

INVASIVE SPECIES & FORESTRY



PREVENTING THE SPREAD OF INVASIVE SPECIES DURING FOREST MANAGEMENT ACTIVITIES

A POCKET GUIDE FOR BRITISH COLUMBIA'S
FOREST WORKERS

Acknowledgement

This guide was developed by the Ministry of Forests in partnership with the Invasive Species Council of British Columbia (ISCBC), an action oriented non-profit organization that works in collaboration with others to stop the spread of invasive species in B.C.

For more information, visit the provincial government website (www.gov.bc.ca/invasive-species) and/or contact the ISCBC at:

Invasive Species Council of BC

www.bcinvasives.ca

info@bcinvasives.ca

1.888.933.3722



This guide was originally developed in 2013 with guidance from Provincial Invasive Plant Specialists and professional forestry advisors. This updated version has been expanded to include additional invasive species threats (e.g. insects) and was created through the guidance of many advisors and specialists. The ISCBC and advisory team hope this guide provides additional support for strengthening responsible practices to help limit the establishment and spread of invasive species.

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Back cover image courtesy of M. Montrone

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Field scabious in pine plantation.

Invasive Species and Why You Should Care

Invasive species are non-native plants, animals or other organisms that can have negative impacts on native biodiversity, ecosystems, our economy and social and cultural values. Invasive species typically don't have the predators and diseases that keep them in check in their native habitats, and can be highly destructive, competitive and difficult to control. They can reduce biodiversity, increase soil erosion, introduce diseases and damage forests. The term noxious weed refers specifically to the invasive plant species listed under the *B.C. Weed Control Act* Regulation (see p. 6).

This guide has been developed to support forest managers and field workers in applying best practices to limit the spread of invasive species.

As forestry workers, it is our job to manage invasive species and protect B.C.'s forests!



B. Grutzmacher

Giant knotweed

THE PROBLEM

Several forestry activities provide opportunities for invasive species to be introduced into new areas. Unhealthy trees are more susceptible to invasive species attack. Forestry activities create disturbed sites with bare ground along resource roads and worksites where invasive plants can quickly establish and spread. Invasive species can be moved to new areas by equipment and vehicles.

DID YOU KNOW?

The estimated annual impact of invasives species to the forest sector in Canada is \$20 billion! (Environment Canada 2012).

INVASIVE SPECIES AND FOREST MANAGEMENT

Invasive plants compete with natural vegetation and tree seedlings for resources, lead to erosion and water siltation, increase fire hazards and reduce landscape aesthetics. They can severely degrade riparian zones, range resources, and habitat quality for wildlife and species at risk. Reduced sight-lines along resource roads and exposure to certain species can endanger worker safety. Invasive insects and pathogens can severely damage trees and reduce yields. Once established, invasive species often result in areas that are less biologically diverse and more costly to treat.

Prevention is the most cost-effective means for controlling invasive species.

Forest managers and field workers can help limit the introduction and spread of invasive species by applying best practices (p. 10-20).

FIRST NATIONS AND FORESTS

Indigenous peoples have an intrinsic relationship to the land, built on stewardship and engrained in their cultures and histories. Invasive species can have significant impacts on Indigenous communities, including cultural values, traditional economies (including foods and medicines) and harvesting practices. As forest professionals, it is important to communicate when travelling or working on First Nations traditional territories, and to collaborate in forest planning and related decision-making processes. See ISCBC's [Indigenous Toolkit](#) and publications for more information.

CLIMATE CHANGE, FIRES AND INVASIVE SPECIES

Fire disturbance is a natural process for forest regeneration, but the intensity and frequency of wildfires is on the rise, and post-fire invasion and establishment of invasive species can have damaging and long-lasting impacts. Seeding following wildfire is the primary tool used to stabilize soils, inhibit the establishment and spread of invasive plants, and support recovery of desirable vegetation. See [Prescribed Fire and Invasive Plants - A Reference Guide and Manual of Best Practices](#) for more information. Climate change can create conditions for new invasive species to establish. Early identification and reporting is key to limiting the spread of invasive species in B.C. See p. 21 for reporting protocol.



M. Blackmore

Western red cedar



M. Blackmore

Forest impacted by wildfire

Legal Status

LEGISLATION

Several provincial Acts and associated Regulations apply to the prevention and management of invasive species on provincial public lands. **With respect to forestry operations, the following Acts apply: The B.C. Weed Control Act (WCA), the B.C. Forest and Range Practices Act (FRPA), and the Integrated Pest Management Act (IPM).**

FRPA requires managers of public forests to specify measures in their Forest Stewardship Plans / Forest Landscape Plans that prevent the introduction or spread of invasive plants listed in the Invasive Plants Regulation and to implement those measures.

B.C. Weed Control Act (WCA)

The WCA requires all land owners or occupiers of non-federal lands to control the designated noxious weeds as listed in the Regulation schedule. In terms of forest management, this legislation relates to private forest lands and other private land used for activities such as log sorting and equipment storage. Within the public forest and range land base the Province is recognized as the occupier.



Remove mud and plant parts before moving to a new site.

Other Related Legislation

There are several other related legislations including the *B.C. Plant Protection Act*, the *Seeds Act*, the *Wildlife Act* and the *Local Government and Community Charter Acts*: Refer to the B.C. Laws website at bclaws.gov.bc.ca for more details.

COMMITMENTS

Professional Codes of Ethics

In B.C., forestry, biology and agronomy professionals have a duty to practice good stewardship of publicly-owned natural resources, including managing invasive species to protect B.C.'s forests and rangelands.

DID YOU KNOW?

WorkSafeBC released a Toxic Plant Warning about Giant Hogweed. Forest workers exposed to the sap of this plant risk getting burn-like blisters. Training in plant recognition is an important safety precaution.



Giant hogweed is a safety hazard to workers.

Forestry Activities That Affect Invasive Species Introduction and Spread

Forestry activities affect invasive species establishment in two major ways:

- V** As a **vector** - Seeds, plant parts and insects hitchhike in caked-on mud or get carried to new places on boots, clothing, equipment, vehicles, wood products and road-building materials.
- D** As a source of **soil disturbance** – Exposed soil is an invitation to the establishment of invasive plants.

DID YOU KNOW?

Marsh plume thistle can compete with planted seedlings for resources, lead to snow-press, and is painful to walk through.

This wind-borne and shade-tolerant invader has unwelcome implications to forest management.



Ministry of Forests

Marsh plume thistle infestation.



Forestry Field Work (e.g. timber cruising, engineering layout, silviculture surveys), via pick-up truck, all-terrain vehicle, boat, bike, and boot



Road Infrastructure Development, Maintenance, and Deactivation including stream crossings, ditching, and road construction



Cut Block Infrastructure Development including landings, bladed skid trails, and back-spar trails



Harvesting including falling, skidding, forwarding, yarding, processing, loading, and trucking



Storage of equipment and supplies when not in use, plus log sort sites



Transport of equipment and supplies



Burning including prescribed fire, wildfire, waste piles, and fuel reduction



Tree Planting and Site Preparation creating seed beds for tree planting

Invasive Species (IS) Best Practices

KEY ACTIVITY	BEST PRACTICES		
	Report IS Sites	Avoid Infested Sites	Work first in uninfested areas
FIELD WORK			
ROAD WORK			
CUT BLOCK DEVELOPMENT			
HARVESTING			
STORAGE			
TRANSPORT OF EQUIPMENT AND SUPPLIES			
BURNING			
TREE PLANTING AND SITE PREPARATION			

BEST PRACTICES				
Clean Equipment BEFORE Moving	Materials are IS Free	Minimize disturbance	Revegetate Disturbed Sites	Control infestations

BEST PRACTICES FOR FOREST MANAGEMENT ACTIVITIES

1 Incorporate known invasive plant sites into development plans and report new sites as they are discovered.

Early in the development planning process, consult the online InvasivesBC database, map and mobile data collection application for known invasive plant sites. (<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/invasivesbc>). Inspect work sites and report the size and location of new infestations. Plan activities so they won't create new or spread existing infestations (see other Best Practices).

Related Forestry Activities



2 Avoid infested sites for staging, parking, and log sorting, both in the bush and storage yards.

Roadsides, landings and storage yards are frequently already infested with invasive plants. Vehicles, equipment, and logs can pick up plant parts, seeds, and insects, especially in muddy conditions, and carry them to new locations.

Related Forestry Activities



DID YOU KNOW?

Early identification and reporting of infestations is key to limiting the spread of invasive plants in B.C. See p. 21 for reporting protocol.



Alex Fraser Research Forest

Orange hawkweed infestation.



B. Grutzmacher

Culverts infested with Scotch broom.

3 Work in uninfested sites before moving to infested sites.

Work sites can be widely infested by invasive plants, partially infested, or invasive plant-free. As vehicles, equipment, and clothing are vectors for seeds and plant parts, schedule work activities to begin in the most pristine sites first and end in the most infested sites last.

Related Forestry Activities



Alex Fraser Research Forest

Harvesting next to Scotch broom infestation.

DID YOU KNOW?

Invasive hawkweeds, knotweeds, Giant hogweed, and Marsh plume thistle are semi-shade tolerant and can become established under forest canopies.

4 Clean equipment before moving to a new work site or region.

Remove seeds and plant parts **within existing infestations** or **designated wash sites** to prevent spread to new sites. **Avoid moving unclean equipment to a new work location.** Carefully bag and dispose of seeds or plant parts picked from your clothes, boots, or equipment.

Cleaning With Water: Pressure washing all mud from vehicles and equipment is best. Prevent run-off from contaminating waterways and riparian areas. Wash within existing infestations or use designated wash sites to concentrate run-off. Alternatively, temporary sumps can be used and then buried when decommissioned.

Cleaning Without Water: Before departing infested sites, visually inspect vehicles and equipment and remove any lodged plant parts found. Knock off mud with a shovel, broom or use your boots (then knock out the boot treads).

Equipment relocated from other regions may be importing new problem plants to your area. Request that such equipment be cleaned before transport.

Related Forestry Activities



5 Inspect and ensure fill and erosion-control materials are free of invasive plants before transport and use.

Use only clean fill material from an invasive plant free source. Regularly inspect material sources (e.g. sand, gravel and borrow pits) for invasive plants, record and report any infestations and don't use the contaminated material.

Certified weed-free straw or hay is not readily available in B.C. When possible, use straw (instead of hay) that has been locally sourced from reputable producers.

Related Forestry Activities



Oxeye daisy infestation in a gravel pit.

6 Minimize soil disturbance and maintain native vegetation.

Minimize unnecessary soil disturbance. Every cut made by bladed equipment into previously undisturbed soil and vegetation increases the likelihood of infestation by invasive plants. A cover of native forest vegetation is the best defense against invasive plants.

Related Forestry Activities



DID YOU KNOW?

Scotch broom, which contains flammable compounds and grows tall, can both present a fire hazard and compete with tree seedlings.



Harvesting with minimum disturbance.

7 Revegetate disturbed sites as soon as possible.

Road and bridge construction/deactivation sites, landings, and bladed trails are most likely to host new or expanding invasive plant infestations if not revegetated quickly. Increase shade levels or fill in growing space with non-invasive ground-cover and/or overstory plants.

To quickly achieve planned closed canopy tree cover on cut blocks: minimize planting delay, plant trees in high density where suitable, use large or fast growing stock, or fertilize if cost effective and the site is appropriate.

Establish ground-cover promptly by seeding with mixtures that are free of invasive plants, locally adapted and quick to establish (e.g. native or short-lived agronomic grass and forage species.)

Request a "Certificate of Seed Analysis" for every seed lot prior to mixing and reject seed lots containing invasive species listed under the WCA Regulation or FRPA Invasive Plants Regulation (see "For More Information" on p. 65). Sow seed in early spring or late fall and as soon as possible following soil disturbance for best results. Monitor to ensure successful establishment and re-seed as necessary.

Related Forestry Activities



Undesirable plants can be introduced through contaminants in seed mixtures!

LAB#: 22-116060			
Analyzed According to Canadian Methods & Procedures for Testing Seed			
Tests: Germination, Canadian Purity, AOSA Purity, Tetrazolium			
Total Grams Analyzed: 25.09	Per 25	Date received: Mar 28, 2022	Per 25
		Purity Date: Mar 28, 2022	
Prohibited Noxious:	0	Other Crop Seeds:	
		Slender wheatgrass (<i>Elymus trachycaulus</i>)	
		Bromegrass (<i>Bromus</i> spp.)	
Total primary	0		
Secondary Noxious:		Total Other Crop Seeds:	<1%
		Sweet Clover (<i>Melilotus</i> sp.)	0
		Brassica spp.	0
		Ergot bodies	0%
Total Primary Noxious	0		
Other Weed Seeds:		Percentage Test (grams):	1.015g
		Pure seed %	97.2%
		Other crop %	0.0
		Weed Seed %	0.0
		Inert matter %	2.8
		Date of Germination:	4/11/22
		% GERMINATION	97
		Abnormal seedlings %	0
		Dead Seed %	3
		Fresh Seed %	0
Total Noxious & Other Weed Seeds	0	Pure Living Seed %	94
Advisory Tests & Remarks:			
Tetrazolium % Viable: 90 Mar 29, 2022			

A Certificate of Seed Analysis will list "other" seeds present and be dated, signed and sealed by an accredited laboratory. Check all species listed against provincially regulated noxious and invasive plants. Reject all seed lots that are contaminated.

If you have questions about an unknown species, contact an Invasive Plant Specialist with the Ministry of Forests.

8 Promptly control infestations resulting from forestry activities.

Remove invasive plants prior to seed set to prevent build-up of seed banks that will take years to control. Prioritize treatment of roadsides and landings to reduce inadvertent movement of seeds and plant parts by vehicles and equipment. Monitor to ensure control efforts are successful and re-treat if necessary. Contact the provincial Invasive Plant Specialist in your area (see p. 72) to determine the best treatment approach.

Related Forestry Activities



B. Grutzmacher

Herbicide crew preparing to treat a Scotch broom infestation in a plantation.

Reporting Invasive Species



It is critical to report new infestations! Fast treatment of new infestations is key to stopping the spread of invasive species.

Unusual plants or insects that appear to be taking over or growing out of control, or diseased trees should be reported in one of these four ways:

- ✓ FREE ‘**Report Invasives BC**’ Mobile smart phone App (find link to download at gov.bc.ca/invasive-species) NOTE: You can use the app without cell service: submit the report and it will send once you are back in service.
- ✓ Online at gov.bc.ca/invasive-species which connects to the provincial **Invasive Alien Plant Program (IAPP)** application
- ✓ Directly through your Regional Invasive Species Committee; (p. 73)
- ✓ Phone 1-888-933-3722 (ISCBC)

Please report the following information:

1. Species (include a photo whenever possible)
2. Size and density of infestation
3. UTM coordinates or directions to site
4. Reporter’s contact information

DID YOU KNOW?

Spongy moths have over 300 hosts, and threaten B.C.’s fruit producers, hardwoods and ornamental trees.



PRIORITY INVASIVE SPECIES IN BRITISH COLUMBIA



Canada thistle

J. Leekie

Priority Invasive Species Affecting Forest Management in British Columbia

The species in this guide include those listed under the Invasive Plants Regulation of the **Forest and Range Practices Act (FRPA)** as well as key invasive insects and fungi. **Species are listed in alphabetical order.** Forest Stewardship / Landscape Plans for public forests must specify measures that prevent the introduction or spread of these species and managers have an obligation to implement those measures. Managers of private forest land should reference the **B.C. Weed Control Act (WCA)** Regulation for a listing of provincial noxious weeds.

Many additional non-listed species are also problematic—consider applying best practices to all suspect plants.

Invasive Plant Treatment Recommendations


Treatment recommendations are highlighted in **blue text boxes** on each species page, generally apply to small infestations and only cover manual control. When addressing large infestations or highly invasive species, consider integrated pest management: mechanical, chemical, or biological treatments. Consult a provincial invasive species specialist or your regional committee for species and site-specific treatment recommendations, including biocontrol.


INVASIVE SPECIES SPREAD - SYMBOLS


Invasive species may be spread by many or all of the methods represented below. Only the most significant methods of spread have been indicated.


 Seed or plant pieces spread in farm produce such as hay or commercial seed


 Seed or plant pieces carried on machinery, equipment and vehicles

 Seed or plant pieces spread by brushing or mowing

 Seed or plant pieces spread by “hitchhiking” on clothing, fur, etc.

 Seed or plant pieces spread in soil

 Seed eaten or carried by birds and mammals

 Seed or plant pieces carried in water

 Seed blown by wind

 Seed or plant pieces spread by cultivation

P Indicates perennial weeds (plants that grow for more than two seasons)

B Indicates biennial weeds (plants that grow for two seasons)

A Indicates annual weeds (plants with a growth cycle lasting one year)

PLANT FLOWERING AND SEED PRODUCTION CALENDARS

All plants should be controlled before they flower and set seed. Calendars of flowering and seed production are included for each plant in this guide to help with forestry activity planning.

The shaded months in these calendars indicate the time of year when each species is producing one of the following:

 Flowers (orange squares)

 Seed (green circles)

For example, in the calendar below, the plant produces flowers from June – September and seed from July – October.

J	F	M	A	M	J	J	A	S	O	N	D
---	---	---	---	---	---	---	---	---	---	---	---

Note: Plants may flower and produce seed at times other than indicated in this guide. Contact your Regional Invasive Plant/Species Committee for local information.



Nodding thistle infestation.

PRIORITY INVASIVE PLANTS IN BRITISH COLUMBIA

ANCHUSA *Anchusa officinalis*



To kill this plant, dig out or sever taproot at least 5cm below soil surface. Infestations can be prevented by maintaining a strong population of native perennials. **Report all sightings.**

Description: Upright plant up to 60cm in height.

Flowers: Found in coiled clusters at the ends of stalks. Tubular and initially reddish flowers eventually turn purplish-blue with white centers.

Leaves: Lance-shaped lower and basal leaves. Stem leaves decrease in size toward the top of the plant, and lack stalks. Leaves are covered in stiff hairs.

Stems: Angular and covered with hairs.

Other ID Tips: Forms a rosette in year one. Plant has a long taproot

Distribution: Found growing in grasslands, rangeland, pastures, and disturbed and waste areas, and along roadsides.



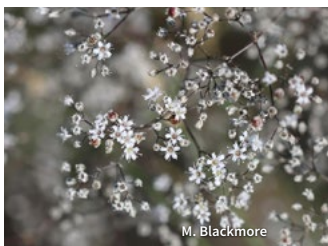
Common tansy

J. Leekie

BABY'S BREATH *Gypsophila paniculata*



R. Mueller



M. Blackmore



J. DiTomasco

Hand-pull small plants or dig out large woody specimens. Seeds can mature after cutting or pulling – bag to dispose of.
Report all sightings.

Description: Upright, bushy plant up to 1.0m in height. Found in disturbed areas, fields and roadsides, and often used in floral arrangements.

Flowers: Sweet-scented, five-petaled, white flowers in clusters at the end of each stem.

Leaves: Bluish appearance, linear, opposite and covered with a white film.

Stems: Highly branched, and swollen at the nodes.

Other ID Tips: Woody taproot.

Distribution: Found growing in pastures, waste areas, grasslands, and along roadsides.



BLUEWEED *Echium vulgare*



B. Stewart



R. Old



L. Scott

To kill the plant, dig out or sever taproot at least 5cm below soil surface. Limit or stop seed production.
Report all sightings.

Description: Upright, tap-rooted plant up to 1.0m in height. Adapted to rocky, gravelly habitats like roadsides, gravel pits.

Flowers: Short, arched branches covered on upper side with purplish-blue, funnel-shaped flowers.

Leaves: Stem leaves are lance-shaped and alternately arranged.

Stems: Stiff hairs with swollen reddish bases are found along the stem. Stem hairs are prickly and can irritate skin.

Other ID Tips: Forms a rosette in year one.

Distribution: Found growing in rangelands, pastures, waste and disturbed areas, and along roadsides and railways; particularly on coarse, sandy to gravelly soils.



BULL THISTLE *Cirsium vulgare*



Competing vegetation limits bull thistle introduction and spread. Re-vegetating disturbed areas is the best defense.

Description: This weed can grow to 3.0m tall, with branches spreading up from erect stems.

Flowers: Flowers are found clustered at the end of the branches. They are 4–5cm wide, pinkish to dark purple, and covered with spines.

Seed/Fruit: The brown, shiny seeds have a top of white, soft hairs.

Leaves: The leaves are alternate and deeply lobed, with spines at the lobes and tips.

The base of each leaf surrounds the stem with spiny wings.

Stems: The stems are erect and branched.

Other ID Tips: This weed has a short, fleshy taproot. Skeletons have nodding heads.

Seedlings: In the first year, these plants form a rosette.

Distribution: Found growing in disturbed, riparian, and waste areas; pastures, forests and along roadsides.



CANADA THISTLE *Cirsium arvense*



Highly invasive plant. Incomplete pulling or cutting can stimulate remaining roots to re-sprout and worsen infestations. Continual, repeated cutting or pulling will deplete root reserves.

Description: A prickly upright plant up to 1.2m tall, often forming dense stands.

Flowers: Purplish-pink, less than 2.5cm across, without sharp spines.

Leaves: Stalkless, alternate, dark green leaves, with spiny lobes.

Stems: Prickly, hollow.

Other ID Tips: Forms a rosette in its first year.

Distribution: Found on moist, rich soils on roadsides, right-of-ways, cultivated fields, pastures, and other open areas.



COMMON BURDOCK *Arctium minus*



First year rosettes are easily hand-pulled. Deep roots of mature plants require digging to remove as much root as possible. Preventing dispersal of burs is particularly important.

Description: Upright, tap-rooted plant up to 3m high. Found on roadsides, ditches, riparian areas, grasslands and forests.

Flowers: Globe-shaped purple flowers, to 2.5cm in diameter, on short stalks. Covered in hooked green bristles.

Leaves: Basal leaves are rhubarb-like. Upper leaves are alternate, with wavy or toothed edges. Leaves have woolly undersides.

Stems: Upright, grooved, and highly branched.

Other ID Tips: Forms a rosette in year one. Mature flower heads form a bur, which allows seeds to be spread throughout the year.

Distribution: Found growing in farmyards; waste, disturbed, and riparian areas; pastures, rangeland, forests, grasslands, fallow fields, and along fence lines, field margins, roadsides, and railways.



COMMON TANSY *Tanacetum vulgare*



Small plants can be easily hand-pulled. Use shovel to loosen soil for more complete root removal. Plants can regrow from severed roots and cut stems may still produce viable seed.

Description: Bushy perennial growing up to 1.8m tall. Common on disturbed areas, streambanks, and roadsides.

Flowers: Flat-topped clusters of 'button-like' yellow flowers, at the top of stems.

Leaves: Alternate, dark green, fern-like leaves.

Stems: Mature plants have several branched stems that can be reddish, and somewhat woody near the base.

Other ID Tips: Forms a rosette in year one. Leaves and flowers aromatic when crushed.

Distribution: Found growing in pastures, riparian, waste, and disturbed areas, open forests, meadows, gardens, grasslands and along roadsides, field margins, and railways



FIELD SCABIOUS *Knautia arvensis*



Northwest Invasive Plant Council

B. Stewart

B. Stewart

Can be challenging to hand-pull. To kill plant, dig out or sever root at least 5cm below soil surface. Report all sightings.

Description: Upright plant up to 1.3m in height. Found on dry roadsides and in pastures.

Flowers: Clover-like violet-purple flowers up to 4cm in diameter, on long leafless stalks.

Leaves: Stem leaves are deeply lobed, stalkless, and opposite.

Stems: Hairy, upright stems. Can form above-ground runners.

Other ID Tips: Forms a rosette in its first year. Woody taproot.

Distribution: Found growing in pastures, meadows, cultivated fields, open forests, riparian, disturbed, and waste areas, and along roadsides.

J	F	M	A	M	J	J	A	S	O	N	D
---	---	---	---	---	---	---	---	---	---	---	---



GIANT HOGWEED *Heracleum mantegazzianum*



U.S. Department of Agriculture

R. Videki

J. Hallworth

WARNING Leaves and stems contain a highly toxic sap that can burn skin. Refer to Worksafe BC guidelines and consult with regional invasive plant/species committee.

Mature plants should be cut below ground. Report all sightings.

Description: Large upright plant up to 5m in height, preferring damp, rich soils.

Found along roadsides, ditches, riparian areas and disturbed sites.

Flowers: Clustered white flowers in large umbrella-shaped heads up to 0.8m in diameter.

Leaves: Dark green, toothed and deeply cut into three large segments. Stiff hairs on undersides.

Stems: Hollow, ridged, green; some with reddish-purple spots.

Other ID Tips: Similar to smaller native cow parsnip (2.5m).

Distribution: Found growing in riparian areas, pastures, open woodlands, and roadsides

J	F	M	A	M	J	J	A	S	O	N	D
---	---	---	---	---	---	---	---	---	---	---	---



GORSE *Ulex europaeus*



Young plants in very loose, sandy soil can be removed by carefully digging to remove entire root mass. Incomplete pulling or cutting can stimulate root fragments to re-sprout and worsen infestations. Be sure to re-inspect. **Report all sightings.**

Description: A spiny evergreen shrub which can grow upwards of 2m in height. Can be found on roadside cutbanks.

Flowers: Bright yellow flowers develop into black seed pods with dark hairs.

Leaves: Slightly waxy, narrow leaves end in sharp, rigid spines.

Stems: Heavily branched stems; bushy.

Other ID Tips: Sharp spines can puncture tires and skin.

Distribution: Found growing on infertile or disturbed sites, sand dunes, gravel bars, pastures, logged areas, and burned areas.



HAWKWEED

Orange *Pilosella aurantiaca*

Yellow *Hieracium* spp.



Highly invasive plants. Mowing before seed set will limit seed production, but may encourage spread by runners. Prevent spread and consult your Regional Invasive Plant/Species Committee.

Description: Fast-spreading, hairy plants, up to 60cm in height. Found on grasslands, lawns, roadsides and other disturbed sites.

Flowers: Orange or yellow clusters, atop slender, unbranched stems.

Leaves: Hairy leaves are arranged in a rosette. Few to no leaves found on stem.

Stems: Stems are covered with bristly hairs, which are black on orange hawkweed.

Other ID Tips: Above ground runners root and grow new plants. Plants produce a milky juice when broken.

Distribution: Found growing in a wide range of habitats, including in forests; forest clearings; pastures; lawns; riparian, waste, and disturbed areas; grasslands; yards; cultivated and fallow fields; rangeland; and along roadsides and railways.



HOARY ALYSSUM *Berteroa incana*



B. Stewart

B. Stewart

R. Mueller

HOARY CRESS *Cardaria* spp.



B. Stewart

L. Scott

S. Dewey

Taproot may be hand-pulled from moist soil. Remove as much of the root system as possible. **Report all sightings.**

Description: Slender plant from the mustard family, growing up to 1.0m in height. Found on disturbed sites, especially roadsides, pastures and embankments.

Flowers: Small white almost spherical flowers at the end of stems.

Leaves: Greyish, hairy leaves clasp the upper portion of stems

Stems: Stems are covered with star-shaped hairs.

Other ID Tips: Seed pods are a distinct oval shape with a pointy tip.

Distribution: Found growing in pastures, waste and disturbed areas, forage crops, yards, lawns, grasslands, rangeland, and along roadsides and railways.



Highly invasive plants. Mowing before seed set will limit seed production, but may encourage spread by runners. Prevent spread and consult your Regional Invasive Plant/Species Committee. **Report all sightings.**

Description: Upright perennial up to 60cm in height, with flat-topped appearance. Found in pastures, rangelands, ditches and roadsides.

Flowers: Clusters of white, four-petalled flowers give plant 'flat top'.

Leaves: Alternate, blue-green leaves up to 10cm in length with toothed edges. Lower leaves are stalked; upper leaves clasp the stem.

Stems: Single stem, often branched at the top, supports one flower cluster.

Other ID Tips: Heart-shaped, stalked seed pods.

Distribution: Found growing in forage and grain crops; pastures, waste, disturbed, and riparian areas; and along roadsides and railways.



HOUND'S-TONGUE *Cynoglossum officinale*



First year rosettes can be easily hand-pulled. Deep roots of mature plants require digging to remove as much root as possible. In southern B.C., control of sites can be achieved through a root-attacking biological control weevil.

Description: A taprooted leafy plant, up to 1.2m in height, found along roads, trails and in meadows.

Flowers: Small, reddish-purple flowers with five petals.

Leaves: Rough, hairy leaves from 10-30cm in length.

Stems: Hairy; usually branched near the top.

Other ID Tips: Forms a rosette in its first year. Seeds are small hooked 'burs' which cling to clothing and animals.

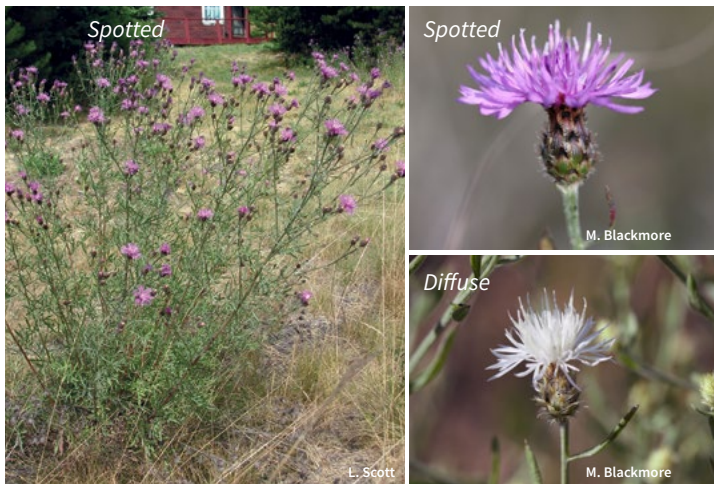
Distribution: Found growing in forested areas, grasslands, pastures, cropland, rangeland, disturbed and waste areas, and along roadsides.



KNAPWEED

Diffuse *Centaurea diffusa*

Spotted *Centaurea stoebe*



Taproot may be hand-pulled from moist soil. Remove as much of the root system as possible. **Report all sightings north of 100 Mile House and on Vancouver Island.**

Description: Heavily branched plants 1.0m to 1.5m in height. Found on dry roadsides, gravel pits, disturbed sites, and in fields.

Flowers: Small white, pink or purple flowers atop spiny bracts.

Leaves: Deeply lobed, hairy, grayish-green leaves. Form rosettes in their first year.

Stems: Single main-stem that divides into bushy, spreading branches on a mature plant.

Other ID Tips: Spotted knapweed flowers are usually pink to purple, and have black tipped bracts.

Distribution: Found growing in well drained soils, waste and disturbed areas, gravel pits, trails, pastures, gravel pits, grasslands, rangelands, and along roadsides and railways.



KNAPWEED

Meadow *Centaurea debeauxii*

Black *Centaurea nigra*; Brown *Centaurea jacea*



Taproot may be hand-pulled from moist soil. Remove as much of the root system as possible. Dispose of bagged flowering plants into garbage.

Description: Species similar, upright, branched, up to 1 m in height. Found on dry roadsides, disturbed sites and in fields.

Flowers: Large pink to purple-red flowers supported atop comb-like bracts ranging from light to dark brown.

Leaves: Lower leaves long-stalked and shallowly lobed, covered with long to cobwebby hairs. Form rosettes in their first year.

Stems: Single main-stem dividing into branches and somewhat hairy.

Other ID Tips: Leaves are undivided, unlike other knapweeds.

Distribution: Found growing in pastures, meadows, grasslands, riparian areas, forest edges, clearcuts, industrial sites, vacant lands and along roadsides and railways.



KNAPWEED, Russian *Rhaponticum repens*

Highly competitive plant. Incomplete pulling or cutting can stimulate remaining roots to re-sprout and worsen infestations. Continual, repeated cutting or pulling will deplete root reserves. Report all sightings.

Description: Upright plant up to 1.0m in height, often forming dense colonies.

Flowers: Single, pink to purple flowers are urn-shaped. Bracts are green at the base with a white, slightly hairy tip.

Leaves: Lower stem leaves are alternate, longer and deeply lobed. Upper leaves are toothed and decrease in size toward the top of the plant.

Stems: Upright, stiff, branched, and covered in soft grey hairs.

Other ID Tips: Roots are black, scaly and creeping.

Distribution: Found growing in pastures; grasslands; disturbed, waste, riparian, and cultivated areas; and along roadsides and railways.



KNOTWEED

Japanese, Giant, Bohemian *Reynoutria* spp.
Himalayan *Polygonum polystachyum*



A single plant can have roots extending 20m in all directions; as little as 0.6g of rhizome can produce a new plant in six days. Do not disturb patches and redistribute material during road or skid trail construction. **Report all sightings.**

Description: Large, woody, bamboo-like shrubs grow 1-5m in height. Found in moist to wet areas like roadside ditches and riparian areas.

Flowers: Small, white/green flowers grow in plume-like, branched clusters along the stem and leaf joints.

Leaves: Variable. Japanese: spade-shaped; Giant: larger, heart-shaped; and Himalayan: lance-shaped, pointy.

Stems: Reddish-brown, hollow stems form dense thickets.

Other ID Tips: Japanese leaves zig-zagged along stems. Bohemian is a hybrid of giant and Japanese knotweeds.

Distribution: Found growing in disturbed and waste areas, gardens, yards, riparian ecosystems, and along roadsides.



LEAFY SPURGE *Euphorbia esula*



WARNING Leaves and stems contain a toxic sap that can cause burns and blisters to skin.

Highly invasive plant. Pulling or cutting may worsen infestations. Very young plants and small patches may be removed manually with deep digging. Wear gloves as the milky sap is toxic. **Report all sightings.**

Description: Upright plant up to 1.0m tall, with creeping roots. Thrives in a variety of habitats.

Flowers: Greenish-yellow flower clusters on long stalks. Floral leaves are heart-shaped.

Leaves: Narrow, bluish-green leaves spirally arranged on the stem.

Stems: Smooth, hairless stems are branched near the top.

Other ID Tips: Exudes a milky juice when cut or broken. This juice is toxic to people and some animals.

Distribution: Found in disturbed soil, waste areas, abandoned cropland, pastures, rangelands, woodlands, and along roadsides.



MARSH PLUME THISTLE *Cirsium palustre*



NODDING THISTLE *Carduus nutans*



To kill plant, dig out or sever taproot at least 5cm below soil surface. Limited distribution - **Report all sightings.**

Description: Slender upright plant up to 3.0m in height. Prefers moist-wet soils, and grows on roadsides, in ditches, cutblocks and riparian areas.

Flowers: Purple flowers found at the tips of stems. Bracts at flower bases are sticky, and tipped with a prickle.

Leaves: Spiny leaves are hairy on undersides and have winged bases.

Stems: Usually unbranched, with spiny wings at leaf bases. Branching may occur at the cluster of flowers.

Other ID Tips: Forms a rosette in first year. Fibrous roots.

Distribution: Found growing in moist forests, riparian and logged areas, wetlands, pastures, and along roadsides.



Repeated hand-pulling or cutting prior to flowering will help reduce seed production. Expansion of nodding thistle populations in southern B.C. has been reduced through biological control agents. **Report all sightings north of Quesnel.**

Description: Solitary stem or several branched stems from a single base, up to 2.4m in height, with nodding flower heads. Found on dry roadsides and disturbed sites.

Flowers: Large (5cm), reddish purple flowers above spiny-tipped bracts, nodding when mature.

Leaves: Deeply lobed with spiny, edges, winged at stem. Overwinter as rosettes.

Stems: Smooth with no spines.

Other ID Tips: Similar to plumeless thistle but has no spines on stem.

Distribution: Found growing in waste and disturbed areas, pastures, meadows, rangeland, and along roadsides.



OXEYE DAISY *Leucanthemum vulgare*



Pull or cut prior to seed set. Pulling or cutting during or after flowering will disperse seeds. Plants will continue to flower and grow if soil is not shaken from roots.

Description: Upright plant growing up to 1.0m in height in dense clumps. Common along roadsides, in fields and in disturbed areas.

Flowers: Daisy-like flowers on the end of each stem branch.

Leaves: Alternate, and decreasing in size up the stem. Upper leaves are stalkless with wavy to toothed edges.

Stems: Smooth to sparsely hairy, and branched.

Other ID Tips: Similar to the ornamental shasta daisy and invasive scentless chamomile.

Distribution: Found growing in pastures; gardens; forage crops; waste, disturbed, and fallow areas; grasslands; rangeland; meadows; and along roadsides and railways.



PERENNIAL PEPPERWEED *Lepidium latifolium*



Highly competitive plant that is extremely limited in distribution in B.C. Report all sightings through Report-A-Weed or to an Invasive Plant Specialist. Incomplete pulling or cutting can stimulate remaining roots to re-sprout and worsen infestations.

Description: Creeping root system results in dense colonies of plants up to 1.0m in height (taller in wet areas). Occasionally found on roadsides and in ditches; thrives in moist habitats.

Flowers: Fragrant white flowers in rounded clusters on branch tips.

Leaves: Waxy, alternate leaves, with a white midvein. Lower leaves are stalked; upper leaves are virtually stalkless.

Stems: Stems are branched.

Other ID Tips: Seed pods are attached by long stalks.

Distribution: Found growing in riparian areas, wetlands, grasslands, pastures, and along roadsides



PLUMELESS THISTLE *Carduus acanthoides*



BC Ministry of Agriculture



BC Ministry of Agriculture

Hand-pull rosettes. Once stalk grows, hand-pulling prior to flowering or removal of flower heads will help reduce seed production. Has an enormous seed banking potential. Limited distribution in B.C. **Report all sightings.**

Description: Very spiny, many branched on upper portion, up to 1.5m in height. Found on dry fields, roadsides and disturbed sites.

Flowers: Purplish-pink flowers up to 2.5cm wide, singly or in clusters at ends of branches.

Leaves: Long, narrow, very spiny. Rosette leaves are saw-toothed to the midrib.

Stems: Very spiny.

Other ID Tips: More spiny than nodding thistle and flowers upright.

Distribution: Found growing in fields, pastures, disturbed areas, and along roadsides.



PUNCTURE VINE *Tribulus terrestris*



L. Scott



F. and K. Starr



L. Scott

After loosening soil, use thick gloves to grab plant at base of vines and pull out. Bag all plant parts and dropped seeds and dispose of in landfill. **Report all sightings.**

Description: Densely-matted, prostrate, trailing plant. Restricted to dry roadsides, fields and disturbed habitats in the Okanagan and Similkameen areas.

Flowers: Yellow, five-petaled single flowers on short stalks. Open only in the morning.

Leaves: Opposite, hairy leaves with four to eight oval leaflet pairs.

Stems: Trailing and up to 1.5m long, often branching along the ground.

Other ID Tips: Spines on seed pods can cause injury to the feet of people and animals, and can puncture bicycle tires.

Distribution: Found growing in fields, pastures, disturbed and waste areas, and along roadsides.



PURPLE LOOSESTRIFE *Lythrum salicaria*



Highly competitive. Purple loosestrife may be pulled from base of plant but it can re-grow from root fragments. Report all sightings.

Description: Competitive perennial plant, with showy purple flowers. Thrives in moist habitats, such as ditches, ponds, and wetlands.

Flowers: Spike of purple flowers found at the upper end of stems.

Leaves: Leaves are lance-shaped and can vary in arrangement from opposite to whorled.

Stems: Stiff smooth stems are square in cross-section.

Other ID Tips: Purple loosestrife is sometimes confused with native fireweed, but purple loosestrife does not produce windborne seeds and is generally found growing adjacent to water or in moist soil areas.

Distribution: Found growing in freshwater wetland habitats, gardens, and along roadsides in wet ditches.



RUSH SKELETONWEED *Chondrilla juncea*



Highly invasive plant with extensive deep root system. Incomplete pulling or cutting can stimulate remaining roots to re-sprout and worsen infestations. Continual, repeated cutting or pulling will eventually deplete root reserves. Report all sightings.

Description: Long-lived perennial up to 1.2m tall with skeleton-like appearance. Found on disturbed, dry sites.

Flowers: Small yellow flowers randomly scattered along branches.

Leaves: Inconspicuous, narrow stem leaves.

Stems: Wiry, highly branched stems with downward pointing hairs near the base.

Other ID Tips: Forms a dandelion-like rosette in the first year. Leaves exude a milky juice when cut or broken.

Distribution: Found growing in disturbed and waste areas, grasslands, pastures, open forests, rangeland, and along roadsides.



SCENTLESS CHAMOMILE

Tripleurospermum inodorum



Single plant can produce 1,000,000 seeds. To hand-pull, loosen the soil using a shovel, then pull from plant base.

Description: Small, bushy plant up to 1.0m in height.

Flowers: Daisy-like and scentless, up to 3cm in diameter.

Leaves: Feathery, and alternate.

Stems: Smooth, often reddish- purple, and highly branched near the top.

Other ID Tips: Fibrous taproot. Often found in wildflower seed mixes.

Distribution: Found growing in disturbed and waste areas, cultivated fields, pastures, perennial forage crops, and along roadsides.



SCOTCH BROOM *Cytisus scoparius*



Small plants should be gently pulled from moist soil. Ensure all roots are removed. Large plants may be cut off as close to the soil surface as possible, without causing soil disturbance.

Description: Taprooted evergreen shrub up to 3.0m in height. Common on roadsides, cutblocks and disturbed areas throughout southern and coastal BC.

Flowers: Bright yellow pea-like flowers, sometimes with red markings.

Leaves: Lower leaves are stalked and have three leaflets; upper leaves are simple and un-stalked.

Stems: Five-angled and ridged, woody, and brown to green.

Other ID Tips: Flat seed pods have fine hairs on edges.

Distribution: Found growing in disturbed, riparian, and waste areas; pastures; grasslands; open forest; and along roadsides and railways.



SCOTCH THISTLE *Onopordum acanthium*



An extremely large and distinctly grey coloured thistle. Deep roots of mature plants require digging to remove as much root as possible. Limited distribution outside the North Okanagan area. **Report all sightings.**

Description: Spiny thistle up to 3.0m in height. Found in disturbed areas, ditches and rangelands.

Flowers: Many single violet flowers on up to 5cm long branches. Bracts are spiny.

Leaves: Very hairy, large, lobed leaves with sharp yellow spikes.

Stems: Numerous branched stems with spiny, hairy wings running down the length.

Other ID Tips: Forms a rosette in the first year, and has a fleshy taproot.

Distribution: Found growing in waste and disturbed areas, pastures, fields, riparian areas, and along roadsides and field margins.



ST. JOHN'S-WORT *Hypericum perforatum*



Repeated hand-pulling or cutting prior to flowering will help reduce seed production and deplete root reserves. Biological control has been the primary treatment method for this species across southern B.C. for over twenty-five years.

Description: Branched, up to 1m in height, with sticky seeds. Found on dry and acidic rangeland, roadsides and disturbed sites.

Flowers: Bright yellow, 5-petaled, numerous.

Leaves: Opposite, oval, small, covered with transparent dots.

Stems: Smooth, upright, and branched.

Other ID Tips: A deep root system finds water when scarce and spreads underground to produce new shoots.

Distribution: Found growing in grasslands, pastures, forests, disturbed and waste areas, and along roadsides.



SULPHUR CINQUEFOIL *Potentilla recta*



Small patches may be manually removed using a shovel. First loosen soil, then carefully remove stolons, plants, and roots. Be sure to re-inspect. **Report all sightings.**

Description: Long-lived perennial, up to 80cm in height. Found in open forests, pastures, disturbed areas, and along roadsides.

Flowers: Stalked flowers are pale yellow with five petals, and found at the top of the stem.

Leaves: Long hairs cover the leaves, which are made up of five to seven toothed leaflets. Leaves appear yellowish-green, not grey, and are hairy on the underside.

Stems: Stems are hairy and have numerous leaves.

Other ID Tips: Can be confused with native graceful cinquefoil, whose leaves have a woolly, grey underside.

Distribution: Found growing in pastures, grasslands, rangeland, forest clearings, waste and disturbed areas, and along roadsides.



TANSY RAGWORT *Senecio jacobaea*



Seeds are viable for up to 20 years. Small plants can be easily hand-pulled. Use shovel to loosen soil for more complete root removal. Plants can regrow from severed roots and cut stems may still produce viable seed. **Report all sightings outside the Lower Mainland and south coast areas.**

Description: Ragged looking plant up to 1.0m in height. Found on roadsides, fields, disturbed and riparian areas.

Flowers: Yellow, daisy-like flowers are borne in clusters at the top of stems.

Leaves: Alternate leaves are deeply cut and almost ragged, and covered with web-like hairs.

Stems: Mature plants have branched stems (often purple).

Other ID Tips: In the first year it forms a rosette with 10-20 leaves. Crushed leaves have an unpleasant odour.

Distribution: Found growing in grasslands, cultivated land, waste and disturbed areas, pastures, rangeland, woodlands, and along roadsides.



TEASEL *Dipsacus fullonum*



Species is a significant threat in moist areas where it can form impenetrable stands. Dig out or sever taproot at least 5cm below soil surface or cut stalks before flowering occurs. **Report all sightings.**

Description: Upright taprooted plant up to 1.8m in height. Found in moist areas like ditches and pastures, but also found on drier sites like roadsides.

Flowers: Oval-shaped flower heads over two inches in length consisting of numerous tiny purple flowers. Long, spiny, upward pointing bracts enclose the flower.

Leaves: Stem-leaves opposite, lance-shaped, veiny, with prickles on the lower part of the central vein.

Stems: Large stems have vertical ribs with rows of downward pointing prickles.

Other ID Tips: Forms a rosette in its first year.

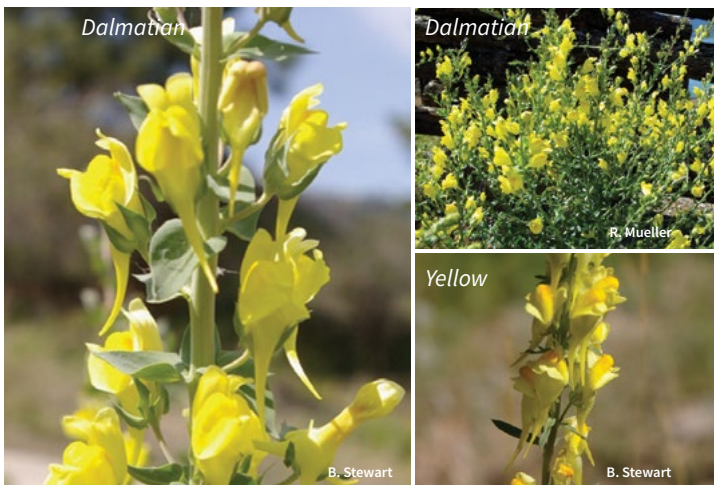
Distribution: Found growing in riparian, disturbed, and waste areas, meadows, grasslands, pastures, forest openings, and along roadsides.



TOADFLAX

Dalmatian *Linaria dalmatica*

Yellow *Linaria vulgaris*



Incomplete root removal/cutting can stimulate remaining roots to re-sprout and worsen infestations. A commitment to regular, repeated cutting/pulling is required for this control method.

Description: Pretty, waxy-leaved, yellow-flowered plants up to 1.2m tall. Commonly found on dry sites like gravel pits, road shoulders, and cut banks.

Flowers: Bright yellow snapdragon-like flowers with a long spur.

Leaves: Pale-green, waxy leaves are stalkless with a pointed tip.

Stems: Branched or unbranched.

Other ID Tips: Yellow toadflax has leaves pointed at both ends, and is shorter – up to 60cm in height.

Distribution: Found growing in waste and disturbed areas, cropland, pastures, grasslands, open forests, rangeland, and along roadsides and railways.



YELLOW FLAG IRIS *Iris pseudacorus*



R. Mueller

C. Hougen

C. Hougen

*Dig and pull as much of the rhizome system as possible and dispose of away from water bodies, preferably a landfill site. Re-visit site at least once per year for several years and repeat treatment. If digging is not possible, flowers, leaves and seed heads may be cut off and disposed of to reduce plant vigour and limit seed spread. Repeat cutting regularly. **Report all sightings.***

Description: Showy, upright plant up to 1.5m in height. Grows in wet areas like ditches and irrigation canals. Widely sold in nurseries.

Flower: Iris-like yellow flowers.

Leaves: Long, sword-like leaves with bases that fold and clasp the stem in a fan-like fashion.

Other ID Tips: Forms green pods with hard, dark brown, smooth seeds, which can float.

Distribution: Found growing in ditches, shallow ponds, wetlands, gardens, and along the margins of still and slow-moving water courses.



YELLOW STARHISTLE *Centaurea solstitialis*



U.S. Department of Agriculture

K. Weller

C. Roche

NOT PRESENT IN BC REPORT ALL SIGHTINGS IMMEDIATELY! Report through gov.bc.ca/invasive-species, Report-Invasives BC mobile app, or phone the ISCBC hotline

Description: Upright plant growing up to 1.5m in height. Can form dense stands. Found in rangelands, pastures, and disturbed areas.

Flowers: Yellow, single flowers with sharp spines radiating from bracts in a star-like formation.

Leaves: Upper leaves are sharply pointed.

Stems: Winged and covered with fine hairs.

Other ID Tips: Hairy cotton-ball seed head visible throughout winter. Deep taproot.

Distribution: Found growing in grasslands, rangelands, disturbed and waste areas, open forests, fields, pastures, and roadsides in Washington and Idaho.



PRIORITY INVASIVE INSECTS AND FUNGI IN BRITISH COLUMBIA

ASIAN LONG-HORNED BEETLE

Anoplophora glabripennis



K. Law, USDA



K. Law, USDA



K. Law, USDA

NOT PRESENT IN BC REPORT ALL SIGHTINGS IMMEDIATELY! Report through gov.bc.ca/invasive-species, Report-Invasives BC mobile app, or phone the ISCBC hotline

Description: Large invasive beetle that bores into many species of hardwoods including maple, birch, elm, ash, and poplar.

Symptoms: Wilted yellowing leaves, leaking sap; large round exit holes (1.5-2 cm) in bark from adults emerging.

Adult: Large, shiny, black beetles, prominent irregular white spots, 2-4 cm in length; white and black segmented antennae longer than body.

Larvae: Round, grub-like, creamy white.

Eggs: Laid singly under bark; resemble grains of rice.

Spread: Spread through firewood, wood products. **Don't Move Firewood!**

LIFECYCLE

FALL

Eggs are laid

WINTER

Larvae overwinter as pupae

SPRING

Adults emerge through large exit holes (1.5-2 cm) in bark

BALSAM WOOLLY ADELGID

Adelges piceae



Wynn Coastal Planning & Biology



Wynn Coastal Planning & Biology



Wynn Coastal Planning & Biology

Description: Tiny invasive aphid-like insect native to Europe that exclusively feeds on true fir species: Grand fir (*Abies grandis*), Subalpine fir (*Abies lasiocarpa*) and Pacific silver fir (*Abies amabilis*), infestations can kill tree after several years.

Symptoms: Trees will droop, crown turns red, needle yellowing; buds and branch nodes swollen.

Adult: Tiny, aphid-like, 1 mm across, grey; appear as white woolly masses on bark.

Larvae: Immature “crawlers” 1/3 size of adult with oval, amber coloured body.

Eggs: Woolly-looking masses, over 200 amber-coloured eggs laid under cottony tufts under branches, on trunk.

Spread: Insects are flightless but crawl away from egg mass; can be spread by humans on logs, nursery stock, firewood and potentially birds. **Don't move firewood!**

LIFECYCLE

LATE SPRING	EARLY SUMMER	SUMMER - EARLY FALL	FALL - LATE FALL
Adults and Eggs	Crawlers	Adults and Eggs	Crawlers

EMERALD ASH BORER

Agrilus planipennis



D. Miller, USDA Forest Service

NOT PRESENT IN BC REPORT ALL SIGHTINGS IMMEDIATELY! Report through gov.bc.ca/invasive-species, Report-Invasives BC mobile app, or phone the ISCBC hotline

Description: Small invasive beetle native to Asia that feeds on native and exotic species of ash (*Fraxinus* spp.); has killed millions of trees in North America.

Symptoms: Larvae feed on inner bark and sapwood, immature beetles feed on foliage. Trees exhibit crown die back, bark loss, yellowing/missing foliage.

Adults: Metallic blue-green narrow beetle, 8 – 14 mm long, hairless.

Larvae: 30 mm long, creamy white, flat and broad-shaped.

Eggs: Small, laid on bark, rarely seen.

Spread: Spread through firewood, wood products. **Don't move firewood!**

LIFECYCLE

SPRING - EARLY SUMMER	MAY - SEP.	SEP. - OCT.	OCT. - SPRING
Adults and Eggs	Crawlers	Adults and Eggs	Crawlers

JAPANESE BEETLE *Popillia japonica*



D. Holden, CFIA



J. Hahn, University of Minnesota



D. Cappaert

PRESENT IN METRO VANCOUVER AREA REPORT ALL SIGHTINGS IMMEDIATELY! Report through gov.bc.ca/invasive-species, Report-Invasives BC mobile app, or phone the ISCBC hotline

Description: An invasive beetle species that feeds on over 250 plant and tree species and turf.

Symptoms: Adults damage plants by skeletonizing leaves; larvae live underground, feed on roots of turf causing patches of dead grass.

Adults: Medium-sized metallic beetle with green head, brown wing covers, white tufts of hair around abdomen.

Larvae: "C-shaped", 25 mm long, creamy white, found in soil.

Eggs: Small, laid on bark, rarely seen.

Spread: Adults fly, hitchhike on plant material, soil, vehicles.

LIFECYCLE

JUN. - AUG.	JUN. - OCT.	SEP. - MAY	OCT. - SPRING
Emerge from soil as Adults, fly between June and August	When temperatures are above 21 degrees C. Females lay eggs in lawns	Overwinter as pupae in soil 4"-8" below surface.	Pupae in soil

SPONGY MOTH

Lymantria dispar asiatica

Lymantria dispar dispar



J. Ghent, Bugwood.org



N. Wong



Connecticut Agricultural Experiment Station, Bugwood.org

NOT ESTABLISHED IN BC REPORT ALL SIGHTINGS IMMEDIATELY! Report through gov.bc.ca/invasive-species, Report-Invasives BC mobile app, or phone the ISCBC hotline

Description: medium sized moth species native across Europe to Far East Asia that feeds on over 300 species of trees and crops.

Symptoms: Caterpillars can defoliate entire trees and shrubs by feeding in large numbers causing landscape level defoliation events.

Adults: Females larger; 5.0 cm wingspan, white wings with dark zigzag pattern, yellow-white hair on head and thorax. Males smaller; 2.5 cm wingspan, brown with feathery antennae. Short-lived for 1-2 weeks to mate, lay eggs. Both sexes with distinct chevron dot pattern on forewings.

Larvae: Caterpillars hairy, black and brownish, 4 mm long when hatched, grow up to 6 cm with 2 rows of blue and red spots running down back. Distinct false eye spots on head.

Eggs: Beige fuzzy masses 3-8 cm in diameter, attached to flat surfaces like tree trunks, buildings, and vehicles and may contain up to 1000 eggs.

Spread: Spread by humans when eggs laid on outdoor household goods, vehicles, and firewood are moved to new areas.

LIFECYCLE

JUL. - SEP	SEP. - APR.	APR. - EARLY JUL.
Adults lay eggs	Overwinter as eggs.	Hatch and pupate under tree bark

SEPTORIA CANKER *Sphaerulina musiva*



Description: An invasive fungal species that affects hybrid poplar. Native to eastern North America on native and hybrid poplar, but introduced into BC on hybrid *Populus* spp. used in agroforestry and for paper products (tissues etc).

Identification: Infected trees can display both leaf spots and cankers on stems and branches. Leaf spots are not a good diagnostic feature since many different types of spotting can occur on a leaf. Stem cankers of different shapes are more characteristic of the disease. Stem cankers can cause stem breakage and in some cases tree mortality.

Spread: Spores are released in the spring from infected leaves that overwinter on the ground. Spores spread by wind and rain to nearby trees and enter through stem wounds and other openings. Native poplars in BC (i.e., *P. trichocarpa*) are susceptible to the fungus.

LIFECYCLE

Infections occur during the spring. Reduce the spread by removing and destroying fallen leaves.

WHITE PINE BLISTER RUST *Cronartium ribicola*



Description: An alien invasive fungal disease actively occurring on forested lands in the Pacific North West. Impacts 5-needle pine species including Western white pine (*Pinus monticola*), Limber pine (*Pinus flexilis*) and Whitebark pine (*Pinus albicaulis*).

Identification: In late spring to early summer orange-coloured, powdery spores are produced in pustules which coalesce into cankers on tree stems and branches. Cankers are often diamond shaped, can girdle branches and stems causing dead bright red needles. Tree mortality often results when cankers encircle most of the affected stem.

Spread: The fungus completes a disease cycle on two different hosts. The primary host being Pines (*Pinus* spp.), and the secondary being Currants (*Ribes* spp.)

LIFECYCLE

LATE SUMMER - EARLY FALL

Spores are released from the secondary host and enter the pine needles of the primary host.

AFTER 1 YEAR

Orange-coloured spores in pustules appear on the tree: when spores are released they are carried by wind and rain to infect the secondary hosts (*Ribes* spp.)

Assistance with Invasive Species

Provincial Invasive Species Program

Invasive Species Specialists and program staff manage high risk invasive species on public land through analyzing the results of new reports surveys, inventories, and monitoring activities to determine priority areas and sites and implementing containment and control actions. Invasive species priorities are identified through risk analysis, including climate change modeling and local collaborative planning with First Nations and other land managers. Coordination of invasive species management activities is facilitated through regional district invasive species programs or regional invasive species organizations. Email Invasive.Plants@gov.bc.ca to connect with an Invasive Species Specialist.

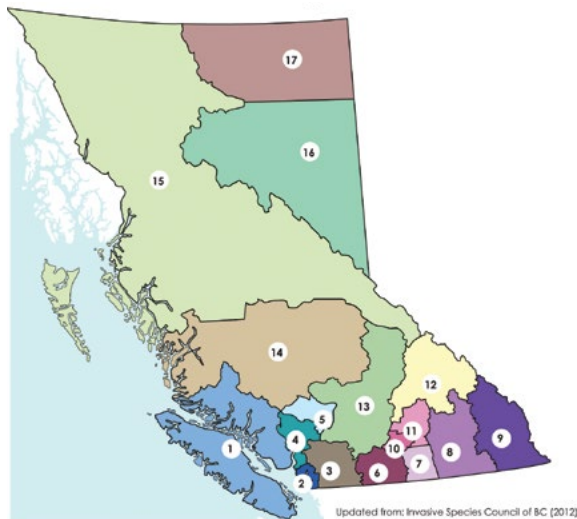
Regional Invasive Species Organizations in B.C.

Regional invasive species organizations are key partners in coordinating the management of invasive species in B.C. Contact your regional organization to find out more about problem species in your area, for assistance with species identification, and to coordinate management activities. The most current contact information can be found here: <https://bcinvasives.ca/invasive-species-contacts-in-british-columbia/>

DID YOU KNOW?

InvasivesBC database and mobile application is found at: <https://invasivesbc.gov.bc.ca/home/landing>. This system updates with every new entry uploaded and includes all known and reported invasive plant sites in B.C.

Regional Invasive Plant/Species Committees



1. **COASTAL INVASIVE SPECIES COMMITTEE**
www.coastalisc.com/
2. **INVASIVE SPECIES COUNCIL OF METRO VANCOUVER**
www.iscmv.ca
3. **FRASER VALLEY INVASIVE SPECIES SOCIETY**
www.fviss.ca/
4. **SEA TO SKY INVASIVE SPECIES COUNCIL**
www.ssisc.ca/
5. **LILLOOET REGIONAL INVASIVE SPECIES SOCIETY**
www.lriss.ca/
6. **OKANAGAN AND SIMILKAMEEN INVASIVE SPECIES SOCIETY**
www.oasiss.ca
7. **BOUNDARY INVASIVE SPECIES SOCIETY**
www.boundaryinvasives.com/

8. **CENTRAL KOOTENAY INVASIVE SPECIES SOCIETY**
www.ckiss.ca/
9. **EAST KOOTENAY INVASIVE SPECIES SOCIETY**
www.ekisc.com/
10. **REGIONAL DISTRICT OF NORTH OKANAGAN NOXIOUS WEEDS AND INVASIVE PLANTS**
www.rdno.ca/our-communities/noxious-weeds-invasive-plants
11. **REGIONAL DISTRICT OF CENTRAL OKANAGAN NOXIOUS WEEDS AND INVASIVE PLANTS**
www.rdco.com/en/your-government/invasive-weed-control-bylaw.aspx
12. **COLUMBIA-SHUSWAP INVASIVE SPECIES SOCIETY**
www.columbiashuswapinvasives.org/
13. **THOMPSON NICOLA REGIONAL DISTRICT INVASIVE PLANT MANAGEMENT**
www.tnrd.ca/services/invasive-plant-management/
14. **CARIBOO CHILCOTIN COAST INVASIVE PLANT COMMITTEE**
www.cccipc.ca/invasive-plants/
15. **NORTHWEST INVASIVE PLANT COUNCIL**
www.nwipc.org
16. **PEACE RIVER REGIONAL DISTRICT INVASIVE PLANT COMMITTEE**
www.prrd.bc.ca/committees/invasive-plant-committee/

For More Information

Provincial Invasive Plant Program

<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/management/plants>

Invasive Species Council of British Columbia

www.bcinvases.ca

InvasivesBC database and mobile application

<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/invasivesbc>

Forest and Range Practices Act Invasive Plants Regulation: 2023

http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/18_2004

Noxious Weeds under the *Weed Control Act* Regulation:

BC Weed Control Act

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/00_96487_01

BC Weed Control Act Regulation

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/10_66_85

Ministry of Forests Forest Pest Identification

<https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/forest-health/forest-pests/pest-identification>

BACKGROUND SOURCES

Cal-IPC. 2012. Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers (3rd ed.). Cal-IPC Publication 2012-03. California Invasive Plant Council, Berkeley, CA. www.cal-ipc.org (Accessed March 2013).

Centre for Invasive Species and Ecosystem Health. ND. Best Management Practices to Prevent the Introduction and Spread of Invasive Species. www.forestasyst.org/invasive_species.html (Accessed February, 2013).

Miller, V. and J. Kekula. 2008. *Forest and Range Practices Act: Invasive Plant Species Considerations*. B.C. Ministry of Forests and Range, unpublished report.

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Environment Canada (2012). Invasive Alien Species Partnership Program Report 2005-2010. https://publications.gc.ca/collections/collection_2012/ec/En11-12-2010-eng.pdf



Alex Fraser Research Forest

Deactivated Road Seeded with Native Groundcover Mix.

Glossary

- ALTERNATE:** arranged singly, one at a time; usually referring to leaves or branches.
- ANNUAL:** a plant that completes its lifecycle in one growing season.
- BASAL LEAVES:** leaves growing at the base of the stem.
- BIENNIAL:** a plant that lives for two years, usually flowering and producing seed in year two.
- BRACT:** a modified leaf, usually associated with a flower.
- BUR:** a rough, prickly husk around the seeds or fruit of some plants.
- CLASPING LEAF:** the base of the leaf surrounds the stem.
- COMPOUND LEAF:** a leaf that is divided into many smaller parts.
- FIBROUS ROOT:** root system with many fine parts.
- FLORAL LEAF:** a modified leaf that is part of a flower.
- LANCE-SHAPED:** much longer than wide; tapering towards the tip.
- LEAF JOINT:** a place where a leaf is attached (a node).
- LEAFLET:** a single segment of a compound leaf.
- LINEAR LEAVES:** long and narrow, with almost parallel sides.
- MIDVEIN:** the main vein of a leaf.
- NODE:** a place where a leaf or branch is attached (a joint).
- OPPOSITE:** arranged in pairs, like leaves on opposite sides of a branch.
- PERENNIAL:** a plant that lives for more than two years.
- PROSTRATE:** growing flat along the ground.
- RHIZOME:** an underground stem that can develop nodes or buds at the joints.
- ROSETTE:** a circular cluster of leaves found at the base of a stem.
- RUNNER:** a stem that spreads horizontally, often rooting at its joints.
- SEED POD:** the protective shell or case surrounding a seed.
- SPIKE:** a flower cluster in which each flower is not stalked.
- TAPROOT:** a main root, usually tapering and pointing down, and larger than the branching roots.
- TRAILING:** lying flat on the ground, but not rooting.
- VEGETATIVE REPRODUCTION:** reproduction without seeds or spores.
- WHORLED:** leaves, flowers or branches arranged around an axis in groups of three or more.

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