

# MONITORING & CONTROLLING INVASIVE PLANTS AT ROHN CABIN: 2015 UPDATE



---

Casey Greenstein, Timm Nawrocki, and Justin R. Fulkerson



Alaska Natural Heritage Program  
Alaska Center for Conservation Science  
UNIVERSITY of ALASKA ANCHORAGE

3211 Providence Dr.  
Anchorage, AK 99508

**Submitted:** January 4, 2016

**Prepared for:**

Bureau of Land Management  
Anchorage Field Office  
4700 BLM Road  
Anchorage, AK 99507-2599



**Keywords**

Alaska, BLM, invasive plants, vegetation monitoring, non-native plants, Rohn Cabin

**Recommended Citation**

Greenstein C., T. Nawrocki, and J.R. Fulkerson. 2016. Monitoring & Controlling Invasive Plants at Rohn Cabin: 2015 Update. Alaska Natural Heritage Program. University of Alaska Anchorage, Anchorage, Alaska. 28 pp. plus appendices.

---

## Contents

List of Tables .....	iv
List of Figures.....	iv
NON-NATIVE VEGETATION MONITORING AND CONTROL.....	1
Site Descriptions and Recommendations.....	4
Rohn Cabin Entrance .....	4
Doghouses and Meadow .....	7
Outhouse and Vicinity .....	9
South Fork of the Kuskokwim River .....	9
East End of Airstrip .....	9
West End of Airstrip .....	9
Mid-Airstrip, South Side .....	10
FAA Site .....	10
Conclusions and General Recommendations.....	11
PERMANENT MONITORING TRANSECTS.....	13
Methods .....	13
Results .....	14
Transect 1 – FAA Site .....	16
Transect 2 – West End of Airstrip .....	17
Transect 3 – Airstrip Loading Zone .....	18
Transect 4 – Mid-Airstrip .....	19
Transect 5 – East End Airstrip .....	20
Transect 6 – Cabin North.....	21
Transect 7 – Cabin East .....	22
Transect 8 – Cabin South.....	24
Transect 9 – Cabin West.....	26
Discussion.....	28
APPENDIX 1 – NON-NATIVE VEGETATION INFESTATION SIZE, PERCENT COVER, AND STEM COUNT AT EACH SITE.....	29
APPENDIX 2 – TRANSECT VEGETATION COVER.....	32

## List of Tables

Table 1 – Non-native species presence at Rohn Cabin across years.....	3
Table 2 – Index of biomass of non-native species found at Rohn Cabin entrance, calculated by multiplying infestation size by percent cover.....	5
Table 3 – Index of biomass of non-native species found around the doghouses and in the meadow, calculated by multiplying infestation size by percent cover. ....	8
Table 4 – Index of biomass of non-native species found in the vicinity of the outhouse, calculated by multiplying infestation size by percent cover.....	9
Table 5 – Index of biomass of non-native species found at the FAA site, calculated by multiplying infestation size by percent cover.....	10
Table 6 - Descriptions of each transect.....	14
Table 7. Summary of non-native species observed on transects.....	15
Table 8. Summary of vegetation cover of transect 1-FAA Site.....	16
Table 9. Summary of vegetation cover of transect 2- west end of airstrip. ....	17
Table 10. Summary of vegetation cover of transect 3- airstrip landing zone. ....	18
Table 11. Summary of vegetation cover of transect 4- mid-airstrip. ....	19
Table 12. Summary of vegetation cover of transect 5- east end of airstrip.....	20
Table 13. Summary of vegetation cover of transect 6- cabin north. ....	21
Table 14. Summary of vegetation cover of transect 7- cabin east .....	23
Table 15. Summary of vegetation cover of transect 8- cabin south.....	25
Table 16. Summary of vegetation cover of transect 9- cabin west. ....	27

## List of Figures

Figure 1 - Rohn Cabin site overview with non-native plant occurrences documented from 2009-2015.....	2
Figure 2 - In 2012 the area in front of the cabin was covered in a dense mat of foxtail barley (outlined in red) and pineappleweed (outlined in yellow; left). ....	5
Figure 3 - The cabin entrance remained bare ground in 2015, as 2014 tarping and mulching were successful in keeping weeds out .....	6
Figure 4 - In 2015 we extended the landscaping fabric and mulch around both sides of the cabin.....	7
Figure 5 - In 2014 a blue tarp was left in the meadow after the Iditarod (top left).....	8
Figure 6. – Outhouse within a white spruce forest (left). Ground cover consists mostly of fireweed, with scattered stems of foxtail barley and narrowleaf hawksbeard (photo from 2013) .....	9
Figure 7 – Airstrip (photo from 2014), removing smooth brome and looking west (left) and looking east (right). ....	10
Figure 8 - Rebar used to mark the ends of transects and an example of photos taken at each transect. ....	13
Figure 9 - Diagram of transects. Each numbered box represents a one half meter square in which all vegetation was documented.....	14

## NON-NATIVE VEGETATION MONITORING AND CONTROL

Botanists from the Alaska Natural Heritage Program (AKNHP), University of Alaska Anchorage, visited Rohn Cabin July 27-28, 2015 to inventory and remove non-native plant species from Bureau of Land Management (BLM) managed lands at the site. This is the sixth year in which AKNHP has surveyed and/or treated non-native plants at Rohn Cabin. The ongoing treatment and survey activities occur for several reasons. First, this remote location is a hub of activity during the Iditarod Trail Sled Dog Race; many people and large amount of materials are transported to the site, including straw for sled dog bedding, which is a known vector for invasive plant propagules<sup>1</sup>. This is a relatively well-known stop along the Iditarod Trail, and successful weed treatment here is intended to encourage invasive plant management at other checkpoints along the trail. Second, the site is surrounded by undisturbed boreal spruce forest and thus acts as a natural laboratory to study whether the non-native species known to occur at the site are able to move into nearby pristine areas. Third, and most importantly, control actions at Rohn Cabin are aimed to prevent the spread of invasive species into adjacent natural areas. Fourth, since the area receives follow-up treatments on a fairly regular basis, weed management activities can be evaluated for efficacy and consequently improve the knowledge base for weed management in remote areas. For example, mustard species (*Brassica rapa* and *B. napus*), chickweed (*Cerastium fontanum* ssp. *vulgare*), common plantain (*Plantago major*), timothy (*Phleum pratense*), and non-native bluegrasses (*Poa annua* and *P. pratensis*) have been eliminated from the site, showing a positive response to hand-pulling. Conversely, foxtail barley (*Hordeum jubatum*), brittlestem hempnettle (*Galeopsis bifida*), lambsquarters (*Chenopodium album*), and pineappleweed (*Matricaria discoidea*) persist despite manual control efforts.

Early surveys confused two yellow flowered mustards: native northern tansymustard (*Descurainia sophioides*) and non-native herb Sophia (*Descurainia sophia*). It was previously believed that the non-native herb sophia was found at Rohn Cabin, but this was determined in 2013 to be the native northern tansymustard. Identification of these two species is difficult and many floristic keys commonly used in the region inadequately distinguish the two taxa. Given its nativity, it was made less of a priority for control from 2013 onward and is not included in the 2013, 2014, or 2015 reports. However, anecdotal evidence indicates that native yellow flowered mustards were not previously observed in the Rohn Cabin area, and although northern tansymustard is native to Alaska, it may have been introduced through human activity at this site. In other locations in boreal Alaska, this native species can form large populations in recently disturbed substrates, such as roadsides and floodplains. This plant forms persistent stands around the outhouse and on the margin of the cabin entrance clearing and meadow; few, scattered stems have been found throughout the meadow and forested areas north and west of the cabin, but to date have been ephemeral.

As in past years, the 2015 survey targeted the airstrip, FAA site, the area surrounding the cabin and outhouse, the meadow in front of the cabin, and neighboring forested areas (Figure 1). Overall, the 2015 survey found the richness and abundance of non-native plant species reduced from previous years. This may be attributable to the Iditarod not passing through Rohn Cabin in 2015, as the race was rerouted due to lack of snow. No new species were encountered. Non-native species richness declined after 2009 but has remained similar from 2011 to 2015 (Table 1; see Appendix I for site-specific comparisons across years). Areas that are hotspots for invasive species have remained consistent across years: the cabin,

---

<sup>1</sup> Conn, J., C. Stockdale, N. Werdin-Pfisterer, and J. Morgan. 2010. Characterizing Pathways of Invasive Plant Spread to Alaska: II. Propagules from Imported Hay and Straw. *Invasive Plant Science and Management* 3: 276-285.



meadow, and their immediate surroundings.

Data from 2009 to 2014 can be accessed through the Alaska Exotic Plants Information Clearinghouse (AKEPIC) data portal<sup>2</sup>, and data from 2015 will also be available here in the near future. Previous reports for Monitoring and Control Invasive Plants at Rohn Cabin were written after the 2012, 2013, and 2014 visits and can be found on AKNHP's (and the center in which AKNHP is now a part of: Alaska Center for Conservation Science) publications page<sup>3</sup>.

This document summarizes current populations, most recent control actions, and recommendations for future management. Specifically, we compare data collected in late summer in 2012, 2013, 2014, and 2015, but omit data from previous years. Records collected prior to 2012 are not included because (a) earlier surveys only looked at two to three sites (cabin and end(s) of airstrip), and (b) species recognition and estimation of percent cover and population size is somewhat subjective and is dependent on level of expertise; consequently, data collected by different people across years can be somewhat inconsistent. By contrast, survey data from 2012 to 2015 were collected, entered, and summarized by the same person (C. Greenstein). The data are used here to describe current trends and inform management recommendations.

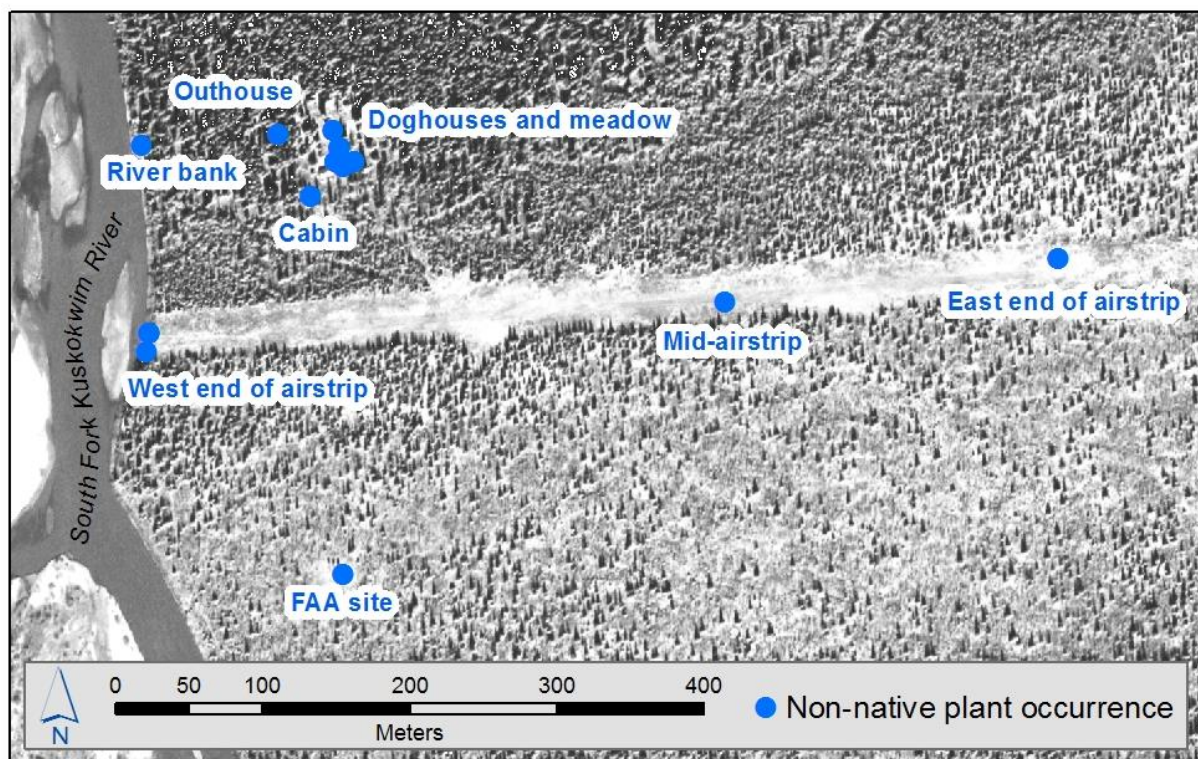


Figure 1 - Rohn Cabin site overview with non-native plant occurrences documented from 2009-2015.

<sup>2</sup> Available at <http://accs.uaa.alaska.edu/invasive-species/non-native-plants>

<sup>3</sup> Available at <http://accs.uaa.alaska.edu/publications>

Table 1 – Non-native species presence at Rohn Cabin across years.

Scientific name	Common name	Invasiveness rank <sup>1</sup>	2009	2011	2012	2013	2014	2015
<i>Brassica napus</i>	rapeseed mustard	47	x					
<i>Brassica rapa</i>	birdsrape mustard	50	x	x				
<i>Bromus inermis</i> ssp. <i>inermis</i>	smooth brome	62			x		x	
<i>Capsella bursa-pastoris</i>	shepherd's purse	40	x			x	x	x
<i>Cerastium fontanum</i> ssp. <i>vulgare</i>	big chickweed	36	x					
<i>Chenopodium album</i>	lambsquarters	37	x	x	x	x	x	x
<i>Crepis tectorum</i>	narrowleaf hawksbeard	56	x	x	x	x	x	
<i>Galeopsis tetrahit</i>	brittlestem hempnettle	50	x	x	x	x	x	x
<i>Hordeum jubatum</i> <sup>2</sup>	foxtail barley	63	x	x	x	x	x	x
<i>Hordeum vulgare</i>	common barley	39			x			
<i>Matricaria discoidea</i>	pineappleweed	32	x	x	x	x	x	x
<i>Phleum pratense</i>	timothy	54	x					
<i>Plantago major</i>	common plantain	44	x					
<i>Poa annua</i>	annual bluegrass	46	x					
<i>Poa pratensis</i> <sup>3</sup>	bluegrass	52	x					
<i>Polygonum aviculare</i>	prostrate knotweed	45	x		x	x		x
<i>Taraxacum officinale</i>	common dandelion	58			x	x	x	x

Records from 2009 and 2011 were taken from AKEPIC, records from 2012 – 2015 were observed in surveys. The native species *Descurainia sophioides* and *Erysimum cheiranthoides* were previously considered to be nuisance species and were controlled by the BLM. However, given their nativity, we did not include them in our survey results for 2013 – 2015.

<sup>1</sup> The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems. For more information see Carlson et al. 2008<sup>4</sup>.

<sup>2</sup> *Hordeum jubatum* is generally considered native to Alaska and the Yukon, but its distribution and abundance has increased dramatically in the last 100 years and it occupies many new areas due to importation by people and goods. We include *H. jubatum* here and elsewhere in the report with non-native species.

<sup>3</sup> AKEPIC records indicate this is either *Poa pratensis* subspecies *pratensis* or subspecies *irrigata*. Both are non-native.

<sup>4</sup> Carlson, M.L., I.V. Lapina, M. Shephard, J.S. Conn, R. Densmore, P. Spencer, J. Heys, J. Riley and J. Nielsen. 2008. Invasiveness ranking system for non-native plants of Alaska. USDA Forest Service, R10-TP-143. 218 pp.

### ***Site Descriptions and Recommendations***

The following site descriptions, include a proxy measure of overall biomass for each species recorded, which is calculated by multiplying infestation size by percent cover. It provides a simple comparison between the relative abundance of different species and across years. See Appendix I for a detail description of infestation size, percent cover, and stem count for each species at each site.

#### **ROHN CABIN ENTRANCE**

Relative to past years, the diversity and abundance of non-native plants has declined at the cabin entrance, likely due to past management efforts. In 2014 we mowed, raked, and bagged the foxtail barley and pineappleweed that carpeted the clearing in front of the cabin. We then applied landscaping fabric and covered this with locally sourced “mulch” consisting of spruce needles and acidic organic soil collected from the surrounding forested area (Figure 2). This proved successful, as this year the cabin entrance remained mostly bare ground. There was a thin strip of pineappleweed along the edge of the landscaping fabric by the cabin door, but otherwise non-native plants were not growing where we had tarped and mulched (Figure 3). This pineappleweed was pulled by hand and additional mulch was placed here.

In 2015 we applied the same technique to the sides of the cabin (Figure 4). Foxtail barley and scattered stems of other taxa were growing immediately around the cabin, but at approximately one meter from the cabin walls, native vegetation dominates. We cleared the weeds in this area, creating a one meter wide vegetation-free buffer along the cabin walls. We moved tools that were leaned up against the cabin, then weed whacked, raked, and bagged weeds in this area. As in 2014, we held the corners of the fabric down with landscape staples and covered everything with about eight centimeters of locally sourced mulch. Tools were put back in their original location. The backside of the cabin was weed-free, so we did not cover this area. Figure 4 shows the process of tarping and mulching.

Overall, at the cabin entrance shepherd’s purse and prostrate knotweed have remained consistently sparse (Table 2). Narrowleaf hawksbeard has been found sparsely and intermittently in past years, but was not found in 2015. Both foxtail barley and pineappleweed are most abundant here, but have fluctuated across years and have decreased since 2014. Lambsquarters has increased in number of stems but not in percent cover (see Appendix I).

Although past evidence shows that tarping can be successful in the short-term, there is a possibility that foxtail barley and pineappleweed will continue to persist here in the future given the local seed bank and continued soil disturbance at the cabin entrance. In the future, we recommend visiting this site in the fall and using a scythe to harvest native Canada bluejoint grass, and use this to “hay mulch” around the entrance. This will effectively spread native seeds on the bare ground we have created around the cabin, and encourage the growth of this native grass over non-native species.



Table 2 – Index of biomass of non-native species found at Rohn Cabin entrance, calculated by multiplying infestation size by percent cover.

Scientific name	Common name	Biomass Index				
		July 2012	August 2012	July 2013	August 2014	July 2015
<i>Capsella bursa-pastoris</i>	shepherd's purse	0.0	0.0	0.001	0.00001	0.000001
<i>Chenopodium album</i>	lambsquarters	0.0	0.0001	0.001	0.01	0.01
<i>Crepis tectorum</i>	narrowleaf hawksbeard	0.0	0.0001	0.0	0.00001	0.0
<i>Hordeum jubatum</i>	foxtail barley	0.0	0.15	1	0.3	0.02
<i>Matricaria discoidea</i>	pineappleweed	0.5	0.05	0.01	0.1	0.01
<i>Polygonum aviculare</i>	prostrate knotweed	0.0001	0.0001	0.0001	0.0	0.000001



Figure 2 - In 2012 the area in front of the cabin was covered in a dense mat of foxtail barley (outlined in red) and pineappleweed (outlined in yellow; left). In 2014 we mowed, raked, and bagged the foxtail barley and pineappleweed, then laid landscaping fabric, and covered the area in locally sourced mulch (right).



Figure 3 - The cabin entrance remained bare ground in 2015, as 2014 tarping and mulching were successful in keeping weeds out. There was only one small patch of pineappleweed along the edge of the landscaping fabric by the front door (outlined in yellow).





Figure 4 - In 2015 we extended the landscaping fabric and mulch around both sides of the cabin. Progress on the north side of the cabin is shown clockwise from top left.

#### DOGHOUSES AND MEADOW

This area was covered with a tarp after the 2014 Iditarod Race. The tarp was presumably covering up leftover Iditarod straw, as it could not be burned due to dry, snow-free conditions. We left this tarp in place and added another segment of landscaping fabric adjacent to the tarp, to cover a thick patch of hempnettle, after mowing, raking, and bagging these plants (Figure 5).

Elsewhere in the meadow we saw a reduction in foxtail barley, pineappleweed, and brittlestem hempnettle relative to previous years, and no lambsquarters or narrowleaf hawksbeard (Table 3). However, in 2014, the lambsquarters had senesced and had dispersed seeds before we were able to remove it thus we had expected an increase in abundance. All weeds found were pulled by hand. We recommend the tarps in the meadow remain in place until 2017 at the latest. Then "hay mulched" as previously described should be applied to the area.

Table 3 – Index of biomass of non-native species found around the doghouses and in the meadow, calculated by multiplying infestation size by percent cover.

Scientific name	Common name	Biomass Index				
		July 2012	August 2012	July 2013	August 2014	July 2015
<i>Chenopodium album</i>	lambsquarters	0.5	0.01	1	0.2	0.0
<i>Crepis tectorum</i>	narrowleaf hawksbeard	0.0	0.0	0.001	0.0001	0.0
<i>Galeopsis tetrahit</i>	brittlestem hempnettle	0.1	1	1	0.5	0.0005
<i>Hordeum jubatum</i>	foxtail barley	0.0	1	1	0.0	0.001
<i>Hordeum vulgare</i>	common barley	0.0	0.001	0.0	0.0	0.0
<i>Matricaria discoidea</i>	pineappleweed	0.0	0.001	1	0.0	0.000001



Figure 5 - In 2014 a blue tarp was left in the meadow after the Iditarod (top left). In 2015 we laid another section of landscape fabric adjacent to the tarp, to cover a thick patch of hempnettle (top right and bottom left).



#### OUTHOUSE AND VICINITY

The area around the outhouse (Figure 6) had the lowest biomass of non-native species recorded since 2012 (Table 4). There are still native yellow-flowered mustards around the outhouse, but narrowleaf hawksbeard that has previously been found here was absent, and there continues to be a reduction of foxtail barley presence since 2012. This area should continue to be monitored and scattered stems of non-native plants should be pulled by hand.

Table 4 – Index of biomass of non-native species found in the vicinity of the outhouse, calculated by multiplying infestation size by percent cover.

Species	Common name	Biomass Index				
		July 2012*	August 2012	July 2013	August 2014	July 2015
<i>Crepis tectorum</i>	narrowleaf hawksbeard	n/a	0.001	0.001	0.0001	0.0
<i>Hordeum jubatum</i>	foxtail barley	n/a	0.5	1	0.0001	0.000001

\*The outhouse area was not specifically surveyed on the July 2012 site visit.



Figure 6. – Outhouse within a white spruce forest (left). Ground cover consists mostly of fireweed, with scattered stems of foxtail barley and narrowleaf hawksbeard (photo from 2013). South Fork of the Kuskokwim River bank (right; photo from 2013).

#### SOUTH FORK OF THE KUSKOKWIM RIVER

No non-natives were found in the forested area behind the cabin extending to the river bank (Figure 7). No non-native plant species have been observed here since surveys began in 2012. Future establishment of non-native species in this area is unlikely and it should be considered a lower priority area for surveying.

#### EAST END OF AIRSTRIP

No weeds were found here between 2012 and 2015. However, this area should continue to be a priority for surveying as it receives significant human traffic.

#### WEST END OF AIRSTRIP

No weeds were found here in 2015, but in past years we have pulled a couple stems of foxtail barley at the bottom of the river bank. On the west end of the airstrip itself, no weeds were found between 2012

and 2015. However, this area should continue to be a priority for surveying as it sees significant human traffic.

#### MID-AIRSTRIP, SOUTH SIDE

A small cluster of smooth brome was found near the middle of the airstrip, on the south edge (Figure 7) in 2012 and 2014, but was not observed in 2013 or 2015. This area should continue to be a priority for surveying as it sees significant human traffic.



Figure 7 – Airstrip (photo from 2014), removing smooth brome and looking west (left) and looking east (right).

#### FAA SITE

Only a few basal rosettes of common dandelion were found here between 2013 and 2015 (Table 5). These can be distinguished from the widely distributed and abundant native horned dandelion by the presence of wider leaves, which are less deeply lobed and are more robust in appearance. About five stems of common dandelion were found and all were pulled. Dandelion has stout roots that are difficult to dig out their entirety and thus plants found this year are likely resprouting from root fragments left in the ground. In the future, we recommend using a full-size shovel and dig one foot around and below plants to remove the entire root system.

Table 5 – Index of biomass of non-native species found at the FAA site, calculated by multiplying infestation size by percent cover.

Species	Common name	Biomass Index				
		July 2012*	August 2012	July 2013	August 2014	July 2015
<i>Crepis tectorum</i>	narrowleaf hawksbeard	n/a	0.001	0.0	0.0	0.0
<i>Taraxacum officinale</i>	common dandelion	n/a	0.001	0.0001	.000001	0.000001

\*The FAA area was not specifically surveyed on the July 2012 site visit.

## ***Conclusions and General Recommendations***

In 2015 we observed an overall decrease in non-native plant diversity and abundance. This could be attributable to the Iditarod not passing through Rohn Cabin, as the race was rerouted due to a lack of snow. Alternatively, a reduction in weeds could reflect success of past control efforts. It is likely that a combination of these two factors contributed to the decrease of invasive plants at this site in 2015. The greatest reductions were seen in narrowleaf hawksbeard, lambsquarters, and foxtail barley around the cabin, outhouse, and meadow.

New recommendations for 2015 involve “hay mulching” sites in the fall. This can be accomplished by covering newly exposed bare ground with cut stems of grasses collected nearby after invasive plants have been pulled, weedwhacked, tarps/landscaping fabric has been removed, or a fresh layer of mulch has been applied. A scythe can be used to cut down swaths of Canada bluejoint grass when their seeds are mature and laying this “hay” on exposed soil, effectively giving native grasses a head start against introduced propagules. This technique is recommended for the meadow and cabin entrance, and could be used elsewhere in the future if additional site disturbance takes place. Hay mulching needs to be done around September, when seeds are ripe

In the meadow, we recommend removing the large blue tarp by 2017. The area could be covered with landscaping fabric or burlap, and locally sourced mulch of spruce needles and acidic organic soil collected from the surrounding forest, similar to our approach at the cabin entrance. Then this can be covered by “hay mulch” previously described. The meadow and cabin entrance should be monitored, and this process of layering native mulches may need to be repeated. These sites pose a particular challenge, as new non-native propagules will likely continue to be introduced annually as long as the Iditarod and other activities take place at Rohn Cabin.

We recognize that the goal for Rohn Cabin is long-term invasive plant containment. Because a significant amount of people and materials are moved through the site regularly (e.g. Iditarod, Iron Dog), this area is unlikely to remain 100% weed-free in perpetuity. However, with minimal control efforts, of one to two days of survey and control work per year the site is likely to remain in good condition. Additionally, plant management at this site can boost public interest and education regarding invasive species. The data collected annually provides evidence to support the certified weed-free straw requirements for sled dog races. Additionally, studying changes at Rohn Cabin overtime provides a unique case study for growth habits of introduced species in a remote location that sees large pulses of introduced goods and people but is often disturbance-free.

General recommendations for continued surveys and treatment at Rohn Cabin were provided in the 2012 summary report. These are still valid and remain as our best suggestions for management. They are as follows:

- Upon visiting the Rohn Cabin site, begin monitoring and treatment activities at areas with the least abundance or likelihood of finding weeds. Start with the FAA site, airstrip, and survey areas behind the cabin and elsewhere where weeds have not yet been reported. Next, move into areas with known, dense populations, including the cabin entrance, outhouse, and doghouses. This will help avoid unintentionally spreading seeds into uninfested areas.
- A thorough accounting and accurate identification of species around Rohn Cabin is necessary to track progress between years. All non-native plant populations should be documented in detail to ensure effective monitoring, assess the efficacy of control over time,



and allow for changes to treatment approaches where appropriate. A change of three sampling locations in 2009, two in 2011, and six in 2012 reflects the survey strategies of different botanist involved on each trip. It would be beneficial to have the same botanist do surveys each year.

- All weeds should be collected (prior to fruiting) in contractor bags or doubled-up garbage bags and flown off site for disposal. On site disposal by burning bags of weeds in a contained unit, such as a burn barrel may be an acceptable alternative if transportation costs and volume of weeds are too high and if low-risk conditions for wildfire are present.
- BLM staff and volunteers visiting Rohn Cabin in the summer should take care to clean boots, gear, and equipment before leaving Anchorage or other cities, to avoid transporting weed seeds from urban centers to the site<sup>5</sup>.
- Timing a weed collection trip for late July or early August would be ideal. The first week of July is too early to scout for invasive species. By the last week of August some species have already set seed<sup>6</sup>, while other species can still be managed. Treatment of some species may require springtime tillage, so a trip may also be necessary in late May or June<sup>7</sup>.
- Iditarod Trail Race considerations
  - ◆ Certified weed-free straw is currently required for special use permits at Rohn Cabin. It is recommended that this should be a permanent requirement and should continue to be enforced.
  - ◆ Offer dog team owners in the area information on where weed-free straw for dog bedding is available.
  - ◆ Encourage those using snow machines on-site to inspect and clean their machines before bringing them to the cabin.
  - ◆ Encourage those working in support of the Iditarod Race to clean their boots and gear before leaving for Rohn Cabin; seeds can be transported even in winter.
- Provide training and educational materials regarding plant identification, impacts, and preventative actions to the public, and to those involved with Rohn Cabin activities. Update educational materials in the Rohn Cabin binder regularly<sup>8</sup>, including plant identification and prevention practices.
- Although the yellow-flowered mustards *Descurainia sophioides*, *Erysimum cheiranthoides*, and *Erysimum inconspicuum* are considered introduced to the Rohn Cabin site, they are native to Alaska and found in habitats similar to Rohn Cabin. *Descurainia sophioides* and *Erysimum cheiranthoides* can form high-density weedy patches on disturbed substrates that may interfere with management goals. *Erysimum inconspicuum*, on the other hand, is not known to form dense patches and is unlikely to interfere with management goals. We recognize that the first two species may be targeted for control, but we recommend that clearly non-native taxa are higher priorities.

---

<sup>5</sup> If weedwhackers are used, they should be cleaned in Anchorage prior to use at Rohn.

<sup>6</sup> As of August 26, 2014, lambsquarters could not be effectively controlled. Northern tansymustard and foxtail barley had also dropped most of its seed.

<sup>7</sup> Rather than tilling, a trip in the fall for mulching is preferred.

<sup>8</sup> The Rohn Cabin binder educational materials were updated July 2013 and may need updating in the future.

## PERMANENT MONITORING TRANSECTS

In 2015 the BLM requested we install permanent monitoring transects in the Rohn Cabin area as construction and possible fire breaks around the cabin was scheduled for late summer 2015. Transects can be used in the future to gather data about vegetation richness and abundance, successional changes, anthropogenic disturbance, and document new non-native arrival. While the non-native plant inventory and survey are useful for documenting new occurrences and abundances, monitoring transects in already known weed occurrences provide a repeatable measurement of abundance in relation to the landscape regardless of observer.

### **Methods**

We established nine transect sites intended for long-term vegetation monitoring around Rohn Cabin: one at the FAA site, four along the airstrip, and four around the cabin. The termini of each transect are marked with a half meter length of rebar that was hammered into the ground with several centimeters protruding from the surface; flagging was tied around the rebar and a red cap was affixed to the top (Figure 8). Transect length varied 15 meters or more, depending if the transect end was within human traffic areas (Table 6). At the starting point we recorded the latitude and longitude with a Garmin handheld GPS unit, referencing the North American Datum of 1983 (NAD83), and we also recorded the accuracy in meters. We measured the azimuth with a compass and took a photo along the transect in both directions, including in the photo a whiteboard on which the date, site name, and azimuth were written (Figure 8, Table 6).



Figure 8 - Rebar used to mark the ends of transects and an example of photos taken at each transect.

Table 6 - Descriptions of each transect.

Transect	Azimuth	Starting coordinates	Ending coordinates	Accuracy (m)	Length (m)	Notes
1- FAA Site	84	62.29216, -153.37378	62.29212, -153.37343	3	20	
2 - West end airstrip	342	62.29354, -153.37592	62.29373, -153.37584	3	20	
3 - Airstrip loading zone	63	62.29395, -153.37225	62.29395, -153.3717	3	27.5	Starts at Rohn sign post at sled, ends at tree with flammables box
4 - Mid airstrip	337	62.29372, -153.36963	62.2939, -153.36961	3	20	
5 - East end airstrip	340	62.29388, -153.36465	62.29408, -153.36464	3	20	
6 - Cabin north	3	62.29457, -153.37376	62.29474, -153.37352	4	21.4	Starts at corner of cabin
7 - Cabin east	115	62.29462, -153.37344	62.29444, -153.37314	3	30	Starts at corner of cabin
8 - Cabin south	192	62.29452, -153.37378	62.29441, -153.37393	3	20	Starts at corner of cabin
9 - Cabin west	278	62.2946, -153.37366	62.29461, -153.37421	3	23	Starts at corner of cabin

To inventory the vegetation along each transect we used a one half meter square quadrat. The quadrat was placed at the starting point of the transect (0 m) and all vegetation within the quadrat was identified and ocular observation was used to estimate canopy cover and ground cover. Ground cover included: litter, wood, rock, silt, rubbish, bare ground, moss, and lichen. Our assessment included all vascular species but only a couple nonvascular species, as this was beyond the scope of this project. The meter square quadrat was placed on the left side of the measuring tape at the starting point (0 m) to read the first plot, then at the one meter point to read the second plot (1 m), and so forth until the end of the transect (Figure 9). Average cover and frequency were summarized by transect for plant species and ground cover.

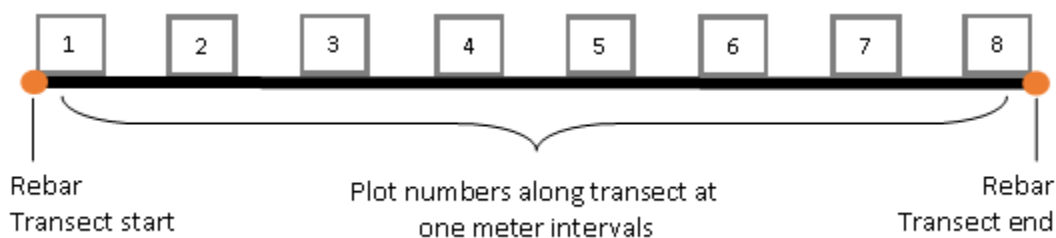


Figure 9 - Diagram of transects. Each numbered box represents a one half meter square in which all vegetation was documented. Quadrats were placed at each meter mark.

## Results

Four non-native species, *Chenopodium album*, *Hordeum jubatum*, *Matricaria discoidea*, and *Polygonum aviculare*, were observed in the transects (Table 7). The non-natives were only observed on transects surrounding the cabin, Transect 6-cabin north, Transect 7-cabin east, and Transect 8-cabin south. Non-native species were not observed on the west side of the cabin. As observed in the general non-native

plant survey, they had a relatively low abundance in relation to all of the vegetation in the transect. The highest non-native canopy cover observed was 3.9% cover of *Hordeum jubatum* at Transect 7-cabin south. The lowest non-native canopy cover observed was *Chenopodium album* with 0.03% Transect 8- cabin south. *Chenopodium album* was also the most frequently observed non-native, being present observed in approximately over half of the quadrats on Transect 6-cabin north and was 2.81% average canopy cover of the transect. *Matricaria discoidea* was the second most frequently non-native observed, present in 31.25% of quadrats on Transect 7- cabin east.

Table 7. Summary of non-native species observed on transects.

Species	Transect	Avg. Canopy Cover %	% Freq.
<i>Chenopodium album</i>	Transect 6- cabin north	2.81	56.25
	Transect 7- cabin east	1	18.75
	Transect 8- cabin south	0.03	6.25
<i>Hordeum jubatum</i>	Transect 6- cabin north	1.25	18.75
	Transect 7- cabin east	3.91	18.75
	Transect 8- cabin south	0.13	6.25
<i>Matricaria discoidea</i>	Transect 6- cabin north	0.25	18.75
	Transect 7- cabin east	0.63	31.25
<i>Polygonum aviculare</i>	Transect 6- cabin north	0.06	6.25

Transect 6- cabin north had the highest amount of vegetation cover, 91%. This transect is in the direction of the dog houses and meadow fireweed (*Chamerion angustifolium*) being the dominant species, 59.5% cover. Transects with relatively low vegetation cover were around the airstrip landing zone (Transect 3) and the west end of the strip toward the mid airstrip (Transect 2), 36.9% and 38.2% cover respectively. Vegetation cover was greater mid airstrip (59.8%) to the east end of the strip (50%) compared to the other parts of the airstrip. There were noticeably larger shrubs in these transects. Seral and ruderal species such as *Dryas drummondii* and *Taraxacum ceratophorum* had the highest canopy cover and greatest frequency in disturbed sites around the airstrip and FAA transect. The following section includes photos of each transect and data are summarized in tables for each transect (Table 8-16). Raw tabular data are included in Appendix 2.



## TRANSECT 1 – FAA SITE

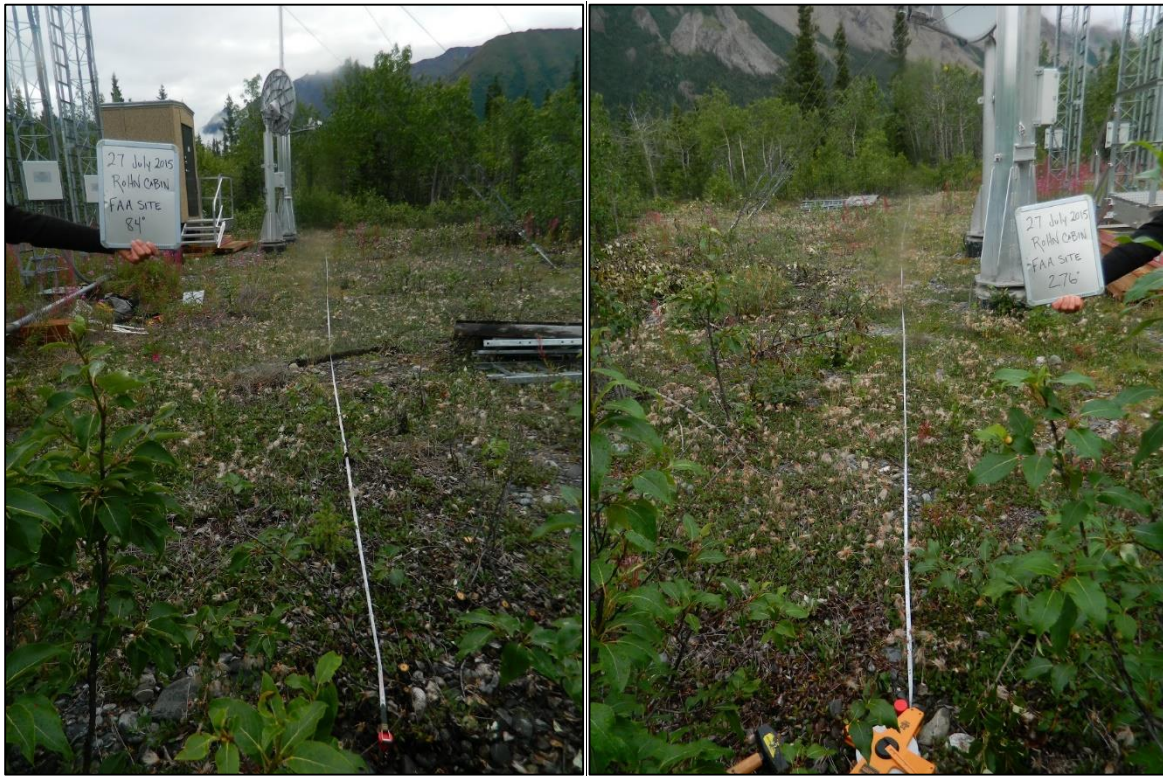


Table 8. Summary of vegetation cover of transect 1-FAA Site.

Vegetative Cover			Ground Cover		
	Avg. Cover %	% Freq.		Avg. Cover %	% Freq.
<i>Agrostis scabra</i>	0.24	14.29	Lichen	0.07	9.52
<i>Arctostaphylos uva-ursi</i>	1.64	19.05	Unidentified Lichen	0.05	9.52
<i>Chamerion angustifolium</i>	0.60	28.57	<i>Flavocetraria cucullata</i>	0.02	4.76
<i>Dryas drummondii</i>	60.00	100.00	Litter	80.33	100.00
<i>Populus balsamifera</i>	2.81	19.05	Moss	2.21	76.19
<i>Shepherdia canadensis</i>	0.33	9.52	Rock	16.48	71.43
<i>Taraxacum ceratophorum</i>	0.29	33.33	Silt	0.95	4.76
<i>Trisetum spicatum</i>	3.71	71.43			
<b>Total</b>	<b>69.62</b>				

## TRANSECT 2 – WEST END OF AIRSTRIP



Table 9. Summary of vegetation cover of transect 2- west end of airstrip.

Vegetative Cover			Ground Cover		
	Avg. Cover %	% Freq.		Avg. Cover %	% Freq.
<i>Arctostaphylos uva-ursi</i>	0.19	4.76	Bare	16.86	57.14
<i>Boechera retrofracta</i>	0.05	9.52	Lichen	3.83	66.67
<i>Chamerion angustifolium</i>	0.33	14.29	<i>Flavocetraria cucullata</i>	0.81	47.62
<i>Draba aurea</i>	0.02	4.76	Unidentified Lichens	3.02	57.14
<i>Dryas drummondii</i>	10.00	47.62	Litter	24.57	71.43
<i>Elymus violaceus</i>	0.10	4.76	Moss	49.36	100.00
<i>Erigeron acris</i>	0.07	9.52	<i>Hylocomium splendens</i>	12.55	61.90
<i>Minuartia rubella</i>	0.48	66.67	Unidentified Mosses	36.81	100.00
<i>Oxytropis deflexa</i>	0.48	28.57	Rock	0.81	14.29
<i>Poa glauca</i>	5.69	66.67	Wood	5.00	52.38
<i>Saxifraga tricuspidata</i>	0.02	4.76			
<i>Solidago multiradiata</i>	0.10	4.76			
<i>Taraxacum ceratophorum</i>	13.00	100.00			
<i>Trisetum spicatum</i>	6.43	66.67			
<b>Vegetation Totals</b>	<b>36.95</b>				



### TRANSECT 3 – AIRSTRIP LOADING ZONE



Table 10. Summary of vegetation cover of transect 3- airstrip landing zone.

Vegetative Cover			Ground Cover		
	Avg. Cover %	% Freq.		Avg. Cover %	% Freq.
<i>Achillea millefolium</i>	0.50	14.29	Bare	45.00	100.00
<i>Chamerion angustifolium</i>	0.19	14.29	Lichen	3.07	80.95
<i>Draba aurea</i>	0.36	61.90	Litter	20.48	95.24
<i>Dryas drummondii</i>	0.98	19.05	Moss	23.45	100.00
<i>Erysimum inconspicuum</i>	0.05	9.52	Unidentified Mosses	19.88	95.24
<i>Festuca brevissima</i>	0.14	9.52	<i>Hylocomium splendens</i>	3.57	28.57
<i>Hedysarum boreale</i>	0.10	9.52	Rock	6.62	71.43
<i>Minuartia rubella</i>	0.50	76.19	Wood	1.57	9.52
<i>Oxytropis deflexa</i>	0.29	9.52			
<i>Poa alpina</i>	2.81	42.86			
<i>Poa glauca</i>	9.29	90.48			
<i>Populus balsamifera</i>	0.95	4.76			
<i>Taraxacum ceratophorum</i>	15.81	100.00			
<i>Trisetum spicatum</i>	6.33	80.95			
<b>Vegetation Totals</b>	<b>38.29</b>				



# TRANSECT 4 – MID-AIRSTRIP

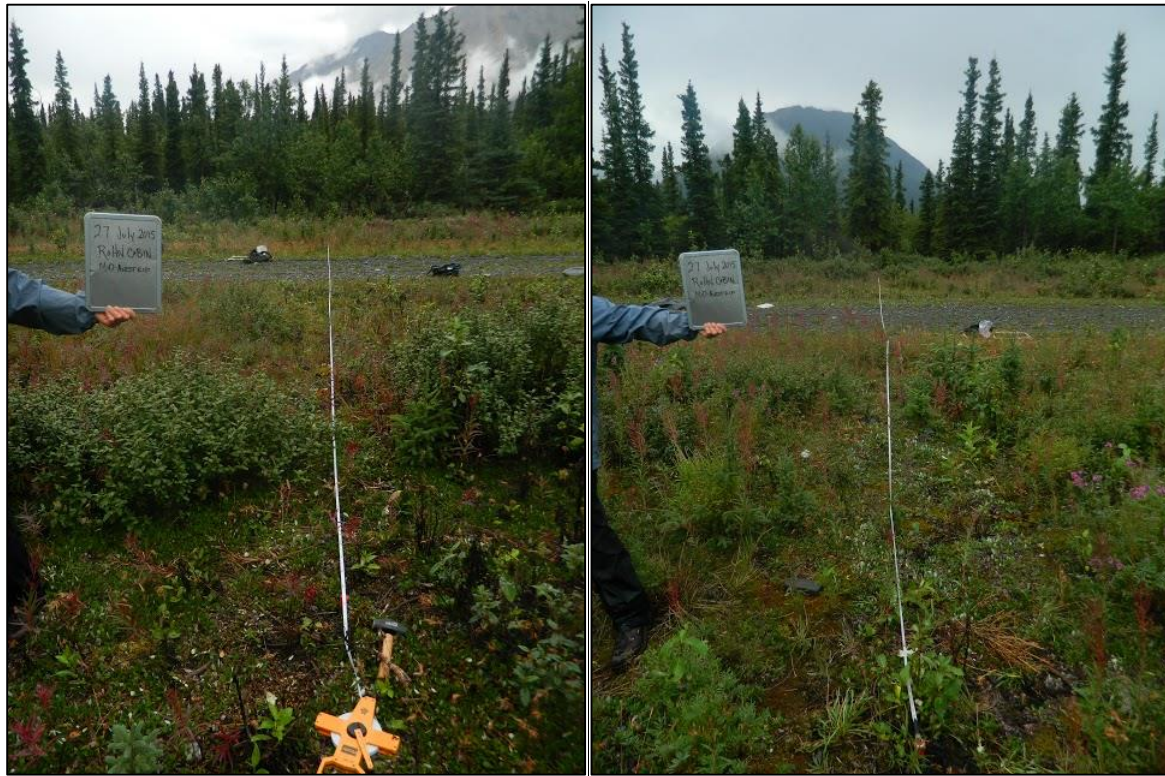


Table 11. Summary of vegetation cover of transect 4- mid-airstrip.

Vegetative Cover			Ground Cover		
	Avg. Cover %	% Freq.		Avg. Cover %	% Freq.
<i>Botrychium neolunaria</i>	0.12	14.29	Bare	0.33	14.29
<i>Chamerion angustifolium</i>	2.81	57.14	Lichen	2.07	42.86
<i>Dryas drummondii</i>	33.19	76.19	<i>Flavocetraria cucullata</i>	0.36	19.05
<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	0.24	4.76	Unidentified Lichens	1.71	42.86
<i>Elymus violaceus</i>	0.38	14.29	Litter	37.76	76.19
<i>Festuca brevissima</i>	0.10	4.76	Moss	32.45	95.24
<i>Hedysarum boreale</i>	0.02	4.76	Unidentified Mosses	3.86	66.67
<i>Minuartia rubella</i>	0.10	19.05	<i>Hylocomium splendens</i>	28.60	66.67
<i>Picea glauca</i>	2.98	19.05	Rock	24.00	52.38
<i>Poa alpina</i>	0.24	4.76	Silt	2.62	23.81
<i>Poa glauca</i>	1.90	38.10	Wood	0.90	19.05
<i>Populus balsamifera</i>	0.86	38.10			
<i>Shepherdia canadensis</i>	6.67	23.81			
<i>Taraxacum ceratophorum</i>	6.55	95.24			
<i>Trisetum spicatum</i>	2.48	57.14			
<b>Vegetation Totals</b>	<b>59.86</b>				

# TRANSECT 5 – EAST END AIRSTRIP



Table 12. Summary of vegetation cover of transect 5- east end of airstrip.

Vegetative Cover			Ground Cover		
	Avg. Cover %	% Freq.		Avg. Cover %	% Freq.
<i>Arctostaphylos uva-ursi</i>	3.21	14.29	Bare	0.71	9.52
<i>Chamerion angustifolium</i>	0.10	4.76	Lichen	2.69	71.43
<i>Dryas drummondii</i>	24.14	80.95	Litter	57.71	76.19
<i>Minuartia rubella</i>	0.38	42.86	Moss	10.57	85.71
<i>Orthilia secunda</i>	0.67	14.29	Unidentified Moss	3.21	71.43
<i>Oxytropis campestris</i> var. <i>gracilis</i>	0.24	4.76	<i>Hylocomium splendens</i>	7.36	76.19
<i>Poa glauca</i>	4.36	71.43	Rock	25.00	38.10
<i>Populus balsamifera</i>	1.76	23.81	Silt	2.29	23.81
<i>Saxifraga tricuspidata</i>	2.48	19.05	Wood	1.19	42.86
<i>Shepherdia canadensis</i>	5.00	28.57			
<i>Taraxacum ceratophorum</i>	5.86	95.24			
<i>Trisetum spicatum</i>	1.86	66.67			
<b>Vegetation Totals</b>	<b>50.05</b>				



# TRANSECT 6 – CABIN NORTH



Table 13. Summary of vegetation cover of transect 6- cabin north. Asterisk indicate non-native species.

Vegetative Cover			Ground Cover		
	Avg. Cover %	% Freq.		Avg. Cover %	% Freq.
<i>Calamagrostis canadensis</i>	3.78	25.00	Bare	21.56	37.50
<i>Chamerion angustifolium</i>	59.50	100.00	Litter	77.25	100.00
<i>Chenopodium album</i> *	2.81	56.25	Moss	0.94	12.50
<i>Descurainia sophioides</i>	8.53	43.75	Wood	0.25	12.50
<i>Erysimum altum</i>	0.72	18.75			
<i>Hordeum jubatum</i> *	1.25	18.75			
<i>Matricaria discoidea</i> *	0.25	18.75			
<i>Mertensia paniculata</i>	1.69	18.75			
<i>Poa interior</i>	0.41	18.75			
<i>Polygonum aviculare</i> *	0.06	6.25			
<i>Populus balsamifera</i>	0.13	6.25			
<i>Rosa acicularis</i>	0.13	6.25			
<i>Rubus idaeus</i>	12.50	68.75			
<b>Vegetation Totals</b>	<b>91.75</b>				

## TRANSECT 7 – CABIN EAST



Table 14. Summary of vegetation cover of transect 7- cabin east. Asterisk indicate non-native species.

Vegetative Cover			Ground Cover		
	Avg. Cover %	% Freq.		Avg. Cover %	% Freq.
<i>Achillea millefolium</i>	5.59	43.75	Bare	33.50	56.25
<i>Anemone parviflora</i>	1.94	37.50	Litter	58.63	100.00
<i>Calamagrostis canadensis</i>	8.81	31.25	Moss		
<i>Carex concinna</i>	0.13	6.25	Unidentified Mosses	2.25	43.75
<i>Chamerion angustifolium</i>	15.00	81.25	<i>Hylocomium splendens</i>	0.06	6.25
<i>Chenopodium album</i> *	1.00	18.75	Rubbish	5.00	6.25
<i>Descurainia sophioides</i>	1.88	18.75	Wood	0.63	12.50
<i>Elymus alaskanus</i> ssp. <i>hyperarcticus</i>	0.03	6.25			
<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	0.06	6.25			
<i>Elymus violaceus</i>	0.13	12.50			
<i>Equisetum scirpoides</i>	0.09	12.50			
<i>Erysimum altum</i>	1.25	6.25			
<i>Eurybia sibirica</i>	4.94	62.50			
<i>Gentianella propinqua</i>	0.38	31.25			
<i>Hedysarum alpinum</i>	4.03	50.00			
<i>Hordeum jubatum</i> *	3.91	18.75			
<i>Linnaea borealis</i>	0.31	6.25			
<i>Matricaria discoidea</i> *	0.63	31.25			
<i>Mertensia paniculata</i>	1.25	12.50			
<i>Poa alpina</i>	0.44	12.50			
<i>Poa pratensis</i> ssp. <i>alpigena</i>	3.50	37.50			
<i>Populus balsamifera</i>	1.06	25.00			
<i>Puccinellia borealis</i>	0.19	12.50			
<i>Rosa acicularis</i>	1.47	43.75			
<i>Taraxacum ceratophorum</i>	0.13	6.25			
<i>Trisetum spicatum</i>	1.00	37.50			
<b>Vegetation Totals</b>	<b>59.13</b>				



TRANSECT 8 – CABIN SOUTH



Table 15. Summary of vegetation cover of transect 8- cabin south. Asterisk indicate non-native species.

Vegetative Cover			Ground Cover		
	Avg. Cover %	% Freq.		Avg. Cover %	% Freq.
<i>Achillea millefolium</i>	0.31	6.25	Bare	5.00	18.75
<i>Arctous rubra</i>	3.81	12.50	Lichen	0.66	18.75
<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	0.19	12.50	Litter	50.69	100.00
<i>Carex concinna</i>	0.16	18.75	Moss	36.25	87.50
<i>Chamerion angustifolium</i>	7.28	93.75	Unidentified Mosses	2.75	25.00
<i>Chenopodium album</i> *	0.03	6.25	<i>Hylocomium splendens</i>	33.50	68.75
<i>Dasiphora fruticosa</i> ssp. <i>floribunda</i>	3.44	18.75	Rock	1.56	6.25
<i>Elymus alaskanus</i> ssp. <i>hyperarcticus</i>	0.03	6.25	Rubbish	0.94	6.25
<i>Elymus violaceus</i>	1.56	56.25	Wood	4.94	62.50
<i>Equisetum scirpoides</i>	2.34	93.75			
<i>Eurybia sibirica</i>	0.31	18.75			
<i>Gentianella propinqua</i>	0.78	43.75			
<i>Geocaulon lividum</i>	1.44	68.75			
<i>Hedysarum alpinum</i>	9.50	68.75			
<i>Hordeum jubatum</i> *	0.13	6.25			
<i>Linnaea borealis</i>	18.16	81.25			
<i>Mertensia paniculata</i>	2.69	31.25			
<i>Moehringia lateriflora</i>	0.03	6.25			
<i>Orthilia secunda</i>	0.94	43.75			
<i>Picea glauca</i>	1.72	31.25			
<i>Platanthera obtusata</i>	0.06	6.25			
<i>Poa interior</i>	0.13	6.25			
<i>Populus balsamifera</i>	3.25	37.50			
<i>Rosa acicularis</i>	5.69	56.25			
<i>Shepherdia canadensis</i>	8.56	37.50			
<i>Trisetum spicatum</i>	0.25	18.75			
<b>Vegetation Totals</b>	<b>72.78</b>				



TRANSECT 9 – CABIN WEST



Table 16. Summary of vegetation cover of transect 9- cabin west.

Vegetative Cover			Ground Cover		
	Avg. Cover %	% Freq.		Avg. Cover %	% Freq.
<i>Anemone parviflora</i>	0.06	6.25	Bare	1.88	12.50
<i>Arctous rubra</i>	13.50	50.00	Lichen	0.34	31.25
<i>Botrychium neolunaria</i>	0.03	6.25	Litter	66.00	100.00
<i>Calamagrostis canadensis</i>	3.69	31.25	Moss		
<i>Carex concinna</i>	4.19	25.00	Unidentified Mosses	15.44	68.75
<i>Chamerion angustifolium</i>	6.38	81.25	<i>Hylocomium splendens</i>	13.94	56.25
<i>Dasiphora fruticosa</i> ssp. <i>floribunda</i>	0.25	6.25	<i>Lycopodium annotinum</i>	0.06	6.25
<i>Descurainia sophioides</i>	0.03	6.25	Rubbish	1.25	6.25
<i>Elymus macrourus</i>	0.41	25.00	Wood	1.25	12.50
<i>Elymus violaceus</i>	2.63	25.00			
<i>Equisetum scirpoides</i>	0.69	93.75			
<i>Eurybia sibirica</i>	2.31	56.25			
<i>Gentianella propinqua</i>	0.25	18.75			
<i>Geocaulon lividum</i>	1.38	37.50			
<i>Hedysarum alpinum</i>	2.13	37.50			
<i>Linnaea borealis</i>	11.75	75.00			
<i>Mertensia paniculata</i>	8.81	87.50			
<i>Moehringia lateriflora</i>	0.09	18.75			
<i>Orthilia secunda</i>	0.59	43.75			
<i>Picea glauca</i>	2.97	25.00			
<i>Poa interior</i>	2.53	50.00			
<i>Populus balsamifera</i>	0.25	18.75			
<i>Pyrola grandiflora</i>	3.88	43.75			
<i>Rosa acicularis</i>	9.06	87.50			
<i>Rubus idaeus</i>	0.06	6.25			
<i>Taraxacum ceratophorum</i>	0.13	6.25			
<i>Trisetum spicatum</i>	1.06	25.00			
<b>Vegetation Totals</b>	<b>79.09</b>				

## **Discussion**

Transect one at the FAA site had a high cover of dwarf shrubs, dominated by *Dryas drummondii*, and relatively low herbaceous cover of forbs and graminoids, with *Trisetum spicatum* the dominant grass. This is likely due to construction at this site creating rocky, exposed ground. Transects two through five had similar diversity and abundance of vegetation, as they all occurred along the airstrip. The airstrip margins are kept mowed for visibility and safety, so the vegetation is kept short and succession impeded. Here the most frequent and abundant vegetation was the dwarf shrub *Dryas drummondii* and forb *Taraxacum ceratophorum*, followed by the grasses *Trisetum spicatum* and *Poa glauca*.

Transects six through nine were also somewhat similar, as each transect began at a corner of the cabin and extended outward into the surrounding forest and meadow. These sites typically had much higher species richness and diversity. The most frequently observed taxa surrounding the cabin were the forb *Chamerion angustifolium*, *Equisetum scirpoides*, *Eurybia sibirica*, *Linnaea borealis*, *Mertensia paniculata*, *Hedysarum alpinum* and the shrub *Rosa acicularis*. All are common species of the boreal forest.

Non-native plant species were detected around the cabin and quantified in a repeatable measure and can be compared to other established surveys on BLM managed land. In the future, it may not be necessary to revisit each transect, and it may be preferable to Transect 3- airstrip loading zone, as this site sees the most traffic of people and goods as well as all four transects (Transect 6-8) surrounding the cabin. The remainder of the transects can be revisited after major disturbance to the area if needed. These specific areas are best monitored within the normal weed survey and inventory methods. We recommend that the permanent monitoring transect be revisited after major anthropogenic (e.g. construction) or natural change agents (e.g. fire) affect the area.

## APPENDIX 1 – NON-NATIVE VEGETATION INFESTATION SIZE, PERCENT COVER, AND STEM COUNT AT EACH SITE

### Cabin Entrance

Species	July 2012	August 2012	July 2013	August 2014	July 2015
<i>Capsella bursa-pastoris</i> (shepherd's purse)					
infestation size (acres)	-	-	0.001	0.01	0.001
percent cover	-	-	1	0.001	0.001
stem count	-	-	6-25	1-5	6-25
<i>Chenopodium album</i> (lambsquarters)					
infestation size (acres)	-	0.01	0.001	0.01	0.01
percent cover	-	0.01	1	1	1
stem count	-	1-5	6-25	51-150	500+
<i>Crepis tectorum</i> (narrowleaf hawksbeard)					
infestation size (acres)	-	0.01	-	0.01	-
percent cover	-	0.01	-	0.001	-
stem count	-	1	-	1-5	-
<i>Hordeum jubatum</i> (foxtail barley)					
infestation size (acres)	-	0.01	1	0.01	0.01
percent cover	-	15	1	3	2
stem count	-	500+	500+	26-50	51-150
<i>Matricaria discoidea</i> (pineappleweed)					
infestation size (acres)	0.01	0.01	0.01	0.01	0.01
percent cover	50	5	1	10	1
stem count	151-500	51-150	151-500	500+	151-500
<i>Polygonum aviculare</i> (prostrate knotweed)					
infestation size (acres)	0.01	0.01	0.001	-	0.001
percent cover	0.01	0.01	1	-	0.001
stem count	1-5	1	1	-	1-5

### ***Doghouses and Meadow***

Species	July 2012	August 2012	July 2013	August 2014	July 2015
<i>Chenopodium album</i> (lambsquarters)					
infestation size (acres)	0.01	0.1	1	0.1	-
percent cover	50	0.01	1	2	-
stem count	151-500	1-5	500+	151-500	-
<i>Crepis tectorum</i> (narrowleaf hawksbeard)					
infestation size (acres)	-	-	0.001	0.1	-
percent cover	-	-	1	0.001	-
stem count	-	-	1-6	6-25	-
<i>Galeopsis tetrahit</i> (brittlestem hempnettle)					
infestation size (acres)	0.01	0.1	1	0.1	0.01
percent cover	10	10	1	5	0.05
stem count	1-5	500+	500+	500+	151-500
<i>Hordeum jubatum</i> (foxtail barley)					
infestation size (acres)	-	0.1	1	-	0.01
percent cover	-	20	1	-	0.1
stem count	-	500+	500+	-	26-50
<i>Hordeum vulgare</i> (common barley)					
infestation size (acres)	-	0.1	-	-	-
percent cover	-	0.01	-	-	-
stem count	-	1-5	-	-	-
<i>Matricaria discoidea</i> (pineappleweed)					
infestation size (acres)	-	0.1	1	-	0.001
percent cover	-	0.01	1	-	0.001
stem count	-	1-5	500+	-	1-5

### ***Outhouse and Vicinity***

Species	July 2012	August 2012	July 2013	August 2014	July 2015
<i>Crepis tectorum</i> (narrowleaf hawksbeard)					
infestation size (acres)	N/A*	0.1	0.001	0.1	-
percent cover	N/A	0.01	1	0.001	-
stem count	N/A	6-25	1-5	1-5	-
<i>Hordeum jubatum</i> (foxtail barley)					
infestation size (acres)	N/A	0.1	1	0.1	0.001
percent cover	N/A	5	1	0.001	0.001
stem count	N/A	51-150	51-150	26-50	6-25

\*Not specifically surveyed this visit.

**West End of Airstrip**

Species	July 2012	August 2012	July 2013	August 2014	July 2015
<i>Hordeum jubatum</i> (foxtail barley)					
infestation size (acres)	-	-	0.001	0.001	-
percent cover	-	-	1	0.001	-
stem count	-	-	1-5	1-5	-

**Mid-Airstrip, South Side**

Species	July 2012	August 2012	July 2013	August 2014	July 2015
<i>Bromus inermis</i> ssp. <i>inermis</i> (smooth brome)					
infestation size (acres)	N/A*	0.001	-	0.001	-
percent cover	N/A	1	-	0.001	-
stem count	N/A	26-50	-	51-150	-

\*Not specifically surveyed this visit.

**FAA Site**

Species	July 2012	August 2012	July 2013	August 2014	July 2015
<i>Crepis tectorum</i> (narrowleaf hawksbeard)					
infestation size (acres)	N/A*	0.1	-	-	-
percent cover	N/A	0.01	-	-	-
stem count	N/A	1	-	-	-
<i>Taraxacum officinale</i> (common dandelion)					
infestation size (acres)	N/A	0.1	0.001	0.001	0.001
percent cover	N/A	0.01	0.001	0.001	0.001
stem count	N/A	1	6-25	1-5	1-5

\*Not specifically surveyed this visit.

## APPENDIX 2 – TRANSECT VEGETATION COVER

These tables represent the raw data transcribed from the data sheets on vegetation cover and are summarized by transect number.

### ***Transect 1 – FAA Site***

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
0	<i>Taraxacum ceratophorum</i>	common dandelion	t	Forb	Litter	60
0	<i>Dryas drummondii</i>	Drummond's mountain-avens	40	Dwarf Shrub	Rock	40
0	<i>Populus balsamifera</i>	balsam poplar	2	Tree	Moss	t
1	<i>Dryas drummondii</i>	Drummond's mountain-avens	65	Dwarf Shrub	Litter	95
1					Moss	5
2	<i>Poa glauca</i>	glaucous bluegrass	t	Graminoid	Litter	100
2	<i>Dryas drummondii</i>	Drummond's mountain-avens	75	Dwarf Shrub	Moss	t
3	<i>Agrostis scabra</i>	rough bentgrass	1	Graminoid	Moss	10
3	<i>Poa glauca</i>	glaucous bluegrass	t	Graminoid	Rock	30
3	<i>Dryas drummondii</i>	Drummond's mountain-avens	40	Dwarf Shrub	Silt	20
3					Litter	40
4	<i>Agrostis scabra</i>	rough bentgrass	3	Graminoid	Litter	100
4	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid	Moss	t
4	<i>Dryas drummondii</i>	Drummond's mountain-avens	80	Dwarf Shrub		
5	<i>Taraxacum ceratophorum</i>	common dandelion	t	Forb	Litter	95
5	<i>Chamerion angustifolium</i>	fireweed	t	Forb	Rock	5
5	<i>Trisetum spicatum</i>	spike trisetum	t	Graminoid	Moss	t
5	<i>Agrostis scabra</i>	rough bentgrass	1	Graminoid		
5	<i>Dryas drummondii</i>	Drummond's mountain-avens	80	Dwarf Shrub		
6	<i>Taraxacum ceratophorum</i>	common dandelion	2	Forb	Moss	10
6	<i>Trisetum spicatum</i>	spike trisetum	8	Graminoid	Lichen	5
6	<i>Dryas drummondii</i>	Drummond's mountain-avens	50	Dwarf Shrub	Rock	30
6					Litter	55
7	<i>Taraxacum ceratophorum</i>	common dandelion	1	Forb	Moss	10
7	<i>Trisetum spicatum</i>	spike trisetum	10	Graminoid	Rock	25
7	<i>Dryas drummondii</i>	Drummond's mountain-avens	15	Dwarf Shrub	Litter	65
8	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid	Litter	100
8	<i>Poa glauca</i>	glaucous bluegrass	1	Graminoid		
8	<i>Dryas drummondii</i>	Drummond's mountain-avens	85	Dwarf Shrub		
9	<i>Chamerion angustifolium</i>	fireweed	2	Forb	Litter	99
9	<i>Trisetum spicatum</i>	spike trisetum	20	Graminoid	Moss	1
9	<i>Dryas drummondii</i>	Drummond's mountain-avens	60	Dwarf Shrub		
10	<i>Chamerion angustifolium</i>	fireweed	2	Forb	Litter	100
10	<i>Taraxacum ceratophorum</i>	common dandelion	1	Forb		
10	<i>Trisetum spicatum</i>	spike trisetum	2	Graminoid		
10	<i>Dryas drummondii</i>	Drummond's mountain-avens	90	Dwarf Shrub		



Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
11	Trisetum spicatum	spike trisetum	5	Graminoid	Rock	2
11	Dryas drummondii	Drummond's mountain-avens	35	Dwarf Shrub	Litter	98
11	Populus balsamifera	balsam poplar	5	Tree		
12	Chamerion angustifolium	fireweed	5	Forb	Rock	25
12	Trisetum spicatum	spike trisetum	10	Graminoid	Litter	75
12	Dryas drummondii	Drummond's mountain-avens	60	Dwarf Shrub	Moss	t
13	Trisetum spicatum	spike trisetum	5	Graminoid	Rock	5
13	Dryas drummondii	Drummond's mountain-avens	75	Dwarf Shrub	Litter	95
14	Taraxacum ceratophorum	common dandelion	t	Forb	Moss	1
14	Poa glauca	glaucous bluegrass	5	Graminoid	Rock	34
14	Trisetum spicatum	spike trisetum	5	Graminoid	Litter	65
14	Dryas drummondii	Drummond's mountain-avens	50	Dwarf Shrub		
15	Trisetum spicatum	spike trisetum	1	Graminoid	Rock	50
15	Poa glauca	glaucous bluegrass	1	Graminoid	Litter	50
15	Dryas drummondii	Drummond's mountain-avens	55	Dwarf Shrub		
16	Trisetum spicatum	spike trisetum	1	Graminoid	Litter	85
16	Poa glauca	glaucous bluegrass	t	Graminoid	Rock	15
16	Dryas drummondii	Drummond's mountain-avens	40	Dwarf Shrub	Moss	t
16	Arctostaphylos uva-ursi	kinnikinnick	30	Dwarf shrub		
17	Poa glauca	glaucous bluegrass	2	Graminoid	Rock	30
17	Trisetum spicatum	spike trisetum	8	Graminoid	Litter	70
17	Dryas drummondii	Drummond's mountain-avens	75	Dwarf Shrub	Moss	t
18	Chamerion angustifolium	fireweed	2	Forb	Rock	20
18	Poa glauca	glaucous bluegrass	t	Graminoid	Litter	80
18	Dryas drummondii	Drummond's mountain-avens	85	Dwarf Shrub	Moss	t
18	Populus balsamifera	balsam poplar	2	Tree		
19	Chamerion angustifolium	fireweed	1	Forb	Rock	10
19	Taraxacum ceratophorum	common dandelion	t	Forb	Litter	90
19	Shepherdia canadensis	russet buffaloberry	5	Shrub	Moss	t
19	Dryas drummondii	Drummond's mountain-avens	65	Dwarf Shrub		
20	Trisetum spicatum	spike trisetum	t	Graminoid	Rock	25
20	Shepherdia canadensis	russet buffaloberry	2	Shrub	Litter	70
20	Dryas drummondii	Drummond's mountain-avens	40	Dwarf Shrub	Moss	5
20	Populus balsamifera	balsam poplar	50	Tree	Flavocetraria cucullata (lichen)	t

### ***Transect 2 – West End Airstrip***

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
0	Oxytropis deflexa	nodding locoweed	t	Forb	Moss	20
0	Taraxacum ceratophorum	common dandelion	2	Forb	Lichen	5
0	Minuartia rubella	beautiful sandwort	t	Forb	Litter	75
0	Trisetum spicatum	spike trisetum	5	Graminoid		

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
0	<i>Poa glauca</i>	glaucous bluegrass	2	Graminoid		
0	<i>Dryas drummondii</i>	Drummond's mountain-avens	70	Dwarf Shrub		
1	<i>Taraxacum ceratophorum</i>	common dandelion	5	Forb	Moss	30
1	<i>Oxytropis deflexa</i>	nodding locoweed	1	Forb	Lichen	5
1	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Litter	53
1	<i>Trisetum spicatum</i>	spike trisetum	20	Graminoid	Hylocomium splendens (moss)	10
1	<i>Dryas drummondii</i>	Drummond's mountain-avens	35	Dwarf Shrub	Flavocetraria cucullata (lichen)	2
2	<i>Taraxacum ceratophorum</i>	common dandelion	2	Forb	Moss	2
2	<i>Oxytropis deflexa</i>	nodding locoweed	1	Forb	Litter	78
2	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Hylocomium splendens (moss)	20
2	<i>Trisetum spicatum</i>	spike trisetum	10	Graminoid	Flavocetraria cucullata (lichen)	t
2	<i>Poa glauca</i>	glaucous bluegrass	10	Graminoid		
2	<i>Dryas drummondii</i>	Drummond's mountain-avens	25	Dwarf Shrub		
3	<i>Taraxacum ceratophorum</i>	common dandelion	5	Forb	Bare	29
3	<i>Oxytropis deflexa</i>	nodding locoweed	t	Forb	Moss	35
3	<i>Minuartia rubella</i>	beautiful sandwort	1	Forb	Litter	20
3	<i>Draba aurea</i>	golden draba	t	Forb	Lichen	10
3	<i>Poa glauca</i>	glaucous bluegrass	20	Graminoid	Flavocetraria cucullata (lichen)	1
3					Hylocomium splendens (moss)	5
4	<i>Taraxacum ceratophorum</i>	common dandelion	20	Forb	Moss	30
4	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Lichen	18
4	<i>Poa glauca</i>	glaucous bluegrass	25	Graminoid	Litter	20
4	<i>Trisetum spicatum</i>	spike trisetum	2	Graminoid	Hylocomium splendens (moss)	30
4					Flavocetraria cucullata (lichen)	2
5	<i>Taraxacum ceratophorum</i>	common dandelion	10	Forb	Moss	35
5	<i>Chamerion angustifolium</i>	fireweed	1	Forb	Bare	15
5	<i>Oxytropis deflexa</i>	nodding locoweed	2	Forb	Litter	30
5	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Hylocomium splendens (moss)	20
5	<i>Erigeron acris</i>	bitter fleabane	t	Forb		
5	<i>Dryas drummondii</i>	Drummond's mountain-avens	35	Dwarf Shrub		
6	<i>Taraxacum ceratophorum</i>	common dandelion	25	Forb	Moss	40
6	<i>Trisetum spicatum</i>	spike trisetum	20	Graminoid	Bare	28
6	<i>Elymus violaceus</i>	Alaskan wheatgrass	2	Graminoid	Lichen	t
6	<i>Poa glauca</i>	glaucous bluegrass	2	Graminoid	Rock	2
6	<i>Dryas drummondii</i>	Drummond's mountain-avens	2	Dwarf Shrub	Litter	25
6					Hylocomium splendens (moss)	5
7	<i>Taraxacum ceratophorum</i>	common dandelion	2	Forb	Moss	40
7	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Rock	10
7	<i>Poa glauca</i>	glaucous bluegrass	t	Graminoid	Bare	50
8	<i>Taraxacum ceratophorum</i>	common dandelion	20	Forb	Moss	30
8	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Rock	5
8	<i>Boechera retrofracta</i>	second rockcress	t	Forb	Bare	65

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
8	Poa glauca	glaucous bluegrass	15	Graminoid		
8	Trisetum spicatum	spike trisetum	1	Graminoid		
9	Taraxacum ceratophorum	common dandelion	25	Forb	Moss	25
9	Minuartia rubella	beautiful sandwort	1	Forb	Bare	75
9	Poa glauca	glaucous bluegrass	1	Graminoid	Hylocomium splendens (moss)	t
10	Taraxacum ceratophorum	common dandelion	20	Forb	Moss	45
10	Minuartia rubella	beautiful sandwort	t	Forb	Wood	20
10	Poa glauca	glaucous bluegrass	t	Graminoid	Bare	35
11	Taraxacum ceratophorum	common dandelion	20	Forb	Moss	40
11	Chamerion angustifolium	fireweed	1	Forb	Litter	40
11	Minuartia rubella	beautiful sandwort	t	Forb	Bare	10
11	Boechera retrofracta	second rockcress	t	Forb	Wood	10
11	Saxifraga tricuspidata	three toothed saxifrage	t	Forb		
11	Poa glauca	glaucous bluegrass	2	Graminoid		
12	Taraxacum ceratophorum	common dandelion	20	Forb	Moss	60
12	Erigeron acris	bitter fleabane	1	Forb	Litter	20
12	Oxytropis deflexa	nodding locoweed	5	Forb	Wood	9
12	Chamerion angustifolium	fireweed	5	Forb	Bare	10
12	Minuartia rubella	beautiful sandwort	1	Forb	Hylocomium splendens (moss)	1
12	Trisetum spicatum	spike trisetum	2	Graminoid		
13	Taraxacum ceratophorum	common dandelion	5	Forb	Lichen	3
13	Minuartia rubella	beautiful sandwort	2	Forb	Moss	75
13	Poa glauca	glaucous bluegrass	1	Graminoid	Wood	5
13	Trisetum spicatum	spike trisetum	t	Graminoid	Bare	15
13	Dryas drummondii	Drummond's mountain-avens	1	Dwarf Shrub	Flavocetraria cucullata (lichen)	2
13	Arctostaphylos uva-ursi	kinnikinnick	4	Dwarf shrub		
14	Taraxacum ceratophorum	common dandelion	10	Forb	Lichen	1
14	Solidago multiradiata	Rocky Mountain goldenrod	2	Forb	Moss	68
14	Poa glauca	glaucous bluegrass	t	Graminoid	Wood	10
14	Trisetum spicatum	spike trisetum	4	Graminoid	Bare	20
14	Dryas drummondii	Drummond's mountain-avens	2	Dwarf Shrub	Flavocetraria cucullata (lichen)	1
15	Taraxacum ceratophorum	common dandelion	15	Forb	Lichen	10
15	Minuartia rubella	beautiful sandwort	t	Forb	Moss	58
15	Trisetum spicatum	spike trisetum	15	Graminoid	Litter	20
15	Poa glauca	glaucous bluegrass	20	Graminoid	Bare	2
15					Wood	8
15					Hylocomium splendens (moss)	2
16	Taraxacum ceratophorum	common dandelion	2	Forb	Lichen	5
16	Trisetum spicatum	spike trisetum	15	Graminoid	Moss	770
16	Dryas drummondii	Drummond's mountain-avens	10	Dwarf Shrub	Wood	10
16					Litter	10
16					Flavocetraria cucullata (lichen)	5
17	Taraxacum ceratophorum	common dandelion	5	Forb	Litter	30
17	Trisetum spicatum	spike trisetum	35	Graminoid	Wood	5

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
17	<i>Dryas drummondii</i>	Drummond's mountain-avens	15	Dwarf Shrub	Lichen	2
17					Moss	13
17					<i>Hylocomium splendens</i> (moss)	50
18	<i>Taraxacum ceratophorum</i>	common dandelion	15	Forb	Litter	65
18	<i>Trisetum spicatum</i>	spike trisetum	t	Graminoid	Lichen	3
18	<i>Dryas drummondii</i>	Drummond's mountain-avens	15	Dwarf Shrub	Moss	15
18					Wood	5
18					<i>Flavocetraria cucullata</i> (lichen)	2
18					<i>Hylocomium splendens</i> (moss)	10
19	<i>Taraxacum ceratophorum</i>	common dandelion	30	Forb	Litter	20
19	<i>Poa glauca</i>	glaucous bluegrass	20	Graminoid	Wood	15
19	<i>Trisetum spicatum</i>	spike trisetum	5	Graminoid	Moss	5
19					<i>Hylocomium splendens</i> (moss)	60
19					<i>Flavocetraria cucullata</i> (lichen)	t
20	<i>Taraxacum ceratophorum</i>	common dandelion	15	Forb	Lichen	1
20					Litter	10
20					Wood	8
20					Moss	30
20					<i>Hylocomium splendens</i> (moss)	50
20					<i>Flavocetraria cucullata</i> (lichen)	1

### ***Transect 3 – Airstrip Loading Zone***

Meter	Scientific name	Common name	% cover	Growth habit	Ground cover	% Cover
0	<i>Chamerion angustifolium</i>	fireweed	1	Forb	Rock	5
0	<i>Taraxacum ceratophorum</i>	common dandelion	1	Forb	Lichen, unidentified	2
0	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid	Moss, unidentified	35
0	<i>Dryas drummondii</i>	Drummond's mountain-avens	15	Dwarf Shrub	Litter	10
0					Wood	28
0					Bare	20
1	<i>Taraxacum ceratophorum</i>	common dandelion	1	Forb	Rock	3
1	<i>Minuartia rubella</i>	beautiful sandwort	1	Forb	Litter	2
1	<i>Draba aurea</i>	golden draba	t	Forb	Moss, unidentified	30
1	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid	Bare	65
2	<i>Minuartia rubella</i>	beautiful sandwort	1	Forb	Moss, unidentified	25
2	<i>Taraxacum ceratophorum</i>	common dandelion	5	Forb	Rock	15
2	<i>Poa alpina</i>	alpine bluegrass	10	Graminoid	Litter	10
2	<i>Poa glauca</i>	glaucous bluegrass	10	Graminoid	Bare	50
2	<i>Festuca brevissima</i>	Alaska fescue	2	Graminoid		
3	<i>Taraxacum ceratophorum</i>	common dandelion	15	Forb	Litter	15
3	<i>Poa alpina</i>	alpine bluegrass	5	Graminoid	Rock	2



Meter	Scientific name	Common name	% cover	Growth habit	Ground cover	% Cover
3	Trisetum spicatum	spike trisetum	10	Graminoid	Moss, unidentified	1
3	Poa glauca	glaucous bluegrass	10	Graminoid	Lichen, unidentified	t
3					Bare	82
4	Taraxacum ceratophorum	common dandelion	15	Forb	Rock	10
4	Minuartia rubella	beautiful sandwort	t	Forb	Bare	60
4	Draba aurea	golden draba	t	Forb	Litter	25
4	Poa alpina	alpine bluegrass	15	Graminoid	Moss, unidentified	5
4	Trisetum spicatum	spike trisetum	10	Graminoid	Lichen, unidentified	t
4	Poa glauca	glaucous bluegrass	1	Graminoid		
5	Taraxacum ceratophorum	common dandelion	10	Forb	Moss, unidentified	40
5	Minuartia rubella	beautiful sandwort	t	Forb	Wood	5
5	Draba aurea	golden draba	t	Forb	Lichen, unidentified	10
5	Trisetum spicatum	spike trisetum	25	Graminoid	Bare	5
5	Poa alpina	alpine bluegrass	5	Graminoid	Litter	30
5	Poa glauca	glaucous bluegrass	2	Graminoid	Hylocomium splendens (moss)	10
6	Taraxacum ceratophorum	common dandelion	10	Forb	Lichen, unidentified	5
6	Draba aurea	golden draba	t	Forb	Bare	30
6	Achillea millefolium	common yarrow	t	Forb	Moss, unidentified	25
6	Poa glauca	glaucous bluegrass	20	Graminoid	Litter	30
6	Poa alpina	alpine bluegrass	15	Graminoid	Hylocomium splendens (moss)	10
6	Trisetum spicatum	spike trisetum	10	Graminoid		
7	Taraxacum ceratophorum	common dandelion	15	Forb	Litter	20
7	Achillea millefolium	common yarrow	5	Forb	Bare	55
7	Draba aurea	golden draba	t	Forb	Rock	5
7	Minuartia rubella	beautiful sandwort	t	Forb	Hylocomium splendens (moss)	20
7	Poa glauca	glaucous bluegrass	10	Graminoid		
7	Trisetum spicatum	spike trisetum	15	Graminoid		
8	Taraxacum ceratophorum	common dandelion	15	Forb	Litter	15
8	Achillea millefolium	common yarrow	5	Forb	Bare	65
8	Minuartia rubella	beautiful sandwort	t	Forb	Rock	20
8	Poa glauca	glaucous bluegrass	5	Graminoid	Moss, unidentified	t
8	Trisetum spicatum	spike trisetum	2	Graminoid	Lichen, unidentified	t
8	Poa alpina	alpine bluegrass	2	Graminoid		
9	Taraxacum ceratophorum	common dandelion	20	Forb	Rock	30
9	Minuartia rubella	beautiful sandwort	t	Forb	Litter	15
9	Draba aurea	golden draba	t	Forb	Moss, unidentified	t
9	Trisetum spicatum	spike trisetum	2	Graminoid	Bare	55
9	Poa glauca	glaucous bluegrass	2	Graminoid	Lichen, unidentified	t
10	Taraxacum ceratophorum	common dandelion	25	Forb	Rock	5

Meter	Scientific name	Common name	% cover	Growth habit	Ground cover	% Cover
10	Minuartia rubella	beautiful sandwort	1	Forb	Bare	75
10	Draba aurea	golden draba	t	Forb	Litter	20
10	Hedysarum boreale	Utah sweetvetch	1	Forb	Moss, unidentified	t
10	Poa glauca	glaucous bluegrass	5	Graminoid	Lichen, unidentified	t
10	Trisetum spicatum	spike trisetum	2	Graminoid		
11	Taraxacum ceratophorum	common dandelion	20	Forb	Moss, unidentified	5
11	Chamerion angustifolium	fireweed	2	Forb	Litter	20
11	Minuartia rubella	beautiful sandwort	1	Forb	Bare	75
11	Draba aurea	golden draba	t	Forb		
11	Erysimum inconspicuum	shy wallflower	t	Forb		
11	Poa glauca	glaucous bluegrass	15	Graminoid		
11	Trisetum spicatum	spike trisetum	5	Graminoid		
11	Poa alpina	alpine bluegrass	5	Graminoid		
12	Taraxacum ceratophorum	common dandelion	15	Forb	Moss, unidentified	15
12	Minuartia rubella	beautiful sandwort	t	Forb	Lichen, unidentified	5
12	Poa glauca	glaucous bluegrass	15	Graminoid	Rock	30
12	Poa alpina	alpine bluegrass	1	Graminoid	Bare	40
12	Dryas drummondii	Drummond's mountain-avens	2	Dwarf Shrub	Hylocomium splendens (moss)	10
13	Taraxacum ceratophorum	common dandelion	20	Forb	Moss, unidentified	40
13	Minuartia rubella	beautiful sandwort	t	Forb	Lichen, unidentified	5
13	Poa glauca	glaucous bluegrass	15	Graminoid	Litter	15
13	Populus balsamifera	balsam poplar	20	Tree	Bare	35
13					Hylocomium splendens (moss)	5
14	Taraxacum ceratophorum	common dandelion	25	Forb	Moss, unidentified	10
14	Chamerion angustifolium	fireweed	1	Forb	Lichen, unidentified	2
14	Poa glauca	glaucous bluegrass	15	Graminoid	Litter	38
14	Trisetum spicatum	spike trisetum	5	Graminoid	Bare	50
14	Poa alpina	alpine bluegrass	tr	Graminoid		
14	Dryas drummondii	Drummond's mountain-avens	3	Dwarf Shrub		
15	Taraxacum ceratophorum	common dandelion	20	Forb	Moss, unidentified	25
15	Oxytropis deflexa	nodding locoweed	5	Forb	Litter	50
15	Draba aurea	golden draba	t	Forb	Lichen, unidentified	2
15	Erysimum inconspicuum	shy wallflower	t	Forb	Bare	23
15	Minuartia rubella	beautiful sandwort	t	Forb		
15	Trisetum spicatum	spike trisetum	15	Graminoid		
15	Poa glauca	glaucous bluegrass	10	Graminoid		
16	Taraxacum ceratophorum	common dandelion	10	Forb	Moss, unidentified	45
16	Minuartia rubella	beautiful sandwort	t	Forb	Lichen, unidentified	5
16	Draba aurea	golden draba	t	Forb	Litter	30

Meter	Scientific name	Common name	% cover	Growth habit	Ground cover	% Cover
16	Trisetum spicatum	spike trisetum	25	Graminoid	Rock	1
16	Poa glauca	glaucous bluegrass	10	Graminoid	Bare	19
17	Taraxacum ceratophorum	common dandelion	25	Forb	Moss, unidentified	40
17	Draba aurea	golden draba	t	Forb	Lichen, unidentified	10
17	Poa glauca	glaucous bluegrass	15	Graminoid	Litter	30
17	Trisetum spicatum	spike trisetum	2	Graminoid	Rock	1
17					Bare	19
18	Taraxacum ceratophorum	common dandelion	20	Forb	Moss, unidentified	25
18	Hedysarum boreale	Utah sweetvetch	1	Forb	Lichen, unidentified	1
18	Minuartia rubella	beautiful sandwort	t	Forb	Rock	2
18	Poa glauca	glaucous bluegrass	20	Graminoid	Litter	40
18					Bare	12
18					Hylocomium splendens (moss)	20
19	Taraxacum ceratophorum	common dandelion	25	Forb	Moss, unidentified	20
19	Draba aurea	golden draba	1	Forb	Lichen, unidentified	5
19	Minuartia rubella	beautiful sandwort	t	Forb	Litter	10
19	Poa glauca	glaucous bluegrass	5	Graminoid	Rock	5
19	Trisetum spicatum	spike trisetum	2	Graminoid	Bare	60
19	Festuca brevissima	Alaska fescue	1	Graminoid		
20	Taraxacum ceratophorum	common dandelion	20	Forb	Lichen, unidentified	10
20	Draba aurea	golden draba	1	Forb	Moss, unidentified	30
20	Oxytropis deflexa	nodding locoweed	1	Forb	Litter	5
20	Minuartia rubella	beautiful sandwort	1	Forb	Rock	5
20	Poa glauca	glaucous bluegrass	10	Graminoid	Bare	50
20	Poa alpina	alpine bluegrass	1	Graminoid		
20	Trisetum spicatum	spike trisetum	1	Graminoid		
20	Dryas drummondii	Drummond's mountain-avens	t	Dwarf Shrub		

#### ***Transect 4 – Mid-Airstrip***

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
0	Taraxacum ceratophorum	common dandelion	t	Forb	Litter	50
0	Chamerion angustifolium	fireweed	2	Forb	Moss, unidentified	10
0	Dryas drummondii	Drummond's mountain-avens	65	Dwarf Shrub	Lichen, unidentified	3
0	Populus balsamifera	balsam poplar	t	Tree	Flavocetraria cucullata (lichen)	2
0					Hylocomium splendens (moss)	35
1	Chamerion angustifolium	fireweed	4	Forb	Litter	68
1	Botrychium neolunaria	grapefern	1	Fern or ally	Lichen, unidentified	2
1	Elymus violaceus	Alaskan wheatgrass	2	Graminoid	Hylocomium splendens (moss)	30
1	Shepherdia canadensis	russet buffaloberry	60	Shrub		

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
1	<i>Dryas drummondii</i>	Drummond's mountain-avens	50	Dwarf Shrub		
2	<i>Chamerion angustifolium</i>	fireweed	5	Forb	Litter	20
2	<i>Taraxacum ceratophorum</i>	common dandelion	2	Forb	Lichen, unidentified	6
2	<i>Trisetum spicatum</i>	spike trisetum	5	Graminoid	Moss, unidentified	15
2	<i>Dryas drummondii</i>	Drummond's mountain-avens	20	Dwarf Shrub	Flavocetraria cucullata (lichen)	4
2	<i>Populus balsamifera</i>	balsam poplar	1	Tree	Hylocomium splendens (moss)	55
2	<i>Picea glauca</i>	white spruce	1	Tree		
3	<i>Saxifraga tricuspidata</i>	three toothed saxifrage	15	Forb	Wood	5
3	<i>Taraxacum ceratophorum</i>	common dandelion	5	Forb	Lichen, unidentified	5
3	<i>Chamerion angustifolium</i>	fireweed	4	Forb	Litter	35
3	<i>Trisetum spicatum</i>	spike trisetum	2	Graminoid	Hylocomium splendens (moss)	55
3	<i>Dryas drummondii</i>	Drummond's mountain-avens	20	Dwarf Shrub		
4	<i>Taraxacum ceratophorum</i>	common dandelion	20	Forb	Litter	40
4	<i>Poa glauca</i>	glaucous bluegrass	25	Graminoid	Rock	1
4	<i>Trisetum spicatum</i>	spike trisetum	5	Graminoid	Bare	1
4	<i>Shepherdia canadensis</i>	russet buffaloberry	30	Shrub	Lichen, unidentified	1
4	<i>Populus balsamifera</i>	balsam poplar	t	Tree	Moss, unidentified	2
4					Hylocomium splendens (moss)	55
5	<i>Taraxacum ceratophorum</i>	common dandelion	20	Forb	Lichen, unidentified	5
5	<i>Chamerion angustifolium</i>	fireweed	2	Forb	Moss, unidentified	1
5	<i>Saxifraga tricuspidata</i>	three toothed saxifrage	t	Forb	Litter	20
5	<i>Hedysarum boreale</i>	Utah sweetvetch	t	Forb	Hylocomium splendens (moss)	74
5	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb		
5	<i>Botrychium neolunaria</i>	grapefern	t	Fern or ally		
5	<i>Trisetum spicatum</i>	spike trisetum	20	Graminoid		
5	<i>Poa glauca</i>	glaucous bluegrass	2	Graminoid		
5	<i>Dryas drummondii</i>	Drummond's mountain-avens	2	Dwarf Shrub		
6	<i>Saxifraga tricuspidata</i>	three toothed saxifrage	5	Forb	Lichen, unidentified	10
6	<i>Taraxacum ceratophorum</i>	common dandelion	10	Forb	Moss, unidentified	20
6	<i>Dryas drummondii</i>	Drummond's mountain-avens	35	Dwarf Shrub	Litter	5
6	<i>Populus balsamifera</i>	balsam poplar	5	Tree	Rock	1
6					Bare	1
6					Flavocetraria cucullata (lichen)	1
6					Hylocomium splendens (moss)	62
7	<i>Taraxacum ceratophorum</i>	common dandelion	2	Forb	Moss, unidentified	5
7	<i>Saxifraga tricuspidata</i>	three toothed saxifrage	t	Forb	Litter	85
7	<i>Elymus violaceus</i>	Alaskan wheatgrass	1	Graminoid	Rock	5
7	<i>Shepherdia canadensis</i>	russet buffaloberry	25	Shrub	Bare	5



Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
7	<i>Dryas drummondii</i>	Drummond's mountain-avens	85	Dwarf Shrub		
7	<i>Populus balsamifera</i>	balsam poplar	4	Tree		
8	<i>Taraxacum ceratophorum</i>	common dandelion	8	Forb	Moss, unidentified	t
8	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Silt	15
8	<i>Poa glauca</i>	glaucous bluegrass	1	Graminoid	Rock	85
8	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid		
8	<i>Dryas drummondii</i>	Drummond's mountain-avens	60	Dwarf Shrub		
9	<i>Taraxacum ceratophorum</i>	common dandelion	10	Forb	Rock	90
9					Silt	10
9					Moss, unidentified	t
10	<i>Taraxacum ceratophorum</i>	common dandelion	8	Forb	Rock	90
10	<i>Poa glauca</i>	glaucous bluegrass	1	Graminoid	Silt	10
11	<i>Taraxacum ceratophorum</i>	common dandelion	5	Forb	Moss, unidentified	t
11	<i>Poa alpina</i>	alpine bluegrass	5	Graminoid	Rock	90
11	<i>Poa glauca</i>	glaucous bluegrass	3	Graminoid	Silt	10
12	<i>Taraxacum ceratophorum</i>	common dandelion	10	Forb	Moss, unidentified	t
12	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Rock	90
12	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	slender wheatgrass	5	Graminoid	Silt	10
12	<i>Poa glauca</i>	glaucous bluegrass	2	Graminoid		
13	<i>Taraxacum ceratophorum</i>	common dandelion	20	Forb	Moss, unidentified	10
13	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Litter	45
13	<i>Trisetum spicatum</i>	spike trisetum	8	Graminoid	Rock	45
13	<i>Poa glauca</i>	glaucous bluegrass	5	Graminoid	<i>Hylocomium splendens</i> (moss)	t
13	<i>Festuca brevissima</i>	Alaska fescue	2	Graminoid		
13	<i>Dryas drummondii</i>	Drummond's mountain-avens	50	Dwarf Shrub		
13	<i>Picea glauca</i>	white spruce	t	Tree		
14	<i>Taraxacum ceratophorum</i>	common dandelion	5	Forb	Litter	65
14	<i>Chamerion angustifolium</i>	fireweed	15	Forb	Moss, unidentified	5
14	<i>Elymus violaceus</i>	Alaskan wheatgrass	5	Graminoid	Rock	5
14	<i>Trisetum spicatum</i>	spike trisetum	5	Graminoid	<i>Hylocomium splendens</i> (moss)	25
14	<i>Poa glauca</i>	glaucous bluegrass	1	Graminoid		
14	<i>Shepherdia canadensis</i>	russet buffaloberry	20	Shrub		
14	<i>Dryas drummondii</i>	Drummond's mountain-avens	45	Dwarf Shrub		
15	<i>Chamerion angustifolium</i>	fireweed	15	Forb	Litter	55
15	<i>Taraxacum ceratophorum</i>	common dandelion	2	Forb	<i>Hylocomium splendens</i> (moss)	45
15	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid		
15	<i>Dryas drummondii</i>	Drummond's mountain-avens	60	Dwarf Shrub		
16	<i>Chamerion angustifolium</i>	fireweed	2	Forb	Litter	50
16	<i>Taraxacum ceratophorum</i>	common dandelion	1	Forb	Lichen, unidentified	2

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
16	Trisetum spicatum	spike trisetum	2	Graminoid	Flavocetraria cucullata (lichen)	t
16	Dryas drummondii	Drummond's mountain-avens	40	Dwarf Shrub	Hylocomium splendens (moss)	48
16	Picea glauca	white spruce	60	Tree		
17	Taraxacum ceratophorum	common dandelion	2	Forb	Rock	2
17	Chamerion angustifolium	fireweed	1	Forb	Litter	90
17	Trisetum spicatum	spike trisetum	1	Graminoid	Hylocomium splendens (moss)	8
17	Shepherdia canadensis	russet buffaloberry	5	Shrub		
17	Dryas drummondii	Drummond's mountain-avens	75	Dwarf Shrub		
18	Chamerion angustifolium	fireweed	2	Forb	Moss, unidentified	1
18	Taraxacum ceratophorum	common dandelion	2	Forb	Litter	20
18	Trisetum spicatum	spike trisetum	1	Graminoid	Wood	4
18	Dryas drummondii	Drummond's mountain-avens	25	Dwarf Shrub	Hylocomium splendens (moss)	75
18	Picea glauca	white spruce	1	Tree		
18	Populus balsamifera	balsam poplar	1	Tree		
19	Saxifraga tricuspidata	three toothed saxifrage	5	Forb	Litter	60
19	Chamerion angustifolium	fireweed	2	Forb	Wood	5
19	Taraxacum ceratophorum	common dandelion	1	Forb	Lichen, unidentified	2
19	Trisetum spicatum	spike trisetum	1	Graminoid	Hylocomium splendens (moss)	33
19	Dryas drummondii	Drummond's mountain-avens	40	Dwarf Shrub		
19	Populus balsamifera	balsam poplar	2	Tree		
20	Chamerion angustifolium	fireweed	5	Forb	Moss, unidentified	10
20	Taraxacum ceratophorum	common dandelion	4	Forb	Wood	5
20	Botrychium neolunaria	grapefern	1	Fern or ally	Litter	85
20	Dryas drummondii	Drummond's mountain-avens	25	Dwarf Shrub		
20	Populus balsamifera	balsam poplar	4	Tree		

### ***Transect 5 – East End Airstrip***

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
0	Orthilia secunda	sidebells wintergreen	8	Forb	Wood	5
0	Shepherdia canadensis	russet buffaloberry	25	Shrub	Moss, unidentified	10
0	Dryas drummondii	Drummond's mountain-avens	20	Dwarf Shrub	Lichen, unidentified	2
0	Populus balsamifera	balsam poplar	5	Tree	Litter	73
0					Hylocomium splendens (moss)	10
1	Taraxacum ceratophorum	common dandelion	2	Forb	Lichen, unidentified	7
1	Orthilia secunda	sidebells wintergreen	1	Forb	Litter	88
1	Dryas drummondii	Drummond's mountain-avens	10	Dwarf Shrub	Hylocomium splendens (moss)	5
2	Taraxacum ceratophorum	common dandelion	5	Forb	Litter	90
2	Orthilia secunda	sidebells wintergreen	5	Forb	Lichen, unidentified	4

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
2	<i>Poa glauca</i>	glaucous bluegrass	4	Graminoid	Wood	5
2	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid	Hylocomium splendens (moss)	1
2	<i>Shepherdia canadensis</i>	russet buffaloberry	30	Shrub		
2	<i>Dryas drummondii</i>	Drummond's mountain-avens	20	Dwarf Shrub		
2	<i>Populus balsamifera</i>	balsam poplar	5	Tree		
3	<i>Taraxacum ceratophorum</i>	common dandelion	2	Forb	Moss, unidentified	1
3	<i>Poa glauca</i>	glaucous bluegrass	5	Graminoid	Wood	3
3	<i>Trisetum spicatum</i>	spike trisetum	4	Graminoid	Litter	95
3	<i>Shepherdia canadensis</i>	russet buffaloberry	15	Shrub	Hylocomium splendens (moss)	1
3	<i>Dryas drummondii</i>	Drummond's mountain-avens	40	Dwarf Shrub		
3	<i>Populus balsamifera</i>	balsam poplar	10	Tree		
4	<i>Taraxacum ceratophorum</i>	common dandelion	1	Forb	Lichen, unidentified	1
4	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Moss, unidentified	2
4	<i>Poa glauca</i>	glaucous bluegrass	10	Graminoid	Wood	5
4	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid	Litter	90
4	<i>Dryas drummondii</i>	Drummond's mountain-avens	40	Dwarf Shrub	Hylocomium splendens (moss)	2
5	<i>Taraxacum ceratophorum</i>	common dandelion	8	Forb	Moss, unidentified	20
5	<i>Minuartia rubella</i>	beautiful sandwort	1	Forb	Lichen, unidentified	5
5	<i>Poa glauca</i>	glaucous bluegrass	20	Graminoid	Wood	2
5	<i>Dryas drummondii</i>	Drummond's mountain-avens	30	Dwarf Shrub	Litter	73
5					Hylocomium splendens (moss)	t
6	<i>Taraxacum ceratophorum</i>	common dandelion	15	Forb	Rock	10
6	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Wood	1
6	<i>Poa glauca</i>	glaucous bluegrass	15	Graminoid	Lichen, unidentified	2
6	<i>Trisetum spicatum</i>	spike trisetum	5	Graminoid	Litter	70
6	<i>Dryas drummondii</i>	Drummond's mountain-avens	20	Dwarf Shrub	Moss, unidentified	7
6					Hylocomium splendens (moss)	10
7	<i>Taraxacum ceratophorum</i>	common dandelion	20	Forb	Moss, unidentified	5
7	<i>Minuartia rubella</i>	beautiful sandwort	2	Forb	Lichen, unidentified	1
7	<i>Poa glauca</i>	glaucous bluegrass	20	Graminoid	Rock	35
7	<i>Trisetum spicatum</i>	spike trisetum	4	Graminoid	Litter	50
7	<i>Dryas drummondii</i>	Drummond's mountain-avens	2	Dwarf Shrub	Silt	8
7					Hylocomium splendens (moss)	1
8	<i>Taraxacum ceratophorum</i>	common dandelion	20	Forb	Moss, unidentified	t
8	<i>Minuartia rubella</i>	beautiful sandwort	1	Forb	Silt	10
8	<i>Poa glauca</i>	glaucous bluegrass	8	Graminoid	Rock	90
9	<i>Minuartia rubella</i>	beautiful sandwort	t	Forb	Silt	10
9	<i>Taraxacum ceratophorum</i>	common dandelion	2	Forb	Rock	90

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
9	Trisetum spicatum	spike trisetum	2	Graminoid		
10	Taraxacum ceratophorum	common dandelion	1	Forb	Silt	10
10					Rock	90
11	Taraxacum ceratophorum	common dandelion	5	Forb	Rock	100
12	Taraxacum ceratophorum	common dandelion	8	Forb	Moss, unidentified	t
12	Minuartia rubella	beautiful sandwort	1	Forb	Rock	90
12	Poa glauca	glaucous bluegrass	1	Graminoid	Silt	10
12	Trisetum spicatum	spike trisetum	1	Graminoid		
12	Dryas drummondii	Drummond's mountain-avens	15	Dwarf Shrub		
13	Taraxacum ceratophorum	common dandelion	8	Forb	Lichen, unidentified	10
13	Minuartia rubella	beautiful sandwort	t	Forb	Moss, unidentified	5
13	Trisetum spicatum	spike trisetum	5	Graminoid	Litter	50
13	Dryas drummondii	Drummond's mountain-avens	25	Dwarf Shrub	Rock	20
13					Bare	10
13					Hylocomium splendens (moss)	5
14	Taraxacum ceratophorum	common dandelion	2	Forb	Moss, unidentified	9
14	Saxifraga tricuspidata	three toothed saxifrage	2	Forb	Lichen, unidentified	15
14	Trisetum spicatum	spike trisetum	10	Graminoid	Litter	75
14	Poa glauca	glaucous bluegrass	1	Graminoid	Hylocomium splendens (moss)	1
14	Dryas drummondii	Drummond's mountain-avens	60	Dwarf Shrub		
14	Arctostaphylos uva-ursi	kinnikinnick	t	Dwarf shrub		
15	Taraxacum ceratophorum	common dandelion	1	Forb	Litter	95
15	Trisetum spicatum	spike trisetum	1	Graminoid	Wood	2
15	Poa glauca	glaucous bluegrass	1	Graminoid	Moss, unidentified	1
15	Shepherdia canadensis	russet buffaloberry	5	Shrub	Lichen, unidentified	t
15	Arctostaphylos uva-ursi	kinnikinnick	65	Dwarf shrub	Hylocomium splendens (moss)	2
15	Dryas drummondii	Drummond's mountain-avens	10	Dwarf Shrub		
16	Oxytropis campestris var. gracilis	yellowflower locoweed	5	Forb	Moss, unidentified	1
16	Taraxacum ceratophorum	common dandelion	5	Forb	Lichen, unidentified	1
16	Saxifraga tricuspidata	three toothed saxifrage	30	Forb	Wood	1
16	Trisetum spicatum	spike trisetum	2	Graminoid	Litter	82
16	Poa glauca	glaucous bluegrass	t	Graminoid	Hylocomium splendens (moss)	15
16	Shepherdia canadensis	russet buffaloberry	20	Shrub		
16	Dryas drummondii	Drummond's mountain-avens	15	Dwarf Shrub		
16	Arctostaphylos uva-ursi	kinnikinnick	2	Dwarf shrub		
17	Taraxacum ceratophorum	common dandelion	8	Forb	Litter	20
17	Chamerion angustifolium	fireweed	2	Forb	Lichen, unidentified	5
17	Trisetum spicatum	spike trisetum	1	Graminoid	Wood	1



Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
17	<i>Poa glauca</i>	glaucous bluegrass	2	Graminoid	Hylocomium splendens (moss)	74
17	<i>Shepherdia canadensis</i>	russet buffaloberry	10	Shrub		
17	<i>Dryas drummondii</i>	Drummond's mountain-avens	15	Dwarf Shrub		
17	<i>Populus balsamifera</i>	balsam poplar	2	Tree		
18	<i>Saxifraga tricuspidata</i>	three toothed saxifrage	15	Forb	Litter	85
18	<i>Taraxacum ceratophorum</i>	common dandelion	4	Forb	bare	5
18	<i>Minuartia rubella</i>	beautiful sandwort	1	Forb	Moss, unidentified	t
18	<i>Poa glauca</i>	glaucous bluegrass	1	Graminoid	Lichen, unidentified	t
18	<i>Dryas drummondii</i>	Drummond's mountain-avens	70	Dwarf Shrub	Hylocomium splendens (moss)	10
18	<i>Populus balsamifera</i>	balsam poplar	15	Tree		
19	<i>Saxifraga tricuspidata</i>	three toothed saxifrage	5	Forb	Lichen, unidentified	2
19	<i>Taraxacum ceratophorum</i>	common dandelion	3	Forb	Moss, unidentified	3
19	<i>Poa glauca</i>	glaucous bluegrass	2	Graminoid	Litter	80
19	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid	Hylocomium splendens (moss)	15
19	<i>Dryas drummondii</i>	Drummond's mountain-avens	35	Dwarf Shrub		
20	<i>Taraxacum ceratophorum</i>	common dandelion	3	Forb	Moss, unidentified	2
20	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid	Litter	96
20	<i>Poa glauca</i>	glaucous bluegrass	1	Graminoid	Lichen, unidentified	t
20	<i>Dryas drummondii</i>	Drummond's mountain-avens	80	Dwarf Shrub	Hylocomium splendens (moss)	2

### ***Transect 6 – Cabin North***

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
0	<i>Chamerion angustifolium</i>	fireweed	10	Forb	Litter	10
0	<i>Chenopodium album</i>	lambsquarters	2	Forb	Bare	90
0	<i>Calamagrostis canadensis</i>	bluejoint	50	Graminoid		
0	<i>Hordeum jubatum</i>	foxtail barley	5	Graminoid		
0	<i>Populus balsamifera</i>	balsam poplar	2	Tree		
1	<i>Chenopodium album</i>	lambsquarters	15	Forb	Wood	2
1	<i>Matricaria discoidea</i>	disc mayweed	2	Forb	Litter	3
1	<i>Polygonum aviculare</i>	prostrate knotweed	1	Forb	Bare	95
1	<i>Chamerion angustifolium</i>	fireweed	2	Forb		
1	<i>Descurainia sophioides</i>	northern tansymustard	t	Forb		
1	<i>Hordeum jubatum</i>	foxtail barley	5	Graminoid		
2	<i>Descurainia sophioides</i>	northern tansymustard	30	Forb	Wood	2
2	<i>Matricaria discoidea</i>	disc mayweed	1	Forb	Litter	48
2	<i>Chenopodium album</i>	lambsquarters	5	Forb	Bare	50
2	<i>Chamerion angustifolium</i>	fireweed	40	Forb		
3	<i>Chamerion angustifolium</i>	fireweed	40	Forb	Litter	100
3	<i>Chenopodium album</i>	lambsquarters	20	Forb		

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
3	Descurainia sophioides	northern tansymustard	30	Forb		
3	Matricaria discoidea	disc mayweed	1	Forb		
3	Calamagrostis canadensis	bluejoint	5	Graminoid		
4	Descurainia sophioides	northern tansymustard	60	Forb	Litter	100
4	Chamerion angustifolium	fireweed	30	Forb		
4	Chenopodium album	lambsquarters	t	Forb		
4	Hordeum jubatum	foxtail barley	10	Graminoid		
5	Chamerion angustifolium	fireweed	75	Forb	Litter	100
5	Descurainia sophioides	northern tansymustard	15	Forb		
5	Rubus idaeus	American red raspberry	5	Shrub		
6	Chamerion angustifolium	fireweed	25	Forb	Litter	100
6	Mertensia paniculata	tall bluebells	20	Forb		
6	Descurainia sophioides	northern tansymustard	t	Forb		
6	Chenopodium album	lambsquarters	t	Forb		
6	Rubus idaeus	American red raspberry	35	Shrub		
7	Chamerion angustifolium	fireweed	25	Forb	Litter	100
7	Mertensia paniculata	tall bluebells	2	Forb		
7	Descurainia sophioides	northern tansymustard	t	Forb		
7	Chenopodium album	lambsquarters	t	Forb		
7	Calamagrostis canadensis	bluejoint	5	Graminoid		
7	Poa interior	inland bluegrass	5	Graminoid		
7	Rubus idaeus	American red raspberry	60	Shrub		
7	Rosa acicularis	prickly rose	2	Shrub		
8	Chamerion angustifolium	fireweed	80	Forb	Litter	50
8	Erysimum altum	wormseed wallflower	1	Forb	Moss, unidentified	10
8	Rubus idaeus	American red raspberry	15	Shrub	Bare	40
9	Chamerion angustifolium	fireweed	90	Forb	Bare	30
9	Chenopodium album	lambsquarters	t	Forb	Litter	70
9	Erysimum altum	wormseed wallflower	10	Forb		
9	Rubus idaeus	American red raspberry	15	Shrub		
10	Chamerion angustifolium	fireweed	90	Forb	Litter	100
10	Chenopodium album	lambsquarters	1	Forb		
10	Erysimum altum	wormseed wallflower	t	Forb		
10	Rubus idaeus	American red raspberry	10	Shrub		
11	Chamerion angustifolium	fireweed	95	Forb	Litter	60
11	Calamagrostis canadensis	bluejoint	t	Graminoid	Bare	40
11	Rubus idaeus	American red raspberry	10	Shrub		
12	Chamerion angustifolium	fireweed	100	Forb	Litter	100
12	Poa interior	inland bluegrass	t	Graminoid		
12	Rubus idaeus	American red raspberry	5	Shrub		

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
13	Chamerion angustifolium	fireweed	60	Forb	Litter	100
13	Poa interior	inland bluegrass	1	Graminoid		
13	Rubus idaeus	American red raspberry	20	Shrub		
14	Chamerion angustifolium	fireweed	95	Forb	Litter	100
14	Rubus idaeus	American red raspberry	20	Shrub		
15	Chamerion angustifolium	fireweed	95	Forb	Moss, unidentified	5
15	Mertensia paniculata	tall bluebells	5	Forb	Litter	95
15	Rubus idaeus	American red raspberry	5	Shrub		

### ***Transect 7 – Cabin East***

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
0	Chamerion angustifolium	fireweed	20	Forb	Rubbish	80
0	Chenopodium album	lambsquarters	2	Forb	Litter	20
0	Matricaria discoidea	disc mayweed	5	Forb		
0	Descurainia sophioides	northern tansymustard	10	Forb		
0	Puccinellia borealis	arctic alkaligrass	2	Graminoid		
0	Populus balsamifera	balsam poplar	5	Tree		
1	Chenopodium album	lambsquarters	4	Forb	Litter	70
1	Descurainia sophioides	northern tansymustard	15	Forb	Bare	30
1	Matricaria discoidea	disc mayweed	2	Forb		
1	Chamerion angustifolium	fireweed	5	Forb		
1	Achillea millefolium	common yarrow	5	Forb		
1	Hordeum jubatum	foxtail barley	60	Graminoid		
1	Elymus trachycaulus ssp. trachycaulus	slender wheatgrass	1	Graminoid		
1	Puccinellia borealis	arctic alkaligrass	1	Graminoid		
2	Chamerion angustifolium	fireweed	65	Forb	Wood	5
2	Descurainia sophioides	northern tansymustard	5	Forb	Litter	95
2	Erysimum altum	wormseed wallflower	20	Forb		
2	Chenopodium album	lambsquarters	10	Forb		
2	Eurybia sibirica	arctic aster	5	Forb		
2	Hordeum jubatum	foxtail barley	t	Graminoid		
3	Chamerion angustifolium	fireweed	30	Forb	Litter	100
3	Mertensia paniculata	tall bluebells	10	Forb		
3	Eurybia sibirica	arctic aster	5	Forb		
3	Achillea millefolium	common yarrow	1	Forb		
3	Calamagrostis canadensis	bluejoint	60	Graminoid		
3	Poa pratensis ssp. alpigena	Kentucky bluegrass	1	Graminoid		
3	Hordeum jubatum	foxtail barley	2	Graminoid		
4	Achillea millefolium	common yarrow	60	Forb	Litter	100
4	Chamerion angustifolium	fireweed	20	Forb		

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
4	<i>Mertensia paniculata</i>	tall bluebells	10	Forb		
4	<i>Calamagrostis canadensis</i>	bluejoint	t	Graminoid		
5	<i>Chamerion angustifolium</i>	fireweed	35	Forb	Litter	100
5	<i>Achillea millefolium</i>	common yarrow	20	Forb		
5	<i>Eurybia sibirica</i>	arctic aster	2	Forb		
5	<i>Calamagrostis canadensis</i>	bluejoint	30	Graminoid		
6	<i>Chamerion angustifolium</i>	fireweed	30	Forb	Litter	100
6	<i>Eurybia sibirica</i>	arctic aster	15	Forb		
6	<i>Achillea millefolium</i>	common yarrow	2	Forb		
6	<i>Calamagrostis canadensis</i>	bluejoint	50	Graminoid		
6	<i>Poa pratensis</i> ssp. <i>alpigena</i>	Kentucky bluegrass	10	Graminoid		
6	<i>Populus balsamifera</i>	balsam poplar	5	Tree		
7	<i>Hedysarum alpinum</i>	alpine sweetvetch	t	Forb	Bare	5
7	<i>Chamerion angustifolium</i>	fireweed	10	Forb	Litter	90
7	<i>Eurybia sibirica</i>	arctic aster	8	Forb	Wood	5
7	<i>Matricaria discoidea</i>	disc mayweed	2	Forb		
7	<i>Equisetum scirpoides</i>	dwarf scouringrush	1	Fern or Ally		
7	<i>Poa pratensis</i> ssp. <i>alpigena</i>	Kentucky bluegrass	10	Graminoid		
7	<i>Calamagrostis canadensis</i>	bluejoint	t	Graminoid		
7	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid		
7	<i>Rosa acicularis</i>	prickly rose	t	Shrub		
8	<i>Hedysarum alpinum</i>	alpine sweetvetch	2	Forb	Litter	80
8	<i>Gentianella propinqua</i>	fourpart dwarf gentian	1	Forb	Bare	10
8	<i>Matricaria discoidea</i>	disc mayweed	t	Forb	Moss, unidentified	9
8	<i>Achillea millefolium</i>	common yarrow	1	Forb	Hylocomium splendens (moss)	1
8	<i>Equisetum scirpoides</i>	dwarf scouringrush	t	Fern or Ally		
8	<i>Poa alpina</i>	alpine bluegrass	5	Graminoid		
8	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid		
8	<i>Poa pratensis</i> ssp. <i>alpigena</i>	Kentucky bluegrass	5	Graminoid		
8	<i>Rosa acicularis</i>	prickly rose	5	Shrub		
9	<i>Anemone parviflora</i>	smallflowered anemone	5	Forb	Moss, unidentified	10
9	<i>Gentianella propinqua</i>	fourpart dwarf gentian	2	Forb	Bare	20
9	<i>Chamerion angustifolium</i>	fireweed	2	Forb	Litter	70
9	<i>Hedysarum alpinum</i>	alpine sweetvetch	5	Forb		
9	<i>Achillea millefolium</i>	common yarrow	t	Forb		
9	<i>Poa alpina</i>	alpine bluegrass	2	Graminoid		
9	<i>Poa pratensis</i> ssp. <i>alpigena</i>	Kentucky bluegrass	20	Graminoid		
9	<i>Trisetum spicatum</i>	spike trisetum	10	Graminoid		
9	<i>Populus balsamifera</i>	balsam poplar	2	Tree		
10	<i>Anemone parviflora</i>	smallflowered anemone	2	Forb	Litter	90



Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
10	Chamerion angustifolium	fireweed	5	Forb	Moss, unidentified	10
10	Hedysarum alpinum	alpine sweetvetch	10	Forb		
10	Gentianella propinqua	fourpart dwarf gentian	2	Forb		
10	Eurybia sibirica	arctic aster	1	Forb		
10	Poa pratensis ssp. alpigena	Kentucky bluegrass	10	Graminoid		
10	Carex concinna	low northern sedge	2	Graminoid		
10	Trisetum spicatum	spike trisetum	2	Graminoid		
10	Rosa acicularis	prickly rose	1	Shrub		
10	Linnaea borealis	twinflor	5	Dwarf Shrub		
10	Populus balsamifera	balsam poplar	5	Tree		
11	Hedysarum alpinum	alpine sweetvetch	15	Forb	Moss, unidentified	5
11	Chamerion angustifolium	fireweed	5	Forb	Litter	10
11	Anemone parviflora	smallflowered anemone	10	Forb	Bare	85
11	Elymus violaceus	Alaskan wheatgrass	1	Graminoid		
11	Trisetum spicatum	spike trisetum	1	Graminoid		
11	Rosa acicularis	prickly rose	2	Shrub		
12	Hedysarum alpinum	alpine sweetvetch	20	Forb	Bare	95
12	Anemone parviflora	smallflowered anemone	2	Forb	Moss, unidentified	1
12	Eurybia sibirica	arctic aster	4	Forb	Litter	4
12	Matricaria discoidea	disc mayweed	t	Forb		
12	Gentianella propinqua	fourpart dwarf gentian	t	Forb		
12	Trisetum spicatum	spike trisetum	1	Graminoid		
12	Rosa acicularis	prickly rose	2	Shrub		
13	Hedysarum alpinum	alpine sweetvetch	10	Forb	Litter	5
13	Eurybia sibirica	arctic aster	15	Forb	Moss, unidentified	t
13	Chamerion angustifolium	fireweed	8	Forb	Bare	95
13	Anemone parviflora	smallflowered anemone	10	Forb		
13	Elymus violaceus	Alaskan wheatgrass	1	Graminoid		
13	Rosa acicularis	prickly rose	8	Shrub		
14	Hedysarum alpinum	alpine sweetvetch	2	Forb	Litter	2
14	Eurybia sibirica	arctic aster	20	Forb	Bare	98
14	Chamerion angustifolium	fireweed	5	Forb		
14	Anemone parviflora	smallflowered anemone	2	Forb		
14	Gentianella propinqua	fourpart dwarf gentian	t	Forb		
15	Eurybia sibirica	arctic aster	4	Forb	Moss, unidentified	t
15	Taraxacum ceratophorum	common dandelion	2	Forb	Litter	2
15	Elymus alakanus ssp. hyperarcticus	tundra wildrye	t	Graminoid	Bare	98
15	Rosa acicularis	prickly rose	5	Shrub		

### ***Transect 8 – Cabin South***

<b>Meter</b>	<b>Scientific name</b>	<b>Common name</b>	<b>% Cover</b>	<b>Growth habit</b>	<b>Ground cover</b>	<b>% Cover</b>
0	Chamerion angustifolium	fireweed	8	Forb	Rubbish	15
0	Gentianella propinqua	fourpart dwarf gentian	1	Forb	Rock	25
0	Equisetum scirpoides	dwarf scouringrush	5	Fern or Ally	Moss, unidentified	15
0	Hordeum jubatum	foxtail barley	2	Graminoid	Bare	25
0	Elymus violaceus	Alaskan wheatgrass	5	Graminoid	Litter	20
0	Poa interior	inland bluegrass	2	Graminoid		
1	Chamerion angustifolium	fireweed	35	Forb	Bare	25
1	Mertensia paniculata	tall bluebells	20	Forb	Moss, unidentified	5
1	Gentianella propinqua	fourpart dwarf gentian	5	Forb	Litter	70
1	Achillea millefolium	common yarrow	5	Forb		
1	Eurybia sibirica	arctic aster	2	Forb		
1	Equisetum scirpoides	dwarf scouringrush	5	Fern or Ally		
1	Elymus violaceus	Alaskan wheatgrass	10	Graminoid		
1	Rosa acicularis	prickly rose	8	Shrub		
1	Linnaea borealis	twinflamer	t	Dwarf Shrub		
1	Populus balsamifera	balsam poplar	20	Tree		
2	Chamerion angustifolium	fireweed	5	Forb	Moss, unidentified	9
2	Mertensia paniculata	tall bluebells	20	Forb	Bare	30
2	Equisetum scirpoides	dwarf scouringrush	2	Fern or Ally	Litter	60
2	Trisetum spicatum	spike trisetum	2	Graminoid	Hylocomium splendens (moss)	1
2	Elymus violaceus	Alaskan wheatgrass	5	Graminoid		
2	Rosa acicularis	prickly rose	2	Shrub		
2	Linnaea borealis	twinflamer	10	Dwarf Shrub		
3	Chamerion angustifolium	fireweed	5	Forb	Litter	75
3	Orthilia secunda	sidebells wintergreen	5	Forb	Wood	10
3	Gentianella propinqua	fourpart dwarf gentian	1	Forb	Moss, unidentified	15
3	Geocaulon lividum	false toadflax	1	Forb		
3	Equisetum scirpoides	dwarf scouringrush	5	Fern or Ally		
3	Elymus violaceus	Alaskan wheatgrass	t	Graminoid		
3	Dasiphora fruticosa ssp. floribunda	shrubby cinquefoil	10	Shrub		
3	Rosa acicularis	prickly rose	10	Shrub		
3	Linnaea borealis	twinflamer	15	Dwarf Shrub		
3	Populus balsamifera	balsam poplar	15	Tree		
4	Chamerion angustifolium	fireweed	20	Forb	Litter	85
4	Mertensia paniculata	tall bluebells	1	Forb	Wood	15
4	Hedysarum alpinum	alpine sweetvetch	1	Forb		
4	Orthilia secunda	sidebells wintergreen	2	Forb		
4	Geocaulon lividum	false toadflax	2	Forb		

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
4	<i>Gentianella propinqua</i>	fourpart dwarf gentian	1	Forb		
4	<i>Equisetum scirpoides</i>	dwarf scouringrush	4	Fern or Ally		
4	<i>Elymus violaceus</i>	Alaskan wheatgrass	1	Graminoid		
4	<i>Dasiphora fruticosa</i> ssp. <i>floribunda</i>	shrubby cinquefoil	25	Shrub		
4	<i>Rosa acicularis</i>	prickly rose	2	Shrub		
4	<i>Linnaea borealis</i>	twinflower	40	Dwarf Shrub		
5	<i>Hedysarum alpinum</i>	alpine sweetvetch	20	Forb	Litter	95
5	<i>Gentianella propinqua</i>	fourpart dwarf gentian	2	Forb	Wood	5
5	<i>Chamerion angustifolium</i>	fireweed	5	Forb		
5	<i>Geocaulon lividum</i>	false toadflax	5	Forb		
5	<i>Chenopodium album</i>	lambsquarters	t	Forb		
5	<i>Equisetum scirpoides</i>	dwarf scouringrush	5	Fern or Ally		
5	<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	northern reedgrass	1	Graminoid		
5	<i>Elymus violaceus</i>	Alaskan wheatgrass	1	Graminoid		
5	<i>Dasiphora fruticosa</i> ssp. <i>floribunda</i>	shrubby cinquefoil	20	Shrub		
5	<i>Linnaea borealis</i>	twinflower	20	Dwarf Shrub		
5	<i>Populus balsamifera</i>	balsam poplar	5	Tree		
5	<i>Picea glauca</i>	white spruce	8	Tree		
6	<i>Chamerion angustifolium</i>	fireweed	10	Forb	Litter	65
6	<i>Hedysarum alpinum</i>	alpine sweetvetch	20	Forb	Wood	5
6	<i>Orthilia secunda</i>	sidebells wintergreen	2	Forb	Hylocomium splendens (moss)	30
6	<i>Geocaulon lividum</i>	false toadflax	5	Forb		
6	<i>Gentianella propinqua</i>	fourpart dwarf gentian	t	Forb		
6	<i>Equisetum scirpoides</i>	dwarf scouringrush	2	Fern or Ally		
6	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid		
6	<i>Elymus violaceus</i>	Alaskan wheatgrass	1	Graminoid		
6	<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	northern reedgrass	2	Graminoid		
6	<i>Linnaea borealis</i>	twinflower	60	Dwarf Shrub		
6	<i>Populus balsamifera</i>	balsam poplar	5	Tree		
6	<i>Picea glauca</i>	white spruce	2	Tree		
7	<i>Hedysarum alpinum</i>	alpine sweetvetch	25	Forb	Litter	30
7	<i>Geocaulon lividum</i>	false toadflax	1	Forb	Wood	10
7	<i>Mertensia paniculata</i>	tall bluebells	1	Forb	Hylocomium splendens (moss)	60
7	<i>Equisetum scirpoides</i>	dwarf scouringrush	2	Fern or Ally		
7	<i>Trisetum spicatum</i>	spike trisetum	1	Graminoid		
7	<i>Carex concinna</i>	low northern sedge	t	Graminoid		
7	<i>Shepherdia canadensis</i>	russet buffaloberry	35	Shrub		
7	<i>Rosa acicularis</i>	prickly rose	25	Shrub		

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
7	<i>Linnaea borealis</i>	twinline	30	Dwarf Shrub		
7	<i>Populus balsamifera</i>	balsam poplar	5	Tree		
7	<i>Picea glauca</i>	white spruce	15	Tree		
8	<i>Chamerion angustifolium</i>	fireweed	5	Forb	Wood	20
8	<i>Geocaulon lividum</i>	false toadflax	2	Forb	Litter	30
8	<i>Hedysarum alpinum</i>	alpine sweetvetch	5	Forb	Hylocomium splendens (moss)	50
8	<i>Equisetum scirpoides</i>	dwarf scouringrush	1	Fern or Ally		
8	<i>Shepherdia canadensis</i>	russet buffaloberry	45	Shrub		
8	<i>Linnaea borealis</i>	twinline	30	Dwarf Shrub		
8	<i>Arctous rubra</i>	red fruit bearberry	1	Dwarf shrub		
9	<i>Platanthera obtusata</i>	bluntleaved orchid	1	Forb	Litter	38
9	<i>Chamerion angustifolium</i>	fireweed	2	Forb	Wood	2
9	<i>Moehringia lateriflora</i>	bluntleaf sandwort	t	Forb	Hylocomium splendens (moss)	60
9	<i>Hedysarum alpinum</i>	alpine sweetvetch	1	Forb		
9	<i>Equisetum scirpoides</i>	dwarf scouringrush	1	Fern or Ally		
9	<i>Carex concinna</i>	low northern sedge	1	Graminoid		
9	<i>Rosa acicularis</i>	prickly rose	2	Shrub		
9	<i>Shepherdia canadensis</i>	russet buffaloberry	1	Shrub		
9	<i>Linnaea borealis</i>	twinline	25	Dwarf Shrub		
9	<i>Populus balsamifera</i>	balsam poplar	2	Tree		
10	<i>Chamerion angustifolium</i>	fireweed	2	Forb	Litter	58
10	<i>Geocaulon lividum</i>	false toadflax	2	Forb	Wood	2
10	<i>Mertensia paniculata</i>	tall bluebells	1	Forb	Hylocomium splendens (moss)	40
10	<i>Equisetum scirpoides</i>	dwarf scouringrush	1	Fern or Ally		
10	<i>Elymus alaskanus</i> ssp. <i>hyperarcticus</i>	tundra wildrye	t	Graminoid		
10	<i>Rosa acicularis</i>	prickly rose	15	Shrub		
10	<i>Arctous rubra</i>	red fruit bearberry	60	Dwarf shrub		
10	<i>Linnaea borealis</i>	twinline	20	Dwarf Shrub		
10	<i>Picea glauca</i>	white spruce	2	Tree		
11	<i>Hedysarum alpinum</i>	alpine sweetvetch	25	Forb	Lichen, unidentified	5
11	<i>Chamerion angustifolium</i>	fireweed	5	Forb	Litter	25
11	<i>Geocaulon lividum</i>	false toadflax	2	Forb	Wood	5
11	<i>Orthilia secunda</i>	sidebells wintergreen	2	Forb	Hylocomium splendens (moss)	65
11	<i>Equisetum scirpoides</i>	dwarf scouringrush	2	Fern or Ally		
11	<i>Carex concinna</i>	low northern sedge	1	Graminoid		
11	<i>Rosa acicularis</i>	prickly rose	25	Shrub		
11	<i>Shepherdia canadensis</i>	russet buffaloberry	1	Shrub		
11	<i>Linnaea borealis</i>	twinline	20	Dwarf Shrub		
12	<i>Chamerion angustifolium</i>	fireweed	8	Forb	Litter	60



Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
12	Hedysarum alpinum	alpine sweetvetch	5	Forb	Lichen, unidentified	t
12	Orthilia secunda	sidebells wintergreen	1	Forb	Wood	5
12	Geocaulon lividum	false toadflax	t	Forb	Hylocomium splendens (moss)	35
12	Eurybia sibirica	arctic aster	2	Forb		
12	Elymus violaceus	Alaskan wheatgrass	t	Graminoid		
12	Shepherdia canadensis	russet buffaloberry	10	Shrub		
12	Linnaea borealis	twinflower	5	Dwarf Shrub		
13	Hedysarum alpinum	alpine sweetvetch	20	Forb	Lichen, unidentified	5
13	Geocaulon lividum	false toadflax	t	Forb	Litter	40
13	Chamerion angustifolium	fireweed	4	Forb	Hylocomium splendens (moss)	55
13	Gentianella propinqua	fourpart dwarf gentian	2	Forb		
13	Eurybia sibirica	arctic aster	1	Forb		
13	Equisetum scirpoides	dwarf scouringrush	1	Fern or Ally		
13	Elymus violaceus	Alaskan wheatgrass	1	Graminoid		
13	Rosa acicularis	prickly rose	2	Shrub		
13	Linnaea borealis	twinflower	15	Dwarf Shrub		
13	Picea glauca	white spruce	t	Tree		
14	Hedysarum alpinum	alpine sweetvetch	15	Forb	Litter	50
14	Geocaulon lividum	false toadflax	2	Forb	Hylocomium splendens (moss)	50
14	Orthilia secunda	sidebells wintergreen	1	Forb		
14	Chamerion angustifolium	fireweed	t	Forb		
14	Equisetum scirpoides	dwarf scouringrush	1	Fern or Ally		
14	Shepherdia canadensis	russet buffaloberry	45	Shrub		
15	Hedysarum alpinum	alpine sweetvetch	15	Forb	Litter	10
15	Orthilia secunda	sidebells wintergreen	2	Forb	Hylocomium splendens (moss)	90
15	Chamerion angustifolium	fireweed	2	Forb		
15	Equisetum scirpoides	dwarf scouringrush	t	Fern or Ally		

### ***Transect 9 – Cabin West***

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
0	Chamerion angustifolium	fireweed	1	Forb	Litter	50
0	Eurybia sibirica	arctic aster	2	Forb	Rubbish	20
0	Mertensia paniculata	tall bluebells	1	Forb	Bare	5
0	Equisetum scirpoides	dwarf scouringrush	1	Fern or Ally	Moss, unidentified	20
0	Calamagrostis canadensis	bluejoint	4	Graminoid	Hylocomium splendens (moss)	5
0	Elymus violaceus	Alaskan wheatgrass	2	Graminoid		
0	Rosa acicularis	prickly rose	4	Shrub		
1	Eurybia sibirica	arctic aster	20	Forb	Moss, unidentified	25

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
1	Chamerion angustifolium	fireweed	2	Forb	Litter	50
1	Equisetum scirpoides	dwarf scouringrush	2	Fern or Ally	Bare	25
1	Poa interior	inland bluegrass	4	Graminoid		
1	Elymus violaceus	Alaskan wheatgrass	20	Graminoid		
1	Populus balsamifera	balsam poplar	2	Tree		
2	Gentianella propinqua	fourpart dwarf gentian	1	Forb	Moss, unidentified	60
2	Eurybia sibirica	arctic aster	1	Forb	Litter	40
2	Equisetum scirpoides	dwarf scouringrush	1	Fern or Ally		
2	Carex concinna	low northern sedge	20	Graminoid		
2	Elymus violaceus	Alaskan wheatgrass	15	Graminoid		
2	Poa interior	inland bluegrass	10	Graminoid		
2	Dasiphora fruticosa ssp. floribunda	shrubby cinquefoil	4	Shrub		
2	Rosa acicularis	prickly rose	1	Shrub		
2	Populus balsamifera	balsam poplar	1	Tree		
3	Gentianella propinqua	fourpart dwarf gentian	2	Forb	Moss, unidentified	55
3	Mertensia paniculata	tall bluebells	2	Forb	Litter	40
3	Eurybia sibirica	arctic aster	4	Forb	Wood	5
3	Chamerion angustifolium	fireweed	1	Forb		
3	Descurainia sophioides	northern tansymustard	t	Forb		
3	Equisetum scirpoides	dwarf scouringrush	1	Fern or Ally		
3	Trisetum spicatum	spike trisetum	10	Graminoid		
3	Poa interior	inland bluegrass	5	Graminoid		
3	Elymus violaceus	Alaskan wheatgrass	5	Graminoid		
3	Carex concinna	low northern sedge	20	Graminoid		
3	Rosa acicularis	prickly rose	8	Shrub		
4	Mertensia paniculata	tall bluebells	15	Forb	Litter	95
4	Hedysarum alpinum	alpine sweetvetch	8	Forb	Moss, unidentified	5
4	Taraxacum ceratophorum	common dandelion	2	Forb		
4	Gentianella propinqua	fourpart dwarf gentian	1	Forb		
4	Moehringia lateriflora	bluntleaf sandwort	t	Forb		
4	Equisetum scirpoides	dwarf scouringrush	t	Fern or Ally		
4	Calamagrostis canadensis	bluejoint	20	Graminoid		
4	Elymus macrourus	tufted wheatgrass	2	Graminoid		
4	Trisetum spicatum	spike trisetum	1	Graminoid		
4	Carex concinna	low northern sedge	25	Graminoid		
4	Rosa acicularis	prickly rose	10	Shrub		
4	Linnaea borealis	twinflower	15	Dwarf Shrub		
5	Hedysarum alpinum	alpine sweetvetch	15	Forb	Litter	90
5	Chamerion angustifolium	fireweed	5	Forb	Moss, unidentified	9

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
5	<i>Mertensia paniculata</i>	tall bluebells	20	Forb	Hylocomium splendens (moss)	1
5	<i>Pyrola grandiflora</i>	largeflowered wintergreen	1	Forb		
5	<i>Eurybia sibirica</i>	arctic aster	1	Forb		
5	<i>Botrychium neolunaria</i>	grapefern	t	Fern or ally		
5	<i>Equisetum scirpoides</i>	dwarf scouringrush	t	Fern or Ally		
5	<i>Calamagrostis canadensis</i>	bluejoint	10	Graminoid		
5	<i>Elymus macrourus</i>	tufted wheatgrass	2	Graminoid		
5	<i>Poa interior</i>	inland bluegrass	10	Graminoid		
5	<i>Rosa acicularis</i>	prickly rose	20	Shrub		
5	<i>Linnaea borealis</i>	twinner	20	Dwarf Shrub		
6	<i>Chamerion angustifolium</i>	fireweed	15	Forb	Litter	95
6	<i>Mertensia paniculata</i>	tall bluebells	15	Forb	Moss, unidentified	3
6	<i>Moehringia lateriflora</i>	bluntleaf sandwort	t	Forb	Hylocomium splendens (moss)	2
6	<i>Anemone parviflora</i>	smallflowered anemone	1	Forb		
6	<i>Geocaulon lividum</i>	false toadflax	2	Forb		
6	<i>Eurybia sibirica</i>	arctic aster	2	Forb		
6	<i>Calamagrostis canadensis</i>	bluejoint	20	Graminoid		
6	<i>Rosa acicularis</i>	prickly rose	5	Shrub		
6	<i>Linnaea borealis</i>	twinner	1	Dwarf Shrub		
7	<i>Geocaulon lividum</i>	false toadflax	5	Forb	Litter	90
7	<i>Eurybia sibirica</i>	arctic aster	5	Forb	Moss, unidentified	10
7	<i>Chamerion angustifolium</i>	fireweed	15	Forb	Lichen, unidentified	t
7	<i>Mertensia paniculata</i>	tall bluebells	5	Forb		
7	<i>Hedysarum alpinum</i>	alpine sweetvetch	5	Forb		
7	<i>Orthilia secunda</i>	sidebells wintergreen	1	Forb		
7	<i>Moehringia lateriflora</i>	bluntleaf sandwort	t	Forb		
7	<i>Pyrola grandiflora</i>	largeflowered wintergreen	1	Forb		
7	<i>Equisetum scirpoides</i>	dwarf scouringrush	t	Fern or Ally		
7	<i>Calamagrostis canadensis</i>	bluejoint	5	Graminoid		
7	<i>Elymus macrourus</i>	tufted wheatgrass	2	Graminoid		
7	<i>Rosa acicularis</i>	prickly rose	20	Shrub		
7	<i>Arctous rubra</i>	red fruit bearberry	15	Dwarf shrub		
7	<i>Linnaea borealis</i>	twinner	1	Dwarf Shrub		
8	<i>Chamerion angustifolium</i>	fireweed	5	Forb	Litter	80
8	<i>Mertensia paniculata</i>	tall bluebells	10	Forb	Lichen, unidentified	t
8	<i>Pyrola grandiflora</i>	largeflowered wintergreen	10	Forb	Hylocomium splendens (moss)	20
8	<i>Geocaulon lividum</i>	false toadflax	1	Forb		
8	<i>Hedysarum alpinum</i>	alpine sweetvetch	1	Forb		
8	<i>Orthilia secunda</i>	sidebells wintergreen	t	Forb		

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
8	Eurybia sibirica	arctic aster	1	Forb		
8	Equisetum scirpoides	dwarf scouringrush	t	Fern or Ally		
8	Poa interior	inland bluegrass	t	Graminoid		
8	Elymus macrourus	tufted wheatgrass	t	Graminoid		
8	Rosa acicularis	prickly rose	20	Shrub		
8	Arctous rubra	red fruit bearberry	1	Dwarf shrub		
8	Linnaea borealis	twinner	2	Dwarf Shrub		
8	Picea glauca	white spruce	15	Tree		
8	Populus balsamifera	balsam poplar	1	Tree		
9	Mertensia paniculata	tall bluebells	20	Forb	Litter	80
9	Pyrola grandiflora	largeflowered wintergreen	20	Forb	Moss, unidentified	10
9	Orthilia secunda	sidebells wintergreen	2	Forb	Hylocomium splendens (moss)	10
9	Geocaulon lividum	false toadflax	3	Forb		
9	Eurybia sibirica	arctic aster	1	Forb		
9	Equisetum scirpoides	dwarf scouringrush	1	Fern or Ally		
9	Rosa acicularis	prickly rose	15	Shrub		
9	Linnaea borealis	twinner	2	Dwarf Shrub		
9	Arctous rubra	red fruit bearberry	5	Dwarf shrub		
9	Picea glauca	white spruce	30	Tree		
10	Mertensia paniculata	tall bluebells	20	Forb	Litter	80
10	Chamerion angustifolium	fireweed	15	Forb	Moss, unidentified	20
10	Geocaulon lividum	false toadflax	10	Forb	Lichen, unidentified	t
10	Orthilia secunda	sidebells wintergreen	1	Forb		
10	Pyrola grandiflora	largeflowered wintergreen	5	Forb		
10	Equisetum scirpoides	dwarf scouringrush	t	Fern or Ally		
10	Rosa acicularis	prickly rose	10	Shrub		
10	Arctous rubra	red fruit bearberry	35	Dwarf shrub		
10	Linnaea borealis	twinner	5	Dwarf Shrub		
11	Pyrola grandiflora	largeflowered wintergreen	20	Forb	Litter	78
11	Orthilia secunda	sidebells wintergreen	1	Forb	Lichen, unidentified	2
11	Mertensia paniculata	tall bluebells	1	Forb	Hylocomium splendens (moss)	20
11	Chamerion angustifolium	fireweed	2	Forb		
11	Equisetum scirpoides	dwarf scouringrush	t	Fern or Ally		
11	Poa interior	inland bluegrass	t	Graminoid		
11	Rosa acicularis	prickly rose	10	Shrub		
11	Linnaea borealis	twinner	2	Dwarf Shrub		
11	Picea glauca	white spruce	t	Tree		
12	Mertensia paniculata	tall bluebells	5	Forb	Litter	70
12	Chamerion angustifolium	fireweed	2	Forb	Hylocomium splendens (moss)	30

Meter	Scientific name	Common name	% Cover	Growth habit	Ground cover	% Cover
12	<i>Pyrola grandiflora</i>	largeflowered wintergreen	5	Forb		
12	<i>Equisetum scirpoides</i>	dwarf scouringrush	t	Fern or Ally		
12	<i>Trisetum spicatum</i>	spike trisetum	2	Graminoid		
12	<i>Rubus idaeus</i>	American red raspberry	1	Shrub		
12	<i>Linnaea borealis</i>	twinner	40	Dwarf Shrub		
12	<i>Arctous rubra</i>	red fruit bearberry	25	Dwarf shrub		
12	<i>Picea glauca</i>	white spruce	2	Tree		
13	<i>Chamerion angustifolium</i>	fireweed	4	Forb	Litter	70
13	<i>Mertensia paniculata</i>	tall bluebells	2	Forb	Moss, unidentified	30
13	<i>Orthilia secunda</i>	sidebells wintergreen	2	Forb		
13	<i>Hedysarum alpinum</i>	alpine sweetvetch	1	Forb		
13	<i>Lycopodium annotinum</i>	stiff clubmoss	1	Fern or Ally		
13	<i>Equisetum scirpoides</i>	dwarf scouringrush	t	Fern or Ally		
13	<i>Poa interior</i>	inland bluegrass	t	Graminoid		
13	<i>Trisetum spicatum</i>	spike trisetum	4	Graminoid		
13	<i>Rosa acicularis</i>	prickly rose	2	Shrub		
13	<i>Arctous rubra</i>	red fruit bearberry	25	Dwarf shrub		
13	<i>Linnaea borealis</i>	twinner	30	Dwarf Shrub		
14	<i>Mertensia paniculata</i>	tall bluebells	15	Forb	Litter	20
14	<i>Chamerion angustifolium</i>	fireweed	15	Forb	Hylocomium splendens (moss)	80
14	<i>Hedysarum alpinum</i>	alpine sweetvetch	4	Forb		
14	<i>Geocaulon lividum</i>	false toadflax	1	Forb		
14	<i>Equisetum scirpoides</i>	dwarf scouringrush	t	Fern or Ally		
14	<i>Rosa acicularis</i>	prickly rose	10	Shrub		
14	<i>Arctous rubra</i>	red fruit bearberry	60	Dwarf shrub		
14	<i>Linnaea borealis</i>	twinner	40	Dwarf Shrub		
15	<i>Chamerion angustifolium</i>	fireweed	20	Forb	Lichen, unidentified	2
15	<i>Mertensia paniculata</i>	tall bluebells	10	Forb	Wood	15
15	<i>Orthilia secunda</i>	sidebells wintergreen	2	Forb	Litter	28
15	<i>Equisetum scirpoides</i>	dwarf scouringrush	t	Fern or Ally	Hylocomium splendens (moss)	55
15	<i>Poa interior</i>	inland bluegrass	10	Graminoid		
15	<i>Carex concinna</i>	low northern sedge	2	Graminoid		
15	<i>Rosa acicularis</i>	prickly rose	10	Shrub		
15	<i>Arctous rubra</i>	red fruit bearberry	50	Dwarf shrub		
15	<i>Linnaea borealis</i>	twinner	30	Dwarf Shrub		