

AUGUST 2015

SITELINES

Landscape Architecture in British Columbia



INVASIVE FREE FUTURE

Designing an Invasive Free Future | Invasive Species: A Quick Snapshot | Knotweeds in BC: Knot just one weed! | Landscape Design and the European fire ant | Urban Green Space is Limited: Give it to the Good Guys! | PlantWise: Leading the Way in Our Landscapes | Spotlight on Business Leaders | A Landscape Architect Project Checklist for Invasive Species Management | Spotlight on European Chafer Beetles | Beware of Invaders in your Water Features | A Checklist for Water Garden Design | BC's Weed Control Act Regulation | Spotlight on Whistler Municipal Bylaw



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DESIGNING

an INVASIVE FREE future

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The purpose of Sitelines is to provide an open forum for the exchange of ideas and information pertaining to the profession of landscape architecture. Individual opinions expressed are those of the writers and not necessarily of those of the BCSLA.



Butterfly bush... Common periwinkle... Yellow flag iris... these plants may seem unimportant to you... but are they? When you as a landscape architect envision a site plan that captures the feel and beauty of an area—the colours, textures and shapes that create appealing and unique outdoor spaces—how often have you looked at whether the plants you are recommending may have dangerous impacts to the surrounding region? Many invasive plants appear harmless and are bought and sold by many growers, retailers and landscaping companies, but have far-reaching economic, social and environmental impacts. Did you know that invasive species are the second largest threat to biodiversity on the planet? ▶

Left: Blueweed Bottom: Orange hawkweed
Photos: J. Leekie



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Cover Image: Burdock near house
Photo: J. Leekie

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The Invasive Species Strategy for BC sets the foundation for successful invasive species management in the province, and was developed over two years with the participation of over 100 contributors. The Invasive Species Council of BC is guided by the Strategy, and works collaboratively to coordinate and unite efforts to reduce the harm caused by invasive species. Our programs support landscape architects, emerging design professionals and others in selecting non-invasive alternatives for site designs, and sourcing invasive-free retailers and growers as the project evolves.

This issue of *Sitelines* includes a range of articles and topics that provide the knowledge and tools to practice invasive-free planning. Key species are highlighted, checklists for invasive species management are included for quick reference, and specific branches of landscape architecture—urban green spaces and water gardens—are featured. The PlantWise program is also featured—an important resource that offers non-invasive plant alternatives to invasive garden plants.

The Invasive Species Strategy calls for the development of an Invasive Species Act for BC, as there are many regulations and policies that can be difficult to decipher. The article on the BC Weed Control Regulation reviews some proposed revisions which will directly relate to landscape architects. For specific invasive species information pertaining to a location or site, or to get assistance in identifying species, contact your local government or your regional

invasive species committee: <http://bcinvasives.ca/about-partners>.

Eliminating invasive species from the initial planning stages of a design is an action that simply requires awareness and informed choices. This simple behaviour change has the ability to help all natural and built environments in British Columbia, as well as avoid costly economic and social impacts. As landscape architects on the front lines of outdoor space design, you have the power to limit invasive species introductions and support their management and elimination. If you would like more information about PlantWise or any of our other programs and resources, we would be more than happy to work with you—contact us at <http://bcinvasives.ca>.

We welcome this opportunity to connect with you through *Sitelines*, as you are a key audience in invasive species management, and look forward to hearing from you if you have any questions, concerns or comments. **SL**

*Gail Wallin, gwallin@bcinvasive.ca
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Top left: Oxeye Daisy Photo: S. Dewey, Bugwood.org
Top right: Spotted Knapweed Photo: J. Leekie
Middle right: English ivy wrap trees Photo: J. Leekie
Bottom right inset: Invasive Species Strategy for British Columbia cover




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INVASIVE SPECIES: A Quick Snapshot

A brief primer on invasive species in BC
and why they are a concern.

What Are Invasive Species?

Some Definitions

A NATIVE SPECIES is one that naturally occurs in an area and has evolved there to be part of the natural ecosystem.

NON-NATIVE or introduced species are animals and plants from other parts of the world that do not naturally occur in an area, and were likely brought by humans, either accidentally or intentionally.

INVASIVE SPECIES are non-native species that cause economic or environmental harm, and can spread rapidly to new areas. They can completely take over an ecosystem as they don't have the predators and diseases to keep them under control. Invasive species are hugely destructive to our economy, environment and society.

NON-NATIVE BUT NOT INVASIVE: Not all alien species are invasive—many ornamental plants such as roses and tulips won't survive outside gardens. Other introduced species such as tomatoes and wheat are beneficial food resources.

Why Are Invasive Species a Problem?

Economic Impacts

Invasive species impact almost every aspect of our economy, including agriculture, forestry, transportation, tourism and energy. Crop losses alone cost BC farmers and ranchers over \$50 million annually. The Canadian Food Inspection Agency estimates the annual impact of invasive species on our economy to be \$30 billion.

(<http://www.inspection.gc.ca/about-the-cfia/accountability/reports-to-parliament/2013-2014-dpr/eng/1409769354767/1409769355486?chap=0#c32s3c>)

Environmental Impacts

Invasive plants displace native plants by out-competing them for water, nutrients, and space, and alter habitats, soil chemistry and displace wildlife. They also reduce water quality through increasing soil erosion, sedimentation, shading of riparian areas and degrading fish habitat.

Social Impacts

Invasive plants impact human health and safety by obstructing sightlines and signs along roads, causing skin burns and dermatitis, and increasing allergies. Invasive species also impact recreation through limiting habitat, displacing fish and wildlife and reducing water quality. Many First Nations have suffered the loss of traditional food and medicinal plants due to invasive plants displacing native species.



DID YOU KNOW...

the leaves and stems of Giant hogweed (*Heracleum mantegazzianum*), an escaped ornamental, contain a watery, highly toxic sap that can cause burns, blisters, and scarring of the skin. WorkSafe BC has issued a Toxic Plant Warning for this plant.

KNOTWEEDS IN BC:

knot just one weed!

Clare Greenberg, Coordinator, Sea to Sky Invasive Species Council
<http://www.ssisic.info/blog>



British Columbians have been hearing a lot about Japanese Knotweed of late. Recent articles like “The plant that’s eating BC” (Macleans.ca, June 12th, 2015) and “Japanese knotweed: A pretty plant, and a growing threat to B.C.” (Times Colonist,

July 5, 2015) highlight the profile this plant is getting from the wider community. Knotweed demands and deserves our attention—have you heard of many other plants that can grow up to 6 cm in one day? Landscape architects and allied professionals play a key role in raising awareness about this plant with clientele, and keeping it out of gardens and landscapes.

Knotweed knows no fences: it will grow just about anywhere. In its native Japan, it is a successional species that grows well on volcanic slopes, but in BC it takes over roadsides, ditches, stream banks, disturbed areas, and even concrete and asphalt. Knotweeds have an immense root structure that is capable of reaching 3m in depth and 20m laterally. Believe it or not, knotweed

will grow through foundations, driveways, roads and septic systems. Knotweeds can also reproduce from a tiny sliver of plant material: a new plant can regenerate from less than 2 cm of plant material left behind, making it difficult to remove and easy to inadvertently spread around. Well-meaning individuals may have done more harm than good by mowing or taking a weed-whacker to it, in attempts to keep it at bay.

The impacts of this amazing but damaging plant include a significant financial burden on taxpayers, governments and private landowners. In the United Kingdom, there are cases where knotweed roots have impacted concrete foundations of homes, leaving homeowners struggling to secure a mortgage and insurance for their properties. Could this happen in BC? It is certainly possible. The BC Weed Control Act requires any landowner or occupier to control knotweed on their property.

When it comes to knotweed control, there is no silver bullet. Effective control requires a dedicated multi-year approach that targets the entire plant: contact a certified company to recommend the best treatment method. ▶

Top left: Japanese Knotweed Photo: University of Alaska Top middle: Knotweed deepcove Photo: J. Leekie Top right: Japanese Knotweed through concrete Photo: CABI Bottom left: Japanese Knotweed Photo: J. Leekie Image on page 8 Japanese Knotweed Photo: T. Heutte

What You Can Do:

1. **Make sure you avoid recommending any species of knotweed in your landscape designs.** If clients request knotweed for their gardens, check out the Plantwise website and the Grow Me Instead resource for alternatives. (<http://bcinvasives.ca/resources/programs/plantwise/>) for alter-native plants to include.
2. **Ensure that soil is 'invasive and knotweed free'.** Monitor and screen any newly deposited soil, compost or fill for unwanted invasives.

Spread the Word (knot the weed!) Awareness is the first step, followed by action. Help spread the word by directing people to www.knotonmyproperty.com, to view a series of short videos about what to do and what knot to do when it comes to knotweed. Also check out the ISCBC Knotweed TIPS sheet for more information: http://bcinvasives.ca/documents/Knotweeds_TIPS_Final_08_06_2014.pdf **SL**

Knotweeds in BC: There are several invasive knotweed species in BC: Japanese knotweed (*Fallopia japonica*), Giant knotweed (*Fallopia sachalinensis*), Himalayan knotweed (*Polygonum polystachyum*), and a hybrid version known as Bohemian Knotweed (*Fallopia x bohemica*) are all present. Amazingly, you can still buy knotweeds from several nurseries in BC: sometimes it is labeled "False Bamboo". Watch for a horticultural variety (*Fallopia japonica var. compact*) that has become popular in landscaping plans: it is still invasive, and has the potential to spread and cause serious impacts.



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LANDSCAPE DESIGN and the European Fire Ant

Dr. Rob Higgins, Biological Sciences
Researcher, Thompson Rivers University
<http://faculty.tru.ca/rhiggins/>

The European fire ant (*Myrmica rubra*) is now established in at least 50 independent locations throughout metro Vancouver, the Fraser Valley and Vancouver Island. Affected areas include residential properties, community gardens, botanical gardens, equestrian centres, commercial gardening centres and parks. Appropriately named for its 'fire' like sting, this ant will attack aggressively if disrupted. When it stings, the fire ant pinches down with its mandible then swings around and stings multiple times. In a few cases it has produced severe allergic reactions including anaphylactic shock.

Properties with well established fire ant populations are difficult to use, and some families have stopped allowing children or pets into affected areas. Ironically, human activity has introduced these ants to each location, and created landscapes that provide the perfect habitat for them.

Food, heat and moisture. These are the three essential elements needed by invasive ants such as the European fire ant, and they are found in abundance in typical urban landscapes. If fire ants could design their perfect environment, it could well look like a typical backyard! Where fire ants have established it is unlikely that they will be eradicated from the surrounding neighbourhood—they will always be looking for a friendly place to set up house. However, there are things we can do to limit their preferred nesting sites.

Food for European fire ants consists of pretty much anything they can individually or collectively obtain. Vegetable and flower

gardens, grasses, shrubs and trees and their associated soil provides an abundance of insects and other invertebrates as prey, while supporting aphids and scale insects that provide an endless source of honeydew.

Heat is the next critical element. The climate of southern BC is acceptable for many ants, but anything that raises the average temperature of a nest is seen as prime fire ant real estate. A warmer nest site will allow the colony to raise larvae more quickly and develop as a robust colony capable of exploiting surrounding food and protecting themselves against native ant competitors. Air temperatures of approximately 25 °C and direct sun exposure to the ground can raise actual ground temperatures to beyond 50 °C. Unfortunately for ants, soil insulates well, so this heat does not penetrate deeply. However, surface rock and wood can act as "heat batteries", gaining heat through the day and steadily releasing it into the soil through the night. Our building foundations, paving stones, stone and wooden garden bed borders are all excellent at raising the average temperature beneath them and enhancing ant colony growth.

Moisture is particularly important to the European fire—more so than for most other ant species in BC. This ant is mainly found in areas where mean annual precipitation is greater than 1000 mm per year. However, any enhanced moisture—such as a watered garden or lawn—promotes colony growth. The same rock and wood elements that enhance temperature are also excellent at trapping moisture. Decaying wood tends to



Top left: European Fire Ant Photo: Sean McCann
Above: Fire ant nest Photo: J. Farnum

remain moist for long periods of time, and tall grass and shrubs create shade that increases moisture retention when we add water through irrigation. Yard clutter such as propane tanks or stored wood also trap moisture.

With the growing concern related to fire ants, landscape architects are incorporating specific elements into landscape plans to make sites unappealing to these stinging insects. Some examples include: ►

Xeriscapes. One way to reduce moist sites is to design at least some of the property using xeriscaping or drought-tolerant landscaping. This will decrease the need for irrigation, support plants whose natural requirements are appropriate to the local climate, and reduce the moist conditions fire ants like.

Rock pathways and pebbled surface areas. Small rocks or pebbles (decorative and/or suitable for walking/playing) can be patterned 10 – 15 cm deep over heavy landscaping fabric to create a visually stimulating and useable property. Stone less than approximately 5 cm

in diameter has a large surface area that rapidly radiates away heat gained during the day, reducing heat transfer to the soil. High drainage rates through this material also reduce moisture retention.

Pots and mini-plantings. Compartmentalizing landscape elements is another tool. Here plantings are reduced to pockets of soil or pots that can be moved around. This greatly reduces the food available to the ants. Compartmentalizing landscape features also allows for the early detection and treatment of areas where fire ants appear.

Garden and site designs can go a long way to reduce the appropriateness of a property for these invasive pests. The traditional lawn or raised garden does not have to be completely eliminated but rather reduced in size and compartmentalized with less ant-friendly surfaces.

For more information, check out the fact sheets and resources on the ISCBC website: <http://bcinvasives.ca/invasive-species/identify/invasive-species/invasive-insects-fungi/european-fire-ant> **SL**

Jennie McCaffrey, Planning and Practices, ISCBC

URBAN GREEN SPACE IS LIMITED: GIVE IT TO THE GOOD GUYS!

People are moving up in cities—into condominiums, apartments, and town houses. Space is limited, yet there is a demand to create small garden spaces and “micro-parks” that are green oases in a concrete jungle. Landscape architects connect people to the environment through creating urban gardens and green spaces on balconies, rooftops and patios, and can help shape their clients’ vision to include native and non-invasive plants in their landscapes.

Some invasive plants cause health hazards due to the presence of toxins. They also create management and control costs once an invasive plant has been introduced. These impacts are directly relevant to clients, as most people want to avoid health hazards in their own green space, and unnecessary control costs down the road. Many clients are also concerned about the impact of invasive plants on the natural environment.

Even though an urban garden may seem far from any natural environment, it’s important to consider the long term effects of introducing an invasive species. Some aspects of urban gardens provide ideal conditions for invasive plants to spread. Many urban gardens are above ground level

—on balconies or rooftops—where the wind, rain, and birds can easily reach plants, spreading seeds or plant parts as they travel. Through careful design, urban gardens will avoid the introduction and spread of invasive plants in the planning stages.

It is always more cost effective to avoid invasive plants in the first place, rather than having to manage them after the fact. Creating plans that rely on sourcing native and other non-invasive plants can save time and money, as well as keeping BC beautiful.

Sourcing non-invasive materials from growers and retailers is becoming easier as the PlantWise program grows, and awareness around invasive species increases across the province and the country.

Landscape architects have the ability to shape not only a client’s urban oasis, but also the shape of urban gardens across the country by committing to invasive-free planning.

HAVE YOU CONSIDERED... asking growers & retailers if they are invasive free?

HAVE YOU EVER... reported an invasive plant with your smartphone? Consider downloading Report-a-Weed on your iPhone or Android device. **SL**



PlantWise: Leading the Way in Our Landscapes

Danielle Toperczer, Invasive Species Council of BC

Landscape architects have great influence on specifiers, landscapers, retailers, growers and gardeners in guiding purchasing and planting choices. By raising awareness of the impacts of invasive species and recommending attractive, non-invasive species for clients' horticulture and aquatic needs, landscape architects are major drivers in making responsible landscape decisions and setting examples for others to follow.

Invasive plants and animals have most often established in Canada and BC as a direct result of intentional introduction. Horticulture practices are a key vector in the introduction and spread of some of BC's worst invasive plant infestations. Unfortunately there are several invasive horticulture plants that are still commonly sold and planted, including:

- ▶ Common periwinkle (*Vinca minor*)
- ▶ English ivy (*Hedera helix*)
- ▶ Mountain bluet (*Centaurea montana*)
- ▶ Russian olive (*Elaeagnus angustifolia*)
- ▶ Spurges (*Euphorbia esula*, *E. myrsinites*, *E. cyparissias*)
- ▶ Yellow archangel (*Lamium galeobdolon*)
- ▶ Yellow flag iris (*Iris pseudacorus*)

What all of these invasives have in common is that they are attractive, hardy and spread quickly. However the costs of these species greatly outweigh their benefits. For example, English ivy provides a quick, attractive cover for walls and buildings and is used as a ground cover in commercial landscapes. Due to its ability to form thick, dense mats, this evergreen overwhelms other plants, prevents natural seedling establishment, and damages trees and infrastructure. Fortunately there are a number of attractive, non-invasive alternative plants that can accomplish similar results without the negative impacts, including Salal (*Gaultheria shallon*), Taiwan creeping raspberry (*Rubus pentalobus*) and Purple wintercreeper (*Euonymus fortunei 'Coloratus'*).

It is critical to take great care when making your plant selection for a design site to avoid invasive plants. If ordering stock from a supplier, ensure they are knowledgeable



Top: PlantWise display, Canadian Tire; ISCBC
Bottom: *Grow Me Instead* booklet cover

professionals that can provide reliable options and information on selecting the right plant for the right place. Don't be fooled by plant tags that boast the plant's ability to 'spread rapidly'—these are often alarm bells that indicate the plant may be invasive!

PlantWise: Grow Me Instead

Through the Invasive Species Council of BC's PlantWise program, BC's horticulture industry and consumers are informed about the detrimental impacts of invasive plants and provided with alternatives. To help determine which plants to avoid and what suitable alternatives to use in their place, check out the programs' comprehensive Grow Me Instead booklet (link: <http://bcinvasives.ca/resources/programs/plantwise>), which lists BC's top 26 unwanted horticultural invasive plants and provides commercially available, attractive and climate-appropriate alternatives.

The PlantWise industry certification program supports the horticulture industry to transition to become an invasive-free business—a growing trend and demand by BC consumers. By offering free local and provincial promotion of businesses that sign on, free training, easy steps to follow and a list of attractive non-invasive alternatives, any member of the horticulture industry has the tools to be invasive-free. Many retailers, growers and specifiers are getting onboard to reduce the spread of invasive plants in BC. **SL**

For more information on PlantWise, please contact Danielle Toperczer at dtoperczer@bcinvasives.ca | 250-503-1588.

PlantWise Mobile Application and Website

Watch for the PlantWise mobile application and website coming to a device near you Fall 2015! Development is underway on a new mobile application and website that provides sharp images and information on BC's worst invasive plants. Identification, images and descriptions of 26 worst offenders will be at your fingertips to help you more easily determine plants to avoid in your designs. Looking for alternative plants? Look no further—for every invasive plant, this tool provides five climate-appropriate and attractive non-invasive alternatives.



SPOTLIGHT ON

Business Leaders:

GardenWorks

GardenWorks has been an inaugural partner with the Invasive Species Council of BC. Prior to their partnership with the ISCBC, GardenWorks voluntarily identified 10 invasive plants to remove from their inventory. GardenWorks volunteered significant hours in the development of the Grow Me Instead and PlantWise programs, and more recently they addressed invasive ants, working with experts to identify and implement best practices for control. They have been a key speaker on their business commitment to removing invasive plants from their sales floor and how this demonstrates success.



Delta Grand Okanagan Resort and Conference Centre

Before 2015, the Delta Grand Okanagan Resort and Conference Centre in Kelowna had a large number of invasive plants on its grounds, climbing the trees, railings and walls. A group of staff volunteers, aptly named 'Green Team', recognized these unwanted guests and decided to take action by organizing a special Earth Day event. Staff invited the local community to join them in removing the plants and celebrating their efforts. As a result, the hotel has since changed its tendering packages for landscaping contracts to ensure that all replacement plantings are invasive-free. Being prime waterfront and having an on-site boat lock to move boats into the marina, the Delta Grand also saw the opportunity to educate boaters about transporting unwanted aquatic invasive species through the installation of Clean Drain Dry signage onsite.



Pacific Gateway Hotel

The Pacific Gateway Hotel has been home to the Invasive Species Council of BC's annual forum for several years. The hotel has committed to becoming a leader in the industry through responsible landscaping. Identified as housing a vast amount of English ivy on its grounds, the hotel has taken action to rid its grounds of this invader and has committed to working with landscape architects to plant only non-invasive plants.



Checklist FOR INVASIVE SPECIES MANAGEMENT

Sue Staniforth, Education and Awareness,
Invasive Species Council of BC

Here are some key steps to take to avoid the introduction and spread of invasive species in your project designs.

- **AWARENESS AND TRAINING:** Promote invasive plant identification training and resources to staff and contractors prior to starting work, to avoid injuries and spreading invasive plant seeds and parts around the jobsite.
- **WORK CLEAN:** Designate specific areas onsite for cleaning tools, vehicles, equipment, clothing, gear and invasive plant disposal, to avoid re-introduction elsewhere.
- **TAKE A FIRST LOOK:** Conduct a site assessment for invasive species to identify any concerns to address before activities begin.
- **LEAVE NO SPACE:** Wherever possible, design site plans to retain desirable vegetation, minimize soil disturbance and reduce the amount of bare soil available for invasive plants to establish. Plan to re-vegetate or mulch disturbed soils as soon as possible to avoid new infestations.
- **INVASIVE SPECIES MANAGEMENT:** Develop management plans for the site for any invasive species that have become established. E.g. Schedule activities to minimize the potential for introduction and spread, such as removing invasive plants prior to seed-set.
- **KNOW YOUR SOIL SOURCE:** When sourcing soil, fill and/or paving materials for your project, ensure that you seek out and confirm a weed-free source for all project materials to avoid introducing and spreading invasive plant parts and species (i.e. invasive ants)
- **WEED-FREE SEEDS:** Many grass and wildflower seed mixes are contaminated with invasive plant seeds that introduce unwanted and difficult to control species to your landscape. Source all seed from a reputable invasive-free supplier.
- **CHECK THOSE LABELS:** Ensure that all delivered plants are checked to ensure plant labels match your specifications prior to planting, and confirm that what you receive is what you've ordered. **SL**


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SPOTLIGHT ON

EUROPEAN CHAFER BEETLES

Peter Isaacson,
National Integrated Pest Management Coordinator,
Canadian Nursery Landscape Association

You have probably heard about the infamous European chafer beetle ravaging lawns in the Lower Mainland. They were first identified in BC in 2001, where they established in New Westminster, Burnaby and Vancouver. By 2015, the beetle has spread into Richmond, Coquitlam, Port Coquitlam, Port Moody, North Vancouver and North Delta, mainly as a result of BC's warming weather trend. So far the beetles are only an issue in Lower Mainland, but they are prevalent in eastern North America and may spread to other regions.

Adult European chafers are tan or brown beetles measuring about 1.5cm in length. The beetles are short lived and not the problem; it's their soil dwelling larvae that feed on the fibrous roots of grasses that make them so destructive.

The damage to grass caused by the grubs attracts birds, skunks and other predators, and they may completely destroy lawns in search of a tasty lunch.

In designing landscapes, there are two main options to consider to help manage this pest.

1. Reduce or eliminate lawn areas where chafers are an issue. Offer alternatives to grass, especially in areas where lawn is difficult to establish, such as high traffic areas, on slopes, in shady areas, and near watercourses.
2. Ensure consistent quality care for your projects that include lawns. Maintaining healthy-looking lawns with little or no dead grass will deter predators. Studies



Top: European chafer beetle Bottom left: European chafer beetle larvae Photos: David Cappaert, bugwood.org Bottom right: Lawn damage Photo: City of Burnaby

have shown that although chafer may be present, predators are unlikely to attack a healthy looking lawn. **SL**

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BEWARE of INVADERS



in your Water Features

Sue Staniforth, Education & Awareness,
Invasive Species Council of BC

Water features are one of today's hottest trends in landscaping. There is a high demand for "cookie-cutter" grass lawns to be transformed into beautiful, low maintenance, eye-catching water gardens, fountains, waterfalls and ponds that add great visual appeal, relaxing sounds and attract local wildlife. Landscape architects are choosing tall reeds and flowering rushes for texture and height, fragrant water lilies, floating heart and fanwort for floating colour and unique surface shapes, and water hyacinths for pops of bright colour BUT...? Hold on! All these plants are invasive species!

Did you know that there are over 130 different aquatic invasive species in British Columbia? (BC Ministry of Environment). Water gardeners, aquarium and terrarium owners can select from a wide variety of aquatic plants, invertebrates, reptiles and fish. Unfortunately, some of these exotic species are invasive in BC. Some of the most serious aquatic invasive species were originally sold as pets or plants for water gardens and aquariums. Over 60% of the provinces' invasive plants were intentionally introduced through BC's horticultural industry!

Some aquatic plants and animals escape

water gardens and ponds into our green spaces while other unwanted species are intentionally released. Many of these species then spread uncontrollably, causing serious damage such as clogged waterways, reduced habitat for native fish and wildlife, and decreased recreation opportunities. The cost of trying to control aquatic invasive species in the United States is more than \$100 billion per year (www.pijac.org/habitattitude).

Landscape architects can ensure that the ponds and water gardens you design are healthy, sustainable communities—free from invasive plants and animals. ▶

This page top: Red-ear slider turtle Photo: Ken Gale, bugwood.org Middle: Eurasian watermilfoil Photo: C. Evans, bugwood.org Bottom: Yellow Flag Iris Photo: Juliet Craig

Page 16 left column first: Parrot Feather Photo: bugwood.org Second: Yellow Flag Iris Photo: Juliet Craig Third: Flowering Rush Photo: J. Leekie Fourth: Purple Loosestrife Photo: University of Utah Right Column: Pulling watermilfoil Photo: Invasive Species Council of BC

Avoid These Invasive Aquatic Plants!

Parrot's feather

(*Myriophyllum aquaticum*)



Parrot's feather is a popular aquatic plant, favored for its stiff green feather-like leaves that stick up above the water and resemble small fir trees. Now found in the Lower Mainland, it has spread by intentional planting and floating plant fragments. This plant forms thick stands and tangled mats of upright stems, outcompeting native plants interfering with irrigation and impacting swimming, boating and fishing.

Yellow flag iris (*Iris pseudacorus*)



Yellow flag iris is an eye-catching perennial, native to Europe and widely sold for wet areas and ponds. Mass stands of it can be seen in Beaver Lake in Vancouver's Stanley Park, and it is found throughout the Okanagan and West Kootenays. Yellow flag iris creates dense stands in wet areas, excluding native species and threatening plant and animal diversity.

Flowering rush (*Butomus umbellatus*)



This invasive species occurs in only a few locations in BC to date, but is a high priority species due to its severe environmental impacts. Its spread is largely due to its popularity in water gardens, due to its clustered pink and white flowers atop a meter-long stem.

Purple loosestrife (*Lythrum salicaria*)



Known also as the "Beautiful Killer", purple loosestrife is one of the most infamous alien invaders that has spread throughout North America. It was first planted in a Port Alberni garden in 1916 and has since spread across all of southern BC. A single plant can produce up to 2.7 million seeds a year and it is still sold in some nurseries. **SL**



A Checklist FOR WATER GARDEN DESIGN

- **SITE SPECIFICS:** When establishing a water garden, consider its proximity to natural water bodies or storm drains: flooding can cause the release of plants and animals into other waterways.
- **KNOW YOUR SOURCES:** Know where plants come from and ensure they are properly identified: be particularly careful of mail-order materials that may only provide a plants' common name.
- **WATCH FOR LURKING INVADERS!** Invasive plants and animals can hitchhike onto other plants purchased, and can be part of plant orders in the water, plant medium or even used for packing material. Ensure that contractors inspect and clean all plants before planting—aquatic plants should be rinsed in clean tap water, or if they are especially 'dirty', use a chlorine dip.
- **DISPOSAL:** Do not compost invasives! If a site that you are working on has invasive plants, ensure they get bagged and sent to the landfill or incinerator, as many have durable and long lasting seeds.
- **AVOID KOI, TURTLES AND SNAILS:** Koi, the most common water garden fish, are actually invasive carp from Asia. The Red-eared slider turtle sold in many pet stores is an invasive that is impacting BC's native turtles. Snails spread by moving themselves or being picked up by wildlife, and are often intermediate hosts for parasites. **SL**

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WEED CONTROL ACT REGULATION:

Suggested Changes and their Implications for Landscape Architects

Val Miller P.Ag., Provincial Invasive Plant Officer, Ministry of Forests, Lands and Natural Resource Operations
www.for.gov.bc.ca/hra/invasive-species

B.C.'s Weed Control Act Regulation is no longer primarily focused on agriculture and crop-related weeds. Having evolved from the Thistle Act of 1871, the legislation is certainly “rooted” in agriculture. However, current invasive plant threats and their potential economic, environmental and social impacts has the B.C. government looking at a broader regulatory framework to stop new invaders and prevent the expansion of established populations.

The Weed Control Act is administered by the Ministry of Forests, Lands and Natural Resource Operations, and applies to all land in BC except federal land. This act obligates all landowners and occupiers of public and private lands to control noxious weed species that are listed in the Act's Regulation. The Act is “enabling legislation”, meaning that municipalities or regional districts have the ability to: appoint local weed committees and weed control officers or inspectors; issue notices for the control of listed noxious weeds; enforce control measures; and recover control costs if they choose to enforce the Weed Control Act by appointing a weed inspector.

The Ministry of Forests, Lands and Natural Resource Operations' Invasive Plant Program, with the support of the Inter-Ministry Invasive Species Working Group (www.gov.bc.ca/invasive-species), has been reviewing the current Regulation, lists of noxious weeds, and assessing invasive plant species that are already established or threaten to become established here.

Preliminary discussions with stakeholders about possible changes to the Regulation have been underway for a couple of years. Suggested amendments include measures to:

- a) better address pathways of noxious weed introduction and spread (such as requiring that no materials contaminated with noxious weeds may be transported or sold)
- b) expand the lists of noxious weeds to include high-risk species whose extent is currently limited or are not yet present in B.C., and include other invasive plant species that need to be controlled to limit their negative impacts
- c) restrict the improper disposal of noxious weeds
- d) include offence provisions to allow the ticketing of offenders, which would enhance the Regulation's enforcement options (from the current model of cost recovery for control treatments through property taxation).

This review process and suggested amendments have generated considerable interest among those who deal with invasive plants in B.C.

Preventing the introduction, establishment and spread of new invasive plant species is much more cost-effective than having to control them after they have already spread across the landscape. Expanding the noxious weed lists to include a “prohibited species” category would support the regulatory framework and effectively address these invasive plant species. Undoubtedly, there will be questions about how any proposed changes to the Weed Control Act Regulation might affect the landscape architecture industry.

If the existing list of noxious weeds is expanded, some species that are presently used in landscape design may be reclassified as noxious weeds. This would prevent the

sale, importation, transportation or use of those noxious weeds or any materials infested with them.

Examples of species that are being considered for inclusion in the noxious weed list but are currently used in landscaped settings include: yellow archangel (*Lamium galeobdolon*); Fuller's teasel (*Dipsacus fullonum*); European common reed (*Phragmites australis subsp. australis*); garden yellow loosestrife (*Lysimachia vulgaris*); milk thistle (*Silybum marianum*); butterfly bush (*Buddleja davidii*); Himalayan balsam (*Impatiens glandulifera*); Russian olive (*Elaeagnus angustifolia*); and tree of heaven (*Ailanthus altissima*).

With the increased popularity of water features, aquatic and semi-aquatic invasive plant species have also been assessed. Species such as parrotfeather (*Myriophyllum aquaticum*), yellow floating heart (*Nymphaoides peltata*), hydrilla (*Hydrilla verticillata*), giant salvinia (*Salvinia molesta*) and Brazilian elodea (*Egeria densa*) are already threatening the ecology of British Columbia's waters. Parrotfeather is creating challenges for drainage and irrigation systems in some areas of the Lower Mainland, and affecting habitat in some Wildlife Management Areas. Regulating these species will help prevent their spread and limit damage to aquatic ecosystems.

Invasive plants affect many different sectors. Understanding which industry-based factors should be considered in any proposed amendments to the Weed Control Act regulation (including any transitional provisions) is important. We welcome your input and suggestions. Anyone wishing to learn more about the Weed Control Act and Regulation can contact one of the Ministry of Forests, Lands and Natural Resource Operations' invasive plant specialists. A list of local contacts is available online at: www.for.gov.bc.ca/hra/Plants/ContactUs.htm **SL**

Municipal Bylaw Supports Invasive Species Management

Tina Symko, Environmental Coordinator, Environmental Stewardship, Resort Municipality of Whistler
<https://www.whistler.ca>

Local governments have traditionally instituted invasive plant programs, but the Resort Municipality of Whistler (RMOW) has gone one step further. “Environmental Protection Bylaw No. 2000, 2012” is a legislative tool that assists Whistler’s local government in protecting the environment. The bylaw was introduced in 2014, and gives the RMOW a comprehensive tool to manage invasive species, in addition to education and outreach. Before this, the RMOW had no legislation that prohibited the planting of invasive species. This Bylaw now achieves this, as well as facilitating enforceable notice to remove invasive plant species from a person’s land, and the ability to issue fines associated with infractions of this bylaw. **SL**



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BCSLA Continuing Education (CE) Credit Guide

Below is a quick CE Credit guide to help you allocate your CE Credits.

Here are the categories and some suggestions for CE Credits which can be earned per year.

1. Work Experience. Anyone working full time can claim 3 credits, if you are working part time, adjust accordingly. Easy credits!

Maximum 3 credits per year

2. Education Courses and Training Program. Here are some examples with credits attached:

Full (2 day) attendance at BCSLA Conference	4 credits
AGM only (free afternoon session)	1 credit
One full day attendance at AGM	2 credits
Full-day conference (6 hour min.)	2 credits
Evening Lecture	1 credit
Self-Directed Study	up to 4 credits
University Courses	up to 4 credits

Maximum 20 credits per year

3. Professional Activities. Activities relating to Landscape Architecture are applicable Board

Service on boards such as:

BCSLA, CSLA	5 credits
CSLA Volunteer	5 credits
Committee Chair	4 credits
Design Panel or similar committee	4 credits
Representative to a Government Agency	up to 2 credits

Maximum 20 credits per year

4. Personal Development. Activities outside the field of Landscape Architecture such as networking clubs and community service clubs.

Book published	10 credits
Article published	2 credits
Present a Lecture	1 credit
Write a paper	1 credit

Maximum 20 credits per year

5. Examination. Any section of the LARE completed during the reporting period:

Per section passed	5 credits
Lead a LARE workshop	5 credits
Attend a LARE workshop	0.5 credits

When in doubt: 3 hours = 1 credit, 6 hours = 2 credits and note the maximums in each category.

IT'S EASY AND FUN Most members already have more credits than they realize.

For further information visit <http://www.bcsla.org/education/continuing-education-ce>

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