

# City of Corvallis Natural Features Inventory

## Wildlife Habitat Assessment

City Council Acceptance  
September 2, 2003

### Table of Contents

<b>INTRODUCTION</b>	<b>1</b>
<b>SUMMARY</b>	<b>1</b>
<b>FUNCTIONAL VALUES</b>	<b>3</b>
<b>METHODS</b>	<b>4</b>
Wildlife Habitat Assessment	4
Vegetation Assessment	12
<b>WILDLIFE HABITAT AND VEGETATION ASSESSMENT RESULTS</b>	<b>15</b>
<b>SUMMARY DESCRIPTIONS</b>	<b>21</b>
North Study Area	21
West Central Study Area	32
South Study Area	48
<b>APPENDIX A. RARE SPECIES/HABITAT TABLE</b>	<b>51</b>
<b>APPENDIX B. WILDLIFE AND VEGETATION DATA FORMS</b>	<b>58</b>
<b>APPENDIX C. RARE SPECIES RECORDS FROM OREGON NATURAL HERITAGE INFORMATION CENTER</b>	<b>63</b>

## Introduction

The Wildlife Habitat Assessment (WHA) evaluates sites, in terms of water, cover and food attributes and other relevant habitat factors and inventories vegetation characteristics. The methods for inventorying wildlife habitat and vegetation assessment areas are based on the *Natural Features Scoping Report* and were refined by Winterbrook Planning, in consultation with City of Corvallis Community Development Department staff.

WHA areas are contiguous areas of natural vegetation that are greater than five acres. Each habitat site is composed of one or more vegetation subareas or subpolygons that contain distinct vegetation cover types.

Each WHA site is generally composed of a mosaic of vegetative cover type subareas or subpolygons. These subareas are described and mapped in a Vegetation Assessment, including:

- Dominant cover types and characterization of the structure (e.g. trees, shrubs, and herbaceous layers);
- Associations with rare plants and wildlife habitat identified by Oregon Natural Heritage Information Center (ORNHIC)<sup>1</sup>.

Vegetation subpolygons that have predominant tree cover are also evaluated as part of the Tree Grove Assessment. Streams or drainage areas with distinguishable riparian vegetation or channel characteristics that flow through WHA areas are evaluated as part of the Riparian Assessment.

This report describes the methodology used to conduct the assessment and provides the results with summary tables and individual descriptions for each site. Appendix A contains reference lists such as Vegetative Cover Types and Rare Species/Potential Habitat. Appendix B contains the WHA and Vegetative Assessment survey forms that are described in the Methods section below. Individual data sheets for each WHA site and its vegetative cover type subpolygons are available and organized by study area (North, West-Central, South).

## Summary

Thirty-two (32) habitat sites ranging in size from 6.8 to 260 acres were evaluated within the Corvallis planning area. WHA sites throughout the UGB totaled 2,595 acres, with a mean site size of 82 acres. Twelve sites were located in North Corvallis (952 acres), eighteen in West/Central Corvallis (1,505 acres) and two in South Corvallis (138 acres). WHA scores ranged from a high of 102 (Site N-9a, Jackson Creek/Chip Ross Park) to a low of 31 (Site N-2a, Lewisburg Ave North). The mean score for all sites in their existing condition was 64.8. Some sites have the potential to be enhanced. With enhancements, the mean score could be raised to 69.8.

Table 1 summarizes each WHA site, its size, existing and potential enhanced scores, habitat types and other noted features. The table is organized by the study area within the UGB, beginning with north, then south, then west/central.

---

<sup>1</sup> The ORNHIC database is a list of rare, threatened or endangered species with documented occurrences dating from the early 1900s to present. Occurrences in the Corvallis UGB area were extracted in February, 2001.

**Table 1. Summary of Wildlife Habitat Sites**

Site #	Habitat Site	Acres	Score	Enhanced Score
<b>North Corvallis</b>				
N-1a	Crescent Valley Northwest	121.29	95	97
N-2a	Lewisburg Ave North	20.61	31	33
N-3a	Lewisburg Ave South	48.71	47	58
N-4a	Crescent Valley West	89.71	94	95
N-5a	Owens Farm	65.66	88	91
N-6a	Crescent Valley Southwest	150.42	65	68
N-7a	Highland Dr./Crescent Valley Dr. South	29.58	62	66
N-7b	Highland Dr./Crescent Valley Dr. North	16.24	40	49
N-8a	Highland Dell	234.65	53	59
N-9a	Jackson Creek/Chip Ross Park	146.62	102	103
N-11a	Highland Avenue Walnut Grove	21.68	34	46
N-12a	Crescent Valley/Jackson Creek	6.80	69	72
<b>North</b>	<b>Subtotal / Mean Scores</b>	<b>951.97</b>	<b>60.00</b>	<b>64.38</b>

<b>West Central Corvallis</b>				
WC-1a	Ponderosa Avenue Northwest	62.18	72	73
WC-2a	Timberhill West	30.92	72	75
WC-2b	Timberhill East	260.08	72	75
WC-3a	Walnut Park Northwest	144.39	77	83
WC-3b	Walnut Park South	172.30	81	83
WC-4a	Witham Hill West	134.29	64	71
WC-4b	Witham Hill East	124.54	54	58
WC-5a	Woodland Meadows Park	35.05	47	62
WC-6a	Bald Hill Park	207.67	99	102
WC-7a	Squaw Creek East	62.94	51	59
WC-7b	Squaw Creek West	90.58	59	65
WC-8a	West Hills Road/Reservoir Road	17.48	78	80
WC-8b	West Hills Road West	9.55	38	43
WC-9a	West Hills Road East	12.25	39	57
WC-10a	Squaw Creek Southwest	66.86	77	79
WC-11a	Brooklane Drive	54.61	66	68
WC-12a	Nash Avenue Plantation	12.59	46	50
WC-13a	Donovan Oak Forest	7.57	39	46
<b>West Central</b>	<b>Subtotal / Mean Scores</b>	<b>1,505.85</b>	<b>62.83</b>	<b>68.28</b>

<b>South Corvallis</b>				
S-1a	Avery Park	37.77	69	71
S-2a	Willamette Park	99.89	93	97
<b>South</b>	<b>Subtotal / Mean Scores</b>	<b>137.66</b>	<b>81</b>	<b>84.0</b>
<b>Corvallis UGB</b>	<b>Total / Mean (Average) Scores</b>	<b>2,595.48</b>	<b>64.78</b>	<b>69.78</b>

## Functional Values

The ability of local wildlife habitats to function properly is an important measure of the general health and vitality of the local environment. Healthy wildlife habitats are a vital scenic, recreational, and educational resource for the city, making a significant contribution to Corvallis' high quality of life.

Wildlife habitat can be described as the integration of the landscape and the essential resources of food, water, and cover found within it. While most species associated with Corvallis' upland habitats use riparian areas, they are dependent on upland areas for key aspects of their life history such as breeding, food, or shelter. Habitat types found in Corvallis include grasslands, meadows, shrublands, oak savannas, and coniferous, deciduous and mixed forests. These land types provide crucial functions and values for many wildlife species.

Wildlife habitat occurs in urban as well as rural areas. With increasing development by humans, habitats are rapidly disappearing and becoming less able to support life. Nurturing habitat in our urban environment creates a healthier and more enjoyable place to live, for both wildlife and people.

Diverse, multi-layered vegetation is essential to wildlife habitat functions. Many plants, shrubs and trees benefit wildlife and are also attractive to people. Plants add interest to the urban landscape, and can convey a sense of privacy or a sense of spaciousness. Habitats with a diversity of plants help protect against drastic changes caused by insect pests and plant diseases. Beauty and health have value and, in this context, the beauty and health of habitats in people's backyards can add to the value of their real estate.

Wildlife habitats can protect soil and improve water and air quality. Trees and other plants hold soils in place during rain and wind. Plants help to keep sediment and contaminants from entering water bodies. In the right places, plants keep homes cool in summer and lessen heat loss in winter. They can offer privacy and reduce dust and noise from road traffic. Plants also improve air quality by removing carbon dioxide from the air and replenishing it with oxygen. These effects are dramatically noticeable in developed areas. Plants can make cities more comfortable and pleasant places to live, for humans and wildlife.

Wildlife habitats are a major educational resource for the citizens of Corvallis. Students of all ages, from gradeschoolers to OSU researchers, and local residents can learn from their interactions with and explorations of local habitats. Preserving habitats within the City limits keeps this learning resource right in your own backyard.

## Methods

Wildlife Habitat Assessment (WHA) field surveys were completed for each habitat site. A habitat site is a contiguous area of natural vegetation that is generally bounded by urban or agricultural land uses. Each habitat site is composed of one or more vegetation subareas or subpolygons that contain distinct vegetation cover types. For habitat sites that contain or overlay riparian areas, a separate riparian assessment is completed for drainage areas with distinguishable riparian vegetation or channel characteristics.

WHA field surveys were conducted on-site where access permission was obtained. Where access was not obtained, off-site assessments were conducted using aerial photographs, existing wildlife data sources, and observation from public lands and adjacent rights-of-way. The goal was to survey all sites or at least of portion of the site that appeared to be representative or typical of the conditions in that resource site. Sixteen (50%) of the WHA sites had on-site access to the site. Fifteen (47%) of the WHA sites were field verified via adequate access from adjacent roads or properties. Only one WHA sites (N-7a) did not have access to the site or could not be surveyed from adjacent roads or properties. Table 2 provides a breakdown between the on-site and off-site surveys for the vegetation subpolygons.

**Table 2. Analysis of On-site vs. Off-site Methods**

Method	No. of Subpolygons	%	Acres	%
On-site	62	37%	1,200	46%
Field Verified	74	44%	1,092	42%
Off-site	32	19%	304	12%

### ***Wildlife Habitat Assessment***

The following survey data were recorded on the WHA field forms. Form data were generally entered in the field except as noted below.

*Habitat Site:* The site name is provided; names are typically based on the local park, road, or other recognizable feature located within or adjacent to the site.

*Site #:* The site number or code has two to three parts: the first identifies the section of the city (WC, west central; N, north; S, south), the second identifies the WHA site code (1, 2, 3, etc). The third identifies the subpolygon or area of the site identifying different vegetation types within a diverse WHA (a, b, c, etc.). For example, the first site in the South section is S-1a.

*Score and Enhanced Score:* Sums of the respective columns in the numerical rating section (see below), calculated automatically when data is entered in the WHA database. Those sites with the highest scores provide the best or most valued wildlife habitat.

*Size:* Site acreage, as amended in the field; this calculation is provided by GIS.

*Map:* Field map number for the surveyed site; sites may extend across multiple maps.

*Date:* Date(s) of the field survey; if multiple field dates, see discussion under Wildlife Species.

*Observers:* Initials of field observers.

*GPS location:* GPS reading of latitude and longitude taken from the approximate center of the site, where possible. In dense forest, readings were taken from clearings or at the forest edge to improve accuracy. For offsite assessments, a GPS reading was generally taken from a neighboring road and the location noted on the field map and/or data form.

*Method:* Indicates whether the inventory was conducted onsite or offsite.

## **General Conditions**

A summary of site and survey conditions, including weather, topography, land use, and habitat alteration is provided for each site.

*Site:* An estimate of the relative abundance of each habitat type by referring to the field maps (e.g., 80% meadow / 20% oak woodland). This estimate may serve as a reference when assessing habitat features such as food and cover in the rating section. It also notes the broader context of habitat site within a basin.

*Weather:* Notes on precipitation, cloud cover, wind, temperature, and any recent weather conditions that might influence wildlife use on the field date.

*Topography:* General notes on slope, aspect and physiographic context of the site.

*Land use:* Lists existing land uses on-site and adjacent to the site; including major roads and development.

*Habitat alteration:* Notes physical changes to the site's habitat such as grading and vegetation removal, invasive species infestation, and on-going management activities such as mowing.

## **WHA Rating System**

The WHA rating system assesses each site in terms of its potential for wildlife. The system is based on the three essential components of habitat: food, water, and cover. Each site is evaluated in terms of relative quantity, quality, diversity, and seasonality of the components present at the site. Also assessed are patch size, connectivity (internal and external), human disturbance, and unique features.

The "score" is based on existing conditions. The "enhanced score" is intended to reflect the score that would be received if a particular feature were added or diversified on the site either through overall site restoration, or by projects targeted at specific features. The potential restoration activities are documented on the individual data sheets for each habitat site.

The scoring of the various components is weighted based on each component's estimated importance for wildlife. In particular, sites with water will rate higher in this system, as most

terrestrial wildlife species need access to water, and all species need some amount of cover while drinking at a water source. However, habitat assessments are also intended to reflect the needs of the types of species that would be expected to occur within the habitat site. Thus, an upland site (without on-site water) may outscore a riparian site in some cases, due to the presence of other features such as critical forage and nesting habitat for certain species, or the presence of rare species or habitats (e.g., oak savanna). The WHA method, as adapted for Corvallis, provides an assessment approach that removes some of the potential bias of the basic WHA (toward forested habitats) while adding greater emphasis on the value of natural communities, particularly those that are rare or threatened.

## **Assessment Factors**

The WHA assessment focuses on specific habitat features or conditions within six general categories:

1. Water
2. Food
3. Cover
4. Human Disturbance
5. Patch Size and Connectivity
6. Unique Features

Following is a discussion of the factors evaluated for each category. The highest scores reflect the better condition or greater functions provided by the site. Potential scores for each factor range a high of 8 to a low of 0, with greater weight given to some factors than others. When rating a factor, any whole number within the given point range may be used. The WHA score is the sum of each of the individual factor scores.

### **Water**

Water resources on a site are evaluated based on four characteristics: quantity and seasonality; quality; proximity to cover; and diversity. All of these factors play an important role in the site's significance to wildlife. The highest rated sites have several types of permanent and ephemeral water sources, with water of high quality located adjacent to vegetative cover.

#### *Quantity and Seasonality*

This aspect refers to the amount of water available on site and its seasonality. Year-round water is important to most wildlife species, particularly in an urban setting where habitat fragmentation may isolate habitat patches from other water sources. Ephemeral streams and wetlands provide important habitat to certain groups of wildlife such as amphibians. A site with a perennial stream, pond or wetland receives a high score, weighted by the size of the waterbody and its relative importance to the habitat site. For example, on a large site with only one small perennial stream present, less mobile species (e.g., amphibians) may have difficulty getting to the water source from distant upland parts of the site. This site may therefore receive a value of 6 instead of 8. A site with only seasonal or ephemeral water sources receives a value of 4, adjusted by the relative quantity of water within the site. In Corvallis, some habitat sites border stream corridors and wetlands; a site without water that is located directly adjacent to a permanent water source receives a value of 2. A site without water on-site or adjacent receives a value of 0.

### *Quality*

Both observable water quality indicators and recorded data may be used to assess water quality conditions within a site. Observable factors include physical evidence in the waterbody (e.g., oil sheens, garbage, stagnant water, eroded banks), biological evidence (e.g., fish, macro-invertebrates), or other indicators (e.g., an undeveloped, forested drainage basin may indicate good water quality). Recorded water quality data for Corvallis, such as DEQ 303d water quality limited streams or records of contaminated sites, may be interpreted alone or in conjunction with observable factors to rate a site's water quality. Streams emerging from forested headwater areas with no observable sources of degradation, evidence of upstream stormwater/contaminated discharges, or recorded water quality degradation would receive a value of 8. Other streams with any of these indicators, including DEQ listed streams, receive lower values (generally 2 to 6) depending on the nature and extent of the impacted water quality parameters. Highly degraded waterbodies (e.g., with no signs of aquatic life) receive a value of 0.

### *Proximity to Cover*

Wildlife will use water more readily if it is close to vegetative cover. Streamside cover allows escape from predators and protection from weather extremes. The closer and more dense the cover, the more important the water source generally is to many species. Dense cover immediately adjacent to a water source receives a value of 8. This value may be lower (4 to 6) if such cover is only available along a limited segment of the stream or waterbody. Nearby cover, generally within 25 feet of a water source, receives a value of 4. Water without cover within 50 feet receives a value of 0.

### *Diversity*

A diversity of water resource types benefits a wide range of wildlife. A site with a mixture of streams (ephemeral and perennial), seasonal wetlands and open water habitat generally has higher wildlife value than a site with only one of these features. A site having three or more types of water available, with at least one perennial source, receives a value of 6. A site with two water types receives a value of 4. A site with one water type receives a value of 2. A site having no water present receives a value of 0.

## **Food**

Food is a basic requirement for any organism. Wildlife species cannot survive in one area for any appreciable period of time without food. The greater the variety and quantity of food, the greater the potential for serving the needs of more wildlife species. The three factors considered in the assessment of forage habitat are quantity and seasonality, variety, and proximity to cover. The highest rated sites have a wide variety of food plants available all year, in good quantity, with adjacent cover.

### *Quantity and Seasonality*

This factor measures the amount of food and its availability on a seasonal or year-round basis. The assessment of seasonality should consider the timing of fruiting or seed setting. While many fruits and seeds become available in the summer and fall, the highest scoring sites should also provide wintertime and early spring food sources. Wintertime food sources might include hazelnuts, acorns, snowberry (persistent fruits), and conifers. Spring food sources include osoberry, salmonberry, maples, ferns, fungi, and flowering plants. Sites having large quantities

of food available year-round receive a value of 8; sites that provide moderate quantities of food or food that is only available on a seasonal basis receive a value of 4; and sites with little or no food available receive a value of 0.

### *Variety*

This factor includes plant matter, insects, and other animals that may be part of the food web. Plant food sources include fleshy fruits, nuts, mast, seeds, and nectar. Insects are more abundant in certain types of habitat (e.g., areas with water, or with snags and downed logs) or in association with certain plants (e.g., willows attract many insects). A wide variety of food sources available throughout the site receives the highest rating of 8. If food sources occur only within a small segment of the site, a lower value of 4 to 6 may be given. A site with a moderate variety of food sources receives a value of 4, adjusted according to its relative value within the site. A site with little or no food sources, such as one dominated by Scot's broom or turf grass, receives a score of 0.

### *Proximity to Cover*

As with water, the presence of adjacent cover from which to forage for food and escape predation by other native wildlife or domestic animals is important. Dense vegetation and multiple vegetation layers near food sources provide cover for foraging wildlife. Values should be weighted based on the relative importance of the forage cover within the site as a whole. Dense cover immediately adjacent to the primary food sources within a site receives the highest rating of 8. Nearby cover, within 25 feet of food sources on average, receives a value of 4. Where available cover is more than 50 feet from the food source, the site receives a value of 0.

## **Cover**

While escape cover has been addressed with respect to wildlife use of water and food sources, several other dimensions of cover—structural diversity, variety and seasonality, and nesting/denning—are important to wildlife. The highest rated sites have multiple layers of vegetation, snags, and logs, and a wide variety of evergreen and deciduous species in all layers.

### *Structural Diversity*

The vertical stratification of vegetation on a site is a measure of a site's wildlife cover value. Sites with multiple canopy layers (e.g., tree, sapling, shrub and herbaceous layers), with a range of age and size classes, and other structural components such as snags and downed logs receive the highest ratings. Generally speaking, the more layers present, the greater the surface area for feeding, traveling and breeding available to a wider diversity of wildlife species. It should be recognized that this factor is weighted in favor of forested habitats. While it is true that forests tend to provide greater cover than other Corvallis habitats such as meadows or oak woodlands, these non-forested habitats may still have important structural features from the standpoint of the species that use them. Thus, a wet meadow habitat providing varied herbaceous "structure" (e.g., small sedges, medium forbs, tall grasses) for the birds, small mammals, butterflies and other insects that use it, might receive a value of 3 or 4, despite the absence of trees and shrubs. Values range from 8 for high structural diversity to 0 for low or no structural diversity.

### *Variety and Seasonality*

The greater the variety of cover, and the longer it is available to wildlife through the year, the more important the habitat. For example, a forest with a mixture of ferns, forbs and understory shrubs provides better cover opportunities for wildlife than a forest that is carpeted by English ivy. Conifers, broadleaved evergreen trees and shrubs, and certain herbaceous plants (e.g., sword fern) provide winter cover for wildlife. Downed large wood and snags also provide important winter cover for many species. Sites with a high variety of cover, in multiple layers and available year round, receive a value of 8. Sites with moderate variety or only seasonal cover receive a value of 4. Mowed lawns and similar monocultures receive a value of 0.

### *Nesting and Denning*

Nesting and denning cover is provided by a variety of structures such as snags, logs, stumps, cavities, rocks, vegetative cover, clumps of mistletoe, large trees, undercut banks, brush piles, root wads, bird and bat boxes, old buildings and bridges, and reptile/amphibian hibernacula such as rocky outcrops and rock piles. Sites with a variety of potential nesting and denning sites may receive up to 4 points.

### **Human Disturbance**

Disturbance is examined from two perspectives: physical or biological alterations to the habitat and disturbance caused by human activity (traffic, trash, pets, outdoor activity). In evaluating this category, it is important to consider the extent of disturbance relative to habitat site size. The highest rated sites have very low human disturbance.

### *Physical/Biological*

This category was used to assign a higher value to those sites with little physical modification and to reflect the fact that the removal or disturbance of physical components (food, water, cover) is detrimental to wildlife. The presence of structures, roads and paved areas, houses, excavations and fills, sewer and stormwater facilities, outfalls or pipes, etc. alter natural habitat. Houses and buildings intrude light into habitats at night. Significantly modified habitats such as lawns or ivy-infested forests also fall within this category. In general, the more physical and biological alterations to a habitat patch, the more altered the wildlife community is likely to become. Values range from 4 for low levels of physical or biological disturbance to 0 for high disturbance levels.

### *Activity*

Human and human-related (domestic animal) disturbances can be very detrimental to wildlife. This factor focuses on human activities (on foot or in vehicles) that can be directly seen, heard, or otherwise detected. Examples include traffic noise, machinery, music, chainsaws, construction and industrial noise and vibration, or humans, dogs, or cats seen or heard. Because such activity varies with time of day, week (weekday-weekend), and year (summer-winter), the assessment is based on observed activities and an estimate of activities and their overall influences over time. A site with very limited or no human or pet disturbances receives a value of 4, whereas a site with multiple human related disturbances such as traffic noise and vibration, barking dogs, human voices, and lawnmowers receives a high disturbance score (0).

## **Patch Size and Connectivity**

During WHA field testing and calibration in Corvallis, several enhancements to the rating sheet were proposed. While some measure of the quantity of water and food sources is captured in the WHA rating, the significance of habitat patches and their relative size is not explicitly addressed. Patch size is intended to address this gap, in the context of both forested habitats (with consideration for interior habitat and edge effect) and unmanaged grasslands.

Connectivity is another area where some refinement of the rating sheet may be helpful. In prior versions of the WHA, access/escape is evaluated as a component of cover. Access refers to internal access (connectivity) to habitats within a site. Escape, however, is the basis for the proximity to cover ratings under the water and food categories and may therefore result in double counting. Thus, it was decided that reference to escape cover be removed and that access be grouped as part of the existing connectivity category. The highest rated sites have large intact patches and have high levels of connectivity both internally and to other habitats and natural areas.

### *Patch Size*

Large patches of natural vegetation help to sustain viable populations of wildlife species, including (in the case of forests) interior species. For example, larger habitat patches may provide very important interior habitat for some disturbance-sensitive species such as neotropical migratory songbirds. Where a forest patch narrows to less than four canopy-widths, a functional discontinuity occurs; this point defines the boundary of the patch. This so-called edge effect, in which a patch is dominated by edge habitat (as opposed to interior habitat), reduces habitat values for these types of interior species. Scoring for this category reflects edge effect impact if these species are expected to use this habitat site. Patches also include unmanaged grasslands that support a variety of grassland species of particular conservation interest in Corvallis. A habitat site may contain both forest and grassland patches. A site (or collection of sites) with a contiguous patch that is 300 acres or larger, with limited if any intrusions (e.g., minor trails), receives a value of 8. A site with a patch of 100 acres receives a value of 4, adjusted to account for the relative extent of internal disturbance. A site with habitat patches less than 100 acres receives a value of 0 to 4, depending on the size and number of patches within the site, and the extent of patch disturbance.

### *Connectivity (Landscape)*

Habitats are important to one another in the sense that a number of different habitats that are connected to one another typically provide a greater diversity of food, cover, and water sources for wildlife. Connectivity at the landscape level (between a habitat site and another site or other habitats such as rural forest lands) also provides a source of genetic and species recruitment. Wildlife movement corridors (such as riparian areas) may be critical to sustaining viable populations of certain species within a site. Without them, habitats may become “sinks.” To assess connectivity, observers consulted an aerial photograph showing the landscape context within at least one-half mile of the site. A site receiving the highest value (8) is directly connected to other habitats, including large habitat patches, in at least three directions (along >75% of the site boundary). A site with more limited connectivity to other habitat areas receives a value between 2 and 6, depending on the extent and function of the connection. An isolated

site surrounded by pavement, buildings, maintained residential yards, or bare ground, receives a value of 0.

### *Connectivity (Internal)*

Internal connectivity within a site may be an important factor in the accessibility of food, cover, and water sources for wildlife (ratings of 0 to 4 reflect the greater emphasis on off-site connectivity). At the Woodland Meadow Park calibration site, Circle Boulevard (with its associated traffic and steep road cuts and fills) creates a potential barrier to the movement of certain wildlife groups such as amphibians that may use the adjacent intermittent stream and wetland. Thus, a site with fully integrated and connected habitat types (areas) that is unfragmented by roads, buildings or other development receives a value of 4. A site with limited internal fragmentation receives a value of 2. A highly fragmented site with isolated habitat areas receives a value of 0.

### **Unique Features**

This category addresses factors not explicitly addressed elsewhere in the WHA rating—the presence of rare or sensitive wildlife species and habitats. Through the Natural Features Scoping process, these factors were determined to be of particular importance to Corvallis. Two refinements have been made to earlier versions of the WHA. First, the range of values for each factor was increased from 0 to 4 points to 0 to 8 points to reflect the additional emphasis Corvallis has placed on sensitive species and habitats. Second, unique flora are now an integral part of the vegetation assessment, and are less relevant to a rating system focused exclusively on wildlife. Unique and rare habitats (which are essentially vegetation assemblages) are documented on the WHA, but individual plants are more appropriately documented in the vegetation assessment.

### *Habitat Type*

As with wildlife, this factor focuses on locally rare habitats and habitats that are designated as sensitive by the Oregon Natural Heritage Information Center (ORNHIC). These habitats generally are either detected on site or documented at the site in the ORNHIC database or local inventory. Locally rare habitats include remnant oak savanna woodlands and certain native grassland habitats. Observers refer to a list of potential locally rare or ORNHIC listed priority habitats during field surveys. Values range from 8 for an ORNHIC listed habitat or multiple locally rare habitats to 0 for sites without rare or listed habitats. Weighting of values should reflect the size of the habitat and its significance to wildlife from both a local and regional perspective.

### *Wildlife*

This assessment factor is reserved for locally rare species and species designated as sensitive by the Oregon Natural Heritage Information Center (ORNHIC) that are: 1) detected on site, 2) documented at the site in the ORNHIC database or local inventory, or 3) are likely to occur at the site based on the presence of suitable habitat (as well as being within the species' range, other occurrences within the Corvallis area, etc.). Locally rare species in the Corvallis area may include habitat specialists such as the oak specialists, the acorn woodpecker (federal Species of Concern), the White-breasted Nuthatch, and the western gray squirrel (also a sensitive species). In the field, observers refer to a list of potential rare and sensitive species and a matrix showing

the relative importance of each ARA cover type to the species. A site with documented use by a federally listed threatened or endangered species receives a value of 8. A site with ORNHIC sensitive species or locally rare species receives a value between 3 and 8 depending on the status and number of species detected, the size of the population, and the significance of the habitat to the species. A site with no documented sensitive or rare species but which contains suitable habitat and is expected to support such species may receive a value of up to 6 depending on the species. Unless use or potential use by specific wildlife species is documented, the site receives a value of 0.

### **Observations**

The second page of the WHA form provides space for field notes and observations. This information includes lists of wildlife species observed (or known to be present), unique features, large woody features (e.g. snags, logs, stumps), and other habitat features (e.g. food sources, roosting/perching/nesting sites).

### **Habitat Stresses**

Wildlife habitat can be placed under stress, especially in urban or suburban locations. This section documents visible signs of stresses and likely sources. Also, the restoration potential are noted.

### **Restoration and Management Opportunities**

Existing restoration efforts are noted, including an assessment of the level of success. Other restoration and/or management opportunities are noted and linked back to the WHA Enhanced Score.

## ***Vegetation Assessment***

Vegetation subareas or subpolygons are defined within Wildlife Habitat Assessment areas. The vegetation subareas are based on vegetative cover types (e.g. forest/shrub/grassland) and are described and mapped, including:

- Dominant cover types and characterization of the structure (e.g. trees, shrubs, and herbaceous layers);
- Rare species and plant associations on Oregon Natural Heritage Information Center (ORNHIC) lists.

### **Vegetation Survey Data**

The following survey data are recorded at the top of the Vegetation Assessment (VA) form. Form data was generally entered in the field except as noted below.

### **Site Information**

*Habitat Site:* The site name is provided; names are typically based on the local park, road, or other recognizable feature located within or adjacent to the site.

*Size:* Site acreage, as amended in the field; this calculation is provided by GIS.

*Site #:* The habitat site code (see above).

*Subpolygon:* A letter code (A, B, C, etc) indicating the applicable vegetation subarea within the habitat site.

*Map:* Field map number for the surveyed site; sites may extend across multiple maps.

*Date:* Date of the field survey.

*Observers:* Initials of field observers.

*GPS location:* GPS reading of latitude and longitude taken from the approximate center of the site, where possible. In dense forest, readings were taken from clearings or at the forest edge to improve accuracy. For offsite assessments, GPS readings were generally not taken unless public roads or parks allowed access to the edge of the subarea.

*Method:* Indicates whether the inventory was conducted onsite or offsite.

### **Vegetation Cover**

*Dominant Cover Type:* Notes the general vegetation cover type (woody, herbaceous, bare). Dominant is defined as the plant species that contribute more to the character of a plant community or vegetative layer (e.g., tree, shrub/sapling, herbaceous) than other species present, as estimated in terms of percent area<sub>1</sub> cover. To be dominant for the purpose of this assessment, a species should provide a minimum of 20 percent area<sub>1</sub> cover within its corresponding vegetative layer.

*ARA Type #:* The ARA Habitat Classes vegetative cover types annotated for Corvallis are the following<sup>2</sup>:

**Table 3. ARA Vegetative Cover Types**

6. Conifer >70% closed canopy	15. Seasonally inundated shrub wet valley
7. Mixed Forest >70% closed canopy	20. Grass short (lawn, pasture)
8. Hardwood >70% closed canopy	21. Grass natural/dry prairie
9. Conifer woodland 30-70% closed	22. Grass tall (ryegrass, meadow)
10. Mixed woodland 30-70% closed	23. Bare soil/rock/burnt
11. Hardwood woodland 30-70% closed	26. Emergent/herb wetland or pond (seasonal)
12. Open (<30% canopy) non-oak woods	27. Emergent wetland or pond (water year-
13. Oak savanna (<30% canopy)	30. Developed
14. Shrub dry, tree open	

*Other ARA Types:* Notes other ARA cover types greater than one acre in size.

<sup>2</sup> Excerpted from Adamus, P.R., J.P. Baker, D. White, M. Santelmann, and P. Haggerty. 2000. Terrestrial Vertebrate Species of the Willamette River Basin: Species-Habitat Relationships Matrix. U.S. Environmental Protection Agency, Corvallis, OR.

*% of Total Cover:* Estimates the proportion of total cover by general types (trees, shrubs/saplings, herbs/vines, bare). The estimates are made from aerial photographs of the subarea and must sum to 100 percent.

### **Vegetation Characterization**

This section documents the general type and the dominant species of trees, shrubs, and herbs/vines.

#### *Trees*

Notes the general type of trees (deciduous, evergreen, or mixed) and the dominant species. Lists secondary species. Estimates the percent of total area of the subarea covered by trees, and estimates the percent of the cover that is native or invasive.

#### *Shrubs/Sapling*

Notes the general type of shrubs / saplings (deciduous, evergreen, or mixed) and the dominant species. Lists secondary species. Estimates the percent of total area of the subarea covered by shrubs/saplings, and estimates the percent of the cover that is native or invasive.

#### *Herbaceous*

Notes the dominant species (minimum 20%). Lists secondary species. Estimates the percent of total area of the subarea covered by trees, and estimate the percent of the cover that is native or invasive.

### **Rare, Threatened, or Endangered Species (RTE)**

The purpose of this section is to note any sensitive species. The assessment documents any locally rare species and species designated as sensitive by the Oregon Natural Heritage Information Center (ORNHIC) that are: 1) detected on site, 2) documented at the site in the ORNHIC database or local inventory, or 3) are likely to occur at the site based on the presence of suitable habitat (as well as being within the species range, other occurrences within the Corvallis area, etc.). Locally rare species in the Corvallis area may include habitat specialists such as the acorn woodpecker (federal Species of Concern), or western gray squirrel (also a sensitive species).

#### *ORNHIC Plant Community*

Notes observance of listed plant communities. If noted, characteristics are described in the following fields.

#### *ORNHIC Database*

Notes results of database search for listed species. If appropriate, notes potential for detection given other factors.

#### *RTE Species Observed*

Notes observance of rare, threatened, or endangered species.

### *RTE Potential Habitat*

Notes potential habitat for specific rare, threatened, or endangered species. A table of rare, threatened, or endangered species grouped by these habitats is provided in Appendix A. Habitat codes are listed in Table 4. General tree cover for the definitions below is as follows: prairie to 10% tree cover; savanna 11 to 30% tree cover, woodland 31 to 70% tree cover; forest over 70% tree cover.

**Table 4. RTE Potential Habitat Codes**

1a Uncultivated grassland/prairie/meadow, upland	3a Savanna, oak
1b Uncultivated grassland/prairie/meadow, wetland	3b Savanna, oak/D. fir
1c Hedgerow, roadside, edge of ag field	4a Woodland, upland
1d Marsh	5a Forest, coniferous
1e Vernal pool; pond edge; ditch edge	5b Forest, mixed
2a Native shrubland, upland	5c Forest, deciduous
2b Native shrubland, wetland	5d Forest gaps and edges
2c Non-native shrubland, upland	6a Pond; lake
2d Christmas tree farms	6b River or stream edge, rocky

### *RTE Species Comment*

Describes species or habitats conditions, data sources and other applicable information.

### **Other Factors**

Describes the general health and condition of the vegetation and any unique or outstanding features.

### **Restoration Potential**

Describes current efforts and recommended actions to restore native vegetation.

## **Wildlife Habitat and Vegetation Assessment Results**

The wildlife habitat and vegetation assessment field inventory was conducted throughout the Corvallis UGB planning area between June and November, 2002, with additional follow-up at selected sites in Spring 2003.

In addition to the information collected on the WHA and Vegetation field forms, habitat site and vegetation subarea boundaries were field verified and adjusted as needed based on field conditions. Information on tree groves was also collected within habitat sites and is addressed in the Tree Grove Assessment Technical Report, published separately. Several habitat sites also contain riparian and/or wetland resources, which are included in the Riparian and Wetland Technical Reports.

Thirty-two (32) habitat sites ranging in size from 6.8 to 260 acres were evaluated within the Corvallis planning area. WHA sites throughout the UGB totaled 2,595 acres, with a mean site size of 82 acres. Twelve sites were located in North Corvallis (952 acres), eighteen in West/Central Corvallis (1,506 acres) and two in South Corvallis (138 acres).<sup>3</sup> WHA scores ranged from a high of 102 (Site N-9a, Jackson Creek/Chip Ross Park) to a low of 31 (Site N-2a, Lewisburg Ave

<sup>3</sup> Acreage figures include approximately 285 acres of wetlands, but do not include adjacent riparian areas.

North). Most (27) of the WHA sites are located outside the city limits in unincorporated Benton County, which is to be expected given that is where most of the undeveloped land is located. Six (6) of the WHA sites are publicly-owned parkland, which account for approximately 650 acres or 25 percent of WHA acreage. The mean score for all sites in their existing condition was 64.8. Some sites have the potential to be enhanced. With enhancements, the mean score could be raised to 69.8.

A variety of habitat types were noted during field investigations within the study area. The most common upland habitats included oak forest, oak savanna, conifer (Douglas fir) forest, and mixed conifer-hardwood forest composed of Douglas fir, Oregon white oak, and bigleaf maple. These habitats vary from dense closed canopy forests to open canopy forests and oak savannas intermixed with grassland habitats. The forest understory also varies considerably, from managed grassland to diverse, multi-layered understories composed of native herbaceous, shrub and tree species like those found at Bald Hill. Many forest communities throughout Corvallis have been infested by false-brome, a highly invasive grass that is seriously degrading understory vegetation and impacting wildlife habitat.

Upland shrub habitats are less common within the study area. These habitats tend to occur along forest edges and in areas of recent disturbance, and are dominated by invasive species such as Himalayan blackberry, English hawthorn, Scot's broom, and spurge laurel. Shrubland habitat containing Douglas' hawthorn and other native species is more common in the riparian and wetland areas of WHA sites.

Upland grasslands and meadows are fairly common throughout the study area. These habitats often border or are intermixed with forest habitat types. Species composition in these grasslands and meadows tends to be dominated by non-native species including pasture grasses, although some pockets of native species persist at Bald Hill and other less disturbed sites. Additional cover types noted within the study area include parkland, pasture land, tree plantations (Douglas fir and ponderosa pine), and developed residential land.

Most of Corvallis' habitat sites contain a mixture of cover types with many sites are directly linked to riparian and wetland habitats. Internal connectivity within habitat sites tends to be good, allowing generally unrestricted wildlife access between the different types of habitat within a site. Several larger sites, particularly at high elevations and at the northern and western borders of the study area, are part of a larger habitat complex with high connectivity to neighboring habitat areas. Protection and enhancement of existing habitat linkages, both internal and external, are the keys to maintaining Corvallis' network of well-functioning habitats.

Table 5 summarizes each WHA site, its size, existing and potential enhanced scores, and habitat types or other noted features. The table is organized by the study area within the UGB, beginning with north, then south, then west/central.

**Table 5. Summary of Wildlife Habitat Sites**

Site #	Habitat Site	Acres	Score	Enhanced Score	Site Features
<b>North Corvallis</b>					
N-1a	Crescent Valley Northwest	121.29	95	97	Forest, meadow, and shrub habitats with many ownerships.
N-2a	Lewisburg Ave North	20.61	31	33	Mature Douglas fir forest, developed except in northwest portion.
N-3a	Lewisburg Ave South	48.71	47	58	Douglas fir plantation (dense, 30-40 year-old stand)
N-4a	Crescent Valley West	89.71	94	95	Conifer and mixed hardwood forest, pastures, and upland meadows.
N-5a	Owens Farm	65.66	88	91	Oak forest and ash forest with cultivated fields, riparian area.
N-6a	Crescent Valley Southwest	150.42	65	68	West portion is Chip Ross Park.
N-7a	Highland/ Crescent Valley Dr. South	29.58	62	66	Mixed forest on east side of Highland Road.
N-7b	Highland/Crescent Valley Dr. North	16.24	40	49	Oak and Douglas fir forest interspersed with residences.
N-8a	Highland Dell	234.65	53	59	Oak and Douglas fir forest interspersed with residences.
N-9a	Jackson Creek/ Chip Ross Park	146.62	102	103	Mostly mixed forest, few openings. Chip Ross Park and private.
N-11a	Highland Avenue Walnut Grove	21.68	34	46	Old walnut orchard.
N-12a	Crescent Valley/ Jackson Creek	6.80	69	72	Oregon ash forest on north side of Crescent Valley Drive
<b>North</b>	<b>Subtotal Average Scores</b>	<b>951.97</b>	<b>60.00</b>	<b>64.38</b>	
<b>South Corvallis</b>					
S-1a	Avery Park	37.77	69	71	Mixed forest along Marys River
S-2a	Willamette Park	99.89	93	97	Riparian forest and lawn areas on 2-3 terraces.
<b>South</b>	<b>Subtotal Average Scores</b>	<b>137.66</b>	<b>81</b>	<b>84.0</b>	

Site #	Habitat Site	Acres	Score	Enhanced Score	Site Features
<b>West Central Corvallis</b>					
WC-1a	Ponderosa Avenue Northwest	62.18	72	73	Altered by grazing, development; most trees native, majority of other vegetation introduced.
WC-2a	Timberhill West	30.92	72	75	Douglas fir forest with some white oak and bigleaf maple. Small prairies have high native species component.
WC-2b	Timberhill East	260.08	72	75	Timberhill and Chip Ross Park with disturbed prairies and mixed forest.
WC-3a	Walnut Park Northwest	144.39	77	83	Walnut Park & OSU lands along Oak Creek -Walnut Blvd.
WC-3b	Walnut Park South	172.30	81	83	OSU lands. Oak forest and remnant savanna.
WC-4a	Witham Hill West	134.29	64	71	Primarily an oak woodland/upland prairie site. Herb layer low quality.
WC-4b	Witham Hill East	124.54	54	58	Oak/Douglas fir mixed forest. Degraded wet prairie.
WC-5a	Woodland Meadows Park	35.05	47	62	Undeveloped park with large oaks, open areas.
WC-6a	Bald Hill Park	207.67	99	102	Oak dominated forest with remnant native prairie (lowlands).
WC-7a	Squaw Creek East	62.94	51	59	Oak knoll, just north of West Hills Rd, west of 35th Street
WC-7b	Squaw Creek West	90.58	59	65	Douglas fir Christmas tree farm
WC-8a	West Hills Road/ Reservoir Road	17.48	78	80	Closed oak forest
WC-8b	West Hills Road West	9.55	38	43	Closed oak forest with weedy understory; meadow at west end.
WC-9a	West Hills Road East	12.25	39	57	Oak forest with grazed understory and adjacent pastures with oaks.
WC-10a	Squaw Creek Southwest	66.86	77	79	Closed oak/Douglas fir forest.
WC-11a	Brooklane Drive	54.61	66	68	Prairie-savanna with dense Douglas fir forest and oak woodland.
WC-12a	Nash Avenue Conifer Plantation	12.59	46	50	Dense stand of young conifer trees.
WC-13a	Donovan Oak Forest	7.57	39	46	Large oaks with invasive understory.
<b>West Central</b>	<b>Subtotal / Mean Scores</b>	<b>1,505.85</b>	<b>62.83</b>	<b>68.28</b>	
<b>Corvallis UGB</b>	<b>Total / Mean Scores</b>	<b>2,595.48</b>	<b>64.78</b>	<b>69.78</b>	

Table 6 summarizes the RTE species findings. Potential habitat for a range of sensitive species are noted in different types of forest and non-forest habitats. Tall cottonwood forests, for example, located near the Willamette River provide potential nesting habitat for wintering bald eagles. Forest edge habitats are potential habitat for edge species such as western bluebird, mountain quail and thin-leaved peavine. Native upland grasslands provide potential habitat for rare upland prairie wildlife species and other species such as Kincaid’s lupine, western meadowlark and Fender’s blue butterfly. Tufted hairgrass prairies found within certain sites provide potential habitat for rare wetland prairie species.

**Table 6. RTE Species Findings**

Site Code	Habitat Site	Observations and Comments
<b>North Corvallis</b>		
N-1a	Crescent Valley Northwest	Pileated Woodpecker excavations observed.
N-2a	Lewisburg Ave North	W. Gray Squirrel observed
N-4a	Crescent Valley West	Pileated Woodpecker observed. Potential habitat for Acorn Woodpecker, W. Gray Squirrel, W. Bluebird, thin-leaved pearine, Lewis' Woodpecker, and tall bugbane.
N-5a	Owens Farm	Acorn Woodpecker observed
N-7b	Higland Drive/Crescent Valley Drive North	Potential habitat for W. Gray Squirrel, Acorn Woodpecker, Mountain Quail, and W. Bluebird
N-8a	Highland Dell	W. Gray Squirrel and Pileated Woodpecker observed. Potential habitat for Mountain Quail.
N-9a	Jackson Creek/Chip Ross Park	W. Gray Squirrel and Pileated Woodpecker observed. Potential habitat for tall bugbane.
<b>South Corvallis</b>		
S-1a	Avery Park	W. Gray Squirrel observed. Liverwort (ORNHIC reference).
S-2a	Willamette Park	Thin leaved peavine and Howell's montia observed. Wolffia columbiana (ORNHIC reference). Potential habitat for thin leaved peavine, Enemion. .Howell's montia documented in Willamette Park Wetland Determination and Habitat Study (2002).

Site Code	Habitat Site	Observations and Comments
<b>West Central Corvallis</b>		
WC-10a	Squaw Creek Southwest	W. Gray Squirrel observed.
WC-11a	Brooklane Road	Acorn Woodpecker, W. Gray Squirrel, and showy milkweed observed. Tricolored monkeyflower observed in 1999-2000. Possible Oak-snowberry habitat (ORNHIC plant community).
WC-1a	Ponderosa Avenue Northwest	Acorn Woodpecker, tufted hairgrass, showy milkweed observed in riparian areas. Low potential for rare prairie species.
WC-2a	Timberhill West	W. Gray Squirrel and Pileated Woodpecker observed. W. Bluebird documented in property owner report. Possible native bunchgrass community remnant.
WC-2b	Timberhill East	Possible ORNHIC grassland communities, W. Meadowlark, Willow flycatcher, W. Bluebird, Pileated woodpecker, and W. Gray Squirrel documented in property owner report.
WC-3a	Walnut Park Northwest	Nelson's checkermallow (ORNHIC reference).
WC-3a	Walnut Park Northwest	Nelson's checkermallow (ORNHIC reference).
WC-3b	Walnut Park South	Meadow sidalcea and Nelson's checkermallow observed.
WC-4a	Witham Hill West	Nelson's checkermallow (ORNHIC reference). Possible Oak-snowberry habitat (ORNHIC plant community).
WC-5a	Woodland Meadows Park	W. Gray Squirrel and Acorn Woodpeckers observed. Limited area of California oatgrass present but not as a dominant community.
WC-6a	Bald Hill Park	Nelson's checkermallow, Willamette daisy and Taylor's Checkerspot (ORNHIC reference). W. Gray Squirrel observed. Possible Oak-snowberry habitat (ORNHIC plant community).
WC-7a	Squaw Creek East	Possible Oak-snowberry habitat (ORNHIC plant community).
WC-8a	West Hills Road/Reservoir Road	Acorn Woodpeckers and W. Gray Squirrel observed.
WC-8b	West Hills Road West	Acorn Woodpecker and W. Bluebird observed.
WC-9a	West Hills Road East	Acorn Woodpecker and W. Gray Squirrel observed.

# Summary Descriptions

## North Study Area

### Crescent Valley Northwest (N-1a)

121 acres, Score: 95, Enhanced Score: 97

*Offsite assessment from roads within and on perimeter.*

#### Current Habitat Conditions

WHA site N-1a is located in northwest Crescent Valley. Nearly the entire site is developed in rural residential uses. Mixed forest of Douglas fir, Oregon white oak and bigleaf maple covers the majority of the site. Areas south of Lewisburg Avenue have been selectively cut to remove some of the Douglas fir resulting in dense shrub cover in much of this area. Pole-sized Douglas fir forest occurs along much of the western edge. A few, very large, old growth Douglas fir were observed in the Douglas fir forest. Open grassland habitats and some Oregon white oak forest are located north of Lewisburg Avenue. Himalayan blackberry, English ivy and false brome form dense infestations in much of the site, although some native understory vegetation persists.

#### Potential Wildlife Present

Pileated woodpeckers were detected using forested habitats. Open habitats have some potential for rare upland prairie and oak savanna species. Oak and mixed forest probably support western gray squirrel populations and are habitat for acorn woodpecker, mountain quail and other oak forest species. Shrubby, forested and riparian areas provide good songbird habitat. The site contains a perennial branch of Frazier Creek and a good-sized pond located adjacent to the creek near the southeast corner of the site, which could potentially support western pond turtles and red legged frogs.

#### Restoration Recommendations

This site is part of a habitat complex that extends north, west, and south connecting to habitats in Vineyard Mountain, MacDonald Forest, WHA site N-4a, and the Jackson Creek drainage basin. Connections to these areas should be protected and enhanced if possible. Restoration opportunities could include upland prairie and oak savanna restoration in and around the open grassland habitats; removal of Douglas firs to prevent overtopping of oaks; and control of invasive species. Homeowners in the area could be encouraged to use native species for landscaping to decrease impacts from invasive ornamentals on native habitats.

#### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
N-1a-A	80.37	Mixed Forest >70% closed canopy	Scattered large oaks.
N-1a-B	9.46	Grass tall (ryegrass, meadow)	None noted.
N-1a-C	3.02	Hardwood Forest >70% closed canopy	Large oaks.
N-1a-D	23.87	Conifer Forest >70% closed canopy	Two very large old-growth Douglas fir with broken/multiple tops.

Site #	Size	Cover Type	Unique Features
N-1a-E	1.34	Open (<30% canopy), non-oak woods	None
N-1a-F	2.51	Mixed Forest >70% closed canopy	None
N-1a-G	0.72	Hardwood woodland 30-70% closed canopy	None

## Lewisburg Avenue North (N-2a)

**21 acres, Score: 31, Enhanced Score: 33**

*Offsite assessment from roads within and on perimeter.*

### Current Habitat Conditions

WHA site N-2a is located north of Lewisburg Avenue. The entire site is forested. A mature Douglas fir forest overstory dominates the southern portion of the site, which is a fully developed low density rural residential area. The overstory is dominated by large Douglas fir but also includes Oregon white oak and bigleaf maple. The understory is composed mostly of manicured lawns and ornamental shrub plantings. English ivy and Himalayan blackberry have infested some small unmanaged areas. A mixed forest of Douglas fir, bigleaf maple, and Oregon white oak, and a young Douglas fir plantation occupy the undeveloped northern portion of the site. Areas of native understory are present in the mixed forest, although Himalayan blackberry, false-brome and other invasives are established.

### Potential Wildlife Present

Western gray squirrels were observed in the site. The undeveloped portion of the site provides good songbird habitat.

### Restoration Recommendations

Restoration of the site could include removal of Douglas firs to benefit oaks and control of non-native species. Homeowners in the developed area could be encouraged to utilize native species in their landscaping.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
N-2a-A	10.24	Conifer Forest >70% closed canopy	Some large Douglas fir at north end. Scattered Oregon white oak.
N-2a-B	8.77	Mixed Forest >70% closed canopy	None noted.
N-2a-C	1.66	Conifer Forest >70% closed canopy	None noted.

## Lewisburg Avenue South (N-3a)

**49 acres, Score: 47, Enhanced Score: 58**

*Offsite assessment from roads on perimeter.*

### Current Habitat Conditions

WHA site N-3a is located just west of Highway 99, on the south side of Lewisburg Road. The site is primarily a plantation of approximately 30- to 40-year-old Douglas fir, and is nearly surrounded by rural residential development. The canopy is dense, and little shrub or herbaceous layer vegetation is present. A cemetery occupies a portion near the center of the site, and a small grand fir Christmas tree plantation is located in the north portion.

### Potential Wildlife Present

Wildlife use of the site by sensitive species could include occasional use by northern saw-whet owls, northern pygmy-owls, mountain quail, red tree vole, or others that may be present in a young, closed-canopy coniferous forest. In general, native plant and animal habitat in this site is low to medium quality, and no unique features were observed during the field visit.

### Restoration Recommendations

Restoration of this site could include the removal of invasives (such as Himalayan blackberry) along the perimeter and in tree openings, introducing a variety of native species in their place, and long-term, active management towards a late seral stage Douglas fir forest. Connection with riparian habitats to the southwest could be improved.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
N-3a-A	46.16	Conifer Forest >70% closed canopy	None noted.
N-3a-B	2.55	Grand fir saplings	None noted.

## Crescent Valley West (N-4a)

**90 acres, Score: 94, Enhanced Score: 95**

*Offsite assessment from roads within and on perimeter.*

### Current Habitat Conditions

Located on the west side of Crescent Valley and mostly south of Frazier Creek, WHA site N-4a is dominated by Douglas fir forest and mixed forest of Douglas fir, Oregon white oak and bigleaf maple. It is well connected to the forested habitats of MacDonald Forest to the west, WHA site N-1a to the north and site N-9a to the south. Portions of the site are developed as rural residential, but most residences are on the periphery of the site, leaving much interior habitat unfragmented. There are a few open grassland habitats in the south and north portions of the site. Mature conifer forest, mixed forest, open habitats and good connection to surrounding habitat areas, combined with the perennial Frazier Creek and its associated bottomland habitats, result in a high WHA score for this site. The conifer forest on the south side of Frazier Creek is composed of large mature Douglas fir with an intermediate layer of bigleaf maple and overtopped Oregon white oak.

### Potential Wildlife Present

This forest is potential habitat for rare conifer forest species including northern spotted owl and tall bugbane. Mixed and oak forests are potential habitat for rare oak forest species such as western gray squirrel and acorn woodpecker. Open habitats and forest edges are potential habitat for rare upland prairie and savanna species and grassland birds.

### Restoration Recommendations

The mature Douglas fir forest should be managed for late successional structure and habitat. Connection to surrounding habitat areas should be maintained and enhanced if possible. Open habitats should prevent encroachment by shrubs and trees at a minimum and could be restored to native upland prairie and oak savanna. In the mixed forest areas Douglas fir could be selectively removed to prevent oaks from being overtopped. Invasive plant species, especially false-brome and Himalayan blackberry should be controlled.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
N-4a-A	2.49	Grass tall (ryegrass, meadow)	None noted.
N-4a-B	12.45	Conifer Forest >70% closed canopy	None noted.
N-4a-C	2.30	Mixed Forest >70% closed canopy	Scattered large oaks.
N-4a-D	56.10	Conifer Forest >70% closed canopy	Scattered large oaks, maples, Douglas fir. North slope moist conifer forest. Relatively unfragmented.
N-4a-E	3.94	Grass tall (ryegrass, meadow)	None noted.
N-4a-F	1.23	Grass tall (ryegrass, meadow)	None noted.
N-4a-G	11.19	Mixed Forest >70% closed canopy	Large oaks.

### Owens Farm (N-5a)

**65.66 acres, Score: 88, Enhanced Score: 91**

*Onsite assessment.*

#### Current Habitat Conditions

WHA site N-5a is located on the historic Owens Farm, which was recently acquired by the City as open space. The site is composed of deciduous forest of Oregon white oak, bigleaf maple, and Oregon ash. Two agricultural fields are contained in the site and are planted in commercial grass seed crops. Jackson Creek flows through the northern end of the site and is joined by Frazier Creek in the northeast corner of the site. Bottomlands associated with the creeks are dominated by Oregon ash forest and wet shrubland habitat. Oak and maple forest occupies higher ground to the south. Large oaks are scattered though much of the oak-maple forest over a dense layer of younger oaks and maples. Some oaks and maples were cut in the past from the southern portion of the site, but these species still dominate the overstory. The understory of the oak-maple forest is badly infested by Himalayan blackberry throughout, and the infestation is especially bad in the southern

portion. The south agricultural field is dotted with large old oaks giving it an oak savanna structure despite its lack of native vegetation in the herbaceous layer.

**Potential Wildlife Present**

Acorn woodpeckers and gray squirrels were observed in the site. Potential habitat is present for rare oak forest species. The riparian corridors and associated wetlands are excellent habitat for amphibians, songbirds and Nelson’s checkermallow.

**Restoration Recommendations**

This site presents an excellent opportunity to restore oak savanna, upland and wetland prairie habitats because of the configuration of habitats and because it is publicly owned. Large oaks are already present on site and weeds have been controlled in the agricultural fields. Wetland prairie could be established both in the northern agricultural field and in the cultivated field east of the site. Upland prairie could be restored in higher parts of the agricultural fields. The south agricultural field already has large old oaks providing savanna structure but would benefit from restoration of the herb layer. Restoration of these habitats would benefit grassland bird species and wildlife associated with oak savanna. Connections to the riparian corridors to the north and to forested habitats to the southwest should be maintained and expanded if possible. Himalayan blackberry control is recommended for all forested areas.

**Vegetation Subpolygon**

Site #	Size	Cover Type	Unique Features
N-5a-A	65.66	Hardwood >70% closed canopy	Large oaks.

**Crescent Valley Southwest (N-6a)**

**150.42 acres, Score: 65, Enhanced Score: 68**

*Mostly offsite assessment from adjacent roads with some onsite (Chip Ross Park).*

**Current Habitat Conditions**

This WHA site lies just southwest of Crescent Valley High School, and is a complex of conifer forest, mixed forest, oak forest, oak savanna, and upland prairie habitats. There is only a small amount of residential development present, in the southwest and south-central portions; however, the central portion of the site has been subdivided and provided with a new street to accommodate residential development. Logging has occurred within the last few years in substantial portions near the center of the site.

The east and west portions of the site are composed of Douglas fir dominated forest habitats. In the west, forests occur within the east end of Chip Ross Park and on adjacent private lands; forests in the east are composed entirely of private lands. There are some small, open, grass-dominated gaps in forests in the Park, and larger open areas occur on the private lands immediately to the east near the center of the site. Also near the center are areas where the firs have been logged and where scattered oaks and other tree species remain. Disturbance from logging, and some possible clearing for future home sites along the new road near the center of the site have resulted in the invasion of many non-native species.

Most of the forests at the west end of the site (in Chip Ross Park) have a high Oregon white oak component, and there are a few very large remnant oaks being overtopped by Douglas fir in or adjacent to the northwest end of the site. Remaining forests in the east and north portions of the site were difficult to view from nearby roads.

**Potential Wildlife Present**

Western gray squirrels, two bobcats, a pileated woodpecker, and numerous songbird species were seen in this site during the field visit. Wildlife sightings mostly occurred in Chip Ross Park, for which onsite access was available. Portions of the site contain good quality forest habitat and fair quality savanna and prairie habitat – although non-native herbaceous species dominate in all or nearly all areas.

**Restoration Recommendations**

Restoration of the site should include the removal of Douglas firs overtopping oaks in Chip Ross Park and removal of non-native, invasive species throughout the entire WHA area. Although restoration of prairie and savanna habitats would be valuable for native plant and animal species, it is likely that they would be difficult to establish and maintain free from ongoing invasion by aggressive non-natives. Shrubs and trees encroaching open habitats should be removed.

**Vegetation Subpolygons**

Site #	Size	Cover Type	Unique Features
N-6a-A	2.16	Grass natural/dry prairie	Native prairie species remnant populations.
N-6a-B	1.63	Hardwood Forest >70% closed canopy	None noted.
N-6a-C	13.46	Mixed Forest >70% closed canopy	None noted.
N-6a-D	2.42	Mixed Forest >70% closed canopy	A few fairly large oaks.
N-6a-E	3.85	Grass tall (ryegrass, meadow)	Undetermined.
N-6a-F	12.81	Oak savanna <30% canopy	Undetermined.
N-6a-G	5.47	Hardwood >70% closed canopy	Mature oaks.
N-6a-H	28.19	Grass tall (ryegrass, meadow)	None noted.
N-6a-I	4.09	Mixed Forest >70% closed canopy	None noted.
N-6a-J	20.83	Mixed Woodland 30-70% closed	None noted.
N-6a-K	33.80	Conifer Forest >70% closed canopy	None noted.
N-6a-L	11.34	Hardwood Forest >70% closed canopy	Undetermined.
N-6a-M	2.55	Hardwood Forest >70% closed canopy	Undetermined.

Site #	Size	Cover Type	Unique Features
N-6a-N	7.82	Mixed Forest >70% closed canopy	None noted.

### Highland Drive/Crescent Valley Drive South (N-7a)

**30 acres, Score: 62, Enhanced Score: 66**

*Offsite assessment with limited views from adjacent roads.*

#### Current Habitat Conditions

This WHA site is located on the east side of Highland Drive just south of the intersection with Crescent Valley Drive. It is dominated by a mixed forest of Douglas fir and Oregon white oak. The oaks are present mostly in the southern and eastern portions of the polygon, and to a lesser extent in the remainder. There is a pocket of rural residential development adjacent to the southwest portion and along the south and north edges. Spurge laurel, an escaped ornamental shrub with high invasive potential, was noted naturalizing in the understory at the western edge of the polygon.

Small riparian areas drain north and east from the site, but upland habitat connectivity is not extensive beyond the narrow riparian connections. Viewing the site was difficult because of the lack of access, dense trees, and the topography of the land. In general, the plant and wildlife habitat quality of the forest appears good from the perimeter, and sensitive, oak-dependent (and possibly some mixed forest dependent) wildlife species are expected to occur in most of the site.

#### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
N-7a-A	29.58	Mixed Forest >70% closed canopy	None noted.

### Highland Drive/Crescent Valley Drive (N-7b)

**16 acres, Score: 40, Enhanced Score: 49**

*One-half on site and one-half offsite assessment from roads within and on perimeter.*

#### Current Habitat Conditions

WHA site 7b is located immediately south of WHA site 7a. It is fairly highly fragmented by residential development, resulting in connected patches of different age and type of forest with variable understories from non-native dominated with some natives, to landscaped. There are few habitat qualities of particular interest, although occasional use may occur by oak-dependent species. A riparian area beginning in the northwest corner flows in a curved shape through the polygon, but it is likely dry for much of the year, and adds only moderately to habitat values for wildlife.

#### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
N-7b-A	11.51	Conifer Forest >70% closed canopy	None noted.
N-7b-B	1.98	Hardwood Forest >70% closed canopy	Undetermined.

N-7b-C	2.76	Grass tall (ryegrass, meadow)	None noted.
--------	------	----------------------------------	-------------

### Highland Dell (N-8a)

**235 acres, Score: 53, Enhanced Score: 59**

*Offsite assessment from roads within and on perimeter.*

#### Current Habitat Conditions

The Highland Dell subdivision comprises the northern 2/3 (approximately) of this WHA. The southern third contains a large Douglas fir forest in the western half, and a mix of oak and conifer forests in the eastern half, with some residential development and public use (water tanks).

The developing portion of the subdivision has some large blocks of invasive shrub habitat, which normally is an indicator of disturbance – in this case, probably logging and grading. English hawthorn and Himalayan blackberry dominate the larger areas, while Scot’s broom and other invasives are present in smaller quantities. Areas lacking both tree and shrub cover are dominated by invasive and other non-native herbaceous species. Some houses are occupied and landscaped, and two or three others are under construction. In this developing area, all trees (and most other vegetation) are removed on some lots where they were originally present, while on others, the Oregon white oak are left. When construction occurs, some lot owners save the remaining oaks, but others remove them and all other native and non-native vegetation, and plant ornamental landscaping and lawns. The various native and non-native, forest, shrub, and herbaceous plant dominated areas provide a mosaic of habitat with variable quality. As the lots develop, especially those where the oaks have been removed, little (to no) habitat of substantial value to either native plants or animals remains.

The large Douglas fir dominated area in the southwest portion of the site has a variable understory. Some portions are native, while some have a large percent coverage of Himalayan blackberry, and smaller amounts of other invasives. A few large Douglas firs (3+' dia.) are present in this area. Portions of the forest in the southeast and southwest areas of the site are owned by the City.

#### Restoration Recommendations

Restoration of the developing subdivision is not feasible. However, to prevent the very large loss of native vegetation in the future, information from the City could be given to developers addressing preservation of native vegetation, especially prairie habitat species. Additionally, educational brochures for lot buyers and homebuilders could promote use of native landscaping to partially offset habitat loss from development. Restoration of the forest areas should concentrate on removal of Himalayan blackberry, false-brome, and other invasive species. Oregon white oaks are being overtopped by Douglas fir in a few areas, so removal of those firs, or creating snags, would benefit the remaining oaks.

#### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
N-8a-A	13.06	Conifer Forest >70% closed canopy	None noted.

Site #	Size	Cover Type	Unique Features
N-8a-B	2.16	Upland Shrub	None noted.
N-8a-C	3.86	Hardwood Forest >70% closed canopy	None noted.
N-8a-D	8.28	Upland Shrub	None noted.
N-8a-E	16.11	Grass tall (ryegrass, meadow)	None noted.
N-8a-F	17.12	Mixed Woodland 30-70% closed	A few snags (black cottonwood, Oregon white oak).
N-8a-G	0.71	Hardwood Forest >70% closed canopy	Large oaks.
N-8a-H	21.51	Conifer Woodland 30-70% closed	None noted.
N-8a-I	9.61	Hardwood Woodland 30-70% closed	None noted.
N-8a-J	14.38	Douglas fir plantation (young)	None noted.
N-8a-K	1.70	Mixed Forest >70% closed canopy	None noted.
N-8a-L	6.83	Mixed Forest >70% closed canopy	Scattered large Douglas fir.
N-8a-M	4.35	Mixed Forest >70% closed canopy	None noted.
N-8a-N	3.52	Conifer Forest >70% closed canopy	None noted.
N-8a-O	40.31	Hardwood Forest >70% closed canopy	None noted.
N-8a-P	60.42	Conifer Forest >70% closed canopy	None noted.
N-8a-Q	1.11	Grass short (lawn, pasture)	None noted.
N-8a-R	3.92	Hardwood Forest >70% closed canopy	None noted.
N-8a-S	5.68	Hardwood Forest >70% closed canopy	None noted.

### **Jackson Creek/Chip Ross Park (N-9a)**

**147 acres, Score: 102, Enhanced Score: 103**

*Chip Ross Park portion of assessment conducted onsite; remainder offsite from roads within and on perimeter of WHA.*

#### **Current Habitat Conditions**

WHA site N-9a is located on both sides of Jackson Creek and includes the northern portion of Chip Ross Park as well as rural residential and undeveloped private lands. Scattered development has occurred in the northern part of the site. Much of the southern two-thirds of the site is forested with Douglas fir, Oregon white oak, and bigleaf maple. Much of this area was

logged long ago, and large old-growth stumps and cut logs are still evident. In one area, a few old growth Douglas firs tower above the canopy of younger trees and large snags are still standing. Large oaks line the southern fringe of the Douglas fir forest adjacent to site WC-2a. In the northern part of the site, oak forest, mixed forest, and open grassland habitats form a habitat complex. Jackson Creek (perennial) and associated bottomland forest connect between the mature conifer forest to the south and the forest-grassland complex to the north. A cleared electrical transmission corridor passes through the site from northeast to southwest. False-brome has invaded most of the forested habitats in the site, seriously degrading understory vegetation. Open habitats are also quite weedy. Jackson Creek Road provides a well used trail connection to Dan's Trail and other trails to the west for hikers, equestrians and mountain bikers.

### Potential Wildlife Present

The mature Douglas fir forest with its snags and large woody debris provides excellent habitat for conifer forest wildlife species including frogs and salamanders. Pileated woodpecker was detected, and northern spotted owl and tall bugbane are species that potentially could occur in this habitat. Western gray squirrel was observed in oak forest, which is potential habitat for other rare oak forest species such as acorn woodpecker. Although grasslands are quite weedy, there is potential for rare upland prairie and oak savanna wildlife and plant species.

### Restoration Recommendations

The forested areas south of Jackson Creek should be managed for late successional structure and habitat. Oaks on the southern fringe and on spur ridges could be released from overtopping through selective removal or girdling of Douglas fir. Upland prairie and oak savanna restoration could be undertaken in the areas north of Jackson Creek. Invasives, especially false-brome and Himalayan blackberry, should be controlled. Following invasive removal in the electrical transmission corridor native shrubs could be planted to occupy the site. This corridor potentially acts as a dispersal corridor for invasives.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
N-9a-A	73.16	Mixed Forest >70% closed canopy	Large Douglas fir trees, snags, logs, stumps. Large oaks especially along south edge.
N-9a-B	20.04	Conifer Forest >70% closed canopy	Scattered large Douglas fir that rise above general canopy height.
N-9a-C	4.16	Shrubland	None noted.
N-9a-D	21.08	Mixed Forest >70% closed canopy	None noted.
N-9a-E	3.46	Open (<30% canopy), non-oak woods	None noted.
N-9a-F	2.60	Hardwood Forest >70% closed canopy	None noted.
N-9a-G	5.41	Grass tall (ryegrass, meadow)	A few remnant prairie species.
N-9a-H	10.14	Mixed Forest >70% closed canopy	None noted.

Site #	Size	Cover Type	Unique Features
N-9a-1	6.54	Oak savanna <30% canopy	Savanna structure.

### Highland Avenue Walnut Grove (N-11a)

**22 acres, Score: 34, Enhanced Score: 46**

*Offsite assessment from adjacent roads.*

#### Current Habitat Conditions

N-11a is located along the west side of Highland Avenue just north of Lester Avenue. The site is a walnut orchard and pasture. Two walnut groves with a strip of pasture make up the polygon. A few Oregon white oak are located along the west side. Because of the site's agricultural history, plant communities are of low diversity and are dominated by non-native species. Likewise, structural diversity is low with a single tree layer and little shrub layer development. The understory of the northern grove and the strip of pasture are grazed by cattle. The southern grove appears to be abandoned and its understory retains a few remnant native species including camas and western buttercup. It appears not to be grazed, but is probably mowed for hay. No water features occur on the site, but there is a small farm pond adjacent to the north end.

#### Potential Wildlife Present

This polygon has low potential for providing habitat for rare species. Walnuts may be eaten by western gray squirrels and savanna-like habitats could be used by western bluebirds.

#### Restoration Recommendations

Restoration on this site could entail gradually replacing walnut trees with Oregon white oak to establish oak savanna.

#### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
N-11a-A	19.70	Hardwood Woodland 30-70% closed canopy	Old walnut orchard
N-11a-B	1.98	Grass Tall (ryegrass, meadow)	None

### Crescent Valley/Jackson Creek (N-12a)

**22 acres, Score: 69, Enhanced Score: 72**

*Offsite assessment from adjacent roads.*

#### Current Habitat Conditions

N-12a is located in Crescent Valley west of Crescent Valley High School. Crescent Valley Drive is adjacent to the site along the south side and Jackson Creek flows through the east end. The polygon is a mature Oregon ash forest with a few Oregon white oak, black cottonwood and bigleaf maple trees scattered through the stand. The understory is degraded by infestations of invasive and introduced species including Himalayan blackberry, English hawthorn, false-brome and tall fescue, although native shrubs and herbs are still present in many areas.

### Potential Wildlife Present

Habitat value of the site is enhanced by the presence of perennially flowing Jackson Creek and connection to the Jackson Creek riparian corridor to the east. The site provides good habitat for songbirds and a variety of other small wildlife species.

### Restoration Recommendations

Restoration actions should focus on controlling invasive plant species and replacing them with native shrubs and herbs.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
N-12a-A	6.80	Hardwood Woodland >70% closed canopy	Oregon ash forest

## West Central Study Area

### Ponderosa Avenue Northwest (WC-1a)

62 acres, Score: 72, Enhanced Score: 73

*Mostly onsite assessment with some offsite from adjacent roads and properties.*

#### Current Habitat Conditions

WHA site WC-1a is located on the north side of Ponderosa Ave. in the northwest corner of the UGB. It has a site history of some grazing use, and possibly some historical logging, but rural residential uses are scattered throughout. The polygon is a mosaic of abandoned pasture, young plantations of Douglas fir, residences, some stands of Oregon white oak, one young ponderosa pine plantation, and one second growth Douglas fir forest (east end). Connectivity to large, open tracts along the power line corridor abutting to the north is good, and most habitats to the north of the power line are more heavily forested.

### Potential Wildlife Present

Some native prairie and savanna plant species are present. There are some significant patches of California oatgrass, for example, on the upper slopes of the prairie areas. False-brome is not only present in the forested areas, sometimes in very thick patches, but it is also creeping out into the open prairie habitats.

Acorn woodpeckers were noted in the Oregon white oak stands near the center of the west half of the site. There are a small number of very large Oregon white oaks associated with residences in the north central portion of the polygon. Small wetlands and riparian areas add to the wildlife habitat values of the site.

### Restoration Recommendations

Restoration of the area would entail many different treatments for the different habitat types. Of particular interest might be propagation of the California oatgrass and other natives from the site and replanting with starts of these native species if false-brome can be removed. In general, the

oaks associated with the residences are in good condition, however, understories are mostly converted to non-native vegetation.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-1a-A	33.02	Grass tall (ryegrass, meadow)	Fairly good patches of California oatgrass on upper slopes.
WC-1a-C	0.65	Hardwood Woodland 30-70% closed canopy	None noted.
WC-1a-D	4.02	Conifer Forest >70% closed canopy	Large black cottonwood in center gap and some small ones nearby.
WC-1a-E	0.88	Hardwood Forest >70% closed canopy	None noted.
WC-1a-F	0.99	Hardwood Forest >70% closed canopy	Large Oregon white oak.
WC-1a-G	1.86	Hardwood Woodland 30-70% closed canopy	Large Oregon white oak.
WC-1a-I	2.93	Conifer Forest >70% closed canopy	None noted.
WC-1a-J	6.46	Conifer Forest >70% closed canopy	None noted.
WC-1a-K	0.86	Hardwood Woodland 30-70% closed canopy	5 large oaks, mostly in yards.
WC-1a-L	1.99	Grass tall (ryegrass, meadow)	None noted
WC-1a-N	8.52	Mixed Forest >70% closed canopy	None noted

### Timberhill West (WC-2a)

**31 acres, Score: 72, Enhanced Score: 75**

*Mostly offsite. On-site with owner in small prairies near SE corner.*

#### Current Habitat Conditions

WHA site 2a is composed of a rectangular ownership of private land on the north side of the Meadowridge subdivision north of Arrowwood and two small open space areas protruding into the subdivision.

The primary habitat type is Douglas fir, with some Oregon white oak and bigleaf maple. There are relic pear trees present from an old orchard (reference vegetation and wildlife reports submitted to the City by Timberhill) in the area. The small prairies on slopes in the southeast section have a fairly high native species component, and appear to be the highest quality of any site in the inventory – although about 1.5 acres in size, at the most. Falsebrome is invading into the understory from OSU lands to the north and west.

#### Potential Wildlife Present

A consultant for Timberhill has documented western bluebird, pileated woodpecker, and western gray squirrel as sensitive species that use the area.

### Restoration Recommendations

Restoration of the area could include removal or girdling of Douglas fir to release the Oregon white oaks from competition, and possible control of invasive species in the understory. The prairie should be protected from invasive species and woody species invasion, and the native plants could be propagated in conjunction with restoration of habitats at Chip Ross Park to the east and northeast.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-2a-A	24.79	Mixed Forest >70% closed canopy	Unknown (Offsite).
WC-2a-B	2.71	Mixed Woodland 30-70% closed canopy	Unknown (Offsite).
WC-2a-C	3.42	Grass natural/dry prairie	Fairly high native grass component.

### Timberhill East (WC-2b)

**260 acres, Score: 72, Enhanced Score: 75**

*Timberhill portion partly onsite (with permission). Chip Ross Park portion on-site.*

#### Current Habitat Conditions

Disturbed prairie is the predominant habitat type of the southern, western, and north portions of the Timberhill portion of this site. There are occasional Oregon white oaks, Himalayan blackberry, and other woody species scattered within the prairie. These areas historically were cultivated, and the entire site probably was grazed at some point. These prairies now are dominated almost entirely by non-native species. A network of well-used trails occupy this area.

The eastern portion of the Timberhill ownership is a mixed forest of primarily Oregon white oak and Douglas fir. There are two very large oaks present (approximately 5 feet diameter at breast height), and several acres of oak woodland where invading Douglas fir and Himalayan blackberry has been removed by the landowner. Areas of taller Douglas fir often have oaks present beneath that are dying from competition for light and other resources (a common phenomenon in the Corvallis area).

The northern portion of the site is within Chip Ross Park. The western portion of the park is forested, with mixed oak and fir forests, and the eastern portion mostly is sloping prairie, with Oregon white oak and other woody vegetation in the small draws.

#### Potential Wildlife Present

A Timberhill consultant documented the following species in the area: western gray squirrel, sharp-tailed snake, western bluebird, pileated woodpecker, willow flycatcher, and western meadowlark.

### Restoration Recommendations

Restoration of the area could include experimental restoration of upland prairie species and continued removal or girdling of Douglas fir from the oak habitats. Remnant populations of native prairie species persist in places within the larger prairie habitat. These native prairie

species could be propagated and spread within the park. In the forested portions, Douglas fir and non-native invasive species could be controlled to improve habitat quality. Connectivity for wildlife is excellent in this area, as it abuts MacDonald Forest on the west end of the park.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-2b-A	104.65	Grass tall (ryegrass, meadow)	Occasional large oaks and patches of prairie with high native component..
WC-2b-B	21.25	Open (<30% canopy), non-oak woods	Unknown (Offsite).
WC-2b-C	5.40	Conifer Woodland 30-70% closed canopy	Unknown (Offsite).
WC-2b-D	11.88	Hardwood Forest >70% closed canopy	Unknown (Offsite).
WC-2b-E	86.37	Mixed Forest >70% closed canopy	Good quality oak woodland with a large number of large oaks and two very large oaks (~5' dbh).
WC-2b-F	2.74	Mixed Forest >70% closed canopy	Unknown (Offsite).
WC-2b-G	18.26	Grass natural/dry prairie	Remnant native prairie patches.
WC-2b-H	9.54	Mixed Woodland 30-70% closed canopy	None noted.

### Walnut Park Northwest (WC-3a)

**144 acres, Score: 77, Enhanced Score: 83**

*Walnut Park and OSU portions onsite; remainder offsite and from bike path and roads.*

#### Current Habitat Conditions

WHA site WC-3a is located in northwest Corvallis and includes a portion of Walnut Park, private lands west and northwest of the park and OSU lands southwest of the park. Habitats occurring on the site include riparian ash forest, upland and wetland grasslands, mature Douglas fir forest, young Douglas fir plantation and mixed forest of Douglas fir and oak. A stand of large Douglas fir is located on OSU land in the southwest part of the polygon. Forested habitats on OSU lands are badly infested with false-brome which has excluded most native herbs from the understory. Although most habitats are quite weedy with Himalayan blackberry, false-brome, reed canarygrass and other invasive and non-native plants, potential rare plant and wildlife habitat is present.

#### Potential Wildlife Present

A population of Nelson's checkermallow (Federally listed threatened) is documented in or near Walnut Park. Riparian forest and shrubby habitats provide good songbird habitat and are potential habitat for native amphibian species. Rare species of prairies and savannas potentially could occur in open habitats in uplands and wetlands.

#### Restoration Recommendations

Wetland and upland prairie could be restored in open habitats. Connection to habitats in WC-3b and to the west should be maintained and enhanced if possible. Mature Douglas fir forest could be managed long-term for late successional habitats. Invasive species should be controlled.

## Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-3a-A	37.34	Grass tall (ryegrass, meadow)	None noted
WC-3a-B	20.34	Emergent herb/wetland	None noted
WC-3a-C	8.76	Conifer Forest >70% closed canopy	None noted
WC-3a-D	18.71	Conifer Forest >70% closed canopy	None noted.
WC-3a-F	3.09	Mixed Forest >70% closed canopy	Some large Douglas fir and Oregon white oak.
WC-3a-G	9.57	Mixed Forest >70% closed canopy	Large mature Douglas fir up to 36".
WC-3a-H	46.58	Mixed Forest >70% closed canopy	Scattered large oaks.

## Walnut Park South (WC-3b)

**172 acres, Score: 81, Enhanced Score: 83**

*Onsite.*

### Current Habitat Conditions

WC-3b is located west of Walnut Boulevard and south of WC-3a. The entire polygon is on Oregon State University land except for small areas at the southern end. The polygon is mostly forested with dense Oregon white oak forest. Douglas firs are present in a few areas but for the most part are not a threat to the oaks. A few large older oaks are present, but most of trees are relatively young. The understory of all forested habitats is badly overrun by false-brome which forms a virtual monoculture in the herb layer throughout much of the polygon. Several upland grasslands are scattered across the polygon. These are degraded and very weedy, but contain some remnant native upland prairie plant species. A small patch of tufted hairgrass wet prairie is located at the southern edge of the polygon. Like the upland grasslands, this area is degraded and quite weedy. Upland pastures dominated by introduced grasses occur in the southeast corner and along the east side of the polygon.

### Potential Wildlife Present

Nelson's checkermallow (Federally listed endangered) and meadow checkermallow are documented from along the east side of the polygon near Walnut Boulevard. Upland grasslands are potential habitat for rare upland prairie species including Kincaid's lupine and Fender's blue butterfly as well as rare upland prairie and oak savanna wildlife species. The tufted hairgrass prairie is potential habitat for rare wetland prairie species and rare oak forest species may use the forested portions of the site.

### Restoration Recommendations

This site would lend itself well to upland prairie and oak savanna restoration efforts. Oak forest around the upland grassland areas could be thinned to form a savanna structure. Control of invasive plants is strongly advised. Because it is on OSU land, this polygon would be an ideal

site on which to research control methods for false-brome and restoration of upland prairie and oak savanna.

**Vegetation Subpolygons**

Site #	Size	Cover Type	Unique Features
WC-3b-A	26.93	Grass natural/dry prairie	Upland native prairie remnants.
WC-3b-B	121.91	Hardwood Forest >70% closed canopy	Scattered large, gnarly oaks.
WC-3b-C	2.93	Mixed Forest >70% closed canopy	Scattered large oaks.
WC-3b-D	1.51	Emergent herb/wetland	High tufted hairgrass cover.
WC-3b-E	19.03	Grass tall (ryegrass, meadow)	May have Nelson's checkermallow along eastern edge.

**Witham Hill West (WC-4a)**

**134 acres, Score: 64, Enhanced Score: 71**

*Onsite.*

**Current Habitat Conditions**

This polygon is primarily in OSU ownership. It is dominated by a large Oregon white oak forest near the center, and also contains a smaller oak forest in the northwest corner. The understory in the large oak forest is overwhelmingly dominated by false-brome, a highly invasive species. The absence of living Douglas fir or stumps in this forest is interesting. Native species persisting in small amounts in the understory include poison-oak, sword fern, and trailing blackberry.

The northeast corner, western edge, and southwest corner are connected, ungrazed pasture habitats, dominated by non-native species (including many invasives such as English hawthorn). There are 2 or 3 small areas in the northern portion of the site planted with a few ornamental trees (apparently by OSU) such as English hawthorn, an invasive species. There are large infestations of Himalayan blackberry, Harding grass, meadow knapweed, reed canarygrass and English hawthorn in the open areas.

Small riparian areas are present on, adjacent to, and near the site. Connectivity is somewhat limited by roads, but wildlife access, in general, is probably good to the majority of the site.

**Potential Wildlife Present**

Oak associated wildlife, such as acorn woodpeckers and western gray squirrels, likely use the larger oaks in the northwest portion of the site. Oak woodland species may use the oak forest, but overall plant species diversity and cover is very low in the woodland because of the false-brome invasion. Rare upland prairie associated species may not use the site because of the high proportion of non-native plant species, particularly invasive non-natives which occupy the site.

### Restoration Recommendations

Reintroduction of fire as a restoration tool could be done experimentally at this site to maintain and increase vigor of the oaks. In association with burning, other weed control and replanting with natives could convert this from a very weedy site to a site with higher native plant and wildlife values. Restoration would be an enormous project, but could be done under the academic realm of OSU (the landowner).

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-4a-A	65.93	Grass tall (ryegrass, meadow)	A few scattered oaks. A few scattered native herbaceous species remnants.
WC-4a-B	16.09	Hardwood Forest >70% closed canopy	Some of the mature oaks are large. Traces of native understory vegetation.
WC-4a-C	42.59	Hardwood Forest >70% closed canopy	See comments below.
WC-4a-D	6.78	Shrubland (Himalayan blackberry)	None noted.
WC-4a-E	2.91	Hardwood Forest >70% closed canopy	Nelson's checkermallow population on southern edge along Harrison Blvd.

### Witham Hill East (WC-4b)

**125 acres, Score: 54, Enhanced Score: 58**

*Onsite in north portion only. Remainder offsite from adjacent bike path.*

#### Current Habitat Conditions

The northern third (approximately) of this site is composed of a mixed Oregon white oak - Douglas fir forest. While the overstory is different, the understory is much like that in the Oregon white oak forest in site 4a on the other side of the fence to the west: both are extensively dominated by false-brome. Much of the middle third of the site is upland shrub habitat, dominated by English hawthorn and Himalayan blackberry. The vast majority of the open, non-forested areas on the lower slopes and flatter areas are dominated by non-native plant species. Wetter portions of the flat areas have traces of native wetland vegetation, and the remainder of the area is dominated by weedy, upland species.

#### Potential Wildlife Present

The area is large enough that grassland bird species such as western meadowlarks may occasionally use the site. Overall connectivity for wildlife is best to the north and west, fair to the south, and poor to the east (residential neighborhoods.)

### Restoration Recommendations

Removal of these invasives and replacement with native plant and wildlife species. Control of false-brome.

## Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-4b-A	47.98	Mixed Forest >70% closed canopy	See comments below.
WC-4b-B	40.00	Upland shrub	Some very large oaks near ridge top.
WC-4b-C	29.45	Grass tall (ryegrass, meadow)	None noted.
WC-4b-D	7.11	Mixed Forest >70% closed canopy	None noted.

## Woodland Meadow Park (WC-5a)

**35 acres, Score: 47, Enhanced Score: 62**

*Onsite.*

### Current Habitat Conditions

This WHA polygon is Woodland Park, in northwest Corvallis. This island of habitat is of high quality considering it is surrounded by development. In general, the majority of the park is open, grassy habitat, which is ringed by forest. Circle Boulevard bisects the site, degrading connectivity for wildlife species. Intermittent, intense human use, and off-leash dog use, also degrade habitat values for native plants and wildlife. The small creek which once ran the same alignment is piped underneath the road.

Forests around the meadow habitats are primarily composed of oak, although there is a significant stand of Douglas fir in the north end of the park. It appears that Himalayan blackberry and other invasives are being removed in small amounts from this area. False-brome also is present in that stand.

Although the meadow habitats primarily consist of non-native lawn grass and pasture species, significant native species populations persist in the northwest facing slopes in the southern half of the park, south of Circle Boulevard. These native species are now rare in the local area, and should be propagated and used here and in other nearby restoration projects.

### Potential Wildlife Present

The oak stand near the Corl House contains some of the finest oak trees in our surveyed areas, and we noted acorn woodpeckers, western gray squirrels, and many other more common species utilizing them for food and cover. Native vegetation could be restored under the oaks to replace the lawn/pasture species currently maintained there.

### Restoration Recommendations

Encouragement of native grass and forb species and control of invasives in the understory of forest areas should be primary goals of restoration. Fencing an off-leash dog area near the Corl House parking lot could improve habitat quality throughout the remainder of the park.

## Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-5a-A	21.70	Grass short (lawn, pasture)	Meadow has significant native component.
WC-5a-B	1.95	Conifer Forest >70% closed canopy	None noted.
WC-5a-C	1.54	Conifer Forest >70% closed canopy	None noted.
WC-5a-D	2.35	Mixed Forest >70% closed canopy	None noted.
WC-5a-E	1.73	Hardwood Forest >70% closed canopy	Very large, old Oregon white oak
WC-5a-F	3.55	Hardwood Woodland 30-70% closed canopy	Mature, large oaks.
WC-5a-G	2.23	Mixed Forest >70% closed canopy	Some large Oregon white oak along south edge.

## Bald Hill Park (WC-6a)

**208 acres, Score: 99, Enhanced Score: 102**

*Onsite.*

### Current Habitat Conditions

The eastern portion of Bald Hill Park comprises the majority of this site. (The western portion of the park is outside the UGB, and not part of this inventory.) This park is well-known locally for its high quality habitats and the presence of rare species.

The northern section of this site is primarily wetland habitat, both grazed wet prairie and Oregon ash - Oregon white oak forest. Removal of the cows may result in greatly improved habitat for native plants and wildlife in this area. Control of the ash, which are already invading the east end of the wet prairie wetland, may also be necessary. Immediately south is an upland prairie area that is weedy upland prairie, with invasion by woody non-native (mostly), and some native shrubs and trees.

The majority of the southern two thirds of the site is forested. The northern portion of the forest has a large component of Douglas fir, while the southern 2/3 is dominated more heavily by Oregon white oak. The understories are being invaded in some places by false-brome, but there are many good quality, native understories – perhaps one of the most important features of the site compared to other Corvallis WHAs.

The southern end of the site consists of sloping, upland prairie habitat and flat, upland and wetland prairie habitat. Both of these habitats are dominated by non-native species, including many invasive species; however, they hold relic populations of native prairie species that are extremely valuable for future restoration in the area, and should be protected from further invasion by non-natives and propagated. Several sighting records of rare prairie plant species are noted in this area.

Overall habitat values of the site are probably the best in the inventory area because of the high native quality (especially the forested habitats), the presence of rare species, the large size of habitat blocks, and the connectivity to nearby habitats – mostly to the west.

**Potential Wildlife Present**

Nelson’s checkermallow is recorded in the east end of this section. A historic sighting of Taylor’s checkerspot butterfly occurred here, and use by acorn woodpeckers, western gray squirrels, and other oak associated species is very likely.

**Restoration Recommendations**

Control of invasive woody species would improve habitat quality, as would restoration of native herbaceous species. Removal of Douglas fir invading the oak stands, and restoration of native species to the non-native dominated prairie habitats should be prioritized.

**Vegetation Subpolygons**

Site #	Size	Cover Type	Unique Features
WC-6a-A	17.57	Emergent herb/wetland	Native wet prairie remnant, Nelson's checkermallow population.
WC-6a-B	17.66	Hardwood Forest >70% closed canopy	None noted.
WC-6a-C	11.42	Grass tall (ryegrass, meadow)	None noted.
WC-6a-D	12.97	Mixed Forest >70% closed canopy	None noted.
WC-6a-E	67.37	Hardwood Forest >70% closed canopy	None noted.
WC-6a-F	30.44	Grass natural/dry prairie	Pockets of native prairie species (upland and wetland).

**Squaw Creek East (WC-7a)**

**63 acres, Score: 51, Enhanced Score: 59**

*Offsite from adjacent roads.*

**Current Habitat Conditions**

Site 7a is on the north side of West Hills Road, just west of its intersection with Western Boulevard. The northeast portion of this site is upland pasture, and was not easily viewed from the railroad tracks abutting the north side. The central portion is mostly an Oregon white oak covered knoll, and there are small areas of mixed forest (including non-native, introduced tree species) to the east. The southeast portion consists of upland pasture similar to that in the northeast section, and includes an abandoned black walnut orchard.

It was not possible to view the understory of the oak forest in the center of the site, so its quality is unknown. Pasture/prairie habitats on the site appear to be dominated by tall fescue and typical non-native pasture species. It is unlikely that there is a significant native component in pasture areas.

### Potential Wildlife Present

It is likely that oak-associated wildlife use the oak forest portion of the site. The open pastures may be used occasionally by grassland birds and other prairie-associated wildlife species.

### Restoration Recommendations

Restoration of the pasture areas would probably have to begin by plowing repeatedly and reseeded with natives: a difficult and costly task.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-7a-A	4.69	Hardwood Woodland 30-70% closed canopy	None noted.
WC-7a-B	2.20	Mixed Forest >70% closed canopy	None noted.
WC-7a-C	13.43	Grass tall (ryegrass, meadow)	None noted.
WC-7a-D	17.82	Hardwood Forest >70% closed canopy	Excellent Oregon white oak stand.
WC-7a-E	24.81	Grass tall (ryegrass, meadow)	None noted.

### Squaw Creek West (WC-7b)

**91 acres, Score: 59, Enhanced Score: 65**

*Offsite from adjacent roads.*

#### Current Habitat Conditions

This site is immediately west of Site 7a. It consists primarily of plantation Douglas fir approximately 15 - 20 years old. A small riparian area diagonally crosses the site, and there are some gaps with weedy pasture species present. It is likely the entire site was disturbed in the past because of the high number of non-native species present, and the lack of any mature trees.

### Potential Wildlife Present

The site has limited connectivity, but probably occasionally hosts coniferous forest wildlife species.

### Restoration Recommendations

The gaps and understory could be restored to native species, and the composition of the forest tree species could be diversified by adding bigleaf maple, and possibly Oregon white oak or other species.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-7b-A	75.64	Conifer Forest >70% closed canopy	None noted.
WC-7b-B	14.94	Grass tall (ryegrass, meadow)	None noted.

## West Hills Road / Reservoir Road (WC-8a)

**17 acres, Score: 78, Enhanced Score: 80**

*Offsite from West Hills Road and Reservoir Road.*

### Current Habitat Conditions

Site WC-8a is located in west Corvallis between West Hills Road and Reservoir Road just west of the Grand Oaks subdivision. It has been developed as a rural residential area, and most of the houses are located on the periphery of the polygon. Most of the polygon is occupied by an Oregon white oak forest with a shrubby, predominantly native understory. Although some invasive species are present in the forest understory, they have not yet seriously impacted the herb and shrub layer. There are no streams or other water features on the site, but there is a large pond adjacent to the northern end, and the seasonal headwaters of Squaw Creek and a wetland prairie are located nearby to the west.

### Potential Wildlife Present

Acorn woodpeckers and western gray squirrels were observed on the site, and potential habitat is present for oak forest species. Forest edges are potential habitat for edge species such as western bluebird, mountain quail, and thin-leaved peavine.

### Restoration Recommendations

Restoration opportunities include enhancing connections to nearby habitat areas, especially to wetlands and water features to the west. Invasives should be controlled. Removal of a high, chain-link fence would restore some internal habitat connection.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-8a-A	17.48	Hardwood Forest >70% closed canopy	Closed oak forest.

## West Hills Road West (WC-8b)

**10 acres, Score: 38, Enhanced Score: 43**

*Offsite from West Hills Road.*

### Current Habitat Conditions

Site WC-8b is located in West Corvallis along West Hills Road directly south of WC-8a. A few residences are located at the periphery of the polygon. Most of the site is a white oak forest with large oaks scattered among dense younger oaks. The understory is quite weedy although native shrubs are community dominants in some areas. Himalayan blackberry forms dense thickets in the eastern portion of the polygon. A weedy grassland is located at the west side of the polygon. There are no streams or water features within the polygon, but Squaw Creek is located to the south and west, and there is wetland prairie to the west.

### Potential Wildlife Present

Acorn woodpeckers are present in the oak forest and potential habitat exists for rare oak forest species. The meadow, forest edge, and surrounding habitats are potential western bluebird habitat.

### Restoration Recommendations

Connections to the Squaw Creek riparian corridor and to the wetland prairie should be maintained and enhanced. Understory invasives should be controlled and replaced with native shrub plantings to provide food and cover for wildlife.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-8b-A	8.22	Hardwood Forest >70% closed canopy	Scattered large oaks
WC-8b-B	1.43	Grass tall (ryegrass, meadow)	None noted.

### West Hills Road East (WC-9a)

12 acres, Score: 39, Enhanced Score: 57

*Onsite.*

### Current Habitat Conditions

Site WC-9a is located in west Corvallis on the south side of West Hills Road. It is densely forested with Oregon white oak except along portions of the north side where oaks are widely scattered. Large oaks are scattered throughout the forest. Most of the area is grazed by sheep and llamas and as a result the understory is open and dominated by introduced pasture grasses. The eastern part appears not to be currently grazed and is infested with invasives such as Himalayan blackberry, English ivy and Canada thistle. A seasonal stream carries water from a recently constructed catchment associated with the subdivision on the north side of West Hills Road. Several oaks have died or are in decline along the stream.

### Potential Wildlife Present

Acorn woodpeckers are present in the oak forest and potential habitat exists for rare oak forest species and forest edge species.

### Restoration Recommendations

Understory restoration plantings of native shrubs and herbs could provide food and cover for wildlife. Plantings would have to be coordinated with changes in the grazing regime. Invasives should be controlled. Connections to other habitat areas and water features to the south could be enhanced.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-9a-A	10.53	Hardwood Forest >70% closed canopy	Scattered, large, open- grown oaks
WC-9a-B	1.72	Oak Savanna <30% closed canopy	Moderately large, widely spaced Oregon white oak.

## Squaw Creek Southwest (WC-10a)

67 acres, Score: 77, Enhanced Score: 79

*Offsite, from West Hills Road / Winding Way.*

### Current Habitat Conditions

Site WC-10a is located in west Corvallis between West Hills Road and Highway 20/34. Most of the polygon is undeveloped but rural residential development has occurred at the south end and along the east side. The polygon is occupied by mixed forest of Douglas fir and Oregon white oak and by shrublands. The forest understory has a good native component, but Himalayan blackberry and sweet cherry are established and likely will spread without control. Oaks are being overtopped by Douglas firs and will eventually decline and die out of the stand. A shrubland area at the southern end of the polygon is very weedy. The forested area is connected to the Squaw Creek riparian corridor to the northeast and is adjacent to wetland prairie to the north.

### Potential Wildlife Present

Western gray squirrels were observed in the forest, and potential habitat exists for oak forest, mixed forest, and forest edge species.

### Restoration Recommendations

Potential restoration activities include selective removal of Douglas fir to benefit the oaks, controlling invasives, planting native food and cover species in the shrubland area, and maintaining and enhancing connections to riparian and wetland habitats to the northeast and north.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
WC-10a-A	53.60	Mixed Forest >70% closed canopy	Scattered large oaks and firs.
WC-10a-B	13.26	Shrubland	None noted.

## Brooklane Drive (WC-11a)

55 acres, Score: 66, Enhanced Score: 68

*Mostly offsite from adjacent roads.*

### Current Habitat Conditions

This site lies on both sides of Brooklane Drive about one mile south of OSU and just west of the Marys River. The portion of the polygon above Brooklane to the northwest is divided by a manicured cemetery. Portions are fairly densely forested with Douglas fir and Oregon white oak, and the north portion contains an oak woodland with a mostly native understory. A western gray squirrel and acorn woodpecker both were sighted there.

Most of the southern portions are prairie-savanna-shrubland complexes, and their composition was difficult to determine without an on-site visit. Indications from off-site glimpses and the aerial photo indicated that the area is probably disturbed rather than native habitat. Significant populations of Scot's broom and Armenian blackberry appear to be invading this site.

The portion of the polygon to the southeast of Brooklane is primarily flat, and is a complex of wetland and upland prairie habitats. They are overwhelmingly dominated by non-native species, indicating probable cultivation and/or heavy grazing in the past. Small populations of native plant species persist, such as tufted hairgrass. Tricolored monkeyflower (*Mimulus tricolor*) was present here approximately two years ago.

**Potential Wildlife Present**

Western meadowlarks and other grassland wildlife species could be expected here.

**Restoration Recommendations**

This may be the largest, flat, wetland-upland complex left within the Corvallis UGB, and restoration to a higher native plant component to improve habitat values could occur in conjunction with adjacent, similar lands outside the UGB. This potential restoration project could be important as it lies adjacent to the Marys River riparian corridor.

**Vegetation Subpolygons**

Site #	Size	Cover Type	Unique Features
WC-11a-A	2.75	Emergent herb/wetland	Large grassland-dominated habitat.
WC-11a-B	4.77	Hardwood Forest >70% closed canopy	Oak woodland with mostly native understory.
WC-11a-C	5.80	Mixed Woodland 30-70% closed canopy	Unknown (Offsite).
WC-11a-D	9.04	Mixed Forest >70% closed canopy	Unknown (Offsite).
WC-11a-E	8.68	Conifer Woodland 30-70% closed canopy	Unknown (Offsite).
WC-11a-F	4.07	Oak Savanna (<30% canopy)	Unknown (Offsite).
WC-11a-G	14.20	Herbaceous	Unknown (Offsite).
WC-11a-H	2.17	Shrubland	Unknown (Offsite).
WC-11a-I	3.12	Hardwood Forest >70% closed canopy	None noted.

**Nash Avenue Plantation (WC-12a)**

**13 acres, Score: 46, Enhanced Score: 50**

*Offsite assessment from perimeter streets.*

**Current Habitat Conditions**

WC-12a is located south of Nash Avenue and East of 53rd Street. Most of the polygon is occupied by a young conifer plantation. Small openings and a few homesites are also scattered within the site. Both native and non-native tree species have been planted including Douglas fir, giant sequoia, and Scot’s pine. Forest cover is very dense resulting in little development of understory vegetation. Some trees appear to be in poor health, probably because they are non-

natives that are poorly adapted to the site. A pond is adjacent to the southeast corner of the polygon.

**Potential Wildlife Present**

The polygon has low habitat value for wildlife and native plant species. Owls probably roost in the dense forest and songbirds likely nest and forage.

**Restoration Recommendations**

Restoration actions could focus on favoring native tree species through thinning, and increasing diversity of the understory by planting native shrubs.

**Vegetation Subpolygons**

Site #	Size	Cover Type	Unique Features
WC-12a-A	12.59	Conifer Forest >70% closed canopy	None

**Donovan Oak Forest (WC-13a)**

**8 acres, Score: 39, Enhanced Score: 46**

*Offsite assessment from perimeter streets.*

**Current Habitat Conditions**

WC-13a is located north of West Hills Road and east of the Grand Oaks development. This site is a small and isolated oak forest with large oaks as well as bigleaf maple, Douglas-fir and Grand fir. Sweet cherry, an introduced species has invaded the forest heavily, and is abundant in all layers of the forest, including large numbers of seedlings in the herb layer. The northern portion of the polygon is part of a Christmas tree farm and yards of residences are included in the eastern portion. The understory in the Christmas tree farm is Christmas trees and in the yards is mowed lawns and ornamentals. The forest has complex vertical structure, due in large part to the presence of sweet cherry in all layers. Most of the trees appear to be in good health, but introduced species have impacted the understory vegetation. Polygon is small and is isolated from neighboring native habitats. No water was observed on the site.

**Potential Wildlife Present**

This site is small and isolated, but has habitat value for oak forest species. Acorn woodpeckers and western gray squirrels were observed on the site.

**Restoration Recommendations**

Restoration actions should focus on removal of introduced and invasive species and replacing them with native species.

**Vegetation Subpolygons**

Site #	Size	Cover Type	Unique Features
WC-13a-A	7.57	Hardwood Forest >70% closed canopy	Large oaks.

## South Study Area

### Avery Park (S-1a)

**38 acres, Score: 69, Enhanced Score: 71**

*Onsite (Avery Park) and offsite from abutting roads (private lands in south portion).*

#### Current Habitat Conditions

Site S-1a includes Avery Park and some private lands abutting to the south. The Mary's River borders the western and northern edges of the park, and the habitats bordering the river were included in the riparian surveys and excluded from this assessment. The proximity of the river adds greatly to the habitat values of the area.

There are several bands of forest through the park. The southernmost ones were included in riparian inventories. Two forested bands in the northern half were included in the upland inventory. The northern bands are dominated by Douglas fir in the overstory and tall fescue in the understory, and the southern band is in a lower swale, and is dominated by Oregon ash, reed canarygrass and Himalayan blackberry in the bottom and Douglas fir on the fringe.

North, between, and south of these two forest bands are areas maintained in a more open, park-like condition. Trees are present in some areas, however, understories are mostly mowed, landscaped/gardened, or graveled so habitat values for native plants and wildlife are lower.

#### Potential Wildlife Present

Pileated woodpecker excavations, western gray squirrels, and many songbird species were noted. California ground squirrels were noted here, and not at any other site during our inventories. This species can become accustomed to human handouts in developed park areas.

#### Restoration Recommendations

Restoration of this site should include (at a minimum) the removal of the new infestations of false-brome, as well as Himalayan blackberry and reed canarygrass. Black locust are beginning to naturalize, and should be removed quickly before the infestations spread further.

#### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
S-1a-A	2.68	Hardwood Forest >70% closed canopy	None noted.
S-1a-B	4.83	Hardwood Woodland 30-70% closed canopy	None noted.
S-1a-C	5.21	Conifer Forest >70% closed canopy	None noted.
S-1a-D	12.84	Mixed Woodland 30-70% closed canopy	None noted.
S-1a-E	3.50	Mixed Forest >70% closed canopy	None noted.
S-1a-F	5.31	Hardwood Forest >70% closed canopy	Mature oaks and a few large Douglas fir.

S-1a-G	0.79	Grass tall (ryegrass, meadow)	None noted.
S-1a-H	2.61	Hardwood Forest >70% closed canopy	Undetermined.

## Willamette River Park (Site-2a)

100 acres, Score: 93, Enhanced Score: 97

*Onsite.*

### Current Habitat Conditions

This WHA polygon is composed entirely of Willamette Park, situated on the west bank of the Willamette River south of downtown Corvallis. The south end of Willamette Park has some high quality forest habitats, while habitats northward degrade as infestations of invasive plant species are heavier. The presence of the River contributes greatly to habitat values. Open lawn, landscaped and developed park areas are less valuable for native plants and wildlife than the forested habitats.

### Potential Wildlife Present

Western pond turtles, olive-sided flycatchers, purple martins, and yellow-breasted chats have been sighted within park boundaries, and both Howell's montia and thin-leaved peavine occur in 2 and 3 locations, respectively – again, mostly in south portions of the park.

### Restoration Recommendations

False-brome and giant knotweed have been documented here in small populations which should be eliminated immediately, as both will aggressively invade the valuable forested riparian habitats within the park. In the longer term, removing of other invasives, and reducing the amount of lawn and landscaped areas could greatly contribute to habitat values for native species.

### Vegetation Subpolygons

Site #	Size	Cover Type	Unique Features
S-2a-A	13.69	Hardwood Forest >70% closed canopy	Native understory vegetation, ponds.
S-2a-B	23.67	Hardwood Forest >70% closed canopy	Patches of native understory.
S-2a-C	8.14	Hardwood Woodland 30-70% closed canopy	None noted.
S-2a-D	6.03	Hardwood Woodland 30-70% closed canopy	None noted.
S-2a-E	15.92	Hardwood Woodland 30-70% closed canopy	None noted.
S-2a-F	20.94	Hardwood Forest >70% closed canopy	Intact hardwood forest with native understory. Rare plant populations: thin leaved peavine.
S-2a-G	1.74	Hardwood Woodland 30-70% closed canopy	None noted.
S-2a-H	.77	Pond/wetland	None noted.
S-2a-I	8.93	Conifer Woodland 30-70% closed	None noted.



## Appendix A. Rare Species/Habitat Table

### Rare Species Grouped by Habitat of Potential Occurrence Revised to include status - 3 September 2003

**Key:**

**Federal status:** LE = Listed Endangered; LT = Listed Threatened; C = Candidate; SoC = Species of Concern

**State wildlife status:** LE = Listed Endangered; LT = Listed Threatened; C = Candidate; SC = Sensitive Critical; SV = Sensitive Vulnerable; SP = Sensitive Peripheral or Naturally Rare; SU = Sensitive Undetermined Status

**State plant status:** LE = Listed Endangered; LT = Listed Threatened; C = Candidate

**Oregon Natural Heritage Information Center (ORNHIC) List Status:** 1 = Threatened or Endangered throughout range; 2 = Threatened or Endangered in Oregon but secure elsewhere; 3 = review (more information needed); 4 = watch (of conservation concern but not currently threatened or endangered).

Habitat	Species	Federal Status	State Status	ORNHIC List	NPSO List
1a: Uncultivated grassland/prairie/meadow - uplands					
<b>Wildlife:</b>					
	grasshopper sparrow		SP	2	
	streaked horned lark	SoC	SC	2	
	Oregon vesper sparrow	SoC	SC	2	
	western meadowlark		SC	4	
	Camas pocket gopher	SoC		3	
<b>Plants:</b>					
	showy milkweed				x
	white-topped aster	SoC	LT	1	x
	golden sedge				x
	golden paintbrush	LT	LE	1-ex	x
	Willamette Valley larkspur		C	1	x
	Willamette daisy	LE	LE	1	x
	Oregon geranium				x
	shaggy horkelia	SoC	C	1	x
	Kincaid's lupine	LT	LT	1	x
	racemose pyrrocoma			2	x
	meadow sidalcea		C	4	x
1b: Uncultivated grassland/prairie/meadow - wetlands					
<b>Wildlife:</b>					
	western meadowlark		SC	4	
<b>Plants:</b>					
	showy milkweed				x
	white-topped aster	SoC	LT	1	x

Habitat	Species	Federal Status	State Status	ORNHC List	NPSO List
	Columbia sedge				x
	golden sedge				x
	Willamette Valley larkspur		C	1	x
	peacock larkspur	SoC	LE	1	x
	Willamette daisy	LE	LE	1	x
	Oregon geranium				x
	small-flowered lipocarpa			2-ex	x
	shaggy horkelia	SoC	C	1	x
	Bradshaw's lomatium	LE	LE	1	x
	Kincaid's lupine	LT	LT	1	x
	racemose pyrrocoma			2	x
	Nelson's sidalcea	LT	LT	1	x

1c: Hedgerow/roadside/edge of ag field

**Wildlife:**

western meadowlark		SC	4		
--------------------	--	----	---	--	--

**Plants:**

showy milkweed					x
white-topped aster	SoC	LT	1		x
golden sedge					x
Willamette Valley larkspur		C	1		x
peacock larkspur	SoC	LE	1		x
Willamette daisy	LE	LE	1		x
Oregon geranium					x
shaggy horkelia	SoC	C	1		x
thin-leaved peavine	SoC		1		x
Kincaid's lupine	LT	LT	1		x
racemose pyrrocoma			2		x
meadow sidalcea		C	4		x
Nelson's sidalcea	LT	LT	1		x

1d: Marsh

**Wildlife:**

black tern	SoC		4		
------------	-----	--	---	--	--

**Plants:**

Columbia sedge					x
----------------	--	--	--	--	---

1e: Vernal pool/pond edge/ditch edge

**Wildlife:**

**Plants:**

timwort			2		x
howellia	LT		1		x
whorled marsh-pennywort			2		x

Habitat	Species	Federal Status	State Status	ORNHIC List	NPSO List
	Nuttall's quillwort				x
	small-flowered lipocarpa			2-ex	x
	three-colored monkeyflower			2	x
	toothcup			2	x

2a: Native shrubland - uplands

**Wildlife:**

western Oregon little willow flycatcher		SV	4
yellow-breasted chat	SoC	SC	4
mountain quail	SoC	SU	4
Oregon vesper sparrow	SoC	SC	2
camas pocket gopher	SoC		3

**Plants:**

2b: Native shrubland - wetlands

**Wildlife:**

northern red-legged frog	SoC	SV	2
western Oregon little willow flycatcher		SV	4
yellow-breasted chat	SoC	SC	4
mountain quail	SoC	SU	4

**Plants:**

2c: Non-native shrubland - upland

**Wildlife:**

mountain quail	SoC	SU	4
----------------	-----	----	---

**Plants:**

2d: Christmas tree farms

**Wildlife:**

Oregon vesper sparrow	SoC	SC	2
western bluebird		SV	4
camas pocket gopher	SoC		3

**Plants:**

3a: Savanna, oak

**Wildlife:**

western toad		SV	4
--------------	--	----	---

Habitat	Species	Federal Status	State Status	ORNHC List	NPSO List
	sharptail snake		SV	4	
	grasshopper sparrow		SP	2	
	band-tailed pigeon	SoC		4	
	white-tailed kite			2	
	acorn woodpecker	SoC		4	
	Lewis's woodpecker	SoC	SC	4	
	mountain quail	SoC		4	
	Oregon vesper sparrow	SoC	SC	2	
	western bluebird		SV	4	
	hoary bat			4	
	fringed myotis	SoC	SV	2	
	long-legged myotis	SoC	SU	4	
	western gray squirrel		SU	3	
	Camas pocket gopher	SoC		3	
	<b>Plants:</b>				
	Willamette daisy	LE	LE	1	x
	Oregon geranium				x
	shaggy horkelia	SoC	C	1	x
	thin-leaved peavine	SoC		1	x
	Kincaid's lupine	LT	LT	1	x
	meadow sidalcea		C	4	x
3b: Savanna, oak/Douglas-fir					
	<b>Wildlife:</b>				
	western toad		SV	4	
	sharptail snake		SV	4	
	Lewis's woodpecker	SoC	SC	4	
	western bluebird		SV	4	
	<b>Plants:</b>				
	thin-leaved peavine	SoC		1	x
4a: Woodland, upland					
	<b>Wildlife:</b>				
	clouded salamander		SU	3	
	western toad		SV	4	
	olive-sided flycatcher	SoC	SV	4	
	pileated woodpecker		SV	4	
	acorn woodpecker	SoC		4	
	Lewis's woodpecker	SoC	SC	4	
	western bluebird		SV	4	
	western gray squirrel		SU	3	
	<b>Plants:</b>				
	thin-leaved peavine	SoC		1	x

Habitat	Species	Federal Status	State Status	ORNHIC List	NPSO List
---------	---------	----------------	--------------	-------------	-----------

5a: Forest, coniferous

**Wildlife:**

Oregon slender salamander	SoC	SU	1
northern red-legged frog	SoC	SV	2
marbled murrelet	LT	LT	2
band-tailed pigeon	SoC		4
pileated woodpecker		SV	4
northern pygmy-owl			4
white-footed vole	SoC	SU	4
red tree vole	SoC		3
silver-haired bat	SoC	SU	4
hoary bat			4
long-eared myotis	SoC	SU	4
fringed myotis	SoC	SV	2
long-legged myotis	SoC	SU	4
Yuma myotis	SoC		4

**Plants:**

5b: Forest, mixed

**Wildlife:**

northern red-legged frog	SoC	SV	2
band-tailed pigeon	SoC		4
pileated woodpecker		SV	4
white-tailed kite			2
northern pygmy-owl			4
bald eagle	LT	LT	2
Lewis's woodpecker	SoC	SC	4
mountain quail	SoC		4
white-footed vole	SoC	SU	4
silver-haired bat	SoC	SU	4
long-eared myotis	SoC	SU	4
fringed myotis	SoC	SV	2
long-legged myotis	SoC	SU	4
Yuma myotis	SoC		4
western gray squirrel		SU	3

**Plants:**

Habitat	Species	Federal Status	State Status	ORNHIC List	NPSO List
---------	---------	----------------	--------------	-------------	-----------

5c: Forest, deciduous

**Wildlife:**

northern red-legged frog	SoC	SV	2	
pileated woodpecker		SV	4	
white-tailed kite			2	
northern pygmy-owl			4	
acorn woodpecker	SoC		4	
Lewis's woodpecker	SoC	SC	4	
white-footed vole	SoC	SU	4	
silver-haired bat	SoC	SU	4	
long-eared myotis	SoC	SU	4	
fringed myotis	SoC	SV	2	
long-legged myotis	SoC	SU	4	
Yuma myotis	SoC		4	
western gray squirrel		SU	3	

**Plants:**

5d: Forest gaps and edges

**Wildlife:**

mountain quail	SoC		4	
western bluebird		SV	4	

**Plants:**

thin-leaved peavine	SoC		1	x
---------------------	-----	--	---	---

6a: Ponds; lakes

**Wildlife:**

western toad		SV	4	
northern red-legged frog	SoC	SV	2	
Oregon spotted frog	C	SC	1	
painted turtle		SC	2	
northwestern pond turtle	SoC	SC	1	
Aleutian Canada goose	LT	LE	1	
dusky Canada goose			4	
black tern	SoC		4	

**Plants:**

howellia	LT		1	x
whorled marsh-pennywort			2	x
Nuttall's quillwort				x
humped bladderwort			2	x
dotted water-meal			2	x
Columbia water-meal			2	x

Habitat	Species	Federal Status	State Status	ORNHIC List	NPSO List
---------	---------	----------------	--------------	-------------	-----------

6b: River or stream edge, rocky

**Wildlife:**

Oregon spotted frog	C	SC	1	
---------------------	---	----	---	--

**Plants:**

umbrella plant				x
----------------	--	--	--	---

U: Species with unique habitat characteristics

**Wildlife:**

clouded salamander		SU	3	
painted turtle		SC	2	
northwestern pond turtle	SoC	SC	1	
western rattlesnake			4	
grasshopper sparrow		SP	2	
marbled murrelet	LT	LT	2	
common nighthawk		SC	4	
yellow-billed cuckoo	SoC	SC	2	
olive-sided flycatcher	SoC	SV	4	
streaked horned lark	SoC	SC	2	
American peregrine falcon		LE	2	
bald eagle	LT	LT	2	
purple martin	SoC	SC	2	
northern spotted owl	LT	LT	1	
Pacific western big-eared bat	SoC	SC	2	

**Plants:**

narrow-leaved buckbrush				x
tall bugbane		C	1	x
mountain lady's slipper			4	x
Enemion stipitatum			4	x
Howell's montia		C	4	x
adder's tongue			2	x

## Appendix B. Wildlife and Vegetation Data Forms







---

---

---

---

# Appendix C. Rare Species Records From Oregon Natural Heritage Information Center

ORNHIC database excerpt for Corvallis and the surrounding area, February 2002.

Latin Name	Common Name	Element Occurrence Code	Federal Status	State Status	ORNHIC List	Last Observed	First Observed
CLEMMYS MARMORATA MARMORATA	NORTHWESTERN POND TURTLE	ARAAD02031*159*OR	SOC	SC	1	1992	1991
CORYNORHINUS TOWNSENDII TOWNSENDII	PACIFIC WESTERN BIG-EARED BAT	AMACC08015*019*OR	SOC	SC	2	1951	1951
EUPHYDRYAS EDITHA TAYLORI	TAYLOR'S CHECKERSPOT BUTTERFLY	IILEPK405K*002*OR	SOC		1	1985	No date
ONCORHYNCHUS MYKISS POP 33	STEELHEAD UPPER WILLAMETTE RIVER WINTER RUN	AFCHA02138*004*OR	LT	SC	1	1999	No date
ONCORHYNCHUS MYKISS POP 33	STEELHEAD UPPER WILLAMETTE RIVER WINTER RUN	AFCHA02138*005*OR	LT	SC	1	1999	No date
ONCORHYNCHUS MYKISS POP 33	STEELHEAD UPPER WILLAMETTE RIVER WINTER RUN	AFCHA02138*006*OR	LT	SC	1	1999	No date
ONCORHYNCHUS TSHAWYTSCHA POP 23	CHINOOK SALMON UPPER WILLAMETTE RIVER SPRING RUN	AFCHA02052*064*OR	LT		1	1999	No date
ONCORHYNCHUS TSHAWYTSCHA POP 23	CHINOOK SALMON UPPER WILLAMETTE RIVER SPRING RUN	AFCHA02052*068*OR	LT		1	1999	No date
ONCORHYNCHUS TSHAWYTSCHA POP 23	CHINOOK SALMON UPPER WILLAMETTE RIVER SPRING RUN	AFCHA02052*069*OR	LT		1	1999	No date
ONCORHYNCHUS TSHAWYTSCHA POP 23	CHINOOK SALMON UPPER WILLAMETTE RIVER SPRING RUN	AFCHA02052*082*OR	LT		1	1999	No date
OREGONICHTHYS CRAMERI	OREGON CHUB	AFCJB56010*026*OR	LE	SC	1	1945	1899
RANA PRETIOSA	OREGON SPOTTED FROG	AAABH01180*026*OR	C	SC	1	1965	1965
STRIX OCCIDENTALIS CAURINA	NORTHERN SPOTTED OWL	ABNSB1201A*914*OR	LT	LT	1	1996	1995
STRIX OCCIDENTALIS CAURINA	NORTHERN SPOTTED OWL	ABNSB1201A*979*OR	LT	LT	1	1996	1994
DELPHINIUM PAVONACEUM	PEACOCK LARKSPUR	PDRAN0B1D0*038*OR	SOC	LE	1	1991	1991
ERIGERON DECUMBENS VAR DECUMBENS	WILLAMETTE VALLEY DAISY	PDAST3M133*013*OR	LE	LE	1	1988	1987
HORKELIA CONGESTA SSP CONGESTA	SHAGGY HORKELIA	PDROS0W031*031*OR	SOC	C	1	1923	1878
HYDROCOTYLE VERTICILLATA	WHORLED MARSH PENNYWORT	PDAPI160A0*002*OR			2	1934	1934
LATHYRUS HOLOCHLORUS	THIN-LEAVED PEAVINE	PDFAB250B0*059*OR	SOC		1	1914	1892
LOMATIUM BRADSHAWII	BRADSHAW'S LOMATIUM	PDAPI1B030*002*OR	LE	LE	1	1999	1977
LOMATIUM BRADSHAWII	BRADSHAW'S LOMATIUM	PDAPI1B030*041*OR	LE	LE	1	1991	1991
LUPINUS SULPHUREUS SSP KINCAIDII	KINCAID'S LUPINE	PDFAB2B2W1*007*OR	LT	LT	1	1916	1899
LUPINUS SULPHUREUS SSP KINCAIDII	KINCAID'S LUPINE	PDFAB2B2W1*009*OR	LT	LT	1	1918	1918
LUPINUS SULPHUREUS SSP KINCAIDII	KINCAID'S LUPINE	PDFAB2B2W1*046*OR	LT	LT	1	1993	1993

Latin Name	Common Name	Element Occurrence Code	Federal Status	State Status	ORNHIC List	Last Observed	First Observed
MONTIA HOWELLII	HOWELL'S MONTIA	PDPOR05070*012*OR		C	4	1996	1996
MONTIA HOWELLII	HOWELL'S MONTIA	PDPOR05070*015*OR		C	4	1997	1997
MONTIA HOWELLII	HOWELL'S MONTIA	PDPOR05070*034*OR		C	4	1999	1999
SIDALCEA CAMPESTRIS	MEADOW CHECKER-MALLOW	PDMAL11020*002*OR		C	4	1978	1978
SIDALCEA CAMPESTRIS	MEADOW CHECKER-MALLOW	PDMAL11020*048*OR		C	4	1946	1946
SIDALCEA NELSONIANA	NELSON'S SIDALCEA	PDMAL110H0*006*OR	LT	LT	1	1993	1978
SIDALCEA NELSONIANA	NELSON'S SIDALCEA	PDMAL110H0*012*OR	LT	LT	1	1985	1898
SIDALCEA NELSONIANA	NELSON'S SIDALCEA	PDMAL110H0*037*OR	LT	LT	1	1995	1985
SIDALCEA NELSONIANA	NELSON'S SIDALCEA	PDMAL110H0*043*OR	LT	LT	1	1995	1985
SIDALCEA NELSONIANA	NELSON'S SIDALCEA	PDMAL110H0*057*OR	LT	LT	1	1993	1986
SIDALCEA NELSONIANA	NELSON'S SIDALCEA	PDMAL110H0*062*OR	LT	LT	1	1995	1989
SIDALCEA NELSONIANA	NELSON'S SIDALCEA	PDMAL110H0*063*OR	LT	LT	1	1995	1989
SIDALCEA NELSONIANA	NELSON'S SIDALCEA	PDMAL110H0*074*OR	LT	LT	1	1995	1991
SPHAEROCARPOS HIANIS	LIVERWORT	NBHEP35040*001*OR			1	1991	1991
SULCARIA BADIA	LICHEN	NLTEST0030*001*OR			1	No date	1993
WOLFFIA COLUMBIANA	COLUMBIA WATER-MEAL	PMLEM03030*004*OR			2	1994	1994