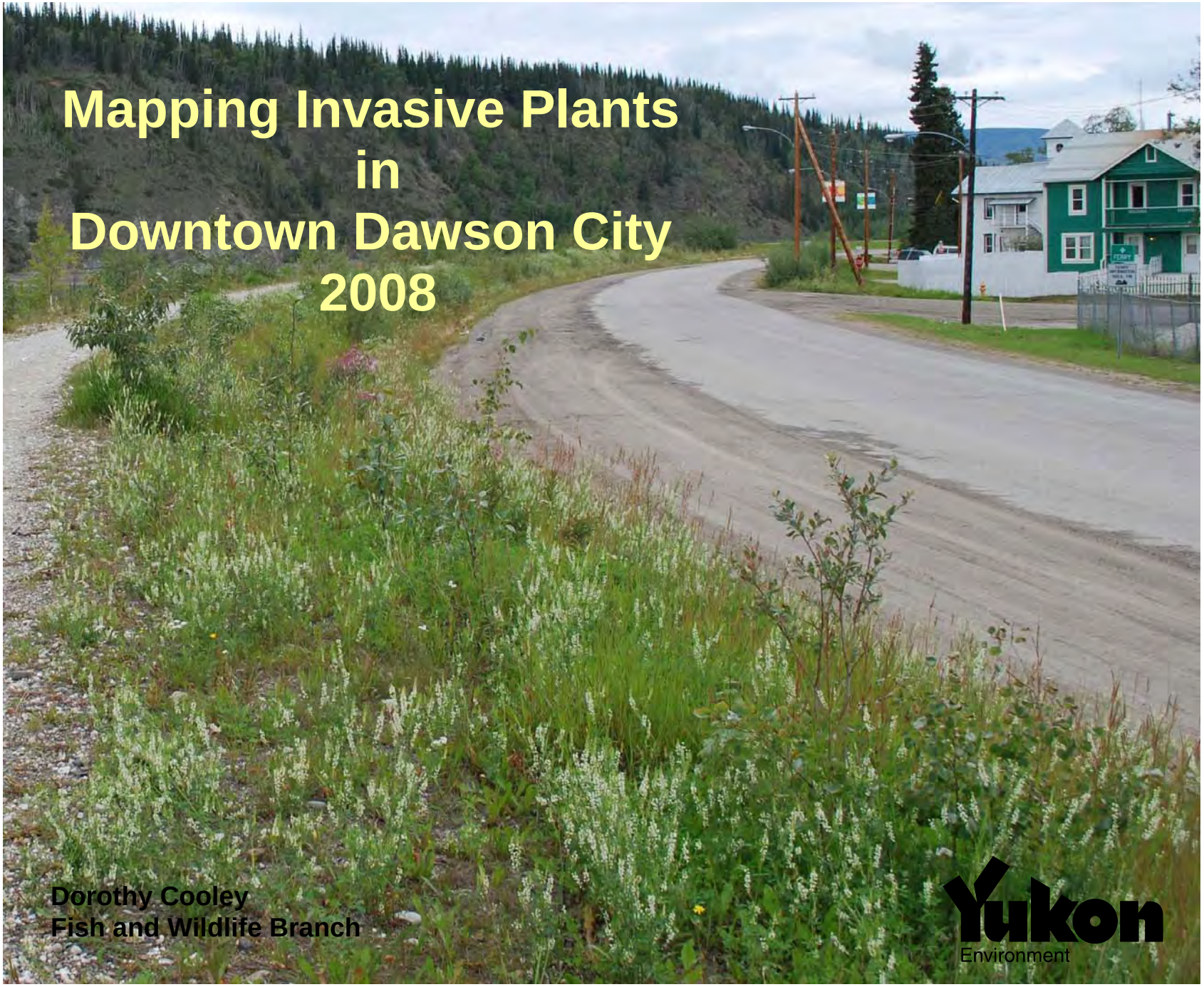


Mapping Invasive Plants in Downtown Dawson City 2008

Dorothy Cooley
Fish and Wildlife Branch

Yukon
Environment

Acknowledgements

Field work was done by Dorothy Cooley and Martin Kienzler (Yukon Department of Environment) and Brodie Smith (Wildlife Technician Trainee with the Porcupine Caribou Management Board).

Jennifer Line, botanist with Government of Yukon provided much encouragement, advice and training in species identification to the field crew. Her enthusiasm and faith in us is greatly appreciated.

Mammoth Mapping Inc provided the electronic map of Dawson City streets.

We also appreciate the informal but encouraging chat with Norm Carlson at the City of Dawson office.

Bruce Bennett and Jean Carey, both of Yukon Department of Environment provided useful suggestions on earlier drafts of this report.

Copies available from:

Yukon Department of Environment
Fish and Wildlife Branch, V-5A
Box 2703, Whitehorse, Yukon Y1A 2C6
Phone (867) 667-5721, Fax (867) 393-6263
Email: environmentyukon@gov.yk.ca

Also available online at www.environmentyukon.gov.yk.ca

Suggested citation:

Cooley, D. (2009). Mapping invasive plants in downtown Dawson City, 2008. Yukon Fish and Wildlife Branch Report SR-09-01, Whitehorse, Yukon, Canada.

Table of contents Page

Introduction

Invasive species of plants have many characteristics that alarm us.

- Invasive plants can grow quickly and mature early.
- They reproduce very effectively, even by multiple means such as seeds and rhizomes. Often they can effectively spread seeds that can lay dormant in the soil for a long time.
- Their profuse leaves and stems can produce dense shade which, along with toxins, can inhibit the growth of their competitors.
- Invasive plants often lack predators, and may cross-breed with local plants, threatening the genetic makeup of native species.
- They easily create monocultures in the under story, preventing the establishment and growth of other plants.
- Some invasive plants can even change ecosystems by using the water and nutrients, or by changing the make-up of the soil.

There are thought to be 145 species of non-native plants in Yukon of which 16 are considered *invasive*. At least 49 non-native species are known or suspected to occur in the Dawson area. Four of the Dawson species are considered *highly invasive* (may displace or replace native ecosystems) and 7 are considered *aggressive* (widespread, persistent, but may not replace native species or change ecosystem function).

Detecting invasive species early and responding quickly and efficiently is very important. Once these species establish in an area, it is extremely difficult – if not impossible – to restore the area to its natural state.

There were several objectives to this project.

- We wanted to record a baseline of prevalence of selected invasive plant species in Dawson City. This survey was designed to be repeated in the future.
- We wanted to compare prevalence of invasive species in disturbed and relatively undisturbed areas. Often invasive species become established in disturbed areas and become of greater concern when they establish in undisturbed areas, therefore
- We wanted to do a project that started to raise awareness of local residents of the problems associated with invasive plant species which would encourage remediation efforts to halt the spread of undesirable, potentially harmful plants in the Dawson City area.

Tufted vetch is very common in the north end of Dawson City.

Methods

We wanted to limit the number of species surveyed and prioritized the species selected for survey as those that were highly invasive or aggressive, and that were known or suspected to be common. We were also interested in how common house or garden escapees were, in particular Oxeye Daisy since it readily naturalizes. It was also important that the species chosen were easily recognizable by the non-botanist survey team.

Invasiveness and prevalence rank of surveyed species.

Species	Invasiveness rank	Prevalence
Tufted Vetch *(Vicia cracca)*	Highly invasive	Common
White Sweetclover *(Melilotus officinalis)*	Highly invasive	Common
Yellow Sweetclover *(Melilotus alba*)	Highly invasive	Common
Butter and Eggs *(Linaria vulgaris)*	Highly invasive	not ranked
Oxeye Daisy *(Leucanthenum vulgare)*	Highly invasive	not ranked
Common Catchfly *(Silene vulgaris)*	Aggressive	Rare
'Escaped' domestic species	not ranked	not ranked

We divided all streets in the downtown core of Dawson City into sample units so that we could do an orderly survey. Each side of the street in each city block was one unit. We split the longer blocks into 2 units because we needed to be able to easily see the entire sample unit to estimate the cover of plants. In the end we had 431 sampling units of various sizes.

Three observers walked all the streets and searched the sides of the streets from the edge of the roadway out to 1 meter. On all maps in this report, the sampling units are shown at an exaggerated size to increase visibility.

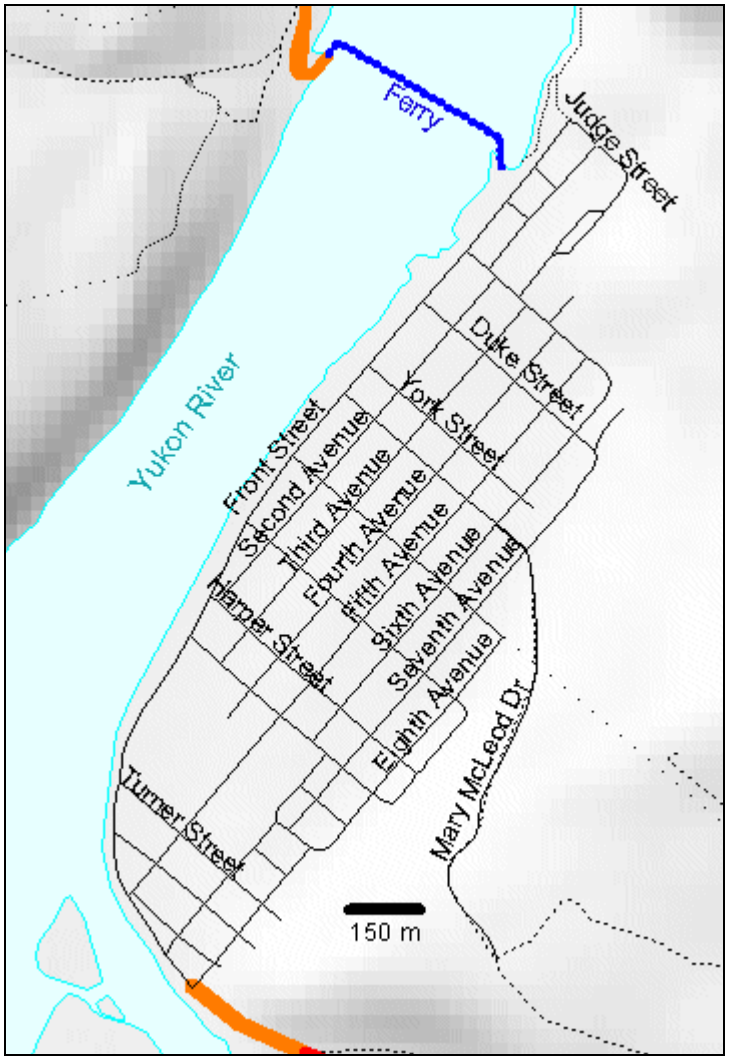
Percent cover was visually estimated to the nearest 5%. Where less than 5% was estimated, the value was recorded as 1%. Where 1 or 2 individual plants were found, percent cover was recorded as 0.1%.

Where there were disturbances to the surface of the ground such as hard packed driveways, the type of disturbance and percent cover was recorded. Disturbances were grouped based on the apparent permanency of the disturbance and a subjective determination of the potential for plants to grow there. Areas that were deemed to have medium or high potential for the growth of plants were called *available*.

Classification of disturbance.

Description	Permanency of disturbance	Potential for non-native species to establish
Driveway or parking	Medium	None: no germination
Road	High	None: no germination
Tended lawn	Medium	Low: expect homeowner to eradicate
Board walk	Medium	Low: no germination or eradicated by City
Untended or semi-tended yard	Low	Medium
Unmaintained trail	Low	Medium: alongside tread
No disturbance recorded	Low	High

Most of this survey was done on 30 and 31 July 2008. One missed sample unit was checked on 6 August 2008.



Streets of downtown Dawson City.

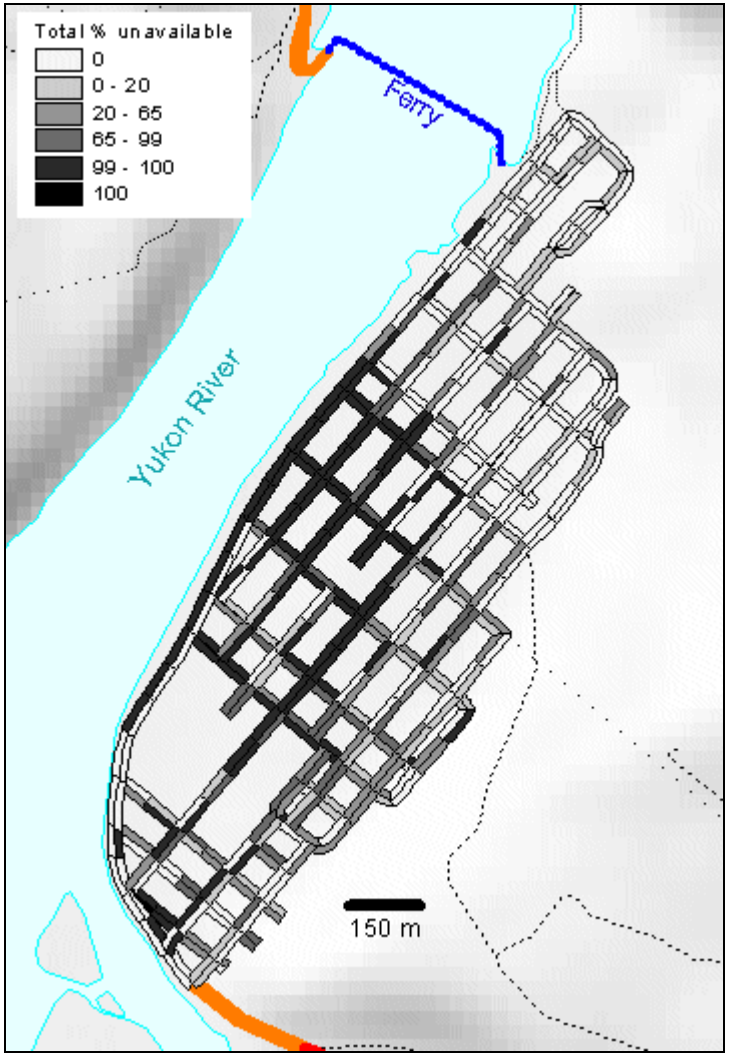
Results and discussion

Area available for invasive species

Generally, sample units in residential areas had less disturbed area and therefore more area available for plants. Those sample units which had more disturbed area were concentrated in the business and tourist areas of town.

When we compared the sample units with invasive species to the area available, there was no indication that invasive species occurred more frequently in areas that were less disturbed.

The town-side of the dike was mowed by the City of Dawson in early August, after our survey was done. Mowing is one way to slow the spread of invasive species.



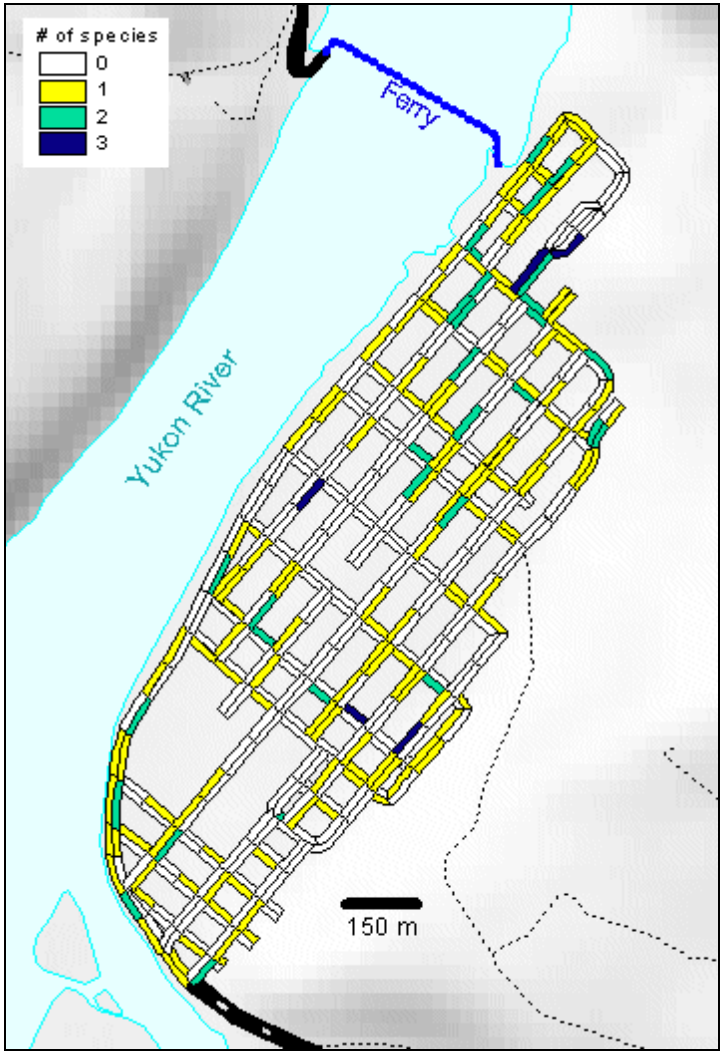
There were more disturbed areas in the business and tourist areas of downtown.

Number of species present

Of the 431 sample units, 254 (59 %) had no invasive species present. Of the sample units that did have invasive species, 141 (33 %) had one species, 31 (7%) had 2 species and 5 (1%) had 3 species.

Although sample units with more than one species are distributed across town, there appears to be more units with a larger number of invasive species on the north end.

Common Catchfly was found in more spots than we had expected, but is still relatively uncommon.



Sample units with more than one invasive species present are spread throughout town but are more common in the north end.

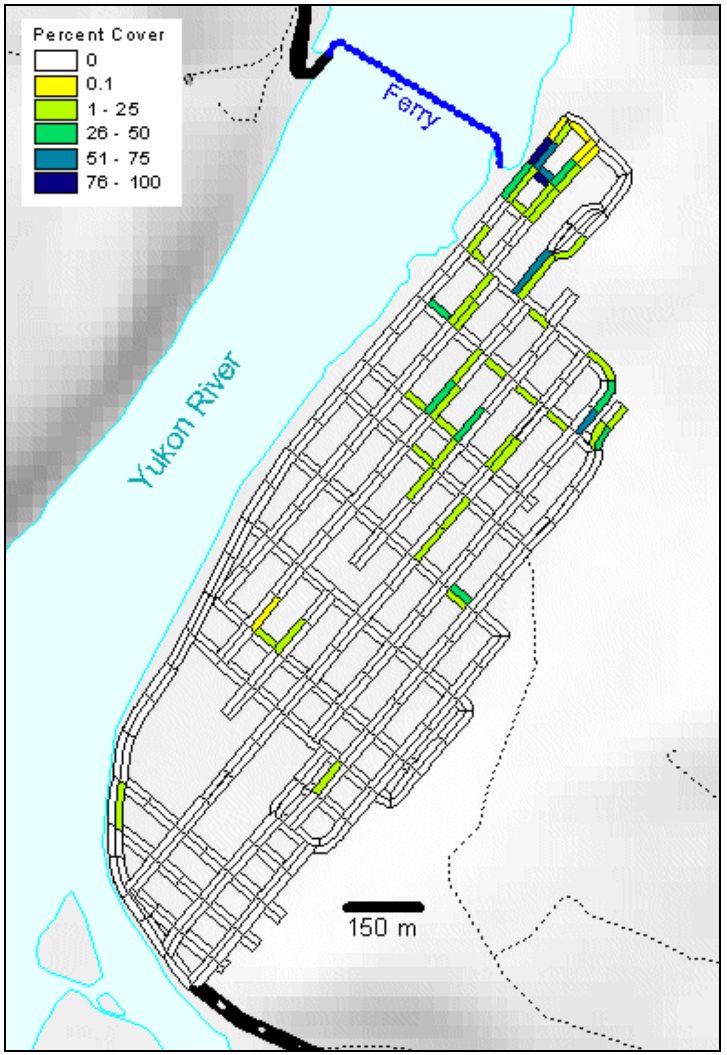
Tufted Vetch (*Vicia cracca*)

This plant is also known as Bird Vetch or Cow Vetch. It is very drought- and cold tolerant and adapts well to many soil textures. It typically grows to 2 feet tall but with fences or trees to climb on, it can reach 6 feet tall. It often forms dense mats of vegetation that out competes other native species. Mowing or hand pulling before the seeds ripen (late June to early July) for consecutive years is probably the most effective way to eradicate this species.

In Alaska, this plant is highly prevalent in all areas of the state except the southeast, spreading aggressively along roads. This species does not appear on invasive species lists for B.C.

Tufted Vetch was found in 55 sample units (13%), most commonly on the north end of town, with the highest percent cover estimates around George Street. This species tends to grow in dense mats therefore we recorded the highest percent cover estimates of any invasive species for this plant.

Tufted Vetch forms large thickets and readily climbs up anything that provides support, such as trees and fences.



Tufted Vetch is most common in the north end of town.

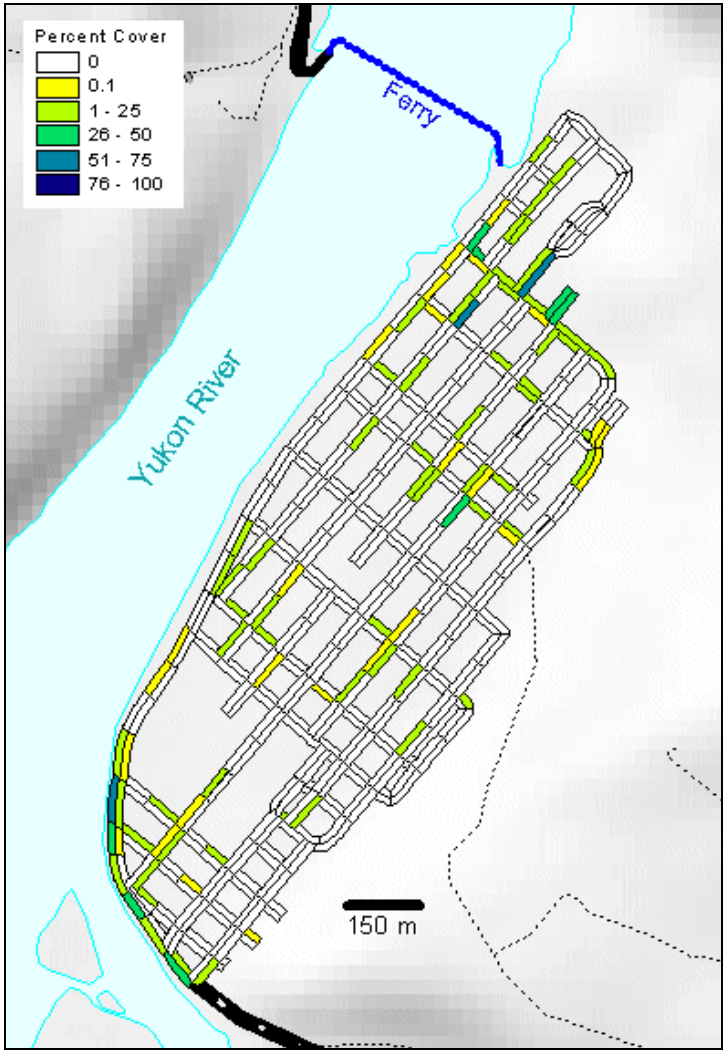
White Sweetclover (*Melilotus alba*)

White Sweetclover was introduced from Europe as a forage plant and by beekeepers and now occurs almost continent wide. It readily establishes in open areas and has the potential to outcompete native species and change the chemistry of the soil. It is drought and cold tolerant and adapts to gravel or sand soils.

In Alaska, White Sweetclover is highly prevalent along road corridors. Recent evidence that seeds are also being widely dispersed in the river systems is of great concern to managers. In B.C. it is considered a moderate upland invasive species.

White Sweetclover was the most common species found, recorded in 98 sample units (23%). Percent cover estimates did not exceed 60% for any sample unit, likely because of its natural growth patterns. Plants were found more frequently and in higher percent cover in the north end and along the south end close to the start of the North Klondike Highway where they are abundant.

White Sweetclover was the most common invasive species found.



White Sweetclover was found throughout town but most often along the dike and in the north end of town.

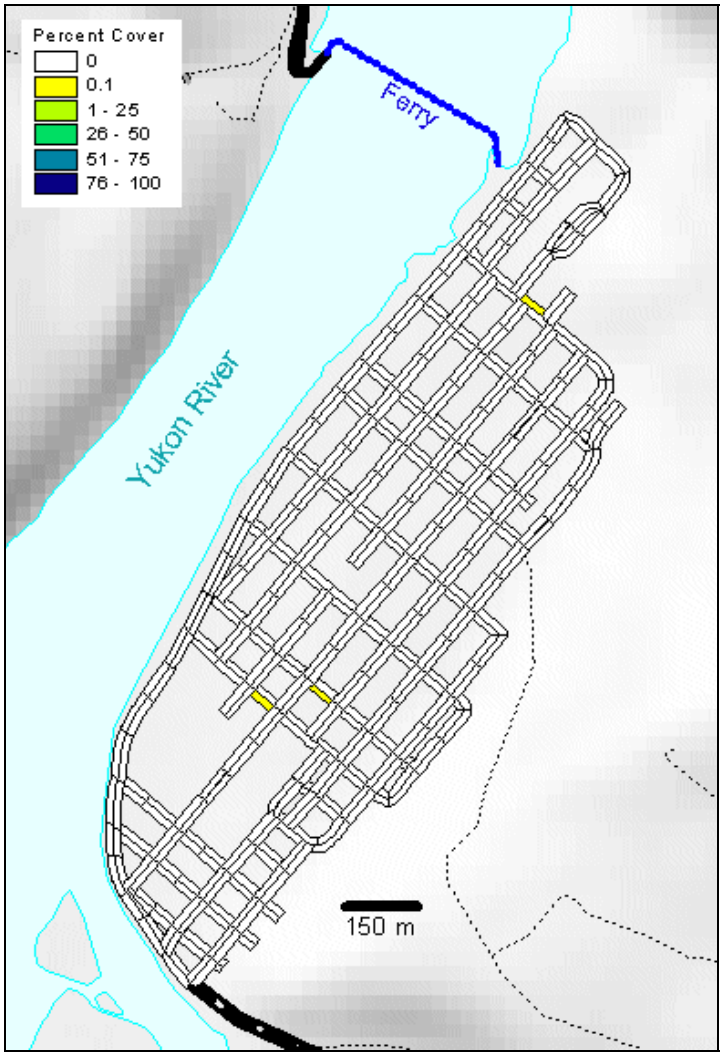
Yellow Sweetclover (*Melilotus officinalis*)

In Alaska, Yellow Sweetclover is in low prevalence in all areas of the state. Invasive species lists for B.C. do not differentiate between the white and yellow sweetclovers.

Yellow Sweetclover was found in 3 sample units, occurring with only a few plants each.

Yellow Sweetclover is fairly common along the North Klondike Highway starting at the baseball diamonds just south of Crocus Bluff. This species may bloom later than the White Sweetclover. Because we sampled in late July, our records for frequency of occurrence and percent cover could be underestimates.

Yellow Sweetclover was much less common than White Sweetclover



Yellow Sweetclover was found in only 3 sample units

Butter and Eggs (*Linaria vulgaris*)

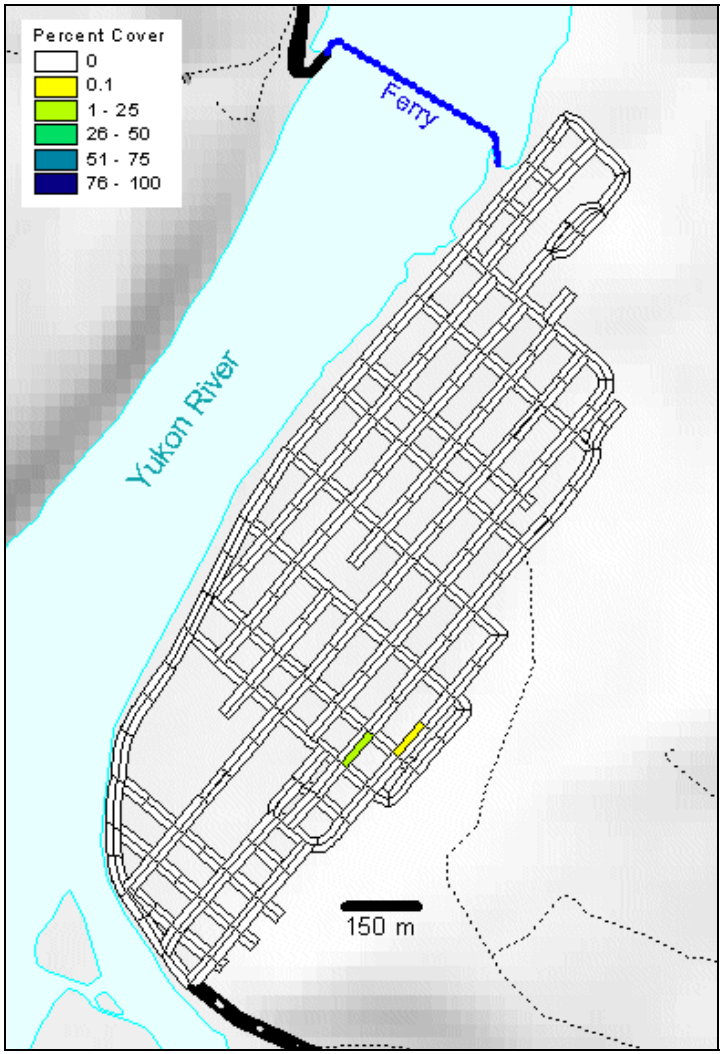
This plant is also called Yellow or Common Toadflax, or Wild Snapdragon. It was probably introduced from Eurasia as an ornamental plant. It adapts to a variety of environmental conditions but seems to do best in well drained, sparsely vegetated sites. It spreads rapidly from buds on creeping root systems, as well as by wind-borne seed.

This plant is a concern because it competes with native grasses and can alter species diversity on some sites. Hand pulling is the best method to manage this species but this requires repeated efforts. Some homeowners may be reluctant to try and eradicate this beautiful flower from their yards.

In Alaska, Butter and Eggs is known in all regions of the state in 'medium' prevalence. it occurs in B.C. and is considered noxious in all regions except the southwest part of the province.

Butter and Eggs was found in only 2 sample units in the Dawson City survey but is known to occur in very large patches in fields at Henderson Corner. Small patches have also been seen along the highway just south of the airport and on Mary McLeod Road near the junction with the Dome Road.

It's hard to think of this beautiful flower as harmful, but it will out compete native plants.



Butter and Eggs was found in only 2 sample units.

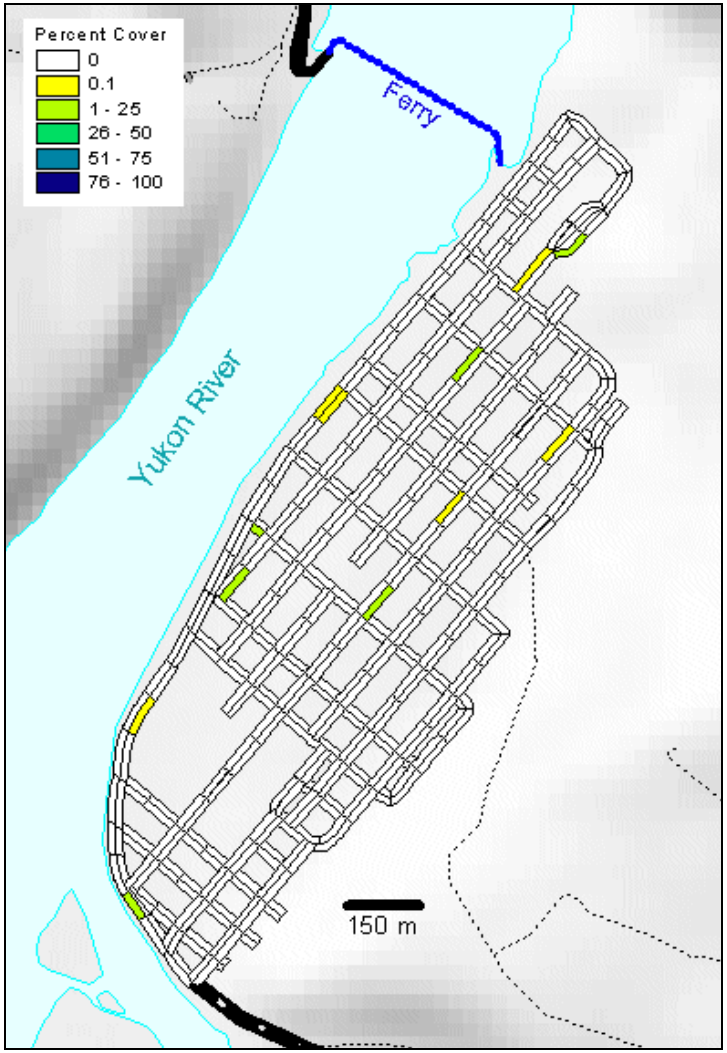
Common Catchfly (*Silene vulgaris*)

Also known as Bladder Campion, cowbell, Maiden's Tears and Rattleweed, little could be found about this plant other than it was introduced from Europe and it likes dry roadsides, fields and waste places. In B.C. it is considered invasive in all parts of the province.

Common Catchfly was found in 12 sample units throughout town. The highest percent cover (5%) was found in the north end of town along Judge Street. In one case, plants were found in an untended planter next to an occupied building. Because of its natural growth patterns, percent cover estimates are low.

This plant is also suspected to occur in larger densities on the river side of the dike, an area which we did not survey in 2008. It is also known to occur over large areas in fields at Henderson Corner.

The unique flowers of common catchfly are very eye catching



Common Catchfly was found in small patches scattered throughout town.

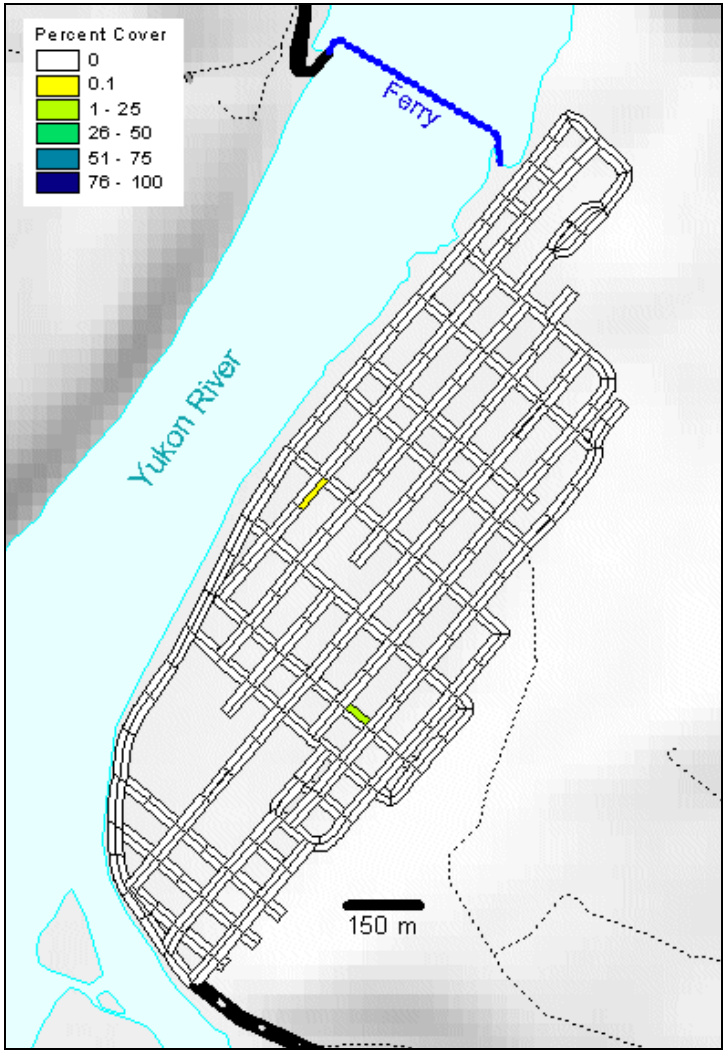
Ox-eye Daisy (*Leucanthenum vulgare*)

This plant is also known as White Daisy. It was introduced from Eurasia and often dominates roadsides, fields and other disturbed areas, doing very well in poor soils. It reproduces by seed and vegetatively from the roots. It is best to hand pull plants but care must be taken to remove much of the root system in order to be effective.

In Alaska, this species is at low prevalence but occurs in all regions by spreading along roads. In B.C., it is present in all regions and is considered noxious in many regions.

Ox-eye Daisy was found in only 2 sample units, both times at low percent cover. In one case, it was possible that the plants were semi-tended.

Ox-eye Daisies are another beautiful but harmful flower.

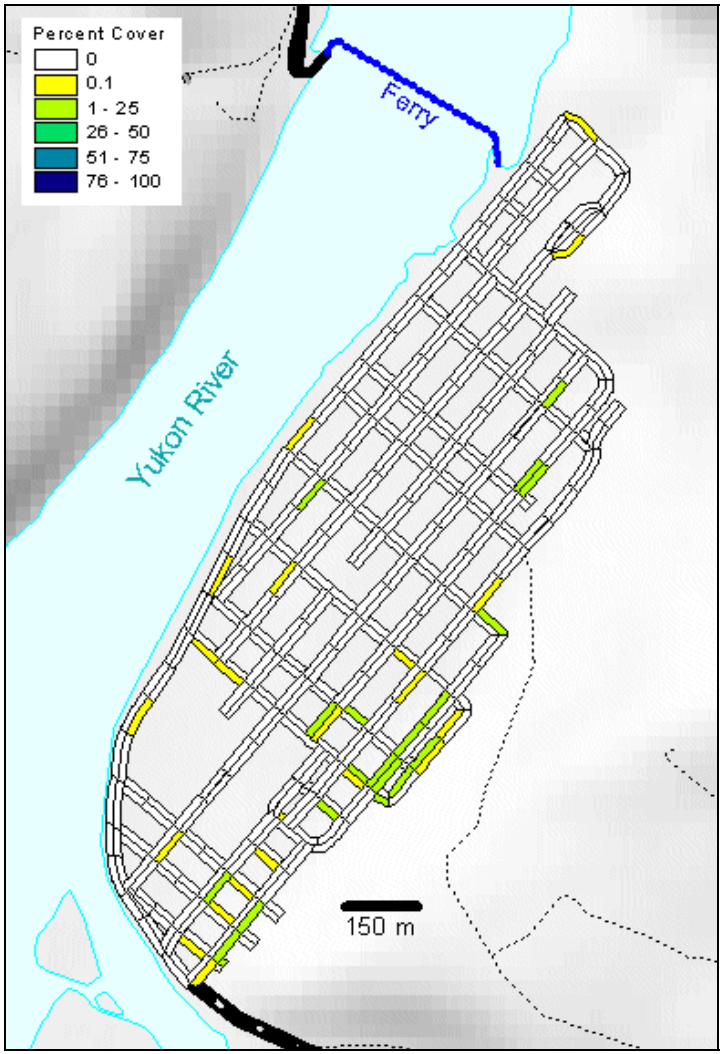


Oxeye Daisies were very uncommon, found in only 2 spots.

Domestic species

The most common garden escapee was a Delphinium species followed by poppies and 2 unknown species. There was one small patch of rhubarb that we considered untended.

Most of the domestic species occurred in residential neighborhoods, all at low percent cover.



Escaped domestic species were found mainly in the residential areas of town.

Discussion

With one-third of Yukon's non-native species occurring in the Dawson City area, we were pleasantly surprised that some of our measurements were so low. The Tufted Vetch is quite common in Dawson City, found in dense patches but for the most part it is only in the north end of town. Common Catchfly was found more frequently that we expected but in scattered patches. Escaped domestic species were much less common than we expected. The Yellow Sweetclover is much rarer than we thought. These plants can probably be eradicated with some effort. Only the White Sweetclover seems ever-present and eradication will require much time and effort.

Recommendations

Future surveys should include more of the many other species known to occur in the Dawson area such as Leafy Spurge (*Euphorbia esula*, ranked highly invasive, rare), Hemp nettle (*Galeopsis tetrahit,* ranked aggressive, rare) and Smooth Brome (*Bromus inermis*, ranked highly invasive, common).

Stem counts in addition to percent cover estimates should be done to provide more detailed information on how common plants are. For Sweetclover and Tufted Vetch, stem counts could be done on representative units to demonstrate how many individual plants there are in different percent cover classes.

The river side of the dike should be included in future surveys. We also did not survey areas outside of the downtown core. In the near future, it would be useful to establish baseline information of Mary McLeod Road, the Dome Road and along the North Klondike and Top of the World Highways.

How to help reduce invasive species

(Taken from the Government of Yukon website)

Careful gardening - many of the invasive plants are attractive and were originally used to beautify homes and offices. You should carefully select which plants to grow and know how to handle yard waste that includes invasive species.

Keeping it clean - invasive species can be transported on vehicles, heavy equipment, footwear and clothing. Inspect and/or clean all of these before entering or moving around the territory. Vehicle wheel-wells and CAT tracks are prone to hiding invasive species and should be cleaned thoroughly.

Requesting and using only weed-free soil, hay, straw, mulch and certified seed.

Becoming aware - learn about invasive species that may be found in your area. Report new findings to your local Environment Yukon office. Learn about new ways to reclaim disturbed land. Seeding may not always be necessary.

Picking and carefully disposing of small infestations you encounter, and reporting larger ones.

Telling your friends - Vigilance and cooperation is the best way to prevent the spread of invasive species in Yukon. By acting now we can avoid the costs and damage an invasive species can cause once it becomes widespread.

For more information

Government of Yukon (http://environmentyukon.gov.yk.ca/wildlifebiodiversity/invasiveplants.php)

Yukon Invasive Species Committee
Bruce.Bennett@gov.yk.ca (867) 667 - 5331
Toos.Omtzigt@gov.yk.ca (867) 633-7929

Weeds BC (http://www.weedsbc.ca/)

Committee for Noxious and Invasive Plants Management in Alaska (http://www.uaf.edu/ces/cnipm/index.html)

Alaska Invasive Species Working Group (http://www.uaf.edu/ces/aiswg/)

E-flora BC (http://www.geog.ubc.ca/biodiversity/eflora/invasives.html)