Best management practices and target plant profiles
Excerpt from Invasive Plants Strategy

JUNE 2014

westvancouver

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Introduction to Schedule A

This document contains general Best Management Practices (BMPs) for the removal of invasive plant species and restoration planting. It also includes detailed BMPs for treatment of the nineteen target invasive plants for West Vancouver, as outlined in the Invasive Plants Strategy adopted in 2014. You'll find photos, how to identify the invasive plant, any related impacts, how to remove/control, and information about appropriate plants for restoration planting.

This document forms part of the District's Invasive Plants Strategy. This excerpt of that document provides the necessary information to assist residents with proper identification and treatment of invasive plants. The BMPs noted in this document are approaches based on known science that result in the most effective outcome.

The Best Management Practices are based on local sources and include the latest information with regards to treatment and control of invasive plants. Note that the BMPs may be updated in the future based on monitoring local results, changes in management practices and new information learned from other agencies.

For more information, visit westvancouver.ca/invasiveplants, or contact the Parks Department at 604-925-7275/parks@westvancouver.ca.

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1.0 General Practices for Invasive Plant Removal

- Seek the assistance of a person experienced in invasive plant removal if you are uncertain about any aspect of control.
- Always wear gloves.
- Check whether any safety precautions are required unique to the plant being removed.
- Remove plants, plant parts and seeds from personal gear, clothing, pets, vehicles, and equipment.
- Avoid unloading, parking, or storing equipment and vehicles in infested areas.
- Bag or tarp plants, plant parts and seeds before transporting to recommended disposal type.
- Avoid unnecessary soil disturbance. When soil is disturbed restoration planting is often beneficial to help prevent the re-establishment of invasive plants.
- When removing invasive plants in a garden setting consider native plant replacement options as well as recommended non-native plants.
- Recommended treatment timing is approximate and will vary year to year depending on weather. It is best to avoid treatment once fruit or seeds appear.
- Avoid the removal of any invasive plant species that may be used for bird nesting during the nesting season, March 15 to August 15 (e.g. blackberry species, English ivy, etc.).

2.0 General Practices for Restoration Planting

- Seek the assistance of a person experienced in ecosystem restoration if you are uncertain about any aspect of restoration.
- Follow the same precautions outlined above in section 1.0 to avoid spreading invasive plants.
- Growing conditions vary within the District. It is critical to select ecologically appropriate plant species for the site. Sun exposure and moisture preference are particularly important.
- Native plants should never be taken from a park or natural area (i.e. disturbing one area to restore another).
- Plant material should conform to the B.C. Landscape Standards for container grown stock.
- To increase survival rates, planting is best carried out during cool, moist seasons: late fall to early spring.
- If possible avoid bringing in soil. There is a very high likelihood that imported soil will be contaminated with invasive plants.
- Avoid soil disturbance. If there is a risk of soil erosion, apply a fiber mat (such as co-co matting), straw or mulch (non-cedar chipped woody material). Within a riparian area, erosion prevention measures such as silt fencing may be necessary to prevent sediment from entering the watercourse.
- Carry out follow-up monitoring and maintenance multiple times per year until the native plant community has successfully established and invasive plants no longer pose a threat.
- Besides planting native plants such as those recommended in the next section, consider planting native tree species (e.g. red alder, black cottonwood, Douglas-fir, western redcedar, and Sitka spruce).

3.0 Target Plant Profiles and Species Specific Best Management Practices

Plants are in alphabetical order by common name. The moisture preference of native plants recommended for restoration sites is denoted by: D – Dry; M – Moist; W – Wet.

All information has been compiled from the sources listed below unless otherwise cited.
For further information, visit the West Vancouver Invasive Plants website.

- BC Parks & Invasive Species Council of BC (ISCBC) "Best Practices for Invasive Plants in Parks and Protected Areas of British Columbia" 2011 (bcinvasives.ca/resources/publications)
- ISCBC "Grow Me Instead" Booklet 2011 Version 2 (bcinvasives.ca/resources/publications)
- ISCBC T.I.P.S. sheets (www.bcinvasives.ca/resources/outreach-materials/invasive-plants-tips)
- Invasive Species Council of Metro Vancouver (ISCMV) website (www.iscmv.ca)
- BC Ministry of Agriculture - Weeds BC website (www.weedsbc.ca)

Staying current

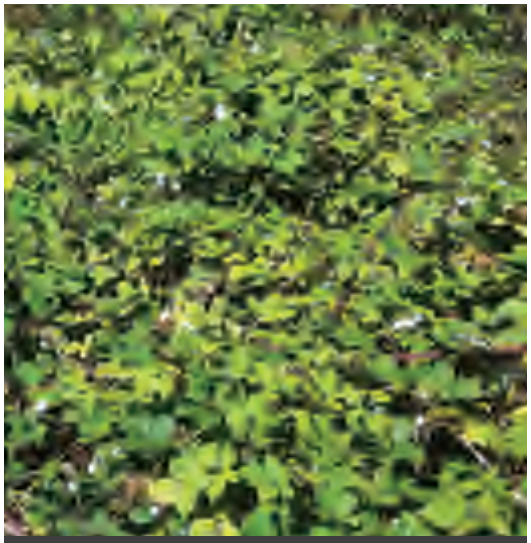
It is important to update these Best Management Practices based on monitoring results at local sites, changes in management practices and new information learned from other agencies.

Blackberry species

Himalayan blackberry
Rubus armeniacus (syn. *Rubus discolor*)

Evergreen/cutleaf blackberry
Rubus laciniatus

Invasive Species Council of Metro Vancouver



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How to Identify

Size: Evergreen, trailing shrub growing to 3 m tall and 12 m long

Flowers: Small, white to pinkish, 5-petalled, in clusters of 5-20

Fruit: Black, shiny, hairless to 2 cm in diameter, ripen from mid-summer to fall

Leaves: Large, rounded or oblong, toothed leaflets

Stem: Robust, stiff canes with large, flattened prickles. First year canes can root from the tips to produce daughter plants.

Location: Roadsides, riparian areas, forest edges, agricultural areas, disturbed areas. Prefers full sun.

Danger/Impact

Forms dense, impenetrable thickets which displace native vegetation. Can prevent establishment of native shrub and trees species.

Limits movement of large animals and reduces access for recreation. Reduces sight lines along roadways and trails.

Thickets along stream banks can increase flood and erosion potential.

How to Remove/Control

Cut or mow above-ground stems; use a Pulaski, mattock or backhoe to remove as much root as possible. Remaining root fragments will re-sprout. Mulching can reduce regrowth.

Timing: Avoid treatment once fruit appears to prevent further spread.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least twice annually for re-growth and new seedlings.

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Red-flowering currant (D)
Ribes sanguineum

Nookta rose (D-M)
Rosa nutkana

Thimbleberry (D-M)
Rubus parviflorus

Snowberry (D-M)
Symphoricarpos albus

Salmonberry (M-W)
Rubus spectabilis

Vine maple (M)
Acer circinatum

Additional Alternatives for Gardens:
Marionberry or Boysenberry
Rubus 'Marion' or 'Boysen'

Red raspberry
Rubus idaeus hybrids

Huckleberry
Vaccinium parvifolium, V. membranaceum or *V. ovatum*

Butterfly bush
Buddleja davidii


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How to Identify

Size: Lanky shrub growing up to 5 m tall

Flowers: Lilac, purple, white or pink with a yellow to orange centre, growing in long, cone-shaped, drooping clusters; blooming in summer

Leaves: Opposite, lance shaped; green above, grey and wooly below

Stem: Woody

Location: Riparian areas, forest edges, roadsides, disturbed areas, gardens

Danger/Impact

Forms dense, shrubby thickets which displace native vegetation. This includes sensitive and rare ecosystems such as stream banks and rock/lichen plant communities.

Can supplant other plants as a nectar source, reducing the pollination of native plant species.[12]

[12] Washington Invasive Species Council www.invasivespecies.wa.gov/priorities/butterfly_bush.shtml

How to Remove/Control

Cut back branches and dig out entire root. Use saw to cut larger plants as close to ground as possible. If roots aren't removed, stump may sprout and require repeat cutting treatment to exhaust the plant. Bag seed and flower heads to avoid spread.

Timing: November to May is best to avoid spreading seed.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least once annually for re-growth and new seedlings.

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Red-flowering currant (D)
Ribes sanguineum

Saskatoon berry (D)
Amelanchier alnifolia

Lewis's mock orange (D)
Philadelphus lewisii

Additional Alternatives for Gardens:
Meyer lilac
Syringa meyeri

California lilac
Ceanothus spp. and hybrids

There are dozens of alternative non-invasive plants that will attract butterflies.[13]

[13] Butterflies and How to Attract Them. Washington Department of Fish and Wildlife wdfw.wa.gov/living/butterflies/butterflies.pdf

Cherry laurel
(English laurel, common laurel)
Prunus lauracerasus


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R. Vidéki, Doronicum Kft, Bugwood.org

How to Identify

Size: Evergreen shrub to medium sized tree, growing 5-15 m tall

Flowers: 1 cm across with five creamy-white petals; part of a narrow cluster of a 30-40 flowers; blooming in early spring to in early summer

Fruit: Small cherry 1-2 cm across, turning black when ripe in early autumn

Leaves: Dark green, leathery, shiny, with a finely toothed serrated margin. May have almond scent when crushed.

Stem: Woody

Location: Forested areas, gardens; shade tolerant

Danger/Impact

Its rapid growth, evergreen habit and tolerance of drought and shade allow it to out-complete native vegetation on the forest floor.

Seeds are spread by bird droppings.

How to Remove/Control

Cut back branches and dig out entire root. Use saw to cut larger plants as close to ground as possible. If roots aren't removed, stump will sprout and require repeat cutting treatment to exhaust the plant.

Caution: The berries, leaves and bark are all poisonous if consumed.

Timing: December to June is best to avoid spreading fruit/seed.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least once annually for re-growth and new seedlings.

Restoration and Planting Alternatives

If soil disturbance occurs, plant shade tolerant native plants including:

Native Plants for Restoration Sites:
Red elderberry (M-W)
Sambucus racemosa

Salmonberry (M-W)
Rubus spectabilis

Vine maple (M)
Acer circinatum

Dull Oregon grape (D-M)
Mahonia nervosa

Additional Alternatives for Gardens:
Hick's Yew
Taxus x media 'Hicksii'

Cedar species
Thuja plicata or *occidentalis*

Mexican mock orange
Choisya species

Evergreen huckleberry
Vaccinium ovatum

Clematis – old man's beard
(traveller's joy)
Clematis vitalba


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District of West Vancouver

How to Identify

Size: Perennial, climbing vine to 30 m long.

Flowers: Small, greeny-white, scented flowers

Fruit/Seed: Tiny fruits have long, silky appendages. Together they form a white, fluffy ball.

Leaves: Opposite, lance-shaped, pale green

Stem: Woody

Location: Forested areas, gardens

Danger/Impact

Can girdle trees and can cause branch or tree failure by forming heavy mats in the canopy.

How to Remove/Control

Cut stems at ground leaving vines and foliage to die. Roots are shallow and can be pulled.

Timing: No restriction on timing, however dormant clematis can be easier to spot from November to March when other trees and shrubs have dropped their leaves.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least once annually for re-growth and new seedlings.

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Typically restoration is not needed after removal of a clematis vine.

If significant tree damage has occurred, replace with a native tree species (e.g. red alder, black cottonwood, Douglas-fir, western redcedar, Sitka spruce).

Alternatives for Gardens:
Other clematis species
Clematis spp.

Honeysuckle
Lonicera ciliosa

English holly
Ilex aquifolium


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How to Identify

Size: Large, evergreen shrub, growing up to 25 m tall

Flowers: Small, white, 4-lobed

Fruit: Reddish orange berries on female plants

Leaves: Evergreen, oval, shiny with 3-5 sharp spines on each side

Stem: Woody

Location: Forested areas, gardens; shade tolerant

Danger/Impact

Forms dense, shrubby thickets which displace native vegetation on the forest floor. Suppresses native plant germination by dominating water and nutrient consumption.

Seeds are spread by bird droppings.

How to Remove/Control

Cut back branches and dig out entire root. Use saw to cut larger plants as close to ground as possible. Stump may sprout and require repeat cutting treatment to exhaust the plant. Bag seed and flower heads to avoid spread.

Timing: Avoid treatment once fruit appears.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least once annually for re-growth and new seedlings.

Restoration and Planting Alternatives

If soil disturbance occurs, plant shade tolerant native plants including:

Native Plants for Restoration Sites:
Salmonberry (M-W)
Rubus spectabilis

Red elderberry (M-W)
Sambucus racemosa

Vine maple (M)
Acer circinatum

Dull Oregon grape (D-M)
Mahonia nervosa

Additional Alternatives for Gardens:
Holly-leaved osmanthus
Osmanthus heterophyllus

Meserve hollies
Ilex x meserve

San Jose holly
Ilex x aquipernyi

Evergreen huckleberry
Vaccinium ovatum

English ivy
Hedera helix


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How to Identify

Size: Evergreen, creeping vine, up to 30 m long

Flowers: Small, greenish-yellow, 3-5 cm diameter

Leaves: Waxy, 5-10 cm in length; juvenile leaves 5 lobed, adult leaves unlobed

Stem: Woody, often covered in root hairs

Location: Forested areas, gardens; shade tolerant

Danger/Impact

Rapidly displaces native vegetation, forming dense carpets on forest floor.

Can girdle trees and can cause tree failure by forming heavy mats in the canopy.

Can accelerate deterioration of manmade structures.

How to Remove/Control

Hand pull. Ivy climbing a tree should be a priority for removal. Cut stems around tree trunk at breast height and pull back from tree base.

Caution: Do not pull ivy from high sections on trees as this may pull down large tree branches.

Timing: No restriction on timing, however ivy is easiest to spot from November to March when other trees and shrubs have dropped their leaves.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: If removing an entire patch, monitor at least once annually for re-growth and new seedlings.

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Salal (D)
Gaultheria shallon

Kinnikinnick (D)
Arctostaphylos uva-ursi

Sword fern (M-W)
Polystichum munitum

Salmonberry (M-W)
Rubus spectabilis

Piggy-back plant (M-W)
Tolmiea menziesii

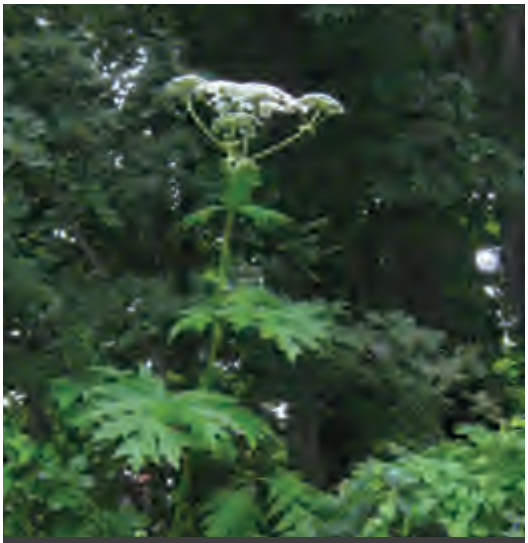
Additional Alternatives for Gardens:
Purple wintercreeper euonymus
Euonymus fortunei 'Coloratus'

Taiwan creeping raspberry
Rubus pentalobus

Privet honeysuckle
Lonicera pileata

Bunchberry
Cornus canadensis

Giant hogweed
Heracleum mantegazzianum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How to Identify

Size: Very large, up to 5 m tall

Flowers: White flowers in umbrella-shaped heads up to 1.5 m in diameter; may start blooming in June

Leaves: Shiny, large with coarse, jagged edges, cut into 3 large segments

Stem: Hollow, reddish-purple blotches, streaks, or spots, and stiff bristly hairs

Mistaken Identity: Often confused with native cow parsnip which is smaller to 2.5 m tall [14]

Location: Riparian areas, roadsides, agricultural land, disturbed areas

[14] Giant hogweed or cow parsnip? www.strathcona.ca/departments/transportation-and-agriculture-services/agriculture-services/weeds/giant-hogweed-or-cow-parsnip/

Danger/Impact

Very dangerous to human health. Sap causes extreme skin dermatitis in the presence of sunlight. Contact can lead to welts, rashes, blistering and scarring. If sap gets into the eyes, it can lead to temporary or permanent blindness.[15]

Displaces native vegetation and reduces suitable habitat for wildlife.

Produces copious seeds (100,000 seeds per plant). Dense taproot will keep producing leaves.

[15] Work Safe BC Toxic Plant Warning for giant hogweed: www.worksafebc.com/publications/health_and_safety/bulletins/toxic_plants/assets/pdf/tp0602.pdf

How to Remove/Control

Due to health risk, best removed by a professional. If attempting removal yourself, cut the root crown 8-10 cm below soil with a sharp blade. Pesticides may be used in certain situations where BMPs indicate that either a) the invasive plant is more harmful to the environment than the use of pesticides or b) other control methods are not effective, feasible or are considered to be more harmful to the environment than the use of pesticides.

Caution: Wear protective water proof clothing, gloves and safety goggles. Bag plant and seed heads in garbage bag to avoid spread and contact during handling/transport.

Timing: April to September (before plant goes dormant).

Disposal: Do not compost. Do not put in green waste container. Dispose in landfill. Cut material can be left on site to decompose if there is no risk of contact for three weeks AND there are no seeds.

Follow-up: Monitor every six weeks until no re-growth or new seedlings appear (seed bank lasts several years).

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Red elderberry (M-W)
Sambucus racemosa

Vine maple (M)
Acer circinatum

Salmonberry (M-W)
Rubus spectabilis

Additional Alternatives for Gardens:
Blue elderberry
Sambucus cerulean

Ligularia
Ligularia dentate

Rodgersia
Rodgersia spp.

Shieldleaf Rodgersia
Astilboides tabularis

Gorse
Ulex europaeus


District of West Vancouver


District of West Vancouver

How to Identify

Size: Evergreen shrub 1-3 m tall

Flowers: Small, bright yellow, pea-like

Fruit/Seeds: Flattened, dark, hairy pods, 10-20 mm long

Leaves: Evergreen, alternate; leaflets arranged in threes on young plants but reduced to stiff scales or spines when mature

Stem: Single, densely branched, upright

Mistaken Identity: Resembles Scotch broom but Scotch broom has no spines

Location: Dry, open clearings, roadsides, coastal bluffs, agricultural areas, disturbed areas

Danger/Impact

Forms dense, shrubby thickets which displace native vegetation. Serious threat to sensitive and rare ecosystems such as rock/lichen plant communities. Impedes native shrub and tree regeneration on logged or disturbed sites.

Reduces access for recreation, and increases fire hazard.

Spreads rapidly by exploding seed pods. Seed can be carried by sea water.

This plant is rare in Metro Vancouver therefore early detection and eradication is critical to prevent establishment. One patch has been observed in the median at the Horseshoe Bay Ferry Terminal.

How to Remove/Control

Dig young plants in loose soil removing entire root. Cut back large plants as close to ground as possible. Incomplete pulling or cutting can stimulate root fragments to re-sprout. Stump may sprout and require repeat cutting treatment to exhaust the plant.

Caution: Sharp spines can puncture tires and skin.

Timing: Avoid treatment once seed pods appear to prevent further spread.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least twice annually until no re-growth or new seedlings appear (seed bank lasts 25-40 years).

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Red-flowering currant (D)
Ribes sanguineum

Nootka rose (D-M)
Rosa nutkana

Snowberry (D-M)
Symphoricarpos albus

Thimbleberry (D-M)
Rubus parviflorus

Additional Alternatives for Gardens:
Shrubby cinquefoil
Dasiphora (*Potentilla*) *fruticosa*

Forsythia
Forsythia hybrids

Deciduous yellow azalea
Rhododendron luteum

Japanese kerria
Kerria japonica 'Pleniflora

Goutweed
Aegopodium podgaria


F. Steele, DHC


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How to Identify

Size: Perennial, growing to 70 cm tall

Flowers: White flowers in umbrella-shaped heads up to 10 cm in diameter, blooming in late spring, throughout summer

Leaves: Broad, toothed; solid green or variegated (white and green)

Stem: Erect, hollow, grooved

Location: Forested areas, riparian areas, roadsides, disturbed areas adjacent to residential gardens; shade tolerant

Danger/Impact

Displaces native vegetation, forming dense colonies in understory.

Commonly dumped illegally. Grown as a garden ground cover which spreads into adjacent natural areas.

How to Remove/Control

Dig plant removing as much root as possible. Take care to remove all plant parts as fragments will re-sprout. Cover treatments of black plastic (for two growing seasons) or thick cardboard and mulch are effective.

Timing: Any time during growing season as spread is primarily through vegetative means not by seed. Targeting the plant in early spring and again in late spring is optimal to exhaust the plant.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least twice annually for re-growth and new seedlings.

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Sword fern (M-W)
Polystichum munitum

Piggy-back plant (M-W)
Tolmiea menziesii

Salmonberry (M-W)
Rubus spectabilis

Wild ginger (M)
Asarum caudatum

Additional Alternatives for Gardens:
Hostas
Hosta spp. and hybrids

Barrenwort
Epirnedium spp. and hybrids

Yerba Buena
Clinopodium douglasii

Alumroot
Heuchera hybrids

Woodland strawberry
Fragaria vesca

Hawkweed – orange
Hieracium aurantiacum

Invasive Species Council of Metro Vancouver

M. Shephard, USDA Forest Service, Bugwood.org

How to Identify

Size: Small perennial herb, up to 30 cm tall

Flowers: Bright orange clusters atop slender branch stems

Leaves: Hairy on both sides, arranged in rosette at base of stem

Stem: Single, unbranched, leafless, covered with bristly black hairs

Location: Meadows, open areas, disturbed sites (roadsides, ski runs, clearings)

Danger/Impact

Displaces native vegetation, forming dense carpets. This may include sensitive and rare ecosystems such rock/lichen plant communities and alpine meadows.

Reduces grazing habitat as it has no food value to wildlife.

New to Metro Vancouver, found primarily along Highway 1 and ski runs in West Vancouver.

Spreads by seed, roots and above ground runners. Can be spread by contaminated soil and hay.

How to Remove/Control

This plant is new to Metro Vancouver. Contact the ISCMV for further information as they have prioritized treatment and have been treating the plant at Cypress Provincial Park. If growing in a garden setting, dig plant, removing as much root as possible. Take care to remove all plant parts as fragments will re-sprout.

Timing: Avoid treatment once seed appears to prevent further spread.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least once annually for re-growth and new seedlings.

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native and Non-Native Alternatives for Gardens:

Arkwright's campion
Lychnis x awkwrightii

Pinks and campions
Dianthus spp. and hybrids

Alpine aster
Aster alpinus subsp. vierhapperi

Heart-leaved arnica
Arnica cordifolia

Blanket flower
Gaillardia aristata

Knotweed species

Bohemian, Giant, Japanese and Himalayan knotweed

Fallopia x bohemica
Fallopia sachalinensis
Fallopia japonica
Polygonum polystachyum

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District of West Vancouver

How to Identify

Size: Large, woody bamboo-like shrubs, 1-5 m tall

Flowers: Small, white/green in plume-like clusters

Leaves: Variable.
Japanese: spade-shaped;
Giant: larger, heart-shaped;
Bohemian: hybrid of Japanese and Giant;
Himalayan: lance-shaped, pointy. Leaves appear in zigzag pattern along stems.

Stem: reddish-brown, hollow

Location: Riparian areas, roadsides, disturbed sites, landscapes. Will grow almost anywhere.

Danger/Impact

Forms dense, impenetrable thickets which displace native vegetation.

Dominates stream banks, increasing erosion potential.

Degrades wildlife and fish habitat.

Reduces access for recreation. Reduces sight lines along roadways and trails.

Able to grow through cement, house foundations and walls.

Spreads prolifically by root and stem segments. Fragments float downstream to form new infestations.

Extensive root system capable of re-sprouting even after many years of control.

How to Remove/Control

Do not treat manually. Manual treatment is ineffective and may cause further spread. Should be removed by a professional using pesticide application. Live knotweed should not be cut as this method is ineffective and disposal results in a high likelihood of spread during transport.

Timing: Pesticide treatment occurs during the growing season and is most effective in late summer. Plant is dormant during the winter.

Disposal: Pesticide killed material can be left on site to decompose. Cut material can be placed in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least twice annually. Continue monitoring for several years even after no re-growth appears.

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Salmonberry (M-W)
Rubus spectabilis

Red-osier dogwood (W)
Cornus stolonifera

Willow species (W)
Salix spp.

Snowberry (D-M)
Symphoricarpos albus

Native tree species (e.g. red alder, black cottonwood, Douglas-fir, western redcedar, Sitka spruce)

Additional Alternatives for Gardens:
Black elderberry
Sambucus racemosa var. melanocarpa

Peegee hydrangea
Hydrangea paniculata 'Grandiflora'

False Solomon's seal
Maianthemum (*Smilacina*) *racemosum subsp. amplexicaule*

Lamium – yellow archangel
Lamium galeobdolon


erbe.altervista.org


F. Steele, DHC

How to Identify

Size: Evergreen, low-growing vine

Flowers: Bright yellow, blooming in spring

Leaves: Heart-shaped, serrated; upper sides often have silver/white pattern and wrinkly texture

Stem: Square shaped, hairy

Location: Riparian areas, forested areas, gardens; shade tolerant; often associated with garden waste dump sites and garden edges

Danger/Impact

Rapidly displaces native vegetation, forming dense carpets in understory. Roots can strangle other plants.

Commonly dumped illegally from spent hanging baskets. Also grown as a garden ground cover which spreads into adjacent natural areas.

Can produce copious seeds that are dispersed primarily by ants.

How to Remove/Control

Repeated mechanical removal can be done by pulling above ground portion and digging as much root as possible. Remaining root fragments will re-sprout. Cover treatments (black plastic or thick layers of cardboard and mulch) may be effective. Pesticides may be used in certain situations where BMPs indicate that either a) the invasive plant is more harmful to the environment than the use of pesticides or b) other control methods are not effective, feasible or are considered to be more harmful to the environment than the use of pesticides.

Timing: Any time of year. Avoid large stream-side removals during rainy months where erosion is a concern.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least twice annually for re-growth and new seedlings.

Restoration and Planting Alternatives

Heavily mulch site after pulling. Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Salmonberry (M-W)
Rubus spectabilis

Sword fern (M-W)
Polystichum munitum

Piggy-back plant (M-W)
Tolmiea menziesii

Dull Oregon grape (D-M)
Mahonia nervosa

Kinnikinnick (D)
Arctostaphylos uva-ursi

Additional Alternatives for Gardens:
Hostas
Hosta spp. and hybrids

Barrenwort
Epirnedium spp. and hybrids

Yerba Buena
Clinopodium douglasii

Alumroot
Heuchera hybrids

Bunchberry
Cornus canadensis

Periwinkle
Vinca minor
Vinca major


City of Surrey


F. Steele, DHC

How to Identify

Size: Evergreen, low-growing herb with trailing stems

Flowers: Blue to purple, blooming in spring and intermittently through summer

Leaves: Shiny, dark leaves, opposite and oval shaped, 2-3 cm long

Stem: Slender, somewhat woody, green

Location: Riparian areas, forested areas, gardens. Ofetn originates in residential gardens. Prefers shade.

Danger/Impact

Displaces native vegetation, forming dense carpets in understory.

Commonly dumped illegally. Grown as a garden ground cover which spreads into adjacent natural areas.

How to Remove/Control

Pull the above ground portion and dig entire root.

Timing: Any time of year. Avoid large stream-side removals during rainy months where erosion is a concern.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least once annually for re-growth and new seedlings.

Restoration and Planting Alternatives

Heavily mulch site after pulling. Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Salmonberry (M-W)
Rubus spectabilis

Sword fern (M-W)
Polystichum munitum

Dull Oregon grape (D-M)
Mahonia nervosa

Piggy-back plant (M-W)
Tolmiea menziesii

Kinnikinnick (D)
Arctostaphylos uva-ursi

Additional Alternatives for Gardens:
Hostas
Hosta spp. and hybrids

Barrenwort
Epirnedium spp. and hybrids

Yerba Buena
Clinopodium douglasii

Alumroot
Heuchera hybrids

Woodland strawberry
Fragaria vesca

Policeman's helmet (Himalayan balsam) *Impatiens glandulifera*

F. Steele, DHC

F. Steele, DHC

How to Identify

Size: Annual herb, growing 1-2 m tall. Emits a strong, sweet, gasoline-like smell.

Flowers: Showy white, pink or reddish flowers shaped like an English policeman's helmet

Leaves: Smooth, egg-shaped clustered in groups of 3-5; toothed edges

Stem: Upright, hollow, smooth and purple-tinged

Location: Riparian areas, roadsides, forest edges, and gardens

Danger/Impact

Displaces native vegetation, forming dense colonies in riparian areas. Increases erosion potential when it dies back in the winter.

Seed capsules explode at maturity launching seed up to 5 meters from the plant. Seed can travel by water.

How to Remove/Control

Hand pull from base of plant prior to seed set. Where there is risk of steam bank erosion, cut plant at base to avoid soil disturbance.

Timing: Spring. Avoid treatment once seeds appear to prevent further spread. Seeds can start as early as June.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least once annually for new seedlings (seeds last for 18 months).

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Salmonberry (M-W)
Rubus spectabilis

Sword fern (M-W)
Polystichum munitum

Red elderberry (M-W)
Sambucus racemosa

Red-osier dogwood (W)
Cornus stolonifera

Willow species (W)
Salix spp.

Additional Alternatives for Gardens:
Cardinal flower
Lobelia cardinalis

Beard-tongue
Penstemon barbatus

Wild bleeding heart
Dicentra formosa

Red columbine
Aquilegia formosa

Pink monkey flower
Mimulus lewisii

Purple loosestrife
Lythrum salicaria


F. Steele, DHC


R. Westbrooks, US Geological Survey

How to Identify

Size: Perennial herb, growing to 3m tall

Flowers: Purple-magenta spikes, blooming from July to October

Leaves: Opposite to whorled, dark green, lance-shaped

Stem: Stiff, smooth, square, woody

Mistaken Identify: Can be confused with native fireweed but purple loosestrife does not produce windborne seeds. Loosestife more common in wetlands and moist areas

Location: Non-forested wetalnds and riparian areas, disturbed wet soil areas (including roadsides ditches), gardens.

Danger/Impact

Aggressively invades wetland areas displacing native vegetation.

Plant roots can alter waterways.

Reduces food sources for wildlife.

Each plant can produce up to 2.5 million seeds. Can also reproduce by root fragments.

How to Remove/Control

Pull from base of plant, taking care to remove all rhizomes. Small patches can be dug. Remaining root fragments will re-sprout. Biological control (Galerucella beetle) of large infestations is relatively successful but may require ongoing, repeat introductions and will not lead to eradication.

Timing: July to August when plant is blooming (and therefore clearly visible) but prior to seeds appearing.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least once annually for re-growth and new seedlings. Eradication of large infestations is unlikely but repeated annual treatment will contain the plant at lower levels.

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Hardhack (W)
Spiraea douglasii

Red-osier dogwood (W)
Cornus stolonifera

Willow species (W)
Salix spp.

Pacific ninebark (M-W)
Physocarpus capitatus

Cattail (W)
Typha latifolia

Additional Alternatives for Gardens:
Blazing star
Liatris spicata

Tall Delphinium
Delphinum elatum

Bloody iris
Iris sanguinea

Spike speedwell
Veronica spicata

Reed canarygrass
Phalaris arundinacea


University of Wisconsin Horticulture


N. Ali, DHC

How to Identify

Size: Grass, growing to 2 m tall

Flowers: Dusty pink to yellow or brown flowering heads to 30 cm long, composed of many small spikelets

Leaves: Green to yellow, broad flat leaves (up to 25 mm wide) with parallel veins

Stem: Hollow, jointed, up to 2 m long. Typically unbranched, though new shoots may grow at leaf base.

Location: Riparian areas, disturbed wet soil areas, (including roadsides), agricultural areas

Danger/Impact

Aggressively invades riparian areas displacing native vegetation. Forms dense stands.

Reduces wildlife habitat value.

How to Remove/Control

Cut or mow plants regularly and frequently to prevent seed production and weaken root reserves. Rhizomes are very difficult to pull and remaining fragments will readily sprout. Digging may damage sensitive riparian areas.

Disposal: Can be left on site to decompose.

Follow-up: Cut plants three times per year for minimum four years. Eradication or control of large infestations is unlikely, often unfeasible and has the potential to damage sensitive riparian areas.

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Hardhack (W)
Spiraea douglasii

Red-osier dogwood (W)
Cornus stolonifera

Willow species (W)
Salix spp.

Pacific ninebark (M-W)
Physocarpus capitatus

Cattail (W)
Typha latifolia

Scotch broom
Cytisus scoparis

District of West Vancouver

District of West Vancouver

How to Identify

Size: Evergreen shrub, growing 3 m tall

Flowers: Yellow, pea-like, sometimes for red markings

Fruit/Seeds: Flat pods with fine hairs on edges

Leaves: Lower leaves stalked and have three leaflets. Upper leaves simple and un-stalked.

Stem: Five-angled, ridged, woody, brown to green

Location: Roadsides, disturbed areas, dry areas; mainly found in non-forested sites

Danger/Impact

Forms dense colonies which displace native vegetation. Serious threat to sensitive and rare ecosystems such as rock/lichen plant communities. Produces a toxic substance that prevents other plants from establishing.

Limits movement of large animals and reduces access for recreation. Reduces sight lines along roadways and trails.

Increases fire hazard.

How to Remove/Control

Pull small plants when soil is moist, ensuring all root is removed. Cut large plants below ground or as close to base as possible to reduce resprouting.

Timing: May to July prior to seed ripening but during flowering season when plants are stressed.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least twice annually for re-growth and new seedlings. Seed can remain viable for at least 30 years.

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Nootka rose (D-M)
Rosa nutkana

Snowberry (D-M)
Symphoricarpos albus

Red-flowering currant (D)
Ribes sanguineum

Thimbleberry (D-M)
Rubus parviflorus

Red alder (D-M)
Alnus rubra
(will provide shade and competition for nitrogen to reduce broom growth)

Additional Alternatives for Gardens:
Shrubby cinquefoil
Dasiphora (*Potentilla*) *fruticosa*

Forsythia
Forsythia hybrids

Deciduous yellow azalea
Rhododendron luteum

Japanese kerria
Kerria japonica 'Pleniflora'

Small flowered touch-me-not
Impatiens parviflora


F. Steele, DHC


F. Steele, DHC

How to Identify

Size: Annual herb, growing to 40 cm tall

Flowers: Small, whitish-yellow flowers shooting from short stems at top of plant

Leaves: Broad, toothed, veined

Stem: Erect

Location: Moist, forested areas; shade tolerant

Danger/Impact

Displaces native vegetation, forming dense colonies in understory.

Seed capsules explode at maturity. Seed can travel by water.

How to Remove/Control

Hand pull from base of plant prior to seed set.

Timing: Spring. Avoid treatment once seeds appear to prevent further spread. Seeds can start as early as June.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least once annually for new seedlings.

Restoration and Planting Alternatives

Plant native or non-invasive species including:

Native Plants for Restoration Sites:
Sword fern (M-W)
Polystichum munitum

Dull Oregon grape (D-M)
Mahonia nervosa

Piggy-back plant (M-W)
Tolmiea menziesii

Salmonberry (M-W)
Rubus spectabilis

Additional Alternatives for Gardens:
Hostas
Hosta spp. and hybrids

Barrenwort
Epirnedium spp. and hybrids

Yerba Buena
Clinopodium douglasii

Alumroot
Heuchera hybrids

Woodland strawberry
Fragaria vesca

Wild ginger
Asarum caudatum

Spurge laurel (Daphne laurel) *Daphne laureola*

F. Steele, DHC

F. Steele, DHC

How to Identify

Size: Evergreen shrub 0.5-1.8 m tall, clusters of stems

Flowers: Fragrant, yellow, bell shaped flowers clustered at branch tips

Fruit: Small, black berries

Leaves: Oblong, evergreen, waxy

Stem: Woody, upright, often branched

Mistaken identity: closely resembles members of the Rhododendron family

Location: Forested areas, gardens; shade tolerant

Danger/Impact

Displaces native vegetation and unfavourably changes the soil chemistry.

All parts of the plant are toxic. Sap can cause skin irritation and consumption of any plant parts (including berries) can be fatal.[16]

Although toxic to humans, seeds are readily eaten by birds and spread in their droppings.

[16] Work Safe BC Toxic Plant Warning for spurge laurel: www.worksafebc.com/publications/health_and_safety/bulletins/toxic_plants/assets/pdf/tp0601.pdf

How to Remove/Control

Dig plant removing as much root as possible. A weed wrench may aid removal of larger plants. For very large clumps cut stems below the soil or as low as possible to prevent re-sprouting. Bag seeds and berries to avoid spread.

Caution: Wear gloves and protective clothing. Do not transport in closed vehicle or burn or chip as plant can release noxious chemicals.

Timing: Avoid treatment once fruit appears.

Disposal: Place in municipal Green Waste Program containers for composting. Do not compost in home compost bin.

Follow-up: Monitor at least once annually for re-growth and new seedlings.

Restoration and Planting Alternatives

If soil disturbance occurs, plant shade tolerant native plants including:

Native Plants for Restoration Sites:
Oregon grape (D-M)
Mahonia nervosa or *aquifolium*

Red elderberry (M-W)
Sambucus racemosa

Vine maple (M)
Acer circinatum

Additional Alternatives for Gardens:
Skimmia cultivars
Skimmia spp.

Winter daphne
Daphne odora

Rhododendron cultivars
Rhododendron spp.

Huckleberry (M)
Vaccinium ovatum (evergreen), *V. parvifolium*, or *V. membranaceum*