



J. Floyd; Bugwood.org

INVASIVE PLANT

Bittersweet nightshade

Solanum dulcamara

AUGUST 2024



BCINVASIVES.CA

ABOUT

Bittersweet nightshade (*Solanum dulcamara*), aka European bittersweet or climbing nightshade, is an invasive perennial plant native to Europe and Asia. It spreads easily through seeds, stem fragments, and root pieces, allowing it to invade new areas. The plant can grow as a vine up to 4 metres long when supported by trees or form dense ground-covering thickets.



All parts of the plant are toxic to people, pets, and livestock.



J. Samanek; Bugwood.org

DISTRIBUTION

Bittersweet nightshade is most prevalent in the southwestern regions of BC, especially in the Fraser Valley. It is less widespread in the south-central and southeastern regions of the province. In Canada, it is absent from Alberta, Manitoba, Labrador, and the territories, while in the USA, it is found in every state except for seven southern states.

LEGAL STATUS

Bittersweet nightshade is listed as exotic on the BC Red and Blue lists. It is considered an invasive plant of concern but is not regulated as noxious under provincial legislation.

IDENTIFICATION

Flowers: From mid-May to September, bittersweet nightshade produces small, star-shaped purple or blue flowers. Each flower measures between 1.5 and 4 centimetres long and grows in an umbrella-shaped cluster along the stems. The petals point backward and contain yellow anthers at their centres.



R. Routledge; Bugwood.org

Stems/Stalks: The plant grows as a slender perennial vine or semi-woody sprawling shrub. Its lower stems are woody, while the upper, herbaceous branches die back annually. The vine can grow from 0.1 to 4 metres long and originates from a rhizome.



L. Mehrhoff; Bugwood.org

Leaves: The leaves are broadly egg-shaped with a heart-shaped base, measuring between 2.5 and 8 centimetres long and 1.5 to 5 centimetres wide. They range from dark green to purple-tinged and usually have 1-2 small lobes near the base. Crushing the leaves or stems releases an unpleasant odour.



Fruits: The berries are globe to egg-shaped and can range from red to orange, or green depending on ripeness. Unripe and ripe berries can be found on the same plant simultaneously. They measure 8 to 11 millimetres in diameter and contain small, flattened, yellow seeds about 2 to 3 millimetres wide. Each berry holds approximately 30 seeds.

Similar Species: Bittersweet nightshade can be distinguished from other solanum species by its purple flowers and red berries. Similar species such as black nightshade (*Solanum nigrum*) or American black nightshade (*S. americanum*) have white or yellow flowers with green or black berries.

It may be confused with red elderberry (*Sambucus racemosa*) due to their similar red berry clusters. However, red elderberry can be distinguished by its white flowers and elongated leaves.

ECOLOGICAL CHARACTERISTICS

Habitat: Bittersweet nightshade typically prefers moist areas such as creeks, wetlands, and riparian zones but can also grow in gardens, parks, field headlands, and along roadsides. It can adapt to many conditions, from dry to flooded soil, and from full sun to shade. It thrives in moist to mesic (not too dry, not too wet) habitats in lowland and steppe zones.

Reproduction: Bittersweet nightshade reproduces through seeds, often spread by birds. Each berry contains about 30 seeds. It also spreads vegetatively through creeping stems that root at the nodes. Stem and root fragments can form new plants when cut and transported to new locations.

Dispersal: Bittersweet nightshade spreads primarily through its berries when animals, particularly birds, eat them and disperse the seeds to new areas. The plant also spreads through its stem and root pieces, which can take root and grow into new plants if relocated with soil or water.



IMPACTS

Economic: Nightshade plants can affect crop growth by competing for resources and damaging nearby crops. Some species are allelopathic, meaning they release chemicals that inhibit the germination and growth of nearby plants. Many nightshade species are poisonous or unpalatable to livestock, pets, and humans, leading to compromised crops when these plants are accidentally harvested together.

Removing bittersweet nightshade from gardens can be costly and time-consuming due to its ability to regenerate from stem and root fragments. Moreover, its tendency to spread and disrupt native plant communities can lead to further economic impacts.



Ecological: Bittersweet nightshade outcompetes native shrubs and trees like salmonberry, red-osier dogwood, alder, and willow. Its preference for riparian areas can disrupt small streams and rivers, potentially causing channel alteration, creating false gravel beds, and obstructing fish movement.

Social: Although rare, bittersweet nightshade can poison humans if leaves or berries are ingested. It contains solanine, a toxic compound found in other nightshade species, and dulcamarine, a toxin similar to that found in deadly nightshade.

INTEGRATED PEST MANAGEMENT

IPM is a decision-making process that involves identifying invasive plant populations, assessing their risks, and developing control strategies using multiple methods, site treatments, and ongoing monitoring.

Prevention:

- ▶ Prevent bittersweet nightshade from establishing by removing small infestations promptly before they spread.
- ▶ Due to the plant's ability to spread from root fragments, follow proper removal techniques to ensure all parts are removed.
- ▶ Dispose of plant material in the garbage rather than composting or leaving it on-site to prevent further spread.

Mechanical Control:

- ▶ Mechanical control methods can be effective for smaller infestations.
- ▶ Wear gloves to avoid contact with toxins when hand-pulling.

- ▶ Ensure all roots are removed to prevent regrowth. Pulling or digging after rain or in loose soils is most effective.
- ▶ Larger plants may require thorough digging due to their extensive root systems.
- ▶ Mowing is generally not recommended, but brush cutting can help access roots for manual removal.
- ▶ Alternatively, cutting the plants and covering them with heavy fabric or a tarp for at least two years can prevent regrowth, with repeated treatments as necessary.

Chemical Control: Before selecting a herbicide, it is essential to evaluate the site-specific characteristics and consider the overall goals and objectives for the area as these will guide the choice of herbicide and application strategy. Always carefully follow the instructions provided on herbicide labels, and herbicide application should be conducted by certified pesticide applicators.

- ▶ Chemical control is most effective for large infestations of bittersweet nightshade.
- ▶ Glyphosate herbicides can be applied in early summer, before flowering after plants have leafed out, or after berries have formed in the fall.
- ▶ Imazapyr products can be used in early to mid-summer.
- ▶ Both herbicides are non-selective and may harm nearby plants, so apply them carefully to target foliage only.
- ▶ Triclopyr is suitable in grassy areas where bittersweet nightshade is present, as it doesn't affect grasses.



On Crown land, pesticide application must follow a confirmed Pest Management Plan (*Integrated Pest Management Act*) and be supervised by a certified pesticide applicator. For more information, visit: <https://www2.gov.bc.ca/gov/content/environment/pesticides-pest-management>.

Biological Control: Biological control involves using an invasive plant's natural enemies—such as insects, parasites, or diseases—to reduce its population to a manageable level.

Currently, there are no known biological control methods for bittersweet nightshade.

DISPOSAL

Note: Disposal guidelines for invasive plants vary by region. Contact your local government for specific disposal information.

When disposing of bitterweet nightshade, collect plant crowns and root balls and discard them in the garbage or at a transfer station. Stems should be disposed of similarly to prevent rooting if left in moist soil. Clean all equipment before leaving the site to avoid spreading plant material and contacting toxins. Follow-up visits may be needed to ensure effective management. Replanting with native species can help restore biodiversity.



M. E. Harte; Bugwood.org

REPORT

Report invasive species by using the mobile Report-Invasives-BC app for Apple and Android platforms, available for download at <https://bcinvasives.ca/take-action/report/>.

You can also report any invasive species through the ISCBC website, through info@bcinvasives.ca or at 1-888-933-3722.

REFERENCES/LINKS

<https://kingcounty.gov/en/legacy/services/environment/animals-and-plants/noxious-weeds/weed-identification/bittersweet-nightshade>

<https://your.kingcounty.gov/dnrp/library/water-and-land/weeds/Brochures/Bittersweet-Nightshade-factsheet.pdf>

<https://your.kingcounty.gov/dnrp/library/water-and-land/weeds/BMPs/bittersweet-nightshade-control.pdf>

<https://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Solanum%20dulcamara&noTransfer=0>

<https://www.fs.usda.gov/database/feis/plants/shrub/soldul/all.html>

https://extension.usu.edu/planthealth/ipm/ornamental-pest-guide/weeds/w_bittersweet-nightshade

https://www.tnrd.ca/invasive_plant/bittersweet-nightshade/

[Estimating Yield Losses of Tomatoes \(*Lycopersicon esculentum*\) Caused by Nightshade \(*Solanum* spp.\) Interference | Weed Science | Cambridge Core](#)

[Biology, distribution and management of the globally invasive weed *Solanum elaeagnifolium* Cav \(silverleaf nightshade\): A global review of current and future management challenges - Roberts - 2022 - Weed Research - Wiley Online Library](#)

BCINVASIVES.CA
info@bcinvasives.ca
1-888-933-3722



**Invasive Species
Council of BC**

ADDITIONAL CONTACT INFO