



*Hedera helix*

*Hedera hibernica*

BEST MANAGEMENT PRACTICES FOR  
English and Irish Ivies  
in the Metro Vancouver Region



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SERVICES AND SOLUTIONS FOR A LIVABLE REGION





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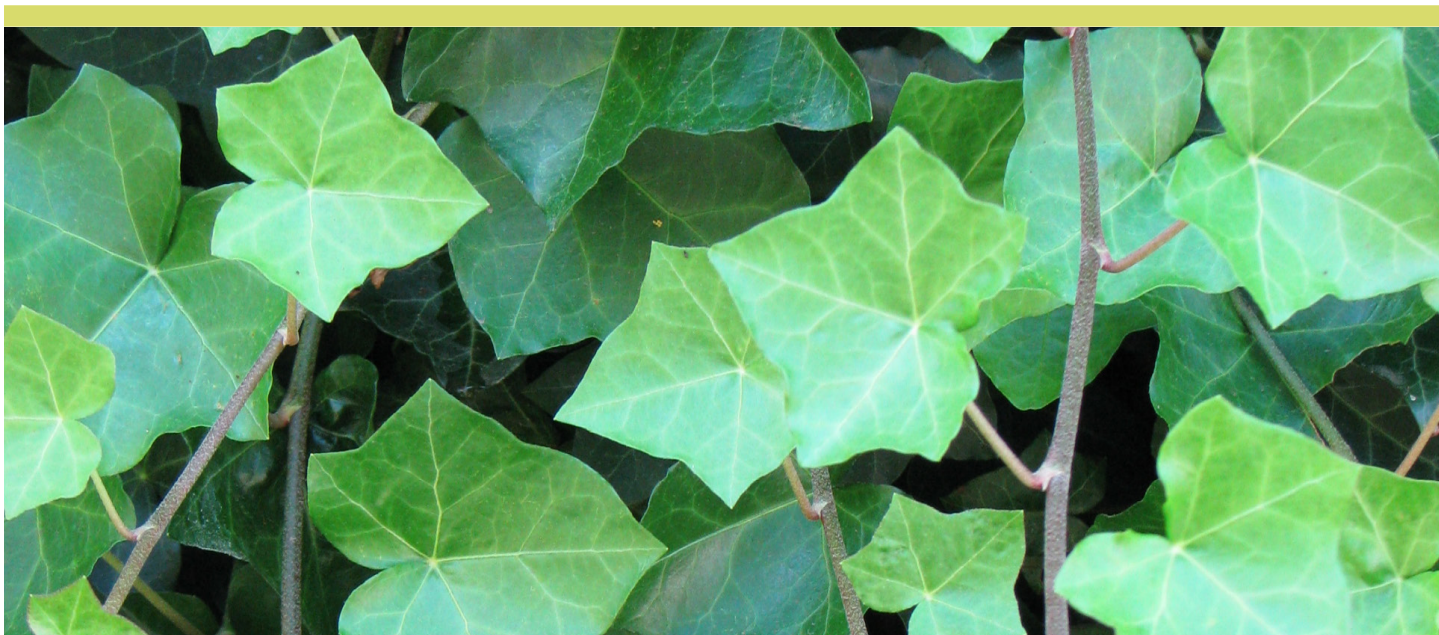
Metro Vancouver’s Regional Planning Advisory Committee –  
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August 2021

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## Introduction

The impacts of invasive species on ecological, human, and economic health are of concern in the Metro Vancouver region. Successful control of invasive species requires concerted and targeted efforts by many players. This document – **“Best Management Practices for English and Irish Ivies in the Metro Vancouver Region”** – is one of a series of species-specific guides developed for use by practitioners (e.g., local government staff, crews, project managers, contractors, consultants, developers, stewardship groups, and others who have a role in invasive species management) in the region. Together, these best practices provide a compendium of guidance that has been tested locally by many researchers and operational experts.

English ivy (*Hedera helix*) and Irish ivy (*Hedera hibernica*)<sup>1</sup> are native to Europe and western Asia. English ivy was introduced to North America during the earliest days of colonialism (Centre for Agriculture and Bioscience International, 2018) and has become increasingly problematic in natural and human-altered landscapes throughout the Metro Vancouver region. Ivy spreads

vegetatively and by seed and it tolerates a wide range of soil, moisture and light conditions. It is still commonly grown and sold as an ornamental plant and valued for its hardy, attractive, evergreen groundcover. Ivy’s ability to take over forest understories, suppress the growth of native species, and alter the tree canopy makes it a serious invader.

Academic institutions, government, and non-government organizations continue to study this species in British Columbia. As researchers and practitioners learn more about the biology and control of ivy, it is anticipated that the recommended best management practices will change overtime and this document will be updated. Please check [metrovancover.org](http://metrovancover.org) regularly to obtain the most recent version of these best management practices.

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<sup>1</sup> Irish ivy (*Hedera hibernica*) is also known by the common name Atlantic ivy (E-Flora, 2017). Unless distinctions are specified, these species are collectively referred to as ivy.



## REGULATORY STATUS

Section 2 (1) b (iii) of the [Community Charter, Spheres of Concurrent Jurisdiction – Environment and Wildlife Regulation](#), states that “municipalities may regulate, prohibit and impose requirements in relation to control and eradication of alien invasive species”, which includes English ivy under Terrestrial Vascular Plants of Schedule 1.

## IMPACTS

Ivy forms dense monocultures that grow along the ground and climb trees and structures. It smothers native vegetation and may inhibit understory growth in Lower Mainland riparian forests (Fierke & Kauffman, 2005). In Vancouver’s Stanley Park, ivy density was correlated with a reduction in species richness and changes in species composition (Quinn & Best, 2002). A similar pattern was found in a survey of three urban parks in Seattle where ivy was found to change community plant structure, largely by reducing the shrub layer (Dlugosch, 2005). Ivy’s shallow root systems can also increase soil erosion (Soll, 2005).

Ivy is especially detrimental to trees. It can engulf and encircle shrubs and trees of all sizes. Ivy cover deprives bark of normal contact with air and microorganisms (King County Noxious Weed Control Program, 2004). The weight of ivy is capable of breaking branches and toppling trees, especially in conjunction with storm or disease events (Soll, 2005). Ivy can impact a tree’s ability to maintain sufficient healthy branches and leaves to photosynthesize. Ivy also serves as a reservoir for bacterial leaf scorch (*Xylella fastidiosa*), a plant pathogen that is harmful to maples, oaks, elms, and other native plants (McElrone, Sherald, & Pooler, 1999). It is more difficult for tree risk assessors to determine the health of trees by visual observation when trees are covered in dense ivy (Pocock, 2018).



**Ivy climbing a mature tree**

CREDIT: F. STEELE

Monocultures of ivy can have rippling consequences through higher trophic levels. Altering the structure of all forest layers, ivy can significantly impact native birds that are reliant on native forest structures (Quinn & Best, 2002). The berries are mildly toxic to birds (Barnea, Harborne, & Pannell, 1993), especially native birds that are not adapted to the toxin.

Ivy berries and leaves are toxic to humans and livestock if eaten (King County Noxious Weed Control Program, 2004) and some people may develop skin irritation after touching ivy (Dreves, 2018). Dense ivy mats provide hiding areas for rats, other vermin and debris (King County Noxious Weed Control Program, 2004). Ivy has the ability to damage infrastructure upon which it grows (Invasive Species Council of British Columbia, 2017). Ivy-caused tree failures may also harm infrastructure and residents.

All levels of government, non-profit organizations and private property owners spend significant resources managing ivy in the Metro Vancouver region every year. In recent years, agencies represented on Metro Vancouver's Regional Planning Advisory Committee - Invasive Species Subcommittee together have spent over \$220,000 on ivy control and volunteer stewardship annually. This figure does not include control costs for private landowners across the region or costs associated with education and awareness activities.

## REPRODUCTION AND SPREAD

Ivy's primary method of spreading is vegetative (Strelau, Clements, Benner, & Prasad, 2018). Stems or stem fragments root quickly when they come in contact with soil (Waggy, 2010). The plant also produces adventitious roots that adhere easily to both natural and artificial structures, allowing it to spread through a new area quickly once established (Melzer, Seidel, Steinbrecher, & Speck, 2012).

Ivy also reproduces by seeds, but flowers will only develop on mature stems, when there is sufficient light (Soll, 2005). Seeds can be dispersed by birds, especially European birds that are adapted to its mild toxicity such as European starling and English house sparrow. Native birds such as thrushes, Stellar's jay, cedar waxwing and American robin have been observed consuming ivy berries in the Pacific Northwest (Strelau, Clements, Benner, & Prasad, 2018). Ivy seeds germinate quickly (in as little as 5-20 days) but are short-lived and do not form a persistent seed bank (Waggy, 2010).

It is not uncommon to see single ivy plants germinating in otherwise undisturbed tracts of forests where the only source can be attributed to seed dispersal by birds.

English ivy was introduced as a horticultural species and continues to be sold by local nurseries and planted by horticulture professionals and the public. Horticulture and associated garden waste disposal also contribute to its spread (Reichard & White, 2001). A study in Surrey, British Columbia found that ivy occurrence decreases with increased distance from roads, suggesting that human infrastructure is a vector for spread (Chance, et al., 2016).

## HABITAT AND DISTRIBUTION

Ivy is commonly found in urban forests growing on the forest floor and up the trunks of canopy trees. It can also be found on rocks/cliffs, sunny fields, and in human-dominated habitats such as gardens and up fences, posts and walls (Centre for Agriculture and Bioscience International, 2018). It is most common in forest parks close to urban centres (Centre for Agriculture and Bioscience International, 2018).

Although ivy can tolerate a variety of light and soil conditions, it prefers direct sunlight and moist, well-drained soils (Strelau, Clements, Benner, & Prasad, 2018). Young plants are shade tolerant, enabling growth under existing dense stands of plants and trees (Invasive Species Council of British Columbia, 2017).

English ivy occurs naturally from the Caucasus Mountains to northern Europe and as far south as Iran and the southern coast of the Mediterranean (Waggy, 2010). Irish ivy has a similar native range (Strelau, Clements, Benner, & Prasad, 2018). Common throughout southwestern British Columbia, including the Metro Vancouver region, Vancouver Island, and the Gulf Islands (Strelau, Clements, Benner, & Prasad, 2018), ivy has also been found in other coastal regions of the province, including on Haida Gwaii. There are isolated reports of English ivy in the southern interior and Kootenays (Invasive Species Council of British Columbia, 2017).



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## CLIMATE ADAPTATION

Climate modellers predict that the Metro Vancouver region will experience warmer temperatures; a decrease in snowpack; longer dry spells in summer months; more precipitation in autumn, winter and spring; more intense extreme events; and an extended growing season. In the past, our region had an average of 252 days in the growing season. In lower elevations 45 days will be added to the growing season by the 2050s, and 56 days by the 2080s, resulting in nearly a year-round growing season of 357 days on average. In higher elevation ecosystems the growing season length will increase by 50% to 325 days by the 2080s (Metro Vancouver, 2016). These changes will stress many sensitive ecosystems, increasing their vulnerability to invasive species.

Ivy may be able to adapt to our future climate in several ways:

- **Extended growing season:** Warmer winters with earlier springs may benefit ivy species more than other broadleaf plants, as they are able to take advantage of high light conditions before tree growth starts in the spring (Manzanedo et al, 2018).

- **Warmer temperatures:** Although higher temperatures may have negative effects on ivy growth, it may benefit from high carbon dioxide concentrations under warm conditions (Manzanedo et al., 2018). Manzanedo et al's research (2018) found that this adaptability under warm conditions is not seen in ivy tree hosts, which showed a weaker response to carbon dioxide as well as higher cavitation risk under high temperatures.
- **Increased precipitation:** Ivy growth is highly dependent on precipitation and it may benefit from an increase (Manzanedo et al., 2018).

With these kinds of competitive advantages, this species is more adaptable than native species in a variety of ecosystems and suggest that it will be able to withstand, and possibly expand or persist in areas where it is not currently known, with changing climate conditions.

## Identification

There are two species of *Hedera* in Canada: *Hedera helix* and *Hedera hibernica*. These species are difficult to distinguish taxonomically and for management purposes are often considered the same taxon (Strelau, Clements, Benner, & Prasad, 2018). *H. helix* has erect trichomes (hairs) on the underside of the leaves while *Hedera hibernica* has flat trichomes. One study of invasive ivy populations in the Pacific Northwest (including several sites in the Lower Mainland) found the majority of samples were *H. hibernica*, not *H. helix* as presumed (Clarke, Reichard, & Hamilton, 2006) (Green, Ramsey, & Ramsey, 2013). The management strategies outlined in this document can be applied to both species (Strelau, Clements, Benner, & Prasad, 2018).

English ivy is an ornamental species and many colour and leaf variations exist, including the *Hedera helix* 'Variegata' with variegated leaves (Moore, 2018). Many varieties of ivy have escaped human cultivation in the Metro Vancouver region. All *Hedera* species are potentially invasive (Invasive Species Council of British Columbia, 2013) and planting should be avoided. The *Hedera* genus is known to hybridize, making separating and identifying species and cultivars difficult (Strelau, Clements, Benner, & Prasad, 2018).

The following identification information was collected from various sources.

**Lifecycle:** Woody, evergreen perennial with two distinct growth phases. The most common is the shade-tolerant, vegetative **juvenile (immature) phase** that manifests as a vine or groundcover. This stage lasts about 10 years (King County Noxious Weed Control Program, 2004). When enough light becomes available, ivy may develop an **adult (mature) phase**, growing as a shrub or vertically up a tree

or structure. In this adult phase, ivy is able to reproduce sexually. Both growth phases may be found on different stems of the same plant. The longevity of ivy in British Columbia has not been extensively studied, but reports of stems over 50 years old are not uncommon in its native range (Okerman, 2001) (Waggy, 2010).

**Stem:** Woody stems can grow over 30 metres tall/long and 30 centimetres in diameter (Strelau, Clements, Benner, & Prasad, 2018). Stems are purple-green, turning brown with age. Juvenile stems can grow adventitious roots (or rootlets) at the leaf nodes, helping the ivy to climb by securing it to structure. These rootlets do not absorb nutrients or water, although they can develop into true roots (Strelau, Clements, Benner, & Prasad, 2018).

**Leaves:** Alternate, leathery, evergreen leaves. Juvenile leaves are distinctive with 3-5 lobes that are dark, glossy green with whitish veins. Mature leaves are spirally arranged, lighter green, unlobed, and more rounded (ovate to rhombic) with veins that are less distinctive (Okerman, 2001). Colour and leaf variations exist, including a variety with variegated leaves (see below).

**Flowers:** Only produced on mature stems. Flowers are greenish-white to greenish-yellow and appear from summer to early fall (Invasive Species Council of British Columbia, 2017). Flowers grow in terminal clusters (umbels) with 8 to 20 flowers per cluster and 3 to 6 clusters per terminal stem.

**Fruit:** Round, bluish-black berries, 2-5 seeded (E-flora, 2017), maturing in winter or early spring. Berries are eaten by birds.

**Other characteristics:** Ivy has a potent smell when crushed.



The following photos show ivy plant parts.



**Juvenile leaf**

CREDIT: ISCMV



**Mature leaf**

CREDIT: ISCMV



**Flowers (mid-November)**

CREDIT: ISCMV



**Fruit (berries)**

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**Stem**

CREDIT: ISCMV



**Adventitious roots on juvenile stem allow the plant to adhere to structures (e.g. walls and fences) or other vegetation (e.g. trees)**

CREDIT: ISCMV



**Ivy roots**

CREDIT: ISCMV



## SIMILAR SPECIES

### NON NATIVE SPECIES

- Virginia creeper (*Parthenocissus quinquefolia*): Leaves alternate and composed of five leaflets, in palmate arrangement (with stems originating from a single central point) (Canadian Wildlife Federation, 2019). This plant is also considered locally invasive.



Virginia creeper

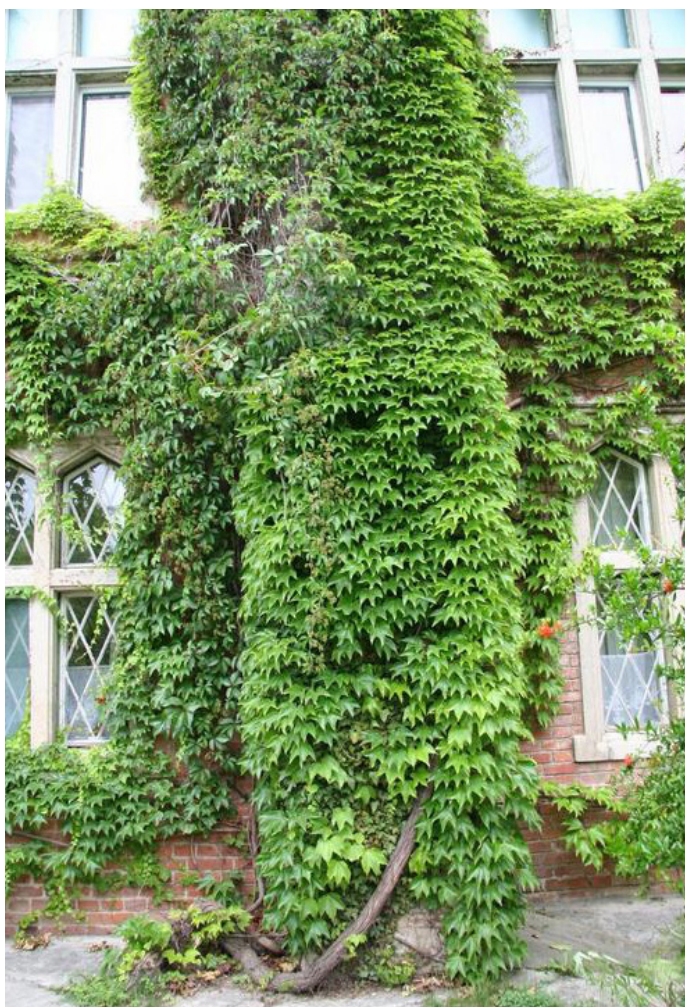
CREDIT: T. WEBSTER, USDA AGRICULTURAL RESEARCH SERVICE, BUGWOOD.ORG



Hedge bindweed

CREDIT: [BREWBOOKS, FLICKR](#)

- Hedge bindweed (*Calystegia sepium*): stems trailing to climbing (cannot attach to structures); leaves alternate, arrowhead-shaped with tips pointed, and thinner than ivy leaves (E-Flora, 2017). This plant is also considered locally invasive.
- Boston ivy (*Parthenocissus tricuspidata*): Leaves are alternate, turning red in the fall; young leaves are composed of 3 distinct leaflets and mature leaves are 3-lobed (Boyd Nursery Company, 2019).



Boston ivy

CREDIT: R. VIDÉKI, BUGWOOD.ORG



## Tracking

The Provincial government maintains the [Invasive Alien Plant Program \(IAPP\) application](#) (British Columbia Ministry of Forests, Lands and Natural Resource Operations and Rural Development 2017), which houses information pertaining to invasive plant surveys, treatments, and monitoring. Many agencies, including local governments, have their own internal invasive species inventory and mapping protocols that are used by staff, contractors and, in some cases, the public. For example, the City of North Vancouver has its own system called AlienMap. Agencies in British Columbia that do not enter data into IAPP are encouraged to check it regularly because it contains public reports and data from other agencies and it is important to consider as much data as possible when making management decisions. The Map Display module of IAPP is publicly accessible.

When carrying out an ivy inventory it is useful to record the following information as it will later inform treatment plans:

- Size and density of infestation;
- Whether the ivy is growing on trees or infrastructure;
- Location in relation to the 10 metre Pesticide-Free Zone (PFZ) adjacent to water courses;
- Location in relation to other water sources, such as wells; and
- The suspected source of infestation (e.g., green waste dumping, spread from an adjacent private garden, etc.).

## Reporting

Since ivy is widespread throughout the Metro Vancouver region and does not pose an imminent health risk, there is generally little value in reporting individual occurrences, unless it is suspected that the integrity of infrastructure or a tree infested by ivy is compromised and posing a safety risk. In this case, contact the property owner to report the concern.



CREDIT: F. STEELE

# Prevention and Control Strategies

Invasive plant management may include a variety of control techniques ranging from prevention, manual, mechanical, chemical, cultural and/or biological methods. Each method is described below in order of effectiveness. Factors such as terrain, time of year and density, depth and size of the infestation must be considered when making management decisions for ivy (Strelau, Clements, Benner, & Prasad, 2018).

Some people may develop a skin reaction upon contact with ivy (Strelau, Clements, Benner, & Prasad, 2018). It is advised to wear gloves and protective clothing no matter which control strategies are used. Care should be taken in urban natural areas to inspect the site for hazardous materials or garbage such as broken glass or hypodermic needles prior to management. Debris and discarded materials have a tendency to become embedded in thick patches of ground ivy due to the plant's quick growth (Pocock, 2018).

When working in steep areas, consider slope and erosion safety protocols (King County Noxious Weed Control Program, 2004).

Follow-up monitoring and treatment will be required for several years regardless of the treatment technique.

## STRATEGY COLOUR LEGEND

**GREEN: RECOMMENDED**

**ORANGE: CAUTION**

**RED: NOT RECOMMENDED OR NOT AVAILABLE**

## PREVENTION: IMPERATIVE

**Prevention is the most economical and effective way to reduce the spread of ivy over the long term.**

When working in or adjacent to ivy, it is best to inspect and remove plants, plant parts, and seeds from personal gear, clothing, pets, vehicles, and equipment and ensure soil, gravel, and other fill materials are not contaminated with ivy before leaving an infested area. Plants, plant parts, and seeds should be piled in/on tarps or bagged before transport to an appropriate disposal site (see Disposal section).

It is best not to purchase, trade or grow ivy, including ivy plants in hanging baskets or containers. Instead, regional native or non-invasive plants should be used. The Invasive Species Council of British Columbia's '[Grow Me Instead](#)' Program or [Metro Vancouver's Grow Green website](#) provide recommendations for non-invasive, drought-tolerant plants, and garden design ideas. All materials (e.g., topsoil, gravel, mulch, compost) should be weed-free. Healthy green spaces are more resistant to invasion by invasive plants, so it is also important to maintain or establish healthy plant communities.

If ivy is already present in a garden, it is critical to prevent the plant from expanding and invading adjacent parks and natural areas.

## MANUAL/MECHANICAL: RECOMMENDED

Although manual/mechanical control is time-consuming, labour-intensive, costly and requires regular monitoring, it is effective (Okerman, 2001) (Quinn & Best, 2002). Manual/mechanical removal may increase the risk of root fragments re-sprouting or reinvasion from adjacent populations (Okerman, 2001); therefore, care must be taken to prevent the spread of plant parts (see Cleaning and Disinfection section below for more information).





Ivy-infested trees after manual control – note the dead ivy stems and leaves in the upper portions of the trees.

CREDIT: F. STEELE

The following manual/mechanical methods can be used to control ivy:

- **Cutting/Pulling** with hand snips, shears, pruners or hand saws may be the most effective control method for ivy and can be used on groundcover ivy and ivy growing up trees/structures. However, the priority should be to remove the ivy growing up trees to prevent tree damage and seed production (Dreves, 2018).

From trees: Using pruners or saws, the ivy stems should be cut at chest height around the entire trunk of the tree (or vertical surface) being careful not to cut or damage the tree bark or surface. It can then be removed off the tree and from the surrounding ground 1-2 meters in diameter from the base of the tree (Pocock, 2018). This method is also known as the 'life-saver ring'. With caution, crowbars

or other tools can be used to pry ivy from trees to avoid damaging the bark. If vines are embedded into the bark, either end of the stem should be cut and left to avoid damaging the tree further. Having severed the nutrient and water supply, the ivy remaining above chest height will eventually die off and should be left in place – trying to remove ivy in tree canopies can damage the tree further or injure the worker. Note that the remaining dead biomass can be a fire hazard for months or even years after treatment. Timing of control should be carefully considered, especially at sites adjacent to human ignition sources (Pocock, 2018).

Cutting and pulling ivy from the ground can be a very effective control method. It is best to take a good hold of the vine and gently tug in the direction of growth, loosening the roots from the ground (Pocock, 2018).



For long vines, each vine should be bundled for ease of removal from the site. As much of the root mass should be removed from the ground as possible, taking care under large woody debris and under the roots of native vegetation (Pocock, 2018). This method requires persistence when vines are tangled. It is best to choose one vine at a time rather than ripping or tearing tangled vines that will leave broken root fragments in the soil (Pocock, 2018).

If a ground infestation is large, a 'continuous mat', 'carpet roll' or 'burrito roll' method can be used. While positioned along the outer edge of the infestation, the ivy should be rolled in a continuous mat away from you, carefully cutting the ivy vines and loosening all roots with your hands as you roll (Pocock, 2018). The 'roll' can be clipped away from native vegetation, and severed into pieces for ease of removal. This method is best used on flat ground, where ivy dominates the site and when multiple people are working together (Pocock, 2018). Be careful not to damage non-target roots. A large roll or pile of ivy is produced using this method, which may be difficult to remove offsite. Alternatively, roughly cut a 2 metre by 3 metre section with hand snips and starting at the short end, roll the ivy away from you. The roll can be picked up and moved as needed.

Care should be taken when working around native plants and to minimize soil disturbance that could lead to increased erosion or compaction (Waggy, 2010). The area around the site should be inspected as the ivy may have runners that extend beyond the main patch. Bird nests (ground and in trees), salamanders, and other wildlife may be present on site. If working during bird nesting season, the site should be inspected by a qualified environmental professional. The site should be replanted with native plants or it may be susceptible to reinvasion (Biggerstaff & Beck, Effects of Method of English Ivy Removal and Seed Addition on Regeneration of Vegetation in a Southeastern Piedmont Forest, 2007). See Restoration section below for more specific recommendations.

- **Mulch application** can be used as a stand-alone control method or after other manual control techniques have been used. Application of a 30 centimetre thick layer of coarse, woody mulch overtop of groundcover ivy may prevent the regrowth of stems and root fragments. If used as the primary control method, mulch should be kept in place for at least two years before implementing restoration activities (King County, 2018). This method is not suitable for steep sites. Mulch can also be applied after ivy has been pulled or around new plants introduced at the site as part of restoration activities.
- **Heat treatment** is possible by use of a weed torch or similar tool. The Langley Environmental Partners Society has had some success using a propane weed torch (Dreves, 2018). The tool produces a continuous flame when ignited and a flame-control squeeze valve on the wand allows the applicator to control the flame size. The flame is applied to the leaves, increasing the temperature enough to destroy the cells, but not burn the leaves. The leaves visibly change after treatment, appearing shiny. This method is best done in teams of two people, with one person operating the wand and the other person managing the propane tank and hose (Dreves, 2018).

This method should only be used during the winter months (Dreves, 2018) or during times of low fire risk (typically October to April in the Lower Mainland). After initial treatment, a follow-up treatment should be conducted three weeks later (Dreves, 2018). Any other plant material contacted by the flame will be impacted, so caution must be used to directly target the ivy. Heat treatment is unlikely to kill ivy outright but with repeated treatments may deplete its energy reserves to the point of killing it (Waggy, 2010). Advantages of this method are that it is suitable for large areas, disposal is not necessary, it is less work for practitioners (doesn't require bending, pulling and repetitive motions), and it requires less people to manage a site (Dreves, 2018).

- **Mowing** ivy infestations may be suitable in areas that are already mowed regularly (King County Noxious Weed Control Program, 2004). However, mowing may increase the risk of spread by root fragments and clippings must be removed.

## REMOVAL TIMING

Ivy can be manually removed year-round, but the ideal time for removal is during the fall and spring when the ground is moist and ivy vines are more flexible (Pocock, 2018). In the fall, leaf litter can make it more difficult to find the plants. During the hottest part of the summer, ivy plants may be dry and brittle, and branches and roots may be more likely to break during treatment. Similarly, during extreme cold and frost, plants may be frozen and easily snap (Pocock, 2018).

Often ivy is the focus of crews during the winter months as other high priority plants are targeted during the spring and summer. One advantage of conducting management in the winter is that it is easy to spot and access the ivy since deciduous plants will have lost their leaves. Winter management also avoids impacts on breeding birds and amphibians (Soll, 2005).

As with all environmental activities, caution must be taken to avoid disturbing wildlife throughout the year, especially nesting birds.

## APPLYING MANUAL/MECHANICAL CONTROL METHODS IN RIPARIAN AREAS

Ivy often grows in large contiguous patches right up to the edge of water courses. Consider the impact of control techniques and the resulting bare soil on the adjacent aquatic environment. Schedule removal works during a period of least risk to fish species, outside of the [fish window](#). Adhere to Provincial and Federal riparian regulations. It is recommended to consult with a qualified environmental professional when working around water bodies.

## CHEMICAL: CAUTION

When alternative methods to prevent or control invasive plants are unsuccessful, professionals often turn to herbicides. Chemical control may be successful on young, actively growing plants (King County Noxious Weed Control Program, 2004). Herbicide application on mature plants may slow growth but is unlikely to eradicate them, even with the addition of surfactants (Okerman, 2001). The waxy leaves of ivy help it resist herbicide absorption and may increase risk to non-target plants via run-off (King County Noxious Weed Control Program, 2004). In addition, ivy is resistant to some commonly used pre-emergent herbicides (King County Noxious Weed Control Program, 2004). Despite these challenges, chemical application may be the most effective option in large areas of dense ivy and when vines are too large to cut or pull. However, herbicide use may prevent the germination of native seeds in the seedbank and, therefore, promote the reinvasion of the site by other invasive species (Biggerstaff & Beck, 2007b). Regular monitoring is needed after chemical application.

With the exception of substances listed on Schedule 2 of the [Integrated Pest Management Regulation](#), the use of herbicides is highly regulated in British Columbia. Site characteristics must be considered with herbicide prescribed, based on site goals and objectives and in accordance with legal requirements. [This summary of the Integrated Pest Management Act](#) provides an overview of the Provincial legislation.

## PESTICIDE LICENCE AND CERTIFICATION

A valid pesticide licence is required to:

- offer a service to apply most pesticides;
- apply most pesticides on public land including local government lands<sup>2</sup>; and
- apply pesticides to landscaped areas on private land, including outside office buildings and other facilities.

Pesticides (e.g., herbicides, insecticides, fungicides) are regulated by the Federal and Provincial government, and municipal governments often have pesticide bylaws.

- Health Canada evaluates and approves chemical pest control products as per the [Pest Control Products Act](#).
- The [Integrated Pest Management Act](#) sets out the requirements for the use and sale of pesticides in British Columbia. This Act is administered by the Ministry of Environment and Climate Change Strategy.
- Several municipalities have adopted bylaws that prohibit the use of certain pesticides.

Everyone who uses pesticides must be familiar with all relevant laws.

ONLY companies or practitioners with a valid Pesticide Licence and staff who are certified applicators (or trained assistant applicators working under a certified applicator) may apply herbicide on invasive plants located on public lands in British Columbia. Applicators must be either the land manager/owner or have permission from the land manager/owner prior to herbicide application.

On private property the owner may obtain a Residential Applicators Certificate (for Domestic class products only) or use a qualified company. Residents do not require a Residential Applicator Certificate for certain uses of domestic class glyphosate including treatment of plants that are poisonous for people to touch, invasive plants and noxious weeds listed in legislation, and weeds growing through cracks in hard surfaces such as asphalt or concrete. Refer to the 'Pesticides & Pest Management' and 'Home Pesticide Use' webpages listed in the Additional Resources Section for more information.

Questions? Contact the Integrated Pest Management Program: Telephone: (250) 387-9537  
Email: [bc.ipm@gov.bc.ca](mailto:bc.ipm@gov.bc.ca)

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<sup>2</sup> on up to 50 hectares/year by a single organization. Organizations looking to treat over 50 hectares of land per year are also required to submit a Pest Management Plan and obtain a Pesticide Use Notice confirmation.



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Pesticide applicator certificates can be obtained under the category 'Industrial Vegetation Management' to manage weeds on industrial land, roads, power lines, railways, and pipeline rights-of-way for control of noxious weeds on private or public land. Assistant applicator training is also available and the [online course and exam](#) are free.

It is best practice for personnel supervising or monitoring pesticide contracts to also maintain a pesticide applicator licence so they are familiar with certification requirements.

For more information on how to obtain a licence and the requirements when working under the Provincial [Integrated Pest Management Act and Regulation](#), please review the Noxious Weed & Vegetation Management section on this webpage: [gov.bc.ca/PestManagement](http://gov.bc.ca/PestManagement).

## HERBICIDE LABELS

Individual herbicide labels must always be reviewed thoroughly prior to use to ensure precautions, application rates, and all use directions, specific site and application directions are strictly followed. Under the Federal Pest Control Products Act and the Provincial Integrated Pest Management Regulation, persons are legally required to use pesticides (including herbicides) only for the use described on the label and in accordance with the instructions on that label. Failure to follow label directions could cause damage to the environment, poor control results, or danger to health. Contravention of laws and regulations may lead to cancellation or suspension of a licence or certification, requirement to obtain a qualified monitor to assess work, additional reporting requirements, a stop work order, or prohibition from acquiring authorization in the future. A conviction of an offence under legislation may also carry a fine or imprisonment.

Herbicide labels include information on both the front and back. The front typically includes trade or product name, formulation, class, purpose, registration number, and precautionary symbols. Instructions on how to use the pesticide and what to do in order to protect the health and safety of both the applicator and public are provided on the back (British Columbia Ministry of Environment and Climate Change Strategy, 2011).

Labels are also available from the Pest Management Regulatory Agency's [online pesticide label search](#) or [mobile application](#) as a separate document. These label documents may include booklets or material safety data sheets (MSDS) that provide additional information about a pesticide product. Restrictions on site conditions, soil types, and proximity to water may be listed. If the herbicide label is more restrictive than Provincial legislation, the label must be followed.

## HERBICIDE OPTIONS

The following herbicides can be used on ivy; although not specifically listed on these herbicide labels, ivy may be treated under the general application provision for woody plants.

ACTIVE INGREDIENT (EXAMPLE BRAND NAMES)+	APPLICATION	PERSISTENCE	GROWTH STAGE++	TYPE+++
Glyphosate (many products) **	spray-on, wipe-on, cut stem, basal bark	non-persistent	actively growing (application during other growth stages may be ineffective)	non-selective
Metsulfuron-methyl*	spray-on, wipe-on	moderately persistent, mobile in soil	actively growing	non-selective
Triclopyr (e.g. Garlon™)	spray-on, cut stem, basal bark	residual	actively growing, foliar application on sunny winter days may also be effective (Oregon State University Extension Service, 2008)	selective, no effect on grasses

+ The mention of a specific product or brand name of pesticide in this document is not, and should not be construed as, an endorsement or recommendation for the use of that product.

++ Active growing periods vary year to year depending on weather and other factors. There may be more than one active growing period for a plant in a year. Typically, the active growing period for ivy is during the spring.

+++ Herbicides that control all vegetation are non-selective, while those that control certain types of vegetation (for e.g. only grasses or only broadleaf plants) are termed selective.

\* Special consideration is required when using metsulfuron-methyl given its persistence and mobility in soil.

\*\* Glyphosate can impact trees with roots within or adjacent to the treatment area.

Application of metsulfuron-methyl or multiple applications of glyphosate, especially during winter or spring and targeting new growth, has proven an effective treatment strategy (Yang, Wehtje, Gilliam, McElroy, & Sibley, 2013). Combining glyphosate and triclopyr may be more effective than using either herbicide alone (King County, 2018).



## APPLYING PESTICIDE IN RIPARIAN AREAS

Provincial legislation prohibits the use of herbicides within 10 metres of natural water courses and 30 metres of domestic or agricultural water sources on public lands. On private lands herbicide labels need to be followed (which means for glyphosate products treatment can happen up to the water's edge) and other restrictions may apply (e.g., industrial sites, forestry sites, golf courses, etc.). On public lands, glyphosate is the only active ingredient that can be applied within the 10 metre Pesticide-Free Zone (PFZ)<sup>3</sup> in British Columbia in accordance with the *Integrated Pest Management Act* and Regulation and all public land Pesticide Management Plans (PMPs). A plant must be either a listed Noxious Weed (under the [Weed Control Act](#)) or appear in the *Forest and Range Practices Act* [Invasive Plants Regulation](#) to be treated within the 10 metre PFZ. **Neither English nor Irish ivy are listed and therefore glyphosate and other herbicides can only be applied on ivy up to 10 metres away from the high water mark (HWM)<sup>4</sup>.** The 30 metre no-treatment zone around a water supply intake or well used for domestic or agricultural purposes may be reduced if the licensee or PMP holder is "reasonably satisfied" that a smaller no-treatment zone is sufficient to ensure that pesticide from the use will not enter the intake or well.

When managing ivy with herbicide in riparian areas:

- Observe and mark all PFZs while on site.
- The HWM should be determined by careful evaluation by the applicator.
- Distances in PFZs should be measured as horizontal distance.
- Herbicides restricted in a PFZ must not enter these zones by leaching (lateral mobility) through soil or by drift of spray mist or droplets.
- Treatments should be conducted when water levels are low (e.g. summer months) to reduce risk.
- Note that efficacy may be dependent on site conditions, including moisture in the soil.

## APPLICATION METHODS

The preferred application methods to minimize non-target damage and applicator exposure are as follows:

- **Foliar application methods:**
  - **Spray-on application** involves using a backpack or handheld sprayer to completely cover the actively growing plant parts with herbicide, including the underside of the leaves when possible. Young leaves that have not fully developed their waxy cuticle will absorb a systemic herbicide most effectively (King

3 The Pesticide-Free Zone (PFZ) is an area of land that must not be treated with pesticide and must be protected from pesticide moving into it, under the *Integrated Pest Management Act and Regulation*.

4 The High Water Mark (HWM) is defined as the visible high water mark of any lake, stream, wetland or other body of water where the presence and action of the water are so common and usual and so long continued in all ordinary years as to mark upon the soil of the bed of the lake, river stream, or other body of water a character distinct from that of the banks, both in vegetation and in the nature of the soil itself. Typical features may include, a natural line or "mark" impressed on the bank or shore, indicated by erosion, shelving, changes in soil characteristics, destruction of terrestrial vegetation, or other distinctive physical characteristics. The area below the high water mark includes the active floodplain (British Columbia Ministry of Environment and Climate Change Strategy, 2011).

County, 2018). The addition of a surfactant may improve absorption (King County, 2018). Application after the spring growth phase is unlikely to be an effective control treatment and this technique may suppress the germination of native seeds in the seed bank, inhibiting recovery.

To access tall foliage and minimize the risk of applicator exposure, long wands and wand extensions are recommended.

- **Wipe-on application** involves applying herbicide directly onto leaf surfaces (including the underside) using a simple hand-held wipe-on applicator or brush. Wipe-on application is time-consuming and can be messy due to herbicide drips.
- **Cut stem application** involves cutting stems as close to the ground as possible and applying herbicide directly to the freshly cut surfaces using a spray bottle, sponge or brush (King County, 2018).
- **Basal bark application** removes a ring of outer bark near ground level with subsequent application of a systemic herbicide (Okerman, 2001). The herbicide should be applied as quickly as possible after exposing the stems to maximize uptake by the plant. This technique may be labour intensive if used for all ivy stems, and is therefore best reserved for very large stems that can not be easily cut.

## TREATMENT TIMING

Chemical control is most successful when applied to actively growing plants; however, it can be used year-round as long as the climate conditions are appropriate for the product being used.

## CULTURAL: CAUTION

**Grazing** may be as effective as manual control, but involves complex logistical and legal considerations (Miller, Tarasoff & Salmon, 2021). A 2010 study assessed the potential for goat browsing to control ivy in Willamette Valley in Oregon (Ingham & Borman, 2010). They concluded that short-duration, high-intensity goat browsing could remove enough aboveground biomass to minimize regrowth, especially after two years of treatment. However, many ivy infestations in the Metro Vancouver region are located in sensitive riparian areas. Grazing opportunities may be limited in urban areas by municipal bylaws regulating animals, the need for specially trained herds, and the potential damage grazing animals may cause in sensitive ecosystems (e.g. off-target grazing and erosion). Due to these constraints and the potential for environmental damage, targeted grazing may not be a practical management option for ivy.

## BIOLOGICAL: NOT AVAILABLE

No biological control agents are currently available for use on ivy. It does not have any preferential predators in its home range and its major diseases result from adverse climatic conditions that may limit their success in the temperate conditions in the Metro Vancouver region (Quinn & Best, 2002).



## CONTROL SUMMARY

The following table provides a summary and comparison of control methods for ivy.

CONTROL STRATEGY	TECHNIQUES	APPLICABLE SITE TYPE	PROS	CONS
Manual	<b>Cutting/pulling</b>	All accessible sites, including tree ivy	Selective, volunteer friendly, non-chemical, year-round control possible	Creates disturbance; labour intensive
	<b>Mulch application</b>	Large, flat sites, groundcover ivy	Non-chemical, year-round control possible	Labour intensive; can't be used on slopes
Mechanical	<b>Heat treatment</b>	Any size site, accessible, groundcover ivy	Selective, cost-effective, efficient, non-chemical	Requires trained staff and specialized equipment; fire hazard; only possible during certain times of year
	<b>Mowing</b>	High density sites, flat sites, non-sensitive areas, groundcover ivy	Less labour intensive, non-chemical	Requires trained staff and specialized equipment; non-selective; creates disturbance
Chemical	<b>Various</b>	Large sites	Less labour intensive, can suppress seed bank, year-round control possible	Unintended environmental/health impacts; high public concern; generally, not effective on ivy's mature waxy leaves
Cultural	<b>Grazing</b>	Sites accessible to grazing herds	Non-chemical	Requires specially trained herds and special permits; complex logistical considerations; non-selective, unintended environmental impacts
Biological	<b>No biological control agents are currently available for distribution in British Columbia</b>			

### CONTROL SUMMARY COLOUR LEGEND

**GREEN: RECOMMENDED**

**ORANGE: CAUTION**

**RED: NOT RECOMMENDED OR NOT AVAILABLE**

# Disposal

Manual removal of ivy generates a lot of biomass. Disposal options must be considered on a site by site basis (Pocock, 2018). Ivy should not be composted at home or at municipal works yards as the temperature may not be high enough to kill seeds or root fragments.

## ON SITE DISPOSAL

The Stanley Park Ecology Society uses onsite disposal for large ivy piles at forest sites that are not easily accessible for off-site disposal; regrowth from these piles has not been observed (Johnstone, 2019). The ivy will slowly break down to 1/5 of its size when left to dry (King County Noxious Weed Control Program, 2004). To prevent re-rooting, the material should be piled on tarps or concrete or regularly turn the pile (King County Noxious Weed Control Program, 2004). Covering the pile will speed the process (King County Noxious Weed Control Program, 2004). The site should be monitored carefully to prevent spread and re-establishment.

Dead plants and debris left onsite can increase the fire potential and should be assessed for risk.

## OFF SITE DISPOSAL

When disposing off site, transport plant parts on/in tarps or in thick plastic bags to an appropriate disposal or compost facility. In the Metro Vancouver region, several facilities accept ivy plants and/or infested soil. Please consult [this disposal facility list](#) for current details.

**PLEASE CONTACT ALL FACILITIES BEFOREHAND TO CONFIRM THEY CAN PROPERLY HANDLE THE MATERIAL.**

## REPURPOSING IVY

In recent years, several artists and collectives have been using ivy as a crafting fiber to make structural art, ropes, baskets, jewelry, ornaments and clothing. Their artwork also builds public awareness about invasive species. The [Urban Weaver Project](#), the [EarthHand Gleaner Society](#), and several other groups offer public workshops and events.

## CLEANING AND DISINFECTION<sup>5</sup>

Before leaving a site, all visible plant parts and soil from vehicles, equipment, and gear should be removed and rinsed if possible. When back at a works yard or wash station, vehicles should be cleaned and disinfected using the following steps:

- Wash with 180 °F water at 6 gpm, 2000 psi\*, with a contact time of ≥ 10 seconds on all surfaces to remove dirt and organic matter such as vegetation parts or seeds. Pay special attention to undercarriages, chassis, wheel-wells, radiators, grills, tracks, buckets, chip-boxes, blades, and flail-mowing chains.
- Use compressed air to remove vegetation from grills and radiators.
- Sweep/vacuum interior of vehicles paying special attention to floor mats, pedals, and seats.

<sup>5</sup> Adapted from Metro Vancouver 2017 Water Services Equipment Cleaning Procedures and Inspection Protocols.

- Steam clean poor access areas (e.g., inside trailer tubes) – 200 psi @ 300 °F.
- Fully rinse detergent residue from equipment prior to leaving facility.

\* Appropriate self-serve and mobile hot power-wash companies in the Metro Vancouver region include: Omega Power Washing, Eco Klean Truck Wash, RG Truck Wash, Ravens Mobile Pressure Washing, Hydrotech Powerwashing, Platinum Pressure Washing Inc, and Alblaster Pressure Washing. Wash stations should be monitored regularly for ivy growth.

## Follow-up Monitoring

Whatever control method is used, follow-up monitoring and maintenance treatments are components of an integrated management plan or approach.

- For **manually treated** sites, the number of years of management and monitoring required depends on maturity of the ivy infestation. Sites with immature ivy may see control after only 1–2 sweeps whereas mature ivy will take many years of control and monitoring (Pocock, 2018). Research in Portland, Oregon suggests that manual removal can be an effective control in just one growing season, although sites should be continued to be monitored for several years (Strelau, Clements, Benner, & Prasad, 2018).
- **Chemical treatments** should be repeated as directed on the herbicide label to control any subsequent growth.



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## Restoration

Following up manual removal with seeding or planting of native species is highly recommended in order to prevent the reinvasion of the site by invasive species and replace lost habitat. Seeding after manual removal has been shown to result in more successful restoration than seeding after herbicide treatment (Biggerstaff and Beck 2007a). Passive restoration may be possible, depending on the persistence of a native seedbank and viability of local source populations (Biggerstaff & Beck, 2007b).

The International Society of Arboriculture and relevant municipal parks or arboriculture departments offer guidelines for mulch application. Specific mulch depths can be used to control invasive weeds and encourage plant growth (International Society of Arboriculture, 2018).

Examples of common competitive native species prescribed for sites within the Metro Vancouver region are summarized in the table below based on site moisture. Replacement species should be chosen based on the ecology of the site by a qualified environmental professional. Local biologists, environmental professionals, agronomists, agrologists, native and domestic forage specialists, seed companies and plant nurseries are all good sources for localized recommendations for regional native species and regionally adapted domestic species, based on site usage. Native grass seed mixes are also available. Several science-based resources are available to guide restoration efforts, such as the South Coast Conservation Program's [Diversity by Design](#) restoration planning toolkit.

WET SITES	MOIST SITES	DRY SITES
SHRUBS		
Salmonberry	Salmonberry	Thimbleberry
Hardhack	Willow	Nootka rose
Willow	Red osier dogwood	Red flowering currant
Red osier dogwood	Red elderberry	Snowberry
Pacific ninebark	Vine maple	Tall Oregon grape
	Indian plum	Oceanspray
TREES		
Western red cedar	Western red cedar	Douglas-fir
Red alder	Red alder	Red alder

Revegetation of the site to a domestic or cultured non-native plant species composition may be considered in some circumstances. Often domestic species establish faster and grow more prolifically, which aids in resisting ivy re-invasion.

Ivy sites are often found in areas with existing, or potential, wildlife populations (e.g. deer, beaver, muskrat, vole, etc.) that can damage restoration plantings. Therefore, any revegetation plan must consider impacts from wildlife and utilize appropriate mitigation measures to protect the restoration and existing native plantings (tree wrapping, exclusion caging/fencing, vole guards, etc.).

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## Additional Resources

For more information please refer to the following resources.

- Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Invasive Alien Plant Program (IAPP). <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/reporting-invasive-species>
- Controlling English ivy (*Hedera helix*) in the Pacific Northwest. The Nature Conservancy: <https://www.invasive.org/gist/moredocs/hedhel02.pdf>
- E-Flora BC, an Electronic Atlas of the Plants of British Columbia. [www.eflora.bc.ca/](http://www.eflora.bc.ca/)
- GrowGreen Guide. [www.growgreenguide.ca](http://www.growgreenguide.ca)
- Grow Me Instead. <http://bcinvasives.ca/resources/programs/plant-wise/>
- Invasive Species Council of British Columbia, English Ivy Factsheet: [https://bcinvasives.ca/wp-content/uploads/2021/01/English\\_Ivy\\_Factsheet\\_March2017.pdf](https://bcinvasives.ca/wp-content/uploads/2021/01/English_Ivy_Factsheet_March2017.pdf)
- Pesticides and Pest Management. Province of British Columbia <https://www2.gov.bc.ca/gov/content/environment/pesticides-pest-management>
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## Acknowledgments

The project team would like to thank the following groups for their contributions related to the development and review of this document:

Justin St. Andrassy, Township of Langley

Kari Pocock, District of West Vancouver

Lisa Dreves, Langley Environmental Partners Society

Metro Vancouver's Regional Planning Advisory Committee (RPAC) – Invasive Species Subcommittee

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