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References

Washington Native Plant Society
US Department of Agriculture
US Forest Service
Washington State Noxious Weed Control Board
NativePlantsPNW.com
Plants of the Pacific Northwest Coast, by Pojar and Mackinnon

Bowman Bay Restoration Project A User's Manual



Background and Long Term Management

Bowman Bay is a pocket beach in Deception Pass State Park, ideal rearing grounds for juvenile salmon and spawning grounds for forage fish. By the 1970s the beach was armored to protect a fish hatchery and marine biology station from coastal erosion. The armoring didn't allow for washed up driftwood or smaller sediments to accumulate, impairing spawning habitat for forage fish. In 2015 Northwest Straits Foundation partnered with Skagit Marine Resources Committee, Skagit Fisheries Enhancement Group, Skagit Conservation District, and Washington State Parks to remove the armoring and restore the near-shore habitat with native plants to prevent erosion, provide shade for fish eggs, and provide food for insects that fish eat. About 540 feet (1600 tons) of armoring was removed. The beach has been monitored for forage fish eggs every month since 2013, and in the summer 2019 surf smelt eggs were documented to have finally returned!

Riparian Restoration Site Maintenance

The vision for this site is to establish a thriving nearshore community of native plants. Ideally, one or two volunteer restoration stewards would take the lead in maintaining the plants at this site until the habitat becomes well established. The riparian restoration plan includes Zone 1- a lower elevation beachgrass community, and Zone 2- the backshore community with ground cover, shrubs, and trees. All weeds must be removed on a regular basis to allow the native plants to thrive. Occasional watering with a watering truck during the hot summer months might also be needed to increase plant survival rates.



Before restoration, (above) riprap and other artificial bank hardening elements prevented natural beach habitat processes.



After restoration, natural processes and native plants have been re-established.

Vegetation Maintenance Supplies

- Garden gloves
- Sturdy close-toed shoes
- Weed removal tools
- Large heavy-duty trash bags
- Plant ID guidebooks
- Notebook/pencil to record observations
- Sunscreen
- Hat
- Water bottle
- Cell phone
- Watering truck as needed



Be sure to dress for the weather! Take photos of any plants you can't ID and email them to SFEG. We would also love to see photos of wildlife enjoying the riparian habitat. Don't forget to record your volunteer hours!



Vegetation Monitoring

We train volunteers to conduct vegetation monitoring as a way to measure success, and as an aid for future planning and adaptive management of sites. At Bowman Bay we utilize a total count method



rather than a plot method, because the entire site is less than an acre. We take coverage data for ground cover, shrub cover, and tree cover for both native and invasive species. We identify each species seen, take the height, mortality rating, whether it was planted by us or grew as a volunteer, and whether or not it has a protector. A mortality rating ranges from 1 (dead) to 5 (healthy, maturing, abundant reproduction). We also take comments such as insect damage, deer browsing, or protector damage.

Native Plant Profiles and Photos

*Information and photos from [Washington Native Plant Society](#), [USDA](#), [US Forest Service](#), [Washington Noxious Weed Control Board](#)

GRASSES



American dunegrass, *Leymus mollis* LEMO

This grass flowers in the summer and inhabits coastal dunes and sand and gravel beaches.



Tufted hairgrass, *Deschampsia cespitosa* DECE

Tufted hairgrass blooms spring through summer and inhabits coastal terraces, upper tidal marshes, etc.

HERBACEOUS



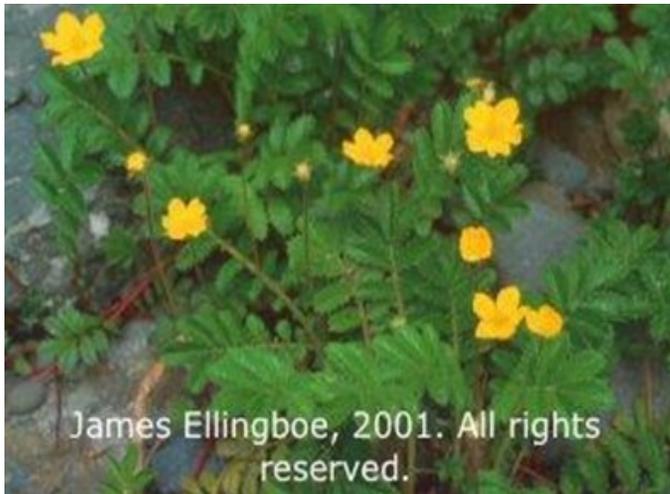
Beach pea, *Lathyrus japonicus* LAJA

This flowering herbaceous species can tolerate full sun, flowers from spring into summer, and has a saline or estuarine habitat.



Pearly everlasting, *Anaphalis margaritacea* ANMA

This herbaceous species has white flowers that resemble little pearls. It has tall stems that grow up to 3 feet, and fuzzy bracts and long pointy leaves.



Pacific silverweed, *Argentina egedii* AREG

This yellow-flowered species inhabits high tidal marshes and has alternate pinnately compound leaves.



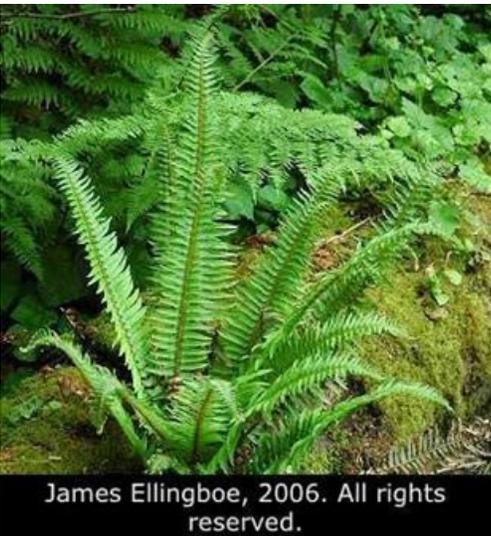
Seashore lupine, *Lupinus littoralis* LULI

This cousin of broadleaf lupine has flowers of purple to blue spaced in whorls. Preferring coastal sands, it grows to height of 1-2 feet and blooms late spring to early summer.



Coastal strawberry, *Fragaria chiloensis* FRCH

An herbaceous groundcover species, coastal strawberry has white flowers with five petals. Blooming from April to June, it grows on sand dunes and beaches, and prefers full sun to part shade.



Western swordfern, *Polystichum munitum* POMU

This fern reproduces by spore and prefers shade and drier soils.



Puget Sound Gumweed, *Grindelia integrifolia* DC

This native, herbaceous to semi-woody subshrub perennial, grows 8 to 40 inches tall. The thick, branched and leafy stems are generally covered in hairs, and produce a sticky resin. The leaves are lance-shaped with smooth or toothed edges. Plants flower from June to November. The yellow daisy-like flower heads are 1 to 2 inches across. Below the flower head is a whorled cup of green bracts that are sticky-glandular. This species serves as an important late-season source of pollen and nectar for beneficial insects. Once established, plants require little management.

Vegetation Monitoring

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SHRUBS



Dull Oregon grape, *Berberis nervosa* BENE

This shrub has opposite leaves that resemble English holly but with finer pointy ends, whereas English holly has alternate leaves. It prefers dry to moist soil partial to full shade, and flowers March through June. It is shorter than its cousin Tall Oregon grape.



Oceanspray, *Holodiscus discolor* HODI

This shrub flowers white cascading blooms late spring to early summer. It prefers full sun to shade, and has moderate tolerance for drought. It can grow up to 20 feet tall, and has alternate leaves with shallow lobes.



Nootka rose, *Rosa nutkana* RONU

This native shrub blooms in pink flowers spring through early summer. It prefers full sun and grows in riparian or disturbed sites. It is especially loved by pollinators.



Red flowering currant *Ribes sanguineum* RISA

One of the first to bloom in spring this shrub reproduces through bright pink to white tubular flowers. It has palmate alternate leaves.



Red elderberry, *Sambucus racemosa* SARA

This shrub flowers late spring to early summer. Its berries are toxic to humans when raw and unprepared. The leaves are opposite and oval to lance shaped, with finely toothed margins. It is shade tolerant but prefers full sun.



Salmonberry, *Rubus spectabilis* RUSP

Salmonberry has thorns at its base, and alternate leaves with 3 leaflets that resemble a butterfly. Its pin flowers give way to orange-red edible berries. The twigs zigzag, and with age the bark turns papery.



Salal, *Gaultheria shallon* GASH

Salal is a shrub with shiny, alternate leaves. It flowers spring through summer, with a wide tolerance for soil moisture and sun through shade. Flowers are white or pink, and berries are dark blue to purple.



Serviceberry, *Amelanchier alnifolia* AMAL

Saskatoon serviceberry produces white flowers, and leaves that have finely toothed margins only at the tips. The basal portions of the leaves do not have serrations. The berries are dark reddish purple and edible. Prefers full sun to part shade.

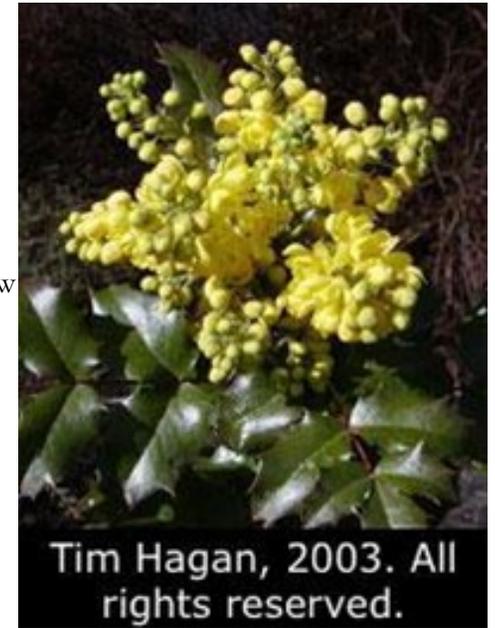


Sowberry, *Symphoricarpos albus* SYAL

Snowberry prefers full sun to part shade. Producing pink flowers in summer, its white berries are inedible. Its leaves are opposite, and can grow in a variety of shapes, but are generally oval, with no serrations.

Tall Oregon grape, *Rubus spectabilis* RUSP

This shrub has alternate, pinnately compound leaves with prickly leaflets. It prefers drier soils, full sun, and a variety of habitats. It has yellow bark, roots, and flowers, and can grow to over 10 feet tall.



Spirea, *Spirea douglasii* SPDO

Especially common in wetlands, spirea flowers pink to purple June through September and can grow to 7 feet tall. The distinctive dry, brown flowerheads remain on the plant through winter. Oblong oval leaves are alternate and up to 3 inches long.



Thimbleberry, *Rubus parviflorus* RUPA

Thimbleberry has large, fuzzy, palmate leaves. The flowers are white and the berries are small, dark red, and edible. It blooms from spring to summer. It does not have any thorns even though it is in the *Rubus* family. It can grow up to 10 feet tall.



Trailing blackberry, *Rubus ursinus* RUUR

Trailing blackberry is a native creeping shrub that resembles its invasive cousins, Himalayan blackberry and evergreen blackberry. Its leaves are alternate, it thrives in disturbed sites, and it has smaller berries and thorns than invasive blackberries. Its vines are blue-gray and trail along the ground.



Red alder, *Alnus rubra* ALRU

Alder trees have alternate leaves with deeper veining and more serrated edges than other trees like cottonwoods. They flower in early spring, and prefer moist soils and full sun. Alder as a symbiotic relationship with a bacteria genus called *Frankia* that allows them to fix nitrogen, so they do well in nutrient-poor soil.

DECIDUOUS TREES



Bigleaf maple, *Acer macrophyllum* ACMA

Bigleaf maple blooms in early spring, and has opposite leaves. It prefers wet, well-drained soils typically growing in river terraces or floodplains.



Willow, *Salix* spp

Willows in tis area are typically one of 4 species: Scouler's, Hooker's, Pacific, and Sitka. For our purposes, willow species isn't important. Willows are shrubby deciduous trees that prefer wet areas in riparian zones. They grow quickly and can resprout just from a branch planted in the ground.

Black cottonwood, *Populus balsamifera* ssp. *trichocarpa*
POBAT

This deciduous tree has alternate leaf arrangement, with finer serrations, and a lighter color on the underside of the leaf than on the top. It blooms from late March to May, tolerates full sun, and is flood tolerant, although intolerant of droughts and stagnant water. Male and female flowers occur in drooping catkins on separate plants. Leaves are oval to lance shaped depending on the age of the tree.



Pacific crabapple, *Malus fuca* MAFU

Pacific crabapple has white flowers and a low tolerance for drought. Its leaves are irregularly lobed with toothed edges and pointed tips. The small fruits ripen August through September.



Douglas hawthorn, *Crataegus douglasii* CRDO

Douglas hawthorn, or black hawthorn, is a shrubby deciduous tree that lives primarily in the understory of the forest. It prefers full sun to apt shade, has white flowers and thorns. It can resemble invasive English hawthorn when there aren't any leaves, but English hawthorn has leaves with much deeper lobes.



Pacific madrone, *Arbutus menziesii* ARME

Pacific madrone or madrona is known for its uniquely peely bark. It has alternate leaves, white flowers, and red berries that ripen in fall. It prefers disturbed gravelly or rocky sites where other trees might not grow, and full sun. It does not do well with transplantation.

CONIFEROUS TREES

Douglas fir, *Pseudotsuga menziesii* PSME

This coniferous tree reproduces through cones with distinctive three-prong bracts that resemble mouse tails. It prefers riparian and forest habitats. The needles are soft and encircle the whole branch.



Western redcedar, *Thuja plicata* THPL

This coniferous tree is easily identifiable by its flat, scaly needles. It prefers well-drained soils. The bark is thin and reddish.



Sitka spruce, *Picea sitchensis* PISI

Sitka spruce is a coniferous tree that prefers well drained soils, full sun, and has stiff spikey needles. The green to blue needles grow from short woody pegs that are still visible after the needles fall off.

Invasive Plant Profiles and Photos, Methods of Removal



Himalayan blackberry, *Rubus armeniacus*

Himalayan blackberry is one of the most persistent and widespread weeds in the region. Classified as a Class C noxious weed in Washington, it needs consistent and complete removal of all roots for years to

completely exterminate. Flowers are white and about one inch in diameter. Stems can reach 20-40 feet tall, and if they touch the ground they can resprout rhizomatically. Thrives in disturbed sites.



Evergreen blackberry, *Rubus laciniatus*

Evergreen or cutleaf blackberry is an invasive shrub classified as a Class C noxious weed in Washington. It has shallow roots that don't add to bank stabilization and it outcompetes native species. It requires consistent removal for years to full exterminate. Flowers are white to pink, and in clusters of 5 to 20. The leaves are more deeply lobed than Himalayan blackberry.



Dandelions (multiple species)

Dandelion is an herbaceous weed with a long taproot that is difficult to remove fully. It spreads through seeds.



Bull thistle, *Cirsium vulgare*

Bull thistle is an herbaceous class C noxious. Once established, it can outcompete native plants and grow in dense patches. It can grow to 3-7 feet tall and has alternate and coarsely lobed leaves with spiny tips. The upper leaf surface has spines while the lower leaf surface has woolly hairs. Flower heads 1.5-2 inches in diameter produce purple flowers.



Common tansy, *Tanacetum vulgare*
Common tansy is an herbaceous Class C noxious weed in Washington. It is poisonous to humans and livestock in large amounts. It has a strong odor, rhizomatic roots, fern-like foliage and yellow button flowers. Leaves are alternate and pinnately compound.



White clover, *Trifolium repens*
White Clover is an introduced perennial herb with stems about 23 inches long. Leaflets of three are finely toothed and stem from the base of the plant, which roots at nodes. White clover flowers are white or pinkish, about 1 cm long and pea-like in dense, round heads up to 2 cm wide. They are found in disturbed sites like fields, roadsides, and other open, grassy sites.

Canada thistle, *Cirsium arvense*
Canada thistle is an herbaceous Class C noxious weed in Washington. Once established it can spread quickly in a site and outcompete native plants. It has less noticeable spiny stems and smaller flower heads than bull thistle. Flower heads 0.5 to 0.75 inches produce flowers that range in color from purple to pink. Stem shoots begin as a rosette and then sprout upwards into a stem. Height ranges from 2-5 feet.



Birds-foot trefoil, *Lotus corniculatus*
Birds-foot trefoil is an introduced perennial herb with yellow pea-like flowers found in wet, open, grassy places that grows 6-24 inches in height. Its leaves are pinnately compound, with three ovular leaflets at the top and two opposite leaflets below. It is a spreading plant that creates dense, tangled mats along the ground that can choke out other species.



Poison hemlock, *Conium maculatum*

Poison hemlock is an herbaceous class B noxious weed in WA in the carrot (Apiaceae) family. All parts of the plant are extremely toxic to humans and livestock. It can grow up to 8 feet tall and has small, white, 5-petaled flowers in umbrella-like arrangements called umbels. Poison hemlock colonizes along roadsides, urban lots, pastures, and waterways and is often confused with parsley, parsnips, and wild carrot.

****Be VERY careful when handling Poison hemlock!
Always cover bare skin and wear gloves and dispose of
it in the trash as its foliage remains toxic after drying.****



Partner Organizations

Skagit Marine Resources Committee: www.skagitmrc.org
Northwest Straits Initiative: www.nwstraits.org
Northwest Straits Foundation: www.nwstraitsfoundation.org
Deception Pass State Park: www.parks.state.wa.us
Puget Sound Partnership: www.psp.wa.gov
United States Environmental Protection Agency: www.epa.gov