COOKS BUTTE PARK MANAGEMENT PLAN

JULY 2008

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In every walk with nature one receives far more than he seeks. John Muir

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BACKGROUND

The City of Lake Oswego provides opportunities for its residents to experience nature and the great outdoors with a plethora of natural area park land within its borders. Over 400 acres of City parks are places where natural ecosystems dominate, comprising a sizeable area for recreational purposes and a place where citizens can breathe fresh air and get away from the hustle and bustle of urban life. Lake Oswego citizens have cited walking and biking trails as one of the most needed parks facility in Lake Oswego, and natural areas and wildlife viewing amongst the most needed, according to a randomized telephone poll (Community Interest & Opinion Citizen Survey, 2004). These statistics, combined with the growing number of volunteer hours donated every year to natural area parks, illustrates the great importance that these places hold for Lake Oswego citizens. Moreover, urban natural area parks can serve as critical refugia to birds and other wildlife species that rely on an interconnected network of wild and greenspaces.

Urban natural area parks are subjected to a particular array of threats, including but not limited to habitat fragmentation, edge encroachment by landscape plants and debris, overuse, and misuse. As managers of an urban ecosystem, the City of Lake Oswego has the responsibility to protect its natural area parks from the current and ongoing suite of threats. This protection can be achieved by creating a series of management plans, complete with action measures and timelines, which can and will be followed by City staff, contractors, and volunteer groups working in the natural area parks.

Using a ranking and prioritizing scheme for all natural area parks in Lake Oswego, Cooks Butte Park comes to the top of the list because of its large (42-acre) size, square shape (providing better wildlife habitat than a long and skinny park), and because the habitat remains largely intact. A relatively modest effort here could provide lasting protection.

Nearby development in the Atherton neighborhood, as well as a new trail connection to nearby Luscher Farm, have likely increased use at Cooks Butte in recent years. In the spring of 2008, the newly developed Hazelia Field at Luscher Farm is opening, likely bringing even more visitors to the Cooks Butte. Both Cooks Butte and Luscher Farm have been nominated for inclusion into an Oregon Birding Trail guide, a driving trail that people in the nationwide birding community use to navigate themselves to particular birding sites. Visitation is

expected from many types of recreational users, from bird watchers to picnickers and dog walkers.

INTENT AND APPROACH OF PLANNING

The Cooks Butte Park Management Plan is intended to serve as a working document that describes natural resource issues, goals, and action plans at Cooks Butte. Cooks Butte will serve as a pilot project, which can help lead the way for successful planning and project implementation at other City-owned natural areas.

This document is intended to guide City staff, as well as contractors and volunteer groups performing resource-related activities in . This first version specifically addresses the first three years of habitat stabilization activities at Cooks Butte. Once these action measures have been implemented, the plan will be evaluated and revised to include a long term maintenance strategy. The intent is to be as clear and detailed as possible, but also to remain broad enough so that flexibility and adaptability to circumstances remains possible. This document also serves as a reference, both for tracking activities and so that stakeholders such as volunteers, staff, contractors, City leaders, and neighbors understand the goals and planned implementation measures at Cooks Butte. Before specific activity outlined in this plan is to be implemented, input from stakeholders will be requested. This will happen through meetings with City staff, City leaders, and neighborhoods.

An overall scheme for all natural area parks has not yet been evaluated. However, this scheme likely will include discreet plans for some parks and a bundled plan for other parks. This Plan serves as a template for both of these scenarios. Goals, objectives, and implementation strategies shall be consistent for all City-owned natural areas so that resource-related activities are not in conflict. Management schemes devised in this plan will help guide similar efforts for other natural areas, and will be adapted as necessary for the specific conditions of these other parks.

MANAGEMENT GOALS

As with every natural area within an urban environment, the natural resources within Cooks Butte Park require attention and maintenance in order to remain healthy and vibrant. Some areas within the park require restoration to recover the integrity of the natural landscape. These activities must consider the types and frequency of visitation by people as well as wildlife. Therefore, the first of three management goals is the following:

- GOAL 1: Maintain a balance of habitat protection and use

Many people use and enjoy Cooks Butte on a regular basis. On an average day, the park hosts joggers, dog walkers, and children, among others. Little attention is paid to enhancing the park for everyday users, so a second goal is identified:

- GOAL 2: Improve access and enhance park experience for users

Traditional park maintenance typically involves depositing trash, mowing entrances, and responding to various concerns, such as hazardous trees and trail issues. Natural area park management inherently consists of different priorities and should consider urban ecology and watershed impacts in the approach. Although staff time is limited, there are ways to organize maintenance activities so they are streamlined and focused on priorities. A corresponding management goal is therefore:

- GOAL 3: Organize a proactive approach to park maintenance based on ecological principles

These three management goals are described in more detail in subsequent pages.

OVERVIEW OF COOKS BUTTE PARK

Historical & Current Uses

The area that comprises and surrounds , formerly called Hazelia, was originally homesteaded by Adam Shipley and his wife Celinda, circa 1850. Known at that time as "Shipley's Butte," the area was farmed primarily for many varieties of grapes. The Cook family purchased the property in 1883, raised hogs and lambs, and farmed cauliflower. They planted a strawberry patch in the upper meadow where people would gather to picnic and gather berries. Many Native American artifacts have been found there, and it is thought that the butte once served as a burial ground for the area's native inhabitants. The land was purchased by the City in 1974 from John Emery, fulfilling the dream of Bill Cook that the land remain contiguous and held for public use in perpetuity[1].

A sign displayed in the park reads:

> "Much of the land for this park was a gift to this community
> By two people who lived next to it for 48 years
> They wished for this forest and meadow to remain forever wild
> A meeting place for human and non-human
> A place to re-enter the world
> Beyond our human habits"

[1] Kellogg, Claire; reference librarian; May 2003. From: City of Lake Oswego park files "L.O. Review," Lake Oswego Public Library historical files (Feb. 7, 1957), Oregon's Iron Dream, by Mary Goodall (May 19, 1960), In Their Own Words; a collection of reminiscences of early Oswego, Oregon (Dec. 5, 1974; Dec. 26, 1974; June 15, 2000)

The 42-acre park now offers a variety of passive recreation: a network of trails offers hiking as well as opportunities for jogging, dog walking, bird watching, and enjoying the view of Mt. Hood from the top of the butte. Entrances are within residential neighborhoods, and likely most park users are nearby residents. Visitation might be starting to include a broader range of people, both because of nearby park development at Luscher Farm, and overall growth of the Stafford region. Conflicts between user groups arise occasionally: mountain biking remains controversial, as does wildfire prevention, presence of coyotes, and dogs let off-leash. Illegal dumping of landscape waste, trash dumping, and graffiti, also remain difficult issues for nearby residents and maintenance crews.

Landscape context

Cooks Butte is a wooded natural area with a system of informal dirt trails leading to the summit for beautiful views of the Stafford Basin. The 2001 Lake Oswego Open Space Plan identifies Cooks Butte as a scenic viewpoint location and a Heritage Landscape. Heritage Landscapes were defined in the Open Space Plan as community landmarks that contribute to a community's identity, with Cooks Butte as a "unique natural feature."

Cooks Butte is the second highest point in Lake Oswego, reaching a height of 718 feet. Its steep sides slope down towards the south and west, and minor ridges and valleys undulate within. A seasonal water feature is featured on the west side, near where the historical Ox Road runs, a route that for many years was the main connection between Oswego and Tualatin[1]. This water is a small tributary of Pecan Creek, which flows in the southeast direction from the butte.

The Stafford area of Clackamas County surrounds Cooks Butte to the south and east, and is currently just outside of the Urban Growth Boundary (UGB) of the City of Lake Oswego. The region has been targeted as a priority for land acquisition by Portland Metro, in partnership with the City and Three Rivers Land Conservancy. Several properties and conservation easements have been acquired already, and together with Cooks Butte, Steven's Meadows, and Luscher Farms, these comprise a somewhat contiguous system of greenspaces in the area. A regional trail concept plan, the Rosemont Trail, will eventually connect this area with West Linn to the south.

The ecology is typical of the region and is host to a diverse array of native plants and animal species (Appendix B). Douglas-fir trees dominate the canopy in much of the area, and bigleaf maple dominates the tree canopy in a section to the north and west. Stands of deciduous forest, such as bigleaf maple, are typically evidence of logging that once occurred here, and the presence of several large stumps confirms this hypothesis. Many other tree species are present, most notably black cottonwood, black locust, scouler's willow, wild cherry and Pacific dogwood. Major understory components include sword fern, licorice fern, Oregon grape, salal, hazelnut, snowberry, blue elderberry, Indian Plum, and trailing blackberry.

Invasive plants are a somewhat significant component of the understory, primarily along the edges, and mostly within habitats dominated by Douglas-fir canopy. English ivy is the predominant nuisance plant, and English holly, English laurel, Herb Robert, Scotch broom, and Himalayan blackberry are other invasive species that are present.

NATURAL RESOURCES INVENTORY

The National Vegetation Classification System (NCVS), as defined by the U.S. Geological Survey, was utilized to define distinct habitat units within Cooks Butte. These units are based primarily on species composition, but are also defined by management practices and desired long-term condition. All regions that have distinct habitat types, and can be linked by the types of management needed are defined as separate habitat (or "management") units. For each habitat unit, the following is defined:

- General habitat unit description
- Desired future condition of habitat
- Natural resources of concern
  - Invasive plant presence/cover
  - Presence of threatened or endangered plants
  - Tree canopy/structure
  - Natural structures (such as beaver dams)
  - Water resources
  - Wildlife evidence
- Man-made features
  - Signs
  - Trails
  - Mowed areas
  - Water management structures (stormwater pipes, reservoirs)
- Desired maintenance activities

Methods

Transect lines were demarcated within each habitat unit and permanent plots were established every 40 feet along the line, and were used to gather quantitative vegetation data. For a detailed method of the natural resources inventory, see Appendix A. Because the initial surveying took place during the dormancy period of winter, the herbaceous layer may be somewhat underrepresented. A follow-up inventory will take place in coming years to more adequately assess the herbaceous layer.

Measuring tree diameter

Results

Results of the natural resources inventory are in Appendix B. The inventory revealed

several ecological patterns within the park, particularly distinct habitat types, and differences in species composition between these habitats.

Implications
Quantitative natural resource data not only allows assessment of current conditions, but they also serve as baseline information to which we can compare in the future. Baseline data are very important when assessing management schemes and how these impacts are affecting the natural resources that reside in a natural area. Permanent plots allow for the long-term evaluation of management schemes and natural changes in the landscape. Additionally, Cooks Butte is serving as a pilot project for natural resource management, and these data can help guide the adaptation of management strategies, which can be applied to other public natural areas in the City.

GOAL 1: Maintain a balance of habitat protection and use

The habitat at Cooks Butte remains relatively intact, especially for a natural area that lies primarily within an urban area. Encroachment, dumping, erosion and invasive plants are highly visible threats to plant and animal habitat. There are also other, less visible threats to the urban natural area: these can include often-polluted stormwater runoff, dog feces, tree disease, or competition for canopy cover between tree species. Some of the effects from these threats can be documented, measured, and alleviated; most cannot, or the benefits of action are too slight in proportion to the cost of such an effort. However, it is important to take a precautionary approach, because often just as soon as we become aware of a threat to the habitat, the damage has already been done. The focus of habitat enhancement at Cooks Butte remains on those actions that are visible and have a high potential of success. The hope is that highly visible habitat enhancement projects will alert users to the fragile urban ecosystem, to promote stewardship of the park, and also so that awareness of unforeseen problems can be noticed before it is too late.

Hiker's enjoying the forest at Cooks Butte

Action Measures

Reduce invasive plant cover by 80% in the first 3 years of habitat enhancement projects

The invasive plant cover within Cooks Butte ranges from an estimated 39% to 48% within the 3 habitat types, with English ivy being the most predominant problem. Invasive plant cover will be reduced by 80% in the first 3 years of implementation, utilizing a combination of maintenance staff, contractors, and volunteers. The most effective implementation strategy is to start by removing invasive plants along the edges of where the infestations are most severe. Once these edges are cleared, then the more severely infested areas can be moved into. After the first three years, activity level will be reduced so that a maintenance level is reached.

English Ivy (*Hedera helix*), climbing trees at Cooks Butte

Appendix B contains information about current condition of each of the habitat units, assessed during the Natural Resources Inventory. The main problems that need addressing are the following: Himalayan blackberry, English ivy, Scotch broom, and English holly all have populations inside of the natural area boundaries. Best Management Practices (BMPs) are to be followed for the removal of these species (to be drafted summer 2008).

Move toward the desired future condition for each habitat unit
Appendix B contains a description of the desired future condition for each habitat unit, along with the management strategies that will move toward achieving this. Schedules for restoration activities are found in Appendix C, and the approximate budget for these activities is found in Appendix D.

Maintain habitat improvements over the long-term
Urban restoration projects tend to focus on the initial removal of invasive plants from the ecosystem, and the positive effect can be seen immediately. However, of utmost importance is to maintain the sometimes arduous on-the-ground efforts undertaken by staff, contractors, and volunteers. Most of the time, this involves a several year effort to return to the same site again and again to pull re-sprouts and eradicate new invasions. After the initial 3-year eradication effort, levels of invasive plants will be reduced enough to be followed up by maintenance staff and volunteers.

Perform quarterly habitat inspections
It is important to be proactive in the management approach. Invasive species are a constant threat, even when monitored as closely as possible. Plant and animal species that used to not be a problem have the potential to move into new areas, and take hold before managers have time to respond. Initial invasions are the most important to remove because it is so much more cost effective to eradicate small invasions rather than large invasions. Therefore, quarterly inspections will be undertaken by trained personnel. A data collection form (Appendix E) will help guide each inspection, and will serve as a tracking mechanism for new and ongoing issues. Any follow-up work needed as a result of the inspection will be noted and acted upon. Additionally, permanent plots established by the Natural Resource Inventory will be surveyed every biennium to detect changes in species composition and overall habitat health.

GOAL 2: Improve safety, access, and enhance experience for users
Little attention is paid to how user groups are enjoying the natural area, and if their experience can be improved upon. It is the land manager's responsibility to minimize any potential conflicts between users and establish priorities for enhancing the users' experiences. Awareness of the importance of natural areas is gaining momentum among researchers and this is becoming apparent to citizens. Indeed, access to natural areas, wildlife, and hiking trails rank among the most important park facilities to Lake Oswego citizens. As natural areas become more popular, so increases the importance of providing adequate access and a safe experience for all.

Action Measures

Trail flooding

Provide and maintain adequate trail network
The trails at Cooks Butte need attention. There are flooding problems in the southern and western sections, and some rogue trails wind up steep slopes, causing significant erosion during storm events. A planning and restoration effort to restore the trail system is necessary to provide adequate access and minimize impacts to the native ecosystem resulting from a poor trail system. U.S. Forest Service trail experts are available for hire to plan for and create a trail system that is appropriate to this particular natural area. As was done in

Springbrook Park in 2004, the trail expert will involve City Parks, City Maintenance, and neighbors to ensure that the trail plans are appropriate and forethought into long-term maintenance is considered.

Ongoing trail maintenance is important to maintain the safety, usability, and to protect the surrounding natural resources. A quarterly trail inspection is necessary to assess trail upkeep, and to plan any restoration activity or other action as appropriate. Damages that occur to trails or near trails are often most easily fixed with a rapid detection and response. Hazardous trees can also be assessed during these surveys, so that these safety concerns can be addressed before becoming real problems. Several certified arborists are on staff that could perform these surveys. Hazardous trees are to be felled by maintenance staff, then left to decompose on site, creating nutrient cycling for the natural system.

Entrance needs work

Enhance entrances to increase usability
Entrances are places where users first gather their impressions that help direct their park experience. The entrances to Cooks Butte are currently not well maintained. Several entrances need enhancement, because of erosion or lack of an inviting presentation of the park. A few rogue entrances exist in inappropriate areas, due to the steep terrain. A thorough assessment of all entrances is needed in order to decide whether to enhance these entrances or remove them, and public involvement will be necessary.

One of the main entrances, at Palisades Crest Drive, is also a service road for the reservoirs, and is primarily used by walkers due to the absence of vehicle parking. Because this entrance can become quite muddy and laden with tire tracks by the service vehicles, it becomes an unwelcoming invitation for walkers. As a strictly undeveloped natural area, it is appropriate to create entrances that are inviting for those that are there to experience and enjoy nature. At the Palisades entrance, the creation of a pathway that is separate from the service road is appropriate.

Create a signage program
Signage is an important component of any natural area. Not only does it provide essential information, such as rules and opening hours, but it can also offer interpretation and open people's eyes to the natural world around them. It is important to be consistent with design standards for all natural areas, and to use the design as a branding tool so that people begin to recognize the natural area park system as a whole. I order to achieve this, a team with expertise in designing standards for park systems, as well as fabricating interpretive signage, will be hired. This firm will assess the needs of the City parks and fabricate directional, welcome, and interpretive signage as necessary.

Entrance sign

Promote assets of natural areas to broad audience
The creation of a management plan is an excellent way to highlight Cooks Butte as an example of the rich natural resources the City has to offer. Promotional tools and events are some of the venues for promoting use and protection of natural areas. The Parks and Recreation Department catalog is a valuable resource for reaching many people who might not otherwise know very much about the natural areas in the City. This publication reaches 21,000 homes each quarter. The Hello LO, and the LO Down are also promotional opportunities, as are broader publications, such as the Lake Oswego Review and the Oregonian. All of these publications have had interest in writing and/or printing articles about our natural areas. A flyer will be produced, highlighting restoration efforts at Cooks Butte and around the region, and these will be mentioned on the City's website as well.

Cooks Butte Park has been nominated for inclusion into the Willamette Valley Birding Trail, a brochure that directs birding enthusiasts to sites that are particularly good for birding. Birders are a vast nationwide community, and this brochure is intended to reach this broad audience.

With a management plan comes action. This action is only successful if supported by neighbors and other citizens. Residents that become long-term volunteers and stewards for upkeep and protection are the very people most affected by these actions. Whether they are Cub Scout or Boy Scout troops, neighborhood associations, school groups, or individuals who just want to be able to be involved

in their community, all are important for contributing toward lasting protection of the natural resources. It is important to create volunteer opportunities, so that people can be further educated about the natural environment around them, as well as to generate support of the actions that the City is undertaking to restore and protect their neighborhood's natural area. Planned restoration work days will take place, and promotion of these will take place through the Palisades neighborhood association and elsewhere.

Educate and discuss controversial issues with the public
Once efforts have been made on the City's part to properly care for its natural area parks, the public will likely be more open to discussions and education on controversial issues. Solving issues, such as mountain biking, dogs let off leash, wildfire prevention, presence of predatory wildlife such as coyotes, illegal dumping of landscape debris, and backyard encroachment into the park, begins with discussion and education. Public meetings will be held to create a forum to discuss issues, educate the public, and generate stewardship of the park.

GOAL 3: Organize a ecological approach to natural area maintenance
Traditional park maintenance consists mainly of mowing, trash collection, maintaining structures, landscaping, and responding to various concerns. Natural areas need these types of traditional maintenance, but often these activities don't address or take into consideration the urban ecology, or the watershed the park is contained within. Of all City employees, maintenance staff has the most direct relationship to these natural areas, and are also those that can have the most influence on the day-to-day activities which can have measureable impact on the natural resources. Therefore, it is imperative that Natural Resource staff help direct a proactive approach to maintenance so that these considerations are taken into account. Scheduling and tracking activities is of utmost importance so that maintenance is effective and restoration goals are met.

Action Measures

Plan and schedule desired maintenance and restoration activities over a 3-year time frame
Of utmost importance is to prioritize restoration activities according to species' biology, seasonal feasibility, and available resources. Creating a 3-year schedule of maintenance activities is imperative in order to reach restoration goals. An abbreviated schedule is outlined in Appendix C; a more detailed schedule will follow, pending budget approval.

Activities already discussed, such as a hazardous tree inventory and trail inventory will be planned and scheduled so that they are on a maintenance rotation. Restoration activities will also be included on a rotational schedule, and will take into consideration the biology, seasonal feasibility, and effectiveness according to the type of activity. For instance, it is best to pull ivy after the rains have started in the fall, so that the soil is less compacted. It is also very important to pull any populations of garlic mustard before they set seed in the late spring.

These kinds of considerations are taken into account when establishing rotations of restoration and maintenance work.

Track and report field activities
Tracking field activities is important for many reasons. First, it helps establish baseline data, so we can look at long-term trends of work being accomplished in the natural area. Tracking is the only way to gather data so that methods and effectiveness of the work can be analyzed. These data are incorporated into quarterly reports for the Parks and Recreation department, and are rolled up into the department's annual report. Once these data are collected, cost/benefit analyses can be calculated to show the long-term effectiveness of the restoration activities. The more preventative the action, the more cost effective it is. Maps created using these data are then translated into acreage of restoration completed within a given year. Tracking and reporting are also important when staff is turned over, so that the transition can be as smooth as possible and directions of work can be continued to accomplish goals.

Microsoft Access is a helpful tool for entering the activities of the field crews. Every crew member working in the field will be supplied with maps resulting from the natural resource inventory work. This will help field crews navigate to the particular habitat they are working on. The information enter will be fairly general: type of activity, date, amount of time, number of people, and any additional observations or follow up work needed. Contract work will be tracked in the same manner, as will volunteer events. An example of an Access form is in Appendix F, provided courtesy of Bruce Barbarasch from Tualatin Hills Parks and Recreation District. This form will be used as a template and adapted for the specific needs of Lake Oswego.

APPENDIX A – Detailed methodology of natural resources inventory

Detailed vegetation data were collected between January and March, 2008. The inventory was carried out by a two person crew. AmeriCorps member Alia Johnson was present for each survey, and was accompanied by one of the following assistants: AmeriCorps member Chelsea Smith, Bryn Knowles, an Arborist with Open Spaces Maintenance, David Odom, City Forester or Natural Resource Coordinator Natalie Strom.

Three transect lines were established, crossing the park along an east/west trajectory (see Figure A1) and permanent plots were established every 60 feet along each line. A section of PVC pipe, topped with a PVC cap, was driven into the ground with a mallet, demarcating the center of each plot. A 20'x 20' plot was measured using two 10-foot PVC pipes, which were placed at a corner vertex of each plot. These PVC pipes indicated a quarter of the plot allowing for visual approximation of a square survey area. At each 400 square-foot plot, vegetation characteristics including understory composition, tree species composition and canopy cover were surveyed. Standardized four letter codes based on the U.S. Geological Survey's Vegetation Classification System were used to represent the binomial species names; the first two letters represent the genus, and the second two letters represent the epithet (e.g., *Acer macrophyllum* = ACMA).

Understory species within the plots were identified, classified as either shrub or herbaceous and percent ground cover for each was estimated. Due to the winter season during which the survey took place, much of the herbaceous cover was dormant. Herbaceous cover will be re-examined in the future to determine the seasonality of species composition and cover.

Each tree within the survey plot was identified and their diameter measured. Diameter measurements were taken at breast height (DBH), approximately 4.5 feet above the trunk.

Canopy cover density was measured at every plot using a spherical densiometer. A densiometer uses a mirror with 24 1/8" x 1/8" squares arranged in a grid. Each square represents four smaller squares which are counted for areas of open canopy (sky image or unfilled squares). The canopy cover density was calculated counting the number of open canopy squares in all four directions (north, east, south and west), multiplying each direction measurement by 1.04, averaging the open canopy cover for each direction and subtracting that number from 100%. The result was canopy cover percent within the designated surveyed field plot.

Qualitative data regarding overall habitat quality were noted for each plot including woody debris, down or hazardous trees, ground cover appearance and approximate location to relative park features.

Within the 60 foot intervals between plots, qualitative information such as specific plants, wildlife, natural structures, trail features, hazards and restoration mitigation sites were observed and reported. Trends among species growth and landscape gradient that further characterized the surveyed habitat type were noted as well. Attention was given to natural and human impacts such as wildfire hazards and historic logging roads. Surveyors documented any visible maintenance concerns, including neighborhood encroachment, dumping, and encampments.

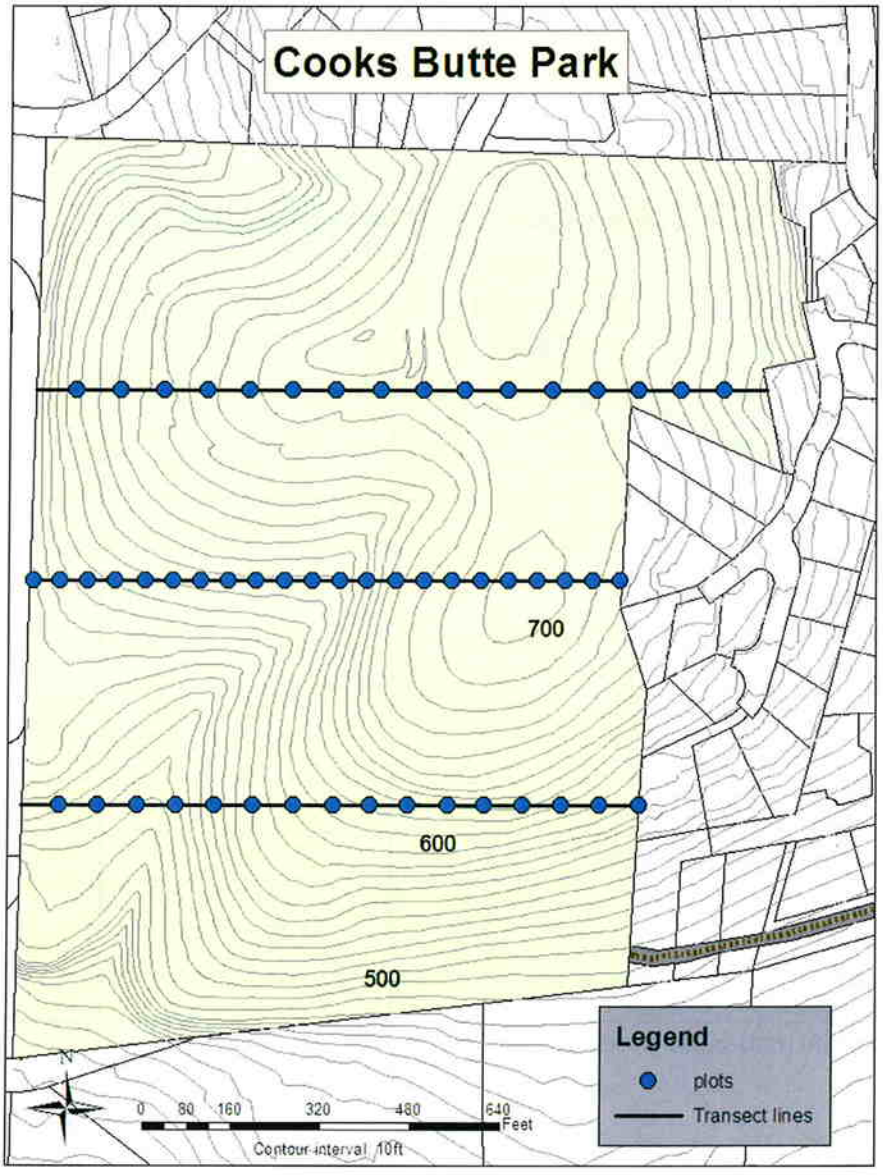


Figure A1. Transect lines and permanent plots for natural resources inventory

COOK'S BUTTE NATURAL RESOURCES SURVEY

Names of Surveyors: _____

Date: _____

Transect: _____

Interval (40-foot, east to west):

Qualitative information within transect area (specific plants, water, wildlife, natural structure, trail features, hazards, restoration mitigation sites)	

PLOT (20'x20', at end of interval)

Canopy cover measurements

Number of dots filled by canopy

(field measurement from densiometer)

North	
South	
East	
West	
Average overall canopy cover	

NOTES:

Vegetation Composition (20' x 20' plot, at end of interval)

TREES		SHRUBS		HERBS	
Species	DBH	Species	% cover	Species	% cover

TABLE A1. Natural Resources Survey Form

APPENDIX B

Habitat Types and Conditions at Cooks Butte Park

OVERALL CONDITIONS

Three distinct habitat types exist at Cooks Butte Park; these are displayed in Figure B8. A deciduous forest exists at the top of the butte, dominated by bigleaf maple, and is surrounded by areas of evergreen forest, dominated by Douglas-fir. In the southwest corner of the park, these habitat types are mixed. Often the boundaries between habitat types are distinct, likely due to previous logging activity. Douglas-fir trees are showing signs of encroachment into the bigleaf maple areas, potentially shading out and outcompeting maple species. This is a natural process of succession, and is typical for areas once affected by logging.

Invasive species, particularly English ivy (*Hedera helix*), are the main threats to the diversity and health of all habitats. It can cover up to 90% of the ground and trees in some areas. Ground ivy cover is displayed in Figure B9, and tree ivy cover is displayed in Figure B10. Ground ivy is more widely distributed throughout the park, but is most heavily concentrated in the southern portion. Tree ivy is patchy in its distribution, being heaviest in the southwest corner of the park. English ivy is more predominant in shady parts of the park, under evergreen trees, but has the ability to survive in patchy areas in deciduous forest as well. Himalayan blackberry (*Rubus discolor*) is most predominant in sunny, disturbed areas. It is widely distributed, but greatest concentrations remain around park entrances. Small amounts of reed canary grass, Scotch broom, English laurel, English holly, and wild geranium are present in the park as well (Figure B1).

A healthy diversity of understory species exists in all habitat types (Figure B2). Figure B2 allows the viewer to see that English ivy covers more area than any other species sampled in the plots. When present, English ivy has the ability to dominate all other understory species.

Deciduous forest habitat exhibits the greatest diversity of tree species (Figures B5 & B6). Douglas-fir remains one of the largest trees in diameter than other species in this habitat type, but in Figure B5, one can see that this species is a relatively small portion of the tree composition. Comparatively, Douglas-fir in the evergreen forest type is typically much larger in diameter (an average of over 20 inches rather than 7 inches in the deciduous forest type). These data support the hypothesis that Douglas-fir are indeed encroaching into bigleaf maple habitat.

TEMPERATE BROAD-LEAVED COLD-DECIDUOUS FOREST: *Acer macrophyllum* Forest Alliance
19.5 acres total
25 plots sampled (20'x20' each) = 0.23 acres

Habitat unit description: This area is dominated by an ageing forest of bigleaf maple (*Acer macrophyllum*) (Figure B5). Few young bigleaf maples are present in the understory. Douglas fir (*Pseudotsuga menziesii*) trees cover the canopy along the perimeter, and show signs of encroachment in some areas, where they shade out the maples. In the northwest section of the habitat, black cottonwood (*Populus trichocarpa*) are present, and is indeed the largest diameter tree species in this habitat type (Figure B6). Many large tree stumps are present, indicating previous logging activity. Other small tree components include wild cherry (*Prunus emarginata*), Pacific dogwood (*Cornus nuttallii*), Indian plum (*Oemleria cerasiformis*), Oceanspray (*Holodiscus discolor*), and Hazelnut (*Corylus cornuta*). Understory species include Oregon grape (*Berberis aquifolium*), trailing blackberry (Rubus ursinus), sword fern (*Polystichum munitum*), and licorice fern (*Polypodium glycyrrhiza*), among others. Invasive plants are patchy in this habitat type, and instances of English ivy, English holly, English laurel, Wild Geranium, and Scotch broom are apparent. Figure B1 displays only those invasive plants that were detected within sample plots; other species were noted throughout the area.

Desired Future Condition: A diverse canopy and understory is preserved while allowing natural processes to continue. Natural succession likely will result in the forest alliance to slowly move toward an evergreen (Douglas-fir) alliance. Eventually a forest of this type could support Western red cedar (*Thuja plicata*). Levels of non-native invasive species are reduced to small (less than 20%) level in the first three years.

Management Strategies: Follow Best Management Practices (BMPs) to reduce levels of invasions for invasive species. Perform a biennial natural resource inventory, quarterly habitat inspections, and frequent assessments of problematic issues such as encampments and illegal dumping.

TEMPERATE NEEDLE-LEAVED EVERGREEN FOREST: *Pseudotsuga menziesii* Forest Alliance
NE Habitat Unit: 7.68 acres
SE Habitat Unit: 6.5 acres
14.8 acres total
19 plots sampled (20'x20' each) = 0.17 acres

Habitat unit description: The southeast section of evergreen forest is dominated by a tall stand of Douglas fir, averaging approximately 20" in diameter (Figure B7). Few young Douglas-fir and a small number of bigleaf maples are in the understory. There are many > 2 inch diameter bitter cherry (*Prunus emarginata*) and bigleaf maples (*Acer macrophyllum*) saplings in the understory of tall Douglas fir. Mature English holly and English laurel are also present in various regions throughout the evergreen forest region. This region has a ~30 degree gradient with a dominant understory of sword fern (*Polystichum munitum*), licorice fern (*Polypodium glycyrrhiza*) trailing blackberry (*Rubus ursinus*), Herb

Robert (*Geranium robertianum*), and blue elderberry (*Sambucus cerulean*). Few small Pacific dogwood (*Cornus nuttallii*), approximately 1 to 3" in diameter, exist below the Douglas-fir canopy. A patch of Himalayan blackberry (*Rubus discolor*) exists near the southeast entrance to the park. English ivy (*Hedera helix*) exists in moderate concentrations in this region, both climbing up trees and spreading along the ground. City maintenance has been working to eradicate these invasions in recent months. A stand of mature black locust trees (*Robinia pseudoacacia*) exists at the southeast entrance.

The Douglas-fir forest in the northeastern corner of the park is characterized by a fairly mature, even-aged, and dense forest. Understory components are generally similar to the southeast corner of the park. Some of these trees are diseased and several limbs have died in recent years (Jim Sanders, City maintenance).

Desired Future Condition: A diverse canopy and understory is preserved. Levels of non-native invasive species are reduced to small (less than 20%) level. Otherwise, allow natural processes to continue. Over time, as mature trees die and fall, the canopy will be opened and possibly will support sun-tolerant tree species (such as red alder). Eventually, the canopy will represent a diverse age and species distribution. A forest of this type could eventually support Western red cedar (*Thuja plicata*).

Management Strategies: Follow Best Management Practices (BMPs) to reduce levels of invasions for invasive species. Perform a biennial natural resource inventory, quarterly habitat inspections, and more frequent assessments of problematic issues such as encampments and illegal dumping.

TEMPERATE MIXED NEEDLE-LEAVED EVERGREEN/BROAD-LEAVED DECIDUOUS FOREST: Pseudotsuga menziesii – Acer macrophyllum Forest Alliance
7.2 acres
8 plots (20'x20' each) = 0.07

Habitat unit description: The habitat is a true mixture of forest types. Bigleaf maple dominates the canopy in some patches, interspersed with patches where Douglas-fir is the dominant canopy species (Figure B4). Infestations of English ivy are worse here than any other area of the park; it reaches the canopy in many areas. This area has a south west facing aspect. Cascara (*Rhamnus purshiana*) tends to be abundant in this region, among other understory species, such as Oregon grape (*Berberis aquifolium*), trailing blackberry *(Rubus ursinus),* salal *(Gaultheria shallon)* and sword fern (*Polystichum munitum*). Dominant herbaceous species include invasive wild geranium *(Geranium maculatum),* and Nuttall's toothwort (*Cardimine nuttallii).* Other herbaceous species found on more southern aspects were Western trillium *(Trillium ovatum)* and wild strawberry (*Fragaria vesca*).

A small stream appears seasonally in this southwest region of the park. Some trails are eroding or become flooded because of excess water.

Desired Future Condition: A diverse canopy and understory is preserved. Levels of non-native invasive species are reduced to small (less than 20%) level. This forest is in transition from a predominately deciduous forest to a predominately evergreen forest. Over time, sun-tolerant deciduous species will not be supported because of the dense canopy shading the forest floor. This is a natural succession process and will be allowed to continue. Over time, as trees die and become replaced, this area will show characteristics of a mature forest, having a diversity of tree species and ages.

NON-NATIVE ANNUAL GRASSLAND (MEADOW)

Habitat unit description: This area on top of the butte has been historically grazed and farmed. It is now a relatively flat meadow dominated by non-native grasses. It is mowed as needed during the growing season, and used as a recreational area.

Desired Future Condition: We would support a project that would transform this meadow into a native bunchgrass upland prairie, and are interested in pursuing grants that might be able to support a project of this scale. Once invasive species are controlled and other priority issues are handled, we can consider using a section of this meadow as a test site for re-introduction of native grasses.

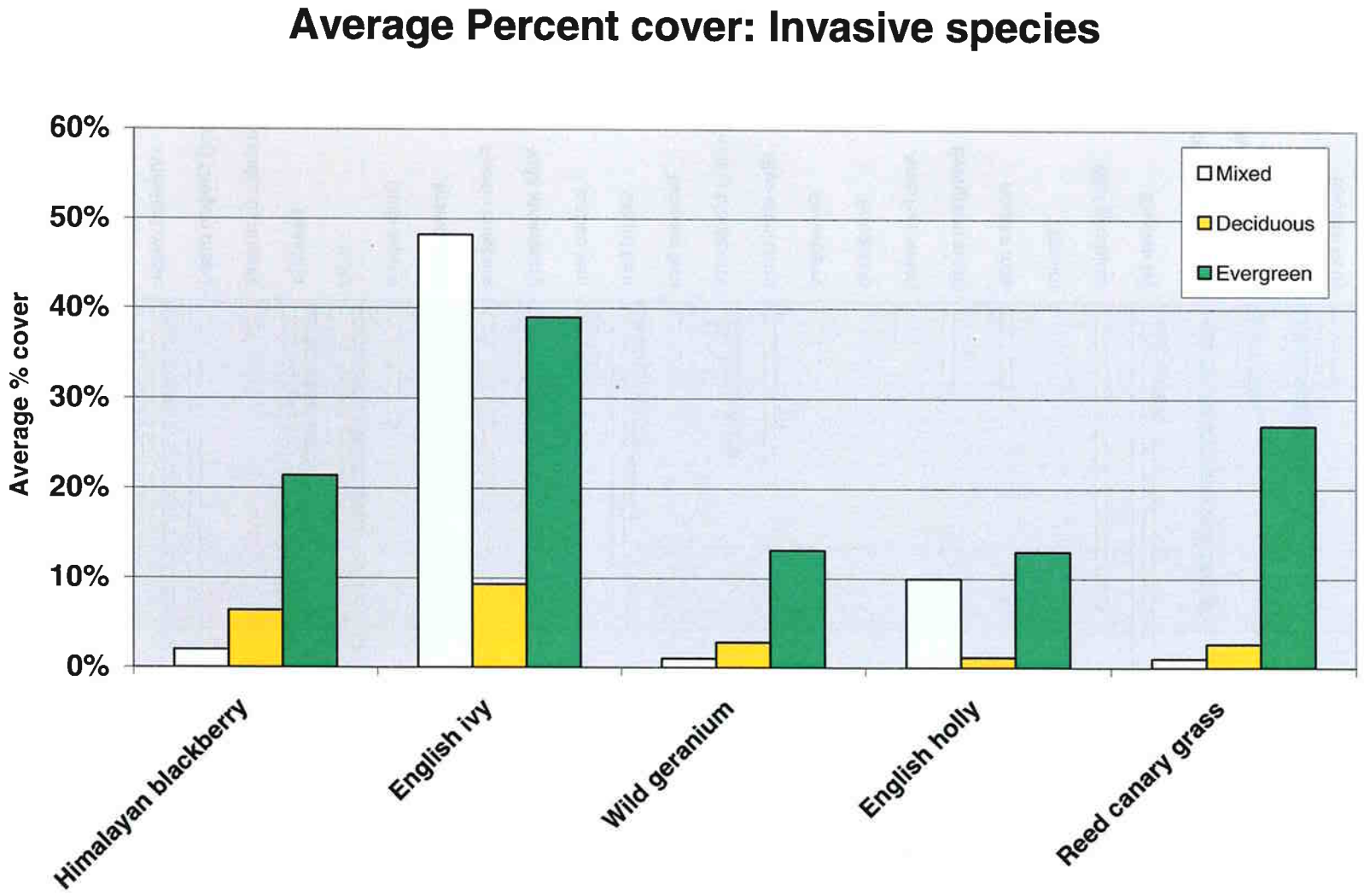


Figure B1. Average percent cover of invasive plant species within each habitat type

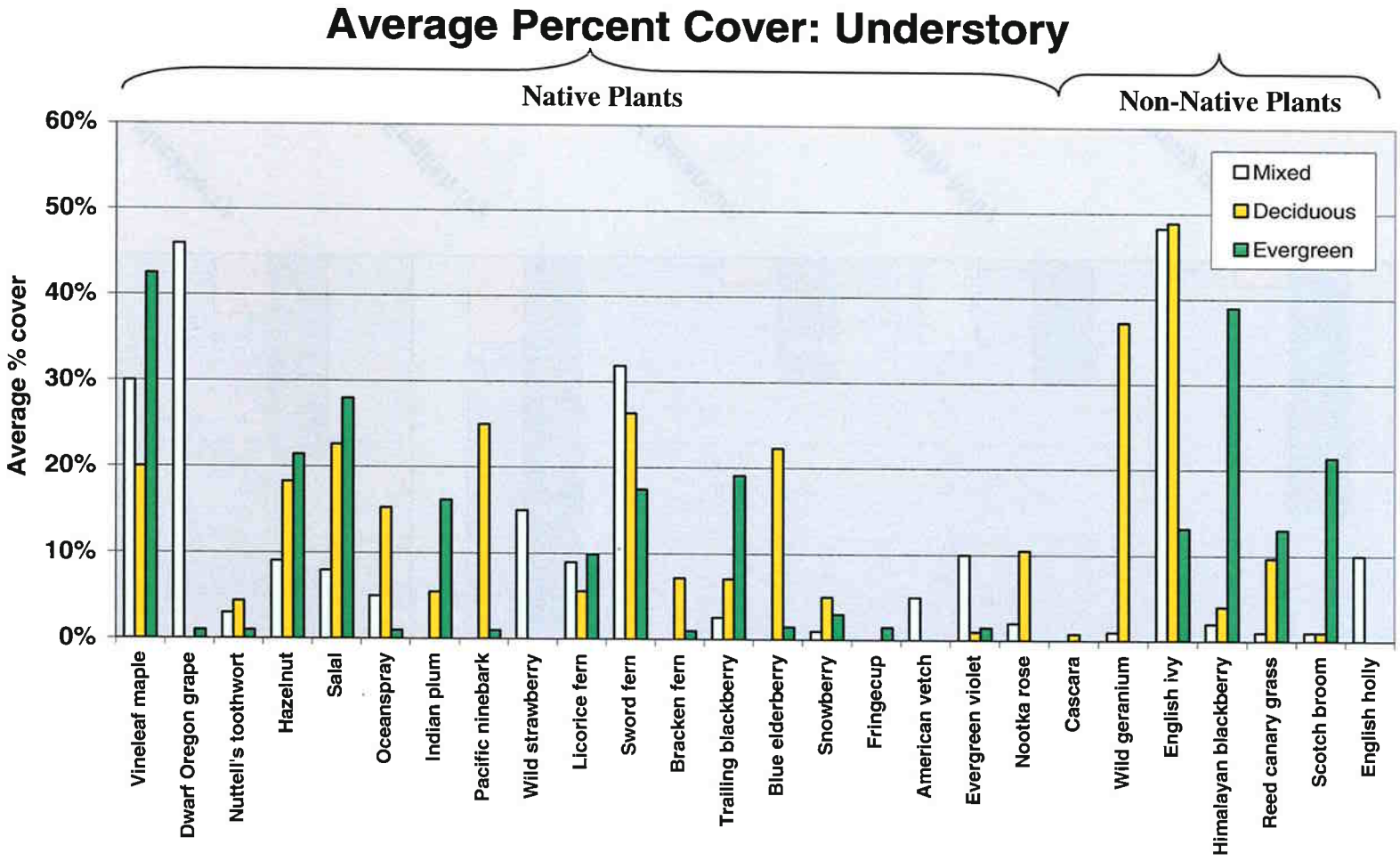


Figure B2. Average percent cover of understory species for each habitat type.

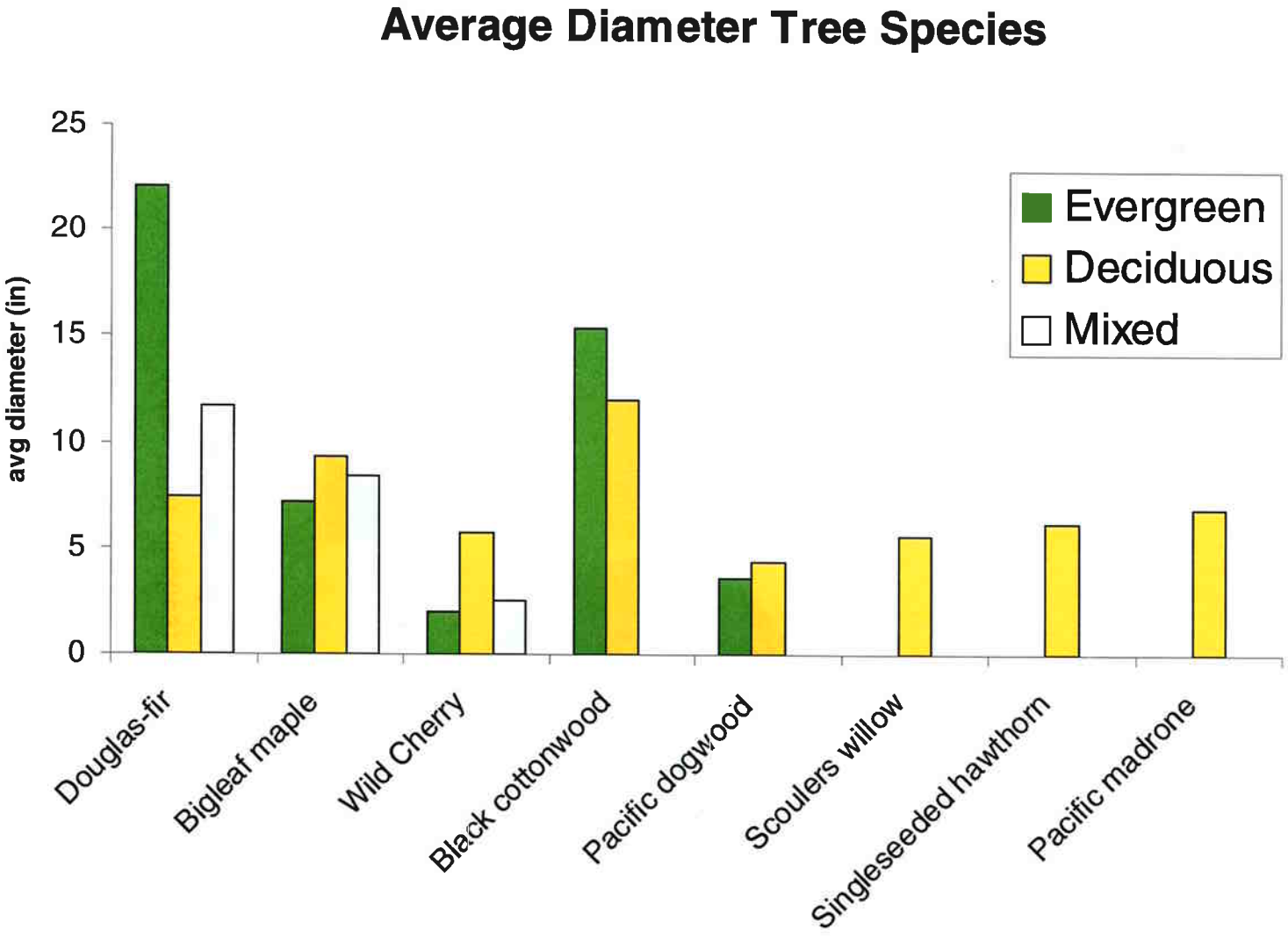


Figure B3. Average diameter of tree species for each habitat type.

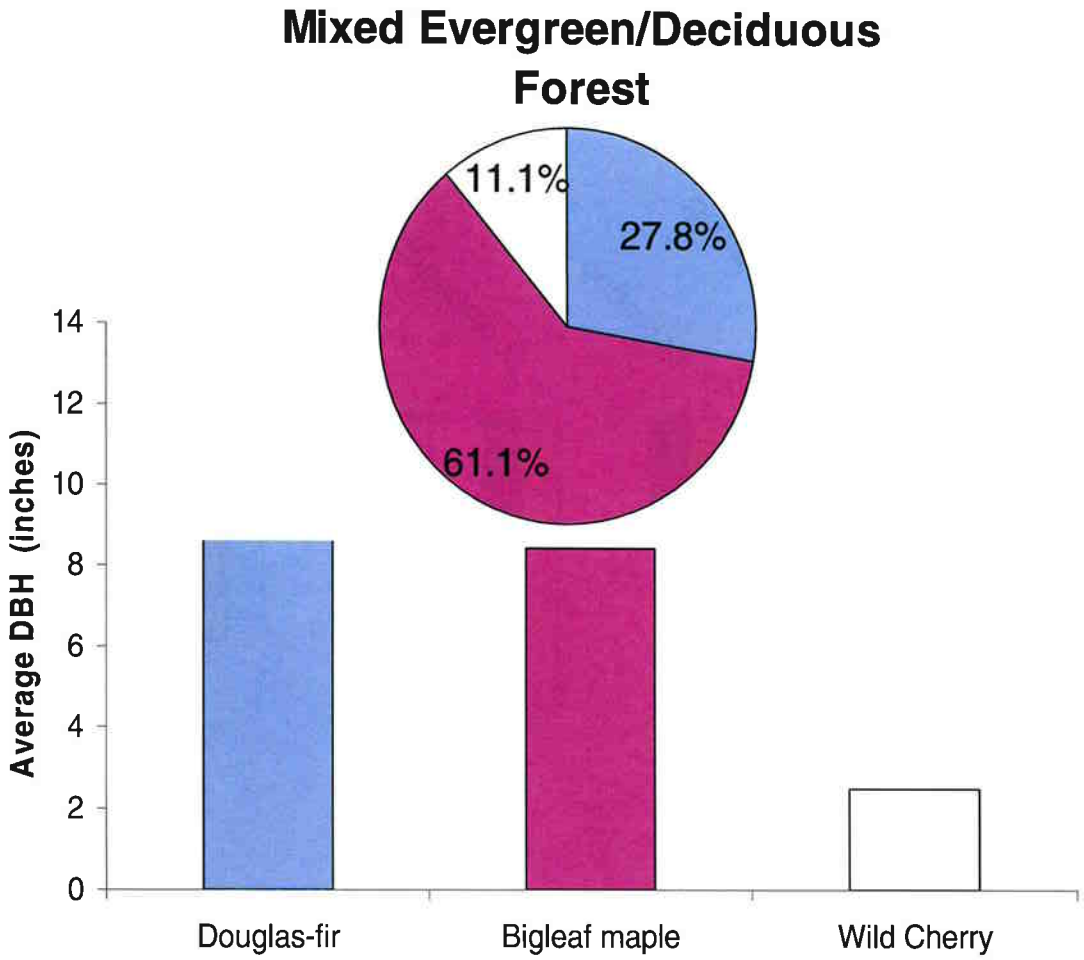


Figure B4. Dominant canopy composition and average diameter of tree species: Mixed evergreen/deciduous forest type

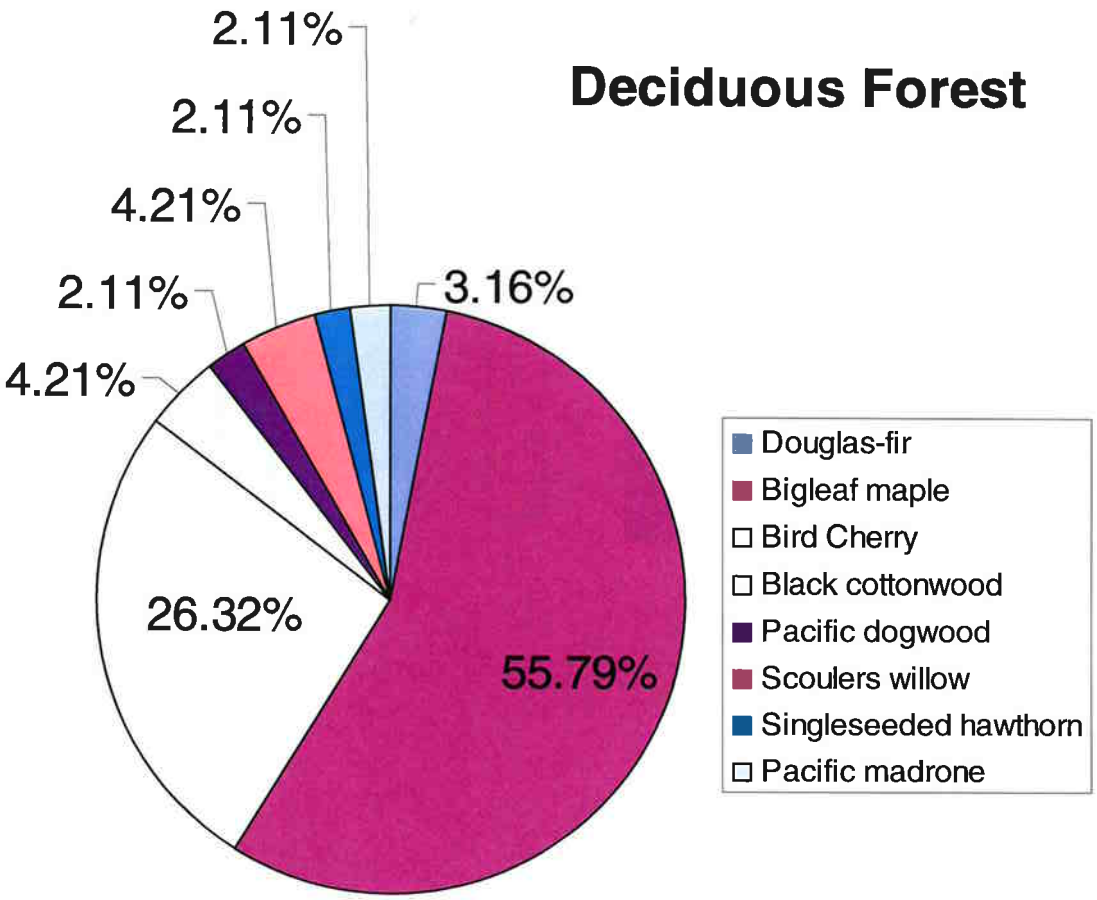


Figure B5. Dominant canopy composition of tree species: Deciduous forest habitat type

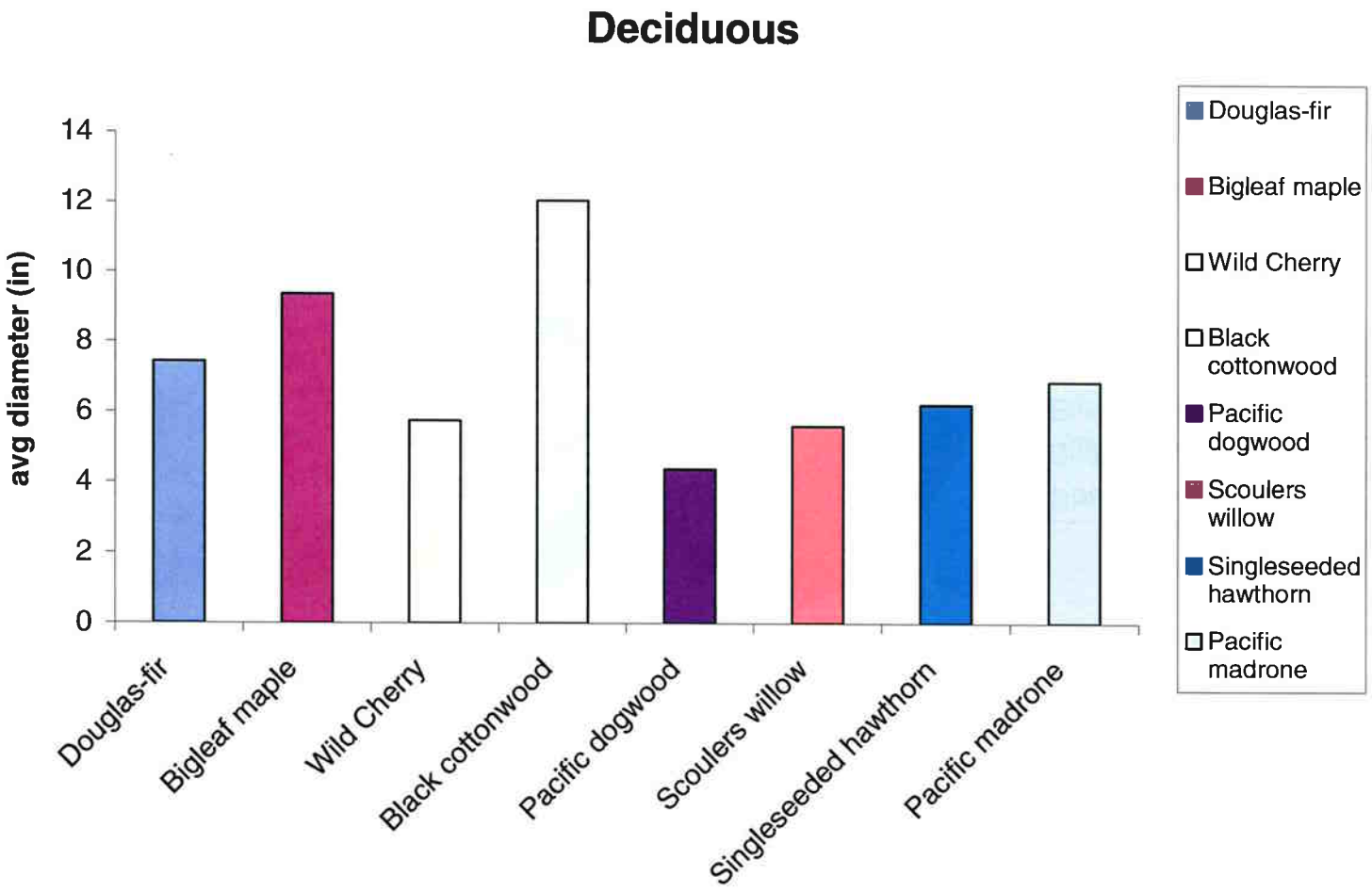


Figure B6. Average diameter of tree species: Deciduous forest habitat type

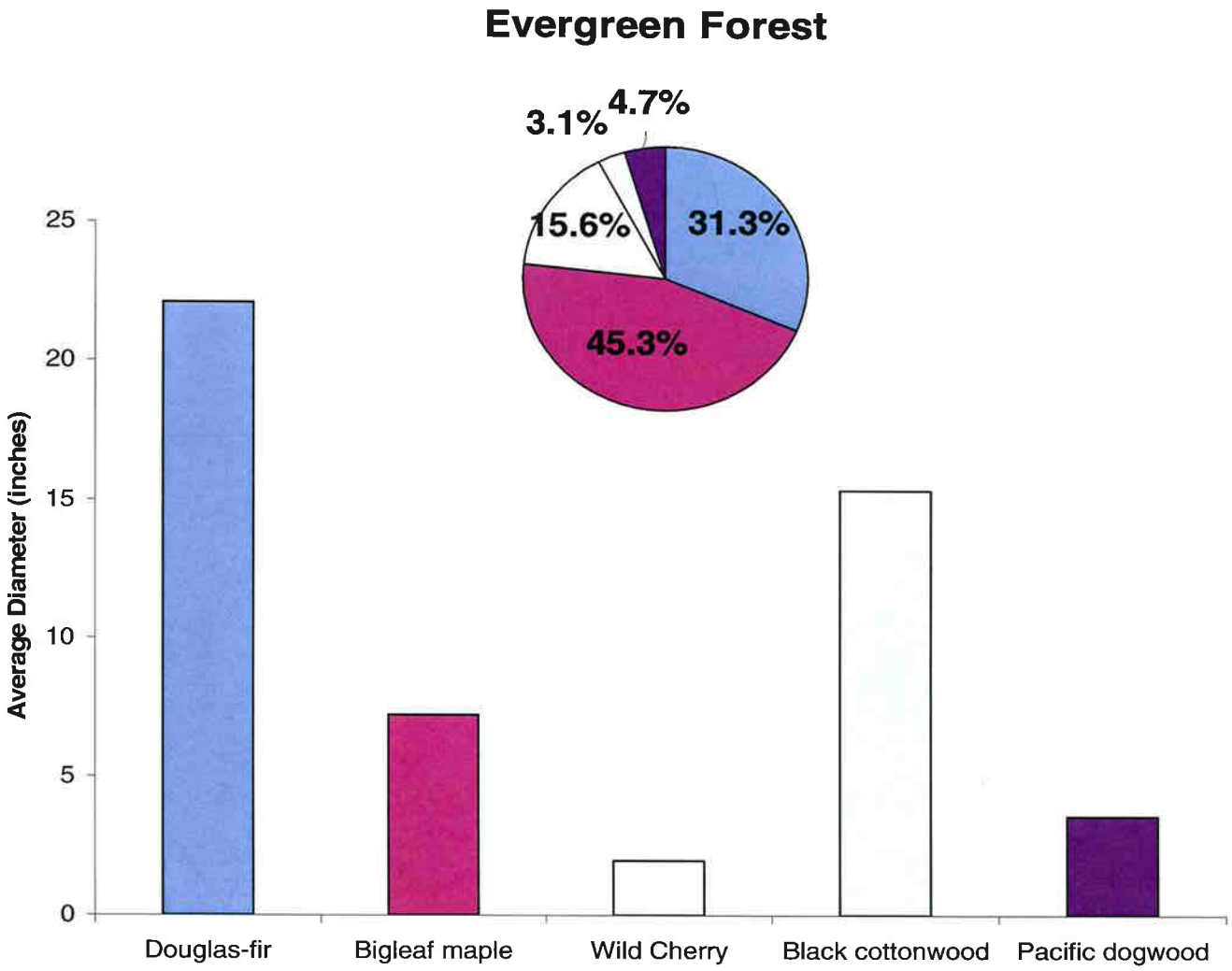


Figure B7. Dominant canopy composition and average diameter of tree species: Evergreen forest habitat type.

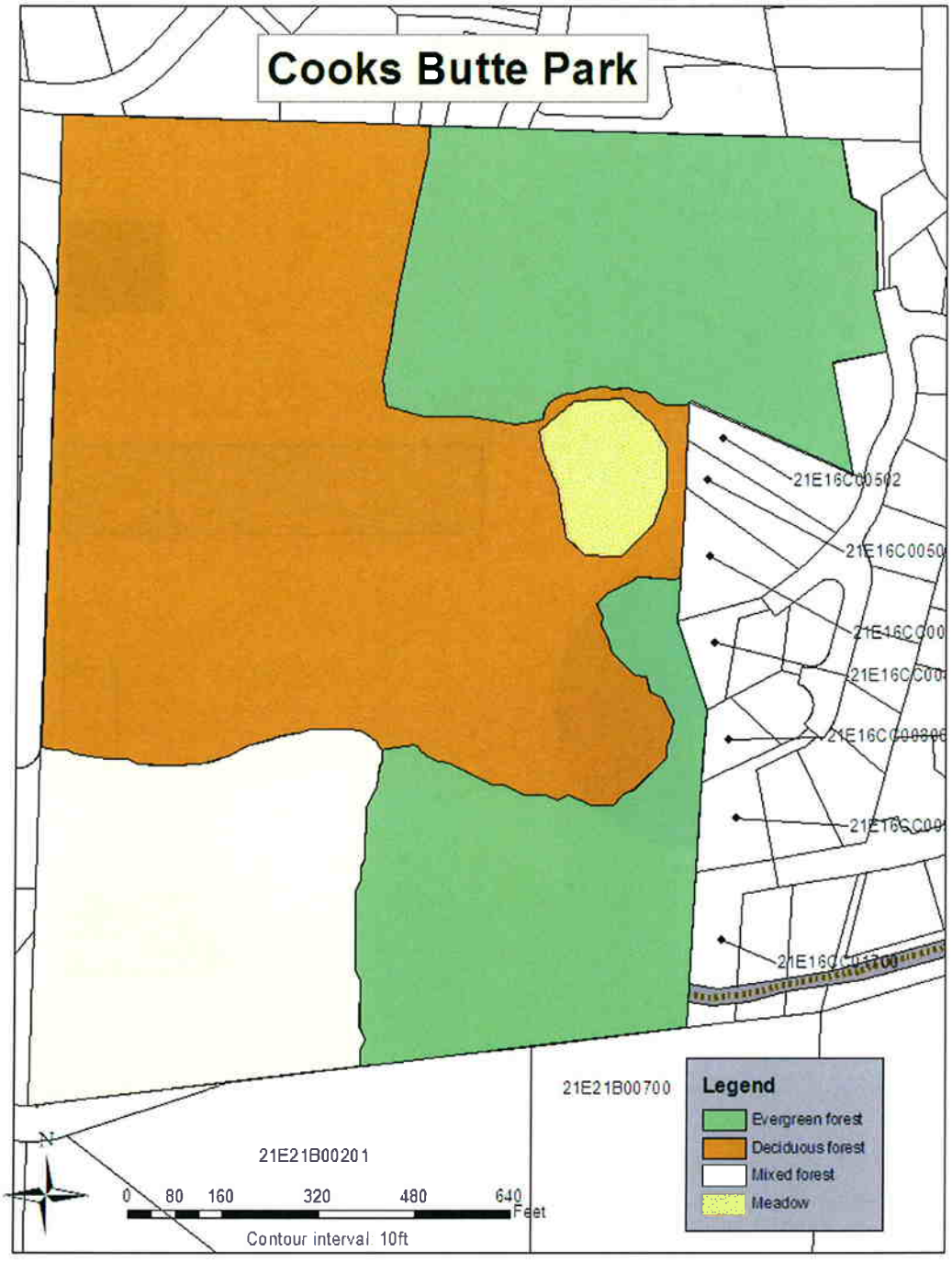


Figure B8. Habitat types.

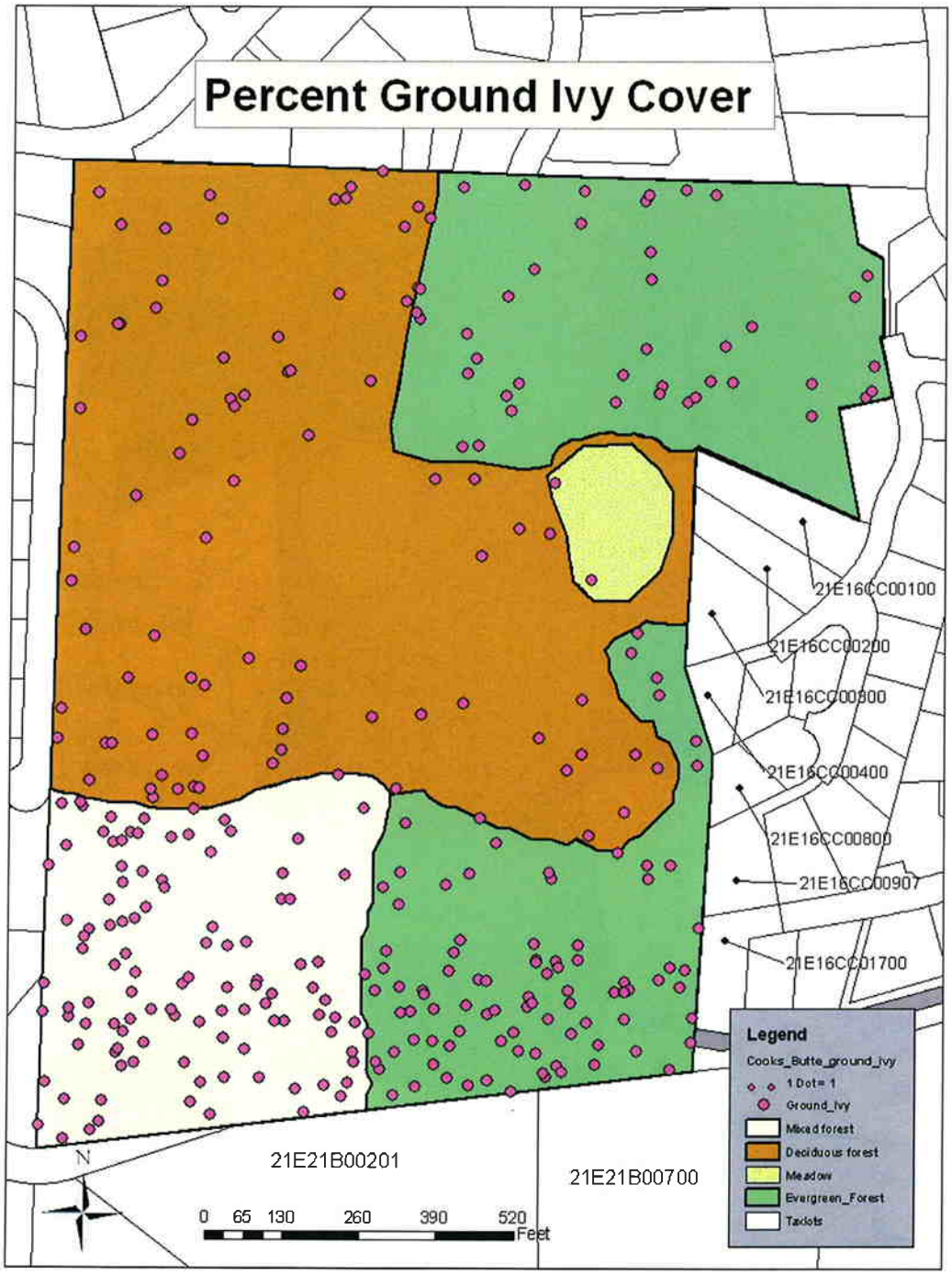


Figure B9. Ground ivy (*Hedera helix*) cover (1 dot = 1% ground ivy cover).

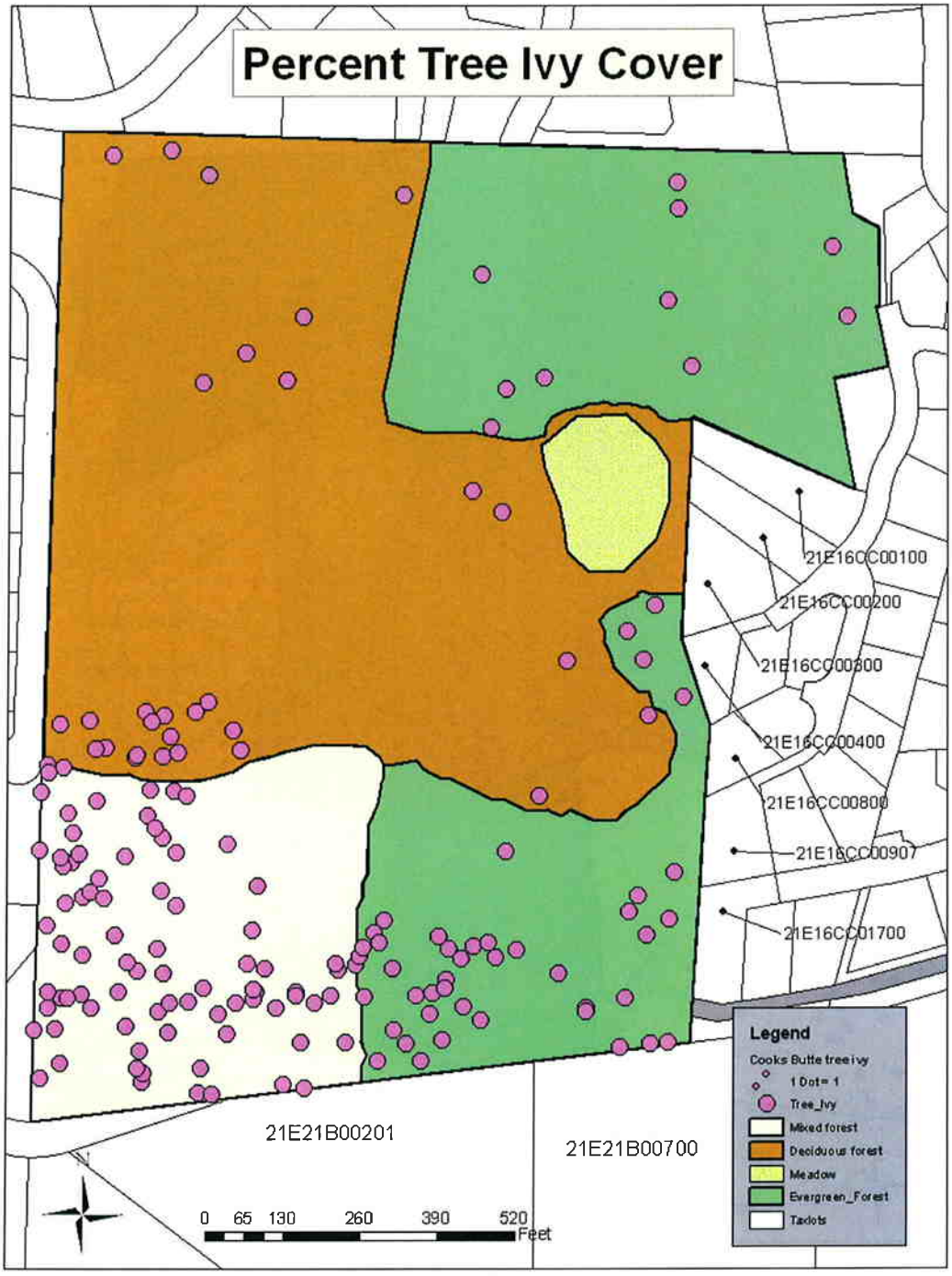


Figure B10. Tree ivy (*Hedera helix*) cover (1 dot = 1% tree ivy cover)

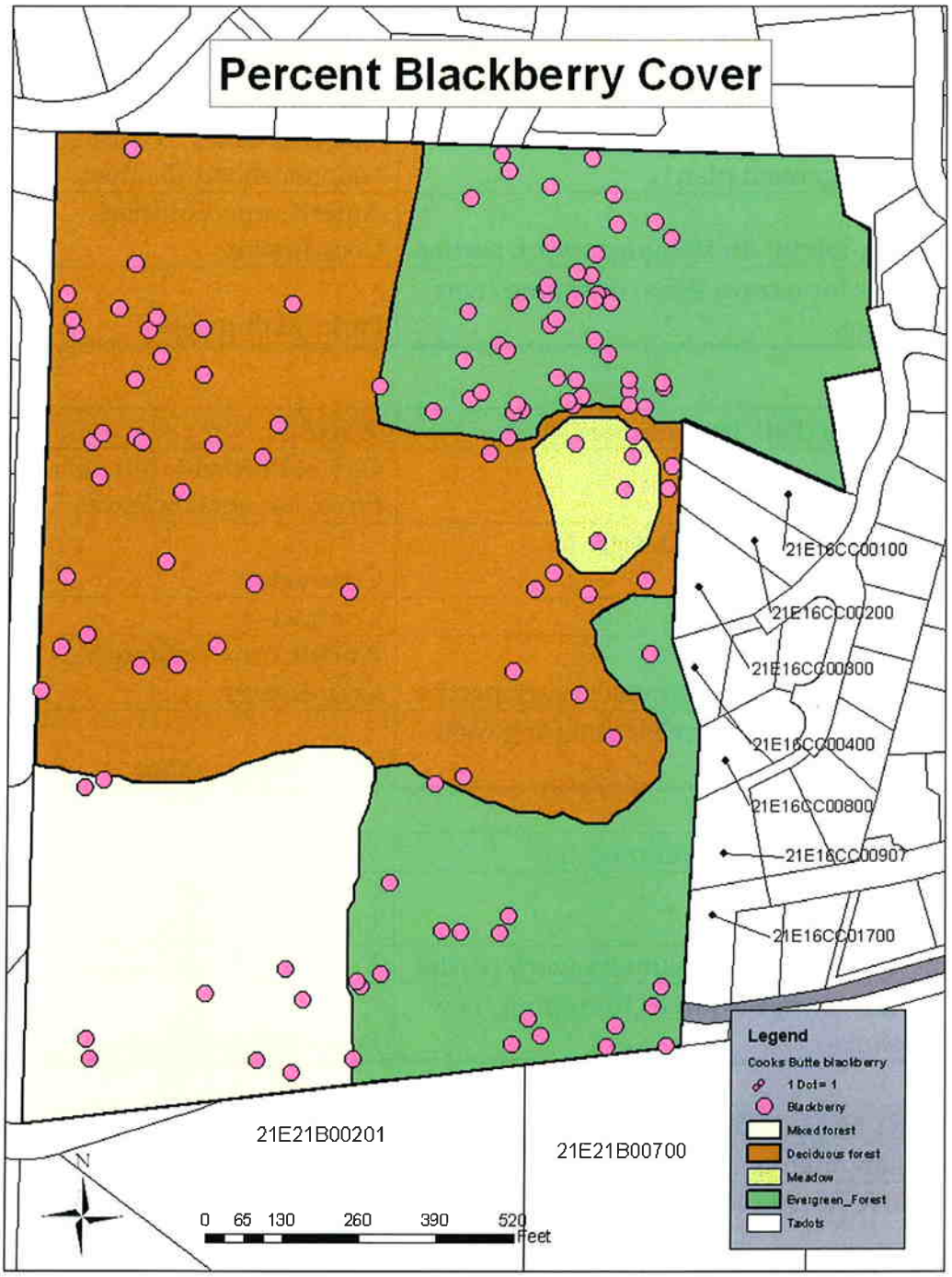


Figure B11. Blackberry (*Rubus discolor*) cover (1 dot = 1% blackberry cover)

APPENDIX C - Timeline for implementation over 3-year period

YEAR 1 TASKS (Fall '08-Summer '09)	WHO
Invasive plant removal	City of Portland, Bureau of Environmental Sciences
Conduct neighborhood meetings to provide status re: management plan	Nat. Resources Coordinator, Neighborhood Planner
Coordinate & recruit for volunteer work parties	AmeriCorps Volunteer Coordinator
Monitor trails for hazard trees/dumping/new plant invasions	Parks Maintenance

YEAR 2 TASKS (Fall '09-Summer '10)	WHO
Invasive plant removal	City of Portland, Bureau of Environmental Sciences
Develop trail signage plan, design, & installation	Contractor
Produce & install trail signs	Contractor
Coordinate & recruit for volunteer work parties	AmeriCorps Volunteer Coordinator
Monitor trails for hazard trees/dumping/new plant invasions	Parks Maintenance

YEAR 3 TASKS (Fall '10-Summer '11)	WHO
Invasive plant removal	City of Portland, Bureau of Environmental Sciences
Coordinate & recruit for volunteer work parties	Volunteer Coordinator
Monitor trails for hazard trees/dumping/new plant invasions	Parks Maintenance

ONGOING MAINTENANCE	WHO
Invasive plant maintenance/control	Parks Maintenance
Coordinate & Recruit for volunteer work parties	Volunteer Coordinator
Monitor trails for hazard trees/dumping/new plant invasions	Parks Maintenance

APPENDIX D – Budget for restoration activities

Cooks Butte Park Management Plan 3 year budget

	FY 08-09	FY09-10	FY10-11
Invasive Plant Removal	10,000	25,000	25,000
(3 acres yr #1; 7.5 acres yr #2 & #3)			
Trail Planning & Construction:			
Community Outreach & Design		10,000	
Construction			50,000
Interpretative Signage			
Signage Plan & Design Development		2,000	
Produce & Install Signs		2,000	
Services Provided by Parks & Recreation Dept.:			
AmeriCorps Volunteer - Conduct Volunteer Work Parties			
Park Maintenance - Routine maintenance and monitoring; removal of new plant invasions			
Natural Resource Coordinator			
	$ 10,000	**$ 39,000**	**$ 75,000**
Proposed Funding Source:			
Park Fund	10,000	$ 29,000	$ 25,000
Park SDC*	0	10,000	50,000
	$ 10,000	$ 39,000	$ 75,000

Note:

* The Park SDC Methodology is currently under review as of July 1, 2008. Funding for trail development and construction may be contingent upon approval of the revised methodology.

It is anticipated that the Cooks Butte Park Management Plan will be fully implemented at the end of FY10-11. Following FY10-11, tasks will include periodic monitoring & maintenance by Parks & Recreation Dept. Natural Resource and Maintenance staff.

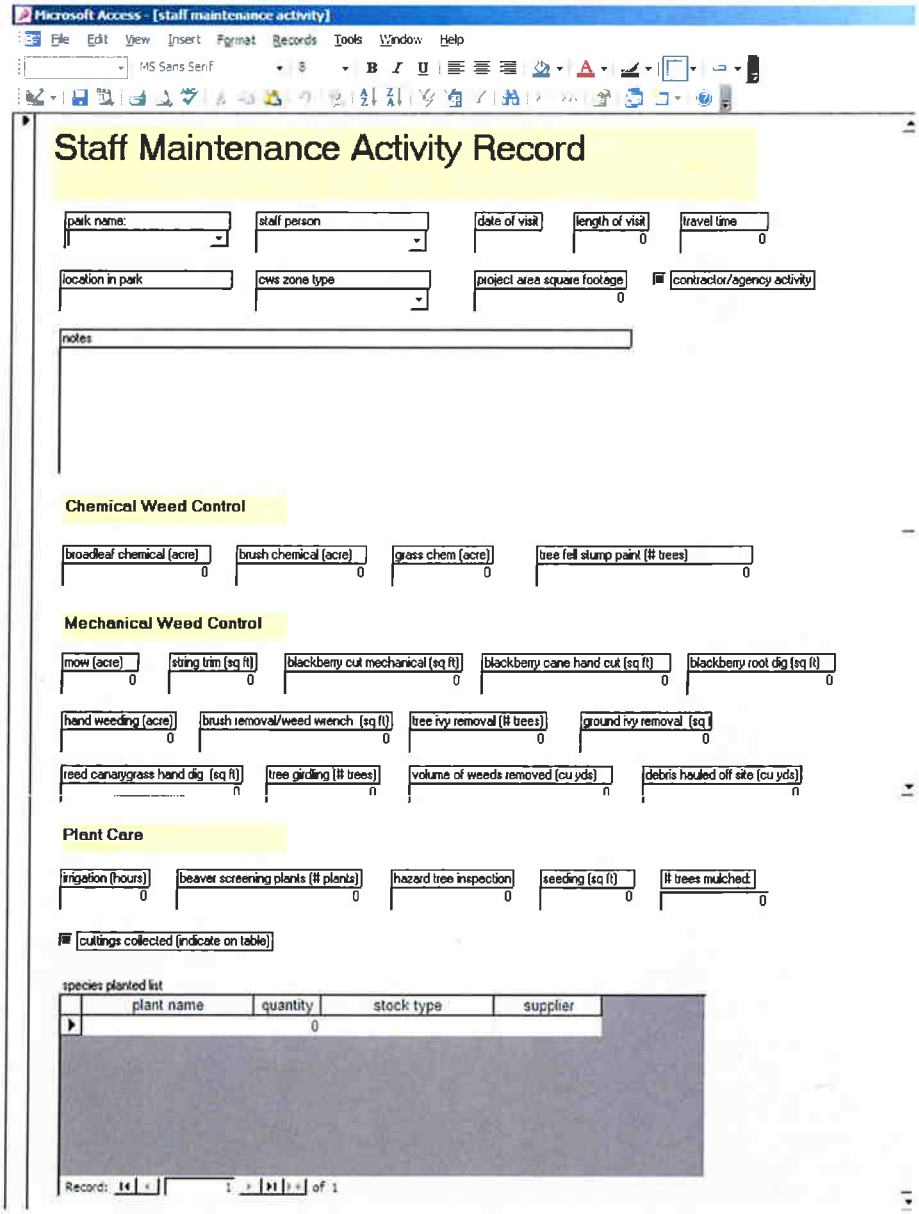
APPENDIX E – Data collection form for quarterly habitat inspections

City of Lake Oswego Parks and Recreation Department

Cooks Butte Quarterly Survey

Surveyor(s): _____

Date: _____

Wildfire risk		
Location (i.e., GPS waypoint, transect, plot, quadrant):	Location:	Location:
Description:	Description:	Description:
Landscaping Encroachment		
Location:	Location:	Location:
Description:	Description:	Description:
Shelters		
Location:	Location:	Location:
Description:	Description:	Description:
Trail maintenance		
Location	Location:	Location:
Condition (i.e. erosion, rogue, flooding,etc):	Condition:	Condition:
Description:	Description:	Description:
User conflicts		
Location:	Location:	Location:
Description:	Description:	Description:
Plant Invasions		
Location (create polygon with GPS)	Location:	Location:
Description:	Description:	Description:

APPENDIX F – Sample of MS Access tracking form (Example from Tualatin Hills Parks and Recreation, courtesy of Bruce Barbarasch).