

## Purple Loosestrife (*Lythrum salicaria*)

**Designation: Regional Category 3**

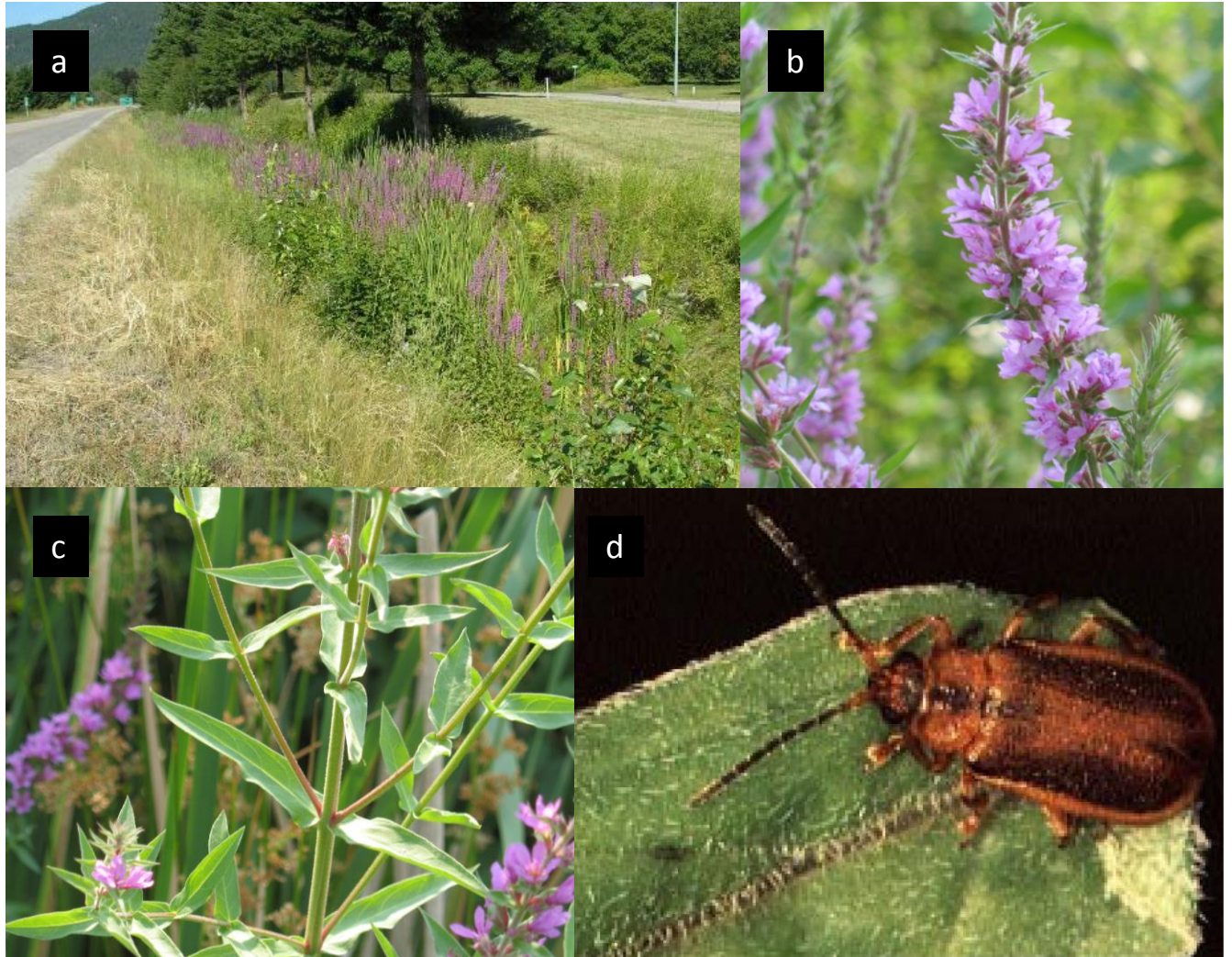


Figure 1: a) *L. Salicaria* is commonly found along roads, b) Flowers, c) Stalk, d) *Galerucella calmariensis* is a biocontrol agent used to control infestations. Photo Credit: a, b, c) Terry Anderson d) BC Gov.

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**Overview:** Purple loosestrife is an aggressive, herbaceous semi-aquatic perennial plant native to Europe. Originally introduced to North America in the 1800's as an ornamental, purple loosestrife has now naturalized and spread across Canada and the northern US. This invasive plant is found in shallow wetlands where it aggressively degrades and crowds out the natural vegetation required by wildlife. It is found in low populations in the Central Kootenay's.<sup>1</sup>

**Habitat:** Lake and river shores, roadside ditches, wetlands, freshwater tidal flats, and riparian meadows are the predominant areas where purple loosestrife will invade and establish. In some locations purple loosestrife has also begun invading drier sites such as pastures and cropland.

**Reproduction:** Reproduction is both by seed and root fragments. Seeds are small and are readily dispersed by moving water, wind, waterfowl, other wildlife and humans. Seeds remain dormant over winter and germinate the following spring or early summer. Seeds may lay dormant for many years before sprouting. Purple loosestrife can also reproduce from root fragments or pieces that may sprout new plants.

**Dispersal:** Seeds are small and are readily dispersed by moving water, wind, waterfowl, other wildlife and humans. Seedlings quickly develop a strong taproot from which new shoots arise annually. Stems increase in number each year-mature plants can have 30 to 50 stems per rootstock. A single plant can produce more than a million seeds each year

**Regional Distribution:** Limited distribution. Currently found near the 6 Mile area on the north shore of Nelson along Kootenay Lake and river to the Kootenay Canal area near Shoreacres. Isolated patches in Fauquier, Trail, Meldeanna pond, Wyndel, Ainsworth and Balfour. Report isolated and remote sites.

**Provincial Distribution:** Common in southwest B.C., particularly on Vancouver Island and the lower Fraser Valley and is found frequently in the Okanagan. Smaller infestations are known in the Quesnel area.

### **Identification**<sup>2, 3,4</sup>

**Flowers:** Grow on a flowering stalk, are reddish-purple in colour and have 5-7 petals per individual flower.

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<sup>1</sup> <http://www.agf.gov.bc.ca/cropprot/ploosestrife.htm>

<sup>2</sup> <http://www.agf.gov.bc.ca/cropprot/ploosestrife.htm>

<sup>3</sup> Biodiversity and Conservation 10: 1787-1807, 2001. Impact and Management of purple loosestrife (*Lythrum salicaria*) in North America.

<sup>4</sup> [www.purpleloosestrife.org](http://www.purpleloosestrife.org)

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Stems: Are woody and have four to six sides, and grow up to 1-1.5 m tall. Mature plant stems can reach 3 m in height.

Leaves: Are stalk-less and opposite-may be whorled at the base of the plant-lance shaped and are 3-10 cm long. Leaves are sometimes covered in fine hairs.

Seeds: Each plant is capable of producing up to 2.5 million seeds. Seeds can remain viable for 2-3 years when submerged.

#### Similar Native Species

Fireweed (*Epilobium angustifolium*)

Swamp loosestrife (*Decodon verticillatus*)

Blue vervain (*Verbena hastata*)

Dotted blazing star (*Liatris punctata*)

Winged loosestrife (*Lythrum alatum*)

Elephant's Head Lousewort (*Pedicularis groenlandica*)

#### Impacts

Ecological: Infestations quickly take over wetlands, excluding native plant species. In Manitoba, infestations increased 13-fold between 1991 and 2001, with over 4000 ha infested in the central part of the province.

Consequently, wildlife populations decrease, particularly those species that are habitat specialists, such as the marsh wren, that prefers sturdy nesting sites and are unable to utilize purple loosestrife for their nests. Water-loving mammals, such as muskrat and beaver, prefer cattail marshes over dense monotypic purple loosestrife infestations.

This plant has multiple impacts on ecosystem function, including changes to the chemical properties of the wetland. The leaves of purple loosestrife rapidly shed in the fall and the nutrients from decomposition are quickly flushed from wetlands, altering the food web structure, and affecting many species. The chemicals released through the decomposition of purple loosestrife can slow the development of frog tadpoles, decreasing the winter survival rate of this species.<sup>5</sup>

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<sup>5</sup> Biodiversity and Conservation 10: 1787-1807, 2001. Impact and Management of purple loosestrife (*Lythrum salicaria*) in North America

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## **Integrated Pest Management (IPM)**<sup>6,7</sup>

IPM is a decision making process that begins with the identification and inventory of invasive plant populations, assessment of the risks that they pose, and development of well-informed management options from monitoring to site treatment.

### **Prevention and Early Detection:**

- Select a non-invasive alternative, such as cardinal flower (*Lobelia cardinalis*) instead of purple loosestrife for your restoration project or water garden. Additional options can be found by downloading the Invasive Species Council of BC's *2011 Grow Me Instead* booklet from: [www.bcinvasives.ca/resources/outreach-materials](http://www.bcinvasives.ca/resources/outreach-materials).
- Avoid accidentally introducing non-native plants to surrounding water bodies by installing water gardens a safe distance away. Ensure water gardens are not allowed to overflow to wetlands, streams or rivers.
- Properly dispose of garden and yard waste by double bagging and disposing of it at your local landfill.
- Prevent plants from spreading from existing populations by washing vehicles, boots and animals that have been in infested areas.
- Report plants infestations found in remote locations to 1-888-WEEDSBC or 250.352.1160.
- Non-native garden plants should never be dumped into natural areas, but should be double bagged and disposed of at a local landfill.
- Prevent plants from spreading from existing populations by washing vehicles, boots and animals that have been in infested areas.

**Mechanical Control:** The best time to remove purple loosestrife should be in late June, July and early August, when it is in flower. Plants are easily recognized, but have not yet gone to seed. Once flower petals start to drop from the bottom of the spike, the plant begins to produce seed. Mechanical control activities can continue during this time, but require greater care so seeds are not shaken from the plant. At sites where plants have gone to seed, remove all of the flowering spikes first by bending them over a plastic bag and cutting them off into the bag. Further cutting of stems or pulling can now take place without fear of spreading the tiny seeds.

Make sure the entire root mass, and all pieces are removed. Place material in a carton where it can dry out completely before being burned or disposed of at a landfill.

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<sup>6</sup> [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96483\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96483_01)

<sup>7</sup> Invasive Species Council of BC (ISCBC), 2012, [www.bcinvasives.ca](http://www.bcinvasives.ca)

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Purple loosestrife can easily re-establish from small pieces of root, stalk or seeds. Re-inspect site frequently.

Keep site disturbance to a minimum. Wetlands provide habitat for many native song birds, waterfowl, mammals, amphibians, and fish which depend on native wetland vegetation. Wetlands are also home to many rare and delicate plants. Take care not to trample or damage native vegetation when controlling purple loosestrife.<sup>8</sup>

Chemical Control: Visit the Integrated Pest Management Program website at [www.env.gov.bc.ca/epd/ipmp/](http://www.env.gov.bc.ca/epd/ipmp/) prior to completing any chemical treatments.

Biological Control: The biological control agent, *Galerucella californiensis* is used to control large infestations. Contact the Ministry of Forests, Lands and Natural Resources for more information at, <http://www.for.gov.bc.ca/hra/Plants/biocontrol/index.htm>.

### **Restoration Substitutes**

- Hardhack (*Spirea douglasii*)
- Tall delphinium (*Delphinium elatum*)
- Blazing Star, Gay Feather (*Liatris spp.*)
- False Spirea (*Astilbe arendsii*)
- Foxglove (*Digitalis purpurea*)
- Lupine (*Lupinus*)
- Lobelia (*Lobelia cardinalis*)
- Obedient Plant (*Physostegia virginiana*)
- Salvia (*Salvia superba*)
- Siberian Iris (*Iris*)
- Spike Speedwell (*Veronica spicata*)

### **Legislation and Regulations**

There is a growing network of partnerships and collaborations among all levels of government, industry, regional invasive plant committees, and concerned individuals to address unwanted aquatic invasive plants.<sup>9</sup> In addition, there is numerous legislation and regulations that pertain to aquatic invasive plants.

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<sup>8</sup> Minnesota Sea Grant: [http://www.seagrant.umn.edu/ais/purpleloosestrife\\_info](http://www.seagrant.umn.edu/ais/purpleloosestrife_info)

<sup>9</sup> Invasive Species Council of BC (ISCBC), 2012

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Federal: The *Fisheries Act*<sup>10</sup> specifies that it is an offence to harmfully alter, disrupt, or destroy fish habitat, including streamside vegetation. It is also an offence to move or introduce aquatic organisms (including plants) to new habitats. The purpose of the *Fisheries Act* is to conserve and protect Canada's fisheries resources, including fish habitat. It applies to all Canadian fisheries waters, including ditches, channelized streams, creeks, rivers, marshes, lakes, estuaries, coastal waters and marine offshore areas. It also applies to seasonally wetted fish habitat such as shorelines, stream banks, floodplains and intermittent tributaries and privately owned land. It is an offence to damage fish habitat or put harmful substances such as pesticides into water frequented by fish, including includes pesticide drift. Fisheries and Oceans Canada (DFO) and Environment Canada administer this legislation.

The *Migratory Birds Convention Act*<sup>11</sup> prohibits the deposit of any substance harmful to migratory birds to any area frequented by migratory birds. This includes pesticides deposited on water and land. The Canadian Wildlife Service of Environment Canada administers this legislation.

Provincial: In BC, invasive plant management on all lands (Crown and non-Crown) is regulated by the BC *Weed Control Act*<sup>12</sup>, and the management of specific Crown lands is regulated by the *Forest and Range Practices Act*<sup>13</sup>, the *Community Charter*<sup>14</sup>, and the *Integrated Pest Management Act*<sup>15</sup>.

In addition, in BC the ownership of water is vested in the Crown as stated in the *Water Act*<sup>16</sup>, the primary provincial statute regulating water resources.

Section 9 of the *Water Act* requires that a person may only make "changes in and about a stream" under an Approval; in accordance with Part 7 of the Water Regulation, including Notification where required; or under a Water Licence or Order. Notifications are typically used for works that do not involve any diversion of water, may be completed within a short period of time and will have minimal impact on the environment or third parties. Notifications are the responsibility of the Environmental Stewardship Division of the Ministry of Forests, Lands and Natural Resource Operations. Contact Front Counter BC for more information at [www.frontcounterbc.gov.bc.ca/contact/](http://www.frontcounterbc.gov.bc.ca/contact/).

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<sup>10</sup> <http://laws.justice.gc.ca/en/F-14/>

<sup>11</sup> <http://laws-lois.justice.gc.ca/eng/acts/M-7.01/>

<sup>12</sup> <http://www.agf.gov.bc.ca/cropprot/noxious.htm>

<sup>13</sup> <http://www.for.gov.bc.ca/code/legislation.htm>

<sup>14</sup> [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/03026\\_00](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/03026_00)

<sup>15</sup> [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_03058\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_03058_01)

<sup>16</sup> [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96483\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96483_01)

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## Useful Links

- Alberta Invasive Plant Council: [www.invasiveplants.ab.ca](http://www.invasiveplants.ab.ca)
- Central Kootenay Invasive Plant Committee: [www.ckipc.ca](http://www.ckipc.ca)
- E-Flora BC, Electronic Atlas of the Plants of BC:  
[www.eflora.bc.ca](http://www.eflora.bc.ca)
- Invasive Species Council of BC: [www.bcinvasives.ca](http://www.bcinvasives.ca)
- Ministry of Forests and Range Invasive Alien Plant Program:  
[www.for.gov.bc.ca/hra/plants/index.htm](http://www.for.gov.bc.ca/hra/plants/index.htm)
- Ministry of Forests and Range Invasive Alien Plant Program:  
[www.env.gov.bc.ca/epd/ipmp/index.htm](http://www.env.gov.bc.ca/epd/ipmp/index.htm)
- Ministry of Agriculture: [www.agf.gov.bc.ca/cropprot/weedguid/weedguid.htm](http://www.agf.gov.bc.ca/cropprot/weedguid/weedguid.htm)
- Society for Ecological Restoration BC Chapter: [www.serbc.ca](http://www.serbc.ca)
- Tipi Mountain Native Plants: [www.tipimountain.com](http://www.tipimountain.com)
- Purple Loosestrife Manitoba: [www.purpleloosestrife.org](http://www.purpleloosestrife.org)
- Weeds BC: [www.weedsbc.ca](http://www.weedsbc.ca)

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