

# **NORTHWEST INVASIVE PLANT COUNCIL (NWIPC)**

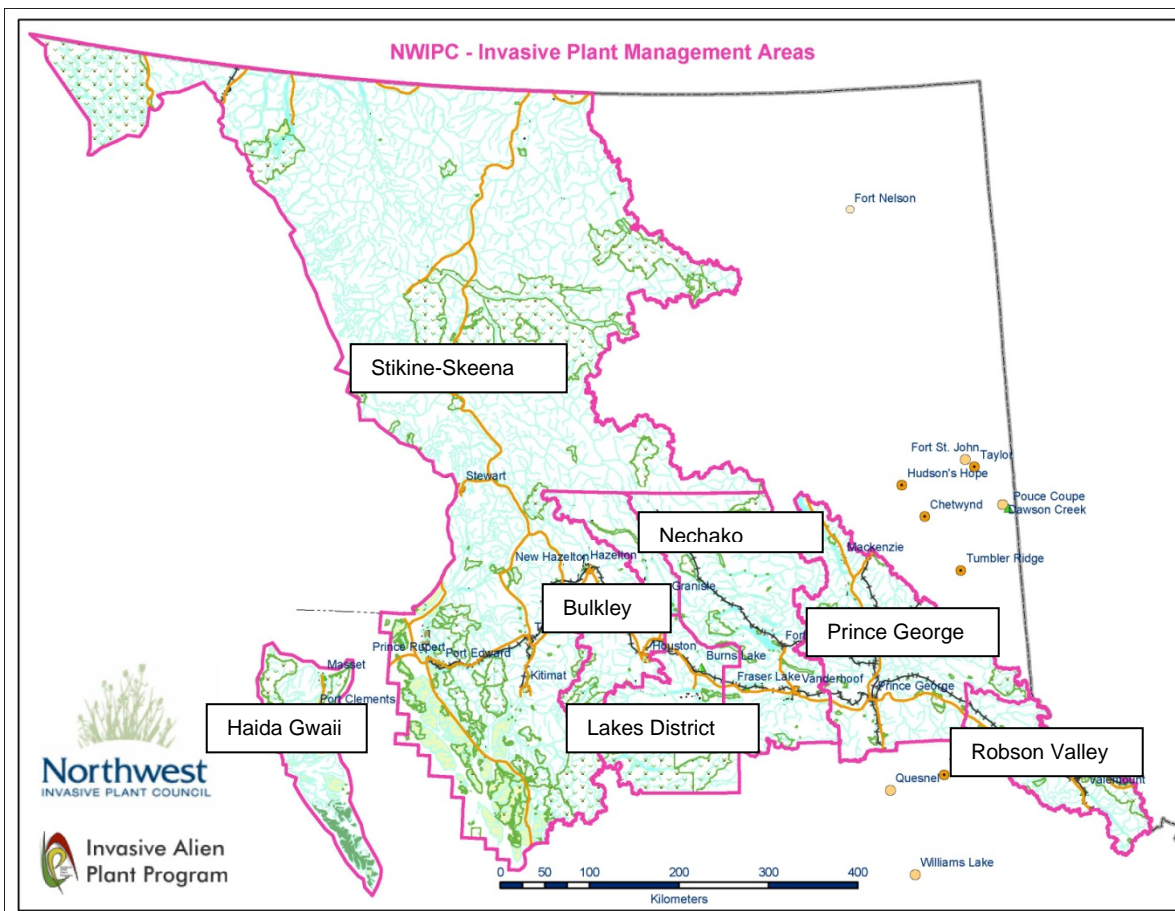
## **2011 STRATEGIC PLAN AND PLANT PROFILES**



**Northwest**  
INVASIVE PLANT COUNCIL

Chairperson: Denise McLean  
BC Ministry of Agriculture Food & Fisheries  
Suite 815 - 299 Victoria Street  
Prince George, BC V2L 5B8  
Phone: 250-565-7201  
Email: [Denise.McLean@gov.bc.ca](mailto:Denise.McLean@gov.bc.ca)

Program Manager: Andrea Eastham  
1595 Fifth Avenue  
Prince George, BC V2L 3L9  
Phone: 250-564-4115 loc 233  
Email: [info@nwipc.org](mailto:info@nwipc.org)



## TABLE OF CONTENTS

<b>GOAL OF THE NORTHWEST INVASIVE PLANT COUNCIL .....</b>	<b>3</b>
<b>OPERATING PRINCIPLES OF NWIPC.....</b>	<b>4</b>
<b>BACKGROUND .....</b>	<b>4</b>
 <b>APPENDIX 1: MANAGEMENT FOCUSES FOR INVASIVE PLANTS IN CENTRAL AND NORTHWEST BC .....</b>	<b>6</b>
 <b>APPENDIX 2: INVASIVE PLANT PROFILE FOR NORTHWEST AND CENTRAL BC.....</b>	<b>10</b>
 <b>APPENDIX 3: EARLY DETECTION RAPID RESPONSE, EDRR .....</b>	<b>33</b>
 <b>APPENDIX 4: CONTAINMENT LINES.....</b>	<b>34</b>
 <b>APPENDIX 5: NWIPC EXECUTIVE.....</b>	<b>36</b>
 <b>APPENDIX 6: NWIPC ROLES AND RESPONSIBILITIES.....</b>	<b>39</b>

## **GOAL OF THE NORTHWEST INVASIVE PLANT COUNCIL**

**To prevent further damage to the ecosystems of northwest and central BC from invasive alien plants and begin to rehabilitate ecosystems that have been degraded by invasive alien plants.**

To achieve our goal, the NWIPC strives to:

- Have NWIPC supported by agencies, organizations and the public of central and northwest BC and used as the organization to identify, address and find solutions to invasive plant issues.
- Assist other organizations, agencies and areas with improving the efficiency and effectiveness of their invasive plant management programs.
- Have effective and accurate provincial wide EDRR systems, IAPP and research, development and extension initiatives.

Our mid-term (3-year) goals include:

- Gain additional NWIPC members and partners contributing to the pooled funds by demonstrating and delivering effective and efficient invasive plant management that integrates awareness, reporting, evaluation, response and adjustment.
- Prevent the establishment of invasive alien plant species that are not currently in BC but present risks to the Province BC, for example, common crupina and yellow star thistle. Promote and assist the implementation of provincial EDRR and adjust NWIPC EDRR to align with provincial systems.
- Using Containment, (Appendix 4), detect and prevent the establishment of new invasive plant species that present a threat to the habitats of central and northern BC but are not yet present including: hound's-tongue, rush skeleton weed, sulphur cinquefoil and scotch thistle. Prevent the spread of species that have established but not spread in central and northern BC and consensus agreement has been reached to establish containment polygons including: marsh thistle, common tansy and field scabious.
- Working with members and partners, continue to develop rehabilitation strategies for those areas infested with species such as hawkweeds, oxeye daisy and Canada thistle. This includes acquiring, releasing and monitoring biological control agents if they are available.
- Have a high degree of data accuracy in IAPP.

The annual work plan, produced in conjunction with the plan & profile, details specific tasks and budget aimed at meeting our above stated goals.

## **OPERATING PRINCIPLES OF NWIPC**

- Encourage the public to report invasive plant sightings. (This requires adequate and prompt feedback to persons who report invasive plants).
- Inform the public about invasive plant programs so they can provide relevant comment.
- Develop and maintain a shared invasive plant inventory.
- Assess problems and threats that various invasive plants present to the environment and economy of the area. Categorize invasive plants and prioritize sites for control.
- Prevent the establishment of invasive plants not currently in the region. Prevent or minimize the spread of the invasive plants present in the region.
- Conduct invasive plant programs in the northwest and central BC using Integrated Pest Management principles as described in the 'Invasive Plant Strategy for BC'.
- Encourage all landowners, agencies and organizations operating in northwest and central BC to develop and implement invasive plant management programs.
- Manage and coordinate the activities and responsibilities of the various agencies and private landowners to ensure NWIPC goals are met.

## **BACKGROUND**

This strategic plan, with plant profiles, (referred to as the Plan and Profile) is for northwest and central BC. The area of concern is roughly west of the Rocky Mountains to the Pacific Ocean, including Haida Gwaii, and north of Quesnel to the Yukon border. Invasive plants, such as the knapweeds, that cause serious problems in southern BC are present in northwest and central BC. Populations of most of these invasive plants are low even though suitable habitat is extensive. A planned and coordinated approach to keep these invasive plants from spreading is necessary to prevent serious habitat degradation. There are also species such as marsh thistle and field scabious that have infested extensive areas in central BC that need to be contained so that they do not spread to the rest of BC.

The Northwest Invasive Plant Council, NWIPC, is a non-profit organization that has many agencies, organizations and private citizens as members. The council reviews and updates this plan annually. The plan tracks invasive plants, categorizes and prioritizes invasive plants and sites for control and outlines required actions. NWIPC provides support and coordination for those involved in the various aspects of invasive plant management including awareness, inventory, treatments and assessment. NWIPC also uses resources pooled by member organizations to conduct on ground inventories and treatments of invasive plants.

The speed at which invasive plants spread depends on the suitability and state of health of the habitats. Habitats in poor condition, with weak or degraded plant communities, and disturbed ground (such as construction sites) allow invasive plants to establish and spread rapidly. Prevention of invasive plant problems requires management of susceptible sites. Keeping habitats in good condition and minimizing and quickly seeding soil disturbances are required if the goals of this plan are to be accomplished.

NWIPC uses the following planning processes:

- **NWIPC Strategic Plan and Plant Profiles.** This Plan is reviewed, updated and approved at each spring meeting. It is a strategic document that defines operating principles, the NWIPC goals, prioritization strategies and a profile (date of introduction, distribution and threat) of the various invasive plants in, or threatening, central and northwest BC.
- **Invasive Plant Management Area (IPMA) Plans.** NWIPC is divided into 7 Invasive Plant Management Areas, IPMAs. Each IPMA has a contractor that provides inventory and treatment services and information on NWIPC programs such as the 50:50 rebate program to partners and the public. With assistance from NWIPC members, each contractor develops a plan that details how and what work will be done to accomplish goals for the IPMA, e.g. containment of a species. Drafting of the plans occurs over the winter and the plans are ready for the spring meeting but may be adjusted through the course of the year depending on resources, weather, growth patterns of invasive plants and other factors.
- **NWIPC Annual Work plan.** Using the NWIPC Strategic Plan and Profile and IPMA plans, the NWIPC Board of Directors develops an annual Work plan that provides an itemized budget to meet annual and shared long-term goals. The work plan provides activities aimed at achieving short-term goals, with budgets, targets and output measures. The work plan is available for discussion and amendment at the spring meeting and is reviewed at the fall meeting.

## APPENDIX 1: MANAGEMENT FOCUSES FOR INVASIVE PLANTS IN CENTRAL AND NORTHWEST BC

### EDRR - CONTAINMENT - REHABILITATION

Weed legislation, mandates and priorities can appear complicated and confusing. Different weed species have been labeled in various ways by local, provincial and federal laws, and the mandate to control weeds may be interpreted in different ways for lands with various types of tenure in private, local government, provincial crown land and federal jurisdiction situations.

To reduce the confusion and inefficiencies that might result from this, the wide range of stakeholders within the North West Invasive Plant Council have taken a co-operative approach to try to reach more effective and accepted focuses for the management of invasive plants.

There are about 70 plant species that could become or already are invasive in the area. It would be impossible with the resources available to eliminate all occurrences of each of these species so a system has been developed to guide and prioritize management efforts. The system involves an agreement that, following provincial directions, focus will be on preventing new species from entering and establishing in BC. A provincial Early Detection Rapid Response, EDRR, program is being developed for species not present or with extremely limited establishment in BC, e.g., common crupina and yellow star thistle. NWIPC will participate and assist with EDRR following the provincial program.

Secondly, invasive plants that have limited establishment in BC and have not yet spread or have limited distribution in central and northern BC will be prevented from spreading further, e.g., marsh thistle, field scabious, common tansy and knapweeds. This is the containment aspect of the program. Protocols for establishing containment polygons are described in Appendix 4.

For those species that have established, spread and have substantial presence in north and central BC, e.g., Canada thistle, hawkweed species and oxeye daisy, work will focus on rehabilitating infested areas. Rehabilitation will involve, when available, the release, monitoring and distribution of biological control agents. Rehabilitation will also involve other treatments particularly when they can be coordinated with work on containment. In the rehabilitation functions of the program a decision-making matrix of 4 plant **invasiveness categories** and 4 **site conditions** is applied to established and well distributed invasive plant species. The list was compiled by reviewing the literature on the habitat range and aggressiveness of invasive plants, scientific advice, and incorporating the substantial expertise and experience of the collective NWIPC membership.

The 4 **invasiveness categories** are labeled 1, 2, 3 and 4 in decreasing expected potential for invasion and impact: Group 1 is most invasive, while groups 2, 3 and 4 have progressively lower invasiveness. Invasive species considered for central and northwest BC are categorized in the table below:

TABLE 1. INVASIVE PLANT CATEGORIES

<b>CATEGORY 1 - EXTREMELY INVASIVE</b>			
Category 1 invasive plants invade even undisturbed habitats and dominate them. Domination implies the invasive plant becomes the most abundant species across the entire site or area of the plant community being invaded. The invasion can progress slowly or rapidly.			
Common Name	Scientific Name	Common Name	Scientific Name
Broom, Scotch	<i>Cytisus scoparius</i>	Knotweeds	<i>Fallopia &amp; Polygonum</i> sp.
Gorse	<i>Ulex europaeus</i>	Policeman's helmet or Himalayan balsam	<i>Impatiens glandulifera</i>
Hawkweeds	<i>Hieracium</i> spp.	Scabious, field or blue buttons	<i>Knautia arvensis</i>
Himalayan blackberry	<i>Rubus discolor</i>	Spurge leafy	<i>Euphorbia esula</i>
Hoary alyssum	<i>Berteroa incana</i>	Sulphur cinquefoil	<i>Potentilla recta</i>
Iris, yellow flag	<i>Iris pseudacorus</i>	Tansy, common	<i>Tanacetum vulgare</i>
Knapweed, black, brown & greater	<i>Centaurea nigra, jacea &amp; scabiosa</i>	Thistle, marsh plume	<i>Cirsium palustre</i>
Knapweed, spotted	<i>Centaurea stobe</i> , (syn. <i>C. maculosa</i> & <i>C. biebersteinii</i> )		
<b>CATEGORY 2 - VERY INVASIVE</b>			
Category 2 invasive plants invade even undisturbed habitats. They become very prevalent and may form dense patches but usually do not dominate the entire site or area of the plant community. If category 2 invasive plants invade the entire site or plant community they tend not to dominate the site.			
Common Name	Scientific Name	Common Name	Scientific Name
Bluet, mountain	<i>Centaurea montana</i>	Hound's-tongue	<i>Cynoglossum officinale</i>
Blueweed	<i>Echium vulgare</i>	Knapweed, diffuse	<i>Centaurea diffusa</i>
Burdock, common	<i>Arctium minus</i>	Loosestrife	<i>Lythrum</i> spp.
Chamomile, scentless	<i>Matricaria maritima</i>	Mossy stone crop	<i>Sedum acre</i>
Chicory	<i>Cichorium intybus</i>	Ragwort, tansy	<i>Senecio jacobaea</i>
Daisy, oxeye	<i>Chrysanthemum leucanthemum</i>	Thistle, Canada	<i>Cirsium arvense</i>
Eyebright	<i>Euphrasia nemorosa</i>	Thistle, plumeless	<i>Carduus acanthoides</i>
Hairy bittercress	<i>Cardamine hirsuta</i>	Toadflax, Dalmatian	<i>Linaria dalmatica</i>
Hops, common	<i>Humulus lupulus</i>	Yellow archangel	<i>Lamium galeobdolon</i> (syn. <i>Lamiastrum galeobdolon</i> , <i>L. galeobdolon</i> subsp. <i>argentatum</i> )
<b>CATEGORY 3 - INVASIVE</b>			
Category 3 invasive plants can invade undisturbed habitats but they usually require some disturbance to gain entry. Once in a habitat they usually do not dominate the site unless there are management problems.			
Common Name	Scientific Name	Common Name	Scientific Name
Baby's-breath	<i>Gypsophila paniculata</i>	Thistle, bull	<i>Cirsium vulgare</i>
Catchfly, night-flowering	<i>Silene noctiflora</i>	Thistle, Russian	<i>Salsola kali</i>
Comfrey	<i>Symphytum officinale</i> L.	Thistle, perennial sow	<i>Sonchus</i> spp.
Foxglove, purple	<i>Digitalis purpurea</i>	Toadflax, yellow	<i>Linaria vulgaris</i>
Goat's-beard	<i>Tragopogon</i> spp.	Wormwood or absinthium	<i>Artemisia absinthium</i>

### CATEGORY 4 – AGGRESSIVE OR UNDER BIOCONTROL

Category 4 invasive plants can invade even undisturbed habitats but they do so at a slow pace and rarely dominate the site. Category 4 invasive plants may go through large population fluctuations. This may be the result of the fluctuation in biocontrol agent populations or cyclic patterns in the plant displays.

Common Name	Scientific Name	Common Name	Scientific Name
Blue buttons	<i>Centaurea cyanus</i>	Medic, black	<i>Medicago lupulina</i>
Bluebur, western	<i>Lappula echinata</i>	Mullein	<i>Verbascum thapsus</i>
Buckwheat, wild	<i>Polygonum convolvulus</i>	Mustard, dog	<i>Erucastrum gallicum</i>
Bugloss, small	<i>Lycopsis arvensis</i>	Mustard hedge	<i>Sisymbrium officinale</i>
Campion, bladder	<i>Silene cucubalus</i>	Mustard, tumble	<i>Sisymbrium</i> spp.
Cockle, white	<i>Silene latifolia</i> ssp. <i>alba</i>	Mustard, wild	<i>Sinapis arvensis</i>
Dock, curled	<i>Rumex crispus</i>	Pineapple weed	<i>Matricaria matricarioides</i>
Fleabane, Canadian	<i>Conyza canadensis</i>	Primrose, evening	<i>Oenothera biennis</i>
Groundsel, common	<i>Senecio vulgaris</i>	St. John's-wort	<i>Hypericum perforatum</i>
Hawk's-beard, narrowleaf	<i>Crepis tectorum</i>	Stinkweed or Pennycress	<i>Thlaspi arvense</i>
Hemp-nettle	<i>Galeopsis tetrahit</i>	Tarweed	<i>Madia glomerata</i>
Hop-clover	<i>Trifolium aureum</i>	Thistle, nodding	<i>Carduus nutans</i>
Lamb's-quarter	<i>Chenopodium</i> spp.	Vetch, tufted	<i>Vicia cracca</i>

### PRIORITIZING SITES

**Site conditions** are divided into 4 groups of expected potential for control with '1' being the highest opportunity for control and 4 sites that have a much lower potential or opportunity (e.g., riparian sites where herbicide use is restricted or sites where costs of treatments will not be offset by significant benefits).

TABLE 2. INVASIVE SITE PRIORITY

PRIORITY	PURPOSE OR INTENT
<b>1</b> <b>Extremely High Opportunity for Control</b>	To stop the spread of invasive plants threatening currently un-infested, highly susceptible areas. These sites are less than or equal to 0.25 ha and there is a good expectation of control. This priority also includes sites that are threatening a large neighbouring economic base, for example, seed and other high value crops.
<b>2 High Opportunity for Control</b>	To stop the enlargement of sites in highly susceptible areas. These sites are less than or equal to 0.5 ha. Must have a reasonably good expectation of control.
<b>3</b> <b>Moderate Opportunity for Control</b>	To stop the enlargement of sites greater than or equal to 0.5 ha in highly susceptible areas, or less than or equal to 0.5 ha in moderately susceptible areas.
<b>4</b> <b>Low Opportunity for Control</b>	To stop the enlargement/contain sites greater than 0.5 ha in moderately susceptible areas.

TABLE 3: TREATMENT MATRIX FOR REHABILITATION

Using categories of invasive plants and site priorities it is possible to develop a matrix to direct or assist crews in determining when rehabilitation treatments should occur.

<b>IP CATEGORY</b>	<b>SITE PRIORITY</b>	<b>REHABILITATION TREATMENTS</b>
1 1 1 2	1 2 3 1	Management involving treatments usually occurs. Sensitive or important habitat is threatened by highly invasive species and treatments can be done at low costs, be effective and have significant benefits to susceptible habitats.
2 2 3 1	2 3 1 4	The need for management and treatments is reviewed in the context of the support and demands of other agencies, area residents and goals for the area. The requirement is to identify the areas infested with invasive plants and those habitats that are not infested and use this information to try and prevent further expansion of invasive plant populations.
2 3 3	4 2 3	Management usually involves inventory, monitoring and, if available, the release of biological control agents. Rehabilitation using methods other than biological control will not be undertaken unless specific requests are made and action or treatments can be justified by an analysis of risks, costs and benefits.

## APPENDIX 2: INVASIVE PLANT PROFILES FOR NORTHWEST AND CENTRAL BC

### INFORMATION INCLUDED IN INVASIVE PLANT PROFILE

The profile has a summary of information on the invasive plants ordered similarly to Table 1 by Categories. Within categories the invasive plants are listed alphabetically by the common name. Information is formatted as follows:

### CATEGORY

#### **Common name, *Latin name***

Page no. in 'Field Guide to Noxious Weeds and Other Selected Invasive Plants of BC' Sixth Edition

- A brief description or estimate of when the invasive plant arrived in the region, where it is found or its distribution and how much of a problem or threat it presents. Detailed inventory information is available on the Invasive Alien Plant Program, IAPP, at: <http://www.for.gov.bc.ca/hra/Plants/application.htm>.
  - o Current availability of biocontrol agents and suggestions on cultural and other control strategies. Herbicide recommendations are no longer provided in this plan. Information on biocontrol agents is also available at the following web site: [http://res2.agr.ca/lethbridge/weedbio/index\\_e.htm](http://res2.agr.ca/lethbridge/weedbio/index_e.htm). Field guides, weed alerts, and other information is also available on the web at: <http://www.agf.gov.bc.ca/cropprot/weeds.htm>.
    - Suggested action for the immediate future.

---

### CATEGORY 1

#### **Broom, Scotch, *Cytisus scoparius* – containment**

Page 82.

- Broom was found in the Prince Rupert area during survey conducted in 2000. It has likely been in the north coast, Haida Gwaii for some time. The infestations are not extensive but the numerous smaller sites are threatening to spread and cause a lot of damage. Broom control days have been organized on Haida Gwaii by BC Parks. The Ministry of Environment commissioned a risk assessment for broom on Haida Gwaii in 2007.
  - o Targeted grazing of sheep and goats on broom is being tested and showing some success in various locations. Biological control agents are being tested on broom in Australia, New Zealand and the US. To date, in northern BC most control work has been done with manual treatments. A manual tool, the 'weed wrench – <http://www.weedwrench.com/>' has been touted as helpful for manual control.
    - The north coast area requires surveys to update inventory information in IAPP so that an assessment can be made and plans developed. The assessment for Haida Gwaii should be used to develop plans. Any isolated broom patches should be controlled wherever they are found.

#### **Gorse, *Ulex europaeus* – containment**

Page 10.

- Lina Island, Skidegate Inlet has a few sites inventoried; five sites treated in NWIPC area in 2008 on 0.0407 ha  
need more information

#### **Hawkweeds, *Hieracium* spp. – rehabilitation**

Page 37.

- A key and risk assessment for hawkweeds for northeastern BC can be found at the following web page: <http://www.for.gov.bc.ca/hra/Plants/> Currently there are thirteen invasive alien yellow flowered hawkweeds and orange hawkweed that are introduced to the Pacific Northwest of North America. There are also seven native yellow flowered hawkweeds as well as the native white flowered hawkweed *H. albiflorum* in BC. The invasive hawkweeds are relatively recent arrivals with the first alien species showing up in the PNW as recently as 50 years ago. Though they have arrived rather recently, reports started becoming common in the mid 1990's; distribution and infestations of invasive hawkweeds are now extensive in the region. One or more of the yellow and orange hawkweeds are major components of much of the vegetation along Highway 16 from the Alberta border to the Pacific as well as Highway 37 south from Terrace to Kitimat and Highway 97 north to the Pine Pass. Hawkweeds are spreading across the region and there are scattered patches and some large patches in most parts of the region. Hawkweeds have become problem pasture weeds in central BC. Of particular note is the expansion of hawkweeds under the pine forests disturbed by mountain pine beetles and consequent logging. The adjacent regional committee, Northeast Invasive Plant Committee (NEIPC) has established a containment line for hawkweeds in the Pine Pass to prevent their spread into that region. NWIPC has been assisting by increasing inventory and treatment from Azouzetta Lodge south along Hwy 97 and other corridors in the area. Inventory in 2009 counted 338 new occurrences totaling 1700 hectares.
  - o A consortium has started and development of biological control agents for hawkweeds is underway. There are indications that orange hawkweed can be controlled with applications of ammonium sulfate, 21-0-0-25, in the spring or fall or prior to a wet period if a good grass stand is present. Trials using ammonium sulfate on a site between Burns Lake and Francois Lake had little impact on the hawkweed and may have encouraged its spread. Demonstration plots near Vanderhoof did show good control of hawkweeds with ammonium sulfate. Timing rate trials were carried out in 1997, on what is thought to be yellow hawkweed *H. almatia*, on Kerr Cattle Company at Quick. Results indicate that all herbicide treatments tested effectively control yellow hawkweed. Information and control recommendations for orange hawkweed are available in a fact sheet located at: <http://www.invasiveplants.ab.ca/Downloads/Bchawkweeds.pdf>. Controls recommended in this fact sheet should also work on yellow hawkweed species.
    - Hawkweeds should be mapped and sites that are threatening adjacent lands, priority 1 sites, should be controlled. Hawkweeds are spreading into the Stikine – Cassiar area and the Yukon territory has been notified.

**Himalayan blackberry, *Rubus discolor* – containment**

- Himalayan blackberry is causing serious problems in both environmental degradation and limiting access in southern coastal BC and the PNW States. There is only 1 reported Himalayan blackberry site in the region that is on Haida Gwaii. There are additional sites on Haida Gwaii and the north coastal areas of NWIPC that have not been inventoried.
  - o Himalayan blackberry sites found should be inventoried and if feasible treated. Strategies need to be updated.

**Hoary alyssum, *Berteroa incana* - containment**

Page 31.

- brought to our attention at the 2008 Fall Meeting by the Cariboo Chilcotin Coast Invasive Plant Committee just south of NWIPC area
- there is a 3-yr old site near Blue River, Hwy 5, that is just south of NWIPC area
- found on a gravel pit site near Kersley (Between Prince George and Quesnel) in spring 2009
- need more location information

**Iris, yellow flag, *Iris pseudoacorus* – containment**

- Yellow flag iris has been sold in garden centres and is still available through the horticulture industry. Provincially, attempting to eliminate the sale of this plant; gardeners should not buy or plant, and should safely dispose of existing plants. The first report of this plant was received in April 2002, from the Research Group on Introduced Species, RGIS, from Haida Gwaii. It is thought the initial infestation began from the plant being washed in, growing among the drift logs and then spreading. The plant is considered extremely invasive and could have serious impacts on the wetlands of Haida Gwaii. Yellow iris was also located, identified and noted as common in Hartley Bay in 2005.
  - o Information on treatments is needed.
    - The proposed action is to locate, pull and rogue this plant to prevent it from establishing.

**Knapweed, black, *Centaurea nigra* – containment**

Page 35, under meadow knapweed

- Black knapweed is another invasive plant present at the site near Minger Road east of Burns Lake. The identity was confirmed by the provincial museum and again in 1994, by a botanist on contract, however, the possibility of the species being *C. pratensis* continues to arise. The threat that this invasive plant represents has not been assessed. There are currently 8 sites from the Minger Road site east to Lakelse.
  - o Control of black knapweed should be similar to the methods used for spotted knapweed control. In Europe *C. nigra* is attacked by the root mining moth *Agapeta zoegana* but it may not have been purposefully tried on *C. nigra* in North America.
    - All black knapweed sites will be hand pulled or controlled using integrated approaches.

**Knapweed, brown, *Centaurea jacea* – containment**

Page 35, under meadow knapweed

- There are a dozen or so brown knapweed sites reported in the region. The sites are located westward in the Lakelse Park – Onion Lake area and to the east to a site found in 2007 near Endako. Most of the sites have 0 to a few dozen plants showing up each year.
  - o Control of brown knapweed should be similar to the methods used for spotted knapweed. In Europe *C. jacea* is attacked by the root mining moth *Agapeta zoegana* but it may not have been purposefully tried on *C. jacea* in North America.
    - All known brown knapweed sites will be checked and treated and any new sites will be inventoried and treated.

**Knapweed, greater, *Centaurea scabiosa* – containment**

- Two sites were reported east of Burns Lake in 1997. Another collection was made in the Village of Telkwa in 1997 and forwarded to the provincial weed specialist. A preliminary identification and confirmation from the Provincial Curator of Botany was made. This may be the first record of this knapweed in BC and the weed specialist indicated in 1997 that it should be watched. It may end up like cornflower, *C. cyanus*, a garden escape and moved into category 4.
  - o Control of greater knapweed should be similar to the methods used for spotted knapweed. In Europe *C. scabiosa* may be attacked by the root-mining moth *Agapeta zoegana* but it may not have been purposefully tried on *C. scabiosa* in North America.
    - The two sites East of Burns Lake will be checked and controlled by hand pulling.

**Knapweed, spotted, *Centaurea stobe biebersteinii*, (formerly *C. biebersteinii* & *C. maculosa*) – containment**

Page 17.

- Given the proven ability of this plant to dominate a variety of habitats it represents a serious threat to the region. Left undetected and uncontrolled spotted knapweed will cause serious economic and

environmental damage. Spotted knapweed was first reported in this region in 1980 at a site west of Terrace. Prior to the inclusion of the Valemount area in NWIPC, approximately 400 spotted knapweed sites have been inventoried across the entire NWIPC area. Some of these sites have been free of spotted knapweed for many years and, with the exception of the larger infestations in the Valemount and south of Valemount areas, most sites are small and attempts are to prevent seeding every year. The first report of spotted knapweed on Haida Gwaii occurred in 2005. That site was controlled. The site at Lakelse is the largest site in the northwest and since it was discovered in 1991 as a dense stand with scattered outriders it has been brought to a size measured in “number of plants” each year. The other sites range from 0 to a few hundred plants. There were 394 sites treated in 2010 that are scattered from west of Terrace to east of Prince George to the Alberta Border near Jasper and north to an old site at Pine tree Lake, 80 km north of Dease Lake, (58° 53’ north); 67 of the sites are newly found/created in 2010.

- Numerous biocontrol agents, approximately 12, have been released or will be released on knapweeds in BC. See <http://www.for.gov.bc.ca/hra/Plants/biocontrol/bcmatrix.htm> for more information. Biocontrol has not significantly reduced spotted knapweed populations to date. There may be information coming from Montana soon that indicates, after long establishment of biocontrol agents and possible depletion of seed banks, spotted knapweed populations are in sharp decline. Small spotted knapweed infestations can be controlled by hand pulling. For this region, a prescription using an integrated approach is developed for each site. For example the Lakelse site has had biocontrol releases, hand pulling, cutting, Round-up, Banvel and Tordon applications. Three seed head agents, *Urophora affinis*, *U. quadrifasciata* and *Metzneria paucipunctella* were released at the Lakelse site in 1992 and 1997. The seed head flies, *Urophora*, have established. The root feeding moth *Agapeta zoegana* and the root-mining weevil *Cyphocleonus achates* were released at the Lakelse site in 1995. These agents were found in 1996 but have not been detected since 1997 and *C. achates* was re-release in 1998. Since then the site has been reduced and it is unlikely biocontrol agents are persisting. *C. achates* was released in the Valemount, Jackman Flats area, in 2010 and will be monitored.
  - All spotted knapweed sites in this region will be managed using an integrated approach to prevent reproduction and spread. Herbicides, (recommendations should be site specific), and or hand pulling will normally be used. All areas where gravel (crush) is or was hauled from contaminated gravel pits should be checked. A strategy and containment line was worked on for the Valemount area in 2010, but issue is the extent of spotted knapweed to the south of us that includes other weed committees and differences in strategies.

### **Knotweeds, *Fallopia* & *Polygonum* sp. – containment**

Page 71.

- In 2002 Japanese and Himalayan knotweed were reported as spreading along access corridors on Haida Gwaii. Knotweeds are likely garden escapes on Haida Gwaii and are spreading from populated areas mostly along highways from Queen Charlotte and Skidegate north to Masset. A 2006 survey confirmed the identity of a Japanese knotweed infestation at Hazelton. In 2007, knotweed was reported as present and threatening to spread at Hartley Bay. Several knotweed sites in the city of Prince Rupert have also been inventoried. In the fall of 2008 an infestation was noted in the West Remo subdivision near Terrace. A key to assist in distinguishing between Japanese, Giant and Bohemian, (hybrid between Japanese and Giant), was developed and is posted at: [http://www.for.gov.bc.ca/hra/Publications/invasive\\_plants/Knotweed\\_key\\_BC\\_2007.pdf](http://www.for.gov.bc.ca/hra/Publications/invasive_plants/Knotweed_key_BC_2007.pdf). Japanese knotweed is an escaped ornamental that is becoming increasingly common along stream corridors and rights-of-way in Washington State and southwestern BC. Alaska reports Japanese knotweed as an aggressive invader and increasing in Southeast Alaska. It is very aggressive and capable of crowding out all other vegetation forming dense stands degrading native plant and animal habitats and can be particularly destructive to streams. It is thought that the knotweeds present a serious threat to riparian habitats through out the southern portions of NWIPC.
  - Knotweed is difficult to control because it has extremely vigorous rhizomes that form a deep, dense mat. In addition, the plant can sprout from fragments; along streams, plant parts may fall into the water to create new infestations downstream. Stem injection of herbicides

has proven to be successful in some areas. On Haida Gwaii treatments using light exclusion – mulching, continuous pulling and, for those infestations close to the ocean, treatment with sea or salt water, have proven successful if the efforts are integrated and continuous over a long period of time.

- Knotweed has been identified as high priority under the Terrestrial Ecosystem Restoration Program, TERP. All knotweed sites should be inventoried with a targeted inventory in the Prince Rupert to Hazelton area including awareness programming in the Terrace area. Inventory information will be recorded in IAPP, treatments in the Prince Rupert to Hazelton including the west Remo location will begin and plans will be updated. On Haida Gwaii, control efforts will continue with some investigation into enforcement possibilities on problem sites where control is not occurring. In the Prince Rupert area it is necessary to establish communication with local gardeners to raise awareness about knotweed. A partnership is being developed with the Gitga'at First Nation to manage the infestation at Hartley Bay.

#### **Policeman's helmet or Himalayan balsam – *Impatiens glandulifera* – containment**

Page 69.

- The exact distribution of Policeman's helmet has not been determined and inventory work only began in 2006. By 2008, 22 sites had been inventoried; 71 new sites established in 2009. Many new sites are large and riparian. Spread appears to be initially by gardeners dumping refuse in remote sites; then spreads by seed. A risk assessment was completed by NWIPC through funding from the Invasive Plant Council of BC.
  - This is an annual plant; continues to flower until first frost; successful seed set due to attractiveness to bees; seed pods rupture sending seed long distances; maximum seed production is 2500/plant; due to prolific seed production and dispersal, 99% control is not effective; tolerates wide range of elevation and climatic conditions; seeds germinate in water; control of Himalayan balsam can be successful; pulling of this shallow-rooted species requires no tools; immediate re-vegetation if soil disturbance is recommended; mowing two times per year timed to prevent seed production has eliminated sites after two to three years in UK; mowing is the recommended treatment by the Langley Environment Group; herbicide treatment should be timed before flowering as otherwise seed production still occurs.
    - Inventory will continue on policeman's helmet. Extension and awareness with nurseries and gardeners is necessary and will be conducted. All sites found outside of garden areas that are threatening habitat will be treated.

#### **Scabious, field, (also blue buttons) *Knautia arvensis* – containment**

Page 29.

- Field scabious is common in the Stoney Creek (Saik'uz First Nation) area near Vanderhoof, and less so in the Fort Fraser area. There are also sites at Buck Flats, south of Houston. This is the same site that was infested by leafy spurge. The invasive plant has probably been in the area for 50+ years and has been spreading. This invasive plant is reported as a problem in western Alberta on native and mountain pastures and is beginning to show up in several locations in BC. A risk assessment is required for field scabious but it is thought that it presents a serious threat to the open canopies and grasslands of the sub-boreal spruce zone as well as other open habitats in BC.
  - This invasive plant is reported to be difficult to remove once established. Where practical, cultivation should be used to kill or control the invasive plant. Herbicide trials conducted at Fort Fraser indicated the best herbicides for control. The plant is palatable early in the season, until it is about eight inches tall and early season grazing may help reduce seed production. Mowing has not been very successful in controlling the invasive plant. Targetted grazing trials were conducted at the Stoney Creek infestation in 2008 and indications are that targeted grazing is a tool that can be integrated with other control techniques.

- Field scabious is considered a containment invasive plant for NWIPC, (see appendix 4). In 2005 formal containment lines were set for the Buck Flats, Fort Fraser and Stoney Creek infestations. After the 2007 season a suggestion to remove the containment line at Fort Fraser was made. Removal of this containment line was tested in 2008, was tested and assessed for confirmation of removal in 2009, and approved by membership in fall 2010. All scabious outside of the containment areas will be managed or treated to prevent reproduction and spread. Containment strategies include extension of information about the invasive plant so that people report sightings, an annual hand pulling day at Buck Flats, possible continuation of targeted grazing trials continuing the partnership with the Saik'Uz First Nation at Stoney Creek and treatment of all sites outside the containment area. Treatment of sites within the containment area will occur after evaluation and prescriptions are developed.

### **Spurge, leafy & cypress, *Euphorbia esula* & *cyparissias* – containment**

Page 12.

- Up until 1998, there was one known leafy spurge site known in the region at Buck Flats south of Houston. In 1998, a second site was reported at Grantham Subdivision between Telkwa and Houston on the south side of the Bulkley River. This second site was treated and controlled in 1998. As of 2001 there have been no plants found at Grantham Subdivision site however, a few plants are found each year at Buck Flats. As the NWIPC area expanded eastward additional sites were added including a site at the Ministry of Forests and Range Regional compound in Prince George and the Hart Bridge in the city of Prince George and small patches on Braeside Road near Fort St. James. New infestations have shown up at the Vanderhoof Fair Grounds, Cluculz Lake and Stoney Creek. In 2004 a site of cypress spurge was reported and confirmed by the Provincial Museum on Haida Gwaii. These invasive plants do not spread rapidly but they do progress with a fierce tenacity and are difficult to control because of its extensive rhizomatous roots. The observations that the spurges can develop across the region and form dense stands once they do indicates that they represent a threat to extensive open canopy habitat.
  - Control of this invasive plant involves an integrated approach prescribed on a site-specific basis. There has been some success in controlling leafy spurge with herbicides, biologically, (using sheep and goat grazing), and with biocontrol agents. At the Buck Flats site a flea beetle, *Aphthona cyparissiae*, has been released. Monitoring of the release indicated that *Aphthona* had established. Herbicide applications were made along the roadside in 1993 with follow-up treatments and hand pulling in 1994 and 1995 to minimize spread of spurge on Buck Flats Road. Control from these activities was quite good and may have reduced the food supply for the *Aphthona* agent to a point where the beetle is no longer present. Leafy spurge is a problem in the Prairie Provinces and numerous agents are being investigated including *Aphthona lacertosa*, *A. nigriscutis*, *Spurgia esulae*, *Oberea erythrocephala*, *Lobesia euphorbiana*, and *Pegomya curticornis*. Caution should be taken if hand pulling this plant as it exudes an irritating latex.
    - Extension material on leafy spurge will be distributed and reporting of the invasive plant encouraged. All leafy spurge sites will be treated using integrated approaches of manual and herbicide treatments.

### **Sulphur cinquefoil, *Potentilla recta* – containment.**

Page 46.

- There were no confirmed sulphur cinquefoil sites in the NWIPC area until the Valemout area became part of NWIPC. There are two sulphur cinquefoil sites recorded in the Valemout area. There are numerous sites recorded north of Prince George and in the Robson Valley, but confirmation is required for these sites as native cinquefoils are often mistakenly identified as sulphur cinquefoil. Sulphur cinquefoil has invaded large areas in the North Thompson River drainage from Kamloops north to about Clearwater. It is expected that the NWIPC area is at serious risk of invasion and the entry path will likely be up the North Thompson River.
  - Control and management measures for sulphur cinquefoil need to be investigated.

- All sightings and reports of sulphur cinquefoil should be forwarded to the NWIPC Program Manager or Ministry of Forests and Range Invasive Plant Specialist for immediate checking. All sites will be managed with attempts to prevent seed production.

### **Tansy, common, *Tanacetum vulgare* – containment**

Page 28.

- This invasive plant is adapting to a wide range of habitats and is quite aggressive. In parts of the ICH in southern BC it appears to be replacing spotted knapweed and is also spreading into drier forest types. Common tansy is abundant between Terrace and Prince Rupert and there are extensive infestations along Highway 37 from the Kitimat River Bridge to Kitimat. Tansy appears to be moving into the interior districts and there are numerous reports of large infestations in the Hazelton area. The CN rail line has dense infestations from Prince Rupert to Cedarville and scattered infestations east to the Alberta border. Numerous single plants and patches were found along highway 37 from Kitwanga to north of Dease Lake. There are also patches between Telegraph Creek to Glenora and in the Atlin area. East of Hazelton scattered patches have been found along Highway 16 and on many side roads and Forest Service roads with some larger patches forming on rangelands east to the Robson Valley. The threat that common tansy presents is clearly indicated by the way it has gone from a few undetected sites east of Hazelton in the early nineties to hundreds of sites that are rapidly increasing in size and displacing native and cultivated vegetation by the year 2000. NWIPC members working in the Stikine Skeena Invasive Plant Management Area have suggested a location for a containment line for common tansy in the Cedarville area. Common tansy contains alkaloids and is slightly toxic.
  - A consortium has recently formed to investigate, among other things, biological control for common tansy. Herbicide recommendations are available and pulling and digging can effectively control small patches. A trial evaluating mowing regimes was conducted at the Skeena River bridge site in the Kispiox Valley from 1992 to 1996. It appears that mowing of common tansy is ineffective.
  - The containment line for common tansy in the Cedarville area was tested in 2008. The test will continue in 2009 with a possible request to house the containment line in IAPP for 2010, Tansy found east and north of this line should be treated using an integrated approach of hand pulling and herbicide applications for larger patches.

### **Thistle, marsh plume, *Cirsium palustre* – containment**

Page 34.

- Marsh plume thistle was collected for a herbarium specimen from the outskirts of Prince Rupert in 1954, and from 0.5 km west of Alliford Bay ferry along a logging road to Moresby Camp on Haida Gwaii in 1997. In 1999, patches of marsh thistle were noticed along the north side of Highway 16 between Prudhomme Lake and the Port Edward turnoff near Prince Rupert. Subsequently marsh plume thistle has been found as far east from Prince Rupert as Exchamsiks Park along the Skeena River. Marsh thistle is quite prolific in the western end of the Robson Valley eastward to approximately McBride. In 1991 an infestation was found about 20 km west of McBride beside Highway 16. By 1998, the weed had spread 115 km west along the Fraser River and 30 km north along the MacGregor River. By 1999, it had spread a further 41 km along the Fraser River, 7.5 km north along the MacGregor River, 27 km southwest up the Holmes River and 22.5 km south along the Milk River. Sightings in the eastern part of the NWIPC area include a site 10 km east of Prince George along the railway at Shelley. In the Prince George Forest District new infestations are being reported every year and there are now numerous scattered infestations.
- Marsh plume thistle grows very tall, 1.2 to 2.4 meters, and the rosettes can form continuous mats preventing germination and limiting growth of other plants. It is considered very aggressive and has invaded and dominated very resistant plant communities like thick sods in sedge stands. The plant presents a very serious threat and will dramatically affect riparian, upland range and seral plant communities. It may also have impacts on regeneration of conifer stands. Spread is primarily by wind blown seed. A risk assessment is available for marsh plume thistle at

<http://www.for.gov.bc.ca/hra/Plants/publications.htm> . In 2005-2006 formal containment lines were established through consensus agreement by NWIPC, and placed in IAPP. The containment line for the east infestation, Robson Valley and PG IPMAs, was adjusted in the spring of 2007. NWIPC working with Cariboo Region to have all known sites treated and eliminated; find and eliminate all new sites. Testing of removal of the containment line for the Prince Rupert area was done in 2007 and in 2008 this line was requested to be removed from IAPP. See appendix 4.

- A seed-feeding weevil, *Rhinocyllus conicus*, which was introduced to BC to attack plumeless and nodding thistle, has been released on marsh thistle in the Robson Valley in 1998. The weevil has overwintered and will be monitored. The seed eating weevil *Larinus planus* and the weevil, *Trichosiocalus horridus*, which attack just below vegetative buds have also been tried. There are some research releases of agents in the Robson Valley that will be evaluated. There may be some adventive insects like the achene-feeding fly *Terellia ruficauda* feeding on marsh thistle as well. Cutting seems to enhance the plant.
  - A close watch and quick reaction will be needed to keep this thistle from causing a lot of damage in BC. Any reports of strange or new thistles will have to be checked quickly and closely to pick up and deal with marsh thistle when it is at manageable levels of infestation. Particular attention will have to be paid to entry of the weed in the eastern districts, Prince George, Vanderhoof & Nadina, as it is able to cause a lot of damage in some habitats in those areas. Starting at Terrace and working towards Prince Rupert, all marsh thistle sites found will be managed.

---

## CATEGORY 2

### **Bluet, mountain, *Centaurea montana* – containment**

- Mountain bluet is grown as an ornamental in the region and is showing up along roadsides. Numerous reports have been received from the Burns Lake area. Notable sites are along Highway 16 at Moe Road near Burns Lake. This site has been watched for many years with confirmation of plant identity in 1994. It has slowly spread from the site causing a change from category 3 to category 2 in 2008. Following this change in category and more intensive inventory efforts, 7 sites have been recorded in IAPP. The threat presented by mountain bluet has not been assessed but it appears to be aggressive and its low population makes management feasible.
  - Control of mountain bluet should be similar to the methods used for spotted knapweed control.
    - All Mountain bluet should be inventoried and treated. The Burns Lake IPMA contractor has begun management on the Moe Road site. New sites have been reported in the Telkwa area.

### **Blueweed, *Echium vulgare* – containment – Risk assessment needed**

Page 24, 27.

- The first report of blueweed in the region occurred in 1992 when it was suspected as another of the weeds found at the Minger Road site near Burns Lake. It is now thought that this is not blueweed but rather an ornamental plant from the same family. In 1994 a well-established population of blueweed was found at the Cranberry Junction Campsite, Highway 37 north. In 2007 a single plant was found between Hazelton and Kitwanga. The weed causes problems in several areas of the province, e.g., East Kootenays, Christina Lake and Lower Nicola. The threat that it represents in this region has not been determined but it will likely cause damage in some localities.
  - The plant can be hand pulled but it has a tremendous taproot with an elongated crown so care must be taken to pull the entire root as well as rosettes.
    - The site at Cranberry Junction will be checked and possibly hand pulled. Watch for, report and control blueweed.

### **Burdock, common, *Arctium minus* – Rehabilitation**

Page 25.

- Burdock is on the list of noxious weeds for Kitimat Stikine and Bulkley Nechako Regional Districts. It is well dispersed throughout the region and found primarily in moist areas. Burdock has been a problem for as long as anyone can remember (i.e. on horses' tails since the 1920's).
  - o Control should be prescribed on a site-specific basis.
    - When considered a problem, the landowner or occupier will control burdock.

### **Chamomile, scentless, *Matricaria almatia* – Rehabilitation - Risk assessment needed**

Page 16.

- This invasive plant has fairly wide distribution and can be found across most of the region and is often abundant. The exact distribution of the plant is difficult to determine, as the flower is similar to the very abundant oxeye daisy. There is also a lot of *Matricaria matricarioides*, pineapple weed, which looks similar to chamomile before bloom. Chamomile can cause problems if commercial fine seed production is occurring.
  - o Small infestations can be hand pulled. A seed head weevil, *Omphalapion hookeri* (referred to as *Apion hookeri* in early plans), looks like a good biocontrol agent and has been released in the Fort St. John area.
    - Mapping and evaluation of chamomile infestations will continue. Smaller infestations will be controlled by hand pulling and or with herbicides.

### **Chicory, *Cichorium intybus* – containment - Risk assessment needed**

Page 57.

- Several chicory sites have been reported in the region. The extent and distribution of this weed in northwest and central BC has not been determined. Pulled and dug in Prince George area in 2008. Following complaints and suggestions that this plant is starting to cause problems it was moved from a category 4 to 2 in 2009.
  - o Control information needed.
    - Continue to watch for and note this weed. When found chicory will be hand pulled.

### **Daisy, oxeye, *Chrysanthemum leucanthemum* – Rehabilitation with possible containment in the Cassiar & other selected areas to be determined**

Page 38.

- Oxeye daisy has a wide distribution in the region and is very abundant in some areas. Some private pastures and crown range are experiencing serious forage losses due to oxeye daisy. Large portions of the Cassiar area are still relatively free from oxeye daisy and it may be possible and beneficial to develop a containment program for the Cassiar area. In particular, the Parks and Protected areas of the Cassiar, such as Mount Edziza and Spatsizi, should be protected. In this regard, oxeye daisy has spread up the Klappan River along the Ealue Lake road to the trail-heads into Spatsizi. There is also one remaining large area of the SBS aspen parklands that is lightly infested from Owen Lake through to Nadina. The adjacent regional committee, Northeast Invasive Plant Committee, NEIPC, has established a containment line at the boundary between NWIPC & NEIPC in the Pine Pass for oxeye daisy. In order to implement this containment line NEIPC commissioned a risk assessment for oxeye daisy which is now available.
  - o Trial work including herbicide testing was done on oxeye daisy at Francois Lake in the 1970s. The trials indicated that sulfur-containing fertilizers such as ammonium sulfate, 21-0-0-24, may have an effect on oxeye daisy. Several farms have noticed dramatic reduction in oxeye daisy after fertilizing with ammonium sulfate. Timing rate trials testing several herbicides were established at Owen Creek Cattle Co. at Evelyn in 1997. Timing rate trails

including the new herbicide Milestone where initiated north of Prince George at the Riehl farm in 2007.

- When oxeye daisy infestations are identified as threatening non-infested lands or causing serious economic or environmental damage they will be controlled. That is, oxeye daisy will be controlled when the site priority is 1 and in particular for the Owen Lake – Nadina area. The Stikine – Skeena IPMA plan needs to clarify actions for seed pick up points along roads and trail heads in the Cassiar and how to prevent the spread of oxeye daisy into Parks and Protected areas. As well, Park Rangers will be supported in recruiting spotters and efforts to have an effective program in Parks and Protected areas. Control will be prescribed on a site-specific basis using integrated approaches. Herbicides, fertilizers and or cultural techniques will be used. Mapping of oxeye daisy will continue so that strategies for managing the weed can be adjusted. Inventory of oxeye daisy in the Cassiar area and a risk assessment are needed.

**Eyebright, *Euphrasia nemorosa* – containment - Risk assessment needed**

- The plant has been on our radar for a couple of years; not sure if it cycles up and down or we are seeing an increase in the plant population that we should be worried about; Brought again to our attention in 2009 by farmer in McBride area; others in NWIPC area have reported it spreading rapidly; It seems to thrive along roadsides and is now getting a foothold on private pasture and crop lands.
  - Poor control with the herbicides we commonly use has been reported; hand pulling if site is small
    - Have asked Dave Ralph, Ministry of Agriculture and Lands, to conduct rate x timing trials in Robson Valley

**Hairy bittercress, *Cardamine hirsuta* – containment - Risk assessment needed**

- Reported as a problem in 2009 by the City of Prince George Parks staff; thought to have been brought in on nursery stock and was spreading rapidly through cultivated beds. This plant is not currently in IAPP.
  - Need control information

**Hops, common, *Humulus lupulus* - containment**

- First report submitted 2010 by Sybille Haeussler: “This summer I found common hops (*Humulus lupulus*) growing at the edge of the Willowvale duck pond off Pacific Street in Smithers. It may have arrived by birds or someone may have dumped their garden wastes nearby..... Common Hops is considered a serious invasive in southern BC. It has long been growing around old farmhouses in the Terrace - Hazelton area but I had never noticed it spreading beyond the actual garden area. However in 2007 I was doing some work for BC Parks at the new Bulkley Junction park in New Hazelton and noticed a large patch spreading from a property at the edge of the park into the adjacent woods.....To date, we do not have any significant invasive woody plants in understory and openings of forests in the Northern Interior of BC. However they are starting to become significant on the coast near communities where there is significant bird use (*Sorbus aucuparia* and a few others). With the warming climate I am convinced that it is only a matter of time before they reach the stage that the invasive herbaceous plants have reached in the Bulkley Valley in the 1990s and 2000s. Anything we can do now to identify potential problem species and start to control them should pay off in a big way.....” Hops is a perennial, rhizomatous, fast growing vine spreads as groundcover and smother forests and vegetation; establishes along fence lines, ditches, roadsides and forest edges; dense growth crowds out native plants; skin contact can result in dermatitis and phyto-photosensitivity; easily confused with the native variety *H. neomexicanus*.
- Not listed as invasive on EFlora. Regional for: Fraser Valley; Metro Vancouver; Squamish-Lillooet; Sunshine Coast; Powell River; Comox; Alberni-Clayoquot; Nanaimo; Cowichan Valley; Capital.
  - Need control information

- Species should be inventoried and treated when found.

#### **Hound's-tongue, *Cynoglossum officinale* – containment**

Page 9.

- There are no reported sightings of hound's-tongue in the region. Given the ease of transporting burrs it will likely appear in the future. Its first appearance will probably be in livestock facilities used for handling cattle from southern BC. Hound's-tongue has an economic impact on the livestock industry at low levels because of the burrs. The ability to detect and control hound's-tongue as it arrives will pay dividends.
  - To prevent seed production, control activities must occur before bloom. This plant blooms very early in the southern part of the province. Small patches of hound's-tongue can be successfully hand pulled and rouged. The plant is a biennial and the rosettes must be controlled as well. Hound's-tongue has a high ranking as a problem invasive plant and biological control work has begun. The root weevil *Mogulones cruciger* (released 1997) and the root-feeding flea-beetle *Longitarsus quadriguttatus* (released 1998) are established in British Columbia.
    - It is important that people are able to identify and report this plant. Any hound's-tongue found will be controlled by hand pulling and herbicide treatment.

#### **Knapweed, diffuse, *Centaurea diffusa* – containment**

Page 7.

- Diffuse knapweed was first reported on three sites in the northwest in 1979 and has established in the cold dry habitat around Kitwanga Village. Though it has expanded throughout Upper Kitwanga Village and spread along highway 37 and 16 to a few more sites, it has not formed dense stands and occurs as scattered plants. The other two sites reported in 1979, east of the turn off into Kitwanga along Highway 16 and the Nadina River Road near Poplar Lake have not persisted. There are scattered diffuse knapweed sites in various locations with a few in the city of Prince George.
- Up until recently diffuse knapweed was able to invade and dominate a variety of habitats and in particular dry grassland habitats in southern BC. Bio-control agents now appear to be causing dramatic declines to the once dense stands of diffuse knapweed on some of these areas in southern BC. Given the success of biological control in Southern BC and the inability of diffuse knapweed to dominate sites in the north it is not considered a serious risk but treatment should be considered to keep the species out of the area.
  - Numerous biocontrol agents, approximately 12, have been released or will be released on knapweed in BC. Small diffuse knapweed infestations can be controlled by hand pulling. Several herbicides can also be used to control diffuse knapweed.
    - Three seed head agents and one root boring agents were released at Kitwanga. New agents that become available will be released at Kitwanga. Other sites may be controlled by hand pulling and/or with herbicides.

#### **Loosestrife, *Lythrum salicaria* – containment**

Page 80.

- This aquatic invasive plant is gaining prominence as a potential problem plant in the region. One site is documented. The site is near the Canfor sawmill in Houston.
  - The site near Houston has been hand pulled every year.

#### **Mossy stone crop (also goldmoss stonecrop), *Sedum acre* – containment – needs risk assessment**

- Several reports submitted by members in 2010:
  - Bob Drinkwater pointed this out during the CCCIPC tour fall 2010. It appeared to be moving and doing quite well in a recreation area. Looks like it should be put on the consideration list for IAPP. Claire Watkins reported it in bloom all over Prince George. The bypass is covered in it; quite a few of the city boulevards have it; this is the plant that has the pungent fumes when hit with a string

trimmer or mower and is an irritant. Darrel Hill reported *Sedum acre* growing between Prince George City Hall parking lot and the fire department in downtown PG.

- Perennial herb from a stout rhizome; mat-forming; stems ascending to erect several branched above, 4-10 cm tall, glabrous. EFlora has it listed as invasive.
  - o Need control information.

#### **Ragwort, tansy, *Senecio jacobaea* – containment**

Pages 18, 28.

- One large, (2 ha), tansy ragwort site on Haida Gwaii has been reported. There are also several sites of tansy reported in the PG & Robson Valley IPMAs in 2006 that need to be confirmed.
  - o The following biological control agents are available: the moth *Cochylis atricapitana* who's larvae mine roots; the fly *Hylemya seneciella* that attacks the seed head; the beetles *Longitarsus flavicornis* and *L. jacobaeae* who's larvae mine the roots; the beetle; and the moth *Tyria jacobaeae* that is a defoliator.
    - The sites in the Prince George and Robson Valley IPMAs need to be checked to confirm if they are tansy ragwort. Need to keep vigilance and control tansy ragwort as it shows up. Haida Gwaii NWIPC members need to develop a strategy for the infestation at Eden Lake camp.

#### **Thistle, Canada, *Cirsium arvense* – Rehabilitation and containment for the Stikine – Cassiar area**

Page 4.

- Canada thistle is widely dispersed in the region particularly along roadsides. It can be found from Haida Gwaii, Ridley Island grain & coal terminals near Prince Rupert, the Terrace area to the eastern edge of the NWIPC region at the Alberta border. There are only a few sites west of Cedarville but some of these are sizable. From Kitwanga east Canada thistle is quite common, particularly along roadsides. It can be found on remote logging roads that are not in cattle ranging areas. There are some areas where Canada thistle is impacting or threatening to impact forage production on range and pasture. Canada thistle is just beginning to show up in the Dease Lake – Cassiar area. There are patches starting at the Riley Creek on the Golden Bear or Muddy Lake road near Telegraph Creek and continuing up the road to the mine site. There is also a site at the boat launch on the northwest corner of the bridge over the Stikine River approximately 60 km south of Dease Lake.
  - o From the Agriculture Canada Web site on biocontrol of weeds at [http://res2.agr.ca/lethbridge/weedbio/index\\_e.htm](http://res2.agr.ca/lethbridge/weedbio/index_e.htm) is the following. “Four biocontrol agents are established in Canada: the stem gall fly, *Urophora cardui*, the stem weevil, *Ceutorhynchus litura*, the defoliating beetle, *Lema cyanella*, and the seed-head weevil *Rhinocyllus conicus*. The thistle is also attacked by six adventitious and one native insect: the root-crown weevil *Cleonis pigra*, the defoliating beetle *Cassida rubiginosus*, the seed-head weevil *Larinus planus*, the seed-head fly, *Terellia ruficauda*, the systemic rust fungus, *Puccinia punctiformis*, and a small midge with yellow-orange larvae *Dasineura gibsoni* (not discussed) that feeds on the seed hairs. Finally, there is the native painted lady butterfly, *Vanessa cardui*, and over 70 general feeders. In spite of the plethora of enemies, the thistle is still a problem. However, strategies are suggested for increasing the impact of several species. There are still prospects for additional biocontrol agents: a defoliating beetle, *Altica carduorum*, that in NW China favours thistles regenerating after cultivation, and a stem mining weevil, *Lixus* sp. Both are restricted to Canada thistle in the field, although they develop on native *Cirsium* spp. In no-choice tests. However, if the biocontrol of Canada thistle is to continue, it will be necessary to get regulatory acceptance a test that shows which species will not attack native *Cirsium* spp. In the field.”
  - o *Larinus planus*, has been released on numerous sites in the region. It over wintered at a site in the Kispiox Valley but has not established in the region yet. Numerous releases of the stem gall fly, *Urophora cardui*, have been also been made. Over wintering has occurred at a Gramophone Creek site near Moricetown but no establishment has occurred. Advice from Dr. Peter Harris is: “The Canada thistle rust should do well in your area and may already be present. It is very harmful to the thistle but its spread is rather poor. I think that the root

crown weevil may help vector it and the presence of the rust certainly improves weevil survival. Thus it might be worth trying both together. I should let the weevil feed on some rusted plants early in the spring and then release it on some healthy plants.” Doctor Harris also suggests that the seed head weevil *Rhinocyllus conicus* may also help spread the rust.

- Mowing and cutting the thistle has limited effect on the population but can be used to keep critical sites in check until integrated control approaches are prescribed. If thistles are in a grazing area adjusting management and trying techniques like placing salt in thistle patches can be tried.
  - North of Meziadin all Canada thistle sites will be inventoried and treated, i.e., an unofficial containment line is at Meziadin. For the rest of the region, when Canada thistle infestations are identified as threatening un-infested lands or causing serious economic or environmental damage they will be controlled. That is, Canada thistle will be controlled on priority 1 sites and on other sites if the landowner or occupier thinks it is necessary. Control will be prescribed on a site-specific basis using integrated approaches. Biological control agents, herbicides, and or cultural techniques will be used. Mapping of Canada thistle will continue so that strategies for managing the weed can be adjusted. Monitoring and additional releases of *L. planus* and *U. cardui* will be made. *L. planus* adults should be released onto thistle patches that are in bloom. Suitable release sites for biocontrol agents will be identified and other agents that become available will be released.

#### **Thistle, plumeless, *Carduus acanthoides* – containment**

Pages 40, 78.

- None reported. Plumeless thistle has an air born seed that can travel long distances. It will likely arrive and cause problems in northwest BC in the near future.
  - In southern BC nodding and plumeless thistles have been controlled with biocontrol agents. The two agents with the most impact are a flower-head weevil, *Rhinocyllus conicus*, and a weevil, *Trichosirocalus horridus*, which attacks just below vegetative buds. *T. horridus* has been effective in regions with cool moist summers such as Southern New Zealand and should be considered if infestations reach sizes that warrant biocontrol. Cutting the thistles in bud is reasonable effective.
    - Awareness work is required so that early detection of sites will occur when this plant arrives. Sites will be controlled by cutting or herbicide applications by the landowner or occupier. If a sizable patch is found requests will be made for biological control agents.

#### **Toadflax, Dalmatian, *Linaria dalmatica* – containment & biological control agent releases**

Page 6.

- The first reports of this invasive plant were received from the Lakes District in 1992. It is likely that an infestation at Lanfeer in Terrace and in the cities of Prince George and Vanderhoof pre dates this report. There are now numerous Dalmatian toadflax sites through out the entire region. Most of the sites are small but some are in particularly difficult locations like the numerous sites in the City of Prince George. This species is spreading quite rapidly in the Region. The wide spread occurrence of common toadflax may be masking the presence of Dalmatian toadflax. Dalmatian toadflax seems to be adapted to a wide range of habitats and is quite aggressive particularly on well-drained soils. Dalmatian toadflax is expected to cause problems in this region.
  - Cultural controls, pulling and cutting, have not been thoroughly investigated but the Lakes Forest District has had some success hand pulling the Dalmatian toadflax site at Francois Lake and the site at Wilson Brothers Ranch has been eliminated by hand pulling. The weed is ranked high in the biocontrol program and work is progressing on development of biocontrol. Release attempts of a leaf-feeding moth, *Calophasia lunula* have not been very successful. A root feeding moth, *Eteobalea intermediella* is being propagated at Kamloops. A stem-mining weevil, *Mecinus janthinus*, is doing well at Kamloops and Williams Lake

and has significantly reduced the vigor and populations of Dalmatian toadflax. Even though this agent prefers hot dry climates it was released at Lanfear Hill in Terrace and near the trailer park in Burns Lake in 1998. A release was made in Vanderhoof in 2003, and releases have been made in the Prince George area including releases in 2006 and 2007, in the city of Prince George. The establishment of this agent in central BC may give rise to a change to category 3 for this species. Establishment of *M. janthinus* has occurred at Terrace and Prince George. A Dalmation strain of *Gymnaetron antirrhini*, an agent found on common toadflax in this region, has completed one generation on Dalmation toadflax at Kamloops.

- Ensure that people are aware this invasive plant presents a serious threat and are familiar enough to differentiate between common and Dalmatian toadflax. Sightings should be reported and recorded. New small infestations should be controlled using an integrated approach of pulling and spraying. Large infestations should be noted as possible sites for biocontrol agent releases. Such an approach will also be developed for sites that present high seed spread potentials. The *M. janthinus* release sites will continue to be monitored and if and when establishment occurs dispersal to other areas will be planned. Other agents that become available will be released.

**Yellow archangel, *Lamium galeobdolon* – containment or rehabilitation - Risk assessment needed**

- Yellow archangel added to the NWIPC list in 2009 and is an introduced European forest-edge species; considered naturalized in Australia and New Zealand and is on the list of suspects for the Hawaiian Ecosystems at Risk (HEAR; [www.hear.org/gcw](http://www.hear.org/gcw)); tolerates sun and shade; persistent once established. This plant was noted in forested lands on Haida Gwaii by NWIPC in 2008; Ministry of Forests and Lands in Smithers received a report in 2009 from a rancher that it was taking over his fields; confirmation of identification on the Smithers site should occur; in IAPP, the Latin name is *Lamiastrum galeobdolon*.
  - Control information is needed.
    - Inventory is needed.

---

## CATEGORY 3

### **Baby's-breath, *Gypsophila paniculata* – containment - Risk assessment needed**

Page 50.

- reported in 2008 in Village of Valemount; escaped garden plants from unmanaged lots in the village; site in Vanderhoof on hillside at end of bridge; need more information on spread where else present.
- Herbaceous perennial with sparse foliage and slender, openly branched stems, to 1 m tall. Crown (sometimes described as a rhizome) thick, not creeping. Roots deep, can penetrate soil to 4 m and survive in cold winter areas. New shoots grow from the crown, but not roots. Severed crown pieces can produce new shoots, but not roots. Severed root pieces do not produce new shoots. Extremely invasive on hwy right-of-way and farm land south Saskatoon so winter not limiting.
- Cariboo Chilcotin Coast IP committee (CCCIPC) just south of NWIPC has it as a priority one species because the number of infested sites is low so reasonable to control; invader of grasslands, pastures and other open areas, that is lots of susceptible habitat; serious invader in other jurisdictions.
  - o Baby's breath spreads in a tumbleweed fashion by abscising just above the ground and releasing seed as it rolls. Large infestations are generally found where skeletons collect, along fencelines and in ditches and ravines. Severing the crown from the roots by cultivation or hand-cutting to several inches below the soil surface destroys plants. Mowing or clipping does not appear to reduce plant vigor. Hand pulling mature baby's breath plants is extremely difficult. The shoot system of the plant must be severed below the thickened crown of the plant. This may require digging to a depth of six inches to one foot. Regrowth is usually rare if the complete crown is removed. Older plants tolerate mowing or light grazing by cattle. Applying heavy grazing pressure may reduce seed production, but may also increase susceptibility to invasion by other weedy species. In agricultural situations, plants can tolerate shallow, infrequent tillage, but do not generally persist in extensively tilled fields. Incorporation of a summer fallow period utilizing tillage and herbicides can greatly assist in eradicating baby's breath. Baby's breath has been observed to invade perennial bunchgrasses (both native and introduced) in Saskatchewan, Canada. It appears to be favored in disturbed areas within grasslands, in sandy and slightly alkaline areas. Therefore, newly detected infestations should be aggressively controlled, as even robust perennial grasses may not be able to exclude baby's breath. There is little information on effective herbicides for baby's breath control. Those herbicides previously tested (picloram at 1 lb ae/A, dicamba at 2 lb ae/A, MCPP at 7 lb ae/A, and 2,4-D at 2 lb ae/A) are limited in their effectiveness except at high rates. This may be due to the plant's sparse foliage and deep root system. Spot treatments of glyphosate can provide some control and should prevent seed production. However, regrowth is likely and retreatment may be necessary.

#### References:

- Darwent, A. L. 1975. The biology of Canadian weeds. 14. *Gypsophila paniculata* L. Canadian Journal of Plant Science 55:1049-1058.
- Darwent, A. L. and Coupland, R. T. 1966. Life history of *Gypsophila paniculata*. Weeds 14:313-318.
- Darwent, A. L., Coupland, R. T., and Skoglund, N. A. 1967. The potential of *Gypsophila paniculata* as a weed in Saskatchewan. Canadian Journal of Plant Science 47:125-134.
- Skoglund, N. A. and Darwent, A. L. 1964. The effect of 2,4-D on baby's breath (*Gypsophila paniculata*). Research Report, Canada Weed Committee, Western Section pp. 208-209.
- Skoglund, N. A. and Darwent, A. L. 1964. The effect of herbicides on *Gypsophila paniculata* (baby's breath). Research Report pp. 209.
- Vanden Born, W. H. and Schraa, R. J. 1972. Control of baby's breath with dicamba and picloram. Research Report, Canada Weed Committee, Western Section pp. 358-359.
- Whitson, T. D., Burrill, L. C., Dewey, S. A., Cudney, D. W., Nelson, B. E., Lee, R. D., and Parker, R. 1992. Weeds of the West. Jackson, WY: Western Society of Weed Science.

- Need to inventory all infestations to understand where it can be a problem in the northwest; perhaps needs hot, dry summers?

### **Catchfly, night-flowering, *Silene noctiflora* –Risk assessment needed**

Pages 36, 52.

- Reported in 1993, along the railroad tracks at Owen Creek Ranch near Smithers. Samples need to be collected to confirm identity as reports may be a native catchfly *S. menziessii*. Two plants of this species were identified at a location on the west side of McCabe Road near Smithers and it is also reported in the Woodmere and Quick Road areas. The knapweed critical site #34 at Pinchie Lake Campsite north of Fort St. James has a report of night-flowering catchfly.

**Foxglove, purple, *Digitalis purpurea* – containment – risk assessment needed**

- Brought to the council's attention in winter 2011 by Elin Price, Gwaii Haanas National Park Reserve and Laskeek Bay Conservation Society: "Gwaii Haanas National Park Reserve and Haida Heritage site would like to make use of the IAPP for planning and management of introduced plant species. *D. purpurea* is a high priority invasive plant species requiring control at a number of ecologically sensitive sites within the Gwaii Haanas and potentially elsewhere on Haida Gwaii. It is particularly invasive in the unique thermal meadows ecosystem of Hotsprings Island (9U 334480 m E 5827901 m N) where it has formed dense patches, outcompeting rare plant species. Yearly mechanical control efforts have occurred over the past 10 years, with slow but steady success. We would like the species added to the IAPP site to map its locations and monitor its population at sites where treatment has not yet occurred. In 2007 Michael Cheney had noted foxglove in the "site comments" section of 7 IAPP sites in Gwaii Haanas (236315, 236285, 236286, 238365, 236296, 236283, 236310) and there are 11 additional known sites that need to be added." *D. purpurea* is listed on the E-Flora website as "nuisance alien, invasive or noxious species in BC": <http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Digitalis%20purpurea>. It is considered invasive in similar climates from Alaska through to Northern California: [http://akweeds.uaa.alaska.edu/pdfs/species\\_bios\\_pdfs/Species\\_bios\\_DIPU.pdf](http://akweeds.uaa.alaska.edu/pdfs/species_bios_pdfs/Species_bios_DIPU.pdf) <http://ipc.org/ipc/management/ipcw/pages/detailreport.cfm@usernumber=42&surveynumber=182.php>

- o Manual digging and pulling. Need more control information.

Contractors and others controlling *D. purpurea* will inventory and keep records. NWIPC will ask that it be added to IAPP.

**Comfrey –*Symphytum officinale* L. – Risk assessment needed**

- (Europe, North Africa, West Asia: L.H.Bailey 1949); not on any other invasive plant lists.
- A recommendation was made to add comfrey to the profile for 2009. Comfrey is a garden escape and is being moved with yard refuse. References on growing comfrey recommend to keep it contained as it spreads rapidly in the garden. It is moving from road rights of way into the forests in the Smithers area and possibly other areas. Initial placement is suggested as a category 3.
- Comfrey was added to IAPP in 2010 so inventory and treatment can now be entered into IAPP.

- o Control information needed

- If comfrey is added to the profile it needs to have its identity verified and put in line for a risk assessment.

**Goat's-beard, *Tragopogon* spp. *T. dubius* & *T. pratensis* – Risk assessment needed**

Page 65.

- There are two species of *Tragopogon* widely distributed in southern BC. *T. dubius* is more common in the Kootenay, Okanagan and Thompson-Nicola Region and *T. pratensis* is more common in the Cariboo-Chilcotin region. The species present in NWIPC needs to be confirmed. *T. dubius* stems are swollen below the flower head whereas *T. pratensis* stems are not. *Tragopogon* is abundant along some roadsides and the CN rail lines and appears to be spreading quite rapidly in the region. It may be spreading off of the roads and rail lines onto adjacent rangeland.

- o A survey and assessment of goat's-beard is required for the region but resources are not available at this time.

**Thistle, bull, *Cirsium vulgare* – Rehabilitation through biological agent monitoring & dispersal**

Page 55.

- Bull thistle can be found throughout the region. It is considered a nuisance weed that can become a problem on some disturbed sites. It usually only remains a problem for a few years as it does not compete with the healthy plant communities. If poor management keeps an area disturbed then bull thistle problems can persist. Seeding of disturbances dramatically shortens the time bull thistles occupy a site and usually prevents it from becoming a problem. Bull thistle has occupied and dominated some clear cuts. Thought and attention are required on clear cuts that are scheduled for disturbance such as burning or Vision applications. There are blocks that have 40+ ha of bull thistle after disturbance. Cut blocks that become infested can have bull thistle cover of 60% to 80% that declines to 5% to 10% within a few years. Bull thistle is just beginning to show up along Highway 37 north.
  - o A seed head gall fly, *Urophora stylata*, has shown some effect in reducing seed production from bull thistle. This agent, in combination with seeding or controlled grazing to give healthy competing vegetation can reduce the time which bull thistle dominates sites. *Urophora stylata* has established pretty well across the region and further releases of the agent are not usually needed. *Rhinocyllus conicus*, a seed head weevil, has also been found on bull thistle in southern BC. Bull thistle is susceptible to cutting or mowing in bud just prior to bloom.
    - The first strategy for this weed is prevention. Susceptible sites should be kept at a minimum by reducing the amount of disturbance and seeding all disturbances. Bull thistle seed sources near planned disturbances should be controlled by cutting or with herbicides before the disturbance occurs. For example, if a Vision application is planned on a logged block the bull thistle along the roads into the block should be mowed before they go to seed. Any bull thistle sites found should be checked for the presence of *U. stylata*. To do this, squeeze the heads, while wearing gloves, in the late summer or fall. If the head is hard it contains the marble sized gall. If it is determined after checking 50 or more bull thistle heads that *U. stylata* is not present then the site should be noted for a release. An excellent collection area for *U. stylata* is the Luno Creek area across the Bulkley River from Highway 16 between the Suskwa River and Moricetown.

**Thistle, Russian, *Salsola kali* – Risk assessment needed**

Page 43.

- Russian thistle was reported in the city of Prince George in 2007, in a historical landfill site. It has not been previously reported so it is likely a new arrival. Russian thistle tends to prefer and cause problems in areas drier than central and northern BC but further assessment might change its category.
  - o Need to investigate control tools and conduct a risk assessment.
    - Russian thistle sites should be inventoried and if small and isolated hand pulled.

**Thistle, perennial sow, *Sonchus arvensis*, & other *Sonchus* spp. – rehabilitation**

Page 13.

- Perennial sow thistle has a wide distribution in the region particularly along roadsides. The extent of the infestation has not been determined and is complicated by the flower similarity between sow thistle and narrow leaved hawk's-beard. It is very common in most areas and has been found as far away as kilometer 66 on the Telegraph Creek Road and at Warm Bay in Atlin. It is felt that the weed is cyclic in this region and populations were high in the early and late nineties, lower in the mid nineties, very high in the late nineties through to 2001. In 2006, it appeared that sow thistle was again starting to cycle up.
  - o Mowing in waste places to prevent seed production is an effective mean of preventing introduction to adjacent range and croplands. Two biocontrol agents are mentioned in the literature, *Liriomyza* sp. and *Cystiphora* sp. In 1992, a release of *Cystiphora sonchi* was made at the junction of the Quick and Lawson Roads near Smithers. The sow thistle at the release site has all but disappeared and it is not known whether this agent established or not.

- Unless specific justifications are made, sow thistle will not be treated by NWIPC crews or contractors.

**Toadflax, yellow, *Linaria vulgaris* – Rehabilitation through biological agent monitoring & dispersal**

Page 23.

- Common toadflax can be found throughout the region particularly along Highway 16 and the CN railway. Patches range from a few plants to patches over a hectare and some patches fluctuate greatly in size over the years. Given the presence of biocontrol agents when no releases were made in the region and the remoteness and size of the infestations, it is likely that common toadflax has been in the region for a long time and is being controlled by numerous factors including biocontrol agents. It is felt that common toadflax can establish through much of the region but likely will not cause wide scale habitat degradation.
  - Two flower-head weevils, *Gymnetron antirrhini*, and *G. netum*, and a flower-head beetle, *Brachypterolus pulicarius*, are involved in controlling common toadflax. All the common toadflax sites monitored in the region have agents feeding on the flower parts. Black beetles are seen, usually in the flower parts, and it is likely that they are *B. pulicarius*. Another agent, *Gymnetron linariae*, may soon be available for release. Development of additional biocontrol agents is underway.
    - No control actions other than biological control are planned at this time. Common toadflax will continue to be monitored to determine which agents are present. Extension will be done so that people can differentiate between common and Dalmatian toadflax. Larger sites that offer good opportunities for protection will be identified, inventoried and entered into IAPP with notes that they are good sites for future biocontrol agent releases.

**Wormwood, absinthium, *Artemisia absinthium* – Risk assessment needed**

- The identity of the plant has to be confirmed when it is suspected as there are native *Artemisia*, (*A. dracunculus*, tarragon), in the region as well. Wormwood was first noticed in 1998, when a patch between the old Milk Plant and Highway 16 became obvious at Telkwa. Since then a large patch has developed on private land at the junction of Huber Road and Highway 16. Identity needs to be confirmed on this site as tarragon is also present at Huber road. Twenty or so plants along Summit Lake Road, (Houston), were noted in 2000, and a small isolated infestation was found near Mud Lake on the Dungate Range Unit in 2001. In 2002, wormwood was reported from numerous locations. It is suspected that this invasive plant is relatively new to the area but is already fairly well distributed as single plants or small clumps along Highway 16 and spur roads from Houston to Moricetown.
  - Control methods are being researched. Individual plants and small clumps are easily pulled.
    - Individual plants and small clumps of wormwood should be pulled when found. Assessment of the threat will be made.

---

**CATEGORY 4**

**Blue buttons, cornflower, *Centaurea cyanus* – Risk assessment needed**

- This knapweed is growing in a waste lot at the corner of Hankin and 5th Streets in Telkwa (together with common tansy). The plants are probably garden escapes but are well established on this lot. Comment in spring 2011 that it may no longer be there because someone cleared the lot; should be checked out this year.

- This plant is not thought to present a serious threat and no control action is planned at this time. Reports of the plant will continue to be recorded and if it appears that it is spreading and causing damage the strategy will be reviewed.

**Bluebur, western, *Lappula echinata***

**Buckwheat, wild, *Polygonum convolvulus***

Page 89.

- This is a common agriculture weed and is found on many grain fields in the region. It is not considered a threat to rangelands and is reasonably palatable to grazing animals.
  - No action is planned at this time.

**Bugloss, small, *Lycopsis arvensis***

- This invasive plant was first reported as *Echium vulgare*, blueweed, in 1992 at the Minger Road site near Burns Lake. It has subsequently thought to be small bugloss but confirmation has not been made. It could also be *Lycopsis anchusa* or a *Lithospermum* spp. These plants are members of the borage family, ornamental garden cultivars and not thought to cause problems.
  - No action required.

**Campion, bladder, *Silene cucubalus***

Page 52.

- Confirmed as present along the railroad track at the Suskwa siding and rail crossing. This plant is often confused with white cockle and night flowering catchfly.
  - A beetle, *Cassida azurea*, that defoliates stands of bladder campion may be available.
    - A more detailed survey that notes possible release sites for *Cassida azurea* will be conducted if resources become available.

**Cockle, white, white campion, *Silene latifolia* ssp. *alba***

- White cockle was confirmed in 1994 just past the junction of Woodmere and Brooks Road in Telkwa and on other sites in Telkwa. White cockle, night flowering catch-fly and bladder campion are very similar. An easy differentiation is that night flowering catch-fly is sticky if squeezed.
- Considered naturalized in the United States.
  - No action planned at this time.

**Dock, curled etc., *Rumex* spp.**

Page 61.

- Curled dock is seen across the region from the Village of Atlin to Valemout. There are indications that curled dock can be a problem on acid soils. *Rumex acetosella*, sour weed or sheep sorrel, is also common throughout the NWIPC area.
  - There is a native agent, *Luperina passer*, which attacks the roots of curled dock.
    - An overview survey of curled dock is needed but resources are not available at this time.

**Fleabane, Canadian or Horseweed, *Conyza canadensis***

- Canadian fleabane is probably a native plant that behaves in a weedy fashion. Formerly known as *Erigeron canadensis*, Canadian fleabane is abundant in waste places, along roadsides, pull-outs and areas with soil disturbance throughout the region. Fleabane appears to have become more abundant recently and it is likely the population cycles. Fleabane can cause skin irritation and is reported to irritate the nostrils of horses.

**Groundsel, common, *Senecio vulgaris*, & other *Senecio* spp.**

Page 66.

- Groundsel is distributed throughout the region. It is not considered a problem or threat to range lands but can cause problems in cultivated fields such as vegetable farms.
  - o Groundsel has become resistant to the triazine herbicides in many parts of the province.
    - Field margins or borders should be checked prior to cultivation and if groundsel is present it should be controlled with herbicides or mowing.

**Hawk's-beard, narrowleaf, *Crepis tectorum***

- Hawk's-beard has a wide distribution and occurrence in the region. Its status is masked by a similar flower appearance with perennial sow-thistle (*Sonchus arvensis*) and yellow flowering hawkweeds, (*Hieracium* spp.). Hawk's-beard responds to disturbances and can appear to be dominating gravel pits and roadsides but does not dominate areas when it moves off these sites to adjacent undisturbed areas. Gravel pits that remain inactive for a period of time have dramatic declines in hawk's-beard. Hawk's-beard is thought to be a nuisance weed that has a very wide distribution but not much of a threat to all but disturbed sites.
  - o Mowing in waste places to prevent seed production is an effective means of preventing introduction to adjacent range and croplands.
    - No action planned at this time.

**Hemp-nettle, *Galeopsis tetrahit***

Page 67.

- Hemp nettle is often found on disturbed sites including clear-cuts, roadsides and utility corridors. It appears to be quite aggressive and numerous complaints concerning this invasive plant have been received.
  - o No action planned at this time.

**Hop-clover, *Trifolium aureum***

- Identification has been confirmed. Hop clover has a wide dispersal along roadsides.
  - o No action planned at this time.

**Lamb's-quarters, *Chenopodium* spp.**

Page 73.

- Lamb's-quarters are a common agricultural weed and can be found in many farm yards in the region. It has also been found in some isolated spots such as Top Camp on the Turnagain River and above Day's Ranch at Telegraph Creek. Lamb's-quarters have some forage value but can occasionally cause nitrate poisoning.
  - o No action planned.

**Medic, black, *Medicago lupulina***

- Abundant in the Smithers area in gravel pits and at the dump.
  - o No action is planned for this common plant.

**Mullein, *Verbascum thapsus***

Page 75.

- Mullein can be found as rare and scattered infestations across the region usually in disturbed sites. Mullein is generally considered to be a nuisance weed that pioneers disturbed ground and is not

usually controlled. It is also an alternate host for an apple pest and is sometimes controlled for that reason.

- No action planned at this time.

#### **Mustard, dog, *Erucastrum gallicum***

- Specimens of this species were collected in the summer 1994, along the Telkwa High Road. Identity was confirmed by Rosamund and Jim Pojar and George Douglas, Conservation Data Center, Victoria. This species is not widely reported and is found in one other location in BC at Radium in the East Kootenays. It is quite likely that this species is much more widely distributed than is currently believed as the leaves are very similar in appearance to those of tumble mustard, (*Sisymbrium altissimum*). Dog mustard has seed pods located in the axils of the leaves or leaf like bracts.
  - Watch for, report and record dog mustard sites.

#### **Mustard, hedge, *Sisymbrium officinalis***

#### **Mustard, tumble, *Sisymbrium* spp., & *Sisymbrium officinale*, hedge mustard**

- Distribution to be determined but tumble mustards, (*S. altissimum* and *S. loeselii*), have been reported at Smithers dump, behind the Skeena Stikine Forest District Office, Kitwanga village and various roadsides. Hedge mustard was reported from Haida Gwaii in 2002. It is listed in publications from 1968 as rare on Haida Gwaii.

#### **Mustard, wild, *Sinapis arvensis***

Page 48.

- Wild mustard is one of the most common annual weeds and is found in most cultivated fields. If land is cultivated and crop species are not quickly established wild mustard occupies the site. It is also a minor component in many established hay fields and pastures.
  - Early harvesting of fields, before wild mustard sets seed, helps reduce populations. Mowing, (not harvesting), new fields or pasture before mustard set seed is effective in reducing populations until the crop is well established. There are herbicide recommendations in the BC Ministry of Agriculture and Food Field Crop Production Guide.
    - No action planned at this time.

#### **Pineappleweed, *Matricaria matricarioides***

Page 79.

- Pineapple weed is very extensive in the region along most roadways including logging roads, spur roads and some skid trails. Pineapple weed can grow very tall in this region and before bloom can be mistaken for scentless chamomile, *M. maritima*. Pineapple weed is not considered a problem.
  - No action is planned for this common plant.

#### **Primrose, evening, *Oenothera biennis* – Risk assessment needed**

- There is an infestation of evening primrose, (identification confirmed), along the roadsides near the Ministry of Forests field office in Hazelton, (1994 report). In 1995, another confirmed report of primrose was made on the west side of Highway 16, east of Burns Lake, 3.3 km northwest of the rest stop at Savory. Collections have also been made in the Prince George area but there have not been instructions or a focus on conducting inventories. In 2008 a lot of concern was raised about primrose spreading rapidly. It is not known if this is a cyclic pattern or the plant is coming out of its lag period and about to spread and cause substantial damage. A risk assessment and review of this plants category needs to be conducted ASAP.
- EFlora does not list it as invasive, but alien and naturalized.

- Sightings will continue to be recorded and the plant will be monitored to see if it is spreading and presents a threat to pastures and native habitats. A risk assessment should be conducted in 2009.
  - Discussed again at 2011 Annual General Meeting; need to put a higher priority on a risk assessment so we have good, sound, scientific understanding of what maybe it is doing, and could do, in the northwest.

**St. John's-wort, goat weed, *Hypericum perforatum* – Rehabilitation through biocontrol monitoring & dispersal**

Page 85.

- St. John's-wort is a companion with common tansy in the Terrace area. It is scattered in clumps amongst the dominant tansy. It is particularly prevalent along Highway 16 from the Skeena River Bridge west to the A&W restaurant in Terrace. St. John's-wort is also a companion of tansy along the rail line from Prince Rupert to Terrace. There are patches of St. John's-wort along Highway 37 from Terrace to Kitimat, at Kitwanga and in numerous sites in the Hazelton area. There is a large patch at the Meziadin Lake campsite. There is a population reported on Hudson Bay Mountain Road, Smithers, after last switchback. St. John's-wort is moving east and small infestations are showing up along Highway 16 through to the eastern edge of the region. It is also moving north towards the region along the CN rail line and Highways 5 and 97. The weed has a wide dispersal in the southern part of the province. In the 1940's, '50's and '60's St. John's-wort infested millions of acres of rangelands in Canada, the US, Australia and South Africa. The plant contains toxins that effect white hair animals causing severe irritation and loss of weight after exposure to strong sunlight. Because of successful biological control, St. John's-wort has not been thought to present a serious threat to the NWIPC area but its spread and the lack of control by biological agents in some habitats is raising concerns.
  - In the mid '60's biological control caused a rapid decline in infestations. Seven biocontrol agents have been released in BC and a complex of three agents seems to be controlling the plant in many locations, habitats. There are still extensive infestations that do not seem to be under biocontrol in BC. One such area is the Gilpin ranges in the Boundary Forest District. *Chrysolina quadrigenima* and *C. hyperici* beetles were obtained from Boundary District and released in the Terrace area in 1994. Disturbance of the release site shortly after release probably effected establishment. A second release of these agents was made in the Terrace area in 1996. This release was reported as established in 1999. A moth, *Aplocera plagiata* and an aphid, *Aphis chloris*, are also available and have been requested.
    - A survey to see what biocontrol agents are present needs to be conducted on St John's-wort in 2009. The action for St. John's-wort will be to report infestations and identify sites for releasing biological control agents. Farms near infestations should be warned about the toxicity of the weed and may choose to control St. John's-wort. If this is done adjacent infestations will be controlled.

**Stinkweed or pennycress, *Thlaspi arvense***

Page 86.

- Numerous reports have been received from across the region including the Smithers dump, the Telkwa High Road - Snake Road area, along Highway 16 at Evelyn, Aldermere area, the boat launch at the bridge over the Stikine River near Dease Lake and the Nadina River - Francois Lake road junction. A very isolated patch has been reported at Coldfish Lake in Spatsizi Wilderness Park in a horse corral. Stinkweed appears to have a scattered distribution throughout the region. Stinkweed is not considered to be a range weed problem but can be a problem in some agriculture settings. Feed containing excessive amounts of stinkweed seed may be toxic to horses.
  - No action planned at this time.

**Tarweed, cluster, *Madia glomerata***

Page 87.

- The tarweed found in the region was confirmed as *Madia glomerata* in 1992. The distribution of the invasive plant is not known but it appears to be fairly wide spread. It is also either spreading rapidly or goes through dramatic population cycles. Tarweed has a particularly pungent odor and complaints about the invasive plant are received regularly. This invasive plant is native to parts of BC but it is unlikely that it is native to the northwest.
  - o A timing rate trial was established in 1996 at Owen Creek Cattle Co. in Evelyn. The weed is easily controlled with all herbicides tested and does respond to management factors such as fertilizing and proper grazing.
    - Because of the pungent odor and this plants ability to cycle up to high populations, landowners and occupiers may choose to control this plant.

**Thistle, nodding, *Carduus nutans* – Some containment activity, monitoring & dispersal of biocontrol agents**

Page 78.

- The first nodding thistle site was reported in 1989, on Highway 37 north of Kitwano. More sites of nodding thistle are being reported every year. There is now a site north of Good Hope Lake. Seeds from these thistles are air born and can travel great distances so it is likely that new sites will continue to show up. Because of successful biological control, nodding thistle is not thought to present a serious threat to the NWIPC area.
  - o In southern BC nodding and plumeless thistles have been controlled with biocontrol agents. The two agents with the most impact are a flower-head weevil, *Rhinocyllus conicus*, and a weevil, *Trichosirocalus horridus*, which attacks just below vegetative buds. *T. horridus* has been effective in regions with cool moist summers such as Southern New Zealand and should be considered if infestations reach sizes that warrant biocontrol. Cutting the thistles in bud is reasonable effective.
    - Existing and new sites will be controlled by, cutting or herbicides by the landowner or occupier. Extension work will continue to encourage people to look for and report 'strange' thistles. If a sizable patch is found requests will be made for biological control agents

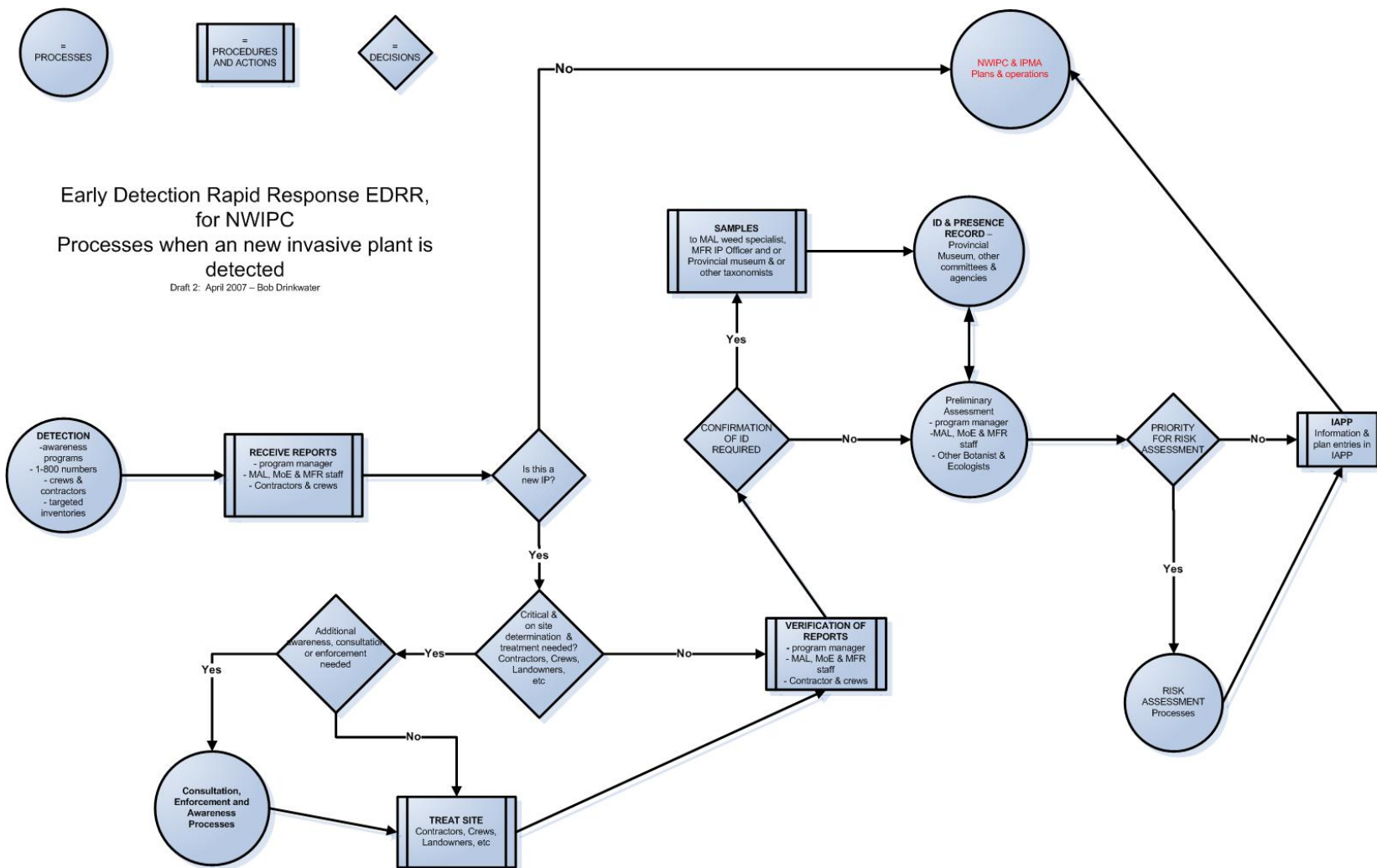
**Vetch, tufted, *Vicia cracca***

- Reported as extensive in the Terrace area.
  - o No action planned at this time.

### APPENDIX 3: EARLY DETECTION RAPID RESPONSE, EDRR

(A new provincial plan is in preparation by the Inter-Ministry Invasive Species Council, and we will add to our plan once it is released)

The schematic below is presented as a suggestion of the processes to detect and respond to new invasive plant arrivals in NWIPC areas.



## APPENDIX 4: CONTAINMENT POLYGONS

### Protocol to Establish Invasive Plant Containment Lines in the IAPP Application

Approved by IMIPWG May 26, 2009

#### DEFINITION:

*The objective of containment in invasive plant management is to prevent large infestations from spreading to un-infested areas. Establishing containment lines around targeted invasive plant species' infestations defines the areas that require treatment and assists in management planning. Inside the containment line the infestation of the invasive plant species is extensive and it is not possible to eradicate the target species. Outside the line the infestation is limited and preventing spread and achieving a long term goal of eradication is possible.*

*The establishment and location of containment lines is determined through stakeholder consensus and are set within geographic areas such as Regional Invasive Plant Committee boundaries or cross-regional areas of the Province. The location of the containment line is based on considerations of the following: a) target invasive plant species' current distribution and abundance; b) known vectors and projected rate of spread; c) natural barriers to movement (e.g. height of land, lakes or rivers), d) ecological factors, and d) other management objectives within the area. Containment lines are housed in the Invasive Alien Plant Program (IAPP) Application, so that their locations are communicated and clear to all stakeholders and their invasive plant management crews.*

*Outside the containment polygon or area all sites of the species being contained need to be managed including enhanced awareness work, inventory, treatment, and monitoring. Management objectives inside a containment line may include rehabilitation of sites, or specific inventory and control actions on areas deemed to be critical from an economic or conservation perspective.*

#### PROCEDURES:

As the support and action of all stakeholders and partners is required for successful containment of invasive plants, the following steps are required to establish containment lines:

- 1) Members of regional Invasive Plant Committees can propose and discuss containment lines. If lines are wholly within the regional invasive plant committee's area and consensus agreement on the location of the line can be reached, the request is forwarded to the Inter-Ministry Invasive Plant Working Group (IMIPWG) for review.

- 2) If proposed lines cross the boundaries of two or more regional invasive plant committees, all committees affected must agree to the lines and locations before they are forwarded to the IMIPWG.
- 3) An agency or organization can propose containment lines to the IMIPWG, the Invasive Plant Council of BC (IPCBC), as well as to regional invasive plant committees. Proposals received by the IMIPWG or IPCBC will be referred to the affected regional committee(s) for consideration and support, and the committee will ensure final submission to the IMIPWG.
- 4) The IMIPWG will review proposed containment lines and either approve their inclusion in IAPP or discuss with those making the proposal why inclusion is not approved at that time or at that location.
- 5) If lines are approved for inclusion in IAPP, those making the proposal will work with the IAPP Technician to have the lines uploaded into IAPP.
- 6) Regular review and adjustment of containment lines is the responsibility of the sponsoring regional committees, agencies and organizations, and the IMIPWG.

NWIPC currently has containment lines for common tansy, marsh plume thistle, and field scabious. There are numerous other species that have unofficial or containment lines under negotiation by NWIPC. The membership formed a new Containment Line Committee at the 2009 Fall Meeting; currently chaired by Marc Schuffert, P.Ag., Ministry of Forests and Range. The status of the various species is noted in APPENDIX 3: INVASIVE PLANT PROFILES FOR NORTHWEST AND CENTRAL BC.

## APPENDIX 5: NWIPC EXECUTIVE

NWIPC Directors for 2011 proposed at AGM April 12, 2011.

Perspective	Director	Affiliation	
Environmental, Conservation & Naturalist Groups	Paul Glover	Northwest BC Coalition for Alternatives to Pesticides	250-847-5575
Local government	Claire Watkins	City of Prince George, Parks Dept.	250-614-7818
First Nations	Myrtle Muldoe	Gitksan First Nation – Mid- Skeena Watershed	250-842-5432
Livestock and Guide Outfitters Associations	Trevor Tapp	Nechako Valley Regional Cattlemen's Association; producer	250-699-6466
Member at Large, Terrace area	Ian Hayes	Cambria Gordon Ltd.	250-635-0226
Provincial Government	Denise McLean, <b>Chair</b>	Ministry of Agriculture and Lands	250-565-7201
Transportation and Utility Companies	Erik Swanson	BC Hydro	250-561-4863
Local farmers and the Robson Valley area	Lester Blouin	District "C" Farmers Institute	250-968-4487
Forest Industry	Bruce Middleton	BC Timber Sales	250-567-6312
Provincial Government	Marc Schuffert	BC Ministry of Forests and Range	250-847-6329
Agriculture	Graeme Johnstone	Retired from Ministry of Agriculture and as NWIPC Invasive Plant Area Manager	250-847-3453
Agriculture	Lynne Wilson	District "C" Farmers Institute/producer	250-967-4645
Local government	Janine Dougall	Regional District of Bulkley Nechako	250-692-3195

## ROLES, RESPONSIBILITIES AND COMMUNICATION

### **NWIPC Members & Partners**

