

NORTH WEST INVASIVE PLANT COUNCIL NWIPC

2006 PLAN & PROFILE

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GOAL OF THE NORTHWEST INVASIVE PLANT COMMITTEE

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.

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'.
- Manage and coordinate the activities and responsibilities of the various agencies and private landowners to ensure NWIPC goals are met.

INTRODUCTION

This 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 the Queen Charlotte Islands, 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.

The Northwest Invasive Plant Council, NWIPC, has many agencies, organizations and private citizens as members (Appendix C). The committee 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 the ground management and treatment of invasive plants.

The speed at which invasive plants spread depends on the suitability and state of health of the habitat. Habitats in poor condition, 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.

APPENDIX 1: CATEGORIZING WEEDS AND PRIORITIZING SITES

The limited amount of resources available and the varying threats each invasive plant species poses means a system to guide actions is needed. For this reason invasive plants are categorized and sites are prioritized.

The aggressiveness and range of habitats that invasive plants will infest and dominate are estimated. This is done by reviewing literature on the habitat range and aggressiveness of invasive plants, having scientists review and advise NWIPC and having the collective membership of NWIPC, which has substantial expertise and experience, assess invasive plants. The various invasive plants present or threatening northern BC are then categorized. The process is flexible and reviewed by NWIPC on an ongoing basis. When additional information becomes available NWIPC is able to work towards a consensus to retain or change an invasive plant's category. Based on similar provincial groupings, invasive plants are given a rating or category.

TABLE 1. INVASIVE PLANT CATEGORIES

CATEGORY 1 - EXTREMELY INVASIVE			
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	<u>Cytisus scoparius</u>	Knotweeds	<u>Polygonum spp</u>
Gorse	<u>Ulex europaeus</u>	Scabious, field or blue buttons	<u>Knautia arvensis</u>
Hawkweeds	<u>Hieracium spp.</u>		
Iris, yellow flag	<u>Iris pseudacorus</u>	Spurge, leafy	<u>Euphorbia esula</u>
Knapweed, black & brown	<u>Centaurea nigra</u> & <u>C.jacea</u>	Tansy, common	<u>Tanacetum vulgare</u>
Knapweed, greater	<u>Centaurea scabiosa</u>	Thistle, marsh plume	<u>Cirsium palustre</u>
Knapweed, spotted	<u>Centaurea maculosa</u>	Toadflax, dalmation	<u>Linaria dalmatica</u>
CATEGORY 2 - VERY INVASIVE			
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
Blueweed	<u>Echium vulgare</u>	Knapweed, diffuse	<u>Centaurea diffusa</u>
Burdock, common	<u>Arctium minus</u>	Loosestrife	<u>Lythrum spp.</u>
Chamomile, scentless	<u>Matricaria maritima</u>	Ragwort, tansy	<u>Senecio jacobaeae</u>
Daisy, oxeye	<u>Chrysanthemum leucanthemum</u>	Thistle, Canada	<u>Cirsium arvense</u>
		Thistle, plumeless	<u>Carduus acanthoides</u>
Hounds tongue	<u>Cynoglossum officinale</u>		
CATEGORY 3 - INVASIVE			
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 management problems are occurring.			
Common Name	Scientific Name	Common Name	Scientific Name
Catchfly, night-flowering	<u>Silene noctiflora</u>	Thistle, sow	<u>Sonchus spp.</u>
Goat's-beard	<u>Tragopogon dubious</u>	Toadflax, common	<u>Linaria vulgaris</u>
Thistle, bull	<u>Cirsium vulgare</u>	Wormwood or absinthium	<u>Artemisia absinthium</u>

TABLE 1 CONTINUED.

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 the plant displays. Native plants that behave in a weedy manner are listed in this category.			
Common Name	Scientific Name	Common Name	Scientific Name
Agrimony	<u>Agrimonia striata</u>	Lamb's-quarter	<u>Chenopodium spp.</u>
Barley, foxtail	<u>Hordeum jubatum</u>	Lettuce, tall blue	<u>Lactuca spp.</u>
Bergamont, wild	<u>Monarda fistulosa</u>	Medic, black	<u>Medicago lupulina</u>
Blue buttons	<u>Centaurea cyanus</u>	Mullien	<u>Verbascum thapsus</u>
Bluet, mountain	<u>Centaurea montana</u>	Mustard, dog	<u>Erucasstrum gallicum</u>
Bluebur, western	<u>Lappula echinata</u>	Mustard hedge	<u>Sisymbrium officinale</u>
Buckwheat, wild	<u>Polygonum convolvulus</u>	Mustard, tumble	<u>Sisymbrium spp.</u>
Bugloss, small	<u>Lycopsis arvensis</u>	Mustard, wild	<u>Sinapis arvensis</u>
Campion, bladder	<u>Silene cucubalus</u>	Pineapple weed	<u>Matricaria matricarioides</u>
Chicory	<u>Cichorium intybus</u>	Pennycress	<u>Thlaspi arvense</u>
Cockle, white	<u>Lychnis alba</u>	Primrose, evening	<u>Oenothera biennis</u>
Dock, curled	<u>Rumex crispus</u>	Safflower	<u>Carthamus tinctorius</u>
Dragonhead, American	<u>Dracocephalum parviflorum</u>	St. John's-wort	<u>Hypericum perforatum</u>
Fleabane, Canadian	<u>Conyza canadensis</u>	Stinkweed	<u>Thlaspi arvense</u>
Groundsel, common	<u>Senecio vulgaris</u>	Tarweed	<u>Madia glomerata</u>
Hawksbeard, narrowleaf	<u>Crepis tectorum</u>	Thistle, nodding	<u>Carduus nutans</u>
Hemp-nettle	<u>Galeopsis tetrahit</u>	Vetch, tufted	<u>Vicia cracca</u>
Hop-clover	<u>Trifolium agrarium</u>	Water hemlock, western	<u>Cicuta douglasii</u>

PRIORIZING SITES

Categorizing invasive plants helps with decisions in allocating resources and methods for control work. A further refinement is to prioritize sites for invasive plants. Some invasive plants, such as spotted knapweed, which was first discovered in the region in the early 1980s, has been prevented from establishing and the sites that have shown up over the years have been kept small or eliminated. This is in spite of the millions of hectares of habitat susceptible to invasion and degradation by spotted knapweed. With available resources it is feasible to keep spotted knapweed from spreading in northern BC. This is done by quickly detecting and controlling new infestations that show up and controlling existing sites until they can be declared free of the invasive plant.

Some invasive plants have been in the region for quite a while and have established on a lot of sites covering large areas. It is not feasible with available resource to control all sites of these invasive plants. Canada thistle is an example of such an invasive plant. Canada thistle aggressively invades grasslands, aspen forests, disturbed forests and other habitats. Canada thistle has been in the region for quite some time and there are numerous infestations, some of which are large. Most of the large infestations are along the main transportation and utility corridors, particularly along highway 16. To appropriately direct the limited resources available to deal with the degradation and threatened degradation caused by Canada thistle it is necessary to prioritize sites.

When Canada thistle has become well established and occupies a substantial portion of the susceptible habitat in an area it is no longer feasible to control or kill the entire invasive plant population. Emphasis shifts to preventing spread off the site and reducing the aggressiveness of the invasive plant on the site through the use of biological control agents. Biological control agents are usually insects and plant diseases that come from the invasive plant's place of origin and attack only the specific invasive plant.

The Skeena Valley from Hazelton to Cedarvale has numerous Canada thistle sites, some of which are quite large. This area is a wet interior cedar hemlock forest, ICH, zone. Unless this forest is disturbed and the canopy is opened not much of it is susceptible to Canada thistle infestation. After disturbances like logging, given appropriate silviculture practices, the canopy closes quickly reducing the risk of degradation by Canada thistle. In the Skeena Valley, Canada thistle is a threat to habitats that are permanently open like the native meadows and habitats kept permanently or semi permanently open through activities like transportation or agriculture. These habitats are important as is the spread of thistle into other areas but the high population of Canada thistle makes it impossible to control all the sites. It is necessary to prioritize the sites for different control approaches. Control in these areas includes doing nothing, mowing, herbicide application and release of biocontrol agents. A different situation with Canada thistle occurs in the Cassiar area, a large area of approx. 13.4 million hectares. The Cassiar has a dozen or so small Canada thistle infestations that are threatening millions of hectares of susceptible habitat, (grasslands, scrub steppe, open aspen stands, etc.). In the Cassiar it is important and feasible to try and control and eventually eliminate all Canada thistle infestations.

The location and surrounding habitat of invasive plant infestations need to be assessed to assist in decisions and resource allocations for invasive plant control. Based on similar provincial groupings, invasive plant sites are given a rating or priority as follows.

TABLE 2. INVASIVE SITE PRIORITY

PRIORITY	PURPOSE OR INTENT
1 Extremely High Risk	To stop the spread of invasive plants threatening currently uninfested, 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.
2 High Risk	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.
3 Moderate Risk	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.
4	To stop the enlargement/contain sites greater than 0.5 ha in moderately susceptible areas.

APPENDIX 2: INVASIVE PLANT PROGRAM LEVELS

By using categories of invasive plants and site priorities it is possible to define various levels for the invasive plant program. A critical program is a level where control measures are targeted to extremely invasive (1) and very invasive plants (2) on small sites, less than .25 ha, that are threatening larger areas of uninfested, highly susceptible habitats. The following table indicates program levels. The critical program level also includes a system of Early Detection and Rapid Response, EDRR, for those invasive plants that have not yet arrived in northern BC but are expected to arrive soon.

TABLE 3. INVASIVE PLANT PROGRAM LEVELS

IPCATEGORY	SITE PRIORITY	PROGRAM LEVEL
1 1 1 2	1 2 3 1	Critical program level & EDRR- control is required. The immediate requirement is to prevent newly arriving and invasive plants that have low population in northwest BC from establishing and or spreading. The goal is to eliminate the local population of the IP.
2 2 3 1	2 3 1 4	Containment program level – doesn't deal with all invasive plant problems but keeps things from getting worse. The need for control 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 prevent further expansion of invasive plant populations.
2 3 3 3	4 2 3 4	Comprehensive program level – all new invasive plant infestations controlled, established infestations contained and work begins on rehabilitation of infested areas. Rehabilitation will be attempted when biological control agents are available and effective. 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 risk, cost and benefit.

Appendix 3: INVASIVE PLANT PROFILE 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 the Table 1: Invasive Plant Categories. They are organized by Category and within categories, alphabetically by the common name.

Information is formatted as follows:

CATEGORY

Common name, Latin name

- A brief description of where the invasive plant is found and how much of a problem or threat it presents.
 - Current availability of biocontrol agents and suggestions, if available 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. 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, Cytisus scoparius

- Broom is reported to be a problem on the Queen Charlotte Islands. BC Parks, Ministry of Environment organized a broom control day at Naikoon Park in 2000. The first report of broom was made during a weed survey in the Prince Rupert area in 2000. The Prince Rupert site was not found during a survey in 2005.

Gorse, Ulex europaeus

- Need information – no reports to date.

Hawkweeds, Hieracium spp. *PROPOSE MOVE FROM CATEGORY 2 TO CATEGORY 1.*

- Some taxonomy work is required to differentiate and delineate between the various hawkweeds in the region. There are at least three yellow flowered hawkweeds that are introduced invasive plants, a hairy stemmed yellow flowered hawkweed that is probably H. pratense, narrow-leaved hawkweed and a spotted leaved yellow flowered hawkweed, H. maculatum. There could also be several native yellow flowered hawkweeds one of which might be H. umbellatum, which is very common along Highway 37 to the Yukon Border, as well as the native white flowered hawkweed H. albiflorum that is quite common. Distribution and infestations of yellow flowering hawkweeds are extensive in the region. The yellow flowered narrow leaved hawkweed, H. umbellatum and possibly orange hawkweed, H. aurantiacum are major components of the vegetation along Highway 16 from Usk to Terrace and Highway 37 south from Terrace to Kitimat. Narrow-leaved hawkweed is also very extensive along Highway 37 north from Kitwanga to the Yukon border and the Telegraph Creek road. Orange hawkweed is spreading across the region and there are scattered patches and some large patches in most parts of the region. These weeds have become problem pasture weeds in many parts of southern BC and are expected to continue to expand and cause problems in the northwest.
 - There are no biological control agents available for orange hawkweed. 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 and Francois Lake had little impact on the hawkweed and may have encouraged its spread. Timing

rate trials were established in 1997 on what is thought to be yellow hawkweed H. pratense, on Kerr Cattle Company at Quick. Initial evaluations indicate that all herbicide treatments effectively control yellow hawkweed.

- Hawkweeds should be mapped and sites that are threatening adjacent lands, priority 1 sites, should be controlled.

Iris, yellow flag, Iris pseudoacorus (category 1)

- 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 infestation started when the plant washed in, started growing amongst the drift logs then spread. The plant is considered extremely invasive and could have serious impacts on the wetlands of Haida Gwaii.

- Information on treatments is needed.
- The proposed action is to locate, pull and rogue this plant.

Knapweed, black, Centaurea nigra

- Black knapweed is another invasive plant present at the Van Tine site. The identity was confirmed by the provincial museum and again in 1994 by a botanist on contract but 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 Lakelse east to Van Tines.

- 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.
- Along with the other invasive plants at Van Tine site, black knapweed will be controlled using an integrated approach. All other black knapweed sites will be controlled by hand pulling.

Knapweed, brown, Centaurea jacea

- There are numerous, ~ 10, brown knapweed sites reported in the region. The sites start in the west in the Lakelse Park - Onion Lake area and are located east to Andimaul Creek, Ritchie Creek, west of Kitwanga and west of Kitseguelca. Most of the sites have 0 to a few dozen plants showing up each year. A new site reported in 2002 at Chist Creek is about 0.5 acre in size.

- 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.
- The road way around the Chist Creek site should be controlled each year. The bulk of this infestation is in a plantation and should eventually be shaded out. The other sites are controlled by hand pulling each year.

Knapweed, greater, Centaurea scabiosa

- 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 indicates that it should be watched. It may end up like corn flower, C. cyanus and bluet, C. montana a garden escape and moved into category 4.

- Control of brown 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 maculosa

- 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. There are currently 22 active sites, 1 transitional site and 7 sites declared weed free. There are also sites in the Robson Valley area that need to be incorporated into this plan. The site at Lakelse is the largest site and is finally being brought to a size measured in number of plants. The other sites range from 0 to a few hundred plants. The 30 or so sites 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, (55 deg 3' 36" north).

- Numerous biocontrol agents, approximately 12, have been released or will be released on knapweeds in BC. Biocontrol has not significantly reduced spotted knapweed populations to date. 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 likely any biocontrol agents are supported or persisting.

- All spotted knapweed sites in this region will be controlled using an integrated approach. Herbicides, (recommendations should be site specific), and or hand pulling will normally be used. The prescription for the Lakelse site was reviewed in 1999, 2000 and 2001. All areas where gravel (crush) from the Donaldson Pit was hauled to should be checked.

Knotweeds, Polygonum spp.

- In 2002 Japanese and Giant Knotweed were reported as spreading along access corridors on the Queen Charlotte Islands. Sites include Queen Charlotte City/Skidegate Landing 'strip' along Hwy 33 and a recent paving project along Highway 16 and 33 including a site at Husband Road which is particularly robust. Japanese knotweed is an escaped ornamental that is becoming increasingly common along stream corridors and rights-of-way in Washington State. 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 habitat.

- 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. (Additional control information will be added as it found).

- Knotweed has been identified as high priority under the Terrestrial Ecosystem Restoration Program, TERP. Funding may be available and clarification on control actions should be forthcoming.

Scabious, field, blue buttons, Knautia arvensis

- Field scabious is common in the Fort Fraser to Stony Creek area near Vanderhoof and there is also a site at Buck flats, Morice district. This is the same site that leafy spurge infests. The invasive plant has probably been in the area for 30+ years and has been spreading. This invasive plant is a problem at Fort Fraser and in western Alberta on native and mountain pastures and is beginning to show up in several locations in BC

- This invasive plant is reported to be difficult to remove once established. Where practical, cultivation should 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.

- Field scabious is considered a containment invasive plant for NWIPC. All sites outside of the 3 main infestations, Buck Flats, Fort Fraser and Stony Creek area, will be controlled. Containment strategies for the Buck Flats site and the Fort Fraser area have been implemented. This strategy includes extension of information about the invasive plant so that people report sightings. A three year, 2000 – 2002, major effort at reducing the population of field scabious was undertaken at Buck Flats. Escort and Tordon were used by private landowners and the Regional District to reduce the infestation and the Ministries of Forests and Transportation complimented the work by

controlling field scabious on Crown Land. A hand pulling and cutting day are held each year to deal with field scabious infestations that cannot be treated with herbicides. The prescription and approach for the field scabious infestation at Buck Flats requires review. In the Fort Fraser area local residents have done a lot of work and over the years the scabious infestation has been significantly reduced. In the Stony Creek area the Saik 'Uz First Nations has begun working cooperatively with NWIPC to try and contain the infestation by treating, cutting & handpulling, critical sites. A review of the containment prescription for field scabious should be done and documented.

Spurge, leafy, Euphorbia esula

- Up until 1998 there was one known leafy spurge site in the region. The site is at Buck Flats in Morice district. 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 has been no plants found at the second site at Grantham Subdivision but a few plants are found each year at Buck Flats. This invasive plant does not spread rapidly but it does progress with a fierce tenacity and is difficult to control because of its extensive rhizomatous roots. Caution should be taken when handling the plant as it exudes a latex that can cause skin irritation and blindness.

- Control of the 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 rouging in 1994 & 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.

- Close monitoring of the sites will be required and modification of the prescriptions may be necessary. The integrated control approach on the Buck Flats site should be continued including the use of herbicides to minimize spread along the road. Extension material on leafy spurge will be distributed and reporting of the invasive plant encouraged.

Tansy, common, Tanacetum vulgare

- 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 and some large infestations in the Hazelton area. The CN line has dense infestations from Prince Rupert to Cedarville and scattered infestations east of there to the Alberta border and likely beyond. Numerous single plants and patches were found along highway 37 from Kitwanga to north of Dease Lake. There are also patches between Telegraph Creek and Glenora and in the Atlin area. East of Hazelton scattered patches have been found on many side roads and Forest Service roads with some larger patches forming on rangelands.. The threat that common tansy presents is clearly indicated by the way it has gone from no to a few undetected sites east of Hazelton in the early nineties to hundreds of sites that are rapidly increasing in size displacing native and cultivated vegetation by the year 2000. Common tansy contains alkaloids and is slightly toxic.

- Very little work has been done on control strategies for this weed. A trial evaluating mowing regimes was started at the Skeena River bridge site in Kispiox District in 1992. It appears that mowing of common tansy is ineffective.

- Common tansy should be mapped and evaluated. Hand pulling should be attempted on isolated patches. Herbicides should be used to control other patches and the weed should be carried forward as one that requires biological control work.

Thistle, marsh plume, Cirsium palustre

- Marsh plume thistle was collected for a herbarium specimen from the outskirts of Prince Rupert in 1954 and from .5km west of Alliford Bay ferry along a logging road to Moresby Camp on the Queen Charlottes 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 thistle has been found as far east 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 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 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, Trichosiromus horridus, that attacks just below vegetative buds have also been tried. 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 the region. 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 & Lakes, as it will cause a lot of damage in some of the habitats in those districts. Work began in 2001 to contain marsh thistle to the Prince Rupert area. This is done by manually controlling, cutting and hand pulling, marsh thistle sites starting at Terrace and working towards Prince Rupert. Work began in 2004 to obtain a Pesticide Use Permit to cover critical sites along the railway bed near Exchamsiks Park. Marsh thistle is being used to test the definition of containment and spatial lines or containment boundaries will be put into IAPP in 2006. The initial discussions have placed the containment polygons around the Prince Rupert infestation with an eastern boundary near Exchampsis and around the western Robson Valley with the western boundary near Purdon Lake Park and the eastern boundary near McBride.

Toadflax, dalmation, Linaria dalmatica

- The first reports of this invasive plant were received from Lakes District in 1992. It is likely that an infestation at Lanfear in Terrace pre dates this report. There are now numerous dalmation 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. Dalmation toadflax seems to be adapted to a wide range of habitats and is quite aggressive particularly on well drained soils. Dalmatian toadflax is spreading rapidly in southern BC and is expected to cause problems in this region.

- Cultural controls, pulling and cutting, have not being thoroughly investigated but Lakes Forest District has had some success hand pulling the dalmation 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. 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. In 1999 the weevil was seen feeding at the Lanfear Hill site in Terrace but none could be found at the Burns Lake site. 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. 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.

CATEGORY 2

Blueweed, Echium vulgare

- The first report of blueweed in the region occurred in 1992 when it was suspected as another of the weeds found at the Van Tine site in Lakes District. 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. 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 tap root 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

- Burdock is on the list of noxious weeds for Kitimat Stikine and Bulkley Nechako Regional Districts. It is well dispersed throughout the region located primarily in moist areas. It is prevalent in the Kispiox Valley including extensive infestations on the Kispiox and Glen Vowel First Nations Reserves. It has been reported around farms in the Woodmere Road Tyhee Lake area and in the town of Smithers. Burdock has been a problem for as long as anyone can remember (i.e. on horses' tails since the 1920's).

- Control should be prescribed on a site specific basis.
- When considered a problem, burdock will be controlled by the landowner or occupier.

Chamomile, scentless, Matricaria maritima

- 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.

- 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.

Daisy, oxeye, Chrysanthemum leucanthemum

- 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.

- 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.

- When oxeye daisy infestations are identified as threatening uninfested 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. 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 will continue and discussions will occur at the fall 2006 meeting on the feasibility of oxeye daisy containment in the Cassiar.

Hound's tongue, Cynoglossum officinale

- There are no reported sightings of hounds 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. Hounds tongue has an economic impact on the livestock industry at low levels because of the burrs. The ability to detect and control hounds 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. Hounds 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 handpulling and herbicide treatment.

Knapweed, diffuse, Centaurea diffusa

- 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 it has not formed dense stands and occurs as scattered plants across about 5 hectares. 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 currently 4 sites with diffuse knapweed present in the northwest. The Kitwanga Village site, a gravel pit 16 km north of Kitwanga, Carnaby Siding west of Hazelton and the Gilligan pit between Francois and Burns Lake. These other 3 sites can have anywhere from none to a few dozen plants in any given year.

- 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 its category will be reviewed with possible change to category 4.

- 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

- 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.

Ragwort, tansy, Senecio jacobaeae

- None reported.

Thistle, Canada, Cirsium arvense

- Canada thistle is widely dispersed in the region particularly along roadsides. It can be found from the Queen Charlotte Islands, Ridley Island grain & coal terminals near Prince Rupert, the Terrace area to the eastern edge of the NWIPC region. 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 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.

- From the Agriculture Canada Web site on biocontrol of weeds at 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 insect¹: the root-crown weevil Cleonis pigra, the defoliating beetle Cassida rubiginosa, 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 feeders³. 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."

- Larinus planus, has been released on numerous sites in the region. It overwintered 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. Overwintering 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.

- When Canada thistle infestations are identified as threatening uninfested 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 land owner 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

- 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, Trichosiromus horridus, that 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.

CATEGORY 3

Catchfly, night-flowering, Silene noctiflora

- Reported in 1993, along the railroad tracks at Owen Creek Ranch. Identification needs to be confirmed as it may be a native catchfly S. menziesii. 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.

Goat's-beard, Tragopogon dubious

- Tragopogon is abundant along some roadsides and the CN rail and appears to be spreading quite rapidly in the region. It may be spreading off of the roads and rail lines onto adjacent rangeland.

- 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

- 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 that usually develop a few years after disturbances. 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 up to 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.

- 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. Squeezing the heads, while wearing gloves, in the late summer or fall does this. 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 Morice Town.

Thistle, perennial sow, Sonchus arvensis, and other Sonchus spp.

- 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. 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 and very high in the late nineties through to 2001.

- 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.

- A more detailed survey that notes possible release sites for Cystiphora will be conducted if resources become available.

Toadflax, common, Linaria vulgaris

- Common toadflax can be found throughout the region particularly along Highway 16 and the CN rail line. Some isolated sites have also been reported including a remote site in the Kechika Valley. Patches range from a few plants to a few hundred square feet. 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.

- 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.

- 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.

Wormwood, absinthium, Artemisia absinthium

- 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 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

Agrimony, Agrimonia striata

- Agrimony was reported present in the Hazelton area in the 1973 publication The Rose Family of British Columbia indicating that it has been present since at least the 1960s. Area residents report that it is spreading and beginning to dominate some sites excluding grasses. The only place it has been reported from is the Hazelton area.

- The provincial weed specialist has been asked if information on control is available.

- The agrimony infestation will be monitored. An assessment as to the risk that it represents needs to be made. In the interim most of the infestation is cut or grazed by horses.

Barley, foxtail, Hordeum jubatum

- The Yukon Territory reports that foxtail barley is causing serious problems. Foxtail barley has a wide distribution in the region. It is common from the Yukon border south to the Skeena and is very heavy at Iskut Village. It is causing problems at the Village when the seeds stick in clothing. Foxtail barley is not reported as causing economic problems elsewhere.

- Control information required.
- No action planned at this time.

Bergamont, wild, Monarda fistulosa (risk assessment needed)

- This plant was reported on the road to the Telus microwave station on the Mount Harry Davis Range unit on Hungry Hill. The plant is native to and common in southern Alberta and does have BC listed in its distribution range.

Blue buttons, corn flower, Centaurea cyanus

- 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.

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.

Bluet, mountain, Centaurea montana

- 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, at Francois Lake just east of the north ferry terminal and at the Van Tine site. Confirmation that the plant is C. montana was made in 1994. The threat presented by mountain bluet has not been assessed but it does not appear to be extremely aggressive.

- Control of mountain bluet should be similar to the methods used for spotted knapweed control.
- Mountain bluet should be reported and an assessment of the threat it represents made.

Bluebur, western, bluebur, stickseed, blueweed, burweed, Lappula echinata

- Distribution of this invasive plant still needs to be determined. It has been reported from many areas in the region. The seeds have hooked bristles that catch on clothing causing problems for hikers, farmers, livestock, etc.

- Bluebur can be hand pulled when small infestations are found.
- Sightings of bluebur will continue to be recorded. Sites will only be controlled if the land owner or occupier feels control is warranted.

Buckwheat, wild, Polygonum convolvulus

- 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.

Bug loss, small, Lycopsis arvensis

- This invasive plant was first reported as Echium vulgare, blueweed, in 1992 at the Van Tine site. It has subsequently thought to be small bug loss 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

- 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.

Chicory, Cichorium intybus

- 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.

- Control information needed.

- Continue to watch for and note this weed. When found chicory will be hand pulled.

Cockle, white, white campion, Lychnis alba

- White cockle was confirmed in 1994 just past the junction of Woodmere and Brooks road in Telkwa and 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.

- Reports of these invasive plants will continue to be recorded to see if it is spreading.

Dock, curled etc., Rumex spp.

- Curled dock has been reported on numerous farms in the region. Curled dock is scattered through the Village of Atlin and along the road adjacent to the farms on the way into Atlin. The Ministry of Agriculture Weed Specialist has indicated that curled dock is a problem on acid soils in the Lower Mainland and it bears watching in our region. Rumex acetosella, sour weed or sheep sorrel, has been reported in the general area of Evelyn to Hazelton. This common garden weed is probably well dispersed in the region.

- There is a native agent, Luperina passer, that attacks the roots of curled dock.

- An overview survey of curled dock is needed but resources are not available at this time.

Dragon head, American, Dracocephalum parviflorum

- This native plant can behave in a weedy manner and is sometimes reported as a problem plant.

Fleabane, Canadian or Horseweed, Conyza canadensis, horseweed

- Canadian horseweed is probably a native plant that behaves in a weedy fashion. Formerly known as Erigeron canadensis, Canadian fleabane is abundant in waste places, along road sides, 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, and other Senecio spp.

- 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.

- 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.

Hawksbeard, narrowleaf, Crepis tectorum

- Hawk's-beard probably has a wide distribution and occurrence in the region. Its status is masked by a similar flower appearance with perennial sow-thistle and yellow flowering hawkweeds, (Hieracium spp.).

- 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

- 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.

No action planned at this time.

Hop-clover, Trifolium agrarium

- Identification has been confirmed. Hop clover has a wide dispersal along roadsides.

- No action planned at this time.

Lamb's-quarters, Chenopodium spp.

- 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.

- No action planned.

Lettuce, tall blue, prickly lettuce, blue lettuce, Lactuca spp.

- These wild lettuce species are periodically brought in as possible knapweeds. The seed heads of tall blue lettuce are similar to the knapweeds with black fringed bracts appearing as spots. The distribution is from the Bulkley Valley to the Nass Valley.

- These species are not aggressive and are palatable to grazing animals so no action is necessary.

Medic, black, Medicago lupulina

- Abundant in the Smithers area in gravel pits and at the dump.

- No action is planned for this common plant.

Mullien, Verbascum thapsus

- Three sites of this nuisance weed had been reported up until 2002. One site is a spotted knapweed site on Telkwa High road just north of Adam road. Another report is a gravel pit along Tatlow road and the third is a gravel pit at the junction of Kispiox Valley and Salmon Valley roads. A third site was reported in 2002 at the Silver Queen Mine Site at Owen Lake. It is likely that there are other mullein sites, particularly in gravel pits and waste areas. From Williams Lake south mullein is a common nuisance weed.

- 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, Eruscastrum 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 leaflike bracts.

- Watch for, report and record dog mustard sites.

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 road sides. Hedge mustard was reported from the Queen Charlottes in 2002. It is listed in publications from 1968 as rare on the Charlottes.

Mustard, wild, Sinapis arvensis

- Wild mustard is one of the most common annual weeds and is found in most cultivated fields. If land is cultivated and crop species 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.

Pineapple weed, Matricaria matricarioides

- 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

- There is an infestation of evening primrose, (identification confirmed), along the road sides near the Ministry of Forests and Range 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. It is not known whether this plant presents a threat.

- 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.

Safflower, Carthamus tinctorius

- A safflower plant was brought in from the Telkwa area in 2002. Though safflower is in the knapweed tribe it is not expected to cause problems in northwest BC. Safflower is cultivated as an oilseed crop and as an ornamental. It is likely the safflower in the Telkwa area is either a garden escape or from a rail grain car.

St. John's-wort, goat weed, Hypericum perforatum

- 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 Terrace to Kitimat, at Kitwanga and numerous sites in the Hazelton area. There is a large patch at the Meziadin Lake campsite. Goat weed 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 1940s, 50s and 60s 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.

- In the mid '60s biological control caused a rapid decline in goat weed infestations. Seven biocontrol agents have been released in BC and a complex of 3 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 quadrigemina 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.

- The action for goat weed will be to report infestations and identify sites for releasing biological control agents. Farms near goat weed infestations should be warned about the toxicity of the weed and may choose to control goatweed. If this is done adjacent infestations will be controlled.

Stinkweed, pennycress, Thlaspi arvense

- 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 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, Madia glomerata

- 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 going through an upward population cycle. 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.

- 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, land owners and occupiers may choose to control this plant.

Thistle, nodding, Carduus nutans

- The first nodding thistle site was reported in 1989 on Highway 37 north of Kitwancool. 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.

- 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, Trichosiromus horridus, that 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.

- No action planned at this time.

Water hemlock, western, Cicuta douglasii

- Western water hemlock is a native plant that is not common but it has a fairly wide distribution in the region. It is found in wet areas. Water hemlock is poisonous and occasionally causes cattle deaths.

- Control recommendations are available if required.

- Note any occurrences and take control action if necessary.

Appendix 4: NWIPC EXECUTIVE

INTERST GROUP	PERSON	AFFILIATION	PHONE
Environmental, Conservation & Naturalist Groups	Paul Glover	Northwest BC Coalition for Alternatives to Pesticides	250-847-5575
First Nations	Myrtle Muldoe	Gitxsan First Nation - Mid Skeena Watershed	250-842-5703
Livestock and Guide Outfitters Associations	John Davidson	Bulkley Valley Cattlemen	250-847-8894
Livestock and Guide Outfitters Associations	Traugott Klien	Nechako Valley Regional Cattlemen Assn.	250-567-3262
Local Government	Janine Dougall	Regional District of Bulkley Nechako	250 692-3195
Local Government	Ralph Roy	Regional District of Bulkley Nechako	
Local Government	vacant		
Members at Large	vacant		
Provincial Government	Denise McLean, Chair	Ministry of Agriculture and Lands	250-963-2510
Provincial Government	Bob Drinkwater, Secretary	Ministry of Forests and Range	250 565-6139
Transportation and Utility Companies	(Gwen Lohbrunner) Mike Verschoor	BC Transmission Corp	250-561-4863