Invasive Plant Management Legislation

Five provincial Acts and seven federal Acts and Regulations address invasive plant management in British Columbia. Provincially, the *Weed Control Act* and the *Forest and Range Practices Act* directly address invasive plant management on Crown land. The *Forest and Range Practices Act* states: "A person carrying out a forest practice or a range practice must carry out measures that are

a) specified in the applicable operational plan, or
b) authorized by the minister

to prevent the introduction or spread of prescribed species of invasive plants." The Ministry of Forests and Range reviews these operational plans and ensures that invasive plant concerns are adequately addressed by the plan holder before plan approval.

Program Challenges

Three main challenges face ministry staff involved in invasive plant management. First, the ecological impacts of the mountain pine beetle epidemic, extensive wildfires and resultant harvesting activities are creating expansive opportunities for invasive plant species to potentially establish and flourish. An analysis of the threats to these areas is used to develop and implement an invasive plant strategy to minimize long-term impacts on habitat and forage. Increased invasive plant inventory, monitoring, and treatments are necessary on these salvage-harvested areas.

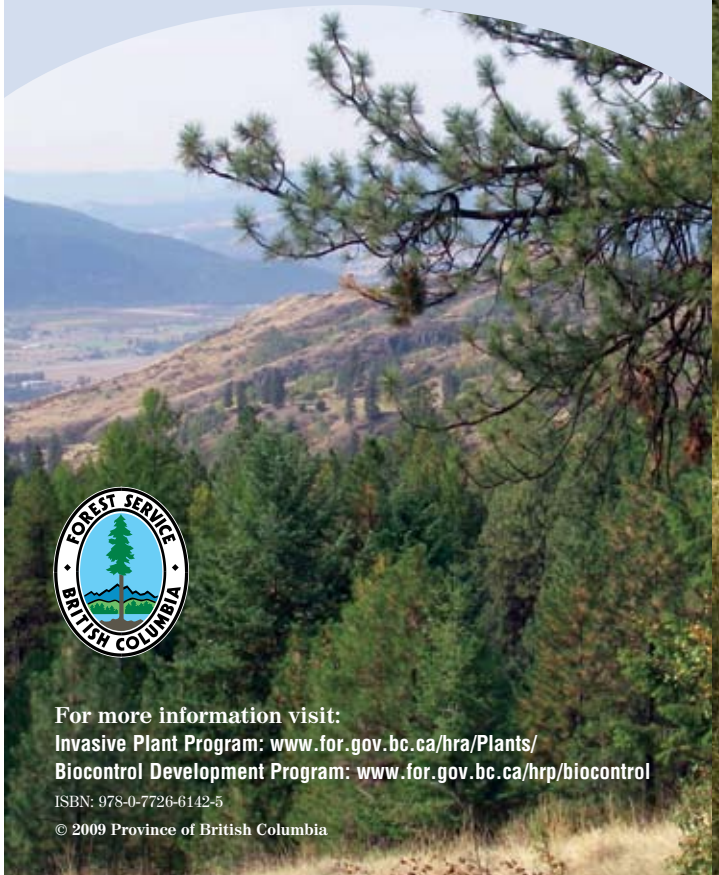
Second, the rapid expansion of hawkweed species across the province is significantly reducing forage availability. Some community pastures in central BC have seen reduced grazing opportunities by as much as an estimated 60 percent since the recent introduction and rapid spread of hawkweed species. The Ministry of Forests and Range is funding research for potential biocontrol agents on hawkweeds.

And last, the effects of climate change are a concern relative to the expansion of both established invasive plant species and the influx of new species moving northward into British Columbia and to higher elevations. Predictive modeling, enhanced early detection and rapid response, and monitoring activities are necessary to minimize future impacts and costs for control should new species establish and expand unabated. The Future Forest Ecosystems Initiative includes investigations of how management for invasive species can be adapted to changes in climate and associated ecosystem changes.

Collaborative Efforts and Partnerships

The Ministry of Forests and Range works co-operatively with regional weed committees; local, provincial, and federal government and non-government agencies; First Nations; and the concerned public. Ministry staff contribute their technical knowledge and experience to collaborative efforts and extension activities, and to the development of invasive plant management standards, delivery models, and projects. The ministry's further collaboration with the Inter-Ministry Invasive Plant Working Group, the Invasive Plant Council of B.C., and research consortia involves a wide range of contributions, including technical expertise, committee participation, and information-sharing on research findings and other news relating to invasive plants and their management.

Active communication and coordination of activities helps to improve invasive plant treatment effectiveness and control actions performed by all land managers. The ministry supports a cooperative, collaborative approach for effective invasive plant management in British Columbia.



For more information visit:
Invasive Plant Program: www.for.gov.bc.ca/hra/Plants/
Biocontrol Development Program: www.for.gov.bc.ca/hrp/biocontrol

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Forest and Range Health:

INVASIVE PLANT STRATEGY

BRITISH COLUMBIA
The Best Place on Earth

Ministry of Forests and Range

2009/10 – 2011/12

Purple Loosestrife
replaces riparian species, degrades shoreline habitat, and displaces nesting birds

Spotted Knapweed
chokes out native vegetation, reducing forage available for livestock and wildlife by up to 90 percent.

Giant hogweed
stems exude sap that can cause severe skin burns, blistering, and permanent scarring

Knotweed
infests riverbanks, increasing erosion and sedimentation of spawning beds, threatening salmon habitat

What are Invasive Plants?

Invasive plants are plants that are non-native or alien to the ecosystem under consideration. Their introduction causes, or is likely to cause, economic or environmental damage, or harm to human health. In B.C., the term invasive plant is synonymous with *invasive alien plant*.

Why are they a Problem?

Invasive plants threaten the natural environment and are recognized globally as the second greatest threat to biodiversity. Free from the plant pests that keep them in check in their native ranges, invasive plants reproduce rapidly and spread aggressively, dominating natural areas and altering biological communities.

What are their Impacts?

Invasive plant infestations can:

- Disrupt natural ecosystem processes;
- Alter soil chemistry, preventing the regrowth of native plants and economic crops;
- Affect wildlife habitat and reduce forage availability;
- Increase soil erosion;
- Poison livestock and wildlife;
- Increase the risk of wildfires;
- Interfere with forest regeneration; and
- Cause allergic reactions and severe skin abrasions and burns.

Invasive plants also pose significant economic impacts. Reductions in forage production, private property values, public land amenities (such as recreation potential and visual quality), and other land values create economic costs and lost opportunities to the land owner and all of society.

How Does the Ministry Manage Invasive Plants?

The Ministry of Forests and Range is responsible for addressing legislated invasive plants, noxious weeds, and other species of concern on Crown land. The ministry has delivered on-the-ground invasive plant management for over 40 years, often in partnership with other agencies or groups, and has identified specific invasive plant performance measures within its Service Plan.

The ministry addresses invasive plant management through operational inventory, survey, treatment, and monitoring activities, and the development of new biological control agents for effective long-term control and rehabilitation of heavily infested areas. Ministry staff support collaborative research with academia, research scientists, and partners, and work to increase public awareness about invasive plants and the ministry's Invasive Plant Program.

The provincial government's three strategic goals for addressing invasive plants are:

1. Prevent the establishment of new invasive plant infestations in British Columbia;
2. Reduce the socio-economic and environmental impacts of existing invasive plants in B.C.; and
3. Provide a framework and capacity for the ongoing management of invasive plants.

The goal of the Ministry of Forest and Range Invasive Plant Program is to prevent new, and reduce existing, invasive plant impacts on forest and range resources to levels that are environmentally and economically acceptable. The program's objectives are to:

- Prevent the establishment of new invasive plant species through effective early detection and rapid response actions;
- Promote implementation of preventative measures with stakeholders and clients;
- Complete and regularly update inventories of legislated and other invasive plants of interest;
- Reduce the spread and decrease the density of invasive plant infestations through a variety of methods, including manual and mechanical measures, chemical treatments, and biological control;
- Restore impacted ecosystems by supporting improved grazing and forest management practices, using available biological control measures and implementing other cost-effective activities;
- Participate in international consortia for research and screening of potential biocontrol agents to control priority invasive plant species in B.C.;
- Develop biocontrol agents that have been approved for importation and release in B.C. into operation-ready agents through a process of propagation, limited release, and documentation;
- Monitor and evaluate the value and effectiveness of biocontrol agents released in B.C. to control invasive plants;
- Monitor and evaluate ministry invasive plant management activities and ecosystem response to ensure overall program effectiveness, and maintain or improve the efficacy of future treatments;
- Support, maintain, and enhance the Invasive Alien Plant Program Application; and
- Coordinate planning and management activities with other agencies, stakeholders, private landholders, and First Nations through active participation in local invasive plant (weed) committees, or directly as required.

Priorities for the development of biocontrol agents are based on factors such as the invasiveness of the target plant and the resource values it affects. Once a new biocontrol agent is approved for release in British Columbia, staff oversee the controlled and thorough examination of the agent's life cycle in the province, document best collection and handling methods, determine the agent's suitability for habitats in B.C., and monitor survival and spread. This information is communicated to other agencies and stakeholders, and the new biocontrol agent is applied as an operational treatment tool.

Canada Thistle
infestations crowd forage grasses in pastures and rangelands, reducing yields and productivity

Common Tansy
displaces native vegetation and is toxic to livestock and humans

Hoary Alyssum
is toxic to horses and can cause fever, limb edema and laminitis

Dalmation Toadflax
is toxic to animals and competes with native grasses and wildflowers, reducing available forage for livestock and wildlife

British Columbia's threatened habitats

Hound's Tongue
contains toxic alkaloids that can cause liver damage in livestock

Gorse
forms dense, thorny, impenetrable patches that displace native plants and create fire hazards

Orange Hawkweed
reproduces rapidly, forming dense mats that crowd out native species

Yellow Flag Iris
replaces riparian species, degrades shoreline habitat, and displaces nesting birds

Data Collection in the field

Data Entry into IAPP

IAPP layers

Data Collection in the field

Data entry into IAPP

Nightly upload of IAPP data and conversion into spatial layers

IAPP data loaded into the provincial Land and Resource Data Warehouse

View Layers and Data in Map Display

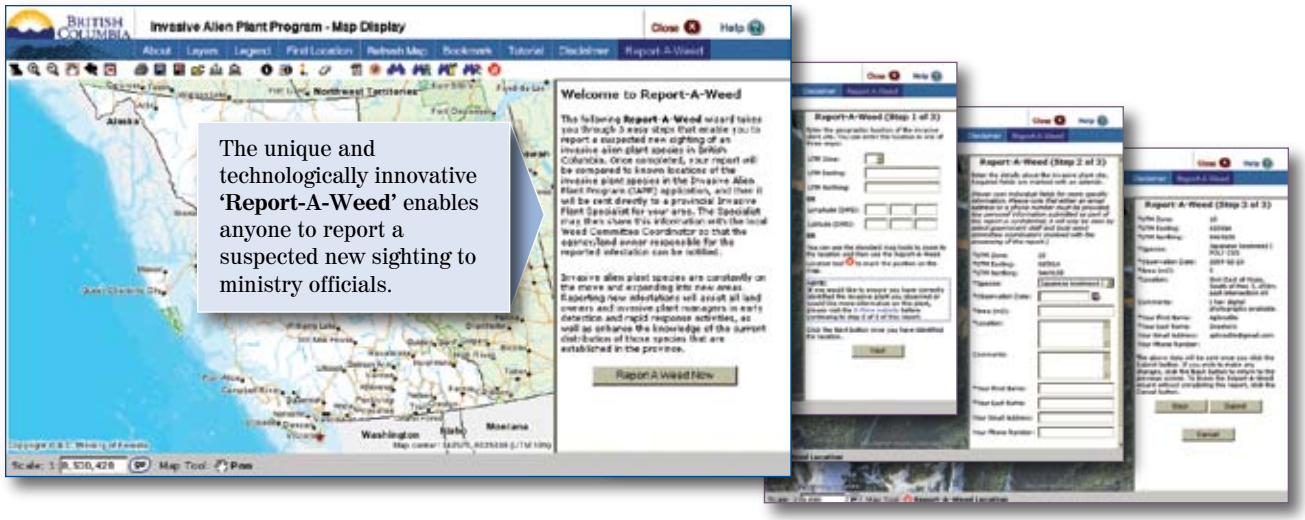
Invasive Alien Plant Program Application

The Invasive Alien Plant Program (IAPP) application is a provincial web-based database and mapping tool developed to:

- coordinate and share information generated by various agencies and non-government organizations involved in invasive plant management; and
- provide inventory information for ministry clients to address legislated requirements under the *Forest and Range Practices Act*.

Over 45 organizations—including weed committees, the Invasive Plant Council of BC, government agencies, and non-government organizations—rely on the Invasive Alien Plant Program Application. Since its release in 2005, this tool has helped to improve planning and delivery of invasive plant control activities in BC.

The interactive Map Display component depicts the location of invasive plant surveys, treatments and monitoring activities, and includes five easy-to-use tools to query data in IAPP which display in various highlight colours.



The unique and technologically innovative **'Report-A-Weed'** enables anyone to report a suspected new sighting to ministry officials.

Agapeta zoegana, the root-feeding moth for biocontrol of Spotted and Diffuse Knapweed

What is Biocontrol?

Biological control, or biocontrol, is the use of an invasive plant's natural predators from its country of origin—chiefly insects, parasites, and pathogens—as specific agents to reduce the plant's incidence and cover to an ecological and economic equilibrium. These biocontrol agents normally fluctuate with the targeted invasive plant in a natural predator–prey relationship. Biocontrol is considered successful when the invasive plant species drops below a tolerable threshold. The desired outcome is that invasive plant species no longer significantly impact native species or ecosystem functions.

Larinus planus, the seedhead feeding agent for biocontrol of Canada Thistle