habitats, with oaks and interior forests having the highest priority.

Identification of key management issues:

- Using the *City of Portland Terrestrial and Aquatic Invasive Animal Assessment* as a starting point, refine the species lists and identify high priority actions and partners for implementation.

Articulation of watershed-specific objectives for terrestrial habitats and biological communities:

- Integrate the TEES watershed-specific objectives into the next update of the *PWMP*.

Identification and implementation of priorities and actions for the next 2 to 5 years:

- Continue to inform and implement BES and PP&R projects, based on information collected during TEES site assessments.
- Implement selected priority recommendations regarding invasive animals.
- Continue the next phase of the Elk Rock Island oak habitat restoration project in partnership with PP&R.
- Continue to implement recommendations resulting from 2008-2011 turtle, bat, bird, and amphibian surveys.

- Continue to participate in interagency working groups for species of regional and statewide concern found in Portland, in order to identify priority actions and form collaborative partnerships to improve the status of those species. These working groups include:
 - Lower Willamette Turtle Working Group: Development of a regional conservation plan and coordination of monitoring and other activities to help recover Oregon’s two native turtle species
 - Streaked Horned Lark Working Group: Coordination of monitoring and other activities
- Finalize the “Portland Bird Agenda,” bring it before City Council, and begin implementing in partnership with PP&R, Bureau of Planning and Sustainable Development, Audubon Society of Portland and other partners.

Guidance to City bureaus and others for improving habitat and addressing plant and wildlife management issues:

- Continue to apply the guidelines for “Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects”. Refine as necessary, based on what is learned.
- Beta-test, and refine the beaver guidelines.
- Finalize, beta-test, and refine guidelines for wildlife trees, down wood and brushpiles for wildlife.
- Finalize, beta-test, and refine guidelines for turtles and amphibians.
- Finalize and use guidelines for oak habitat.
- Develop and use guidelines for wetlands.
- Develop and use guidelines for coyotes.
- Develop guidelines for bioroofs for wildlife.
- Refine and finalize the long TEES Site Assessment Form.
- Continue to provide assistance to PP&R regarding Desired Future Conditions (DFCs) for specific natural area parks and other sites.
- Continue to assist watershed teams, BES Revegetation, PP&R, and Planning and Sustainable Development upon request, providing TEES information to inform their projects and decision making.
- Continue to conduct training for City staff as needed.

Selection of species and habitats to be monitored over time to determine the health of biological communities in Portland’s urban watersheds:

- *Watershed Health Index (WSHI) and Portland Watershed Management Plan (PWMP) Measures Monitoring:* As part of the long-term monitoring in the four watershed health goal categories (hydrology, physical habitat, water quality, and biological communities), continue PAWMAP monitoring efforts for birds and terrestrial biological communities.
- *Special Status Species Monitoring:* Because several wildlife species of particular concern are associated with specific habitats and/or are very limited in their distribution, monitor selected sites where they are known to occur and/or breed. This will help the City make decisions about management of specific sites and enable the City to take appropriate action if negative changes occur. High priority species include the streaked horned lark, the western painted turtle, amphibians (pond-breeding and terrestrial), and bats.

Monitor select species or species groups to determine the effectiveness of projects and to identify and address any unanticipated unintended consequences:

- *Project Monitoring:* Pre- and post-construction project monitoring will occur at many projects, including: Oaks Bottom Habitat Enhancement, Columbia Slough Confluence, Elk Rock Island Oak Restoration, Ramsey Pacific Willow Wetland and Refugia, Big Four Corners Natural Area, and Winmar Mason Flats.

SECTION 10
Attachments

ATTACHMENT A

Portland Metro Area Amphibians

Common_Name	Latin_Name	In_Portland?
Northwestern Salamander	Ambystoma gracile	<input checked="" type="checkbox"/>
Long-toed Salamander	Ambystoma macrodactylum	<input checked="" type="checkbox"/>
Pacific Giant Salamander	Dicamptodon tenebrosus	<input checked="" type="checkbox"/>
Cope's Giant Salamander	Dicamptodon copei	<input checked="" type="checkbox"/>
Columbia Torrent Salamander	Rhyacotriton kezeri	<input type="checkbox"/>
Cascade Torrent Salamander	Rhyacotriton cascadae	<input type="checkbox"/>
Rough-skinned Newt	Taricha granulosa	<input checked="" type="checkbox"/>
Dunn's Salamander	Plethodon dunni	<input type="checkbox"/>
Western Red-backed Salamander	Plethodon vehiculum	<input type="checkbox"/>
Ensatina	Ensatina eschscholtzii	<input checked="" type="checkbox"/>
Clouded Salamander	Aneides ferreus	<input checked="" type="checkbox"/>
Oregon Slender Salamander	Batrachoseps wrighti	<input type="checkbox"/>
Western Toad	Bufo boreas	<input checked="" type="checkbox"/>
Tailed Frog	Ascaphus truei	<input type="checkbox"/>
Pacific Chorus Frog	Hyla regilla	<input checked="" type="checkbox"/>
Northern Red-legged Frog	Rana aurora aurora	<input checked="" type="checkbox"/>
Oregon Spotted Frog	Rana pretiosa	<input type="checkbox"/>
Bullfrog	Rana catesbeiana	<input checked="" type="checkbox"/>

Portland Metro Area Reptiles

Common_Name	Latin_Name	In_Portland?
Common Snapping Turtle	Chelydra serpentina	<input checked="" type="checkbox"/>
Western Painted Turtle	Chrysemys picta bellii	<input checked="" type="checkbox"/>
Northwestern Pond Turtle	Clemmys marmorata marmorata	<input checked="" type="checkbox"/>
Red-eared Slider	Trachemys scripta elegans	<input checked="" type="checkbox"/>
Northern Alligator Lizard	Elgaria coerulea	<input checked="" type="checkbox"/>
Southern Alligator Lizard	Elgaria multicarinata	<input type="checkbox"/>
Western Fence Lizard	Sceloporus occidentalis	<input checked="" type="checkbox"/>
Western Skink	Eumeces skiltonianus	<input checked="" type="checkbox"/>
Rubber Boa	Charina bottae	<input type="checkbox"/>
Racer	Coluber constrictor	<input type="checkbox"/>
Sharptail Snake	Contia tenuis	<input type="checkbox"/>
Ringneck Snake	Diadophis punctatus	<input type="checkbox"/>
Gopher Snake	Pituophis catenifer	<input type="checkbox"/>
Western Terrestrial Garter Snake	Thamnophis elegans	<input type="checkbox"/>
Northwestern Garter Snake	Thamnophis ordinoides	<input checked="" type="checkbox"/>
Common Garter Snake	Thamnophis sirtalis	<input checked="" type="checkbox"/>

Portland Metro Area Birds

Common_Name	Latin_Name	In_Portland?	Common_Name	Latin_Name	In_Portland?
Red-throated Loon	<i>Gavia stellata</i>	<input type="checkbox"/>	Gadwall	<i>Anas strepera</i>	<input checked="" type="checkbox"/>
Pacific Loon	<i>Gavia pacifica</i>	<input type="checkbox"/>	Mallard	<i>Anas platyrhynchos</i>	<input checked="" type="checkbox"/>
Common Loon	<i>Gavia immer</i>	<input checked="" type="checkbox"/>	Eurasian Wigeon	<i>Anas penelope</i>	<input checked="" type="checkbox"/>
Pied-billed Grebe	<i>Podilymbus podiceps</i>	<input checked="" type="checkbox"/>	American Wigeon	<i>Anas americana</i>	<input checked="" type="checkbox"/>
Horned Grebe	<i>Podiceps auritus</i>	<input type="checkbox"/>	Blue-winged Teal	<i>Anas discors</i>	<input checked="" type="checkbox"/>
Eared Grebe	<i>Podiceps nigricollis</i>	<input type="checkbox"/>	Cinnamon Teal	<i>Anas cyanoptera</i>	<input checked="" type="checkbox"/>
Western Grebe	<i>Aechmophorus occidentalis</i>	<input checked="" type="checkbox"/>	Northern Shoveler	<i>Anas clypeata</i>	<input checked="" type="checkbox"/>
Clark's Grebe	<i>Aechmophorus clarkii</i>	<input type="checkbox"/>	Northern Pintail	<i>Anas acuta</i>	<input checked="" type="checkbox"/>
Doubled-crested Cormorant	<i>Phalacrocorax auritus</i>	<input checked="" type="checkbox"/>	Green-winged Teal	<i>Anas crecca</i>	<input checked="" type="checkbox"/>
American Bittern	<i>Botaurus lentiginosus</i>	<input checked="" type="checkbox"/>	Canvasback	<i>Aythya valisineria</i>	<input checked="" type="checkbox"/>
Great Blue Heron	<i>Ardea herodias</i>	<input checked="" type="checkbox"/>	Redhead	<i>Aythya americana</i>	<input checked="" type="checkbox"/>
Great Egret	<i>Ardea alba</i>	<input checked="" type="checkbox"/>	Ring-necked Duck	<i>Aythya collaris</i>	<input checked="" type="checkbox"/>
Green Heron	<i>Butorides virescens</i>	<input checked="" type="checkbox"/>	Greater Scaup	<i>Aythya marila</i>	<input checked="" type="checkbox"/>
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	<input checked="" type="checkbox"/>	Lesser Scaup	<i>Aythya affinis</i>	<input checked="" type="checkbox"/>
California Condor	<i>Gymnogyps californianus</i>	<input type="checkbox"/>	Surf Scoter	<i>Melanitta perspicillata</i>	<input type="checkbox"/>
Turkey Vulture	<i>Cathartes aura</i>	<input checked="" type="checkbox"/>	Harlequin Duck	<i>Histrionicus histrionicus</i>	<input type="checkbox"/>
Greater White-fronted Goose	<i>Anser albifrons</i>	<input checked="" type="checkbox"/>	Bufflehead	<i>Bucephala albeola</i>	<input checked="" type="checkbox"/>
Snow Goose	<i>Chen caerulescens</i>	<input type="checkbox"/>	Common Goldeneye	<i>Bucephala clangula</i>	<input checked="" type="checkbox"/>
Ross's Goose	<i>Chen rossii</i>	<input type="checkbox"/>	Barrow's Goldeneye	<i>Bucephala islandica</i>	<input type="checkbox"/>
Canada Goose	<i>Branta canadensis</i>	<input checked="" type="checkbox"/>	Hooded Merganser	<i>Lophodytes cucullatus</i>	<input checked="" type="checkbox"/>
Dusky Canada Goose	<i>Branta canadensis occidentalis</i>	<input type="checkbox"/>	Common Merganser	<i>Mergus merganser</i>	<input checked="" type="checkbox"/>
Aleutian Canada Goose	<i>Branta canadensis leucopareia</i>	<input type="checkbox"/>	Red-breasted Merganser	<i>Mergus serrator</i>	<input type="checkbox"/>
Trumpeter Swan	<i>Cygnus buccinator</i>	<input type="checkbox"/>	Ruddy Duck	<i>Oxyura jamaicensis</i>	<input checked="" type="checkbox"/>
Tundra Swan	<i>Cygnus columbianus</i>	<input checked="" type="checkbox"/>	Osprey	<i>Pandion haliaetus</i>	<input checked="" type="checkbox"/>
Wood Duck	<i>Aix sponsa</i>	<input checked="" type="checkbox"/>	White-tailed Kite	<i>Elanus leucurus</i>	<input checked="" type="checkbox"/>
			Bald Eagle	<i>Haliaeetus leucocephalus</i>	<input checked="" type="checkbox"/>

Common_Name	Latin_Name	In_Portland?	Common_Name	Latin_Name	In_Portland?
Northern Harrier	Circus cyaneus	<input checked="" type="checkbox"/>	Semipalmated Sandpiper	Calidris pusilla	<input type="checkbox"/>
Sharp-shinned Hawk	Accipiter striatus	<input checked="" type="checkbox"/>	Western Sandpiper	Calidris mauri	<input checked="" type="checkbox"/>
Cooper's Hawk	Accipiter cooperii	<input checked="" type="checkbox"/>	Least Sandpiper	Calidris minutilla	<input checked="" type="checkbox"/>
Northern Goshawk	Accipiter gentilis	<input type="checkbox"/>	Baird's Sandpiper	Calidris bairdii	<input checked="" type="checkbox"/>
Red-shouldered Hawk	Buteo lineatus	<input checked="" type="checkbox"/>	Pectoral Sandpiper	Calidris melanotos	<input checked="" type="checkbox"/>
Red-tailed Hawk	Buteo jamaicensis	<input checked="" type="checkbox"/>	Dunlin	Calidris alpina	<input checked="" type="checkbox"/>
Rough-legged Hawk	Buteo lagopus	<input type="checkbox"/>	Short-billed Dowitcher	Limnodromus griseus	<input checked="" type="checkbox"/>
American Kestrel	Falco sparverius	<input checked="" type="checkbox"/>	Long-billed Dowitcher	Limnodromus scolopaceus	<input checked="" type="checkbox"/>
Merlin	Falco columbarius	<input checked="" type="checkbox"/>	Wilson's Snipe	Gallinago delicata	<input checked="" type="checkbox"/>
Peregrine Falcon	Falco peregrinus	<input checked="" type="checkbox"/>	Wilson's Phalarope	Phalaropus tricolor	<input checked="" type="checkbox"/>
Ring-necked Pheasant	Phasianus colchicus	<input checked="" type="checkbox"/>	Red-necked Phalarope	Phalaropus lobatus	<input checked="" type="checkbox"/>
Ruffed Grouse	Bonasa umbellus	<input type="checkbox"/>	Bonaparte's Gull	Larus philadelphia	<input checked="" type="checkbox"/>
Blue Grouse	Dendragapus obscurus	<input type="checkbox"/>	Mew Gull	Larus canus	<input checked="" type="checkbox"/>
Wild Turkey	Meleagris gallopavo	<input type="checkbox"/>	Ring-billed Gull	Larus delawarensis	<input checked="" type="checkbox"/>
Mountain Quail	Oreortyx pictus	<input type="checkbox"/>	California Gull	Larus californicus	<input checked="" type="checkbox"/>
California Quail	Callipepla californica	<input checked="" type="checkbox"/>	Herring Gull	Larus argentatus	<input checked="" type="checkbox"/>
Virginia Rail	Rallus limicola	<input checked="" type="checkbox"/>	Thayer's Gull	Larus thayeri	<input checked="" type="checkbox"/>
Sora	Porzana carolina	<input checked="" type="checkbox"/>	Western Gull	Larus occidentalis	<input checked="" type="checkbox"/>
American Coot	Fulica americana	<input checked="" type="checkbox"/>	Glaucous Gull	Larus hyperboreus	<input checked="" type="checkbox"/>
Sandhill Crane	Grus canadensis	<input checked="" type="checkbox"/>	Glaucous-winged Gull	Larus glaucescens	<input checked="" type="checkbox"/>
Black-bellied Plover	Pluvialis squatarola	<input checked="" type="checkbox"/>	Caspian Tern	Sterna caspia	<input checked="" type="checkbox"/>
American Golden-plover	Pluvialis dominica	<input type="checkbox"/>	Forster's Tern	Sterna forsteri	<input type="checkbox"/>
Semipalmated Plover	Charadrius semipalmatus	<input checked="" type="checkbox"/>	Common Tern	Sterna hirundo	<input type="checkbox"/>
Killdeer	Charadrius vociferus	<input checked="" type="checkbox"/>	Rock Pigeon	Columba livia	<input checked="" type="checkbox"/>
Greater Yellowlegs	Tringa melanoleuca	<input checked="" type="checkbox"/>	Band-tailed Pigeon	Columba fasciata	<input checked="" type="checkbox"/>
Lesser Yellowlegs	Tringa flavipes	<input checked="" type="checkbox"/>	Mourning Dove	Zenaida macroura	<input checked="" type="checkbox"/>
Solitary Sandpiper	Tringa solitaria	<input checked="" type="checkbox"/>	Barn Owl	Tyto alba	<input checked="" type="checkbox"/>
Spotted Sandpiper	Actitis macularia	<input checked="" type="checkbox"/>	Western Screech-Owl	Otus kennicottii	<input checked="" type="checkbox"/>

Common_Name	Latin_Name	In_Portland?	Common_Name	Latin_Name	In_Portland?
Great Horned Owl	Bubo virginianus	<input checked="" type="checkbox"/>	Western Kingbird	Tyrannus verticalis	<input checked="" type="checkbox"/>
Northern Pygmy-Owl	Glaucidium gnoma	<input type="checkbox"/>	Northern Shrike	Lanius excubitor	<input checked="" type="checkbox"/>
Northern Spotted Owl	Strix occidentalis caurina	<input type="checkbox"/>	Cassin's Vireo	Vireo cassinii	<input checked="" type="checkbox"/>
Barred Owl	Strix varia	<input checked="" type="checkbox"/>	Hutton's Vireo	Vireo huttoni	<input checked="" type="checkbox"/>
Long-eared Owl	Asio otus	<input type="checkbox"/>	Warbling Vireo	Vireo gilvus	<input checked="" type="checkbox"/>
Short-eared Owl	Asio flammeus	<input checked="" type="checkbox"/>	Red-eyed Vireo	Vireo olivaceus	<input checked="" type="checkbox"/>
Northern Saw-whet Owl	Aegolius acadicus	<input type="checkbox"/>	Steller's Jay	Cyanocitta stelleri	<input checked="" type="checkbox"/>
Common Nighthawk	Chordeiles minor	<input checked="" type="checkbox"/>	Western Scrub-Jay	Aphelocoma californica	<input checked="" type="checkbox"/>
Vaux's Swift	Chaetura vauxi	<input checked="" type="checkbox"/>	Gray Jay	Perisoreus canadensis	<input type="checkbox"/>
Anna's Hummingbird	Calypte anna	<input checked="" type="checkbox"/>	American Crow	Corvus brachyrhynchos	<input checked="" type="checkbox"/>
Rufous Hummingbird	Selasphorus rufus	<input checked="" type="checkbox"/>	Common Raven	Corvus corax	<input checked="" type="checkbox"/>
Belted Kingfisher	Ceryle alcyon	<input checked="" type="checkbox"/>	Streaked Horned Lark	Eremophila alpestris strigata	<input checked="" type="checkbox"/>
Lewis's Woodpecker	Melanerpes lewis	<input type="checkbox"/>	Purple Martin	Progne subis	<input checked="" type="checkbox"/>
Acorn Woodpecker	Melanerpes formicivorus	<input type="checkbox"/>	Tree Swallow	Tachycineta bicolor	<input checked="" type="checkbox"/>
Red-breasted Sapsucker	Sphyrapicus ruber	<input checked="" type="checkbox"/>	Violet-green Swallow	Tachycineta thalassina	<input checked="" type="checkbox"/>
Downy Woodpecker	Picoides pubescens	<input checked="" type="checkbox"/>	Northern Rough-winged Swallow	Stelgidopteryx serripennis	<input checked="" type="checkbox"/>
Hairy Woodpecker	Picoides villosus	<input checked="" type="checkbox"/>	Cliff Swallow	Petrochelidon pyrrhonota	<input checked="" type="checkbox"/>
Northern Flicker	Colaptes auratus	<input checked="" type="checkbox"/>	Barn Swallow	Hirundo rustica	<input checked="" type="checkbox"/>
Pileated Woodpecker	Dryocopus pileatus	<input checked="" type="checkbox"/>	Black-capped Chickadee	Poecile atricapilla	<input checked="" type="checkbox"/>
Monk Parakeet	Myiopsitta monachus	<input checked="" type="checkbox"/>	Mountain Chickadee	Poecile gambeli	<input type="checkbox"/>
Yellow-billed Cuckoo	Coccyzus americanus	<input type="checkbox"/>	Chestnut-backed Chickadee	Poecile rufescens	<input checked="" type="checkbox"/>
Olive-sided Flycatcher	Contopus cooperi = borealis	<input checked="" type="checkbox"/>	Bushtit	Psaltriparus minimus	<input checked="" type="checkbox"/>
Western Wood-Pewee	Contopus sordidulus	<input checked="" type="checkbox"/>	Red-breasted Nuthatch	Sitta canadensis	<input checked="" type="checkbox"/>
Willow Flycatcher	Empidonax traillii brewsteri	<input checked="" type="checkbox"/>	White-breasted Nuthatch	Sitta carolinensis	<input checked="" type="checkbox"/>
Hammond's Flycatcher	Empidonax hammondii	<input checked="" type="checkbox"/>	Brown Creeper	Certhia americana	<input checked="" type="checkbox"/>
Dusky Flycatcher	Empidonax oberholseri	<input checked="" type="checkbox"/>	Bewick's Wren	Thryomanes bewickii	<input checked="" type="checkbox"/>
Pacific-slope Flycatcher	Empidonax difficilis	<input checked="" type="checkbox"/>	House Wren	Troglodytes aedon	<input checked="" type="checkbox"/>
Say's Phoebe	Sayornis saya	<input checked="" type="checkbox"/>	Winter Wren	Troglodytes troglodytes	<input checked="" type="checkbox"/>

Common_Name	Latin_Name	In_Portland?	Common_Name	Latin_Name	In_Portland?
Marsh Wren	Cistothorus palustris	<input checked="" type="checkbox"/>	Savannah Sparrow	Passerculus sandwichensis	<input checked="" type="checkbox"/>
American Dipper	Cinclus mexicanus	<input type="checkbox"/>	Fox Sparrow	Passerella iliaca	<input checked="" type="checkbox"/>
Golden-crowned Kinglet	Regulus satrapa	<input checked="" type="checkbox"/>	Song Sparrow	Melospiza melodia	<input checked="" type="checkbox"/>
Ruby-crowned Kinglet	Regulus calendula	<input checked="" type="checkbox"/>	Lincoln's Sparrow	Melospiza lincolni	<input checked="" type="checkbox"/>
Western Bluebird	Sialia mexicana	<input type="checkbox"/>	Swamp Sparrow	Melospiza georgiana	<input type="checkbox"/>
Townsend's Solitaire	Myadestes townsendi	<input checked="" type="checkbox"/>	White-throated Sparrow	Zonotrichia albicollis	<input checked="" type="checkbox"/>
Swainson's Thrush	Catharus ustulatus	<input checked="" type="checkbox"/>	Harris's Sparrow	Zonotrichia querula	<input type="checkbox"/>
Hermit Thrush	Catharus guttatus	<input checked="" type="checkbox"/>	White-crowned Sparrow	Zonotrichia leucophrys	<input checked="" type="checkbox"/>
American Robin	Turdus migratorius	<input checked="" type="checkbox"/>	Golden-crowned Sparrow	Zonotrichia atricapilla	<input checked="" type="checkbox"/>
Varied Thrush	Ixoreus naevius	<input checked="" type="checkbox"/>	Dark-eyed Junco	Junco hyemalis	<input checked="" type="checkbox"/>
European Starling	Sturnus vulgaris	<input checked="" type="checkbox"/>	Black-headed Grosbeak	Pheucticus melanocephalus	<input checked="" type="checkbox"/>
American Pipit	Anthus rubescens	<input checked="" type="checkbox"/>	Lazuli Bunting	Passerina amoena	<input checked="" type="checkbox"/>
Cedar Waxwing	Bombycilla cedrorum	<input checked="" type="checkbox"/>	Red-winged Blackbird	Agelaius phoeniceus	<input checked="" type="checkbox"/>
Orange-crowned Warbler	Vermivora celata	<input checked="" type="checkbox"/>	Tricolored Blackbird	Agelaius tricolor	<input checked="" type="checkbox"/>
Nashville Warbler	Vermivora ruficapilla	<input checked="" type="checkbox"/>	Western Meadowlark	Sturnella neglecta	<input checked="" type="checkbox"/>
Yellow Warbler	Dendroica petechia	<input checked="" type="checkbox"/>	Yellow-headed Blackbird	Xanthocephalus xanthocephalus	<input checked="" type="checkbox"/>
Yellow-rumped Warbler	Dendroica coronata	<input checked="" type="checkbox"/>	Brewer's Blackbird	Euphagus cyanocephalus	<input checked="" type="checkbox"/>
Black-throated Gray Warbler	Dendroica nigrescens	<input checked="" type="checkbox"/>	Brown-headed Cowbird	Molothrus ater	<input checked="" type="checkbox"/>
Townsend's Warbler	Dendroica townsendi	<input checked="" type="checkbox"/>	Bullock's Oriole	Icterus bullockii	<input checked="" type="checkbox"/>
Hermit Warbler	Dendroica occidentalis	<input checked="" type="checkbox"/>	Purple Finch	Carpodacus purpureus	<input checked="" type="checkbox"/>
MacGillivray's Warbler	Oporornis tolmiei	<input checked="" type="checkbox"/>	House Finch	Carpodacus mexicanus	<input checked="" type="checkbox"/>
Common Yellowthroat	Geothlypis trichas	<input checked="" type="checkbox"/>	Red Crossbill	Loxia curvirostra	<input checked="" type="checkbox"/>
Wilson's Warbler	Wilsonia pusilla	<input checked="" type="checkbox"/>	Pine Siskin	Carduelis pinus	<input checked="" type="checkbox"/>
Yellow-breasted Chat	Icteria virens	<input checked="" type="checkbox"/>	Lesser Goldfinch	Carduelis psaltria	<input checked="" type="checkbox"/>
Western Tanager	Piranga ludoviciana	<input checked="" type="checkbox"/>	American Goldfinch	Carduelis tristis	<input checked="" type="checkbox"/>
Spotted Towhee	Pipilo maculatus	<input checked="" type="checkbox"/>	Evening Grosbeak	Coccothraustes vespertinus	<input checked="" type="checkbox"/>
Chipping Sparrow	Spizella passerina	<input checked="" type="checkbox"/>	House Sparrow	Passer domesticus	<input checked="" type="checkbox"/>
Vesper Sparrow	Poocetes gramineus	<input checked="" type="checkbox"/>			

Portland Metro Area Mammals

Common Name	Latin Name	In Portland?			
Virginia Opossum	Didelphis virginiana	<input checked="" type="checkbox"/>	Northern Flying Squirrel	Glaucomys sabrinus	<input checked="" type="checkbox"/>
Vagrant Shrew	Sorex vagrans	<input checked="" type="checkbox"/>	Western pocket gopher	Thomomys mazama	<input type="checkbox"/>
Pacific Water Shrew	Sorex bendirii	<input checked="" type="checkbox"/>	Camas Pocket Gopher	Thomomys bulbivorus	<input checked="" type="checkbox"/>
Water Shrew	Sorex palustris	<input checked="" type="checkbox"/>	American Beaver	Castor canadensis	<input checked="" type="checkbox"/>
Trowbridge's Shrew	Sorex trowbridgii	<input checked="" type="checkbox"/>	Deer Mouse	Peromyscus maniculatus	<input checked="" type="checkbox"/>
Shrew-mole	Neurotrichus gibbsii	<input checked="" type="checkbox"/>	Bushy-tailed Woodrat	Neotoma cinerea	<input checked="" type="checkbox"/>
Townsend's Mole	Scapanus townsendii	<input checked="" type="checkbox"/>	Western Red-backed Vole	Clethrionomys californicus	<input checked="" type="checkbox"/>
Coast Mole	Scapanus orarius	<input checked="" type="checkbox"/>	Heather Vole	Phenacomys intermedius	<input checked="" type="checkbox"/>
Yuma Myotis	Myotis yumanensis	<input checked="" type="checkbox"/>	White-footed Vole	Arborimus = Phenacomys albipes	<input checked="" type="checkbox"/>
Little Brown Myotis	Myotis lucifugus	<input checked="" type="checkbox"/>	Red Tree Vole	Arborimus = Phenacomys longicaudus	<input checked="" type="checkbox"/>
Long-legged Myotis	Myotis volans	<input checked="" type="checkbox"/>	Gray-tailed Vole	Microtus canicaudus	<input checked="" type="checkbox"/>
Fringed Myotis	Myotis thysanodes	<input checked="" type="checkbox"/>	Townsend's Vole	Microtus townsendii	<input checked="" type="checkbox"/>
Long-eared Myotis	Myotis evotis	<input checked="" type="checkbox"/>	Long-tailed Vole	Microtus longicaudus	<input checked="" type="checkbox"/>
Silver-haired Bat	Lasionycteris noctivagans	<input checked="" type="checkbox"/>	Creeping Vole	Microtus oregoni	<input checked="" type="checkbox"/>
Big Brown Bat	Eptesicus fuscus	<input checked="" type="checkbox"/>	Water Vole	Microtus richardsoni	<input checked="" type="checkbox"/>
Hoary Bat	Lasiurus cinereus	<input checked="" type="checkbox"/>	Common Muskrat	Ondatra zibethicus	<input checked="" type="checkbox"/>
Pacific Western Big-eared Bat	Corynorhinus townsendii townsendii	<input checked="" type="checkbox"/>	Black Rat	Rattus rattus	<input checked="" type="checkbox"/>
Brush Rabbit	Sylvilagus bachmani	<input checked="" type="checkbox"/>	Norway Rat	Rattus norvegicus	<input checked="" type="checkbox"/>
Eastern Cottontail	Sylvilagus floridanus	<input checked="" type="checkbox"/>	House Mouse	Mus musculus	<input checked="" type="checkbox"/>
Mountain Beaver	Aplodontia rufa	<input checked="" type="checkbox"/>	Pacific Jumping Mouse	Zapus trinotatus	<input checked="" type="checkbox"/>
Townsend's Chipmunk	Tamias townsendii	<input checked="" type="checkbox"/>	Common Porcupine	Erethizon dorsatum	<input checked="" type="checkbox"/>
California Ground Squirrel	Spermophilus beecheyi	<input checked="" type="checkbox"/>	Nutria	Myocastor coypus	<input checked="" type="checkbox"/>
Eastern Fox Squirrel	Sciurus niger	<input checked="" type="checkbox"/>	Coyote	Canis latrans	<input checked="" type="checkbox"/>
Eastern Gray Squirrel	Sciurus carolinensis	<input checked="" type="checkbox"/>	Red Fox	Vulpes vulpes	<input checked="" type="checkbox"/>
Western Gray Squirrel	Sciurus griseus	<input checked="" type="checkbox"/>	Gray Fox	Urocyon cinereoargenteus	<input checked="" type="checkbox"/>
Douglas' Squirrel	Tamiasciurus douglasii	<input checked="" type="checkbox"/>	Gray Wolf	Canis lupus	<input type="checkbox"/>

Common_Name	Latin_Name	In_Portland?
Black Bear	Ursus americanus	<input checked="" type="checkbox"/>
Grizzly Bear	Ursus arctos	<input type="checkbox"/>
Common Raccoon	Procyon lotor	<input checked="" type="checkbox"/>
Ermine	Mustela erminea	<input checked="" type="checkbox"/>
Long-tailed Weasel	Mustela frenata	<input checked="" type="checkbox"/>
Mink	Mustela vison	<input checked="" type="checkbox"/>
Striped Skunk	Mephitis mephitis	<input checked="" type="checkbox"/>
Western Spotted Skunk	Spilogale gracilis	<input checked="" type="checkbox"/>
Northern River Otter	Lontra canadensis	<input checked="" type="checkbox"/>
Cougar	Puma concolor	<input checked="" type="checkbox"/>
Bobcat	Lynx rufus	<input checked="" type="checkbox"/>
Domestic Cat feral	Felis domesticus	<input checked="" type="checkbox"/>
California Sea Lion	Zalophus californianus	<input checked="" type="checkbox"/>
Roosevelt Elk	Cervus elaphus roosevelti	<input checked="" type="checkbox"/>
Columbian White-tailed Deer	Odocoileus virginiana leucurus	<input type="checkbox"/>
Mule Deer	Odocoileus hemionus	<input checked="" type="checkbox"/>

ATTACHMENT B

Code	Common Name	Scientific Name	USFWS Status	ODFW Status	ODFW StratSp	ORNHIC Rank	ORNHIC List	NWPCC Subbasin	PIF FocalSp	OWEB Priority	ABC Audubon Watchlist
Amphibian	Clouded Salamander	Aneides ferreus		SV		G3/S3	3				
	Northern Red-legged Frog	Rana aurora aurora	Species of Concern	SV	X	G4T4/S3	2	X		X	
Reptiles	Northwestern Pond Turtle	Actinemys marmorata	Species of Concern	SC	X	G3T3/S2	1	X		X	
	Western Painted Turtle	Chrysemys picta bellii		SC	X	G5/S2	2			X	
Birds	American Bittern	Botaurus lentiginosus								X	
	American Kestrel	Falco sparverius						X	X	X	
	American White Pelican	Pelecanus erythrorhynchos		SV	X	G3/S2B	2				
	Bald Eagle	Haliaeetus leucocephalus	Delisted	LT		G4/S3B, S4N	2	X			
	Band-tailed Pigeon	Columba fasciata	Species of Concern			G5/S4	4		X	X	
	Black-throated Gray Warbler	Dendroica nigrescens							X		
	Brown Creeper	Certhia americana							X		
	Bufflehead	Bucephala albeola				G5/S2B, S5N	4				
	Bullock's Oriole	Icterus bullockii							X	X	
	Bush-tit	Psaltriparus minimus							X		
	Chipping Sparrow	Spizella passerina			X			X	X		
	Common Nighthawk	Chordeiles minor		SC	X	G5/S5	4				
	Common Yellowthroat	Geothlypis trichas						X			
	Downy Woodpecker	Picoides pubescens							X		
	Dunlin	Calidris alpina						X		X	
	Great Blue Heron	Ardea herodias								X	
	Green Heron	Butorides virescens						X			
	Hammond's Flycatcher	Empidonax hammondii							X		
	Hermit Warbler	Dendroica occidentalis							X		Yellow List
	Hooded Merganser	Lophodytes cucullatus								X	
	House Wren	Troglodytes aedon							X		
	Hutton's Vireo	Vireo huttoni							X		
	Loggerhead Shrike	Lanius ludovicianus		SV	X	G4/S3B, S2N	4				
	Long-billed Curlew	Numenius americanus		SV	X	G5/S3B	4				Yellow List
	Merlin	Falco columbarius				G5/S1B	2				
	Nashville Warbler	Vermivora ruficapilla							X		
	Northern Harrier	Circus cyaneus						X	X		
	Olive-sided Flycatcher	Contopus cooperi	Species of Concern	SV		G5/S4	4	X	X	X	Yellow List
	Orange-crowned Warbler	Vermivora celata							X		
	Pacific-slope Flycatcher	Empidonax difficilis							X	X	
	Peregrine Falcon	Falco peregrinus	American & Arctic Delisted	SV		G4/T3/S1B	2				
	Pileated Woodpecker	Dryocopus pileatus		SV		G5/S4	4	X	X		
	Purple Finch	Carpodacus purpureus								X	
Purple Martin	Progne subis	Species of Concern	SC	X	G5/S3B	2	X	X	X		
Red Crossbill	Loxia curvirostra							X			
Red-eyed Vireo	Vireo olivaceus						X	X			
Red-necked Grebe	Podiceps grisegena		SC	X	G5/S1B, S4N	2					
Rufous Hummingbird	Selasphorus rufus							X			
Short-eared Owl	Asio flammeus			X				X	X	Yellow List	
Sora	Porzana carolina						X				
Streaked Horned Lark	Eremophila alpestris strigata	Candidate	SC	X	G5/T2/S2B	1	X	X	X		
Swainson's Hawk	Buteo swainsoni		SV	X	G5/S3B	4				Yellow List	
Swainson's Thrush	Catharus ustulatus							X			

	Thayer's Gull	Larus thayeri							X		Yellow List
	Varied Thrush	Ixoreus naevius							X		Yellow List
	Vaux's Swift	Chaetura vauxi						X	X		
	Vesper Sparrow	Poocetes gramineus	Species of Concern	SC	X	G5/T3/S2B, S2N	2	X	X	X	
	Western Meadowlark	Sturnella neglecta		SC WV	X	G5/S5	4	X	X	X	
	Western Sandpiper	Calidris mauri									Yellow List
	Western Wood-Pewee	Contopus sordidulus						X	X		
	White-breasted Nuthatch (Slender-billed)	Sitta carolinensis aculeata		SV	X			X	X	X	
	White-tailed Kite	Elanus leucurus				G5/S1B, S3N	2				
	Willow Flycatcher (Little)	Empidonax traillii brewsteri		SV	X	G5TU/S1B	4	X	X	X	Yellow List
	Wilson's Warbler	Wilsonia pusilla							X		
	Winter Wren	Troglodytes troglodytes							X		
	Wood Duck	Aix sponsa						X			
	Yellow Warbler	Dendroica petechia						X	X	X	
	Yellow-breasted Chat	Icteria virens	Species of Concern	SC WV	X	G5/S4?	4		X		
Mammals	American Beaver	Castor canadensis						X			
	California Myotis	Myotis californicus		SV		G5/S3	4				
	Camas Pocket Gopher	Thomomys bulbivorus	Species of Concern			G3G4/S3S4	3				
	Fringed Myotis	Myotis thysanodes	Species of Concern	SV		G4G5/S2	2				
	Hoary Bat	Lasiurus cinereus		SV		G5/S3	4				
	Long-eared Myotis	Myotis evotis	Species of Concern			G5/S3	4				
	Long-legged Myotis	Myotis volans	Species of Concern	SV		G5/S3	4				
	Northern River Otter	Lontra canadensis						X			
	Red Tree Vole	Arborimus = Phenacomys longicaudus	Species of Concern	SV		G3G4/S3S4	3	X			
	Silver-haired Bat	Lasionycteris noctivagans	Species of Concern	SV	X	G5/S3S4	4				
	Townsend's Big-eared Bat	Corynorhinus townsendii townsendii	Species of Concern	SC	X	G4/T3T4/S2	2	X			
	Western Gray Squirrel	Sciurus griseus		SV	X	G5/S4	3	X			
	White-footed Vole	Arborimus = Phenacomys albipes	Species of Concern			G3G4/S3	4				
Yuma Myotis	Myotis yumanensis	Species of Concern			G5/S3	4					

CODES AND DEFINITIONS USED IN TEES SPECIAL STATUS SPECIES LIST
(without habitat associations, threats, and limiting factors)

SPECIAL STATUS SPECIES A City of Portland designation that includes species whose range includes Portland, and that are listed or have been identified in one or more of the following. (Note, however, that in a few cases, species *not* on these lists have been identified as Special Status Species by TEESAG—specifically Douglas Squirrel and Pacific Giant Salamander).

USFWS_Status

- C – Candidate
- LE – Listed Endangered
- LT – Listed Threatened
- SoC – Species of Concern

ODFW_Status Listed as Threatened or Endangered under the State Endangered Species Act, or listed as Sensitive under OAR 635-100-140. Sensitive Species are those naturally-reproducing native animals which may become threatened or endangered throughout all or any significant portion of their range in Oregon.

- LE – Listed Endangered
- LT – Listed Threatened
- SC – Sensitive Species, Critical category
- SP – Sensitive Species, Peripheral or Naturally Rare category
- SV – Sensitive Species, Vulnerable category

ODFW Strat. Sp. Identified as a “Strategy Species” in the Oregon Department of Fish and Wildlife’s Comprehensive Wildlife Conservation Strategy for Oregon (2005) for the Willamette Valley Ecoregion. “Strategy Species” are those closely associated with “Strategy Habitats” or are declining for a variety of reasons.

ORNHIC Rank Oregon Natural Heritage Information Center Rank

- 1 = Critically imperiled because of extreme rarity or because it is somehow especially vulnerable to extinction or extirpation, typically with five or fewer occurrences.
- 2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction or extirpation, typically with 6 – 20 occurrences.
- 3 = Rare, uncommon or threatened, but not immediately imperiled, typically with 21 – 100 occurrences.
- 4 = Not rare and apparently secure, but with cause for long-term concern, usually with more than 100 occurrences.
- 5 = Demonstrably widespread, abundant, and secure.
- H = Historical occurrence, formerly part of the native biota with the implied expectation that it may be rediscovered.
- T = subspecies, variety or recognized race.
- X = Presumably extirpated or extinct.
- U = Unknown rank.

NR = Not yet ranked.

G = Global Rank

S = State Rank

Global and State Rank Qualifiers:

Q = Questionable taxonomy.

? = Inexact Numeric Rank. Taxa that can be ranked, but for which the rank is not certain. Ranks with a “?” indicate that the rank is probably correct, but that either documentation is lacking or there is still some uncertainty.

Range Ranks = Ranks with more than one value. These can be G1G2, G1G3, etc. These indicate that the predicted final rank would be within the range, but with no indication of preference among the possibilities.

B = Breeding—Conservation status refers to the breeding population of the species in the nation or state/province.

N = Nonbreeding—Conservation status refers to the non-breeding population of the species in the nation or state/province.

M = Migrant—Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the nation or state/province.

ORNHIC List Oregon Natural Heritage Information Center Heritage List

1 (List 1) – threatened with extinction or presumed to be extinct throughout their entire range

2 (List 2) – threatened with extirpation or presumed to be extirpated in Oregon

3 (List 3) – More information is needed before status can be determined, but may be imperiled in Oregon or throughout range

4 (List 4) – of conservation concern but not currently imperiled

OWEB Priority Identified by the Oregon Watershed Enhancement Board as priorities in its process of identifying land acquisition priorities.

PIF_FocalSp Bird species identified as “focal species” by Partners In Flight (PIF) in the “Conservation Strategy for Landbirds in Lowlands and Valleys of Western Oregon and Washington” (March 2000) or “Conservation Strategy for Landbirds in Coniferous Forests of Western Oregon and Washington” (March 1999).

Subbasin_FocalSp Identified in the Northwest Power and Conservation Council Willamette Basin Subbasin Plan as Focal Species. These include species that are: listed or that are current candidates for listing as threatened or endangered by federal agencies; listed as threatened, endangered, sensitive—critical, or sensitive—vulnerable by ODFW; declining in the basin or region as indicated by Breeding Bird Survey (BBS) data; endemic to the Willamette Basin; or perform ecological functions quite different from those performed by other species that regularly occur in the same habitat type.

ABC_Audubon Watchlist - American Bird Conservancy & National Audubon Society Watchlist 2007. At risk bird species identified by these two organizations based on the latest available scientific research.

Red List - species in this category are declining rapidly and/or have very small populations or limited ranges, and face major conservation threats. These typically are species of global conservation concern.

Yellow List - this category includes species that are either declining or rare. These typically are species of national conservation concern.

ATTACHMENT C

Special Status Species, Habitat Associations, and Limiting Factors

Code	Species Name	Species Status			Habitat Associations		Limiting Factor Categories
A	Clouded Salamander <i>Aneides ferreus</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status	SV	Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank	G3/S3	PIF Focal Sp	<input type="checkbox"/>	WODF	General
		ORNHIC List	3	OWEB Priority Sp	<input type="checkbox"/>	WLCH	General
Audubon Watchlist							
Special_Needs: Need big downed logs in partially shaded forest, or talus. A talus substitute is crumbling rock foundations of old houses. Either brought in with firewood, or may be remnant populations.							
A	Northern Red-legged Frog <i>Rana aurora aurora</i>	USFWS Status	SoC	ODFW Strategy Sp	<input checked="" type="checkbox"/>	URBN	General
		ODFW Status	SV	Subbasin Focal Sp	<input checked="" type="checkbox"/>	AGPA	General
		ORNHIC Rank	G4T4/S3	PIF Focal Sp	<input type="checkbox"/>	WEGR	General
		ORNHIC List	2	OWEB Priority Sp	<input checked="" type="checkbox"/>	WODF	General
						WLCH	Close
						RWET	Close
				HWET	Close		
				WATR	Close		
Audubon Watchlist							
Special_Needs: Often prefer ponds and sloughs with more permanent water than wetland prairies and seasonal marshes where the water stays cool (shaded or from springs), but with a warm, sunny edge for tadpoles to develop, and with adjacent, fairly extensive forest or riparian woods. They do use some stormwater detention ponds.							
R	Western Painted Turtle <i>Chrysemys picta bellii</i>	USFWS Status		ODFW Strategy Sp	<input checked="" type="checkbox"/>	URBN	General
		ODFW Status	SC	Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank	G5/S2	PIF Focal Sp	<input type="checkbox"/>	WODF	General
		ORNHIC List	2	OWEB Priority Sp	<input checked="" type="checkbox"/>	RWET	General
						HWET	Close
				WATR	Close		
Audubon Watchlist							
Special_Needs: Habitat is not limited to ponds, but potentially includes nearly all water bodies with stagnant or slow-flowing water, whether seasonal or perennial. Use sloughs and wetlands that contain surface water only seasonally if perennially inundated areas are nearby. Some seasonal movement between habitats (juveniles, esp. use warmer, invertebrate-rich vernal pools and shallow wetlands more during spring when river currents are too swift, moving to cooler and more permanent waters of rivers, deep ponds and reservoirs in late summer. Sighted where ponds or rivers are situated near relatively open areas (including natural gaps in forest canopy, agricultural lands, golf courses, sewage treatment facilities, prairies), esp. if not far from wooded areas. Lay eggs on land. Understory of wooded areas (with thick mat of leaves) is important for hibernation. Riparian wood, in rivers and ponds, provides important basking sites. Nest and hibernation sites generally within about 100 ft of surface water, but can be over 300 ft away. Movements of over 1 mile are common.							

Code	Species Name	Species Status			Habitat Associations		Limiting Factor Categories
R	Northwestern Pond Turtle <i>Actinemys marmorata</i>	USFWS Status	SoC	ODFW Strategy Sp	<input checked="" type="checkbox"/>	URBN	General
		ODFW Status	SC	Subbasin Focal Sp	<input checked="" type="checkbox"/>	AGPA	General
		ORNHIC Rank	G3T3/S2	PIF Focal Sp	<input type="checkbox"/>	WEGR	General
		ORNHIC List	1	OWEB Priority Sp	<input checked="" type="checkbox"/>	WODF	Close
					WLCH	General	
					RWET	Close	
					HWET	Close	
					WATR	Close	

Audubon Watchlist

Special_Needs: Habitat is not limited to ponds, but potentially includes nearly all water bodies with stagnant or slow-flowing water, whether seasonal or perennial. Use sloughs and wetlands that contain surface water only seasonally if perennially inundated areas are nearby. Some seasonal movement between habitats (juveniles, esp. use warmer, invertebrate-rich vernal pools and shallow wetlands more during spring when river currents are too swift, moving to cooler and more permanent waters of rivers, deep ponds and reservoirs in late summer. Sighted where ponds or rivers are situated near relatively open areas (including natural gaps in forest canopy, agricultural lands, golf courses, sewage treatment facilities, prairies), esp. if not far from wooded areas. Lay eggs on land. Understory of wooded areas (with thick mat of leaves) is important for hibernation. Riparian wood, in rivers and ponds, provides important basking sites. Nest and hibernation sites generally within about 100 ft of surface water, but can be over 300 ft away. Movements of over 1 mile are common.

B	American Bittern <i>Botaurus lentiginosus</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	AGPA	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	HWET	Close
		ORNHIC Rank		PIF Focal Sp	<input type="checkbox"/>		
		ORNHIC List		OWEB Priority Sp	<input checked="" type="checkbox"/>		

Audubon Watchlist

Special_Needs:

B	Great Blue Heron <i>Ardea herodias</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	Close
		ORNHIC Rank		PIF Focal Sp	<input type="checkbox"/>	WEGR	General
		ORNHIC List		OWEB Priority Sp	<input checked="" type="checkbox"/>	WODF	General

Audubon Watchlist

Special_Needs:

Code	Species Name	Species Status		Habitat Associations	Limiting Factor Categories	
B	Green Heron <i>Butorides virescens</i>	USFWS Status	ODFW Strategy Sp	<input type="checkbox"/>	WATR	Close
		ODFW Status	Subbasin Focal Sp	<input checked="" type="checkbox"/>	RWET	Close
		ORNHIC Rank	PIF Focal Sp	<input type="checkbox"/>	HWET	Close
		ORNHIC List	OWEB Priority Sp	<input type="checkbox"/>		
		Audubon Watchlist				

Special_Needs: Strongly associated with wooded or brushy ponds and channels, esp. those containing water year-round.

B	Wood Duck <i>Aix sponsa</i>	USFWS Status	ODFW Strategy Sp	<input type="checkbox"/>	WATR	Close
		ODFW Status	Subbasin Focal Sp	<input checked="" type="checkbox"/>	AGPA	General
		ORNHIC Rank	PIF Focal Sp	<input type="checkbox"/>	WLCH	General
		ORNHIC List	OWEB Priority Sp	<input type="checkbox"/>	RWET	Close
		Audubon Watchlist			HWET	General
				WATR	Close	

Special_Needs: Prefer wooded sloughs, shaded ponds, shallow portions of reservoirs, and slow-water sections of wooded rivers and wide streams. Nest in large tree cavities as well as artificial nest boxes. Feed extensively on acorns, but also on aquatic invertebrates, berries, seeds of aquatic plants and even hazelnuts.

B	Bufflehead <i>Bucephala albeola</i>	USFWS Status	ODFW Strategy Sp	<input type="checkbox"/>	RWET	General
		ODFW Status	Subbasin Focal Sp	<input type="checkbox"/>	HWET	Close
		ORNHIC Rank G5/S2B,S5N	PIF Focal Sp	<input type="checkbox"/>	WATR	Close
		ORNHIC List 4	OWEB Priority Sp	<input type="checkbox"/>		
		Audubon Watchlist				

Special_Needs: Overwintering habitat.

B	Hooded Merganser <i>Lophodytes cucullatus</i>	USFWS Status	ODFW Strategy Sp	<input type="checkbox"/>	WLCH	Close
		ODFW Status	Subbasin Focal Sp	<input type="checkbox"/>	RWET	Close
		ORNHIC Rank	PIF Focal Sp	<input type="checkbox"/>	HWET	General
		ORNHIC List	OWEB Priority Sp	<input checked="" type="checkbox"/>	WATR	Close
		Audubon Watchlist				

Special_Needs:

Code	Species Name	Species Status			Habitat Associations		Limiting Factor Categories
B	White-tailed Kite <i>Elanus leucurus</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	AGPA	Close
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	WEGR	General
		ORNHIC Rank	G5/S1B, S3N	PIF Focal Sp	<input type="checkbox"/>	WLCH	General
		ORNHIC List	2	OWEB Priority Sp	<input type="checkbox"/>	RWET	General
		Audubon Watchlist					

Special_Needs:

B	Bald Eagle <i>Haliaeetus leucocephalus</i>	USFWS Status	Delisted	ODFW Strategy Sp	<input type="checkbox"/>	RWET	Close
		ODFW Status	LT	Subbasin Focal Sp	<input checked="" type="checkbox"/>	URBN	General
		ORNHIC Rank	G4/S3B, S4N	PIF Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC List	2	OWEB Priority Sp	<input type="checkbox"/>	WEGR	General
						WODF	General
						WLCH	General
						HWET	General
						WATR	Close
		Audubon Watchlist					

Special_Needs: Most associated with forested rivers and lakes, but in some months occurs extensively in open areas with livestock. Nests mainly in large Douglas-fir (mean diameter = 42 in) or cottonwood, either live or dead. Home range during breeding is 1-10 sq mi (much larger in winter). In summer, feed mainly on fish (live or dead) and augment at other times with waterfowl and sheep.

B	Northern Harrier <i>Circus cyaneus</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	HWET	Close
		ODFW Status		Subbasin Focal Sp	<input checked="" type="checkbox"/>	URBN	General
		ORNHIC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>	AGPA	General
		ORNHIC List		OWEB Priority Sp	<input type="checkbox"/>	WEGR	General
						RWET	General
						HWET	General
		Audubon Watchlist					

Special_Needs: Large home range needed (>300 acres)

Code	Species Name	Species Status			Habitat Associations		Limiting Factor Categories
B	American Kestrel <i>Falco sparverius</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	WEGR	General
		ODFW Status		Subbasin Focal Sp	<input checked="" type="checkbox"/>	URBN	General
		ORNHIC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>	AGPA	General
		ORNHIC List		OWEB Priority Sp	<input checked="" type="checkbox"/>	WODF	General
					WLCH	General	
					RWET	General	
					HWET	General	
		Audubon Watchlist					

Special_Needs: For nest sites, kestrels require tree cavities excavated by other species, but will occasionally use nest boxes. Nests are within or along the edge of clearcuts, pastures or other open areas dominated by grasses and forbs. Generally don't nest or forage in closed-canopy forest or in fields totally overgrown by shrubs. At all seasons requires elevated perch within or along a field.

B	Merlin <i>Falco columbarius</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank	G5/S1B	PIF Focal Sp	<input type="checkbox"/>	WEGR	General
		ORNHIC List	2	OWEB Priority Sp	<input type="checkbox"/>	WODF	General
					WLCH	General	
					RWET	General	
					HWET	General	
					WATR	General	
		Audubon Watchlist					

Special_Needs:

B	Peregrine Falcon <i>Falco peregrinus</i>	USFWS Status	American & Arctic Delisted	ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status	SV	Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank	G4/T3/S1B	PIF Focal Sp	<input type="checkbox"/>	WEGR	General
		ORNHIC List	2	OWEB Priority Sp	<input type="checkbox"/>	WODF	General
					WLCH	General	
					RWET	General	
					HWET	General	
					WATR	General	
		Audubon Watchlist					

Special_Needs:

Code	Species Name	Species Status		Habitat Associations		Limiting Factor Categories	
B	Sora <i>Porzana carolina</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	HWET	Close
		ODFW Status		Subbasin Focal Sp	<input checked="" type="checkbox"/>	AGPA	General
		ORNHIC Rank		PIF Focal Sp	<input type="checkbox"/>		
		ORNHIC List		OWEB Priority Sp	<input type="checkbox"/>		
		Audubon Watchlist					

Special_Needs: Inhabits taller denser marsh vegetation than may be typical of some wetland prairies, but not as tall as used by bittern and Virginia rail. Marshes of sedge or cattail, flooded either seasonally or year-round, are frequently used, as are (occasionally) irrigated hayfields, wet meadows, and lightly-grazed pastures on poorly-drained soils. Not recorded nesting in reed canary grass.

B	Dunlin <i>Calidris alpina</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	AGPA	Close
		ODFW Status		Subbasin Focal Sp	<input checked="" type="checkbox"/>	HWET	Close
		ORNHIC Rank		PIF Focal Sp	<input type="checkbox"/>	WATR	Close
		ORNHIC List		OWEB Priority Sp	<input checked="" type="checkbox"/>		
		Audubon Watchlist					

Special_Needs: Flocks feed in vernal pools and other seasonal wetlands with very short grass (<6 in.) with bare saturated soils. Generally avoid wetlands bordered by woody vegetation (esp. tall trees) unless wetlands are very large. Pools or wet soils that are richest in earthworms, fly larvae, and other soil invertebrates are probably favored. Frequently wander over 100 sq. mi. per day searching for food. Roost in bare or short-grass areas relatively free from constant human activity such as gravel islands in river, sewage treatment plants, and large agricultural fields.

B	Band-tailed Pigeon <i>Columba fasciata</i>	USFWS Status	SoC	ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank	G5/S4	PIF Focal Sp	<input checked="" type="checkbox"/>	WODF	Close
		ORNHIC List	4	OWEB Priority Sp	<input checked="" type="checkbox"/>	WLCH	Close
		Audubon Watchlist				RWET	Close

Special_Needs:

B	Short-eared Owl <i>Asio flammeus</i>	USFWS Status		ODFW Strategy Sp	<input checked="" type="checkbox"/>	AGPA	Close
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	WEGR	General
		ORNHIC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>	HWET	Close
		ORNHIC List		OWEB Priority Sp	<input checked="" type="checkbox"/>		
		Audubon Watchlist	Yellow List				

Special_Needs:

Code	Species Name	Species Status				Habitat Associations		Limiting Factor Categories
B	Common Nighthawk <i>Chordeiles minor</i>	USFWS Status		ODFW Strategy Sp	<input checked="" type="checkbox"/>	URBN	General	
		ODFW Status	SC	Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General	
		ORNHIC Rank	G5/S5	PIF Focal Sp	<input type="checkbox"/>	WEGR	General	
		ORNHIC List	4	OWEB Priority Sp	<input type="checkbox"/>	WODF	General	
					WLCH	General		
					RWET	General		
					HWET	General		
					WATR	General		
		Audubon Watchlist						

Special_Needs:

B	Vaux's Swift <i>Chaetura vauxi</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input checked="" type="checkbox"/>	WEGR	General
		ORNHIC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>	WODF	General
		ORNHIC List		OWEB Priority Sp	<input type="checkbox"/>	WLCH	General
					RWET	General	
					HWET	General	
					WATR	Close	
		Audubon Watchlist					

Special_Needs: Traditionally nested only in large snags, but has adapted to nesting mostly in uncapped unused brick chimneys. Tall chimneys are also used as staging and roosting areas just prior to migration. Selects streams and wetlands for aerial foraging. Also forage in multi-layered, broken canopy of old-growth forests and over agricultural fields, lakes, rivers and residential neighborhoods. Snags used for nesting by pairs or colonies generally have a diameter of at least 27 in and contain holes excavated by pileated woodpeckers or resulting from detached limbs or rot.

B	Rufous Hummingbird <i>Selasphorus rufus</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>	WEGR	General
		ORNHIC List		OWEB Priority Sp	<input type="checkbox"/>	WODF	General
					WLCH	General	
					RWET	General	
					HWET	General	
		Audubon Watchlist					

Special_Needs:

Code	Species Name	Species Status			Habitat Associations		Limiting Factor Categories
B	Downy Woodpecker <i>Picoides pubescens</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>	WODF	General
		ORNHIC List		OWEB Priority Sp	<input type="checkbox"/>	WLCH	General
		Audubon Watchlist				RWET	Close

Special_Needs:

B	Pileated Woodpecker <i>Dryocopus pileatus</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status	SV	Subbasin Focal Sp	<input checked="" type="checkbox"/>	AGPA	General
		ORNHIC Rank	G5/S4	PIF Focal Sp	<input checked="" type="checkbox"/>	WODF	General
		ORNHIC List	4	OWEB Priority Sp	<input type="checkbox"/>	WLCH	General
		Audubon Watchlist				RWET	General

Special_Needs: Strongly associated with old-growth conifer forest. Also uses large-diameter stands of deciduous trees (e.g., large cottonwoods and maples) in riparian areas, and even in low-density residential neighborhoods. Forages on both standing and fallen trees, and will use less mature forests if a few large-diameter trees are present or if mature stands are present nearby. Feeds extensively on carpenter ants. Home range is over 2000 acres, and they commonly travel up to 4 miles.

B	Olive-sided Flycatcher <i>Contopus cooperi</i>	USFWS Status	SoC	ODFW Strategy Sp	<input type="checkbox"/>	WLCH	Close
		ODFW Status	SV	Subbasin Focal Sp	<input checked="" type="checkbox"/>	RWET	General
		ORNHIC Rank	G5/S4	PIF Focal Sp	<input checked="" type="checkbox"/>		
		ORNHIC List	4	OWEB Priority Sp	<input checked="" type="checkbox"/>		
		Audubon Watchlist	Yellow List				

Special_Needs: Strongly associated with old-growth conifer forest; associated with canopy gaps created by blowdowns, mudflows, lightning strikes, beaver impoundments and other natural processes or from human-related activities (logging, low-density residential development, controlled burns). Appears to benefit from some types of fragmentation of conifer forests. Optimal habitat is edges and forest openings where tall trees and snags are present for singing and foraging perches, and varying sized conifers for nesting. The most important variable for nest success in managed early successional forest may be presence of snags taller than 40 ft.

Code	Species Name	Species Status	Habitat Associations	Limiting Factor Categories
B	Western Wood-Pewee <i>Contopus sordidulus</i>	USFWS Status ODFW Status ORNHIC Rank ORNHIC List Audubon Watchlist	ODFW Strategy Sp <input type="checkbox"/> Subbasin Focal Sp <input checked="" type="checkbox"/> PIF Focal Sp <input checked="" type="checkbox"/> OWEB Priority Sp <input type="checkbox"/>	URBN General AGPA General WODF General WLCH General RWET General

Special_Needs: A main requirement seems to be a somewhat open canopy of oaks or other deciduous trees, with few or no conifers. The understory may contain herbaceous plants or shrubs.

B	Willow Flycatcher (Little) <i>Empidonax traillii brewsteri</i>	USFWS Status ODFW Status SV ORNHIC Rank G5TU/S1B ORNHIC List 4 Audubon Watchlist Yellow List	ODFW Strategy Sp <input checked="" type="checkbox"/> Subbasin Focal Sp <input checked="" type="checkbox"/> PIF Focal Sp <input checked="" type="checkbox"/> OWEB Priority Sp <input checked="" type="checkbox"/>	URBN General AGPA General WODF General WLCH General RWET Close
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Special_Needs: Uses riparian alder, willow and vine maple, and regularly uses clearcuts (4 – 15 yrs post-harvest); patches of scotch broom, hawthorn, trailing blackberry, bracken fern and Himalayan blackberry. Tends to prefer shrubs in the open, rather than ones beneath extensive forest canopy. Fragmenting of large shrub stands with paths may benefit the species. Territory size at lower elevations avg. 1.1 ac.

B	Hammond's Flycatcher <i>Empidonax hammondii</i>	USFWS Status ODFW Status ORNHIC Rank ORNHIC List Audubon Watchlist	ODFW Strategy Sp <input type="checkbox"/> Subbasin Focal Sp <input type="checkbox"/> PIF Focal Sp <input checked="" type="checkbox"/> OWEB Priority Sp <input type="checkbox"/>	WODF General WLCH General
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Special_Needs:

B	Pacific-slope Flycatcher <i>Empidonax difficilis</i>	USFWS Status ODFW Status ORNHIC Rank ORNHIC List Audubon Watchlist	ODFW Strategy Sp <input type="checkbox"/> Subbasin Focal Sp <input type="checkbox"/> PIF Focal Sp <input checked="" type="checkbox"/> OWEB Priority Sp <input checked="" type="checkbox"/>	WODF General WLCH Close RWET General
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Special_Needs:

Code	Species Name	Species Status			Habitat Associations		Limiting Factor Categories	
B	Hutton's Vireo <i>Vireo huttoni</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General	
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General	
		ORNHIC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>	WODF	Close	
		ORNHIC List		OWEB Priority Sp	<input type="checkbox"/>	WLCH	General	
		Audubon Watchlist				RWET	General	

Special Needs:

B	Red-eyed Vireo <i>Vireo olivaceus</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	WLCH	General
		ODFW Status		Subbasin Focal Sp	<input checked="" type="checkbox"/>	RWET	Close
		ORNHIC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>		
		ORNHIC List		OWEB Priority Sp	<input type="checkbox"/>		
		Audubon Watchlist					

Special Needs: Mainly associated with large (>100 ft tall) canopy trees in cottonwood stands near water.

B	Streaked Horned Lark <i>Eremophila alpestris strigata</i>	USFWS Status	Candidate	ODFW Strategy Sp	<input checked="" type="checkbox"/>	URBN	General
		ODFW Status	SC	Subbasin Focal Sp	<input checked="" type="checkbox"/>	AGPA	General
		ORNHIC Rank	G5/T2/S2B	PIF Focal Sp	<input checked="" type="checkbox"/>	WEGR	Close
		ORNHIC List	1	OWEB Priority Sp	<input checked="" type="checkbox"/>		
		Audubon Watchlist					

Special Needs: Formerly bred in upland and wetland prairies, but as these have diminished, has adapted to nesting in some types of ag lands (row crops, conifer plantations, ryegrass fields, grazed pastures, burned fields), plus road and RR rights-of-way, wetland prairies, and mudflats. Always prefers large open expanse with short, sparse grass/forb cover and patches of bare ground. Mean territory size is 1.9 ac.

B	Purple Martin <i>Progne subis</i>	USFWS Status	SoC	ODFW Strategy Sp	<input checked="" type="checkbox"/>	URBN	General
		ODFW Status	SC	Subbasin Focal Sp	<input checked="" type="checkbox"/>	WEGR	General
		ORNHIC Rank	G5/S3B	PIF Focal Sp	<input checked="" type="checkbox"/>	WODF	General
		ORNHIC List	2	OWEB Priority Sp	<input checked="" type="checkbox"/>	WLCH	General
		Audubon Watchlist				RWET	General
				HWET	General		
				WATR	Close		

Special Needs: Historically nested in cavities of enormous old-growth trees near water bodies or other open areas.

Code	Species Name	Species Status		Habitat Associations	Limiting Factor Categories	
B	Bushtit	USFWS Status	ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status	Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
	<i>Psaltriparus minimus</i>	ORNHIC Rank	PIF Focal Sp	<input checked="" type="checkbox"/>	WODF	General
		ORNHIC List	OWEB Priority Sp	<input type="checkbox"/>	WLCH	General
		Audubon Watchlist			RWET	General

Special_Needs:

B	White-breasted Nuthatch (Slender-billed)	USFWS Status	ODFW Strategy Sp	<input checked="" type="checkbox"/>	URBN	General
		ODFW Status SV	Subbasin Focal Sp	<input checked="" type="checkbox"/>	AGPA	General
	<i>Sitta carolinensis aculeata</i>	ORNHIC Rank	PIF Focal Sp	<input checked="" type="checkbox"/>	WEGR	General
		ORNHIC List	OWEB Priority Sp	<input checked="" type="checkbox"/>	WODF	Close
		Audubon Watchlist			RWET	General

Special_Needs: Strongly tied to presence of large-diameter oak in semi-open stands, and occasionally associated with other hardwoods, uncommonly in floodplain deciduous forests. Generally not found within the interior of short, dense oak stands. Uses ash forests in bottomland hardwood forest.

B	Brown Creeper	USFWS Status	ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status	Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
	<i>Certhia americana</i>	ORNHIC Rank	PIF Focal Sp	<input checked="" type="checkbox"/>	WEGR	General
		ORNHIC List	OWEB Priority Sp	<input type="checkbox"/>	WODF	General
		Audubon Watchlist			WLCH	General
					RWET	General

Special_Needs:

B	House Wren	USFWS Status	ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status	Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
	<i>Troglodytes aedon</i>	ORNHIC Rank	PIF Focal Sp	<input checked="" type="checkbox"/>	WEGR	General
		ORNHIC List	OWEB Priority Sp	<input type="checkbox"/>	WODF	General
		Audubon Watchlist			WLCH	General
					RWET	General

Special_Needs:

Code	Species Name	Species Status			Habitat Associations	Limiting Factor Categories
B	Winter Wren <i>Troglodytes troglodytes</i>	USFWS Status ODFW Status ORNHIC Rank ORNHIC List Audubon Watchlist	ODFW Strategy Sp Subbasin Focal Sp PIF Focal Sp OWEB Priority Sp	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	URBN WODF WLCH RWET	General General General General

Special_Needs:

B	Swainson's Thrush <i>Catharus ustulatus</i>	USFWS Status ODFW Status ORNHIC Rank ORNHIC List Audubon Watchlist	ODFW Strategy Sp Subbasin Focal Sp PIF Focal Sp OWEB Priority Sp	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	URBN AGPA WODF WLCH RWET	General General General General General
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Special_Needs: Prefers interior habitat, not edge.

B	Varied Thrush <i>Ixoreus naevius</i>	USFWS Status ODFW Status ORNHIC Rank ORNHIC List Audubon Watchlist	ODFW Strategy Sp Subbasin Focal Sp PIF Focal Sp OWEB Priority Sp	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	URBN AGPA WODF WLCH	General General General Close
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Yellow List

Special_Needs:

B	Orange-crowned Warbler <i>Vermivora celata</i>	USFWS Status ODFW Status ORNHIC Rank ORNHIC List Audubon Watchlist	ODFW Strategy Sp Subbasin Focal Sp PIF Focal Sp OWEB Priority Sp	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	URBN AGPA WEGR WODF WLCH RWET	General General General General General General
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Special_Needs:

Code	Species Name	Species Status		Habitat Associations	Limiting Factor Categories	
B	Nashville Warbler <i>Vermivora ruficapilla</i>	USFWS Status ODFW Status ORNHC Rank ORNHC List Audubon Watchlist	ODFW Strategy Sp Subbasin Focal Sp PIF Focal Sp OWEB Priority Sp	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	AGPA WODF WLCH RWET	General General General General

Special_Needs:

B	Yellow Warbler <i>Dendroica petechia</i>	USFWS Status ODFW Status ORNHC Rank ORNHC List Audubon Watchlist	ODFW Strategy Sp Subbasin Focal Sp PIF Focal Sp OWEB Priority Sp	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	WATR RWET	Close Close
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Special_Needs: Prefers deciduous shrubs or trees within a few dozen ft of standing or flowing water. Occurs mostly in lowland riparian areas with willow and/or cottonwood.

B	Black-throated Gray Warbler <i>Dendroica nigrescens</i>	USFWS Status ODFW Status ORNHC Rank ORNHC List Audubon Watchlist	ODFW Strategy Sp Subbasin Focal Sp PIF Focal Sp OWEB Priority Sp	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	URBN AGPA WODF WLCH RWET	General General Close Close Close
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Special_Needs:

B	Hermit Warbler <i>Dendroica occidentalis</i>	USFWS Status ODFW Status ORNHC Rank ORNHC List Audubon Watchlist	ODFW Strategy Sp Subbasin Focal Sp PIF Focal Sp OWEB Priority Sp	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	WODF WLCH RWET	General Close General
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Yellow List

Special_Needs:

Code	Species Name	Species Status			Habitat Associations		Limiting Factor Categories
B	Common Yellowthroat <i>Geothlypis trichas</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input checked="" type="checkbox"/>	WEGR	General
		ORNHC Rank		PIF Focal Sp	<input type="checkbox"/>	WODF	General
		ORNHC List		OWEB Priority Sp	<input type="checkbox"/>	WLCH	General
					RWET	Close	
					HWET	Close	
		Audubon Watchlist					

Special_Needs: Nests in a wide variety of marsh vegetation types, including reed canary grass. Thrives in marshes with scattered plants that are more robust (e.g., cattail, bulrush, shrubs).

B	Wilson's Warbler <i>Wilsonia pusilla</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>	WODF	General
		ORNHC List		OWEB Priority Sp	<input type="checkbox"/>	WLCH	Close
					RWET	Close	
		Audubon Watchlist					

Special_Needs:

B	Yellow-breasted Chat <i>Icteria virens</i>	USFWS Status	SoC	ODFW Strategy Sp	<input checked="" type="checkbox"/>	AGPA	General
		ODFW Status	SC WV	Subbasin Focal Sp	<input type="checkbox"/>	WODF	General
		ORNHC Rank	G5/S4?	PIF Focal Sp	<input checked="" type="checkbox"/>	WLCH	General
		ORNHC List	4	OWEB Priority Sp	<input type="checkbox"/>	RWET	Close
		Audubon Watchlist					

Special_Needs:

B	Chipping Sparrow <i>Spizella passerina</i>	USFWS Status		ODFW Strategy Sp	<input checked="" type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input checked="" type="checkbox"/>	AGPA	General
		ORNHC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>	WEGR	General
		ORNHC List		OWEB Priority Sp	<input type="checkbox"/>	WODF	General
					WLCH	General	
					RWET	General	
		Audubon Watchlist					

Special_Needs: Within oak woodlands, the presence of a native shrub and herbaceous (esp. grassy) understory is important. The species is more common near edges and openings in oak woodlands or where trees are widely-spaced. Not correlated with oak height or diameter.

Code	Species Name	Species Status			Habitat Associations		Limiting Factor Categories
B	Vesper Sparrow <i>Pooecetes gramineus</i>	USFWS Status	SoC	ODFW Strategy Sp	<input checked="" type="checkbox"/>	AGPA	Close
		ODFW Status	SC	Subbasin Focal Sp	<input checked="" type="checkbox"/>	WEGR	Close
		ORNHIC Rank	G5/T3/S2B, S2N	PIF Focal Sp	<input checked="" type="checkbox"/>		
		ORNHIC List	2	OWEB Priority Sp	<input checked="" type="checkbox"/>		
		Audubon Watchlist					

Special_Needs:

B	Western Meadowlark <i>Sturnella neglecta</i>	USFWS Status		ODFW Strategy Sp	<input checked="" type="checkbox"/>	AGPA	Close
		ODFW Status	SC WV	Subbasin Focal Sp	<input checked="" type="checkbox"/>	WEGR	Close
		ORNHIC Rank	G5/S5	PIF Focal Sp	<input checked="" type="checkbox"/>	HWET	General
		ORNHIC List	4	OWEB Priority Sp	<input checked="" type="checkbox"/>		
		Audubon Watchlist					

Special_Needs: Prefers large open expanse (greater than 100 ac) of uncultivated grassland with grass-forb cover of 1-2 ft height and scattered shrubs (less than 10 % cover) or artificial perches (fences, telephone poles).

B	Bullock's Oriole <i>Icterus bullockii</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>	WODF	Close
		ORNHIC List		OWEB Priority Sp	<input checked="" type="checkbox"/>	RWET	Close
		Audubon Watchlist					

Special_Needs:

B	Purple Finch <i>Carpodacus purpureus</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank		PIF Focal Sp	<input type="checkbox"/>	WODF	Close
		ORNHIC List		OWEB Priority Sp	<input checked="" type="checkbox"/>	WLCH	General
		Audubon Watchlist				RWET	Close

Special_Needs:

Code	Species Name	Species Status			Habitat Associations		Limiting Factor Categories
B	Red Crossbill	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	WODF	General
	<i>Loxia curvirostra</i>	ORNHIC Rank		PIF Focal Sp	<input checked="" type="checkbox"/>	WLCH	General
		ORNHIC List		OWEB Priority Sp	<input type="checkbox"/>	RWET	General
		Audubon Watchlist					

Special_Needs:

M	Yuma Myotis	USFWS Status	SoC	ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
	<i>Myotis yumanensis</i>	ORNHIC Rank	G5/S3	PIF Focal Sp	<input type="checkbox"/>	WEGR	General
		ORNHIC List	4	OWEB Priority Sp	<input type="checkbox"/>	WODF	General
						WLCH	General
						RWET	Close
						HWET	Close
						WATR	Close
		Audubon Watchlist					

Special_Needs:

M	Long-legged Myotis	USFWS Status	SoC	ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status	SV	Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
	<i>Myotis volans</i>	ORNHIC Rank	G5/S3	PIF Focal Sp	<input type="checkbox"/>	WEGR	General
		ORNHIC List	4	OWEB Priority Sp	<input type="checkbox"/>	WODF	General
						WLCH	Close
						RWET	General
						HWET	General
						WATR	General
		Audubon Watchlist					

Special_Needs: Often associated with late successional conifer forests or other forested habitat with late successional components (especially snags); uses large snags and hollow trees primarily in riparian areas for day, night and maternity roosts; may use bridges in forested habitat for night roosting; occasionally found night roosting and hibernating in caves or mines; forages in forest riparian and forest edge

Code	Species Name	Species Status		Habitat Associations		Limiting Factor Categories	
M	Fringed Myotis <i>Myotis thysanodes</i>	USFWS Status	SoC	ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status	SV	Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank	G4G5/S2	PIF Focal Sp	<input type="checkbox"/>	WODF	General
		ORNHIC List	2	OWEB Priority Sp	<input type="checkbox"/>	WLCH	General
						RWET	General
						HWET	General
						WATR	General
		Audubon Watchlist					

Special_Needs: Forest habitats; large snags and rock features for day, night and maternity roosts (occasionally uses bridges for night roosting); caves and mines for hibernacula; beetles for prey.

M	Long-eared Myotis <i>Myotis evotis</i>	USFWS Status	SoC	ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank	G5/S3	PIF Focal Sp	<input type="checkbox"/>	WEGR	General
		ORNHIC List	4	OWEB Priority Sp	<input type="checkbox"/>	WODF	General
						WLCH	General
						RWET	General
						HWET	General
						WATR	General
		Audubon Watchlist					

Special_Needs:

M	Silver-haired Bat <i>Lasionycteris noctivagans</i>	USFWS Status	SoC	ODFW Strategy Sp	<input checked="" type="checkbox"/>	URBN	General
		ODFW Status	SV	Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General
		ORNHIC Rank	G5/S3S4	PIF Focal Sp	<input type="checkbox"/>	WEGR	General
		ORNHIC List	4	OWEB Priority Sp	<input type="checkbox"/>	WODF	General
						WLCH	Close
						RWET	General
						HWET	General
						WATR	General
		Audubon Watchlist					

Special_Needs:

Code	Species Name	Species Status				Habitat Associations		Limiting Factor Categories
M	Hoary Bat <i>Lasiurus cinereus</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General	
		ODFW Status	SV	Subbasin Focal Sp	<input type="checkbox"/>	AGPA	General	
		ORNHIC Rank	G5/S3	PIF Focal Sp	<input type="checkbox"/>	WEGR	General	
		ORNHIC List	4	OWEB Priority Sp	<input type="checkbox"/>	WODF	General	
						WLCH	General	
						RWET	General	
						HWET	General	
						WATR	General	
		Audubon Watchlist						

Special_Needs: Forest habitats, including late succession conifer forests which are used for roosting

M	Townsend's Big-eared Bat <i>Corynorhinus townsendii townsendii</i>	USFWS Status	SoC	ODFW Strategy Sp	<input checked="" type="checkbox"/>	URBN	General	
		ODFW Status	SC	Subbasin Focal Sp	<input checked="" type="checkbox"/>	AGPA	General	
		ORNHIC Rank	G4/T3T4/S2	PIF Focal Sp	<input type="checkbox"/>	WEGR	General	
		ORNHIC List	2	OWEB Priority Sp	<input type="checkbox"/>	WODF	General	
						WLCH	General	
						RWET	General	
						HWET	General	
						WATR	Close	
		Audubon Watchlist						

Special_Needs:

M	Western Gray Squirrel <i>Sciurus griseus</i>	USFWS Status		ODFW Strategy Sp	<input checked="" type="checkbox"/>	URBN	General	
		ODFW Status	SV	Subbasin Focal Sp	<input checked="" type="checkbox"/>	AGPA	General	
		ORNHIC Rank	G5/S4	PIF Focal Sp	<input type="checkbox"/>	WODF	Close	
		ORNHIC List	3	OWEB Priority Sp	<input type="checkbox"/>	WLCH	General	
		Audubon Watchlist						

Special_Needs: Acorns comprise a major portion of diet, so inhabits oak woodlands. Also occurs in riparian woodlands, orchards and mixed forest. Nests (dreys) are constructed in tall trees, but large tree cavities are also apparently important for birthing, sleeping and shelter.

Code	Species Name	Species Status				Habitat Associations		Limiting Factor Categories
M	Camas Pocket Gopher <i>Thomomys bulbivorus</i>	USFWS Status	SoC	ODFW Strategy Sp	<input type="checkbox"/>	URBN	General	
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	AGPA	Close	
		ORNHIC Rank	G3G4/S3S4	PIF Focal Sp	<input type="checkbox"/>	WEGR	Close	
		ORNHIC List	3	OWEB Priority Sp	<input type="checkbox"/>			
		Audubon Watchlist						

Special_Needs:

M	American Beaver <i>Castor canadensis</i>	USFWS Status		ODFW Strategy Sp	<input type="checkbox"/>	URBN	General
		ODFW Status		Subbasin Focal Sp	<input checked="" type="checkbox"/>	AGPA	General
		ORNHIC Rank		PIF Focal Sp	<input type="checkbox"/>	WODF	General
		ORNHIC List		OWEB Priority Sp	<input type="checkbox"/>	WLCH	General
						RWET	Close
						HWET	Close
						WATR	Close
		Audubon Watchlist					

Special_Needs: Inhabit wooded rivers, streams, lakes and sloughs. Generally don't reside in wave-swept portions of reservoirs or intermittent streams. Select relatively low-gradient channels whose geomorphic characteristics make them suitable for dam and lodge placement, but in wide channels and lakes will tunnel into bank and place lodges against the bank.

M	White-footed Vole <i>Arborimus = Phenacomys albipes</i>	USFWS Status	SoC	ODFW Strategy Sp	<input type="checkbox"/>	WLCH	Close
		ODFW Status		Subbasin Focal Sp	<input type="checkbox"/>	RWET	Close
		ORNHIC Rank	G3G4/S3	PIF Focal Sp	<input type="checkbox"/>		
		ORNHIC List	4	OWEB Priority Sp	<input type="checkbox"/>		
		Audubon Watchlist					

Special_Needs:

M	Red Tree Vole <i>Arborimus = Phenacomys longicaudus</i>	USFWS Status	SoC	ODFW Strategy Sp	<input type="checkbox"/>	WODF	Close
		ODFW Status	SV	Subbasin Focal Sp	<input checked="" type="checkbox"/>	WLCH	Close
		ORNHIC Rank	G3G4/S3S4	PIF Focal Sp	<input type="checkbox"/>	RWET	General
		ORNHIC List	3	OWEB Priority Sp	<input type="checkbox"/>		
		Audubon Watchlist					

Special_Needs: US Forest Service research in southern Oregon indicates they prefer old misshapen trees.

Code	Species Name	Species Status			Habitat Associations		Limiting Factor Categories
M	Northern River Otter <i>Lontra canadensis</i>	USFWS Status	ODFW Strategy Sp	<input type="checkbox"/>	URBN	General	
		ODFW Status	Subbasin Focal Sp	<input checked="" type="checkbox"/>	RWET	Close	
		ORNHIC Rank	PIF Focal Sp	<input type="checkbox"/>	HWET	Close	
		ORNHIC List	OWEB Priority Sp	<input type="checkbox"/>	WATR	Close	
		Audubon Watchlist					

Special_Needs: May be associated with relatively clean waters with adequate streamside cover (e.g., downed wood, forest canopy). Often occurs in beaver flowages. Regularly reported from urban waterways and upland forested areas.

ATTACHMENT D



Memorandum

To: City of Portland – Interested parties
From: TEES Team
Date: Monday August 17th, 2009
Subject: City of Portland, **Special Status Species - Plants**

A list of “Special Status” plant species has been compiled by City of Portland TEES staff. The list (much like the Special Status Wildlife Species List) is compiled as an informational document. “Special Status” plant species are those listed by state and/or federal agencies as rare, threatened or endangered.

The method for choosing the Special Status Species Plants is as follows:

The list is based on the 2007 version of the Oregon Natural Heritage Information Center List of Rare, Threatened and Endangered Species of Oregon. The list includes species expected to be present in the Willamette Valley eco-region of Multnomah County that have an ORNHIC Heritage Rank of 1, 2, 3 and 4.

ORNHIC RANK 1 = Critically imperiled because of extreme rarity or because it is somehow especially vulnerable to extinction or extirpation, typically with 5 or fewer occurrences. ORNHIC regards extreme rarity as a significant threat and has included species which are very rare in Oregon on this list.

ORNHIC RANK 2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (extirpation), typically with 6-20 occurrences.

ORNHIC RANK 3 = Rare, uncommon or threatened, but not immediately imperiled, typically with 21-100 occurrences.

ORNHIC RANK 4 = Not rare and apparently secure, but with cause for long-term concern, usually with more than 100 occurrences.

The Special Status Species list also includes information about the grouping of species into Ranked lists as follows:

List 1 contains taxa that are threatened with extinction or presumed to be extinct throughout their entire range.

List 2 contains taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon. These are often peripheral or disjunct species which are of concern when considering species diversity within Oregon's borders. They can be very significant when protecting the genetic diversity of a taxon.

List 3 contains taxa for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range.

List 4 contains taxa which are of conservation concern but are not currently threatened or endangered. This includes taxa which are very rare but are currently secure, as well as

taxa which are declining in numbers or habitat but are still too common to be proposed as threatened or endangered. While these taxa may not currently need the same active management attention as threatened or endangered taxa, they do require continued monitoring.

List 5 – The TEES Special Status Species list does not include those ranked 5, demonstrably widespread and secure.

Refinements for the TEES Special Status Species Plants that were selected from the ORNHIC lists included the following steps:

1. ORNHIC Plant Lists 1-4 were queried for their occurrence in Multnomah County
2. To verify the presence of those plants in the Willamette Valley and Columbia River eco-regions the queried results were compared to:
 - a. Urbanizing Flora of Portland 1806-2008, by John Christy et al
 - b. Flora of the Pacific Northwest: An Illustrated Manual by C. Leo Hitchcock and Arthur Cronquist
 - c. Plants of Western Oregon, Washington & British Columbia by Eugene N. Kozloff
3. The list will be reviewed by botanists and ecologists familiar with the Portland area.

The following list is proposed as the 2009 TEES - Special Status Species Plants List. The list is informational. It was developed to assist land managers and planners in identifying actions that will protect, restore and enhance Portland Special Status Habitats and associated wildlife species.

SCIENTIFIC NAME	COMMON NAME	Heritage Status - Rank	ORNHC List
<i>Agrostis howellii</i>	Howell's bentgrass	S-2	1
<i>Cimicifuga elata</i> var. <i>elata</i>	Tall bugbane	S-3	1
<i>Delphinium leucophaeum</i>	White rock larkspur	S-2	1
<i>Delphinium pavonaceum</i>	Peacock larkspur	S-1	1
<i>Howellia aquatilis</i>	Howellia	S-1	1
<i>Rorippa columbiae</i>	Columbia cress	S-3	1
<i>Sericocarpus rigidus</i> (syn <i>Aster curtus</i>)	White-topped aster	S-2	1
<i>Sullivantia oregana</i>	Oregon sullivantia	S-2	1
<i>Castilleja levisecta</i>	Golden paintbrush	S-H	1-extirpated
<i>Artemisia campestris</i> var. <i>wormskioldii</i>	Northern wormwood	S-X	1-extirpated
<i>Carex comosa</i>	Bristly sedge	S-1	2
<i>Carex retrorsa</i>	Retorse sedge	S-1	2
<i>Delphinium nuttallii</i>	Nuttall's larkspur	S-1	2
<i>Fritillaria camschatcensis</i>	Indian rice / black lilly	S-1	2
<i>Heliotropium curassavicum</i>	Salt heliotrope	S-2	2
<i>Rotala ramosior</i>	Toothcup	S-2	2
<i>Wolffia columbiana</i>	Columbia water-meal	S-1	2
<i>Sedella pumila</i>	Sierra mock-stonecrop	S-H	2-extirpated
<i>Ammannia robusta</i>	Grand redstem (loosestrife family)	S-NR	3
<i>Elodea nuttallii</i>	Nuttall's waterweed	S-NR	3
<i>Hierochloa odorata</i>	Holy grass	S-NR	3
<i>Polygonum punctatum</i>	Dotted smartweed	S-NR	3
<i>Scirpus pallidus</i>	Pale bulrush	S-3	3
<i>Zizia aptera</i>	Golden alexanders	S-NR	3
<i>Bergia texana</i>	Texas bergia	S-3?	4
<i>Bolandra oregana</i>	Oregon bolandra	S-3	4
<i>Cypripedium montanum</i>	Mountain lady's-slipper	S-3, S-4	4
<i>Euonymus occidentalis</i>	Western wahoo	S-3	4
<i>Montia howellii</i>	Howell's montia	S-3, S-4	4
<i>Poa laxiflora</i>	Loose-flowered bluegrass	S-3	4
<i>Poa marcida</i>	Weak bluegrass	S-4	4
<i>Sidalcea campestris</i>	Meadow checker-mallow	S-4	4

NR = Not yet ranked (2007 report)

H = Historical Occurrence, formerly part of the native biota with the implied expectation that it may be rediscovered.

X = Presumed extirpated or extinct.

CODES AND ABBREVIATIONS

FEDERAL STATUS

LE	Listed as an Endangered Species
LT	Listed as a Threatened Species
PE	Proposed as an Endangered Species
PT	Proposed as a Threatened Species
C	Candidate for Listing as Threatened or Endangered
SOC	Species of Concern - Taxa for which additional information is needed to support a proposal to list under the ESA

STATE STATUS - ANIMALS

LE	Listed as an Endangered Species
LT	Listed as a Threatened Species
PE	Proposed as an Endangered Species
PT	Proposed as a Threatened Species
SC	Sensitive - Critical
SV	Sensitive - Vulnerable

STATE STATUS - PLANTS

LE	Listed as an Endangered Species
LT	Listed as a Threatened Species
PE	Proposed as an Endangered Species
PT	Proposed as a Threatened Species
C	Candidate for Listing as Threatened or Endangered

ECOREGIONS

BM	Blue Mountains (includes High Lava Plains)
BR	Northern Basin and Range (includes Owyhee Uplands)
CB	Columbia Basin
CR	Coast Range
EC	East Cascades
KM	Klamath Mountains
SP	Snake River Plains
WC	West Cascades and Crest
WV	Willamette Valley

STATES AND PROVINCES

AB	Alberta	NJ	New Jersey
AK	Alaska	NM	New Mexico
AZ	Arizona	NY	New York
AR	Arkansas	NC	North Carolina
BC	British Columbia	NT	NW Territories
CA	California	NS	Nova Scotia
CO	Colorado	ON	Ontario
HI	Hawaii	QC	Quebec
ID	Idaho	SK	Saskatchewan
KS	Kansas	TN	Tennessee
MB	Manitoba	UT	Utah
MA	Massachusetts	WA	Washington
MT	Montana	WI	Wisconsin
NV	Nevada	WY	Wyoming

NATURAL HERITAGE RANKS

G1	Critically imperiled throughout its range
G2	Imperiled throughout its range
G3	Rare, threatened or uncommon throughout its range
G4	Not rare, apparently secure throughout its range
G5	Widespread, abundant and secure throughout its range
S1	Critically imperiled in Oregon
S2	Imperiled in Oregon
S3	Rare, threatened or uncommon in Oregon
S4	Not rare, apparently secure in Oregon
S5	Widespread, abundant and secure in Oregon
T	Rank for a subspecies, variety, or race
Q	Taxonomic questions
H	Historic, formerly part of the native biota with the implied expectation that it may be rediscovered
X	Presumed extirpated or extinct
U	Unknown rank
?	Not yet ranked
B	Rank of the breeding population (migratory birds)
N	Rank of the wintering population (migratory birds)

MISCELLANEOUS

ESA	Endangered Species Act
EPA	Environmental Protection Agency
FED	Federal
NOAA	National Oceanic and Atmospheric Administration
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
OESA	Oregon Endangered Species Act
ORNHIC	Oregon Natural Heritage Information Center
sp. nov.	species novum (new species) - in the process of being described in the literature
ssp.	subspecies
ssp. nov.	subspecies novum (new subspecies) - in the process of being described in the literature
TNC	The Nature Conservancy
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
var.	variety
+	taxon occurs in additional states

HERITAGE LISTS

1	Threatened or Endangered Throughout Range
2	Threatened, Endangered or Extirpated from Oregon, but Secure or Abundant Elsewhere
3	Review
4	Watch
2-ex	Extirpated in Oregon
1-X	Presumed extinct

Portland Special Status Species Plants (updated 2009)

SCIENTIFIC NAME	COMMON NAME	Site conditions and habitats found
<i>Agrostis howellii</i>	Howell's bentgrass	Moist, shady cliffs; canyon walls; waterfall spray zones; talus
<i>Cimicifuga elata</i> var. <i>elata</i>	Tall bugbane	In, or at the margins of, moist, mixed coniferous and deciduous forest. Areas of filtered light.
<i>Delphinium leucophaeum</i>	White rock larkspur	Mesic woodlands and forests
<i>Delphinium pavonaceum</i>	Peacock larkspur	Prairie
<i>Howellia aquatilis</i>	Howellia	Ponds or sloughs / submerged or partially flooded
<i>Rorippa columbiae</i>	Columbia cress	Near water; seasonally inundated
<i>Sericocarpus rigidus</i> (syn <i>Aster curtus</i>)	White-topped aster	Grasslands
<i>Sullivantia oregana</i>	Oregon sullivantia	Moist cliffs, especially near waterfalls; growing on small pockets of basalt derived soil.
<i>Castilleja levisecta</i>	Golden paintbrush	Seasonally (spring) wet prairies
<i>Artemisia campestris</i> var. <i>wormskioldii</i>	Northern wormwood	Rocky, cobbly shorelines and riverbanks
<i>Carex comosa</i>	Bristly sedge	Marshes, lake shores, wet meadows
<i>Carex retrorsa</i>	Retrorse sedge	Wet thickets, swamps, marshes, lake shores
<i>Delphinium nuttallii</i>	Nuttall's larkspur	Low moist ground, gravelly outwashes, basalt cliffs
<i>Fritillaria camschatcensis</i>	Indian rice / black lilly	Moist open meadows, near lakes and streams, coniferous-forested wetlands
<i>Heliotropium curassavicum</i>	Salt heliotrope	Dry or moist saline and alkaline areas
<i>Rotala ramosior</i>	Toothcup	Wet, swampy places; lake and pond margins; along rivers
<i>Wolffia columbiana</i>	Columbia water-meal	Freshwater ponds, lakes, and slow-moving streams
<i>Sedella pumila</i>	Sierra mock-stonecrop	Thin soil on rock outcrops, gravelly soil, vernal pools.
<i>Ammannia robusta</i>	Grand redstem (loosestrife family)	Riverine emergent wetlands, riparian mudflat wetlands
<i>Elodea nuttallii</i>	Nuttall's waterweed	In lakes, ponds, ditches
<i>Hierochloe odorata</i>	Holy grass	Moist slopes, meadows, stream banks

<i>Polygonum punctatum</i>	Dotted smartweed	Swamps, shallows; pond, stream, and lake edges
<i>Scirpus pallidus</i>	Pale bulrush	Wet meadows, stream banks, springs
<i>Zizia aptera</i>	Golden alexanders	Prairie, rocky upland woodlands, limestone glades
<i>Bergia texana</i>	Texas bergia	Sand bars, vernal pools, moist disturbed soil
<i>Bolandra oregana</i>	Oregon bolandra	Wooded areas on cliffs near waterfalls
<i>Cypripedium montanum</i>	Mountain lady's-slipper	Mid- to late-successional forest communities; mixed conifers or mixed evergreen/oak woodland
<i>Euonymus occidentalis</i>		Moist, wooded/forested areas
<i>Montia howellii</i>	Howell's montia	Moist, disturbed soils; lowlands
<i>Poa laxiflora</i>	Loose-flowered bluegrass	Open meadows along stream banks; upper margins of sea beaches
<i>Poa marcida</i>	Weak bluegrass	
<i>Sidalcea campestris</i>	Meadow checker-mallow	Prairie / grasslands (roadside ditches)

ATTACHMENT E

Habitat Types, Status, Threats, and Limiting Factors

Johnson / O'Neil Habitat Type: Herbaceous Wetlands

Hab Code: HWET

Special Status Habitat(s) within this type: All

General Characteristics

Wetlands are covered with water during all or part of the year. Permanently wet habitats include backwater sloughs, oxbow lakes, and marshes, while seasonally wet habitats include seasonal ponds, vernal pools and wet prairies. Wetland habitats are highly diverse and include the following:

Deciduous swamps and shrublands are located in depressions, around lakes or ponds or on river terraces. They generally flood seasonally with nutrient-rich waters and are dominated by woody vegetation including willows, spirea, alder, red-osier dogwood, Pacific crabapple, and ash. These scrub-shrub and wooded wetlands are often associated / classified with wooded riparian areas and better fit there, but have been included with wetlands for more complete coverage.

Marshes (including emergent marshes) occur in depressions (ponds), fringes around lakes and along slow-flowing streams especially in valley bottoms. Marshes are seasonally or continually flooded and have water-adapted plants such as sedges, bulrush, spikesedges, rushes, cattails, and floating vegetation. Marshes can have mucky soils resulting in water with high mineral content and dominated by herbaceous species, often including wildflowers.

Off-channel habitat (oxbow lakes, stable backwater sloughs, and flooded marshes) are created as rivers change course. In these areas, water moves slowly, providing quiet aquatic habitats.

Seasonal ponds and vernal pools hold water during the winter and spring but typically dry up during the dry summer months. Vernal pools occur in complexes of networked depressions that are seasonally filled with rainwater. They host a variety of species with unique adaptations.

Wet prairies occur in lowlands, especially in floodplains whereas wet meadows occur in depressions surrounded by forests and are associated with snow melt. Wet prairies are dominated by grasses, sedges and wildflowers.

Habitat Status and Threats

Wetlands provide important habitat for migrating and breeding waterfowl, shorebirds, waterbirds, songbirds, mammals, amphibians and reptiles. In addition to being critical for birds and many kinds of wildlife, floodplain wetlands and backwater sloughs and swamps are important rearing habitats for juvenile salmon. Wetlands have direct value for people because they improve water quality by trapping sediments and toxins, recharge aquifers, store water, and reduce the severity of floods. Restoration and careful management of wet meadow systems and other wetlands can increase sustainable production of forage for livestock and increase late-season stream flows.

In general, most wetland habitat loss has occurred at lower elevations and valley bottoms. Many of these wetlands have been drained and converted to agriculture. Almost all remaining wetlands in the Willamette Valley have been degraded to some degree by altered water regimes, pollution, and invasive plants and animals.

Habitat Types, Status, Threats, and Limiting Factors

Limiting Factors

Biological Stressors

Climate Change

Disruption of Natural Disturbance Regimes Habitat Types, Status, Threats, and Limiting Factors

Habitat Fragmentation and Access

Human Disturbance

Physical Habitat Change

Pollution

Vegetation Change and Altered Habitat Structure

Habitat Types, Status, Threats, and Limiting Factors

Johnson / O'Neil Habitat Type: Open Water – Lakes, Rivers, and Streams **Hab Code:** WATR

Special Status Habitat(s) within this type:

General Characteristics

Freshwater aquatic habitats include rivers, streams, ponds, lakes and reservoirs, and are defined as occurring above the influence of tides and salinity fluctuations. Freshwater aquatic habitats typically contain water year-round, while wetlands may dry out through the season. Oregon's freshwater aquatic habitats are both interconnected and highly diverse, including tributary streams and lakes at high elevations, major rivers, smaller meandering streams, springs, seeps, and many lakes and reservoirs.

Habitat Status and Threats

Water is crucial for all fish and wildlife, and high quality freshwater aquatic systems provide essential habitat to many at-risk species, including important spawning and rearing habitat for salmonids, breeding habitat for amphibians, and habitat for freshwater mussels and other invertebrates.

Limiting Factors

Biological Stressors

Climate Change

Disruption of Natural Disturbance Regimes

Habitat Fragmentation and Access

Human Disturbance

Physical Habitat Change

Pollution

Vegetation Change and Altered Habitat Structure

Habitat Types, Status, Threats, and Limiting Factors

Johnson / O'Neil Habitat Type: Urban and Mixed Environs

Hab Code: URBN

Special Status Habitat(s) within this type: Key structures used by sensitive species

General Characteristics

Urban development occurs within or adjacent to nearly every habitat type in Oregon, and often replaces habitats that are valuable for wildlife. The highest urban densities normally occur in lower elevations along natural or human-made transportation corridors, such as rivers, railroad lines, coastlines, or interstate highways. These areas often contain good soils with little or no slope and lush vegetation. Once level areas become crowded, growth continues along rivers or shores of lakes and eventually up elevated sites with steep slopes or rocky outcrops. Typically, 3 zones are characteristic of urban habitat: high-density zone, medium-density zone and low-density zone.

The high-density zone is the downtown area of the inner city. It also encompasses the heavy industrial and large commercial interests of the city in addition to high-density housing areas such as apartment buildings and high-rise condominiums. This zone has 60% of its total surface area covered by impervious surfaces. This zone has the smallest lot size, the tallest buildings, the least amount of total tree canopy, the lowest tree density, the highest percentage of exotics, the poorest understory and subcanopy, and the poorest vegetative structure. Most streams and natural areas have disappeared from this zone. Ecoroofs, vertical landscaping and street trees may provide the best opportunity for greening these areas of the city.

The medium-density zone is comprised of light industry mixed with high-density residential areas. Housing density of 3-6 single-family homes per acre is typical. This zone has more potential wildlife habitat. With 3059% impervious soil cover, this zone has 41-70% of the ground available for plants. Isolated wetlands, stream corridors, open spaces and green belts are more frequently retained in this zone than in the high-density zone. However, remnant wetland and riparian areas are often widely separated by urban development. Restoring structural complexity in simplified parks, naturescaping private properties, planting street trees and reconnecting natural areas are potentially important strategies to pursue in this zone.

The low-density zone is the outer zone of the urban-rural continuum. This zone contains only 10-29% impervious ground cover and normally contains only single-family homes. It has more natural ground cover than artificial surfaces. Vegetation is denser and more abundant than in the previous two zones. Typically, housing densities are 0.4-1.6 single-family homes per acre, and road density is the lowest of all 3 zones, consisting primarily of secondary and tertiary roads. Many wetlands remain and are less impacted. Water levels are more stable and peak flows are more typical of historic flows. Watertables are less impacted and vernal wetlands are more frequent; stream corridors are less impacted and more continuous.

Habitat Status and Threats

Within urban areas, a diversity and mosaic of remnant natural habitat fragments, albeit often simplified in structure and function. Many structural features typical of the historical vegetation, such as snags, dead and downed wood, and brush piles, are often completely removed from the landscape. The original habitats are often replaced by buildings, impervious surfaces, and bridges; and plantings of non-native species are frequently found along streets, in parks and in private gardens. Some human made structures provide habitats similar to those of cavities, caves, fissures, cliffs and ledges and are frequently used by wildlife species.

Remnant, isolated blocks of natural areas often are found scattered in a city or region mixed with a multitude of introduced or exotic vegetation. As urban development increases, these remnant natural areas become fragmented and isolated. In urban and suburban areas, species richness is often increased because of the introduction of exotics. The juxtaposition of exotics interspersed with native vegetation produces a diverse mosaic with areas of extensive edge. Also because of irrigation and the addition of fertilizers, the biomass in the urban communities is often increased. Interest in the use of native plants for landscaping, or naturescaping, is rapidly expanding.

Habitat Types, Status, Threats, and Limiting Factors

From 1970 to 1990, more than 30,000 square miles of rural lands in the U.S. became urban, as classified by the US Census Bureau. From 1940 to 1970, the population of the Portland urban region doubled and the amount of land occupied by that population quadrupled. More people are moving to Oregon and Portland than most other places in the US placing continued pressure on the natural resources. Development and associated urban growth is blamed as one of the single biggest factors affecting the environment. This urban growth is predicted to continue to increase at an accelerated pace, at the expense of native habitat.

Limiting Factors

Biological Stressors

Climate Change

Disruption of Natural Disturbance Regimes

Habitat Fragmentation and Access

Human Disturbance

Pollution

Habitat Types, Status, Threats, and Limiting Factors

Johnson / O'Neil Habitat Type: Westside Upland Grasslands

Hab Code: WEGR

Special Status Habitat(s) within this type: Upland Prairie; Grasslands

General Characteristics

Upland grasslands include a variety of grass-dominated habitats such as upland prairies, coastal bluffs and montane grasslands. In general, grasslands occur on dry slopes or plateaus and have well-drained sandy or loamy soils. Although dominant species vary across Oregon, perennial bunchgrass and forbs dominate native grasslands. In some areas, upland grasslands are similar to wet prairies and wet meadows in structure and share some of the same prairie-associated plants and animals. In all but the most shallow rocky soils, grasslands are maintained through disturbances such as periodic fire, soil upheaval by rodents, frostheave, wind or salt spray. In the Willamette Valley, grasslands, or upland prairies, are dominated by grasses, forbs, and wildflowers. Upland grasslands have well-drained soils and often occur on dry slopes. They are similar to wet prairies in structure and share some of the same prairie-associated plants and animals. Oak savannas are grasslands with scattered Oregon white oak trees, generally only one or two trees per acre. Oak trees in savannas are usually large with well-developed limbs and canopies.

Habitat Status and Threats

As a whole, native grasslands are one of the most imperiled habitats in the western United States and are disappearing rapidly around the globe. In Oregon, the greatest loss of grasslands has been in valley bottoms and foothills where they have been impacted by conversion to agriculture, development, and invasive plant species. In some areas, past grazing has impacted grasslands, affecting plant composition and structure. Also, non-native species were historically seeded for livestock forage in some grasslands, decreasing the abundance and diversity of native plants. However, grazing practices become more sustainable over time, and carefully managed grazing can help maintain grassland structure where prescribed fire is not practical or desired. Disruption of historical fire regimes has allowed for shrubs or trees to encroach, replacing grasslands with forest. In addition, some foothill grasslands have been converted to forests through tree planting. Compared to historic grassland distributions, grassland loss has been extremely high in the Willamette Valley (99 percent estimated loss). Grasslands have been lost due to conversion to other uses, particularly development, vegetation changes following fire suppression, and invasive species. In the Willamette Valley, grasslands are particularly fragmented and isolated. In cooperation with landowners, remnant patches in should be maintained and, where feasible, restored.

Limiting Factors

Biological Stressors

Disruption of Natural Disturbance Regimes

Habitat Fragmentation and Access

Physical Habitat Change

Vegetation Change and Altered Habitat Structure

Habitat Types, Status, Threats, and Limiting Factors

Johnson / O'Neil Habitat Type: Westside Lowlands Conifer-Hardwood Forest **Hab Code:** WLCH

Special Status Habitat(s) within this type: Interior Forest

General Characteristics

In the City of Portland, Interior Forest Habitat is defined as a forest patch of 30 acres in size or greater that is more than 300 feet from the nearest forest edge. Interior forest habitats are buffered from non-forest land and from primary and secondary roads (i.e., roads considered large enough to break the canopy) and transmission right-of-way corridors. Two forested tracts are considered noncontiguous or disjunct if separated by at least 30 feet of non-forested habitat.

Interior Forest Habitat is characterized primarily by physical characteristics, rather than tree or understory species. The scale and shape of interior habitat patches, for example, have an important bearing on their ability to support species dependant on interior habitats. An interior forest is large enough, and of an appropriate shape, to provide conditions that minimize predation, parasitism, and microclimate fluctuations associated with forest edges.

In a fragmented landscape, there are many microclimates within a forest stand. By contrast, interior forest is generally characterized by a relatively stable environment that is cool, dark, humid, and windless. These stabilized climate conditions occur due to the lack of edge effects produced by roads, clear cuts, transmission right of ways, and active forest management.

Interior forest conditions provide critical habitat for a diversity of wildlife and plant species, especially plants, fungus, mammals, birds, amphibians, and invertebrates that are sensitive to isolation disturbances. These species avoid competition with edge associated species. Examples include: Pacific-slope flycatcher and pileated woodpecker.

Habitat Status and Threats

Oregon's forests have long contributed to local economies through timber harvest. However, timber harvests, transportation corridors and utility rights-of-way have replaced interior forest habitats with interrupted patches of forest throughout western Oregon.

Identifying remaining interior forest areas is one means of identifying important habitat areas for specific species dependant upon interior conditions. As such, it can help in the identification of forest habitat conservation opportunities on a regional scale. It also suggests to local decision-makers that special care be taken in the land management and development to avoid interrupting interior forest areas.

Limiting Factors

Biological Stressors

Disruption of Natural Disturbance Regimes

Habitat Change, Degradation and Loss

Habitat Fragmentation and Access

Human Disturbance

Climate Change

Habitat Types, Status, Threats, and Limiting Factors

Johnson / O'Neil Habitat Type: Westside Lowlands Conifer-Hardwood Forest **Hab Code:** WLCH

Special Status Habitat(s) within this type: Late Successional Conifer Forest

General Characteristics

Historically, fire was the major natural disturbance in all but the wettest climatic areas. Depending on local conditions, fires in western Oregon conifer forests were moderate to high severity with fire return intervals averaging from 100 to more than 400 years. The historic fire regime created a complex mosaic of stand structures across the landscape. Late successional conifer forests are defined by the plant species composition, overstory tree age and size, and the forest structure as follows:

Plant species composition - Forests at low to moderate elevations in western Oregon often shift from strong dominance by Douglas-fir in early stages of succession to mixed stands with large amounts of *western hemlock and other tolerant species at mid to late stages in succession*. Other species found in these forests, at various stages of succession, include Western red cedar, big leaf maple, and red alder.

Overstory tree age and size - Late-successional forests have seral stages that include mature and old-growth age classes, and includes forests with greater than 32" dbh with two or more canopy layers.

Forest structure - Late successional forests have a multi-layered tree canopy, with shade-tolerant tree species growing in the understory, and a high volume of dead wood such as snags and logs.

Habitat Status and Threats

Oregon's forests have long contributed to local economies through timber harvest. However, both timber harvests and a number of large fires have replaced much of the late-successional forests with younger forests in western Oregon. Based on a comparison between historic (1850) and current vegetation maps, an estimated 23 percent of late-successional Douglas-fir mixed conifer forests remain in the West Cascades and 8 percent remains in the Coast Range. In the West Cascades, less than 10 percent of historic low-elevation and mid-elevation (more than 4,500 feet) late-successional forests remain.

Federal lands contain substantial acreages of mature and late-successional forests, but many of these forests occur in a patchwork with much younger forests that are managed with shorter rotations to generate timber products. The younger forests still maintain their capacity to become older forests, and they often support many of the same wildlife species. However, late-successional forests support a wide array of species. Many of these species require large patches of these older or mature forests to survive and may be sensitive to changes in the forest seral stage.

Limiting Factors

Biological Stressors

Disruption of Natural Disturbance Regimes

Habitat Change, Degradation and Loss

Habitat Fragmentation and Access

Habitat Types, Status, Threats, and Limiting Factors

Johnson / O'Neil Habitat Type: Westside Oak and Dry Douglas-fir Forest and Woodlands **Hab Code:** WODF

Special Status Habitat(s) within this type: Oak Woodland

General Characteristics

Oak woodlands are characterized by an open canopy dominated by Oregon white oak. Depending on the ecoregion and site characteristics, oak woodlands may also include Ponderosa pine and / or Douglas-fir. In general, the understory is relatively open with shrubs, grasses and wildflowers. The tree canopy of an oak woodlands obscures between 30 percent – 70 percent of the sky as you look up at it. Oak habitats were historically maintained through fire, which removes small conifers and maintains a low to moderate shrub cover.

In the Coast Range and West Cascades, oak habitats can be found in drier landscapes, such as south facing slopes and foothills bordering the Willamette Valley. In the Willamette Valley, oaks were originally found in a mosaic of prairies, oak savanna, and riparian habitats throughout the valley floor and low elevation slopes. Oaks were most common on flat to moderately rolling terrain, usually in drier landscapes, and often were found between prairie remnants and conifer forests. Today, oak woodlands often are found in small isolated pockets surrounded by other land-uses, such as development or agriculture.

Oak woodlands grade into oak savannas. Oak savannas are characterized by primarily upland prairie with widely-spaced large Oregon white oak and conifers. Oak savannas are discussed with grasslands.

Habitat Status and Threats

Oak woodlands once covered almost one million acres in the Coast Range and 400,000 acres in the Willamette Valley. However, the Coast Range now has less than four percent of its estimated historic oak woodlands and the Willamette Valley less than seven percent.

Oak woodlands have been impacted by conversion to other land uses, invasive species, and vegetation changes due to fire suppression. As a result of conifer plantings and changes in fire frequency and intensity after European settlement, Douglas-fir is now dominant in many areas of the Coast Range and Willamette Valley foothills that were once oak habitats. Oak habitats continue to be converted to agriculture, residential and other uses in Willamette Valley and the Coast Range foothills. Because much of the remaining oak woodlands are in private ownership and maintenance of these habitats requires active management, cooperative incentive-based approaches are crucial to conservation.

Loss of oaks, particularly large diameter open-structured trees valuable to wildlife, are of particular concern because oak trees have a slow growth rate and require a long time to regenerate, slowing restoration. In addition, reproduction and recruitment of younger trees is poor in many areas.

Limiting Factors

Biological Stressors

Disruption of Natural Disturbance Regimes

Habitat Fragmentation and Access

Physical Habitat Change

Vegetation Change and Altered Habitat Structure

Habitat Types, Status, Threats, and Limiting Factors

Johnson / O'Neil Habitat Type: Westside Riparian-wetlands

Hab Code: RWET

Special Status Habitat(s) within this type: Bottomland hardwood forest; Riparian habitats

General Characteristics

Riparian habitats are those adjacent to rivers and streams or occurring on nearby floodplains and terraces. Riparian habitats are shaped and maintained through seasonal flooding, scour, and soil deposition. Floods replenish nutrients, recharge groundwater, and reset successional processes. Riparian habitats occur along rivers and streams at all elevations, from valley bottom floodplains to alpine torrents. Riparian habitats also include springs, seeps, and intermittent streams, and many low elevation alluvial floodplains confined by valleys and inlets.

Riparian habitats vary from sparsely vegetated areas to cottonwood gallery forests due to flood dynamics. Plant composition is influenced by elevation, stream gradient, floodplain width, and flooding events. Throughout most of the state, riparian vegetation is mostly dominated by deciduous trees and shrubs, such as bigleaf maple, alders, aspen, cottonwood, dogwood, willows and Oregon ash. In some areas, riparian habitats include some riparian shrublands.

Habitat Status and Threats

Riparian habitats often have high species diversity and are critical for wildlife. These habitats are important to species that prefer moist shrubby or forested habitats. Riparian areas provide essential wintering habitat and travel corridors for songbirds and other wildlife. In addition, riparian habitats have important ecological functions. Healthy riparian vegetation protects banks from erosion, influences in-channel aquatic habitats, maintains favorable water temperature for fish through shading, filters runoff, and provides nutrients. Riparian vegetation creates meanders and increases habitat complexity in valley bottoms. Riparian habitats link upland and aquatic habitats. Upland habitats have a critical role in watershed function and affect riparian and aquatic habitats, particularly in drier, low-elevation sites.

Riparian habitats have declined from historic levels and are now greatly reduced in area and connectivity, especially those in low-elevation areas and valley bottoms. Development, logging, road building, agriculture and pasture use have degraded some riparian habitat directly through decreased riparian vegetation, increased sedimentation, and reduced large wood in streams. Runoff containing fertilizers and other contaminants can further impact habitat.

In the Willamette Valley, riparian forests have significantly declined with increasing development. Many streams now have only a thin strip of riparian vegetation, and some have none.

Limiting Factors

Biological Stressors

Disruption of Natural Disturbance Regimes

Habitat Fragmentation and Access

Vegetation Change and Altered Habitat Structure

ATTACHMENT F

Landscape and Urban Features, Threats, and Species Use

Feature Type: Natural Landscape Feature

Feature Name: Beach, Mudflat and Intertidal

Feature Characteristics: Beaches and mudflats occur primarily in seasonally flooded shallow areas of riparian areas and floodplains. During any one year, they may be absent because of year-to-year variation in river water levels. Mudflats must be exposed before the vegetation develops from the seedbank. These areas provide connectivity between other high value habitats.

Feature Habitats: They are dominated mainly by low-stature annual plants. They range from sparsely vegetated mud to extensive sods of herbaceous vegetation.

Feature Threats:

Associated_Species: These habitat areas provide important feeding habitat for shorebirds, waterfowl, terns and gulls, and Bald Eagles. They are especially critical during shorebird migration.

Feature Locations: Lower Columbia Slough, Smith and Bybee Wetlands, Willamette River, Columbia River, Oaks Bottom

Feature Type: Natural Landscape Feature

Feature Name: Butte

Feature Characteristics: Buttes are important landscape features in eastern Portland, providing important migratory stopover habitat. In addition to providing critical areas for rest and cover from predators, these buttes provide abundant food sources (insects, nectar, fruits) for refueling during migration.

Feature Habitats: These buttes are dominated by mixed conifer-deciduous forests, but may also include a mosaic of native grasslands and / or savannahs.

Feature Threats: Urban development

Associated_Species: These buttes provide important migratory stopover habitat for neotropical migrant bird species during their north- and southbound migrations.

Feature Locations: Rocky Butte, Mt. Tabor, Kelly Butte, Powell Butte and numerous buttes near Damascus and Boring

Feature Type: Natural Landscape Feature

Feature Name: Riverine Island and River Delta

Feature Characteristics: Riverine islands and deltas are important landscape features in the Willamette and Columbia rivers, and are dominated by a mosaic of habitat types. During high water events in these rivers, they may be completely inundated.

Feature Habitats: Beaches, lowland riparian forest and wetlands

Feature Threats:

Landscape and Urban Features, Threats, and Species Use

Associated_Species: They provide critical feeding, stopover, resting and nesting habitat for shorebirds, waterfowl, terns and gulls, Bald Eagles, and other wildlife, as well as native salmonids.

Feature Locations: Ross Island, Sauvie Island, Government Island, Hayden Island, and several smaller islands

Feature Type: Natural Landscape Feature

Feature Name: Rock Habitat

Feature Characteristics: Rock habitats are relatively uncommon in the Portland area but can be found in a few areas along the Willamette and Columbia Rivers, and associated with some of the buttes in east Portland. They include cliffs, rimrock, rock outcrops, and talus. They are found primarily in association with buttes. They provide habitat for cliff nesting birds (e.g. Peregrine Falcon), cliff-roosting bats, rare plants, and wildlife that use rocks for shelter, and/or foraging areas. They also provide important hibernacula for native snakes.

Feature Habitats: N/A

Feature Threats:

Associated_Species: Reptiles (hibernacula), Peregrine Falcon

Feature Locations: Buttes in East Portland, Forest Park

Landscape and Urban Features, Threats, and Species Use

Feature Type: Urban Feature
Feature Name: Bridge
Feature Characteristics: Several of Portland’s bridges provide several habitat functions: nesting sites for Peregrine Falcon; perching sites for other bird species; roosting sites for bats; while also improving access corridors for other terrestrial species to move along riparian areas
Feature Habitats: N/A
Feature Threats:
Associated_Species: Peregrine Falcon and other bird species; bats
Feature Locations: Fremont Bridge, Interstate Bridge

Feature Type: Urban Feature
Feature Name: Channel Markers, Utility Poles, and Utility Towers
Feature Characteristics: These structural features provide perches for raptors, and nesting locations for Osprey and Bald Eagle.
Feature Habitats: N/A
Feature Threats:
Associated_Species: Raptors, including nesting Osprey and Bald Eagle
Feature Locations: Willamette River, Columbia River, Smith and Bybee Wetlands

Feature Type: Urban Feature
Feature Name: Chimney
Feature Characteristics: Several small and large chimneys provide nesting and roosting habitat for Vaux’s Swift.
Feature Habitats: N/A
Feature Threats:
Associated_Species: Vaux's Swift
Feature Locations: Chapman School, Denver Ave. in Kenton, Church at NE 30th/Ainsworth

Feature Type: Urban Feature
Feature Name: Corridors Between Patches or Habitats

Landscape and Urban Features, Threats, and Species Use

Feature Characteristics: Corridors provide connectivity between high value habitats; provide connectivity between water bodies, riparian areas and upland habitats; provide movement corridors for wildlife. These include designated wildlife corridors, utility corridors, riparian corridors, etc.

Feature Habitats: Various Habitat Types

Feature Threats:

Associated_Species: Birds, mammals, reptiles

Feature Locations:

Feature Type: Urban Feature

Feature Name: Ecoroofs

Feature Characteristics: Ecoroofs provide habitat for birds and a host of insects, including native pollinators.

Feature Habitats: Various Herbaceous Vegetation Types

Feature Threats:

Associated_Species: Birds

Feature Locations: Multnomah County Building, Portland Building, Natural Capital Center (Ecotrust), Hamilton, etc.

Feature Type: Urban Feature

Feature Name: Neighborhood Tree Canopy and Backyard Habitat

Feature Characteristics: Extensive areas of neighborhood tree canopy and backyard habitat patches provide nesting, roosting, feeding and migratory stopover habitat for a number of bird species, as well as habitat for other terrestrial wildlife species

Feature Habitats: Various Habitat Types

Feature Threats:

Associated_Species: Birds and other terrestrial wildlife species

Feature Locations: Irvington, Southwest neighborhoods

Feature Type: Urban Feature

Feature Name: Structural Habitat Features (e.g. nest boxes, platforms, and bat boxes)

Feature Characteristics: Allows habitat to be integrated into highly developed areas. Includes nest boxes, nest platforms (e.g. Osprey), bat boxes, etc.

Feature Habitats: N/A

Landscape and Urban Features, Threats, and Species Use

Feature Threats:

Associated_Species: Various terrestrial wildlife species

Feature Locations:

Feature Type: Urban Feature

Feature Name: Wildlife Crossings

Feature Characteristics: Wildlife crossings (typically under roads) provide safer access across barriers (e.g. roads) and connectivity between important habitat areas for terrestrial wildlife species, such as Western Painted Turtle

Feature Habitats: N/A

Feature Threats:

Associated_Species: Mammals, turtles

Feature Locations: Time Oil Road, North Lombard Overcrossing

ATTACHMENT G

Limiting Factors Organized by Category

Category **Limiting Factor Numer and Name**

Biological Stressors (#12)

- 100 Competition for nesting cavities
- 101 Competition from non-native animals
- 79 Cowbird parasitism
- 116 Disease, parasites and pathogens
- 102 Invasive aquatic animal species
- 103 Invasive aquatic plant species
- 136 Invasive invertebrate species
- 104 Invasive terrestrial animal species
- 105 Invasive terrestrial plant species
- 108 Nest predation
- 117 Predation by bullfrogs
- 107 Predation by invasive fish
- 109 Predation by non-native species

Climate Change (#13)

- 138 Change in soil moisture
- 137 Decreased/increased snowpack/snowmelt
- 120 Drought/decreased/increased precipitation
- 119 Edge of range change
- 111 Temperature change - air
- 139 Temperature change - water
- 118 Vegetation change

Disruption of Natural Disturbance Regimes (#7)

- 2 Altered disturbance regime - fire
- 3 Altered disturbance regime - floodplain
- 126 Altered disturbance regime - nutrient recycling
- 127 Altered erosional disturbance (e.g. due to revetments, rip-rap - not always along rivers)
- 128 Reduction of natural activity or grazing by animals (e.g. such as beavers on trees or deer on saplings)

Habitat Change, Degradation and Loss (#2)

- 1 Altered channel structure
- 4 Altered floodplain structure
- 5 Altered habitat structure
- 6 Altered soil condition/compaction/fill

Category Limiting Factor Numer and Name

Habitat Change, Degradation and Loss (#2)

- 7 Changes in plant and animal species population composition
 - 121 Changes in water regime
 - 122 Conversion of mature forest to early successional land cover
 - 25 Degradation or Habitat Loss - breeding habitat
 - 24 Degradation or Habitat Loss - feeding habitat
 - 23 Degradation or Habitat Loss - stopover habitat
 - 32 Degradation or Habitat Loss - wintering habitat
 - 37 Degraded channel conditions
 - 9 Disconnected or filled floodplain
 - 91 Eggs or larvae sensitive to changes in water level or flow
 - 40 Erosion (bank or upland)
 - 133 Filling of seasonally or permanently inundated areas (e.g., by intentional or natural deposition of sediment, rock or debris)
 - 31 Hardened Banks
 - 134 Increases in shade/cover
 - 15 Land use conversion and urbanization (e.g., to impervious, natural veg. to lawn, etc.)
 - 90 Larvae sensitive to changes in water level
 - 17 Limited in-channel wood
 - 49 Loss of hollow trees and large diameter, tall, newly dead snags
 - 18 Loss of or decreases of shade/cover
 - 135 Permanent inundation of land (e.g. dams)
 - 29 Reduction or lack of downed wood
 - 30 Reduction or lack of snags
 - 71 Reductions of quality and quantity of mineral sites
 - 38 Sedimentation
 - 60 Shrub encroachment
 - 35 Steepened banks
-

Habitat Fragmentation and Access (#3)

- 10 Habitat fragmentation (e.g. vegetation change, development - residential/parks/industrial)
 - 36 Loss or lack of habitat connectivity (e.g. culverts, roads, fences and other barriers)
 - 21 Roadkill and collisions with vehicles
-

Human Disturbance (#8)

- 113 Artificial lighting (especially night)
- 43 Disturbance at roosts (bats and birds)
- 8 Domestic animal impacts
- 129 Harassment (especially during nesting season)
- 39 High Human Use

Category	Limiting Factor Numer and Name
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Human Disturbance (#8)

- 27 Hook mortality from anglers
 - 68 Human disturbance at nests (of all species)
 - 112 Illegal collecting
 - 115 Noise (e.g. from construction, airport, industry, racetrack, etc.)
 - 28 Poaching
 - 130 Powerlines, communication towers and transmission poles
 - 97 Recreation impacts (e.g., trails, boats)
 - 114 Reflective windows (collisions by birds)
 - 59 Residential and other types of urban development
 - 131 Smells/human and pet scents
 - 132 Soil compaction
 - 51 Untimely bridge replacement / repair
-

Pollution (#4)

- 123 Airbourne dust from distant sources
- 67 Eggshell thinning
- 11 Industrial effluent
- 16 Landscape pollutants-herbicides/pesticides/fertilizers
- 124 Road dust from traffic
- 125 Road maintenance pollutants
- 22 Stormwater and road runoff
- 33 Toxics in water column, sediments, or soils

ATTACHMENT H

City of Portland

Terrestrial Ecology Site Assessment Short Form



Purpose

The Terrestrial Ecology Site Assessment Form is a tool that can be used to integrate terrestrial ecology elements into city projects. The **Short Form** is designed for use in the early phase of project development (e.g., 30% design stage or *preferably earlier*) or during consideration of possible land acquisitions. It is intended to be used during initial site visits, in order to capture general information about the terrestrial ecology features of a site and preliminary thoughts and recommendations regarding possible restoration actions.

The **Long Form** is designed for use during follow-up visits, and is intended to record more detailed information that can be used in project planning and project design stages (e.g., 40 – 60 % design).

How to Use This Site Assessment Short Form

The Short Form is designed for use in the field. To the extent possible, users should mark obvious physical and biological features on maps or aerial photographs. Similarly, general locations of potential actions should be indicated.

Resources useful in completing the Site Assessment Short Form include:

- Maps that delineate such things as:
 - The project area
 - Adjacent properties within one mile of the site
 - Topography
 - Water features
 - Easements
 - Outfalls, water lines and other utilities
 - Tax lots
 - Reveg polygons
- Two black and white aerial photographs—one for delineating habitats and marking key locations of habitat features, and one for recording action concepts or recommendations
- Digital camera (for recording site conditions and key features of interest)
- Field guides (e.g., native plants and trees, birds, amphibians, reptiles, mammals)
- Invasive species identification cards for both plants and animals
- Special Status Species List

Background

Site or project name

Person(s) conducting the site visit and contact information

Description of project / Purpose of site assessment

General description of site and surrounding area

Watershed/Subwatershed

Site address or nearest intersection

Access to site

Total acreage/size of project area

Ownership

Public Private

Additional comments

Site Visit Conditions

Date	Time
General Weather Conditions (e.g., temperature, precipitation)	

Site Uses Observed

Current Land Uses

<input type="checkbox"/> Open Space/Undeveloped	<input type="checkbox"/> Park	<input type="checkbox"/> Residential	<input type="checkbox"/> Industrial
<input type="checkbox"/> Business/Commercial	<input type="checkbox"/> Mixed	<input type="checkbox"/> Landscaped	
<input type="checkbox"/> Other:			

Activities

<input type="checkbox"/> Pedestrian Trails	<input type="checkbox"/> Dog Walking	<input type="checkbox"/> Dirt Biking	<input type="checkbox"/> Garbage Dumping	<input type="checkbox"/> Homeless Camps
<input type="checkbox"/> Other:				

Structures (note locations on maps)

<input type="checkbox"/> Buildings	<input type="checkbox"/> Roads	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> Picnic Tables
<input type="checkbox"/> Culverts	<input type="checkbox"/> Outfalls	<input type="checkbox"/> Fences	<input type="checkbox"/> Tennis Courts
<input type="checkbox"/> Soccer/Ball Fields	<input type="checkbox"/> Boat Docks	<input type="checkbox"/> Boat Ramps	<input type="checkbox"/> Parking Lots
<input type="checkbox"/> Other:			

Natural Features

Water (note locations on maps)

Type (e.g., pond, lake, river, stream, wetland, spring, seep)	Condition (e.g., pristine, degraded)	If wetland, isolated or connected to stream?

Habitat Types (note locations on maps)

<input type="checkbox"/> Herbaceous wetland (rushes, sedges)	<input type="checkbox"/> Conifer Forest
<input type="checkbox"/> Shrub/scrub wetland (willow, rose, spirea)	<input type="checkbox"/> Mixed deciduous/conifer forest
<input type="checkbox"/> Forested wetland (ash, cottonwood, willow)	<input type="checkbox"/> Prairie/grassland
<input type="checkbox"/> Forested riparian habitat (cottonwood, alder, big-leaf maple)	<input type="checkbox"/> Oak woodland (oak, madrone)
<input type="checkbox"/> Urban/landscaped	<input type="checkbox"/> Other:
Comments:	

Tree, Shrub, and Herbaceous Plant Species

--

Invasive Plant Species

Shaded boxes indicate Early Detection/Rapid Response (EDRR) species. Please report location, patch size and cover class to Mitch Bixby (503/823-2989; mitch.bixby@bes.ci.portland.or.us). Percent cover is percentage of entire site and can be estimated as follows: 1 = <1% (i.e., just a few plants); 2 = 1-10%; 3 = 10-20%; 4 = 20-40%; 5 = 40- 60%; 6 = 60-80%, 7 = 80-100%).

EDRR Plant Species	Cover Class	Other Species	Cover Class		Cover Class
<input type="checkbox"/> Knapweeds		<input type="checkbox"/> Tansy Ragwort		<input type="checkbox"/> Clematis	
<input type="checkbox"/> Garlic Mustard		<input type="checkbox"/> Parrots Feather		<input type="checkbox"/> Scot's Broom	
<input type="checkbox"/> Butterfly Bush		<input type="checkbox"/> Money Plant		<input type="checkbox"/> English Hawthorn	
<input type="checkbox"/> Spurge Laurel		<input type="checkbox"/> Holly		<input type="checkbox"/> Canadian Thistle	
<input type="checkbox"/> Giant Hogweed		<input type="checkbox"/> Indigo Bush		<input type="checkbox"/> Reed Canarygrass	
<input type="checkbox"/> Knotweed		<input type="checkbox"/> Purple Loosestrife		<input type="checkbox"/> English Laurel	
<input type="checkbox"/> Yellow Flag		<input type="checkbox"/> Himalayan Blackberry		<input type="checkbox"/> Other:	
<input type="checkbox"/> Gorse		<input type="checkbox"/> English Ivy		<input type="checkbox"/> Other:	

Overall estimate of % native vs. non-native vegetation _____

Native Wildlife Species Observed or Heard

Invertebrates:
Amphibians:
Reptiles:
Birds:
Mammals:

Other Evidence of Wildlife if Animals Are Not Observed (e.g., woodpecker holes, tracks and droppings, chews, dens, rubs and scrapes):

Species of Management Concern Observed (or evidence seen)

Shaded boxes indicate Early Detection/Rapid Response (EDRR) species. Please report locations to: Bennett Huffman, Oregon Department of Agriculture (503-452-0108), or the Invasive Species Hotline (1-800-525-0137).

<input type="checkbox"/> Bullfrog	<input type="checkbox"/> Red-eared slider (turtle)	<input type="checkbox"/> Domestic cat (feral)	<input type="checkbox"/> Domestic dog
<input type="checkbox"/> Snapping turtle	<input type="checkbox"/> Nutria	<input type="checkbox"/> Domestic ducks or geese	
<input checked="" type="checkbox"/> Emerald Ash Borer	<input type="checkbox"/> Asian Longhorned Beetle	<input type="checkbox"/> Other:	
Comments:			

Features Potentially Useful to Wildlife

<input type="checkbox"/> Rock outcrop or butte	<input type="checkbox"/> Chimney	<input type="checkbox"/> Street trees
<input type="checkbox"/> Snags	<input type="checkbox"/> Downed Wood	<input type="checkbox"/> Large Stumps
<input type="checkbox"/> Riverine island	<input type="checkbox"/> Channel marker	<input type="checkbox"/> Utility pole/tower
<input type="checkbox"/> Beach/mudflat habitat (i.e., seasonally-flooded shallow areas)	<input type="checkbox"/> Semi-natural or cultivated landscapes (e.g., tree stands, vegetated areas or corridors, golf courses, water features)	<input type="checkbox"/> Stormwater facility (e.g., ecoroof, planter, swale)
<input type="checkbox"/> Bridge	<input type="checkbox"/> Floodplain	<input type="checkbox"/> Other:
Comments:		

Potential Restoration and Enhancement Actions

(check all that apply and note location on maps)

Revegetation	
<input type="checkbox"/> Remove non-native plants/trees	<input type="checkbox"/> Plant native species along streambank
<input type="checkbox"/> Diversify tree/shrub/plant species and/or age class	<input type="checkbox"/> Plant native species in upland areas
<input type="checkbox"/> Remove native competing trees (e.g., firs encroaching on oaks)	<input type="checkbox"/> Plant street trees useful to wildlife
<input type="checkbox"/> Other:	

Habitat Features	
<input type="checkbox"/> Increase amount of downed wood/large woody debris	<input type="checkbox"/> Create brush piles for nesting, denning and cover
<input type="checkbox"/> Erect bird nest box, platform, or other nesting structure	<input type="checkbox"/> Install bat boxes or other bat-friendly features
<input type="checkbox"/> Other:	<input type="checkbox"/> Create snags

Hydrologic Modification	
<input type="checkbox"/> Daylight stream/remove culvert	<input type="checkbox"/> Create amphibian pond
<input type="checkbox"/> Re-establish hydrologic conditions (e.g., flow, stream connectivity)	<input type="checkbox"/> Create wetland
<input type="checkbox"/> Other:	

Connectivity	
<input type="checkbox"/> Remove barriers or human site constraints (e.g., fences, dikes, culverts)	<input type="checkbox"/> Establish wildlife corridor (e.g., vegetated area between habitat patches)
<input type="checkbox"/> Establish wildlife crossing (e.g., road underpass)	<input type="checkbox"/> Upgrade culvert or convert to bridge
<input type="checkbox"/> Other:	

Community Stewardship	
<input type="checkbox"/> Remove trash or conduct other cleanup	<input type="checkbox"/> Naturescape all or part of the site
<input type="checkbox"/> Other:	

Other	
<input type="checkbox"/> Acquire land or easement	<input type="checkbox"/> Stabilize slope
<input type="checkbox"/> Reduce/remove human disturbance	<input type="checkbox"/> Remove fill from wetland
<input type="checkbox"/> Modify stormwater project (e.g., ecoroof, planter, swale)	<input type="checkbox"/> Protect mature trees from beaver damage
<input type="checkbox"/> Conduct controlled burn	
<input type="checkbox"/> Other:	

Additional Notes (e.g., opportunities and constraints, high value because of size or location)

A large, empty rectangular box with a thin black border, occupying most of the page. It is intended for additional notes, opportunities, and constraints related to the site assessment.

Attach maps to the end of this document

Questions? Contact Claire Puchy, Bureau of Environmental Services—Science, Fish and Wildlife Program
503-823-3045; clairep@bes.ci.portland.or.us

ATTACHMENT I

City of Portland, Oregon

Terrestrial Ecology
Site Assessment Form



DRAFT
July 18, 2008

City of Portland Terrestrial Ecology Site Assessment Form

Background

Portland's City Council approved the *Portland Watershed Management Plan (PWMP)* in March 2006. The Plan establishes a definition of healthy urban watersheds, a science-based watershed management approach, citywide watershed health goals and objectives, and strategies and actions for the next 2 – 5 years. The *PWMP* identifies development and integration of a terrestrial component into watershed management as a high priority. A Terrestrial Ecology Enhancement Strategy (TEES) is being developed to address that need. This Terrestrial Ecology Site Assessment Form is part of the TEES¹.

Purpose

The Terrestrial Ecology Site Assessment Form is a tool that can be used to integrate terrestrial ecology elements into city projects. The Terrestrial Ecology Site Assessment Form is designed to be compatible with a similar wildlife habitat assessment (WHA) form developed by Metro in 2001. It can be used to systematically characterize and catalog information about sites—whether they are sites that are being considered for salmon habitat restoration, or areas that may be impacted by a variety of actions (e.g., repairing a broken sewer line, removing a culvert).

An additional use of the Site Assessment Form within BES is in the Short-term and Long-term Project Selection Process. The form can also be used in Bureau of Planning's master planning efforts, and in parks' management planning, and to augment vegetation surveys conducted in Portland Parks and Recreation's natural area parks.

The Form may be used in all phases of project development, including project planning and project pre-design. However, the earlier it is used, the more effective it will be. It is intended to inform discussions and provide ideas for taking actions to "add terrestrial ecological value" to any project. Its greatest value may be in ensuring that terrestrial habitat improvement opportunities are not overlooked, particularly in areas of the City identified as deficient in certain habitat types or species.

The form can be used to record baseline information, and over time help track information related to project effectiveness. It also has applicability to the Watershed Monitoring Strategy. However, the Site Assessment Form is not intended to substitute for a project monitoring form.

More detailed guidance documents that describe *specifically* how to improve habitat conditions for certain plant communities and wildlife species may be needed. For example, specific guidance for creating nesting habitat for Western Painted Turtles, or restoring and managing oak woodlands will be provided in separate documents and/or websites. Similarly, guidelines for timely removal of invasive plant species (e.g., to minimize disturbance to nesting birds) should be consulted.

The Site Assessment Form may help inform decisions regarding site restoration, but additional, detailed work will generally be needed during that phase of project development. Similarly,

¹ A key element of the TEES is to provide guidance to city bureaus for improving habitat and addressing plant and wildlife management issues. This Assessment Form is part of that guidance. Other elements of the TEES include identification of: "Special Status" Plant and Wildlife Species and Habitat Types; key management issues; watershed-specific objectives; and priority strategies and actions.

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additional, detailed information may need to be collected during project implementation and monitoring.

Overview of the Site Assessment Form

The Form consists of three main sections, each comprised of several parts.

Section A – To be completed in the office

Part 1: Background Information

This is where basic information about the site (e.g., location, watershed) and completion of the form (e.g., person, date) is recorded.

Part 2: Physical Parameters

Here, the user documents such things as topography, land use, and zoning.

Part 3: Terrestrial Ecology Enhancement Strategy (TEES) Information

Information regarding status as an identified anchor habitat, corridor or gap is documented in this part.

Part 4: Land Use Information

Information regarding land use and zoning is documented in this part.

Section B – To be completed in the field and supplemented with existing documents and available information

Part 5: Site Visit Conditions

Information pertaining to weather conditions during field visit(s) is recorded in this part.

Part 6: Natural Features—Water

Part 7: Natural Features--Vegetation and Habitat Types

In this part, information about habitat type, percent cover, Special Status Habitats and Plant Species, invasive plant species, and key structures (both natural and human-made) are recorded.

Part 8: Other Natural Features—Not Vegetation-Based

Part 9: Other Wildlife Structures and Features—Human-made or Planted

Part 10: Wildlife Species and Assemblages

Key information regarding wildlife, including Special Status Wildlife Species, is recorded in this part.

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Part 11: Human Disturbance

Physical features and hazards, as well as other things that may disturb wildlife, is documented in Part 6, along with possible impacts.

Section C – Can be completed in the office

Part 12: Considerations for Wildlife

This part contains a checklist of elements important to wildlife. It is intended to be used to determine whether all life-history elements needed by wildlife have the potential to be incorporated into a project's design.

Part 13: Restoration and Enhancement Efforts and Opportunities

This part offers the user a place to record observations regarding possible future restoration or enhancement efforts that address wildlife considerations in Part 12.

Part 14: Opportunities to Connect People with Nature

This part is intended to prompt the user to identify possible ways in which people may be able to appropriately connect with nature on the site.

How to Use the Site Assessment Form

Section A should be completed in the office, using GIS and other "desktop" information prior to site visits.

Section B is designed for use in the field, based on observation, and is to be filled out on-site. However, the user can draw upon information contained in WHA forms or HGM wetland assessments, or detailed vegetation surveys conducted by Portland Parks & Recreation or others (if relevant). Information collected in scientific studies, citizen monitoring efforts (e.g., Audubon Christmas Bird Count) and the like, can inform this section.

Section C can be completed in the office, and is intended to draw upon information collected in Sections A and B.

Resources needed for completion of the Site Assessment Form include:

- Maps (including the project area and adjacent properties within one mile of the site)
- Terrestrial Ecology Enhancement Strategy (TEES) GIS layers regarding anchor habitats, connectors and gaps
- Aerial photographs
- Existing watershed plan assessments (if relevant)
- Park master plans, desired future conditions reports, and management plans (if relevant)
- Digital camera (for recording site conditions and key features of interest)
- Vegetation survey information (for Portland Parks & Recreation Natural Area Parks)
- Field guides (e.g., plant and tree identification, birds)
- Portland "Weed" notebook

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Users should mark various biological physical features and structures on maps and aerial photographs. Similarly, locations of possible actions should be indicated on maps and aerial photographs.

Terminology that is unfamiliar to non-biologists; or that is specific to the TEES is defined, and other referenced materials are provided below, or can be accessed electronically. Occasionally, the user is instructed to refer to Terrestrial Ecology Enhancement Strategy maps, and links to those data layers are provided.

If a site contains a Special Status Habitat or a Special Status Species, please refer to detailed "guidance documents" for assistance in designing projects. For example, a project that might affect Western Painted Turtles should follow accepted biological guidelines and protocols.

General Principles for "Adding Value" During Project Planning and Implementation

The following principles should be considered in any project. Although it may not be possible to address all of them, every effort should be made to incorporate these into project pre-design and implementation.

- Protect the best existing populations, functions, and rare and high-quality habitats.
- Retain large connected areas with natural, functioning, habitats.
- Protect floodplain, off-channel, shallow water, in-stream habitat; and provide generous riparian area.
- "Build" (e.g., acquire, enhance, restore) outward from existing populations, functions, and rare and high-quality habitats.
- Improve connectivity by enlarging habitat patches and creating linkages between isolated habitat patches.
- Identify sources of degradation, not just the impacts of those sources. If possible, address the sources before attempting to address the impacts.
- Focus initial restoration actions on the processes that create and maintain healthy watershed conditions and functions.
- Use natural processes to achieve ecological functions and project goals to the extent possible.
- Identify and control invasive species, and minimize the introduction and spread of nonnative plant and animal species, especially into relatively natural habitat areas.
- Prevent the future establishment of invasive plants by monitoring for early invaders and providing vegetative cover in disturbed or open areas.
- Use native species and emphasize natural habitat features and processes whenever possible.
- Where habitat restoration is not possible, incorporate habitat features and functions into the built environment (e.g., wildlife road crossings; rooftop gardens and nests; artificial habitat structures).

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- Provide artificial habitat structures (e.g., snags, nest boxes, bat roosts) in restoration sites until natural habitat reaches suitable size and structure.
- Seek natural alternatives to, and reduce the use of, pesticides, herbicides and fertilizers.
- Plant trees—especially native species, and especially large canopy trees (of any species)—along the street and sidewalk to enhance urban forest canopy.
- Keep and add use large woody debris (i.e., bark, downed wood over xxx meters in diameter) for upland and aquatic habitat.
- Schedule work to avoid conflicts with Special Status Species' breeding and/or other important life cycle activities.
- Seek to minimize people/wildlife conflicts.
- Seek to minimize attractive nuisances or other hazards to wildlife (e.g., use non-reflective glass to minimize bird collisions)
- Provide positive opportunities to connect people with nature and/or provide public education.
- Partner with other bureaus and/or other entities when they are doing projects

Definitions Used in the Site Assessment Form

Anchor Habitat Anchor habitats are sites that are relatively large (over 30 acres), and provide conditions and functions favorable to multiple biological communities. Identified on TEES GIS map layer.

Corridor **xxxxx** Some have been identified on TEES GIS map layer.

Gap **xxxxx** Some have been identified on TEES GIS map layer.

Site A geographic area that is assessed using this form. They may be any size, and may be comprised of multiple, smaller geographic units. There should be a separate Site Assessment Form for each site that is evaluated.

Special Status Habitat Types Habitat types that are either State Strategy Habitats, or are of particular importance in Portland and the Metro area. These include: All wetland types (but especially herbaceous wetlands); native grassland and upland prairie; interior forest (especially late successional conifer forest); oak woodland; bottomland hardwood forest, open water (lakes, rivers and streams), and riparian/floodplain habitat.

Special Status Wildlife Species Species whose range includes Portland, and that are officially listed or identified in one or more of the following ways by various entities:

- U.S. Fish and Wildlife Service: Candidate, Listed Threatened or Endangered, Species of Concern
- Oregon Department of Fish and Wildlife: Listed Threatened or Endangered, State Sensitive, State Strategy
- Oregon Natural Heritage Information Center: Ranked or Listed
- Oregon Watershed Enhancement Board: Priority
- Partners In Flight: Focal Species

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- Northwest Power and Conservation Council Willamette Basin Subbasin Plan: Focal Species
- National Audubon Society's WatchList

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SECTION A

To be completed in the office.

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Part 1: Background Information

Site Name	
Site Location (Township, Range, Section; GIS coordinates, Lat/Long, or HUC identification)	
Site Address or Nearest Intersection	
Total acreage/size of project area (if smaller)	
Watershed/Subwatershed	
Person Completing This Form	
Contact Information for person completing form	
Contact Information for site	
Date Form Completed	

Part 2: Physical Parameters²

General Topography	Flat Rolling Steep Ravine Bluff Other:
General Aspect	North South East West Facing
Elevation (feet above sea level)	Highest: Lowest:

Part 3: Terrestrial Ecology Enhancement Strategy (TEES) Information

Anchor Habitats, Connectors and Gaps and Barriers Information³	Within an identified Anchor Habitat?	Y	N
	Abutting an identified Anchor Habitat?	Y	N
	Within ½ mile of an identified Anchor Habitat?	Y	N
	Within 1 mile of an identified Anchor Habitat?	Y	N
	If not within an Anchor Habitat or within 1 mile of an Anchor Habitat, what is the distance to the nearest Anchor Habitat?		
	Within an identified Corridor?	Y	N
	Abutting an identified Corridor?	Y	N
	Within ¼ mile of an identified Corridor?	Y	N
	Within an identified Gap?	Y	N
	Presence of an identified Barrier?	Y	N

² Calculate using GIS. Mark on maps and aerial photographs as appropriate.

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Part 4: Land Use Information

Land Use	Current Zoning (circle all that apply)	Park/Open Space	Industrial	
		Commercial	Residential	
		Environmental Overlay: Protection	Conservation	
		Greenway Overlay: Industrial	General Recreation Natural Quality (Water)	
		Design Overlay	Scenic Overlay	
		Other:		
	Current Land Use (circle all that apply)	Park	Open Space/Undeveloped	Residential
		Industrial	Commercial	
		Mixed	Other:	
	Ownership	Public	Private	
Tax Lot ID				
Structures (e.g., buildings, roads, playgrounds, picnic tables, soccer/ball fields, tennis courts, boat docks, boat ramps, parking lots, fences, culverts, outfalls)				
Existing Mitigation Site ⁴	Specify type (e.g., wetland, tree canopy): Relevant conditions:			
Tree Preservation Plans or Conditions of Approval ⁵				
City Easement	Yes	No		
Seep/Spring Tract ⁶	Yes	No		
Drainage Reserve ⁷	Yes	No		

³ Refer to the City's list of anchor habitats and Terrestrial Ecology Enhancement Strategy GIS map layers to make these determinations.

⁴ This information is available from xxx.

⁵ This information is available from Bureau of Development Services.

⁶ This information is available from Bureau of Planning.

⁷ This information is available from Bureau of Planning.

Section B

To be completed in the field.

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Part 5: Site Visit Conditions⁸

Date and Time of Site Visit							
Person(s) Conducting Site Visit							
Wind	None	Light	Medium	Strong	Direction:		
Precipitation	None	Mist	Lt. Rain	Med. Rain	Hard Rain	Snow	Other:
Cloud Cover	0%	33%	66%	100%			
Temperature	___°F.		___°C.				

Part 6: Natural Features—Water

Water Features On Site⁹	Type (e.g., pond, lake, river, stream, wetland, spring, seep)	Number, size or extent	ODFW Stream Segment /Reach Number	Condition (e.g., pristine, degraded)	Isolated or connected to stream (if wetland)?

Part 7: Natural Features—Vegetation and Habitat Types¹⁰

Percent Cover¹¹ (General Estimate)		< 5%	5 – 25%	26 – 50%	51 – 75%	76 – 100%
Cover Type	Herb					
	Shrub					
	Canopy					

8 Circle the appropriate conditions, and fill in any additional information that may be pertinent.

9 Mark on maps and aerial photographs as appropriate.

10 If site is a Natural Area Park, please use vegetation survey information from Portland Parks & Recreation to complete Part 7.

11 May be determined using aerial photo interpretation.

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	Habitat Type ¹²	HWET	WATR	RWET	WLCH	WODF	WEGR	URBN
1	Approximate % of Site							
2	Dominant herbaceous species present							
3	Dominant shrub species present (< 5 m)							
4	Dominant canopy species present (> 5m)							
Comments: 1 2 3 4								

¹² Use Johnson and O'Neil's classification system below, and refer to TEES summaries describing these habitat types :
 Herbaceous Wetlands (HWET)
 Open Water – Lakes, Rivers and Streams (WATR)
 Westside Riparian-Wetlands (RWET)
 Westside Lowlands Conifer-Hardwood Forest (WLCH)
 Westside Oak and Dry Douglas-fir Forest and Woodlands (WODF)
 Westside Grasslands (WEGR)
 Urban and Mixed Environs (URBN)

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Special Status Habitats and Their Condition	Habitat Types Present On Site	Approximate Size (acres)	Condition			
	<input type="checkbox"/> Any wetland type		Poor	Fair	Good	Excellent
	<input type="checkbox"/> Upland prairie; grassland		Poor	Fair	Good	Excellent
	<input type="checkbox"/> Interior conifer-hardwood forest		Poor	Fair	Good	Excellent
	<input type="checkbox"/> Late successional conifer forest		Poor	Fair	Good	Excellent
	<input type="checkbox"/> Oak woodland		Poor	Fair	Good	Excellent
	<input type="checkbox"/> Bottomland hardwood forest		Poor	Fair	Good	Excellent
	<input type="checkbox"/> Open water—lakes, rivers and streams		Poor	Fair	Good	Excellent
	<input type="checkbox"/> Riparian/floodplain habitat		Poor	Fair	Good	Excellent
Other Habitat Types	<input type="checkbox"/> Mixed deciduous/conifer forest		Poor	Fair	Good	Excellent
	<input type="checkbox"/>		Poor	Fair	Good	Excellent
	<input type="checkbox"/>		Poor	Fair	Good	Excellent
	<input type="checkbox"/>		Poor	Fair	Good	Excellent
	<input type="checkbox"/>		Poor	Fair	Good	Excellent
	<input type="checkbox"/> Other:		Poor	Fair	Good	Excellent

Large Individual Live Trees ¹³	Species:	Height: DBH:	Comments

Snags and Downed Materials¹⁴	Abundance of Snags	Absent Low Medium High	Comments
	Snag Size	Small dbh (< 10") Medium dbh (10" – 24") Large dbh (> 24")	
	Bark on Snag(s)?	Y N	
	Downed Wood Present?	Y N	
	Rootwads Attached to Downed Wood?	Y N	

¹³ Note location on maps and/or aerial photographs.
¹⁴ Note location on maps and/or aerial photographs.

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Invasive Plant Species		Present on Site (check all that are observed, and mark locations on maps and/or aerial photographs)	Percent Covering Site	Present on Adjacent Areas (check all that are observed)
	English Ivy			
	Himalayan Blackberry			
	Reed Canarygrass			
	Japanese Knotweed			
	Diffuse Knapweed			
	Spotted Knapweed			
	Garlic Mustard			
	English Holly			
	Butterfly Bush			
	Morning Glory			
	English Laurel			
	Scot's Broom			
	Tree of Heaven			
	Robert's Geranium			
	Shiny Geranium			
	Giant Hogweed			
	Clematis (Traveler's Joy)			
	English Hawthorn			
	Canadian Thistle			
	Purple Loosestrife			
	False Brome			
	Daphne Laurel			
	Iris pseudocaris			
Parrot Feather				
Norway Maple				
Money Plant				
Other:				

Part 8: Other Natural Features (Non-Vegetation-Based)

Key Non-Veg-based Features—Natural	Feature	Present on Site	Used by Wildlife	Species Using Feature
	Beach/mudflat habitat (seasonally-flooded shallow areas)	Y N	Y N Unknown	
	Rock outcrop	Y N	Y N Unknown	
	Butte	Y N	Y N Unknown	
	Riverine island	Y N	Y N Unknown	
	Waterfall	Y N	Y N Unknown	
	Other:	Y N	Y N Unknown	

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Part 9: Other Wildlife Structures and Features—Human-made or Planted

Feature	Present on Site	Check if adjacent to, or within ¼ mile	Used by Wildlife	Species Using Feature
Bridge	Y N		Y N Unknown	
Chimney	Y N		Y N Unknown	
Channel marker	Y N		Y N Unknown	
Utility pole/tower	Y N		Y N Unknown	
Stormwater facility (e.g., ecoroof, planter, swale)	Y N		Y N Unknown	
Street trees				
<input type="checkbox"/> Native species	Y N		Y N Unknown	
<input type="checkbox"/> Non-native species	Y N		Y N Unknown	
<input type="checkbox"/> Large canopy	Y N		Y N Unknown	
<input type="checkbox"/> Small canopy	Y N		Y N Unknown	
Semi-natural or cultivated landscapes in residential, commercial or industrial neighborhoods (e.g., tree stands, vegetated areas or corridors, golf courses, water features)	Y N		Y N Unknown	
Nest box, platform, bat boxes	Y N		Y N Unknown	
Wildlife crossing/corridor (e.g., road underpass)	Y N		Y N Unknown	
Other:	Y N		Y N Unknown	

Part 10: Wildlife Species and Assemblages

Wildlife Species	Species	Observed or Known to be Present on Site ¹⁵	Vegetation or features they are using	Other Evidence ¹⁶	Potentially Present on Site ¹⁷ ?	Known to be Adjacent to Site	Special Status or Focal Species ¹⁸ (check all that apply)
	Invertebrates						
	Amphibians						
	Reptiles						
	Birds						
	Mammals						

¹⁵ Note location on maps and/or aerial photographs.
¹⁶ For example, woodpecker holes, tracks and droppings, rubs and scrapes.
¹⁷ Based on location, proximity to other sightings, or vegetation and/or structural features. May also be based on surveys, reports or other site visits.
¹⁸ Refer to Terrestrial Ecology Enhancement Strategy lists to make this determination.

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Species Groups Observed or Known to be Present	Species Group	Species Group Observed	Species Group Known To Use Site	What Are they Using?
	Migratory waterfowl	Y N	Y N Unknown	
	Shorebirds	Y N	Y N Unknown	
	Neotropical migratory songbirds	Y N	Y N Unknown	
	Cavity-nesting birds (e.g., woodpeckers, owls)	Y N	Y N Unknown	
	Colonial-nesting birds (e.g., great blue heron)	Y N	Y N Unknown	
	"Iconic" species (species of cultural interest; e.g., great blue heron, Vaux's swift, osprey)	Y N	Y N Unknown	
	xxx	Y N	Y N Unknown	
	xxx	Y N	Y N Unknown	
	Other (specify):	Y N	Y N Unknown	

Species of Management Concern (check all that apply)	Bullfrog	House sparrow	Black bear	
	Snapping turtle	Virginia opossum	Common raccoon	
	Red-eared slider	Eastern cottontail	Striped skunk	
	Canada goose	Eastern fox squirrel	Western spotted skunk	
	Domestic goose species	Eastern gray squirrel	Cougar	
	Mute swan	American beaver	Domestic cat (feral)	
	Domestic duck species	Black rat	Roosevelt elk	
	Rock pigeon	Norway rat	Black-tailed deer	
	European starling	Nutria	Other:	
	Brown-headed cowbird	Coyote	Other:	

Part 11: Human Disturbance

	Description, including Intensity (i.e., High, Medium, Low)	Impacts on Wildlife and/or Wildlife Habitat¹⁹
Physical Disturbance (e.g., parking lots, development)		
Human Disturbance on Site (e.g., activities such as picnicking, recreation, traffic; noise)		
Barriers to Migration or Movement (e.g., fences, roads, freeways, significant vegetation gaps)		
Barriers, or Other Things Preventing or Inhibiting Safe Access to, Water or Other Important Habitat Features (e.g., highways)		
Disturbance from Domestic Animals (e.g., dogs off leash)		
Wildlife Hazards and/or Attractive Nuisances (e.g., grain towers, reflective glass, traffic)		
Proximity to Residential or Other Developed Areas (e.g., distances in all directions)		
Type and Intensity of Nearby Developments/Land Uses		
Activities That Put Humans and Wildlife Into Conflict (e.g., dog parks, concerts, high human use parks such as soccer fields, boat ramps near mudflats, bikes, ATVs)		
Trails (e.g., formal, informal, trails in floodplains)		
Other Management Issues (e.g., erosion, fire management)		

¹⁹ For example, reduction in size of nesting or foraging area, interference with nesting or migration, loss of food sources.

SECTION C

Can be completed in the office.

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Part 12: Considerations for Wildlife

Functional Category		Current Conditions ²⁰	Potential for providing or establishing (if conditions are poor or non-existent)
Food Availability (A)	1 Variety —Diversity of food sources (e.g., native trees and shrubs), (as opposed to non-native species or a mowed field)	Excellent Good Poor Non-existent	High Medium Low None
	2 Quantity and Seasonality —Abundance of food sources (native trees, shrubs, wetlands) at the desirable season	Excellent Good Poor Non-existent	High Medium Low None
	3 Proximity to Cover —Proximity of cover to food sources identified above	Excellent Good Poor Non-existent	High Medium Low None
Cover (B)	1 Structural Diversity —Structural elements such as snags, live trees, downed trees of various sizes and types	Excellent Good Poor Non-existent	High Medium Low None
	2 Variety of cover —Diversity of cover (e.g., trees, shrubs)	Excellent Good Poor Non-existent	High Medium Low None
	3 Nesting —Presence of nesting habitat for desirable species	Excellent Good Poor Non-existent	High Medium Low None
	4 Escape —Quantity of avenues of escape including lack of structures (e.g., fences) that might prevent escape or movement	Excellent Good Poor Non-existent	High Medium Low None
	5 Seasonality —Availability of cover throughout the year	Excellent Good Poor Non-existent	High Medium Low None
	6 Roosting —Presence of roost sites for desirable species	Excellent Good Poor Non-existent	High Medium Low None
	7 Presence of large trees —Trees larger than xxxxx	Excellent Good Poor Non-existent	High Medium Low None
Water (C)	1 Safe access to clean water —Lack of barriers (e.g., fences)	Excellent Good Poor Non-existent	High Medium Low None
	2 Good water quality on site —Presence of streams, wetlands or other water bodies	Excellent Good Poor Non-existent	High Medium Low None

²⁰ Based on field assessment from Section B.

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7/18/08

Disturbance (D)	1 Lack of habitat modification —Minimal development, structures and other habitat modification	Excellent Good Poor Non-existent	High Medium Low None
	2 Lack of direct disturbance —Lack of trails, road noise, pets	Excellent Good Poor Non-existent	High Medium Low None
Habitat Features (E)	1 Downed wood, snags and old stumps	Excellent Good Poor Non-existent	High Medium Low None
	2 Low percentage of nonnative plants	Excellent Good Poor Non-existent	High Medium Low None
	3 Mix of habitats	Excellent Good Poor Non-existent	High Medium Low None
	4 Other	Excellent Good Poor Non-existent	High Medium Low None

Part 13: Restoration and Enhancement Efforts and Opportunities

Describe current or past restoration and/or enhancement efforts and apparent success or failure	
--	--

Possible Future Restoration or Enhancement Efforts	Possible Actions	Check all that apply, and note location on maps and/or aerial photographs	Function(s) Addressed (refer to categories from Part 12—e.g., A1, B2)
	Remove non-native plants/trees or natives suppressing other sensitive species		
	Remove native competing trees (e.g., firs encroaching on oaks)		
	Diversity tree/shrub/plant species and age class		
	Upland (non-streambank) native species plantings		
	Streambank native species plantings		
	Create snags		
	Increase amount of downed wood/large woody debris		
	Create brush piles		
	Conduct controlled burn		
	Slope stabilization		
	Trash or other cleanup		
	Remove fill from wetland		
	Land acquisition or easement		
	Daylight stream		
	Re-establish hydrologic conditions (e.g., flow, stream connectivity)		
	Culvert upgrade or conversion to bridge		
	Remove barriers or human site constraints (e.g., fences)		
	Establish wildlife corridor (e.g., vegetated area between habitat patches)		

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Establish wildlife crossing (e.g., road underpass)		
Reduce/remove human disturbance		
Erect nest box, platform, bat box or other structure		
Maintain former restoration efforts (e.g., remove rodent barriers that are girdling trees)		
Protect mature trees from beaver damage		
Modify stormwater project (e.g., ecoroof, planter, swale) to benefit wildlife		
Plant street trees useful to wildlife		
Naturescape all or part of the site		
Other ²¹		

Part 14: Opportunities To Connect People With Nature

Opportunities	Location (note on maps)	Comments
Interpretive signs		
Viewing blind		
Trail		
On-site education		
Other:		

²¹ Identify functions in Part 12 that are not addressed by other actions.

Attachments (and or Links)

Identified Anchor Habitats, Connectors, Gaps and Barriers

Habitat Types, Status, Threats and Limiting Factors

Landscape and Urban Features, Threats, and Species Use

Special Status Species, Habitat Associations, and Limiting Factors

Special Status Habitat Types

Special Status Plant Species

Limiting Factors Organized by Category

**Terrestrial Wildlife Species of Management Concern, Habitat Associations,
and Potential Management Actions**

ATTACHMENT J

USING THE TERRESTRIAL ECOLOGY ENHANCEMENT STRATEGY (TEES) SITE ASSESSMENT FORMS



What are the TEES Site Assessment Forms?

The TEES Site Assessment Forms are tools that can be used to integrate terrestrial ecology elements into city projects. They are intended to be used in the field in order to capture information about biological communities and physical features of a site, and preliminary recommendations regarding possible restoration actions.

There are two versions of the TEES Site Assessment Form—the “short” form and the longer, more detailed form (both can be found on Group 105 in a folder titled, “TEES Site Assessment Forms and Information”). The following table will help you decide which form is most appropriate:

Use the short form for:	Use the long form for:
<ul style="list-style-type: none">▪ At the “conceptual” project stage	<ul style="list-style-type: none">▪ Large, complex, or diverse sites (e.g., Oaks Bottom, Willamette Cove)
<ul style="list-style-type: none">▪ For initial site visits	<ul style="list-style-type: none">▪ Follow-up site visits for further documentation of terrestrial conditions and refinement of restoration opportunities
<ul style="list-style-type: none">▪ Prior to 30% (pre-design) stage	<ul style="list-style-type: none">▪ Assisting in the development of Portland Parks & Recreation’s Desired Future Conditions

Who Should Use the TEES Site Assessment Forms?

BES Watershed and Revegetation teams and others involved in projects or actions that may potentially affect upland habitat and wildlife are expected to fill out the TEES Site Assessment Forms. However, because teams may not always have the time or technical expertise or to conduct such assessments, there are several other options:

- TEES team members may be called upon to assist with the assessments.
- For complex projects, it may be desirable to solicit the services of an on-call contractor.

What Kinds of Projects Are High Priority for Using the Forms?

Because of limited staff resources available to conduct TEES site assessments, the following are the types of projects that are high priority for completing such assessments (please refer to the table above to determine whether the short or long form should be used):

- Projects that will improve aquatic and terrestrial habitat, including CIP projects with restoration as a secondary goal (e.g., instream sewer projects)
- Regional stormwater facilities (e.g., Ramsey Lake Wetland, 17th and Taylor's Ferry)
- BES Watershed Revegetation projects
- Projects in or near areas where there are known Special Status Habitat Types or Species¹
- TEES projects (e.g., Texas Wetlands Bird Habitat Enhancement Project)
- Potential land acquisitions (e.g., Grey To Green, regional stormwater facilities, BES facilities)
- Actions within Conservation, Protection zones or within the Willamette Greenway
- Actions in or within ¼ mile of a "PEA" resource area²
- Culvert replacements that require permits
- Development of Desired Future Conditions for natural area and hybrid parks

What Kinds of Projects Are Lower Priority?

The following types of projects are lower priority for completing a TEES Site Assessment:

- Actions within "Priority Habitat Enhancement Areas" on the Portland Watershed Management Plan map
- Land use reviews
- Ecoroofs
- Greenstreets
- Small curb extensions
- Parkinglot retrofits
- Routine maintenance activities

What Happens to the Information Collected?

Information collected during a TEES Site Assessment should be incorporated into a Site Report. A report template can be found Group 105 in a folder titled, "TEES Site Assessment Forms and Information".

¹ Special Habitat Types include: oak woodlands, wetlands, prairie/grasslands, interior forests, late-successional conifer forests, bottomland hardwood forests and riparian habitats. A list of Special Status Species can be found in the Group 105 folder titled, "TEES Site Assessment Forms and Information".

² Portland Ecological Asset ("PEA") Resource Areas are delineated on the Portland Watershed Management Plan map.

ATTACHMENT K

City of Portland
Terrestrial Ecology Enhancement Strategy (TEES)
Site Report Template



Site Name:
Date(s) of Site Visit:
Report Date:
Site Assessors:
Report Author:
Watershed:

Introduction

Description of the purpose of the assessment. What action (e.g., CIP project, restoration, revegetation, potential land acquisition) triggered the assessment?

Physical Characteristics

Description of the location, size, physical features (e.g., streams), zoning, on-site uses, activities, etc.

Site Conditions

Overview - Description of the ecological role of the site relative to the Terrestrial Ecology Enhancement Strategy. What is the function of this site relative to other sites? (e.g., Is it within an identified anchor or connector? Could it help connect habitat patches?)

Historic Conditions – Description of historic conditions of the site (e.g., summary of 1851 vegetation communities, known historic conditions for wildlife, presence of water bodies), including reference to inventories, bird lists, or other information included in the report appendix.

Habitat Types Found on the Site, including TEES Special Status Habitat Types and Plant Species of Interest - Description of each of the habitat types present at the site, including condition and any TEES Special Status Habitat Types present. Include native/invasive ratio for each habitat type. List TEES Special Status Plant Species or other unique plants or plant communities. List EDRR Plant Species present. Include references to reports or other information included in the report appendix.

Habitat Features Potentially Useful to Wildlife - Description of non-vegetated landscape features - either natural or human-made (e.g., rocky outcrops or buttes, snags, riverine islands, beach/mudflats, bridges, chimneys, downed wood, channel markers, semi-natural cultivated landscapes, floodplain, street trees, large stumps, utility poles, stormwater facility).

Wildlife Use of the Site

Summary of wildlife seen or known to use the site, including TEES Special Status Species and Species of Management Concern. Provide references to completed TEES Site Assessment field form, other species lists and inventories for the site, etc. Include references in appendix if appropriate.

Map of Current Conditions, Habitat Types and Features – Attachment A

Map with polygons showing location of habitat types and features discussed in narrative.

Relevant Watershed-specific TEES Objectives

Reference the TEES 2009 Summary document to provide a bulleted list of objectives that have been identified that are relevant for this site / general location/ watershed.

Recommended Actions

Habitat Area or Location on Site	Recommendation(s)

Map of Recommended Actions – Attachment B

“Bubble” map showing locations and brief narrative description of the recommended actions.

Other Considerations or Comments

Appendices

Attach additional information (e.g., maps and photos of the site; completed TEES Site Assessment form; plant and animal surveys, studies or lists; other relevant reports, surveys or studies).

ATTACHMENT L

TERRESTRIAL ECOLOGY ENHANCEMENT STRATEGY

GUIDANCE:



Anna's Hummingbirds
Photo by Phillip G.Engstrom

Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects

*Version 2
October 2010*



ENVIRONMENTAL SERVICES
CITY OF PORTLAND

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INTRODUCTION

The Terrestrial Ecology Enhancement Strategy (TEES) is part of the City of Portland's Watershed Management Plan (PWMP), and is intended to help achieve the watershed health goals and objectives in the PWMP, particularly those for biological communities. Information about, and agreed-upon conservation and restoration priorities for, terrestrial plant and animal species and habitats in Portland inform the ongoing implementation of the PWMP.

The main elements of the TEES include:

- Identification of priority plant and animal species and terrestrial habitats in need of protection, conservation and/or restoration
- Identification and prioritization of key management issues
- Recommendations for watershed-specific objectives
- Identification of priority strategies and actions
- Selection of species and habitats to be monitored
- *Guidance to city bureaus and citizens for improving habitat and addressing plant and wildlife management issues*

This document provides information about nesting bird species in Portland and guidance that can inform habitat management decisions and in project timing, selection, design and maintenance. Intended audiences include: the Bureau of Environmental Services and Portland Parks & Recreation¹. Following these guidelines may minimize the chances of City activities (e.g., stream enhancement construction projects, invasive plant species removal and revegetation efforts) resulting in a “take” of nesting birds.

It should be noted that these guidelines are advisory only, and simply present some precautionary actions to avoid the “take” of native birds. They are intended to help facilitate project implementation—not hinder it. If followed, the guidelines will help you avoid conflicts and last-minute delays. You can think of these as “Best Management Practices” for stream and upland restoration projects and revegetation activities. In order to safeguard migratory birds, employees are encouraged to practice as much due diligence as can reasonably be expected while carrying out their activities. Because every project presents its own set of challenges (e.g., funding deadlines, weather, public safety), this document recognizes the need for flexibility in selecting strategies. It is recognized that there may be a variety of possible options for consideration on a project-by-project basis.

¹ These guidelines have not been written to apply to Portland Bureau of Transportation (PBOT). PBOT employees should instead refer to the Oregon Department of Transportation's Highway Division Directive #ENV 01-01.

BIRDS IN PORTLAND

There are over 200 bird species that spend all—or part—of their lives in Portland. Some are “resident” species, meaning they are non-migratory. For example, birds (such as scrub jays) spend their whole life in the same neighborhood and never migrate. Others (such as warblers) are migratory; they spend winters in Central and South America, but may breed here. Still others (such as some shorebirds) pass through this area on their migratory routes to feed and rest.

In addition to native bird species, there are some non-native bird species in Portland. These include rock pigeons (city or “street” pigeons), house sparrows, European starlings ring-necked pheasant, domestic ducks and geese, and peacocks. These guidelines do not apply to non-native species.

The City has developed a *Special Status Species* list that includes over 50 birds. These are species that have been placed on Threatened, Endangered, and Sensitive lists or other “watch lists” by agencies and organizations (e.g., U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, Partners In Flight). This list includes some birds that regularly nest in neighborhoods, parks and natural areas, like rufous hummingbirds, willow flycatchers and Vaux’s swifts. Because their populations are in decline, any disturbance to individuals or their breeding habitat is a significant concern.

NESTING BEHAVIOR OF PORTLAND BIRDS

Birds can be found nesting anywhere, even in the most developed areas. This guidance document describes those times of the year that birds are more likely to be present or nesting in a project area within the City of Portland. It also describes actions that minimize the risk of taking an actual bird or disturbing a nest without stopping a project. This guidance follows the adage that a little advanced planning can go a long way, and minimize problems later on. While these guidelines are directed at restoration and revegetation programs, they may be appropriate for a range of BES and Parks’ projects.

TIMING

The best way to avoid disturbing birds is to schedule activities outside the nesting season. The nesting season is not the same for all species, and not all sites will have nesting birds present during the entire nesting season. Furthermore, about 100 species of birds build nests, lay eggs and raise young in the City. Determining what can or cannot be done can be challenging. However, here is some guidance so that you don’t have to know the particulars of each species. (But if you *are* interested in individual species, **Appendix A** is a list of average Spring arrival dates of birds in the Portland Metro Area).

Non-nesting Season: August 1 – January 31

Nesting Season: The nesting season can be divided into two major time-frames:

Early Nesting Season: February 1 – April 15

Raptors (owls, eagles, falcons and hawks), herons, geese, and hummingbirds are early nesters. Great-horned owls are exceptionally early nesters and may lay eggs in January. Many early nesters have longer breeding cycles and most will not complete breeding until June or July.

Primary Nesting Season: April 15 - July 31

This includes songbirds and the majority of species. Willow flycatchers are late nesters, often extending to the end of August.

As they leave the nest, young birds go through the fledgling phase. They are often seen on the ground, flightless and unable to fend for themselves, however the adults are nearby and tending to them. June and July are peak months for fledgling activity. They often take shelter in *low vegetation* and are highly vulnerable to a variety of human disturbances at this critical time.

NESTING HABITATS

Trees: Stick nests of hawks, crows, and jays placed in tree canopies are among the most conspicuous and familiar signs of nesting birds on the City. These are the easiest to detect and the easiest to avoid.

Shrubs: The majority of nesting birds build a cup nest in dense vegetation in the shrub layer, often close to the ground. These species – sometimes called “tangle nesters” – complicate reasonable efforts to avoid taking protected birds. Willow flycatcher, a species in decline, actually builds nests in Himalayan blackberry, an invasive plant species heavily managed in the City.

Ground: Many species place a well concealed nest on the ground in either open areas or forested habitats. Examples include meadowlarks, harniers, killdeer and Wilson’s warblers.

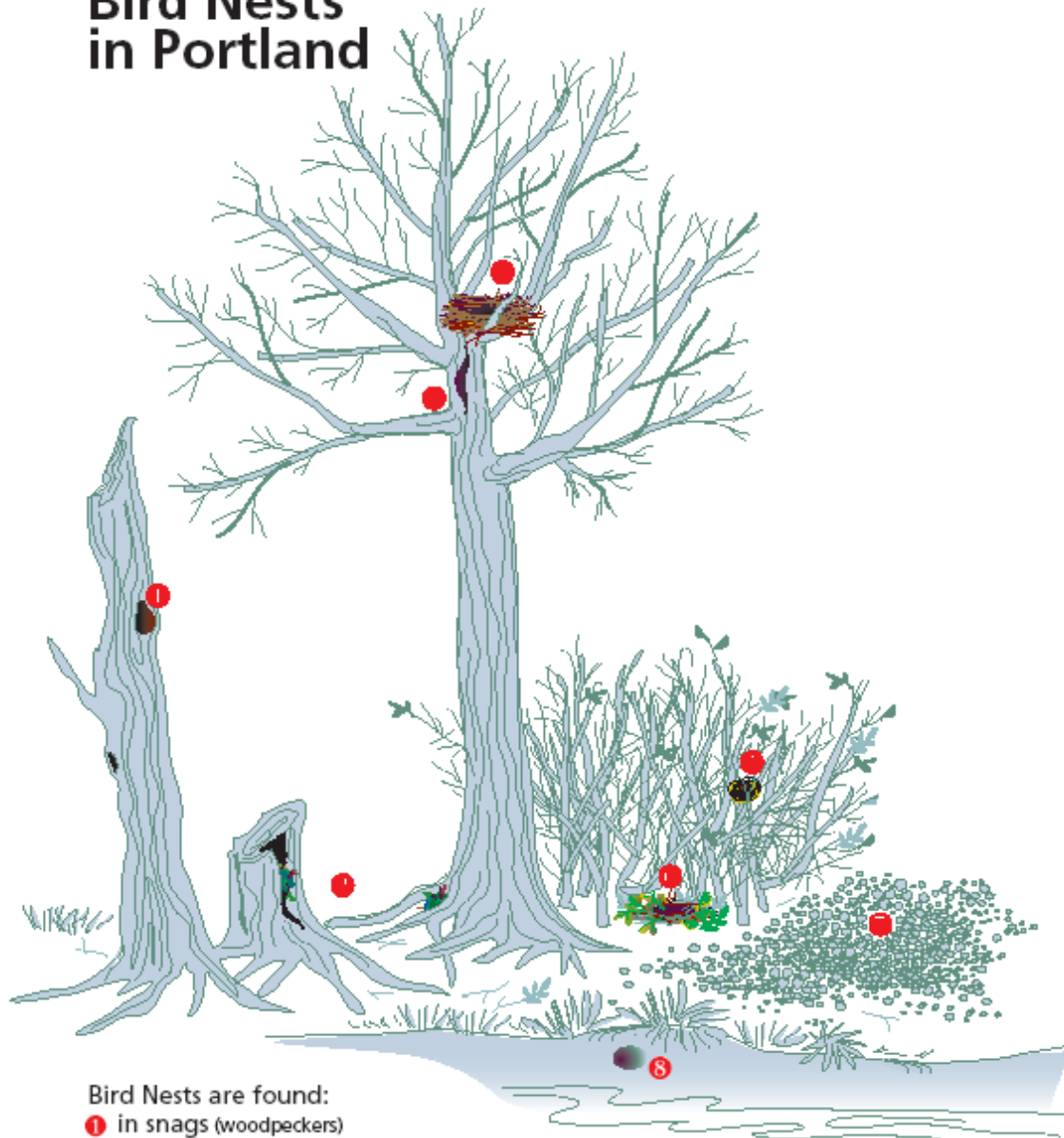
Cavity: Rather than concealing a nest in vegetation, dozens of local species use cavities. These are often in dead or dying trees, but can also be in the ground or in a variety of structures in the urban environment. Tree swallows, Bewick’s wrens and downy woodpeckers are common cavity nesters.

Streambanks: The northern rough-winged swallow and the belted kingfisher are “cut bank” nesters, meaning they use holes excavated in streambanks for nesting. Sometimes they even use holes on steep slopes of dirt stock piles.

Structures: Many birds use human-made structures for nesting. In addition to using bird boxes that are intended for such use, birds will nest on bridges, under house eaves, on building ledges, utility and light poles, on railroad tracks and even on gravel roads.

Appendix B provides a list of Portland area birds and the types of habitats they use for nesting.

Bird Nests in Portland

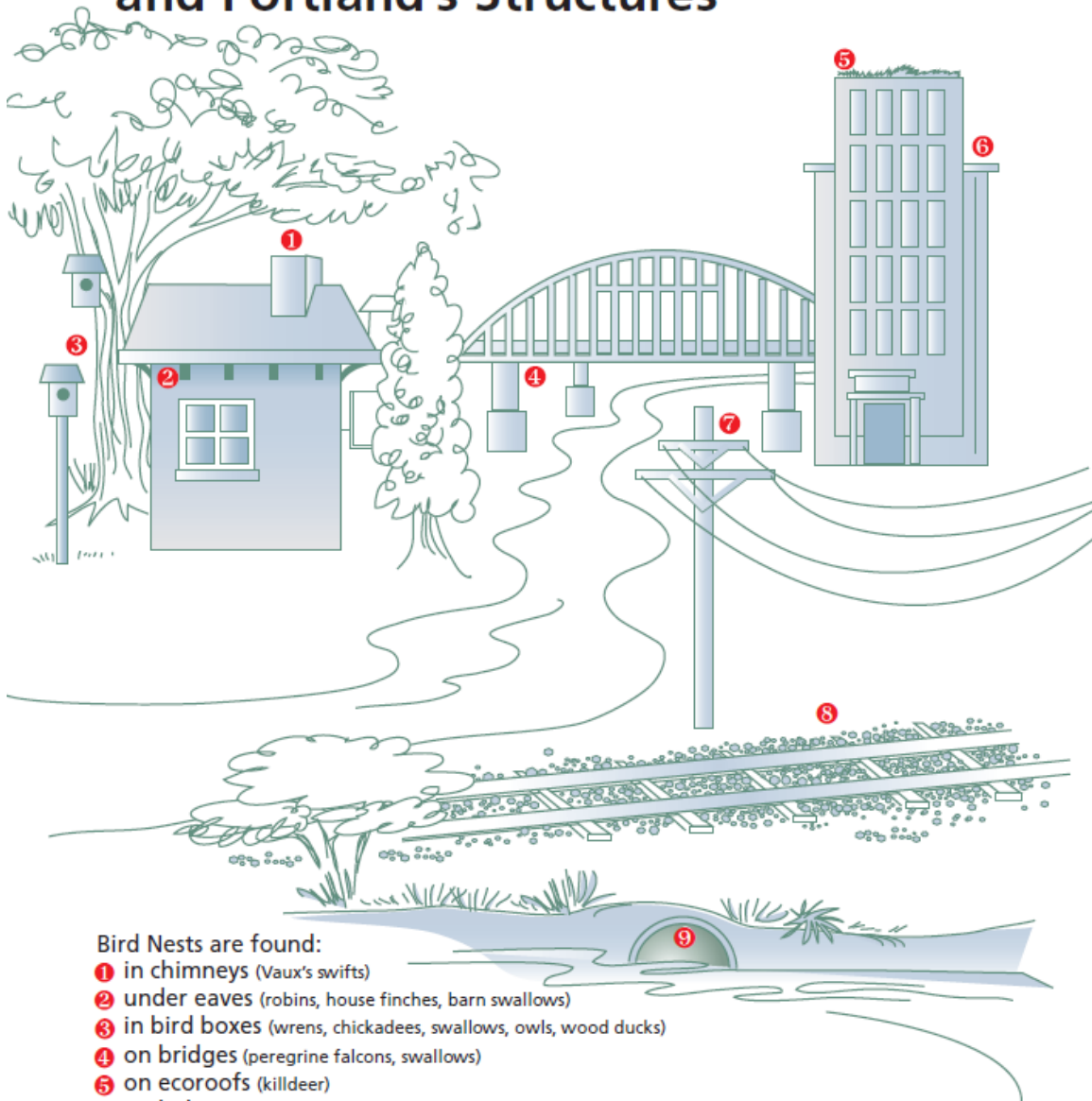


Bird Nests are found:

- ❶ in snags (woodpeckers)
- ❷ in log and stump crevices, and around roots (winter wrens)
- ❸ in tree crevices (chickadees, brown creepers)
- ❹ in tree branches (jays, crows, herons)
- ❺ in shrub branches (hummingbirds, warblers, song sparrows)
- ❻ on ground under shrubs (spotted towhees)
- ❼ in open gravel (killdeer)
- ❽ in streambanks (kingfishers)

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Bird Nests and Portland's Structures



Bird Nests are found:

- ① in chimneys (Vaux's swifts)
- ② under eaves (robins, house finches, barn swallows)
- ③ in bird boxes (wrens, chickadees, swallows, owls, wood ducks)
- ④ on bridges (peregrine falcons, swallows)
- ⑤ on ecoroofs (killdeer)
- ⑥ on ledges (red-tailed hawks, mourning doves, crows)
- ⑦ on utility and light poles (ospreys, Canada geese)
- ⑧ on railroad tracks and gravel roads (killdeer, spotted sandpipers)
- ⑨ in culverts (barn swallows)

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GENERAL GUIDELINES

While many City activities and projects can potentially impact nesting birds, especially construction and maintenance, this guidance focuses on stream enhancement and revegetation projects, mowing, removal and maintenance of structures, and water-level management. Any projects that include removal of live trees or standing dead trees (snags), native or non-native invasive vegetation removal, grubbing and clearing may disrupt bird nesting. Assessing bird use in the project area prior to construction and altering the timing of plant removal are recommended.

Here are some general guidelines to help you plan project activities (for a summary overview, please refer to page 21 of this document):

When to Plan Disturbance (see Appendix C):

August 1 – January 31 is the best time to plan for tree removal, invasive plant species management, and grubbing and clearing.

When to Avoid Disturbance (see Appendix C):

February 1 – April 15 is the early nesting season. Disturbance to vegetation, especially trees, should be avoided during this time.

April 15 – July 31 is the primary nesting season. Disturbance to vegetation should be avoided during this time.

Note: If birds are not present during nesting season, vegetation removal and other disturbance activities may proceed.

WHAT IF WORK MUST OCCUR DURING AVOIDANCE PERIODS?

If work must occur in the recommended avoidance time frames, the project area and specific vegetation impacted should be surveyed for nesting birds. **Appendix D** is a Bird Nesting Assessment Form that can be used. If an active nest is found, avoid it until the young have fledged. “Active” nests are defined as those with eggs or young.

WHO CONDUCTS A NESTING BIRD SURVEY?

BES and Parks personnel who can identify bird species are encouraged to fill out the Bird Nesting Assessment Form. However, because some teams may not have the technical expertise or time to conduct bird surveys, there are several other options:

- Terrestrial Ecology Enhancement Team (TEES) members may be called upon.
- The services of an on-call contractor may be used (this is encouraged for projects that cover large areas or large numbers of trees).

SPECIFIC GUIDELINES

Below are some recommended guidelines for four broad types of actions—stream enhancement projects, invasive plant species removal, other vegetation removal, and other management activities. These are summarized in matrix format in **Appendix E**.

STREAM ENHANCEMENT CONSTRUCTION PROJECTS

Since many City projects have in-water work windows from June 1 to October 31 (see **Appendix C**), the bird nesting period can best be avoided if:

- Vegetation removal and erosion control occurs prior to February 1 *or*
- All construction activities begin after July 31.

If vegetation disturbance, removal or other work must occur during nesting season, please confer with the Terrestrial Ecology Enhancement Strategy (TEES) team for project-specific guidance.

INVASIVE SPECIES MANAGEMENT

There are a number of programs and efforts that are specifically aimed at removing invasive plant species (e.g., BES Watershed Revegetation Program, BES Early Detection and Rapid Response Program, Parks' Protect the Best Program, Parks' Volunteer Stewards, Parks' Ecologists). It is important to plan invasive species removal to coincide with times best for eradication *and* to avoid disturbance to nesting birds. The following recommended guidelines will help avoid disturbance to nesting birds:

Blackberry – One of the most beneficial invasive plants for native birds. Heavily used by a myriad of species for nesting, foraging and winter cover.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Blackberry spraying and removal is generally fine EXCEPT for areas with willow flycatchers (such as Johnson Creek, Columbia Slough and Powell Butte areas). The willow flycatcher is a sensitive species in serious decline and a late nester, often until the end of August.
- Early Nesting Season (February 1 – April 15) – Blackberry spraying and removal is OK. Watch for Anna's hummingbirds which are early nesters and defend their territory with displays that are easily heard and seen.
- Primary Nesting Season (April 15 – July 31) – Avoid major spray and removal. Maintenance management and volunteer efforts are OK, but watch for song sparrow, spotted towhee and California quail nests, which are on ground or in blackberry plants. AVOID if present.

- Remember: Willow flycatchers' nesting season extends through August. Therefore, avoid April 15 – August 31 in riparian and wetland habitats

Clematis – Growth form provides the type of cover many nesting birds are seeking. Although not well-documented, it is likely that many local species are placing nests in or under clematis clumps

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Air gapping and root grubbing is OK.
- Early Nesting Season (February 1 - April 15) - Air gapping and root grubbing is OK. Be sure to leave vines in trees to decompose in case there is an early tree nester.
- Primary Nesting Season (April 15 – July 31) – Air gapping is OK. Avoid root grubbing and pulling vines down. Watch for nearby active nests on the ground and in shrubs.

Garlic Mustard – There is no known use of garlic mustard by nesting birds. However, garlic mustard is typically treated with spot spraying or hand pulling in the nesting season, and there may be nests nearby in other plant species.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Spraying and hand pulling is OK.
- Early Nesting Season (February 1 - April 15) - Spraying and hand pulling is OK. Watch for ducks, killdeer or other ground nesters when treating garlic mustard along streams or along parking areas.
- Primary Nesting Season (April 15 – July 31) – Spot spraying and hand pulling is OK. Watch for nests low to the ground. If a nest is found, leave the surrounding vegetation.

Hawthorne – Cedar waxwings and American robins are two species that commonly build open cup nests in hawthornes.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Generally removal is OK. However, if removing hawthornes in willow flycatcher areas such as Powell Butte, avoid removal **until after August 31**.
- Early Nesting Season (February 1 - April 15) – Girdling is OK. Avoid tree removal.
- Primary Nesting Season (April 15 – July 31) – Avoid removal.

Holly and Laurel – Although these invasive trees are a threat to native habitats, many birds will use them to build nests and raise young.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is the best time for intensive first treatments to areas with dense holly and laurel stands.
- Early Nesting Season (February 1 - April 15) – Removal is likely OK. Watch for nesting behavior and avoid if observed.
- Primary Nesting Season (April 15 – July 31) – Avoid intensive first treatments. If removal is required, visually inspect smaller trees (i.e., under 10 feet) for small cup nests. If there are larger specimens to be removed, a more thorough survey is recommended. Watch for robin and other nests and avoid if present.

Ivy: Ground Ivy – There are no native birds known to exclusively use ground ivy, but typical ground and low shrub nesters are spotted towhees and song sparrows. Pulling ivy in the primary nesting season could disturb native vegetation, or the presence of a group of people for an extended period of time could cause nest to be abandoned.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Foliar spray and hand pulling is OK
- Early Nesting Season (February 1 - April 15) – Foliar spray and hand pulling is OK.
- Primary Nesting Season (April 15 – July 31) - Avoid pulling and foliar spraying if possible. Hand pulling can take place, but with caution. Look and listen for winter wrens, and watch for nesting birds nearby. If there is an active nest in the area, do not work in there.

Ivy: Tree Ivy – There are no native birds known to exclusively use tree ivy, though there are many that use branches on the infested tree such as robins and vireos. Pulling ivy down after cutting could pull active nests down.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Air-gapping is OK.
- Early Nesting Season (February 1 - April 15) - Air-gapping is acceptable, but leave ivy in trees to decompose slowly.
- Primary Nesting Season (April 15 – July 31) - Air-gapping is acceptable, but leave ivy in trees to decompose slowly. Watch for nearby active ground and shrub nests and avoid if present.

Knapweed, Tansy, and Thistle – Grassland birds will use non-native, weedy areas for nesting.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Spot spraying is OK.
- Early Nesting Season (February 1- April 15) – Spot spraying is OK, but watch for killdeer nests on the ground. Birds will flush and perform a loud distraction display. Avoid area if present.
- Primary Nesting Season (April 15 – July 31) - Spot spraying of herbicides is acceptable any time, but watch for Savannah sparrows, common yellowthroats, American goldfinches and nests in nearby shrubs and grasses. Avoid if present.

Knotweed – Use by native birds is not well-known.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is a good time for foliar spray or injection.
- Early Nesting Season (February 1- April 15) – This is a good time for foliar spray or injection.
- Primary Nesting Season (April 15 – July 31) – Treatment is likely OK, but watch for nearby nests.

Purple Loosestrife – Wetlands are important to many native nesting birds, and therefore, actions to control purple loosestrife may have the potential to affect them.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is a good time to treat loosestrife.
- Early Nesting Season (February 1- April 15) – Herbicide application is OK until March 1. Watch for ducks in wetlands, as they tend to breed early – typically in March.
- Primary Nesting Season (April 15 – July 31) – Avoid vegetation management. If mid-summer treatment is advised, watch for red-winged blackbirds and American goldfinch nests in plants, and watch for ducks on the ground.

Reed Canarygrass – Common yellowthroats, mallards and cinnamon teal have been documented nesting in reed canarygrass at a wetland adjacent to the Columbia Slough. Growing and treatment season for reed canarygrass is March through August, which may conflict with nesting birds, since it's typically mowed in May and June.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is a non-conflict time to cut, spray or grub.

- Early Nesting Season (February 1 - April 15) – Typical treatment (hand-spraying) is OK in March and April. Watch for nesting ducks such as cinnamon teal.
- Primary Nesting Season (April 15 – July 31) – Avoid vegetation management. Conduct nest survey if mowing is advised.

Yellow Flag Iris – Red-winged blackbirds have been known to nest in patches of yellow flag iris.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is a good time for herbicide application and mechanical removal.
- Early Nesting Season (February 1 - April 15) – Herbicide application and mechanical removal is OK until March 1. Watch for duck nests along the shore after March 1, and avoid if present.
- Primary Nesting Season (April 15 – July 31) – Avoid vegetation management. Watch for red-winged blackbird and duck nests along the shore and in reeds.

OTHER VEGETATION MANAGEMENT

At times, it is necessary to remove non-invasive, non-native—or even native—trees, snags, shrubs and ground cover. If so, the following recommendations should be followed.

Live Tree Removal (Native and Non-Native) – Native, as well as non-native, live trees can host nesting birds any time from February 1 to August 31. Many of the early nesters are larger birds (e.g., herons, raptors) with larger nests that are easier to detect early in the season prior to leaf-out.

Management Recommendations:

- Non-nesting Season (August 1 - January 31) – Tree removal and girdling is OK.
- Early Nesting Season (February 1 – April 15) – Avoid tree removal, but girdling is OK. If trees must be removed, watch for early nesters: owls, hawks and Anna’s hummingbird (and killdeer on the ground). Scan canopies for any possible nests; if any are found seek assistance to determine if they are active.
- Primary Nesting Season (April 15 – July 31) – Avoid tree removal, but girdling is OK.

Snag Removal – Snags (standing dead trees) and standing dead wood play critical roles for many bird species. Snags attract insects, which are a vital source of food for woodpeckers and others birds. They provide perches, and are often the only

source of cavities for cavity-nesting birds. In general, the following steps are recommended:

- Leave snags when possible.
- If there is a public safety concern, trim offending branch(es), leaving as much of the snag as possible.
- If all branches are unsafe, trim branches and leave the trunk.
- If the trunk is very tall and considered unsafe, leave 20 – 40 feet.
- If removal is unavoidable and there are no nearby trees appropriate for girdling, consider auguring the removed dead tree trunk into the ground. Use the tree branches for terrestrial habitat elements within the project site so that food sources and perch sites remain in the area.

Management Recommendations (if a snag must be removed, or if there is a public safety issue):

- Non-nesting Season (August 1 – January 31) – This is the best time for snag removal.
- Early Nesting Season (February 1 - April 15) – Watch for early snag nesting birds such as owls, and avoid removal if possible.
- Primary Nesting Season (April 15 – July 31) – Avoid snag removal if possible.

Shrub Removal (Native and Non-Native) – Low, dense shrub cover is vitally important nesting habitat and supports more breeding birds than trees do in the Portland area. Birds will nest at a variety of heights in the shrub layer. For example, spotted towhees build nests from ground level up to about 15 feet.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is the best time for vegetation removal.
- Early Nesting Season (February 1 - April 15) – Watch for early nesters such as Anna's hummingbirds in shrubs; they often produce loud visual displays near their nests. Watch for killdeer which nest on open ground and make loud displays to distract predators from the nest. Be aware of ducks or other birds flushing suddenly off the ground.
- Primary Nesting Season (April 15 – July 31) – Avoid vegetation impacts and removal.

Grassland Mowing and Ground Cover Removal (Native and Non-Native) – Many species only build their nests on the ground. Some will build below dense shrub cover (e.g., Wilson's warbler), while others will conceal their nest in grass (e.g., Savannah sparrow, Western meadowlark). Still others will build an exposed nest on gravel or

bare ground (e.g., horned lark, killdeer). Ground nesters are vulnerable to a variety of disturbances.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is the best time for ground cover removal or disturbance like road building.
- Early Nesting Season (February 1 - April 15) – Proceed with caution: Be aware of killdeer, often calling loudly and feigning injury when you are near their nest. Be aware of ducks or other birds flushing suddenly off the ground.
- Primary Nesting Season (April 15 – July 31) – Avoid mowing and removal of ground cover.

Controlled Burn – This is a useful technique for controlling some plant species and encouraging native grasses. Some birds, such as horned larks and Western meadowlarks, nest in grasslands, however.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – OK to burn.
- Early Nesting Season (February 1 - April 15) – OK to burn.
- Primary Nesting Season (April 15 – July 31) – Avoid burning.

OTHER MANAGEMENT ACTIVITIES

Several activities that can affect nesting birds do not involve vegetation treatment or management. These include removing structures and manipulating water levels.

Removing and Maintaining Structures – Some birds use structures for winter roosting, but may also use them for nesting. Removing structures and maintenance activities (e.g., pressure-washing, painting and repair work) is another activity that can disrupt nesting birds. Osprey nests are often found on artificial structures near water. Barn owls, cliff swallows, barn swallows and Vaux's swifts are examples of protected species that readily use buildings for nesting. From February 1 to July 30, building demolitions should include a survey for nesting birds.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – OK to remove structures, but if birds are using the building for winter roosting, flush the bird from the building and allow them an opportunity to exit (e.g., make loud noises). If removing a roost chimney used by Vaux's swifts, wait until October 10 or later until birds migrate south for the winter.
- Early Nesting Season (February 1 - April 15) – Survey for owls, which nest on beams and platforms in old buildings. If present, wait until the young are fully fledged.

- Primary Nesting Season (April 15 – July 31) – Survey for nests of birds such as cliff and barn swallows, which make mud nests in eaves and on ledges. Survey for swifts in chimneys and for house finches in eaves and cavities. Avoid structure removal if possible, or wait until the young fledge.

Manipulating Water Levels – Lowering water levels or flooding areas can have impacts on nesting birds such as waterfowl, red-winged blackbirds, common yellowthroats and marsh wrens, which nest in wetlands. Birds such as kingfishers make nests in streambanks which could be flooded by high water.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – OK to manipulate water levels.
- Early Nesting Season (February 1 - April 15) – Consider ducks and other waterfowl which are early nesters (as early as March 1). Duck nests are near or on the ground in wetland habitats.
- Primary Nesting Season (April 15 – July 31) – If inundating wetlands, consider impacts to red-winged blackbirds and other species, which nest in reed canarygrass, cattails and tall reeds.

SENSITIVE AREAS

Certain habitats within the City are recognized by state and federal agencies as being ecologically important and sensitive to disturbance. They are also home to unique nesting species that can be overlooked. These “Special Status Habitats” include wetlands, grasslands, oaks, interior forests (especially late-successional conifer forests), bottomland hardwood forest and riparian habitats, and aquatic habitats (e.g., lakes, rivers and streams). The Special Status Habitats and the Special Status Bird Species most closely associated with them are presented in **Appendix F**.

Specific habitats of concern are wetlands and grasslands, which are often home to ground nesting birds, including Western meadowlarks, rails and other species. Riparian areas – the forest along streams and rivers – host a diverse array of nesting species using all four nesting habitats: ground, shrub, tree and cavity. It is important to be particularly vigilant in these areas to avoid impacts to nesting birds.

SPECIAL CONSIDERATIONS

SPECIES

There are some species that—because of their status or unusual nesting season—deserve special consideration. The following guidelines (which are also summarized in **Appendix E**) will help avoid disturbing these birds:

Willow flycatchers are a Special Status Species, and are listed by the State of Oregon as Sensitive-Vulnerable. These small songbirds are among the latest nesting species in the City, often extending their breeding activities to the end of August. They occur in riparian and wetland habitats in most of the City's watersheds, sometimes choosing to build nests in Himalayan blackberry, an invasive plant species. If Willow flycatchers are known or suspected in the project area, the primary nesting season window should be extended to August 31.

Anna's hummingbirds are early nesters. Females build tiny nests of lichens and spider webs placed on small branches of shrubs and trees. They can lay eggs as early as mid-February. Nests are very difficult to find, but the presence of a territorial male from February to May is an indication that a nest is nearby and vegetation disturbance should be avoided.

Killdeer lay their eggs in gravel areas on the ground and out in the open. Vacant lots, gravel access roads, margins of farm fields, and street shoulders in open grassy areas are likely to have killdeer nests. They are early nesters, usually laying eggs in March and April. Due to the location of their nest, they are highly vulnerable to disturbance. Killdeer are often conspicuous and if they are observed in a project area March to May it should be assumed there is a nest nearby. Once a nest is located it can usually be flagged or fenced with exclusion zone fence and avoided.

Great-horned owls are very early nesters, often laying eggs in January and February. In our area, they use stick nests in trees and can often be found by conducting an early season nest survey of the project area.

Bald eagles nest high in trees from January 1 to September 1. As of 2010, there are five bald eagle nest sites in the Portland area: East Hayden Island, West Hayden Island, Ross Island, areas adjacent to Elk Rock Island, Ramsey, and Smith and Bybee Lakes. The most recent bald eagle survey data from the Oregon Cooperative Fish and Wildlife Research Unit at Oregon State University will be consulted to determine project proximity to known bald eagle nests. Restoration activities (i.e., above local ambient noise and visual activity levels) cannot occur within 0.25 miles (or 0.5 miles line-of-site) from an occupied nest during the critical nesting period from January 1 to September 1, or known winter roost areas from October 31 to April 30.

OTHER THINGS TO KEEP IN MIND

Every project is unique and presents its own set of challenges. Here are just a few things to keep in mind as you plan your project:

Impacts on neighboring properties

Aesthetics and public perception

Contractor schedules, permits and funding deadlines

Human safety

Every project has the potential to inform and educate others!

WHAT IF YOU FIND AN ACTIVE NEST ON A PROJECT SITE DURING PROJECT IMPLEMENTATION?

What should you do if you have followed the above guidelines, have planned activities to avoid disturbance to nesting birds, and you find an active nest during project implementation? “Active” nests are those with eggs or young in them. **Attachment H** will help you make the most appropriate decision.

WHAT IF YOU FIND A BABY BIRD OUT OF ITS NEST?

It is normal for many bird species such as scrub jays, robins, crows and owls to leave the nest and spend as many as 2-5 days on the ground before they can fly. Parents will care for them during this period. Unless a bird is injured, it is important that it NOT be taken into captivity, since this will deny them the opportunity to learn survival skills (e.g., finding food, identifying predators, flying) from their parents.

Attachment G will help you make the right decision, should you find a baby bird during project implementation.

SUMMARY OF RECOMMENDATIONS FOR AVOIDING IMPACTS ON NESTING BIRDS DURING CONSTRUCTION AND REVEGETATION PROJECTS

BEST

You have at least a year to plan your project.

- Plan your project at least a year in advance.
- Plan disturbance to occur during the non-nesting season (August 1 – January 31) or complete site preparation prior to April 15.
- Refer to specific guidelines in this document for different kinds of actions/projects.

NEXT BEST

*You do not have time to plan ahead
and work must occur during the nesting season.*

- Refer to the specific guidelines in this document for different kinds of actions/projects.
- Survey for nesting birds, using the Bird Nesting Assessment Form in this document (Appendix D).
- If survey reveals nesting birds, avoid action until young have fledged.
- If survey reveals no nesting, proceed with action.
- If the survey found no evidence of nesting, but a nest is found during project implementation, refer to Appendix G.

ADDITIONAL THINGS YOU CAN DO TO HELP NATIVE BIRDS

In addition to the above management recommendations, there are other things that project managers and field crews can do to help native birds. Some of these are important regardless of habitat type; others are habitat-specific. These are summarized in **Appendix I**.

Appendix A

Average Arrival Dates for Birds in the Portland Metro Area

(Note: Many local species, such as the winter wren, are not listed here because they are year-round residents.)

<u>Average Arrival</u>	<u>Species</u>
Feb 09	Tree Swallow
Feb 25	Rufous Hummingbird
Mar 03	Violet-green Swallow
Mar 04	Turkey Vulture
Mar 16	Osprey
Mar 19	Orange-crowned Warbler
Mar 21	Cinnamon Teal
Apr 02	Cliff Swallow
Apr 04	Common Yellowthroat, Northern Rough-winged Swallow
Apr 05	Black-throated Gray Warbler
Apr 08	Brown-headed Cowbird, Barn Swallow
Apr 12	Cassin's Vireo, Vaux's Swift
Apr 13	Purple Martin
Apr 16	Yellow-headed Blackbird
Apr 18	Chipping Sparrow
Apr 19	Hammond's Flycatcher, Wilson's Warbler
Apr 20	House Wren
Apr 22	MacGillivray's Warbler
Apr 24	Pacific-slope Flycatcher
Apr 26	Warbling Vireo, Western Tanager, Western Kingbird, Bullock's Oriole
Apr 27	Black-headed Grosbeak, Yellow Warbler
Apr 29	Calliope Hummingbird
May 01	Swainson's Thrush
May 02	Olive-sided Flycatcher, Western Wood-Pewee
May 05	Lazuli Bunting
May 13	Yellow-breasted Chat
May 14	Willow Flycatcher
May 28	Eastern Kingbird
May 31	Red-eyed Vireo
Jun 08	Common Nighthawk

Appendix B

Nesting Birds by Habitat in Portland

Note: For nesting habitat, trees are generally defined as greater than 7m (~20 feet) and shrubs are less than 7m (~20 feet). The categories below are based on typical nest sites; however some “shrub nesters” will nest in trees and likewise some “tree nesters” can chose a site closer to the ground.

* On the City of Portland’s “Special Status Species” List, meaning the species has been listed by the U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, or another entity because it is rare, in decline or otherwise of special concern.

Tree Nesting Birds in Portland

American Crow	Great-horned Owl
Bald Eagle*	House Finch
Band-tailed Pigeon*	Mourning Dove
Barred Owl	Olive-sided Flycatcher*
Black-headed Grosbeak	Osprey
Black-throated Gray Warbler*	Pine Siskin
Bullock’s Oriole*	Purple Finch*
Cedar Waxwing	Red Crossbill*
Common Raven	Red-shouldered Hawk
Cooper’s Hawk	Red-tailed Hawk
Double-crested Cormorant	Sharp-shinned Hawk
Eastern Kingbird	Steller’s Jay
Evening Grosbeak	Western Kingbird
Golden-crowned Kinglet	Western Tanager
Great Blue Heron*	

Shrub Nesting Birds in Portland

American Goldfinch	Pacific Slope Flycatcher*
American Robin	Red-winged Blackbird
Anna’s Hummingbird	Rufous Hummingbird*
Brewer’s Blackbird	Scrub Jay
Brown-headed Cowbird	Song Sparrow
Bushtit*	Swainson's Thrush*
Cassin’s Vireo	Warbling Vireo
Green Heron*	Western Wood Pewee*
Hutton’s Vireo*	Willow Flycatcher*
Lazuli Bunting	Yellow Warbler*
Lesser Goldfinch	Yellow-breasted Chat*
MacGillivray's Warble	Yellow-headed Blackbird

Ground Nesting Birds in Portland

American Bittern*	Orange-crowned Warbler*
American Coot	Pied-billed Grebe
Blue-winged Teal	Ring-necked Pheasant
California Quail	Ruddy Duck
Canada Goose	Savannah Sparrow
Chipping Sparrow*	Sora*
Cinnamon Teal	Spotted Sandpiper
Common Nighthawk*	Spotted Towhee
Common Yellowthroat*	Streaked Horned Lark*
Dark-eyed Junco	Turkey Vulture
Killdeer	Virginia Rail
Mallard	Western Meadowlark*
Marsh Wren	White-crowned Sparrow
Northern Harrier*	Wilson's Snipe
Northern Shoveler	Wilson's Warbler

Standing Snag and Live Tree Cavity Nesting Birds in Portland

American Kestrel*	Northern Flicker
Black-capped Chickadee	Northern Pygmy Owl
Barn Owl	Northern Saw-whet Owl
Barred Owl	Pileated Woodpecker*
Brown Creeper*	Purple Martin*
Bufflehead*	Red-breasted Nuthatch
Chestnut-backed Chickadee	Red-breasted Sapsucker
Common Merganser	Tree Swallow
Downy Woodpecker*	Violet-green Swallow
European Starling (non-native; not protected by laws; OK to destroy)	Vaux's Swift*
Hairy Woodpecker	Western Screech Owl
Hooded Merganser*	White-breasted Nuthatch*
House Wren*	Wood Duck*
House Sparrow (non-native; not protected by laws; OK to destroy)	

Ground Cavity Nesting Birds in Portland

Two wrens are “nook and cranny” nesters, using cavities on or near the ground in decaying logs, under logs, in root wad tangles, or in the ground at the base of shrubs:

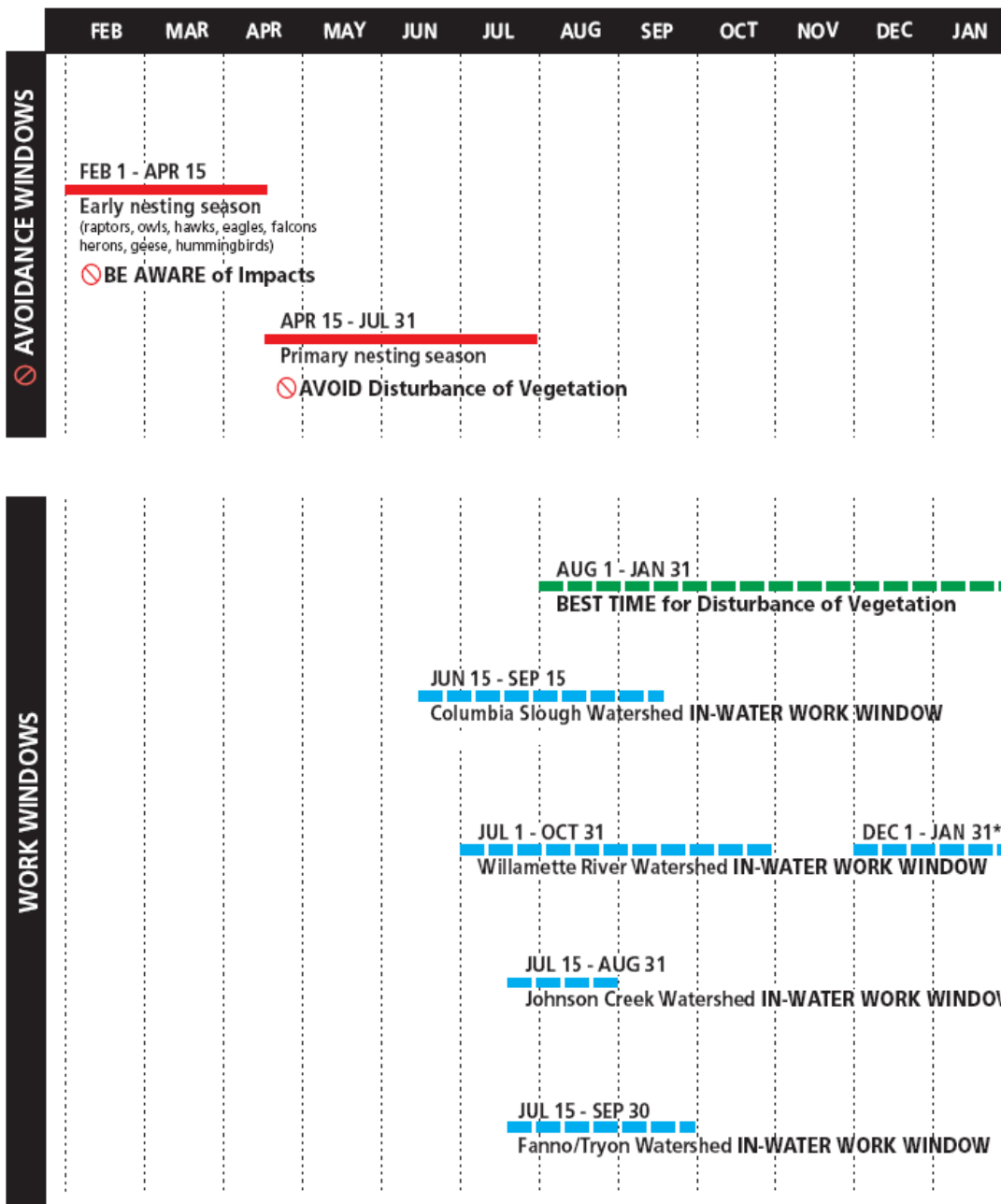
Winter Wren*
Bewick's Wren

These two birds are “cut bank” nesters that use holes excavated in stream banks or even on steep slopes of dirt stock piles:

Northern Rough-winged Swallow
Belted Kingfisher

Appendix C

Bird Nesting Season and Work Windows



* The Oregon Department of Fish and Wildlife acknowledges the in-water work window for the Willamette, and therefore it is officially available. However the National Marine Fisheries Services currently is not approving the winter in-water work window in the Willamette. Realistically therefore it is difficult to get approvals for the winter period.

Appendix D

Bird Nesting Assessment Form

Site _____ Date of Assessment _____

Name of Project _____

Project Manager _____

Name of person conducting Assessment _____

Time of Assessment _____

Date Assessment was provided to Project Manager _____

Construction or Activity Schedule if known _____

Design Completed ___ 30% ___ 60% ___ 90%

Are staging, access and other disruption areas known? ___ yes ___ no

Are trees or other vegetation to be removed marked on construction documents?
___yes ___ no

Birds Observed on Site:

Species	# of Obs.	Check if Special Status Species	Does it likely breed here? Yes or No	Breeding behavior observed? Yes or No	Behavior Codes [Ⓜ]	Habitat and Notes

[Ⓜ] Behavior codes:

- forag. = foraging
- copl. = copulation
- pair = pair observed
- fledg. = fledging
- song = singing adult

- mat. carry = carrying nesting material
- food carry = adult carrying food (e.g., insect, fish) or fecal sac
- displ. = courtship or territorial display
- flock = flocking

Nests or Nesting Evidence Observed on Site:

Description of nest, nest hole in tree, or species if known	Description of location of nest (tree number and species, vegetation type, etc.)	Former or active nest?

Concerns about project impacts to birds (e.g., likelihood of nests observed to be active during construction, etc):

Recommendations to Project Manager:

Appendix E

Vegetation and Other Management Recommendations *

**Ideally, all vegetation disturbance/removal should be scheduled to occur between August 1 and January 31. If work cannot occur in this window, please consider the following recommendations. For questions and additional guidance in following these recommendations, contact a member of the TEES Team.*

Stream Enhancement Construction Projects		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
Vegetation removal	Refer to tables, below.	Refer to tables, below.
Construction activities	Refer to tables, below, if vegetation will be disturbed.	Refer to tables, below, if vegetation will be disturbed.

Invasive Species Management		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
<p>Blackberry Removal</p> <p><i>A beneficial invasive plant for native birds. Heavily used by a myriad of species for nesting, foraging and winter cover.</i></p>	<p>First treatment for overgrown areas – foliar spraying (mash and spray) and mechanical removal – OK</p> <p>Watch for Anna’s hummingbirds, which are early nesters, and defend their territories with displays that are easily seen and heard.</p>	<p>Avoid major spray and removal.</p> <p>Maintenance management and volunteer hand removal work are OK, but watch for active nests (spotted towhee, song sparrow, California quail) and avoid if present. Nests are mostly cups of fine plant material in blackberry, or on the ground.</p> <p>In August, watch for willow flycatchers, which are found especially in Johnson Creek, Powell Butte and Columbia Slough areas; avoid if present. Willow flycatchers sit out prominently and call “fitz-bew” (easy to learn with some practice). Avoid blackberry removal in August in willow flycatcher territory.</p>
<p>Clematis Removal</p> <p><i>Growth form provides the type of cover nesting birds are seeking. Likely that many local species nest in or under clematis clumps.</i></p>	<p>Air gapping and root removal (grubbing) – OK</p> <p>Leave vines in trees to decompose in case there is an early tree nester.</p>	<p>Air gapping – OK</p> <p>Avoid root grubbing and pulling down vines.</p> <p>Watch for winter wrens, spotted towhees and other nearby active ground and shrub nests; avoid if present.</p>
<p>Garlic Mustard Removal</p> <p><i>There is no known use of garlic mustard by nesting birds, but there may be nests in nearby plants.</i></p>	<p>Spot spraying – OK</p> <p>Hand pulling – OK</p> <p>Watch for early nesters (e.g., killdeer, ducks) and nests low to the ground</p> <ul style="list-style-type: none"> ▪ Killdeer nest on the ground in gravel. Loud adult display to distract predators from nest is a good sign to watch for. ▪ If nest is found, leave surrounding vegetation. 	<p>Spot spraying – OK</p> <p>Hand pulling – OK</p> <p>Watch for nearby active ground and shrub nests. Avoid if present.</p>

Invasive Species Management		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
<p>Holly and Laurel Removal</p> <p><i>Many birds use these for nesting and raising young. In the fall and winter, berries provide food for many species, including American robin and varied thrush.</i></p>	<p>Removal (by cut and stump treatment) – likely OK.</p> <p>Watch for nesting behavior and avoid if observed.</p>	<p>Avoid intensive first treatments.</p> <p>If removal is required, visually inspect small trees (< 10') for small cup nests. If there are larger specimens to be removed, a more thorough survey is recommended.</p> <p>Watch for active robin nests and avoid if present.</p>
<p>Ivy: Ground Ivy Removal</p> <p><i>No native birds are known to exclusively use ground ivy, but typical and ground and low shrub nesters are spotted towhees and song sparrows.</i></p>	<p>Foliar spraying and hand pulling – OK</p>	<p>Avoid pulling and foliar spraying if possible. Pulling ivy can disturb native vegetation, and the presence of people for an extended period of time can cause nearby nests to be abandoned.</p> <p>Hand pulling OK with caution. Watch for birds. If an active nest is found, do not work in that area.</p> <p>Look and listen for winter wrens.</p>
<p>Ivy: Tree Ivy Removal</p> <p><i>No native birds are known to exclusively use tree ivy, though many use branches on infested trees, such as American robins and vireos.</i></p>	<p>Air gapping – OK</p> <p>Leave ivy in tree – pulling down ivy might result in pulling down nests.</p>	<p>Air gapping – OK</p> <p>Leave ivy in trees.</p> <p>Watch for nearby active ground and shrub nests. Avoid if present</p>

Invasive Species Management		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
<p>Knotweed Removal</p> <p><i>Use by native birds is not well-known.</i></p>	Foliar spraying and injection – OK	Treatment is likely OK, but watch for nearby nests prior to treatment.
<p>Purple Loosestrife Treatment</p> <p><i>Used by red-winged blackbirds and American goldfinches for nesting. Also, ducks may nest on the ground nearby.</i></p>	<p>Herbicide application and mechanical removal – OK prior to March 1.</p> <p>Avoid cutting, spraying and grubbing after March 1.</p> <p>Watch for ducks in wetlands, as they tend to breed early (typically in March).</p>	<p>Avoid cutting and spraying.</p> <p>If mid-summer treatment is advised, watch for red-winged blackbirds and American goldfinch nests in plants.</p> <p>Also watch for ducks on the ground.</p>
<p>Reed Canarygrass Removal/Spray</p> <p><i>Common yellowthroats, mallards and cinnamon teal have been documented nesting in Reed canarygrass in the Slough.</i></p>	Typical treatment (hand spraying) in March and April – OK. Watch for early nesting ducks , and avoid if present.	Avoid any vegetation management. Conduct nest survey if mowing is advised.
<p>Yellow Flag Iris</p> <p><i>Red-winged blackbirds have been known to nest in patches of this plant.</i></p>	<p>Herbicide application and mechanical removal – OK until March 1.</p> <p>Watch for duck nests along shore and in reeds after March 1 and avoid if present.</p>	Avoid herbicide application and mechanical removal.

Other Vegetation Management		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
<p>Live Tree Removal (native and non-native)</p> <p><i>Trees can host nesting birds any time between February 1st – August 31st. Many early nesters are larger birds (e.g., herons and raptors).</i></p>	<p>Tree removal – Avoid</p> <p>Tree girdling – OK, and preferred to removal, if equally effective for control.</p> <p>If trees must be removed: Watch for early nesters: owls, hawks, Anna’s hummingbirds, and killdeer – Avoid if present</p> <ul style="list-style-type: none"> ▪ Raptors have large stick nests—easy to see before trees leaf out. ▪ Killdeer nest on the ground in gravel. Loud adult display to distract predator from nest is a good sign to watch for. ▪ Anna’s hummingbirds have tiny camouflaged nests, but males defending their territory are detected visually and audibly. 	<p>Tree girdling – OK</p> <p>Tree removal – Avoid</p>
<p>Snag Removal</p> <p><i>Snags (standing dead trees) play critical roles for many bird species. Snags attract insects, which are a vital source of food for woodpeckers and other birds. They provide perches, and are often the only source of cavities for cavity-nesting birds.</i></p>	<p>Watch for early snag nesting birds such as owls, and avoid removal if possible.</p>	<p>Avoid snag removal if possible.</p>

<p>Shrub Removal (native and non-native)</p> <p><i>Shrubs support more breeding birds than trees do in the Portland area.</i></p>	<p>For construction access or other purposes – OK, but watch for early nesters and nesting behavior. For example:</p> <ul style="list-style-type: none"> ▪ Killdeer nest on the ground in gravel. Loud adult display to distract predators from nest is a good sign to watch for. ▪ Anna’s hummingbirds have tiny camouflaged nests, but males defending their territory are detected visually and audibly. ▪ Be aware of ducks or other birds flushing suddenly off the ground. 	<p>Avoid.</p>
<p>Other Vegetation Management</p>		
<p>Action</p>	<p>February 1 through April 15 Early Nesting Season</p>	<p>April 15 through July 31 Primary Nesting Season</p>
<p>Grassland Mowing and Ground Cover Removal (native and non-native)</p> <p><i>Many species build nests only on the ground. Some will build below a dense, shrub cover, while others conceal their nest in grass.</i></p>	<p>For construction access or other purposes – OK</p> <p>Watch for nests (e.g., Wilson’s warbler, savannah sparrow, western meadowlark, horned lark) and nesting behavior. For example:</p> <ul style="list-style-type: none"> ▪ Killdeer nest on the ground in gravel. Loud adult display to distract predators from nest is a good sign to watch for. ▪ Be aware of ducks or other birds flushing suddenly off the ground. 	<p>Avoid mowing and removal of ground cover.</p>
<p>Controlled Burn</p>	<p>OK</p>	<p>Avoid</p>

Other Management Activities		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
<p>Removing and Maintaining Structures</p> <p><i>In addition to winter roosting, structures are used for nesting.</i></p>	<p>Watch for owls on beams and platforms in old buildings. Delay removal until young are fully fledged.</p>	<p>Watch for:</p> <ul style="list-style-type: none"> ▪ mud nests of cliff and barn swallows in eaves and on ledges ▪ Vaux's swifts in chimneys ▪ house finches in eaves and cavities <p>Avoid removing structure until birds have fledged.</p>
<p>Manipulating Water Levels</p> <p><i>Lowering or raising water levels can impact waterfowl and red-winged blackbirds in wetlands, and kingfishers along streambanks.</i></p>	<p>Watch for duck and other waterfowl nests after March. Avoid water manipulation if birds are present and activity could impact nests.</p>	<p>Avoid inundating wetlands if red-winged blackbirds are nesting in cattails and tall reeds.</p>

Appendix F

City of Portland Special Status Bird Species Most Closely Associated with Special Status Habitats

Wetlands

Wetlands are covered or saturated with water during all or part of the year. Permanently wet habitats include backwater sloughs and marshes, while seasonally wet habitats include forested and/or scrub shrub wetlands, emergent marsh, headwater seeps and springs, and wet prairies. Marshes (including emergent marshes) occur in depressions (topographic low areas), fringes around lakes and along slow-flowing streams, especially in valley bottoms. Marshes are seasonally or continually saturated and have water-adapted plants such as sedges, rushes, cattails, and floating vegetation. Marshes can have mucky soils resulting in water with high mineral content. Off-channel habitat (oxbow lakes, stable backwater sloughs, and flooded marshes) is created as rivers and streams change course. In these areas, water moves slowly, providing quiet aquatic habitats important for fish and wildlife. In these off-channel wetland areas, vegetation around the fringe often includes shrub and tree species, such as spirea, ninebark, rose, dogwood, willow, and ash.

Closely Associated Special Status Bird Species: American bittern, great blue heron, green heron, wood duck, bufflehead, northern harrier, sora, dunlin, short-eared owl, common yellowthroat

Aquatic Habitats – Lakes, Rivers and Streams

Freshwater aquatic habitats include rivers, streams, ponds, lakes, springs, seeps and reservoirs. They occur above the influence of tides and salinity fluctuations.

Freshwater aquatic habitats typically contain water year-round (whereas wetlands may dry out through the season).

Closely Associated Special Status Bird Species: great blue heron, green heron, wood duck, bufflehead, hooded merganser, bald eagle, dunlin, Vaux's swift, purple martin, yellow warbler

Grasslands

Willamette Valley grasslands, or upland prairies, are dominated by grasses, forbs, and wildflowers. Grasslands have well-drained soils and often occur on dry, south facing slopes or shallow-soiled balds. These grassland habitat types are often associated with low-density tree cover (5-30%) savannahs. Historically prairies were maintained by the Native American practice of setting frequent low-intensity fires. With fire suppression (or in abandoned pastures), many such areas have succeeded to forest. The dominant vegetation of these native grasslands were perennial bunchgrasses such

as Roemer's fescue and California oatgrass, with abundant and diverse herbaceous plants. Scattered, open-growth trees such as Oregon white oak, Douglas fir, or ponderosa pine within the grassland characterize a savannah. Uncommon now, such savannahs and grasslands once covered about 1/3 of the Willamette Valley.

Closely Associated Special Status Bird Species: northern harrier, American kestrel, streaked horned lark, vesper sparrow, western meadowlark

Oak Woodlands

Oak woodlands are characterized by an open canopy dominated by Oregon white oak. In general, the understory is relatively open with shrubs, grasses and wildflowers. Oak habitats can be found in drier landscapes, such as south facing slopes. In Portland, oak woodlands are found in small isolated pockets.

Closely Associated Special Status Bird Species: band-tailed pigeon, western wood-pewee, Hutton's vireo, white-breasted nuthatch, black-throated gray warbler, chipping sparrow, Bullock's oriole

Bottomland Hardwood Forest (Riparian Habitats)

Riparian habitats are those adjacent to rivers and streams or occurring on nearby floodplains and terraces. Riparian habitats are shaped and maintained through seasonal flooding, scour, and soil deposition. Riparian habitats vary from sparsely vegetated areas to cottonwood gallery forests. Plant composition is influenced by elevation, stream gradient, floodplain width, and flooding events. Floods replenish nutrients, recharge groundwater, and reset successional processes. Riparian vegetation is mostly dominated by deciduous trees and shrubs, such as big leaf maple, red alder, black cottonwood, Oregon ash, red-osier dogwood, and numerous willow species.

Closely Associated Special Status Species: great blue heron, green heron, wood duck, hooded merganser, bald eagle, band-tailed pigeon, downy woodpecker, pileated woodpecker, willow flycatcher, red-eyed vireo, brown creeper, Swanson's thrush, orange-crowned warbler, yellow warbler, black-throated gray warbler, common yellowthroat, Wilson's warbler, yellow-breasted chat, Bullock's oriole

Interior Forest (especially Late-successional Conifer Forests)

Late successional conifer forests are defined by plant species composition, overstory tree age and size, and forest structure. They include characteristics such as multi-layered tree canopy, shade-tolerant tree species growing in the understory, large-diameter trees, and a high volume of dead wood such as snags and logs. Douglas fir is generally the dominant species, but other species found in these forests, at

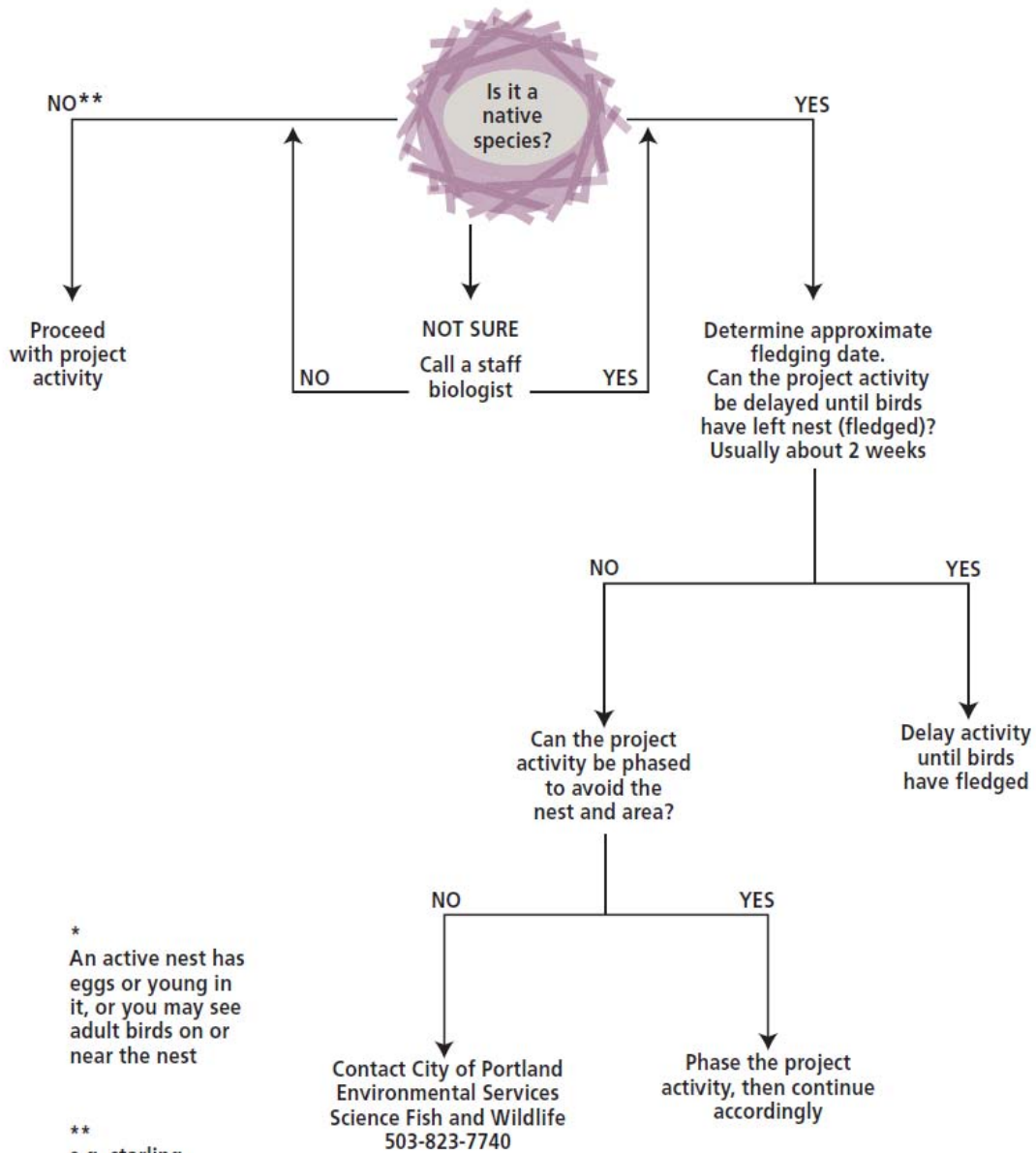
various stages of succession, include western hemlock, western red cedar, big leaf maple, vine maple, and red alder.

Closely Associated Special Status Bird Species: band-tailed pigeon, pileated woodpecker, olive-sided flycatcher, Hammond's flycatcher, Pacific-slope flycatcher, brown creeper, winter wren, Swainson's thrush, varied thrush, black-throated gray warbler, hermit warbler, Wilson's warbler, red crossbill

Note: There are several species are Special Status Bird Species found in Portland that are associated with several habitat types. In some cases, they may be more closely associated with a specific feature that occurs in several habitats, rather than the vegetation of the habitat itself. These species include: merlin, peregrine falcon, common nighthawk, rufous hummingbird, bushtit, house wren, and Nashville warbler.

APPENDIX G

If you find an active* nest on a project site during project implementation



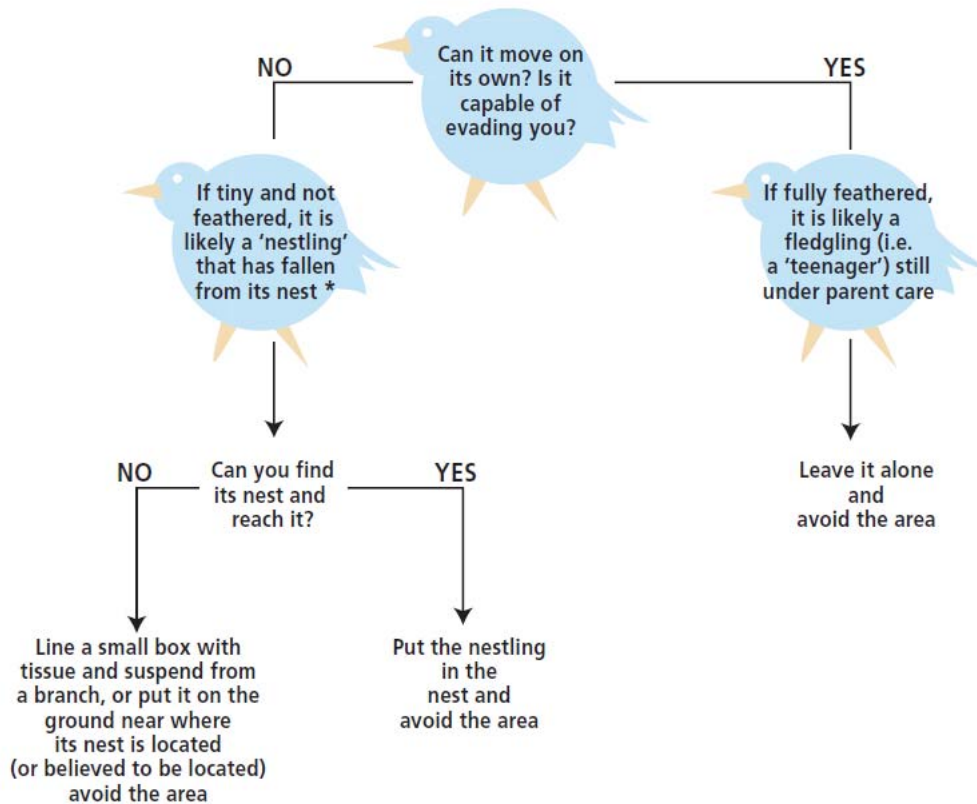
*
An active nest has eggs or young in it, or you may see adult birds on or near the nest

**
e.g. starling, house sparrow or rock pigeon

WS 1045 Sept 2010 © Environmental Services City of Portland

APPENDIX H

If you find a baby bird out of its nest on a project site



*
If CLEARLY injured or KNOWN to be orphaned, you may take it to the Audubon Society of Portland Wildlife Center, 5151 NW Cornell Road, 9 am - 5 pm, 7 days a week

WS 1046 Sept 2010 © Environmental Services City of Portland

Appendix I

ADDITIONAL THINGS YOU CAN DO TO HELP NATIVE BIRDS

ANY HABITAT TYPE

- Be aware of what birds are doing!
 - ♦ Are they carrying nesting material in their beaks and bills? If so, watch where they take it; you might be able to identify the specific tree or clump of bushes where a nest is being built. Avoid disturbing that area.
 - ♦ Are they carrying insects in their beaks and bills? If so, watch where they take them; they are probably feeding baby birds. Avoid disturbing that area.
- Minimize disturbance to large habitat patches to the extent possible. Some species require interior habitats and have large territories.
- Maintain as much connectivity as possible—between habitat patches and to water sources. Migratory birds (as well as other native animals) need corridors for safe travel, foraging, nesting, raising young, hiding from predators, gene flow between populations, and for other life functions.
- Use native tree, shrub and other plant species in restoration projects, and provide a diversity of species and age classes.
- Birds nest in a variety of places—on the ground to the tops of trees. Different species nest in different areas. Therefore, leave herbaceous plants for ground-nesting species, shrubs for “open-cup” nesters, dead trees and snags for cavity-nesters, and trees for canopy-nesters.
- Let seed-bearing plants and dead tree snags stand through the winter to provide habitat, perches, food and shelter.
- Consider leaving dead standing wood (snags). If this presents a safety concern, leave as much of the snag as possible. A trunk that is 20 – 30 feet high can be an important food source, perch, and/or nesting site. If the entire snag must be removed, consider placing part of the tree in another area for wildlife to use. This can make the landscape visually interesting!
- When possible, girdle invasive trees to create snags, rather than removing them. (Note: This approach may not be effective control for some invasive tree species).

- Reduce lawn cover; when possible allow leaves and twigs to decompose on-site.
- Seek natural alternatives to, and reduce the use of, pesticides, herbicides and fertilizers, when practical.
- Seek to minimize people/wildlife conflicts. For example:
 - ♦ Site trails, picnic areas and garbage cans away from nesting habitat.
 - ♦ Hold outdoor concerts and other public events in natural area parks after birds have fledged.
 - ♦ Provide wildlife viewing opportunities at safe distances from wildlife.
- If a site lacks water, consider putting in a water feature, such as a small pond.
- During project implementation, reduce hazards such as landscape netting and other litter, in which birds can become entangled.
- If you come across a baby bird on the ground, don't attempt to return it to the nest; just avoid them, allowing their parents to attend to them. Be careful to not trample vegetation around the bird or the nest, since that can alert predators to their presence.

GRASSLAND HABITATS

- Large open fields with several kinds of grasses of varying heights and densities are ideal. Grasses provide places for nesting, hiding, and feeding; and more variety means they will be attractive to more species that have different nesting and foraging needs.
- Wildflowers attract different insects than do grasses. A variety of native wildflowers means a variety of insects—and that will benefit insect-eating birds.
- It's OK to leave some patches of bare ground. Bare ground is important for some birds for dusting and foraging—and sometimes nesting.
- Create singing perches. Singing perches are important for defending territories and attracting mates. Singing perches should extend above the surrounding plants so that males can be seen and heard. A few shrubs or solitary trees (< 10% cover/area) will help males establish breeding territories. Fence poles, wires, brush and rock piles also work well.
- Mowing is OK if timed to allow for nesting to occur and young fledged.

- Consider fire as a management tool to help restore and maintain this important habitat type.
- Some species that may benefit: Western meadowlark, American kestrel, Savannah sparrow, American goldfinch, Oregon vesper sparrow.
- Want more information? Take a look at *Landowner's Guide to Creating Grassland Habitat for the Western Meadowlark and Oregon's Other Grassland Birds* (a publication of the Oregon Department of Fish and Wildlife).

RIPARIAN AREAS

- Maintain a vegetative riparian buffer zone of native species along streams (at least 100 feet wide, if possible).
- Maintain snags along stream edges for species such as the belted kingfisher. This is important for nesting as well as perching.
- Maintain or create a dense riparian shrub layer of native plants, which will benefit song sparrows, and several kinds of warblers.
- Because breeding and migratory bird densities in cottonwood habitats are generally the highest of all habitat types in North America, retain all large cottonwood trees. They are important to cedar waxwings, western wood-pewees, brown creepers, and finches—as well as larger birds that need big trees for nests (e.g., bald eagles, great-horned owls, and great blue herons).
- Avoid locating walking and biking trails within the riparian area—both to minimize direct disturbance to birds, but also to reduce the amount of vegetation that is removed.
- Some species that may benefit: belted kingfisher, great blue heron, willow flycatcher, Western wood-pewee, yellow warbler, Bullock's oriole, purple martin.
- Want more information? Take a look at *Riparian Areas: Fish and Wildlife Havens* (a publication of the Washington State University Extension's Woodland Fish & Wildlife Bulletin Series, <http://WoodlandfishandWildlife.org>).

FORESTED HABITATS

- Retain existing large coniferous and deciduous trees and large snags for nesting. But retain smaller snags, too, if possible, since these provide important features

for many species—for example, perches for resting and from which to hunt insects, branches that are used for nest-building.

- Create snags through topping and girdling of some green trees. Green replacement tree snags are as important as existing snags because eventually they will replace snags that fall over.
- Retain existing down logs, especially large ones.
- Retain berry and nectar-producing trees and shrubs, and plant additional ones.
- Retain shrub patches.
- Consider creating brush piles, which can provide cover and serve as signing perches.
- Manage for a diversity of native tree species, understory plants and ground cover. Vegetative diversity is usually more important to birds than are plantings of one species.
- Where it's not possible to protect larger trees or create snags, nest boxes might provide some short-term artificial cavities for some species. A useful book is *Birds in Nest Boxes* by Charlotte Corkran (Naturegraph Publishing, Inc. 2004).
- Species that will benefit: pileated woodpecker, hairy woodpecker, Western screech owl, pygmy owl, Vaux's swift, red-breasted nuthatch.
- Want more information? Take a look at:
 - ♦ *Managing Small Woodlands for Cavity Nesting Birds* October 1991 (a publication of the World Forestry Center).
 - ♦ *Rainforest Birds: A Land Manager's Guide to Breeding Bird Habitat in Young Conifer Forests in the Pacific Northwest* – Scientific Investigations Report 2006-5304 (a publication of the U.S. Department of the Interior, the U.S. Geological Survey and the American Bird Conservancy).
 - ♦ *Managing Forest Habitats for Migrant Songbirds* (a publication of the Washington State University Extension's Woodland Fish & Wildlife Bulletin Series, <http://WoodlandfishandWildlife.org>).

HIGHLY-URBANIZED AREAS

- Don't underestimate the value of retaining even single mature big-leaf maple trees or oaks for birds! Big-leaf maples are among the earliest to leaf-out in the Spring,

and therefore one of the first trees to support herbivorous insects—an important food for early spring forest migratory birds, such as yellow-rumped, hermit and Townsend’s warblers.

- Plant native shrubs, including fruit, seed and nectar-producers.
- Connect small habitat patches to other small habitat patches by planting vegetated “corridors”.
- Some species that will benefit: warblers, spotted towhee, house finch, Bewick’s wren, song sparrow.

Questions? Contact:

Claire Puchy, Bureau of Environmental Services—Science, Fish and Wildlife Program
503-823-3045; clairep@bes.ci.portland.or.us

Dave Helzer, Bureau of Environmental Services—Columbia Slough Watershed
503-823-5760; davidhelzer@bes.ci.portland.or.us

Jennifer Devlin, Bureau of Environmental Services—Fanno/Tryon Creek Watersheds
503-823-6182
jenniferd@bes.ci.portland.or.us

Find injured or orphaned birds? Contact:

Audubon Society of Portland Wildlife Care Center
503-292-0304

ATTACHMENT M

CITY OF PORTLAND
TERRESTRIAL ECOLOGY ENHANCEMENT STRATEGY

GUIDANCE:



LIVING WITH
AMERICAN BEAVER
(Castor canadensis)

Version 1
October 2010



ENVIRONMENTAL SERVICES
CITY OF PORTLAND

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INTRODUCTION

The Terrestrial Ecology Enhancement Strategy (TEES) is part of the City of Portland's 2005 Watershed Management Plan (PWMP). It is intended to help achieve the watershed health goals and objectives for biological communities. Information about terrestrial plant and animal species and habitats in Portland inform the ongoing implementation of the PWMP.

The main elements of the TEES include:

- Identification of priority plant and animal species and terrestrial habitats in need of protection, conservation and/or restoration
- Identification and prioritization of key management issues
- Recommendations for watershed-specific objectives
- Identification of priority strategies and actions
- Selection of species and habitats to be monitored
- *Guidance to city bureaus and citizens for improving species and habitats, and for addressing plant and wildlife management issues*

PURPOSE

American Beavers provide important watershed health and ecological benefits, yet are of management concern because of the damage they sometimes inflict on property. Striking a balance can be challenging, particularly in an urban setting. The purpose of this document is to offer guidance for living in harmony with this species, and (to the extent possible) for incorporating beaver activity into watershed management decisions and restoration projects—particularly for salmon recovery.

There are many excellent websites and resources that address the subject of living with beavers (see the section of this document titled, "RESOURCES and REFERENCES"). This guidance document draws upon those resources, and presents information that is particularly relevant to watershed restoration activities of Portland's Bureau of Environmental Services and management actions of Portland Parks & Recreation. Information presented here may be useful in project selection, project design and habitat management. These guidelines are advisory only, except where state laws and regulations are cited.

This guidance document is organized into four main sections:

- ▶ **American Beavers in the Pacific Northwest**
Includes information about beaver ecology, watershed benefits beavers provide, presence of beavers in Portland, and issues associated with being a species of management concern.
- ▶ **Guidelines for “Living With Beavers”**
Presents guidelines for characterizing site conditions, identifying specific objectives for encouraging or discouraging beaver activity, and identifying appropriate actions and management strategies.
- ▶ **Oregon Laws, Rules and Policies**
Summarizes current laws, rules and policies pertaining to beavers.
- ▶ **Resources and References**
Contains sources of information used or cited in this document, along with other useful resources for readers desiring additional information.

AMERICAN BEAVERS IN THE PACIFIC NORTHWEST

The American Beaver is widely considered **a functional keystone species**—a “species whose removal would most alter the structure or function of the community” (Marcot and Vander Heyden, *Wildlife-Habitat Relationships in Oregon and Washington*, p. 185). The American Beaver was selected as a focal species for “Riparian Areas of Rivers and Streams Focal Habitat” in the Draft Willamette Subbasin Plan (Northwest Power and Conservation Council by the Willamette Restoration Initiative 2004) because of its capacity to modify habitat in ways that benefit many other species. The biological objectives in the Subbasin Plan are aimed at maintaining or expanding existing numbers and geographic distribution of beaver populations, through protection, restoration, and management of suitable habitat throughout the Willamette Basin.

At the statewide level, the Oregon Department of Fish and Wildlife coordinates a Beaver Workgroup that is focused on identifying and supporting research and information gaps that need to be addressed in order to improve understanding of beaver ecology and management. Such research will help maximize the ecological benefits that beaver provide and minimize negative economic (or other) impacts.

Beaver Ecology

Beavers live throughout wooded and partly wooded portions of the Willamette Basin, with highest densities in the Coast Range. They typically inhabit rivers, 2nd to 4th order streams, lakes and sloughs. Beavers select relatively low-gradient channels with geomorphic characteristics that make them suitable for dam and

lodge building (Suzuki & McComb 1998); they usually avoid areas with rocky or bedrock banks¹. There are few beaver lodges in western Oregon; instead, beavers are more likely to tunnel into stream banks for resting, staying warm, overwintering, giving birth and raising young.

Beavers are notorious for building dams across creeks and other watercourses to impound water. This creates deep water for protection from predators, for access to food supplies, and to provide underwater entrances to dens. Beaver typically build their dams August – October when rainfall and stream flows are lowest and water temperatures are highest. As water levels recede in the summer, beaver activity shifts towards building and maintaining channels that lead to nearby ponds and food sources.

Beavers eat the leaves, inner bark, and twigs of trees and shrubs, preferring aspen, cottonwood, willow, fruit trees and some ornamentals. They also eat ferns, aquatic plants, grasses and crops. Although they eat coniferous trees, more often they girdle and kill these trees for dam-building, rather than for food.

A mated pair of beaver will live together for many years—sometimes for life. They breed between January and March, and litters of one to eight kits (averaging four) are born between April and June. Beavers live in colonies of two to 12 individuals, comprised of an adult breeding pair, the kits of the year and kits of the previous year(s).

Watershed Benefits

A beaver's ability to intentionally alter the landscape is second only to humans. Through dam building and feeding, beavers alter hydrology, channel geomorphology, biogeochemical pathways, and community productivity². Perhaps their greatest contribution is their role in creating diverse aquatic habitat structure, which collectively results in many watershed benefits:

- Attenuated peak flow volumes and velocities reduce channel incision and bank erosion while increasing localized flood storage capacity.
- Trapped sediments behind dams and in surrounding floodplains provide a growth medium for grasses and other herbaceous and woody plants.
- Increased vegetative structure strengthens streambanks for protection during erosive flows, and further contributes to increased sediment deposition, retention and filtration on gravel bars and floodplains.
- Increased sediment filtration and accumulation reduces the amount of solids transported downstream, improving water quality.

¹ http://www.dfw.state.or.us/wildlife/living_with/beaver.asp

² *Ecosystem Alteration of Boreal Forest Streams by Beaver (Castor Canadensis)* by: Robert J Naiman, Jerry M Melillo, John E Hobbie; *Ecology*, Vol. 67, No. 5. (1986), pp. 1254-1269.

- Stored woody debris and leaf litter supports aquatic insect production—an important food for fish.
- Riparian plant communities (willow, cottonwood and alder) thrive amongst beaver activity. Beaver cuttings cause dense vegetative growth; each cut willow stem can lead to 3-4 new stems.

Ecological Benefits

In addition to affecting watershed processes and functions, beaver dams and ponds create slack water habitat for juvenile salmon to feed and grow. Debris jams, fallen trees, and brush provide cover for fish to hide from predators and refuge during high flows. The accumulation of downed woody debris in channel and in surrounding floodplain areas also provides nesting and roosting habitat, and food and cover for upland wildlife, waterfowl and songbirds, and other native wildlife, such as mink, otter, turtles, frogs and salamanders. Willows, cottonwood and alder thrive with beaver cuttings (as long as the habitat is extensive enough that forage species are not severely impacted or eliminated by the beaver activity); the resulting denser vegetative growth patterns benefit other species such as nesting songbirds. Hence, American Beavers fill a specific ecological function within a larger biological community; their reduction or extirpation can significantly alter or lower the biological diversity and productivity of an ecosystem. This was observed in Oregon in the early 1900's. Unregulated trapping in streams nearly eliminated the species from Oregon by the early 1900s, and was determined to be a key factor in the decline of stream health and salmonid productivity. With regulated trapping, beaver populations have recovered throughout the State in areas where sufficient suitable habitat is present.

Beavers in Portland

Historically beavers were widespread and were an integral part of Portland's watersheds. Although the current beaver population in Portland area is nowhere near historical levels, beavers currently reside in all of the City's watersheds. As city employees become better informed of the nature and location of beaver activity, a database and linked map for tracking beaver activity can be established. These tools may be useful in designing and modifying projects to accommodate beavers and/or address beaver interactions.

Beaver as a Species of Management Concern

The American Beaver provides many watershed benefits, but it is also a species of management concern in Portland. Flooding behind dams and tree girdling and felling can damage property and affect human health. In these circumstances, beavers are often a perceived nuisance. The subsequent section describes the City's "Living with Beavers" watershed management approach, and provides guidelines for balancing the benefits and risks of beaver presence in Portland.

GUIDELINES FOR “LIVING WITH BEAVERS”

“Living with Beavers” is the City’s approach on how to best receive the benefits gained by this functional keystone species, while recognizing the potential for human /wildlife conflicts. The following section provides guidelines for City resource managers and municipal property owners on how to best manage for beavers in Portland. These may be applied in both general watershed management and also in project design and implementation situations.

The three main steps (for which details are provided), include:

- *Monitor and characterize site conditions and beaver activity* in the area of interest; identify site constraints or opportunities, and potential human / wildlife conflicts.
- *Establish specific objectives* relative to the City’s watershed goals based on site characteristics, constraints and opportunities - either encourage and manage for beavers, or discourage nuisance beaver activity if human / wildlife conflicts prevail.
- *Identify actions and management strategies* best suited to the area of interest.

Monitor and Characterize Site Conditions

Resource managers should spend time monitoring watershed conditions on sites of interest, including hydrologic conditions (water features), habitat (aquatic and terrestrial), water quality (if relevant) and biological communities. City staff are encouraged to use the *Terrestrial Ecology and Enhancement Strategy Short Form* to document existing conditions, and to help plan potential future actions that both improve conditions for wildlife and minimize human/wildlife conflicts.

<http://www.portlandonline.com/bes/index.cfm?c=51502#a=272859>.

Beavers are not always seen during site visits. Furthermore, they may be confused with two other mammals (native muskrat and non-native nutria). In order to determine whether beavers are present at sites, it is helpful to be able to discern these three species from one another, and to recognize indications of beaver activity such as dams, dens, slides and scent mounds (see **Appendix A**).

Based on the TEES site characterization, resource managers can then document potential opportunities to attract beavers, or conversely recognize constraints that warrant exclusion (or prevention) of beavers. Beavers on their own will colonize riparian areas and creeks that are suitable. However, there may be circumstances that preclude beaver activity due to low population numbers or limited access and migration. With this in mind, there may be areas where resource managers wish to attract (or at least tolerate) beaver activity to stimulate watershed processes, such as re-establishing floodplain connectivity.

Analysis of western Oregon streams by the Oregon Department of Fish and Wildlife suggests that suitable beaver habitat generally has the following characteristics:

- Small, year-round (perennial) streams with an active channel width 13- 20 feet wide
- Valley width greater than 2 times the active channel (bank-full) width
- Less than 6% stream gradient
- Stream canopy cover 25% -50% [not in ODFW guidelines—source?]
- Abundant food supply (i.e., a density of more than 220 trees/acre of small (6 – 12 inches DBH), primarily deciduous trees or shrubs adjacent to the stream

The lower 2.5 miles of Tryon Creek (within Tryon Creek State Natural Area), has characteristics similar to those listed above. Beavers likely played a key role in shaping the ecological form and function of that watershed. The area has greater opportunities for floodplain reconnection due to the absence of homes, roads and other infrastructure in the Coastal Management Zone (CMZ)/floodway of the stream.

An example of site characterization for a stream restoration project in Tryon Creek State Natural Area (Oregon State Parks) near River Mile 1.5 might be as follows:

Beaver activity has been documented in the past. None currently exists. No infrastructure is within 0.5-miles of project reach. The riparian corridor supports young and mature riparian vegetation. Project goal is to increase instream habitat and add complex structure to the channel to better activate surrounding floodplain areas. Beaver dams could provide added value to watershed functions by backing-up water onto surrounding floodplain areas.

Establish Specific Objectives

Recognizing the many watershed benefits that beaver activity can impart as well as the potential risks to property, the decision to attract and encourage beavers into a particular area should be carefully evaluated. Questions to ask when considering beaver activity include:

- What hydrologic and physical conditions should be monitored that have the potential to cause damage to homes, roads or buildings?
- Are there trees that could, if damaged by foraging or changes to hydrologic function, damage homes or buildings?

- Are native riparian plant communities present on site *and also* within a minimum of a half mile of the project site to provide adequate resources for food and dam building over time? A minimum of a half mile of vegetated streambank or 20 acres of forage area are needed during the summer to support a family unit of 3-12 individuals. Plant communities should consist of a variety of herbaceous and woody plant communities.
- Is the stream gradient suitable for prolonged use by beavers (typically less than three percent but up to six percent)?
- Can the stream corridor support dam building (typically bank-full widths of 13-26 feet)?
- Is there a sufficient riparian corridor at/near the project site?
- Are stream banks and channel streambeds “formable” (i.e., not incised down to bedrock), to support dam building? Bedrock channels can be dammed; however upstream habitat usually is not desirable.
- Is there sufficient area to accommodate impounded water?
- Are there nearby beaver colonies (within 5-6 miles of the site)? If so, beavers have a better chance of finding your site.

Considering these characteristics will help resource managers and project managers better establish objectives for a particular area, stream reach, culvert, roadway or property. To the extent feasible, objectives should:

- be specific, measurable, attainable, realistic and time-bound;
- set clear expectations for extent of acceptable beaver activity, and identify “benchmarks” or “triggers” for taking action to prevent and reduce beaver activity; and
- be included in project design, and/or land use plans as appropriate; and
- include site monitoring protocols for monitoring and documenting active use and development at the project site.

An example of an objective for encouraging beaver activity (with contingencies) for a stream restoration project in Tryon Creek State Natural Area (Oregon State Parks) near River Mile 1.5 might be as follows:

Beaver activity including dam building, ponding water, tree girdling and felling are acceptable between river mile 0.5 to 2.4 as long as activity does not cause substantive erosion and damage to storm-water, sanitary line and State Park property. Newly planted riparian plant communities will be protected for first 5-years after projects are constructed.

Identify Actions and Management Strategies

If well-crafted, the objectives will give resource managers and project managers enough information to prescribe site-specific or project-specific actions and management strategies. It should be clear whether the long-term goal is to encourage or discourage beaver activity.

Encouraging Beaver Activity

If it is appropriate to encourage beaver activity and clear objectives have been crafted, the following guidelines may be useful (**Appendix B** provides more specific guidance on these topics):

- Plant tree and herbaceous plant species that are preferred by beavers.
- Plant adequate densities to provide sufficient food and den-building materials, while protecting some trees for succession (beavers will abandon sites when food supplies are inadequate).
- Exclude (e.g., fence-off) constructed and revegetated “natural” areas to protect those areas
- Create or protect corridors to natural forage areas.
- Fence off areas so as to give beavers refuge from predators, pets, and human interactions.
- Construction near beaver communities should occur during the midsummer to avoid times of peak beaver activity (which is in the fall).
- Build structures that provide beavers with stable foundations in which to build dams upon or in front of (i.e. log structures and/or multiple floodable terraces).
- Allow for changes in hydrology; allow for floodable terraces.
- Inform surrounding landowners of your intent and provide materials (e.g., fencing, trees that beavers do not prefer) to mitigate for interactions outside of the project area.

Beaver Relocation and Re-introduction

Oregon Department of Fish and Wildlife’s general policy is to not release beavers into urban areas to re-establish populations. Presumably, most prime habitat is already occupied by beaver, and therefore relocation is not likely to be effective. Beavers require a lot of food and if released into an area without an adequate food supply, will readily move in search of new forage. Notably, in rural areas, only **12%** of relocated beavers stay in their new stream systems; the average distance from release site to the area of establishment is 8 miles.

If identified as a desired need, however, all beaver relocation activities and release locations must be pre-approved by ODFW and cannot proceed without a permit from that agency. ODFW adopted *Guidelines for Relocation of Beaver in Western Oregon* in May, 2010. The guidelines establish standards for when, where, and by whom beaver may be relocated on public and private lands in

western Oregon, and provide a process for monitoring and evaluating the success of beaver relocation efforts. The guidelines also provide direction to ODFW staff when evaluating applications to relocate beaver.

Discouraging Nuisance Beaver Activity

Depending upon the location of beaver activity and whether it is causing property damage, resource managers and property owners may consider one or more courses of actions to prevent and reduce beaver damage (**Appendix B** provides more detailed guidance on these topics):

- Dam removal and modification is a short term solution; habitat alteration such as removal of forage and construction material may be more effective³.
- Planting sites with species that beavers do not prefer may be effective. Those species include: Sitka spruce, elderberry, cascara, osoberry (Indian plum), ninebark, and twinberry.
- Do not plant species preferred by beavers near beaver trails and other known beaver activity areas.
- Exclusion or fencing of areas and caging trees needing protection works, but needs to be monitored to maintain effectiveness.
- Applying a product called “4 The Birds” to trees has been found to be effective by City of Portland stormwater maintenance crews. Electric fences and abrasive paints may deter some foraging behavior as well. Natural scent deterrents such as scat or urine from predators are less effective; chemical deterrents have not been shown to work.
- As a last resort, ODFW’s biologists should be contacted. They can recommend authorized trappers for culling or relocation, if applicable.

STATE LAWS, RULES AND POLICIES

Beaver are legally classified as “Protected Furbearers” in Oregon. Oregon Administrative Rule (OAR) 498.012 states that no one shall take any wildlife the Fish and Wildlife Commission has classified as “protected”. However, there are exceptions to this rule: 1) Beaver may be harvested during established seasons with a valid Furtaker’s License, and 2) Oregon Revised Statute (ORS) 610.105 provides the authority for private landowners to lethally remove beaver and other rodents from their lands without a permit from the Oregon Department of Fish and Wildlife. ODFW promotes “Living With Wildlife,” and encourages public and private landowners to first use beaver exclusion devices and habitat modification techniques for alleviating beaver damage. These methods are also suggested to prevent damage (see **Appendix B**).

³ Vegetation removal should be done so as to not impact nesting birds or other wildlife. Please refer to the City of Portland’s TEES Guidance document: *Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects* (October 2010).

ODFW's response to beaver damage (e.g., loss of or harm inflicted on land, livestock or agricultural or forest crops) is guided by Oregon Revised Statute 498.012 which authorizes landowners to take wildlife that is causing damage, is a public nuisance, or poses a public health risk on their land. Beavers causing damage on *public* lands are protected by their status as a Protected Furbearer and require a permit from ODFW before any action can be taken. Beavers on *private* lands fall under OAR 610.002 (which defines "Predatory Animal") and OAR 610.105 (which gives a private landowner the authority to "take" predatory animals or noxious rodents). These two statutes are implemented by the Oregon Department of Agriculture.

ODFW typically makes a determination of damage over the telephone based on the information provided by the complainant - e.g., loss of crop trees, damage to roads or other human structures from beaver damming activities. ODFW documents beaver damage complaints on a wildlife damage complaint form that includes fields for describing the claimed damage and quantifying the monetary value of the damage. ODFW generally does not have the staff resources to go to sites and evaluate damage first-hand. They typically provide technical assistance to the landowner - giving them advice and providing them with the current list of ODFW-permitted Wildlife Control Operators (WCO). Multnomah County does not provide assistance with beaver issues. Similarly, the City of Portland does not provide assistance to private landowners.

Trapping to address damage can be done by the landowner or their agent (i.e., Wildlife Control Officer). Trapping to address damage can occur within the furbearer season as per applicable OARs or outside the furbearer season. A landowner cannot retain beavers taken within the trapping season without a proper trapping license.

Live trapping of beavers is legal, but the relocation of beavers (or any wildlife) is illegal without a permit from ODFW. All release locations need to be approved by ODFW. ODFW issued beaver relocation guidelines for Western Oregon in May 2010. These can be downloaded from the ODFW website: http://www.dfw.state.or.us/wildlife/living_with/docs/Guidelines_for_Relocation_of_Beaver_in_Western_Oregon_052610.pdf.

The purposes of the relocation guidelines are to establish standards for when, where, and by whom beaver may be relocated on public and private lands, and to provide a process for monitoring and evaluating the success of beaver relocation efforts. They also provide direction to ODFW staff when evaluating applications for relocating beaver. *ODFW is currently not releasing beaver into urban areas to re-establish populations.*

Quick Legal Facts Regarding Beavers

On Public Land: Classified as Protected Furbearers. Laws are implemented by ODFW.

On Private Land: Are considered a Predatory Animal. Laws are implemented by the Oregon Department of Agriculture. Landowners or their agents may lethally remove beaver without a permit from ODFW. ODFW's website has a list of ODFW-licensed Wildlife Control Operators.

Live-trapping and Relocating Beavers: Refer to the ODFW Beaver Relocation Guidelines, which include a process for evaluating applications and selecting release sites. An ODFW permit is required to live-trap and/or relocate beaver.

Removal of Beaver Dens: ODFW does not recommend dens be removed, but does not require a permit to do so. *Note: Removing muskrat lodges is prohibited.*

Removal of Beaver Dams: ODFW does not recommend dams be removed, but does not require a permit to do so.



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Appendix A [add photo credits]

BEAVERS, MUSKRAT AND NUTRIA

There are three large semi-aquatic rodents in the Portland area — beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*) and nutria (*Myocastor coypus*). Beaver and muskrat are native; nutria are non-native. Although they resemble one another, there are some important differences that will help you tell them apart.

Native Species**American Beaver** (*Castor canadensis*)

Characteristics: Broad (horizontally flattened) and almost hairless tail. Length is between 39 and 47 inches. They weigh between 35 and 50 pounds or more. Fur color appears reddish brown to black. Each foot has 5 digits. The hind feet have webbing, but the front do not.

Also look for: “Girdled” or “felled” trees, limbs with bark removed. Beaver prefer certain tree and shrub species. These include aspen, cottonwood, willow, conifers, fruit trees, and ornamentals. Dams and lodges made from limbs and mud. Primary dam building is August – October. “Slides” (“slicked-down” paths where they enter and leave water; 15 – 20 inches wide and at right angles to the shoreline). Channels that lead to their ponds (sometimes look human-made). Look also for scent mounds.

**Muskrat** (*Ondatra zibethicus*)

Characteristics: Much smaller than a beaver, and not as large as a nutria. About 16 – 25 inches in length. May reach a maximum of only 4 pounds. Long, rat-like tail that is flattened vertically. The dense grayish underfur is overlaid by long, glossy guard hairs that vary in color from dark brown to yellowish brown. Guard hairs are long and coarse on the back and finer on the side and the belly. Food consists of aquatic and semiaquatic vegetation (including grasses, rushes, sedges, cattails, etc). They also eat mussels, snails, and crayfish. Unlike beavers, they are not strict vegetarians.

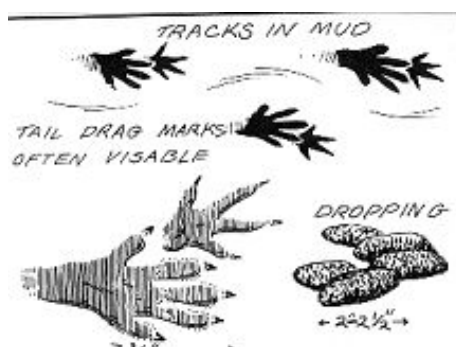
Also look for: Lodges that are smaller than beaver lodges and built from marsh vegetation, not sticks.



Non-native Species

Nutria (*Myocastor coypus*)

Characteristics: Much smaller than the beaver; much larger than the muskrat. May reach a maximum of 20 pounds. Mature adults are about 2 feet in length. Muzzle is covered by white coarse hair. Tail is hairy and round (not compressed from side to side) and pointed at the tip. Hind legs are much longer than the front legs, giving them a hunched appearance when on land. Hind feet are webbed. Large incisors are yellow to orange-red.



Also look for: Floating platforms up to 3 feet high that they make from aquatic vegetation. Burrows in vegetated banks near waterways and collapsing banks and road beds (especially where slope is more than 45°).

Food consists almost entirely of aquatic and semiaquatic vegetation (including grasses, rushes, sedges, cattails, etc).



Appendix B. ENCOURAGING AND DISCOURAGING BEAVERS

ENCOURAGING BEAVERS

Treatment Category	Description	Example / Specifications
Tree and Other Plantings	<p><u>Species</u> – Plant tree and herbaceous plant species preferred by beavers.</p> <p><u>Plant Density</u> – Plant adequate densities to provide sufficient food and den-building materials. Protect some trees for future use (beavers will abandon sites when food supplies are inadequate).</p>	<p>Densely plant aspen, cottonwood, willow, spirea (hardhack), and red-twig dogwood. Once their roots are well-established, the upper parts of these species often re-sprout after being eaten by beavers.</p> <p>See specifications under “Tree Protection” in “Discouraging Beavers”.</p>
Access to Food	<p><u>Corridors</u> – Create or protect corridors to natural forage areas. Remove existing barriers.</p>	<p>Identify any corridors that beaver are using and avoid creating barriers to foraging areas.</p>
Natural Attractants		<p>In California, there has been some success in luring beavers to new locations by leaving otter scat at the site, spraying almond extract on willow trees? to attract beavers to willow stands that need thinning, and placing favorite food (e.g., fresh willow or poplar branches) at the desired site.</p>
Safe Refuge	<p><u>Fencing</u> – Fence off areas to give beavers refuge from predators, pets and human interactions.</p>	<p>See specifications under “Tree Protection” in “Discouraging Beavers”.</p>
Promoting Dam-building	<p><u>Structures</u> – Build structures that provide beavers with stable foundations on which dams can be built (or can be built in front of).</p> <p><u>Flowing water</u> - Damming behavior in beavers is stimulated by the sound and feel of flowing water. Make system modifications that increase the noise of running water.</p>	<p>Construct log structures and/or multiple floodable terraces.</p> <p>A series of 3 – 5 inch diameter non-treated lumber posts or live willow posts spaced 18 – 24 inches apart can serve as a foundation for beavers to build a new dam. If you place the woody material from a dam that has been removed or blown out upstream from the posts, beavers will use it to start the new dam.</p> <p>Add rocks and other features that increase the noise of running water.</p>

ENCOURAGING BEAVERS

Treatment Category	Description	Example / Specifications
Hydrologic Considerations		Allow for changes in hydrology by allowing for floodable terraces.
Timing of Project Construction		Construction near beaver communities should occur during the midsummer to avoid times of peak beaver activity (which is in the fall). However, care must be taken to avoid impacts on nesting birds.
Maintain Beaver Dams and Ponds	<u>Flow devices</u> – Install a beaver deceiver or flexible leveler.	It may be possible to make a change in the depth of a beaver pond to prevent flooding by installing a flow device at the intended depth that extends upstream and downstream of the dam. The flow device (a beaver deceiver or flexible leveler) keeps the rise in water level in the pond at a minimum by using one or more plastic pipes to continually drain the pond area. In general, at least 3 feet of water in the pond area will need to be maintained for the beavers to stay.
Public Relations	<u>Communication Strategy</u> – Develop and implement a communication strategy early in project design. Implement the strategy throughout project implementation and thereafter.	Inform surrounding landowners of your intent. Provide materials (e.g., fencing) to mitigate for interactions outside of the project area. Provide landowners with trees that beavers do not prefer. Sitka spruce, elderberry, cascara, osoberry (Indian plum), Pacific ninebark and twinberry are <i>not</i> preferred food plants. Plan to have ongoing communication with, and outreach to, landowners.

DISCOURAGING BEAVERS		
Treatment Category	Description	Example / Specifications
Protection of Individual Trees	<u>Tree Cages</u> - If beaver are cutting down trees and the number of trees susceptible to damage is minimal, tree cages can be used to prevent damage.	<p>Cages can be made from fencing material (e.g., hog wire, welded wire, or heavy-gauge chicken wire). Metal fence posts can be pounded in around the tree. Wrap wire around the fence posts and anchor with hog rings or zip ties. Leaving a 6-to-12 inch space between the wire cage and the tree trunk may discourage beavers from trying to chew between wires and allow for tree growth. Some form of stake or support will be needed to keep beavers from pushing fencing against the tree trunk to chew. Tree trunks should be wrapped to a height of at least 4 feet, or (in areas where flooding is common) at least 2 feet above the high-water mark. Barriers can be painted to make them less noticeable. Welded wire fencing coated with green vinyl helps fencing blend in. Lengths of corrugated plastic drainpipe can be attached around trunks of narrow-diameter trees. However, dark-colored pipe can burn trunks that are in full sun. If so, try using wider-diameter pipe or pipe with holes to prevent overheating.</p> <p>Place wire cages (beaver guards) on 50% of mature deciduous trees at time of site preparation (e.g., invasive species removal) to insure shade cover while restoration plantings are establishing. If needed increase the number, type and extent of cages.</p>
	<u>Abrasive Paint</u> – Beaver don't like the gritty texture.	<p>Use exterior latex paint (with a color to match the bark) mixed with masonry sand (30 mil or 70 mil) in a ratio of 5 oz. (2/3 cup) sand to 1 quart paint. Mechanically mix on the day of application. Paint trunks up to about 4 feet above the ground. Avoid painting young trees less than about 6 feet tall, as it is not effective at protecting seedlings and small saplings, and may harm them.</p> <p>For more information, contact Dale Nolte (Olympia, WA) 360-956-3793.</p>
Protection of Tree Groves	<u>Temporary Fence</u> - To protect larger areas, newly-replanted restoration areas, or if a large number of trees is involved, and cages are not practical, a temporary fence of chicken wire or other similar fencing material may work.	<p>Fencing should be 3 – 4 feet high, securely staked to the ground to prevent beavers from crawling under it, or pushing it over. It should be made from materials that beavers cannot chew through, since they sometimes will use wooden construction materials, even if they do not eat them.</p>

DISCOURAGING BEAVERS

Treatment Category	Description	Example / Specifications
Plant Selection and Establishment	<p>Plant species <i>not</i> preferred by beavers.</p> <p>Densely plant species that survive beaver activity.</p> <p>Plant desired plants away from known beaver trails and dams, and plant ample beaver food source plants nearby.</p>	<p>Sitka spruce, elderberry, cascara, osoberry (Indian plum), Pacific ninebark and twinberry are <i>not</i> preferred food plants.</p> <p>Densely plant aspen, cottonwood, willow, spirea (hardhack), and red-twig dogwood. Once their roots are well-established, the upper parts of these species often re-sprout after being eaten by beavers.</p>
Habitat Modifications	<p>To maintain some benefits of beaver dams and ponds, but minimize flood damage, consider ways to minimize dam construction.</p>	<p>It may be possible to make a change in the depth of a beaver pond to prevent flooding by installing a flow device at the intended depth that extends upstream and downstream of the dam. The flow device (a beaver deceiver or flexible leveler) keeps the rise in water level in the pond at a minimum by using one or more plastic pipes to continually drain the pond area. In general, at least 3 feet of water in the pond area will need to be maintained for the beavers to stay.</p> <p>Clemson Beaver Pond Leveler and the Beaver Pond Control Structure The Clemson Beaver Pond Leveler frustrates beavers by continually lowering the water level behind the dam. A key feature is protective mesh near the intake that prevents beavers from plugging intakes. For further information about the Clemson Beaver Pond Leveler, contact the Department of Aquaculture, Fisheries and Wildlife, Clemson University, Clemson, SC 29634 (503-656-3117) or download information from http://www.clemson.edu/psapublishing/Pages/AFW/afw1.pdf.</p>
Natural Repellants		<p>In California, there has been some success in luring beavers from problem areas to new locations by leaving otter scat at the site, spraying almond extract on willow trees? to attract beavers to willow stands that need thinning, and placing favorite food (e.g., fresh willow or poplar branches) at the desired site.</p>
	<u>Electric Fence</u>	<p>An electric fence may be another option (a 110 Volt, solar-powered, or battery-powered charger attached to a single strand of fencing wire stretched 4 - 6 inches above the ground creates an effective barrier).</p>

DISCOURAGING BEAVERS

Treatment Category	Description	Example / Specifications
Culvert Modifications	<p>Damming behavior in beavers is stimulated by the sound and feel of flowing water. System modifications that reduce the noise of running water through a culvert, or physically move beavers away from a culvert will help reduce dam-building behavior.</p> <p>Modifications to culverts to improve fish passage such as eliminating the "fall" at the downstream end or reducing the slope of the culvert will reduce water noise and reduce conflicts with beaver.</p> <p>A "receiver fence" or a "round fence" can function as a "filter" by diffusing incoming water over a large area, thus minimizing the sound of running water.</p>	<p>To stop dam building at culverts and allow for fish passage, refer to Beaver Deceiver Plans (including Peterson Ponds). http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SurfaceWaterManagement/Deceivergraphs.pdf.</p> <p>To prevent beaver dams from blocking culverts refer to the BeaverStop® and the Flexible Leveler http://www.fsiculvert.com/common/pdfs/Beaverstop-AD-3-54.pdf. http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SurfaceWaterManagement/Flexleveler.pdf.</p> <p>To allow beavers to build dams without plugging a culvert, and allowing fish passage refer to Beaver Diversion Dam. http://www.co.snohomish.wa.us/documents/Departments/Public_Works/surfacewatermanagement/community/pondcontrolplan.pdf.</p>

DISCOURAGING BEAVERS

Treatment Category	Description	Example / Specifications
<i>Relocating or Euthanizing</i>	Removing beavers from an area is difficult and often costly; and in the long-term has not been shown to be effective. Neighboring populations most often recolonize the area for the same reasons the prior community took-up residence. For these reasons, beaver relocation and/or euthanasia should only be considered after actions to prevent and avoid beaver damage have been tried and deemed unsuccessful.	<p>Beaver removal, euthanization, and/or relocation must be pre-approved by the Oregon Department of Fish and Wildlife.</p> <p>Note: Oregon Revised Statute 610.105 provides the authority for private landowners to lethally remove beaver and other rodents from their lands without a permit from the Oregon Department of Fish and Wildlife. However pre-approval and a permit from the Oregon Department of Fish and Wildlife is required to <i>relocate</i> beaver.</p>

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ATTACHMENT N

Portland, Oregon's Bird Agenda



June 27, 2011



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EXECUTIVE SUMMARY

Over 209 species of birds are regularly observed and recorded in the Portland, Oregon and Vancouver, Washington metropolitan region. Some are “resident” species, meaning they are non-migratory. Others spend winters in Central and South America, but breed here. Others pass through on their migratory routes and use local habitats for feeding and resting during their journeys. Twenty-three of the migratory species that occur here have been designated with some type of state or federal status for being at-risk due to population decline and threats.

In 2003, the City of Portland was selected by the U.S. Fish and Wildlife Service (USFWS) to become a pilot city for the Urban Conservation Treaty for Migratory Birds Program. Subsequently, an Urban Conservation Treaty for Migratory Birds was signed by City Commissioner Jim Francesconi with support from then Mayor Vera Katz. Between 2003 and 2006, 31 other agencies and organizations in the Portland metropolitan area signed on as partners. By joining this effort, Portland and its partners have made long-term commitments to help protect and conserve migratory birds in the following action categories:

- Habitat creation, protection and restoration
- Reducing hazards
- Invasive species management
- Education and outreach

Through a grant from the USFWS, the City of Portland launched its Treaty program, and accomplished a number of things to benefit migratory birds. In addition, the City has taken on other actions to carry on their work and commitment beyond the initial Treaty grant to promote the conservation of birds and their habitats. Further, the City of Portland has renewed its commitment to Treaty actions and has identified “next steps” as outlined in this Bird Agenda.

The Portland Bird Agenda is a document that:

- Summarizes the Urban Conservation Treaty for Migratory Birds Program and the City’s accomplishments to date;
- Identifies key issues currently facing migratory birds in Portland; and
- Outlines high priority actions and “next steps” for the City of Portland to take over the next five years.

INTRODUCTION

Background

The Portland area has benefited from a long history of citizens, organizations, elected officials and others that have appreciated and advocated for birds over the years. Various bird-related education and conservation programs have been offered here for well over a century. For example, the Audubon Society of Portland was established in 1902, hosting programs for Portlanders that were as popular back then as they are today.

While the public's interest in birds here and elsewhere is not new, knowledge about birds continues to grow, and the conservation issues that call for our attention continue to shift with the ever-changing times. In recent decades, much of the nation's population has moved out of rural areas and into cities. About 80% of people in the U.S. are now living in urban areas. Consequently, some of the major threats to the nation's biodiversity are now related to factors associated with urbanization and peoples' diminishing sense of connection with nature.

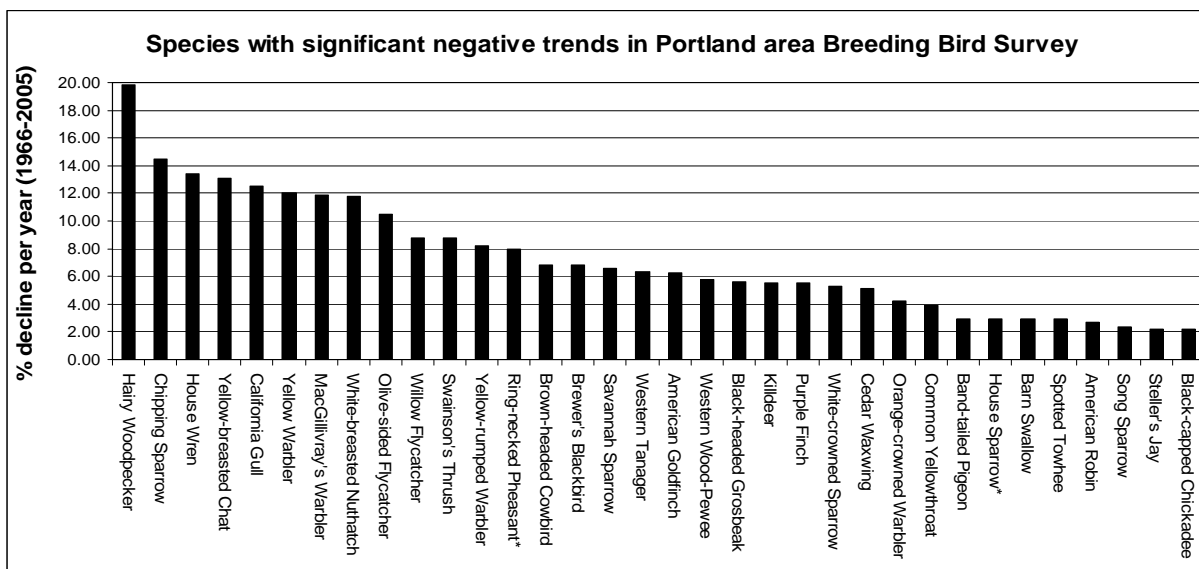
In the Portland, Oregon – Vancouver, Washington region, over 209 species of birds are regularly observed and recorded. Some are “resident” species, meaning they are non-migratory. For example, birds such as scrub jays, spend their whole life in the same neighborhood and never migrate. Others, such as warblers, are migratory; they spend winters in Central and South America, but may breed here. Still others, such as some shorebirds, pass through this area on their migratory routes and use Portland habitats for feeding and resting.

Migratory birds require a variety of different habitats across large landscapes; they travel to and from these habitats seasonally, and use them in order to meet their needs for food, breeding, and over-wintering. The greater Portland, Oregon –Vancouver, Washington metropolitan area is an important part of the major migratory bird travel and stopover route known as the Pacific Flyway, which extends from Alaska to Argentina. Of the birds known to occur in the Portland region, 23 are migratory species that have been designated with some type of state or federal status for being at-risk due to population declines and on-going threats. The same area also is home to the largest human population in Oregon—1.9 million in 2000, but expected to grow to between 2.9 and 3.2 million by 2030, and to between 3.6 and 4.4 million by 2060¹.



¹ Source: Metro. “20 and 50 year regional population and employment range forecasts”. September 2009.

Many of the migratory birds found in Portland show declining population trends based on 40 years of Breeding Bird Surveys and Christmas Bird Count data. Data from the Breeding Bird Survey analyzed by Metro indicate an unsettling trend in local bird populations, trends show that locally, species declines have been greater than declines statewide. The graph below shows species with statistically significant negative trends for the Portland area.



(c) Lori Hennings, Metro (2007)

Issues

Portland has identified a number of threats facing migratory birds. The primary ones include:

- Habitat Loss and Fragmentation
- Timing of Construction and Revegetation Projects
- Cat Predation
- Dogs in Natural Areas
- Public Activity in Sensitive Areas
- Structural Hazards (including Window Strikes and Collision with Communication Towers)
- Invasive Plants and Animals (including Invasive Plants and Animals and Exotic Ducks and Geese in Parks and Natural Areas)
- Climate Change

Issue: *Habitat Loss and Fragmentation*

Habitat loss and fragmentation is the largest cause of decline in native bird species populations². As urbanization occurs, native habitat tends to get destroyed or become degraded, and the remaining patches become smaller and increasingly fragmented (i.e., disconnected) from each other. These smaller pieces of habitat lose important functional values.

² Urban Conservation Treaty for Migratory Birds Program Handbook. U.S. Fish and Wildlife Service (46 pp.).

Natural areas and parks provide some of the most important nesting, feeding and stopover habitat in Portland. Protection and restoration of these existing habitats, creation of new habitats, and providing habitat connections for birds to move safely across the landscape are needed to ensure birds can successfully use and traverse the urban landscape throughout the year. Backyards can provide some of these important habitats for birds, and should not be overlooked.

An important aspect of habitat loss and deterioration is loss of snags and down wood. These elements are essential to many bird species for cover, shelter, food, nesting, roosting, perching. Yet, they are often removed by both public and private landowners because of perceived hazards or aesthetics.

Issue: Timing of Construction and Revegetation Projects

Many City activities and projects can potentially impact nesting birds. Stream enhancement; revegetation; mowing; construction, removal and maintenance of structures; water-level management; and projects that include native or non-native invasive vegetation removal, may disrupt bird nesting. Assessing bird use in areas prior to project implementation and altering the project methods or timing is important if birds are nesting in the area. Planning projects so as to avoid disturbances to birds by scheduling activities in potential habitats outside of the nesting season is the most effective way to ensure birds will not be harmed.

Issue: Cat Predation

Cat predation is a major cause of bird mortality in the U.S. The American Bird Conservancy estimates that up to 500 million birds are killed each year by cats—about half by pets and half by feral felines. Locally, cats are the number one cause of injury for birds treated at wildlife rehabilitation facilities, accounting for as many as 40% of all intakes (Bob Sallinger, Conservation Director, Audubon Society of Portland, pers. comm.). Over the past two decades, at least 20,000 birds, representing more than 80 different species, have been treated at Portland area wildlife rehabilitation facilities for cat-related injuries. Cats are natural hunters, but they are not a natural part of the ecosystem. Studies show the well-fed, well-cared-for outdoor cats are just as likely to prey on wildlife as feral cats that have to fend for themselves. Allowing cats to roam free also exposes the cats themselves to a variety of hazards. The best thing for both birds and cats is to keep cats indoors or in secure outdoor enclosures.

Issue: Dogs in Natural Areas

Portland has more off-leash dog areas than any other city in the United States. Yet many people take their dogs to natural areas to run and exercise. While dogs are allowed in some natural areas on leash, letting a dog run free in land that has been set aside for wildlife is not appropriate. Dogs can harm wildlife through direct predation, disruption of nesting (especially ground nesting birds), and harassment. Although wetlands support populations of waterfowl during all seasons, they are of particular importance during the winter, when they are “home” to thousands of migratory waterfowl. These birds live life on the edge, carefully reserving limited energy to find food, keep warm and avoid predators. Getting repeatedly scared up by off-leash dogs can be the difference between survival and death.

Issue: Public Activity in Sensitive Areas

Many of the most valuable habitats that remain in Portland are under public ownership. It is important that public use and access are carefully sited and managed to ensure that habitat values do not become diminished due to human disturbances and habitat degradation. Portland Parks & Recreation (PP&R) develops Habitat Management and Trail plans for natural areas, which set the course for habitat management and appropriate access. The plans use a set of guiding principles that makes habitat protection and restoration the highest priorities. PP&R also works with neighbors and local schools on stewardship activities to enhance and restore natural areas.

Issue: Structural Hazards

Collision with Communication Towers. A June 2002 report, “Communication Towers: A Deadly Hazard to Birds” by the American Bird Conservancy, estimated that, at a minimum, four to five million birds are killed each year nationwide in collisions with communication towers—but the number could be as high as 40 million. Neotropical songbirds, which migrate at low elevations and at night, are particularly susceptible to collisions. It is believed that their internal navigation systems can become confused by artificial night lighting, and they are attracted to tower lighting. Birds drawn to tower lights can become entrapped and circle endlessly, colliding with each other, with the tower and the guy wires, or dropping to the ground from exhaustion (<http://www.abcbirds.org/abcprograms/policy/collisions/towers.html>).

Window Strikes. Collisions with windows have emerged as a significant threat to migratory birds in the U.S. and around the world. In the U.S. alone, it is estimated that 100 million to 1 billion birds die every year after colliding with windows—a mortality rate second only to habitat destruction. Strikes can occur day or night, at windows of various sizes and aspects, on residences and high-rise buildings, in urban as well as suburban and rural areas. Windows deceive the healthiest individuals as readily as the weakest ones. During the day, birds are confused by reflections of trees, clouds, and even skyline reflected in building glass, and may fly head-on into it because it appears to be habitat. At night, rooftop lighting, interior light spill, and architectural ornamental lighting can “drown out” the celestial cues birds use to migrate and lure them into cities, where they may directly strike windows, circle until they are exhausted, or face daytime hazards they wouldn’t otherwise encounter.

Issue: Invasive Plants and Animals

Invasive Vegetation in Urban Natural Areas. Invasive plant species are among the biggest challenges facing our urban natural areas, and hence, the habitat our native bird populations depend upon. Next to outright conversion of land, invasive species and climate change are generally considered the most important threats to biodiversity. Invasive species play a significant role in altering the landscape and fundamental ecosystem processes, decreasing biodiversity, and damaging infrastructure. In an urbanized and fragmented area, invasive species pose a particularly acute threat to remaining natural habitats. Invasive species generally outcompete native plant species, and provide less food, cover and nesting value for native birds than native vegetation does. Species such as reed canarygrass and English and Irish ivies are capable of homogenizing the structure and biota of habitats, creating biological deserts, which provide few, if any, resources for native birds.

The change in species composition in grasslands and forest understories is decreasing habitat for native birds as well. The spread of rhizomatous, perennial grasses and understory weeds such as garlic mustard eliminates bare ground which many native ground-nesting birds require.

As mentioned under “Timing of Construction and Revegetation Projects” above, another issue related to managing invasive vegetation is how and when the management occurs. Removing invasive species during the nesting season can be disruptive or even cause nest failure. It is important to plan and implement invasive species removal to coincide with times best for eradication *and* to avoid disturbance to nesting birds.

Introduced and invasive birds can outcompete native birds for essential resources such as food and nesting sites, with aggressive non-native birds such as house sparrows and European starlings often usurping and/or depredating native bird nests and even killing native competitors. These actions can have drastic negative effects on native bird populations already stressed by alteration of their historic habitat.

Exotic Ducks and Geese in Local Parks and Natural Areas. Exotic ducks and geese in local parks and natural areas are those that have either been released from captivity or are the offspring of animals that have been released from captivity. Releasing domestic ducks and geese into the “wild” may seem like a kind thing to do, but it is actually considered to be “animal abandonment” and is against the law. Many exotic ducks and geese are poorly adapted to life in the “wild” and easily fall prey to dogs and predatory wildlife. They typically do not migrate and can quickly overpopulate a natural area, leading to habitat degradation, reduced water quality and competition with native ducks and geese that depend on the habitat for survival. Overcrowding in urban natural areas frequently results in aggressive behavior by male ducks during nesting season. Female ducks are forced to nest far away from over-populated parks and then have to lead their ducklings across a hazardous landscape after they hatch. It is not uncommon for females to be injured or killed during intense courtship competition.

Issue: Climate Change

There is growing scientific evidence that some birds are already responding to the changing climate.³ In the future, some species may disappear, some will likely experience range decreases or increases, and others will face challenges of new competitors. Many of the species projected to disappear or whose ranges might shrink are those that feed on insects (some are pests and threats to street trees, parks, landscape plants, and agriculture), which are key components of the diets of many of our migratory birds. Some species that commonly occur in Portland that may be excluded during the summer include the black-capped chickadee, Townsend’s warbler, dark-eyed junco, and evening grosbeak. Some species whose summer range may contract in Oregon include the olive-sided flycatcher, willow flycatcher, horned lark, red-breasted nuthatch, winter wren, warbling vireo, yellow warbler, yellow-rumped warbler, MacGillivray’s warbler, common yellowthroat, Wilson’s warbler, western tanager, Lazuli bunting, fox sparrow, song sparrow, white-crowned sparrow, western meadowlark, house finch, pine siskin and American goldfinch.

How a changing climate will play out in Portland is difficult to predict. What projections are showing, however, is that bird communities will look different in the future. Among the most important things that can be done to prepare and mitigate adverse effects is to protect, buffer and connect habitats, and help restore resilient ecosystems.

3 Global Warming & Songbirds: Oregon. American Bird Conservancy and National Wildlife Federation. 2002.

Urban Conservation Treaty for Migratory Birds

The U.S. Fish and Wildlife Service created the Urban Conservation Treaty for Migratory Birds (Treaty) program to help municipal governments conserve birds that live and nest in or overwinter or migrate through their cities. Launched in 1999, the first treaty was signed with New Orleans and the second was signed with Chicago. The treaties are a partnership agreement between a U.S. city and the U.S. Fish and Wildlife Service (Service) to conserve migratory birds through education, habitat improvement and bird conservation actions (<http://www.fws.gov/birds/Urban%20Treaty%20Fact%20Sheet.pdf>).

The aim of the Treaty program is to increase citizen awareness and understanding of the importance of bird conservation, maintain people's joy of nature through birds, and to identify and support the many roles urban areas can and need to play in order to conserve migratory bird populations into the future.

The Treaty program primarily focuses on four **action categories**:

- Habitat creation, protection and restoration
- Reducing hazards
- Invasive species management
- Education and outreach

Portland Treaty Partnership

The City of Portland was selected to become the fifth city in the nation to pilot the Treaty program. In February 2003, Portland Mayor Vera Katz accepted the invitation to become a pilot city for the Urban Conservation Treaty for Migratory Birds Program (Attachment A).

In May 2003, Portland City Commissioner Jim Francesconi and Dave Allen, Regional Director of the U.S. Fish and Wildlife Service, signed the Urban Conservation Treaty for Migratory Birds as part of the International Migratory Bird Treaty festivities, and 21 organizations signed on as Treaty partners (Attachment B). In May 2006, City Mayor Tom Potter and Miel Corbett, Assistant State Supervisor with the Service renewed the Treaty commitment and ten new organizations signed on as partners.

Urban Bird Treaty Goals

- ☑ Protect, restore and enhance urban/suburban habitats for birds
- ☑ Reduce hazards to birds
- ☑ Educate and engage citizens in monitoring, caring about, and advocating for birds and their conservation
- ☑ Foster youth education with a focus on birds
- ☑ Manage invasive species to benefit and protect birds
- ☑ Increase awareness of the value of migratory birds and their habitats, especially for their intrinsic, ecological, recreational, and economic significance

Convinced of the urgency of taking appropriate measures to protect and promote Migratory birds, on this day of May 13, 2006, the U.S. Fish and Wildlife Service and the City of Portland reaffirm their Urban Conservation Treaty for Migratory Birds and acknowledge the importance of local efforts and partnerships to achieve migratory bird conservation throughout the greater Portland metropolitan region.

~ Excerpt from the 2006 signed Treaty reaffirmation

By joining the effort, these 31 agencies and organizations (Attachment C) have made long-term commitments to help protect and conserve migratory birds, and have formally acknowledged that migratory birds:

- Are an excellent indicator of the overall health of an ecosystem and are an irreplaceable part of the natural systems of the earth.
- Are a valuable resource, contributing aesthetically, culturally, scientifically, and economically to citizens.
- Represent, for the vast majority of people, the sole everyday contact with wildlife. Birds connect all of us to the environment.
- Cross boundaries and ecosystems. Protecting them birds must be a cooperative effort among cities, states, citizens, educational institutions, environmental organizations, businesses and federal agencies.
- Face serious challenges. Many bird species are in decline from a variety of causes including habitat loss and degradation, introduction of nuisance plants and animals, pesticides and other pollutants, and collisions with buildings, cars, powerlines and other human-made objects.

The overall goal of the partnership is to help ensure that migratory birds and their habitats are conserved by promoting, linking and building on the impressive myriad of protection, restoration and educational efforts that are already underway throughout the greater Portland region.

Portland Bird Agenda

Urban areas pose unique challenges, as well as opportunities, for birds. The Portland Bird Agenda is an outgrowth of the Urban Conservation Treaty for Migratory Birds. It was developed by the City to highlight some of the challenges that birds face locally, some of the City's accomplishments to date that benefit migratory birds, and the specific actions that the City is committed to over the next five years.

This Bird Agenda also includes suggestions for actions that Treaty Partners and citizens can take. In the future, this Portland Bird Agenda can be broadened to include accomplishments and future actions of all Treaty Partners.

On February 14, 2011, the Bureau of Environmental Services (BES) and Portland Parks & Recreation sent a joint letter to the U.S. Fish and Wildlife Service, once again renewing the City's commitment to the conservation of migratory birds in Portland (Attachment D). The letter also

Migratory Bird Treaty Partners

American Bird Conservancy
 Audubon Society of Portland
 Berry Botanic Garden
 City of Portland
 Columbia Slough Watershed Council
 Corps Restoring the Urban Environment
 East Multnomah SWCD
 Ecotrust
 Friends of Forest Park
 Friends of Kellogg and Mt. Scott Creeks
 Friends of Oaks Bottom Wildlife Refuge
 Friends of Portland Community Gardens
 Friends of Rock, Bronson, Willow Creeks
 Friends of Smith & Bybee Lakes
 Friends of Trees
 Friends of Tryon Creek State Park
 Jackson Bottom Wetlands Preserve
 Johnson Creek Watershed Council
 Mazamas
 Metro Regional Parks and Greenspaces
 Northwest Ecological Research Institute
 Oregon Department of Fish and Wildlife
 OSU Extension Service, 4-H Wildlife Stewards
 Portland Chapter, Native Plant Society of OR
 Stop Oregon Litter & Vandalism (SOLV)
 Sunnyside Environmental School
 Three Rivers Land Conservancy
 Tualatin Riverkeepers
 Urban Greenspaces Institute
 USDA Forest Service, Mt. Hood National Forest
 Willamette Riverkeeper
 Wolftree

articulated the priorities that would be addressed by the respective bureaus. One of the top priorities was to update and finalize the draft Portland Bird Agenda, and submit it for adoption by the Portland City Council.



ACCOMPLISHMENTS

Actions Under the Original Treaty Grant

With the original \$50,000 grant from the USFWS for the City to launch this program, the City and its partners accomplished a number of things to address the intent of the Treaty:

Habitat Protection and Improvement

- Designated Oaks Bottom Wildlife Refuge as Portland's first urban migratory bird park through a City Council Resolution passed on May 5, 2004. This natural area was chosen because of its large size and diversity of habitats (e.g., open water, riparian, emergent wetland and upland habitats) that are important for nesting, wintering, resting and "re-fueling" to more than 185 species of birds, including some that are unusual for the Portland area.
- Re-established native components of the Oregon white oak plant community on 33 upland acres at Oaks Bottom Bluffs. This neighborhood-based community stewardship program provides a location for long-term educational activities, ecological field studies and research by area universities and schools. This project was supported, in part, by a 2003 Greenspaces grant and was identified as a Treaty action.
- Increased connectivity of bird habitat by purchasing over 150 acres of natural areas.
- Promoted Three-Rivers Conservancy's⁴ backyard conservation certification program.

Reducing Hazards

- Submitted comments on the 2006 Federal Communications Commission's (FCC) Proposed Rules addressing the effects of communication towers on migratory birds.
- Treaty partners commented on a project to locate new and taller utility towers at Ross Island and Oaks Bottom. Treaty partners submitted comments to the Planning Bureau with recommended measures designed to protect birds.
- Supported partners in efforts to reduce building hazards (e.g., window strikes) through additional requests to the USFWS for development of programs with that aim.
- Developed a "Dogs on Leash" program in Portland's parks and natural areas.
- Applied for a grant from the USFWS to convene a work group and summit of experts. Information gleaned will be used to develop Birdsafe Building Guidelines.
- Developed guidelines for mowing and pruning vegetation to reduce impacts on nesting birds and encouraged timing considerations by PP&R and TriMet in scheduling these activities.

Invasive Species Management

- Removed hundreds of acres of invasive species and revegetated public and private properties.

⁴ The Three Rivers Conservancy is now part of the Columbia Land Trust.

Education and Outreach

- Held annual Migratory Bird Day Festivals to celebrate migratory birds and raise public awareness about the plight of migratory birds.
- Garnered the support of 31 agencies and organizations as urban conservation Treaty for Migratory Birds Program Partners. By joining this effort, partners have made long-term commitments to help protect and conserve migratory birds.
- Purchased the “portlandmigratorybird.org” and “portlandmigratorybird.com” website in order to share and promote migratory bird resources and information for the City and Treaty partners. A graphic designer developed the layout, graphics and other design elements for the web site.
- Developed bird checklists (in conjunction with website development) for Leach Botanical Garden, Hoyt Arboretum, Whitaker Ponds Natural Area, Powell Butte, Pittock Bird Sanctuary, Forest Park, Sauvie Island, Sandy River Delta, Fernhill Wetlands, Jackson Bottom Wetlands, Tualatin Hills Nature Park, and Smith & Bybee Lakes in conjunction with Audubon Society of Portland volunteers, friends groups and other knowledgeable people.
- Created a CD, “On the Great Pacific Flyway – Songs and Stories Celebrating Portland’s Migratory Birds”. Storyteller Anne Rutherford, along with other local musicians and actors, wrote original songs and stories and performed them for the CD and other local events. CDs have been provided to educators and are available for purchase. All proceeds benefit the ongoing work of Portland’s Urban Migratory Bird Program.
- Portland Audubon Society developed Public Service Announcements (PSAs) to raise awareness of the region’s avian biodiversity and to inform the public about ways they can actively help protect and preserve birds. The PSAs appeared over 100 times in 2005 and 2006.
- Provided hot links on the BES website to Portland Audubon Society’s “Living with Wildlife” outreach materials. The materials are aimed at reducing hazards for migratory birds and address common questions received from the general public about birds. These include: *Living with Vaux Swifts*, *Living with Urban Waterfowl*, *The Impacts of Feeding Waterfowl*, *What to Do if You Find a Baby Bird*, *Living with Urban Crows*, and *Living with Woodpeckers*.
- Conducted bird-focused youth activities in Portland parks.
- Joined the Flying WILD City Partner network. This teacher-training program of the Council for Environmental Education uses the Flying WILD curriculum to help increase local support for the Migratory Bird Treaty program and develop a greater understanding of Portland’s birding areas.
- Developed Portland’s version of the Flying WILD program and trained 200 local teachers in using bird-oriented activities in their curriculum.
- Created a bird habitat garden in Oaks Bottom as an educational site.
- Began a neighborhood-based community stewardship program on 33 upland acres at Oaks Bottom Bluffs. This offers opportunities for educational activities, ecological field studies and research by area universities and schools. This project was supported, in part, by a 2003 Greenspaces grant and was identified as a Treaty action.

Actions Under the City's Terrestrial Ecology Enhancement Strategy and Other Programs

In addition to the actions taken under the original grant, the City of Portland has embarked on a number of other activities that compliment the Treaty activities to promote the conservation of migratory birds. Many of these actions have been conducted as part of the Portland Watershed Management Plan (PWMP) implementation, and specifically as part of the Terrestrial Ecology Enhancement Strategy (TEES), which is part of the PWMP. A citywide effort led by the Bureau of Environmental Services in collaboration with regional experts in wildlife ecology, the TEES includes identification and prioritization of habitats and species for protection and restoration, watershed-specific objectives, and actions.

The Terrestrial Ecology Enhancement Strategy is coordinated through the Science, Fish and Wildlife Division of BES. Because the TEES is consistent with the intent of the Treaty, and its actions help implement the Treaty, the TEES work is included in the Portland Bird Agenda.

Other City programs also contribute to the goals of the Treaty, including land acquisition, planning and restoration of City parks and natural areas, and updates to City programs and rules related to natural resource protection and control of invasive species.

Some examples of accomplishments under the TEES and other City programs that carry out the intent of the Treaty since 2006 include:

Habitat Protection and Improvement

- Planted, enhanced and maintained over 80 acres of oak woodland and savanna habitat, primarily along the North Escarpment (e.g., Mocks Bluff and Wauds Bluff) and South Escarpment (e.g., Oaks Bottom) along the Willamette River.
- Conducted an "oak release" habitat restoration project on Elk Rock Island to benefit the oak habitat, including birds associated with that habitat.
- Purchased over 150 acres of habitat through the Grey to Green Initiative, the Johnson Creek Willing Seller Program, and regional bond measure funds.
- Removed invasive shrubs and vines on 19.5 acres and nuisance trees, and planted over 1,000 native shrubs and trees throughout Mt. Tabor Park
- With other partners (including Urban Greenspaces Institute, Willamette Riverkeeper and Audubon Society of Portland), brought Ross Island into public ownership, protecting habitat for bald eagles, great blue herons and numerous other bird species.
- Developed a Site Assessment Form that is used to integrate terrestrial ecology elements into City projects. The assessments capture information about birds and habitats on sites that are slated for restoration or acquisition, and are then used to develop recommendations for possible actions to benefit birds.
- Developed a document, "Additional Things You Can Do To Help Native Birds," and incorporated it into the City's guidelines for avoiding impacts on nesting birds ("*Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects*") (Attachment E).
- Developed "Desired Future Conditions" for over half of the City's natural area parks, including conditions favorable to migratory birds.
- Monitored the Streaked Horned Lark, a federal candidate species for listing. Participated on the Streaked Horned Lark Working Group.

- Conducted point-counts at a number of sites that are undergoing habitat restoration project work (pre- and post-implementation).
- Developed an Avian BII (Bird Integrity Index) and monitoring birds as indicators of watershed health over time.
- Developed an updated draft of the City's Natural Resource Inventory, building and improving on Metro's Title 13 inventory of regionally significant riparian corridors and wildlife habitat.
- Overhauled the City's tree-related regulations to improve tree preservation and planting, and strengthened City codes to improve control of invasive plants.
- Participated in the expansion of the Backyard Habitat Program in partnership with the Audubon Society of Portland, the Columbia Land Trust (formerly Three Rivers Land Conservancy) and the Multnomah County Soil and Water Conservation Districts.
- Rerouted the trail system at Maricara Natural Area to protect wetland habitat.

Reducing Hazards

- Developed guidelines and conducted training workshops for BES and PP&R staff to inform habitat management decisions and project timing, selection, design and maintenance so as to avoid impacts on nesting birds ("*Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects*") (Attachment E). The BES staff have been implementing these guidelines in watershed restoration and revegetation projects.
- Conducted a citywide campaign aimed at reducing disturbance to wildlife in parks and other sensitive areas. This included development of a "Dogs for the Environment" brochure and pledge form (Attachment F), a "Portland's Sensitive Wildlife and Your Dog" brochure (Attachment G) <http://www.portlandonline.com/bes/index.cfm?c=51344&a=353681> ; and employment of park rangers to help educate and enforce the City's dog-on-leash policy.
- Submitted a letter to the Oregon Zoo in support of Audubon Society of Portland's grant application to fund a fall pilot BirdSafe Portland window strike study to begin to quantify the magnitude of bird window collisions in the City of Portland
- Applied for, and was awarded, a grant from the USFWS to convene a working group and summit of architects, developers, representatives from other cities to help guide the development of Bird-Friendly Building Guidelines and to raise awareness about the risks associated with residential windows through demonstration projects, interpretive signage and brochures about birds and windows.
- Restored hundreds of acres of land with native vegetation that will benefit migratory birds.

Invasive Species Management

- Portland Parks & Recreation inventoried vegetation communities in all of Portland's natural areas and documented ecological health, presence of invasive species and management issues that need to be addressed.
- Portland City Council passed a resolution in 2005 to create a strategy for management of invasive plant species. It subsequently also passed a resolution calling for an assessment of invasive animal species.
- BES developed and has implemented a citywide "Invasive Plant Species Strategy".

- BES administers the City's early detection and rapid response efforts (ED/RR) which focus weed control efforts on newly-detected, high-risk invasive plant species to eliminate them before they spread and become established.
- Conducted an Invasive Animals Species Assessment, which will be the basis for an Invasive Animals Species Strategy (underway).
- Hired an Invasive Species Coordinator.
- Conducted numerous projects in all of the City's urban watersheds to reduce and eliminate invasive plant species.
- Invasive species have been removed in over 4,000 acres of natural area lands owned or managed by PP&R in the past three years. PP&R's Protect the Best Program removes invasive species in natural areas that have high ecological functions to ensure the habitat does not degrade. Contract crews, BES Revegetation Program, and residents work in other areas, depending on the level of infestation.
- BES conducts numerous trainings and workshops to inform the public, partners and other bureaus about invasive species biology and management.
- BPS led a project to update the City's Nuisance Plants List, strengthened code requirements to remove invasive plants on development sites, and established a "Required Eradication list" to prevent certain invasive plants from becoming widespread.

Education and Outreach

- Conducted training workshops for BES and PP& R staff on avoiding impacts on nesting birds (*"Avoiding Impacts on nesting Birds During Construction and Revegetation Projects"*).
- Served on the Steering Committee for the October 2010 regional "Managing Lands for Songbirds" conference held at the Oregon Zoo, and made several key presentations at the conference.
- Identified "Special Status Bird Species" in Portland, along with their habitat associations and limiting factors and threats (where known).
- Posted bird checklists developed by citizens for two of the City's premier bird areas—Oaks Bottom Wildlife Refuge and Mt. Tabor Park—on the City's BES website (Attachment H).
Mt. Tabor: <http://www.portlandonline.com/bes/fish/index.cfm?c=31006&a=280021>.
Oaks Bottom: <http://www.portlandonline.com/bes/fish/index.cfm?c=31006&a=280023>.
- Produced a poster, "Wildlife of Portland," that included information about bird species in Portland, their habitat associations, and things citizens can do to help birds and other wildlife (Attachment J). The City distributed nearly 4,000 of these posters to schools, agencies, and at public gatherings and conferences.
<http://www.portlandonline.com/bes/fish/index.cfm?c=31006&a=307484>
- Created the "Dogs for the Environment" Program which employs physical barriers, education and enforcement for natural area park users regarding the impacts of dogs on wildlife and their habitats.

Portland's Wildlife and Your Dog

You can help protect Portland's wild creatures by keeping your dog on a leash.

1. **Western Hairy Woodpecker** One of two hairy woodpeckers designated as critical and Oregon's emblem species. This hairy woodpecker has a very sensitive to disturbance.
2. **North American Blunt-nosed Darter** Live in and near streams and rivers. They are especially susceptible to environmental degradation when raising young. The Audubon Society of Portland reserves riparian habitats that are attacked by logs in local parks.
3. **House Wren** Nest in shrubs. It's one of Portland's Special Status Species.
4. **Black-capped Kinglet** This Kinglet is federally designated as a species of concern. It is dependent on deciduous, often sphagnum, ponds or wetlands and adjacent riparian vegetation. Eggs in water are easily disturbed.
5. **Northwestern Salamander** Found in wet habitats from the north coast and east to 5,700 feet including grasslands, meadows, and forests. Eggs in water are easily disturbed.
6. **Skunk** Hides on the ground in grassy areas. They are well camouflaged and easily hidden from view.
7. **White-tailed Kestrel** These are found on the edge of forests, which use the undergrowth and grasslands that they prefer as food and that provides cover for safety. Over use many of the local riparian areas and often cause damage to these understories when they graze.
8. **Spotted Towhee** Nests on or near the ground in shrubby areas, are well camouflaged and easily disturbed.
9. **American Kestrel** When hunting, they use their feet to capture mice and insects. It's one of Portland's Special Status Species.
10. **Western Kingbird** Nest in a horizontal tunnel made in a hole back in soil bank. Long, slender tongue, always impact nest sites.

HIGH PRIORITY PORTLAND BIRD AGENDA ACTIONS

The City of Portland renewed its commitment to the conservation of migratory birds in February 2011, and embarked on development of this Portland Bird Agenda (Attachment D). Under a new interbureau arrangement between the Portland Parks & Recreation and the Bureau of Environmental Services, the City hopes to expand and draw upon additional resources.

Although there are numerous actions that are needed to address migratory birds, the City has limited resources, and recognizes the importance of selecting and prioritizing actions that will have the most benefit. For these reasons, the City's initial Bird Agenda focuses on high priority actions that the City is committed to over the next five years. It is anticipated that the City of Portland will review its progress towards implementing high priority actions, and update the Bird Agenda from time to time.

Although actions and commitments from Treaty partners are very important, this initial Bird Agenda is limited to City commitments. It does, however, include suggested actions that might be taken by Treaty Partners as well as citizens. It is recommended that the next iteration of the Portland Bird Agenda incorporate the work and address the additional commitments of Treaty Partners to the extent that partners are interested. A priority identified in this initial Bird Agenda is to work with Treaty Partners to coordinate efforts to maximize effectiveness of resources and results.

The high priority actions identified in this Bird Agenda are organized according to the four Treaty program **action categories**:

- Habitat protection and improvement
- Reducing hazards
- Invasive species management
- Education and outreach

Habitat Protection and Improvement

Nesting Bird Guidelines

Many City activities and projects can potentially impact nesting birds. Stream enhancement; revegetation; mowing; construction, removal and maintenance of structures; water-level management; and projects that include native or non-native invasive vegetation removal, may disrupt bird nesting. Assessing bird use in areas prior to project implementation and altering the timing of projects is important. Planning projects and scheduling activities outside the nesting season is the most effective way of avoiding disturbance. However, the nesting season is not the same for all bird species, and different kinds of projects and activities have differing impacts.

In 2010, the City of Portland's Bureau of Environmental Services issued a document, "*Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects*" (Attachment E) <http://www.portlandonline.com/bes/fish/index.cfm?c=31006&a=322164>. It provides information about nesting bird species in Portland; and guidance to inform habitat management decisions, project timing, selection, design and maintenance. Intended "audiences" include BES (including

its watershed management teams and revegetation team) and PP&R. The guidelines are best management practices that are intended to minimize the chances of City activities (e.g., stream enhancement construction projects, invasive plant species removal and revegetation efforts) result in a “take” of nesting birds. The advisory guidelines also include ways to improve habitat for native birds.

A number of brown-bags, workshops and training sessions about “bird basics” and use of the guidelines were provided for city staff in 2010, and the guidelines are now being implemented by BES watershed and revegetation teams.

In October 2010, a one-day regional workshop—“Managing Land with Minimal Impact to Birds”—was held at the Oregon Zoo. Over 200 people, representing regional municipalities, state and federal agencies, soil and water conservation districts, parks and recreation managers, and others attended. The impetus for the workshop were the City’s nesting bird guidelines.

Next Steps:

- Continue to implement the nesting bird guidelines as BES plans, designs and implements construction and revegetation and other habitat improvement projects (ongoing)
- Expand use of the nesting bird guidelines to other bureaus such as Portland Bureau of Transportation, Portland Parks & Recreation, and Water Bureau (2011).
- Share the guidelines with other local jurisdictions and partners, and make them available to others both within and outside of the region by responding to requests for copies and making them available on the City’s website (ongoing).
- Modify the guidelines as necessary to reflect new information, techniques and “lessons learned” (annually)

Other Guidelines

The Bureau of Environmental Services is taking the lead in developing additional guidelines to improve habitats for birds and other wildlife, with assistance from Portland Parks & Recreation. *Living with Beavers Guidelines* were completed in 2011⁵ Additional guidelines underway include:

- Wildlife Trees, Snags, Down Wood and Brushpiles for Wildlife
- Oak Habitat Conservation and Restoration

Guidelines that are highly desired include those for Wetlands and for Grassland-Associated Bird Species (e.g., Streaked Horned Lark, Western Meadowlark).

Next Steps:

- Complete development of management guidelines for:
 - Wildlife Trees, Snags, Down Wood and Brushpiles for Wildlife (2011)
 - Oak Habitat Conservation and Restoration (2011)
 - Wetlands (2012)

⁵ The American beaver is a “keystone species” whose presence benefits bird habitat.

- Beta-test these guidelines and revise them as needed
- Develop additional guidelines for Wetlands (2011) and for Grassland-Associated Bird Species (TBD)
- Train City staff in the principles behind these guidelines and in their application in City projects and actions
- Implement the new guidelines as they are developed

Streaked Horned Lark Monitoring

The Streaked Horned Lark is a federal candidate for listing, and monitoring of known sites in Portland in 2009 revealed only two remaining breeding populations. Monitoring continued in 2010 and 2011 at those sites by Dr. Randy Moore (under contracts with the City of Portland). This information is being used to inform the discussions regarding the Airport Futures Project and the City's Natural Resources Inventory. It is also informing discussions and recovery planning by the Streaked Horned Lark Working Group, which is a partnership of local governments, agencies and organizations aimed at sharing information and working to conserve streaked horned larks.

Next Steps:

- Continue monitoring remaining populations of the Streaked Horned Lark within the City
- Work with partners to conserve populations and enhance suitable habitat

Land Acquisition/Habitat Restoration of Sites Important to Birds

Through the Grey to Green (G2G) Initiative (described in more detail below) and Portland Local Share of the Metro Natural Areas Bond, BES and PP&R are collaborating to identify, preserve, and restore natural areas. Key criteria include protecting large, intact areas, protecting sites with exceptional biodiversity values; and improving connectivity between habitat patches.

Next Steps:

- Acquire at least 300 acres of natural area to protect habitat important to avian and other species. These will include a diversity of habitat types to benefit numerous species. Target habitat types include interior forest, oak woodland, floodplain, wetland, and riparian areas.
- Implement stabilization, restoration and management actions on newly acquired natural areas that address the watershed-specific TEES objectives, including enhancing habitat conditions and key ecological functions to improve productivity, diversity, capacity, and distribution of native wildlife populations.

Grey to Green Initiative

Portland's Grey to Green (G2G) initiative expands the City's green infrastructure to sustainably manage more stormwater runoff, reduce the spread of invasive plants, restore native vegetation, protect sensitive natural areas, and replace culverts that impede fish passage. Among other things, G2G investments improve water quality, and preserve and restore habitat for birds and other wildlife.

The Tree Program of G2G works with a variety of partners to plant a diversity of tree types (small, large, native, evergreen) in a variety of locations (residential streets, highway rights-of-way, schools, parks, commercial and industrial areas), maximizing urban forest canopy coverage, connectivity and habitat in the built environment. Where practicable, the Tree Program plants Portland area and Willamette Valley native species.

The City began funding the initiative on July 1, 2008, with a 5-year planned investment of \$55 million. New public and private partnerships help achieve G2G goals. The Initiative's five-year goals, and progress as of August 2010, include:

Revegetation

Five-year goal: 350 new acres of revegetation initiated; 175,000 natural area trees planted

- Restoration work has been initiated on more than 1,300 new acres, including ivy removed from trees on more than 1,000 acres in Forest Park to protect the existing forest canopy
- Nearly 70,000 tree seedlings have been planted in natural areas

Yard and Street Trees

Five-year goal: 33,000 new yard trees and 50,000 new street trees

- 8,487 yard trees planted (5,487 through Grey to Green efforts)
- 8,909 street trees planted (5,909 through Grey to Green efforts)
- Key partners include Friends of Trees, Verde, Portland Parks & Recreation
- Treebate incentive for homeowners to plant yard trees exceeded expectations (1,100 trees planted in first season)

Invasive Plants

Five-year goal: 800 acres of new Early Detection Rapid Response (EDRR) treatment plus ongoing management

- Invasive Plant Management Strategy and code changes adopted
- Priority invasive plant species treated on more than 500 acres of rights-of-way and private property through EDRR program
- Treated 2,700 acres and re-treated 1,700 acres of invasive vegetation on Portland Parks & Recreation property through Protect the Best, with ongoing treatment on hundreds of additional acres

Land Acquisition

Five-year goal: 419 acres purchased for protection. Priority areas for acquisition include land with tributaries, confluences, floodplains, riparian areas, off-channel habitats, seeps, springs, steep slopes, forested areas, grasslands and meadows, wetlands, and riverine islands. In addition, BES seeks acquisition opportunities that improve connectivity and build outward from existing habitats by focusing on

properties that are contiguous with existing protected functioning habitats, or that provide corridors between existing habitats.

- 107 acres purchased to date, including floodplain, riparian corridors, wetlands, oak woodland, and interior forest
- Partnerships secured with Portland Parks & Recreation, Metro, Trust for Public Land, and Columbia Land Trust

Next Steps:

- Continue to work with a variety of partners to plant a diversity of tree types (small, large, native, evergreen) in a variety of locations (residential streets, highway rights-of-way, schools, parks, commercial and industrial areas), maximizing urban forest canopy coverage, connectivity and habitat in the built environment. Where practicable, plant Portland and Willamette Valley native species.
- Work with watershed teams, PP&R City Nature staff, and other partners to identify and assess candidate parcels for habitat features and potential acquisition.
- Integrate habitat features onto newly-acquired parcels to enhance habitat features for birds, including removing invasives, increasing native plant palette, and installing bird boxes or other nesting structures.

Elk Rock Island Oak Release Bird Monitoring

Elk Rock Island in the Willamette River is one of the last remaining oak habitats in the vicinity of Portland. To benefit the oak community (including rare plants and associated bird species), the City of Portland performed an “oak release” project in September 2010 (i.e., 40 invading Douglas-firs were felled, girdled, or made into snags). Prior to project implementation, bird surveys were conducted to establish baseline information. Subsequent bird monitoring will reveal responses to the project.

Next Steps:

- Monitor birds to determine response to the 2010 treatment.
- Manage public access to minimize disturbance to birds and other island amenities through education, signage and trail realignments.

Ross Island Important Bird Area

Among over 100 internationally-recognized Important Bird Areas in Oregon, the 404-acre Ross Island stands out because of its proximity to downtown Portland. A Ross Island Vision Team formed in 2004, comprised of the Audubon Society of Portland, Urban Greenspaces Institute, Willamette Riverkeeper, GreenWorks and independent landscape designers) developed a long-term vision for the ecological and recreational future of Ross Island. In 2007, a vision of public ownership, first laid out by the Olmsted Brothers in their 1903 Report to the Park Board, became a reality when 45 acres of Ross Island were transferred by the Ross Island Sand and Gravel Company to the City of Portland.

More than 100 bird species use the Island along their Pacific Flyway migratory path. A pair of Bald Eagles has nested and raised young on the Island since the 1990s, and a heron rookery also existed on the Island and at one time had as many as 66 nests.

Future reclamation work by the Ross Island Sand & Gravel Company will include creation of shallow water habitat and emergent wetlands. Invasive species have been removed over the past three years, and native species plantings will begin in the Spring of 2012. Portland Audubon Society has started bird monitoring on Ross Island.

Next Steps:

- Work with Friends of Ross Island to engage the public in conservation and restoration activities on Ross Island
- Develop a habitat management plan for the acres owned by Portland Parks & Recreation
- Implement actions that enhance habitat in the Ross Island Important Bird Area
- Partner with the Audubon Society of Portland to conduct seasonal point counts on Ross Island
- Support implementation, monitoring and enforcement of the no-wake zone that was established in 2011 on the South Holgate Channel and Ross Island Lagoon
- Support establishment of a reduced noise zone in the Holgate Channel and Ross Island Lagoon
- Continue to remove invasive species and plant native vegetation

Tryon Confluence Project

The confluence of Tryon Creek and the Willamette River is a site rich in bird habitat and current avian use. It is also an important site for passage of Willamette River fish (salmonids and potentially lamprey) into the Tryon Creek system. Because of the aquatic resources, the site is a focal point for in-stream and riparian area restoration work. Currently in public ownership (Metro, City of Lake Oswego and City of Portland) the property has ongoing restoration activities and major future plans including developing it as a park with a regional trail and possibly replacing the culvert (under Hwy 43 and the railroad) with a bridge. In 2007 and 2009, the site hosted restoration projects. The first was to improve the in-stream approach to the culvert and to retrofit the baffles inside the culvert for better fish passage and the second was to enhance the stream segment at the mouth to provide off channel habitat for salmon. The 2009 effort included grading back the banks, which removed some native vegetation with documented bird nesting use. To minimize the impact on bird nesting, the trees and shrubs were removed outside of the bird nesting window (April 15 – July 30) and bird boxes were installed on the south side of the stream, where no work was being done.

Next Steps:

- Continue to remove invasive species and plant native vegetation.
- Continue to work with multiple jurisdictions to advocate for the enhancement of bird habitat during future restoration efforts.

Powell Butte Bird Study

Powell Butte is one of the most important sites in the City of Portland for raptors and other grassland birds. A volunteer bird survey is being established by PP&R and would begin in the spring of 2012. The purpose is to determine which species are using the Butte, what habitat areas they are using (e.g., forest, grassland), and in what ways they are using these areas. This information will be useful for future management of the site.

Next Steps:

- Establish annual volunteer bird surveys (to begin spring 2012)
- Partner with the Audubon Society of Portland and other PP&R volunteers to conduct point counts on Powell Butte

Oaks Bottom Habitat Restoration

Oaks Bottom Wildlife Refuge was designated as Portland's first urban migratory bird park through a City Council Resolution passed on May 5, 2004. It is a 170 acre complex of meadows, woodlands and wetlands on the east bank of the Willamette River, just north of the Sellwood Bridge. The refuge is the largest remaining natural area within in the Lower Willamette River floodplain and provides important habitat for fish and wildlife, including threatened salmon and over 175 bird species. Oaks Bottom supports many wildlife species that are considered "Special Status" because they are in decline on a regional or statewide scale. These include 44 bird species.

BES and PP&R City Nature are working together on design of a large-scale habitat enhancement project to benefit wildlife and people. The project will enhance 75 acres of wetland habitat by:

- Replacing an existing culvert with a larger box culvert to enhance fish passage and significantly improve the flow of Willamette River water in and out of the refuge
- Excavating tidal slough channels and enhancing wetland habitats at the south end of the refuge to provide off-channel refuge for ESA-listed salmon
- Removing invasive vegetation, such as purple loosestrife, and revegetating with native species to improve wildlife habitat
- Enhancing opportunities for environmental education and interpretation of the refuge from the Springwater on the Willamette Trail
- Designing the project to ensure sufficient open water area for optimal water bird habitat

As part of this project, Portland Audubon Society, in partnership with BES, is monitoring nesting bird and waterbird use of Oaks Bottom for three years. This work directs the City to conduct invasives removal work at times when the least disruption to birds will occur.

Next Steps:

- Implement project construction in 2013
- Continue baseline monitoring for nesting and waterbirds
- Monitor post-project for bird and other wildlife use of the enhanced refuge area
- Install bird viewing platforms along Springwater Corridor

Mt. Tabor Revegetation Project

The Mt. Tabor Revegetation Project is part of the larger Tabor to the River Program⁶, and is particularly focused on improving stormwater management, ecological conditions and wildlife habitat for birds. Thus far, invasive shrubs and vines have been removed on 19.5 acres, and nuisance trees have been removed on over 70 acres (fall 2010). Over 1,000 native shrubs and trees were planted (February 2011).

The project recently received additional funding from the East Multnomah Soil and Water Conservation District Partners in Conservation Grant, Portland Parks & Recreation, and the Bureau Environmental Services. These funds will be used to remove invasive shrubs and vines and plant native plants on an additional 37 acres of natural area (starting in summer 2011).

Breeding bird surveys and winter bird surveys have taken place at the project site for three years (2009, 2010, 2011) and will continue annually. This will help BES avoid impacts to bird species, provide baseline and effectiveness monitoring data, and track any changes in bird species use of the park with changes in vegetation.

Next Steps:

- Invasive plant control (Spring/Fall 2011 and ongoing)
- Native grass and forb seeding and planting (Fall 2011)
- Primary native tree and shrub planting (February 2012)
- Invasive plant control and planting area maintenance (Spring/Fall 2012 and ongoing)
- Conduct annual breeding bird surveys and winter bird surveys
- Partner with the Audubon Society of Portland to conduct point counts to assess the efficacy of restoration efforts for migratory birds

Mason Flats Wetland Enhancement Project

The City of Portland is constructing a stormwater treatment and habitat enhancement project at Mason Flats in the Columbia Slough watershed. The 25-acre project will restore a wetland that is currently dominated by non-native reed canarygrass. Planting a variety of native wetland plants will increase vegetation diversity, and increase native shrub canopy and hopefully benefit willow flycatchers and yellow warblers.

Next Steps:

- Construct the project in late summer 2011 and plant during the following rainy season.
- Monitor birds at the site.

Natural Resources Inventory (NRI)

Portland's Bureau of Environmental Services and Bureau of Planning and Sustainability have updated and refined species lists used in the City's NRI methodology. These lists highlight rare and declining birds and other species in our region. "Special Habitat Areas" (SHAs) are an

⁶ The Tabor to the River Program improves sewer system reliability and promotes natural watershed functions over a 2.3 square mile area from Mt. Tabor Park to the Willamette River between SE Powell and SE Hawthorne boulevards.

element of the Wildlife Habitat Model in the NRI. Updated “At Risk” species and “Grassland Associated” species lists have been completed for the SHA criteria. These updated species lists and criteria have been recently or are currently being applied in four area-specific NRIs: Airport/Middle Slough, River Plan/North Reach, River Plan/Central Reach, and Hayden Island.

Next Steps:

- Continue application of updated SHA criteria in area-specific and citywide natural resources inventories

“At Risk” Bird Species in the City of Portland	
<u>Common Name</u>	<u>Genus & Species</u>
American White Pelican	<i>Pelecanus erythrorhynchos</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Band-tailed Pigeon	<i>Columba fasciata</i>
Bufflehead	<i>Bucephala albeola</i>
Common Nighthawk	<i>Chordeiles minor</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Long-billed Curlew	<i>Numenius americanus</i>
Merlin	<i>Falco columbarius</i>
Olive-sided Flycatcher	<i>Contopus cooperi</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>
Purple Martin	<i>Progne subis</i>
Red-necked Grebe	<i>Podiceps grisegena</i>
Streaked Horned Lark	<i>Eremophila alpestris strigata</i>
Swainson's Hawk	<i>Buteo swainsoni</i>
Vesper Sparrow (Oregon)	<i>Pooecetes gramineus</i>
Western Meadowlark	<i>Sturnella neglecta</i>
White-breasted Nuthatch (Slender-billed)	<i>Sitta carolinensis aculeata</i>
White-tailed Kite	<i>Elanus leucurus</i>
Willow Flycatcher (Little)	<i>Empidonax traillii brewsteri</i>
Yellow-breasted Chat	<i>Icteria virens</i>

Grassland-Associated Bird Species in the City of Portland	
<u>Common Name</u>	<u>Genus & Species</u>
American Kestrel	<i>Falco sparverius</i>
Chipping Sparrow	<i>Spizella passerina</i>
Common Nighthawk	<i>Chordeiles minor</i>
Northern Harrier	<i>Circus cyaneus</i>
Oregon Vesper Sparrow	<i>Pooecetes gramineus affinis</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Short-eared Owl	<i>Asio flammeus</i>
Streaked Horned Lark	<i>Eremophila alpestris strigata</i>
Western Meadowlark	<i>Sturnella neglecta</i>
White-tailed Kite	<i>Elanus leucurus</i>

Backyard Habitat Certification Program

An increasing body of science indicates that small pockets of habitat can be critical in assisting migratory birds as they cross urban landscapes. Private residential lots comprise nearly 40% of the land area in Portland, but often are overlooked when it comes to urban conservation initiatives.

The Columbia Land Trust (formerly Three Rivers Land Conservancy) and the Audubon Society of Portland joined forces to create the Backyard Habitat Certification Program (BHCP) in January 2009 to help improve habitats for birds and other wildlife. Through citizen education and involvement, technical assistance to small lot private property owners, native wildlife habitat is being restored in backyards throughout the City of Portland.

The BHCP focuses on the removal of aggressive weeds, Naturescaping with native plants, stormwater management and wildlife stewardship, and assists property owners through three levels of advanced habitat restoration. Citizens who voluntarily enroll in this program receive technical assistance, increase their level of knowledge specific to their neighborhood ecology, and develop and implement site-specific plans that address desired habitat conditions. The certification process involves a site visit from a trained habitat technician followed by a written report advising them about site specific habitat enhancements that could be implemented. They also receive continuing technical support as they restore their property, access to a variety of incentives to assist with their restoration efforts, and a sign identifying their property as “certified wildlife habitat” when the process is completed.

The City of Portland has helped with the expansion of the Backyard Habitat Certification Program in partnership with the Audubon Society of Portland, the Columbia Land Trust and the Multnomah County Soil and Water Conservation districts. Since this program was initiated in 2009, more than 1000 site visits have been conducted and more than 400 properties have been certified as “backyard habitat”.

Next Steps:

- Continue to promote the Backyard Habitat Certification Program through various efforts, including the Watershed Stewardship Program and Grey to Green
- Integrate the Backyard Habitat Certification Program into the City’s Greenstreets/ Bike Boulevards Program through joint promotional and funding efforts
- Support expansion of the program to other parts of the City
- If funding is available, support the Backyard Habitat Certification Program



Portland Area Watershed Monitoring and Assessment Program (PAWMAP)

Breeding birds are included in the City's PAWMAP Program, a watershed health monitoring effort based on the EPA's nationwide methodology. Starting in 2011 and continuing annually, birds are sampled for PAWMAP as an indicator of riparian habitat health. A Riparian Bird Integrity Index for the Willamette Valley is used to generate a relative score for Portland's watersheds as part of the data analysis. By incorporating birds as an upland indicator, the City is both directly monitoring birds, and assessing terrestrial habitat for a holistic look at watershed health.

Next Steps:

- Continue field sampling in 2012
- Analyze and report 2011 data
- Determine long-term trends in local birds as an indicator of watershed conditions

Urban Forestry

Portland Parks & Recreation completed the *Urban Forest Action Plan* in 2007. The plan was developed to implement the goals established in the 2004 Portland Urban Forest Management Plan. The Action Plan details priority actions for the three main goals:

- Protect, preserve, restore and expand Portland's urban forest;
- Develop and maintain support for the urban forest;
- Manage the urban forest to maximize community benefits for all residents.

The 2004 plan sets the canopy goal of 35-40% for residential areas, 15% for commercial/industrial areas, 30% for developed parks and open spaces, and 35% for rights-of-way. In FY 2009-2010, a total of 27,491 trees were planted (recorded through permits, Friends of trees, schools and at City-owned sites). The City and non-governmental organizations have been working on a variety of actions to maintain and increase the canopy. These actions include changes to the City's tree regulations, plantings in rights-of-way, natural areas and parks, and encouraging residents to Naturescape. Maintaining and increasing the urban canopy benefits migratory birds by providing additional feeding and resting areas. PP&R is working with neighborhood stewards to inventory, plant and care for trees in their areas.

Next Steps:

- Continue the Neighborhood Tree Steward Program that trains participants to be leaders and resources for tree advocacy in their neighborhoods.
- Create Neighborhood Stewardship plans that inventory, plant and maintain street trees
- Continue to plant native species in natural areas and parks.

What partners can do – Protect and Improve Habitat

- ☑ Identify, protect and restore important habitats
- ☑ Adapt Portland's nesting bird and other guidelines for your own location and activities
- ☑ Educate your staff about ways they can improve habitat for birds
- ☑ Participate in, and promote, the Backyard Habitat Certification Program
- ☑ Work with BES and PP&R to identify candidate natural areas that increase habitat for avian species
- ☑ Partner with the City of Portland on acquisition and restoration of natural areas to leverage limited local funding

What citizens can do – Protect and Improve Habitat

- ☑ Plant native tree, shrub and other plant species in your yard
- ☑ When possible, leave snags and down wood
- ☑ Reduce lawn cover
- ☑ Seek natural alternatives to, and reduce the use of, pesticides, herbicides and fertilizers, when practical
- ☑ Volunteer in a neighborhood invasive plant species removal project (e.g., ivy pull)
- ☑ Participate in the Backyard Habitat Certification Program
- ☑ Take a "Naturescaping" class and landscape your yard to be bird-friendly
- ☑ Notify BES if you own or know of vacant parcels in the City of Portland that may be candidate natural area acquisitions. Of interest are tributaries, stream confluences, floodplains, riparian areas, off-channel habitats, seeps, spring, steep slopes, forested areas, grasslands and meadows, wetlands, and riverine islands. Contact: Shannah Anderson at 503/823-2605 or shannah.anderson@portlandoregon.gov.

Reducing Hazards

Bird-Friendly Building Guidelines

Since September 2009, the Audubon Society of Portland has coordinated seasonal BirdSafe Portland surveys (a largely volunteer effort) to quantify the magnitude of Portland's window strike rate. September 2009 pilot surveys included 44 buildings, 4 skybridges and the base of the Oregon Health State University (OHSU) tram tower. Surveys conducted in the Spring and Fall of 2010 and in the Spring 2011 included a subset of the original sample: 21 buildings and the base of the tram tower. These continue to be surveyed. Outreach to building owners and managers has raised awareness about strike hazards, and the survey effort is yielding critical reports from staff and tenants on site. This results in more comprehensive data collection. BirdSafe surveyors have encountered 26 native species of birds that have struck windows in three seasons of surveys, while the Audubon Wildlife Care Center has admitted 69 species of birds that have hit windows since the inception of BirdSafe surveys. This discrepancy is indicative of the myriad of obstacles to finding strike victims, which can end up on rooftops, balconies, or in backyards and courtyards.

Numerous cities, including Toronto, Chicago, New York, San Francisco, and the State of Minnesota have used local surveys to demonstrate the need for the development of Bird-Friendly Building Guidelines (BFBGs). BFBGs address the elements of building architecture (materials and design) which pose the greatest hazards to birds. Among the potential solutions included in BFBGs are: creating visual markers on transparent or reflective glass; avoiding design traps such as window glass extended to building corners, and breezeways or skybridges bounded by unmarked glass, minimization of rooftop and architectural lighting schemes; proper shielding on light fixtures to reduce light scatter (light trespass) and sky glow.

Next Steps:

- Develop Bird-Friendly Building Guidelines. Collaborate with the Audubon Society of Portland efforts to develop voluntary guidelines. To facilitate the development of the guidelines, the City of Portland will:
 - help plan and hold a one-day workshop with experts from other cities, local architects, lighting engineers, planners, developers, etc.
 - participate with the Audubon Society of Portland and others in a group of local advisors to help guide the development of bird-friendly building guidelines. Advisors will include Bird Treaty partners, local architects, building contractors and developers, lighting engineers, and other stakeholders.
- To demonstrate the types of building designs that can be used to reduce hazards, Portland Parks & Recreation will showcase window-strike mitigation approaches at several City community centers. Interpretive signage will accompany these demonstration projects to inform homeowners and others (up to 1,000 people use these facilities daily). Initially, modifications will be made at two centers, with the goal of installing features at nine of the total eleven community centers in the City.
- Explore options for addressing bird-friendly building and illumination policies in the Portland Plan or Comprehensive Plan update and through voluntary efforts.
- Seek feedback and endorsement of the BFBG measures from City bodies including the Planning and Sustainability Commission and Portland City Council.

Lights Out Campaign

Neotropical migratory birds travel remarkable distances, often flying at night to avoid predators, save energy (the atmosphere is less turbulent), and use the moon and stars as guides. This allows them to forage by day, a necessity for replenishing the vital energy stores that fuel their long-distance migrations.

Migration begins just after sunset for many birds traveling from their wintering grounds as far south as South America to their breeding grounds as far north as the Arctic tundra. Night flight brings birds over ever-expanding urban areas across the landscape. Researchers estimate that 85% of annual mortality in songbirds occurs during migration. Birds' already perilous journeys are made more deadly by night-lit structures, which can both confuse and attract them. Hundreds of millions (upward estimates are over a billion) of birds die every year after hitting windows, both during the day and at night. In response, 21 U.S. cities have instituted voluntary Lights Out programs from dusk until dawn during spring and fall migrations. Lights Out programs do not affect street lights or safety lighting, however, proper shielding of all light fixtures is necessary to reduce impact on the circadian rhythms that drive migration, breeding, and feeding cycles, and influence predator-prey relationships across multiple taxa.

A Portland Lights Out Program would ask building owners and managers to participate from August 25 through November 15, and March 15 through June 7, from dusk until dawn.

Next Steps:

- Explore opportunities to participate in a pilot Lights Out project (e.g., Portland Building, 1900 Building)
- Review Lights Out program messages and explore opportunities to provide information to building owners and managers and the public
- Coordinate with the Mayor and City Council members in support of a proclamation to launch a Portland Lights Out Program
- Explore options for addressing bird-friendly building and illumination policies in the Portland Plan or Comprehensive Plan update and through voluntary efforts

Cats Indoors Campaign

Cats pose a significant threat to resident and migratory birds in urban ecosystems, especially in pockets of habitat where birds congregate as they pass through the urban landscape, and when young birds are on the ground before they can fly. In many cities, cat advocates and bird advocates have found little common ground. However, in Portland, the Audubon Society of Portland and the Feral Cat Coalition of Oregon have been working together to spread a unified message about responsible pet ownership. This has included public service announcements, educational materials and presentations focused on housing cats indoors or in enclosures, and on leash when outside. The Feral Cat Coalition encourages people to "spay/neuter your cat and make sure that all feral cats are spayed/neutered".

The joint Audubon/Feral Cat Coalition effort was recently featured on an episode of *Oregon Field Guide* and has been presented at the American Ornithologists and the Humane Society of the United States "Taking Action For Animals" Conference. At the request of the USFWS, Audubon Society of Portland staff presented their approach to this issue in Hawaii where

biologists are struggling to protect some of the most imperiled bird species on the planet. This approach recognizes that keeping cats indoors reduces risks to pets, prevents increases to feral cat populations and protects wildlife.

Next Steps:

- Educate the public about the negative impacts cats have on birds, and stress the importance of keeping pet cats indoors, in enclosures or on leash when outside
- Support the efforts of the Audubon Society of Portland through distribution of educational materials
- Support efforts to report feral cat colonies that become established on local natural areas

Dogs in Natural Areas

The City of Portland recognizes that responsible pet ownership means more than licensing and vaccinating dogs; it means controlling dogs' interactions with wildlife and natural areas. Unleashed dogs can harm birds, disturb breeding areas, or harass wintering birds, causing them to use valuable energy reserves. Dogs running loose also trample plants and habitat. Portland City Code requires that all dogs in parks must be kept on a leash unless in one of 31 designated off-leash areas. City Code also requires that all poop be picked up and disposed of in proper receptacles. Violation of either leash or scoop laws results in a \$150 fine. To educate the public about these problems and City Codes, several brochures and informational pieces were created:

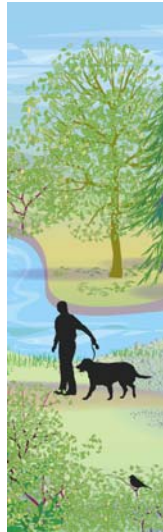
The "Dogs For the Environment" Brochure and Pledge Form (Attachment F) includes basic information about responsible pet ownership and City Code requirements. It also includes a pledge form for owners, signifying they will keep their dog on leash and on trails in natural areas; scoop and properly dispose of poop; and avoid contact with streams and wildlife. In recognition of signing the pledge form, owners are sent a green bandana for their pet to wear.



A "Portland's Sensitive Wildlife and Your Dog" Brochure and poster were developed to inform people about the importance of keeping dogs on-leash in natural areas to reduce disturbance to birds and other wildlife (Attachment G). A number of native birds nest on, or near the ground, and are particularly susceptible to harm by off-leash dogs. Ranger patrols were established to educate the public, and to help enforce City Codes.

Next Steps:

- Continue to inform the public about the importance of keeping dogs on-leash in natural areas through signage and rangers
- Continue to patrol natural areas and enforce City Codes regarding on-leash and poop scoop laws

**Public Activity in Sensitive Areas**

Many of the most sensitive habitats in Portland are publicly-owned. Habitat Management and Trail plans for the City's natural areas are developed by PP&R, with habitat protection and restoration as the highest priorities. Public use and access are addressed so that habitat values do not become diminished due to human disturbances and habitat degradation. PP&R also works with neighbors and local schools on stewardship activities to enhance and restore natural areas.

Next Steps:

- Continue to develop and implement Habitat Management and Trail plans for City natural areas to minimize human disturbances to birds and their habitats.
- Continue to work with neighbors and local schools on stewardship activities to enhance and restore City natural areas.

What partners can do – Reduce Hazards

- ☑ Educate your staff about ways they can minimize impacts on nesting birds and make habitat safe for birds
- ☑ Install bird-friendly lighting, and turn off unnecessary lights at night
- ☑ Start your own “lights out” campaign
- ☑ Partner with Audubon Society of Portland’s Cats Indoors Campaign
- ☑ Start your own “keep dogs on leash” campaign

What citizens can do – Reduce Hazards

- ☑ Use the “scarecrow” technique around windows frequently struck by birds. The most effective techniques involve hanging items in front of windows to catch their attention before they collide. Reflective Mylar streamers and hawk silhouettes hung from string (so they move in the breeze) work best.
- ☑ Place birdfeeders at least 8 feet away from windows. At this distance, birds are unlikely to have the momentum to strike a window.
- ☑ Do not let your housecats roam freely. Keep cats indoors.
- ☑ Don’t feed feral cats.
- ☑ Do not abandon cats.
- ☑ Spay/neuter your cat, and make sure feral and stray cats are spayed/neutered.
- ☑ Keep dogs on leash and entirely out of natural area parks
- ☑ Stay on trails.
- ☑ Support limiting access to sensitive habitats in natural areas.

Invasive Species Management

Invasive Species in Urban Natural Areas

Portland has three bureaus actively involved in the management of invasive vegetation: BES, PP&R and the Portland Water Bureau. These bureaus all are controlling vegetation in urban natural areas in concert with one another and with multiple partners at the local, state and federal levels. The various programs administered by these bureaus are gradually and successfully restoring native habitat that native bird species depend on for survival. Management activities are varied and range from outreach to the public to large-scale removal of tons of non-native vegetation in certain areas.

An issue related to managing invasive vegetation is how and when the management activities occur. Removing invasive species during the nesting season can be disruptive or even cause nest failure for the few native species capable of nesting in dense thickets of Himalayan blackberry or English or Irish ivy. It is important to plan and implement invasive species removal to coincide with times best for eradication *and* to avoid disturbance to nesting birds. The City's *Nesting Bird Guidelines* provide managers and practitioners the guidance to effectively deal with invasive vegetation while minimizing negative impacts to birds.

The Bureau of Environmental Services has started crafting the invasive Animal Strategy to address the negative impacts caused by invasive animals to native habitat and wildlife. Invasive bird species can have direct, significant impacts on native birds. Invasive birds are also a vector for avian diseases which native birds may have had no prior exposure. Other invasive animals degrade habitat. For example, nutria can severely alter shoreline habitat. Feral domestic animals such as cats have severe negative impacts on bird populations. In addition, invasive invertebrate species have the potential to significantly alter habitats across the City, threatening resident and migratory bird populations.

Next Steps:

- Continue to incorporate *Nesting Bird Guidelines* into the City's vegetation management activities. The City's *Nesting Bird Guidelines* contain recommendations for managing a variety of invasive plant species while minimizing impacts on nesting birds.
- Continue to implement invasive vegetation removal efforts and replant native vegetation across City properties.
- Assist private landowners with significant bird habitat in controlling and managing invasive vegetation on their properties.
- Continue composing and implementing Portland's Invasive Animal Strategy and working with City partners in mitigating the negative effects of invasive animals on native birds and other wildlife.
- Identify municipal properties in the Portland Metro Area which provide essential habitat for at-risk native bird species and address these species in management and landscape activities.
- Continue programs such as PP&R's "Protect the Best," BES' Revegetation Program, and other invasive species removal efforts.

Exotic Ducks and Geese in Local Parks and Natural Areas

Birdwatchers and the general public enjoy watching geese, ducks, and other waterfowl. However, in many areas of the country, including the City of Portland, and many areas of the country, populations of nonmigrating, or resident, domestic ducks and geese are increasing.

Domestic ducks and geese are common in parks and open spaces in the City of Portland, especially in areas with man-made ponds and grass fields. The overpopulation of these resident birds contributes to overcrowding, malnutrition and disease, environmental degradation, and water pollution.

Many of the domestic ducks and geese in urban parks are flightless and unable to escape predators or withstand the breeding season; those animals that are able to survive often displace native wildlife, destroy valuable habitat, and have the potential to introduce diseases and parasites to native populations. Many of these birds then successfully breed in the wild.

Although most people find a few birds acceptable, problems quickly develop as bird numbers increase. These problems include: overgrazing of grass and ornamental plants; accumulation of droppings and feathers; attacks on humans by aggressive birds; and the fouling of reservoirs, swimming areas, docks, lawns, and recreational areas. Domestic ducks and geese have usually escaped from homes or are deliberately released or abandoned. Overpopulation causes erosion and the accumulation of waste matter in parks and open spaces reduces oxygen levels, reducing the viability of aquatic life in the water.

The City of Portland is committed to improving habitat for native wildlife, protecting human health, and protecting our parks and open spaces from degradation. The Bureau of Environmental Services and the Portland Parks & Recreation are currently working with Audubon Society of Portland to develop a long-term plan to minimize and manage non-native waterfowl, including an education campaign to reduce feeding of waterfowl by park users and domestic duck and goose abandonment.

Next Steps:

- Partner with Audubon Society of Portland and organizations and agencies, such as the Humane Society and U.S. Department of Agriculture – Wildlife Services to manage populations of domestic ducks and geese at local parks and natural areas.
- Design environmental restoration projects to improve the habitat for native waterfowl and deter the congregation of domestic ducks and geese.
- Develop and implement an education campaign to advise public against feeding waterfowl in parks and natural areas, including a brochure and signage at parks and natural areas. Use existing outreach materials from the Audubon Society of Portland, USFWS and others as available.
- Develop and implement an ongoing educational outreach campaign to pet and feed stores to encourage them to inform customers that domestic and exotic animals should never be released into the wild.
- Utilize partnerships with Portland State University (PSU) and other community organizations to develop and implement educational campaigns.

What partners can do – Invasive Species

- ☑ Work with your local birding community to adapt Portland's nesting bird and other guidelines for your own location and activities
- ☑ Educate your staff about ways they can minimize impacts on nesting birds and improve habitat for birds
- ☑ Participate in the Backyard Habitat Certification
- ☑ Educate the public about buying and releasing ducks at parks and natural areas
- ☑ Support invasive species legislation and policy

What citizens can do – Invasive Species

- ☑ Follow the City's Nesting Bird Guidelines
- ☑ Participate in the Backyard Habitat Certification Program
- ☑ Attend invasive species training opportunities offered by the City of Portland and its partners
- ☑ Volunteer for an invasive species removal project in a nearby natural area.
- ☑ Naturescape your yard
- ☑ Inform your neighbors about invasive species
- ☑ Don't buy a pet duck or goose unless you will provide it with a permanent home; never let a pet such as a duck or goose go free
- ☑ Do not feed domestic, exotic or wild ducks and geese
- ☑ Volunteer for an invasive species removal project in a nearby natural area
- ☑ Naturescape your yard
- ☑ Inform your neighbors about invasive species
- ☑ Support invasive species legislation and policy

Education and Outreach

Migratory Bird Festival

As an outreach action under the Urban Migratory Bird Conservation Treaty, an annual International Migratory Bird Day Festival of the Birds was started in 2004, and has been held annually at Sellwood Park in southeast Portland. The festival includes birding walks into Oaks Bottom Wildlife Refuge and family-friendly activities and local bird information. The City of Portland (lead by PP&R Environmental Education), USFWS and Audubon Society of Portland began by planning and hosting this event with many treaty partner organizations participating. Over the years, attendance has risen to around 1,000. For recent festivals, the City and USFWS have taken the lead on organizing and publicizing activities, and the City has provided all of the funding for the event. Partners, volunteers and businesses have supported the festival by hosting activity stations, leading bird and other nature-related walks, and by donating food and supplies

Next Steps:

- Continue to hold annual Migratory Bird Festivals in partnership with the Audubon Society of Portland, the U.S. Fish and Wildlife Service, and treaty partners.
- Look for sponsorship funding or donations of tents and signs, making it possible to hold an outside event during rainy weather.
- Develop methods to evaluate the festival's true attendance, best methods for publicizing the event, and outreach outcomes.
- Make use of the annual festival bird counts to learn how habitat changes in Oaks Bottom are affecting the refuge's bird population.

Staff Training

The three training sessions regarding birds and the nesting bird guidelines were held in March 2010 for Bureau of Environmental Services staff, and were highly successful. In addition, abbreviated "trainings" tailored for specific program teams in BES (e.g., several in Engineering Services) were held upon request. The guidelines are now being used routinely in project planning and implementation.

In October 2010, a number of BES staff, including many from BES Reveg, attended a one-day workshop that focused on migratory birds and the City's nesting bird guidelines.

Next Steps:

- Continue to provide training for BES staff about the nesting bird guidelines.
- Hold trainings for Portland Parks & Recreation, other city bureaus
- Provide the City's nesting bird guidelines to other public agencies, and hold trainings for them as time allows.

Portland Migratory Bird Website

Information about birds, bird population trends, impacts of activities on bird habitats, and volunteer or recreational activities supporting birds in the Portland area is available, but spread throughout many entities. It is therefore difficult to find information, including local events, and may require significant time searching through a variety of websites. The City of Portland's migratory bird treaty action plan in 2004 identified the need to develop a publicly-accessible website that provides local information about migratory birds, links to partner and other websites with bird-related topics, and a calendar of events focusing on migratory and resident native birds.

A preliminary website was uploaded in 2005. The intention has been to update the content and organization of this website to give a more comprehensive picture of bird actions throughout the region. A new design has been proposed by a local graphic designer, which includes the development of additional content and linkages between pages and to other websites. Converting these files to the portlandonline format needs to take place before implementing the website.

Next Steps:

- Convert files to website design and present it to treaty partners for their comments.
- Establish a routine and identify a staff person responsible for adding calendar items and other information to the website.

Parks' Building Demonstration Project

Most people experience bird window strikes as rather isolated incidents at home and at work. Often this limited experience does not translate into an understanding of the big-picture impact this is having on many of our familiar backyard birds. It is therefore important to raise awareness about the magnitude of window strikes.

Next Steps:

- Install demonstration windows on high visibility windows at Southwest Community Center and the East Portland Community Center, with an eye toward replicating this model at other Parks' centers. Window treatments will demonstrate at least four different easy solutions for residents to apply to windows to deter strikes.
- Develop interpretive signage in conjunction with the demonstration windows,
- Make brochures and other written take-away materials locally-relevant and available to residents who are interested in implementing their own window treatments.
- Demonstrate appropriate lighting strategies (i.e., properly shielded lights that eliminate light trespass) at demonstration sites.
- Ensure that staff at Parks' visitor centers are trained in appropriate messaging and can re-direct visitors to appropriate resources for more information (e.g., Audubon Society of Portland, Cornell Laboratory, National Wildlife Federation and other websites).
- Consult with the Audubon Society of Portland on demonstration projects and messaging.

Teacher Training (Flying WILD)

In 2008, PP&R received funding through the Grey's Family Fund of the Oregon Community Foundation to provide bird-based environmental education. PP&R's Environmental Education staff affiliated with the National Bird Education network and now participates as a treaty city partner in disseminating the Flying WILD curriculum. This teacher-training program has demonstrably shown the spread of interest in birds by both teachers and students. Providing motivation for teachers to use this curriculum to meet benchmarks in the classroom has been one of the goals of Portland's educational efforts under the Treaty program. Providing opportunities to use the Flying WILD curriculum in schools and other venues is seen as a way to increase local support for the Migratory Bird Treaty Program and develop a greater understanding of Portland's birding areas.

Next Steps:

- Develop a standardized program of Flying WILD training for preschool teachers as part of their certification process. Obtain funding so that the process of including bird-focused activities by these teachers does not become a monetary burden.
- Continue to offer Flying WILD curriculum to region-wide classroom and informal science teachers, and track their requests for using bird field trips and attendance at the bird festival as means to determine the continued use of the bird curriculum in the classroom.
- Provide bird activities to leaders of youth groups (Boy Scout, Campfire, etc.) based on the Flying WILD curriculum.
- Establish bird-focused stewardship projects for service learning opportunities.

What partners can do — Outreach and Education

- ☑ Hold a Migratory Bird Festival...or participate as a partner in Portland's Festival of the Birds
- ☑ Educate your staff about ways they can minimize impacts on nesting birds and improve habitat for birds
- ☑ Post information about birds on your website or provide links to other websites or sources of information
- ☑ Link to the portlandmigratorybird.org website when it's completed

What citizens can do – Outreach and Education

- ☑ Attend a Migratory Bird Festival
- ☑ Educate your neighbors
- ☑ Volunteer to help with events where there is an opportunity to inform others
- ☑ Learn more about birds that are visiting your yard and evaluate their habitat for hazards and restoration possibilities
- ☑ Involve neighbors, local school students and others in observing birds with you

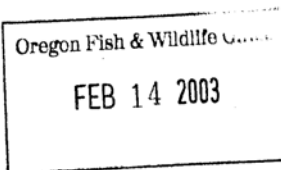
Attachments

- A** Letter to USFWS from Portland Mayor Vera Katz, February 7, 2003
- B** Portland's 2003 Urban Migratory Bird Program Treaty with the USFWS and regional partners
- C** Treaty Partners: Urban Conservation Treaty for Migratory Birds
- D** Letter to Paul Henson, USFWS, from BES and PP&R, February 14, 2011
- E** Portland's Guidelines: "Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects"
- F** "Dogs for the Environment" brochure and pledge form
- G** "Portland's Sensitive Wildlife and Your Dog" brochure
- H** Bird Checklists for Oaks Bottom and Mt. Tabor
- I** "Wildlife of Portland" poster

Attachment A



The office of
Vera Katz
 Mayor Portland Oregon The City That Works



February 7, 2003

Julie St. Louis
 Division of Migratory Bird Management
 U.S. Fish and Wildlife Service
 4401 North Fairfax Drive, Suite 634
 Arlington, VA 22203

Dear Ms. St. Louis:

Thank you for the exciting invitation to become a pilot city for the U.S. Fish and Wildlife Service's Urban Conservation Treaty for Migratory Birds Program (Treaty). The City of Portland cordially accepts, and we plan to involve several of our bureaus including the Bureau of Environmental Services, Parks and Recreation, and the Bureau of Planning. We also intend to work with a variety of other interested local partners, including Audubon Society of Portland, Portland Public Schools, Friends of Trees, and local watershed councils.

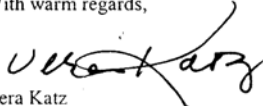
The technical assistance and \$50,000 in challenge funding offered through the Treaty program will help us to expand on a host of conservation efforts the City has already initiated, such as the Watershed Revegetation Program, Salmon Safe Parks, Clean Rivers Plan (improving water quality/watershed health) and River Renaissance to name a few. It will also open opportunities for us to support other migratory bird conservation projects initiated by our partners such as Great Blue Heron Week, Migratory Songbird Festival and Wild-in-the-City.

Portland is committed to the conservation of all native species, including migratory birds. In fact, I officially proclaimed that October 5th be Audubon Society of Portland (ASOP) day to celebrate their 100-year anniversary in 2002. We have been working with ASOP over many years to promote the enjoyment, understanding, and protection of native birds, other wildlife, and their habitats throughout the City. Certain birds in our community, such as Neotropical migratory birds, help us to understand the overall health of our ecosystem and provide an excellent avenue to educate the public about environmental issues.

Over the next several months, we plan to work with US Fish and Wildlife Service staff and other partners to identify and select worthy projects that will leverage the Service's challenge funding in each of the four Treaty categories: 1) education and outreach; 2) habitat creation, protection and restoration; 3) hazard reduction; and 4) non-native, invasive or nuisance animal and plant species management. We hope to develop a pilot program that will demonstrate the importance of this unique, urban-focused initiative. It is our goal to have a proposal developed in time to have a "Treaty" signing ceremony as part of the International Migratory Bird Treaty festivities in May 2003.

Thank you again for offering us this opportunity. We look forward to working with you. If you would like to reach us to discuss this program further, please contact Margaret Nover, the City's coordinator for the Treaty, at (503) 823-7623.

With warm regards,


 Vera Katz
 Mayor



The City of Roseburg

Portland designed by Ray Kaskey photos by Stewart Harvey

Attachment B

Portland's Urban Migratory Bird Program

A regional partnership between

The U.S. Fish and Wildlife Service - Department of Interior,

The City of Portland,

and

Regional community partners, named below

Parties Recognize that Migratory Birds:

- Are an excellent indicator of the overall health of an ecosystem and are an irreplaceable part of the natural systems of the earth;
- Are a valuable resource, contributing aesthetically, culturally, scientifically, and economically to America's citizens;
- Represent, for the vast majority of people, the sole everyday contact with wildlife. Birds connect all of us to the environment;
- Cross boundaries and ecosystems. Protecting them must be a cooperative effort among city and state planners, environmental organizations and federal conservation agencies;
- Face serious challenges. Many species are in decline because of habitat loss, collisions with human-made objects and contaminants.

Convinced of the urgency of taking appropriate measures to protect and promote migratory birds, the U.S. Fish and Wildlife Service, the City of Portland and our regional partners (noted below) enter into a partnership for the purpose of conserving migratory birds through education and outreach, habitat restoration, invasive removal and hazard reduction in the Greater Portland Region.

U.S. Fish and Wildlife Service

City of Portland

By: _____

By: _____

*Dave Allen
Regional Director, U.S. Fish &
Wildlife Service*

*Jim Francesconi
Commissioner, City of Portland*

Date: _____

Date: _____

Portland's Urban Migratory Bird Program Partners – 2003:

Organization

Delegate signature

Attachment C

Treaty Partners Urban Conservation Treaty for Migratory Birds Partners

Signatory Partners – 2003

American Bird Conservancy
Audubon Society of Portland
City of Portland
Columbia Slough Watershed Council
Corps Restoring the Urban Environment
Ecotrust
Friends of Forest Park
Friends of Kellogg and & Mt. Scott Creeks
Friends of Portland Community Gardens
Friends of Rock, Bronson, Willow Creeks
Friends of Trees
Friends of Tryon Creek State Park
Johnson Creek Watershed Council
Mazamas
Metro Regional Parks and Greenspaces
Northwest Ecological Research Institute (NERI)
Oregon Department of Fish and Wildlife (ODFW)
Portland Chapter, Native Plant Society of Oregon
Stop Oregon Litter & Vandalism (SOLV)
Three Rivers Land Conservancy
Tualatin Riverkeepers
Wolfree

Signatory Partners – 2006

Berry Botanic Garden
East Multnomah Soil & Water Conservation District
Friends of Oaks Bottom Wildlife Refuge
Friends of Smith & Bybee Lakes
Jackson Bottom Wetlands Preserve
Oregon State University, 4-H Wildlife Stewards
Sunnyside Environmental School
USDA Forest Service, Mt. Hood National Forest
Urban Greenspaces Institute
Willamette Riverkeeper

Attachment D

CITY OF PORTLAND



ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers



PORTLAND PARKS & RECREATION
Healthy Parks, Healthy Portland

Dean Marriott, Director

Zari Santner, Director

1120 SW Fifth Avenue, Portland Oregon 97204

February 14, 2011

Paul Henson, State Supervisor
U.S. Fish and Wildlife Service
Oregon Fish and Wildlife Office
2600 SE 98th Avenue
Suite 100
Portland, OR 97266-1398

RE: Portland Bird Treaty

Dear Mr. Henson:

It was an honor for the City of Portland to be selected by the U.S. Fish and Wildlife Service as an Urban Conservation Treaty for Migratory Birds Program Partner. As you know, the Portland City Council officially signed the Treaty in May 2003. The intent of signing the Treaty was to:

- Raise awareness of migratory birds in Portland's urban ecosystems,
- Share and increase knowledge of the needs and ecological functions of migratory birds,
- Recognize and promote existing efforts to conserve and enhance the health of migratory bird populations,
- Identify and pursue new actions to maintain the diversity of migratory birds through time,
- Instill a sense of stewardship and responsibility in the City and its citizens, and
- Identify specific measure the City and its citizens can take to ensure migratory birds remain an important element in the urban landscape.

Since 2003, the Portland Parks & Recreation Bureau has been the lead entity for coordinating the City's Treaty activities. With the original grant from the USFWS for the City to launch the program, we have accomplished a number of things that address the intent of the Treaty:

- Designated Oaks Bottom Wildlife Refuge as Portland's first urban migratory bird park.
- Held annual Migratory Bird Festivals to celebrate migratory birds and raise public awareness about the plight of migratory birds.
- Garnered the support of 31 agencies and organizations as Urban Conservation Treaty for Migratory Birds Program Partners. By joining this effort, partners have made long-term commitments to help protect and conserve migratory birds.
- Began development of a Portland Migratory Bird website framework and concept.

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Letter to Paul Henson, USFWS
February 14, 2011

- Created a CD, "On the Great Pacific Flyway - Songs and Stories Celebrating Portland's Migratory Birds".
- Produced Public Service Announcements.
- Developed "Living with Birds" brochures.
- Conducted bird-focused youth activities in Portland Parks.
- Developed Portland's version of the "Flying Wild" Program and trained 200 local teachers in using bird-oriented activities in their curriculum.
- Submitted comments to the FCC regarding impacts of communication towers on birds.
- Created a bird habitat garden in Oaks Bottom as an educational site.

The City of Portland has embarked on a number of other activities that compliment the Treaty activities to promote the conservation of migratory birds. These actions have been conducted as part of the Portland Watershed Management Plan (PWMP) implementation, and specifically as part of the Terrestrial Ecology Enhancement Strategy (TEES), which is part of the PWMP. The Terrestrial Ecology Enhancement Strategy is coordinated through the Science, Fish and Wildlife program of the Bureau of Environmental Services. For example, the City:

- Monitored the Streaked Horned Lark, a federal candidate species for listing.
- Conducted point-counts at a number of sites that are undergoing habitat restoration project work (pre- and post-implementation). For example:
 - Mt. Tabor
 - Stephens Creek Confluence Project
 - Ramsey Pacific Willow Wetland & Refugia
 - Columbia Slough Confluence Project
 - Elk Rock Island Natural Area
 - Oaks Bottom
 - Kelley Point Park
 - Winmar Wetlands
- Conducted a citywide campaign aimed at reducing disturbance to wildlife in parks and other sensitive areas. This included development of a "Dogs in the Environment" brochure, and employment of park rangers to help educate and enforce the dog on leash policy.
- Supported Audubon Society of Portland's pilot Bird Strike Study to document and determine the extent of bird collisions with tall, reflective buildings in the City.
- Developed and is implementing a citywide "Invasive Plant Species Strategy".
- Conducted an Invasive Animals Species Assessment, which will be the basis for an Invasive Animal Species Strategy (underway).
- Developed guidelines and conducted training workshops for Bureau of Environmental Services and Portland Parks & Recreation staff to inform habitat management decisions and project timing, selection, design and maintenance ("Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects").
- Served on the steering committee for the October 2010 "Managing Lands for Songbirds" conference held at the Oregon Zoo, and made several key presentations at the conference.
- Restored hundreds acres of land with native vegetation that will benefit migratory birds.
- Identified "Special Status Bird Species" in Portland, along with their habitat associations.
- Developed bird checklists for two of the City's premier bird areas—Oaks Bottom Wildlife Refuge and Mt. Tabor Park.
- Developed "Desired Future Conditions" for several City natural area parks, including conditions favorable to migratory birds.

Letter to Paul Henson, USFWS
February 14, 2011

- Developed an Avian IBI (Integrity Bird Index) and will be monitoring birds as indicators of watershed health over time.

The above activities could fit under a plan of action we have begun to draft for our bird conservation efforts, which we refer to as the "Portland Bird Agenda". Because many of the objectives and actions of the TEES support the intent of the Treaty, we believe that it would be most effective to coordinate the technically-based Portland Bird Agenda activities under the TEES "umbrella". Because Portland's Parks & Recreation Bureau has been coordinating the annual Migratory Bird Festival and other outreach efforts, it makes sense for that bureau to continue that focus.

Under this modified arrangement for the sharing of Treaty activities, the City is renewing its commitment to the conservation of migratory birds in Portland. We are looking forward to updating and finalizing the draft Portland Bird Agenda, and hope to continue working with the USFWS and other partners on more bird conservation efforts. We intend to accomplish this work as follows.

The Bureau of Environmental Services' priorities will include:

- Updating and finalizing the Portland Bird Agenda, and submitting it for adoption by the Portland City Council.
- Updating (as necessary) and implementing the City of Portland's guidelines, *Avoiding Impacts on Nesting Birds During Construction and Revegetation Projects*. Continue to train city staff and raising awareness among city employees about migratory birds and the impacts of our habitat restoration activities on these species and their habitats.
- Developing guidelines for conservation of wildlife trees, snags, down wood and brushpiles for birds and other wildlife.
- Developing guidelines for management of oak habitats.
- Partnering with the Audubon Society of Portland to conduct point-counts at project sites in order to determine the effectiveness of habitat restoration actions.
- Embarking on long-term monitoring of avian communities as indicators of the health of terrestrial communities in the City.
- Continuation of monitoring of the Streaked Horned Lark populations in Portland, and working with the Streaked Horned Lark Working Group to improve the status of that species.
- Supporting Portland Audubon Society's "Cats Indoors" campaign.

The Portland Parks & Recreation Bureau will focus on:

- Public outreach and education through the annual Migratory Bird Festival.
- Ensuring communication and coordination among the signatory Migratory Bird Treaty Partners.
- Implementation of Parks "Natural Areas Restoration Plan", Published October 2010.
- Developing guidelines for bird-safe buildings.

We are currently developing a grant proposal to apply for funding from the USFWS that is available to existing Treaty cities this year. If additional resources become available in the future from the USFWS or another source, the City would be interested in conducting additional bird monitoring, staff training, on-the-ground conservation projects, and public outreach activities to further benefit migratory birds.

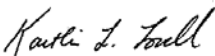
Letter to Paul Henson, USFWS
February 14, 2011

Thank you for your past and ongoing support. The primary contacts for future Treaty activities will be:

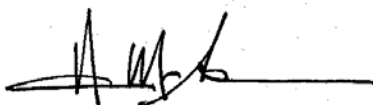
Claire Puchy, Science, Fish and Wildlife Program, Bureau of Environmental Services
claire.puchy@portlandoregon.gov (through June 30, 2011)
503-823-3045

Sue Thomas, Education Specialist, Portland Parks & Recreation
PKST@ci.portland.or.us
503-823-3601

Sincerely,



Kaitlin Lovell
Science, Fish and Wildlife Program



David McAllister
City Nature, Portland Parks & Recreation

cc: Claire A. Puchy, BES
Jane Bacchieri, BES
Zari Santner, Parks & Recreation
Sue Thomas, Parks & Recreation
Jennifer L. Thompson, USFWS

Attachment E
TERRESTRIAL ECOLOGY ENHANCEMENT STRATEGY
GUIDANCE:



Anna's Hummingbirds
Photo by Phillip G.Engstrom

*Avoiding Impacts on Nesting Birds
During Construction
and
Revegetation Projects*

*Version 2
October 2010*



ENVIRONMENTAL SERVICES
CITY OF PORTLAND

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INTRODUCTION

The Terrestrial Ecology Enhancement Strategy (TEES) is part of the City of Portland’s Watershed Management Plan (PWMP), and is intended to help achieve the watershed health goals and objectives in the PWMP, particularly those for biological communities. Information about, and agreed-upon conservation and restoration priorities for, terrestrial plant and animal species and habitats in Portland inform the ongoing implementation of the PWMP.

The main elements of the TEES include:

- Identification of priority plant and animal species and terrestrial habitats in need of protection, conservation and/or restoration
- Identification and prioritization of key management issues
- Recommendations for watershed-specific objectives
- Identification of priority strategies and actions
- Selection of species and habitats to be monitored
- *Guidance to city bureaus and citizens for improving habitat and addressing plant and wildlife management issues*

This document provides information about nesting bird species in Portland and guidance that can inform habitat management decisions and in project timing, selection, design and maintenance. Intended audiences include: the Bureau of Environmental Services and Portland Parks & Recreation⁷. Following these guidelines may minimize the chances of City activities (e.g., stream enhancement construction projects, invasive plant species removal and revegetation efforts) resulting in a “take” of nesting birds.

It should be noted that these guidelines are advisory only, and simply present some precautionary actions to avoid the “take” of native birds. They are intended to help facilitate project implementation—not hinder it. If followed, the guidelines will help you avoid conflicts and last-minute delays. You can think of these as “Best Management Practices” for stream and upland restoration projects and revegetation activities. In order to safeguard migratory birds, employees are encouraged to practice as much due diligence as can reasonably be expected while carrying out their activities. Because every project presents its own set of challenges (e.g., funding deadlines, weather, public safety), this document recognizes the need for flexibility in selecting strategies. It is recognized that there may be a variety of possible options for consideration on a project-by-project basis.

⁷ These guidelines have not been written to apply to Portland Bureau of Transportation (PBOT). PBOT employees should instead refer to the Oregon Department of Transportation’s Highway Division Directive #ENV 01-01.

BIRDS IN PORTLAND

There are over 200 bird species that spend all—or part—of their lives in Portland. Some are “resident” species, meaning they are non-migratory. For example, birds (such as scrub jays) spend their whole life in the same neighborhood and never migrate. Others (such as warblers) are migratory; they spend winters in Central and South America, but may breed here. Still others (such as some shorebirds) pass through this area on their migratory routes to feed and rest.

In addition to native bird species, there are some non-native bird species in Portland. These include rock pigeons (city or “street” pigeons), house sparrows, European starlings ring-necked pheasant, domestic ducks and geese, and peacocks. These guidelines do not apply to non-native species.

The City has developed a *Special Status Species* list that includes over 50 birds. These are species that have been placed on Threatened, Endangered, and Sensitive lists or other “watch lists” by agencies and organizations (e.g., U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, Partners In Flight). This list includes some birds that regularly nest in neighborhoods, parks and natural areas, like rufous hummingbirds, willow flycatchers and Vaux’s swifts. Because their populations are in decline, any disturbance to individuals or their breeding habitat is a significant concern.

NESTING BEHAVIOR OF PORTLAND BIRDS

Birds can be found nesting anywhere, even in the most developed areas. This guidance document describes those times of the year that birds are more likely to be present or nesting in a project area within the City of Portland. It also describes actions that minimize the risk of taking an actual bird or disturbing a nest without stopping a project. This guidance follows the adage that a little advanced planning can go a long way, and minimize problems later on. While these guidelines are directed at restoration and revegetation programs, they may be appropriate for a range of BES and Parks’ projects.

TIMING

The best way to avoid disturbing birds is to schedule activities outside the nesting season. The nesting season is not the same for all species, and not all sites will have nesting birds present during the entire nesting season. Furthermore, about 100 species of birds build nests, lay eggs and raise young in the City. Determining what can or cannot be done can be challenging. However, here is some guidance so that you don’t have to know the particulars of each species. (But if you *are* interested in individual species, **Appendix A** is a list of average Spring arrival dates of birds in the Portland Metro Area).

Non-nesting Season: August 1 – January 31

Nesting Season: The nesting season can be divided into two major time-frames:

Early Nesting Season: February 1 – April 15

Raptors (owls, eagles, falcons and hawks), herons, geese, and hummingbirds are early nesters. Great-horned owls are exceptionally early nesters and may lay eggs in January. Many early nesters have longer breeding cycles and most will not complete breeding until June or July.

Primary Nesting Season: April 15 - July 31

This includes songbirds and the majority of species. Willow flycatchers are late nesters, often extending to the end of August.

As they leave the nest, young birds go through the fledgling phase. They are often seen on the ground, flightless and unable to fend for themselves, however the adults are nearby and tending to them. June and July are peak months for fledgling activity. They often take shelter in *low vegetation* and are highly vulnerable to a variety of human disturbances at this critical time.

NESTING HABITATS

Trees: Stick nests of hawks, crows, and jays placed in tree canopies are among the most conspicuous and familiar signs of nesting birds on the City. These are the easiest to detect and the easiest to avoid.

Shrubs: The majority of nesting birds build a cup nest in dense vegetation in the shrub layer, often close to the ground. These species – sometimes called “tangle nesters” – complicate reasonable efforts to avoid taking protected birds. Willow flycatcher, a species in decline, actually builds nests in Himalayan blackberry, an invasive plant species heavily managed in the City.

Ground: Many species place a well concealed nest on the ground in either open areas or forested habitats. Examples include meadowlarks, harriers, killdeer and Wilson’s warblers.

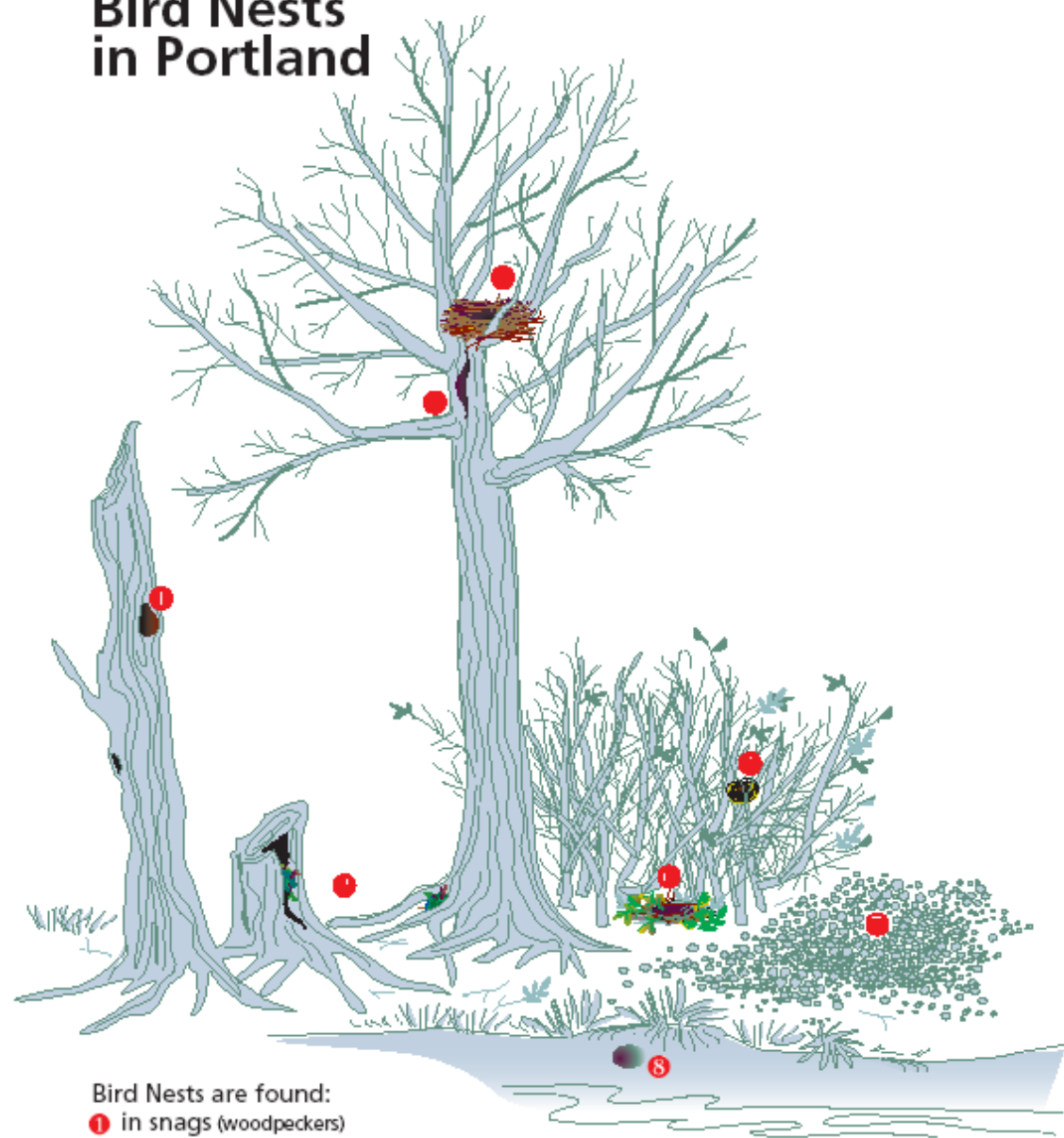
Cavity: Rather than concealing a nest in vegetation, dozens of local species use cavities. These are often in dead or dying trees, but can also be in the ground or in a variety of structures in the urban environment. Tree swallows, Bewick’s wrens and downy woodpeckers are common cavity nesters.

Streambanks: The northern rough-winged swallow and the belted kingfisher are “cut bank” nesters, meaning they use holes excavated in streambanks for nesting. Sometimes they even use holes on steep slopes of dirt stock piles.

Structures: Many birds use human-made structures for nesting. In addition to using bird boxes that are intended for such use, birds will nest on bridges, under house eaves, on building ledges, utility and light poles, on railroad tracks and even on gravel roads.

Appendix B provides a list of Portland area birds and the types of habitats they use for nesting.

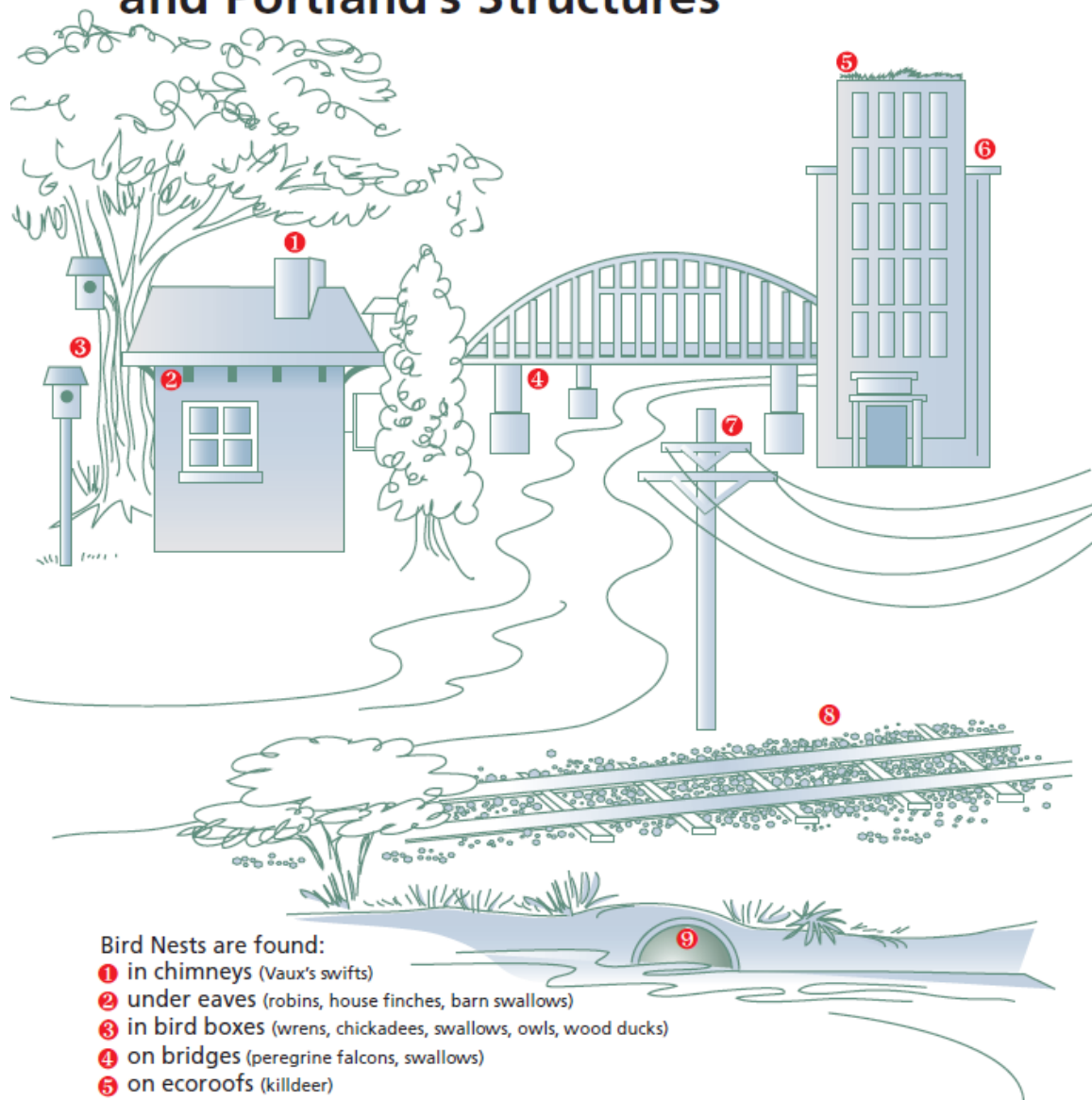
Bird Nests in Portland



- Bird Nests are found:
- 1 in snags (woodpeckers)
 - 2 in log and stump crevices, and around roots (winter wrens)
 - 3 in tree crevices (chickadees, brown creepers)
 - 4 in tree branches (jays, crows, herons)
 - 5 in shrub branches (hummingbirds, warblers, song sparrows)
 - 6 on ground under shrubs (spotted towhees)
 - 7 in open gravel (killdeer)
 - 8 in streambanks (kingfishers)

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Bird Nests and Portland's Structures



Bird Nests are found:

- ❶ in chimneys (Vaux's swifts)
- ❷ under eaves (robins, house finches, barn swallows)
- ❸ in bird boxes (wrens, chickadees, swallows, owls, wood ducks)
- ❹ on bridges (peregrine falcons, swallows)
- ❺ on ecoroofs (killdeer)
- ❻ on ledges (red-tailed hawks, mourning doves, crows)
- ❼ on utility and light poles (ospreys, Canada geese)
- ❽ on railroad tracks and gravel roads (killdeer, spotted sandpipers)
- ❾ in culverts (barn swallows)

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GENERAL GUIDELINES

While many City activities and projects can potentially impact nesting birds, especially construction and maintenance, this guidance focuses on stream enhancement and revegetation projects, mowing, removal and maintenance of structures, and water-level management. Any projects that include removal of live trees or standing dead trees (snags), native or non-native invasive vegetation removal, grubbing and clearing may disrupt bird nesting. Assessing bird use in the project area prior to construction and altering the timing of plant removal are recommended.

Here are some general guidelines to help you plan project activities *(for a summary overview, please refer to page 21 of this document)*:

When to Plan Disturbance (see Appendix C):

August 1 – January 31 is the best time to plan for tree removal, invasive plant species management, and grubbing and clearing.

When to Avoid Disturbance (see Appendix C):

February 1 – April 15 is the early nesting season. Disturbance to vegetation, especially trees, should be avoided during this time.

April 15 – July 31 is the primary nesting season. Disturbance to vegetation should be avoided during this time.

Note: If birds are not present during nesting season, vegetation removal and other disturbance activities may proceed.

WHAT IF WORK MUST OCCUR DURING AVOIDANCE PERIODS?

If work must occur in the recommended avoidance time frames, the project area and specific vegetation impacted should be surveyed for nesting birds. **Appendix D** is a Bird Nesting Assessment Form that can be used. If an active nest is found, avoid it until the young have fledged. “Active” nests are defined as those with eggs or young.

WHO CONDUCTS A NESTING BIRD SURVEY?

BES and Parks personnel who can identify bird species are encouraged to fill out the Bird Nesting Assessment Form. However, because some teams may not have the technical expertise or time to conduct bird surveys, there are several other options:

- Terrestrial Ecology Enhancement Team (TEES) members may be called upon.
- The services of an on-call contractor may be used (this is encouraged for projects that cover large areas or large numbers of trees).

SPECIFIC GUIDELINES

Below are some recommended guidelines for four broad types of actions—stream enhancement projects, invasive plant species removal, other vegetation removal, and other management activities. These are summarized in matrix format in **Appendix E**.

STREAM ENHANCEMENT CONSTRUCTION PROJECTS

Since many City projects have in-water work windows from June 1 to October 31 (see **Appendix C**), the bird nesting period can best be avoided if:

- Vegetation removal and erosion control occurs prior to February 1 *or*
- All construction activities begin after July 31.

If vegetation disturbance, removal or other work must occur during nesting season, please confer with the Terrestrial Ecology Enhancement Strategy (TEES) team for project-specific guidance.

INVASIVE SPECIES MANAGEMENT

There are a number of programs and efforts that are specifically aimed at removing invasive plant species (e.g., BES Watershed Revegetation Program, BES Early Detection and Rapid Response Program, Parks' Protect the Best Program, Parks' Volunteer Stewards, Parks' Ecologists). It is important to plan invasive species removal to coincide with times best for eradication *and* to avoid disturbance to nesting birds. The following recommended guidelines will help avoid disturbance to nesting birds:

Blackberry – One of the most beneficial invasive plants for native birds. Heavily used by a myriad of species for nesting, foraging and winter cover.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Blackberry spraying and removal is generally fine EXCEPT for areas with willow flycatchers (such as Johnson Creek, Columbia Slough and Powell Butte areas). The willow flycatcher is a sensitive species in serious decline and a late nester, often until the end of August.
- Early Nesting Season (February 1 – April 15) – Blackberry spraying and removal is OK. Watch for Anna's hummingbirds which are early nesters and defend their territory with displays that are easily heard and seen.
- Primary Nesting Season (April 15 – July 31) – Avoid major spray and removal. Maintenance management and volunteer efforts are OK, but watch for song sparrow, spotted towhee and California quail nests, which are on ground or in blackberry plants. AVOID if present.

- Remember: Willow flycatchers' nesting season extends through August. Therefore, avoid April 15 – August 31 in riparian and wetland habitats

Clematis – Growth form provides the type of cover many nesting birds are seeking. Although not well-documented, it is likely that many local species are placing nests in or under clematis clumps

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Air gapping and root grubbing is OK.
- Early Nesting Season (February 1 - April 15) - Air gapping and root grubbing is OK. Be sure to leave vines in trees to decompose in case there is an early tree nester.
- Primary Nesting Season (April 15 – July 31) – Air gapping is OK. Avoid root grubbing and pulling vines down. Watch for nearby active nests on the ground and in shrubs.

Garlic Mustard – There is no known use of garlic mustard by nesting birds. However, garlic mustard is typically treated with spot spraying or hand pulling in the nesting season, and there may be nests nearby in other plant species.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Spraying and hand pulling is OK.
- Early Nesting Season (February 1 - April 15) - Spraying and hand pulling is OK. Watch for ducks, killdeer or other ground nesters when treating garlic mustard along streams or along parking areas.
- Primary Nesting Season (April 15 – July 31) – Spot spraying and hand pulling is OK. Watch for nests low to the ground. If a nest is found, leave the surrounding vegetation.

Hawthorne – Cedar waxwings and American robins are two species that commonly build open cup nests in hawthornes.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Generally removal is OK. However, if removing hawthornes in willow flycatcher areas such as Powell Butte, avoid removal **until after August 31**.
- Early Nesting Season (February 1 - April 15) – Girdling is OK. Avoid tree removal.
- Primary Nesting Season (April 15 – July 31) – Avoid removal.

Holly and Laurel – Although these invasive trees are a threat to native habitats, many birds will use them to build nests and raise young.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is the best time for intensive first treatments to areas with dense holly and laurel stands.
- Early Nesting Season (February 1 - April 15) – Removal is likely OK. Watch for nesting behavior and avoid if observed.
- Primary Nesting Season (April 15 – July 31) – Avoid intensive first treatments. If removal is required, visually inspect smaller trees (i.e., under 10 feet) for small cup nests. If there are larger specimens to be removed, a more thorough survey is recommended. Watch for robin and other nests and avoid if present.

Ivy: Ground Ivy – There are no native birds known to exclusively use ground ivy, but typical ground and low shrub nesters are spotted towhees and song sparrows. Pulling ivy in the primary nesting season could disturb native vegetation, or the presence of a group of people for an extended period of time could cause nest to be abandoned.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Foliar spray and hand pulling is OK
- Early Nesting Season (February 1 - April 15) – Foliar spray and hand pulling is OK.
- Primary Nesting Season (April 15 – July 31) - Avoid pulling and foliar spraying if possible. Hand pulling can take place, but with caution. Look and listen for winter wrens, and watch for nesting birds nearby. If there is an active nest in the area, do not work in there.

Ivy: Tree Ivy – There are no native birds known to exclusively use tree ivy, though there are many that use branches on the infested tree such as robins and vireos. Pulling ivy down after cutting could pull active nests down.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Air-gapping is OK.
- Early Nesting Season (February 1 - April 15) - Air-gapping is acceptable, but leave ivy in trees to decompose slowly.
- Primary Nesting Season (April 15 – July 31) - Air-gapping is acceptable, but leave ivy in trees to decompose slowly. Watch for nearby active ground and shrub nests and avoid if present.

Knapweed, Tansy, and Thistle – Grassland birds will use non-native, weedy areas for nesting.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – Spot spraying is OK.
- Early Nesting Season (February 1 - April 15) – Spot spraying is OK, but watch for killdeer nests on the ground. Birds will flush and perform a loud distraction display. Avoid area if present.
- Primary Nesting Season (April 15 – July 31) - Spot spraying of herbicides is acceptable any time, but watch for Savannah sparrows, common yellowthroats, American goldfinches and nests in nearby shrubs and grasses. Avoid if present.

Knotweed – Use by native birds is not well-known.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is a good time for foliar spray or injection.
- Early Nesting Season (February 1 - April 15) – This is a good time for foliar spray or injection.
- Primary Nesting Season (April 15 – July 31) – Treatment is likely OK, but watch for nearby nests.

Purple Loosestrife – Wetlands are important to many native nesting birds, and therefore, actions to control purple loosestrife may have the potential to affect them.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is a good time to treat loosestrife.
- Early Nesting Season (February 1 - April 15) – Herbicide application is OK until March 1. Watch for ducks in wetlands, as they tend to breed early – typically in March.
- Primary Nesting Season (April 15 – July 31) – Avoid vegetation management. If mid-summer treatment is advised, watch for red-winged blackbirds and American goldfinch nests in plants, and watch for ducks on the ground.

Reed Canarygrass – Common yellowthroats, mallards and cinnamon teal have been documented nesting in reed canarygrass at a wetland adjacent to the Columbia Slough. Growing and treatment season for reed canarygrass is March through August, which may conflict with nesting birds, since it's typically mowed in May and June.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is a non-conflict time to cut, spray or grub.

- Early Nesting Season (February 1 - April 15) – Typical treatment (hand-spraying) is OK in March and April. Watch for nesting ducks such as cinnamon teal.
- Primary Nesting Season (April 15 – July 31) – Avoid vegetation management. Conduct nest survey if mowing is advised.

Yellow Flag Iris – Red-winged blackbirds have been known to nest in patches of yellow flag iris.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is a good time for herbicide application and mechanical removal.
- Early Nesting Season (February 1 - April 15) – Herbicide application and mechanical removal is OK until March 1. Watch for duck nests along the shore after March 1, and avoid if present.
- Primary Nesting Season (April 15 – July 31) – Avoid vegetation management. Watch for red-winged blackbird and duck nests along the shore and in reeds.

OTHER VEGETATION MANAGEMENT

At times, it is necessary to remove non-invasive, non-native—or even native—trees, snags, shrubs and ground cover. If so, the following recommendations should be followed.

Live Tree Removal (Native and Non-Native) – Native, as well as non-native, live trees can host nesting birds any time from February 1 to August 31. Many of the early nesters are larger birds (e.g., herons, raptors) with larger nests that are easier to detect early in the season prior to leaf-out.

Management Recommendations:

- Non-nesting Season (August 1 - January 31) – Tree removal and girdling is OK.
- Early Nesting Season (February 1 – April 15) – Avoid tree removal, but girdling is OK. If trees must be removed, watch for early nesters: owls, hawks and Anna’s hummingbird (and killdeer on the ground). Scan canopies for any possible nests; if any are found seek assistance to determine if they are active.
- Primary Nesting Season (April 15 – July 31) – Avoid tree removal, but girdling is OK.

Snag Removal – Snags (standing dead trees) and standing dead wood play critical roles for many bird species. Snags attract insects, which are a vital source of food for woodpeckers and others birds. They provide perches, and are often the only source of cavities for cavity-nesting birds. In general, the following steps are recommended:

- Leave snags when possible.
- If there is a public safety concern, trim offending branch(es), leaving as much of the snag as possible.
- If all branches are unsafe, trim branches and leave the trunk.
- If the trunk is very tall and considered unsafe, leave 20 – 40 feet.
- If removal is unavoidable and there are no nearby trees appropriate for girdling, consider auguring the removed dead tree trunk into the ground. Use the tree branches for terrestrial habitat elements within the project site so that food sources and perch sites remain in the area.

Management Recommendations (if a snag must be removed, or if there is a public safety issue):

- Non-nesting Season (August 1 – January 31) – This is the best time for snag removal.
- Early Nesting Season (February 1 - April 15) – Watch for early snag nesting birds such as owls, and avoid removal if possible.
- Primary Nesting Season (April 15 – July 31) – Avoid snag removal if possible.

Shrub Removal (Native and Non-Native) – Low, dense shrub cover is vitally important nesting habitat and supports more breeding birds than trees do in the Portland area. Birds will nest at a variety of heights in the shrub layer. For example, spotted towhees build nests from ground level up to about 15 feet.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is the best time for vegetation removal.
- Early Nesting Season (February 1 - April 15) – Watch for early nesters such as Anna’s hummingbirds in shrubs; they often produce loud visual displays near their nests. Watch for killdeer which nest on open ground and make loud displays to distract predators from the nest. Be aware of ducks or other birds flushing suddenly off the ground.
- Primary Nesting Season (April 15 – July 31) – Avoid vegetation impacts and removal.

Grassland Mowing and Ground Cover Removal (Native and Non-Native) – Many species only build their nests on the ground. Some will build below dense shrub cover (e.g., Wilson’s warbler), while others will conceal their nest in grass (e.g., Savannah sparrow, Western meadowlark). Still others will build an exposed nest on gravel or bare ground (e.g., horned lark, killdeer). Ground nesters are vulnerable to a variety of disturbances.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – This is the best time for ground cover removal or disturbance like road building.
- Early Nesting Season (February 1 - April 15) – Proceed with caution: Be aware of killdeer, often calling loudly and feigning injury when you are near their nest. Be aware of ducks or other birds flushing suddenly off the ground.
- Primary Nesting Season (April 15 – July 31) – Avoid mowing and removal of ground cover.

Controlled Burn – This is a useful technique for controlling some plant species and encouraging native grasses. Some birds, such as horned larks and Western meadowlarks, nest in grasslands, however.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – OK to burn.
- Early Nesting Season (February 1 - April 15) – OK to burn.
- Primary Nesting Season (April 15 – July 31) – Avoid burning.

OTHER MANAGEMENT ACTIVITIES

Several activities that can affect nesting birds do not involve vegetation treatment or management. These include removing structures and manipulating water levels.

Removing and Maintaining Structures – Some birds use structures for winter roosting, but may also use them for nesting. Removing structures and maintenance activities (e.g., pressure-washing, painting and repair work) is another activity that can disrupt nesting birds. Osprey nests are often found on artificial structures near water. Barn owls, cliff swallows, barn swallows and Vaux's swifts are examples of protected species that readily use buildings for nesting. From February 1 to July 30, building demolitions should include a survey for nesting birds.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – OK to remove structures, but if birds are using the building for winter roosting, flush the bird from the building and allow them an opportunity to exit (e.g., make loud noises). If removing a roost chimney used by Vaux's swifts, wait until October 10 or later until birds migrate south for the winter.
- Early Nesting Season (February 1 - April 15) – Survey for owls, which nest on beams and platforms in old buildings. If present, wait until the young are fully fledged.
- Primary Nesting Season (April 15 – July 31) – Survey for nests of birds such as cliff and barn swallows, which make mud nests in eaves and on ledges. Survey for swifts in chimneys and for house finches in eaves and

cavities. Avoid structure removal if possible, or wait until the young fledge.

Manipulating Water Levels – Lowering water levels or flooding areas can have impacts on nesting birds such as waterfowl, red-winged blackbirds, common yellowthroats and marsh wrens, which nest in wetlands. Birds such as kingfishers make nests in streambanks which could be flooded by high water.

Management Recommendations:

- Non-nesting Season (August 1 – January 31) – OK to manipulate water levels.
- Early Nesting Season (February 1 - April 15) – Consider ducks and other waterfowl which are early nesters (as early as March 1). Duck nests are near or on the ground in wetland habitats.
- Primary Nesting Season (April 15 – July 31) – If inundating wetlands, consider impacts to red-winged blackbirds and other species, which nest in reed canarygrass, cattails and tall reeds.

SENSITIVE AREAS

Certain habitats within the City are recognized by state and federal agencies as being ecologically important and sensitive to disturbance. They are also home to unique nesting species that can be overlooked. These “Special Status Habitats” include wetlands, grasslands, oaks, interior forests (especially late-successional conifer forests), bottomland hardwood forest and riparian habitats, and aquatic habitats (e.g., lakes, rivers and streams). The Special Status Habitats and the Special Status Bird Species most closely associated with them are presented in **Appendix F**.

Specific habitats of concern are wetlands and grasslands, which are often home to ground nesting birds, including Western meadowlarks, rails and other species. Riparian areas – the forest along streams and rivers – host a diverse array of nesting species using all four nesting habitats: ground, shrub, tree and cavity. It is important to be particularly vigilant in these areas to avoid impacts to nesting birds.

SPECIAL CONSIDERATIONS

SPECIES

There are some species that—because of their status or unusual nesting season—deserve special consideration. The following guidelines (which are also summarized in Appendix E) will help avoid disturbing these birds:

Willow flycatchers are a Special Status Species, and are listed by the State of Oregon as Sensitive-Vulnerable. These small songbirds are among the latest nesting species in the City, often extending their breeding activities to the end of August. They occur in riparian and wetland habitats in most of the City's watersheds, sometimes choosing to build nests in Himalayan blackberry, an invasive plant species. If Willow flycatchers are known or suspected in the project area, the primary nesting season window should be extended to August 31.

Anna's hummingbirds are early nesters. Females build tiny nests of lichens and spider webs placed on small branches of shrubs and trees. They can lay eggs as early as mid-February. Nests are very difficult to find, but the presence of a territorial male from February to May is an indication that a nest is nearby and vegetation disturbance should be avoided.

Killdeer lay their eggs in gravel areas on the ground and out in the open. Vacant lots, gravel access roads, margins of farm fields, and street shoulders in open grassy areas are likely to have killdeer nests. They are early nesters, usually laying eggs in March and April. Due to the location of their nest, they are highly vulnerable to disturbance. Killdeer are often conspicuous and if they are observed in a project area March to May it should be assumed there is a nest nearby. Once a nest is located it can usually be flagged or fenced with exclusion zone fence and avoided.

Great-horned owls are very early nesters, often laying eggs in January and February. In our area, they use stick nests in trees and can often be found by conducting an early season nest survey of the project area.

Bald eagles nest high in trees from January 1 to September 1. As of 2010, there are five bald eagle nest sites in the Portland area: East Hayden Island, West Hayden Island, Ross Island, areas adjacent to Elk Rock Island, Ramsey, and Smith and Bybee Lakes. The most recent bald eagle survey data from the Oregon Cooperative Fish and Wildlife Research Unit at Oregon State University will be consulted to determine project proximity to known bald eagle nests. Restoration activities (i.e., above local ambient noise and visual activity levels) cannot occur within 0.25 miles (or 0.5 miles line-of-site) from an occupied nest during the critical nesting period from January 1 to September 1, or known winter roost areas from October 31 to April 30.

OTHER THINGS TO KEEP IN MIND

Every project is unique and presents its own set of challenges. Here are just a few things to keep in mind as you plan your project:

Impacts on neighboring properties

Aesthetics and public perception

Contractor schedules, permits and funding deadlines

Human safety

Every project has the potential to inform and educate others!

WHAT IF YOU FIND AN ACTIVE NEST ON A PROJECT SITE DURING PROJECT IMPLEMENTATION?

What should you do if you have followed the above guidelines, have planned activities to avoid disturbance to nesting birds, and you find an active nest during project implementation? “Active” nests are those with eggs or young in them. **Attachment H** will help you make the most appropriate decision.

WHAT IF YOU FIND A BABY BIRD OUT OF ITS NEST?

It is normal for many bird species such as scrub jays, robins, crows and owls to leave the nest and spend as many as 2-5 days on the ground before they can fly. Parents will care for them during this period. Unless a bird is injured, it is important that it NOT be taken into captivity, since this will deny them the opportunity to learn survival skills (e.g., finding food, identifying predators, flying) from their parents.

Attachment G will help you make the right decision, should you find a baby bird during project implementation.

SUMMARY OF RECOMMENDATIONS FOR AVOIDING IMPACTS ON NESTING BIRDS DURING CONSTRUCTION AND REVEGETATION PROJECTS

BEST

You have at least a year to plan your project.

- Plan your project at least a year in advance.
- Plan disturbance to occur during the non-nesting season (August 1 – January 31) or complete site preparation prior to April 15.
- Refer to specific guidelines in this document for different kinds of actions/projects.

NEXT BEST

*You do not have time to plan ahead
and work must occur during the nesting season.*

- Refer to the specific guidelines in this document for different kinds of actions/projects.
- Survey for nesting birds, using the Bird Nesting Assessment Form in this document (Appendix D).
- If survey reveals nesting birds, avoid action until young have fledged.
- If survey reveals no nesting, proceed with action.
- If the survey found no evidence of nesting, but a nest is found during project implementation, refer to Appendix G.

ADDITIONAL THINGS YOU CAN DO TO HELP NATIVE BIRDS

In addition to the above management recommendations, there are other things that project managers and field crews can do to help native birds. Some of these are important regardless of habitat type; others are habitat-specific. These are summarized in [Appendix I](#).

Appendix A

Average Arrival Dates for Birds in the Portland Metro Area

(Note: Many local species, such as the winter wren, are not listed here because they are year-round residents.)

<u>Average Arrival</u>	<u>Species</u>
Feb 09	Tree Swallow
Feb 25	Rufous Hummingbird
Mar 03	Violet-green Swallow
Mar 04	Turkey Vulture
Mar 16	Osprey
Mar 19	Orange-crowned Warbler
Mar 21	Cinnamon Teal
Apr 02	Cliff Swallow
Apr 04	Common Yellowthroat, Northern Rough-winged Swallow
Apr 05	Black-throated Gray Warbler
Apr 08	Brown-headed Cowbird, Barn Swallow
Apr 12	Cassin's Vireo, Vaux's Swift
Apr 13	Purple Martin
Apr 16	Yellow-headed Blackbird
Apr 18	Chipping Sparrow
Apr 19	Hammond's Flycatcher, Wilson's Warbler
Apr 20	House Wren
Apr 22	MacGillivray's Warbler
Apr 24	Pacific-slope Flycatcher
Apr 26	Warbling Vireo, Western Tanager, Western Kingbird, Bullock's Oriole
Apr 27	Black-headed Grosbeak, Yellow Warbler
Apr 29	Calliope Hummingbird
May 01	Swainson's Thrush
May 02	Olive-sided Flycatcher, Western Wood-Pewee
May 05	Lazuli Bunting
May 13	Yellow-breasted Chat
May 14	Willow Flycatcher
May 28	Eastern Kingbird
May 31	Red-eyed Vireo
Jun 08	Common Nighthawk

Appendix B

Nesting Birds by Habitat in Portland

Note: For nesting habitat, trees are generally defined as greater than 7m (~20 feet) and shrubs are less than 7m (~20 feet). The categories below are based on typical nest sites; however some “shrub nesters” will nest in trees and likewise some “tree nesters” can chose a site closer to the ground.

* On the City of Portland’s “Special Status Species” List, meaning the species has been listed by the U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, or another entity because it is rare, in decline or otherwise of special concern.

Tree Nesting Birds in Portland

American Crow	Great-horned Owl
Bald Eagle*	House Finch
Band-tailed Pigeon*	Mourning Dove
Barred Owl	Olive-sided Flycatcher*
Black-headed Grosbeak	Osprey
Black-throated Gray Warbler*	Pine Siskin
Bullock’s Oriole*	Purple Finch*
Cedar Waxwing	Red Crossbill*
Common Raven	Red-shouldered Hawk
Cooper’s Hawk	Red-tailed Hawk
Double-crested Cormorant	Sharp-shinned Hawk
Eastern Kingbird	Steller’s Jay
Evening Grosbeak	Western Kingbird
Golden-crowned Kinglet	Western Tanager
Great Blue Heron*	

Shrub Nesting Birds in Portland

American Goldfinch	Pacific Slope Flycatcher*
American Robin	Red-winged Blackbird
Anna’s Hummingbird	Rufous Hummingbird*
Brewer’s Blackbird	Scrub Jay
Brown-headed Cowbird	Song Sparrow
Bushtit*	Swainson’s Thrush*
Cassin’s Vireo	Warbling Vireo
Green Heron*	Western Wood Pewee*
Hutton’s Vireo*	Willow Flycatcher*
Lazuli Bunting	Yellow Warbler*
Lesser Goldfinch	Yellow-breasted Chat*
MacGillivray’s Warble	Yellow-headed Blackbird

Ground Nesting Birds in Portland

American Bittern*	Orange-crowned Warbler*
American Coot	Pied-billed Grebe
Blue-winged Teal	Ring-necked Pheasant
California Quail	Ruddy Duck
Canada Goose	Savannah Sparrow
Chipping Sparrow*	Sora*
Cinnamon Teal	Spotted Sandpiper
Common Nighthawk*	Spotted Towhee
Common Yellowthroat*	Streaked Horned Lark*
Dark-eyed Junco	Turkey Vulture
Killdeer	Virginia Rail
Mallard	Western Meadowlark*
Marsh Wren	White-crowned Sparrow
Northern Harrier*	Wilson's Snipe
Northern Shoveler	Wilson's Warbler

Standing Snag and Live Tree Cavity Nesting Birds in Portland

American Kestrel*	Northern Flicker
Black-capped Chickadee	Northern Pygmy Owl
Barn Owl	Northern Saw-whet Owl
Barred Owl	Pileated Woodpecker*
Brown Creeper*	Purple Martin*
Bufflehead*	Red-breasted Nuthatch
Chestnut-backed Chickadee	Red-breasted Sapsucker
Common Merganser	Tree Swallow
Downy Woodpecker*	Violet-green Swallow
European Starling (non-native; not protected by laws; OK to destroy)	Vaux's Swift*
Hairy Woodpecker	Western Screech Owl
Hooded Merganser*	White-breasted Nuthatch*
House Wren*	Wood Duck*
House Sparrow (non-native; not protected by laws; OK to destroy)	

Ground Cavity Nesting Birds in Portland

Two wrens are “nook and cranny” nesters, using cavities on or near the ground in decaying logs, under logs, in root wad tangles, or in the ground at the base of shrubs:

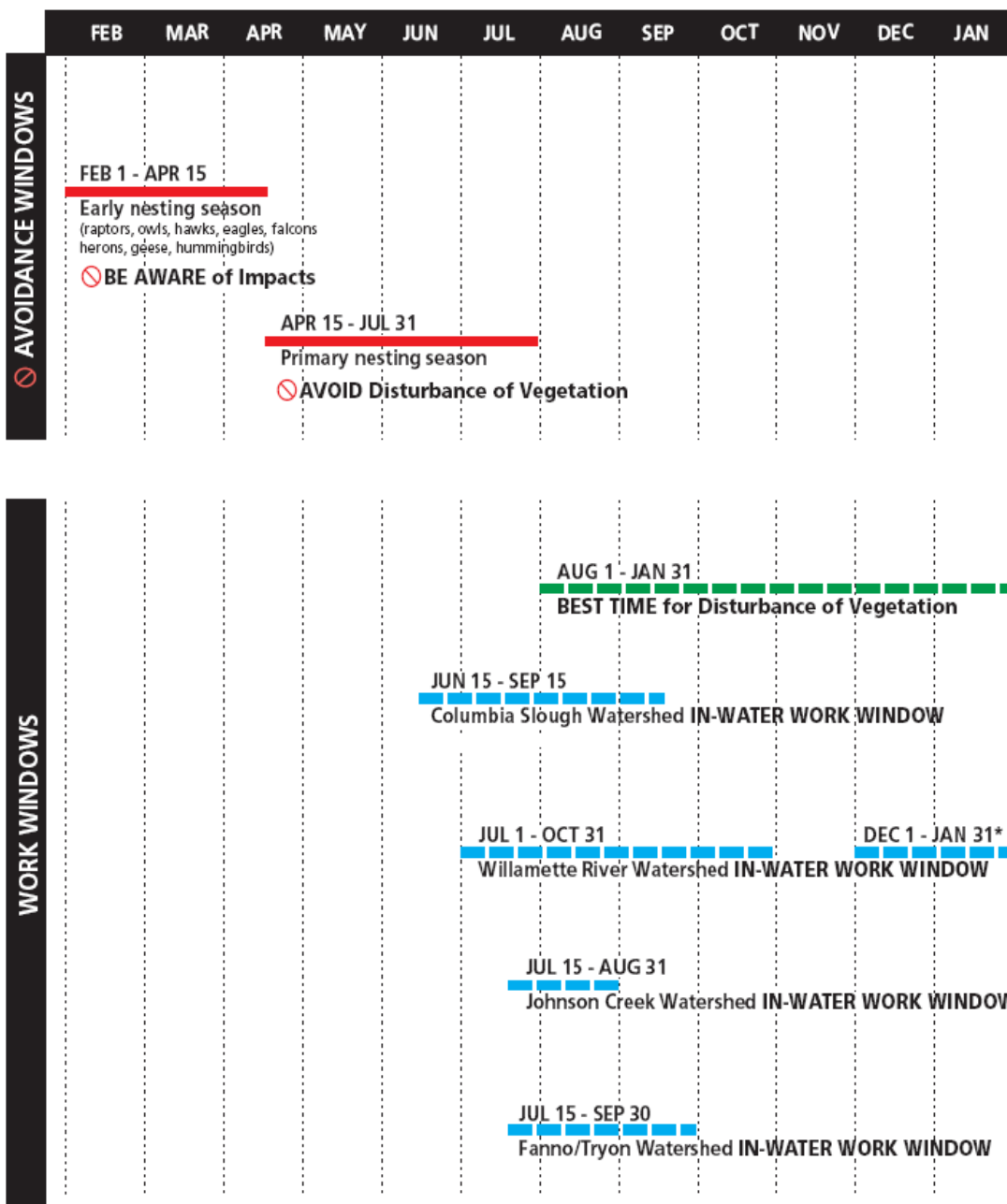
Winter Wren*
Bewick’s Wren

These two birds are “cut bank” nesters that use holes excavated in stream banks or even on steep slopes of dirt stock piles:

Northern Rough-winged Swallow
Belted Kingfisher

Appendix C

Bird Nesting Season and Work Windows



* The Oregon Department of Fish and Wildlife acknowledges the in-water work window for the Willamette, and therefore it is officially available. However the National Marine Fisheries Services currently is not approving the winter in-water work window in the Willamette. Realistically therefore it is difficult to get approvals for the winter period.

Appendix D

Bird Nesting Assessment Form

Site _____ Date of Assessment _____

Name of Project _____

Project Manager _____

Name of person conducting Assessment _____

Time of Assessment _____

Date Assessment was provided to Project Manager _____

Construction or Activity Schedule if known _____

Design Completed ___ 30% ___ 60% ___ 90%

Are staging, access and other disruption areas known? ___ yes ___ no

Are trees or other vegetation to be removed marked on construction documents?

___yes ___ no

Birds Observed on Site:

Species	# of Obs.	Check if Special Status Species	Does it likely breed here? Yes or No	Breeding behavior observed? Yes or No	Behavior Codes ^a	Habitat and Notes

^a Behavior codes:

forag. = foraging
 copl. = copulation
 pair = pair observed
 fledg. = fledging
 song = singing adult

mat. carry = carrying nesting material
 food carry = adult carrying food (e.g., insect, fish) or fecal sac
 displ. = courtship or territorial display
 flock = flocking

Nests or Nesting Evidence Observed on Site:

Description of nest, nest hole in tree, or species if known	Description of location of nest (tree number and species, vegetation type, etc.)	Former or active nest?

Concerns about project impacts to birds (e.g., likelihood of nests observed to be active during construction, etc):

Recommendations to Project Manager:

Appendix E

Vegetation and Other Management Recommendations *

**Ideally, all vegetation disturbance/removal should be scheduled to occur between August 1 and January 31. If work cannot occur in this window, please consider the following recommendations. For questions and additional guidance in following these recommendations, contact a member of the TEES Team.*

Stream Enhancement Construction Projects		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
Vegetation removal	Refer to tables, below.	Refer to tables, below.
Construction activities	Refer to tables, below, if vegetation will be disturbed.	Refer to tables, below, if vegetation will be disturbed.

Invasive Species Management		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
<p>Blackberry Removal</p> <p><i>A beneficial invasive plant for native birds. Heavily used by a myriad of species for nesting, foraging and winter cover.</i></p>	<p>First treatment for overgrown areas – foliar spraying (mash and spray) and mechanical removal – OK</p> <p>Watch for Anna’s hummingbirds, which are early nesters, and defend their territories with displays that are easily seen and heard.</p>	<p>Avoid major spray and removal.</p> <p>Maintenance management and volunteer hand removal work are OK, but watch for active nests (spotted towhee, song sparrow, California quail) and avoid if present. Nests are mostly cups of fine plant material in blackberry, or on the ground.</p> <p>In August, watch for willow flycatchers, which are found especially in Johnson Creek, Powell Butte and Columbia Slough areas; avoid if present. Willow flycatchers sit out prominently and call “fitz-bew” (easy to learn with some practice). Avoid blackberry removal in August in willow flycatcher territory.</p>
<p>Clematis Removal</p> <p><i>Growth form provides the type of cover nesting birds are seeking. Likely that many local species nest in or under clematis clumps.</i></p>	<p>Air gapping and root removal (grubbing) – OK</p> <p>Leave vines in trees to decompose in case there is an early tree nester.</p>	<p>Air gapping – OK</p> <p>Avoid root grubbing and pulling down vines.</p> <p>Watch for winter wrens, spotted towhees and other nearby active ground and shrub nests; avoid if present.</p>
<p>Garlic Mustard Removal</p> <p><i>There is no known use of garlic mustard by nesting birds, but there may be nests in nearby plants.</i></p>	<p>Spot spraying – OK</p> <p>Hand pulling – OK</p> <p>Watch for early nesters (e.g., killdeer, ducks) and nests low to the ground</p> <ul style="list-style-type: none"> ▪ Killdeer nest on the ground in gravel. Loud adult display to distract predators from nest is a good sign to watch for. ▪ If nest is found, leave surrounding vegetation. 	<p>Spot spraying – OK</p> <p>Hand pulling – OK</p> <p>Watch for nearby active ground and shrub nests. Avoid if present.</p>

Invasive Species Management		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
<p>Holly and Laurel Removal</p> <p><i>Many birds use these for nesting and raising young. In the fall and winter, berries provide food for many species, including American robin and varied thrush.</i></p>	<p>Removal (by cut and stump treatment) – likely OK.</p> <p>Watch for nesting behavior and avoid if observed.</p>	<p>Avoid intensive first treatments.</p> <p>If removal is required, visually inspect small trees (< 10') for small cup nests. If there are larger specimens to be removed, a more thorough survey is recommended.</p> <p>Watch for active robin nests and avoid if present.</p>
<p>Ivy: Ground Ivy Removal</p> <p><i>No native birds are known to exclusively use ground ivy, but typical and ground and low shrub nesters are spotted towhees and song sparrows.</i></p>	<p>Foliar spraying and hand pulling – OK</p>	<p>Avoid pulling and foliar spraying if possible. Pulling ivy can disturb native vegetation, and the presence of people for an extended period of time can cause nearby nests to be abandoned.</p> <p>Hand pulling OK with caution. Watch for birds. If an active nest is found, do not work in that area.</p> <p>Look and listen for winter wrens.</p>
<p>Ivy: Tree Ivy Removal</p> <p><i>No native birds are known to exclusively use tree ivy, though many use branches on infested trees, such as American robins and vireos.</i></p>	<p>Air gapping – OK</p> <p>Leave ivy in tree – pulling down ivy might result in pulling down nests.</p>	<p>Air gapping – OK</p> <p>Leave ivy in trees.</p> <p>Watch for nearby active ground and shrub nests. Avoid if present</p>

Invasive Species Management		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
<p>Knotweed Removal</p> <p><i>Use by native birds is not well-known.</i></p>	Foliar spraying and injection – OK	Treatment is likely OK, but watch for nearby nests prior to treatment.
<p>Purple Loosestrife Treatment</p> <p><i>Used by red-winged blackbirds and American goldfinches for nesting. Also, ducks may nest on the ground nearby.</i></p>	<p>Herbicide application and mechanical removal – OK prior to March 1.</p> <p>Avoid cutting, spraying and grubbing after March 1.</p> <p>Watch for ducks in wetlands, as they tend to breed early (typically in March).</p>	<p>Avoid cutting and spraying.</p> <p>If mid-summer treatment is advised, watch for red-winged blackbirds and American goldfinch nests in plants.</p> <p>Also watch for ducks on the ground.</p>
<p>Reed Canarygrass Removal/Spray</p> <p><i>Common yellowthroats, mallards and cinnamon teal have been documented nesting in Reed canarygrass in the Slough.</i></p>	Typical treatment (hand spraying) in March and April – OK. Watch for early nesting ducks , and avoid if present.	Avoid any vegetation management. Conduct nest survey if mowing is advised.
<p>Yellow Flag Iris</p> <p><i>Red-winged blackbirds have been known to nest in patches of this plant.</i></p>	<p>Herbicide application and mechanical removal – OK until March 1.</p> <p>Watch for duck nests along shore and in reeds after March 1 and avoid if present.</p>	Avoid herbicide application and mechanical removal.

Other Vegetation Management		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
<p>Live Tree Removal (native and non-native)</p> <p><i>Trees can host nesting birds any time between February 1st – August 31st. Many early nesters are larger birds (e.g., herons and raptors).</i></p>	<p>Tree removal – Avoid</p> <p>Tree girdling – OK, and preferred to removal, if equally effective for control.</p> <p>If trees must be removed: Watch for early nesters: owls, hawks, Anna’s hummingbirds, and killdeer – Avoid if present</p> <ul style="list-style-type: none"> ▪ Raptors have large stick nests—easy to see before trees leaf out. ▪ Killdeer nest on the ground in gravel. Loud adult display to distract predator from nest is a good sign to watch for. ▪ Anna’s hummingbirds have tiny camouflaged nests, but males defending their territory are detected visually and audibly. 	<p>Tree girdling – OK</p> <p>Tree removal – Avoid</p>
<p>Snag Removal</p> <p><i>Snags (standing dead trees) play critical roles for many bird species. Snags attract insects, which are a vital source of food for woodpeckers and other birds. They provide perches, and are often the only source of cavities for cavity-nesting birds.</i></p>	<p>Watch for early snag nesting birds such as owls, and avoid removal if possible.</p>	<p>Avoid snag removal if possible.</p>

<p>Shrub Removal (native and non-native)</p> <p><i>Shrubs support more breeding birds than trees do in the Portland area.</i></p>	<p>For construction access or other purposes – OK, but watch for early nesters and nesting behavior. For example:</p> <ul style="list-style-type: none"> ▪ Killdeer nest on the ground in gravel. Loud adult display to distract predators from nest is a good sign to watch for. ▪ Anna's hummingbirds have tiny camouflaged nests, but males defending their territory are detected visually and audibly. ▪ Be aware of ducks or other birds flushing suddenly off the ground. 	<p>Avoid.</p>
<p>Other Vegetation Management</p>		
<p>Action</p>	<p>February 1 through April 15 Early Nesting Season</p>	<p>April 15 through July 31 Primary Nesting Season</p>
<p>Grassland Mowing and Ground Cover Removal (native and non-native)</p> <p><i>Many species build nests only on the ground. Some will build below a dense, shrub cover, while others conceal their nest in grass.</i></p>	<p>For construction access or other purposes – OK</p> <p>Watch for nests (e.g., Wilson's warbler, savannah sparrow, western meadowlark, horned lark) and nesting behavior. For example:</p> <ul style="list-style-type: none"> ▪ Killdeer nest on the ground in gravel. Loud adult display to distract predators from nest is a good sign to watch for. ▪ Be aware of ducks or other birds flushing suddenly off the ground. 	<p>Avoid mowing and removal of ground cover.</p>
<p>Controlled Burn</p>	<p>OK</p>	<p>Avoid</p>

Other Management Activities		
Action	February 1 through April 15 Early Nesting Season	April 15 through July 31 Primary Nesting Season
<p>Removing and Maintaining Structures</p> <p><i>In addition to winter roosting, structures are used for nesting.</i></p>	<p>Watch for owls on beams and platforms in old buildings. Delay removal until young are fully fledged.</p>	<p>Watch for:</p> <ul style="list-style-type: none"> ▪ mud nests of cliff and barn swallows in eaves and on ledges ▪ Vaux's swifts in chimneys ▪ house finches in eaves and cavities <p>Avoid removing structure until birds have fledged.</p>
<p>Manipulating Water Levels</p> <p><i>Lowering or raising water levels can impact waterfowl and red-winged blackbirds in wetlands, and kingfishers along streambanks.</i></p>	<p>Watch for duck and other waterfowl nests after March. Avoid water manipulation if birds are present and activity could impact nests.</p>	<p>Avoid inundating wetlands if red-winged blackbirds are nesting in cattails and tall reeds.</p>

Appendix F

City of Portland Special Status Bird Species Most Closely Associated with Special Status Habitats

Wetlands

Wetlands are covered or saturated with water during all or part of the year. Permanently wet habitats include backwater sloughs and marshes, while seasonally wet habitats include forested and/or scrub shrub wetlands, emergent marsh, headwater seeps and springs, and wet prairies. Marshes (including emergent marshes) occur in depressions (topographic low areas), fringes around lakes and along slow-flowing streams, especially in valley bottoms. Marshes are seasonally or continually saturated and have water-adapted plants such as sedges, rushes, cattails, and floating vegetation. Marshes can have mucky soils resulting in water with high mineral content. Off-channel habitat (oxbow lakes, stable backwater sloughs, and flooded marshes) is created as rivers and streams change course. In these areas, water moves slowly, providing quiet aquatic habitats important for fish and wildlife. In these off-channel wetland areas, vegetation around the fringe often includes shrub and tree species, such as spirea, ninebark, rose, dogwood, willow, and ash.

Closely Associated Special Status Bird Species: American bittern, great blue heron, green heron, wood duck, bufflehead, northern harrier, sora, dunlin, short-eared owl, common yellowthroat

Aquatic Habitats – Lakes, Rivers and Streams

Freshwater aquatic habitats include rivers, streams, ponds, lakes, springs, seeps and reservoirs. They occur above the influence of tides and salinity fluctuations. Freshwater aquatic habitats typically contain water year-round (whereas wetlands may dry out through the season).

Closely Associated Special Status Bird Species: great blue heron, green heron, wood duck, bufflehead, hooded merganser, bald eagle, dunlin, Vaux's swift, purple martin, yellow warbler

Grasslands

Willamette Valley grasslands, or upland prairies, are dominated by grasses, forbs, and wildflowers. Grasslands have well-drained soils and often occur on dry, south facing slopes or shallow-soiled balds. These grassland habitat types are often associated with low-density tree cover (5-30%) savannahs. Historically prairies were maintained by the Native American practice of setting frequent low-intensity fires. With fire suppression (or in abandoned pastures), many such areas have succeeded to forest. The dominant vegetation of these native grasslands were perennial bunchgrasses such as Roemer's

fescue and California oatgrass, with abundant and diverse herbaceous plants. Scattered, open-growth trees such as Oregon white oak, Douglas fir, or ponderosa pine within the grassland characterize a savannah. Uncommon now, such savannahs and grasslands once covered about 1/3 of the Willamette Valley.

Closely Associated Special Status Bird Species: northern harrier, American kestrel, streaked horned lark, vesper sparrow, western meadowlark

Oak Woodlands

Oak woodlands are characterized by an open canopy dominated by Oregon white oak. In general, the understory is relatively open with shrubs, grasses and wildflowers. Oak habitats can be found in drier landscapes, such as south facing slopes. In Portland, oak woodlands are found in small isolated pockets.

Closely Associated Special Status Bird Species: band-tailed pigeon, western wood-pewee, Hutton's vireo, white-breasted nuthatch, black-throated gray warbler, chipping sparrow, Bullock's oriole

Bottomland Hardwood Forest (Riparian Habitats)

Riparian habitats are those adjacent to rivers and streams or occurring on nearby floodplains and terraces. Riparian habitats are shaped and maintained through seasonal flooding, scour, and soil deposition. Riparian habitats vary from sparsely vegetated areas to cottonwood gallery forests. Plant composition is influenced by elevation, stream gradient, floodplain width, and flooding events. Floods replenish nutrients, recharge groundwater, and reset successional processes. Riparian vegetation is mostly dominated by deciduous trees and shrubs, such as big leaf maple, red alder, black cottonwood, Oregon ash, red-osier dogwood, and numerous willow species.

Closely Associated Special Status Species: great blue heron, green heron, wood duck, hooded merganser, bald eagle, band-tailed pigeon, downy woodpecker, pileated woodpecker, willow flycatcher, red-eyed vireo, brown creeper, Swainson's thrush, orange-crowned warbler, yellow warbler, black-throated gray warbler, common yellowthroat, Wilson's warbler, yellow-breasted chat, Bullock's oriole

Interior Forest (especially Late-successional Conifer Forests)

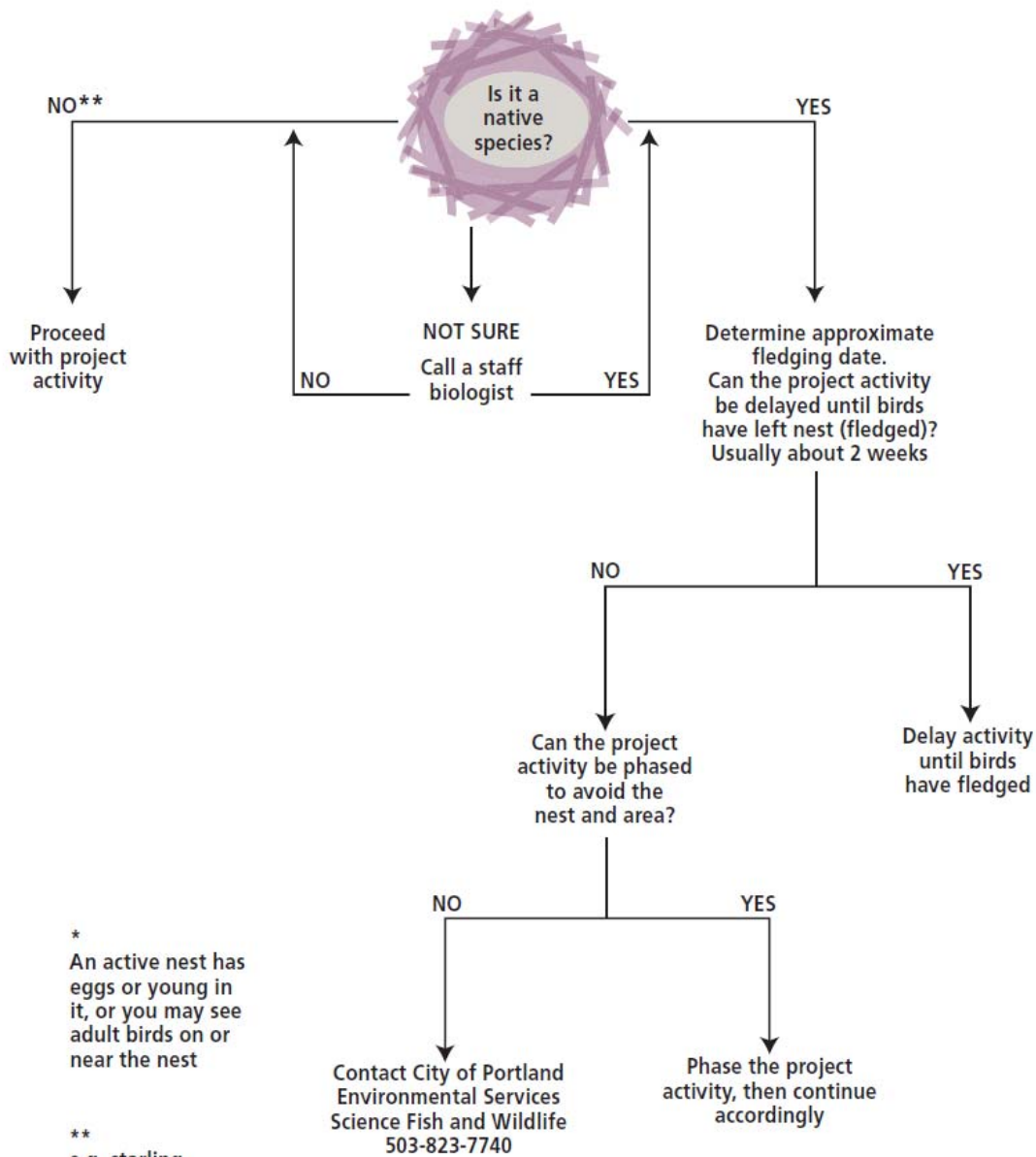
Late successional conifer forests are defined by plant species composition, overstory tree age and size, and forest structure. They include characteristics such as multi-layered tree canopy, shade-tolerant tree species growing in the understory, large-diameter trees, and a high volume of dead wood such as snags and logs. Douglas fir is generally the dominant species, but other species found in these forests, at various stages of succession, include western hemlock, western red cedar, big leaf maple, vine maple, and red alder.

Closely Associated Special Status Bird Species: band-tailed pigeon, pileated woodpecker, olive-sided flycatcher, Hammond's flycatcher, Pacific-slope flycatcher, brown creeper, winter wren, Swainson's thrush, varied thrush, black-throated gray warbler, hermit warbler, Wilson's warbler, red crossbill

Note: There are several species are Special Status Bird Species found in Portland that are associated with several habitat types. In some cases, they may be more closely associated with a specific feature that occurs in several habitats, rather than the vegetation of the habitat itself. These species include: merlin, peregrine falcon, common nighthawk, rufous hummingbird, bushtit, house wren, and Nashville warbler.

APPENDIX G

If you find an active* nest on a project site during project implementation



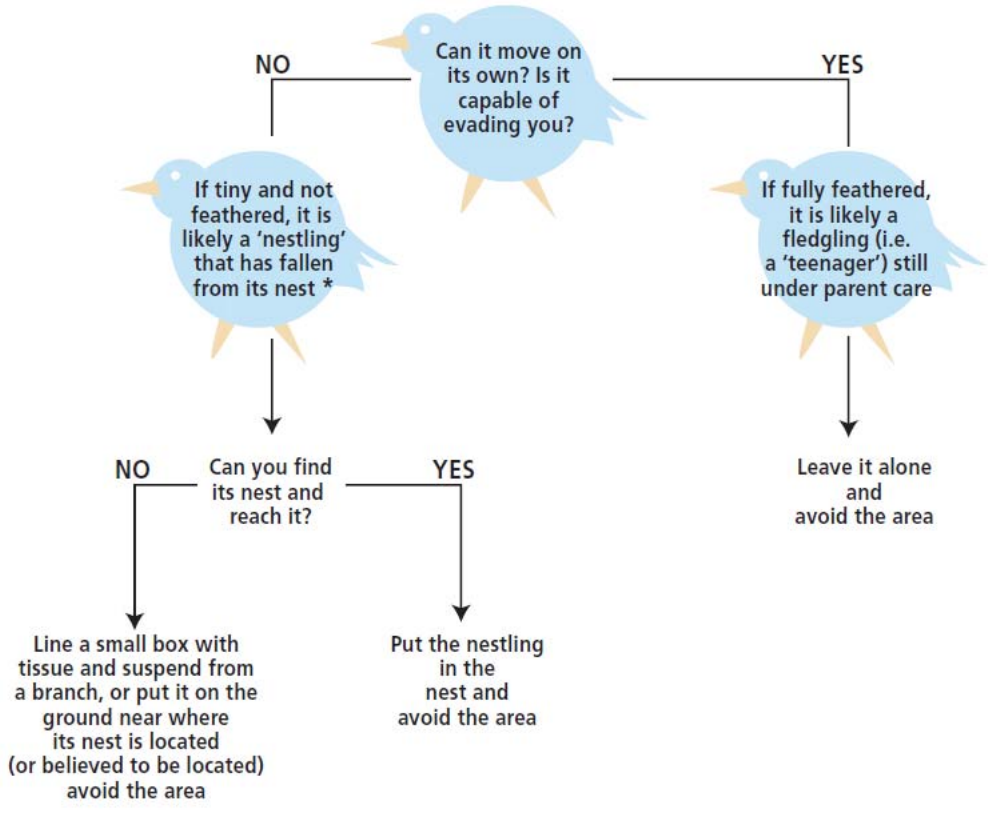
*
An active nest has eggs or young in it, or you may see adult birds on or near the nest

**
e.g. starling, house sparrow or rock pigeon

WS 1045 Sept 2010 © Environmental Services City of Portland

APPENDIX H

If you find a baby bird out of its nest on a project site



*
If CLEARLY injured or KNOWN to be orphaned, you may take it to the Audubon Society of Portland Wildlife Center, 5151 NW Cornell Road, 9 am - 5 pm, 7 days a week

Appendix I

ADDITIONAL THINGS YOU CAN DO TO HELP NATIVE BIRDS

ANY HABITAT TYPE

- Be aware of what birds are doing!
 - ♦ Are they carrying nesting material in their beaks and bills? If so, watch where they take it; you might be able to identify the specific tree or clump of bushes where a nest is being built. Avoid disturbing that area.
 - ♦ Are they carrying insects in their beaks and bills? If so, watch where they take them; they are probably feeding baby birds. Avoid disturbing that area.
- Minimize disturbance to large habitat patches to the extent possible. Some species require interior habitats and have large territories.
- Maintain as much connectivity as possible—between habitat patches and to water sources. Migratory birds (as well as other native animals) need corridors for safe travel, foraging, nesting, raising young, hiding from predators, gene flow between populations, and for other life functions.
- Use native tree, shrub and other plant species in restoration projects, and provide a diversity of species and age classes.
- Birds nest in a variety of places—on the ground to the tops of trees. Different species nest in different areas. Therefore, leave herbaceous plants for ground-nesting species, shrubs for “open-cup” nesters, dead trees and snags for cavity-nesters, and trees for canopy-nesters.
- Let seed-bearing plants and dead tree snags stand through the winter to provide habitat, perches, food and shelter.
- Consider leaving dead standing wood (snags). If this presents a safety concern, leave as much of the snag as possible. A trunk that is 20 – 30 feet high can be an important food source, perch, and/or nesting site. If the entire snag must be removed, consider placing part of the tree in another area for wildlife to use. This can make the landscape visually interesting!
- When possible, girdle invasive trees to create snags, rather than removing them. (Note: This approach may not be effective control for some invasive tree species).
- Reduce lawn cover; when possible allow leaves and twigs to decompose on-site.

- Seek natural alternatives to, and reduce the use of, pesticides, herbicides and fertilizers, when practical.
- Seek to minimize people/wildlife conflicts. For example:
 - ♦ Site trails, picnic areas and garbage cans away from nesting habitat.
 - ♦ Hold outdoor concerts and other public events in natural area parks after birds have fledged.
 - ♦ Provide wildlife viewing opportunities at safe distances from wildlife.
- If a site lacks water, consider putting in a water feature, such as a small pond.
- During project implementation, reduce hazards such as landscape netting and other litter, in which birds can become entangled.
- If you come across a baby bird on the ground, don't attempt to return it to the nest; just avoid them, allowing their parents to attend to them. Be careful to not trample vegetation around the bird or the nest, since that can alert predators to their presence.

GRASSLAND HABITATS

- Large open fields with several kinds of grasses of varying heights and densities are ideal. Grasses provide places for nesting, hiding, and feeding; and more variety means they will be attractive to more species that have different nesting and foraging needs.
- Wildflowers attract different insects than do grasses. A variety of native wildflowers means a variety of insects—and that will benefit insect-eating birds.
- It's OK to leave some patches of bare ground. Bare ground is important for some birds for dusting and foraging—and sometimes nesting.
- Create singing perches. Singing perches are important for defending territories and attracting mates. Singing perches should extend above the surrounding plants so that males can be seen and heard. A few shrubs or solitary trees (< 10% cover/area) will help males establish breeding territories. Fence poles, wires, brush and rock piles also work well.
- Mowing is OK if timed to allow for nesting to occur and young fledged.
- Consider fire as a management tool to help restore and maintain this important habitat type.

- Some species that may benefit: Western meadowlark, American kestrel, Savannah sparrow, American goldfinch, Oregon vesper sparrow.
- Want more information? Take a look at *Landowner's Guide to Creating Grassland Habitat for the Western Meadowlark and Oregon's Other Grassland Birds* (a publication of the Oregon Department of Fish and Wildlife).

RIPARIAN AREAS

- Maintain a vegetative riparian buffer zone of native species along streams (at least 100 feet wide, if possible).
- Maintain snags along stream edges for species such as the belted kingfisher. This is important for nesting as well as perching.
- Maintain or create a dense riparian shrub layer of native plants, which will benefit song sparrows, and several kinds of warblers.
- Because breeding and migratory bird densities in cottonwood habitats are generally the highest of all habitat types in North America, retain all large cottonwood trees. They are important to cedar waxwings, western wood-pewees, brown creepers, and finches—as well as larger birds that need big trees for nests (e.g., bald eagles, great-horned owls, and great blue herons).
- Avoid locating walking and biking trails within the riparian area—both to minimize direct disturbance to birds, but also to reduce the amount of vegetation that is removed.
- Some species that may benefit: belted kingfisher, great blue heron, willow flycatcher, Western wood-pewee, yellow warbler, Bullock's oriole, purple martin.
- Want more information? Take a look at *Riparian Areas: Fish and Wildlife Havens* (a publication of the Washington State University Extension's Woodland Fish & Wildlife Bulletin Series, <http://WoodlandfishandWildlife.org>).

FORESTED HABITATS

- Retain existing large coniferous and deciduous trees and large snags for nesting. But retain smaller snags, too, if possible, since these provide important features for many species—for example, perches for resting and from which to hunt insects, branches that are used for nest-building.

- Create snags through topping and girdling of some green trees. Green replacement tree snags are as important as existing snags because eventually they will replace snags that fall over.
- Retain existing down logs, especially large ones.
- Retain berry and nectar-producing trees and shrubs, and plant additional ones.
- Retain shrub patches.
- Consider creating brush piles, which can provide cover and serve as signing perches.
- Manage for a diversity of native tree species, understory plants and ground cover. Vegetative diversity is usually more important to birds than are plantings of one species.
- Where it's not possible to protect larger trees or create snags, nest boxes might provide some short-term artificial cavities for some species. A useful book is *Birds in Nest Boxes* by Charlotte Corkran (Naturegraph Publishing, Inc. 2004).
- Species that will benefit: pileated woodpecker, hairy woodpecker, Western screech owl, pygmy owl, Vaux's swift, red-breasted nuthatch.
- Want more information? Take a look at:
 - ♦ *Managing Small Woodlands for Cavity Nesting Birds* October 1991 (a publication of the World Forestry Center).
 - ♦ *Rainforest Birds: A Land Manager's Guide to Breeding Bird Habitat in Young Conifer Forests in the Pacific Northwest* – Scientific Investigations Report 2006-5304 (a publication of the U.S. Department of the Interior, the U.S. Geological Survey and the American Bird Conservancy).
 - ♦ *Managing Forest Habitats for Migrant Songbirds* (a publication of the Washington State University Extension's Woodland Fish & Wildlife Bulletin Series, <http://WoodlandfishandWildlife.org>).

HIGHLY-URBANIZED AREAS

- Don't underestimate the value of retaining even single mature big-leaf maple trees or oaks for birds! Big-leaf maples are among the earliest to leaf-out in the Spring, and therefore one of the first trees to support herbivorous insects—an important food for early spring forest migratory birds, such as yellow-rumped, hermit and Townsend's warblers.

- Plant native shrubs, including fruit, seed and nectar-producers.
- Connect small habitat patches to other small habitat patches by planting vegetated “corridors”.
- Some species that will benefit: warblers, spotted towhee, house finch, Bewick’s wren, song sparrow.

Questions? Contact:

Claire Puchy, Bureau of Environmental Services—Science, Fish and Wildlife Program
503-823-3045; clairep@bes.ci.portland.or.us

Dave Helzer, Bureau of Environmental Services—Columbia Slough Watershed
503-823-5760; davidhelzer@bes.ci.portland.or.us

Jennifer Devlin, Bureau of Environmental Services—Fanno/Tryon Creek Watersheds
503-823-6182
jenniferd@bes.ci.portland.or.us

Find injured or orphaned birds? Contact:

Audubon Society of Portland Wildlife Care Center
503-292-0304

Attachment F



Take the pledge for the environment!



WS 0864 Revised July 2008 Printed on recycled paper.

Parks Off-leash Areas
 Unleashed dogs are never allowed in natural areas. However, Portland has areas in 31 parks where dogs and their owners can exercise and play off-leash. Some sites are fenced, others are unfenced with markers designating the boundaries. Off-leash hours are specific to each park.

<p>NORTH Arbor Lodge Park N. Bryant and Delaware Cathedral Park N. Edson and Pittsburg Chalmers Park 5300 N. Columbia Blvd Delta Park N. Denver and M.K., Jr Blvd Overlook Park N. Fremont and Interstate Portland International Raceway N. Denver and Victory Blvd</p>	<p>SOUTHEAST Hawthood Park SE 60th and Duke Cherry Park SE 110th and Stephens Craton Park SE 44th and Powell Blvd Laurelhurst Park SE 39th and Stark Lents Park SE 92nd and Holgate Lynchwood Park SE 170th and Haig Mt Tabor Park SE 110th, east of SE 64th Solwood Blueford Park SE Spokane and Oaks Place Sewallcrest Park SE 31st and Market Woodstock Park SE 47th and Steele</p>
<p>NORTHEAST Alberta Park NE 22nd and Killingsworth Argoy Park NE 141st and Falling East Holladay Park NE 130th and Wasco Farnhill Park NE 37th and Almsworth Frazer Park NE 52nd and Hassalo Grant Park NE 33rd and U.S. Grant Place Irving Park NE 75th and Fremont Monserade Park NE 57th and Halcy Sacajawea Park NE 75th and Alberta Willshire Park NE 33rd and Skidmore</p>	<p>SOUTHWEST Council Crest Park SW Grand Crest Dr Gabriel Park SW 45th and Vermont Hilldale Park SW 27th and Hilldale Hwy Willamette Park SW Macadam and Nebrauka</p>

Partners:
 Portland Parks & Recreation,
 Bureau of Environmental
 Services, Audubon Society,
 Multnomah County Animal
 Services, and the Oregon
 Humane Society

i'm for the environment!



City of Portland Dogs for the Environment

Responsible pet ownership
 means more than licensing and vaccinating your pet, it means controlling your dogs' interactions with people, wildlife, and natural areas. Here are some actions you and your dog can take to keep our beautiful city clean, green, and safe.

Leash your dog
 While your dog is your friendly, furry companion, other animals and even people may view dogs as a threat. Unleashed dogs can harm birds, amphibians, fish, and other wildlife. They may also disturb breeding areas or harass wintering wildlife causing them to use valuable energy reserves. Dogs running loose in natural parks also trample plants and create inappropriate trails. Worse, they can endanger themselves, other dogs, and people. Portland City Code requires that all dogs in parks must be kept on a leash unless in a designated Off-leash Area.

Scoop the poop
 Dog poop is essentially raw sewage; it contains harmful organisms like E. coli, Leptospira, and Roundworms. These organisms can be contracted by other dogs, wildlife, and even children. Bacteria from dog poop can wash into rivers and streams when it rains. City Code also requires that all poop must be picked up and disposed of into the proper receptacle. Violation of either leash or scoop laws will result in a \$150 fine.

Off-leash Areas
 Every dog deserves the freedom to run, play, and socialize with other dogs. The City of Portland manages 31 Off-Leash Areas, ranking first in the country for dog parks per capita, according to Forbes Magazine.

Dogs are never allowed off-leash in Natural Area Parks

Parks are for everyone
 Our parks and natural areas not only provide recreation and relaxation for people, children, and dogs, they also provide important habitat for fish and wildlife. Our parks are home to threatened salmon, salamanders, and birds. To protect these valuable resources, parks sometimes undergo restoration. You may notice fences going up near trails and streams; these fences are to protect parks from further degradation, and ensure the success of restoration efforts. Between 2002 and 2007, 36,500 volunteers gave 146,000 hours of their time to help restore Portland's natural areas. If you would like to get involved, volunteer opportunities are available throughout the city.

Visit the Portland Parks & Recreation website for more information about Dogs for the Environment, dog off-leash areas and volunteer opportunities:
www.PortlandParks.org

i'm for the environment!

pledge

Human: I pledge to be environmentally responsible by:

- Keeping my dog on leash and on the trail in natural areas
- Scooping and properly disposing of poop
- Avoiding contact with streams and wildlife


signature: _____

Dog: I pledge to do my part to be environmentally responsible and earn the right to proudly wear my green bandana.

paw: _____

To receive your green bandana, please sign the pledge, cut it out, and send it to:

Dogs for the Environment
 1120 SW 5th Avenue, Suite 1000
 Portland Oregon 97204



Please send my bandana to this address:

name: _____
 address: _____
 city/state/zip: _____

Attachment G

Your dog should never be off-leash in natural areas because they are occupied year-round by a wide range of wild animals feeding, breeding, and raising young, including some animals whose very existence is threatened. While your pet's activities may appear harmless and fun, wildlife and their habitat are significantly impacted in ways that you may not be able to see.

Even if your dog doesn't chase wildlife, dogs that are off-leash disturb wild animals enough to deplete their precious energy reserves, which can cause malnutrition or death. Birds that nest on or near the ground are particularly susceptible to harm by off-leash dogs. Nests on the ground or in low shrubs are very difficult to see and your off-leash dog can easily destroy or dislodge them without you ever even noticing. Fragile amphibians and reptiles rely on clean, quiet water bodies for feeding and reproduction. While your dog may have fun splashing in the water, this activity is detrimental to frogs and turtles. Also, remember that your dog is only one of thousands to recreate in Portland's parks. While your pet may appear to have little impact on the landscape, the cumulative effect of all the dogs that visit the same area is very significant.

Keeping your dog on a leash in natural areas is not only a responsible decision that protects wildlife and our urban environment, it's also the law. Portland City Code requires dogs to be leashed outside designated off-leash areas. Violators can be fined \$150 per dog (Portland City Code 20.12.140).

Please respect all the animals, domestic and wild, that live in Portland. Natural areas may be home to the animals listed here and your cooperation is essential for their survival.

For more information:
Environmental Services, 503-823-4000
or
www.portlandonline.com/beswildlife

Parks Off-leash Areas

Unleashed dogs are never allowed in natural areas. However, Portland has areas in 31 parks where dogs and their owners can exercise and play off-leash. Some sites are fenced, others are unfenced with markers designating the boundaries. Off-leash hours are specific to each park.

NORTH

actor ridge park
A-1000 and oakmead
cathlamet park
N-1000 and mitchell
chessy park
N-1000 and oregon
N-1000 and oregon
N-1000 and oregon
N-1000 and oregon
N-1000 and oregon

NORTHWEST

cauch park
N-1000 and oregon
wallowa park
N-1000 and oregon
Albion park
N-1000 and oregon
agony park
N-1000 and oregon

NORTHEAST

Albion park
N-1000 and oregon
agony park
N-1000 and oregon

EAST

east valley park
N-1000 and oregon
east valley park
N-1000 and oregon
east valley park
N-1000 and oregon
east valley park
N-1000 and oregon
east valley park
N-1000 and oregon

SOUTHWEST

central oregon park
N-1000 and oregon
central oregon park
N-1000 and oregon
central oregon park
N-1000 and oregon
central oregon park
N-1000 and oregon

SOUTHEAST

central oregon park
N-1000 and oregon
central oregon park
N-1000 and oregon
central oregon park
N-1000 and oregon
central oregon park
N-1000 and oregon



Dan Saltzman, Commissioner Dean Merritt, Director

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Portland's Sensitive Wildlife and Your Dog

Portland's natural areas are wonderful places for you and your pet to exercise and enjoy some solitude in the city. However, these places are also very important for the survival of wildlife living in and passing through Portland.

Portland's Wildlife and Your Dog


You can help protect Portland's wild creatures by keeping your dog on a leash.



- Western Painted Turtle:** One of few native turtles designated as critical on Oregon's Sensitive Species list. The turtle relies on adequate riparian areas for nesting and is very sensitive to disturbance.
- North American Beaver:** Live in and near streams and rivers. They are especially susceptible to disturbance and predation when raising young. The Audubon Society of Portland reviews injured beavers that are attacked by dogs in local parks.
- Yellow Warbler:** Nests in shrubs. It's one of Portland's Special Status Species.
- Red Legged Frog:** This frog is federally designated as a Species of Concern. It is dependent on shallow, often agricultural, ponds or wetlands and adequate riparian vegetation. Eggs in water are easily disturbed.
- Northwestern Salamander:** Found in wet habitats from the Pacific coast sea level to 1,700 feet including grasslands, woodlands, and forests. Eggs in water are easily disturbed.
- Killdeer:** Nests on the ground in gravelly clearings. They are well camouflaged and easily flushed from nests.
- Black Tailed Deer:** These deer thrive on the edge of forests, which has the understory and grasslands the deer prefer as food and that provides cover for safety. Deer use many of our local natural areas and often leave vulnerable fawns unattended while they graze.
- Spotted Towhee:** Nests, on or near the ground in shrubby areas, are well camouflaged and easily disturbed.
- American Kestrel:** When hunting, this bird hovers above crops to the ground to capture mice and insects. It's one of Portland's Special Status Species.
- Redtail Kingfisher:** Nests in a horizontal tunnel made in a river bank or sand bank. Dogs splashing through streams impact nest sites.

Attachment H

Species	s	S	F	W	Species	s	S	F	W
Flycatchers (continued)					Pipits to Waxwings				
*Willow Flycatcher	u	u	u		American Pipit	o	o		
Hammond's Flycatcher	u	o			*Cedar Waxwing	f	f	f	f
Dusky Flycatcher	x				Wood Warblers				
Pacific-Slope Flycatcher	u	o			Orange-crowned Warbler	f	o	f	x
Say's Phoebe	r				Nashville Warbler	o	r		
Ash-throated Flycatcher			x		Yellow Warbler	u	r	u	
Western Kingbird	x	x			Yellow-rumped Warbler	c	u	o	f
Eastern Kingbird		x			Black-throated Gray Warbler	f	u	x	
Shrikes to Vireos					Townsend's Warbler	u	u	u	
Northern Shrike			x		Blackpoll Warbler	x			
Cassin's Vireo	o	r			MacGillivray's Warbler	r			
*Hutton's Vireo	u	u	u	u	*Common Yellowthroat	f	f	f	r
Warbling Vireo	u	o	u		Wilson's Warbler	u	o	u	x
Corvids					Yellow-breasted Chat	x			
*Stellar's Jay	u	u	u	u	Tanagers				
*Western Scrub-Jay	o	o	o	o	Western Tanager	u	u		
Common Raven	x				Sparrows				
*American Crow	o	o	o	o	*Spotted Towhee	c	o	c	f
Swallows					Brewer's Sparrow	x			
*Purple Martin	f	f	f		Savannah Sparrow	r	r	r	f
Tree Swallow	u	o	u	r	Fox Sparrow	f	f		
*Violet-Green Swallow	c	f	c		*Song Sparrow	c	o	c	o
Northern Rough-winged Swallow	u	o	u		Lincoln's Sparrow	o	o	o	o
Cliff Swallow	u	o	u		Swamp Sparrow	x		x	
*Barn Swallow	c	o	c	x	White-throated Sparrow	o	o	o	o
Chickadees to Bunchbills					White-crowned Sparrow	u	o	o	
*Black-capped Chickadee	c	o	o	o	Golden-crowned Sparrow	c	o	c	f
Chestnut-backed Chickadee	u	u	u	u	*Dark-eyed Junco	c	u	c	c
*Bushy-tit	c	o	c	o	Grosbeaks to Buntings				
Nuthatches to Creepers					*Black-headed Grosbeak	f	u	u	
Red-breasted Nuthatch	u	u	u	u	Blue Grosbeak	x			
White-breasted Nuthatch	f	u	f	f	Lazuli Bunting	x			
*Brown Creeper	f	f	f	f	Icterids				
Wrens to Kinglets					*Red-winged Blackbird	c	c	c	f
*Bewick's Wren	c	o	c	o	Western Meadowlark	x	x	x	
House Wren	r				Brewer's Blackbird	o	o	o	o
Winter Wren	f	f	f		*Brown-headed Cowbird	o	o	o	o
Marsh Wren	o	o	o		Bullock's Oriole	r			
Rock Wren	x				Finches				
Golden-crowned Kinglet	f	r	f	f	Purple Finch	o	o	o	
Ruby-crowned Kinglet	c	o	c	o	*House Finch	c	c	c	c
Thrushes					Red Crossbill	o	r	o	o
Townsend's Solitaire	x		x		Common Redpoll	x	x	x	x
Swainson's Thrush	u	o	u		Pine Siskin	u	r	u	u
Hermit Thrush	u	u	u	u	*Lesser Goldfinch	c	c	c	c
*American Robin	c	o	c	o	*American Goldfinch	c	c	c	c
Varied Thrush	u	u	u	u	Evening Grosbeak	u	u	o	o
Starling					Old World Sparrows				
*European Starling	c	o	c	o	House Sparrow	u	u	u	u



**Oaks Bottom
Bird List**

Portland, OR

Illustrated and compiled by
Christopher Hinkle
January 2010


Species	s	S	F	W	Species	s	S	F	W
Waterfowl (continued)					Shorebirds (Continued)				
Surf Scoter		x	x		Solitary Sandpiper	x			
Bufflehead	c	o	o		*Spotted Sandpiper	u	u	u	u
Common Goldeneye	o	o	o		Marbled Godwit		x		
Hooded Merganser	u	u	u	u	Western Sandpiper	o	r	u	
Common Merganser	f	f	f	f	Least Sandpiper	o	o	u	
Ruddy Duck	o	o	o	o	Baird's Sandpiper		x		
Phalaropes & Quail					Pectoral Sandpiper				
Ring-necked Pheasant	r	r	r	r	Dunlin	r	r	r	
California Quail	r	r	r	r	Short-billed Dowitcher		x		
Grebes					Long-billed Dowitcher	o	r	u	
*Pied-billed Grebe	f	f	f	f	Wilson's Snipe	o	o	o	
Horned Grebe	r	r	r		Wilson's Phalarope		x		
Red-necked Grebe	r	x	x		Red-necked Phalarope		x		
Eared Grebe	x				Gulls & Terns				
Western Grebe	r	x	r	r	Bonaparte's Gull		x		
Pelicans to Cormorants					Mew Gull	u	u	u	
American White Pelican	x	x	x		Ring-billed Gull	f	o	f	
Brown Pelican	o	o	x		California Gull	c	u	c	
Double-crested Cormorant	c	f	c	o	Herring gull	u	u	u	
Egrets & Herons					Thayer's Gull	u	u	u	
Great Blue Heron	c	o	c	o	Glaucous Gull		x	x	
Great Egret	r	o	r		Glaucous-winged Gull	o	u	o	c
Snowy Egret	u	x			Western Gull	u	u	u	
Green Heron	u	u	o		Caspian Tern		r		
Black-crowned Night-Heron	x				Black Tern	x			
Vultures					Pigeons & Doves				
Turkey Vulture	f	f	f	r	Rock Pigeon	f	f	f	f
Osprey, Hawks & Falcons					Band-tailed Pigeon	o	o	o	r
*Osprey	c	o	c		Eurasian Collared-Dove	x	x	x	
Bald Eagle	u	u	u	u	Mourning Dove	o	o	o	o
Northern Goshawk	x				Owls				
Sharp-shinned Hawk	u	u	u	u	*Western Screech-Owl	u	u	u	u
*Cooper's Hawk	u	u	u	u	*Great Horned Owl	r	r	r	r
Red-shouldered Hawk	x	x	x		Barred Owl		x		
Red-tailed Hawk	f	f	f	f	Swifts to Hummingbirds				
Northern Harrier	x	x	x	x	Vaux's Swift	c	o	c	o
American Kestrel	o	o	o	o	*Anna's Hummingbird	c	o	c	o
Merlin	o	o	o	o	*Rufous Hummingbird	c	o	c	o
Perseus Falcon	u	u	u	u	Kingfisher				
Rails to Cranes					*Belted Kingfisher	f	f	f	f
Sora	x				Woodpeckers				
Virginia Rail	o	o	o		*Red-breasted Sapsucker	u	u	u	u
American Coot	c	o	c	o	*Downy Woodpecker	c	o	c	o
Sandhill Crane	r	r	r		Hairy Woodpecker	o	o	o	o
Shorebirds					Pileated Woodpecker	o	o	o	o
Semipalmated Plover		o			*Northern Flicker	c	o	c	o
*Killdeer	f	f	f	u	Flycatchers				
Greater Yellowlegs	o	r	u		Olive-sided Flycatcher	o	o		
Lesser Yellowlegs	r				*Western Wood-Pewee	f	f	f	

Symbols:
 s=spring - usually March through May
 S=summer - usually June to mid-August
 F=fall - usually mid-August to November
 W=winter - usually November through February
 *Nesting confirmed or very likely
Abundance:
 c=common; almost always present in proper habitat
 f=fairly common; often seen
 u=uncommon; sometimes seen
 o=occasional; only a handful of records each year
 r=rare; rarely occurs and usually not every year
 x=extremely rare; fewer than five records

Despite its urban surrounding in SE Portland, 160-acre Oaks Bottom is a true birding hotspot, with over 185 species recorded. This list covers Oaks Bottom Wildlife Refuge and the adjacent section of Willamette River, encompassing various habitats including a large shallow central lake, mixed maple and oak woodlands, riparian cottonwood, ash and willow forests, patches of shrubs, small fields and clearings, and open waters of the Willamette River. The Springwater Corridor multi-use trail passes through the refuge paralleling the river and offers views of the lake from its west shore. A one-mile trail loops around the east side of the lake. Short side trails lead up the bluff to Sellwood Park to the south, and the refuge parking lot to the north. The refuge is also accessible from Oaks Amusement Park.

Species	S	F	W	Species	S	F	W
Jays & Crows				Warblers (continued)			
*Stellar's Jay	c	c	f	Blackpoll Warbler			x
*Western Scrub-Jay	c	c	c	MacGillivray's Warbler	u		o
*American Crow	c	c	c	*Wilson's Warbler	c		c
Swallows				Hooded Warbler	x		
Tree Swallow	r		r	Tanagers			
Violet-green Swallow	f	f	f	*Western Tanager	c	u	u
Northern Rough-winged Swallow			x	Summer Tanager	x		
Cliff Swallow	r		r	Sparrows			
*Barn Swallow	c	c	c	*Spotted Towhee	c	c	u
*Purple Martin	x		x	Chipping Sparrow	o		r
Chickadees				Savannah Sparrow			x
*Black-capped Chickadee	c	c	c	Fox Sparrow	f	f	f
*Chestnut-backed Chickadee	c	c	c	*Song Sparrow	c	c	c
Bush-tits				Lincoln's Sparrow	o		r
*Bush-tit	c	c	c	White-throated Sparrow	r	r	r
Nuthatches				*White-crowned Sparrow	u	o	r
*Red-breasted Nuthatch	c	c	c	Golden-crowned Sparrow	f	f	f
Creepers				*Dark-eyed Junco	c	c	c
*Brown Creeper	c	c	c	Grosbeaks			
Wrens				*Black-headed Grosbeak	f	f	f
*Bewick's Wren	c	c	c	Rose-breasted Grosbeak	x		
House Wren	x	x		Bunting			
*Winter Wren	c	o	c	Lazuli Bunting	r		x
Kinglets				Blackbirds			
Golden-crowned Kinglet	c	u	c	Brewers Blackbird	x	x	x
Ruby-crowned Kinglet	c		c	Red-winged Blackbird	x		x
Thrushes				Brown-headed Cowbird	f	f	u
Townsend's Solitaire	u	r	r	Orioles			
Swainson's Thrush	c	o	c	Bullock's Oriole	r	x	
Hermit Thrush	c	c	f	Finches			
*American Robin	c	c	c	Purple Finch	f	u	r
Varied Thrush	c		c	*House Finch	c	c	c
Starlings				Red Crossbill	u	o	o
European Starling	f	f	f	*Pine Siskin	f	u	f
Waxwings				*Lesser Goldfinch	c	c	u
*Cedar Waxwing	u	u	u	*American Goldfinch	u	u	u
Warblers				Evening Grosbeak	f	o	r
Northern Parula	x			Pine Grosbeak			x
*Orange-crowned Warbler	c	o	c	Old world Sparrows			
Tennessee Warbler	x			House Sparrow	u	u	u
Nashville Warbler	u		r				
Yellow Warbler	r		r				
*Yellow-rumped Warbler	c	o	u				
Black-throated Gray Warbler	c	o	u				
Townsend's Warbler	c	r	f				
Hermit Warbler	u		o				

Mt. Tabor Park Bird List



Portland, OR

Illustrated and Compiled by
Adriah Hinkle
January 2010

Species	S	F	W	Species	S	F	W
Geese & Ducks				Pigeons & Doves			
Greater White-fronted Goose			x	*Band-tailed Pigeon	c	c	o
Cackling Goose			x	Rock Pigeon	f	f	f
Canada Goose	u	u	u	*Mourning Dove	o	o	o
Wood Duck			x	Owls			
Gadwall			x	*Great-horned Owl	o	o	o
American Wigeon			x	Snowy Owl			x
*Mallard	f	f	f	Barred Owl			x
Ring-necked Duck	x	x	x	*Western Screech-Owl	f	f	f
Lesser Scaup	x		x	Short-eared Owl	x		
Bufflehead	u	u	u	Nightjars			
Common Goldeneye			x	Common Poorwill	x		
Hooded Merganser			x	Swifts			
Ruddy Duck			x	Vaux's Swift	f	f	f
Grebes				Hummingbirds			
Pied-billed Grebe	x			*Anna's Hummingbird	c	c	c
Red-necked Grebe			x	Calliope Hummingbird	r	x	x
Horned Grebe			x	Costa's Hummingbird			x
Cormorants & Herons				Black-chinned Hummingbird	x	x	
Double-crested Cormorant	r	r	r	Rufous Hummingbird	u	u	c
Great Blue Heron	r	r	r	Kingfishers			
New world Vultures				Belted Kingfisher	x	x	
Turkey Vulture	u	u	x	Woodpeckers			
Hawks & Falcons				Red-breasted Sapsucker	o	o	o
Osprey	o	o	o	Red-naped Sapsucker	x	x	
Bald Eagle	r	r	r	Williamson's Sapsucker			x
Sharp-shinned Hawk	u	u	u	Hairy Woodpecker			x
*Cooper's Hawk	u	u	u	*Downy Woodpecker	u	u	u
Northern Goshawk	x	x		*Northern Flicker	c	c	c
*Red-tailed Hawk	f	f	f	Pileated Woodpecker	x	x	
Northern Harrier	x	x		Flycatchers			
American Kestrel	r	r	r	Olive-sided Flycatcher	u	o	u
Merlin	u	u	u	*Western Wood-Pewee	c	f	c
Peregrine Falcon	r	r	r	*Pacific-slope Flycatcher	c	u	c
Flovers & Sandpipers				Willow Flycatcher	o	r	o
Killdeer	x	x		Hammond's Flycatcher	f	r	u
Spotted Sandpiper	r	o	r	Dusky Flycatcher	r	r	
Least Sandpiper	x			Gray Flycatcher	x	x	
Gulls				Say's Phoebe	x		
Lesser Gull	r	r	r	Vireos			
Ring-billed Gull	r	r	r	Warbling Vireo	c	o	c
California Gull	o	r	o	*Hutton's Vireo	f	f	f
Herring Gull	r	r	o	Red-eyed Vireo	x		
Taylor's Gull	r	r	o	Cassin's Vireo	f	o	u
Western Gull	r	r	o	Blue-headed Vireo	x		
Glaucous-winged Gull	u	u	f	Plumbeous Vireo	x		

Symbolic and abundance:
 s=Spring -March to May
 S=Summer -June through early-August
 F=fall -Mid-August through mid-November
 W=Winter -Late-November through February
 * Nesting confirmed or suspected

C=common, almost always found in proper habitat
 F=fairly common, often found in good habitat
 U=uncommon, sometimes found in proper habitat
 O=occasional, found a few times every year
 R=rare, rarely occurs and usually not every year
 X=extremely rare, fewer than 5 records

Mt. Tabor is a small butte in Southeast Portland. Residential neighborhoods are found on the lower flanks and 200-acre Mt. Tabor Park is located atop the butte.

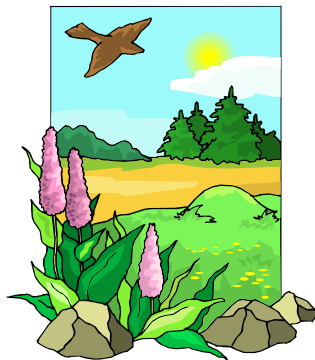
Most of the park's slopes are covered with stands of Douglas Firs and Bigleaf Maples. The understory on the north side of the park is dominated by grass and, in some places, native shrubs. The southern end of the park has a denser understory, mostly consisting of native plants and shrubs. Three reservoirs, which provide Portland with its drinking water, can be found on the south and west sides of the park. Access and birding vantage points are excellent, including trails, closed roads, and grassy fields.

The main birding attraction at Mt. Tabor is its many neotropical migrants. April to May and mid-August to early-October are the best times to view migrants. Especially from late-April to early-May, birders from across the Portland Metro Area visit the park every morning. Winter and summer are less productive, but still rewarding.

Portland's Migratory Bird Program Mission Statement

The City of Portland is an important part of the Pacific Flyway and provides critical resting, feeding and nesting habitat for migratory birds, both those that fly long distances and those that migrate shorter distances within the metropolitan region. Participation in the Urban Conservation Treaty for Migratory Birds demonstrates the City's long-term commitment to the protection and conservation of migratory birds. The Portland Urban Migratory Bird Program raises awareness of migratory birds in Portland's urban ecosystem; shares and increases knowledge of the needs and ecological functions of migratory birds; recognizes and promotes existing efforts to conserve and enhance the health of our migratory bird population; and identifies and pursues new actions that will ensure their diversity is maintained through time. The program instills a sense of stewardship and responsibility so that the City and its citizens take specific measures to co-exist with migratory birds and other species to ensure that they remain an important element in the urban landscape.

- Adopted by the Portland City Council, May 2003 -



For more information, contact:

Claire Puchy
City of Portland—Environmental Services
claire.puchy@portlandoregon.gov
503-823-3045

Sue Thomas
City of Portland—Portland Parks & Recreation
PKST@ci.portland.or.us
503-823-3601

ATTACHMENT O

ATTACHMENT P



**Take the pledge
for the environment!**



**PORTLAND
PARKS & RECREATION**
Healthy Parks, Healthy Portland



WS 0864 Revised July 2008 Printed on recycled paper.

Parks Off-leash Areas

Unleashed dogs are never allowed in natural areas. However, Portland has areas in 31 parks where dogs and their owners can exercise and play off-leash. Some sites are fenced, others are unfenced with markers designating the boundaries. Off-leash hours are specific to each park.

NORTH

Arbor Lodge Park
N. Bryant and Delaware
Cathlamet Park
N. Edison and Pittsburg
Chimney Park
9300 N. Columbia Blvd
Delta Park
N. Denver and M.K., Jr Blvd
Overlook Park
N. Fremont and Interstate
Portland International Raceway
N. Denver and Victory Blvd

NORTHEAST

Alberta Park
NE 22nd and Killingsworth
Agony Park
NE 141st and Falling
East Holladay Park
NE 130th and Wasco
Farmhill Park
NE 37th and Atsworth
Frazier Park
NE 52nd and Haszard
Grant Park
NE 32nd and U.S. Grant Plaza
Irving Park
NE 7th and Fremont
Normandale Park
NE 57th and Halsey
Sacajawea Park
NE 75th and Alberta
Wilshire Park
NE 33rd and Skidmore

NORTHWEST

Couch Park
NW 19th and Gilman
Wallace Park
NW 25th and Raleigh

SOUTHEAST

Brentwood Park
SE 60th and Duke
Cherry Park
SE 110th and Stephens
Creston Park
SE 44th and Powell Blvd
Laurelhurst Park
SE 39th and Stark
Lantz Park
SE 92nd and Holgate
Lynchwood Park
SE 120th and Halg
Mt. Tabor Park
SE Lincoln, east of SE 64th
Sellewood Riverfront Park
SE Spokane and Cooks Pkwy
Sowalcrest Park
SE 31st and Market
Woodstock Park
SE 47th and Slovic

SOUTHWEST

Council Crest Park
SW Council Crest Dr
Galbraith Park
SW 45th and Vermont
Hilldale Park
SW 27th and Hilldale Hwy
Willamette Park
SW Maracum and Nebraska

Partners:
Portland Parks & Recreation,
Bureau of Environmental
Services, Audubon Society,
Multnomah County Animal
Services, and the Oregon
Humane Society

**i'm for the
environment!**



City of Portland Dogs for the Environment

**Responsible
pet ownership**

means more than licensing and vaccinating your pet, it means controlling your dogs' interactions with people, wildlife, and natural areas. Here are some actions you and your dog can take to keep our beautiful city clean, green, and safe.

Leash your dog

While your dog is your friendly, furry companion, other animals and even people may view dogs as a threat. Unleashed dogs can harm birds, amphibians, fish, and other wildlife. They may also disturb breeding areas or harass wintering wildlife causing them to use valuable energy reserves. Dogs running loose in natural parks also trample plants and create inappropriate trails. Worse, they can endanger themselves, other dogs, and people. Portland City Code requires that all dogs in parks must be kept on a leash unless in a designated Off-leash Area.

Scoop the poop

Dog poop is essentially raw sewage; it contains harmful organisms like E. coli, Leptospira, and Roundworms. These organisms can be contracted by other dogs, wildlife, and even children. Bacteria from dog poop can wash into rivers and streams when it rains. City Code also requires that all poop must be picked up and disposed of into the proper receptacle. Violation of either leash or scoop laws will result in a \$150 fine.

Off-leash Areas

Every dog deserves the freedom to run, play, and socialize with other dogs. The City of Portland manages 31 Off-Leash Areas, ranking first in the country for dog parks per capita, according to Forbes Magazine.

Dogs are never allowed off-leash in Natural Area Parks

Parks are for everyone

Our parks and natural areas not only provide recreation and relaxation for people, children, and dogs, they also provide important habitat for fish and wildlife. Our parks are home to threatened salmon, salamanders, and birds. To protect these valuable resources, parks sometimes undergo restoration. You may notice fences going up near trails and streams; these fences are to protect parks from further degradation, and ensure the success of restoration efforts. Between 2002 and 2007, 36,500 volunteers gave 146,000 hours of their time to help restore Portland's natural areas. If you would like to get involved, volunteer opportunities are available throughout the city.

Visit the Portland Parks & Recreation website for more information about Dogs for the Environment, dog off-leash areas and volunteer opportunities:
www.PortlandParks.org

**i'm for the
environment!**

pledge

Human: I pledge to be environmentally responsible by:

- Keeping my dog on leash and on the trail in natural areas
- Scooping and properly disposing of poop
- Avoiding contact with streams and wildlife

signature: _____

Dog: I pledge to do my part to be environmentally responsible and earn the right to proudly wear my green bandana.

paw: _____

To receive your green bandana, please sign the pledge, cut it out, and send it to:

Dogs for the Environment
1120 SW 5th Avenue, Suite 1000
Portland Oregon 97204

Please send my bandana to this address:

name: _____

address: _____

city/state/zip: _____



ATTACHMENT Q

Your dog should never be off-leash in natural areas because they are occupied year-round by a wide range of wild animals feeding, breeding, and raising young, including some animals whose very existence is threatened. While your pet's activities may appear harmless and fun, wildlife and their habitat are significantly impacted in ways that you may not be able to see.

Even if your dog doesn't chase wildlife, dogs that are off-leash disturb wild animals enough to deplete their precious energy reserves, which can cause malnutrition or death. Birds that nest on or near the ground are particularly susceptible to harm by off-leash dogs. Nests on the ground or in low shrubs are very difficult to see and your off-leash dog can easily destroy or dislodge them without you ever even noticing. Fragile amphibians and reptiles rely on clean, quiet water bodies for feeding and reproduction. While your dog may have fun splashing in the water, this activity is detrimental to frogs and turtles. Also, remember that your dog is only one of thousands to recreate in Portland's parks. While your pet may appear to have little impact on the landscape, the cumulative effect of all the dogs that visit the same area is very significant.

Keeping your dog on a leash in natural areas is not only a responsible decision that protects wildlife and our urban environment, it's also the law. Portland City Code requires dogs to be leashed outside designated off-leash areas. Violators can be fined \$150 per dog (Portland City Code 20.12.140).

Please respect all the animals, domestic and wild, that live in Portland. Natural areas may be home to the animals listed here and your cooperation is essential for their survival.

For more information:
Environmental Services, 503-823-4000
or
www.portlandonline.com/bes/wildlife

Parks Off-leash Areas

Unleashed dogs are never allowed in natural areas. However, Portland has areas in 31 parks where dogs and their owners can exercise and play off-leash. Some areas are fenced, others are unfenced with markers designating the boundaries. Off-leash hours are specific to each park.

NORTH

Arbor Lodge park
N. Irving and Columbia
Cathlamet park
N. Irving and Milburg
Chimney park
N. Irving, Columbia Blvd
Delia park
N. Conover and N. Irving
Overlook park
N. Irving and Milburg
Northwest International Parkway
N. Conover and Irving Blvd

NORTHWEST

Couch park
NW Irving and Clatsop
Walden park
NW Irving and Clatsop

NORTHEAST

Alberta park
NE Irving and Milburg
Argus park
NE Irving and Irving

EAST

East Valley park
NE Irving and Irving
Marshall park
NE Irving and Milburg
Osman park
NE Irving and Irving
Scott park
NE Irving and Irving
Swing park
NE Irving and Irving
Washburn park
NE Irving and Irving
Washburn park
NE Irving and Irving

SOUTHWEST

Walden park
NE Irving and Clatsop
Walden park
NE Irving and Clatsop

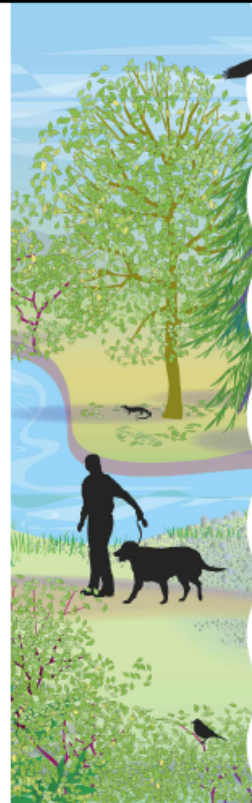
SOUTHWEST

Central Crest park
NE Irving and Irving
Walden park
NE Irving and Irving
Walden park
NE Irving and Irving



Dan Saltzman, Commissioner Dean Marriott, Director

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Portland's Sensitive Wildlife and Your Dog

Portland's natural areas are wonderful places for you and your pet to exercise and enjoy some solitude in the city.

However, these places are also very important for the survival of wildlife living in and passing through Portland.

Portland's Wildlife and Your Dog

You can help protect Portland's wild creatures by keeping your dog on a leash.



- 1 Western Painted Turtle:** One of two native turtles designated as critical on Oregon's Sensitive Species list. This turtle relies on adequate riparian areas for nesting and is very sensitive to disturbance.
- 2 North American Beaver:** Live in and near streams and rivers. They are especially susceptible to disturbance and predation when raising young. The Audubon Society of Portland notes injured beavers that are attacked by dogs in local parks.
- 3 Yellow Warbler:** Nests in shrubs. It's one of Portland's Special Status Species.
- 4 Red Legged Frog:** This frog is federally designated as a Species of Concern. It is dependent on shallow, often ephemeral, ponds or wetlands and adequate riparian vegetation. Eggs in water are easily disturbed.
- 5 Northwestern Salamander:** Found in wet habitats from the Pacific coast sea level to 5,700 feet including grasslands, woodlands, and forests. Eggs in water are easily disturbed.
- 6 Killdeer:** Nests on the ground in gravelly clearings. They are well camouflaged and easily flushed from nests.
- 7 Black Tailed Deer:** These deer thrive on the edge of forests, which has the understory and grasslands the deer prefer as food and that provides cover for safety. Deer use many of our local natural areas and often leave vulnerable fawns unattended while they graze.
- 8 Spotted Towhee:** Nests on or near the ground in shrubby areas, are well camouflaged and easily disturbed.
- 9 American Kestrel:** When hunting, this bird hovers above the ground to capture mice and insects. It's one of Portland's Special Status Species.
- 10 Red Wing Blackbird:** Nests in a horizontal tunnel made in a river bank or sand bank. Dogs splashing through streams impact nest sites.

ATTACHMENT R

Species	S	S	F	W
Flycatchers (continued)				
*Willow Flycatcher	u	u	u	
Hammond's Flycatcher	u	o		
Dusky Flycatcher	x			
Pacific-Slope Flycatcher	u	o		
Say's Phoebe	r			
Ash-throated Flycatcher		x		
Western Kingbird	x	x		
Eastern Kingbird		x		
Shrikes to Vireos				
Northern Shrike			x	
Cassin's Vireo	o	r		
*Hutton's Vireo	u	u	u	
Warbling Vireo	u	o	u	
Corvids				
*Stellar's Jay	u	u	u	u
*Western Scrub-Jay	c	c	c	c
Common Raven	x			
*American Crow	c	c	c	c
Swallows				
*Purple Martin	f	f	f	
Tree Swallow	u	o	u	r
*Violet-Green Swallow	c	f	c	
Northern Rough-winged Swallow	u	o	u	
Cliff Swallow	u	o	u	
*Barn Swallow	c	c	c	x
Chickadees to Nuthatch				
*Black-capped Chickadee	c	c	c	c
Chestnut-backed Chickadee	u	u	u	u
*Nuthatch	c	c	c	c
Nuthatches to Creepers				
Red-breasted Nuthatch	u	u	u	u
White-breasted Nuthatch	f	u	f	f
*Brown Creeper	f	f	f	f
Wrens to Kinglets				
*Bewick's Wren	c	c	c	c
House Wren	r	r	r	r
Winter Wren	f	f	f	f
Marsh Wren	o	o	o	o
Rock Wren	x			
Golden-crowned Kinglet	f	r	f	f
Ruby-crowned Kinglet	c	c	c	c
Thrushes				
Townsend's Solitaire	x		x	
Swainson's Thrush	u	o	u	
Hermite Thrush	u	u	u	u
*American Robin	c	c	c	c
Varied Thrush	u	u	u	u
Starling				
*European Starling	c	c	c	c

Species	S	S	F	W
Pipits to Waxwings				
American Pipit	o	o		
*Cedar Waxwing	f	f	f	f
Wood Warblers				
Orange-crowned Warbler	f	o	f	x
Nashville Warbler	o	r		
Yellow Warbler	u	r	u	
Yellow-rumped Warbler	c	u	c	f
Black-throated Gray Warbler	f	u	u	x
Townsend's Warbler	u	u	u	
Blackpoll Warbler	x			
MacGillivray's Warbler	r			
*Common Yellowthroat	f	f	f	r
Wilson's Warbler	u	o	u	x
Yellow-breasted Chat	x			
Tanagers				
Western Tanager	u	u		
Sparrows				
*Spotted Towhee	c	c	c	f
Brewer's Sparrow	x			
Savannah Sparrow	r	r	r	r
Fox Sparrow	f	f	f	f
*Song Sparrow	c	c	c	c
Lincoln's Sparrow	o	o	o	o
Swamp Sparrow	x	x	x	x
White-throated Sparrow	o	o	o	o
White-crowned Sparrow	u	o	u	o
Golden-crowned Sparrow	c	c	c	c
*Dark-eyed Junco	c	u	c	f
Grosbeaks to Buntings				
*Black-headed Grosbeak	f	u	u	
Blue Grosbeak	x			
Least Bunting	x			
Icterids				
*Red-winged Blackbird	c	c	c	f
Western Meadowlark	x	x	x	x
Brewer's Blackbird	o	o	o	o
*Brown-headed Cowbird	o	o	o	
Bullock's Oriole	r			
Finches				
Purple Finch	o	o	o	o
*House Finch	c	c	c	c
Red Crossbill	o	r	o	o
Common Redpoll	x	x	x	x
Pine Siskin	u	r	u	u
*Lesser Goldfinch	c	c	c	c
*American Goldfinch	c	c	c	c
Evening Grosbeak	u	o	o	o
Old World Sparrows				
House Sparrow	u	u	u	u

Oaks Bottom Bird List



Portland, OR

Illustrated and compiled by
Christopher Hinkle
January 2010

Species	S	S	F	W
Waterfowl				
Greater White-fronted Goose	o	o		
*Canada Goose	c	c	c	c
Cackling Goose	u	o	u	
Trumpeter Swan	u	x		
Tundra Swan	r	r	r	r
*Wood Duck	f	f	f	f
Eurasian Wigeon	o	o	o	
American Wigeon	f	f	f	f
Gadwall	c	c	c	c
*Mallard	c	c	c	c
Blue-winged Teal	r	r	r	x
Cinnamon Teal	o	o	o	
Green-winged Teal	c	c	c	c
Northern Shoveler	c	c	c	c
Northern Pintail	c	c	c	c
Canvasback	o	o	o	o
Redhead	x	x	x	x
Ring-necked Duck	f	f	f	f
Greater Scaup	x	x	x	x
Lesser Scaup	f	f	f	f

Species	S	S	F	W
Waterfowl (continued)				
Surf Scoter	o	x	x	
Bufflehead	o	o	o	
Common Goldeneye	o	o	o	
Hooded Merganser	u	u	u	u
Common Merganser	f	f	f	f
Ruddy Duck	o	o	o	o
Pheasant & Quail				
Ring-necked Pheasant	r	r	r	r
California Quail	r	r	r	r
Grebes				
*Pied-billed Grebe	f	f	f	f
Horned Grebe	r	r	r	r
Red-necked Grebe	x	x	x	x
Emerald Grebe	x			
Western Grebe	r	x	r	r
Pelicans to Cormorants				
American White Pelican	x	x	x	
Brown Pelican	o	o	x	
Double-crested Cormorant	c	f	c	o
Egrets & Herons				
Great Blue Heron	o	o	o	o
Great Egret	r	o	r	
Snowy Egret	u	o	u	
Green Heron	u	u	o	
Black-crowned Night-Heron	x			
Vultures				
Turkey Vulture	f	f	f	r
Osprey, Hawks & Falcons				
*Osprey	o	c	c	
Bald Eagle	u	u	u	u
Northern Goshawk	x			
Sharp-shinned Hawk	u	u	u	u
*Cooper's Hawk	u	u	u	u
Red-shouldered Hawk	x	x	x	x
Red-tailed Hawk	f	f	f	f
Northern Harrier	x	x	x	x
American Kestrel	o	o	o	o
Merlin	u	o	u	u
Peregrine Falcon	o	u	o	u
Rails to Cranes				
Sora	x			
Virginia Rail	o	o		
American Coot	c	c	c	c
Sandhill Crane	r	r		
Shorebirds				
Semipalmated Plover		o		
*Killdeer	f	f	f	u
Greater Yellowlegs	o	r	u	
Lesser Yellowlegs		r		

Species	S	S	F	W
Shorebirds (Continued)				
Solitary Sandpiper	x			
*Spotted Sandpiper	u	u	u	u
Marbled Godwit	o	r	u	
Western Sandpiper	o	r	u	
Least Sandpiper	o	o	u	
Baird's Sandpiper	o	x		
Pectoral Sandpiper		x		
Dunlin	r	r	r	r
Short-billed Dowitcher	o	x		
Long-billed Dowitcher	o	r	u	
Wilson's Snipe	o	o		
Wilson's Phalarope		x		
Red-necked Phalarope		x		
Gulls & Terns				
Bonaparte's Gull	u	x	u	
Mew Gull	u	u	u	u
Ring-billed Gull	f	o	f	f
California Gull	c	u	c	c
Herring gull	u	u	u	u
Taylor's Gull	u	u	u	u
Glaucous Gull	o	x	x	x
Glaucous-winged Gull	c	u	c	c
Western Gull	u	u	u	u
Caspian Tern		r		
Black Tern	x			
Pigeons & Doves				
Rock Pigeon	f	f	f	f
Band-tailed Pigeon	o	o	o	r
Eurasian Collared-Dove	x	x	x	
Mourning Dove	o	o	o	o
Owls				
*Western Screech-Owl	u	u	u	u
*Great Horned Owl	r	r	r	r
Barn Owl	x			
Swifts to Hummingbirds				
Vaux's Swift	c	c	c	
*Anna's Hummingbird	c	c	c	c
*Rufous Hummingbird	c	c	c	c
Kingfisher				
*Belted Kingfisher	f	f	f	f
Woodpeckers				
*Red-breasted Sapsucker	u	u	u	u
*Downy Woodpecker	o	c	c	c
Hairy Woodpecker	o	o	o	o
Pileated Woodpecker	o	o	o	o
*Northern Flicker	c	c	c	c
Flycatchers				
Olive-sided Flycatcher	o	o		
*Western Wood-Pewee	f	f	f	f

ATTACHMENT S

Species	s	S	F	W
Jays & Crows				
*Stellar's Jay	c	c	c	f
*Western Scrub-Jay	c	c	c	c
*American Crow	c	c	c	c
Swallows				
Tree Swallow	r	r		
Violet-green Swallow	f	f	f	
Northern Rough-winged Swallow		x		
Cliff Swallow	r	r		
*Barn Swallow	c	c	c	
*Purple Martin	x	x		
Chickadees				
*Black-capped Chickadee	c	c	c	c
*Chestnut-backed Chickadee	c	c	c	c
Bush-tits				
*Bush-tit	c	c	c	c
Nuthatches				
*Red-breasted Nuthatch	c	c	c	c
Creepers				
*Brown Creeper	c	c	c	c
Wrens				
*Bewick's Wren	c	c	c	c
House Wren	x	x		
*Winter Wren	c	o	c	c
Kinglets				
Golden-crowned Kinglet	c	u	c	c
Ruby-crowned Kinglet	c		c	c
Thrushes				
Townsend's Solitaire	u	r	r	r
Swainson's Thrush	c	o	c	
Hermit Thrush	c	c	c	f
*American Robin	c	c	c	c
Varied Thrush	c	c	c	c
Starlings				
European Starling	f	f	f	f
Waxwings				
*Cedar Waxwing	u	u	u	o
Warblers				
Northern Parula	x			
*Orange-crowned Warbler	c	o	c	
Tennessee Warbler	x			
Nashville Warbler	u	r		
Yellow Warbler	r	r		
*Yellow-rumped Warbler	c	o	u	u
Black-throated Gray Warbler	c	o	u	
Townsend's Warbler	c	r	f	f
Hermit Warbler	u		o	

Species	s	S	F	W
Warblers (continued)				
Blackpoll Warbler			x	
MacGillivray's Warbler	u		o	
*Wilson's Warbler	c	o	c	
Hooded Warbler	x			
Tanagers				
*Western Tanager	c	u	u	x
Summer Tanager	x			
Sparrows				
*Spotted Towhee	c	c	c	u
Chipping Sparrow	o	r		
Savannah Sparrow			x	
Fox Sparrow	f	f	f	
*Song Sparrow	c	c	c	c
Lincoln's Sparrow	o	r		
White-throated Sparrow	r	r	r	
*White-crowned Sparrow	u	o	u	r
Golden-crowned Sparrow	f	f	f	
*Dark-eyed Junco	c	c	c	c
Grosbeaks				
*Black-headed Grosbeak	f	f	f	
Rose-breasted Grosbeak	x			
Buntings				
Lazuli Bunting	r	x		
Blackbirds				
Brewers Blackbird	x	x	x	x
Red-winged Blackbird	x	x		
Brown-headed Cowbird	f	f	u	
Orioles				
Bullock's Oriole	r	x		
Finches				
Purple Finch	f	u	r	
*House Finch	c	c	c	c
Red Crossbill	u	o	o	o
*Pine Siskin	f	u	f	f
*Lesser Goldfinch	c	c	c	u
*American Goldfinch	u	u	u	u
Evening Grosbeak	f	o	o	r
Pine Grosbeak				x
Old world Sparrows				
House Sparrow	u	u	u	u

Mt. Tabor Park Bird List



Portland, OR

Illustrated and Compiled by
Adriah Hinkle
January 2010

Symbols and abundance:

s=Spring -March to May
S=Summer -June through early-August
F=fall -Mid-August through mid-November
W=Winter -Late-November through February
* Nesting confirmed or suspected

C=common, almost always found in proper habitat
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R=rare, rarely occurs and usually not every year
X=extremely rare, fewer than 5 records

Mt. Tabor is a small butte in Southeast Portland. Residential neighborhoods are found on the lower flanks and 200-acre Mt. Tabor Park is located atop the butte.

Most of the park's slopes are covered with stands of Douglas Firs and Bigleaf Maples. The understory on the north side of the park is dominated by grass and, in some places, native shrubs. The southern end of the park has a denser understory, mostly consisting of native plants and shrubs. Three reservoirs, which provide Portland with its drinking water, can be found on the south and west sides of the park. Access and birding vantage points are excellent, including trails, closed roads, and grassy fields.

The main birding attraction at Mt. Tabor is its many neotropical migrants. April to May and mid-August to early-October are the best times to view migrants. Especially from late-April to early-May, birders from across the Portland Metro Area visit the park every morning. Winter and summer are less productive, but still rewarding.

Species	s	S	F	W
Geese & Ducks				
Greater White-fronted Goose		x	x	
Cackling Goose		x	x	
Canada Goose	u	u	u	u
Wood Duck	x			
Gadwall		x		
American Wigeon		f	f	f
*Mallard	f	f	f	f
Ring-necked Duck	x	x	x	
Lesser Scaup	x	x		
Bufflehead	u	u	u	u
Common Goldeneye	x			
Hooded Merganser	x	x		
Ruddy Duck	x			
Grebes				
Pied-billed Grebe	x			
Red-necked Grebe		x		
Horned Grebe		x		
Cormorants & Herons				
Double-crested Cormorant	r	r		
Great Blue Heron	r	r	r	r
New world Vultures				
Turkey Vulture	u	u	u	x
Hawks & Falcons				
Osprey	o	o	o	
Bald Eagle	r	r	r	r
Sharp-shinned Hawk	u	u	u	u
*Cooper's Hawk	u	u	u	u
Northern Goshawk	x	x		
*Red-tailed Hawk	f	f	f	f
Northern Harrier	x	x		
American Kestrel	r	r	r	r
Merlin	u	u	u	u
Peregrine Falcon	r	r	r	r
Flovers & Sandpipers				
Killdeer	x	x		
Spotted Sandpiper	r	o	r	
Least Sandpiper	x			
Gulls				
Lesser Gull	r	r	r	r
Ring-billed Gull	r	r	r	r
California Gull	o	r	o	u
Herring Gull	r	r	o	
Taylor's Gull	r	r	o	
Western Gull	r	r	o	
Glaucous-winged Gull	u	u	f	

Species	s	S	F	W
Pigeons & Doves				
*Band-tailed Pigeon	c	c	c	o
Rock Pigeon	f	f	f	f
*Mourning Dove	o	o	o	o
Owls				
*Great-horned Owl	o	o	o	o
Snowy Owl				x
Barred Owl				x
*Western Screech-Owl	f	f	f	f
Short-eared Owl	x			
Nightjars				
Common Poorwill	x			
Swifts				
Vaux's Swift	f	f	f	
Hummingbirds				
*Anna's Hummingbird	c	c	c	c
Calliope Hummingbird	r	x	x	
Costa's Hummingbird	x	x		
Black-chinned Hummingbird	x	x		
Rufous Hummingbird	u	u	c	
Kingfishers				
Belted Kingfisher	x	x		
Woodpeckers				
Red-breasted Sapsucker	o	o	o	o
Red-naped Sapsucker	x	x		
Williamson's Sapsucker	x	x		
Hairy Woodpecker	u	u	x	
*Downy Woodpecker	u	u	u	u
*Northern Flicker	c	c	c	c
Pileated Woodpecker	x	x		
Flycatchers				
Olive-sided Flycatcher	u	o	u	
*Western Wood-Pewee	c	f	c	
*Pacific-slope Flycatcher	c	u	c	
Willow Flycatcher	o	r	o	
Hammond's Flycatcher	f	r	u	
Dusky Flycatcher	r	r		
Gray Flycatcher	x	x		
Say's Phoebe	x			
Vireos				
Warbling Vireo	c	o	c	
*Hutton's Vireo	f	f	f	f
Red-eyed Vireo	x			
Cassin's Vireo	f	o	u	
Blue-headed Vireo	x			
Plumbeous Vireo	x			