

Facilitating the Interpretation of the Washington Park Arboretum:
A selective review and application of the Interpretive and Wayfinding Plan

Christina A. Cadenhead

A thesis project
submitted in partial fulfillment of the
requirements for the degree of

Master of Arts

University of Washington

2012

Committee:

Sarah Reichard

Stephen Kerr

Program authorized to offer degree:

Museology

ABSTRACT

Many thesis projects focus on the creation of new plans for collecting, or novel models of exhibition. These plans are only successful so long as they are actually implemented and periodically reviewed. I seized the opportunity to do both these tasks on behalf of the University of Washington Botanic Gardens. In 2004, they commissioned an Interpretive and Wayfinding Plan to direct the content and feel of interpretation throughout the entire Washington Park Arboretum and Center for Urban Horticulture public spaces. I discovered this plan after agreeing to write a set of six interpretive signs for a new ecogeographic forest in the Arboretum. While the plan was comprehensive and provided context for my interpretive endeavor, it was also seven years old.

This project consists of two major parts: the selective review and update of the Interpretive Plan and the creation of a set of labels whose existence was facilitated by the above review. The updates include a comprehensive inventory of all the currently installed interpretive signage at the Washington Park Arboretum as well as an addendum to the technology section of the Plan's appendix. The labels interpret the Cascadia forest, one-fifth of the Pacific Connections Garden, and the first section to receive signage. My hope is that future educators or writers at UWBG will refer to the inventory and addendum to inform what they do at the institution and better contextualize their contributions.

CONTENTS

DEDICATION 2

INTRODUCTION 3

LITERATURE REVIEW 8

PROCESS..... 12

PRODUCTS & RESULTS.....19

CONCLUSION & REFLECTION.....25

REFERENCES 28

APPENDIX A: SIGNAGE INVENTORY LIST 30

APPENDIX B: SIGNAGE INVENTORY SPREADSHEETS 54

APPENDIX C: CASCADIA LABEL VISITOR ASSESSMENT INSTRUMENTS..... 68

APPENDIX D: CASCADIA LABEL VISITOR ASSESSMENT RESPONSES 73

APPENDIX E: TECHNOLOGY ADDENDUM 76

DEDICATION

For my parents, who trusted me to do what makes me happy,

For the wonderful UWBG staff, who made this project possible,

And for my cohort and advisor – I've finally found my people.

INTRODUCTION

The mission of the University of Washington Botanic Gardens is “sustaining managed to natural ecosystems and the human spirit through plant research, display, and education.”

The American Association of Museums, in describing the base things that all organizations must do in order to be categorized as museums, says they must provide a “unique contribution to the public by collecting, preserving, and interpreting the things of this world.” Institutions like arboreta, botanical gardens, and nature centers are included in a list acknowledging the range of the places that might qualify (American Association of Museums, 2000). Having previously worked with other institutions specializing in living collections like the Woodland Park Zoo and the Seattle Aquarium, I was interested in continuing my exploration of “non-traditional” museums that often are not recognized as such by the public in general. The opportunity to work with the University of Washington Botanic Gardens (UWBG) on interpretive signage was immediately exciting to me. The trailside labels would be for a portion of an on-going project to recreate the forests of five different Pacific Rim countries and the accompanying materials that were produced subsequently would support UWBG staff and UW students in future interpretive endeavors.

Site Background

In 2005, the name of “University of Washington Botanic Gardens” was created to symbolically unite the resources and efforts of the Center for Urban Horticulture – a multi-purpose facility comprised of buildings, gardens and a wildlife habitat – and the Washington Park Arboretum (WPA) – a 230-acre urban arboretum located just south of the University (University of Washington Botanic Gardens, 2011). The recently published manual *Public Garden Management* defines an arboretum as a specific kind of public garden, one that “focus[es] on the study and display of woody plants, primarily trees and shrubs,” (Rakow & Lee, 2011). Seattle’s arboretum was founded in 1934 and was initially designed by the Olmstead Brothers, a firm known for their large-scale urban parks including New York City’s Central Park and Seattle’s Woodland, Volunteer, and Seward Parks (National Association for Olmstead Parks).

Currently there are over 10,400 living specimens in the UWBG collection (University of Washington Botanic Gardens, 2011). Some of the strengths of the collection include maples (both Asiatic and Japanese), hollies, rhododendrons, azaleas, ashes, oaks, and pines. There are also several themed plantings and these include the Woodland Garden, the Witt Winter Garden, and the site of this project, the Pacific Connections Garden.

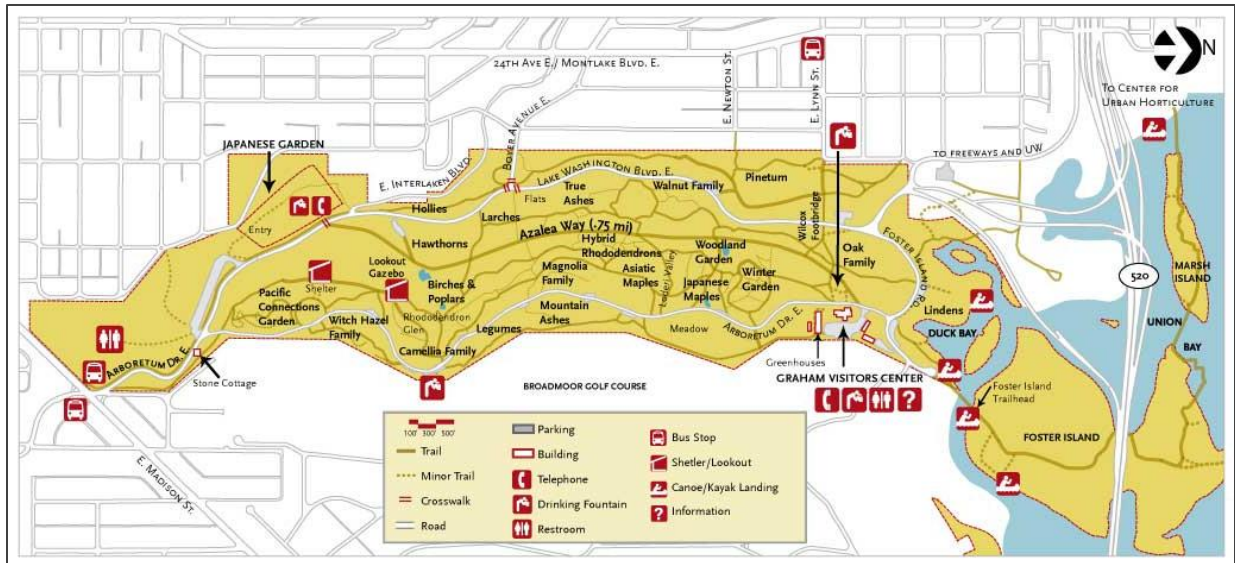


Figure 1 Map showing the location of various species within the Washington Park Arboretum.

Garden Background

The Pacific Connections Garden (PCG) is located at the southern end of the WPA and features plants from specific regions of five countries that lie on the Pacific Rim. They are the Victorian Alps of Australia, the Siskiyou Mountains of the Cascade Range in the United States, La Araucania of Chile, Mount Emei of China, and the Southern Alps of New Zealand. At the garden’s core is a central meadow featuring small preview gardens of each of the represented countries as well as a large interpretive shelter explaining how the main themes of conservation, culture, geography, and climate impact plants and people all over the world. From the PCG page of the Botanic Gardens website:

Five paths will lead out from the meadow into the focal forests. While the preview gardens offer an introduction to each country’s plants, their horticultural uses, and varieties, the larger focal forests will give you an

opportunity to enter into a representative forest from a specific region within each of the five countries. These forests will offer a glimpse into how these plants grow in the wild (University of Washington Botanic Gardens, 2011).

Forest Background

The forests are being designed and planted in phases with financial support from City of Seattle green spaces levy monies and funds raised by The Arboretum Foundation. The path through Cascadia, a part of Phase I, and the planting of the “Gateway to Chile,” a part of Phase II, had both been completed and both areas were at a stage where interpretive signage could be written. I chose to write labels for Cascadia due to my general interest in forests of the Pacific Northwest and for the area’s more “robust” current appearance. Some plants chosen for installation in the PCG are obtained from nursery stock but many are propagated from seed under contract. As Cascadia was planted first, its plant life has had several more years to fill out.

Additionally, the most obvious path to the Pacific Connections Meadow (if one doesn’t simply walk up Arboretum Drive E from Lake Washington Blvd) winds through this forest and on days when I visited the Arboretum it was well traveled.

Planning Documents

An committee of UWBG staff and students meets biweekly to discuss curatorial issues ranging from large scale planning to student projects such as this one. Their request for interpretive signage for the Pacific Connections Gardens as well as for other areas of the Arboretum was in line with recommendations of several institutional planning documents. The Washington Park Arboretum Master Plan (2000) and the Interpretive and

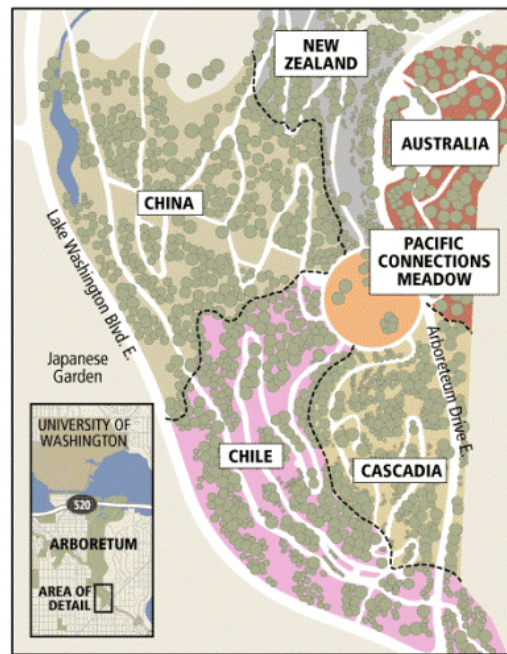


Figure 2 Map showing the five regions of the Pacific Connections Garden.

Wayfinding Plan (2004) highlight the need to provide programs and materials that support the educational component of the organizations mission and they point to the success of other living museums in doing so. The Master Plan addresses long term goals for the institution such as creating gardens that are more comprehensibly organized to the non-horticulturist visitor (like Pacific Connections) and providing interpretation for self-guided learners (The Arboretum and Botanical Garden Committee, 2000).

The Interpretive and Wayfinding Plan was created “to guide current and future evaluations, descriptions, and designs in order to help shape understanding of, and an appreciation for the Arboretum” (Cascade Interpretive Consulting & Lehrman Cameron Studio, 2004). As such, it was a major reference for this interpretive project. One of the responsibilities it places on staff is to revisit the Plan on a regular basis. A component that stood out as needing attention with the most recent review was the appendix on Interpretive and Wayfinding Technology. I decided to address this component as part of the project as well because while some of the suggestions it contained were still applicable, it obviously hadn’t addressed technological improvements of the past seven years.

Another task the Plan recommended was to strategically conduct inventories of all non-living materials on the grounds. During discussions about signage topics with an Environmental Science and Resource Management student who was also working on a label-writing project, we realized that there was the potential for similar subjects to be repeated in different parts of the Arboretum. While the park is large enough that the chances of a visitor encountering the same information twice are low, such repetitions, if necessary, should be done with intention. As UWBG did not have a centralized listing or transcription of all the currently installed interpretive signage, I decided to add that task to the project as well. The Plan suggested that

Responsibilities of staff

- Familiarity with the Arboretum Guiding Documents (Mission, Master Plan, Communications Plan, *Interpretation and Wayfinding Plan*, etc.).
- Revisiting the *Interpretation and Wayfinding Plan* on regular, annual basis (at minimum).
- Maintain inventory of signs, shelters, benches, fences, lights, donor recognition, irrigation, etc. (working closely with the Arboretum Plant Registrar, and the existing inventory of collections plants).
- Confirm that inventoried elements in the landscape are repaired and replaced as necessary.




Figure 3 Excerpt from the Interpretive and Wayfinding Plan

inventories be conducted in partnership with the curatorial staff and since I was working with that team on label writing and planned on familiarizing myself with the grounds anyway, I volunteered to catalog the arboretum's interpretive signs as I came across them.

Goal Statement

Considering the three tasks together, even though I took ownership of them each separately, it was clear that the linchpin to the project was the Interpretive and Wayfinding Plan. It outlined appropriate themes and display methods for signage, suggested ways that technology might be used to further disseminate information, and iterated the importance of maintaining a current inventory of existing conditions of non-living UWBG property. It was also upwards of seven years old. Many thesis projects take on the creation of new educational, programmatic or collections plans. It is also just as important to routinely validate the content of plans already in existence. With that in mind, the goal of this project was to selectively review and apply the recommendations of the UWBG Interpretive and Wayfinding Plan, specifically at the Washington Park Arboretum site. The final output would be a set of interpretive labels, a complete inventory of all WPA interpretive signage and a summary of new technologies likely to enhance interpretation. The intention was that future staff or student writers of Arboretum interpretive material would have a set of updated materials to inform what they wrote and would be better able to contextualize their contributions.



LITERATURE REVIEW

Research into several fields informed the content of this project. I looked at literature on visitorship to public gardens, exhibitions standards, label and interpretive writing, evaluation, and the stories behind the Pacific Connections project. I also browsed innumerable plant biology websites and books while conducting research for the labels themselves.

I started with issues of *Public Garden*, a publication of the American Public Gardens Association. One article in particular caught my eye, “Who Goes & Doesn’t go to Public Gardens, and Why?” The authors concluded that in general, garden visitors attend in groups. They also tend to be over 50 years of age, female. Parents with children as a whole did not report enjoying public gardens, but when that data was further dissected, it appeared that parents with children under five enjoyed outdoor gardens more than any other group. Ethnicity was a mixed indicator of public garden use; Latinos and American Indians reported enjoying public gardens at the same rate as whites, but there was “less enthusiasm among Asians and Blacks,” (Wilkening & Chung, 2011). Again, however, when more detailed data was examined, *all* non-white ethnicities engaged with institutions (subscribed to email lists, etc) with far less frequency than white patrons. It was wise to read this article a second reading. Though the data are generalizable, that is also their flaw. The research providing the statistics was not conducted to inform on public garden visitors alone; it was part of a larger nation-wide cultural institution study and questions about outdoor activities were only a part of it. Because I was hoping for direction on who the audience for my interpretive labels would be, I decided to look for research specifically on the UW Botanic Gardens or at least on university-based public gardens.

Conveniently, just such a demographic study was conducted at the Arboretum last year. Museology student, Cynthia Welte, looked at who visited the arboretum, why, and how they felt about it. Her results contrasted sharply with the national study although they did reflect the surrounding neighborhoods, which are less diverse than King County in general and made up 53% of the respondents (Welte, 2011). Welte found that, in the fall and winter at least, 82% of participants in her survey and interviews were white (69% of King

Country reports being white only). Additionally, 37% were visiting alone and 23% were aged 20-29; both quite different finding than those in the national survey (although her research did not uncover why that was so). When she asked participants to rate their interest in plants and gardening on a scale of one to seven (seven was highest), the average interest in plants was 5.1 and gardening ranked at 4.7 Another important outcome of her study was actually not the result of the questionnaires; rather it was a reflection of who **didn't** participate in them. Thirty-nine percent of the people she encountered could not participate in her research because they were jogging or riding a bike. There was a large amount of interesting data in her report that does not bear reviewing here. One last point of note however, is the reason that people gave for visiting. Just 3% reported going for education; they seemed to think others might seek educational more than they might however, as 11% of respondents thought others used the Arboretum to learn.

What this meant with regards to writing interpretive signage, after much reflection, was not particularly much, I realized. Though these two studies report on general inclinations of cultural institutions and public garden visitors, neither address specifically sign-reading behaviors. Just because a visitor didn't intentionally go to the WPA to learn, that didn't necessarily mean they couldn't have come away with some new knowledge. Though an investigation looking into such a phenomenon is beyond the scope of this project, I did ponder how I might address this concern.

With not much more insight into who, specifically, would be reading the labels beyond being mostly white, generally local, and people relatively interested in plants, I switched gears to reviewing books on exhibit design and label writing. The audience being targeted that the curatorial team had discussed at the beginning of the project was simply the general visitorship. I would be making no particular efforts to write labels that would speak to small children, foreign tourists, or any other group in particular so the writing would just need to be all-around approachable and interesting. Two well-known tomes in the field are David Dean's *Museum Exhibition* and Beverly Serrell's *Exhibit Labels*. Dean defines the upgrade from a display to an exhibit as the addition of "significant interpretation," of a grouping of objects (Dean, 1996). With that in mind, I set out to transform the Cascadia display into the Cascadia exhibit. In order to do that, I would need to focus on the trail and the plants around it as being a "grouping" or a whole. I looked for

information on how to write not just a good paragraph that would stand on its own, but a collection of paragraphs that would reinforce the Arboretums vision of creating a public that was educated, engaged, and dedicated to environmental stewardship. Both authors, and many others besides, emphasize the importance of storyline and cohesiveness. As these concepts are abstract, the instruction in the literature was only able to be so specific. Concepts that came up again and again that were found applicable not just to museums but to exterior permanent exhibits are best summed up in list. They mainly include formatting guidelines and things to avoid:

- Refer to the context around the sign – things people can see, hear, smell, do, etc.
- Include only one idea per paragraph.
- Vary sentence length and do not exceed 25 words per.
- Max words per label varies from 50-60 (Serrell, 1996) to 75 (Dean, 1996) or even 60-80 if one is not just describing but exploring implications of objects or an exhibit (Lord & Lord, 2001).
- Avoid jargon and technical language
- Use active verbs and avoid vague modifiers like “rather,” “very,” “quite.
- Use humor, questions, commands, and exclamation points with caution.
- Test your ideas, and then text, and then design before installing.

Searching for articles describing the research that quantified the suggestions made in these yielded a reassuring number. Many studies were not published as peer-reviewed articles but were available through a public site called informal.science.org. As beneficial as that site was, one assessment that did appear in a peer-reviewed publication took place in an arboretum that was situated on a university campus. It dealt specifically with the interpretive signage that was available on the grounds. The authors, biology teachers, were extremely impressed with the quality of the signs at the Crosby Arboretum and sought to quantify why the interpretation was so good. The authors, Wandersee and Clary wanted to provide a way for other teacher to assess potential learning opportunities in outdoor informal environments and provide helpful information for those wishing to develop such interpretive signage (Wandersee & Clary, 2007). This article was published in 2007, many years after most of the literature that I have previously cited was. As it was made available by The American Biology Teacher journal, it is understandable how knowledge in the field

of museum studies may not have transferred to that of primary-level formal education. Their study provides not suggestions for, but proof of what makes labels “good.” Once again, the data are best summed up in a table, this one of the author’s design because so much of it is relevant.

Suggested Target for Interpretive Science Trail Sign Evaluation and Writing
Signage System Criteria:
• 70 words per sign
• 8-word average sentence length
• 80% minimum active voice sentences
• 15% maximum unique words
• 8th-grade reading level
• one main topic per sign
• conversational, non-pedantic style
• invites visual comparison and contrast
• interesting, coherent, logical
• frequent signs—to make the trail feel like it is being narrated by a knowledgeable tour guide
• both common and scientific names supplied
• accompanying graphics provided to aid identification
• no specialized science knowledge assumed
• scientific questions posed and/or inquiry about the site stimulated
• interaction promoted among group members and with the site itself at each waypoint
• diverse sign topics, rather than a thematic series
• multivocal signs, representing the voices of a variety of stakeholders
• narration or exposition relates both practical and applied, as well as multidisciplinary, science to the site
• some topics are art-, humanities-, or cultural history-oriented to entice the reluctant science reader
• signs meet this study’s recommended quantitative, text-based analysis guidelines for optimal readership and maximal opportunity to learn
• signs promote critical thinking and meaning making

Figure 4 Wandersee & Clary's criteria for great interpretive signs in exterior environments.

PROCESS

EL-COBRA method

Though the timeline for the project was fluid with some steps overlapping others, the majority of the stages generally went in the order: Explore and Learn, Catalogue and Organize, Brainstorm, Refine and Assess (I have referred to this intentional ordering as the EL-COBRA method). The beginning of the project was marked by an effort at immersion into the physical site and into botanical literature. I visited the Arboretum often and became familiar with the Cascadia trail and with the layout of the Pacific Connections Garden. I also got my bearings for the rest of the park. During the first months of the project, I could often be found at the Miller Library in the Center for Urban Horticulture reading about public gardens, ethnobotany, and the history of the WPA. This immersion took longer than expected but eventually the distinctive terminology became familiar. I refreshed my memory regarding standard museological practices of label writing, exhibit design, and evaluation. Throughout the duration of the project, I researched novel technologies by following forward thinking twitter users and by signing up for email updates from the Center for the Future of Museums. I made the 'E' and 'L' portions of EL-COBRA distinct from the other stages in the textual representation of the method because while they were most informative during the beginning of my project, I continued to perform both tasks throughout the duration.

Catalogue

After months of research, it became time to switch gears to the more hands-on portion of the project. For many afternoons, over the course of a couple months in late winter, I walked the project site with purpose and photographed every interpretive sign that was visible with a point and shoot camera. Originally, the idea behind using the camera was just so that I wouldn't have to stand too long in the cold transcribing signs. Once I began the process however, I realized that having a photograph of an object was one of the most critical components of a catalog or inventory record (Buck & Gilmore, 2010). With images, not only can textual content be compared, but color and style can as well.

The scope of this project was strictly limited to interpretive elements, not wayfinding or identification features, so the concentration was on locating and measuring and reporting on panels that included some sort of commentary beyond plant names or places. The Interpretive and Wayfinding Plan includes a (now outdated) map of the 2004 locations of the interpretive signage sets so I began my cataloging process searching for those.

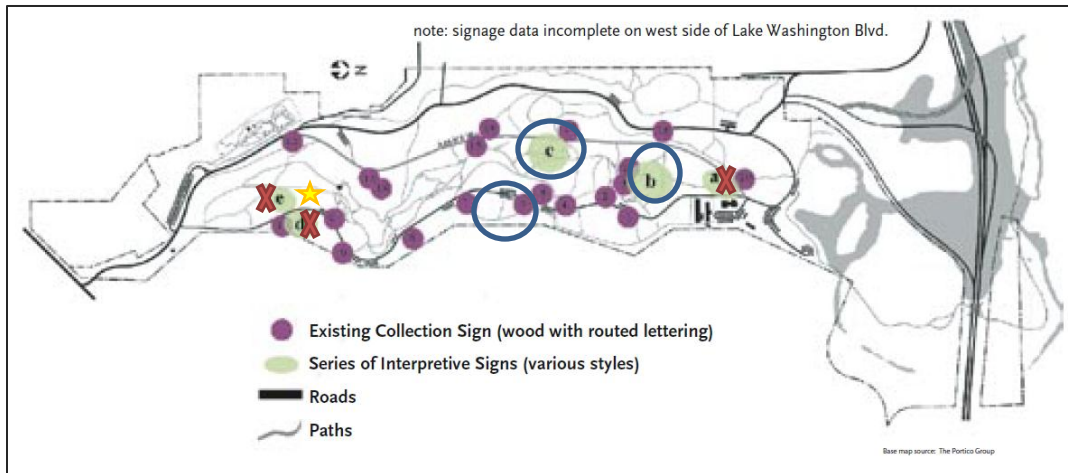


Figure 5 Existing Conditions (2004): Interpretive and Place Identification Signs. Circled sets were inventoried, crossed out sets had been removed. Star indicated general location of PCG signage.

Since the survey however, three of those sets had been removed (Native Plants of WA, New Zealand High Country, Hollies of the World). The panels in the Witt Winter Garden and the collection examining the Rhododendron Hybrids were intact and in fair to excellent condition. Curatorial staff provided specific directions to one stubborn group of signs that I kept accidentally avoiding in my early explorations (the Sorbus Collection is not represented on this map, although it is listed as having interpretive signage earlier in the Plan).

Organize

As the inventory count neared two dozen, I began to ponder how best to organize the information I had collected. When I was hired at a local history museum to assist in the coordination of text and graphic material for their new museum, I was shown a probable solution. Long before I joined the coordination team, the consultant hired to project-

manage the writing for the new museum had been prepping material that would help her employees contextualize their assignment. A folder of documents listed transcriptions of every label currently on exhibit at the museum. A duo of massive shared documents, stored online using Google's Documents feature, contained every piece of metadata about text panels that needed to be written, 3-D objects that would be on display, and potential photographs for the upcoming exhibits. The combination of providing an archive to refer to and having a living, constantly evolving document to work within served to connect contributors who were not physically present on site or even in Seattle.

I decided to model my deliverable for the UWBG after that history museum's strategy. I organized the label data within an Excel spreadsheet and separated out every grouping of signs onto its own tab (see Appendix B). Titles, body text, word counts, measurements, install dates, and condition notes each received their own line on the master spreadsheet and the format was replicated in the exact same way for every grouping. This makes finding a particular set of labels easy. I made sure to set up the printing preferences for each tab of the sheet so that the information for as many signs as possible would fit one letter-sized piece of paper while still being readable. It is possible that future writers or staff will want to be able to print out a quick overview of the signage collection. Setting up a Google document, which would be accessible to anyone off site who is granted access, was not necessary. The signage collection is fairly small and while some signs will be installed or removed soon, there will not be many employees working in the document and none would be accessing it off-site.

As adding photographs to an Excel sheet quickly renders the file too large to be opened, I decided to create an additional living document that the staff can place on a shared drive or server, which anyone can edit or add to. Microsoft Word is a common word processing program that allows for insertion of images and Times New Roman is a font that is found on any computer. By setting up the document with these things in mind, the formatting should look the same no matter what machine the document is opened on and be user-friendly for anyone (see Appendix A).

Brainstorm

With background research and physical exploration of the site completed, I had a good grasp of what the context for my Cascadia labels would be. I began the final and most creative part of this thesis project. Every manual on writing emphasized the importance of brainstorming profusely first and editing repeatedly afterwards (Leftridge, 2006) (McLean, 2009) (Serrell, 1996). Big Ideas, or organizing themes, were written, edited, tossed out, and recycled. I shared preliminary texts first with family and then with close friends unfamiliar with museological practice. I originally started by using the fact that the Cascadia plantings are roughly divided into three elevation zones as an organizing principle. Each elevation zone – lower, middle, and upper – would have two labels. One would be an introduction to the physical features of the region and the second would emphasize a particular plant or tree. It was difficult to make this rigid scheme work as some areas offered more opportunity for interpretation than others did. I continued to struggle to define a big idea that wouldn't be so limiting but would also be cohesive and tie each of these particular labels together as a set.

Revise

I feel that I officially finished the brainstorming part of the el cobra process one spring morning after a meeting with the Arboretum gardener charged with caring for all the Pacific Connections plants. Kyle Henegar took me on a tour through the Cascadia area that changed the way I viewed the entire place. Her enthusiasm for and close relationship with literally every seedling and shrub was practically contagious. That afternoon I stopped brainstorming for ideas and focused my efforts on revising the factual statements about plants that I had previously written into textual representations of the quiet beauty of the Siskiyou. My big idea became: *the Siskiyou have a subtle beauty, which is revealed by small details and unusual physical features*. This statement answers the questions where, what and how and is both emotional and intellectual. Each of the resulting labels is an expanded version of the big idea.

Assess

Once I had new drafts for the labels I continued to revise periodically. Because formative testing of any exhibit is important in standard museum practice, I thought it

essential to obtain visitor feedback on the near finalized text (Dean, 1996). I drafted a brief instrument to assess the readability, interest, and level of information of the labels. I divided the six of them into three sets of two. Each set was printed on a single sheet of paper with the same two evaluation questions following each sample text (see Appendix C). In *Interpretive Writing*, Alan Leftbridge recommends obtaining a minimum of three reviews for each set of text so I printed four sheets of each set of labels for a total of 12 instrument (Leftbridge, 2006). I visited the Arboretum on a very sunny and crowded late spring day. With a clipboard and a smile, I stopped at each group of people I encountered as I walked up the Cascadia trail and around the Pacific Connections Meadow, explained my project and requested assistance and opinions. Everyone I approached (eight individuals that were part of groups and one man that wanted to read all six labels) agreed to help and the surveys were all complete in about an hour and a half. Many participants suggested improvements in both grammar and style of the text and most provided general comments. Refer to Appendix D for visitor comments as well as tables of raw data. Analysis of responses to the three questions I asked will be offered in the Results section of this paper.

With the visitors perceptions tallied up and comments transcribed, I brought the labels to receive a final review by the curatorial team. They provided technical oversight to ensure I had all the horticultural facts correct and we discussed the pros and cons of choosing one word over another. Unlike in the audience assessment exercise, this team of six heads was aware of the context of both my project and the Cascadia trail and we had the benefit of all debating syntax and meaning together. Once a final consensus was reached on wording, the el cobra method ended.

Timeline

Each of the components of this thesis was fairly small on its own so no benchmarks for success were set ahead of time; when all the data was collected for a portion of the project, it was simply finished. The rough timeline began in December 2011 with exploration of the grounds and organizational literature to situate myself within the scope of a public garden. That portion lasted the longest, about 3 months. I also began my literature and technology reviews during that time. I catalogued and organized the signage inventory next, throughout the month of March 2012. Only after that was completed, did I feel comfortable taking on the role of interpretive author. April was largely spent

brainstorming and writing while May was dedicated to assessment and finalization of all the final products of the thesis.

Resources and Hindrances

I was fortunate to have direct access to the UW Botanic Gardens curatorial team throughout the second half of this project. They held biweekly meetings to which I was always welcome and eventually expected at. The Elisabeth C. Miller Library in the Center for Urban Horticulture was a fantastic resource for the first half of my research. Only towards the very end of label writing did I discover the back issues of the Washington Park Arboretum Bulletin, a quarterly membership magazine that is currently in its 74th year. The Bulletin would be a fantastic starting point for any future project that has anything to do with the Arboretum or Northwest flora. Though short, the articles within it are always interesting and reflect current projects, such as the Pacific Connections Garden and its various components (Dunne, 2012) (Hinkley, 2007) (Loudon, 2008).

The best assets to my project however, were the people I met. The undergraduate student who was working on a similar interpretive project enthusiastically supported the inventory aspect of my thesis. She was able to eliminate one topic she was thinking of working on and adjust the direction of another by knowing what the Arboretum already addressed. Before even being finalized, the catalog of installed signs had been of use to another writer, a reassuring situation. I have already called out Kyle, the Pacific Connections gardener, as a source of inspiration and wonder. The rest of the staff I worked with was invaluable as well. I feel that they provided more applicable information for me in the 10 or so total hours we met than in all the weeks I had spent plugging away through research solo.

As may often be the case with long-range projects, everything took longer than expected. The formatting of the various iterations of the inventory required careful attention to detail to ensure that the right data made it into the right field and that everything would print out properly. Many mis-printed copies ended up in the recycle bin before they finally appeared from the printer perfect. This shouldn't really be considered unanticipated though. The one real inconvenience I ran into was more of an oversight on my part regarding the inventory. I hadn't fully thought out what I wanted to include in the

cataloging and failed to take measurements on my first runs through the park. Still, I had the opportunity to see every single sign one last time in May and it was reassuring to double check that all the information I had collected was accurate.

PRODUCTS & RESULTS

The final product will be presented to the UWBG in several formats. This thesis, along with a cd of all the digital files will be bound and made available for use in the Miller Library. It will perhaps best serve students or volunteers who may be writing additional interpretive signage. I am aware that at some point, it will become very outdated but at that point, I hope it will then gain some historical value.

The technology addendum (Appendix E) may not need to be handled as frequently and so it will exist as just the digital file located in the same folder on the computer or server as the Interpretive and Wayfinding Plan.

In addition to the digital pdf document, a separate printed, color-copy of just the signage inventory list may be helpful to have on hand in various visitor centers and offices on the UWBG site. That document is a separate electronic file and is formatted differently from the content presented in the appendix (Appendix A) so that it appears as intended when printed double-sided and stapled. The inventory spreadsheet (Appendix B) will probably be the most used feature of this package. The Excel sheet can be saved to a shared drive where all appropriate UWBG staff can access it for review and updating, when the time comes. I hope that the usability is put to the test when sets of recently completed signs (Cascadia included) are installed.

Though the above components will be used internally at UWBG, the public facing part, the set of Cascadia signs, was the ultimate product of this project. The technology review and inventory were partially done with the intent that they would inform what I wrote as interpretation. Indeed, they did. All signs will be located on the ADA accessible portion of the path (there is a “short-cut” trail of stairs running through the center of the Cascadia area). Ideally, if a visitor were stopped at a sign they would not be able to see the next one from that vantage point. Per the Interpretive and Wayfinding Plan, all freestanding interpretation should be unobtrusive, “small, low, slanted, to be discovered” but not hidden. Exact placement has not been determined as of this writing. If a visitor enters the trail from just off Lake Washington Blvd (as opposed to descending down from

the meadow) the signs will be encountered in the below order and will correspond with notable features along the trail.

An Opportunity to Pause

The forests of the Cascade Range offer a subtle beauty in all seasons. Be on the lookout for tiny seasonal blooms such as the golden flowers of the *Iris innominata* in the early spring or drifts of purple beardtongue (*Penstemon*) later in the summer. In colder months, tawny leaves and lingering berries offset the architecture of the bare trees.

Fallen Trees Make Fine Homes

Walking through the Pacific Connections forests you may notice snags and decaying logs. Though no longer green or growing, such piles of coarse woody debris are left on purpose to provide a nutrient-rich habitat for many smaller plants and creatures. Take note of the dead wood you see each time you visit and consider how it changes.

Ecosystem Within an Ecosystem

Wetland areas can be found throughout the lower elevations of the Siskiyou. They are home to plants found nowhere else. Bog ecosystems like this one are extremely delicate. However, the species living here are well adapted to the high acidity of the water. Some plants have even become carnivorous to gain nutrients that the surrounding soil does not provide.

Many Factors Make this Forest Unique

Many of the plants you see around you are endemic, or found nowhere else. Glaciers, wind, and animals brought seeds from far-off regions to the Siskiyou. The plants then evolved in unique ways due to the serpentine soil of the area, which is low in nutrients and high in heavy metals. The Siskiyou ecosystem is now one of the most diverse in the world.

Renewal by Fire

Wild fires can be destructive to people and property. However, the intense heat is often crucial for plant survival. Knobcone pines (*Pinus attenuata*) and the threatened species Siskiyou cypress (*Cupressus bakeri*) both produce cones that cannot release their seeds without the help of natural fires. Burning also thins out the understory, increasing sunlight and reducing the intensity of future fires.

Diversity Isn't Always Obvious

Over 21 species of conifers can be found in the Siskiyou. Several of them are represented along this trail. At first glance, many of the trees may look the same but take a moment to look closer. Leaves and needles grow in different shapes and sizes and the pattern of tree bark varies.

Visitor Feedback

These labels were the result of continuous revisions. One aspect of the el cobra method that was very helpful in wrapping up that process, which could have potentially continued endlessly, was the assessment phase. Testing out exhibit components or programs on a small audience before investing in full-scale plans can be relatively quick and low cost (Diamond, Luke, & Uttal, 2009). I estimate that I spent about two hours defining the purpose of my evaluation: to find out if a) the text was providing anything new to visitors and b) if they thought it was interesting and actually building the questionnaire. Though not difficult, this process requires as careful consideration as writing label copy does – wording, question order, and focus of intent need to be to the point but also natural to a reader (see Appendix C). As mentioned previously, it took about an hour and a half to collect all 12 surveys on a busy day. Then an additional two hours were invested in entering data, analyzing it, and preparing charts and graphs (see Appendix D). Six hours in the context of the entire project was a worthwhile investment. While the results certainly weren't statistically significant, they provided both a sense of confidence that the labels

were close to being complete and the reassurance of having received input from non-museum, non-biologist readers. Many readers' suggestions were implemented such as changing a word in a title from 'fell' to 'fallen' for greater clarity and breaking up a sentence to make it easier to understand. Because the results are not especially revelatory, I will share just a few charts; they indicate that the writing was in the right place to be just about finished.

Firstly, while I did not have interest in collecting demographic data for such a small sample, I did want to know what sort of readers I was dealing with. Their presence alone in the park did not necessarily mean that they were avid sign-readers so I simply asked. This

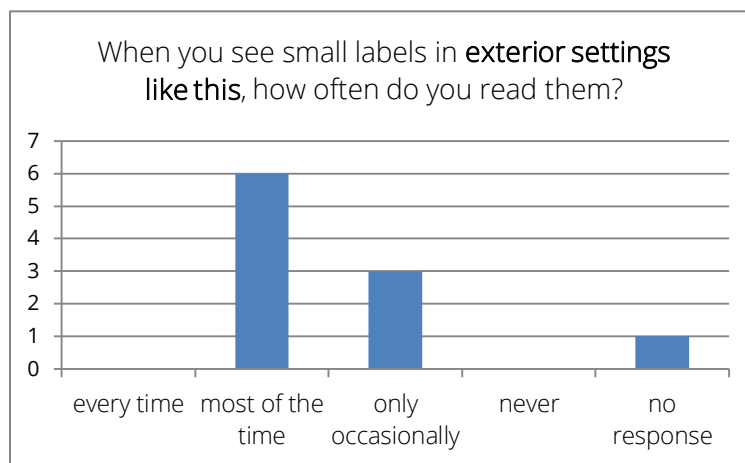


Figure 6 Reader responses to the singular “demographic” question. One participant wanted to read all six labels so there are 10 unique responses.

question also begins to address concerns I had that appeared during my initial review of the literature, namely that people do not report visiting the WPA for educational purposes. I feel that statements like that can often be over-interpreted to mean that visitors do not read signs, which is not what it indicates. Intentions do not necessarily reflect actions. I did not expect to see anyone reading labels every time although I did assume I would see some respondents answer ‘never.’ By providing an even number of answer choices, participants were forced to choose an answer that was either more or less than half the time (Diamond, Luke, & Uttal, 2009). The responses are right about where I would expect visitors to a botanic garden/arboretum to be – interested in learning but not solely visiting to read.

I didn't want to be simplifying the interpretation so much that it would be all old news to arboretum visitors. I did expect that visitors might have a slightly higher than average knowledge of the natural world than the average person who might chose to spend the weekend exploring downtown rather than the park.

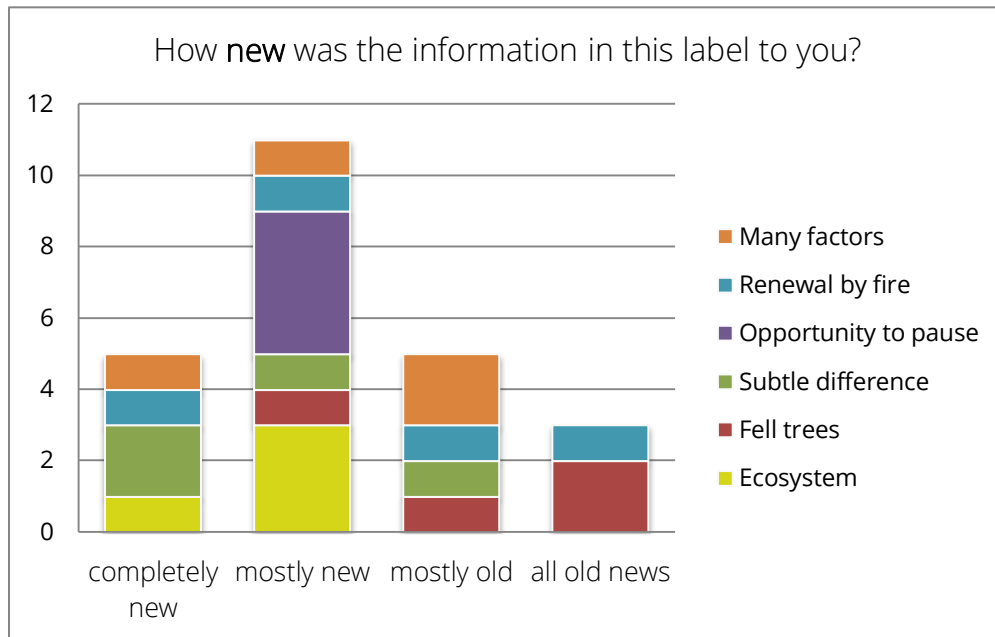


Figure 7 Reader responses by novelty of the text and broken out by individual label.

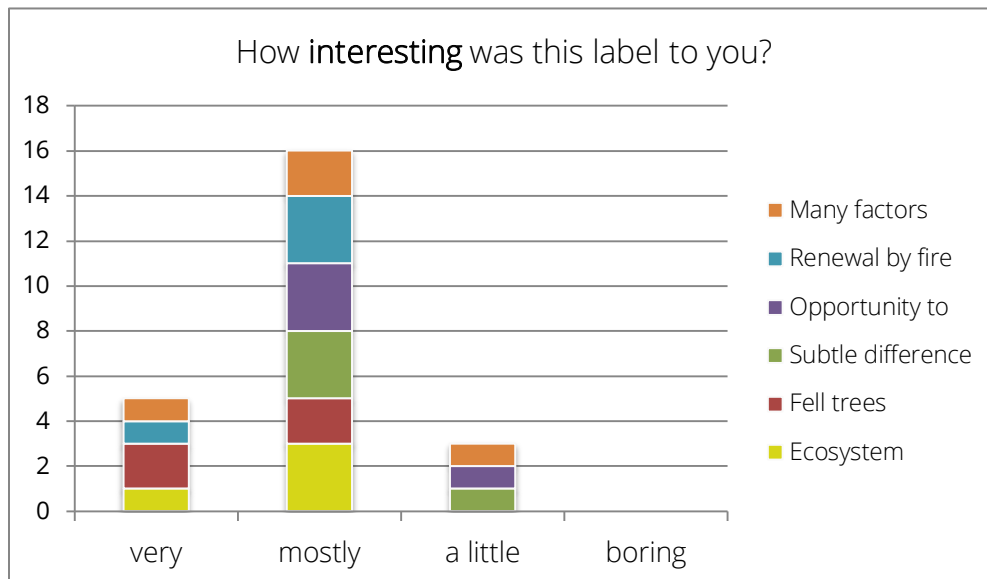


Figure 8 Readers report how interested they are in each label.

These responses were what I had hoped for – the text was new or mostly novel to twice as many people as it was familiar (Figure 6). The responses for interest follow suit and luckily no one reported any of the labels as being boring (Figure 7). I did find it curious that although the text about fell trees (later changed to fallen trees) was old or mostly old news to three of the four participants that edited that label, they also found it very or mostly interesting. Again, nothing revelatory here but had the charts been skewed more to the right, as a curatorial writer I would have taken pause to investigate where my ideas were missing the mark.

I was very pleased to see that eight of the 10 respondents also volunteered comments and feedback. Those notes can be viewed along with the raw data in Appendix D. Suggestions like “smaller sentences,” “specific examples,” and “interesting looking” are simple aspects of good labels that we, as curators and educators do well to never forget. Providing readers with direction as to “where to look” will have to be carefully considered when it comes time to place the signs. One reader found the labels on trying to spot differences and taking the opportunity to pause patronizing. I felt that this was important feedback and subsequently did some gentle adjusting of a few phrases. Still, as a curatorial team, we agreed that though honest, this person seemed a little defensive. Other participants offered feedback on grammar and word choice as well but no one reported their feelings in the matter. This brief assessment exercise was a change of pace from constant editing. It prompted me to take off my writer’s hat and look at things from a visitor’s perspective – an action that, as students, we were taught constantly and occasionally still need reminding of.

CONCLUSION & REFLECTION

The UWBG will have four other sets of signs in addition to this one to install in various gardens on the grounds over the remainder of the year. They are currently in various stages from production to design to just words on a page. This project, though large in scope for me, represents just a portion of the entire interpretive process for the institution. By addressing my goal of reviewing the principles set forth in the Interpretive and Wayfinding Plan, it was subsequently easier to realize the second half of the goal, which was to apply the standards set therein for interpretive signage. I believe that the inventory and transcription of current signage will be of benefit to future writers, especially for the four other forests of the Pacific Connections Garden that will need to be interpreted. Additionally, the inventory may be of use to informal educators on staff that could want to reinforce or build upon knowledge that is presented in the signs. By inventorying the past, creating signage for the present, and drawing attention to technologies that might be utilized in the future this project took a holistic view of the “simple” task of interpretive writing.

The UWBG is already aware of the need for increased wayfinding within the Washington Park Arboretum and is working with contractors and vendors to design an elegant and professional solution. In the meantime, though, it may be possible to take advantage of the growing number of tech-savvy students interested in the intersection of social media and the environment by advertising the need for a smartphone based, GPS enabled mapping program. It's creation could be the focus of a year-long internship or Masters project. This might come in the form of an operating system specific app or a clever application of the opportunities that Google Maps and Panoramio provide. As tempting as it might be to jump in and create interesting self-guided tours or provide more signage for non-formal learners, the emphasis should first be on providing casual visitors the tools *they* need to feel confident in breaking away from the confines of the well-known and well-travelled main thoroughfare, Azalea Way.

Alternatively, in order to facilitate more two-way dialogue, social media could be harnessed to provide a way for visitors to ask questions about plants they see and receive

timely answers. Much in the way that the Plant Answer Line functions as resource to gardeners, a program where visitors are encouraged to post or submit photos of plants with accompanying questions would function as a direct line to the institution. It seems that up-and-coming technologies are focusing on visual stimulation rather than auditory delivery of information (as indicated by the sorts of services listed in the Interpretive Plan's appendix). Institutional thought might be given to the innovative ways that might engage or acknowledge more than one sense at a time.

Reflection

This work has expanded my knowledge of museology practice by providing an invaluable hands-on experience. I knew that I wanted to work on an interpretive project, an area where I felt my knowledge and skills were perhaps not lacking, but not previously put to the test in my graduate education. I was thrilled to be able to apply ideas that I had picked up from my history museum internship (mainly how to organize data and things) and see how those processes can be of benefit to more than just a collections department.

The opportunity to engage with nature was a bonus that I had not planned on that I am so grateful for. With the full and hectic schedule of graduate school, I was practically done with the program before I realized I hadn't been camping or skiing once since it had started. I had also only been hiking a handful of times in two years. The chance to explore the Arboretum and connect with nature over three consecutive seasons fulfilled mental and emotional needs that I almost hadn't recognized I had.

Between this work and other studies I have conducted at the zoo and aquarium, I've developed a strong interest in working with living museums in the future. Additionally, I hope to see increased collaboration between these classes of institutions; the camps of traditional museum, zoo/aquarium and public garden have so much in common but there seem to be real barriers between their working together. While the American Association of Museums includes organizations that maintain living collections in their definition of museum, I have not seen much support for those types of institutions. I believe I almost intimidated an educator from a botanic garden that I met at the most recent conference; so excited was I to speak with someone that would understand the angle my research was coming from.

Inspiration for the Future

Being outside, physically experiencing the land of our living, is the beginning of garnering an appreciation for place – be it a park in the city, a paved path by an urban river, or a mountaintop or grassland in some governmentally-protected space. Linking human stories through narratives to these places we set foot on has the potential to create a sincere desire to live in harmony with nature, to enable the human story to continue where we are, and to respect the landscapes where we have already been. And museums can tell the stories.

- (Agrella, 2009)

REFERENCES

- Agrella, L. J. (2009). The Power of Narrative to Bring People and Nature Together. *Museums & Social Issues*, 4(2).
- American Association of Museums. (2000). *Code of Ethics for Museums*. Retrieved May 10, 2012, from <http://aam-us.org/museumresources/ethics/upload/Code-of-Ethics-for-Museums.pdf>
- Buck, R. A., & Gilmore, J. A. (Eds.). (2010). *Museum Registration Methods, 5th Edition*. Washington D.C.: The AAM Press.
- Cascade Interpretive Consulting & Lehrman Cameron Studio. (2004). *Washington Park Arboretum: Interpretive and Wayfinding Plan*. Seattle.
- Dean, D. (1996). *Museum Exhibition: Theory and Practice*. London: Routledge.
- Diamond, J., Luke, J. J., & Uttal, D. H. (2009). *Practical Evaluation Guide: Tools for Museums and other Informal Educational Settings* (2nd ed.). Lanham, Maryland: AltaMira Press.
- Dunne, N. (2012, Winter). Haning Out at the New Bog Garden. *Washington Park Arboretum Bulletin*, 73(4), pp. 11-14.
- Hinkley, D. J. (2007, Spring). Cascadia. *Washington Park Arboretum Bulletin*, 68(1), pp. 27-29.
- Leftridge, A. (2006). *Interpretive Writing*. Fort Collins, Colorado: The National Association for Interpretation.
- Lord, B., & Lord, G. D. (2001). *The Manual of Museum Exhibitions*. Walnut Creek, California: AltaMira Press.
- Loudon, E. (2008, Spring). The New Pacific Connections Garden and Interpretive Shelter. *Washington Park Arboretum Bulletin*, 69(1), pp. 8-11.
- McLean, K. (2009). *Planning for People in Museum Exhibitions* (5th ed.). Washington D.C.: Association of Science-Technology Centers.
- Mogg, T. (2012, March 6). *US smartphone users now over 100 million, Android increases market share*. Retrieved May 15, 2012, from Yahoo! News: <http://news.yahoo.com/us-smartphone-users-now-over-100-million-android-041611789.html>
- National Association for Olmstead Parks. (n.d.). *Find an Olmstead Landscape Design in Your Area*. Retrieved May 3, 2012, from Olmstead Network: <http://www.olmsted.org/olmsted-network/find-an-olmsted-landscape-near-you>

- Rakow, D., & Lee, S. (2011). *Public Garden Management*. Hoboken, N.J.: John Wiley & Sons.
- Serrell, B. (1996). *Exhibit Labels: An Interpretive Approach*. Walnut Creek, California: AltaMira Press.
- The Arboretum and Botanical Garden Committee. (2000). *Appendix A: Renewing the Washington Park Arboretum*. Seattle: Seattle Parks Department.
- University of Washington Botanic Gardens. (2011, April 27). *About Us*. Retrieved from University of Washington Botanic Gardens:
<http://depts.washington.edu/uwbg/docs/UWBGFactSheet11-11.pdf>
- University of Washington Botanic Gardens. (2011, December 22). *Pacific Connections*. Retrieved January 25, 2012, from Washington Park Arboretum:
http://depts.washington.edu/uwbg/gardens/wpa/pacific_connections.shtml
- Wandersee, J. H., & Clary, R. M. (2007). Learning on the Trail: A Content Analysis of a University Arboretum's Exemplary Interpretive Science Signage System. *The American Biology Teacher*, 16-23.
- Welte, C. (2011). *Visitor Use and Perceptions of the Washington Park Arboretum*. Unpublished Masters Thesis, University of Washington, Seattle.
- Wilkening, S., & Chung, J. (2011, Fall). Who Goes & Doesn't Go to Public Gardens, and Why? *Public Garden*, pp. 8-11.

APPENDIX A: SIGNAGE INVENTORY LIST

Puget Sound RHODODENDRON HYBRID GARDEN



Diversity: The genus *Rhododendron*, well known for extravagant flowers and foliage, exhibit a remarkable diversity of size, form, and color. *Rhododendron* species are found from arctic to equatorial regions and range in size from a few inches to sixty feet tall.

Pacific Northwest Popularity: The Pacific Northwest climate is amenable to a wide range of *Rhododendron* species and hybrids and is regarded as the best region for growing rhododendrons in the United States. It has been a center of rhododendron hybridization for several decades, with over 2,000 cultivars named.

Arboretum Collection: *Rhododendron* is one of the most important genera in the collections of the Washington Park Arboretum. Approximately 700 different kinds are grown Arboretum wide.

History: In the Puget Sound region, rhododendron hybridization began in the early 1940's. It started from seed sent from England in efforts to save breeding stock from bombing raids during the war. A local nurseryman, Halfdan Lem, sparked the hybridization work that has led many others in the region to develop and name hundreds of rhododendrons. This work continues today.

The Garden: This garden area is divided into three general time periods, and features over 150 hybrids. Here is an excellent opportunity for visitors to follow the evolution of Puget Sound rhododendron hybrids developed since the 1940's. It is a historical record and a tribute to the outstanding work done by rhododendron breeders of the Puget Sound region.



Contributors: This project was supported by the Arboretum Foundation and many rhododendron enthusiasts who have provided expertise, plant material and assistance.

Puget Sound RHODODENDRON HYBRID GARDEN

Diversity: The genus Rhododendron, well known for extravagant flowers and foliage, exhibit a remarkable diversity of size, form, and color. Rhododendron species are found from arctic to equatorial regions and range in size from a few inches to sixty feet tall.

Pacific Northwest Popularity: The Pacific Northwest climate is amenable to a wide range of Rhododendron species and hybrids and is regarded as the best region for growing rhododendrons in the United States. It has been a center of rhododendron hybridization for several decades, with over 2,000 cultivars named.

Arboretum Collection: Rhododendron is one of the most important genera in the collections of the Washington Park Arboretum. Approximately 700 different kinds are grown Arboretum wide.

History: In the Puget Sound region, rhododendron hybridization began in the early 1940's. It started from seed sent from England in efforts to save breeding stock from bombing raids during the war. A local nurseryman, Halfdan Lem, sparked the hybridization work that has led many others in the region to develop and name hundreds of rhododendrons. This work continues today.

The Garden: This garden area is divided into three general time periods, and features over 150 hybrids. Here is an excellent opportunity for visitors to follow the evolution of Puget Sound rhododendron hybrids developed since the 1940's. It is a historical record and a tribute to the outstanding work done by rhododendron breeders of the Puget Sound region.

Contributors: This project was supported by the Arboretum Foundation and many rhododendron enthusiasts who have provided expertise, plant material and assistance.

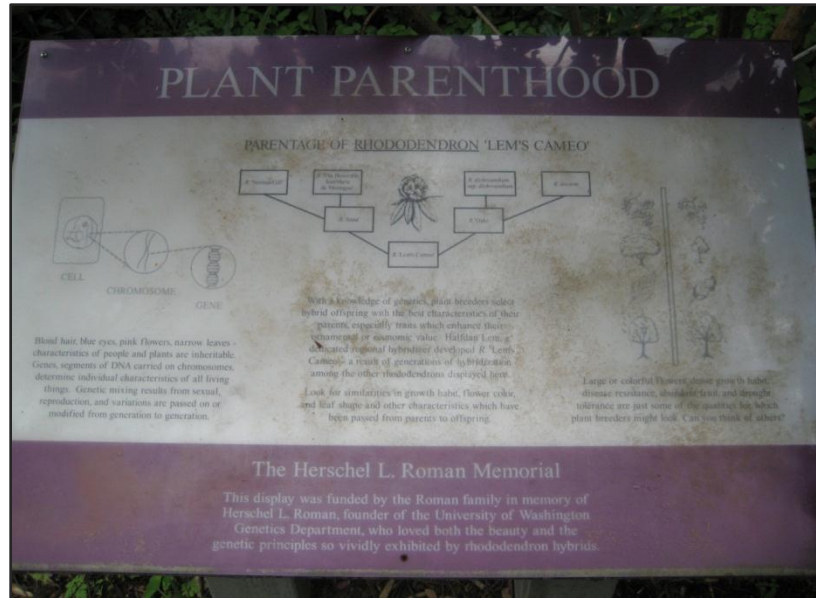
words: 41/48/26/60/58/21 (254)

size: 36" w x 45" h

center of sign is appx 47.5" from ground

installed: 2001

notes: none (5/13/12)



PLANT PARENTHOOD

PARENTAGE OF RHODODENDRON 'LEM'S CAMEO' lineage illustration

Blond hair, blue eyes, pink flowers, narrow leaves - characteristics of people and plants are inheritable. Genes, segments of DNA carried on chromosomes, determine individual characteristics of all living things. Genetic mixing results from sexual reproduction, and variations are passed on or modified from generation to generation.

With a knowledge of genetics, plant breeders select hybrid offspring with the best characteristics of their parents, especially traits which enhance their ornamental or economic value. Halldam Lem, a dedicated regional hybridizer developed R. Lem's Cameo, a result of generations of hybridization among the other rhododendrons displayed here. Look for similarities in growth habit, flower color, and leaf shape and other characteristics which have been passed from parents to offspring.

Large or colorful flowers, dense growth habit, disease resistance, abundant fruit, and drought tolerance are just some of the qualities for which plant breeders might look. Can you think of others?

The Hershel L. Roman Memorial This display was funded by the Roman family in memory of Hershel L. Roman, founder of the University of Washington Genetics Department, who loved both the beauty and the genetic principles so vividly exhibited by rhododendron hybrids.

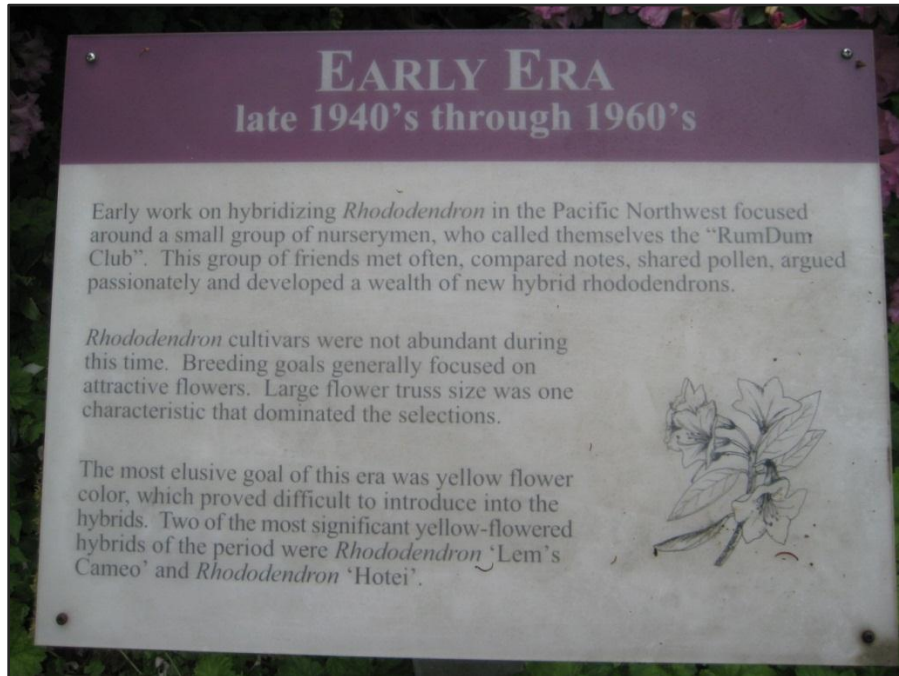
words: 47/70/31/42 (190)

size: 36" w x 24" h

center of sign is appx 30" from ground

installed: 2001

notes: very dirty, needs cleaning (5/13/12)



EARLY ERA late 1940's through 1960's

Early work on hybridizing *Rhododendron* in the Pacific Northwest focused around a small group of nurserymen, who called themselves the "RumDum Club". This group of friends met often, compared notes, shared pollen, argued passionately and developed a wealth of new hybrid rhododendrons.

Rhododendron cultivars were not abundant during this time. Breeding goals generally focused on attractive flowers. Large flower truss size was one characteristic that dominated selections.

The most elusive goal of this era was yellow flower color, which proved difficult to introduce into the hybrids. Two of the most significant yellow-flowered hybrids of the period were *Rhododendron* 'Lem's Cameo' and *Rhododendron* 'Hotei'.

words: 42/25/36 (103)

size: 24"w x 18"h

center of sign is appx 34" from ground

installed: 2001

notes: needs stabilizing, sign post leaning backwards (5/13/12)



MIDDLE ERA 1970's and 1980's

During this period, the color range expanded. The yellow-flowered hybrids bred in previous years were used to produce better yellows, apricot-peach tones and even more exotic "tropical" colors.

Rhododendron breeders placed more emphasis on interesting leaf colors, shapes, and textures.

The development of hybrids suitable for small gardens became an increasingly important goal. The small size and compact habit of *Rhododendron yakushimanum* made it popular with hybridizers, resulting in many popular "yak hybrids".

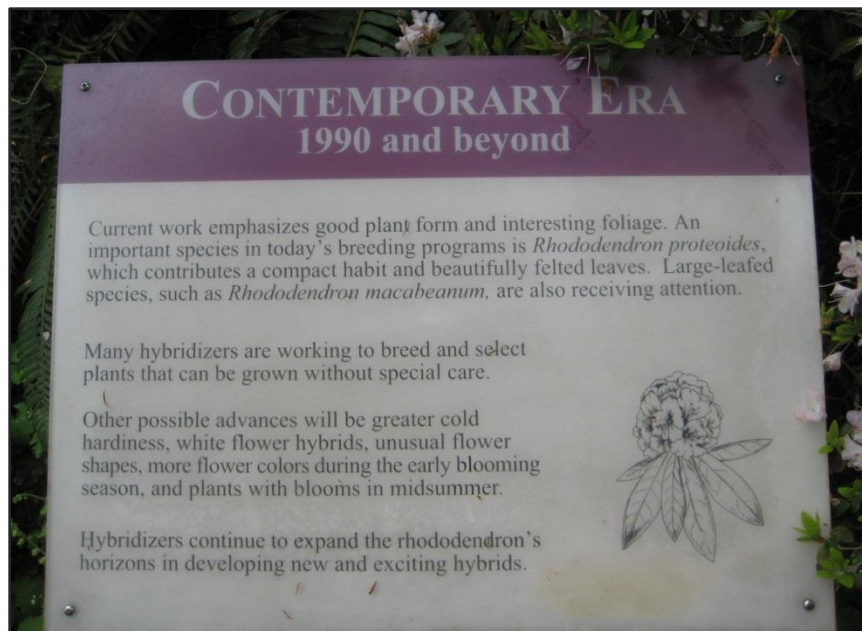
words: 29/12/33 (74)

size: 24"w x 18" h

center of sign is appx 39" from ground

installed: 2001

notes: very dirty and plant covering sign (5/13/12)



CONTEMPORARY ERA 1990 and beyond

Current work emphasizes good plant form and interesting foliage. An important species in today's breeding programs is *Rhododendron proteoides*, which contributes a compact habit and beautifully felted leaves. Large-leafed species, such as *Rhododendron macabeum*, are also receiving attention.

Many hybridizers are working to breed and select plants that can be grown without special care.

Other possible advances will be greater cold hardiness, white flower hybrids, unusual flower shapes, more flower colors during the early blooming season, and plants with blooms in midsummer.

Hybridizers continue to expand the rhododendron's horizons in developing new and exciting hybrids.

words: 38/16/28/13 (95)

size: 24"w x 18"h

center of sign is appx 39" from ground

installed: 2001

notes: none (5/13/12)



<< There are two copies of this sign in the garden.>>

THE WITT WINTER GARDEN

This seasonal display commemorates the late Joseph A. Witt who served successively as Recorder, Assistant Director, and Curator of the Arboretum between 1953 and 1983.

Plants in the garden have been selected and arranged according to their landscape qualities, rather than by family relationships as in other areas of the Arboretum.

The mild climate of the Puget Sound area provides growing conditions for a wide range of plants that can enliven our gardens during the winter months. In addition to flowering plants, look for those with distinctive bark, fruit, foliage, shape, texture, and fragrance.

The renovation of this garden was funded in part by the Arboretum Foundation.

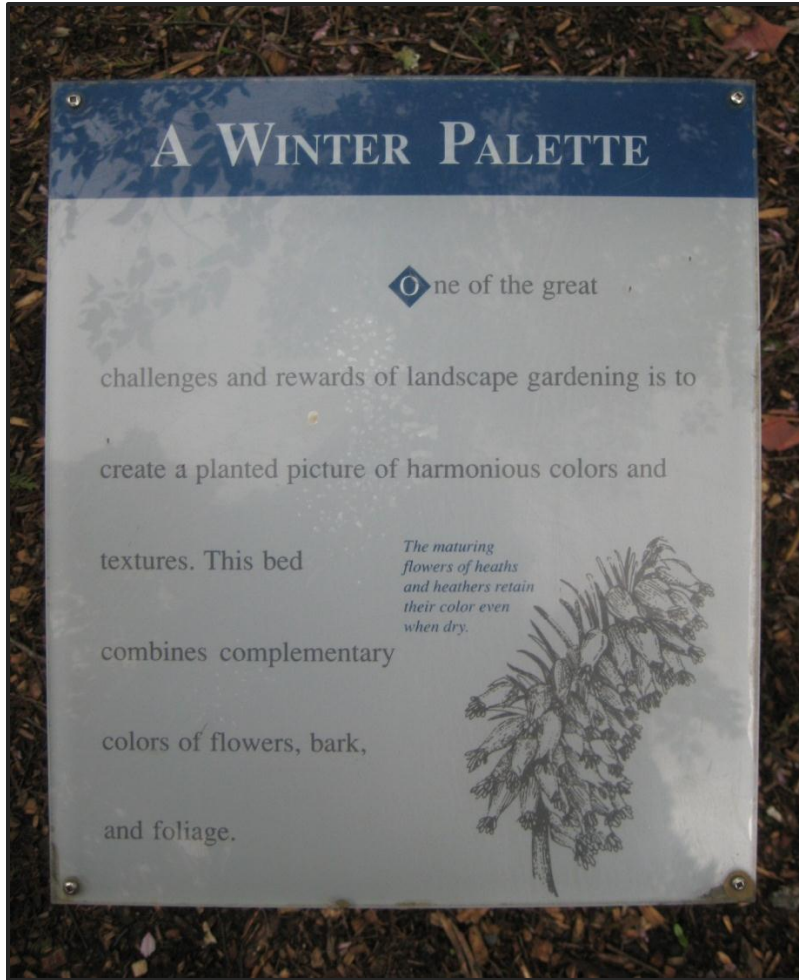
words: 25/26/43/13 (107)

size: 36" w x 45" h

center of sign is appx 35" from ground

installed: 1998

notes: one of two signs needs cleaning (5/13/12)



A WINTER PALETTE

One of the great challenges and rewards of landscape gardening is to create a planted picture of harmonious colors and textures. This bed combines complementary colors of flowers, bark, and foliage.

(caption) The maturing flowers of heaths and heathers retain their color even when dry.

words: 31/13 (44)

size: 12" w x 14" h

center of sign is appx 32" from ground

installed: 1998

notes: none (5/13/12)



COPPICED FOR COLOR

These shrubby dogwoods (*Cornus* species) are cut back to the ground every spring to encourage brightly colored new twig growth. Plants with colorful twigs look their best against solid backgrounds and in direct sunlight.

(caption) Coppicing is the periodic pruning of shoots to ground level.

words: 34/10 (44)

size: 12" w x 14" h

center of sign is appx 32" from ground

installed: 1998

notes: none (5/13/12)



<< There are two copies of this sign in the collection.>>

The Brian O. Mulligan SORBUS COLLECTION

The cool, moist Puget Sound climate is well suited to growing *Sorbus* – commonly know as mountain-ash, rowan or whitebeam. This collection is the most complete in North America. Over 50 different types are displayed here, including a wide slection of fspecies and cultivars. Plants in the genus *Sorbus*, together with apple (*Malus*) and pears (*Pyrus*) are part of a small tribe within the rose family.

The collection has been named to honor Brian O. Mulligan, director of the Arboretum from 1947 to 1972. His dedication to the Arboretum over the years has been a major forece in the development of its magnificent and diverse plant colelctions. His special interest in *Sorbus* guided the renovation and re-design of this collection.

The design of this collection reflects the Olmsteadian character of the Arboretum with gentle curviliner lines and naturalistic massing of plants. It provides better spaces for plant growth and greater educational opportunities for visitors. Spruces and companion shrub collections of *Deutzia* and *Philadelphus* (mock orange) are interplanted here.

Renovation of this area was made possible by a gift from the Arboretum Foundation.

words: 66/54/48/14 (181)

size: 36”w x 45”h

center of sign is appx 44.5” from ground

installed: 1989

notes: none (5/13/12)



SORBUS FOR URBAN GARDENS

Many mountain-ashes are perfect for small, urban gardens. They offer ornamental features throughout most of the year – spring flowers, rich green foliage providing filtered shade in the summer, and brilliant fall colors of fruits and leaves.

Sorbus species display a range of growth habits, depending upon the species or cultivar chosen. If you would like one for your garden, you may request plants propagated from this collection by the Arboretum Foundation. Inquire at the Graham Visitors Center.

words: 36/41 (77)

size: 12”w x 14”h

center of sign is appx 31” from ground

installed: 1989

notes: none (5/13/12)



Geography

Geography plays an important part in determining where plants can grow. In the temperate zones of the earth, plants are adapted to changing seasons and considerable variation in the length of days. The plants selected for the Pacific Connections Garden are native to regions found in similar latitudes north or south of the equator.

Plant diversity is decreasing worldwide and public gardens like this one play an important role in conservation. Some of the plants displayed in this garden are threatened in the wild and the work done here helps conserve their genetic material.

words: 54

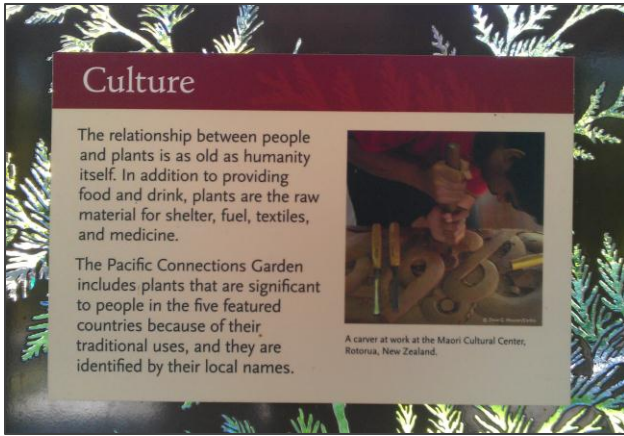
size: 24" w x 18" h

installed: spring 2008

center of geography sign is appx 63" from ground;

center of plant diversity sign is appx 43" from ground

notes: none (5/13/12)



(These two text panels are located on the same metal panel. *Culture* on top and *tree varieties* below, in the same manner as the above shelter signage.)

Culture

The relationship between people and plants is as old as humanity itself. In addition to providing food and drink, plants are the raw material for shelter, fuel, textiles, and medicine.

The Pacific Connections Garden includes plants that are significant to people in the five featured countries because of their traditional uses, and they are identified by their local names.

(caption) A carver at work at the Maori Cultural Center, Rotorua, New Zealand.

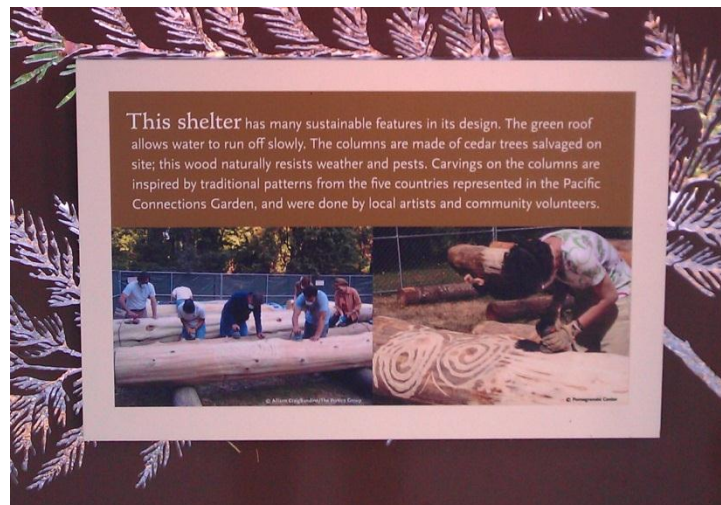
words: 30/29/12 (71)

size: 24”w x 18”h

center of sign is appx 63” from ground

installed: spring 2008

notes: none (5/13/12)



(These two text panels are located on the same metal panel. *Sustainability* on top and *This shelter* below, in the same manner as the other shelter signage.)

Sustainability

The Pacific Connections Garden was designed with sustainability in mind. The plants displayed here were selected because they are particularly well-suited to Seattle's climate. They were also chosen for their resistance to pests and disease and their non-invasive nature. These features not only make them easier to care for but save natural resources and help protect the environment.

(caption) *Buddleja globosa* (top) is not invasive in this region; however *Buddleja davidii* (bottom) has invaded natural areas, displacing native plants.

This shelter has many sustainable features in its design. The green roof allows water to run off slowly. The columns are made of cedar trees salvaged on site; this wood naturally resists weather and pests. Carvings on the columns are inspired by traditional patterns from the five countries represented in the Pacific Connections Garden, and were done by local artists and community volunteers.

words: 58/20/63 (141)

size: 24" w x 18" h

center of sustainability sign is appx 63" from ground;

center of shelter signs is appx 43" from ground

installed: spring 2008

notes: none (5/13/12)



Cascadia

Extending from Northern California to British Columbia, the forests of Cascadia are among the richest temperate coniferous woodlands in the world. Much of the region's diversity is because parts of the area remained free of glaciers during the last ice age, allowing species to survive and become specialized.

words: 48

size: 12"w x 12"h

center of sign is appx 21" from ground

installed: spring 2008

notes: none (5/13/12)



Chile

Isolated from the rest of South America by the Andes Mountains and the Atacama Desert, Chile is a major center of plant diversity. From arid deserts to temperate rainforests to mountain grasslands, Chile's diverse habitat types are home to over 5,000 species of plants.

words: 44

size: 12" w x 12" h

center of sign is appx 21" from ground

installed: spring 2008

notes: none (5/13/12)



China

China is rich in plant diversity. Nearly every plant family found in the tropical and temperate zones of the Northern Hemisphere is represented in China. This garden displays many plant species familiar to North American gardeners, such as bamboos, rhododendrons, and epimediums.

words: 42

size: 12" w x 12" h

center of sign is appx 21" from ground

installed: spring 2008

notes: none (5/13/12)



New Zealand

New Zealand has some of the world's most unique plants. Some of the plants are descendants of those that existed on an ancient continent hundreds of millions of years ago. Others are recent introductions, brought to the island nation by winds, ocean currents, and birds.

words: 45

size: 12"w x 12"h

center of sign is appx 21" from ground

installed: spring 2008

notes: none (5/13/12)



Australia

The natural landscape of Australia was once a mosaic of forests, shrublands, grasslands, and desert, but much of it has been forever changed by logging, farming, and grazing. This garden provides a glimpse of the plant diversity of this region.

words: 40

size: 12" w x 12" h

center of sign is appx 21" from ground

installed: spring 2008

notes: dirty (5/13/12)



The Cascadia Forest

Looking around, you will see native plants of Cascadia, an ecological bioregion stretching from Alaska to California on the west side of the Cascade Mountain Range. Many of the plants in this collection come from the **Siskiyou Mountains** of Southern Oregon. Unusual geography combined with the temperate climate make this area a botanical hotspot. Plant life is more diverse in the Siskiyou than anywhere else on the West Coast.

(caption) The Siskiyou Mountains are an especially diverse region of Cascadia.

(caption) The Cascade Range extends from Canada to northern California.

(caption) Cascadia has the world's largest temperate rainforests, dominated by conifers.

words: 69/10/9/10 (98)

word count: 69/10/9/10 (98)

size: 14"w x 12"h

center of sign is appx 26" from ground

installed: spring 2008

notes: none (5/13/12)



People of the Cedar

Northwest Coast Native American life has been centered around the western red cedar for thousands of years and many uses continue today. Every part of this native tree is used: wood for canoes and houses, twigs and roots for baskets, bark for mats and clothing. Appreciation is growing for the benefits and values of native plants and the sense of place they provide.

(caption) Mary Lou Slaughter, the great granddaughter of Chief Seattle carries on the basket weaving traditions of the Duwamish people.

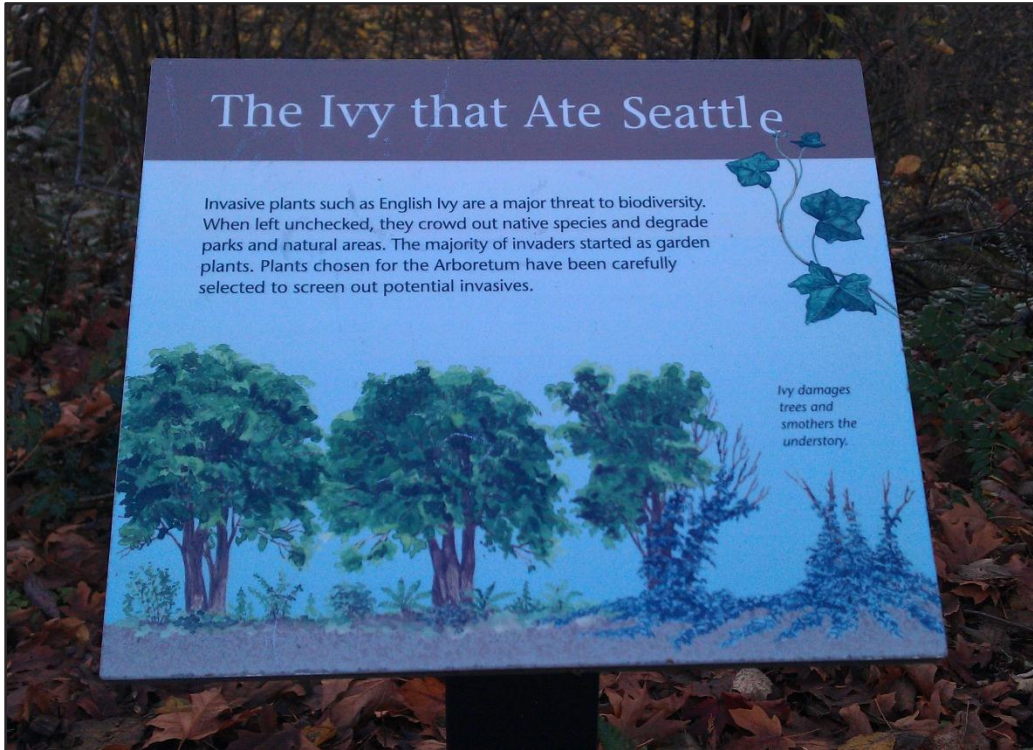
words: 63/19 (82)

size: 14" w x 12" h

center of sign is appx 29" from ground

installed: spring 2008

notes: none (5/13/12)



The Ivy that Ate Seattle

Invasive plants such as English Ivy are a major threat to biodiversity. When left unchecked they crowd out native species and degrade parks and natural areas. Plants chosen for the Arboretum have been carefully selected to screen out potential invasives.

(caption) Ivy damages trees and smothers the understory.

words: 40/7 (47)

size: 14"w x 12"h

center of sign is appx 33" from ground

installed: spring 2008

notes: none (5/13/12)

APPENDIX B: SIGNAGE INVENTORY SPREADSHEETS

Rhododendron Glen		inventoried May 2012			
1.	Puget Sound Rhododendron Hybrid Garden	2.	Plant Parenthood	3.	Early Era late 1940's through 1960's
	Diversity: The genus Rhododendron, well known for extravagant flowers and foliage, exhibit a remarkable diversity of size, form, and color. Rhododendron species are found from arctic to equatorial regions and range in size from a few inches to sixty feet tall.		Parentage of Rhododendron 'Lem's Cameo' lineage illustration		Early work on hybridizing Rhododendron in the Pacific Northwest focused around a small group of nurserymen, who called themselves the "RumDum Club". This group of friends met often, compared notes, shared pollen, argued passionately and developed a wealth of new hybrid rhododendrons.
	Pacific Northwest Popularity: The Pacific Northwest climate is amenable to a wide range of Rhododendron species and hybrids and is regarded as the best region for growing rhododendrons in the United States. It has been a center of rhododendron hybridization for several decades, with over 2,000 cultivars named.		Blond hair, blue eyes, pink flowers, narrow leaves - characteristics of people and plants are inheritable. Genes, segments of DNA carried on chromosomes, determine individual characteristics of all living things. Genetic mixing results from sexual reproduction, and variations are passed on or modified from generation to generation.		Rhododendron cultivars were not abundant during this time. Breeding goals generally focused on attractive flowers. Large flower truss size was one characteristic that dominated selections.
	Arboretum collection: Rhododendron is one of the most important genera in the collections of the Washington Park Arboretum. Approximately 700 different kinds are grown Arboretum wide.		With a knowledge of genetics, plant breeders select hybrid offspring with the best characteristics of their parents, especially traits which enhance their ornamental or economic value. Halfdam Lem, a dedicated regional hybridizer developed R. Lem's Cameo, a result of generations of hybridization among the other rhododendrons displayed here. Look for similarities in growth habit, flower color, and leaf shape and other characteristics which have been passed from parents to offspring.		The most elusive goal of this era was yellow flower color, which proved difficult to introduce into the hybrids. Two of the most significant yellow-flowered hybrids of the period were Rhododendron 'Lem's Cameo' and Rhododendron 'Hotei'.
	History: In the Puget Sound region, rhododendron hybridization began in the early 1940's. It started from seed sent from England in efforts to save breeding stock from bombing raids during the war. A local nurseryman, Halfdan Lem, sparked the hybridization work that has led many others in the region to develop and name hundreds of rhododendrons. This work continues today.		Large or colorful flowers, dense growth habit, disease resistance, abundant fruit, and drought tolerance are just some of the qualities for which plant breeders might look. Can you think of others?		end of sign

	The Garden: This garden area is divided into three general time periods, and features over 150 hybrids. Here is an excellent opportunity for visitors to follow the evolution of Puget Sound rhododendron hybrids developed since the 1940's. It is a historical record and a tribute to the outstanding work done by rhododendron breeders of the Puget Sound region.		The Hershel L. Roman Memorial This display was funded by the Roman family in memory of Hershel L. Roman, founder of the University of Washington Genetics Department, who loved both the beauty and the genetic principles so vividly exhibited by rhododendron hybrids.		
	Contributors: This project was supported by the Arboretum Foundation and many rhododendron enthusiasts who have provided expertise, plant material and assistance.		end of sign		
	word count: 41/48/26/60/58/21 (254)		word count: 47/70/31/42 (190)		word count: 42/25/36 (103)
	size: 36"w x 45"h		size: 36"w x 24"h		size: 24"w x 18"h
	center of sign is approx 47.5" from ground		center of sign is appx 30" from ground		center of sign is appx 34" from ground
	installed: 2001		installed: 2001		installed: 2001
	notes: none (5/13/12)		notes: very dirty (5/13/12)		notes: needs stabilizing, sign post leaning backwards (5/13/12)

Rhododendron Glen, contd			
4.	Middle Era 1970's and 1980's	5.	Contemporary Era 1990's and beyond
	During this period, the color range expanded. The yellow-flowered hybrids bred in previous years were used to produce better yellows, apricot peach tones and even more exotic "tropical" colors.		Current work emphasizes good plant form and interesting foliage. An important species in today's breeding programs is Rhododendron proteoides, which contributes a compact habit and beautifully felted leaves. Large-leafed species, such as Rhododendron macabeaum, are also receiving attention.
	Rhododendron breeders placed more emphasis on interesting leaf colors, shapes, and textures.		Many hybridizers are working to breed and select plants that can be grown without special care.
	The development of hybrids suitable for small gardens became an increasingly important goal. The small size and compact habit of Rhododendron yakushimanum made it popular with hybridizers, resulting in many popular "yak hybrids".		Other possible advances will be greater cold hardiness, white flower hybrids, unusual flower shapes, more flower colors during the early blooming season and plants with blooms in midsummer.
	end of sign		Hybridizers continue to expand the rhododendron's horizons in developing new and exciting hybrids.
			end of sign
	word count: 29/12/33 (74)		word count: 38/16/28/13 (95)
	size: 24"w x 18" h		size: 24"w x 18"h
	center of sign is appx 39" from ground		center of sign is appx 39" from ground
	installed: 2001		installed: 2001
	notes: very dirty and plant covering sign (5/13/12)		notes: none (5/13/12)

	Witt Winter Garden		inventoried May 2012		
1.	The Witt Winter Garden	2.	A Winter Palette	3.	Coppiced for Color
	This seasonal display commemorates the late Joseph A. Witt who served successively as Recorder, Assistant Director, and Curator of the Arboretum between 1953 and 1983.		One of the great challenges and rewards of landscape gardening is to create a planted picture of harmonious colors and textures. This bed combines complementary colors of flowers, bark, and foliage.		These shrubby dogwoods (Cornus species) are cut back to the ground every spring to encourage brightly colored new twig growth. Plants with colorful twigs look their best against solid backgrounds and in direct sunlight.
	Plants in the garden have been selected and arranged according to their landscape qualities, rather than by family relationships as in other areas of the Arboretum.		(caption) The maturing flowers of heaths and heathers retain their color even when dry.		(caption) Coppicing is the periodic pruning of shoots to ground level.
	The mild climate of the Puget Sound area provides growing conditions for a wide range of plants that can enliven our gardens during the winter months. In addition to flowering plants, look for those with distinctive bark, fruit, foliage, shape, texture, and fragrance.		end of sign		end of sign
	The renovation of this garden was funded in part by the Arboretum Foundation.				
	word count: 25/26/43/13 (107)		word count: 31/13 (44)		word count: 34/10 (44)
	size: 36"w x 45"h		size: 12"w x 14"h		size: 12"w x 14"h
	center of sign is appx 35" from ground		center of sign is appx 32" from ground		center of sign is appx 32" from ground
	installed: 1988		installed: 1988		installed: 1988
	notes: one sign dirty (5/13/12)		notes: none (5/13/12)		notes: none (5/13/12)
	removed:		removed:		removed:

Witt Winter Garden		NEW, uninstalled as of May 2012				
Art of Constrast	2.	Rare Gems	3.	Seasonal Snack	4.	Winter's Barter
In wintertime, unusual bark and colorful stems serve as punctuation against evergreen backdrops. Vivid white and green stripes decorate this manchurian snakebark maple (<i>Acer tegmentosum</i> 'Joe Witt'), named for the curator and founder of this winter garden, Joseph Witt.		Most species and cultivars of the camellia genus, like the common tea plant, have little to no scent. The few that do, like this camellia lutchuensis, are treasured by plant aficionados. In ikebana, the Japanese art of flower arrangement, camellias represent long-lasting love.		Midwinter blooms offer oasis to local wintering hummingbirds, like the Anna's hummingbird pictured here. This hardy berberis 'Arthur Menzies' blooms in January, just in time to feed hungry hummingbirds. This berberis hybrid was originally discovered here at the Washington Park Arboretum in 1961.		Plants that flower in winter do not face as much competition for pollinators, but the cold means that many of the animals that would otherwise pollinate a flower or spread seeds are dormant. Some plants compensate by producing stronger aromas. Azara's scent has been described as white chocolate, and Sarcococca pours sweet fragrance on every breeze.
(caption) <i>Acer tegmentosum</i> 'Joe Witt'		Renovations of this garden have been funded in part by the Lake Washington Garden Club, Unit III, Arboretum Foundation.		end of sign		end of sign
end of sign		end of sign				
word count: 39/4 (43)		word count: 43/19 (64)		word count: 43		word count: 56
size:		size:		size:		size:
center of sign is appx		center of sign is appx		center of sign is appx		center of sign is appx
installed:		installed:		installed:		installed:
notes:		notes:		notes:		notes:

	Sorbus Collection		Inventoried May 2012
1.	The Brian O. Mulligan SORBUS COLLECTION (x2 signs)	2.	
	The cool, moist Puget Sound climate is well suited to growing Sorbus – commonly know as mountain-ash, rowan or whitebeam. This collection is the most complete in North America. Over 50 different types are displayed here, including a wide slection of fspecies and cultivars. Plants in the genus Sorbus, together with apple (Malus) and pears (Pyrus) are part of a small tribe within the rose family.		Many mountain-ashes are perfect for small, urban gardens. They offer ornamental features throughout most of the year – spring flowers, rich green foliage providing filtered shade in the summer, and brilliant fall colors of fruits and leaves.
	The collection has been named to honor Brian O. Mulligan, director of the Arboretum from 1947 to 1972. His dedication to the Arboretum over the years has been a major forece in the development of its magnificent and diverse plant colelctions. His special interest in Sorbus guided the renovation and re-design of this collection.		Sorbus species display a range of growth habits, depending upon the species or cultivar chosen. If you would like one for your garden, you may request plants propagated from this collection by the Arboretum Foundation. Inquire at the Graham Visitors Center.
	The design of this collection reflects the Olmsteadian character of the Arboretum with gentle curviliner lines and naturalistic massing of plants. It provides better spaces for plant growth and greater educational opportunities for visitors. Spruces and companion shrub collections of Deutzia and Philadelphus (mock orange) are interplanted here.		end of sign
	Renovation of this area was made possible by a gift from the Arboretum Foundation.		
	word count: 66/54/48/14 (181)		word count: 36/41 (77)
	size: 36" w x 45" h		size: 12" w x 14" h
	center of sign is appx 44.5" from ground		center of sign is appx 31" from ground
	installed: 1989		installed: 1989
	notes: none (5/13/12)		notes: none (5/13/12)

	Shelter Themes		inventoried May 2012				
1	Climate	2	Geography	3	Culture	4	Sustainability
	Climate is the weather of a place averaged over a long period of time. The amount and seasonal pattern of rainfall and the fluctuation of temperature are primary factors influencing which plants can grow in a particular place.		Geography plays an important part in determining where plants can grow. In the temperate zones of the earth, plants are adapted to changing seasons and considerable variation in the length of days. The plants selected for the Pacific Connections Garden are native to regions found in similar latitudes north or south of the equator.		The relationship between people and plants is as old as humanity itself. In addition to providing food and drink, plants are the raw material for shelter, fuel, textiles, and medicine.		The Pacific Connections Garden was designed with sustainability in mind. The plants displayed here were selected because they are particularly well-suited to Seattle's climate. They were also chosen for their resistance to pests and disease and their non-invasive nature. These features not only make them easier to care for but save natural resources and help protect the environment.
	The five countries represented in the Pacific Connections Garden were selected because their climates are similar to Seattle's. Plants were selected that can tolerate Seattle's climate, with dry summers and mild, wet winters.		The Pacific Connections Garden features plants native to regions located between 35* and 55* north and south latitudes as well as plants found in similar climate conditions from mountain environments.		The Pacific Connections Garden includes plants that are significant to people in the five featured countries because of their traditional uses, and they are identified by their local names.		Buddleja globosa (top) is not invasive in this region; however Buddleja davidii (bottom) has invaded natural areas, displacing native plants.
	end of sign		Plant diversity is decreasing worldwide and public gardens like this one play an important role in conservation. Some of the plants displayed in this garden are threatened in the wild and the work done here helps conserve their genetic material.		(caption) A carver at work at the Maori Cultural Center, Rotorua, New Zealand		This shelter has many sustainable features in its design. The green roof allows water to run off slowly. The columns are made of cedar trees salvaged on site; this wood naturally resists weather and pests. Carvings on the columns are inspired by traditional patterns from the five countries represented in the Pacific Connections Garden, and were done by local artists and community volunteers.
	word count: 38/33 (71)		word count: 54		word count: 30/29/12 (71)		word count: 58/20/63 (141)
	size: 24"w x 18"h		size: 24"w x 18"h		size: 24"w x 18"h		size: 24"w x 18" h
	center of sign is appx 66" from ground		center of geography sign is appx 63" from ground; center of plant diversity sign is appx 43" from ground		center of sign is appx 63" from ground		center of sustainability sign is appx 63" from ground; center of shelter signs is appx 43" from ground
	installed: spring 2008		installed: spring 2008		installed: spring 2008		installed: spring 2008
	notes: none (5/13/12)		notes: none (5/13/12)		notes: none (5/13/12)		notes: none (5/13/12)

	Meadow Previews		inventoried May 2012						
1.	Cascadia	2.	Chile	3.	China	4.	New Zealand	5.	Australia
	Extending from Northern California to British Columbia, the forests of Cascadia are among the richest temperate coniferous woodlands in the world. Much of the region's diversity is because parts of the area remained free of glaciers during the last ice age, allowing species to survive and become specialized.		Isolated from the rest of South America by the Andes Mountains and the Atacama Desert, Chile is a major center of plant diversity. From arid deserts to temperate rainforests to mountain grasslands, Chile's diverse habitat types are home to over 5,000 species of plants.		China is rich in plant diversity. Nearly every plant family found in the tropical and temperate zones of the Northern Hemisphere is represented in China. This garden displays many plant species familiar to North American gardeners, such as bamboos, rhododendrons, and epimediums.		New Zealand has some of the world's most unique plants. Some of the plants are descendants of those that existed on an ancient continent hundreds of millions of years ago. Others are recent introductions, brought to the island nation by winds, ocean currents, and birds.		The natural landscape of Australia was once a mosaic of forests, shrublands, grasslands, and desert, but much of it has been forever changed by logging, farming, and grazing. This garden provides a glimpse of the plant diversity of this region.
	word count: 48		word count: 44		word count: 42		word count: 45		word count: 40
	size: 12"w x 12"h		size: 12"w x 12"h		size: 12"w x 12"h		size: 12"w x 12"h		size:12"w x 12"h
	center of sign is appx 21" from ground		center of sign is appx 21" from ground		center of sign is appx 21" from ground		center of sign is appx 21" from ground		center of sign is appx 21" from ground
	installed: spring 2008		installed: spring 2008		installed: spring 2008		installed: spring 2008		installed: spring 2008
	notes: none (5/13/12)		notes: none (5/13/12)		notes: none (5/13/12)		notes: none (5/13/12)		notes: dirty (5/13/12)

	Cascadia - upper		inventoried May 2012		
1.	The Cascadia Forest	2.	People of the Cedar	3.	The Ivy that Ate Seattle
	Looking around, you will see native plants of Cascadia, an ecological bioregion stretching from Alaska to California on the west side of the Cascade Mountain Range. Many of the plants in this collection come from the Siskiyou Mountains of Southern Oregon. Unusual geography combined with the temperate climate make this area a botanical hotspot. Plant life is more diverse in the Siskiyous than anywhere else on the West Coast.		Northwest Coast Native American life has been centered around the western red cedar for thousands of years and many uses continue today. Every part of this native tree is used: wood for canoes and houses, twigs and roots for baskets, bark for mats and clothing. Appreciation is growing for the benefits and values of native plants and the sense of place they provide.		Invasive plants such as English Ivy are a major threat to biodiversity. When left unchecked they crowd out native species and degrade parks and natural areas. Plants chosen for the Arboretum have been carefully selected to screen out potential invasives.
	The Siskiyou Mountains are an especially diverse region of Cascadia.		Mary Lou Slaughter, the great granddaughter of Chief Seattle carries on the basket weaving traditions of the Duwamish people.		Ivy damages trees and smothers the understory.
	The Cascade Range extends from Canada to northern California.		end of sign		end of sign
	Cascadia has the world's largest temperate rainforests, dominated by conifers.				
	word count: 69/10/9/10 (98)		word count: 63/19 (82)		word count: 40/7 (47)
	size: 14"w x 12"h		size: 14"w x 12"h		size: 14"w x 12"h
	center of sign is appx 26" from ground		center of sign is appx 29" from ground		center of sign is appx 33" from ground
	installed: spring 2008		installed: spring 2008		installed: spring 2008
	notes: none (5/13/12)		notes: none (5/13/12)		notes: none (5/13/12)

	Cascadia - path		NEW, uninstalled as of May 2012		
1	An Opportunity to Pause	2.	Fallen Trees Make Fine Homes	3.	Ecosystem Within an Ecosystem
	The forests of the Cascade Range offer a subtle beauty in all seasons. Be on the lookout for tiny seasonal blooms such as the white globes of flowers of coltsfoot (<i>Petasites frigidus</i>) in the early spring or various small stands of lilies later in the summer. The colder months evergreen shrubs still have lovely foliage.		Walking through the Pacific Connections forests you may notice snags and decaying logs. Though no longer green or growing, such piles of coarse woody debris are left on purpose to provide a nutrient-rich habitat for many smaller plants and creatures. Take note of the dead wood you see each time you visit and consider how it changes.		Wetland areas can be found throughout the lower elevations of the Siskiyou. They are home to plants found nowhere else. Bog ecosystems like this one are extremely delicate. However, the species living here are well adapted to the high acidity of the water. Some plants have even become carnivorous to gain nutrients that the surrounding soil does not provide.
	word count: 55		word count: 57		word count: 59
	size:		size:		size:
	center of sign is appx		center of sign is appx		center of sign is appx
	installed:		installed:		installed:
	notes:		notes:		notes:

Cascadia - path, contd			
4.	Many Factors Make This Forest Unique	5.	Renewal by Fire
	Many of the plants you see around you are endemic, or found nowhere else. Glaciers, wind, and animals brought seeds from far-off regions to the Siskiyou. The plants then evolved in unique ways due to the serpentine soil of the area which is low in nutrients and high in heavy metals. The Siskiyou ecosystem is now one of the most diverse in the world.		Wild fires can be destructive to people and property. However, the intense heat is often crucial for plant survival. Knobcone pines (<i>Pinus attenuata</i>) and the threatened species Siskiyou cypress (<i>Cupressus bakeri</i>) both produce cones that cannot release their seeds without the help of natural fires. Burning also thins out the understory, increasing sunlight and reducing the intensity of future fires.
	word count: 64		word count: 60
	size:		size:
	center of sign is appx		center of sign is appx
	installed:		installed:
	notes:		notes:
6.	Diversity isn't always obvious		Over 21 species of conifers can be found in the Siskiyou. Several of them are represented along this trail. At first glance, many of the trees may look the same but take a moment to look closer. Leaves and needles grow in different shapes and sizes and the pattern of tree bark varies.
	word count: 54		
	size:		size:
	center of sign is appx		center of sign is appx
	installed:		installed:
	notes:		notes:

	Holly Collection		NEW, uninstalled as of May 2012		
1.	Holly Beyond the Holidays	2.	Deciduous Clade	3.	American Clade
	<<no subheader>>		WILD HOLLIES NEED HELP		OUR NATIVE HOLLIES
	We may think we know holly: jagged leaves, red berries, and winter. But hollies are actually very diverse. This collection includes 38 species, making it one of the largest in North America.		Deciduous hollies drop their leaves in the fall. Two deciduous hollies native to the US - Winterberry (<i>Ilex verticillata</i>) and Possumhaw (<i>Ilex decidua</i>) - provide important sources of food and shelter for birds, deer, squirrels, and even butterflies. Unfortunately, habitat loss threatens Winterberry and Possumhaw in several states. Protecting native holly habitat helps other plants and animals too.		This clade includes 300 species, including American holly (<i>Ilex opaca</i>), our native, non-invasive version of "traditional" English holly (<i>Ilex aquifolium</i>). American holly looks great in yards, makes beautiful holiday decorations, and provides food and shelter for wildlife - and it's non-invasive.
	All hollies belong to the genus <i>Ilex</i> . A genus is a group of closely related species. You can also group hollies into clades - a clade includes an ancestor and all of its descendants.		end of sign		end of sign
	The hollies here are planted in 4 clades based on DNA analysis: Deciduous, American, Asian/North American, and Eurasian.				
	word count: 32/34/18 (84)		word count: 58		word count: 41
	size:		size:		size:
	center of sign is appx		center of sign is appx		center of sign is appx
	installed:		installed:		installed:
	notes:		notes:		notes:

Holly Collection, contd			
4.	Asian Clade	5.	Eurasian Clade
	IMPORTANT IN FORESTS AND GARDENS		HOLIDAY HOLLY INVADES THE NORTHWEST!
	Gardeners use the ornamental Japanese holly (<i>Ilex crenata</i>) and its many cultivars which can grow small and dense or tall and tree like. Japanese holly also plays an important role in its native pine forests where it is an important food source for sika deer.		Most of us recognize English holly (<i>Ilex aquifolium</i>), one of about 250 Eurasian species. Unfortunately, English holly becomes invasive in Washington. Birds spread its seed and it can grow so thick that it excludes native shrubs and trees. You can help by using non-invasive hollies instead, like American holly (<i>Ilex opaca</i>).
	end of sign		end of sign
	word count: 45		word count: 52
	size:		size:
	center of sign is appx		center of sign is appx
	installed:		installed:
	notes:		notes:

APPENDIX C: CASCADIA LABEL VISITOR ASSESSMENT INSTRUMENTS

Ecosystem within an ecosystem

Wetland areas can be found throughout the lower elevations of the Siskiyou. They are home to plants found nowhere else. Bog ecosystems like this one are extremely delicate and the species living here are well adapted to the high acidity of the water. Some plants have even become carnivorous to gain nutrients that the surrounding soil does not provide.

How **new** was the information in this label to you?

Completely new –	Mostly new –	Mostly old –	All old news –
I have never heard the information before	I have heard about the topic before but don't remember anything specific	I know most of this information already but not all of it	I knew all the information presented before reading

How **interesting** was this label to you?

Very	Mostly	A little	Boring
------	--------	----------	--------

Fell trees make fine homes

Walking through the Pacific Connections forests you may notice fallen and crumbling logs. Though no longer green or growing, such piles of coarse woody debris are left on purpose to provide a nutrient-rich habitat for many smaller plants and creatures. Take note of the dead wood you see each time you visit and consider how it changes.

How **new** was the information in this label to you?

Completely new –	Mostly new –	Mostly old –	All old news –
I have never heard the information before	I have heard about the topic before but don't remember anything specific	I know most of this information already but not all of it	I knew all the information presented before reading

How **interesting** was this label to you?

Very	Mostly	A little	Boring
------	--------	----------	--------

Renewal by fire

Wild fires can be devastating to people and property. However, sometimes the intense heat is crucial for plant survival. Knobcone pines and the threatened species, Siskiyou cypress, both produce cones that cannot release their seeds without the help of natural fires. Fires also clear out the understory, which is important for forest renewal in the wild.

How **new** was the information in this label to you?

Completely new –	Mostly new –	Mostly old –	All old news –
I have never heard the information before	I have heard about the topic before but don't remember anything specific	I know most of this information already but not all of it	I knew all the information presented before reading

How **interesting** was this label to you?

Very	Mostly	A little	Boring
------	--------	----------	--------

Many factors make a forest unique

Some of the most diverse plant and animal life in the world lives right here in the Pacific Northwest. Many of the plants you see around you are *endemic*, or found nowhere else. Glaciers, wind, and animals brought seeds from other regions. Then the climate and the heavy metal in the soil and lack of nutrients like calcium forced plants to evolve in unique ways.

How **new** was the information in this label to you?

Completely new –	Mostly new –	Mostly old –	All old news –
I have never heard the information before	I have heard about the topic before but don't remember anything specific	I know most of this information already but not all of it	I knew all the information presented before reading

How **interesting** was this label to you?

Very	Mostly	A little	Boring
------	--------	----------	--------

Try to spot subtle differences

Diversity isn't always obvious. Over 21 species of conifers live in the Siskiyou. Several of them are represented along this trail. At first glance, many of the evergreens growing here may look the same but take a moment to look closer. Notice how the needles grow in different shapes and sizes or how the pattern of tree bark varies.

How **new** was the information in this label to you?

Completely new –	Mostly new –	Mostly old –	All old news –
I have never heard the information before	I have heard about the topic before but don't remember anything specific	I know most of this information already but not all of it	I knew all the information presented before reading

How **interesting** was this label to you?

Very	Mostly	A little	Boring
------	--------	----------	--------

An opportunity to pause

The forests of the Cascade Range offer a subtle beauty. Allow yourself to slow down here. Be on the lookout for tiny seasonal blooms such as the white globes of flowers of the coltsfoot in the early spring or various small stands of lilies later in the summer.

How **new** was the information in this label to you?

Completely new –	Mostly new –	Mostly old –	All old news –
I have never heard the information before	I have heard about the topic before but don't remember anything specific	I know most of this information already but not all of it	I knew all the information presented before reading

How **interesting** was this label to you?

Very	Mostly	A little	Boring
------	--------	----------	--------

When you see small labels in **exterior setting like this**, how often to you stop to read them?

Every time	Most of the time	Only occasionally	Never
------------	------------------	-------------------	-------

Comments/Notes:

***This final page was reproduced on the reverse of all three sets of labels.

APPENDIX D: CASCADIA LABEL VISITOR ASSESSMENT RESPONSES

sign reader?	
every time	0
most of the time	6
only occasionally	3
never	0
no response	1
addtl from same visitor	2
total	12

	Ecosystem	Fell trees	Subtle difference	Opportunity to pause	Renewal by fire	Many factors
<i>how new is info?</i>						
completely	1		2		1	1
mostly new	3	1	1	4	1	1
mostly old		1	1		1	2
all old news		2			1	
total	4	4	4	4	4	4

	Ecosystem	Fell trees	Subtle difference	Opportunity to pause	Renewal by fire	Many factors
<i>how interesting is info?</i>						
very	1	2			1	1
mostly	3	2	3	3	3	2
a little			1	1		1
boring						
total	4	4	4	4	4	4

Comments/Notes:

Ecosystem within/Fell trees instrument

- Cool project, thnx for your commitment!
- More smaller sentences w/punctuation that helps separate the ideas/thoughts/info
- I like when you provide specific examples

Subtle difference/Opportunity to pause instrument

- What are the Siskiyou? Do people know their contexts?
- I felt like they were a bit patronizing. On the second one (opportunity) I'd prefer a picture of the flowers with a label, a learning moment. And not the slow down part which sounds a little judgmental, like "you are going too fast" and I feel a bit "profiled." Again, I'd prefer to have an interesting bit of knowledge posted, like the illustration of the plant with the name and times of year and that's it.

Renewal by fire/Many factors instrument

- How will I know where to look?
- I will read labels with the labels are interesting looking
- It is great that this info is available so we know what we are looking at/enjoying at the Arb. I actually learned something new abt. the plants/forests here today.

APPENDIX E: TECHNOLOGY ADDENDUM

PREVIOUSLY ADDRESSED

All of these technologies, including the original vendors that were provided as examples, are still viable. The PDA rental provider was no longer in business but with the proliferation of personal smartphones, there are plenty of other ways to utilize PDA-like devices.

<i>Type</i>	<i>Vendors still available</i>	<i>Notes</i>
FM Radio Broadcasting	Yes	
Ambient Radio	Yes	UW doctoral student currently creating sound installation for WPA
Guided Audio	Yes	UWBG implemented; many wand/headphone based companies now produce apps as well; Podcasts would be included in this category
Kiosks: map printouts	Yes	Bellevue Botanical Garden experimenting
BG-Map System (Botanical Garden- Map)	Yes	Vendor website is very outdated though they seem to have current clients
PDA's	No – but new opportunities below	
Cell Phone Tours	Yes	Klondike Gold Rush Museum and Tacoma art Museum currently use
Websites	Yes	UWBG implemented

NEW OPPORTUNITIES TO INTEGRATE TECHNOLOGY

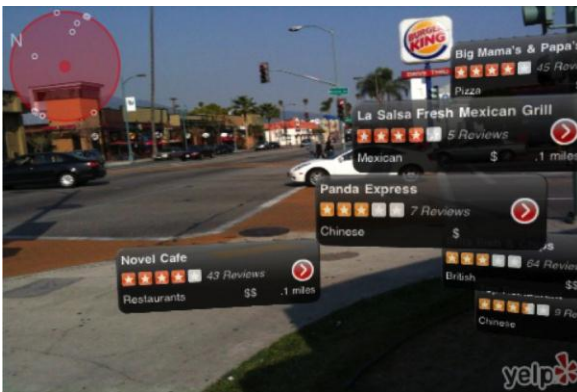
Most of the new opportunities to integrate technology in an exterior environment in an innovative way hinge on the use of a smart phone or tablet computer of some kind. All rely on internet access at some point either during or after the visit. The main barrier to implementing these technologies is whether visitors have access to such a handheld device. However, data from January 2012 indicate that over 100 million of the 234 million mobile phones users in the United States use a smartphone (Mogg, 2012). Development costs may also be prohibitive. Additionally, research has so far been inconclusive regarding effectiveness of these techniques to encourage greater engagement from visitors. Technology is also changing more rapidly than ever. Though experimentation is encouraged, be aware that even extremely widespread apps and social media sites will wane in popularity over time. No singular method will be ideal for every target audience group so issues of who (which visitor) does and doesn't use a particular technology should be taken with a grain of salt.

Type	Notes	Examples
<p>Apps Smart phone/tablet programs that allow deeper exploration of a site or location. They can provide condensed version of the website, maps, collection searching, games, and feedback opportunities for visitors.</p>	<p>Usually created by a consultant company but tools are available to create simple versions in-house; need constant maintenance.</p> <p>Can be offered to the public via the devices 'app' store free or for a charge.</p>	<p>Woodland Park Zoo (paid) features GPS enabled map that shows where you are, ability to add events to your personal calendar,</p> <p>National Botanic Gardens of Ireland (free) beautiful self-guided audio tours (3) with easy to read maps, additional information, and historical photos at some stops.</p> <p>Brooklyn Museum (free) streamlined version of website, also offers opportunity for users to record feedback and send it to staff</p>



WPZ's GPS map / NBC of Ireland's enhanced audio guide / Brooklyn Museum's app homepage

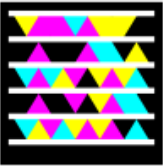
<i>Type</i>	<i>Notes</i>	<i>Examples</i>
<p>Augmented reality Smart phone/tablet programs that overlay computer generated material on top of a live view of the environment. Device must have camera.</p>	<p>Has not taken off as quickly as some had thought.</p> <p>The yellow “first down” line on tv broadcasts of football games is AR.</p>	<p>Yelp.com app has AR function where it shows all restaurants/bars/businesses in the area in the general direction that the phone’s camera is facing. Touching one of the business names links to its review page on yelp.</p> <p>Streetmuseum by the Museum of London overlays historic photos of the city that match up with whatever the camera is seeing</p>



yelp's monocle function



Museum of London's Streetmuseum

Type	Notes	Examples
<p>2d barcodes (QR codes or HCCBs) Square shaped barcode that links to any information the provider wants, usually a website (contact info, images, or geo-locations can be embedded in a code)</p> 	<p>Require a reader app to read the code.</p> <p>Have not caught on as much as anticipated - many people know what they are but do not use them.</p> <p>Can be created for free and the only maintenance is of the website or information they link to.</p>	<p>State Botanical Garden of Georgia added dozens last fall. They said that so far it was members of the older generation that own smartphones that were using the codes to get additional information.</p> <p>U.S. Botanic Garden added stickers with QR codes to pre-existing signs advertising an audio tour.</p> <p>Atlanta Botanical Garden created an app with a built in reader – visitors don't need an additional program.</p>

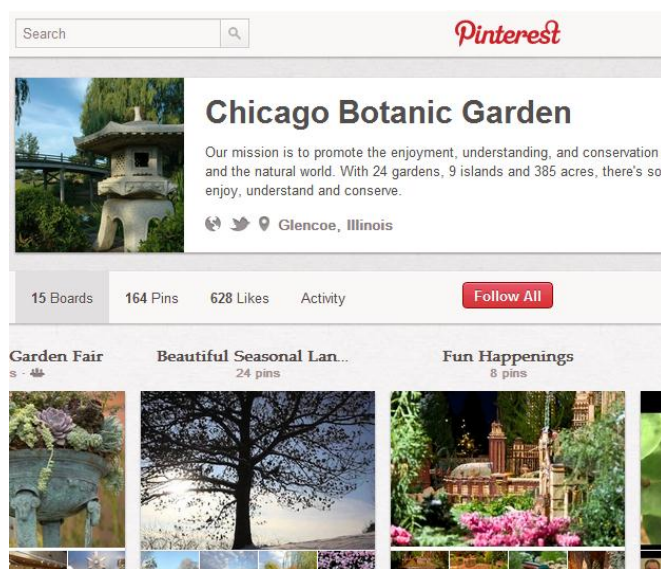


SBG of Georgia, QR code on interpretive sign

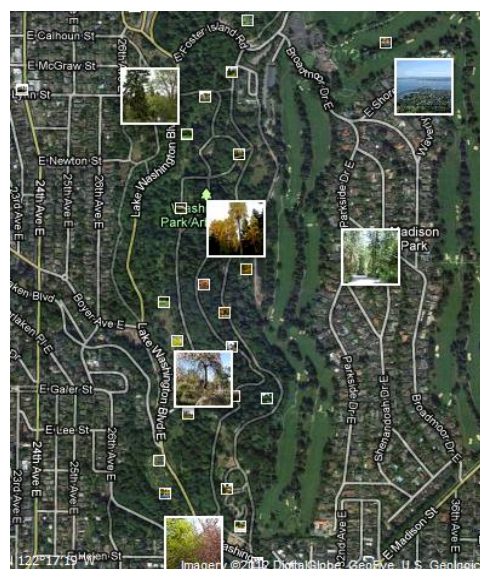


USBG, scanning QR code on audio tour sign

Type	Notes	Examples
<p>Social Media based/Web 2.0</p> <p>Websites or applications that facilitate participatory information sharing.</p> <p>Mostly used by organizations for marketing purposes but could be used to start conversations – finding out what community members want or looking at what they post to determine future interpretive opportunities.</p>	<p>Also free to create accounts; may be able to pay extra for PRO versions.</p> <p>May be time consuming to monitor or “police.”</p> <p>Seem to have the greatest reach although even sites with millions of fans may ebb in popularity over time (myspace).</p> <p>Not necessarily linked to a mobile device but can be.</p>	<p><i>There are numerous popular sites and exemplary institutional users. UWBG already utilizes the first few of this list. In general, if an org is on one of these sites, they are on most of the others. The key to utilizing social media effectively is interacting with users by commenting, thanking, “liking” posts and most importantly remaining active.</i></p> <p>Facebook – Missouri BG Twitter – Brooklyn BG Flickr – Atlanta BG Instagram – New York BG Pinterest – Chicago BG Panoramio – Google maps add-on where users can add photographs to maps. Could be used intentionally by UWBG.</p>



Chicago BG's pinterest site



User photos at UWBG on Panoramio