

Public comments received  
January 23-January 27, 2017,  
on proposed amendments to the City's CAO  
and SMP

Olympia Community Planning and Development Department  
601 4<sup>th</sup> Ave E  
PO Box 1967  
Olympia WA, 98507-1967

**Re: Comments to Public Hearing #1038 - Changes to Critical Areas Ordinance - January 23, 2017**

I am opposed to the proposed changes regarding heron habitat quiet period.

As a land owner within the proposed seasonal boundaries, I see the new regulations as overly oppressive. Currently, because of steep slopes critical areas, the building period for my property is limited to the 'dry season' (May 1<sup>st</sup> to September 30<sup>th</sup>). If the new regulations, limiting activity above ambient noise, go into effect and restricts building from February 1<sup>st</sup> to August 1<sup>st</sup>, my effective building period will be limited to one month a year. Not a viable situation.

I'm am willing to perform excessively noisy operations – like blasting and pile driving during the 'non-nesting-season'. But standard building operations such as pouring footers, framing, roofing, paving will need to take place during the dry season to build a house within standard permitting timeframe.

Restrictions on activities should not exists during the spring and summer if the herons are not nesting that year.

I am opposed to the proposed changes regarding screen trees.

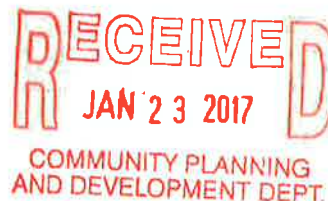
Currently, I have a large tree on my property that needs to come down before building - as there exists a large heart rot in the trunk. Under the new ordinance, such safety measures would not be allowed. This doesn't seem right.

I plan to respect a setback of 30 feet on the rookery side of my property, but it will take decades to grow vegetation that effectively screens the rookery.

In summary, I see the proposed protection plan of the East and West bay rookeries as an overreaction. Herons are urban birds and can coexist with our modern world. There is no science that says otherwise – or even that herons are bothered by human noise. Herons are threatened by animals that eat their young, not by those that admire them from afar.

Thank you,

Doug Keck  
[dbKeck@yahoo.com](mailto:dbKeck@yahoo.com)  
303 NW Kenyon #4B  
Olympia, WA 98502



**Linda Bentley**

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**From:** Tom Schrader <schraderfour@gmail.com>  
**Sent:** Monday, January 23, 2017 9:25 PM  
**To:** Linda Bentley; Brian Mark; Carole Richmond; Darrell Hoppe; Mike Auderer; Missy Watts; Negheen Kamkar; Paula Ehlers  
**Cc:** glenn wells; Tim Smith  
**Subject:** > CITY OF OLY - CAO (Blue Herons) 2017

Dear Planning Commissioners,

We just finished tonight's meeting regarding the City of Olympia's CAO/Blue Heron issue, Phase II.

If we all are really serious about preserving the wonderful blue herons we currently have, we would begin to set policy which actually saves these birds. Since the great blue heron is a transitory species, and doesn't the area for a warmer climate, etc... the birds have to be somewhere right now. Right now-- before this years' breeding season begins.

Since the West Bay site has been decimated for years... the only "known nesting site" most likely is the East Bay site,... or is it? Tonight, we were told that site wasn't even known for sure as a nesting location.

If this is the case, why isn't it a nesting site now??? For if the herons can't/won't nest in the West Bay site, shouldn't we be doing everything we can to get ready for them at East Bay NOW before the breeding/nesting season?

Or wherever they will nest this year?!?

Where is today's science--- here in our South Sound, on where they are now, and where they nested last year, and future REAL SCIENCE (not neighbors, or emotional well intentioned eco-groups, etc...)???

- 1) GET A REAL PLAN, FORMULATED BY REAL ANIMAL BIOLOGISTS ON HOW TO PROTECT THE HERON'S NESTS --- EVERY YEAR.**
- 2) ONCE A NESTING SITE HAS BEEN DETERMINED (by the biologist...), ENFORCE ALL THE CAO ORDINANCE'S WE HAVE IN FRONT OF US TODAY.**
- 3) HAVE BUILDERS/ HOMEOWNERS WHO WANT TO BUILD/ETC... HIRE A BIOLOGIST FOR EVERY SUSPECTED HABITAT (much like mazama gopher soils...), AND PROVE THERE AREN'T HERONS THERE.**

NOW we can get on to your CAO guidelines you have brought to Phase II, because we know where the birds are, where they are nesting and how we protect their habitat next year, and then next for decades to come!

**Let's get to work and do this--- for all of us, our children's children!**

Thank you for your time and service to our beautiful community!

Tom Schrader  
(360) 480-9387



# OlyEcosystems

Olympia Coalition for Ecosystems Preservation

January 26, 2017

Members of the Olympia Planning Commission,

The purpose of this letter is to enhance and amend oral comments given in support of the proposed Phase II of the Critical Areas Ordinance (CAO) update. However, we believe that it is necessary to correct statements made by opponents of the proposed CAO during the January 23, 2017 public hearing regarding the activities of the Olympia Coalition for Ecosystem Preservation (OCEP) at the West Olympia Heronry. We believe this is necessary, because it provides proper context for how and whether the community should strive to protect the Pacific Great Blue Heron in Olympia, and provides background for critical next steps, such as the adoption of Phase II of the CAO update. We believe the City of Olympia can and should preserve the interface of our urban and natural environment.

## Part I - Corrections

- 1) It was vocally and somewhat aggressively stated that by removing invasive English Ivy from the trees and ground at the Westside Heronry, OCEP volunteers had driven away the resident heron colony by altering the heron's preferred habitat. Moreover, it was stated that the actions of OCEP were well-meaning but naïve, and that they certainly were not science-based. Nothing could be farther from the truth.

First, we ask you to consider the fact that English Ivy is invasive and has only been present in the Olympia area for approximately 50 years, whereas the Pacific Great Blue Heron have inhabited our shores since the receding of the glaciers, approximately 12,000 years ago. The fact that English ivy is a recent introduction contradicts the assertion that it is necessary or even desirable for the survival of the herons.

Secondly, of the three OCEP Board Members with Ph.D.'s, one has a Ph.D. in restoration ecology and actively teaches the subject for the Master of Environmental Studies graduate program at The Evergreen State College. As a practitioner, she has many years of experience in the field. Collectively, as scientists, we appreciate the need for research and due diligence.

Thus, before beginning restoration, we consulted with heron conservation groups throughout the Puget Sound region; additionally, we consulted with the Washington State Department of Fish and Wildlife. Moreover, our restoration activities directly follow the

stewardship directives prepared for this site by the City of Olympia's Public Works Environmental Services Habitat Stewardship Program. That document is attached to this letter. Finally, our restoration activities have been guided by a Conservation Strategy memorandum for the West Bay Woods compiled by the regional land trust Forterra.

In short, the assertion of unintended harm by restoration activities carried out by OCEP confuses correlation with causation. In fact, while the herons did not breed at the Westside Heronry in the 2016 season, they did breed at the site in the 2015 season, which is documented and in the April 23, 2015 article in *The Olympian*, available here: <http://www.theolympian.com/news/local/article26125213.html>. In contrast, the predominant reason the herons did not breed in 2016 at the Westside Heronry was eagle predation, which drove the herons to the East Bay site. Heron movement underscores the inadequacy of preserving a circumscribed set of trees at a single location. Nature is dynamic, and animals adapt to survive. For Olympia's herons, this demonstrates the importance of providing an alternate breeding site, and not destroying their habitat should they not be present in one rookery for one or two breeding seasons.

Barring habitat destruction at the East Bay site, eagle predation is likely to drive Olympia's herons back to the West Bay site. Heron movement between breeding sites is a pattern; it is not arbitrary, nor are the locations arbitrary. It requires much less energy to inhabit an old breeding site than to find and create new site. In nature, energy conservation equates with survival. It is estimated that 40% of colony abandonment in the Puget Sound region is due to eagle predation. The remaining 60% is due to habitat destruction. There are many variables at play in wildlife biology. Humans control one variable: habitat destruction.

Finally, let us point out that OCEP and its activities enjoy substantial public support in Olympia. In addition, the City of Olympia has repeatedly and tangibly supported conservation at the Westside Heronry through technical and other in-kind support, such as applying Parks funds to purchase threatened areas in the West Bay Woods, and writing letters of support for OCEP grant applications. To date, we have received approximately \$200k in foundation and agency support, including most recently \$150k for the purchase of a 1-acre parcel from the Thurston County Conservation Futures Program. A proposal to conserve an additional 3 acres in the West Bay Woods was ranked competitively by the State of Washington's Recreation and Conservation Office this year and likely will be funded. Clearly, OCEP's activities have earned the respect they merit. The next step is to protect this progress with fair and effective regulation.

It was also asserted that by removing English Ivy from the forest floor, restoration left the ground denuded of plants. This is also false. The flat plateau where the herons nest are located was a holly plantation as late as the early 1950's. The combination of holly (also an invasive species) and dense English Ivy on the forest floor made it impossible for

understory forest plants to establish growth in the intervening years. Nearly every plant on the forest floor under the heron nests was planted in the last two years. In fact, OCEP, with foundation support, has installed nearly 5000 native plants in the area. It is true that not all plants survive. The summer drought of 2015 was particularly brutal. With the area occupied by herons, there was no way to water the young plants without disturbing the colony. Nevertheless, we estimate that approximately 75% of installed plants did survive, a percentage that is well within the norm for a typical year and frankly exceptional for a drought year. Accounts of plant death due to the drought are widespread, affecting many mature trees throughout the region.

- 2) It was stated that accounts of the herons' presence at the West Olympia Heronry was merely anecdotal. Again, this statement is provably false. The Washington Department of Fish and Wildlife has monitored this site on and off since at least 2005. The City of Olympia is in possession of these documents; they are also readily available to the public.

## **Part II - Recommendations**

As stated orally during the January 23, 2017 public hearing, we do not think that the proposed ordinance is perfect. We would prefer stronger protections in each of the buffer zones. We do, however, find the bulk of the ordinance to be a common-sense compromise; one that is not an excessive imposition on property owners, while clearly underscoring the need for additional conservation. We point out that the ordinance is universally supported by West Olympia Heronry neighbors, who have made their homes in the vicinity of the heronry. Many of these neighbors provided oral testimony during the January 23, 2017 hearing.

Regulation exists to uphold the values and interests of the many, over the narrow interests of the few. Beyond the East and West side neighborhoods, habitat and species conservation is the first or second priority of a statistically significant pool of citizens in multiple surveys conducted by the City of Olympia. This ordinance update enjoys widespread community support.

However, the real measure of regulation is whether it will work, and whether it can work. The goal of this CAO update is to protect and preserve Olympia's sole Pacific Great Blue Heron colony. As such, protection and preservation must be its first yardstick of success.

Recently, an amendment to permit development on off-season years during the heron breeding season in the 'heron colony' was introduced. This amendment was presented publically for the first time at the January 23, 2017 public hearing. The working group established to help craft this proposed update to the CAO was not consulted on this amendment, and, we believe, would not support this change. Permitting development within the heron colony during a ten-year window should herons not be present by April 1 will not protect and preserve Olympia's sole Great Blue Heron colony.

First, the 10-year window is not arbitrary; rather, it aligns with federal and state recommendations for Great Blue Heron protection and preservation. As stated previously, a small number of alternate breeding sites are critical for heron survival. Allowing development within the colony during the breeding season would completely remove the possibility for the herons to escape eagle predation at their secondary breeding site. Olympia's herons were on the West Side as late as April 23, 2015; about a month later they abandoned that site due to eagle predation. At this time, the entire colony moved to the East Side to an historic breeding site. There they successfully fledged a small number of chicks late in the season. Had development been allowed at the Eastside location – where after all no herons were present the year before - the herons would have been left with no alternate breeding site, and Olympia's heron population would have crashed.

There are approximately 9000 breeding individuals of the Pacific Great Blue Heron left in the world. We believe that our city must protect and preserve breeding sites for these animals. Thus, we cannot support the amendment. Should it remain, then we will withdraw our support for the entire ordinance. With the amendment, the ordinance is not workable and has a high probability of failure.

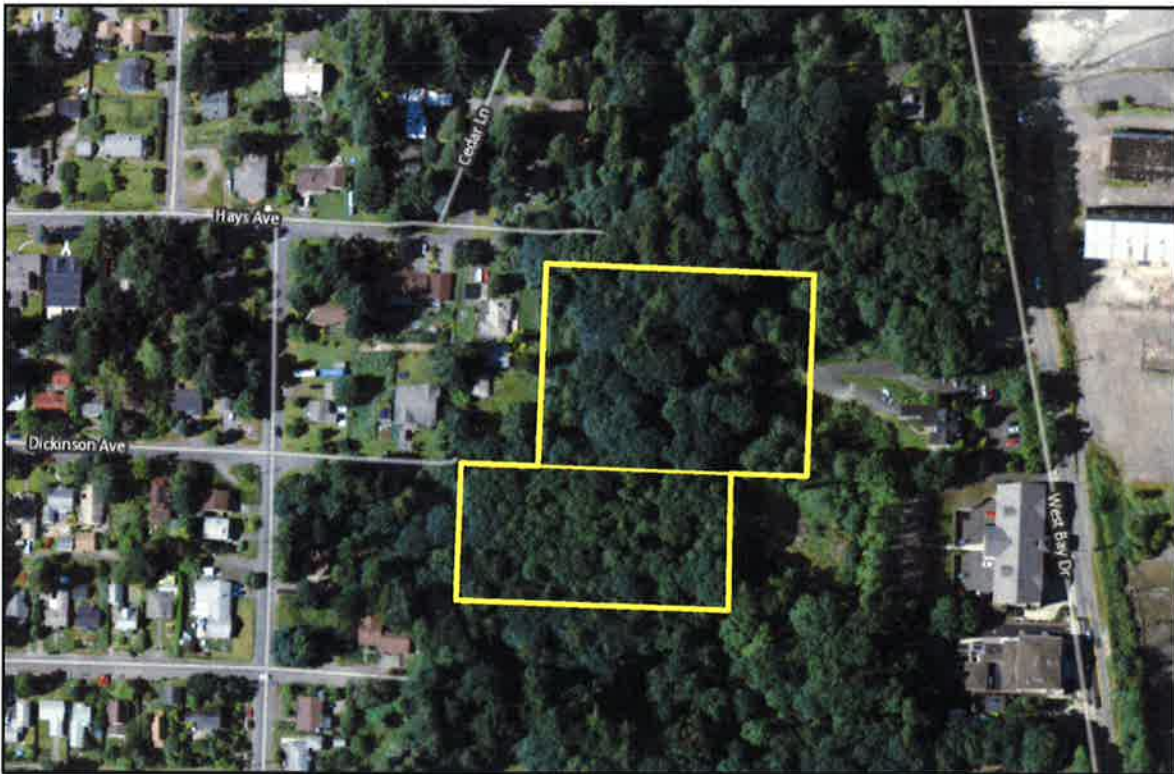
Sincerely,

A handwritten signature in black ink, appearing to read 'D. Einstein', written in a cursive style.

Daniel R. Einstein, Ph.D.  
Chairman, Olympia Coalition for Ecosystems Preservation

**City of Olympia Public Works, Environmental services**

**Habitat Stewardship Program**



**Habitat Assessment for West Bay Heronry**

**May 2015**



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## 1.0 Introduction

In 2012, the City of Olympia Utility Advisory Committee directed the Stormwater Planning & Implementation (now Environmental Services) section of Water Resources at Public Works to explore opportunities for strategic land stewardship by protecting and improving aquatic, riparian, and associated habitat within Olympia and its urban growth boundary. Following a detailed city-wide analysis, a Preliminary Habitat & Stewardship Strategy (City of Olympia 2014) was developed, which led to the creation of the Environmental Services (ES) Habitat Program in 2014. The program's mission is to "Partner with the community to protect, steward, and restore aquatic, riparian, and associated terrestrial habitats within Olympia's watersheds".

In late 2014, ES staff collaborated with landowner Alicia Elliott and the Olympia Coalition for Ecosystems Preservation (OlyEcosystems) in wildlife habitat enhancement activities on a 4.5 acre site, found near the intersection of Rogers St. NW and Dickinson Ave. NW. This site is of particular value as wildlife habitat because it is some of the last breeding and nesting habitat for the Pacific great blue heron (*Ardea herodias fannini*) found within Olympia city limits. This document presents the findings of Olympia ES staff regarding current habitat conditions and concludes with general maintenance and restoration recommendations. It is the goal of ES staff to form productive partnerships with like-minded community members and organizations, such as Alicia and OlyEcosystems, for the improvement of habitat and ecological function throughout the City of Olympia and Urban Growth Area.

### 1.1 Description of Project Site

The site is located on two properties, both purchased for habitat conservation by Alicia Elliott, with the support of OlyEcosystems, in 2014. The southernmost of the parcels contains the heron colony proper (county parcel # 09030002001; 1.87 acres); the northern parcel (#67400003600; 2.73 acres), has value for other wildlife, as a buffer for the breeding colony, and as a portion of the West Bay Woods wildlife habitat corridor envisioned by OlyEcosystems. Map 1 shows the parcels purchased for conservation, hereafter referred to as the West Bay Heronry. The habitat corridor would connect the West Bay Heronry with wooded properties to the north, as well as the Schneider Creek stream basin.

## 1.2 Site History

West Olympia's agricultural and residential development dates to the mid-1800s; the first wooden bridge between the west side and downtown was constructed in 1869. A more reliable concrete bridge was installed in 1919, allowing increased residential, agricultural, and industrial development. The heronry parcel was used as a holly (*Ilex aquifolium*) plantation as recently as the mid-1900s. Map 2 depicts a historic aerial photo of the site from 1947. The photo was georeferenced to show land use as of 1947 at the site and cross-referenced with the current Thurston County parcel layer. In this photo, a plantation of English holly is clearly visible. Since that time, the site has grown into a deciduous plant community and is currently heavily impacted by invasive vegetation. Further detail into the ecology of the site is provided below.

## 1.3 Ecological Background

Thurston County lies on a glacial plain, carved by the advance and retreat of the Vashon Glacier ~10 - 20,000 years ago. It is bordered by low-lying mountain chains to the south, west, and east, and by the Puget Sound to the north. The West Bay Heronry site is located on the west side of Budd Inlet, within the Olympia city limits. The area is geologically and topographically similar to the coastal regions and islands of the south Puget Sound. The parent material is typically Vashon-age glacial till. Historically, late successional forests in the area likely consisted of Douglas-fir (*Pseudotsuga menziesii*), western redcedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), bigleaf maple (*Acer macrophyllum*), and grand fir (*Abies grandis*), with salal (*Gaultheria shallon*), Oregon grape (*Mahonia nervosa*), huckleberry (*Vaccinium* spp.) sword fern (*Polystichum munitrum*), and trailing blackberry (*Rubus ursinus*) in the understory. In wetter or more disturbed areas, one might find red alder (*Alnus rubra*), black cottonwood (*Populus trichocarpa*), Oregon ash (*Fraxinus latifolia*), willow (*Salix* spp.), and other faster growing deciduous tree species. The West Bay Heronry, at one time, probably held a late-seral, temperate forest plant community such as the one described above. This is evident by the redcedar found occupying a prominent space in the canopy of the north parcel, as well as the Douglas-fir located in the draw to the south, which is steeper and less likely to experience human disturbance. Some time after the land ceased to be managed as a holly farm, red alder likely seeded in naturally, along with a variety of invasive vegetation, leading to the site's current condition.

## 1.4 Basin Information

The West Bay Heronry lies within the watershed of Budd Inlet, with the basin flowing directly into West Bay. Map 3 shows the complete West Bay basin, from Cooper Point to Capitol Lake. A small intermittent stream flows along the southern edge of the heronry parcel, fed by runoff from the northwest Rogers Street and the neighborhood. An intermittent stream may flow through the north parcel; although no standing or flowing water was present at time of survey.

## 1.5 Goals & Objectives

The formation of OlyEcosystems was and land purchase for conservation, was in part, a response to the threat development on adjacent properties, including an access/road easement on the parcel currently owned by Alicia Elliott which would have cut directly through the heron colony. Now that the property has been acquired by Alicia for habitat conservation, ES staff are collaborating with her and OlyEcosystems to restore and improve habitat conditions on site, for the heron in particular, and also for other wildlife species that use the area. The fact that great blue heron are aquatic-dependent species, the relative rarity locally and sensitivity of their breeding colonies to disturbance, and desire to support community conservations efforts merit the Habitat Program's involvement.

## 2.0 Current Site Conditions

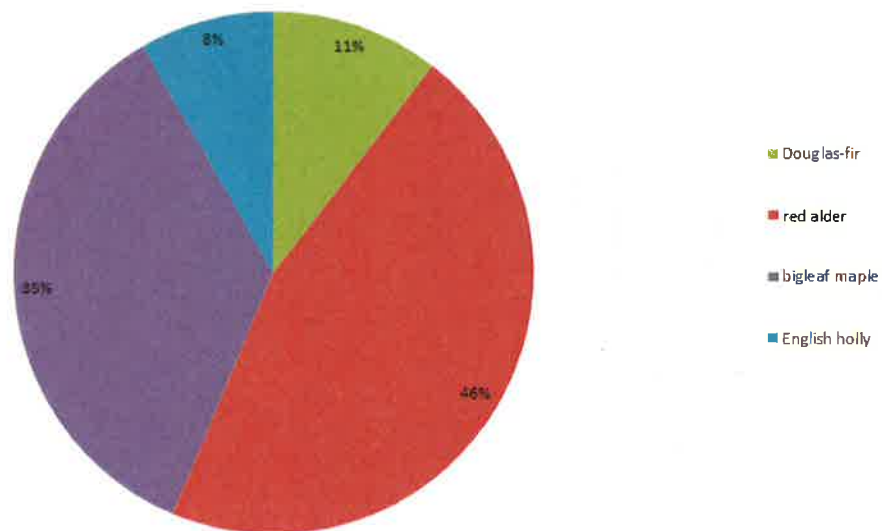
Current conditions and habitat elements of the forest were assessed using a five-part sampling methodology, which examined forest overstory, regeneration, plant community/ invasive plant coverage, snags, and downed wood on the forest floor. Data collected during the overstory survey allows the calculation of metrics such as basal area per acre, number of trees per acre, tree species distribution, and relative stand density; a measure long used by foresters to determine optimal stocking levels in a working forest (Reineke 1933; Curtis 1981). Relative stand density is also useful for determining stocking levels in forests managed as wildlife habitat (Bottorff et al. 2003). Tree seedling and sapling regeneration data allows the analysis of the future seral stages of the forest. Vegetation community analysis identifies native plant communities onsite, facilitating native species selection for replanting and restoration efforts. Approximate distribution and coverage of invasive vegetation was also determined during the vegetation survey, iden-

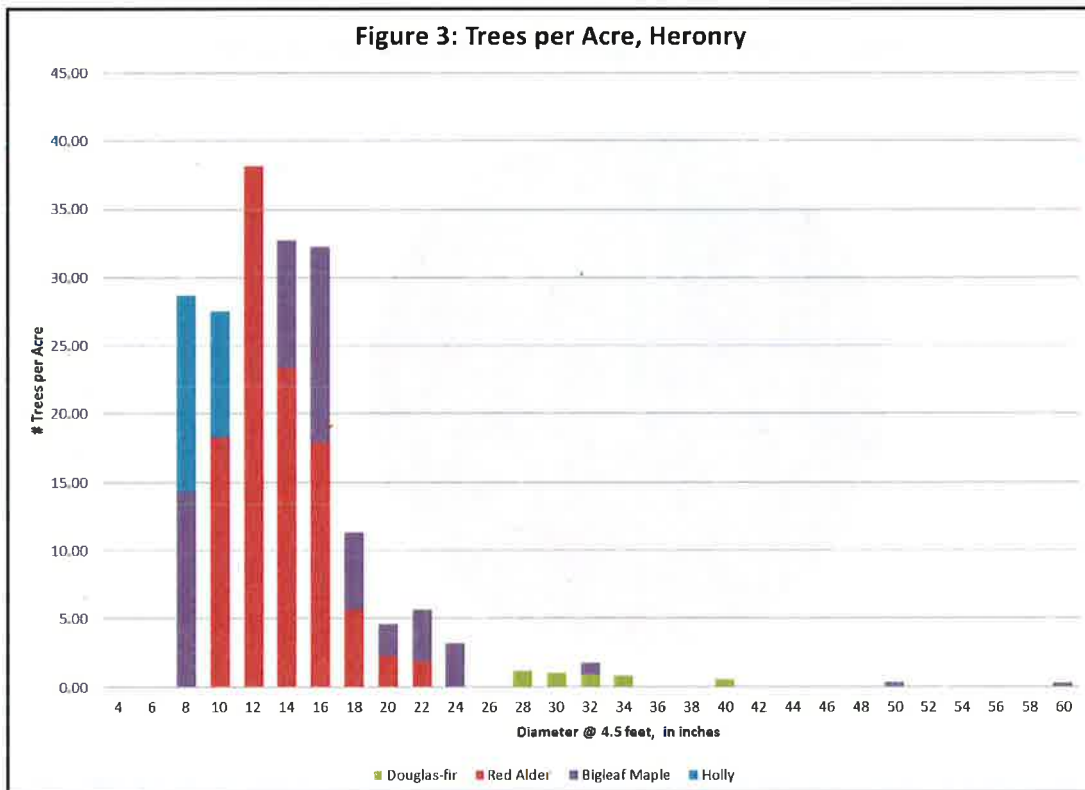
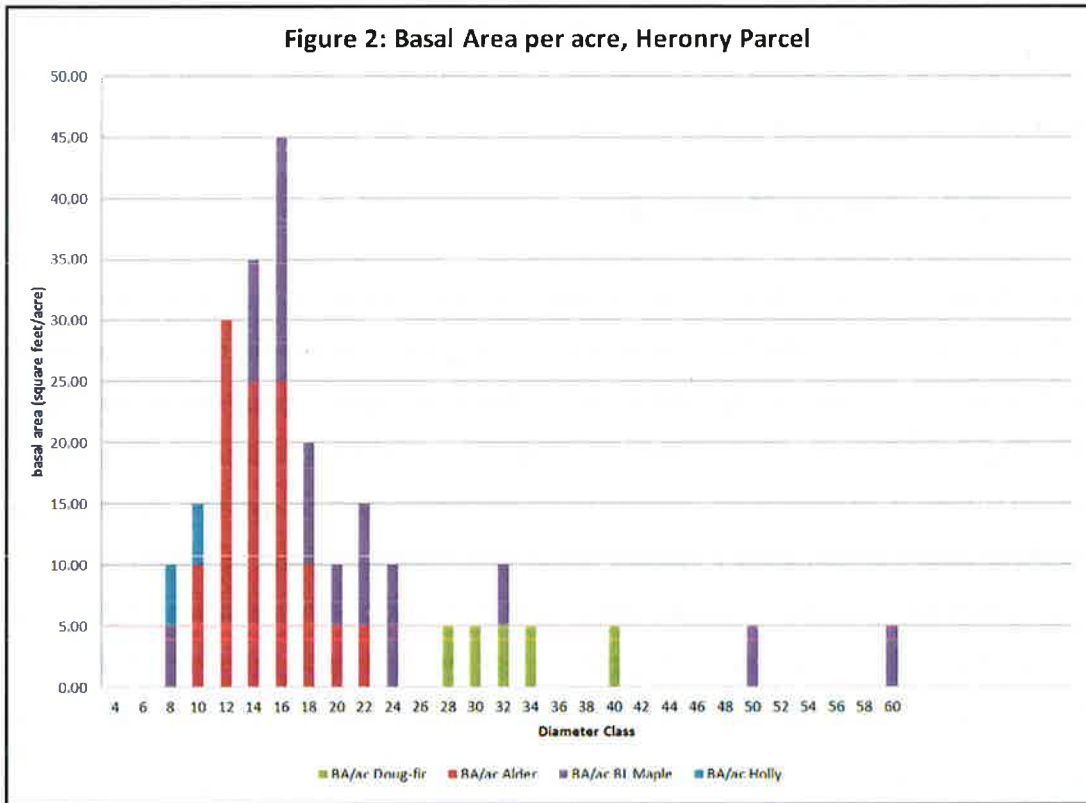
tifying future invasive plant removal efforts and allowing monitoring of vegetation community restoration success. Snag and downed wood surveys identify the current amount of dead wood within the forest, and can be used to predict future needs of these habitat elements.

## 2.1 Forest Overstory

**Heronry Parcel:** The overstory is primarily comprised of red alder, with a secondary component of bigleaf maple. The third most common tree species is Douglas-fir, found primarily within the draw along the southern edge of the parcel. The fourth species noted during the tree survey was English holly, normally considered a shrub species, which would be noted during the vegetation survey. However, the specimens found on site are large enough that they were tallied during the overstory survey using a variable-radius plot method of sampling (Avery and Burkhart 1983), possibly due to a legacy effect from the historic holly plantation. Figure 1 illustrates tree species diversity on the heronry parcel. The quadratic mean diameter (QMD, the diameter of a tree with average basal area for the site) for the heronry parcel is 14.9 inches. Basal

**Figure 1: Overstory Species Diversity, Heronry Parcel**

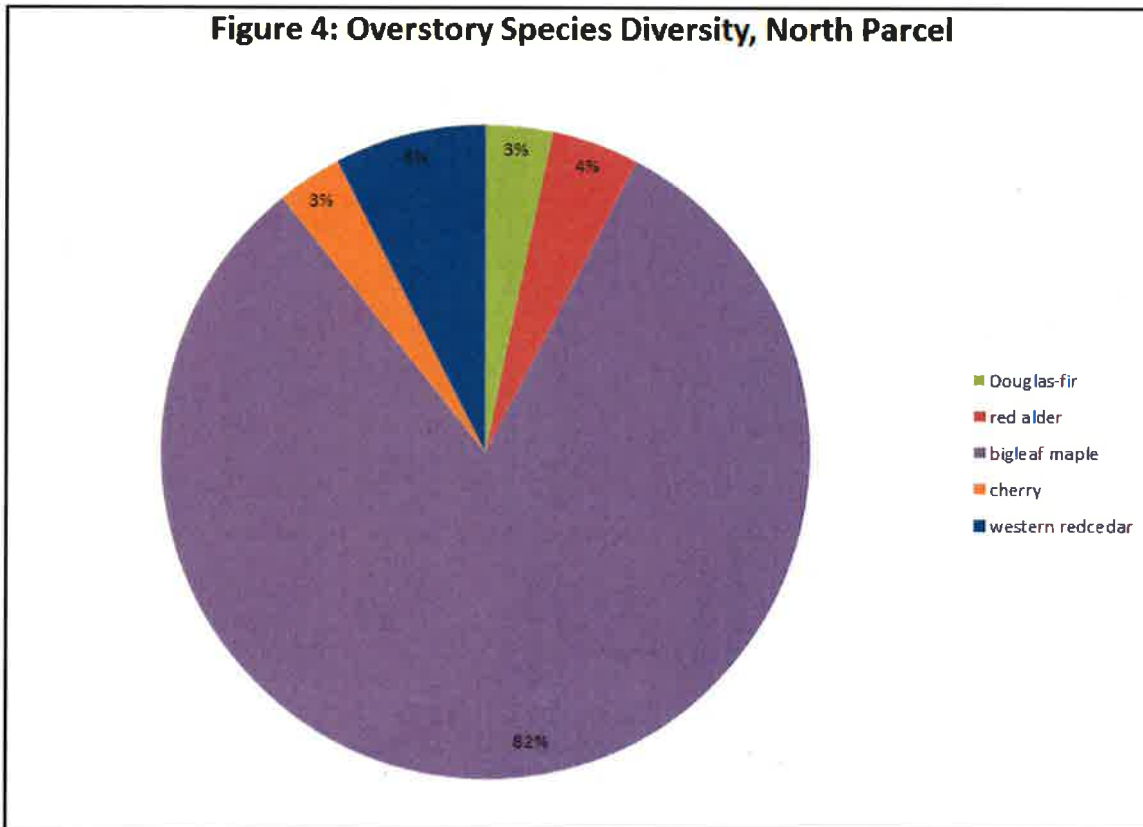




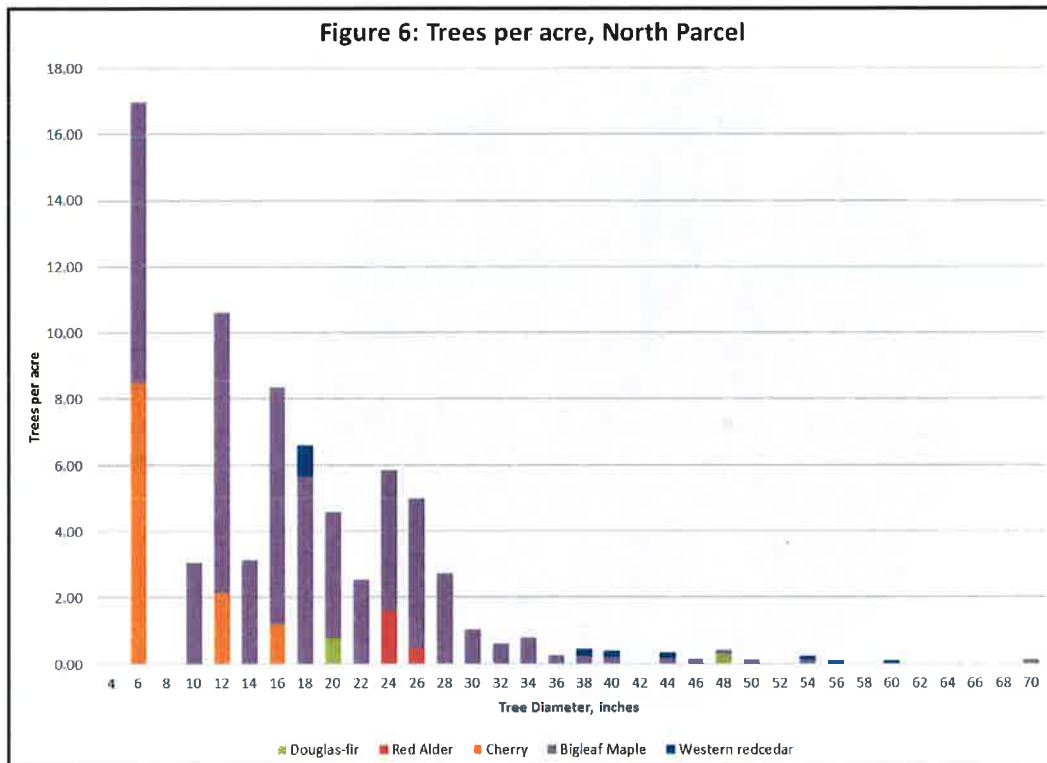
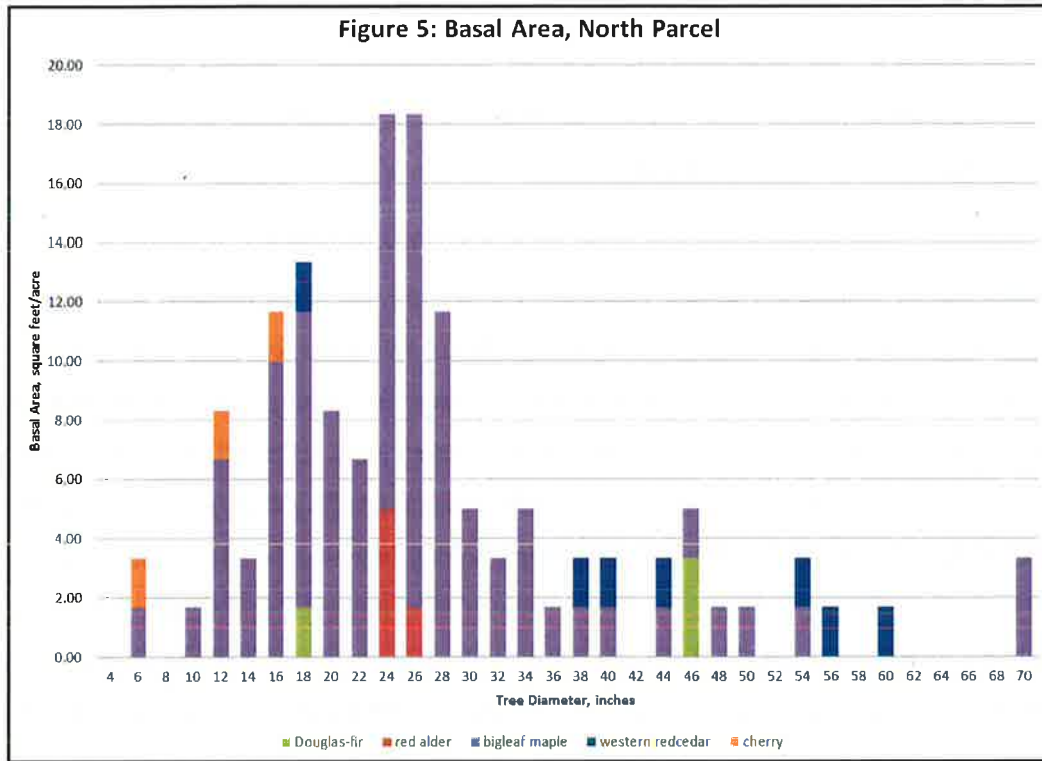
area is about 230 square feet per acre (Figure 2), and average number of trees per acre is 190 (Figure 3). Using a theoretical maximum stand density for red alder of 595, relative density for the heronry parcel is around 61%. What these numbers mean, and how they can be used for wildlife habitat management, is discussed below.

**North Parcel:** Trees on the north parcel are primarily made up of big-leaf maple, with a small amount of western redcedar, red alder, cherry [*Prunus* spp.], and Douglas-fir (Figure 4). QMD for the north parcel is 19.13 inches. Basal area is about 148 square feet per acre (Figure 5), and the north parcel has an average of 74 trees per acre (Figure 6). Again, using a maximum stand density of 595, relative density for the north parcel is about 35%. Bottorff et al. (2003) recommend a relative density within the range of 25-45% when managing even-aged Douglas-fir as wildlife habitat; the reason for this is that a lower stocking level would allow understory shrubs, as well as new seedlings, to thrive, creating more structural and species diversity within the forest. While Douglas-fir is not the dominant overstory species on this site, there are clear relationships between red alder canopy cover and understory growth (Grotta and Zobrist 2009). Puett-

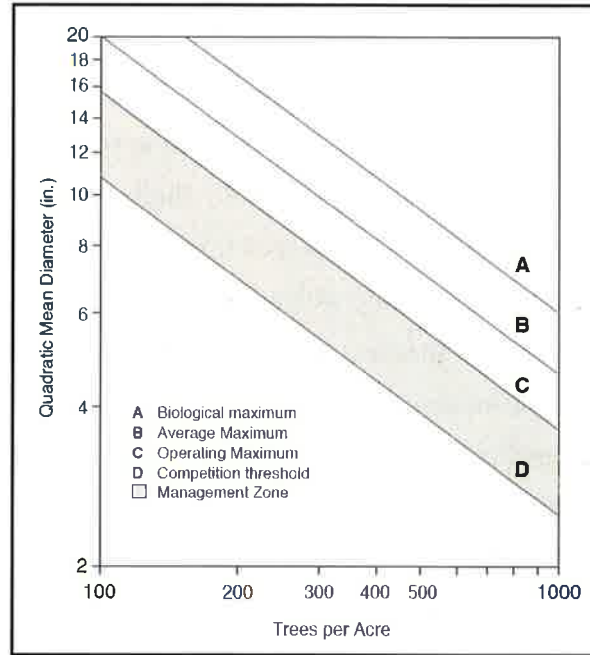
**Figure 4: Overstory Species Diversity, North Parcel**







man et al. (1993) have created a density management guide for red alder forests, and while their guidelines optimize wood production, their techniques and the relationships between trees per acre and average diameter can be used for wildlife habitat management as well. Figure 7 is a diagram showing recommended “management zones” for red alder forests; according to this diagram, the heronry parcel is above recommended stocking levels for timber management, which are typically higher than stocking recommendations for wildlife.



**Figure 7: Red Alder (*Alnus rubra*) density management diagram (from Puettman et al. 1993)**

## 2.2 Regeneration

**Heronry Parcel:** No tree regeneration was discovered on this site; the only woody species found growing in the understory were Indian plum (*Oemleria cerasiformis*) and invasive English holly, along with small amounts of beaked hazelnut (*Corylus cornuta*), as well as some salmonberry (*Rubus spectabilis*) in the southern drainage.

**North Parcel:** Again, very little tree regeneration was noted during the survey; no trees of seedling or sapling size (< 4 inches diameter @ 4.5 feet) were found on any sample plot. However,

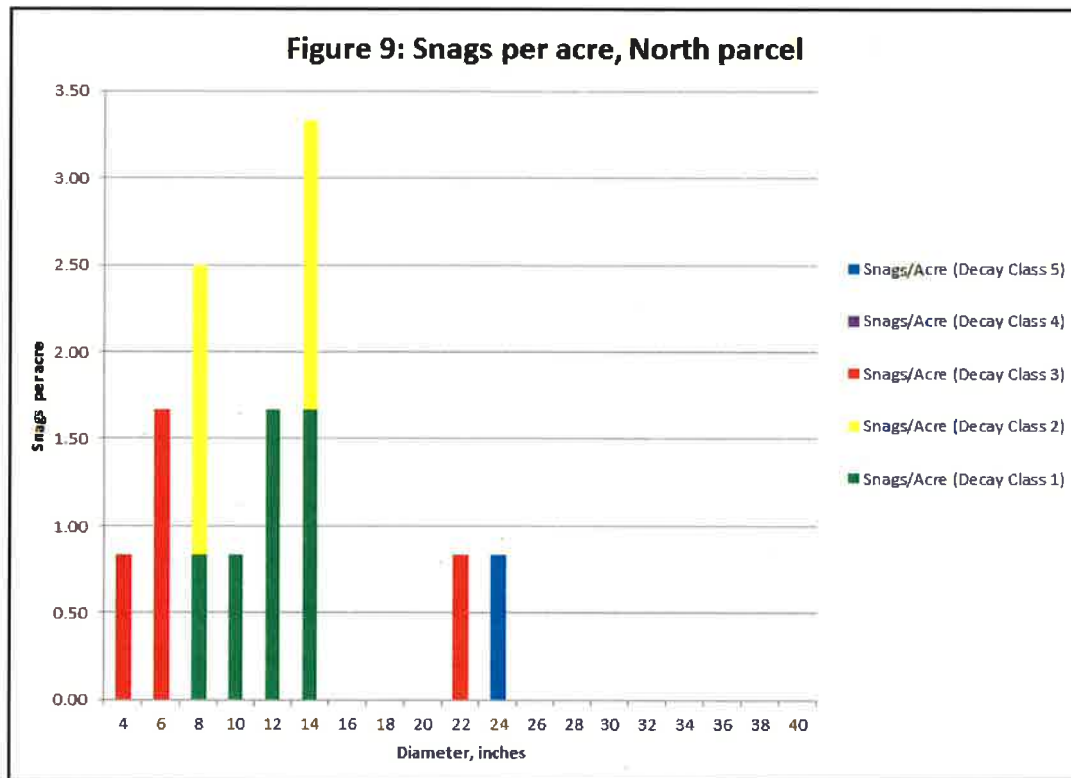
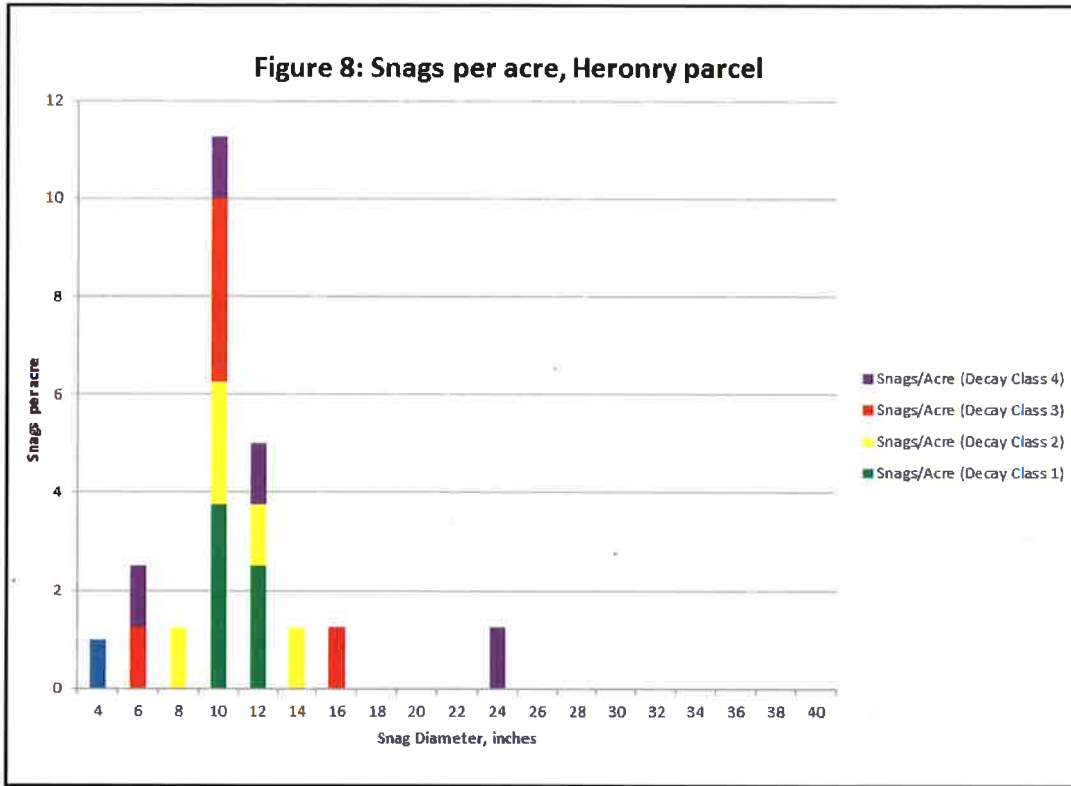
some small cherry, redcedar, and bigleaf maple were noted on the unit which did not make it into the sample.

### 2.3 Plant Communities

The majority of habitat on both parcels of the West Bay heronry appears to be part of a red alder/sword fern (*A. rubra/Polystichum munitum*) plant community (Chappell 2006). As mentioned in section 2.1, forest canopy is dominated by red alder, with a large component of bigleaf maple. Some Douglas-fir can be found on the southern and eastern borders of the heronry parcel, while the north parcel is home to a number of western redcedar, as well as small amounts of cherry. The heronry parcel also holds a number of large English holly shrubs and trees, likely left over from when the site was used as a holly plantation and seed from those mature plants. The shrub component of both parcels is dominated by holly, with more holly found on the southern parcel. The second-most common shrub on both sites was Indian plum, with small amounts of non-native one-seed hawthorn (*Crataegus monogyna*), beaked hazelnut (*Corylus cornuta*), and salmon-berry (*Rubus spectabilis*). Ground cover on both parcels was dominated by English ivy (*Hedera helix*), with the vine climbing into the canopy on many of the trees found on both sites. Map 4 illustrates density and distribution of *H. helix* on the two parcels. Restoration projects in late 2014/early 2015 have drastically reduced the amount of ivy on the heronry parcel, as well as installed a number of native forest plants. The newly-installed plantings had not been installed prior to the vegetation survey.

### 2.4 Snags

**West Bay Heronry:** Nineteen snags were found on eight 1/10th acre plots; this equates to an average of 23.75 snags per acre. Decay class was measured on a scale of 1-5, (1 would be a freshly dead snag and 5 showing advanced stages of decay). Bunnell et al. (2002) suggest one large (> 12-inch diameter) snag, and 4-8 smaller snags per acre, as a target for acceptable snag habitat in Pacific Northwest forests. The West Bay heronry contains an average of 20 smaller snags and 3.75 larger snags per acre, well over the suggested target range (Figure 8).



**North parcel:** The north parcel held a smaller number of snags per acre, at 12.5. Of these, 7.5 snags were 12 inches or less, while 5 per acre were in the larger diameter range. While this is substantially less than the heronry parcel, it is still within the target range (Figure 9).

## 2.5 Coarse Woody debris

**West Bay Heronry:** While the value of coarse woody debris (CWD) on the ground as a habitat element has been known for years (Thomas 1979), ideal amounts and spatial distribution of downed wood can be difficult to determine. Bunnell et al. (2002) found that volumes of 1400-2800 cubic feet per acre, with a variety of log sizes, should sustain most users of downed wood. During the CWD survey, an average of 1793.25 cubic feet of downed wood per acre was found on the heronry site, within the recommended target range mentioned above.

**North parcel:** The north parcel had a much higher volume of CWD per acre than the heronry site, with 2724.04 cubic feet of CWD per acre. This may be due to trees being prematurely taken down by English ivy climbing into the canopy adding weight and surface area for wind exposure.

## 2.6 Great Blue Heron Breeding, Nesting, & Foraging Habitat

The colony found on site appeared to contain 12-15 nests at the time of the survey (non-nesting season) and occupied approximately 20,000 square feet (about one half acre). Nests are large (3 ft. + in diameter), and found in the upper portions of the 70-80 foot red alder. A likely reason for the existence of the heron colony at this location is the proximity to foraging areas; Map 6 shows the intertidal estuarine habitat, as identified by Washington Department of Fish & Wildlife (WDFW), found within 3 km of the West Bay Heronry. Key foraging grounds for this colony are likely located in shallows and mudflats along the shoreline of Budd Inlet in close proximity to the colony within 3 km of the rookery (Azerrad 2012). Though invasive plants, such as English ivy and holly will eventually lead to a net loss in habitat diversity for the site, and may even prevent new trees from establishing, the horizontal and vertical visual screening of the nests which these plants provide may have been another factor in the heron choosing this site for a nesting colony.

## 2.7 Fish, Riparian, & Wetland Habitat

No areas on either the heronry parcel or the north parcel have been identified as containing riparian, wetland, or stream habitat. The herons nesting at the site are wetland and estuary dependent species. This association along with the relative scarcity of local nesting populations supports the involvement of the Habitat Program in site stewardship and technical assistance.

A ravine along the south edge of the heronry parcel contains an intermittent stream fed by storm-water runoff originating off of Rogers St. NW and the surrounding neighborhood and likely some groundwater inputs. This small channel contains some wetland-associated plants, such as skunk cabbage (*Lysichiton americanum*) and salmonberry, though the majority of these types of plants were located further down the ravine, and not on the West Bay Heronry parcel. On the north parcel, some small hillside seeps and other hydrologic activity resulted in small microsites with wetland characteristics; as none of these microsites are greater than 1000 square feet, part of a wetland mosaic, or considered as critical habitat to a WDFW listed or priority species, these micro-wetlands are likely not subject to critical areas protection.

## 2.8 Other Wildlife Use

A variety of other wildlife species have been identified using the site, including black-tailed deer (*Odocoileus hemionus columbianus*), raccoon (*Procyon lotor*), eastern grey squirrel (*Sciurus carolinensis*), Virginia opossum (*Didelphis virginiana*), Steller's jay (*Cyanocitta stelleri*), American robin (*Turdus migratorius*), and American crow (*Corvus brachyrhynchos*). Similar species of wildlife can be found on the north parcel, and in the more open areas, extensive evidence of mountain beaver (*Aplodontia rufa*) activity was found.

## 3.0 Recommendations

Collected data was used to develop recommendations to optimize the habitat value of the West Bay Heronry parcels and protect nesting herons from disturbance. Why great blue heron have chosen this site for nesting is unknown, but key issues have been identified which may threaten the health of the forest on the site. This may eventually force the colony to migrate to property that is not protected for conservation. This is also a natural response as landscape conditions

change over time in both natural and urban environments with various forest and vegetation communities developing and changing in response to disturbance and forest succession. This dynamic speaks to the need to conserve appropriate forested parcels within a reasonable proximity to key foraging ground capable of supporting a breeding colony (alternative nesting sites) in addition to protecting the current colony location from disturbance. WDFW's guidance on heron management describes stand traits and proximity to consider (Azerrad 2012).

Other general recommendations aim to improve the habitat for all wildlife users, increasing diversity of the on-site forest, understory, and planting screening vegetation from the surrounding residences, neighborhood, community residents and their pets. Perhaps the most pressing long term issue with forest health at the West Bay Heronry is the age and decadence of the overstory canopy, and little to no seedling regeneration occurring underneath. The forest is comprised of a deciduous closed canopy of trees approaching the end of their life. If no new seedlings exist to replace the dying canopy, then the site will degenerate into a brush patch filled with noxious and invasive vegetation, such as English ivy and Himalayan blackberry. The infestation of English ivy on the ground across much of both parcels may be preventing seedlings from establishing.

The site should be protected from disturbance from the early nesting season in February through the month of August; a split-rail fence, installed by OlyEcosystems with help from volunteers, is an effective way to limit traffic on the retired road bed which cuts through the colony. It is recommended that trees and shrubs be planted along the perimeter of the West Bay Heronry site, to further screen the colony from disturbance. WDFW has published recommendations for management of great blue heron habitat (Azerrad 2012); these guidelines should be used to protect and minimize disturbance at the colony site. As per WDFW guidelines, ES recommends more accurate identification of nesting and overlapping trees, to obtain a more accurate boundary for the nesting colony. Buffer sizes and locations are displayed on Map 7; buffer distances are based on the density of development within  $\frac{1}{4}$  mile of the nest colony. In urban areas, a year-round buffer of 197 feet is recommended; for suburban or rural areas, the buffer is increased to 656 feet ( $\sim\frac{1}{8}$  mile). From February to September; it is recommended that unusually loud activities ( $> 92$  decibels) be prohibited from occurring within the  $\frac{1}{8}$  mile seasonal buffer. Extremely loud activities (an example would be rock blasting) should be prevented from occurring during the nesting season within  $\frac{1}{4}$  mile of the colony location.

### 3.1 Invasive Management

Currently, Olympia has not developed a city-wide Integrated Pest Management (IPM). The Parks, Arts, and Recreation Department has their own policy that applies to property under their management. Until a policy addressing our City's needs and standards is developed, pest and vegetation management recommendations for the City will be based on the Thurston County IPM policy (Thurston County 2013). Through several meetings between OlyEcosystems and ES staff, it was determined that the best control strategies for the two parcels are mechanical removal, including hand-pulling of ivy and English laurel, as well as the girdling or cutting of English holly on site. While the holly may resprout from the base below the point of girdle or stump, this treatment should slow the spread of seed from the mature holly trees, and the standing dead stems continue to provide habitat as cover and as snags. Suckers sprouting from the base of the holly will need to be cut annually (or more frequently) for a number of years to exhaust the root reserves.

### 3.2 Restoration Planting

It is recommended that any area in which invasive vegetation is removed be promptly replanted with native vegetation, to reduce erosion and prevent invasive plants from reestablishing in the site. Due to the lack of regenerating seedlings within the forest, it is recommended that shade-tolerant tree species be used to underplant the alder/maple overstory. A mix of conifers is recommended, such as western redcedar and Sitka spruce (*Picea sitchensis*) in the wetter areas, and western hemlock (*Thuja heterophylla*) or grand fir (*Abies grandis*), in dryer, shaded sites. A mixture of native understory shrubs including low Oregon grape (*Mahonia nervosa*), Indian plum, salmonberry, oceanspray, and vine maple would be appropriate. This will help recreate the natural plant succession on a site in absence of invasive vegetation. In areas of disturbed ground after removal of dense ivy woody mulch, straw, and/or native seeds should be spread to prevent erosion.

In January of 2015 800 native plants were planted on the heronry parcel where ivy had been removed by a contract crew hired by Alicia and OlyEcosystems over approximately 0.5 acre. The bulk of this area was also mulched during the January 21<sup>st</sup> event and the next weekend. See Table 1 on the following page for a plant list.

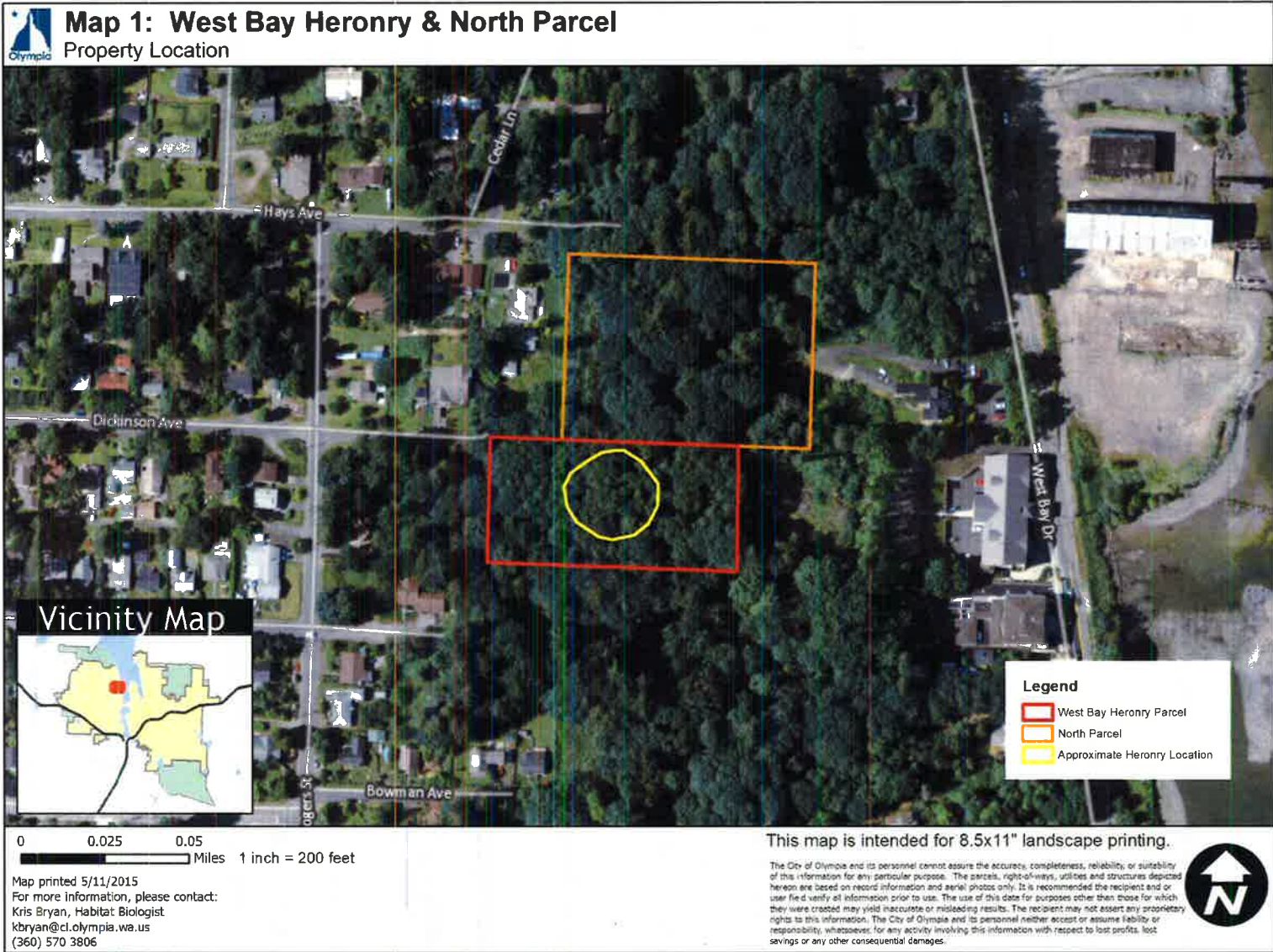


<b>Species</b>	<b>Quantity</b>	<b>Stock Type</b>
cascara	20	#2
Douglas fir	20	#5
hazelnut	14	#1
Indian plum	150	#1 and BR
low Oregon grape	66	#1
Nootka rose	25	#3
oceanspray	15	#1
western red cedar	25	#1
salmonberry	100	BR
sword fern	350	#1 and BR
vine maple	112	#1 and BR
<b>Total</b>	<b>897</b>	

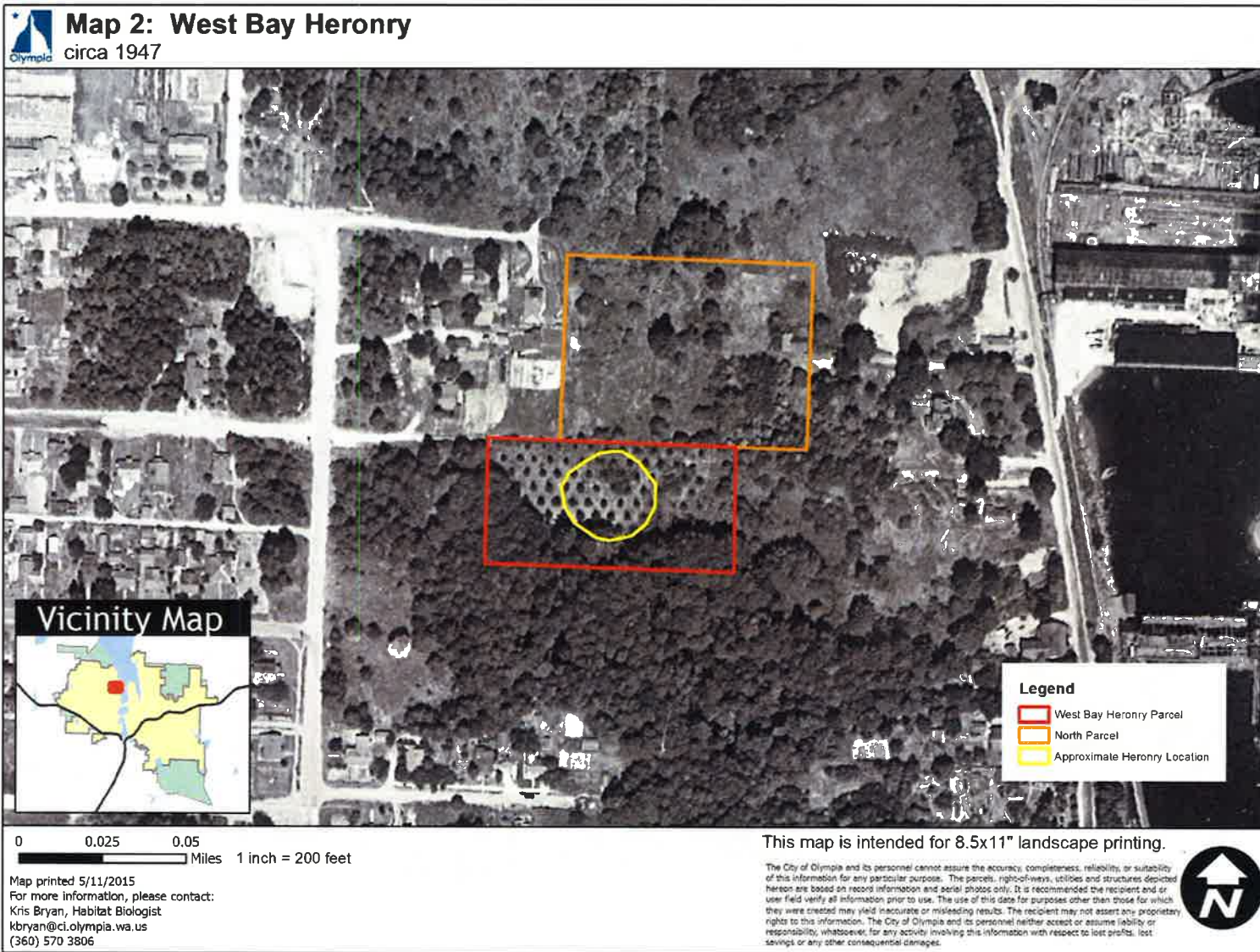
**Table 1: Plant List from Martin Luther King Jr. Day event, 2015**

## Works Cited

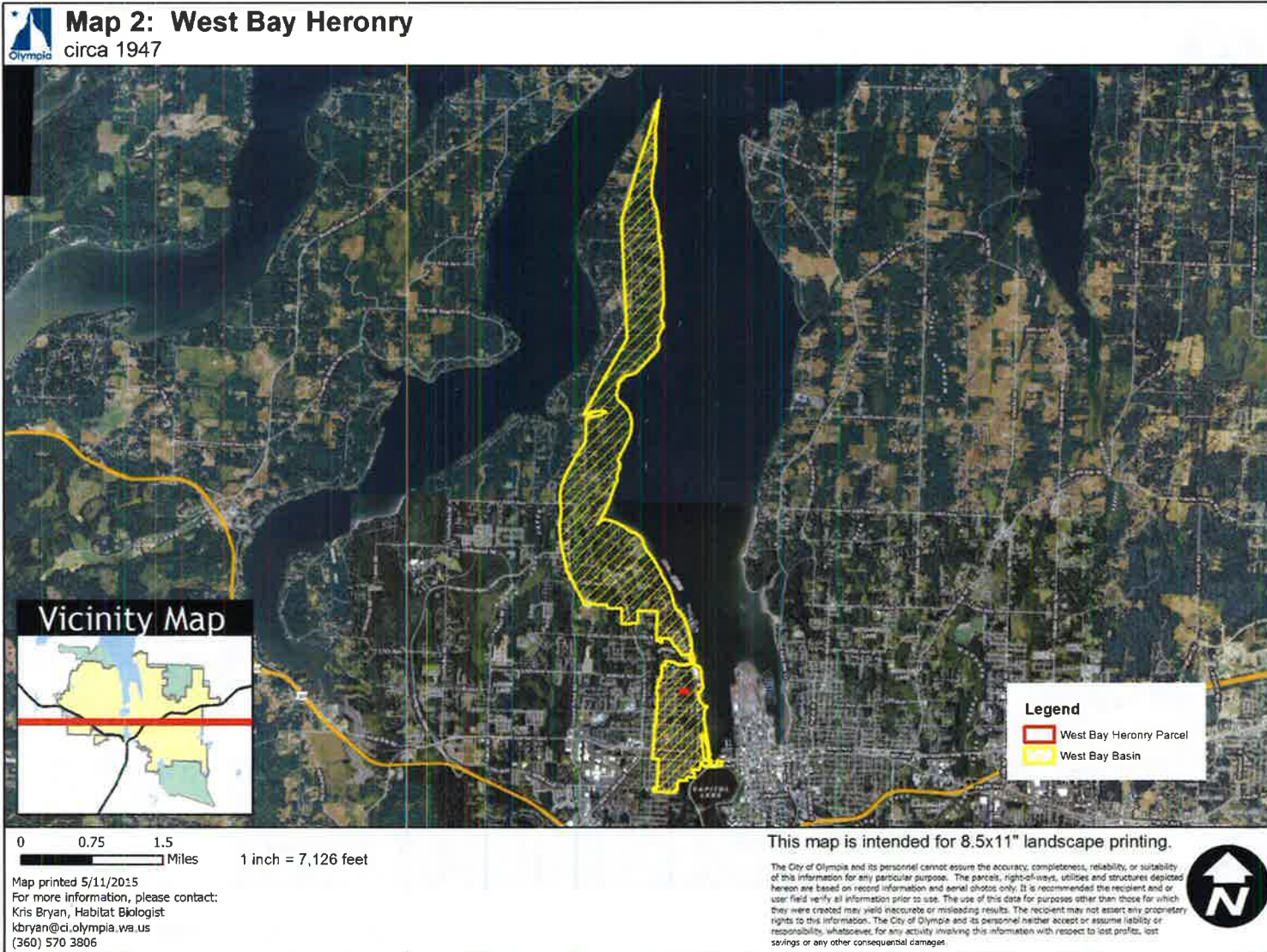
- Avery, T. E., and Burkhart, H. E. (1983). *Forest Measurements*. McGraw-Hill, New York, NY
- Bottorff, J. and Helgerson, O. (2003) *Thinning Young Douglas-fir west of the Cascades for Timber and Wildlife*. Washington State University College of Agriculture and Home Economics, Pullman, WA
- Azerrad, J. M. (2012). *Management Recommendations for Washington's Priority Habitats and Species: Great Blue Heron*. Washington Department of Fish & Wildlife, Olympia, WA
- Bunnell, F. L., Boyland, M., Wind, E. (2002) *How Should We Spatially Distribute Dying and Dead Wood?* USDA Forest Service.
- Chappell, C.B. (2006). *Upland Plant Associations of the Puget Trough Ecoregion, Washington*. Natural Heritage Rep. 2006-01. Washington Department of Natural Resources, Natural Heritage Program.
- City of Olympia (2014). *Preliminary Habitat & Stewardship Strategy*. Olympia Public Works, Water Resources, Storm & Surface Water Utility, Olympia, WA
- Curtis, R. O., Clendenen, G. W., DeMars, D. J. (1981). *A new stand simulator for coast Douglas-fir: DFSIM user's guide*. USDA Forest Service General Technical Report. PNW-128
- Grotta, A. T., and Zobrist, K. W. (2009). *Management Options for Declining Red Alder Forests*. Washington State University, Extension Manual EM003
- Puettmann, K. J., DeBell, D. S., Hibbs, D. E. (1993). *Density Management Guide for Red Alder*. Oregon State University College of Forestry, Forest Research Laboratory.
- Reineke, L. H. (1933). *Perfecting a stand-density index for even-aged forests*. J. Agric. Res. 46: 627-638
- Thomas, J. W. (1979). *Wildlife Habitats in Managed Forests: the Blue Mountains of Oregon and Washington*. US Department of Agriculture, Forest Service, Agriculture Handbook No. 553
- Thurston County. (2013). *Thurston County Noxious Weed Control Rules and Regulations*. Noxious Weed Control Board, Thurston County, WA.

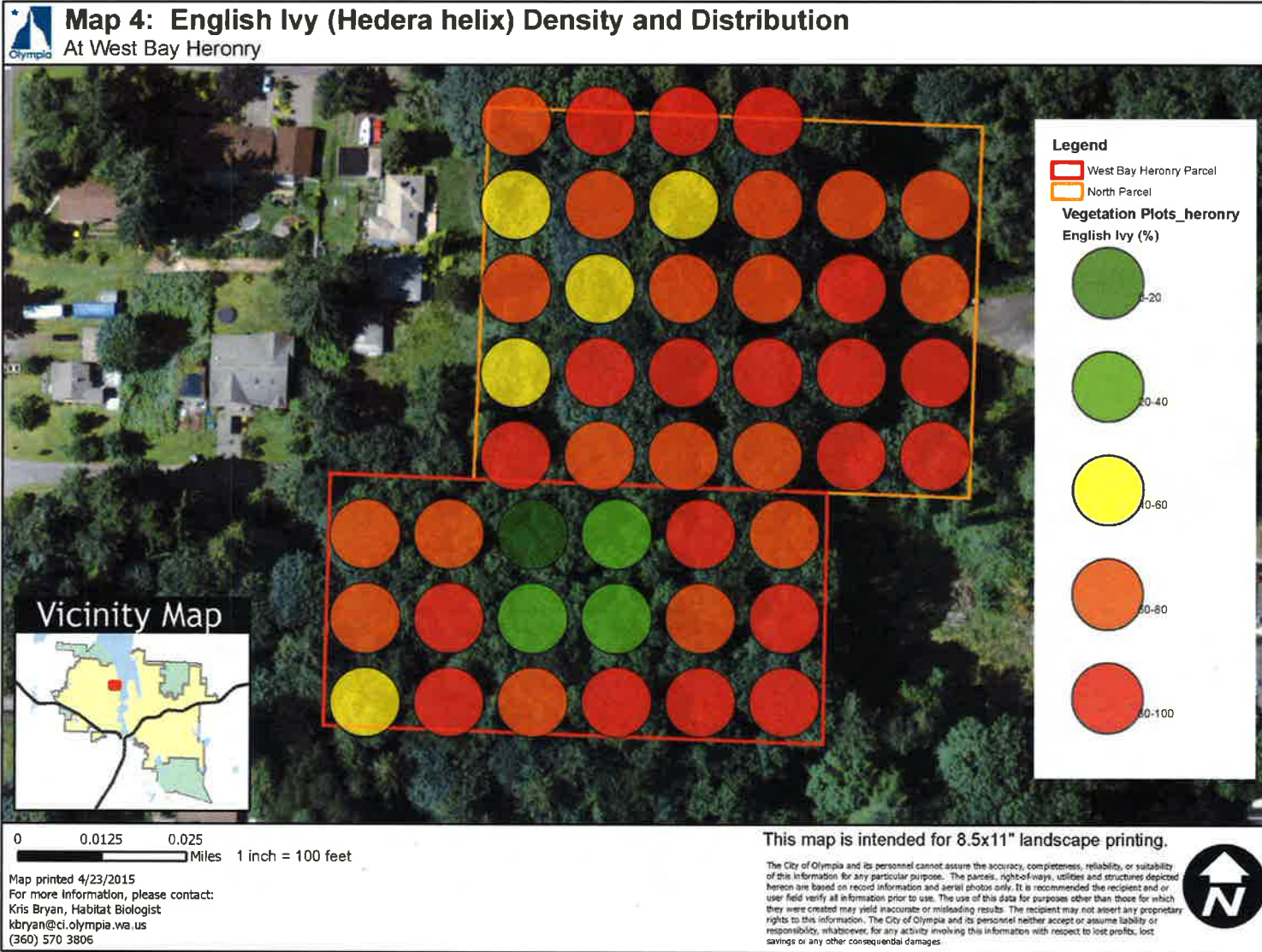


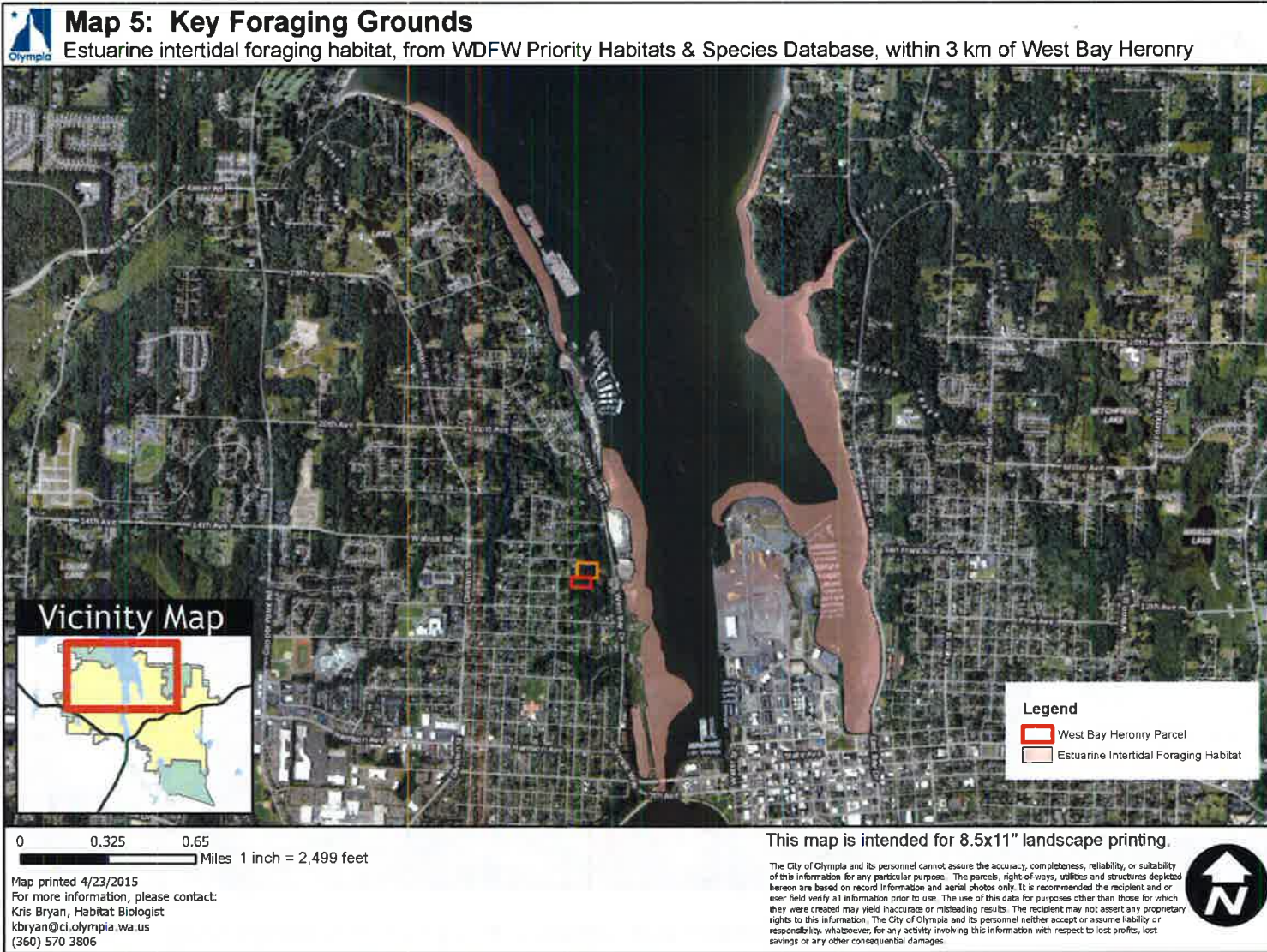
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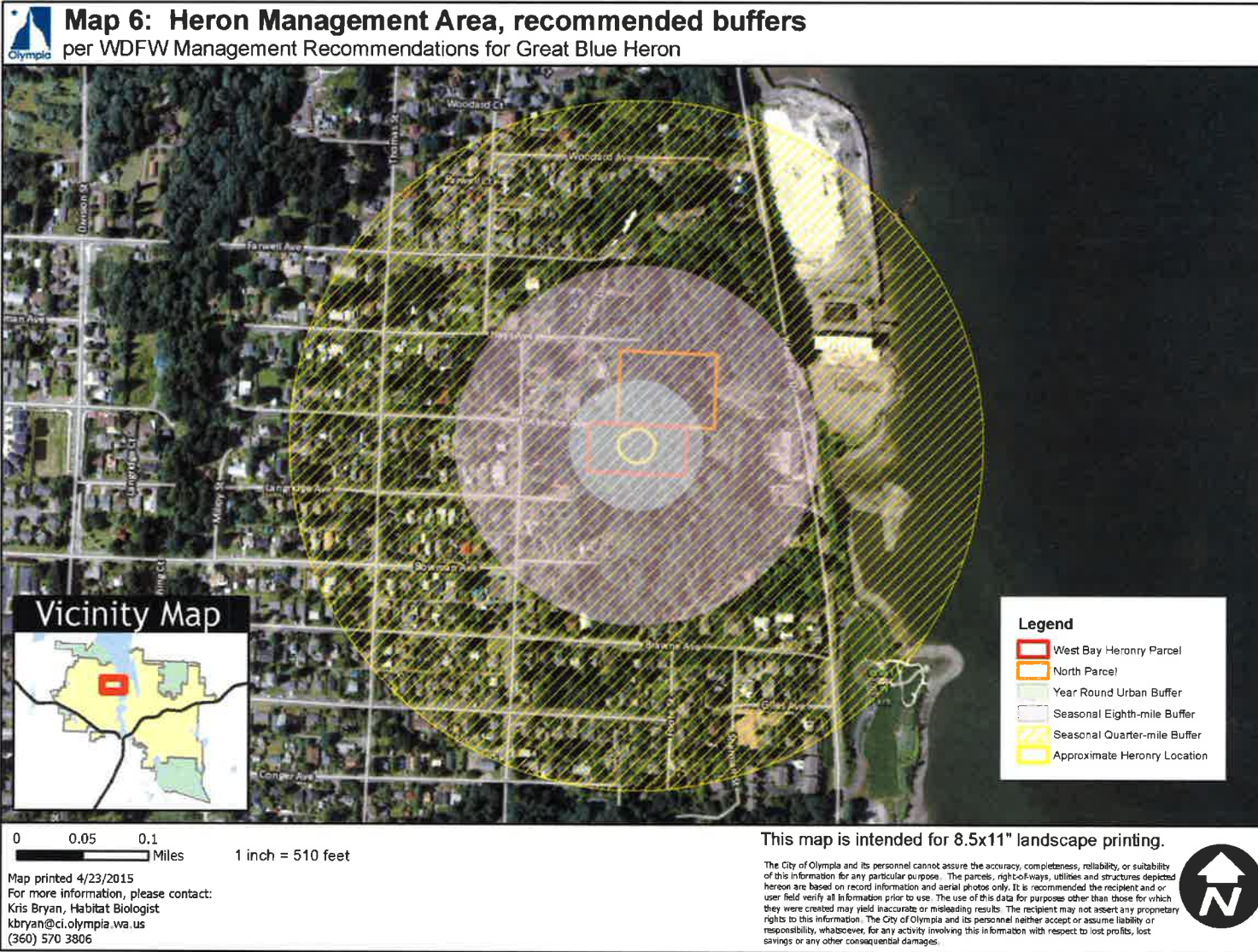
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