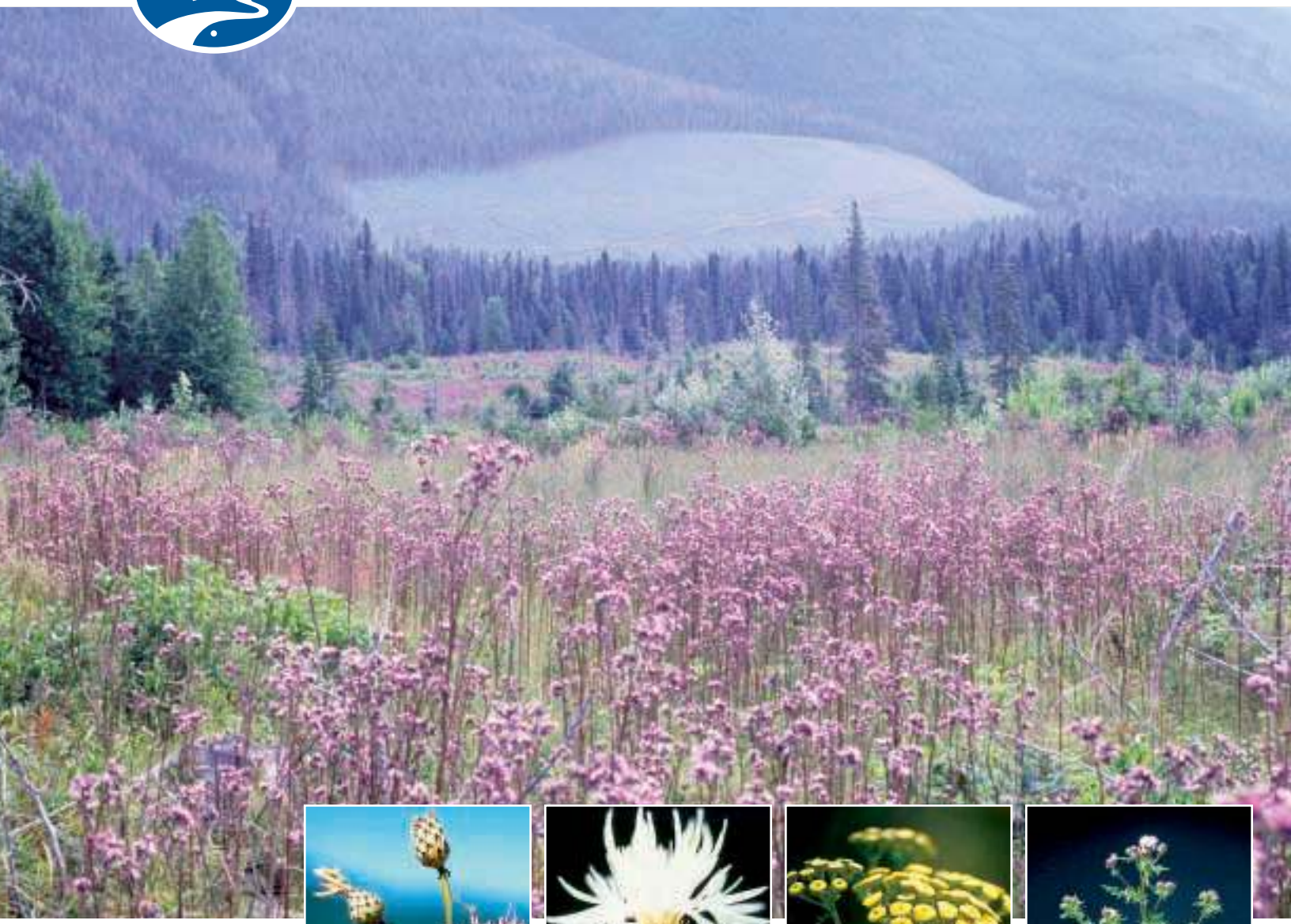
Fraser Basin Council



# Invasive Plant Strategy for British Columbia

Fraser Basin Council

# Invasive Plant Strategy for British Columbia

**FUNDING FOR THE DEVELOPMENT OF THE STRATEGY WAS PROVIDED BY:**

BC Ministry of Water, Land and Air Protection
BC Ministry of Agriculture, Food and Fisheries
First Nations Agricultural Association
Fraser Basin Council
Regional Districts of: Bulkley-Nechako, Capital, Cariboo, Central Okanagan, Columbia-Shuswap, Fraser-Fort George, Greater Vancouver, Nanaimo, Peace River, Squamish–Lillooet, Thompson–Nicola

## ACKNOWLEDGEMENTS

Many people contributed to the development of this ***Invasive Plant Strategy for British Columbia***. These individuals represent a wide variety of affiliations and backgrounds. The 11 members of the strategy's writing group listed below worked diligently to incorporate feedback from written submissions and workshops. The strategy subsequently reflects a wide base of technical and experiential knowledge about invasive plant management in British Columbia and beyond.

Gail Wallin of the Fraser Basin Council managed and facilitated the strategy's development, and Gail Lucier provided valuable administrative support. Jane Perry of J. Perry Resource Communications served as the strategy's technical writer. Raymond McAllister of the Fraser Basin Council coordinated the strategy's final production.

## STRATEGY WRITING GROUP MEMBERS

- **Duncan Barnett**, 150 Mile House, representing the BC Cattlemen's Association
- **Dwaine Brooke**, Kamloops, BC Ministry of Forests
- **Roy Cranston**, Abbotsford, BC Ministry of Agriculture, Food and Fisheries
- **Gordon Gillette**, Williams Lake, Cariboo Regional District, representing the Union of BC Municipalities
- **Dave Konesky**, Burnaby, Envirow Consulting Inc., representing the Integrated Vegetation Management Association of BC
- **Ted Lea**, Victoria, BC Ministry of Water, Land and Air Protection
- **Raymond McAllister**, Vancouver, Fraser Basin Council
- **Kristy Palmantier**, Williams Lake, Williams Lake Indian Band; writing group alternate facilitator
- **Jane Perry**, Williams Lake, J. Perry Resource Communications, technical writer
- **Barb Stewart**, Rock Creek, Boundary Weed Management Committee, representing regional weed committees
- **Gail Wallin**, Williams Lake, Fraser Basin Council; strategy manager and facilitator

## PHOTOGRAPHS USED IN THIS DOCUMENT

Photographs in this strategy were provided by the Province of British Columbia. The majority of the photographs are from the *Field Guide to Noxious and Other Selected Weeds of British Columbia*, a document produced by the BC Ministry of Agriculture, Food and Fisheries and BC Ministry of Forests.

**FRONT COVER:**
Large Photo: Marsh Thistle Infestation
Small Photos (left to right): Spotted Knapweed, Diffuse Knapweed Flower, Common Tansy, Canada Thistle

## FOR MORE INFORMATION, CONTACT:

*Fraser Basin Council*

Fraser Basin Council
1st Floor – 470 Granville Street
Vancouver BC V6C 1V5

Tel: (604) 488-5350
Fax: (604) 488-5351
Email: gwallin@fraserbasin.bc.ca

**www.fraserbasin.bc.ca**

# TABLE OF CONTENTS


1. EXECUTIVE SUMMARY ..... 1
2. MEMORANDUM OF SUPPORT ..... 3
   - 2.1 OVERVIEW ..... 3
   - 2.2 LIST OF SIGNATORIES ..... 3
3. INTRODUCTION TO THE STRATEGY ..... 4
   - 3.1 DEFINITION OF "INVASIVE PLANT" ..... 4
   - 3.2 GOAL AND OBJECTIVES ..... 4
   - 3.3 PRINCIPLES ..... 5
     - 3.3.1 Integrated Pest Management ..... 5
     - 3.3.2 Ecosystem Approach ..... 5
   - 3.4 HISTORY ..... 6
   - 3.5 RATIONALE ..... 6
4. BACKGROUND ..... 7
   - 4.1 GLOBAL, NATIONAL AND PROVINCIAL CONTEXT ..... 7
   - 4.2 HOW INVASIVE PLANTS SPREAD ..... 8
5. IMPACTS OF INVASIVE PLANTS ..... 9
   - 5.1 HUMAN HEALTH AND SAFETY ..... 9
   - 5.2 ENVIRONMENT AND BIODIVERSITY ..... 9
   - 5.3 AGRICULTURE ..... 10
   - 5.4 ANIMAL HEALTH ..... 11
   - 5.5 FOREST MANAGEMENT ..... 11
   - 5.6 SOCIO-ECONOMIC ..... 11
   - 5.7 FIRST NATIONS ..... 12
   - 5.8 TOURISM AND RECREATION ..... 12
6. CHALLENGES AND SOLUTIONS TO INVASIVE PLANT MANAGEMENT ..... 13
   - 6.1 THE TOP TEN CHALLENGES ..... 13
   - 6.2 SOLUTIONS ..... 13
     - 6.2.1 Cooperation ..... 13
     - 6.2.2 Resources ..... 13
     - 6.2.3 Legislation ..... 14
     - 6.2.4 Compliance ..... 14
     - 6.2.5 Federal Lands ..... 14
     - 6.2.6 Prevention ..... 14
     - 6.2.7 Inventory ..... 15
     - 6.2.8 Regional Coordination ..... 15
     - 6.2.9 Aquatic Species ..... 15
     - 6.2.10 Research ..... 15
7. INVASIVE PLANT COUNCIL OF BRITISH COLUMBIA ..... 16
   - 7.1 OVERVIEW AND FUNCTION ..... 16
   - 7.2 BOARD OF DIRECTORS ..... 17
   - 7.3 ROLES AND RESPONSIBILITIES ..... 17
8. KEY ACTIONS FOR THE INVASIVE PLANT COUNCIL ..... 19
   - 8.1 HELP ENSURE SUFFICIENT FUNDING ..... 19
   - 8.2 RECOMMEND LEGISLATIVE CHANGES ..... 19
   - 8.3 AIM FOR IMPROVED COMPLIANCE ..... 20
   - 8.4 ENHANCE COMMUNICATION AND COORDINATION ..... 20
   - 8.5 INCREASE PUBLIC AWARENESS AND OUTREACH ..... 20

# TABLE OF CONTENTS


**9. ROLES AND RESPONSIBILITIES OF OTHER STRATEGY PARTICIPANTS ..... 21**

9.1 FEDERAL GOVERNMENT ..... 22
9.1.1 Overview and Function ..... 22
9.1.2 Roles and Responsibilities ..... 22
9.2 FIRST NATIONS ..... 22
9.2.1 Overview and Function ..... 22
9.2.2 Roles and Responsibilities ..... 22
9.3 PROVINCIAL GOVERNMENT ..... 23
9.3.1 Overview and Function ..... 23
9.3.2 Roles and Responsibilities ..... 23
9.4 LOCAL GOVERNMENT ..... 23
9.4.1 Overview and Function ..... 23
9.4.2 Roles and Responsibilities ..... 23
9.5 REGIONAL WEED COMMITTEES ..... 24
9.5.1 Overview and Function ..... 24
9.5.2 Roles and Responsibilities ..... 24
9.6 LAND OCCUPIER ..... 24
9.6.1 Overview and Function ..... 24
9.6.2 Roles and Responsibilities ..... 24
9.7 INDUSTRY ..... 24
9.7.1 Overview and Function ..... 24
9.7.2 Roles and Responsibilities ..... 24
9.8 NON-GOVERNMENT ORGANIZATIONS ..... 25
9.8.1 Overview and Function ..... 25
9.8.2 Roles and Responsibilities ..... 25
9.9 ACADEMIA AND RESEARCH ORGANIZATIONS ..... 25
9.9.1 Overview and Function ..... 25
9.9.2 Roles and Responsibilities ..... 25

**10. IMPLEMENTING AND MONITORING THE STRATEGY ..... 26**

**11. REFERENCES ..... 27**

**12. CURRENT LEGISLATION ..... 28**

12.1 FEDERAL ..... 28
12.2 PROVINCIAL ..... 28

**13. MEMORANDUM OF SUPPORT – POTENTIAL SIGNATORIES ..... 29**

**MEMORANDUM OF SUPPORT**

# EXECUTIVE SUMMARY

The term **"invasive plant"** in this strategy refers to any invasive alien plant species that has the potential to pose undesirable or detrimental impacts on humans, animals or ecosystems.

The term "invasive plant" in this strategy refers to any invasive alien plant species that has the potential to pose undesirable or detrimental impacts on humans, animals or ecosystems. Invasive plants have the capacity to establish quickly and easily on new sites, and they have widespread negative economic, social and environmental impacts. Many invasive plants in British Columbia are "alien" to North America, and may also be referred to as "non-native," "exotic" or "introduced" plant species.

The ***Invasive Plant Strategy for British Columbia*** is the product of a diverse group of contributors from:

- All orders of government—federal, provincial, local and First Nations;
- Land- and water-based user groups;
- Resource-based businesses and industries;
- Utilities; and
- Non-government organizations.

Led by the Fraser Basin Council, development of the strategy stemmed from the exponential increase in the damage and threats caused by invasive plants, exacerbated by inconsistent management around the province. The strategy is presented as a process-oriented document that complements and supports ongoing activities in invasive plant management.

The strategy's goal is to build cooperation and coordination to protect British Columbia's environment and minimize negative social and economic impacts caused by the introduction, establishment and spread of invasive alien plants. Implementing the strategy is expected to build commitment and "buy-in" throughout British Columbia from the many agencies, organizations and individuals concerned by, or associated with, invasive plant management. Integrated pest management principles will be promoted under the strategy when implementing invasive plant management programs.

The strategy identifies, and calls for action on, the "top ten" challenges to invasive plant management in British Columbia, which are the need to:

1. **Improve cooperation** among all orders of government, landowners and land users by establishing a body to provide province-wide leadership.
2. **Provide the necessary resources for provincial Crown lands** to increase the level of invasive plant management undertaken by the provincial government.
3. **Enact provincial legislation** to manage invasive species not classified as noxious weeds, and **federal legislation** to prevent the introduction of new invasive species to British Columbia.
4. **Improve compliance** with current legislation regarding the introduction, spread and control of invasive plants.
5. **Increase management of invasive plants on federal land**, with the provision of direct funding for First Nations reserve lands.
6. **Coordinate a system for the early detection and eradication** of new invasive species that arrive in the province, and monitor these populations' impacts and any expansion.
7. **Establish a comprehensive provincial inventory** of invasive plants in British Columbia.
8. **Ensure that all areas of the province implement a regional approach** to invasive plant management.
9. **Improve the management of invasive aquatic plant species** through the necessary technical expertise and funding resources.
10. **Identify and promote coordinated research** to increase knowledge and awareness about invasive plant biology, ecology and management options and ecosystem restoration.

Under the strategy, a new **Invasive Plant Council of British Columbia** (the "Council") will be established to coordinate invasive plant management province-wide. The Council will be formally

*Marsh Thistle*

established as a legal, non-profit society with members and bylaws. Its inclusive membership will work to improve compliance with legislated responsibilities, establish research priorities, coordinate public awareness and outreach programs, and conduct other related functions and activities. The Council will not be associated with the funding or delivery of operational activities. Members of the Council will appoint a representative board of directors with comprehensive geographic and multi-stakeholder coverage.

The strategy identifies five key preliminary actions to be undertaken by the new Council:

1. Help ensure sufficient funding both for its province-wide coordination role and for operational invasive plant management.
2. Recommend changes to strengthen provincial and federal legislation.
3. Work towards improved compliance with current and new legislation.
4. Communicate and coordinate among its diverse membership.
5. Increase public awareness and outreach.

A number of other key participants will be involved in implementing the strategy.

The **federal government** will manage invasive plants on all federal lands and conduct research on invasive plant bio-control and management.

**First Nations** will play a larger role in the management of invasive plants on reserve lands by working closely with the federal, provincial and local governments, and participating directly with local weed committees.

The **provincial government** will oversee all relevant legislation and will manage invasive plants on Crown land, as well as provide technical expertise on key species in British Columbia.

Regional management of invasive plants will be delivered through a cooperative approach at the local level, involving **local governments** and **regional weed committees**, to coordinate delivery of operational invasive plant management programs.

**Land occupiers** will continue to be responsible for noxious weed control, as specified in the provincial *Weed Control Act*, and will be encouraged and supported to manage all invasive species. Improved public awareness and outreach on the prevention of invasive plant establishment, along with options for management, are expected to assist with this.

**Industry** will continue to conduct management activities, including voluntary control of known outbreaks. The numerous industrial sectors affiliated with land management will be relied on to influence their employees, contractors and clients about the importance of invasive plant management.

**Non-government organizations** will provide vital support and far-reaching influence about invasive plant management, both within the Council and to their respective members.

Finally, the **academic and research community** will provide essential technical support by developing new management strategies utilizing sound integrated vegetation management principles. Research scientists will be relied on for their contributions to advancing control methods.

The strategy includes a **Memorandum of Support** for signing by a wide range of potential signatories whose representatives would become members of the Council. Implementation of the strategy is expected to commence in 2004, with monitoring of its effectiveness, and the necessary modifications, made over time.

**Invasive plants** have the capacity to establish quickly and easily on new sites, and they have widespread negative economic, social and environmental impacts. Many invasive plants in British Columbia are "alien" to North America, and may also be referred to as "non-native," "exotic" or "introduced" plant species.

*Diffuse Knapweed*

# 2 MEMORANDUM OF SUPPORT

Signatories to this Memorandum of Support are expected to endorse the ***Invasive Plant Strategy for British Columbia*** as organizational representatives. They may or may not also provide financial contributions towards the strategy's implementation.

## 2.1 Overview

The *Invasive Plant Strategy for British Columbia* is a collaborative outcome produced by a wide range of representatives from:

- All orders of government, including federal, provincial, local and First Nations;
- Land- and water-based user groups;
- Resource-based businesses and industries;
- Utilities; and
- Non-government organizations.

**The strategy's goal is to build cooperation and coordination to protect British Columbia's environment and minimize negative social and economic impacts caused by the introduction, establishment and spread of invasive alien plants.**

Signatories to this Memorandum of Support endorse the strategy's intent and thereby agree to uphold and espouse its goal. Signatories agree to participate in the Invasive Plant Council of British Columbia and help build leadership and a cooperative, province-wide invasive plant management program. Signatories are likewise expected to encourage other potential parties and individuals to work towards successful implementation of the strategy over time.

Nothing in this Memorandum of Support obligates signatories to contribute financially to the Invasive Plant Council of British Columbia or any aspect of the strategy's implementation.

## 2.2 List of Signatories

Strategy signatories will be recorded when a signed copy of the Memorandum of Support is submitted by an organization. A list of potential signatories to the Memorandum of Support can be found in Section 13, pages 29 and 30. A blank copy of this document, ready for signing, is provided at the end of the strategy.

*St. John's-wort*

# INTRODUCTION TO THE STRATEGY 3

### 3.1 Definition of "Invasive Plant"

Many invasive plants in British Columbia are "alien" to North America and may also be referred to as "non-native," "exotic" or "introduced" plant species. Invasive plants have the capacity to establish quickly and easily on new sites, whether through prolific seed production, aggressive rooting structures, broad ecological amplitude or other characteristics. They are the prime focus of this strategy. However, the strategy also recognizes that certain invasive species have become established outside their natural range within British Columbia. Because of their impacts on biodiversity, the strategy also includes them on a case-specific basis.

Throughout this strategy, the term "invasive plant" refers to any invasive alien plant species that has the potential to pose undesirable or detrimental impacts on humans, animals or ecosystems.

*Caribou in field of Yellow Hawkweed.*

### 3.2 Goal and Objectives

The ***Invasive Plant Strategy for British Columbia*** is a process-oriented framework developed to improve province-wide invasive plant management. The strategy is presented to complement and support ongoing activities in invasive plant management and is not intended to serve as a technical summary for either invasive plants or their management.

The strategy's goal is to build cooperation and coordination to protect British Columbia's environment and minimize negative social and economic impacts caused by the introduction, establishment and spread of invasive alien plants. This will be done by:

1. **Providing the framework** to strengthen, support and coordinate efforts to manage invasive plants across all lands in BC;
2. **Promoting the implementation of invasive plant management programs**, using ecosystem-based, multi-stakeholder approaches and principles of integrated pest management; and
3. **Establishing a broad-based commitment** to long-term funding and the necessary human resources.

The objectives of the strategy are to:

1. Build and sustain effective multi-jurisdictional partnerships for collaborative and coordinated management of invasive plants in British Columbia and surrounding jurisdictions.
2. Help ensure secure, stable and long-term funding, resources and staffing for the coordination and implementation of invasive plant management in British Columbia.
3. Clearly define the roles and responsibilities for all relevant government, Crown agencies and affiliated groups and individuals, including landowners, occupiers and users.
4. Encourage effective legislation, regulation, compliance and enforcement options.

**Scope of the Invasive Plant Strategy for British Columbia**

The strategy addresses **invasive alien plants** that can detrimentally impact the economy, social values or the environment. Often, all three areas are simultaneously affected.

The word **weed** is a widely used, general term used to refer to undesirable plants. The strategy avoids the term "weed" except where it is part of a title, such as the *British Columbia Weed Control Act* or "regional weed committee." It is also necessary to refer to **noxious weeds**, plants legislated under the provincial *Weed Control Act*.

*Common Tansy*

# 3 INTRODUCTION TO THE STRATEGY

**Invasive Plant Strategy for British Columbia**

The strategy is a process-oriented framework developed to improve province-wide cooperation and coordination. It is presented to complement and support ongoing activities in invasive plant management.

5. Increase public awareness of the impacts of invasive plants and management strategies for their prevention, detection and control.
6. Coordinate the development of a standardized process for the inventory of invasive plants, and the maintenance, storage and accessibility of this information.
7. Promote the application of coordinated research to improve control methods and reduce the impacts of invasive plants.
8. Monitor and evaluate the strategy's implementation and effectiveness.

### 3.3 Principles

Two important principles of the *Invasive Plant Strategy for British Columbia* are that it incorporates integrated pest management practices and an ecosystem approach.

Integrated pest management is a decision making process that uses a combination of techniques to suppress pests (BC Ministry of Water, Land and Air Protection 2003). Implementation of the strategy will use an ecosystem approach, which broadly evaluates how people's use of an ecosystem affects its functioning and productivity (World Resources Institute 2000).

#### 3.3.1 Integrated Pest Management

Integrated pest management principles will be promoted under the strategy when implementing invasive plant management programs. However, since the specific objective of the strategy is to target invasive plants, the strategy restricts the use of "pest" to specific invasive alien plant species, and therefore refers to "integrated vegetation management."

Integrated vegetation management is a balanced approach for managing vegetation that includes the following (based on BC Ministry of Agriculture, Food and Fisheries 2003a):

- Managing the resource to prevent the invasion of alien plants;
- Correctly identifying invasive plant species and learning about their biology, ecology and management;
- Conducting inventories and mapping, and monitoring invasive plant populations and damage;
- Making control decisions based on knowledge of potential damage, cost of control methods, and the environmental impact of both the invasive plant and the control decision;
- Using control strategies that may include a combination of methods to reduce the invasive plant population to an acceptable level; and
- Evaluating the effectiveness and impacts of management decisions.

*Bittersweet Nightshade Berries*

#### 3.3.2 Ecosystem Approach

The Convention on Biological Diversity (2002) defines an ecosystem approach as:

> *"A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Application of the ecosystem approach will help to reach a balance of the three objectives of the Convention. [The ecosystem approach] is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems."*

The ecosystem approach is comprehensive; it is based on all of a watershed's biological resources and it considers the economic health of communities within that watershed (US Fish & Wildlife Service 2003).

An ecosystem approach for the invasive plant strategy incorporates the following principles (Ted Lea, BC Ministry of Water, Land and Air Protection, pers. comm.):

- Maintain healthy ecosystems, since they are more resilient to invasive species.
- Base priority setting and control treatments on susceptibility of ecosystems to the invasive species on the landscape; therefore, focus on species that will affect ecosystems and economic and environmental values the most.
- Prevent or minimize disturbances in any land use activities.
- Restore disturbed areas and degraded ecosystems to their natural state as soon as possible, or seed quickly to temporary cover.
- Treat ecosystems individually, and determine the appropriate management approach to invasive species and priorities based on knowledge of them.
- Consider other values when managing for invasive alien species, such as water quality, species at risk, wildlife, nesting sites and invertebrate food sources.

### 3.4 History

The process to develop an invasive plant strategy for British Columbia began with the Fraser Basin Council, a non-profit organization aimed at bringing people together to develop sustainable solutions to address complex issues. The Fraser Basin Council's board of directors participated in a field trip in the Cariboo in June 2001. The board's concerns led to a province-wide symposium, "Weeds Know No Boundaries," held in Williams Lake in May 2002. Over 100 participants endorsed the development of a strategy for British Columbia to provide a coordinated, practical approach that encourages cooperation by a wide range of stakeholders.

A province-wide workshop was held in Richmond in February 2003 to determine a process and structure for the strategy. Participants decided to work as a broad-based strategy development group that directs a strategy writing group supported by a technical writer. Two workshops held later that year, in Kamloops and Richmond, resulted in draft strategies that were distributed for review and comment. This final version of the strategy incorporates written responses and feedback from the workshops. Other comments and issues relating to the strategy's implementation have been collated and distributed for later use.

A parallel initiative was underway within the provincial government in 2003. The "Government Caucus Committee on Natural Resources – Sub-Committee on Noxious Weeds" developed options and recommendations for Cabinet to ensure improved funding and program structure for noxious weed management on Crown land.

### 3.5 Rationale

The need to develop an invasive plant strategy for British Columbia stemmed from the exponential increase in the damage and threats caused by invasive plants, exacerbated by inconsistent management around the province. The actions in one managed geographic area have frequently been undermined by actions or lack of action in an adjacent unmanaged area. Invasive plant management therefore clearly requires province-wide cooperation beyond jurisdictional boundaries.

Representatives of many agencies and organizations strongly support addressing the lack of provincial coordination of invasive plant management. This is particularly important because of the widespread negative economic, social and environmental effects of invasive plants throughout the province. A process-oriented strategy is also expected to build commitment and "buy-in" throughout British Columbia from a diverse range of agencies, organizations and individuals concerned by, or associated with, invasive plant management.

*Scotch Broom*

# 4 BACKGROUND

**Invasive plants…**

- Have the capacity to establish quickly and easily on new sites, whether through prolific seed production, aggressive rooting structures, broad ecological amplitude or other characteristics. Many invasive plants in British Columbia are "alien" to North America or the province and may also be referred to as "non-native," "exotic" or "introduced."
- Invasive species are considered the second-most serious factor responsible for the extinction of native species and loss of biodiversity, worldwide, after habitat loss.

---

**This strategy addresses invasive alien plant species that can pose undesirable or detrimental impacts on humans, animals or ecosystems.**

*Scentless Chamomile*

## 4.1 Global, National and Provincial Context

Human impact on the environment is widespread and global. Over time, people have transported plants with unique properties and uses to new environments to provide food crops, fibre and ornamental species. Modern global transportation of people and goods, along with increased international trade, have also facilitated the unintended transport of plants. Although many of these plants have improved the well-being of people around the world, other species have found their new environments extremely conducive to rapid establishment and growth, often to the detriment of natural ecosystems, wildlife, agricultural crops and livestock. These detrimental types of invasive plants are the subject of this strategy.

Invasive species produce widespread negative effects that influence many aspects of our lives. They cost ranchers, farmers, utilities, forest companies, government agencies, conservation organizations and the general public untold millions of dollars each year in lost productivity and increased management costs. Invasive plants transform the landscape, weakening the economic and environmental health of the areas they infest. The invasive plant problem crosses all political, ecological and land ownership boundaries, and negatively affects industries and activities that rely on healthy ecosystems.

*Chamomile Infestation.*

Approximately one-quarter of Canada's total 5,800 plant species originated in Europe or Eurasia, and 120–160 of these introduced species may invade natural habitats. Some invasive plant species have contributed to the decline of rare plants and altered rare habitats (Claudi et al. 2002). The United States now has an estimated 5,000 introduced plant species that grow in natural ecosystems, and some have displaced native species (Morse et al. 1995).

The British Columbia *Weed Control Act* designates 48 plant species as noxious; 21 are listed for all regions and the remaining 27 are regionally listed. Other invasive species – such as **Scotch broom, purple loosestrife, Japanese knotweed, Himalayan blackberry** and many others – lack this designation but nevertheless pose serious threats to native plant communities and ecosystem health, as well as to the economy and social interests.

It is anticipated that the ability of invasive plant species already established in British Columbia to invade and dominate new sites will increase with higher levels of atmospheric carbon dioxide as a result of global warming; **cheatgrass** is one example (Dukes and Mooney 1999). Global warming is also expected to allow new invasive species to successfully establish in British Columbia, and existing invasive species to reach more northerly latitudes – such as **purple loosestrife** (Environment Canada 2003) – and higher elevations.

### 4.2 How Invasive Plants Spread

Invasive plants spread in many ways. People enjoying various land- and water-based recreational activities can unknowingly spread invasive plant seeds, roots and pieces of reproductive foliage. Cyclists and ATV users on grasslands, campers moving among parks, guide outfitters packing in hay for their horses, and boaters launching their boats into a new lake are examples of how recreational users can unknowingly introduce invasive plants.

*ATV and other recreational users can unknowingly introduce invasive plants.*

Land clearing, logging cutblocks, gravel pits, utility lines, pipeline rights-of-way, transportation corridors and urban development create soil disturbances favourable to plant establishment. Excessive grazing by livestock and wildlife can also create an optimal environment for invasive plants to establish and expand their range. All of these activities create an ideal seedbed for invasive plants.

Invasive plants can also spread through seed mixes for forage, crops, land rehabilitation, erosion control, wildflowers and birds, which sometimes unintentionally include invasive plant seeds. Nurseries and mail order catalogues supply plants and seedlings to commercial and domestic gardeners, and increasingly rely on trans-provincial and international sales through mail and Internet orders. Imported horticultural species are seldom assessed for their invasive potential, and many have escaped their intended space in the garden to seriously impact natural habitats. In fact, 85 percent of the 235 woody plants invading natural areas of the United States were introduced for landscape purposes (Reichart 1998). Urbanization of lands is another potential source of invasive plants through landscaping.

The actions of livestock and wildlife, especially birds and ungulates, can also spread invasive plants. Seeds are eaten and then excreted into a new area, or carried in feathers, fur or hair. Many invasive plant species are well adapted for successful transport, either through their palatability to birds and animals, or their plant architecture. Once deposited, the seeds can germinate and grow. The species has then successfully expanded its geographic range.

**Weeds: "Slow-Moving Wildfire"**

Invasive species "…cause a level of destruction to the environment and economy matched only by damage caused by floods, earthquakes, wildfire, hurricanes and mudslides." Bruce Babbitt, US Secretary of the Interior (1998).

Without efforts to contain their spread, noxious weeds generally increase their area an average of 14% annually. This produces exponential growth by doubling every five years!

**Dalmatian toadflax** (a noxious weed in British Columbia) expanded its area by 1,200 percent in just six years in Colorado (Beck 2001).

**Invasive plants…**

- Outcompete native grasses and wildflowers, including rare and endangered species.

*Diffuse Knapweed*

# 5 IMPACTS OF INVASIVE PLANTS

**Invasive plants…**

- Endanger public health and safety. They increase allergies and hay fever, and are potentially toxic to humans, pets, livestock and wildlife. They clog waterways used for swimming and boating, and reduce visibility on transportation corridors.
- Increase costs for maintaining resources and public utilities.
- Destroy natural habitat for birds, butterflies and other wildlife, domestic animals, and fish and other aquatic organisms.

*Purple Loosestrife*

Invasive plants affect many aspects of our economy, communities and environment. The examples described below provide some introductory information about invasive plant impacts, and are not listed in any relative order of importance.

### 5.1 Human Health and Safety

Invasive plants directly affect human health and safety in many ways. **Giant hogweed** produces painful skin burns; the large, sharp spines of **gorse** are unsafe to humans; and the toxic berries of **bittersweet nightshade** can cause poisoning. Some allergies, including hay fever, are caused by invasive species.

Human safety is also directly affected by the heavy growth of invasive plants when fast-growing species (and especially those with thorns) inhibit maintenance and safety inspections of pipelines. Invasive species also affect rights-of-way and transportation corridors when their rapid establishment and growth decrease access to equipment, reduce sightlines for drivers and animals, and increase the risk of accidents and collisions.

Invasive species, such as **gorse**, can increase the wildfire hazard because of the high oil content in their branches (Clements et al. 2001). **Cheatgrass** alters the natural fire regime by significantly reducing the intervals between fires (Billings 1948).

### 5.2 Environment and Biodiversity

After habitat loss, invasive species are the second biggest threat to species at risk in British Columbia, including plants and other wildlife. Ecosystems across the province are vulnerable, particularly Interior grasslands and dry forests, and drier coastal ecosystems. Associated riparian and wetland communities in these areas are also susceptible to the threat of invasive plants.

*Scotch Broom threatens ecosystems on Vancouver Island.*

Examples of negative environmental impacts caused by invasive plants are numerous. For example, the invasion of **spotted knapweed** in Glacier National Park eliminated seven rare and uncommon plant species in three years (Montana Weed Control Association 2003). Wetlands lose 50–100 percent of their native biomass due to **purple loosestrife** invasion. This displacement of food supply results in the matching displacement of many animals, such as muskrats, and many birds will not nest in loosestrife infestations (Thompson et al. 1987).

The replacement of native bunchgrass by **spotted knapweed** resulted in increased surface water runoff of 56 percent and soil loss of 192 percent in Montana compared to a non-infested site. The resultant loss of soil and the sedimentation of watercourses is devastating to water resources, fish spawning and wildlife habitat (Lacey et al. 1989).

Garry oak and associated ecosystems on southern and central Vancouver Island are under increasing threat by invasive species, most notably **Scotch broom** and **gorse**. An assessment of regional parks within the Capital Regional District in Victoria concluded that all parks were threatened by invasive plant species, 36 percent of them severely so (Fleming 1998).

**Himalayan blackberry** and **Japanese knotweed** have spread quickly within riparian vegetation alongside coastal streams and formed dense thickets that exclude native vegetation, reducing biodiversity and greatly altering natural ecosystems (Sellentin 2002). **English ivy** is an aggressive climbing vine that kills trees and threatens the structural integrity of tree species in both natural and urban environments. These and other invasive species can replace the understory vegetation and threaten biodiversity.

Plants deposited in ponds and lakes may also become invasive. **Eurasian watermilfoil** was accidentally deposited into Okanagan Lake. In other cases, people have introduced **water lilies** and **yellow flag iris** to improve a lake's attractiveness. Invasive plants also threaten the integrity of marine foreshore areas; for example, **cordgrass** has invaded tidal mudflats near Delta.

**Invasive plants…**

- Reduce the yield and quality of agricultural crops and natural forage, and the quality and price of marketable livestock.

### 5.3 Agriculture

Invasive plants produce a wide range of detrimental impacts on the agriculture industry. Many act as hosts for insects and crop diseases. They reduce crop quality and market opportunities, and similarly decrease farm income by reducing yields by an average of 10–15 percent. Every year, British Columbian farmers and ranchers lose an estimated $50 million in crop revenue, and then also pay several million dollars more for control measures, such as herbicides and cultivation (BC Ministry of Agriculture, Food and Fisheries 1998). A conservative estimate of the economic impact of invasive plants on Canadian agriculture is over $1 billion annually (R. Cranston, BC Ministry of Agriculture, Food and Fisheries, pers. comm., based on estimates by Swanton et al. 1993).

*Hound's-tongue is easily spread by burrs that attach themselves to animals.*

In one British Columbia study, grassland production in the southern Interior was reduced by 88 percent as a result of **knapweed** invasion (Watson and Renney 1974). Elk foraging in Montana was reduced by 98 percent on a rangeland dominated by **spotted knapweed** (Hakim 1979). Annual economic losses from knapweed species are estimated at US $42 million in Montana, a state with an area of only 40 percent that of British Columbia. Most of BC's grasslands (about 1 million hectares) and the province's approximately 9 million ha of forested range are susceptible to knapweed invasion (BC Ministry of Agriculture, Food and Fisheries, undated) and the associated economic losses.

Invasive plants also have the potential to seriously affect the provincial beef cattle industry. Its mainstay, the cow/calf sector, contributes about $315 million in annual farm cash receipts from animal sales. The 6200 livestock owners (of whom 2500 are commercial) employ an additional 1000 people, and total investment in the sector exceeds $4 billion. Government revenues include

*Hound's-tongue burred seeds*

# 5 IMPACTS OF INVASIVE PLANTS

**Invasive plants…**

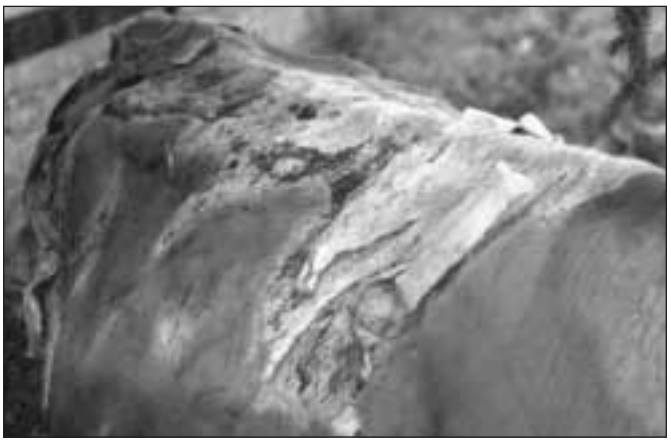
- Accelerate soil erosion and stream sedimentation, consume critical water resources and negatively impact water quality.
- Increase the wildfire hazard and interfere with the regeneration of forests.
- Act as carriers of disease and insects to beneficial plants
- Decrease land values

*Leafy Spurge*

$2 million in range fees and $9 million in property taxes. On an annual basis, the value of beef production attributed solely to range forage (4–5 months on the range) exceeds $60 million. The replacement value of the forage exceeds $27 million. Failure to control weeds on rangeland could destroy at least 50 percent of this rangeland capacity (BC Ministry of Agriculture, Food and Fisheries 2003b).

### 5.4 Animal Health

Livestock and wildlife are affected by some invasive plant species in serious ways. **St. John's wort** increases photosensitization of ungulates, making them more vulnerable to skin burns from solar radiation. Animals that consume **hound's-tongue** or **tansy ragwort** can experience cumulative liver damage from the toxic alkaloids in these species, and those that graze on **Russian knapweed** or **yellow starthistle** can be inflicted with a fatal nervous disorder. The seed heads of **burdock** and **hound's-tongue** can cause serious irritation around the eyes and ears of livestock and wildlife ungulate species when embedded, and can also reduce thermal insulation when matted in the animals' hair.



*St. John's-wort can cause serious health problems for cattle.*

### 5.5 Forest Management

**Gorse** and **cheatgrass** increase the risk of wildfire (as described in section 5.1). Also, when woody invasive species, such as **Scotch broom**, replace native vegetation, they contribute to high-intensity fires from increased fuel accumulations. In harvested cutblocks, **Scotch broom** can interfere with Douglas-fir regeneration on southern Vancouver Island (Peterson and Prasad 1998) and **diffuse knapweed** can affect the survival and growth of planted conifers in the southern Interior (Powell et al. 1997). Other species, including **marsh thistle**, can bend the stems of young conifer seedlings through "snow-press" and permanently alter their form. When **Japanese knotweed** invades riparian sites and displaces native *Carex* sedges, its less fibrous rooting system contributes to soil erosion and stream sedimentation (T. Prather, Univ. of Idaho, pers. comm.). **Spotted knapweed** has a different above-ground form than the native species it displaces, which contributes to sheet erosion of soil because the soil surface is less protected from precipitation (Lacey et al. 1989).

### 5.6 Socio-Economic

There are no specific data for British Columbia on the individual social or economic impacts of invasive plants. However, economic impacts generally create social impacts through their close linkage, and the effects of certain species in BC can be assumed to be generally similar as those in the northern United States.

The invasion of **leafy spurge** (a BC noxious weed) in four northern US states has resulted in annual economic losses of US $129 million, equivalent to approximately 1,433 jobs (Westbrooks 1998). **Leafy spurge** infestations on Manitoba grazing lands have produced a net economic impact of $16 million per year, equivalent to an estimated reduced herd size of 16,450 head, and an additional annual loss of $5 million in reduced producer income and production expenditures. Secondary

economic impacts on other business sectors were estimated at $11 million per year (Leafy Spurge Stakeholders Group 1999).

Losses to invasive plants and control costs total about US $5 billion per year in the United States in non-crop sectors (including golf courses, turf production and growing of ornamentals); highway and utility rights-of-way; and industrial, aquatic, forestry and other sites (Westbrooks 1998).

Land values in Manitoba are potentially reduced by over $30 million due to **leafy spurge** (Leafy Spurge Stakeholders Group 1999). This invasive plant produced an 83 percent reduction in property value for one Oregon ranch, from US $170,000 to $27,500 (Westbrooks 1998). Furthermore, a $2 million land transaction in Oregon was reduced by $200,000 due to **sulphur cinquefoil**, another BC noxious weed species (BC Ministry of Forests, undated).

### 5.7 First Nations

First Nations are very concerned about the effects of invasive plants on their sustenance activities within their traditional territories, including hunting, fishing, and the gathering of food and medicinal plants. First Nations are also involved in ranching, farming and eco-tourism, businesses that are vulnerable to the socio-economic and environmental impacts of invasive plants. As well, the threat by invasive species to the health and availability of native plants and their associated spiritual values could inflict serious impacts on aboriginal peoples.

### 5.8 Tourism and Recreation

Invasive plants destroy the natural beauty of the landscape by replacing native plant communities with an aggressive single species. As well, the burrs, thorns and prickles of some invasive species cause physical discomfort and are a deterrent to recreational use on that land.

*Invasive plants can obstruct sitelines along highways.*

Data from the United States show that, in some areas, **spotted knapweed** has reduced available elk winter forage by 50–90 percent, which affects hunting opportunities and the value of these resources to local economies. However, when **spotted knapweed** was controlled on an elk winter range in Montana, there was a 266 percent increase in elk use, which also removed grazing pressure on adjoining private lands (Duncan 1997). North Dakota loses over US $3.5 million annually in revenues from wildlife-related recreation due to non-native plant infestations (Westbrooks 1998). In Manitoba, the direct and secondary impacts on consumptive and non-consumptive wildlife recreation caused by leafy spurge were assessed at over $2 million per year (Leafy Spurge Stakeholders Group 1999).

**Economic Benefits of Controlling Invasive Plants**

Invasive plant control can be costly, but risk analyses have proven that treatment is often less expensive in the long run than is leaving infested areas untreated. For example, the cost of controlling purple loosestrife was found to be returned 27 times over in the retention of land and resource values (Office of Technology Assessments, United States Congress 1993). Control of poisonous tansy ragwort, an invasive plant listed in British Columbia as a noxious weed, was found in Oregon to return control costs 13 times over—in other words, for every dollar spent on control, the economic return was $13 (Radtke 1993).

*Spotted Knapweed*

# 6 CHALLENGES AND SOLUTIONS TO INVASIVE PLANT MANAGEMENT

**Legislated Responsibilities**

The *British Columbia Weed Control Act* places a duty on all land occupiers to control noxious weeds growing on land occupied by that person. An "occupier" is a person who is in physical possession of the land or who is responsible for, and has control over, the condition of, the activities conducted on, and the persons allowed to enter or use the land. Provincial and local governments (regional districts and municipalities) may enforce the Act.

## 6.1 The Top Ten Challenges

Successful implementation of the strategy requires that all relevant agencies, organizations and user groups cooperate and contribute to addressing the "top ten" challenges for invasive plant management in British Columbia, as listed below.

**The top ten most significant challenges to invasive plant management in British Columbia are the need to:**

1. **Improve cooperation** among all orders of government, landowners and land users by establishing a body to provide province-wide leadership.
2. **Provide the necessary resources for provincial Crown lands** to increase the level of invasive plant management undertaken by the provincial government.
3. **Enact provincial legislation** to manage invasive species not classified as noxious weeds, and **federal legislation** to prevent the introduction of new invasive species to British Columbia.
4. **Improve compliance** with current legislation regarding the introduction, spread and control of invasive plants.
5. **Increase management of invasive plants on federal land**, with direct funding for First Nations reserve lands.
6. **Coordinate a system for the early detection and eradication** of new invasive species that arrive in the province, and monitor these populations' impacts and any expansion.
7. **Establish a comprehensive provincial inventory** of invasive plants in British Columbia.
8. **Ensure that all areas of the province implement a regional approach** to invasive plant management.
9. **Improve the management of invasive aquatic plant species** through the necessary technical expertise and funding resources.
10. **Identify and promote coordinated research** to increase knowledge and awareness about invasive plant biology, ecology and management options and ecosystem restoration.

## 6.2 Solutions

Resolving the ten main challenges will be enabled by the overall implementation of the invasive plant strategy. Detailed solutions for each challenge are provided below.

### 6.2.1 Cooperation

***Challenge:*** *Improve cooperation to provide province-wide leadership for invasive plant management.*

**Solution:**

1. Establish the Invasive Plant Council of British Columbia (described in Section 7).
2. Build "buy-in" to the Council to ensure its success, including the financial resources it requires to operate through a trust fund.
3. Monitor the Council's effectiveness and modify as required.

### 6.2.2 Resources

***Challenge:*** *Provide the necessary resources for invasive plant management on Crown lands by the provincial government.*

**Solution:**

1. Provide the necessary staff and funding resources to the provincial ministry programs involved in invasive plant management.
2. Establish cooperation among provincial agency programs for Crown land.
3. Explore coordinated, long-term funding solutions for invasive plant management.
4. Create funding opportunities to deal with specific areas receiving inadequate funding for invasive plant management, such as provincial parks and protected areas.

*Canada Thistle*

### 6.2.3 Legislation

***Challenge:*** *Improve coverage of federal and provincial legislation for invasive plant species.*

**Solution:**

1. Review current federal and provincial acts relating to invasive plant management and recommend new or improved legislation as required.
2. Consider specific means to deal with invasive plants that affect species or ecosystems at risk.

### 6.2.4 Compliance

***Challenge:*** *Improve compliance with current legislation.*

**Solution:**

1. Increase public awareness efforts, especially targeted to land occupiers and recreational user groups, to encourage compliance and help prevent the spread of invasive plants.
2. Monitor compliance to assess the effectiveness of improved public awareness and outreach and the need for enforcement measures.

### 6.2.5 Federal Lands

***Challenge:*** *Increase invasive plant management on federal lands.*

**Solution:**

1. Increase funding from the federal government to manage invasive plants on First Nations reserve lands, military areas and national parks.
2. Encourage cooperation by First Nations bands and local weed committees for information exchange and other efficiencies.
3. Recognize through the treaty process that invasive plants on settlement lands within traditional territories must be managed.
4. Encourage cooperation between First Nations and their neighbours.

### 6.2.6 Prevention

***Challenge:*** *Coordinate the prevention, early detection, eradication and monitoring of invasive species.*

**Solution:**

1. Increase public awareness programs to help the public and land users understand the impacts that invasive plants pose, how human actions can transmit seeds and plant parts, and how to identify key species. Link with available Best Management Practices.
2. Implement a regionally based program for public reporting of the occurrence of invasive plants.
3. Target land user groups with information and land ethic principles to prevent the spread of invasive plants.
4. Involve the horticulture industry in preventing the spread of invasive plants by discouraging the commercial sale of invasive plants, and monitoring direct mail marketing and Internet sales of the seeds of invasive plants.
5. Establish local government or regional weed committees throughout the province.
6. Provide outreach services on invasive plant management methods to land occupiers.
7. Establish "Alert Programs" around high-risk areas for the presence of new invasive species.
8. Encourage new legislation or bylaws to address invasive plant management.

**Invasive plant management** is not a mandatory function of local governments in BC, which has resulted in incomplete geographic coverage of management activities in the province. However, invasive plant management programs are currently offered by ten Interior and northern regional districts. As well, there are four community-based programs — operating in the Southern Interior, Okanagan–Similkameen, Boundary and Central Kootenay areas — established by citizens concerned with addressing invasive plant management.

*Dalmatian Toadflax*

### 6.2.7 Inventory

***Challenge:*** *Establish a comprehensive provincial inventory of invasive species.*

**Solution:**

1. Develop and maintain a provincial inventory database and mapping system for invasive plants that provides easy Internet access to all users.
2. Add a layer for invasive species to the provincial GIS database.
3. Monitor invasive species over time and their changes in distribution in the provincial inventory.

### 6.2.8 Regional Coordination

***Challenge:*** *Implement a coordinated regional approach to invasive plant management throughout British Columbia.*

**Solution:**

1. Establish local government or regional weed committees to cover all of British Columbia.
2. Encourage continued voluntary participation by stakeholders in invasive plant management.
3. Encourage regional weed committees and local government programs to share issues and ideas, and coordinate management across jurisdictional boundaries through annual meetings and other means of communication.

### 6.2.9 Aquatic Species

***Challenge:*** *Improve the management of invasive freshwater and marine plant species.*

**Solution:**

1. Increase programs, funding and the necessary technical expertise associated with invasive plant management within the provincial and federal government, including management, inventory, monitoring and public awareness.
2. Encourage partnerships and the necessary resources within and among the federal, provincial and local governments to address invasive freshwater and marine species.
3. Discourage the commercial sale of aquatic and wetlands invasive plant species.

### 6.2.10 Research

***Challenge:*** *Increase knowledge and awareness about invasive plants through coordinated research.*

**Solution:**

1. dentify research needs and promote research on invasive plant impacts and management, including plant biology and ecology, risk assessment for different management regimes, and control methods for individual species.

*Gorse*

# INVASIVE PLANT COUNCIL OF BRITISH COLUMBIA 7

## 7.1 Overview and Function

Members of the strategy development group strongly recommend the establishment of a new Invasive Plant Council of British Columbia. The "Council" will serve a critical role in coordinating invasive plant management in British Columbia. It will operate through an inclusive and open membership composed of representatives from all orders of government, Crown agencies and relevant organizations, along with interested individuals (Figure 1). Rather than exercise legislated authority, members of the Council would use their collective influence to facilitate and achieve action. The Council will not oversee or conduct on-the-ground management activities.

The Council will be formally established as a legal, non-profit society with members and bylaws. Members of the Council would appoint a representative board of directors (described in section 7.2) and, through consensus, make recommendations for the necessary actions. As signatories to the Memorandum of Support, members will be recognized endorsers of the strategy. Formation and continuation of the Council requires stable, long-term, independent funding established in a trust fund (described in section 8.1).

The Council will receive input and information from its members and constituents on which it can raise and address strategic-level issues. It will host annual meetings and regularly communicate with members by newsletters and a website. The Council will influence various province-wide aspects of invasive plant management, such as employing peer pressure to achieve legislative compliance by land occupiers and land users, and ensuring that invasive plant management in British Columbia is addressed through a coordinated regional approach.

The **Invasive Plant Council of British Columbia** will coordinate invasive plant management in BC by using its collective influence through an inclusive membership.

The Council will provide province-wide coordination of invasive plant management. It will not be associated with operational activities.

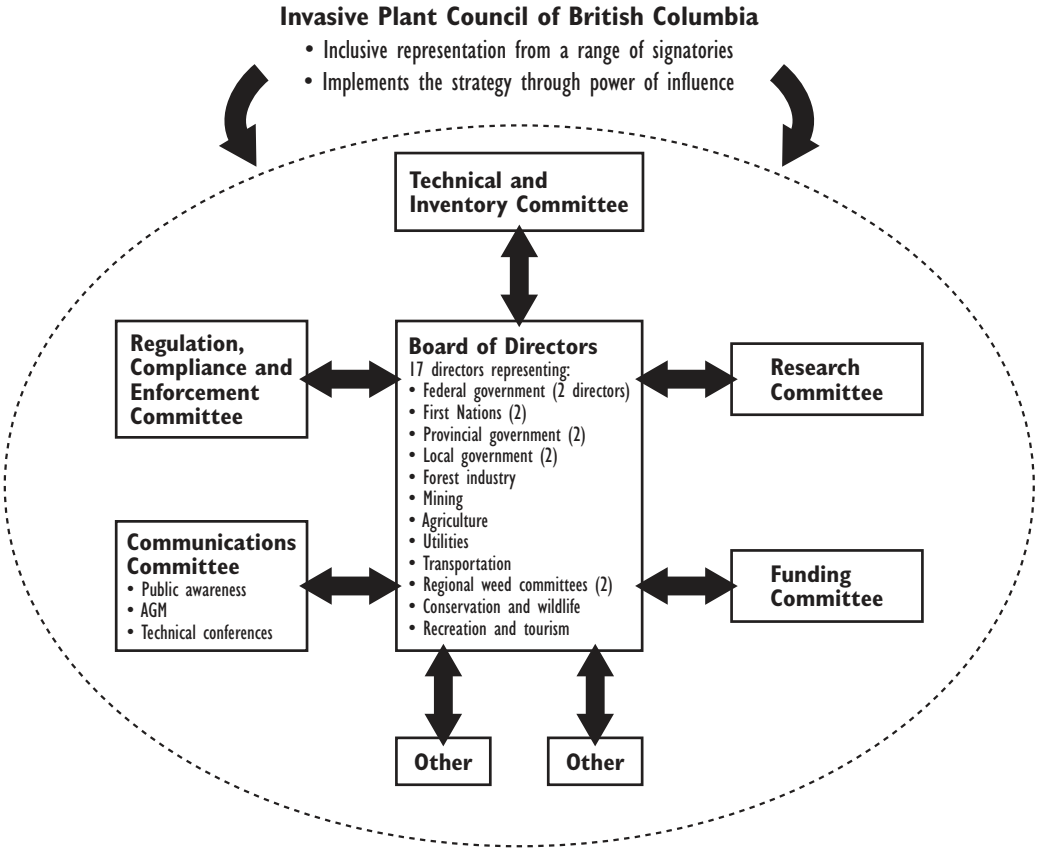



Figure 1. Proposed Organizational Structure for the Invasive Plant Council of British Columbia

*Sulphur Cinquefoil*

# 7 INVASIVE PLANT COUNCIL OF BRITISH COLUMBIA

The Council's **Board of Directors** will provide comprehensive geographic and stakeholder coverage for British Columbia.

### 7.2 Board of Directors

The Council will provide direction to a diverse, multi-party board of directors consisting of a proposed total of 17 representatives as shown in Figure 1. Province-wide geographic membership is desired from the 12 categories. Board directors will be appointed by Council members from the respective categories for a designated period of time (i.e., the provincial government council members will appoint their two directors). Board members will be knowledgeable about invasive plants and dedicated to making a positive strategic influence on invasive plant management. Five independent seats within the industry category are also proposed to adequately cover the forestry, mining, agriculture, utilities and transportation sectors to reflect their degree of activity in operational control treatments. As well, local representation by local government and regional weed committees needs to be strong, and should be addressed with representatives from both northern and southern regions of British Columbia.

The board of directors will make decisions on behalf of the Council based on the direction it receives, and it will aim to implement the Council's direction by consensus. The board will additionally establish working groups (sub-committees) on key topics like research and public awareness, and will link with the federal and provincial governments and other key agencies and strategic groups. The working groups should also include members at large who can contribute technical knowledge and experience.

### 7.3 Roles and Responsibilities

The specific roles and responsibilities of the Invasive Plant Council of British Columbia are to be determined. It is expected that the Council will:

1. Coordinate invasive plant management programs in British Columbia by:

   - Recommending changes in legislation and Best Management Practices to improve invasive plant management;
   - Helping to define roles and reporting mechanisms for a range of groups, including the public; and
   - Conducting gap analysis for local delivery agents and lands not addressed, using a proactive action plan for key issues in sensitive areas and developing emergency preparedness plans, as required.

2. Develop a process, in cooperation with local government and regional weed committees, to determine a minimum acceptable level of invasive plant management in British Columbia that will meet the strategy's goal.

3. Produce a list of invasive plant species requiring management in British Columbia, and over time, identify key invasive plant species from different Ministry priorities, key habitats at risk, habitats identified through the Species at Risk process and habitats with legislated priority, then recommend actions for ecosystem restoration and recently discovered species.

4. Coordinate education and information to meet the strategy's goal by:

   - Implementing a strong provincial-level invasive plant public awareness program that will complement and support similar programs for regional districts, municipalities and regional invasive plant programs;
   - Coordinating all information management relating to invasive plants in BC, including developing and maintaining a central website and establishing an information clearing house for publication distribution; and
   - Enabling the sharing of technical information, such as by organizing and hosting annual conferences, symposia and workshops.

*Nodding Thistle*

5. Promote the establishment and maintenance of a centralized, coordinated and current invasive plant inventory that is accessible and available to users and the public, with mapping capability and an online reporting system for invasive plant management.

6. Address early detection and eradication of outbreaks of invasive plants by:

   - Serving as a catalyst or support mechanism for action on crisis management, without duplicating local actions;
   - Developing and implementing a protocol to keep ecosystems free of invasive plants through cooperation by all agencies;
   - Providing special funding to address new outbreaks of invasive plants; and
   - Developing early detection and risk assessment strategies for new invasive plant species in British Columbia, including producing a "provincial invaders list" for key species in areas of concern and identifying levels of action needed.

7. Manage the proposed trust fund, through the board of directors, to:

   - Receive applications and funding proposals from a variety of parties to conduct public awareness campaigns, research projects and other relevant activities; and
   - Implement a provincial prioritization mechanism for making decisions on spending limited funds.

8. Identify research needs and priorities for the management of invasive plants.

9. Monitor the strategy's effectiveness towards improved invasive plant management in British Columbia by:

   - Producing a provincial "report card" on the state of invasive plant management and how agencies are performing; and
   - Adapting the strategy as required, based on monitoring results and new knowledge.

*Oxeye Daisy*

# 8 KEY ACTIONS FOR THE INVASIVE PLANT COUNCIL

The **trust fund** will be established with multi-party funding at arms length from government to coordinate invasive plant management in BC. The trust fund will not be used for operational invasive plant management activities.

**Effective legislation is required** to achieve the strategy's goal of protecting the environment and minimizing the negative social and economic impacts caused by invasive plants.

The new Invasive Plant Council of British Columbia will have five key preliminary actions to undertake. The Council will need to focus its efforts to: help ensure there is sufficient funding both for operational management and province-wide coordination, recommend changes to strengthen legislation, improve compliance with current and new legislation, communicate and coordinate among its membership, and increase public awareness and outreach regarding invasive plant management.

### 8.1 Help Ensure Sufficient Funding

Sufficient funding for invasive plant management in British Columbia is required for two main purposes: (1) to carry out operational management programs, including control treatments, and (2) to provide province-wide coordination by the Invasive Plant Council. The Council will use its collective influence to help ensure there is sufficient funding for operational management of invasive plants at the local level. Additional funds are required to carry out the Council's new province-wide coordination role, which will be best achieved through the establishment and management of a new multi-party trust fund. This is expected to be a more cost-effective process overall for invasive plant management.

Funding the Council's activities through the trust fund will not draw from funds for operational invasive plant management. The purpose of the trust fund will be to finance coordination of invasive plant management in British Columbia, the identification and promotion of research priorities, public awareness and outreach programs, and other related Council functions and activities. The trust fund would be managed and administered at arms-length from government, and not subject to the provincial government's annual budgeting process. The provision of financial support is not only critical for the Council's functions, but is also expected to help develop "buy-in" to the strategy and the Council's role.

Contributions to the trust fund would be voluntary. Contributors could include the federal and provincial governments, industry, non-government organizations and research groups. A more complete overview of possible contributors is provided in the list of potential signatories to the strategy's Memorandum of Support in Section 13.

The Council will consider provincial priorities in its allocation of funding from the trust fund; however, it will also need to recognize regional priorities and their significance to the province. Independent management of the trust fund is required for the secure continuation of, and confidence in, the Council and its mandate.

### 8.2 Recommend Legislative Changes

Effective legislation for invasive plant management is a foundation for the Council's fulfillment of its roles and responsibilities and the strategy's overall success. To minimize threats to British Columbia's environment and economy and to public health, the Council will appoint a working group (Regulation, Compliance and Enforcement) to review federal and provincial legislation relating to invasive alien plant management and make recommendations for changes.

In reviewing all relevant federal and provincial Acts (listed in section 12), the Regulation, Compliance and Enforcement working group may wish to consider:

- The effectiveness of current federal and provincial legislation in achieving proactive management of invasive plants on all federal lands, provincial Crown lands and private land, including preventing the importation of potentially invasive species;
- The role of local government and invasive plant control under section 9 of the provincial *Weed Control Act*, and in municipal and regional district bylaws;
- The extent and ability of current legislation to effectively address all invasive plants (not only those legislated as noxious weeds);
- Methods of cost recovery for invasive plant management;
- The role of land users in preventing new outbreaks and the spread of invasive plants; and

*Orange Hawkweed*

- Effective ways to present and implement Best Management Practices for invasive plants (for example, linking with the development and promotion of Best Management Practices for recreational activities in grasslands).

### 8.3 Aim for Improved Compliance

Many invasive plant program managers and technical specialists find that increasing awareness of the impacts of invasive plants is the best way to achieve compliance with legislation by a wide range of stakeholders. Compliance with all legislation, both current and new, is a foundation of this strategy and is based on improving public awareness and understanding of the impacts of invasive plants.

Compliance will be monitored by the Council, in combination with its efforts to improve public awareness and outreach (described in section 8.5) for evaluating changes in compliance over time. This is expected to create a more cooperative and supportive environment for successful invasive plant management.

### 8.4 Enhance Communication and Coordination

Communication and coordination of this strategy will be focused on the broad, inclusive membership of the provincial Invasive Plant Council. The Council will communicate with its members through an annual meeting and regular e-mail updates. This will initiate a process for members to share new information and Council business with their staff, members and constituents. The Council's work will emphasize the prevention of invasive plant establishment and spread. Regional programs will build on those prevention efforts and supplement them with the necessary operational work to control invasive plants.

### 8.5 Increase Public Awareness and Outreach

Among its many important roles and responsibilities, the Invasive Plant Council will lead a coordinated public awareness and outreach program across the province. This is a critical foundation of the strategy. Public awareness will employ a comprehensive approach that addresses all land users and ends the issue of "weeds" as primarily an agricultural issue.

Increasing public awareness of the impacts of invasive plants will include drawing on the potential influence of the Council and its members. The program will communicate key messages to user groups and the public, based on local technical needs and the most effective delivery methods. Public awareness will build on local programs using consistent and complementary messages to all age groups. Programs and activities will focus on preventing invasive plant infestations, minimizing the spread of outbreaks, presenting methods of control and restoring ecosystems. Outreach (extension) services will continue to be provided at the local level by knowledgeable individuals who can assist with plant identification, confirmation of recent outbreaks and options for site-specific treatments.

The Council's board of directors may wish to establish a working group to oversee public awareness at the province-wide level. Duplication of local efforts must be avoided. As well, information and outreach to children through school programs and nature activities can help them alert their families in the identification of invasive species. Monitoring the results of public awareness efforts will require that a benchmark study first be conducted to evaluate current programs.

Public awareness and outreach may include setting up and maintaining a central website, implementing a television campaign, creating an invasive plants mascot, adding invasive plant management to the science and environmental school curriculum, and establishing a toll-free number to report new outbreaks. Engaging the media may be particularly helpful to relay key messages to the public about the impacts and management of invasive plants. Local stewardship groups will be encouraged to help implement invasive plant management in their ecosystem restoration programs and projects.

Implementing the invasive plant strategy will emphasize **compliance** with existing and new legislation.

**Communication and coordination** among the Council's inclusive membership will be one of the Council's important functions.

**Public awareness** is a key tool for improving British Columbians' awareness to minimize the impacts of invasive plants.

*Giant Hogweed*

# 9 ROLES AND RESPONSIBILITIES OF OTHER STRATEGY PARTICIPANTS

Implementation of the strategy will involve individual and coordinated roles and responsibilities for all Memorandum of Support signatories. As discussed earlier, under the strategy a new **Invasive Plant Council of British Columbia** will be established to conduct all coordination, planning, prioritizing and education for invasive plant management. The Council will exist as a legal, non-profit society with members and bylaws, and will be guided by a board of directors.

The **federal government** will fulfill its role in managing invasive plants on all federal lands, such as Indian Reserves, military areas and national parks. Research on invasive plant bio-control and management will be another important function.

The strategy will also encourage **First Nations** to play a larger role in the management of invasive plants on reserve lands. To realize this, First Nations will work closely with the federal, provincial and local governments, and participate directly with local government and regional weed committees.

The **provincial government** is the most significant land occupier of provincial Crown land, and several ministries hold responsibility for Crown land management and tenures. The provincial government will oversee all relevant legislation and will manage invasive plants on Crown land, as well as provide technical expertise on key species in British Columbia.

Regional management of invasive plants will be delivered through a cooperative approach at the local level, involving **local governments** and **regional weed committees**, to coordinate delivery of operational invasive plant management programs.

**Land occupiers**, as defined under the provincial *Weed Control Act*, will continue to be responsible for the control of noxious weeds on their land. Fulfilling this requirement will be achieved through improved public awareness and outreach to prevent the establishment of all invasive plant species and provide options for management.

**Industry** will continue to conduct management activities, including voluntary control of known outbreaks. Industry representatives will work with multi-jurisdictional initiatives to develop management programs that cover all land uses in an area. The numerous industrial sectors affiliated with land management will be relied on to influence their employees and clients about the importance of invasive plant management.

**Non-government organizations** will provide vital support and far-reaching influence about invasive plant management, both within the Council and to their respective members.

*Japanese Knotweed*

The **academic and research** community will provide essential technical support by developing new management strategies using sound integrated vegetation management principles. Research scientists will be relied on for their contributions to advancing control methods.

Specific functions and responsibilities for each category are described below.

## 9.1 Federal Government

### 9.1.1 Overview and Function

The federal government encompasses a range of agencies involved in invasive plant management in Canada. Federal involvement includes legislation, environmental protection, research, and the funding and delivery of control treatments on federal lands. Federal departments must be coordinated to deliver a cohesive national approach to invasive plant management for the benefit of all provinces, including British Columbia. A federal inter-agency coordination committee (or other mechanism) should be established to represent and coordinate the various federal departments involved in invasive plant management.

### 9.1.2 Roles and Responsibilities

The expected roles and responsibilities of the federal government under the strategy are to:

1. Conduct and fund operational invasive plant management on federal lands, such as Indian Reserve lands, military areas and national parks, to a level that achieves the strategy's goal.
2. Identify research priorities and conduct invasive plant management research.
3. Maintain and update all relevant national legislation, as required.
4. Lead the development and delivery of new bio-control agents.
5. Enforce prevention of the importation of invasive plants in seed, forage and nursery stock.
6. Fund and deliver coordination of the federal role on invasive plant management within the federal government and for the provinces and territories.
7. Contribute funding to the Council.
8. Contribute technical knowledge and materials for public awareness and outreach.

## 9.2 First Nations

### 9.2.1 Overview and Function

First Nations play an important role in invasive plant management because of the need to control invasive plants on reserve lands and traditional territories. Reserve lands can often harbour invasive plants, but there is limited or no funding for management of these plants. Additionally, improved awareness and new operational programs will provide opportunities to develop local First Nations workforces as a means of economic development.

*Yellow Starthistle*
*Photo: Dr. Ben Roche, Washington State University*

### 9.2.2 Roles and Responsibilities

The expected roles and responsibilities for First Nations under the invasive plant strategy are to:

1. Conduct invasive plant management on Indian Reserve lands to a level that achieves the strategy's goal, and work with community-based weed committees within First Nations traditional territories.
2. Contribute treatment data and information on invasive plant outbreaks to the inventory database.
3. Develop effective integrated invasive plant management strategies.
4. Liaise with, and provide information to, land managers and regional weed committees regarding invasive plant management.
5. Increase awareness with Band members of invasive plants and their impacts.
6. Encourage the establishment of an invasive plant committee for each Band.

# 9 ROLES AND RESPONSIBILITIES OF OTHER STRATEGY PARTICIPANTS

## 9.3 Provincial Government

### 9.3.1 Overview and Function

The provincial government is responsible for the management of British Columbia's vast area of Crown lands, including forests, grasslands and transportation corridors. Several government ministries have overlapping responsibilities for tenures and resource management on Crown land.

### 9.3.2 Roles and Responsibilities

The expected roles and responsibilities for the provincial government under the strategy are to :

1. Maintain and update relevant legislation and regulations.
2. Develop effective integrated invasive plant management strategies.
3. Conduct invasive plant management on Crown lands to a level that achieves the strategy's goal.
4. Determine the role of each provincial ministry for invasive plant management.
5. Monitor and ensure the enforcement of provincial legislation.
6. Ensure the maintenance of an accurate invasive plant inventory and database that are accessible to users and the public, both for data entry and retrieval.
7. Provide technical expertise to local government, regional weed committees and the public on priority (key) species, prescriptions, treatment options (Best Management Practices), data collection, management and mapping.
8. Assist with funding for local programs by local governments and regional weed committees.
9. Contribute funding to the Council.
10. Encourage the development of a functioning weed committee or local program in every region of the province.
11. Identify research needs and priorities with the federal government and provincial universities.
12. Contribute technical knowledge and materials for public awareness and outreach.

## 9.4 Local Government

### 9.4.1 Overview and Function

Local government includes regional districts and municipalities responsible for invasive plant management on lands it occupies. Some local governments conduct invasive plant management programs that vary according to direction of the regional district board or municipal council. Activities of local government could include operating or participating on weed committees, education and awareness programs, inventory and monitoring, and enforcing weed control where deemed necessary.

*Field Scabious*

### 9.4.2 Roles and Responsibilities

The expected roles and responsibilities of local government under the strategy are to:

1. Conduct invasive plant management on the land it occupies to a level that achieves the strategy's goal.
2. Operate, encourage the establishment of, or participate on a multi-sector weed committee to coordinate invasive plant management by stakeholders at the local level.
3. Encourage private landowners to comply with provincial legislation.
4. Provide leadership and support for public education at the local level. This could include undertaking awareness programs or supporting education programs that benefit local communities.
5. Encourage implementation of prevention strategies.
6. Deliver on-the-ground invasive plant management programs on private land, at the direction of the regional district board or municipal council, as appropriate.

## 9.5 Regional Weed Committees

### 9.5.1 Overview and Function

For the purposes of this strategy, "regional weed committee" refers to community-based, or regional, weed committees operating as societies or informal groups. They are usually composed of a range of stakeholders from provincial government agencies, local government, community interest groups and industry, along with affiliated individuals, all of whom cooperate to improve invasive plant management within the defined area. In addition to planning and coordinating treatments, regional weed committees focus on prevention, education and awareness, inventory and monitoring. Coordination between weed committees is facilitated by annual meetings to share information and coordinate activities across jurisdictional boundaries.

### 9.5.2 Roles and Responsibilities

The expected roles and responsibilities of regional weed committees under the strategy are to:

1. Support delivery of invasive plant management to a level that achieves the strategy's goal.
2. Operate as a multi-sector committee to coordinate local invasive plant management by stakeholders.
3. Coordinate delivery of operational control programs, the "on-the-ground" work, with available resources and encourage implementation of prevention strategies by all stakeholders.
4. Provide outreach services for public education and awareness and respond to requests for technical information.
5. Encourage or provide complete and accurate database entry on invasive plant outbreaks and control treatments.
6. Encourage compliance with provincial legislation pertaining to invasive plants.
7. Monitor effectiveness of local invasive plant management.
8. Work as a catalyst to ensure that local contractors are available for operational work.

## 9.6 Land Occupier

### 9.6.1 Overview and Function

Under the *Weed Control Act*, land occupier refers to a person who is in physical possession of land, premises or property, or who is responsible for – and has control over – the condition of, the activities conducted on, and the persons allowed to enter or use, land, premises or property. The land occupier may be a municipality or government. Land occupiers are responsible for the management of defined noxious weeds on their land.

*Burdock*

### 9.6.2 Roles and Responsibilities

The primary responsibility of land occupiers is to control legislated noxious weeds. Land occupiers will also be encouraged and supported to conduct invasive plant management, as required, to a level that achieves the strategy's goal.

## 9.7 Industry

#### 9.7.1 Overview and Function

The industry category covers a wide range of commercial users in British Columbia affiliated with invasive plant management, including the agriculture, forestry and mining sectors; utilities and transportation; and commercial recreation and guide outfitters.

### 9.7.2 Roles and Responsibilities

Under the invasive plant strategy, the expected roles and responsibilities for industry are to:

1. Conduct invasive plant management to a level that achieves the strategy's goal.
2. Support local government and regional weed committees by:
   - Cooperating in public awareness and education activities;
   - Contributing technical expertise in the preparation of information resources; and
   - Assisting with the distribution of information resources to employees, contractors and clients.
3. Influence employees, contractors and clients to manage invasive plants.
4. Participate, where possible, on local government or regional weed committees.
5. Contribute to the trust fund.

### 9.8 Non-Government Organizations

#### 9.8.1 Overview and Function

Non-government organizations (NGOs) play an important role in invasive plant management because they encompass a wide range of resource management categories, mandates and land-based user groups. Individual members of NGOs represent a diverse number of disciplines and they are often able to contribute and influence in many constructive ways.

#### 9.8.2 Roles and Responsibilities

The expected roles and responsibilities for NGOs under the strategy are to:

1. Support regional programs and local government by:
   - Cooperating in public awareness and education activities;
   - Contributing technical expertise in the preparation of information resources; and
   - Assisting with the distribution of information resources to members and clients.
2. Influence members and clients to implement invasive plant management.
3. Participate, where possible, on local government and regional weed committees.
4. Contribute to the trust fund.

### 9.9 Academia and Research Organizations

#### 9.9.1 Overview and Function

Academia and research organizations include universities, other post-secondary institutions and research organizations. This category covers researchers who contribute to invasive plant management, including those involved in bio-control businesses. This scientific expertise will continue to play a critical role in invasive plant management by making available the most effective control strategies.

*Horsetail*

#### 9.9.2 Roles and Responsibilities

The expected roles and responsibilities for academia and research organizations under the strategy are to:

1. Conduct research on invasive plant management techniques.
2. Conduct risk assessment to analyze the costs and benefits of different management regimes and control methods for individual plant species.
3. Recommend changes to invasive plant management strategies and practices based on new information and knowledge derived from research.
4. Share staff expertise through teaching at post-secondary institutions, adult education courses, and technical workshops and courses.
5. Develop ecosystem restoration methodologies to rehabilitate areas infested with invasive plants.

# IMPLEMENTING AND MONITORING THE STRATEGY

# 10

The implementation process for the invasive plant strategy is detailed below.

1. Complete the strategy by February, 2004.
2. Present the strategy to federal, provincial and local governments.
3. Build cooperation and support for the strategy, including confirming signatories to the Memorandum of Support.
4. Establish the Invasive Plant Council and develop a short-term action plan for its five preliminary key actions:
   - Help ensure sufficient funding both for province-wide coordination and operational management;
   - Recommend changes to strengthen legislation;
   - Improve compliance with current and new legislation;
   - Communicate and coordinate among its membership; and
   - Increase public awareness and outreach.
5. Obtain funding by April 2004 to initiate strategy implementation.
6. Review the Memorandum of Support in early 2005.
7. Release the strategy's first "report card" in early 2005.
8. By 2005, identify key invasive plant species from different Ministry priorities, key habitats at risk, habitats identified through the Species at Risk process, habitats with legislated priority, and actions for new species recently discovered.

Once implemented, the strategy must be monitored to assess its effectiveness in improving the management of invasive plants, and to determine if further changes are required. Implementation of the strategy will be monitored for achievement of commitments at all levels. Monitoring will require defined indicators to measure progress, including surveys with benchmarks established for 2003 on which progress can be measured.

Monitoring will be at two levels. Firstly, it will be conducted to evaluate the effectiveness of the strategy's implementation through the Council, the federal and provincial governments, and regional weed committees. This will additionally include the effectiveness of different measures to increase public awareness of invasive plants. Secondly, monitoring will be conducted to find ways to improve the strategy itself.

The Council would set the targets and indicators for such strategy components as public awareness, invasive plant control, and key invasive plant species and habitats, and then monitor to assess progress and the strategy's effectiveness. Monitoring of public awareness will require that strategy signatories and other members of the Council know if the publications, posters and other measures produced to date have been effective, or if the approaches used to convey important messages about invasive plants should be modified.

Strategy monitoring results could be presented in a "report card" format to simplify the communication of progress on invasive plant management. The report card would assess different components of invasive plant management, such as the functioning of the Council, security of funding, number of new outbreaks, and overall progress in improving invasive plant management. All reporting will be based on the strategy's goal and objectives.

*Goat's Beard*

# REFERENCES


BC Ministry of Agriculture, Food and Fisheries. 1998. Integrated weed management—an introductory manual.

BC Ministry of Agriculture, Food and Fisheries. 2003a. Available at <www.agf.gov.bc.ca/cropprot/ipm.htm.

BC Ministry of Agriculture, Food and Fisheries. 2003b. Internal report.

BC Ministry of Agriculture, Food and Fisheries. Undated. Knapweed—its cost to British Columbia. Extension brochure.

BC Ministry of Forests. Undated. Noxious weeds—a black mark on biodiversity. Nelson Region, Cranbrook District. Available at <www.for.gov.bc.ca/nelson/district/cranbrk/Range/Noxious%20Weeds.htm>.

BC Ministry of Water, Land and Air Protection. 2003. Definition of integrated pest management. Available at <wlapwww.gov.bc.ca/epd/epdpa/ipmp/IPMdefn.htm>.

Beck, K.G., 2001. Biology and management of the toadflaxes. Colorado State Cooperative Extension Service. July.

Billings, W. D. 1948. Preliminary notes on fire succession in the sagebrush zone of western Nevada. Bull. of the Ecol. Society of America. 29:30.

Convention on Biological Diversity. 2002. Ecosystem approach. Available at <www.biodiv.org/programmes/crosscutting/ecosystem/>.

Claudi, R., Nantel, P. and E. Muckle-Jeffs (eds). 2002. Alien invaders in Canada's waters, wetlands, and forests. Nat. Res. Canada, Can. For. Serv., Ottawa. 320 pp.

Clements, D.R., D. J. Peterson and R. Prasad. 2001. The biology of Canadian weeds. 112. *Ulex europaeus* L. Can. J. Plant Sci. 81:325–337.

Dukes, J.S. and H.A. Mooney. 1999. Does global change increase the success of biological invaders? TREE Vol. 14(4): pp.135–139.

Duncan, C. 1997. Environmental benefits of weed management. Techline, July. p. 5–10. Available at <www.fs.fed.us/r4/boise/mgmt/weeds/Documents/projects/envirben.pdf>.

Environment Canada. 2003. Wetlands and climate change. Available at <www.ec.gc.ca/water/en/nature/wetlan/e_clim.htm>.

Fleming, T. 1998. The state of regional parks: an ecological perspective. Prepared for Capital Regional District Parks. Victoria, BC.

Hakim, S.E.A. 1979. Range condition on Three Mile Game Range in western Montana. MS thesis. Univ. of Montana, Missoula, MT. 62 pp.

Morse, L., J. Kartesz and L. Kutner. 1995. Native vascular plants. In: Laroe, E., G. Farris, C. Puckett, P. Doran and M. Mac (eds.) Our living resources: a report to the nation on the distribution, abundance, and health of US plants, animals, and ecosystems. Wash. DC: US Dept. of the Interior, Nat. Biol. Service. p. 205–209.

Lacey, J., C. Marlow and J. Lane. 1989. Influence of spotted knapweed (*Centaurea maculosa*) on surface runoff and sediment yield. Weed Technology. Vol. 3, Issue 4.

Leafy Spurge Stakeholders Group. 1999. Impact assessment working group. Manitoba. Exec. summ.

Montana Weed Control Association. 2003. Available at <www.mtweed.org/Impacts/General/general.html>.

Office of Technology Assessments, United States Congress. 1993. Harmful non-indigenous species in the United States.

Peterson, D. and R. Prasad. 1998. The biology of Canadian weeds, 109. *Cytisus scoparius*. Can. J. Plant Sci. 78:497–504.

Powell, G., B. Wikeem, A. Sturko and J. Boateng. 1997. Knapweed growth and effect on conifers on a montane forest. Can. J. For. Res. 27:1427–1433.

Radtke, H. 1993. An economic evaluation of biological control of tansy ragwort. Tech. Rep. Oregon Dept. of Agriculture.

Reichart, S. Reducing the spread of invasive plants. Hortus West. Vol. 9, Issue 1:pp. 22-24.

Sellentin, E. 2002. Invasive alien species removal and habitat restoration in the wetlands and estuaries of the Comox Valley, 2002. Comox Valley Naturalists Society. Available at <www.comoxvalleynaturalist.bc.ca/ernietext.html>.

Swanton, C.J., Harker, K.N. and R.L. Anderson. 1993. Crop losses due to weeds in Canada. Weed Technology. Vol 7. p. 537–542.

Thompson, D. Q., Stuckey, R. L. and E. B. Thompson. 1987. Spread, impact, and control of purple loosestrife (*Lythrum salicaria*) in North American wetlands. US Fish and Wildlife Service. 55 pp. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. Available at <www.npwrc.usgs.gov/resource/1999/loosstrf/loosstrf.htm (Version 04JUN99)>.

US Fish and Wildlife Service. 2003. Ecosystem approach. Available at <http://ecosystems.fws.gov>.

Watson, A.K. and A.J. Renney 1974. The biology of Canadian weeds. 6. *Centaurea diffusa* and *C. maculosa*. Can. J. Plant Sci. 54:687–701.

Westbrooks, R. 1998. Invasive plants, changing the landscape of America: Fact book. Federal Interagency Committee for the Management of Noxious and Exotic Weeds. Washington, DC. 109 pp.

World Resources Institute. 2000. Available at <www.wri.org/wr2000/index.html>.

## 12.1 Federal

The purpose of the ***Plant Protection Act*** is to protect plant life and the agricultural and forestry sectors of the Canadian economy by preventing the importation, exportation and spread of pests, and by controlling or eradicating pests in Canada.

Source: <http://laws.justice.gc.ca/en/P-14.8/index.html>

The ***Seeds Act*** stipulates that seed imported into, or exported from, Canada must conform to the prescribed standard and be marked, packed and accurately labeled.

Source: <http://laws.justice.gc.ca/en/S-8/index.html>

The ***Species at Risk Act*** was recently enacted to prevent wildlife from becoming extinct in Canada; to provide for wildlife species that are extirpated, endangered or threatened as a result of human activity; and to manage species of special concern to prevent them from becoming endangered or threatened.

Source: <www.sararegistry.gc.ca/the_act/SARA_guide_e.pdf>

The ***Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act*** was created to control international trade and inter-provincial transport in wild animals and plants, their parts and products to better conserve Canadian and foreign species, and to protect Canadian ecosystems from the introduction of harmful wild species. The Act prohibits the importation of wildlife taken illegally from another country, and implements Canada's obligations under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Source:<www.ec.gc.ca/EnviroRegs/ENG/SearchDetail.cfm?intAct=1014>.

## 12.2 Provincial

The ***Weed Control Act*** places a duty on all land occupiers to control the noxious weed species listed in the accompanying regulations. British Columbia has 48 plant species classified as noxious. These must not be transported to, or seeded in, areas where they are not already established. The Act provides for the appointment of inspectors to ensure compliance and, failing that, for a method by which they can control weeds with costs recovered from the occupier. Weed Control Committees may be established by municipal councils to administer the Act within a municipality. Committees report to the municipal councils and to the Minister.

Source: <www.agf.gov.bc.ca/ministry/legsum/WCON.stm>

The ***Plant Protection Act*** provides for the prevention of the spread of pests destructive to plants in British Columbia, including the powers of inspectors and the authority to establish quarantine areas.

Source: <www.agf.gov.bc.ca/ministry/legsum/PPRO.stm>

The ***Forest and Range Practices Act*** brings in the application of a results-based system for the management of forest and range resources. It replaces the *Forest Practices Code of British Columbia Act* and requires that forest and range practices prevent the introduction or spread of invasive plants.

Source: <www.for.gov.bc.ca/code/>

The ***Integrated Pest Management Act*** replaces the *Pesticide Control Act* regarding the application of pesticides for commercial and industrial use on all public land and on private land used for forestry, utilities, transportation and pipelines. The Act requires that all reasonable non-pesticide treatments must be evaluated and the use of pesticides justified before being used.

Source: <http://wlapwww.gov.bc.ca/epd/epdpa/ipmp/pestact/index.html>

Under the ***Pipeline Act***, companies that construct or operate pipelines to transport oil, gas or solids must, on its land adjacent to its pipeline, annually root out and destroy thistles and noxious weeds before they have matured to seed.

Source: <http://www.qp.gov.bc.ca/statreg/stat/P/96364_01.htm#section38>

# 13 MEMORANDUM OF SUPPORT – POTENTIAL SIGNATORIES

Potential signatories of the ***Invasive Plant Strategy for British Columbia***, by category, include, but are not limited to:

| Category | Potential Signatory |
|---|---|
| **Federal Government** | • Agriculture and Agri-Food Canada<br>• Canadian Food Inspection Agency<br>• Department of National Defence<br>• Environment Canada<br>• Fisheries and Oceans Canada<br>• Indian and Northern Affairs Canada<br>• Natural Resources Canada<br>• Parks Canada<br>• Western Economic Diversification Canada |
| **First Nations** | • First Nations Agricultural Association<br>• First Nations Summit and affiliated bands and tribal councils<br>• Independent bands<br>• Individual treaties (e.g., Nisga'a, Douglas, Treaty 8)<br>• Union of BC Indian Chiefs and affiliated bands and tribal councils |
| **Provincial Government** | • BC Ministry of Agriculture, Food and Fisheries<br>• BC Ministry of Energy and Mines<br>• BC Ministry of Forests<br>• BC Ministry of Sustainable Resource Management<br>• BC Ministry of Transportation<br>• BC Ministry of Water, Land and Air Protection<br>• Land and Water BC Inc. |
| **Local Government** | • Association of Vancouver Island and Coastal Communities<br>• Individual municipalities<br>• Individual regional districts<br>• Regional weed committees<br>• Union of BC Municipalities |
| **Forest Industry** | • BC Nursery Trade Association<br>• Central Interior Logging Association<br>• Coast Forest Lumber Association<br>• Council of Forest Industries<br>• Federation of BC Woodlot Associations<br>• Forest Nursery Association of BC<br>• Northern Integrated Vegetation Management Association<br>• Private Forest Landowners Association<br>• Truck Loggers Association |
| **Agriculture** | • BC Agriculture Council<br>• BC Cattlemen's Association<br>• BC Forage Council<br>• BC Landscape and Nursery Association<br>• Farmer's Institute<br>• Provincial 4-H Council<br>• Seed companies<br>• Society for Range Management |
| **Utilities** | • BC Hydro<br>• BC Transmission Corporation<br>• Fortis<br>• Duke Energy Gas Transmissions |

| Category | Potential Signatory |
|---|---|
| **Utilities (continued)** | • Pacific Northern Gas<br>• Telus<br>• Terasen Gas<br>• Terasen Pipelines<br>• TransCanada PipeLines |
| **Transportation** | • BC Rail<br>• Burlington Northern Santa Fe<br>• CN Rail<br>• CP Rail |
| **Conservation and Wildlife** | • BC Habitat Conservation Fund<br>• BC Wildlife Federation<br>• Cariboo Chilcotin Conservation Society<br>• Columbia Basin Trust<br>• Ducks Unlimited<br>• Federation of BC Naturalists<br>• Garry Oak Ecosystems Recovery Team<br>• Grasslands Conservation Council of BC<br>• Habitat Acquisition Trust<br>• Land Trust Acquisition of BC<br>• Native Plant Society of BC<br>• Nature Conservancy of Canada<br>• Rocky Mountain Elk Association<br>• The Land Conservancy of BC<br>• The Nature Trust of BC |
| **Recreation and Tourism** | • BC Marine Trades Association<br>• BC Rodeo Association<br>• BC Snowmobile Federation<br>• Council of Tourism Associations<br>• Four Wheel Drive Association of BC<br>• Guide Outfitters Association of BC<br>• Horse Council BC<br>• Mountain Bike BC<br>• Outdoor Recreation Council of BC<br>• Quad Riders Association of BC |
| **Academic and Research** | • Affiliated research organizations<br>• Bio-control businesses<br>• Universities and university colleges in British Columbia, other western provinces, and western US states |
| **Others** | • Association of BC Forest Professionals<br>• Association of Professional Biologists of BC<br>• Association of Professional Engineers and Geoscientists of BC<br>• BC and Yukon Chamber of Mines<br>• BC Institute of Agrologists<br>• BC Society of Landscape Architects<br>• BC Plant Protection Advisory Council<br>• BC Real Estate Association<br>• Integrated Vegetation Management Association of BC<br>• Land development associations and affiliated industry |

# Invasive Plant Strategy for British Columbia
# Memorandum of Support

The *Invasive Plant Strategy for British Columbia* is a collaborative outcome produced by a wide range of representatives from:

- All orders of government, including federal, provincial, local and First Nations;
- Land- and water-based user groups;
- Resource-based businesses and industries;
- Utilities; and
- Non-government organizations.

**The strategy's goal is to build cooperation and coordination to protect British Columbia's environment and minimize negative social and economic impacts caused by the introduction, establishment and spread of invasive alien plants.**

Signatories to this **Memorandum of Support** endorse the strategy's intent and thereby agree to uphold and espouse its goal. Signatories agree to participate in the Invasive Plant Council of British Columbia and help build leadership and a cooperative, province-wide invasive plant management program. Signatories are likewise expected to encourage other potential parties and individuals to work towards successful implementation of the strategy over time.

Nothing in this **Memorandum of Support** obligates signatories to contribute financially to the Invasive Plant Council of British Columbia or any aspect of the strategy's implementation.

_____ _____

Name Title

_____

Organization

_____ _____

Signature Date

# Invasive Plants in British Columbia

*Hound's-tongue*

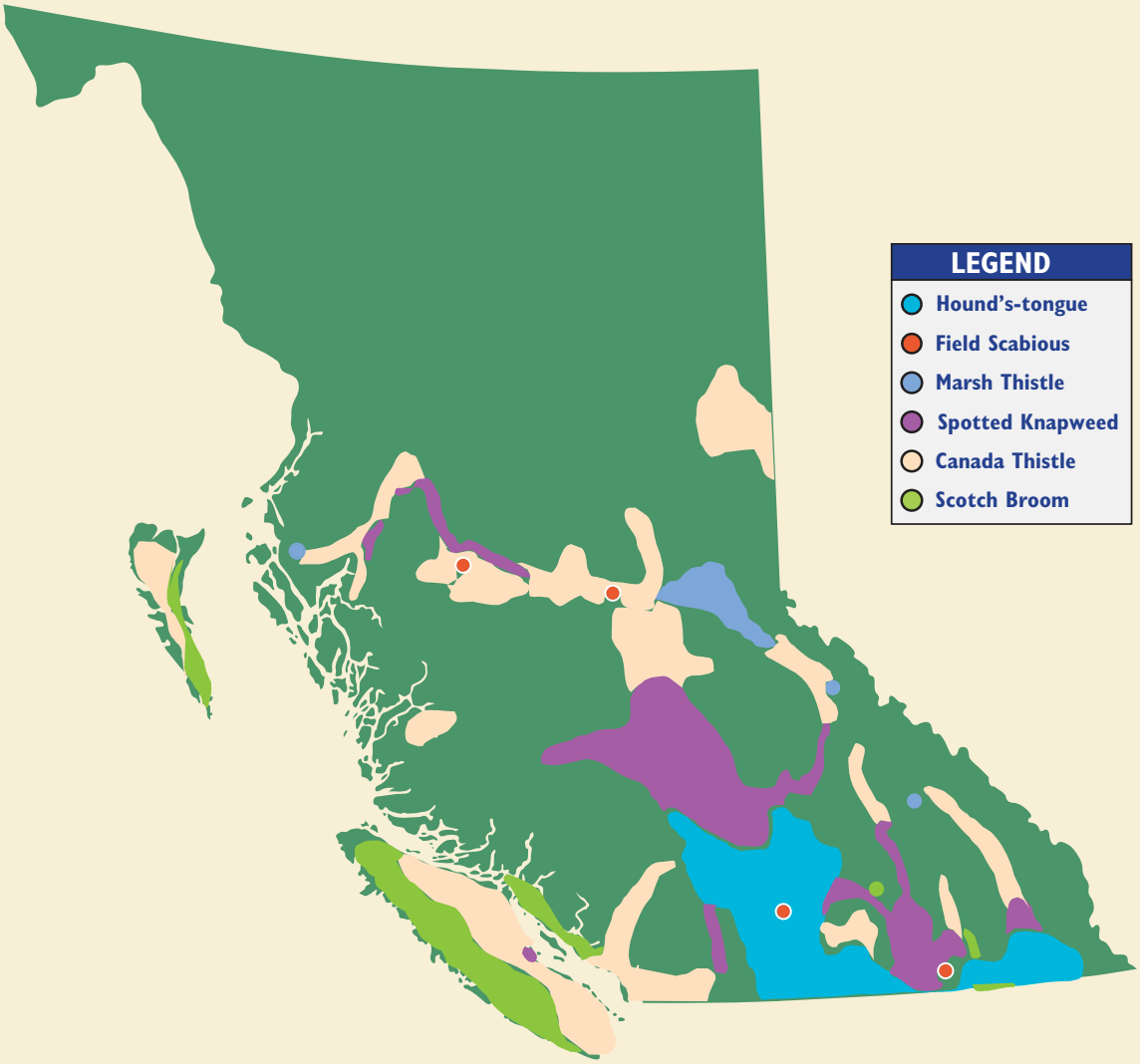
*Field Scabious*

*Marsh Thistle*

*Spotted Knapweed*

*Canada Thistle*

*Scotch Broom*




Invasive – or non-native – plant species have spread over large areas of British Columbia and have significant negative economic, environmental and social impacts. This map illustrates the extent of just six of over 40 major invasive plant species throughout the province. Please note that the map does not reflect the fact that many of these invasive plants overlap in distribution.

The Fraser Basin Council has worked with many agencies, organizations and individuals to develop the ***Invasive Plant Strategy for British Columbia***. The **Invasive Plant Council of British Columbia** is being established to address this important sustainability challenge.

**FOR MORE INFORMATION, CONTACT:**

*Fraser Basin Council*

Fraser Basin Council
1st Floor – 470 Granville Street
Vancouver BC V6C 1V5

Tel: (604) 488-5350
Fax: (604) 488-5351
Email: gwallin@fraserbasin.bc.ca

**www.fraserbasin.bc.ca**

PRINTED IN CANADA ♻ MADE FROM 100% POST CONSUMER WASTE