

Forestry Operations

What Can You Do?

Invasive plants are negatively impacting forestry operations across British Columbia. Forestry professionals, including planners, researchers, operational crews and others have the ability to mitigate these negative impacts by implementing a combination of prevention and management practices.

This document provides a summary of forestry best management practices for invasive plants, which licensees are encouraged to use when developing Standard Operating Procedures under their Forest Stewardship Plans. Implementation of these recommendations will benefit from a cooperative approach that involves the support of Regional Invasive Plant and Species Organizations and additional expertise to provide education, training, technical advice, and provincial and regional coordination.

The term invasive plant, as used hereafter, includes provincially listed invasive plants and noxious weeds, as well as other alien plant species with the potential to pose undesirable impacts on humans, animals or ecosystems.

Ecological Impacts of Invasive Plants on Forestry

Invasive plants displace desirable vegetation through competition and aggressive reproduction. Lacking natural pathogens or predators, invasive plants can spread rapidly through vegetative growth and/or production of vast numbers of long-lived seeds. Invasive plants can negatively affect soil productivity, water quality and aquatic habitats, forest structure, biodiversity, seedling regeneration, range resources, wildlife habitat, species at risk, wildfire dynamics, culturally important plants, human health, public infrastructure, recreation, and landscape aesthetics.



Management Strategies

Management strategies will vary by invasive plant species and by region of the province. Refer to the accompanying species-specific factsheets for detailed information on management of specific invasive plant species.

Three elements common to all management strategies include:

- » **Prevention** measures that encompass development planning, silviculture, and all operations.
- » Establishment of coordinated early **detection** and **reporting** systems.
- » Application of Integrated Pest Management (**IPM**) principles

Objectives of this Document:

- » Manage and mitigate the impacts of invasive plants by providing roadside maintenance contractors, land managers, and others with information and resources to prevent, detect, and report invasive plants.
- » Develop a coordinated approach to invasive plant management for all maintenance contractors, land managers, and others.
- » Manage and mitigate the impacts of invasive plants by providing forestry and resource management professionals with information and resources to prevent, detect, and report invasive plants.
- » Develop a coordinated approach to invasive plant management for all forest and resource managers.
- » Assist in compliance with the Forest and Range Practices Act and the Weed Control Act.

Prevention

The most cost-effective management option for invasive plants is prevention. Depending on the current distribution of the species, this includes preventing the initial introduction to an area, and subsequent introductions (spread). Prevention requires that, at a minimum:

- » A coordinated detection and reporting system is used; and
- » Specific practices, such as those outlined in this document, are in place across all forestry operations to prevent introduction or spread of invasive plants.

Early Detection and Rapid Response (EDRR) is a strategy that incorporates education, coordinated detection, and focused response efforts. A common approach to prevent invasive plant introduction or spread through EDRR includes the following steps.

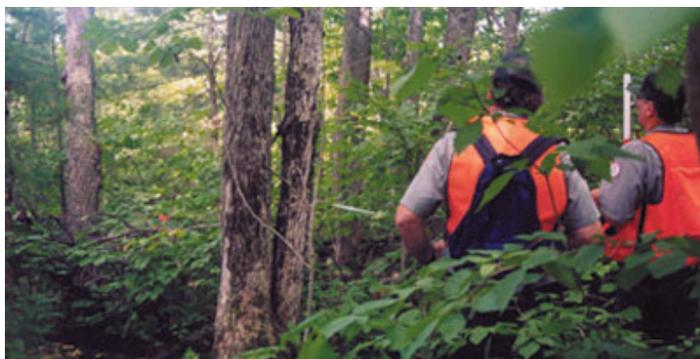
1. Determine the priority invasive plant species within your operating area and maintain an awareness of species new to your area using, at minimum, the following sources of information.
 - » Province-wide web-based databases such as the Invasive Alien Plant Program (IAPP) Application and E-Flora BC.
 - » Regional Invasive Plant or Species Organization coordinator(s) serve to coordinate invasive plant management within each regional district or group of districts across most of BC. For current contact information: <https://bcinvasives.ca/about/partners/bc-stakeholders>
2. Ensure staff and contractors learn to identify species of concern that are present at and near their operating areas and, at a minimum, to follow the prevention measures specified in this document. This may include but is not limited to:
 - » Collaborating with the regional invasive plant committee coordinator(s) or Ministry of Forests, Lands and Natural Resource Operations and Rural Development (MFLNRORD) regional invasive plant specialists to ensure training is available on species identification.
 - » Making resources available to staff and contractors to facilitate identification of species and implementation of factsheets.
 - » Facilitating networking among staff and contractors who are likely to encounter invasive plants with MFLNRORD regional invasive plant specialists and Regional Invasive Plant or Species Organization coordinators.
3. Establish a protocol for action when an invasive plant is encountered that includes the following:
 - » Identifying the species. Determine the plant's legal status and regional priority.
 - » Using a species-specific factsheets to determine appropriate control measures.
 - » Reporting the species name, date of observation, location (UTM coordinates), and estimated area (ha or m²) of infestation to the regional invasive plant committee coordinator or MFLNRORD invasive plant specialist.



Preferably, complete a Site and Inventory Invasive Plant Record form for data entry into IAPP. Alternatively, acquire data entry access to the IAPP Application and actively participate in invasive plant data management.

Integrated Pest Management (IPM)

- » IPM is a decision-making process that includes identification and inventory of invasive plant populations, assessment of the risks that they pose, development of well-informed control options that may include a number of methods, site treatment, and monitoring.
- » Control methods vary with species, severity of the plant invasion, and site considerations. Site-specific mechanical, chemical, or biological control methods may be applied.
- » Additional information on control methods is available in the accompanying species-specific factsheets, from a regional invasive plant committee coordinator or regional invasive plant specialist, or online at the IAPP Application Reference Guide.



Best Management Practices for: Forestry Operations »

TARGETED INVASIVE PLANT SOLUTIONS

General

These practices are always applicable, regardless of the operation, and are not limited to specific operations listed here.

1. Determine priority invasive plant species within your operating area.
2. Stay informed through collaborations with regional experts, and assist staff and contractors to identify and minimize spread of invasive plant species within your operating area.
3. Carry out regular detection surveys and record the locations of invasive plants in your operating area.
4. Keep equipment out of areas infested by invasive plants and keep equipment yards and storage areas free of invasive plants.
5. Regularly inspect the undercarriages of vehicles and remove any plant material found.
6. Dispose of plant material at the site of the infestation (if no flowers are present), or bag the plant material and dispose of it (locally) in the garbage (if flowers are present).
7. Wash plant seeds and propagules from personal gear, equipment, vehicles and machinery at designated cleaning stations before leaving infested sites. Ensure soil that is being moved does not contain invasive plant seeds or propagules.
8. Minimize unnecessary soil disturbance during road, landing, skid trail and site preparation. Ensure soil that is being moved does not contain invasive plant seeds or propagules.
9. Re-vegetate disturbed areas as soon after disturbance as possible using an appropriate combination of scarification, seeding, fertilizing and/or mulching. Ensure that seed used to re-vegetate will meet site objectives. Use quality forage mixture without any weed seed contamination. Suggested to request "Certificate of Analysis" to ensure mix is weed seed free.
10. Treat infestations of invasive plants prior to disturbance (pre-treatment).
11. Monitor treatment sites for several years to ensure efficacy. Re-treat as necessary to ensure spread does not continue.



Silviculture and Reconnaissance Surveys

1. Consult the Invasive Alien Plant Program (IAPP) Application database to determine locations of high-risk infestations.
2. Incorporate IAPP spatial data into planning maps.
3. Incorporate detection surveys into existing survey procedures.
4. When an invasive plant is encountered: record the species, date of observation, location (UTM coordinates), and estimated area of infestation (ha or m²). IAPP field cards are available for use. Provide this information to the Regional Invasive Plant or Species Organization coordinator or MFLNRORD invasive plant specialist, or enter the data independently.

Road Building and Maintenance

1. Inspect gravel pits and material sources for invasive plants, and remove invasive plant seeds and materials prior to use.
2. Where possible, begin work in un-infested areas and move toward infested areas.
3. Promptly re-vegetate disturbed areas along roadsides, landings, and cleaned culverts.
4. All machinery and equipment capable of carrying invasive plant propagules should be cleaned prior to moving on and off site.
5. Grade roads in directions that do not encourage spread of seeds away from known, priority invasive plant sites.

Harvesting and Site Preparation

1. Re-vegetate all harvested openings by re-establishing an appropriate stand of trees following the stocking standards prescribed in the Forest Stewardship Plan.
2. Minimize disturbance and the duration of time the site is left un-vegetated. Consider seeding if there is a delay in re-vegetation.
3. All machinery and equipment capable of carrying invasive plant propagules should be cleaned prior to moving on and off site.

Legal Status

Invasive plant management on Crown land is regulated by the BC Forest and Range Practices Act (FRPA), the BC Weed Control Act (WCA), and the Integrated Pest Management Act (IPMA).

The FRPA requires forest managers to specify and implement measures that prevent the introduction or spread of the 42 invasive plants listed under the Invasive Plants Regulation within their Forest Stewardship Plans. Please visit the FLNRORD website for more information on the Forest Stewardship Plans.

The WCA requires all land occupiers to control the spread of 64 provincial and/or regional noxious weeds on their land and premises, and specifies provisions for transportation, movement and cleaning of machinery. http://www.bclaws.ca/Recon/document/ID/freeside/10_66_85

The IPMA regulates herbicide applications that may be used to control invasive plant infestations. http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_03058_01

References/Links

Provincial and Regional Coordination:

- » Invasive Species Strategy for British Columbia. 2018-2022: https://bcinvasives.ca/documents/Invasive_Species_Strategy_for_BC-2018-180117-WEB.pdf

Species Identification and Management

- » Field Guide to Noxious Plants and Other Selected Invasive Plants of British Columbia https://bcinvasives.ca/documents/Field_Guide_to_Noxious_Weeds_Final_WEB_09-25-2014.pdf
- » BC Ministry of Forests, Lands and Natural Resource Operation and Rural Development Invasive Plant Program <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/plants>
- » E-Flora BC, Electronic Atlas of the Plants of BC: www.eflora.bc.ca
- » Global Invasive Species Database: <http://www.iucngisd.org/gisd/>
- » Invasive Species Council of BC <https://bcinvasives.ca/resources/tips/>



Provincial Inventory and Mapping Database

- » Invasive Alien Plant Program (IAPP) Application, Reference Guide and Field Forms: <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/invasive-species/reporting-invasive-species>

Integrated Pest Management

- » BC Ministry of Environment Integrated Pest Management Program: <https://www2.gov.bc.ca/gov/content/environment/pesticides-pest-management>

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