Before You Begin: Invasive Plant Management on Marine Shorelines and Steep Slopes

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• General overview of invasive plant impacts and priorities including a brief introduction to the state noxious weed law and weed list
• Invasive plant management techniques and considerations when working on steep slopes and shorelines
• Details on ID and control for major invasive weeds found on Puget Sound shorelines and ravines
What is an Invasive Plant?

• Successful invader
  – Introduced from elsewhere, non-native
  – Escapes into natural areas
  – Persists and spreads
  – Generally lacks predators and natural controls

• Causes harm
  – Out-grows, out-spreads and out-competes native plants
  – Disrupts ecosystems

Invasive plants such as English ivy displace native plants and wildlife and can transform entire ecosystems
What is a Noxious Weed?

- **Legal term**, defined and regulated by Washington State law (RCW 17.10)
- **Non-native plants that impact** agriculture, wildlife, human health, land values or natural resources
- Property owners and public agencies are **required to control selected weeds to prevent spread to new areas**
- Many noxious weeds are also on the **state’s quarantine list** and can not be sold in Washington
- County weed boards implement the law at the local level and educate landowners

Washington State Noxious Weed Control Board website: nwcb.wa.gov
Washington’s noxious weed law is designed to:

- Contain and eradicate new weeds when first detected
- Prevent spread of established weeds to un-infested areas in the state
- Allow flexibility for weed control at the county level for widespread weeds that are of local concern

Early detection and rapid response for new outbreaks

Containment and control to prevent further spread
State noxious weeds are ranked by how widespread they are.

- **Class A Weeds** – new invaders, control required statewide, still a chance to eradicate
  
  Class A: garlic mustard

- **Class B Weeds** – control required only in particular counties or regions, still have a chance to stop them from getting established in some places
  
  Class B: tansy ragwort

- **Class C Weeds** – widespread weeds; counties may select these for required control but for most the focus is on awareness and technical assistance

  Class C: English ivy
Okay, but why control invasive weeds on shorelines and steep slopes?
Aggressive, dominating growth will overwhelm other vegetation
Shallow roots are not ideal for slope stability and erosion control

https://greencitypartnerships.files.wordpress.com/2015/04/img_8821.jpg

Some invasive plants are notorious for increasing erosion and slope instability
Heavy vines like ivy will destabilize trees
Invasive weeds can really reduce habitat and enjoyment of shorelines.
And controlling weeds mixed with desirable plants is no fun, so get it right the first time!

http://www.heronhelpers.org/volunteer/
A Few Weed Control Tips for Slopes and Shorelines
First the disclaimer: study up on the regulations for your site

• Removing weeds may require a permit or be restricted in some areas

• **City and County Codes**
  – Critical or sensitive area protections (steep slopes!)
  – Shoreline protection rules
  – Clearing restrictions

• **State Regulations/Laws**
  – WDFW – Hydraulic Project Approval (HPA)
  – WDOE – Aquatic Pesticide Permits
  – WSDA – Pesticide Application Act
Key Issue with Slopes/Shores

**Problem**: removing vegetation can increase soil erosion and slope instability

**Goal**: use strategies that minimize this problem while still being effective
Time it right to minimize risk

• Time work to minimize having exposed soil during the winter storm season
• Control weeds in spring, spot treat skips in summer, plant in fall
• But keep in mind:
  – This won’t work for all weeds or all methods
  – One season of control is usually not enough
Island method

• Clear small areas just large enough to establish trees or tall shrubs first
• Remove understory plants only when the tree roots are established and there is a canopy that will mitigate against erosion and inhibit new weed growth
• Shade is your friend for controlling weeds!

http://www.ecolandscaping.org/wp-content/uploads/2014/05/Tree-Planting.420.jpg
Staged control

• Replace invasive plants in stages to avoid exposing an entire slope to erosion
• Move to new areas only after vegetation in cleared area is established
Above-ground control

• Use methods that kill the plant without physically removing their roots
  – Covering
  – Repeat cutting
  – Spraying
  – Stem injection/cut stem
If you must dig, keep it shallow

- Only loosen topsoil and just remove shallow roots
- Use hand tools and tread lightly and carefully
Keep it covered

- Use a combination of biodegradable covering (like jute) and mulch to keep bare soil covered (reduces erosion and new weed recruitment)
Some invasive weeds that impact shores and hills around Puget Sound*

*Not all of them by any means, just some of my “favorites”
Scotch Broom (*Cytisus scoparius*)
Scotch Broom Infestation
Gorse (*Ulex europaeus*)

Large shrubs covered with stout, sharp spines with fragrant flowers that appear in late Feb-early March.
Gorse in Western Oregon
Gorse invades beaches, bluffs and forests
Butterfly Bush (*Buddleia davidii*)

Leaves gray green above and white and fuzzy on the underside, finely toothed on margins

Can grow 5 to 8 feet in a single season
Butterfly Bush (*Buddleia davidii*)

Butterfly bush has invaded along the Tolt River.

Seedlings thrive in open sandy soil.
Pampas and Jubata Grass

**Pampas grass:** In 2013, a large escaped population was discovered in Olympia with almost 500 plants.

**Jubata grass** is also invasive in California and Oregon and has been documented in Washington. Looks very similar but less ornamental.
Pampas Grass Looking Weedy
Yellow Bush Lupine (Lupinus arboreus)

Native to southern and central California. It was introduced repeatedly to many dune systems as a sand stabilizer during the early to mid-1900s. Invasive north CA to BC and in New Zealand and Australia.
Himalayan Blackberry

(*Rubus armeniacus*)
Evergreen Blackberry
(Rubus laciniatus)

http://www.biopix.dk
http://www.nic.funet.fi
Invasive Knotweed
*(Polygonum bohemicum et al)*
Knotweed has hollow, bamboo-like stems often reddish or red-speckled.
Knotweed spreads as fragments get moved by floods, by mowing, or in soil. Knotweed out-grows native riparian trees and shrubs need for good habitat and water quality. Despite the large rhizome mass, knotweed provides poor erosion control.
English Ivy

(*Hedera hibernica, Hedera helix*)
English Ivy

Old Man’s Beard
(*Clematis vitalba*)
Old Man’s Beard on the Snoqualmie River
Yellow Archangel
*Lamiastrum galeobdolon* (a.k.a. *Lamium*)

Small yellow mint-type flowers in leaf axils

Silvery markings on leaves of this popular garden plant make it easy to spot invading into shady forests
Yellow archangel can completely take over the understory of even very shady forests.
Bindweed (Morning Glory)
(Convolvulus arvensis and Calystegia sepium)
Bittersweet Nightshade (Solanum dulcamara)
Canada Thistle (*Cirsium arvense*)

Perennial thistle with creeping roots.
Yellow Flag Iris  
(*Iris pseudacorus*)

- Large yellow iris – blooms April to June
- Leaves in a fan
- Prominent midrib on leaf
- Found on lakes, streams, wetlands
- Outcompetes native plants and animals for habitat
- Forms impenetrable mats, accumulates sediment
Purple Loosestrife (*Lythrum salicaria*)

**Key characteristics:**
- Perennial rhizomatous emergent with showy magenta flower spikes
- Branched stems are square, can root at nodes
- Leaves opposite, lanceolate
- Up to 2.5 million tiny seeds/plant
- Flowers July and August

Class B Noxious Weed
Perennial Pepperweed (Lepidium latifolium)
Perennial Pepperweed (*Lepidium latifolium*)

- 1-4 ft tall perennial
- Tiny “baby’s breath” like flowers in clusters, each with 4 petals. Peppery smell.
- Leaves: Alternate, waxy, stalked, lance-shaped
- Stems: Many emerge from woody root crown
- Flowering Time: Starts early June through August

Class B Noxious Weed
Perennial Pepperweed (*Lepidium latifolium*)

Habitat sandy shorelines (also dry landscapes)

Spreads by extensive rhizome and abundant seed

Class B Noxious Weed
Garlic Mustard (*Alliaria petiolata*)

- Has no natural enemies in North America (other than people!)
- One sq ft of garlic mustard can produce up to 60,000 seeds per year and doesn’t need pollination to produce seed

Class A Noxious Weed
Garlic Mustard Identification

- White flowers, 4 petals
- Lower leaves rounded
- Upper leaves longer, more like triangles
- Garlic smell when crushed
- Thin seed pods
- Curved roots
Garlic mustard is a plastic plant – adapts to conditions and determined to make seeds.
Giant Hogweed (Heracleum mantegazzianum)

Class A Noxious Weed

15 feet tall with a stout, purple-blotched stem, white umbrella-shaped flower clusters, and giant, jagged leaves
Caution: Giant Hogweed Can Cause Burns

- Juice of giant hogweed contains skin toxins
- Causes skin to be hypersensitive to sunlight
- Burns occur when skin is exposed to sunlight, even a day or two after contact with hogweed
- Causes blisters followed by purplish-dark blotches that persist and can continue to be sun-sensitive for several years
- Washing or flushing with water before sap dries can help reduce blisters
- People vary in their sensitivity

Sap from hogweed causes painful burns
Giant Hogweed Identification

Very tall plant, thick stems with purple bumps and stiff hairs, flower heads over 2 ft across, no hairs on leaf undersides (shiny)
Shorter plant, thinner stems, smaller leaves and flower heads, no raised purple bumps, soft hairs on leaf undersides (not shiny)
Giant Hogweed (Heracleum mantegazzianum)
King County Noxious Weed Control Program

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