

Shoreline Noxious Weed Control in San Juan County, Washington.

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San Juan County, the smallest of Washington State's 35 counties by land mass, apparently has the largest number of shoreline miles of any *county* in the country, with 375 (www.thesanjuans.com). While many of these shores are relatively undeveloped by the standards of the mainland, there is still plenty of scope for undesirable disturbance to soils, water quality, native vegetation and wildlife habitat, both terrestrial and marine.

According to Tina Whitman of Friends of the San Juans, a conservation group, there are about 5,000 shoreline parcels in the county, and each is subject to an array of county, state and possibly federal regulations meant to limit the impacts of development. Any attempt to control noxious weeds (as listed in the state's noxious weed list, WAC 16-750), should keep these rules in mind before, during and after weed control activities. One should consult SJC Community Development if you are thinking of developing your property along the shoreline.

One of the main goals of the Department of Community Development is to minimize ground disturbance in those lands within 200 feet of the ordinary high water mark (OHWM). Often, when the ground is disturbed, weed seeds will germinate more readily, perhaps because of changes to light or moisture conditions, often triggered by the removal of competing species that may suppress weed seedling development by shading or competition for moisture and nutrients.

A developer or property owner may be surprised to find noxious weeds that were not apparent before the disturbance. **Bull thistle**, for example, often appears in recently logged areas; its seeds can remain dormant for twenty or more years. The seeds of **Scot's broom**, a fairly well known weed in the Pacific Northwest, can survive in the soil seed bank for 80 or more years. **Tansy ragwort**, a toxic noxious weed on the state quarantine list, produces seeds that may survive for up to 15 years, and any use of machinery (graders, excavators, vehicle traffic) is very likely to spread it within the parcel and beyond, unless care is taken to clean all equipment before leaving an infested site or entering a clean site. Many septic systems throughout the county also have **Canada thistle**, suggesting that contaminated excavation equipment may serve as vectors.

The San Juan County Noxious Weed Control Program, which is part of WSU Extension and overseen by the County Noxious Weed Control Board, offers information to the public on noxious weed identification, methods of control, and landowner or manager legal responsibilities for noxious weeds as described in the state's noxious weed law, **RCW 17.10**. The Weed Program's staff even provides site-specific evaluations and recommendations for managing noxious weed species; dependent upon site conditions, the noxious weed species in question, and the management goals of the landowner.

What Weed Species Is It? There are now over 160 noxious weed species on the state list, but thankfully, only a small portion are likely found near shorelines in our area. Again, the Noxious Weed Program's staff would be happy to come out to help identify plants if requested. Here are some noxious weeds we have encountered along marine shorelines:

- English Ivy (*Hedera helix*, *Hedera hibernica*).
- Himalayan or Evergreen Blackberry (*Rubus armeniacus* or *R. laciniatus*).
- Scot's Broom (*Cytisus scoparius*).
- Tansy Ragwort (*Senecio jacobaea*).
- Bull Thistle (*Cirsium vulgare*).
- Canada Thistle (*Cirsium arvense*).
- Common Catsear (*Hypochaeris radicata*).
- Common Teasel (*Dipsacus fullonum*).
- Sulfur Cinquefoil (*Potentilla recta*).
- Perennial Sowthistle (*Sonchus arvensis* ssp. *arvensis*).
- Purple Loosestrife (*Lythrum salicaria*).
- Spurge Laurel (*Daphne laureola*).
- English Hawthorn (*Crataegus monogyna*).
- Oxeye Daisy (*Leucanthemum vulgare*).
- Gorse (*Ulex europaeus*).
- Lawnweed (*Soliva sessilis*).
- Italian Arum (*Arum italicum*).
- Common Fennel (*Foeniculum vulgare*).
- Bohemian Knotweed (*Polygonum x bohemicum*).

How Do I Get Rid of It? The Noxious Weed Program promotes a multi-faceted approach to weed control, in something called 'integrated weed management' or IWM. Like 'integrated pest management' (IPM), integrated weed management may employ a variety of techniques, depending on the species, the time of year, the site, and property owner preference. There are several main components of IWM:

- **Preventive.** Though it is self-evident, the best way to deal with weeds is not to have them in the first place. Being aware of local flora or horticultural stock helps one to avoid bringing unwanted plants to a parcel. On occasion, plant nurseries unknowingly sell noxious weeds or may have weeds mixed in with desirable plants. This also happens with seed mixes, which may contain species known to be invasive in Washington or other parts of the country. Being even a little more aware of noxious weeds will help one to make smarter choices when selecting plant materials or bringing in soils, mulches, compost, or gravel, all of which may contain weed contaminants. Cleaning one's equipment prior to entering a clean

site is also an important preventive measure (a 'best management practice, or BMP).

- **Cultural.** Like prevention, cultural control may involve proper selection of plant materials, choosing species that will be adapted well to the site's conditions and can provide vigorous, competitive growth without being invasive. A seed mix with non-invasive grasses and forbs, for example, can do a great deal to minimize or eliminate encroachment of noxious weeds if established in a timely manner on bare ground. Mulches, such as wood chips and cardboard, are a classic example of a cultural control technique used in weed control or suppression. A **planting plan** with natives or other desirable trees, shrubs and forbs is a good exercise to help one think about site restoration once the weeds are gone.
- **Mechanical or Manual.** As with farming and gardening, one can control weed species using anything from one's hands, a hori hori or gardening trowel, to rototillers, weed trimmers or mowers. Effectiveness again depends on the species and the growth stage of the plant.

Scot's Broom, for example, can simply be pulled from the ground, preferably when the soil is moist, either with one's hands or with the aid of a tool called a 'weed wrench', which clasps the base of the shrub and wrenches the plant out by its roots. Again, minimal soil disturbance is important, especially along shorelines, so take care to replace disturbed soil when possible. Another approach is to cut broom down, either with loppers, a hand saw, chain saw, or brush mower. There is considerable risk of re-sprouting from the stumps unless done correctly, and the time of year can have a significant impact on the likelihood of broom's survival after cutting (best to do at the beginning of the summer in late June or early July, but avoid disturbing if pods turn black).

Loppers can be used to cut the plant at the ground level, getting even an inch or two under the surface if possible, to reach the root crown. Once making the cut, one can cover the stump with soil or leaf litter to minimize the chance of re-sprouting. This technique is highly effective when done correctly, but it does require occasional sharpening of the blades as soil and rock will dull them. A hand saw, especially for the larger shrubs, is also effective, and the bigger the shrub, the more likely it will not come back. For larger specimens (> 2" diameter at base), we occasionally cut the broom to about 6 inches off the ground, then peel the bark off the trunk to the ground level. Obviously, this takes a bit more time but can be worth the effort. If brush-mowing or weed-trimming, wait until the early summer to cut the shrubs about 4 to 6 inches off the ground surface. Jagged cuts may expose the stumps to more desiccation (drying), thus increasing the likelihood that the cut

plants will die. Of course, if heavy machinery is available, they can do a great deal of work in a short time (clearing acres of Scot's broom or English hawthorn), but the resultant ground disturbance may encourage a flush of weed seeds soon after.

- **Biological.** For weeds that have just germinated or are in their early growth, livestock such as goats, sheep and cows can be effective for controlling some noxious weeds. These animals, of course, would need to be contained somehow to keep them focused on the weeds and not the desirable vegetation on the site. Given the sensitivity of shoreline sites, biological control of this sort may not be desirable due to concerns with manure and stormwater contamination. The federal government (APHIS) has a program that allows a select few control agents from noxious weeds' native ranges to be used as biological control agents. Many times, these are insects or other arthropods such as mites. Perhaps the best-known local example (though no longer recommended) is the cinnabar moth, whose tiger-striped larvae feed voraciously on tansy ragwort while it is in bloom. Unfortunately, they often do not succeed in killing the plant, and are said to feed on other plant species that are desirable. Another insect, the tansy ragwort flea beetle (*Longitarsis jacobaeae*), is host-specific and only attacks tansy ragwort, both in the roots (the larvae) and the leaves (the adults).
- **Chemical.** The use of herbicides in the near-shore environment should be handled with great care. First, decide if other approaches (cultural, manual, mechanical, biological) might accomplish the task of noxious weed control at the particular site without resorting to herbicides. Many weed species can be removed manually, for example, but a few have extensive root systems that defy digging or pulling (Canada thistle, perennial sowthistle, Bohemian knotweed, English hawthorn, gorse, common fennel, Italian arum) or simply result in too much soil disturbance. If you are a contractor considering herbicides for your shoreline work, we strongly recommend that you acquire an applicator's license from the Washington Department of Agriculture (<https://agr.wa.gov/pestfert/licensinged/>). **Note:** *Application directly to water requires a specific license for aquatic environments, and all such applications (with aquatically labeled products) are considered 'restricted use' and call for special approval from the state Department of Ecology.*

There are actually some valid reasons why a carefully chosen herbicide might be an option on some shoreline properties:

- * Slope too steep for other methods;
- * Desire to minimize soil-disturbing activities or protect cultural resources;
- * May minimize harm to other vegetation if a selective product is used;
- * Root networks left in place, helping to maintain bank stability;

- * Can use aquatically labeled products on upland areas to reduce risk;
- * Newer products can use very low concentrations of active ingredient;
- * More economical and potentially more effective than other approaches.

It is *highly important* to consider the weather, particularly wind speed/direction and chance of precipitation in order to avoid drift or runoff. **Please consult the SJC Noxious Weed Control Program (360-376-3499)** before undertaking any chemical controls near water. Products should be chosen with the greatest efficacy for the job while offering the lowest possible risks for unwanted impacts to the environment. Select products that are EPA-approved, registered for use in the state of Washington, and are appropriate for use on the site with the species in question. The product's **label is the law**. Fortunately, the newest technologies require much less of the active ingredient than older products, thereby further reducing potential environmental impacts. Application methods, whether by injection, cut-and-paint or spot-spray, can target noxious weeds individually.

What Comes Next? It is important for the contractor or property owner to consider what the desired end product (landscape) will be. Ideally, there would be a generous proportion of native grasses, forbs, shrubs and trees that can keep soil conditions stable and effectively diffuse and filter stormwater runoff from the hardscape surfaces on the property (decks, rooftops, driveways, etc.). If the developer or contractor has minimized disturbance within the 200-foot zone, existing vegetation surrounding the noxious weed infestation may be enough to replace spots left bare by noxious weed removal. Once the weed is gone, native vegetation is often “released” and can fill the voids.

Noxious weed infestations may be so dense at times that there are no other desirable species left. For example, a thick tangle of English ivy (*Hedera helix* or *H. hibernica*) may completely smother and suppress all other ground species, and may even kill standing trees. The property owner or contractor should plan ahead and develop a **planting plan** (permit may be required). Unless the site has a ready supply of water, plant in the early fall, just ahead of the seasonal rains. Typically, container or ball-and-burlap plantings will take at least two years of supplemental watering during the dry months before they become established. Using drought-tolerant species (xeriscaping) will increase the likelihood of survival if appropriate to the site. Landscape plants that can quickly fill in voids or provide shade will be the best competitors and will stand the greatest chance of suppressing weedy species. The property owner or manager should regularly monitor the site to ensure that weed species do not re-invade and crowd out new plantings. It may take 5 or more years before a restored site is more or less self-sustaining. If you have noxious weeds on your shoreline property and would like our assistance, please contact us by phone (360-376-3499) or email (jasono@sanjuanco.com, shawnb@sanjuanco.com).