

NEACOXIE WATERSHED ASSESSMENT  
*Terrestrial and Aquatic Plant Surveys*

Submitted by:  
North Coast Land Conservancy

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## **Explanation of Study Need**

Previously, little information was known about the ecology or the condition of native habitats in the Neacoxie sub-watershed that drains from the city of Warrenton into the north section of the Necanicum Estuary in the city of Seaside. In 2002, the Necanicum Watershed Council completed an assessment for the Necanicum River watershed, but with major knowledge gaps for the Neacoxie watershed, which includes the Neacoxie Creek corridor and the Clatsop Plains. In order for the North Coast Land Conservancy (NCLC) and other land managers to develop stewardship priorities and to make informed decisions about land management actions in this region, additional information was required. Together with the Necanicum Watershed Council and the North Coast Watershed Association, NCLC secured funding to conduct habitat inventories of the Neacoxie watershed.

The Neacoxie Watershed Assessment summarizes the results of terrestrial plant transects and aquatic plant surveys completed in the summer of 2011 on ten properties owned by the North Coast Land Conservancy (NCLC) in the Neacoxie Creek watershed (*please refer to Appendices A & B*). Habitat types include stabilized sand dunes dominated by coastal prairie habitat, interdunal wetland swales and lakes, upland Sitka spruce forest, and forested wetlands. Percent composition of each plant community type observed was calculated. Invasive non-native plant species were recorded. Surveys were also conducted for both native and non-native plants in four water bodies owned by NCLC or adjacent to land trust properties. The plant community data that were collected will be used to evaluate baseline ecological conditions in the Neacoxie watershed. Plant communities can be used as indicators of long-term tidal and hydrologic conditions as well as the ecological health of the landscape. Repeated measurements can be used to assess community changes over time and to assess how plant community composition compares to that described for natural conditions. This information will assist the land trust in making science-based stewardship decisions on its properties, and can be used by other landowners to better understand changes occurring in plant communities in similar habitats on their properties as a result of human disturbance (e.g., land development, farming, grazing) and invasion by non-native plants.

## **Methods Used**

The plant community inventory method used to evaluate ten NCLC properties was adapted from the methodology outlined in “Vegetation Cross-Section Composition and Greenline Composition” in the U.S. Forest Service manual *Monitoring the Vegetation Resources in Riparian Areas* (Winward 2000). Plant transects were done following the vegetation cross-section composition protocol, which quantifies the percent cover of plant community types relative to other community types in a given area. The community types were categorized using plant association guides developed by the Oregon Natural Heritage Information Center (ONHIC) and detailed in *Plant Associations of the Oregon Dune National Recreation Area* (1998), *Classification of Native Vegetation of Oregon* (2004), and *Native Freshwater Wetland Plant Associations of Northwestern Oregon* (2004).

Cross-section composition data were collected by recording the number of paces for each plant community type along a transect line. Transects ran from east to west and were uniformly spaced 50 meters apart in each of the ten NCLC properties. For a separate community type to be counted, it had to occur for longer than two paces. For consistency, one surveyor performed the pacing on all transects, walking in a straight line from east to west. The other surveyor recorded the number of paces, plant community types, and geographical data (*please refer to Figure 1*). The number of paces for each property was totaled, and the number of paces for each community type on the property was divided by that total to determine the percent composition of each plant community type. Then total paces were added for all the properties surveyed and divided by total paces for each community type to get the overall percent composition for the entire study area. In addition to recording indicator species used for typing plant associations, other plant species were noted, including invasive non-native plants and their abundance. At the beginning and end of each transect, and at points along transects where plant community types began to change, photos were taken in each of the cardinal directions and GPS coordinates recorded.

For aquatic surveys, surveyors walked through and along the margins of West Lake and Wild Ace Lake. Sunset Lake and part of Neacoxie Creek adjacent to Neacoxie Forest property were accessed by kayaks. All plants species, including invasive species, observed growing in the water and along riparian edges were recorded.

**Figure 1.** Plant transect data sheet

**NATURAL RESOURCE INVENTORY**

Site: \_\_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_

Date: \_\_\_\_\_

Data Collector: \_\_\_\_\_

Transect # \_\_\_\_\_

UTM: Start

\_\_\_\_\_;

End

\_\_\_\_\_;

Azimuth \_\_\_\_\_

\_\_\_\_\_

Community #	UTM at beginning of Community Type	Community Type/Publication	Paces	Invasives	
				Species	Notes including relative abundance

## **Plant Associations**

The Oregon Biodiversity Information Center has ranked plant associations according to their conservation status. Some of the following descriptions include their ranking, composed of a global rank ("G") followed by a state rank ("S"). These standardized ranks are used by all natural heritage programs and conservation data centers throughout North America.

1 = Critically imperiled because of extreme rarity, with 5 or fewer occurrences or very few remaining acres.

2 = Imperiled because of rarity, with 6-20 occurrences or few remaining acres.

3 = Either very rare and local throughout its range or found locally in a restricted range; uncommon, with 21-100 occurrences.

4 = Apparently secure, though it may be quite rare in parts of its range, especially at the periphery; many occurrences.

5 = Demonstrably secure, though it may be quite rare in parts of its range, especially at the periphery; ineradicable under present conditions.

**The following is a list of the most common plant associations observed in the Clatsop Plains and Neacoxie Creek corridor.**

### **ALRU2/CAOB3-LYAM3**

#### **Red alder / slough sedge - skunk cabbage**

(*Alnus rubra* / *Carex obnupta* - *Lysichiton americanus* Association)

**Vegetation and ecology:** Habitat is forested wetland (swamp). Some sites are silted-in beaver ponds, and others are in peatlands where the association occurs in nutrient-rich soils adjacent to uplands. Stands are dominated by *Alnus rubra* between 20-50 years old and have relatively few species in the shrub and herb layers. *Thuja plicata*, *Picea sitchensis*, and *Tsuga heterophylla* are sparsely represented in both in both the overstory and understory, where they are peripheral or limited to elevated microsites. The sparse shrub layer may include *Rubus ursinus*, *Salix hookeriana*, *Spiraea douglasii*, *Lonicera involucrata*, or *Rubus spectabilis* in wet areas and may have *Gaultheria shallon* and *Acer circinatum* on stumps and logs. The herb layer is dominated by *Carex obnupta* and *Lysichiton americanus*. *Athyrium filix-femina* has a constancy of 23 percent but cover never exceeds 10 percent. *Polystichum munitum* may be abundant on logs and stumps. Expanses of treacherously deep muck frequently occur between clumps of *Carex* and *Lysichiton*. *Sphagnum* moss does not occur in this association but the moss *Eurhynchium praelongum* is common. Stands along streams may be flooded for brief periods after winter storms.

### **CALHET**

#### **Different-leaved water-starwort**

(*Callitriche heterophylla* Association)

**Vegetation and ecology:** Habitat is low-elevation shallow pools, ponds, slow-moving streams, and flooded shrub swamps. *Fraxinus latifolia*, *Salix hookeriana*, *Salix lucida* ssp. *lasiandra*, *Salix sitchensis*, and *Spiraea douglasii* are typical associates in this habitat, but woody vegetation

may also be entirely absent. *Callitriche heterophylla* is the dominant species and is usually immersed with the topmost leaves floating on the surface of the water. Emergent species present may include *Oenanthe sarmentosa*, *Veronica scutellata*, *Cicuta douglasii*, *Torreyochloa pallida* var. *pauciflora*, and *Glyceria*.

## **CARAQUD**

### **Sitka sedge**

(*Carex aquatilis* var. *dives* Association)

**Vegetation and ecology:** Habitat is usually montane fens. The association is widespread and important in the Cascade Range and, like the *Carex aquatilis* var. *aquatilis* association, includes a heterogeneous mix of species that do not segregate in any meaningful way. Trees and shrubs are scarce, although many different species are present. The herb layer is astonishingly diverse with more than 120 species recorded, but most of these have relatively low constancy and reflect the patchy distribution of many different taxa. *Carex aquatilis* var. *dives* is the primary species, averaging 54 percent cover, and many stands occur as monotypic reedswamp with cover ranging from 5 to 99 percent. Some of these stands intergrade with the *Carex utriculata* association in seasonally flooded depressions. *Dodecatheon jeffreyi*, *Carex utriculata*, and *Hypericum anagalloides* are the only other species with constancy higher than 20 percent. Species with significant patches include *Caltha leptosepala* ssp. *howellii*, *Eleocharis quinqueflora*, *Equisetum fluviatile*, *Viola macloskeyi*, *Cicuta douglasii*, and *Agrostis thurberiana*. Stands may occur on old beaver terraces on seepage slopes, and also in sag ponds on slopes prone to slumping. *Carex aquatilis* var. *dives* can intermix with forest ecotone or meadow taxa as long as enough soil moisture is present. Plants become progressively dwarfed as conditions become drier.

## **CAROBN**

### **Slough sedge**

(*Carex obnupta*)

Habitats include isolated depressions with internal drainage, peatlands, shrub swamps, ancient marine terraces, and deflation plains. The *Carex obnupta* association is heterogeneous and difficult to segregate into meaningful types. Stands range from species-rich assemblages to monotypes and can be dense or depauperate, the latter with only bare mud or sphagnum moss between the plants. Tussocks may be six inches in diameter, closely spaced and 1-3 feet tall, or 3 feet in diameter, 3-6 feet apart and growing up to 6 feet tall. Some sites are old beaver swamps, cleared for pasture and then abandoned because they were too wet for livestock. Beaver subsequently reclaimed most of these sites. Elk and beaver use may be heavy. ONHIC ranks this plant community as G4S4, meaning it is common and apparently secure, though it may be quite rare in parts of its range.

### **Cultivated Grassland with Scotch Broom**

#### **Cultivated Grassland with CYSC4**

(scotchbroom-*Cytisus scoparius*)

Planted, cultivated, disturbed grasslands inland from beachgrass communities where non-native grasses, especially tall fescue (*Schedonorus phoenix*), orchard grass (*Dactylis glomerata*), velvet grass (*Holcus lanatus*), sweet vernalgrass (*Anthoxanthum odoratum*), and other pasture grass species dominate. Scotch broom present in greater than 10% of the shrub canopy.

### **Cultivated Grassland**

Planted, cultivated, disturbed grasslands inland from beachgrass communities where non-native grasses, especially tall fescue (*Schedonorus phoenix*), orchard grass (*Dactylis glomerata*), velvet grass (*Holcus lanatus*), sweet vernalgrass (*Anthoxanthum odoratum*), and other pasture grass species dominate. Scotch broom present in less than 10% of the shrub canopy.

### **JUNEFF**

#### **Common rush**

(*Juncus effusus* association)

Habitat is meadows, fens and old pastures. Landform position is slopes, floodplains, and basins. Hydrology is seasonally moist to perennially saturated. Soils are mostly loam and some organic. This association is generally thought of as a disturbance-induced community type resulting from grazing, but some occurrences suggest that it may be native in some places that have not been grazed. Trees are usually absent. The herb layer usually consists of large amounts of *Ranunculus repens*, but otherwise the community is monotypic.

### **LEMOM**

#### **American Dunegrass Herbaceous Vegetation**

(*Leymus mollis* spp. *Mollis*)

Stands on well-drained upper beaches and foredunes contain little vegetation with up to 70 percent bare sand. Sea pea is usually a conspicuous associate. Continual sand burial and inputs of salt spray on beaches, foredunes, and exposed areas on deflation plains seems necessary for American dunegrass to thrive. A variant expression occurs on deflation plains and in upper estuaries, where additional moisture allows many more species to grow. These may have a total herb cover approaching 100 percent, and weedy species typical of the salt rush association may be conspicuous. Stands in most locations have been overrun by European beachgrass, but American dunegrass often persists in patches among the European beachgrass.

### **MALFUS**

#### **Crabapple Shrubland**

(*Malus fusca*)

Found in perennially wet mucky soils with high organic content, this plant association typically occurs on old deflation plains. Sites are seasonally flooded with water just below the ground surface in late summer. Crabapple thickets are nearly impenetrable, growing in dense patches with tangles of vertical and horizontal branches creating as much as 95% canopy cover. The



understory is dominated by bare mucky soils with a lesser component of slough sedge. Dense vegetation prohibits human access, minimizing management concerns. ONHIC ranks this plant community as G3S3, meaning it is very rare and restricted locally throughout its range both globally and within Oregon.

### **MALFUS-CAOB3**

#### **Crabapple / slough sedge**

(*Malus fusca* / *Carex obnupta* Association)

**Vegetation and ecology:** Habitat is depressions in both deciduous and coniferous forest. All trees grow along the periphery of wetlands. The most typical expression known to the author is a dense, monotypic stand of *Malus fusca* with a monotypic understory of *Carex obnupta*. Depending on hydroperiod, the understory ranges from nearly 100 percent cover of *Carex obnupta* to very low cover of any other vegetation because of prolonged seasonal ponding. The association may also contain *Salix geyeriana* and *Spiraea douglasii*. The association may have been more widespread historically, as large expanses of swamp vegetation once occurred in the northern Willamette and Tualatin valleys.

### **MALFUS-(SAHO)/CAOB**

#### **Crabapple Hooker-Willow/Slough Sedge Shrubland**

(*Malus fusca*-*Salix hookeriana* / *Carex obnupta*)

This plant association occurs in perennially wet mucky soils with high organic content in old deflation plains and along the edges of lakes and wetland swales. Sites are typically flooded on a seasonal basis with summer water levels falling just below the ground surface. Dense, tangled thickets of crabapple and Hooker willow can reach 95% canopy cover. The understory is composed of slough sedge with patches of bare mucky soils. Dense vegetation prohibits human access, minimizing management concerns. ONHIC ranks this plant community as G3S3, meaning it is very rare and restricted locally throughout its range both globally and within Oregon.

### **NULUP**

#### **Pond Lily Herbaceous Vegetation**

(*Nuphar lutea* ssp. *polysepala*)

This plant association is common in lakes and ponds occurring on deflation plains and floodplains. Water levels are typically permanent but may dry up in late summer revealing a deep mucky substrate. Small trees, Hooker willow, Sitka willow, and Douglas spiraea are frequently found along the edges of this plant assemblage or on emergent logs and tree islands. Pond lily dominates the herb layer, covering extensive areas, with smaller patches of sedges and other aquatic forbs. Commonly found along the coast between California and Alaska, this community requires perennial water levels. While pond lily can withstand seasonal exposure of its roots, it cannot survive prolonged exposure by premature draw-down of the water table. No special management is needed for this community other than maintaining water levels. ONHIC ranks this plant community as G5S5, meaning it is secure and not in danger of eradication both globally and within Oregon.

### **PISI-ALRU/CAOB3-LYAM3**

#### **Sitka Spruce-Red Alder/Slough Sedge-Skunk Cabbage Saturated**

*(Picea sitchensis-Alnus rubra/Carex obnupta-Lysichiton americanum)*

Small populations of this plant association can be found in depressions between old stabilized dunes and on floodplains adjacent to perennial streams. Soils are perennially wet with a well-developed organic content. Stands are dominated by Sitka spruce with cover of red alder falling well below 50 percent. Hemlock and western red cedar occur on root mounds and decaying logs. Spruce trees are capable of reaching the same large diameters of upland sites but more typically trees are smaller due to low nutrient levels in perennial wet soils. Shallow root systems, buttressed roots, yellowing needles, reduced branching patterns, thick boles tapering rapidly toward the tree crown, and reduced crown spread are all typical of swamp spruce. Large mats of Scouler's polypody and epiphytic mosses are abundant. Sunny openings support shrub thickets of crabapple, black twinberry, salmonberry, and Hooker willow. Root mounds and decaying logs support salal and evergreen huckleberry. Slough sedge, skunk cabbage, water-parsley, and lady fern are common species in the understory. Sword fern and false lily-of-the-valley occur on root mounds. A matrix of bare, deep, mucky soil can be found throughout the sedge community. This plant community is considered late-seral to climax and is distributed along the coast from southwestern Oregon to Washington. Old-growth examples are rare since historically this plant assemblage was not extensive and because the open, flat habitat was accessible to logging. Management concerns include catastrophic wind throw due to shallow rooted plants in waterlogged soils. Maintaining wind-firm buffers will make this plant community less vulnerable to severe storms. Invasive species removal is necessary since English ivy and English holly readily invade these communities. ONHIC ranks this plant community as G3S1, meaning it is very rare and restricted locally throughout its range globally. Within Oregon, this plant community is considered critically imperiled because of extreme rarity.

### **PISI/CAOB3-LYAM3**

#### **Sitka spruce / slough sedge - skunk cabbage**

*(Picea sitchensis / Carex obnupta - Lysichiton americanus Association)*

**Vegetation and ecology:** Habitat is forested wetland (swamp) in coastal fens. The association occurs peripheral to open mire or shrub-swamp and often develops in nutrient-rich lags adjacent to uplands. Stands are dominated by *Picea sitchensis* with lesser amounts of *Alnus rubra*, *Thuja plicata* and *Tsuga heterophylla* confined to elevated logs, rootballs, or stumps. Cover of *Picea sitchensis* ranges from 30-85 percent, and stands with more open canopies have moderate shrub cover of *Gaultheria shallon*, *Rubus spectabilis*, and *Vaccinium parvifolium* on mounds, and *Malus fusca* and *Lonicera involucrata* in wetter hollows. *Carex obnupta*, *Lysichiton americanus*, and *Oenanthe sarmentosa* dominate wet hollows in the herb layer with exposures of typically deep muck soil between them. *Eurhynchium praelongum* is the most common moss, but several species of *Sphagnum* become more frequent near the Columbia River and northward with increasing precipitation. *Picea sitchensis* grows slowly in perennially saturated soils and trees with diameters of 25-40 inches have been found to be 200-500 years old, generally much older than upland spruce with comparable diameters. These "swamp spruce" have a characteristic growth form with shallow and spreading root systems, buttressed trunks,

and reduced crown spread. Large wads of *Polypodium scolieri*, and thick mats of epiphytic mosses, particularly *Antitrichia curtispindula*, are typical on upper trunks and limbs. Wind throw is frequent, creating gaps for regeneration of *Picea*, often as resprouts from fallen boles. Old-growth stands are very rare because most swamps were readily accessible for logging and suitable sites may never have been numerous or extensive.

## **PISI-GASH**

### **Sitka Spruce/Salal Forest**

*(Picea sitchensis/Gaultheria shallon)*

The canopy is dominated by Sitka spruce, with an average cover of 85%. Most stands are either 50-75 year old second growth, or have been selectively logged for red cedar prior to 1940, leaving Sitka spruce up to 200 years old. Like the Sitka spruce/salal-salmonberry association, this association differs significantly from those on sand dunes by its high canopy cover, high basal area, and low shrub cover. The shrub layer has been suppressed by the dense, even-aged canopy developed after logging. Moss cover can be about 15%, and ferns are absent. These stands are similar to the Sitka spruce-salal-salmonberry association, except that salmonberry is absent, and the herb and moss layers are depauperate.

## **PICSI-PICOC/GASH-VACOVA**

### **Sitka Spruce-Shore Pine/Salal-Evergreen Huckleberry Forest**

*(Picea sitchensis-Pinus contorta var. contorta/Gaultheria shallon-Vaccinium ovatum)*

Widespread throughout the Oregon coast, this plant association can be found on dry stabilized dunes, tree islands, and deflation plains. Soils in this plant association are composed of a poorly developed humus layer from one to six inches in depth overlying the sand. The dominant reproducing conifers include shore pine and Sitka spruce. As stands mature, they become littered with fallen shore pine trees. Shrub layers can become dense reaching 95% cover and averaging eight feet in height. As a mid-seral community type, Sitka spruce will grow to dominate the stand. Hemlock will establish only in areas protected from salt spray. Distribution of these forests can be found from northern California to southwestern Washington. Dense vegetation prohibits human access, minimizing management concerns. ONHIC ranks this plant community as G3S3, meaning it is very rare and restricted locally throughout its range both globally and within Oregon.

## **PISI-POMU**

### **Sitka Spruce/Sword Fern Forest**

*(Picea sitchensis/Polystichum munitum)*

Dominated by second-growth Sitka spruce, on slopes of silt loams. All slopes and aspects are represented, and soils may be well-developed. The association extends from northern California to British Columbia. Based on descriptions, canopy cover ranges from 60-65 percent. Sword fern may have up to 55 percent cover, and few shrubs are present.

## **PISI-RUSP**

### **Sitka Spruce/ Salmonberry**

*(Picea sitchensis/Rubus spectabilis association)*

The Sitka spruce/salmonberry association occurs on all aspects, most commonly on low elevation slopes and near streams. This plant community is ranked by the Oregon Biodiversity Information Center as G4S3, meaning that globally it is “apparently secure, though it may be quite rare in parts of its range, especially at the periphery [of its range] with many occurrences, and within the state it is either very rare and local throughout its range or found locally in a restricted range; uncommon, with 21-100 occurrences” (Kagan et al. 2000).

## **SAHO-MAFU/CAOB3-LYAM3**

### **Hooker Willow-Crabapple/Slough Sedge-Skunk Cabbage Saturated Shrubland**

*(Salix hookeriana-Malus fusca/Carex obnupta-Lysichiton americanum)*

Found in perennially wet mucky soils with high organic content, this plant association typically occurs on gentle slopes adjacent to lakes and ponds and on old deflation plains. Sites are usually flooded year-round or, if seasonally flooded, with water just below the ground surface in late summer. Constant water levels are needed to maintain the hydrology. Tree canopy is sparse in this association with shore pine or Sitka spruce growing on the edges. Dense, tangled thickets of Hooker willow and crabapple can reach as much as 95% canopy cover. The understory is composed of slough sedge and skunk cabbage with patches of bare mucky soils. Mosses and licorice fern are abundant in the shrub canopy. As a mid-seral plant assemblage, these populations can be long-lived if maintained by wet soils and gap succession. Willow stands can be maintained by wind pruning during winter storms, and browsing beavers stimulate vigorous sprouting. Commonly found along the coast from California to British Columbia, willow-crabapple thickets are prime feeding and denning sites for beaver. Dense vegetation prohibits human access, minimizing management concerns. ONHIC ranks this plant community as G3S3, meaning it is very rare and restricted locally throughout its range both globally and within Oregon.

## **SPIDOU**

### **Douglas Spiraea Saturated Shrubland**

*(Spiraea douglasii)*

Habitat is shrub swamp found in riparian zones, prairies, and fens. Trees are absent or peripheral. The shrub layer is dominated by *Spiraea douglasii* with an average cover of 95 percent, and is so dense that the herb layer is nearly nonexistent. Changes in hydrology may enhance dense stands. Stands may be extensive along floodplains and some have no doubt developed on abandoned pasture land and old prairie. As an early seral community, this plant association is eventually replaced by Hooker Willow-Crabapple/Slough Sedge-Skunk Cabbage Saturated Shrubland. ONHIC ranks this plant community as G5S4, meaning it is common and apparently secure, though it may be quite rare in parts of its range.

## TYPLAT

### Broadleaf cattail

(*Typha latifolia* Association)

**Vegetation and ecology:** Habitat is shallow depressions, marshes, edges of lakes, and freshwater tidal flats. This is a common association but is overlooked and undersampled. The general aspect is usually a monotype of *Typha latifolia*, but closer inspection shows some differentiation based on patches of other vegetation. The only woody species recorded in these four plots are *Frangula purshiana* and *Salix hookeriana* with 25 percent constancy but with only trace cover. About twenty species are recorded from the herb layer, with *Typha latifolia* being most abundant with an average cover of 54 percent and ranging from 40-65 percent. All other species have low constancy, but some with significant patches include *Myosotis laxa*, and unidentified *Mentha*, and *Scirpus microcarpus*. Some exotics are evident and indicate low elevation and proximity to settlement. Although this association is native, it appears to respond positively to eutrophic conditions caused by agricultural and urban runoff. Changes in surface and groundwater flows associated with road construction also appear to have a strong influence on this association.

## **Natural Resource Inventory Transect Data**

### ***Neawanna Point***

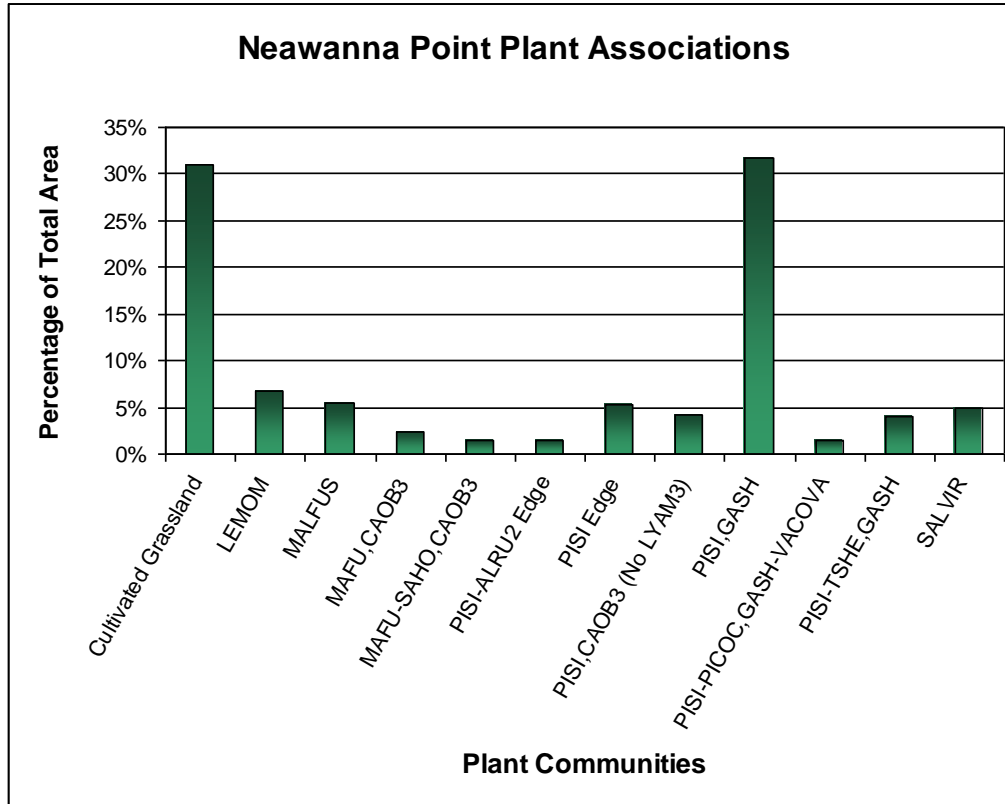
The confluence of the Necanicum River and Neawanna and Neacoxie creeks, consisting of tidal wetlands, salt marsh, and forest, is not only an extremely important area ecologically but a place of great cultural significance since the first humans settled here thousands of years ago. Encompassing 18.6 acres and located at the mouth of the Necanicum Estuary, this property is rich in wildlife and plants adapted to a dynamic tidal ecosystem. A proposed condominium development plunged Neawanna Point into controversy in the 1990s. NCLC spent years patiently working on options that would allow for key parts of this sensitive ecosystem to be preserved. The landowners ultimately decided the best use of the property was to advance their philanthropic goals, and the site was placed under NCLC's stewardship through a donation in 1998. Through a National Scenic Byways grant written for the City of Seaside, NCLC later transferred ownership of 1.5 acres to the city to provide a public wayside at this northern gateway to the community.



Figure 2. Map of the Neawanna Point property



**Figure 3.** Cover of plant associations found at the Neawanna Point property



**Table 1.** Plant associations observed at the Neawanna Point property

Community Type	Percentage of Total Area
Cultivated Grassland	30.94%
LEMOM	6.71%
MALFUS	5.52%
MAFU,CAOB3	2.28%
MAFU-SAHO,CAOB3	1.44%
PISI-ALRU2 Edge	1.44%
PISI Edge	5.28%
PISI,CAOB3 (No LYAM3)	4.19%
PISI,GASH	31.77%
PISI-PICOC,GASH-VACOVA	1.44%
PISI-TSHE,GASH	4.08%
SALVIR	4.92%
<b>Total</b>	<b>100%</b>



**Table 2.** Non-native plants found at the Neawanna Point property

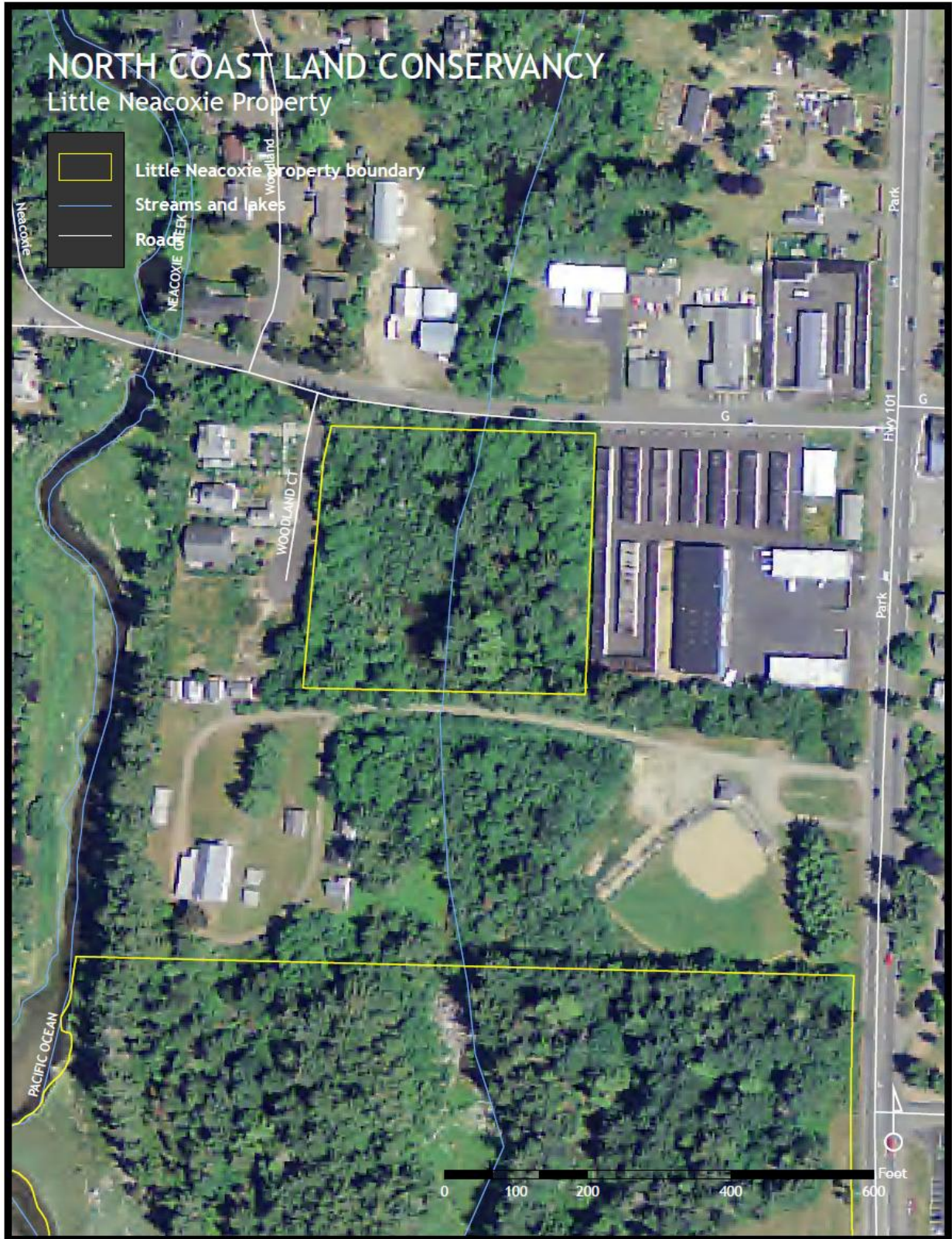
<b>Species</b>	<b>Common Name</b>
<i>Asparagus</i>	asparagus
<i>Cirsium vulgare</i>	bull thistle
<i>Convolvulus arvensis</i>	morning glory/field bindweed
<i>Cotoneaster sp.</i>	cotoneaster
<i>Cytisus scoparius</i>	Scotch broom
<i>Ilex aquifolium</i>	English holly
<i>Iris pseudacorus</i>	yellow flag iris
<i>Hedera helix</i>	English ivy
<i>Hypochaeris radicata</i>	hairy cat's ear
<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Phalaris arundinacea</i>	reed canarygrass
<i>Plantago lanceolata</i>	narrowleaf plantain
<i>Polygonum cuspidatum</i>	Japanese knotweed
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rubus laciniatus</i>	cutleaf/evergreen blackberry
<i>Senecio jacobaea</i>	tansy ragwort/stinking willie

### ***Little Neacoxie Wetland***

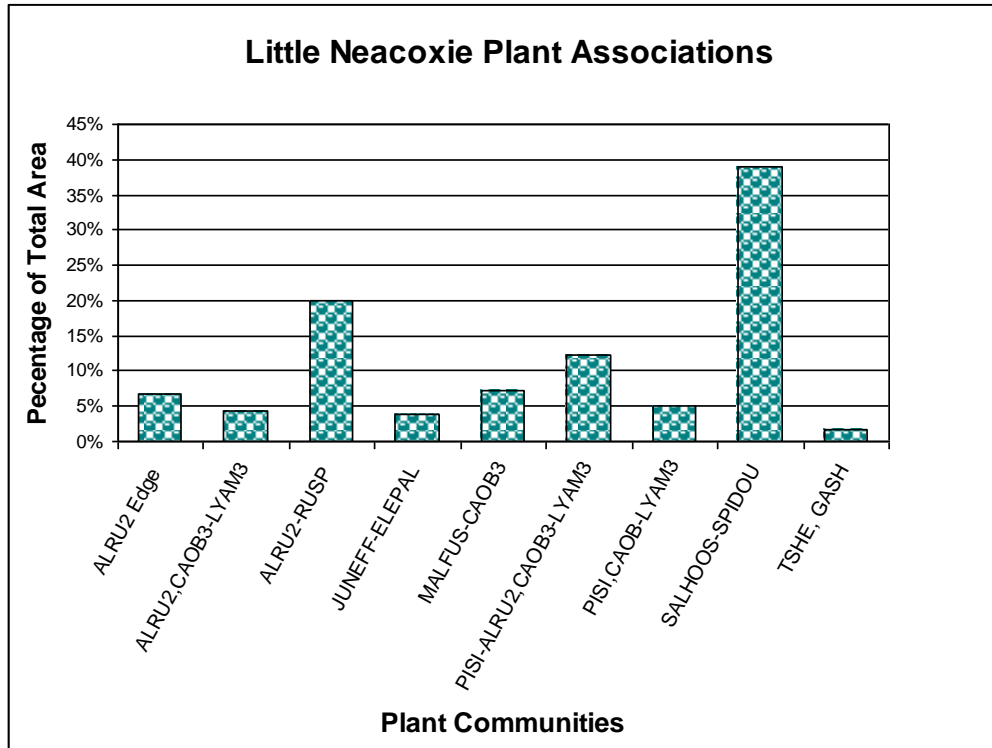
Located in the land trust's conservation initiative area known as the Neacoxie Wildlife Corridor, Little Neacoxie Wetland encompasses 3.24 acres. The property was conserved in 1997 through a land donation. Little Neacoxie Wetland includes an upland Sitka spruce and western hemlock forest with a *Carex* scrub-shrub wetland with open water. Notable species sighted in this area are the Townsend warbler and river otters. A colony of beavers takes up residence in the wetland each year. Little Neacoxie Wetland drains into Neawanna Point, also owned by NCLC, which includes the mouth of the Necanicum Estuary.



Figure 4. Map of the Little Neacoxie property



**Figure 5.** Cover of plant associations recorded at the Little Neacoxie property



**Table 3.** Plant associations observed at the Little Neacoxie property

Community Type	Percentage of Total Area
ALRU2 Edge	6.67%
ALRU2,CAOB3-LYAM3	4.44%
ALRU2-RUSP	20.00%
JUNEFF-ELEPAL	3.89%
MOLFUS-CAOB3	7.22%
PISI-ALRU2,CAOB3-LYAM3	12.22%
PISI,CAOB-LYAM3	5.00%
SALHOOS-SPIDOU	38.89%
TSHE, GASH	1.67%
<b>Total</b>	<b>100%</b>

**Table 4.** Non-native plants found at the Little Neacoxie property

<b>Species</b>	<b>Common Name</b>
<i>Anthoxanthum odoratum</i>	sweet vernalgrass
<i>Buddleja davidii</i>	butterflybush
<i>Cytisus scoparius</i>	Scotch broom
<i>Dactylis glomerata</i>	orchardgrass
<i>Festuca arundinacea</i>	tall fescue
<i>Geranium robertianum</i>	herb Robert/stinky Bob
<i>Ilex aquifolium</i>	English holly
<i>Leucanthemum vulgare</i>	oxeye daisy
<i>Rubus armeniacus</i>	Himalayan blackberry

### ***Royal Chinook***

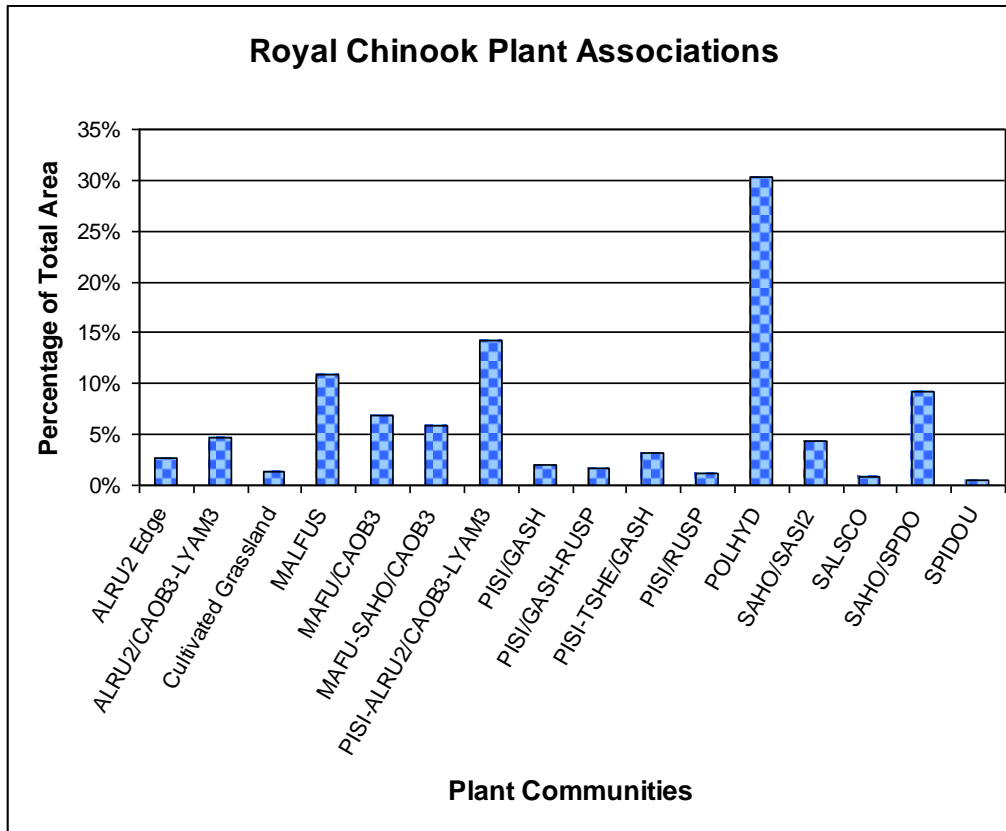
Royal Chinook is a 10.46-acre property located along Highway 101 in the city of Gearhart. Working together with the developer, the land trust was able to conserve a connected system of forested wetland, scrub-shrub thickets, and freshwater wetlands in 2005. The site's location within the waters of the Neacoxie watershed makes it an important contributor to the ecological connectivity of the Neacoxie Wildlife Corridor as well. Part of the Clatsop Plains sand dune swale system, Royal Chinook contains open water, flowing from the exposed groundwater of the Neacoxie Creek drainage, surrounded by scrub-shrub thickets and Sitka spruce forested wetlands and uplands on the remnant dune ridge.



Figure 6. Map of the Royal Chinook property



**Figure 7.** Cover of plant associations recorded the Royal Chinook property



**Table 5.** Plant associations observed at the Royal Chinook property

Community Type	Percentage of Total Area
ALRU2 Edge	2.68%
ALRU2/CAOB3-LYAM3	4.63%
Cultivated Grassland	1.34%
MALFUS	10.96%
MAFU/CAOB3	6.94%
MAFU-SAHO/CAOB3	5.85%
PISI-ALRU2/CAOB3-LYAM3	14.25%
PISI/GASH	1.95%
PISI/GASH-RUSP	1.71%
PISI-TSHE/GASH	3.17%
PISI/RUSP	1.22%



POLHYD	30.33%
SAHO/SASI2	4.38%
SALSCO	0.85%
SAHO/SPDO	9.26%
SPIDOU	0.49%
<b>Total</b>	<b>100%</b>

**Table 6.** Non-native plants found at the Royal Chinook property

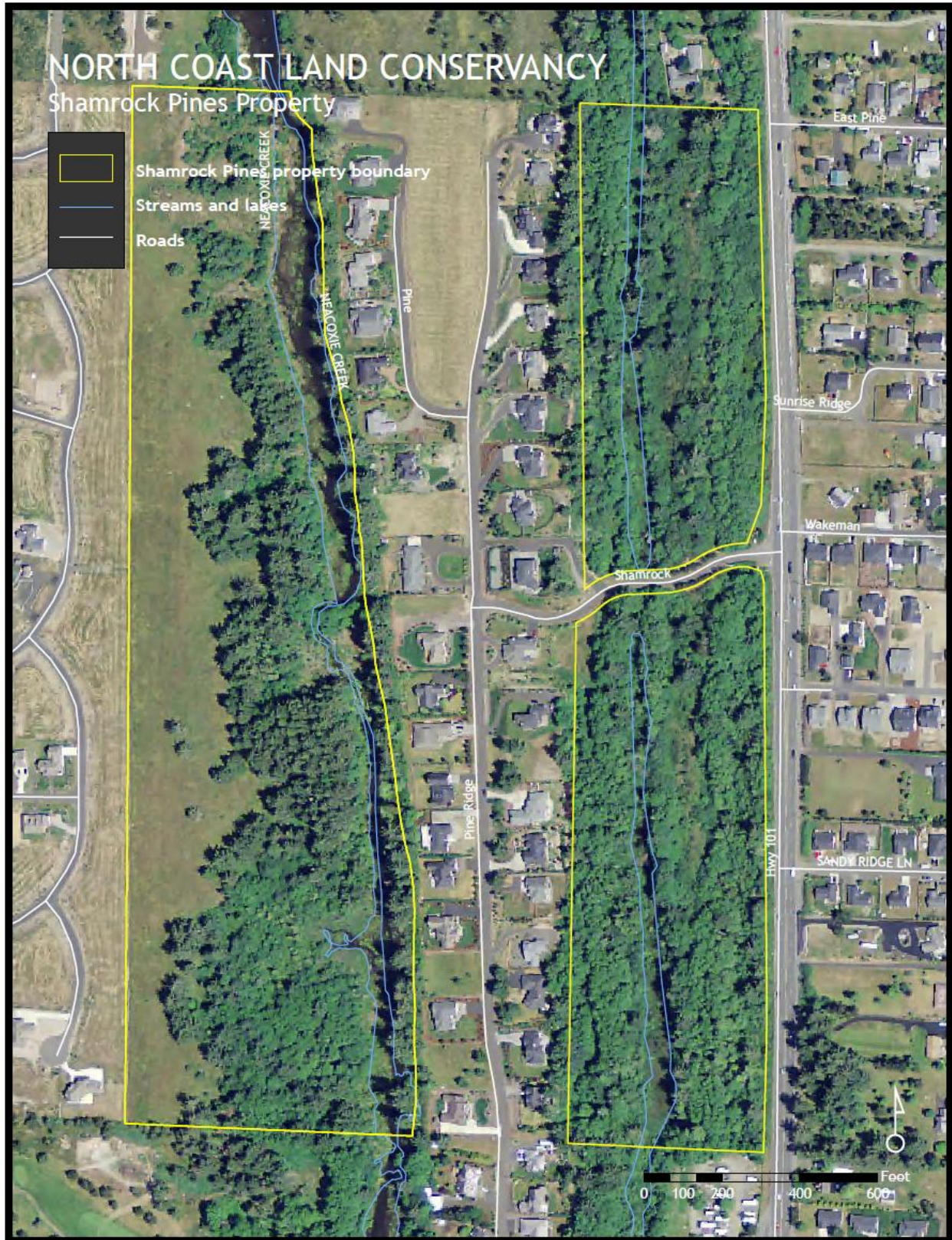
<b>Species</b>	<b>Common Name</b>
<i>Cytisus scoparius</i>	Scotch broom
<i>Hedera helix</i>	English ivy
<i>Hypochaeris radicata</i>	hairy cat's ear
<i>Ilex aquifolium</i>	English holly
<i>Leucanthemum vulgare</i>	oxeye daisy
<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Phalaris arundinacea</i>	reed canarygrass
<i>Plantago lanceolata</i>	narrowleaf plantain
<i>Ranunculus repens</i>	creeping buttercup
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rubus laciniatus</i>	cutleaf/evergreen blackberry
<i>Senecio jacobaea</i>	tansy ragwort/stinking willie
<i>Trifolium repens</i>	white clover

### ***Shamrock Pines***

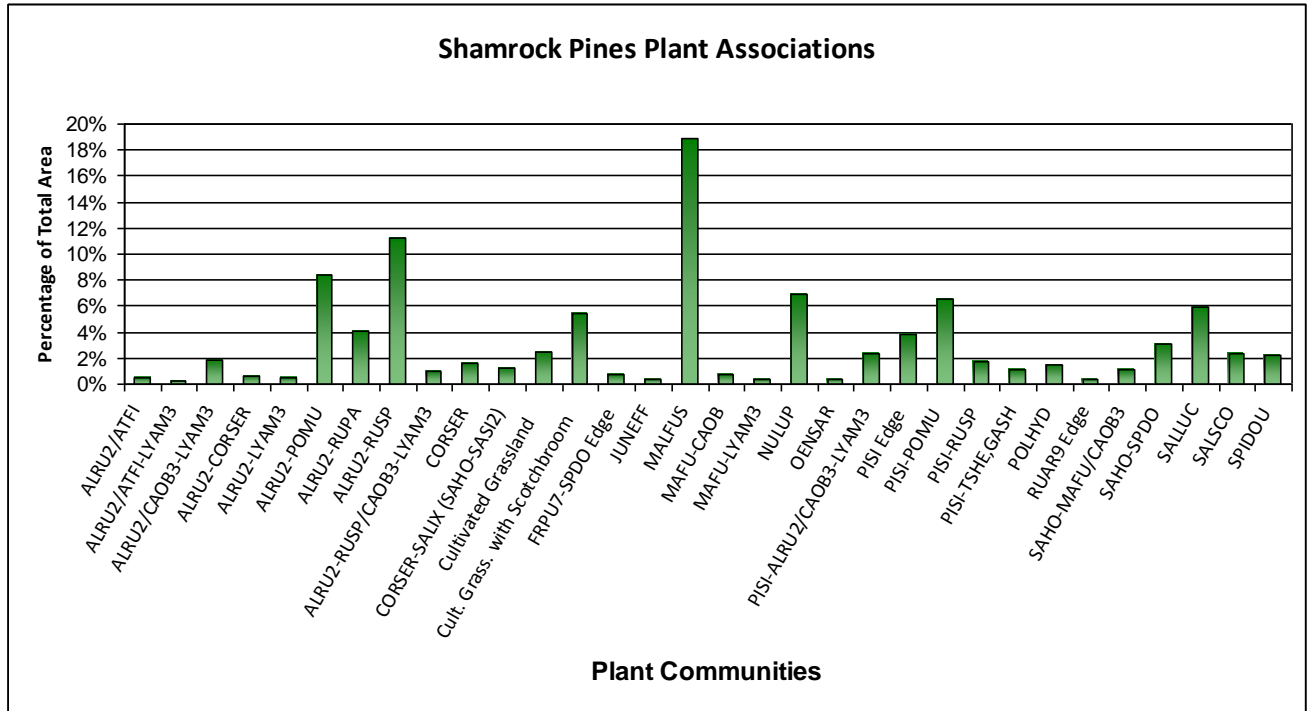
Shamrock Pines, donated to the land trust in 2005, includes 20 acres located along Highway 101 in the city of Gearhart. As part of the Clatsop Plains sand dune swale system, Shamrock Pines wetland contains an interdunal creek surrounded by scrub-shrub thickets and forest dominated by Sitka spruce on uplands created by the remnant dune ridge. Migratory and year-round songbirds and waterfowl frequent the open water and riparian areas. Beavers are very active on this property, along with Roosevelt elk and deer.



Figure 8. Map of the Shamrock Pines property



**Figure 9.** Cover of plant associations found at the Shamrock Pines property



**Table 7.** Plant associations observed at the Shamrock Pines property

Community Type	Percentage of Total Area
ALRU2/ATFI	0.46%
ALRU2/ATFI-LYAM3	0.25%
ALRU2/CAOB3-LYAM3	1.83%
ALRU2-CORSER	0.56%
ALRU2-LYAM3	0.51%
ALRU2-POMU	8.39%
ALRU2-RUPA	4.02%
ALRU2-RUSP	11.24%
ALRU2-RUSP/CAOB3-LYAM3	0.97%
CORSER	1.63%
CORSER-SALIX (SAHO-SAS12)	1.22%
Cultivated Grassland	2.44%
Cult. Grassland with Scotchbroom	5.49%
FRPU7-SPDO Edge	0.76%
JUNEFF	0.36%

MALFUS	18.92%
MAFU-CAOB	0.71%
MAFU-LYAM3	0.36%
NUPLUTP	6.97%
OENSAR	0.36%
PISI-ALRU2/CAOB3-LYAM3	2.39%
PISI Edge	3.81%
PISI-POMU	6.56%
PISI-RUSP	1.68%
PISI-TSHE,GASH	1.17%
POLHYD	1.53%
RUAR9 Edge	0.36%
SAHO-MAFU/CAOB3	1.17%
SAHO-SPDO	3.05%
SALLUC	5.90%
SALSCO	2.29%
SPIDOU	2.24%
<b>Total</b>	<b>100%</b>

**Table 8.** Non-Native plants found at the Shamrock Pines property

<b>Species</b>	<b>Common Name</b>
<i>Cirsium vulgare</i>	bull thistle
<i>Cytisus scoparius</i>	Scotch broom
<i>Geranium robertianum</i>	herb Robert/stinky Bob
<i>Hedera helix</i>	English ivy
<i>Holcus lanatus</i>	velvet grass
<i>Hypochaeris radicata</i>	hairy cat's ear
<i>Ilex aquifolium</i>	English holly
<i>Iris pseudacorus</i>	yellow flag iris
<i>Ranunculus repens</i>	creeping buttercup
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rubus laciniatus</i>	cutleaf/evergreen blackberry
<i>Senecio jacobaea</i>	tansy ragwort/stinking willie

### ***Neacoxie Forest***

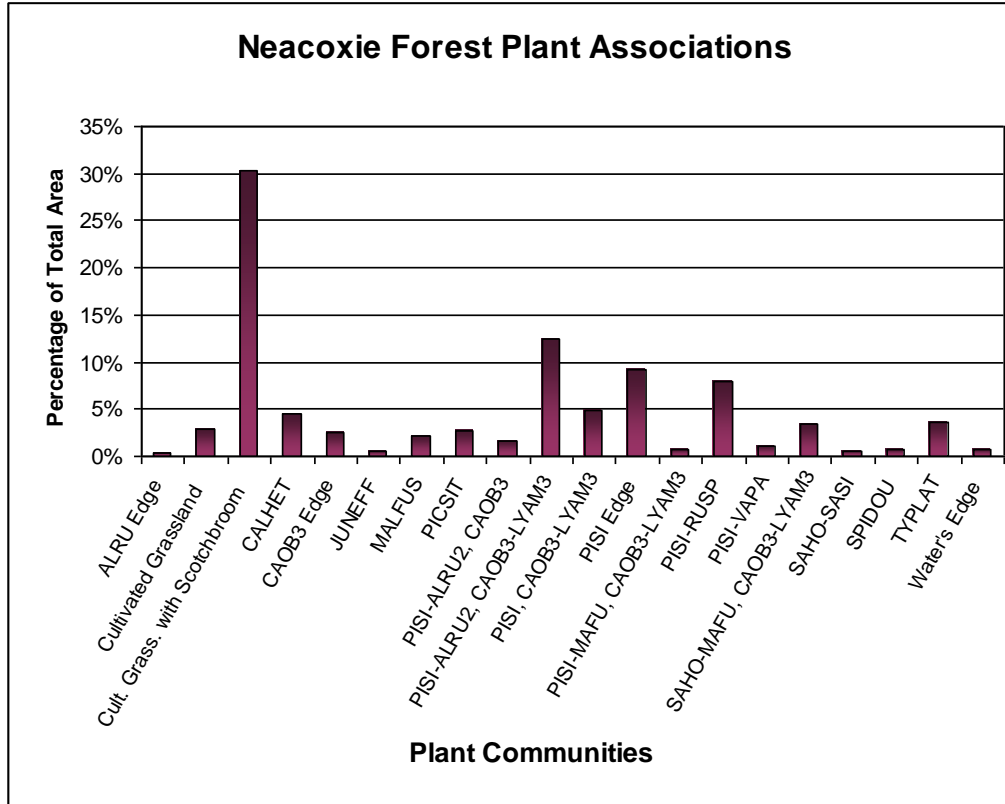
Neacoxie Forest is a 40-acre property adjacent to Neacoxie Creek that was donated to the land trust in 2005. The property includes approximately 20 acres of coastal prairie habitat that transitions into a mature Sitka spruce forest with pockets of old-growth crabapple trees. The forest borders Neacoxie Creek, which supports a diverse freshwater wetland. A favorite haunt of the local elk herd, Neacoxie Forest also provides habitat for both year-round and migratory birds and waterfowl.



Figure 10. Map of the Neacoxie Forest property



**Figure 11.** Cover of plant associations recorded at the Neacoxie Forest property



**Table 9:** Plant associations observed at the Neacoxie Forest property

Community Type	Percentage of Total Area
ALRU2, CAO3-LYAM3	6.90%
ALRU Edge	0.35%
Cultivated Grassland	2.88%
Cultivated Grassland with Scotch broom	30.38%
CALHET	4.60%
CAOB3 Edge	2.47%
JUNEFF	0.58%
MALFUS	2.24%
PICSIT	2.76%
PISI-ALRU2, CAO3	1.67%
PISI-ALRU2, CAO3-LYAM3	12.43%
PISI, CAO3-LYAM3	4.89%
PISI Edge	9.15%



PISI-MAFU, CAOB3-LYAM3	0.69%
PISI-RUSP	7.99%
PISI-VAPA	1.15%
SAHO-MAFU, CAOB3-LYAM3	3.34%
SAHO-SASI	0.58%
SPIDOU	0.69%
TYPLAT	3.57%
Water's Edge	0.69%
<b>Total</b>	<b>100%</b>

**Table 10.** Non-native plants found at the Neacoxie Forest property

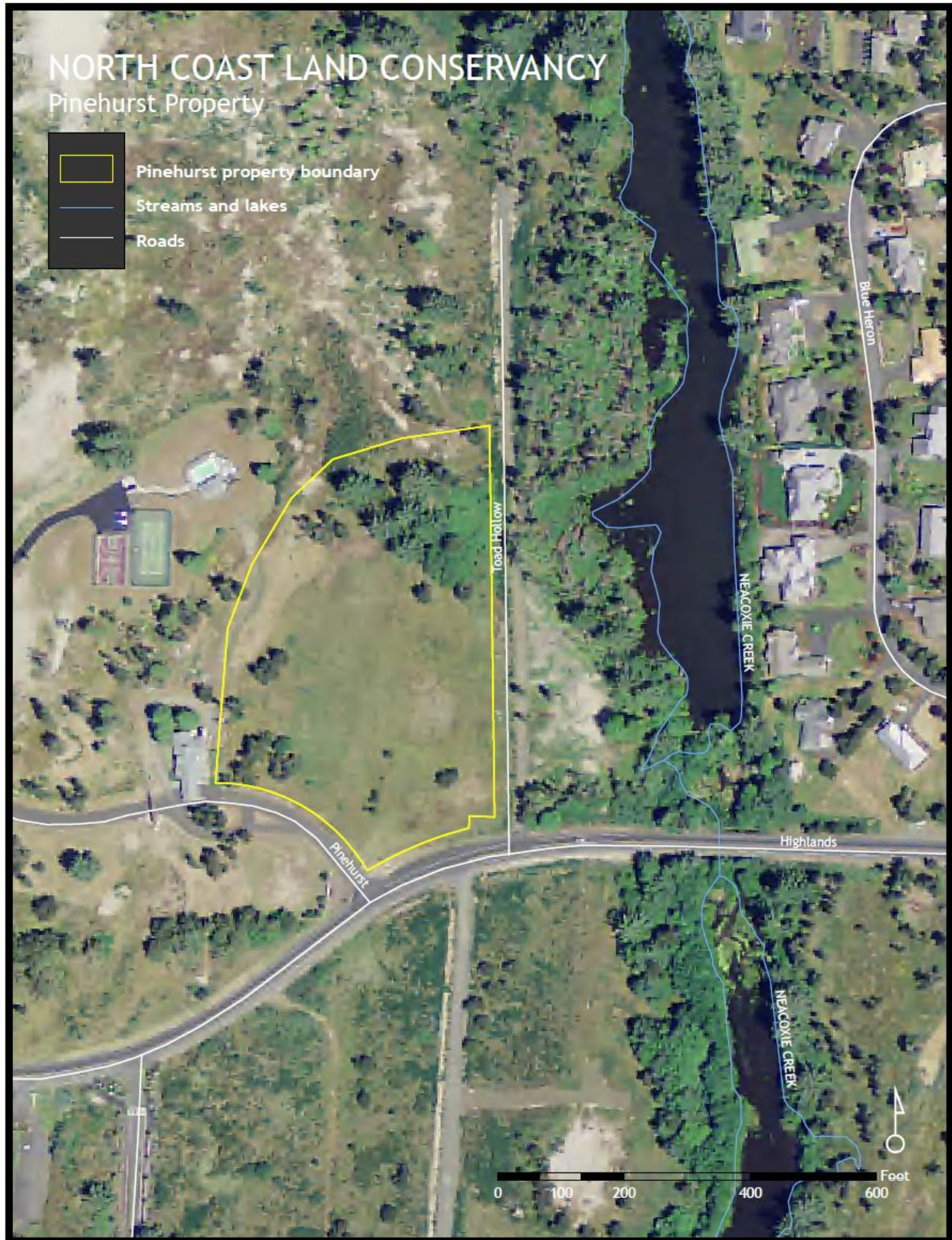
<b>Species</b>	<b>Common Name</b>
<i>Anthoxanthum odoratum</i>	sweet vernalgrass
<i>Cirsium vulgare</i>	bull thistle
<i>Cytisus scoparius</i>	Scotch broom
<i>Hedera helix</i>	English ivy
<i>Hypochaeris radicata</i>	hairy cat's ear
<i>Ilex aquifolium</i>	English holly
<i>Iris pseudacorus</i>	yellow flag iris
<i>Leucanthemum vulgare</i>	oxeye daisy
<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Plantago lanceolata</i>	narrowleaf plantain
<i>Ranunculus repens</i>	creeping buttercup
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rubus laciniatus</i>	cutleaf/evergreen blackberry
<i>Senecio jacobaea</i>	tansy ragwort/stinking willie
<i>Solanum dulcamara</i>	climbing nightshade

### ***Pinehurst***

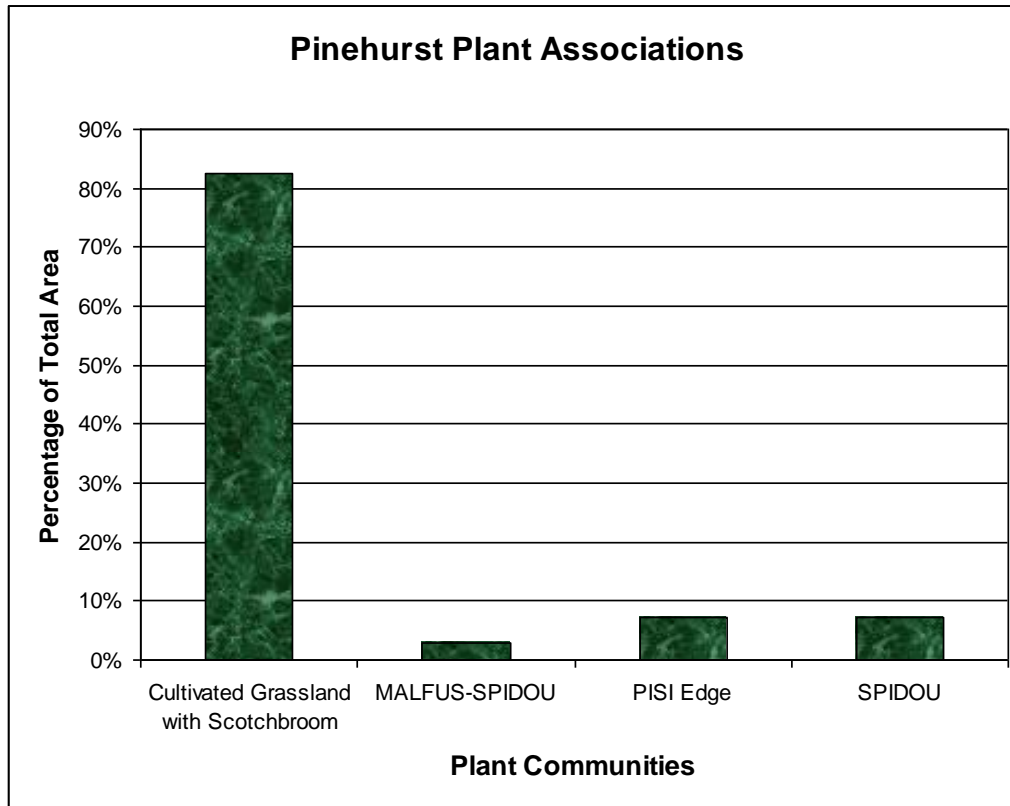
Pinehurst is a five-acre property that is managed by the land trust but owned by The Nature Conservancy. The land includes a large expanse of remnant coastal prairie with forested dune habitat along the north edge. Sitka spruce and crabapple dominate the forest. Migratory song birds and invertebrates such as butterflies and dragonflies are frequent visitors.



Figure 12. Map of the Pinehurst property



**Figure 13.** Cover of plant associations recorded at the Pinehurst property



**Table 11.** Plant associations observed at the Pinehurst property

<b>Community Type</b>	<b>Percentage of Total Area</b>
Cultivated Grassland with Scotchbroom	82.59%
MALFUS-SPIDOU	2.83%
PISI Edge	7.29%
SPIDOU	7.29%
<b>Total</b>	<b>100%</b>

**Table 12.** Non-native plants found at the Pinehurst property

<b>Species</b>	<b>Common Name</b>
<i>Anthoxanthum odoratum</i>	sweet vernalgrass
<i>Cytisus scoparius</i>	Scotch broom
<i>Dactylis glomerata</i>	orchardgrass
<i>Holcus lanatus</i>	velvet grass
<i>Hypochaeris radicata</i>	hairy cat's ear
<i>Ilex aquifolium</i>	English holly
<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rubus laciniatus</i>	cutleaf/evergreen blackberry
<i>Senecio jacobaea</i>	tansy ragwort/stinking willie

### **Surf Pines Prairie**

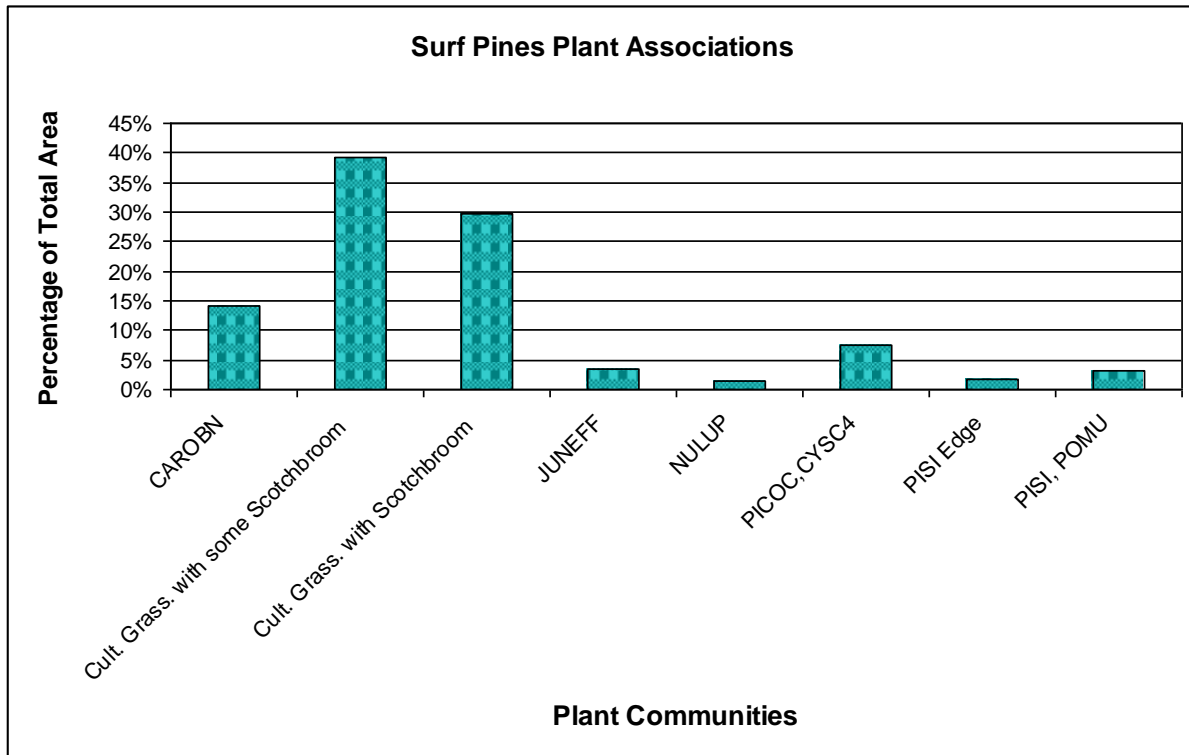
Donated to the land trust in 2005, the Surf Pines property includes 20 acres along Neacoxie Creek. The land is a mosaic of coastal prairie, forested dunes, and slough sedge wetlands stretching north and south along Neacoxie Creek. Surf Pines Prairie supports a number of species that utilize the Neacoxie Creek riparian corridor to travel throughout the Clatsop Plains, including a variety of butterflies and dragonflies, elk, beavers, migratory songbirds, and coyotes.



Figure 14. Map of the Surf Pines property



**Figure 15.** Cover of plant associations recorded at the Surf Pines property



**Table 13.** Plant associations observed at the Surf Pines property

Community Type	Percentage of Total Area
CAROBN	14.03%
Cultivated Grassland with less Scotch broom	39.20%
Cultivated Grassland with Scotch broom	29.57%
JUNEFF	3.58%
NULUP	1.38%
PICOC,CYSC4	7.57%
PISI Edge	1.65%
PISI, POMU	3.03%
<b>Total</b>	<b>100%</b>



**Table 14.** Non-native plants found at the Surf Pines property

<b>Species</b>	<b>Common Name</b>
<i>Anthoxanthum odoratum</i>	sweet vernalgrass
<i>Cirsium vulgare</i>	bull thistle
<i>Cytisus scoparius</i>	Scotch broom
<i>Dactylis glomerata</i>	orchardgrass
<i>Festuca arundinacea</i>	tall fescue
<i>Hedera helix</i>	English ivy
<i>Holcus lanatus</i>	velvet grass
<i>Hypochaeris radicata</i>	hairy cat's ear
<i>Ilex aquifolium</i>	English holly
<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Plantago lanceolata</i>	narrowleaf plantain
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rubus laciniatus</i>	cutleaf/evergreen blackberry
<i>Senecio jacobaea</i>	tansy ragwort/stinking willie
<i>Trifolium dubium</i>	small hop-clover
<i>Trifolium repens</i>	white clover

### ***Neacoxie Estates***

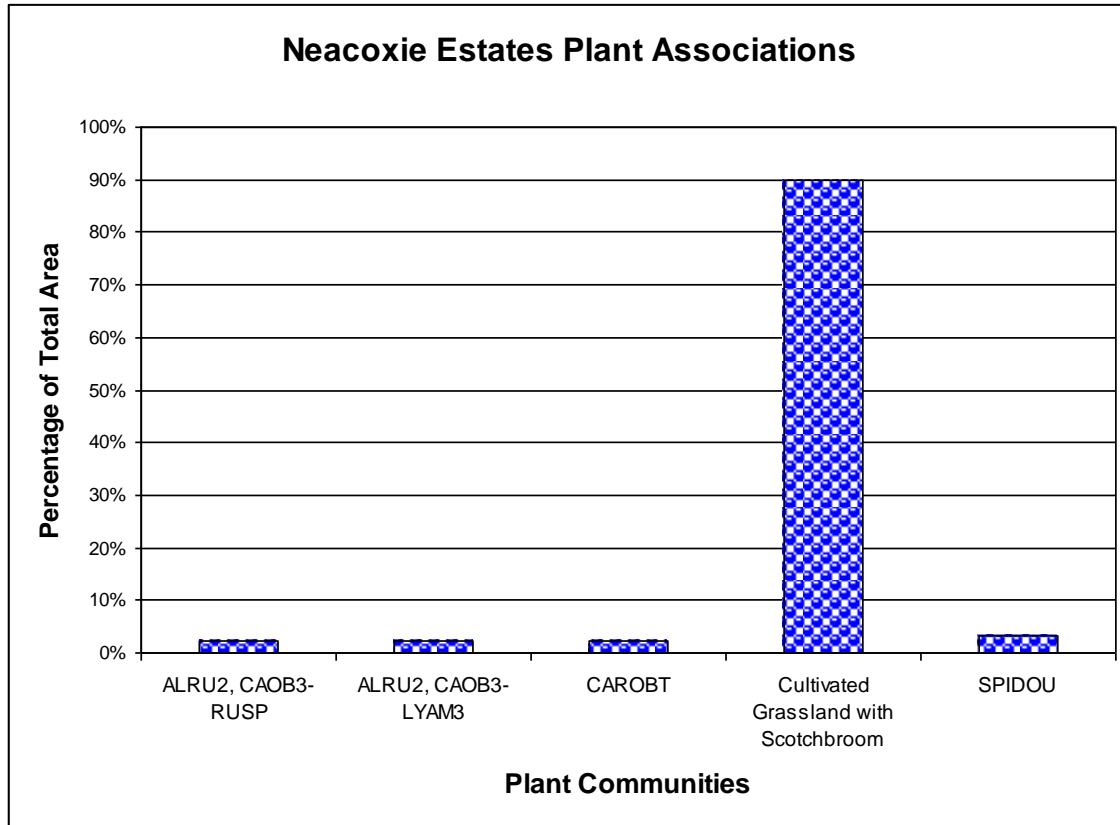
Neacoxie Estates encompasses 5.39 acres donated to the land trust in 2005. The land is a mosaic of coastal prairie, forested dunes, and slough sedge wetlands stretching north and south along Neacoxie Creek. Neacoxie Estates supports a number of species that use the Neacoxie Creek riparian corridor to travel throughout the Clatsop Plains, including a variety of butterflies and dragonflies, elk, beavers, migratory songbirds, and coyotes.



Figure 16. Map of the Neacoxie Estates property



**Figure 17.** Cover of plant associations recorded at the Neacoxie Estates property



**Table 15.** Plant associations observed at the Neacoxie Estates property

Community Type	Percentage of Total Area
ALRU2, CAOB3-RUSP	2.33%
ALRU2, CAOB3-LYAM3	2.33%
CAROBT	2.33%
Cultivated Grassland with Scotch broom	89.77%
SPIDOU	3.26%
<b>Total</b>	<b>100%</b>

**Table 16.** Non-native plants found at the Neacoxie Estates property

<b>Species</b>	<b>Common Name</b>
<i>Anthoxanthum odoratum</i>	sweet vernalgrass
<i>Cirsium vulgare</i>	bull thistle
<i>Cytisus scoparius</i>	Scotch broom
<i>Dactylis glomerata</i>	orchardgrass
<i>Geranium dissectum</i>	cutleaf geranium
<i>Holcus lanatus</i>	velvet grass
<i>Hypochaeris radicata</i>	hairy cat's ear
<i>Leucanthemum vulgare</i>	oxeye daisy
<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Plantago lanceolata</i>	narrowleaf plantain
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Senecio jacobaea</i>	tansy ragwort/stinking willie

### **Reed Ranch**

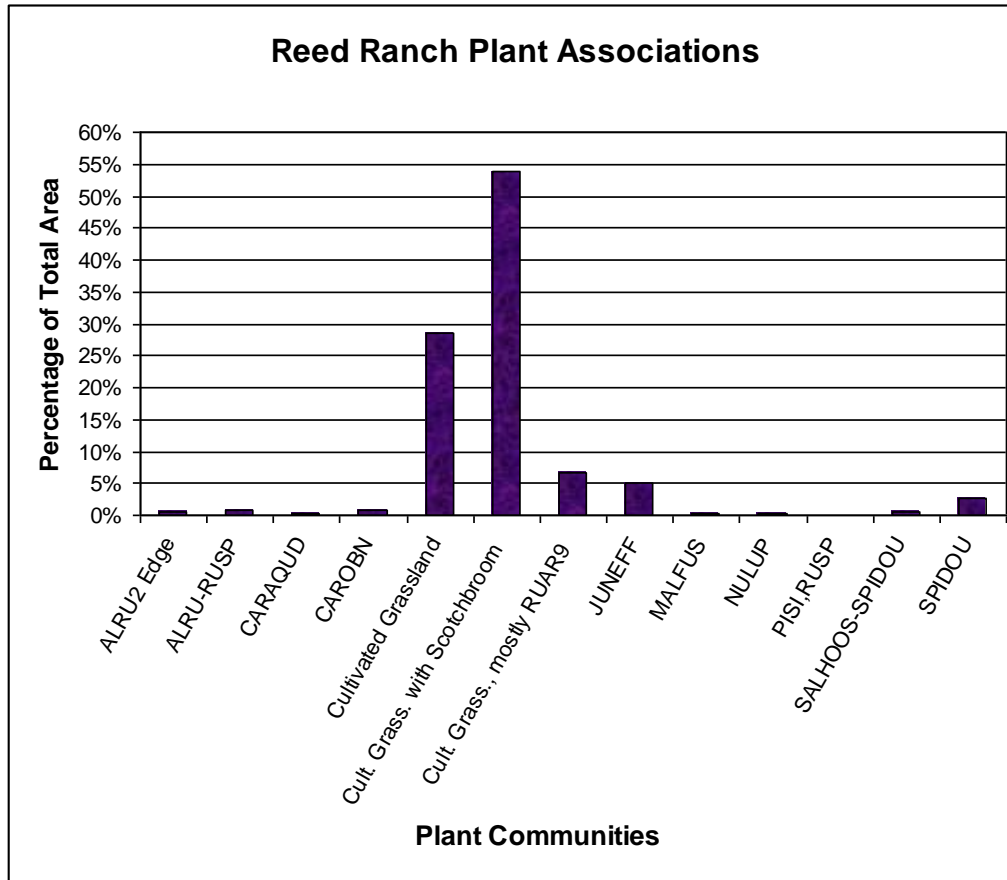
Reed Ranch includes 106 acres along Sunset Lake. The property had been a conservation priority for many years before being acquired by the land trust. When planning began in 2008 for the West Lake Estates subdivision, the opportunity arose to preserve this large, contiguous stretch of open space. Within a year the land trust became the owner of Reed Ranch. The property includes a series of parallel dune ridges dominated by non-native pasture grasses and Scotch broom. In low-lying areas native coastal prairie habitat still persists. Over the years, the land trust has mowed and mechanically removed Scotch broom to replant native species. Wetland scrub-shrub habitat is becoming reestablished, providing nesting sites for migratory birds and contributing to the diet of deer and elk that also graze the preserve's open grassland. Reed Ranch is emerging as a wildlife refuge linking conservation efforts all the way from Fort Stevens State Park to the Necanicum estuary.



Figure 18. Map of the Reed Ranch property



**Figure 19.** Cover of plant associations recorded at the Reed Ranch property



**Table 17.** Plant associations observed at the Reed Ranch property

Community Type	Percentage of Total Area
ALRU2 Edge	0.45%
ALRU-RUSP	0.69%
CARAQUD	0.17%
CAROBN	0.72%
Cultivated Grassland	28.42%
Cultivated Grassland with Scotchbroom	53.87%
Cultivated Grassland dominated by RUAR9	6.78%
JUNEFF	5.15%
MALFUS	0.17%



NULUP	0.25%
PISI,RUSP	0.10%
SALHOOS-SPIDOU	0.66%
SPIDOU	2.56%
<b>Total</b>	<b>100%</b>

**Table 18.** Non-native plants found at the Reed Ranch property

<b>Species</b>	<b>Common Name</b>
<i>Agrostis sp.</i>	bentgrass
<i>Anthoxanthum odoratum</i>	sweet vernalgrass
<i>Cirsium vulgare</i>	bull thistle
<i>Cytisus scoparius</i>	Scotch broom
<i>Dactylis glomerata</i>	orchardgrass
<i>Festuca arundinacea</i>	tall fescue
<i>Geranium dissectum</i>	cutleaf geranium
<i>Holcus lanatus</i>	velvet grass
<i>Hypochaeris radicata</i>	hairy cat's ear
<i>Juncus effusus</i>	common rush
<i>Leucanthemum vulgare</i>	oxeye daisy
<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Nymphaea odorata</i>	white waterlily
<i>Myriophyllum aquaticum</i>	parrot feather
<i>Phalaris arundinacea</i>	reed canarygrass
<i>Phragmites australis</i>	common reed
<i>Plantago lanceolata</i>	narrowleaf plantain
<i>Ranunculus repens</i>	creeping buttercup
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rubus laciniatus</i>	cutleaf/evergreen blackberry
<i>Senecio jacobaea</i>	tansy ragwort/stinking willie
<i>Trifolium dubium</i>	small hop-clover
<i>Trifolium repens</i>	white clover
<i>Vallisneria americana</i>	American eelgrass

### ***Silverspot Meadows***

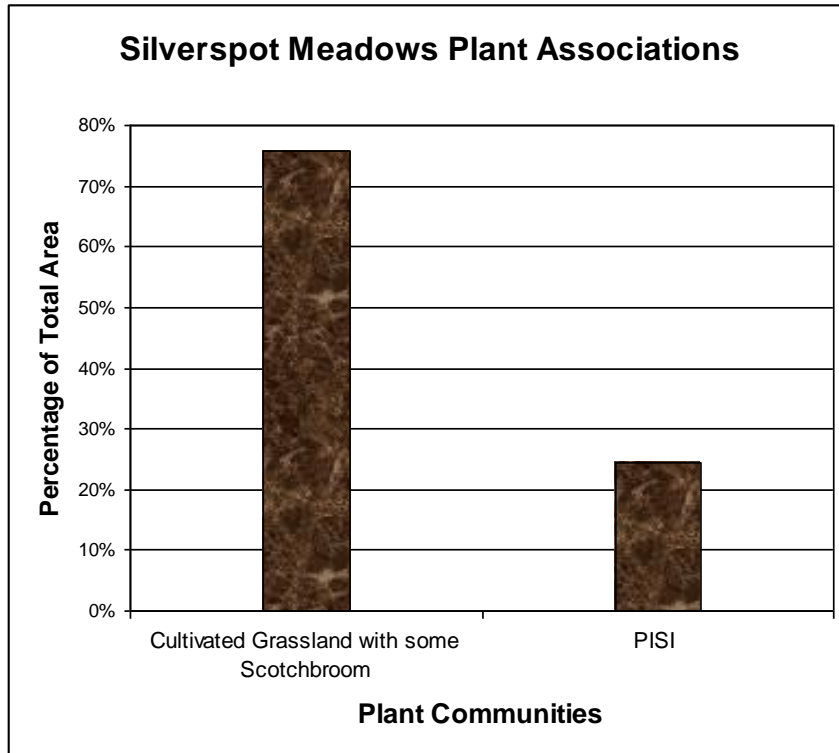
Silverspot Meadows includes 1.18 acres and is located at the north side of the Surf Pines neighborhood in the city of Gearhart. Donated to the land trust in 1996, this land serves as critical open space for wildlife in an increasingly populated area. The land is a mosaic of coastal prairie, forested dunes, and slough sedge wetlands stretching north and south along Neacoxie Creek. Silverspot Meadows supports a number of species that use the Neacoxie Creek riparian corridor to travel throughout the Clatsop Plains, including a variety of butterflies and dragonflies, elk, beavers, migratory songbirds, and coyotes.



Figure 20. Map of the Silverspot Meadows property



**Figure 21.** Cover of plant associations recorded at the Silverspot Meadows property



**Table 19.** Plant associations observed at the Silverspot Meadows property

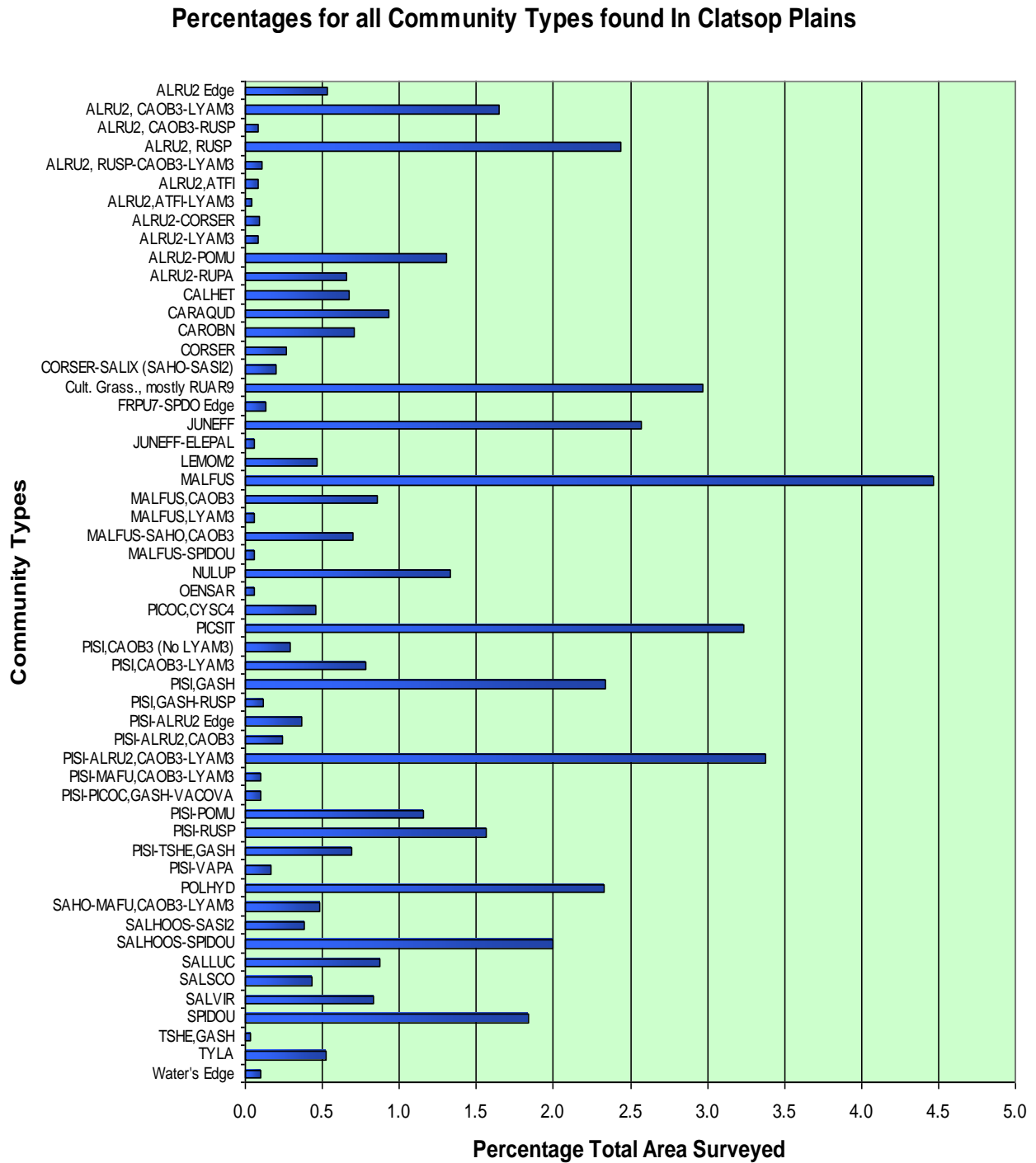
<b>Community Type</b>	<b>Percentage of Total Area</b>
Cultivated Grassland with Scotch broom	75.68%
PISI	24.32%
<b>Total</b>	<b>100%</b>

**Table 20.** Non-native plants found at the Silverspot Meadows property

<b>Species</b>	<b>Common Name</b>
<i>Cytisus scoparius</i>	Scotch broom
<i>Dactylis glomerata</i>	orchard grass
<i>Daphne laureola</i>	spurge laurel
<i>Hypochaeris radicata</i>	hairy cat's ear
<i>Ilex aquifolium</i>	English holly
<i>Leucanthemum vulgare</i>	oxeye daisy
<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Plantago lanceolata</i>	narrowleaf plantain
<i>Senecio jacobaea</i>	tansy ragwort/stinking willie
<i>Trifolium repens</i>	white clover

**Percentage Composition of Plant Community Types for all Properties**

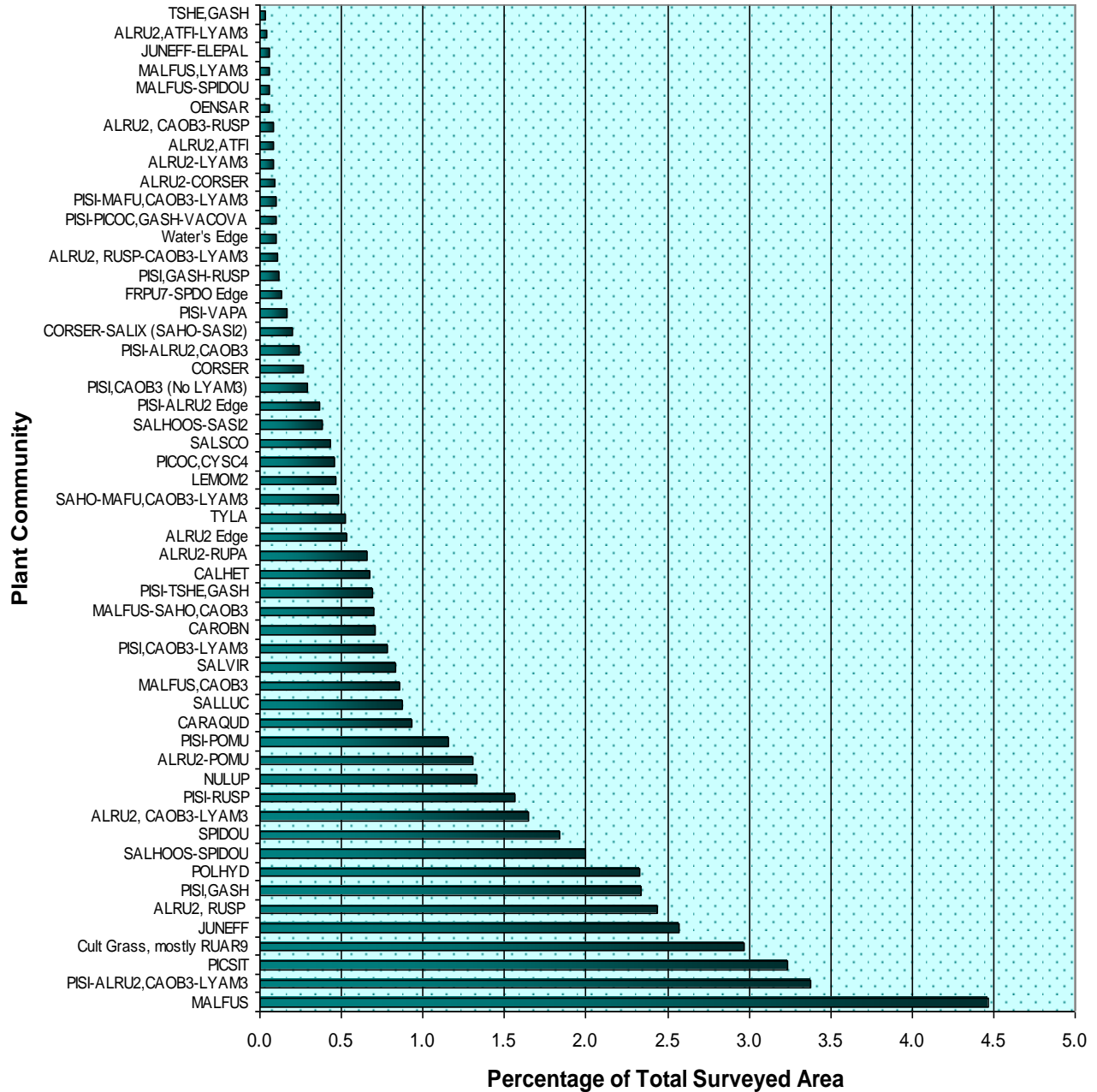
**Figure 22.** Cover of plant associations on all surveyed properties organized by name



**Note:** Cultivated Grassland and Cultivated Grassland with >10% Scotch broom cover were left out of this graph due to the high percentage of these two community types found in the Clatsop Plains.

Figure 23. Cover of plant associations on all surveyed properties organized by value

### Relative Percentages of Plant Communities Found in Clatsop Plains



**Note:** Cultivated Grassland and Cultivated Grassland with >10% Scotch broom cover were left out of this graph due to the high percentage of these two community types found in the Clatsop Plains.

**Table 21.** List of plant communities and percent composition of each community in total area surveyed

<b>Plant Community</b>	<b>% Found</b>	<b>Plant Community</b>	<b>% Found</b>
ALRU2 Edge	0.53	NULUP	1.33
ALRU2, CAOB3-LYAM3	1.65	OENSAR	0.06
ALRU2, CAOB3-RUSP	0.08	PICOC,CYSC4	0.46
ALRU2, RUSP	2.44	PICSIT	3.24
ALRU2, RUSP-CAOB3-LYAM3	0.11	PISI,CAOB3 (No LYAM3)	0.29
ALRU2,ATFI	0.08	PISI,CAOB3-LYAM3	0.78
ALRU2,ATFI-LYAM3	0.04	PISI,GASH	2.34
ALRU2-CORSER	0.09	PISI,GASH-RUSP	0.12
ALRU2-LYAM3	0.08	PISI-ALRU2 Edge	0.37
ALRU2-POMU	1.31	PISI-ALRU2,CAOB3	0.24
ALRU2-RUPA	0.66	PISI-ALRU2,CAOB3-LYAM3	3.38
CALHET	0.67	PISI-MAFU,CAOB3-LYAM3	0.10
CARAQUD	0.93	PISI-PICOC,GASH-VACOVA	0.10
CAROBN	0.71	PISI-POMU	1.16
CORSER	0.27	PISI-RUSP	1.56
CORSER-SALIX (SAHO-SASI2)	0.20	PISI-TSHE,GASH	0.69
Cultivated Grassland	18.10	PISI-VAPA	0.17
Cultivated Grassland Dominated by RUAR9	2.97	POLHYD	2.33
Cultivated Grassland w/ CYSC4	33.52	SAHO-MAFU,CAOB3-LYAM3	0.48
FRPU7-SPDO Edge	0.13	SALHOOS-SASI2	0.38
JUNEFF	2.57	SALHOOS-SPIDOU	2.00
JUNEFF-ELEPAL	0.06	SALLUC	0.87
LEMOM2	0.47	SALSCO	0.43
MALFUS	4.47	SALVIR	0.83
MALFUS,CAOB3	0.86	SPIDOU	1.84
MALFUS,LYAM3	0.06	TSHE,GASH	0.03
MALFUS-SAHO,CAOB3	0.70	TYLA	0.52
MALFUS-SPIDOU	0.06	Water's Edge	0.10



**Table 22.** Plant association codes with corresponding scientific and common names

Plant Association Acronym	Plant Association Scientific Names	Plant Association Common Names
ALRU2 Edge	<i>Alnus rubra</i> Edge	red alder (band of trees on edges of forested habitat)
ALRU2, CAOB3-LYAM3	<i>Alnus rubra, Carex obtupna-Lysichiton americanum</i>	red alder, slough sedge-skunk cabbage
ALRU2, CAOB3-RUSP	<i>Alnus rubra, Carex obtupna- Rubus spectabilis</i>	red alder, slough sedge-salmonberry
ALRU2, RUSP	<i>Alnus rubra, Rubus spectabilis</i>	red alder, salmonberry
ALRU2, RUSP-CAOB3-LYAM3	<i>Alnus rubra, Rubus spectabilis-Carex obtupna-Lysichiton americanum</i>	red alder, salmonberry-slough sedge-skunk cabbage
ALRU2,ATFI	<i>Alnus rubra, Athyrium filix-femina</i>	red alder, ladyfern
ALRU2,ATFI-LYAM3	<i>Alnus rubra, Athyrium filix-femina-Lysichiton americanum</i>	red alder, ladyfern-skunk cabbage
ALRU2-CORSER	<i>Alnus rubra-Cornus sericea</i>	red alder-creek dogwood
ALRU2-LYAM3	<i>Alnus rubra- Lysichiton americanum</i>	red alder-skunk cabbage
ALRU2-POMU	<i>Alnus rubra-Polystichum munitum</i>	red alder-sword fern
ALRU2-RUPA	<i>Alnus rubra-Rubus parviflorus</i>	red alder-thimbleberry
CALHET	<i>Callitriche heterophylla</i>	water star-wort
CARAQUD	<i>Carex aquatilis</i>	water sedge
CAROBN	<i>Carex obtupna</i>	slough sedge
CORSER	<i>Cornus sericea</i>	creek dogwood
CORSER-SALIX (SAHO-SASI2)	<i>Cornus sericea-Salix sp.(Salix hookeriana-Salix sitchensis)</i>	creek dogwood - (Hooker's willow-Sitka willow)
Cultivated Grassland	Cultivated Grassland	Grassland with a variety of introduced grasses
Cultivated Grassland w/ CYSC4	Cultivated Grassland with over 10% <i>Cytisus scoparius</i>	Cultivated Grassland with over 10% Scotchbroom
Cultivated Grassland dominated by RUAR9	Cultivated Grassland dominated by <i>Rubus armeniacus</i>	Cultivated Grassland dominated by Himalayan blackberry
FRPU7-SPDO Edge	<i>Frangula purshiana-Spiraea douglasii</i> Edge	casacara-Douglas spiraea (band on edges of wetlands)
JUNEFF	<i>Juncus effusus</i>	common rush (non-native)
JUNEFF-ELEPAL	<i>Juncus effusus-Eleocharis palustris</i>	common rush-common spikerush
LEMOM2	<i>Leymus mollis</i>	American dunegrass
MALFUS	<i>Malus fusca</i>	crabapple shrubland
MALFUS,CAOB3	<i>Malus fusca, Carex obnupta</i>	crabapple, slough sedge shrubland
MALFUS,LYAM3	<i>Malus fusca, Lysichiton americanum</i>	crabapple, skunk cabbage shrubland
MALFUS-SAHO,CAOB3	<i>Malus fusca-Salix hookeriana, Carex obtupna</i>	crabapple-Hooker's willow, slough sedge shrubland
MALFUS-SPIDOU	<i>Malus fusca-Spiraea douglasii</i>	crabapple-Douglas spiraea shrubland
NULUP	<i>Nuphar lutea</i>	yellow pond lily bed
OENSAR	<i>Oenanthe sarmentosa</i>	water parsley marsh
PICOC,CYSC4	<i>Pinus contorta, Cytisus scoparius</i>	shore pine, Scotchbroom
PICSIT	<i>Picea sitchensis</i>	Sitka spruce, usually on the edge of a forested habitat
PISI,CAOB3 (No LYAM3)	<i>Picea sitchensis, Carex obtupna (No Lysichiton americanum)</i>	Sitka spruce, slough sedge, without skunk cabbage
PISI,CAOB3-LYAM3	<i>Picea sitchensis, Carex obtupna-Lysichiton americanum</i>	Sitka spruce, slough sedge-skunk cabbage

PISI,GASH	<i>Picea sitchensis, Gaultheria shallon</i>	Sitka spruce, salal
PISI,GASH-RUSP	<i>Picea sitchensis, Gaultheria shallon-Rubus spectabilis</i>	Sitka spruce, salal-salmonberry
PISI-ALRU2 Edge	<i>Picea sitchensis-Alnus rubra</i> Edge	Sitka spruce-red alder (band of trees on edge of forested habitat)
PISI-ALRU2,CAOB3	<i>Picea sitchensis-Alnus rubra, Carex obtupna</i>	Sitka spruce-red alder, slough sedge
PISI-ALRU2,CAOB3-LYAM3	<i>Picea sitchensis-Alnus rubra, Carex obtupna-Lysichiton americanum</i>	Sitka spruce-red alder, slough sedge-skunk cabbage
PISI-MAFU,CAOB3-LYAM3	<i>Picea sitchensis-Malus fusca, Carex obtupna-Lysichiton americanum</i>	Sitka spruce-crabapple, slough sedge-skunk cabbage
PISI-PICOC,GASH-VACOVA	<i>Picea sitchensis-Pinus contorta ssp. Contorta,Gaultheria shallon-Vaccinium ovatum</i>	Sitka spruce-shore pine, salmonberry-evergreen huckleberry
PISI-POMU	<i>Picea sitchensis-Polystichum munitum</i>	Sitka spruce, swordfern
PISI-RUSP	<i>Picea sitchensis-Rubus spectabilis</i>	Sitka spruce-salmonberry
PISI-TSHE,GASH	<i>Picea sitchensis-Tsuga heterophylla, Gaultheria shallon</i>	Sitka spruce-western hemlock, salmonberry
PISI-VAPA	<i>Picea sitchensis-Vaccinium parvifolium</i>	Sitka spruce-red huckleberry
POLHYD	<i>Polygonum hydropiperoides</i>	swamp smartweed marsh
SAHO-MAFU,CAOB3-LYAM3	<i>Salix hookeriana-Malus fusca, Carex obnupta-Lysichiton americanum</i>	Hooker's willow-crabapple, slough sedge-skunk cabbage
SALHOOS-MAFU,CAOB3	<i>Salix hookeriana-Malus fusca, Carex obnupta</i>	Hooker's willow-crabapple, slough sedge
SALHOOS-SASI2	<i>Salix hookeriana-Salix sitchensis</i>	Hooker's willow-Sitka willow
SALHOOS-SPIDOU	<i>Salix hookeriana-Spiraea douglasii</i>	Hooker's willow-Douglas spiraea
SALLUC	<i>Salix lucida</i>	Pacific willow
SALSCO	<i>Salix scouleriana</i>	Scouler willow
SALVIR	<i>Salicornia virginica</i>	pickleweed
SPIDOU	<i>Spiraea douglasii</i>	Douglas spiraea shrub swamp
TSHE,GASH	<i>Tsuga heterophylla, Gaultheria shallon</i>	western hemlock, salmonberry
TYPLAT	<i>Typha latifolia</i>	cattail marsh
Water's Edge	Water's Edge	Used for the edge of Neacoxie Creek with various mixed plants

**Table 23.** Non-native plants observed during surveys

<b>Species</b>	<b>Common Name</b>
<i>Agrostis</i> sp.	bentgrass
<i>Anthoxanthum odoratum</i>	sweet vernalgrass
<i>Asparagus</i>	asparagus
<i>Buddleja davidii</i>	butterflybush
<i>Cirsium vulgare</i>	bull thistle
<i>Convolvulus arvensis</i>	morning glory/field bindweed
<i>Cotoneaster</i> sp.	cotoneaster
<i>Cytisus scoparius</i>	Scotch broom
<i>Dactylis glomerata</i>	orchard grass
<i>Daphne laureola</i>	spurge laurel
<i>Festuca arundinacea</i>	tall fescue
<i>Geranium dissectum</i>	cutleaf geranium
<i>Geranium robertianum</i>	herb Robert/stinky Bob
<i>Hedera helix</i>	English ivy
<i>Holcus lanatus</i>	velvet grass
<i>Hypochaeris radicata</i>	hairy cat's ear
<i>Ilex aquifolium</i>	English holly
<i>Iris pseudacorus</i>	yellow flag iris
<i>Juncus effusus</i>	common rush
<i>Leucanthemum vulgare</i>	oxeye daisy
<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Myriophyllum aquaticum</i>	parrot feather
<i>Nymphaea odorata</i>	white waterlily
<i>Phalaris arundinacea</i>	reed canarygrass
<i>Phragmites australis</i>	common reed
<i>Plantago lanceolata</i>	narrowleaf plantain
<i>Polygonum cuspidatum</i>	Japanese knotweed
<i>Ranunculus repens</i>	creeping buttercup
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rubus laciniatus</i>	cutleaf/evergreen blackberry
<i>Senecio jacobaea</i>	tansy ragwort/stinking willie
<i>Solanum dulcamara</i>	climbing nightshade
<i>Trifolium dubium</i>	small hop-clover
<i>Trifolium repens</i>	white clover
<i>Vallisneria americana</i>	American eelgrass

## Aquatic Plant Surveys

### *Neacoxie Creek*



Neacoxie Creek, in Gearhart, Oregon, was surveyed on August 10, 2011, along the edge of North Coast Land Conservancy's Neacoxie Forest. Kayaks were put in through an opening in the forest near the north end of the property. Surveyors traveled downstream until the creek was blocked by a large fallen tree close to the southern end of the property. The creek was also accessed during land surveys at NCLC's Neacoxie Forest, Surf Pines, and Neacoxie Estates properties. Additional plants from these surveys and variations in abundance are noted at the bottom of this document.

Neacoxie Forest lies on the western edge of Neacoxie Creek, as do all NCLC properties adjoining the creek. Located on the eastern edge of the creek at Neacoxie Forest is a narrow band of vegetation separating the creek from houses located on top of a dune. Water flow is from north to south. Common wetland trees and shrubs line the creek on both sides, but mainly on the west, and include *Alnus rubra* (red alder), *Picea sitchensis* (sitka spruce), *Frangula purshiana* (cascara), *Malus fusca* (Oregon crabapple), *Salix hookeriana* (Hooker's willow), *Sambucus racemosa* (red elderberry), some *Spiraea douglasii* (Douglas' spiraea--much more of this species was found at Neacoxie Estates), and *Lonicera involucrata* (black twinberry). Neacoxie Forest has

been said to also contain a different species of alder, *Alnus viridis* (sitka alder), but none was positively identified by the survey crew.

The stream sides were dominated by three plants at the time of the survey: *Cicuta douglasii* (western water hemlock), *Hydrocotyle ranunculoides* (floating marsh pennywort), and *Bidens cernua* (nodding beggarticks), with duckweeds mixed in. In the main flow, four plants were dominant: *Ceratophyllum demersum* (coontail), *Elodea canadensis* (Canadian waterweed), a *Potamogeton* species (probably either *P. pusillis* or *P. foliosus*--small or leafy pondweed), and the invasive *Callitriche stagnalis* (pond water starwort) in lesser amounts.

About half way down the creek going south, there is a bend to the west, and an old culvert straight ahead. The culvert leads to a wetland area on the other side of a small strip of raised land. The land area behind it is dominated by *Typha latifolia* (cattail) and western water hemlock. This area probably had more stream flow moving through it in the past. The culvert was clogged with dirt and was possibly impassable to flow. The culvert was GPS marked at UTM 10T 0428986; 5099178.

One *Taricha granulosa* (rough-skinned newt) was found during the aquatic survey.

**Invasive plants** found during the Neacoxie Creek survey are listed below with notes:

<u>Scientific name</u>	<u>Common Name</u>	<u>Abundance and locations</u>
<i>Callitriche stagnalis</i>	pond water starwort	medium amount submerged in flow
<i>Phalaris arundinacea</i>	reed canary grass	sparse patches along creek
<i>Vallisneria Americana</i>	American eelgrass	very sparse

**Aquatic plant species** found during wading and kayaking Neacoxie Creek are listed below:

<u>Scientific name</u>	<u>Common Name</u>
<i>Berula erecta</i>	cutleaf water parsnip
<i>Bidens cernua</i>	nodding beggarticks
<i>Ceratophyllum demersum</i>	coontail
<i>Cicuta douglasii</i>	western water hemlock
<i>Elodea canadensis</i>	Canadian waterweed
<i>Elodea nuttallii</i>	western waterweed
<i>Epilobium ciliatum</i>	purple leaved willow herb
<i>Hydrocotyle ranunculoides</i>	floating marsh pennywort
<i>Impatiens capensis</i>	jewelweed/touch me not
<i>Juncus effuses</i>	common rush
<i>Lemna minor</i>	common duckweed
<i>Mimulus</i> sp.	monkeyflower
<i>Nasturtium officinale</i>	watercress
<i>Potamogeton</i> sp. <i>pusillis</i> (or <i>foliosus</i> )	small or leafy pondweed
<i>Sparganium</i> sp.	bur-reed

<i>Spirodela polyrhiza</i>	greater duckweed
<i>Spirogyra</i>	green algae
<i>Typha latifolia</i>	cattail
brown slime	algae?

**Additional plant species** found by the creek side while conducting plant transects at Neacoxie Forest are listed below:

<b><u>Scientific name</u></b>	<b><u>Common Name</u></b>
<i>Carex obnupta</i>	slough sedge
<i>Comarum palustre</i>	marsh cinquefoil
<i>Eleocharis palustris</i>	creeping spike rush
<i>Galium trifidum</i>	small bedstraw
<i>Lysichiton americanum</i>	skunk cabbage
<i>Mimulus guttatus</i>	seep monkeyflower
<i>Myosotis laxa</i>	forget me not
<i>Nuphar lutea</i> spp. <i>polysepala</i>	yellow pond lily
<i>Oenanthe sarmentosa</i>	water parsley
<i>Schoenoplectus</i> sp.	bulrush (either soft stemmed or hard stemmed)
<i>Stellaria longifolia</i>	longleaf starwort
<i>Veronica americana</i>	American speedwell

At the Surf Pines property there is a greater amount of yellow pond lily, plus *Juncus bolanderi* (Bolander's rush) and *Carex aquatilis* var. *dives* (Sitka sedge).

At the Neacoxie estates property, thick Douglas' spiraea lines the creek, and *Juncus breweri* (Brewer's rush) was found.

## Sunset Lake



Sunset Lake, located along the west side NCLC's Reed Ranch property in Warrenton, Oregon, was surveyed on August 8, 2011. Surveyors canoed to the edge of the Reed Ranch property from a boat ramp located off of Sunset Beach Lane. The edges of the lake contain common wetland species such as *Alnus rubra* (red alder), *Malus fusca* (Oregon crabapple), *Salix hookeriana* (Hooker's willow), *Lonicera involucrata* (black twinberry), and *Juncus effusus* (common rush).

The aquatic environment is dominated by invasive species *Nymphaea odorata* (American white water lily) and *Cabomba caroliniana* (fanwort), with a lesser amount of *Vallisneria americana* (American eelgrass). Several clumps of invasive *Iris pseudacorus* (yellow flag iris) and *Lythrum salicaria* (purple loosestrife) were observed along both the western and eastern edges of the lake. Purple loosestrife occurs sparsely in small clusters near houses and docks, with very little located next to the Reed Ranch property. Some was found just north of the boat dock for the house by Reed Ranch. Yellow flag iris clumps are medium to large, with none found near the Reed Ranch property.

The edge of the Reed Ranch property was surveyed beginning at the southern end and canoeing to the northern end, pulling in closer to the land periodically through white water lily and fanwort tangles. Three photopoint locations were established with photos taken.

The following is a list of **native aquatic plant species** found at Sunset Lake, with notes on relative abundance:

<b><u>Scientific Name</u></b>	<b><u>Common Name</u></b>	<b><u>Notes</u></b>
<i>Ceratophyllum demersum</i>	coontail	Sparse
<i>Cicuta douglasii</i>	western water hemlock	Sparse
<i>Comarum palustre</i>	marsh cinquefoil	Sparse
<i>Eleocharis palustris</i>	creeping spike rush	Sparse
<i>Elodea canadensis</i>	Canadian waterweed	Sparse to medium amount
<i>Hydrocotyle ranunculoides</i>	floating marsh pennywort	Sparse
<i>Juncus acuminatus</i>	taper tipped rush	Sparse
<i>Lycopus americanus</i>	American water horehound	Sparse
<i>Mentha arvensis</i>	field mint	Very sparse
<i>Mentha piperita</i>	peppermint	Very sparse
<i>Myosotis laxa</i>	forget me not	Sparse
<i>Nasturtium officinale</i>	watercress	One clump by boat dock
<i>Nuphar lutea ssp. polysepala</i>	yellow pond lily	Thick on west side of lake
<i>Potamogeton pusillus (or foliosus)</i>	small or leafy pondweed	Sparse
<i>Potamogeton richardsonii</i>	Richardson's pondweed	Sparse
<i>Potamogeton zosteriformis</i>	flat stemmed pondweed	Medium amount
<i>Stuckenia pectinatus</i>	sago pondweed	Sparse
<i>Utricularia macrorhiza</i>	common bladderwort	Sparse
unknown	brown slime	Medium amount

The following is a list of **invasive species** found at Sunset Lake:

<b><u>Scientific Name</u></b>	<b><u>Common Name</u></b>
<i>Cabomba caroliniana</i>	fanwort
<i>Iris pseudacorus</i>	yellow flag iris
<i>Ludwigia palustris</i>	marsh seedbox
<i>Lythrum salicaria</i>	purple loosestrife
<i>Nymphaea odorata</i>	American white water lily
<i>Vallisneria americana</i>	American eelgrass



## West Lake



West Lake, located in Warrenton, Oregon, was surveyed on August 9, 2011. Surveyors accessed the lake from the east side of NCLC's Reed Ranch property, off of the road coming off of Highway 101. The surveyors hiked to the northern end of the property along the lake and waded back to the road through the water, then hiked to the southern end of the property along the lake and waded through the lake edge back north to the road.

Species lining the north edge of NCLC property along the lake include *Picea sitchensis* (Sitka spruce—several dead and two alive), *Malus fusca* (Oregon crabapple), *Frangula purshiana* (cascara), *Rosa nutkana* (Nootka rose), *Rubus ursinus* (trailing blackberry), *Rubus spectabilis* (salmonberry), and the invasive species *Rubus armeniacus* (Himalayan blackberry) and *Lotus corniculatus* (bird's foot trefoil). The plant community on the edge of the lake is cultivated grassland on the north side of the road that is taken to get into Reed Ranch.

On the southern edge of the property along the lake (south of the road), the most common plant community found was *Spiraea douglasii* (Douglas' spiraea). *Spiraea* stands are extremely thick and sometimes impassable. Other plant species lining the south edge of NCLC property along the lake include several dead Sitka spruce, Oregon crabapple, Nootka rose, *Lonicera involucrata* (black twinberry), *Salix scouleriana* (Scouler's willow), and *Salix hookeriana* (Hooker's willow). Willows are especially abundant at the southernmost end in a deep swamp.

In the south portion of the lake on NCLC property, invasive *Nymphaea odorata* (American white water lily) is very abundant with *Nuphar lutea* ssp. *polysepala* (yellow pond lily) mixing in and becoming more predominant to the north. Yellow pond lily covers the entire lake surface near the road, and is the only lily found north of the road. The invasive *Cabomba caroliniana* (fanwort) is another dominant species found on both sides of the road, thick throughout the lake environment. Several thick patches of invasive *Myriophyllum aquaticum* (parrot's feather) can be found on the south side of the road, with a small amount found to the north of the road. Three GPS marks, with photos, were taken of parrot's-feather infestations on the south side of the road. A small amount of invasive *Phalaris arundinacea* (reed canary grass) was found near the water by the road. *Typha latifolia* (cattail) is thick on both the north and south sides of the road, with otherwise only a small amount found at the very south end. Other plant species found at the road edge on the lake include Scouler's willow, *Salix lucida* ssp. *lasiandra* (pacific willow), native *Juncus* spp., and *Potentilla anserina* ssp. *pacifica* (Pacific silverweed).

Signs of beavers, including chewed stumps and holes dug into the banks of the lake, were found on both sides of the road on the lake edge.

The following is a list of **invasive plant species** found at West Lake, in the water or on the lake edge:

<u>Scientific Name</u>	<u>Common Name</u>
<i>Cabomba caroliniana</i>	fanwort
<i>Lotus corniculatus</i>	bird's foot trefoil
<i>Ludwigia palustris</i>	marsh seedbox
<i>Myriophyllum aquaticum</i>	parrot's feather
<i>Nymphaea odorata</i>	American white water lily
<i>Phalaris arundinacea</i>	reed canary grass
<i>Rubus armeniacus</i>	Himalayan blackberry

The following is a list of **native plant species** found at West Lake, in the water or on the lake edge:

<u>Scientific Name</u>	<u>Common Name</u>
<i>Callitriche</i> sp.	water starwort
<i>Camarum palustre</i>	marsh cinquefoil
<i>Carex aquatilis</i> var. <i>dives</i>	sitka sedge
<i>Carex obnupta</i>	slough sedge
<i>Ceratophyllum demersum</i>	coontail
<i>Ceratophyllum echinatum</i>	spineless hornwort
<i>Elodea canadensis</i>	Canadian waterweed
<i>Epilobium ciliatum</i>	purple leaved willowherb
<i>Hippuris vulgaris</i>	common mare's tail
<i>Hydrocotyle ranunculoides</i>	floating marsh pennywort
<i>Juncus effusus</i>	common rush

<i>Lemna minor</i>	common duckweed
<i>Lysichiton americanum</i>	skunk cabbage
<i>Nuphar lutea</i> ssp. <i>polysepala</i>	yellow pond lily
<i>Potamogeton pusillis</i> (or <i>foliosus</i> )	small pondweed or leafy pondweed
<i>Potamogeton zosteriformis</i>	flatstem pondweed
<i>Salix hookeriana</i>	Hooker's willow
<i>Salix scouleriana</i>	Scouler's willow
<i>Schoenoplectus</i> sp.	soft or hard-stem bulrush
<i>Sparganium</i> sp.	bur-reed
<i>Spiraea douglasii</i>	Douglas' spiraea
<i>Spirodela polyrhiza</i>	greater duckweed
<i>Spirogyra</i>	green algae
<i>Typha latifolia</i>	cattail
<i>Utricularia macrorhiza</i>	common bladderwort

## Wild Ace Lake



Wild Ace Lake is a 39.08 acre property owned by NCLC in Warrenton, Oregon, and it includes an interdunal lake and associated wetlands. The lake was surveyed on August 2, 2011. The site was accessed from a powerline trail leading from a cul-de-sac. The entrance was reached by driving north on Ridge Road on the west side of the lake, turning right onto 9<sup>th</sup> St., and taking the first right onto the dead-end road. Surveyors waded into the lake at three locations along the eastern side of the lake. The edges of the lake contain common wetland tree and shrub species, such as *Alnus rubra* (red alder), *Malus fusca* (Oregon crabapple), *Lonicera involucrata* (black twinberry), and *Salix hookeriana* (Hooker's willow). Invasive *Phalaris arundinacea* (reed canary grass) was abundant along the elk trail and old power line road that run parallel to the lake on the east side. *Gaultheria shallon* (salal) was very thick along this trail.

In the lake are small raised land masses covered with diverse plant species that prefer not to be submerged, such as Oregon crabapple seedlings, invasive *Lythrum salicaria* (purple loosestrife), *Juncus* species, *Carex* species, *Cicuta douglasii* (western water hemlock), and *Spiraea douglasii* (Douglas' spiraea). The most abundant species found in the lake is the invasive plant *Cabomba caroliniana* (fanwort). *Nuphar lutea* spp. *polysepala* (yellow pond lily) is also abundant.

Near the south eastern part of the lake, a canoe was found by a large log, with a trail leading off to a house nearby. Near the canoe is a large amount of purple loosestrife and *Comarum palustre* (marsh cinquefoil), a native cinquefoil. *Lotus corniculatus* (bird's foot trefoil), the only other invasive species found, is sparsely scattered along the banks of the lake.

Two photopoints were installed with photos taken.

The following is a list of **invasive plant species** found at Wild Ace Lake:

<b><u>Scientific Name</u></b>	<b><u>Common Name</u></b>
<i>Cabomba caroliniana</i>	fanwort
<i>Lotus corniculatus</i>	bird's foot trefoil
<i>Ludwigia palustris</i>	marsh seedbox
<i>Lythrum salicaria</i>	purple loosestrife
<i>Phalaris arundinacea</i>	reed canary grass
<i>Vallisneria americanus</i>	American eelgrass

The following is a list of **native aquatic plant species** found at Wild Ace Lake:

<b><u>Scientific Name</u></b>	<b><u>Common Name</u></b>
<i>Alnus rubra</i>	red alder
<i>Callitriche hermaphroditica</i>	northern star-wort
<i>Carex obnupta</i>	slough sedge
<i>Cicuta douglasii</i>	western water hemlock
<i>Comarum palustre</i>	marsh cinquefoil
<i>Elodea canadensis</i>	Canadian waterweed
<i>Hippuris vulgaris</i>	common mare's tail
<i>Hydrocotyle ranunculoides</i>	floating marsh pennywort
<i>Juncus effusus</i>	common rush
<i>Juncus ensifolius</i>	dagger leaf rush
<i>Lemna minor</i>	common duckweed
<i>Lycopus americanus</i>	American water horehound
<i>Malus fusca</i>	Oregon crabapple
<i>Menyanthes trifoliata</i>	buckbean
<i>Nuphar lutea ssp. polysepala</i>	yellow pond lily
<i>Oenanthe sarmentosa</i>	water parsley
<i>Potamogeton epihydrus</i>	ribbon leaf pondweed
<i>Potamogeton natans</i>	floating leaf pondweed
<i>Sparganium natans</i>	small bur-reed
<i>Sparganium sp.</i>	bur-reed
<i>Spiraea douglasii</i>	Douglas' spiraea
<i>Spirogyra</i>	green algae
<i>Utricularia macrorhiza</i>	common bladderwort
<i>Veronica scutellata</i>	skullcap speedwell