BIOMONITORING OF VEGETATION AND BROWN-HEADED COWBIRDS IN THE SKAGIT VALLEY PROVINCIAL PARK



Prepared for: Skagit Environmental Endowment Commission

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Cover Photograph: Panoramic view of the Skagit Valley Provincial Park taken from Skyline Trail on Nepopekum Mountain.

SUMMARY

During the period of this survey it was demonstrated that populations of Brown-headed Cowbirds are at low levels in the 5 kilometer radius surrounding Whitworth Forest horse camp. In addition, the spread of alien plant species is also at low levels outside of roadways and other heavily disturbed areas.

Research into the experiences of other wilderness areas, and reviews of scientific literature into the habits of Cowbirds, point to the fact that an increase in both alien plant and Cowbird activity could be expected in the Whitworth horse camp and in areas adjacent to the horse trail corridors.

Based on the experiences of other managers and organizations in regard to these issues, a number of actions have been outlined in the recommendations section of this document.

In brief these can be summarized as:

- 1. Educate users of the park to be sensitive to the environment;
- 2. Mitigate opportunities for alien plant species invasion and Cowbird proliferation through regulation and monitoring;
- 3. Explicitly protect areas having a high degree of sensitivity and monitor and control alien plant species designated as alien species of greatest concern.

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1 INTRODUCTION

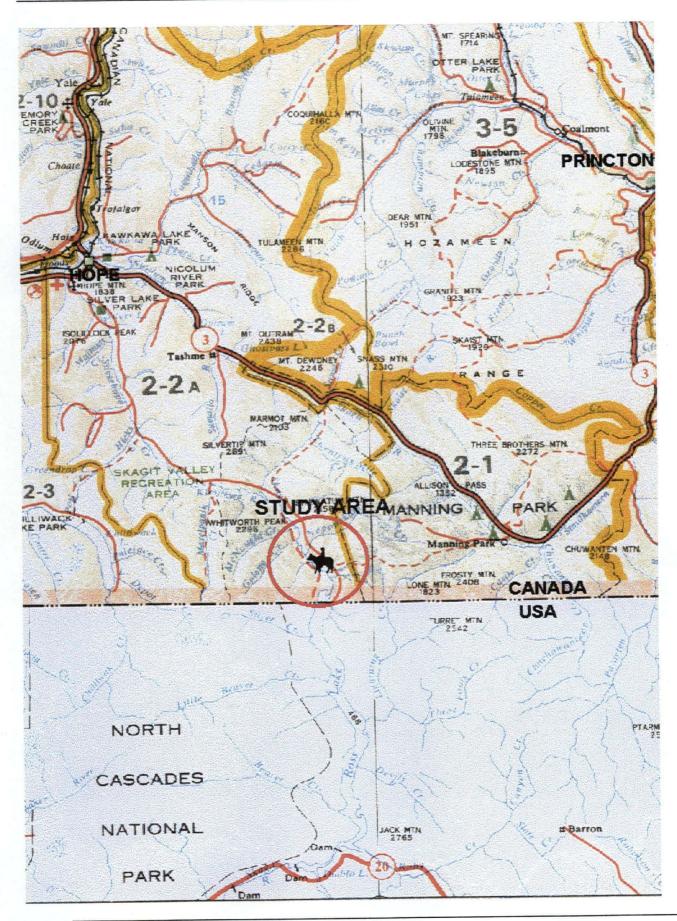
This study provides baseline data on the status of alien plant species and Brown-headed Cowbird and passerine species within a five-kilometer radius of the Skagit Valley horse camp, located at Whitworth Forest in the Skagit Valley Provincial Park. Road access to the Skagit Valley Provincial Park is located 3 kilometers west of Hope, B.C., just off of Highway #1 (Exit 168) on the Silver/Skagit Road. The park entrance begins approximately 37 kilometers south of Highway #1 and extends another 23 kilometers south to the Ross Lake Reservoir and the International border (See Fig. 1, Site Location).

The purpose of this study is to monitor any impact as the result of introducing horse recreation into the Skagit Valley Provincial Park, and in particular, to monitor the possible introduction and spread of alien plant species and the Brown-headed Cowbird, both of which are associated with horses and pack animals.

An avian survey of passerine species and Brown-headed Cowbird presence was conducted. Vegetation plots were established in areas susceptible to alien weed invasion.

The vegetation species lists compiled from the plot surveys, and included as an appendix to this report, cannot be considered comprehensive but do constitute valid samples upon which to base general conclusions. Future monitoring of these vegetation plots will provide the basis for evaluating long-term impact on the area. For species name-identification we have followed Plants of Coastal British Columbia (Pojar and Mackinnon) and Plants of Southern Interior British Columbia, (Parrish, Coupe, Lloyd).

During this project B.C. Area Supervisor Jim Wiebe provided information on current park use. Ranger Allan Westhaver of Jasper National Park was interviewed for his extensive field experience of horse activities and impact in that park. Don Lockerton, an Environmental Assessor at the Alberta Ministry of the Environment was also interviewed and gave detailed management and impact information on horse recreation at Kananaskis Country in Alberta. Dr. Bruce Leeson of the University of Calgary pointed us to relevant research for this project.



2 PROJECT GOALS AND OBJECTIVES

2.1 Goals

The goal of this project is to obtain baseline data on plant, Brown-headed Cowbird and passerine species prior to the introduction of horses to the Skagit Valley Provincial Park. This study will give the commission and BC Parks a document that will enable land-use decisions to be made in regard to:

- a) preserving sensitive plant communities from the potential invasion of weedy introduced plant species, and;
- b) maintaining ecological diversity so as to conserve songbird habitat.

This research provides a snapshot of bio-diversity in the region surrounding the Whitworth Forest Horse Corral. In addition, ecologically sensitive areas are identified. This information will aid resource management efforts during the planning of future park facilities and horse trails.

2.2 Objectives

As the project has two parts, one concerning vegetation and the other bird diversity, two sets of objectives are identified.

The objectives of the vegetation inventory were:

- 1. Collect and present baseline data by compiling a comprehensive list of vegetation, including alien and indigenous species, occurring within a five-kilometer radius of the horse camp:
- 2. Identify special habitat types such as wetlands, riparian zones, unique transitional sites and old growth forests that may be sensitive to the introduction of non-indigenous vegetation and/or severely impacted by horses or pack animals.

The objectives of the bird inventory and nest searches were:

- 1. Collect and present baseline data regarding songbird diversity within a five kilometer radius of the horse camp;
- 2. Discover which, if any, species are being parasitized by Brown-headed Cowbirds and at what rate.

In addition, both segments of the study shared the following tertiary objectives:

- 1. To recommend positive initiatives to minimize effects on environmentally sensitive features and songbird populations found within the study area;
- 2. To compile and complete a document of use for research, stewardship and educational purposes.

3 SCOPE

This survey of vegetation and Brown-headed Cowbird parasitism/songbird diversity was funded by the Skagit Environmental Endowment Commission (SEEC). The survey was conducted within a five-kilometer radius centered on the Whitworth Forest Horse Corral (see Fig. 2). This project meets the mission and goals of SEEC by providing an educational and research resource for studies of the park environment. In addition, this study helps sustain the biological integrity of the watershed by providing information useful in planning and developing horse-riding and other recreational opportunities with an eye to the stewardship of the region.

Four phases were conducted for this project during the period March 1999 to March 2000:

- 1. Research relevant scientific reports and archival information reviewed; interviews with experts and field personnel conducted;
- 2. Field Surveys vegetation and songbird surveys were undertaken; environmentally sensitive areas were identified;

A survey boundary with a 5 kilometer radius from the horse camp was established for the avian and vegetation studies and is identified on Figures 2.0 and 3.0.

4 BACKGROUND

Horse recreation has a long history in the public park systems of Canada and the United States. The Whitworth Forest Horse Camp was designed to provide recreational opportunities for horse riders within the Skagit Valley where historic horse usage is in evidence by the Skagit, Whatcom, Skyline and Dewdney trails. With the cooperation of Skagit Environmental Endowment Commission (SEEC) and BC Parks, the Backcountry Horsemen of B.C. completed construction of a horse corral/campsite at Whitworth Forest in the Skagit Valley Provincial Park in the fall of 1998 (see Fig. 2 for location of camp). Previous to the building of the Whitworth facility, use by riders was limited by the lack of an appropriate camp.

The corral development consists of ten 24' x 12' campsites with drive-through parking for horsetrailers, and each site is adjacent to a horse corral divided into two 12' x 12' stalls. A 24' highline nearby permits horses to graze outside of their corrals. The site began operation on May 15, 1999 and closed again for the season Oct 11, 1999. During this period there were an estimated 60 paid site visits, most of one or two nights, and approximately 120 horses and pack mules were lodged over this period.

Over time comes the expectation that riders will come to the park for week-end and longer rides in the area, expanding territorial reach from what is currently day-trips. Volume of visitors is also expected to climb as awareness of the facility grows. Riders from all over B.C., the rest of Canada, and the United States (as connecting trails lead into the U.S. system) are expected to be users of the facility. A 1994 study by the Province of British Columbia estimated 26,000 horses were kept in B.C. alone by recreational users.

Risks to habitat come in two forms:

- 1. The physical presence of horses in the park creates greater impact on soil and vegetation;
- 2. Horses and pack animals and their feed act as a vector for spreading alien plants and are associated with Brown-headed Cowbirds.

4.1 Potential Impact on Habitat

In terms of soil and vegetation impact, studies have shown that horse hooves puncture the surface of the soil causing erosion. This leads to quagmires and muddy areas as subsurface soil tends to become compacted (Widnerand & Marion, 1993/4). Streams and creeks are vulnerable to siltation. Horse hooves have also been shown to cause permanent damage to plants as the hooves tend to cut plants off at the roots (Nagy & Scotter, 1974). According to interviews with rangers at Jasper National Park and personnel at Kananaskis Country in Alberta, areas of particular risk have been shown to be low-lying moist areas, meadows and areas where over-nighting occurs. In the Skagit Valley Provincial Park, this would mean that Chittenden and Whitworth Meadows, all alpine meadows, wetland and riparian zones and horse camp areas would be areas of particular risk.

4.2 Potential Impact of Horses and Feed

Non-indigenous plant species that would not naturally occur in the valley may be brought into the park from vehicles, horse bedding, feeds, contents of horses' stomachs and on horse hooves. Alien species have the potential to colonize a variety of habitats and choke out indigenous vegetation. The Canadian Nature Federation reports that the greatest stress to national parks are the tourist facilities and the second most frequently reported stress is the introduction of alien plant species. In Jasper National Park, it is reported that alien plant

species in wilderness areas are associated with horse trail corridors and horse camps (Appendix G, Photo A).

Also reported along horse trail corridors is an increase in Brown-headed Cowbird activity. In addition, areas where horses are lodged provide shelter and food for Cowbirds in the form of spilled feed and undigested seeds in manure. (Skutch, <u>Orioles, Blackbirds and their kin,</u> 1996)

In order to monitor these potential risks, and thereby to provide information to ameliorate them, the following survey of plant and songbird activity in the area of study was completed.

As this study has two distinct parts, for the convenience of the reader the rest of this report is divided into sections dealing with plant and avian surveys separately.

5 AVIAN SURVEY

5.1 Avian Survey Background

The Brown-headed Cowbird (*Molothrus ater*) has had an amazing population explosion and range expansion from its home in the Great Plains. This parasitic bird locates the nests of suitable hosts, usually destroys the host eggs, and lays her own egg in the nest, leaving the host bird to raise the Cowbird nestling. A female Brown-headed Cowbird can lay 40 eggs per year and is adapted to take advantage of a continuous supply of host nests for the two-month breeding period (Ehrlick, Dobkin, Wheye, 1988). In an area of broad songbird diversity the Cowbird significantly alters host community demography (Arcese, Smith, Hatch, 1995) and can drive some vulnerable species to extinction with no effect on its own population, as it will simply move to other hosts (Grzybowski, Pease, 1999).

The Brown-headed Cowbird is already found within the Skagit Valley in low numbers. Its spread is attributed to its affinity for sites where there are horses and cows, as such areas supply ready feeding opportunities for dispersing young. At E.C. Manning Provincial Park, and Jasper National Park juvenile Cowbirds have been observed congregating at horse camps (Appendix G, Photo B). The Cowbird has the potential to become sufficiently numerous to pose a threat to the neo-tropical migrants that utilize the Skagit Valley for breeding habitat, such as warblers and vireos, as well as local species, such as juncos and sparrows. A reduction in avian diversity would not only have a negative effect on the biological diversity of the area but would also disappoint the many visitors to the park who come for the wildlife viewing opportunities. By identifying current species in the area possible demographic changes as a result of Cowbird activity can be monitored.

Also, a preferred host of the Cowbird, the Chipping Sparrow, breeds at Whitworth Meadow and Chittenden Meadow. This is noteworthy as this is a songbird found rarely outside the interior of B.C., and it is particularly affected by Cowbird activity. Appendix A contains a list

of all avian species observed within the 5 km radius study area and denotes species that are preferred Cowbird hosts (Ehrlich *et al* 1988). Appendix B contains a complete bird checklist for the entire park.

5.2 Avian Survey - Methodology

Brown-headed Cowbirds, the species of concern in this study, are migratory. The avian field survey was conducted from April 30/99 to July 28/99 during peak Cowbird activity.

A main transect was conducted along the Silver-Skagit Road. This road winds for approximately 11 kilometers through the study area (5 km radius). The road created open edge habitat preferred by this species, cut longitudinally through the study area, and transected different habitat types in the park. All birds observed or heard during the study were recorded. Two observers spent a total of 17 days at the park specifically on the avian survey.

Numbers of individual male and female Cowbirds or songbirds reported were the highest number observed simultaneously during each stop. Survey techniques employed wherein sightings of Cowbird and other species were recorded include:

- 1) On each site visit, a main transect was conducted along 11 km of the Silver-Skagit Road from the 5 km radius boundary to the boat launch point at Ross Lake. Two observers would stop at random 1km intervals along the Silver-Skagit Road transect from the park entrance to the boat launch point, turn off the vehicle engine and for ten minutes note characteristic calls and/or visual sightings of species of concern;
- 2) Random transects were conducted in open habitat at Chittenden Meadows, Whitworth Meadows. As this grassland/shrub habitat represents a rare habitat in B.C. and contains species that are known preferred hosts of the Cowbird all species observed were recorded;
- 3) During the breeding season, two observers spent a total of 40 hours in the field scouting nest locations of song birds and evidence of parasitism by Cowbirds;
- 4) During other procedures and visits to the area of the survey any incidental sightings of Cowbirds were recorded.

5.3 Avian Survey - Results

During the survey, the highest number of Brown-headed Cowbirds typically observed at any one time in the Skagit Valley Provincial Park throughout May and June1999 consisted of 6 females and 8 males. A one-time observation of a flock of 14 male Cowbirds was recorded on July 14/1999 across the international boundary on the shoreline of the Ross Lake Reservoir. Due to the distance of this observation and the difficulty in attaining positive

species identification, it is possible that this flock may have been a mixed flock of Cowbirds and blackbirds. ⁻ The specific dates and locations of all Brown-headed Cowbird observations are listed in Appendix C.

Consistent high numbers of Brown-headed Cowbirds were located repeatedly at the Ross Lake boat launch point where Cowbirds would congregate at dawn. These birds would fly from the north (Ross Lake Campground area) to the point. The consistent observation of high Cowbird numbers at the point indicates that the Cowbirds had a communal night-roost within the vicinity of the campground.

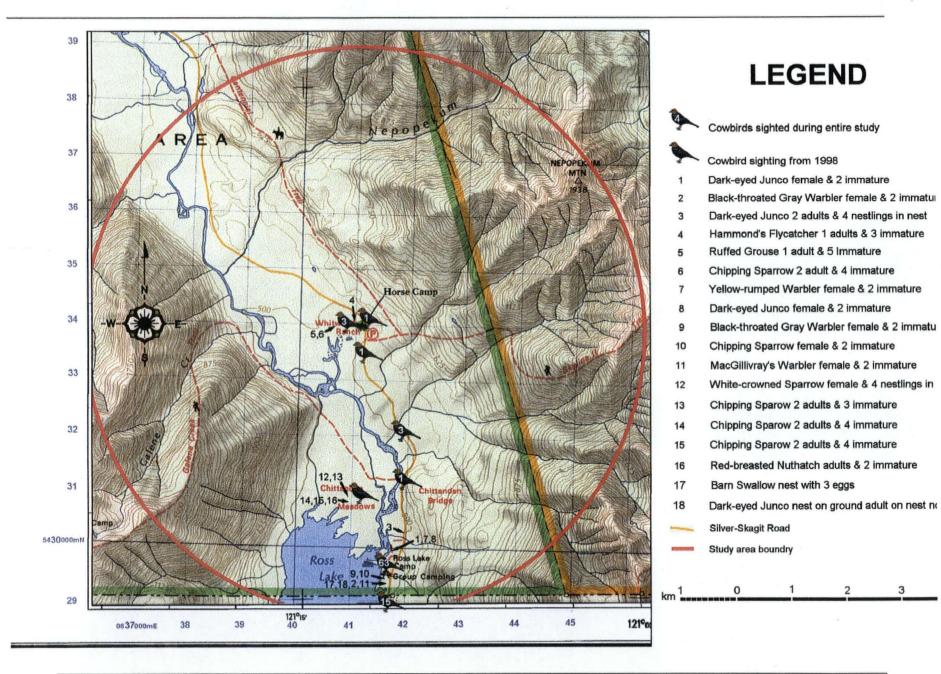
During the survey, eighteen songbird nests containing eggs or young and/or adults rearing fledgling immature birds were located on the study transects. No Cowbird parasitism was evident in the nest sites or where adult passerines were located with immatures. The approximate location of bird nests and adult birds with fledglings can be found on Figure 2. A complete list of all avian species observed in the 5 km radius study area is included in Appendix A.

One of the significant findings of this survey is that Brown-headed Cowbirds were not found to be congregating at the newly opened horse camp. Low numbers of Cowbird sightings at the horse camp gives the impression that the camp, which opened in the spring of 1999, was not attracting Cowbirds. Lack of Cowbird activity at the horse camp may be due to the fact that there was very little use of the horse camp until the fall of 1999, and the camp was very clean of any trace of manure or seed. Early in the summer, the only horse droppings located were on a trail in Whitworth Meadows where horse recreation was not permitted.

Other Brown-headed Cowbird sightings of interest include: Cowbirds at Ross Lake (Chittenden Meadow) on June 21/99 (4 males and 6 females); a pair perched in a tree on May 26/99 in Whitworth Meadows; one observation in Whitworth Meadow June 21/99 and an aural observation at the Horse Camp itself on May 19/99. To illustrate the frequency of Brown-headed Cowbird habitat use, the following Figure 2.0 indicates the approximate locations for the accumulated total number of all Brown-headed Cowbirds observed during the entire survey. Figure 2.0 also contains information on passerine observations from the breeding bird survey that was conducted along the Cowbird transects.

A preferred host of the Cowbird, the Chipping sparrow, was seen on more than one occasion at Whitworth Meadow and at Chittenden Meadow. This is noteworthy as this songbird is rarely found outside the interior of B.C., and is particularly affected by Cowbird activity. Avian species that are preferred hosts of the Brown-headed Cowbird have been noted in Appendix A (Ehrlich, Dobkin & Wheye, 1988).

FIGURE 2 ACCUMULATED COWBIRD SIGHTINGS & BREEDING BIRD SURVEY



5.4 Avian Survey - Discussion

Currently Brown-headed Cowbird activity within the survey area is minimal. This is borne out by the low numbers of Cowbirds observed during the survey period. The Cowbird is noted for its fearlessness in the face of human activity and is quite active during their extended laying period so a lack of observations in an otherwise abundant avian community is a good indication of current low numbers.

At other provincial and national park locations a correlational effect has been observed between horse camps and Cowbird activity. No causal link could be confirmed during this survey, as the Whitworth Forest horse camp was not active until the late summer/fall of 1999. The lack of Cowbird activity at the Whitworth Forest camp may also be due to the cleanliness of the horse camp and the lack of spilt seed or horse manure in the 1999 season.

6 VEGETATION SURVEY

6.1 Vegetation Survey Background

The Skagit Valley is notable as a transition zone between coastal and interior ranges. Many plant and animal species found here are at the edge of their range, and as a result, a unique merging of ecosystems has developed. Significant rain shadows provide another element to the environmental mix.

Whitworth Forest Horse Camp, and most of the survey area lies within the Interior Douglas-fir Wet, Warm Biogeoclimatic (IDFww) subzone. Douglas-fir is the most common species of tree in the canopy of this subzone. Secondary tree species include western redcedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), black cottonwood (*Populus balsamifera*), ponderosa pine (*Pinus ponderosa*), and lodgepole pine (*Pinus contorta*). Plants common in the shrub layer include dull Oregon grape (*Mahonia nervosa*), falsebox (*Paxistima myrsinites*), kinnickinnick (*Arctostaphylos uvaursis*), twinflower (*Linnaea borealis*), and Pacific *rhododendron* (*Rhododendron macrophyllum*). The herb layer typically contains queen's cup (*Clintonia uniflora*), rattlesnake plantain (*Goodyera oblongifolia*), bunchberry (*Cornus canadensis*), wild strawberry (*Fragaria virginiana*), and may often be sparse. Step moss (*Hylocomium splendens*) and red-stemmed feather moss (*Pleurozium schreberi*) are common in the moss layer.

On the eastern edge of the survey area is a region of Engelman Spruce –Subalpine Fir moist warm Biogeoclimactic (ESSFmw) subzone. Engelmann spruce is the most common tree species. The shrub layer typically contains Black huckleberry (Vaccinium membranaceum, V. ovalifium), White flowered Rhododendron (Rhododendron albiflorum) and Black Gooseberry (Ribes parviflorus). The herb layer is dominated by

Rosy Twisted Stalk (*Streptopus roseus*), and Oak Fern (*Gymnocarpus dryopteris*). Red-stemmed feather moss (*Pleurozium schreberi*) is common in the moss layer.

Along the road and other disturbed areas weeds are now present. Some control effort is underway through the North Cascades National Park (Appendix D), and some of these efforts extend into the Skagit Valley Provincial Park. There is no "Master Plan" for this activity and a campaign to hand-pull weed species is conducted largely by volunteers. Because of these factors, plot surveys were not conducted along the Silver-Skagit roadside.

6.2 Vegetation Survey - Methodology

Forty-four sites in total were surveyed proximate to the following locations:

- 8 sites at the Whitworth Forest Horse Camp
- 10 sites along Skyline trail
- 14 sites along Centennial trail
- 6 sites at Whitworth meadow
- 6 sites at Chittenden meadow.

Horseback recreation is permitted at the Whitworth Forest horse camp, Skyline Trail and Centennial Trail. Horseback recreation is not permitted in Whitworth Meadows or Chittenden Meadows. Due to the close proximity of Whitworth Meadows to the horse camp and evidence of recent horse use (manure) in the meadow, Chittenden Meadow was chosen as a control for this survey, and possibly for future data, as horses are not allowed in this area.

The vegetative survey was conducted between June 16/99 – October 27/99. Areas under dense forested canopies were not selected for plot surveys as shrub and herbaceous vegetation is minimal or absent in these conditions. Therefore site plots were selected in open and/or wet areas. Survey plots were circular and measure 4m in diameter. Generally two sample plots were taken at each stop. The center of the first plot was on the right side of the trail, leading away from the horse camp. The center of the second plot, which was 10 meters from the first plot was in the center of the trail. The center of the first plot in these pairs was physically marked with a lettered (A-Z) iron peg driven into the ground (Appendix G, Photo C). Further, both plots were oriented with a Global Positioning System and this position is indicated by the UTM-NAD 27 (Universal Transverse Mercator Grid) coordinates listed on the original data sheets in Appendix E. For map of UTM coordinates and vegetation plot locations refer to Fig. 3.

The vegetation description forms used in this survey are located in Appendix E. All plant species in the plots were recorded along with a percentage representing their percent coverage within the shrub and herbaceous stratums (Appendix G, Photo D). Cover percentages are estimates of the surface area covered by the indicated species

within the circle. Due to vegetative layering (stratum) within the circle percentages do not add up to 100%. Large trees (caliper >10 cm dbh – diameter at breast height) were noted but excluded from plot percentages due to the survey focus on weed invasion in the shrub/herb stratum. Common species were identified on site, unknown species were sampled and keyed out at camp by referring to "The Vascular Plants of B.C.", Vol. 1-4, (MOF 1989).

6.3 Vegetation Survey - Results

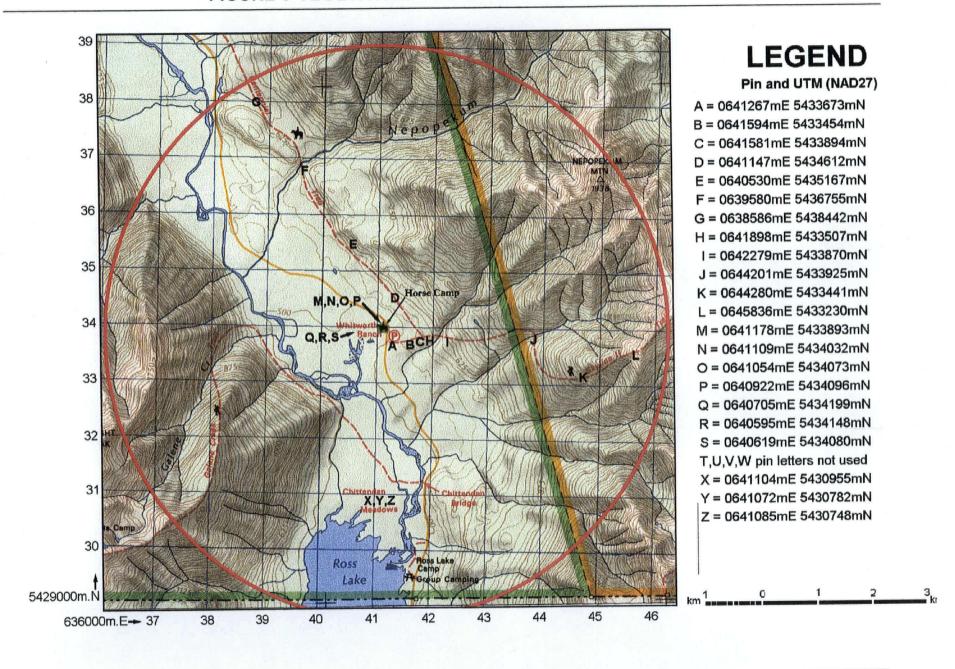
Alien plant species within the project area were observed to be most abundant in disturbed areas such as Ross Lake Campground and picnic area, Silver-Skagit roadside and at entrance to the horse camp, which has been recently disturbed by camp construction (Appendix G, Photo E & F). While conducting the vegetation plot surveys, it was observed that no alien plant species are currently in evidence on the new trail that leads from the horse camp to the heads of the Skyline and Centennial trails. Although in relatively natural states, Whitworth and Chittenden Meadows did contain some alien weed species. Alien plant species were only observed at the start of both the Centennial (at 26 Mile Bridge and east of the horse camp) and Skyline Trails. Only one weed species, Canada thistle, was noted further along in one location on the Skyline Trial.

Baseline information collected at each vegetation sample plot and current plant species with percent coverage were recorded on data forms in Appendix D. The majority of the sample plots along trails where horse recreation has been recently introduced did not contain alien weed species. Sample plots at Whitworth and Chittenden Meadow did contain a few non-indigenous plant species. Figure 3 outlines the locations of these plots. As well, a complete list of alien weed species and their associated habitat types (Knopp 2000) located in the Skagit Valley Provincial Park has been complied in Appendix F.

6.4 Vegetative Survey - Discussion

Future visits to the sample vegetation plots can be used to track the advance, if any, of alien plant species and to monitor their possible spread along horse activity corridors. Although not scientifically rigorous, it is nonetheless possible, and indeed easy to conduct an informal survey of the new trail that leads from the horse camp to the start of the Centennial trailhead to determine if alien species are spreading along this corridor. Informal observational notes on the evolution of this area will be maintained.

FIGURE 3 VEGETATION PLOTS AND UTM LOCATION



7 DISCUSSION

The baseline data collected indicates that levels of alien weed invasion and Cowbird activity in the project area are currently low. Based on the experiences of other parks, where horses have been introduced or have long traditions, this situation may change with indications pointing to higher levels of both weeds and Cowbird activity.

A number of incidents and observations made during the course of the study are noteworthy in that they demonstrate how challenging future stewardship will be.

During this survey, horse excrement and tracks were found in two locations, well away from the designated horse trail, in the unnamed creek that crosses the Skyline Trail. Obviously this type of activity is damaging to water quality but this concern is highlighted by the fact the creek is known habitat for blue-listed tailed frog larvae (Ascaphus trueii).

Also observed during the survey were horse tracks and excrement in an area posted as off-limits to horses in Whitworth Meadow. In addition to meadow environments being particularly sensitive to horse activity, this location provides habitat for the blue-listed butterfly, Propertius' duskwing (*Erynnis propertius*).

These two incidents are a model for how riders and the park environment will interact in the future. Flashpoints will occur around sensitive species and environments. The good news is that horse activity in parks has a long tradition and therefore the successes and lessons of other parks can be applied in the Skagit Valley early on, to protect and preserve the region.

8 RECOMMENDATIONS

It is clear from the experiences of parks in Canada, the U.S and elsewhere that introducing horses to wilderness areas presents specific issues. In the unique situation of the Skagit Valley Provincial Park, to these must be added the potential for increased Cowbird activity.

Given the factors of:

- 1) an abundant passerine population:
- 2) current small Cowbird population;
- 3) Cowbird environmental adaptability with a preference for:
- "...distinct visible edges formed by canopy openings in the forest landscape..." (Evans and Gates, 1997) such as along roadways, meadows, and building sites.
 - 4) the fact that Cowbirds are:
- "...strongly attracted to horses and cattle." (Skutch, Orioles, Blackbirds and their kin, 1996)

it is possible demographic changes (Arcese, Smith, Hatch, 1995) may occur in the meadow songbird populations in the Skagit Valley. These changes may be mitigated by depriving the Cowbirds of benefit from the habitat presented by the horse camp/trail activities. These ameliorative steps are outlined in the numerated recommendations below.

Weeds are another issue associated with horses and horse trail corridors in wilderness areas. However, introduction of weeds via horse vectors can also be mitigated with safeguards currently being deployed at other parks and recreational areas in Canada and the U.S.

Three approaches have been identified as having impact on habitat preservation and slowing the spread of invasive species:

1. Public Education:

Public education has been identified as the key component in success of any programs aimed at park users. Effective programs have been those which reach the target group with clear guidelines for managing their activities. Such a program might consist of:

- a) a pamphlet available on site with appropriate information and guidelines including "rider etiquette" and recommended "tours" so riders can reach exceptional viewing sites or complete easy or difficult rides without deviating from trails – managers should be aware that novices are responsible for an inordinate amount of problems (ex. deviating from protocol or getting into difficulty);
- b) well signed trails and out-of-bounds areas;
- c) encouragement and procedures for reporting offenses with phone numbers of appropriate enforcement officers on signage at base camps:
- d) encouragement of trail maintenance and other interface between users and park managers to build a sense of "ownership" with horse recreation industry (a leadership role in this area should be cultivated in relevant rider associations).
- e) encouraging respect amongst different user groups (ex. hikers, mountain bikers, riders).

(compiled with thanks to Kananaskis Country, Alberta)

2. Modern Wilderness Horse Recreation Protocols:

These might include:

- a) Feeding horses pelleticized or certified weed-free hay at least two days before and during the stay in the park;
- b) Keeping horses out of wet areas (and building up areas of trails which may become sodden) and strictly on trails;
- c) Not allowing horses to graze in wilderness areas, particularly meadows, alpines or wet locations;
- d) Issuing grazing permits, if appropriate, and clearly marking areas where grazing will be allowed. Environmental assessments should be conducted at

these areas prior to the issuing of permits to ensure they do not provide habitat for rare and endangered species;

e) ensuring outfitters or wilderness guides are aware of regulations and certified (if applicable) to operate in the park.

3. Explicitly Protecting Sensitive Areas

Some areas, such as riparian, wetland, and meadow (alpine and lowland) habitats, designated horse camp areas, or a habitat of an endangered species may be sensitive to the point where specific alien weed species may need to be controlled and where fencing or other horse recreational access-denying infrastructure may be appropriate.

Current specific examples of this are:

- a) on-going monitoring of non-indigenous plant species invasion along trail corridors and especially near sensitive habitats;
- b) barriers (to stop horse traffic) and signs should be erected at the entrance to Whitworth Meadows;
- c) barriers or signs at the crossing of the unnamed creek on the Skyline trail to discourage horse riders from entering the creek and
- d) expansion of the horse camp and activities along the Silver-Skagit Road near the Whitworth horse camp should be restricted until further EA's establish the host larval plant and habitat use of the blue-listed butterfly, Propertius' duskwing (*Erynnis propertius*).

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Canada Goose

Mallard

Harlequin Duck

Common Goldeneye

Common Merganser

Osprey

Red-tailed Hawk

American Kestrel

Ruffed Grouse

Common Snipe

Spotted Sandpiper

Killdeer

Ring-billed Gull

Common Loon

Band-tailed Pigeon

R - Mourning Dove

Common Nighthawk

Black Swift

Calliope Hummingbird

Rufous Hummingbird

Belted Kingfisher

Red-naped Sapsucker

Red-breasted Sapsucker

Downy Woodpecker

Hairy Woodpecker

Northern Flicker

Pileated Woodpecker

Olive-sided Flycatcher

R - Western Wood-Pewee

C - Willow Flycatcher

? - Hammond's Flycatcher

R - Dusky Flycatcher

R - Pacific-slope Flycatcher

C - Eastern Kingbird

Steller's Jay

American Crow

Common Raven

C - Cassin's Vireo

VR - Red-eyed Vireo

C - Warbling Vireo

U - Cedar Waxwing

American Dipper

Varied Thrush

R - Mountain Bluebird

Townsend's Solitaire

Table Symbols:

VC Very Common = 3 most frequent host

C Common = often host

U Uncommon = not common host

R-Swainson's Thrush

R - American Robin

European Starling

Red-breasted Nuthatch

R - Brown Creeper

Winter Wren

R-Tree Swallow

Violet-green Swallow

Northern Rough-winged Swallow

R - Barn Swallow

R - Ruby-crowned Kinglet

R - Golden-crowned Kinglet

R - Black-capped Chickadee

Chestnut-backed Chickadee

American Pipit

U - Pine Siskin

Gray-crowned Rosy-Finch

U - Purple Finch

Red Crossbill

R - Evening Grosbeak

R - Orange-crowned Warbler

VC - Yellow Warbler

R - Yellow-rumped Warbler

R - Black-throated Gray Warbler

R - Townsend's Warbler

C - American Redstart

U - MacGillivray's Warbler

VC - Common Yellowthroat

U - Wilson's Warbler

U - Fox Sparrow

VC - Song Sparrow

U - Lincoln's Sparrow

U - White-crowned Sparrow

U - Dark-eyed Junco

Savannah Sparrow

F - Chipping Sparrow

C - Spotted Towhee

R - Western Tanager

Black-headed Grosbeak U -

R -Yellow-headed Blackbird

F-Red-winged Blackbird

U-Western Meadowlark

N/A Brown-headed Cowbird

////--- STATISTICS ----/////

Species seen - 88

VC Very Common = most frequent host F Frequent = regular host

From 3/1/1999 1	to 3/31/2000 ~	in Skagit Val.P	.Park ∼ 88 spe	cies observ
				. •

APPENDIX B BIRD CHECKLIST

	Pied-billed Grebe		Virginia Rail
1	Red-necked Grebe	_ 	Sora
	Horned Grebe		American Coot
	Eared Grebe		Sandhill Crane
	Western Grebe		Common Snipe
	Ruddy Duck		Long-billed Curlew
	Trumpeter Swan		Greater Yellowiegs
	Tundra Swan		Lesser Yellowlegs
	Greater White-fronted Goose		
	Snow Goose		Spotted Sandpiper
			Long-billed Dowitcher
	Canada Goose		Semipalmated Sandpiper
	Wood Duck		Pectoral Sandpiper
	American Wigeon		American Golden-Plover
	Green-winged Teal		Semipalmated Plover
	Mallard		Killdeer
	Northern Pintail		Mew Gull
	Blue-winged Teal		Ring-billed Gull
(Cinnamon Teal		California Gull
	Northern Shoveler		Glaucous-winged Gull
	Canvasback		Bonaparte's Gull
	Redhead	,	Forster's Tern
	Ring-necked Duck		Pomarine Jaeger
	Greater Scaup		Common Loon
	Lesser Scaup		Rock Dove
	Harlequin Duck		Band-tailed Pigeon
	Oldsquaw		Mourning Dove
	Surf Scoter		Western Screech-Owl
	White-winged Scoter		Great Horned Owl
	Common Goldeneye		Spotted Owl
	Barrow's Goldeneye		Barred Owl
	Bufflehead		Northern Saw-whet Owl
	Hooded Merganser		Short-eared Owl
	Red-breasted Merganser		Common Nighthawk
	Common Merganser		Common Poorwill
	Great Blue Heron		Black Swift
	Osprey		Vaux's Swift
	Bald Eagle		Calliope Hummingbird
	Northern Harrier		Rufous Hummingbird
;	Sharp-shinned Hawk		Belted Kingfisher
	Cooper's Hawk		Lewis's Woodpecker
	Northern Goshawk		Yellow-bellied Sapsucker
	Swainson's Hawk		Red-naped Sapsucker
	Red-tailed Hawk		Red-breasted Sapsucker
	Golden Eagle		Downy Woodpecker
	American Kestrel		Hairy Woodpecker
	Merlin		Three-toed Woodpecker
			•
	Peregrine Falcon		Black-backed Woodpecker
	Spruce Grouse		Northern Flicker
	Blue Grouse		Pileated Woodpecker
	White-tailed Ptarmigan		Olive-sided Flycatcher
	Ruffed Grouse		Western Wood-Pewee
		1	
		1	

APPENDIX B BIRD CHECKLIST

Willow Flycatcher		Chestnut-backed Chickadee
Hammond's Flycatcher		Horned Lark
Dusky Flycatcher		American Pipit
Pacific-slope Flycatcher		Pine Siskin
Say's Phoebe		American Goldfinch
Western Kingbird		Common Redpoll
Scissor-tailed Flycatcher		Gray-crowned Rosy-Finch
Eastern Kingbird		Purple Finch
Steller's Jay		Cassin's Finch
Gray Jay		Pine Grosbeak
Black-billed Magpie		Red Crossbill
Clark's Nutcracker		White-winged Crossbill
Northwestern Crow		Evening Grosbeak
American Crow	·	Orange-crowned Warbler
Common Raven		Nashville Warbler
		
Hutton's Vireo Cassin's Vireo		Yellow Warbler
		Yellow-rumped Warbler
Red-eyed Vireo		Black-throated Gray Warbler
Warbling Vireo		Townsend's Warbier
Loggerhead Shrike		American Redstart
Northern Shrike		Northern Waterthrush
Bohemian Waxwing		MacGillivray's Warbler
Cedar Waxwing		Common Yellowthroat
American Dipper		Wilson's Warbler
Varied Thrush		Snow Bunting
Western Bluebird		Fox Sparrow
Mountain Bluebird		Song Sparrow
Townsend's Solitaire		Lincoln's Sparrow
Veery		Harris's Sparrow
Swainson's Thrush		White-crowned Sparrow
Hermit Thrush		Golden-crowned Sparrow
American Robin		Dark-eyed Junco
Gray Catbird		Savannah Sparrow
European Starling		American Tree Sparrow
Red-breasted Nuthatch		Chipping Sparrow
Brown Creeper		Vesper Sparrow
Rock Wren		Lark Sparrow
Winter Wren		Spotted Towhee
House Wren		Western Tanager
Tree Swallow		Black-headed Grosbeak
Violet-green Swallow		Lazuli Bunting
Northern Rough-winged Swallow		Bullock's Oriole
Bank Swallow		Yellow-headed Blackbird
Barn Swallow		Red-winged Blackbird
Cliff Swallow		Western Meadowlark
Ruby-crowned Kinglet		Brewer's Blackbird
 · •		Brown-headed Cowbird
Golden-crowned Kinglet		
Black-capped Chickadee		Bobolink
Mountain Chickadee		
Boreal Chickadee		
	ĺ	
	1	

APPENDIX C BROWN-HEADED COWBIRD SIGHTINGS

The following observations are of Brown-headed Cowbirds sighted during this study in the project area

Date	Time	Number	Sex	Location	Note
04/28/99				Ross Lake	Small Flock
					(anecdotal report
					by Danyel)
05/19/99		1	Unknown	Horse Camp	Heard only
05/26/99	5:35 am	5	Male	Ross Lake	Courtship song
05/26/99	5:35 am	3	Female	Ross Lake	
05/26/99	6:11 am	2	Male	Ross Lake	Courtship song
05/26/99	6:11 am	6	Female	Ross Lake	
05/26/99	8:12 am	1	Male	Whitworth	Courtship song
				Meadow	
05/26/99	8:12 am	1	Female		
05/26/99		1	Unknown	Chittenden	Heard only
				Bridge	
06/15/99	7:30 am	6	Male	Ross Lake	Flying
06/15/99	7:30 am	1	Female	Ross Lake	Flying
06/16/99		2	Male	Ross Lake	Calling Flying
06/16/99		6	Female	Ross Lake	
06/17/99	6:00 am	5	Male	Ross Lake	
06/21/99	5:42 to	4	Male	Ross Lake	
	8:34 am				
06/21/99		6	Female	Ross Lake	
06/21/99	11:03am	1	Unknown	Whitworth	Heard only
				Meadow	
07/12/99	6:25 am	8	Male	Ross Lake	Calling Flying
07/12/99	6:25 am	1	Female	Ross Lake	
07/12/99	7:58 am	2	Female	Ross Lake	
07/12/99	8:28 am	3	Unknown	Ross Lake	Heard only
07/12/99	8:45 am	1	Male	Ross Lake	
07/13/99	7:02 am	8	Male	Ross Lake	Flying
07/13/99	7:02 am	1	Female	Ross Lake	Flying
07/14/99	6:30 am	14	Male	USA Ross Lake	
07/14/99	6:30 am	1.	Female	USA Ross Lake	
07/27/99		1	Male	Ross Lake	
07/27/99		1	Female	Ross Lake	

APPENDIX D ALIEN PLANT SPECIES IN THE NORTH CASCADES NATIONAL PARK

NORTH CASCADES NATIONAL PARK: ALIENS

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by Damian Sedney, Resource Management Specialist

What is one of the largest threats to the integrity of the North Cascades ecosystem? Surprisingly, it's invasion. Not by alien visitors, but by invading non-native plants.

Over thousands of years, more than 1700 different native plants have adapted to specific North Cascade habitats. Though most of these plants are resilient after natural disturbances such as fire, they do not fare as well in areas of human disturbance. Native plant communities are most prone to impacts from human disturbance in low elevation dry habitats and high elevation cold habitats.

Native plant communities are disturbed by a variety of human activities like excavation and road building. Such soil disturbances create an ideal habitat for alien plants to colonize.

Most non-native plants colonize well in disturbed soils. Native plants, while they can grow in disturbed sites, don't do as well when they must compete with non-natives. Aliens usually arrive as seeds attached to vehicles, cargo, luggage, and pets, colonizing disturbed sites. The most aggressive invaders are from southern Europe or Asia.

Several non-native plants have become established in the North Cascades and are out-competing native species. The most widespread alien is diffuse knapweed < Centaurea diffusa). In their homeland, knapweed and other non-native species must compete with each other and with predators (usually insects) which keep them from spreading. When they arrive here, those competitors and predators are absent. For several years the National Park Service has toiled to reduce the spread of knapweed and other alien plants. The Stehekin community in the Lake Chelan National Recreation Area assists the effort by hand-pulling plants in the valley. In 1992, valley residents adopted stretches of road and pulled plants along the road side.

In another effort, employees and volunteers gathered native grass seed, which is used to fill in the "voids" created by the removal of the offending nonnative plants. Hopefully, the grasses will become established in the human-disturbed areas, and stem the tide of knapweed.

Knapweed has the potential to spread to much higher elevations in the North Cascades ecosystem. The Stehekin valley is surrounded by wilderness, but knapweed has

APPENDIX D ALIEN PLANT SPECIES IN THE NORTH CASCADES NATIONAL PARK

already invaded some wilderness areas 30 miles to the east. Efforts like those initiated in the Stehekin valley should help prevent the further spread of knapweed into the local "high-country" and protect natural plant communities.

Over 258 exotic plant species have been documented, in or near, the North Cascades National Park Complex. Priority exotic species for monitoring and control include:

Diffuse knapweed (Centaurea diffusa)
Spotted knapweed (Centaurea maculosa)
Rush skeltonweed (Chondrilla juncea)
St. John's-wort (Hypericum perforatum)
Scotch-broom (Cytisus scoparius)
Japanese knotweed (Polygonum cuspidatum)
Foxglove (Digitalis purpurea)
Common mullein (Verbascum thapsus)

Of the eight species above, the first three are of greatest concern. Knapweed has dramatically decreased productivity of shrub and grassland communities throughout many western states. This has seriously affected foraging habitat of wildlife and livestock, which do not eat knapweed.

Source: www.nps.gov/noca/alien.htm

Last Updated: 29-Oct-1998

B.C.'s WILD HERITAGE VEGETATION PLOT DATA:

Surveyor Denis, Jason, and Angela Date 06/16/99, 07/13/99 Site Name Skagit Centennial Trail

Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot.

Din A Plot 1

TITOL T			,	,			
UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cover
(1 st) 0641267	(1 st) 5433673					Trembling Aspen	N/A
(2 nd) 0641227	(2 nd) 5433688					Vine Maple	7.0%
						Beaked Hazelnut	8.0%
N	otes					BaldhipRose	12.0%
Spike at the begin	ning of trail, just		-			Thimbleberry	50.0%
after crossing the						Dull Oregon-grape	20.0%
Large trees within the 2m. circle are not given a cover percent, and are						Falsebox	4.0%
						Orange Honeysuckle	1.0%
narked N/A. Part						Twinflower	20.0%
	de up of the trail.					Black Twinberry	1.0%
	ed twice and UTM					Broad-leaved Starflower	2.0%
NAD 27) coordin	nate taken each					Bunchberry	4.0%
visit.			150			Wild Strawberry	0.5%
						Woodland Strawberry	2.0%
						Sweet-scented Bedstraw	1.0%
		11.06				Sweet Sicily	1.0%
	•					Queen's Cup	2.0%
						Blue Wildrye	3.0%
	*					Non-vegetated area	20.0%
Pin A:	Plot 2: 10r	n. @ 12	20°				
UTM m. E	UTM m. N			Grassland	Wetland	Plant Species	% Cove
	(1 st) 5433673					Willow sp.	3.0%
(2 nd) 0641227	(2 nd) 5433688		10000			Saskatoon	0.00/
				1		Saskatoon	9.0%
						Red-stemmed Ceanothus	7.0%
N	otes						
						Red-stemmed Ceanothus	7.0%
Non-vegetated ar	ea is made up					Red-stemmed Ceanothus Thimbleberry Falsebox	7.0% 35.0%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry	7.0% 35.0% 9.0%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape	7.0% 35.0% 9.0% 4.0%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry	7.0% 35.0% 9.0% 4.0% 1.0%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape	7.0% 35.0% 9.0% 4.0% 1.0% 9.0%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle	7.0% 35.0% 9.0% 4.0% 1.0% 9.0%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower Broad-leaved Starflower	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0% 15.0% 2.0% 5.0%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower Broad-leaved Starflower Queen's Cup Fireweed	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0% 2.0% 5.0% 3.0%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower Broad-leaved Starflower Queen's Cup Fireweed Woodland Strawberry	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0% 15.0% 2.0% 5.0% 3.0%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower Broad-leaved Starflower Queen's Cup Fireweed	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0% 5.0% 3.0% 3.0% 0.5%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower Broad-leaved Starflower Queen's Cup Fireweed Woodland Strawberry Lyall's Anemone	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0% 15.0% 2.0% 5.0% 3.0% 0.5%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower Broad-leaved Starflower Queen's Cup Fireweed Woodland Strawberry Lyall's Anemone Sweet-scented Bedstraw Red-seeded Dandelion	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0% 15.0% 2.0% 5.0% 3.0% 0.5% 0.5% 0.2%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower Broad-leaved Starflower Queen's Cup Fireweed Woodland Strawberry Lyall's Anemone Sweet-scented Bedstraw Red-seeded Dandelion Timber Oat-grass	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0% 15.0% 2.0% 5.0% 3.0% 0.5% 0.5% 0.2% 0.7%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower Broad-leaved Starflower Queen's Cup Fireweed Woodland Strawberry Lyall's Anemone Sweet-scented Bedstraw Red-seeded Dandelion Timber Oat-grass Columbia Brome	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0% 15.0% 2.0% 5.0% 3.0% 0.5% 0.5% 0.2% 0.7% 0.5%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower Broad-leaved Starflower Queen's Cup Fireweed Woodland Strawberry Lyall's Anemone Sweet-scented Bedstraw Red-seeded Dandelion Timber Oat-grass Columbia Brome Western Fescue	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0% 15.0% 2.0% 5.0% 3.0% 0.5% 0.5% 0.5% 0.5% 1.5%
Non-vegetated are mostly of the trail visited twice and	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower Broad-leaved Starflower Queen's Cup Fireweed Woodland Strawberry Lyall's Anemone Sweet-scented Bedstraw Red-seeded Dandelion Timber Oat-grass Columbia Brome Western Fescue Blue Wildrye	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0% 15.0% 2.0% 5.0% 3.0% 0.5% 0.5% 0.2% 0.7% 0.5% 1.5% 1.0%
Non-vegetated armostly of the trail visited twice and coordinate taken	ea is made up This site was UTM (NAD 27)					Red-stemmed Ceanothus Thimbleberry Falsebox Dull Oregon-grape Tall Oregon-grape Bunchberry Orange Honeysuckle Twinflower Broad-leaved Starflower Queen's Cup Fireweed Woodland Strawberry Lyall's Anemone Sweet-scented Bedstraw Red-seeded Dandelion Timber Oat-grass Columbia Brome Western Fescue	7.0% 35.0% 9.0% 4.0% 1.0% 9.0% 1.0% 15.0% 2.0% 5.0% 3.0% 0.5% 0.5% 0.2% 0.7% 0.5% 1.5%

B.C.'s WILD HERITAGE VEGETATION PLOT DATA

Surveyor Denis, Jason, and Angela Date 06/16/99, 07/13/99 Site Name Skagit Centennial Trail Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot. Plot 1 Pin B UTM m. N Plant Species % Cover UTM m. E Forested Shrubland Grassland Wetland 8.0% 5433454 0641594 Vine Maple 0641615 5433570 Beaked Hazelnut 4.0% Saskatoon 15.0% Baldhip Rose 14.0% **Notes** 5.0% Common Snowberry The spike is located across the trail (south side) from a single, large Black Huckleberry 2.0% Douglas-fir (DBA ~ 60cm.). Non-10.0% Orange Honeysuckle vegetated area is mostly made up of 15.0% Dull Oregon-grape the trail. This site was visited twice Spreading Dogbane 4.0% and UTM (NAD 27) coordinate Arctic Lupine 1.0% taken each visit. Woodland Strawberry 7.0% 1.0% Sweet-scented Bedstraw 2.0% Twinflower 1.0% Sweet Sicily Blue Wildrye 2.0% Falkland Island Sedge 1.0% 12.0% Non-vegetated area Pin B: Plot 2: 10m. @ 110° UTM m. E UTM m. N Forested Shrubland Grassland Wetland **Plant Species** % Cover Douglas-fir (seedlings) 2.0% 0641594 5433454 4.0% 0641615 5433570 Saskatoon 0.5% Beaked Hazelnut 2.0% Kinnikinnick **Notes** Falsebox 25.0% Non-vegetated area is made up 12.0% mostly of the trail. This site was Dull Oregon-grape visited twice and UTM (NAD 27) 1.0% Tall Oregon-grape coordinate taken each visit. 9.0% Baldhip Rose Orange Honeysuckle 8.0% 6.0% Spreading Dogbane 2.0% Black Huckleberry Twinflower 12.0% Broad-leaved Starflower 1.0% Birch-leaved Spirea 5.0% Sickletop Lousewort 0.5% One-sided Wintergreen 2.0% 0.7% Tiger Lily 1.0% White-flowered Hawkweed 0.5% Arctic Lupine Wild Strawberry 1.5% Woodland Strawberry 2.0% Blue Wildrye 0.1% Falkland Island Sedge 4.0%

Non-vegetated area

12.0%

B.C.'s WILD HERITAGE VEGETATION PLOT DATA:

Surveyor Denis, Jason, and Angela Date 06/16/99, 07/13/99 Site Name Skagit Centennial Trail

Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot.

Pin C	Plot 1						
UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cove
1 st) 0641581	(1 st) 5433894					Douglas-fir (seedling)	1.5%
2 nd) 0641642	(2 nd) 5433910				-	Vine Maple	5.0%
· · · · · ·						Dull Oregon-grape	11.0%
1	Notes					Tall Oregon-grape	2.0%
A large Douglas		AND SHOP OF SHIP				Black Huckleberry	1.0%
	cut at butt end) fell					Orange Honeysuckle	2.0%
cross the trail,						Twinflower	1.0%
	the trail) was cut	er for the first of the				Broad-leaved Starflower	1.5%
•	and rolled west of					Sickletop Lousewort	0.7%
he trail. The spi	ike is on the right					Prince's-Pine/ Pipsissewa	2.0%
side of the trail,	where the log would	All the state of				Woodland Strawberry	1.0%
nave crossed if i	t had not been cut.					Arctic Lupine	2.0%
	quite as large, has	Salar Sa				Fairyslipper	2.0%
	east side of the trail,	SAME AND THE SAME A			·	White-flowered Hawkweed	0.5%
	under the larger log.					Sweet Sicily	0.5%
	ed area is so large	galling and the				Western Fescue	0.5%
	stly moss and trail,	建筑 建铁矿 排列				Columbia Brome	0.1%
noss not being o				<u> </u>			0.1%
	y. This site was		e e e e e e e e e e e e e e e e e e e			Falkland Island Sedge	
visited twice and UTM (NAD 27)				ļ		Non-vegetated area	50.0%
coordinate taken	each visit.						
			<u> </u>				
<u></u>							
		·				<u> </u>	
Pin C:		^					
	Plot 2: 1	0m. (<i>a</i>)	325°				
UTM m. E	Plot 2: 1 UTM m. N			Grassland	Wetland	Plant Species	% Cove
				Grassland	Wetland	Plant Species Douglas-fir	N/A
(1 st) 0641581	UTM m. N			Grassland	Wetland	Douglas-fir Vine Maple	N/A 7.0%
(1 st) 0641581	UTM m. N (1st) 5433894			Grassland	Wetland	Douglas-fir	N/A
(1 st) 0641581 (2 nd) 0641642	UTM m. N (1st) 5433894			Grassland	Wetland	Douglas-fir Vine Maple	N/A 7.0%
(1 st) 0641581 (2 nd) 0641642	UTM m. N (1 st) 5433894 (2 nd) 5433910 Notes	Forested		Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose	N/A 7.0% 0.3% 8.0%
(1 st) 0641581 (2 nd) 0641642 Large trees with	UTM m. N (1 st) 5433894 (2 nd) 5433910	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape	N/A 7.0% 0.3% 8.0%
(1 st) 0641581 (2 nd) 0641642 Large trees with not given a cove	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape	N/A 7.0% 0.3% 8.0% 13.0% 2.0%
(1 st) 0641581 (2 nd) 0641642 Large trees with not given a cove marked N/A. Th	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are his site was visited	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0%
(1st) 0641581 (2nd) 0641642 Large trees with not given a cove marked N/A. The	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are nis site was visited (NAD 27)	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon Birch-leaved Spirea	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0%
(1st) 0641581 (2nd) 0641642 Large trees with not given a cove marked N/A. The	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are nis site was visited (NAD 27)	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon Birch-leaved Spirea Orange Honeysuckle	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0% 1.0% 7.0%
(1st) 0641581 (2nd) 0641642 Large trees with not given a cove marked N/A. The	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are nis site was visited (NAD 27)	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon Birch-leaved Spirea Orange Honeysuckle Prince's-pine / Pipsissewa	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0% 1.0% 7.0% 2.0%
(1st) 0641581 (2nd) 0641642 Large trees with not given a cove marked N/A. The	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are nis site was visited (NAD 27)	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon Birch-leaved Spirea Orange Honeysuckle Prince's-pine / Pipsissewa Broad-leaved Starflower	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0% 1.0% 7.0% 2.0% 1.0%
(1st) 0641581 (2nd) 0641642 Large trees with not given a cove marked N/A. The	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are nis site was visited (NAD 27)	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon Birch-leaved Spirea Orange Honeysuckle Prince's-pine / Pipsissewa Broad-leaved Starflower Twinflower	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0% 1.0% 7.0% 2.0% 1.0% 0.5%
(1st) 0641581 (2nd) 0641642 Large trees with not given a cove marked N/A. The	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are nis site was visited (NAD 27)	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon Birch-leaved Spirea Orange Honeysuckle Prince's-pine / Pipsissewa Broad-leaved Starflower Twinflower Black Huckleberry	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0% 7.0% 2.0% 1.0% 0.5%
(1 st) 0641581 (2 nd) 0641642 Large trees with not given a cove marked N/A. The	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are nis site was visited (NAD 27)	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon Birch-leaved Spirea Orange Honeysuckle Prince's-pine / Pipsissewa Broad-leaved Starflower Twinflower Black Huckleberry Woodland Strawberry	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0% 1.0% 7.0% 2.0% 1.0% 0.5% 1.5%
(1 st) 0641581 (2 nd) 0641642 Large trees with not given a cove marked N/A. The	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are nis site was visited (NAD 27)	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon Birch-leaved Spirea Orange Honeysuckle Prince's-pine / Pipsissewa Broad-leaved Starflower Twinflower Black Huckleberry Woodland Strawberry Falkland Island Sedge	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0% 1.0% 7.0% 2.0% 1.0% 0.5% 0.5% 1.5% 2.0%
(1 st) 0641581 (2 nd) 0641642 Large trees with not given a cove marked N/A. The	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are nis site was visited (NAD 27)	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon Birch-leaved Spirea Orange Honeysuckle Prince's-pine / Pipsissewa Broad-leaved Starflower Twinflower Black Huckleberry Woodland Strawberry Falkland Island Sedge Blue Wildrye	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0% 1.0% 7.0% 2.0% 1.5% 0.5% 0.5% 0.5%
(1 st) 0641581 (2 nd) 0641642 Large trees with not given a cove marked N/A. The	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are nis site was visited (NAD 27)	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon Birch-leaved Spirea Orange Honeysuckle Prince's-pine / Pipsissewa Broad-leaved Starflower Twinflower Black Huckleberry Woodland Strawberry Falkland Island Sedge	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0% 1.0% 7.0% 2.0% 1.5% 0.5% 0.5% 0.5%
(1 st) 0641581 (2 nd) 0641642 Large trees with not given a cove	UTM m. N (1st) 5433894 (2nd) 5433910 Notes in the 2m. circle are er percent, and are nis site was visited (NAD 27)	Forested	Shrubland	Grassland	Wetland	Douglas-fir Vine Maple Beaked Hazelnut BaldhipRose Dull Oregon-grape Tall Oregon-grape Saskatoon Birch-leaved Spirea Orange Honeysuckle Prince's-pine / Pipsissewa Broad-leaved Starflower Twinflower Black Huckleberry Woodland Strawberry Falkland Island Sedge Blue Wildrye	N/A 7.0% 0.3% 8.0% 13.0% 2.0% 4.0% 1.0% 7.0% 2.0% 1.0% 0.5% 0.5% 1.5%

B.C.'s WILD HERITAGE VEGETATION PLOT DATA:

Surveyor Denis, Jason, and Angela Date 06/16/99, 07/14/99 Site Name Skagit Centennial Trail

Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot.

Pin D	Plot 1	,		•		
UTM m. E	UTM m. N	Forested	Shrubland Grassla	d Wetland	Plant Species	% Cover
(1 st) 0641147	(1 st) 5434612				Douglas-fir (seedling)	0.5%
(2 nd) 0641166	(2 nd) 5434629				Beaked Hazelnut	6.0%
	,	il de la companya de			Vine Maple	5.0%
Notes					Dull Oregon-grape	26.0%
Spike across trai	from large				Saskatoon	8.0%
•	-vegetated area is				Soopolallie / Soapberry	1.5%
nade up mostly	of the trail. This site				Falsebox	0.2%
	and UTM (NAD				Trailing Blackberry	0.5%
27) coordinate ta	ken each visit.				Black Huckleberry	1.0%
					Orange Honeysuckle	15%
	'				Baldhip Rose	7.0%
					Prince's-pine / Pipsissewa	5.0%
					Broad-leaved Starflower	0.5%
					Twinflower	13.0%
4					White-veined Wintergreen	0.1%
					One-sided Wintergreen	0.5%
		100			Star-flowered Solomon's-seal	0.5%
•					Purple Peavine	0.5%
		0.47			Non-vegetated	16.0%

Pin D:	Plot 2: 101	m. @ 3	20°			
UTM m. E	UTM m. N	Forested	Shrubland Grassla	nd Wetland	Plant Species	% Cover
(1 st) 0641147	(1 st) 5434612				Douglas-fir (seedlings)	1.0%
(2 nd) 0641166	(2 nd) 5434629				Vine Maple	18.0%
					Beaked Hazelnut	3.0%
l	Notes				Red Huckleberry	23.0%
Non-vegetated a	rea is made up				Saskatoon	6.0%

UTM m. E UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cover
(1^{st}) 0641147 (1^{st}) 5434612					Douglas-fir (seedlings)	1.0%
(2 nd) 0641166 (2 nd) 5434629	in the second				Vine Maple	18.0%
					Beaked Hazelnut	3.0%
Notes	12.00	* * * * * * * * * * * * * * * * * * * *			Red Huckleberry	23.0%
Non-vegetated area is made up	E.S.				Saskatoon	6.0%
mostly of the trail. This site was					Dull Oregon-grape	45.0%
visited twice and UTM (NAD 27)	71111				Baldhip Rose	4.0%
coordinate taken each visit.					Orange Honeysuckle	12.0%
_		Legislation of			Falsebox	0.5%
					Twinflower	6.0%
		Britis II			Prince's-pine / Pipsissewa	3.0%
					One-sided Wintergreen	0.2%
					Broad-leaved Starflower	1.5%
	9.7				Woodland Strawberry	1.0%
					Non-vegetated area	13.0%
		44 341.7 34 105 440 3				
ł						
i						

B.C.'s WILD HERITAGE VEGETATION PLOT DATA: Site Name Skagit Centennial Trail Surveyor Denis and Angela Date 07/14/99 Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot. Plot 1 Pin E UTM m. E UTM m. N Forested Shrubland Grassland **Plant Species** % Cover Wetland 3.0% 0640530 5435167 Douglas-fir (seedlings) 18.0% Beaked Hazelnut 16.0% Vine Maple Dull Oregon-grape 13.0% **Notes** The spike is in the first clearing after Orange Honeysuckle 3.0% the base of the hill. Non-vegetated 6.57 Black Huckleberry 5.0% area is made up mostly of the trail. A 1.0% Saskatoon UTM(NAD 27) was taken. Birch-leaved Spirea 2.0% 1.0% Thimbleberry Baldhip Rose 4.0% 15.0% Falsebox Twinflower 6.0% 0.5% Prince's-pine / Pipsissewa Broad-leaved Starflower 1.0% Non-vegetated area 10.0% Plot 2: 10m. @ 300° Pin E: UTM m. E UTM m. N Forested Shrubland Grassland Wetland **Plant Species** % Cover 1st) 0640530 Douglas-fir N/A 5435167 Douglas-fir (seedlings) 1.0% Vine Maple 10.0% and the same of the same of Beaked Hazelnut 12.0% **Notes** 7.0% Black Huckleberry Large trees within the 2m. circle are not given a cover percent, and are Saskatoon 5.0% marked N/A. Non-vegetated area is Baldhip Rose 10.0% made up mostly by the trail. A 1.0% Thimbleberry UTM(NAD 27) was taken. Falsebox 7.0% Dull Oregon-grape 17.0% Birch-leaved Spirea 4.0% Prince's-pine / Pipsissewa 1.0% Broad-leaved Starflower 1.5% Twinflower 1.0% 22.0% Non-vegetated area

B.C.'s WILD HERITAGE VEGETATION PLOT DATA:

Surveyor Denis, Jason, and Angela Date 06/16/99, 07/14/99 Site Name Skagit Centennial Trail Two 2m, radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot. Pin F Plot 1 UTM m. E UTM m. N Plant Species % Cover Forested Shrubland Grassland Wetland 1st) 0639580 0.5% 5436755 Douglas-fir (seedling) 0.5% Western Redcedar (seedling) Devil's Club (seedling) 0.4% Swamp Gooseberry 1.0% **Notes** Spike is buried on the south side of Dull Oregon-grape 4.0% the bridge, at the top of the bank on Thimbleberry 2.0% the right side. Non-vegetated area is Broad-leaved Starflower 7.0% made up mostly by the trail. A 0.1% Fringecup UTM (NAD 27) was taken. Sweet-scented Bedstraw 1.0% Woodland Strawberry 0.5% Sweet Sicily 0.3% American Wintercress 0.1% Hooker's Fairybells 1.0% Wall Lettuce 0.1% Tall Blue Lettuce 0.5% Star-flowered Solomon's-seal 0.5% Blue Wildrye 0.1% Non-vegetated area 65.0% Pin F: Plot 2: 10m. @ 10° UTM m. E UTM m. N Forested Shrubland Grassland Wetland **Plant Species** % Cover 0639580 5436755 Western Redcedar (seedling) 0.5% Dull Oregon-grape 0.5% Devil's Club 3.0% Star-flowered Solomon's-seal 4.0% **Notes** Western Trillium Since 10m, further down the trail 0.1% would be in the river, the second plot Wall Lettuce 0.1% was taken 10m. back up the trail. Rattlesnake Plantain 0.1% The area is sparsely vegetated Non-vegetated area 95.0% because it is kept shaded and dry by the mature Cedar forest in the area. Non-vegetated area is made up mostly by the trail. A UTM (NAD (27) was taken.

Surveyor De	enis	D	ate 10/27	//99		Name Skagit Centennial T	rail
					f plot one	is the lettered pin. The center of	
						center is on the right hand side o	
	orsecamp. The cente						
Pin G	Plot 1	1		•		•	
			los sa s				T 2/ 6
UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cove
(1 st) 0640530	(1 st) 5435167					Redcedar (seedling)	0.5%
(2 st) 0638586	(2 st) 5438442					Dull Oregon-grape	15.0%
						Falsebox	4.0%
	Notes					Red Huckleberry	0.5%
	reek bed at the end					Baldhip Rose	1.0%
	eter log. This site					Twinflower	2.0%
	and UTM (NAD					broad-leaved Starflower	4.5%
7) coordinate taken each visit. Non egetated area is made up mostly by						Pink Wintergreen	0.3%
						Prince's-pine / Pipsissewa	4.0%
he trail.	•					Queen's Cup	1.0%
						Moss sp.	75.0%
						Downed Woody Debris	12.0%
						Non-Vegetated area	18.0%
			-				
		 	<u> </u>	1			
		 	 	 			
Pin G:	Diot 2. 10m	olong (mail				1
	Plot 2: 10m			I			1 2/ 2
UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cove
(1 st) 0638586	(1 st) 5438442					Vine Maple	2.0%
			<u> </u>		<u></u>	Douglas Maple	0.1%
						Hemlock (seedling)	0.1%
	Notes					Beaked Hazel	1.0%
	sited twice but no			<u> </u>		Falsebox	3.5%
, ,	coordinateS were					Dull Oregon-grape	11.0%
	l visit. Non-vegetated	d d				Saskatoon	1.0%
area is made up	mostly by the trail,					Red Huckleberry	4.0%
						Baldhip Rose	1.0%
						Twinflower	3.0%
						Prince's-pine / Pipsissewa	7.0%
		1.6				Pink Wintergreen	2.0%
						Moss sp.	70.0%
				1		Downed Woody Debris	9.0%
			Dr E	<u> </u>	<u> </u>		
			<i>7</i> .			Non-Vegetated area	19.0%
						Non-Vegetated area	19.0%
			전 장			Non-Vegetated area	19.0%
						Non-Vegetated area	19.0%

B.C.'s WILD HERITAGE VEGETATION PLOT DATA: Date 9/4/99 Site Name Skagit Skyline Trail Surveyor Denis and Lee Two 2m, radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot. Plot 1 Pin H UTM m. E UTM m. N Wetland **Plant Species** % Cover Forested Shrubland Grassland 0.1% 1st) 0641898 (1st) 5433507 Douglas-fir (seedlings) 6.0% Beaked Hazel 0.5% Birch-leaved Spirea Baldhip Rose 4.0% **Notes** 9.0% Non-vegetated area is made up Saskatoon mostly by the trail. A UTM (NAD Red Raspberry 0.2% 27) was taken. Orange Honeysuckle 1.5% Dull Oregon-grape 9.0% Broad-leaved Starflower 1.5% Falsebox 0.5% Prince's-pine / Pipsissewa 0.2% Woodland Strawberry 0.6% White-flowered Hawkweed 3.0% Falkland Island Sedge 2.0% Blue Wildrye 0.1% Moss 45.0% Non-Vegetated area 40.0% Pin H: Plot 2: 10m. @ UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species % Cover 15.0% Dull Oregon-grape Saskatoon 1.5% 4.0% Baldhip Rose Falsebox 3.0% Notes Orange Honeysuckle 4.5% Non-vegetated area is made up Birch-leaved Spirea 0.5% mostly by the trail. A UTM (NAD 27) was taken. Broad-leaved Starflower 5.0% Prince's Pine / Pipsissewa 0.2% White-flowered Hawkweed 0.1% Woodland Strawberry 1.0% Blue Wildrye 0.5% Moss sp. 60.0% 12.0% Non-vegetated area

B.C.'s WILD HERITAGE VEGETATION PLOT DATA:

Surveyor Lee, Denis Date 08/04/99 Site Name Skyline Trail

Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot.

Pin I	Plot 1	i					
UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cove
1 st) 0642279	(1 st) 5433870					Western Red Cedar	7.0%
						Douglas-fir Seedling	0.1%
						Saskatoon	4.0%
N	otes					Dull Oregon-grape	10.0%
in at right side	of trail, at cedar,					Falsebox	0.5%
	log. 10m to plot #2.	p(x, t) = x				Oceanspray	1.0%
Non-vegetated ar		4.00				Baldhip Rose	1.0%
nostly by the trai	il. A UTM (NAD					Orange Honeysuckle	2.0%
27) was taken.						Elderberry Sp.	0.3%
						False Solomon's-seal	0.5%
						Broad-leaved Starflower	1.5%
				*	 	Woodland Strawberry	3.0%
		1.00				Wild Strawberry	0.2%
						Moss	65.0%
	,		P	ğ		Non-vegetative area	18.0%
					<u>}</u>	1 ton-vegetative area	10.070
		2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -					
			1	II.			1
		<u> </u>	†	-	-		
Pin I:	Plot 2: 10:	m along	trail				
Pin I:	Plot 2: 10			Grassland	Wetland	Plant Species	% Cove
UTM m. E	UTM m. N			Grassland	Wetland	Plant Species Orange Honeysuckle (ciliosa)	
UTM m. E				Grassland	Wetland	Orange Honeysuckle (ciliosa)	5.0%
UTM m. E	UTM m. N			Grassland	Wetland	Orange Honeysuckle (ciliosa) Falsebox	5.0%
UTM m. E (1 st) 0642279	UTM m. N (1 st) 5433870			Grassland	Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray	5.0% 0.5% 3.0%
UTM m. E (1st) 0642279	UTM m. N (1 st) 5433870			Grassland	Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon	5.0% 0.5% 3.0% 7.0%
UTM m. E (1st) 0642279 Non-vegetated as	UTM m. N (1st) 5433870 Notes rea is made up			Grassland	Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose	5.0% 0.5% 3.0% 7.0% 4.0%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1 st) 5433870			Grassland	Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape	5.0% 0.5% 3.0% 7.0% 4.0% 30.0%
UTM m. E (1st) 0642279 Non-vegetated as	UTM m. N (1st) 5433870 Notes rea is made up			Grassland	Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up			Grassland	Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up			Grassland	Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up			Grassland	Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed Blue Wildrye	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4% 0.3%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up		Shrubland		Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed Blue Wildrye Moss	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4% 0.3% 40.0%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up	Forested	Shrubland		Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed Blue Wildrye	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4% 0.3%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up	Forested	Shrubland		Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed Blue Wildrye Moss	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4% 0.3% 40.0%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up	Forested	Shrubland		Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed Blue Wildrye Moss	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4% 0.3% 40.0%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up	Forested	Shrubland		Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed Blue Wildrye Moss	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4% 0.3% 40.0%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up	Forested	Shrubland		Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed Blue Wildrye Moss	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4% 0.3% 40.0%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up	Forested	Shrubland		Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed Blue Wildrye Moss	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4% 0.3% 40.0%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up	Forested	Shrubland		Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed Blue Wildrye Moss	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4% 0.3% 40.0%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up	Forested	Shrubland		Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed Blue Wildrye Moss	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4% 0.3% 40.0%
UTM m. E (1st) 0642279 Non-vegetated amostly by the tra	UTM m. N (1st) 5433870 Notes rea is made up	Forested	Shrubland		Wetland	Orange Honeysuckle (ciliosa) Falsebox Oceanspray Saskatoon Baldhip Rose Dull Oregon-grape Woodland Strawberry Broad-leaved Starflower White-flowered Hawkweed Blue Wildrye Moss	5.0% 0.5% 3.0% 7.0% 4.0% 30.0% 1.0% 3.0% 0.4% 0.3% 40.0%

	B.C.'s WII	LD HERITA	AGE V	EGET	ATION	N PLO	T DATA:	
	Surveyor Deni	s, Lee Dat	e <u>09/04/</u>	99	Site	Name SI	kyline Trail	
•	Two 2m. radius p	lots are located nea	r each lette	red pin. T	he center o	f plot one i	is the lettered pin. The center of plo	t two is 10-m.
	along the trail fro	om the lettered pin	unless othe	rwise speci	fied. The	first plot c	enter is on the right hand side of the	e trail leading
3	way from the hor	rsecamp. The cente	r of the trai	ls marks th	e plot cente	r for the se	econd plot.	
	Pin J	Plot 1	1					
I	UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cover
Ì		(1 st) 5433925					Foamflower (uniflora)	18.0%
Ì	2) 0011201	(2) 0 300 300	1341				Red-flowering Currant	0.5%
ı							Black Swamp Current	0.1%
Ì	N	otes					Trailing Blackberry	0.1%
ŀ		of trail, blowdown					Broad-leaved Starflower	0.1%
	debris. 9m south						Red Columbine	0.2%
	Nepopekum. Stee						Evergreen Violet	1.0%
	Lots of blowdown		Compagain				American Vetch	0.1%
	Non-vegetated are						Woodland Strawberry	0.5%
		I. A UTM (NAD					Oak Fern	6.0%
	27) was taken.	`					Lady Fern	1.0%
l							Sword Fern	2.0%
l		·					Downed woody debris	20.0%
l							Non-vegetated trail	50.0%
١	•						11011-vegetated trail	30.070
l						<u> </u>		
I				 				
l				<u> </u>		-		
١								
l								+
l			 	<u> </u>				-
l	D: T.	DI-4.2. 10.		- A		<u> </u>	<u> </u>	L
I	Pin J:	Plot 2: 10			Grassland	337-413	Impart Caral	% Cover
ı	UTM m. E (1 st) 0644201	UTM m. N (1 st) 5433925	Forested	Shrubiand	Grassiand	Wetland	Plant Species Goatsbeard	2.0%
	(1) 0044201	(1) 3433923					Thimbleberry	18.0%
I							Blackcap Raspberry	1.0%
١	N.				 		Black Swamp Gooseberry	0.2%
ı		otes	P4.5-12.7					
	By creek. Non-ve made up mostly b		1000				Falsebox Bitter Lettuce	0.8%
	made up mostry t UTM (NAD 27)					· ·		1.0%
	UTM (NAD 21)	was taken.	100 - 200				Queen's Cup Devil's Club	2.5%
į	•					<u> </u>		
		٠,					Foamflower (uniflora) Broad-leaved Starflower	8.0% 1.0%
1						<u> </u>	Pathfinder	
			-545 (\$1) 45-5		<u> </u>			0.2%
Ì			F 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		ļ		Woodland Strawberry	0.1%
1					<u> </u>		Hooker's Fairybells	3.0%
				<u> </u>	ļ		Mt. Sweet Cicely	0.1%
ı				<u> </u>			Evergreen Violet	2.5%
				<u> </u>	 	ļ	Blue Wildrye	0.1%
		•			<u> </u>		Oak Fern	10.0%
							Lady Fern	0.5%
			1,341.11				Sword Fern	0.3%
ļ			34,7415		<u> </u>		Moss Sp.	3.0%
			344				Non-vegetated area	1 FA AA/

% Cover 0.2% 8.0% 0.1% 5.0% 5.0%
% Cover 0.2% 8.0% 0.1% 5.0%
0.2% 8.0% 0.1% 5.0%
0.2% 8.0% 0.1% 5.0%
0.2% 8.0% 0.1% 5.0%
0.2% 8.0% 0.1% 5.0%
8.0% 0.1% 5.0%
0.1% 5.0%
5.0%
1 3.070
5.0%
2.0%
4.0%
3.0%
9.0%
0.1%
0.2%
0.2%
2.0%
2.0%
0.2%
0.5%
0.1%
0.1%
0.1%
0.1%
12.0%
0.1%
0.1%
% Cove
1.0%
12.0%
7.0%
2.0%
3.0%
6.0%
6.0%
3.5%
4.0%
9.0%
9.0% 0.8%
9.0% 0.8% 2.0%
9.0% 0.8% 2.0% 0.1%
9.0% 0.8% 2.0% 0.1% 0.1%
9.0% 0.8% 2.0%
9.0% 0.8% 2.0% 0.1% 0.1%

		LD HERITA			ATION			
	Surveyor <u>Den</u>		10/17/				ne Sky Line Trail	
							is the lettered pin. The center of	
							enter is on the right hand side of	of the trail leading
2		rsecamp. The center	of the trai	ils marks the	e plot cente	r for the se	cond plot.	
ł	Pin L	Plot 1	,					
	UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cover
	(1 st) 0645836	(1 st) 5433230					Saskatoon	2.0%
	(2 nd) 0645820	(2 nd) 5433230					Falsebox	2.0%
ſ							Dull Oregon-grape	0.4%
ſ	N	otes		7.			Oregon Sunshine	1.5%
ı	This site was visi	ted twice and UTM					Pussy Toes	3.0%
k	NAD 27) coordi	nate taken each			Series Sage		Wild Strawberry	9.0%
ŀ	visit. Non-vegetat	ted area is made up	*	17.2			Spreading Phlox	3.5%
þ	nostly by the trai	1.					Showy Daisy	0.1%
ı							American Vetch	0.1%
Ì		*	 	7 7			Northern Bedstraw	0.5%
١							Showy Aster	1.5%
ı							Yarrow	2.0%
١	•						Arctic Lupine	0.5%
١							Blue Wildrye	2.0%
I							Sweet Grass	0.2%
۱				51,270			Falkland Island Sedge	4.5%
١				1000			Non-vegetated area	50%
l				7.298.204C 42.0054.004466519679.004				
l								
ł				 				
İ				 				
l								
ŀ								
ŀ	Pin L:	Plot 2: 10:	n @ 3	250			<u> </u>	
ŀ		Plot 2: 10:			0 1 1	337.43. 3	Di a Carata	T e/ G
ŀ	UTM m. E (1 st) 0645836	UTM m. N (1st) 5433230	rorestea	Shrubland	Grassiano	wetiand	Plant Species	% Cover 5.0%
	(1 st) 0645836 (2 nd) 0645820	(1 st) 5433230 (2 nd) 5433230	<u> </u>				Douglas-fir Falsebox	6.0%
F	2) 0043820	(2) 3433230					Thimbleberry	1.0%
ŀ		<u> </u>						
ŀ		lotes	ļ				Birch-leaved Spirea	1.0%
		ited twice and UTM	<u> </u>				Baldhip Rose	1.0%
	(NAD 27) coordi	nate taken each		3.7			Oregon Stonecrop	0.1%
	mostly by the train		<u> </u>				Yarrow	5.0%
ľ	mostry by the trai	11.					Silverleaf Phacelia	1.5%
١							Holboell's Rockcress	0.5%
١					100		Cinquefoil	0.5%
ł				51 T SEC. 25	100		Aster Sp.	2.0%
Į							Blue Wildrye	3.0%
			ļ				Falkland Island Sedge	1.0%
l							Non-vegetated area	50%
		•			ļ			
Į							to a	
١					ļ			

B.C.'s WILD HERITAGE VEGETATION PLOT DATA:

Surveyor Denis and Angela Date 07/12/99 Site Name Whitworth Forest Horse Camp

Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot.

Pin M	Plot 1						
UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cover
1 st) 0641178 (1	st) 5433893					Birch (seedling)	0.75%
						Birch-leaved Spirea	3.0%
		Section 4.				Dull Oregon-grape	14.0%
Not	es					Falsebox	4.0%
Spike is located in t	he center of a	4				Baldhip Rose	2.0%
mall island betwee		2500	Alexania.			Saskatoon	2.0%
and corral at site #8	, at the south end				, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Broad-leaved Starflower	0.1%
of the horse camp.]	Non-vegetated		May 1			Bunchberry	1.0%
rea is made up mo	stly by the trail.				<u> </u>	Miner's Lettuce	0.3%
A UTM (NAD 27)	was taken.					Wild Strawberry	0.1%
		40,000				Arctic Lupine	0.1%
						Small-flowered Willowherb	0.2%
						Blue Wildrye	0.7%
						Sweet Grass Sp.	0.3%
						Western Fescue	4.0%
						Non-vegetated area	70.0%
				1			
							
			<u> </u>				
Pin M:	Plot 2: 101	m. @ 3	30°		I	<u> </u>	· · · · · · · · · · · · · · · · · · ·
UTM m. E	UTM m. N			Grassland	Wetland	Plant Species	% Cove
1 st) 0641178 (1	st) 5433893	27,				Douglas-fir	15.0%
						Willow sp.	3.0%
						Soopalallie	2.5%
Not	es					Tall Oregon-grape	4.0%
Non-vegetated area	is made up					Dull Oregon-grape	9.0%
nostly by the trail.	•					Birch-leaved Spirea	3.0%
27) was taken.	•	200				Saskatoon	5.0%
		APPINE NA				Falsebox	25.0%
			22			Kinnikinnick	2.0%
						Arctic Lupine	10.0%
						White-flowered Hawkweed	2.0%
						Broad-leaved Starflower	0.3%
						Spreading Dogbane	2.0%
						Woodland Strawberry	2.0%
						Woodland Strawberry Wild Strawberry	2.0%
						Wild Strawberry	2.0%
						Wild Strawberry Early Blue Violet	2.0% 0.7%
						Wild Strawberry Early Blue Violet Twinflower	2.0% 0.7% 0.5%
						Wild Strawberry Early Blue Violet Twinflower Lyall's Anemone	2.0% 0.7% 0.5% 0.1%
						Wild Strawberry Early Blue Violet Twinflower Lyall's Anemone Blue Wildrye	2.0% 0.7% 0.5% 0.1% 1.0%
						Wild Strawberry Early Blue Violet Twinflower Lyall's Anemone Blue Wildrye Western Fescue	2.0% 0.7% 0.5% 0.1% 1.0% 2.0%
						Wild Strawberry Early Blue Violet Twinflower Lyall's Anemone Blue Wildrye Western Fescue Columbia Brome	2.0% 0.7% 0.5% 0.1% 1.0% 2.0% 1.0%
						Wild Strawberry Early Blue Violet Twinflower Lyall's Anemone Blue Wildrye Western Fescue	2.0% 0.7% 0.5% 0.1% 1.0% 2.0%

B.C.'s WILD HERITAGE VEGETATION PLOT DATA:

Surveyor Denis and Angela Date 07/12/99 Site Name Whitworth Forest Horse Camp

Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot.

1° 0641109 (1° 5434032 Saskatoon 13.09	Pin N	Plot 1						
Notes Notes Dull Oregon-grape Palsebox Spike is located across the road from ite 11, 10m from the double tree cheind the number 11 post. The irrele is overhung by a Douglas-fir. On-vegetated area is made up mostly by the trail. A UTM (NAD 77) was taken. Pin N: Plot 2: 10m. @ 215° UTM us. E UTM m. N Forested Shrubland Grassland Wetland Wetland Shrevpt 4.0% Non-vegetated area is made up mostly by the trail. Notes Only trees with their trunks within the circle are included. Overhanging branches not factored. Non-vegetated area is nade up mostly by the trail. A UTM (NAD 27) was taken. Saskatoron Fall Oregon-grape 22.0% Baldhip Rose 6.0% 17-miling Blackberry 6.0% Wild Strawberry 9.00-miling Blackberry 15.0% Non-vegetated 25.0% Non-vegetated 25.0% Pin N: Plot 2: 10m. @ 215° UTM us. E UTM m. N Forested Shrubland Grassland Wetland Plant Species 18.0% Non-vegetated 25.0% Pin Os41109 [1*] 5434032 Ouglas-fir 0.0mgpeloe Pine 36.0% Orange Honeysuckle 1.0% Orange Honeysuckle 1.0% Orange Honeysuckle 1.0% Red Raspberry 1.0% Red Raspberry 1.0% Red Raspberry 1.0% Wild Strawberry 1.0% Woodland Strawberry 1.0% Woodla		UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cover
Notes Spike is located across the road from ite 11, 10m from the double tree whind the number 11 post. The circle is overhung by a Douglas-fir. Non-vegetated area is made up nostly by the trail. A UTM (NAD 27) was taken. Pin N: Plot 2: 10m. @ 215° UTM m. E UTM m. N [18] 0 641109 [18] 5434032 Ponly trees with their trunks within the circle are included. Overhanging branches not factored. Non-vegetated area is made up nostly by the trail. A UTM (NAD 27) was taken. Tailing Blackberry 4.0% Arctic and Silvery Lupines 15.0% Field Passytoes 18.0% Non-vegetated 2.5,0% Non-vegetated 2.5,0% Non-vegetated 2.5,0% Non-vegetated 2.5,0% Notes 2.5,0% Notes 2.5,0% Douglas-fir 2.5,0% Douglas-fir 2.5,0% Douglas-fir 3.6,0% Douglas-fir 4.0,0% Douglas-fir 3.6,0% Douglas-fir 4.0,0%	(1 st) 0641109	(1 st) 5434032						17.0%
Notes Dull Oregon-grape 22.09		·					The state of the s	13.0%
Pin N: Plot 2: 10m. @ 215° Pin N: Plot 2: 10m. @ 215° UTM m. E UTM m. N "b" 0641109 1*" 5434032 Notes Diny trees with their trunks within the circle are included. Overhanging branches not factored. Non-eyestated are as made up mostly by the trail. A UTM (NAD 27) was taken.								
rite 11, 10m from the double tree whind the number 11 post. The chind the number 11 post. The number 12 post. The nu	N	lotes						22.0%
pelind the number 11 post. The circle is overhung by a Douglas-fir. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. Pin N: Plot 2: 10m. @ 215° UTM m. E UTM m. N Forested Shrubland Grassland Wetland Non-vegetated Plant Species (18) Orange Honeysuckle (19) Orange H								5.0%
Pin N: Plot 2: 10m. @ 215° UTM m. E UTM m. N Forested Shrubland Grassland Wetland Douglas-fir A0% Notes Orange Honeysuckle 1.0% Notes Orange Honeysuckle 1.0% Notes Orange Honeysuckle 1.0% Notes Dull Orgon-grape 35.0% ITailing Blackberry 4.0% Arctic and Silvery Lupines 15.0% Blue Wildyre 2.0% Wild Strawberry 4.0% Non-vegetated 25.0% Pin N: Plot 2: 10m. @ 215° UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species 4.0% Orange Honeysuckle 1.0% Orange Honeysuckle 1.0% Orange Honeysuckle 1.0% Orange Honeysuckle 1.0% Orange Honeysuckle 5.0% Dull Orgon-grape 35.0% Baldhip Rose 1.0% Falsebox 4.0% Falsebox 4.0% Woodland Strawberry 0.759 Woodland Strawberry 0.759 Woodland Strawberry 6.0% Woodland Strawberry 8.0% Small-flowerd Willowherb 0.1% Blue Wildyre 12.0% Early Blue Vildet 0.1½ Lyall's Anemone 0.1%				444				6.0%
Non-vegetated area is made up nostly by the trail. A UTM (NAD Field Pussyloes 18.0% Wild Strawberry 4.0% Non-vegetated 25.0% Notes Notes Notes Notes Notes Notes Notes Notes Non-vegetated 25.0% Notes Notes Non-vegetated 25.0% Notes Notes Non-vegetated 25.0% Notes Notes Non-vegetated 25.0% Notes Notes Non-vegetated 25.0% Non-vegetated 25.0% Non-vegetated 25.0% Notes Notes Notes Non-vegetated 25.0% Notes								3.0%
Pin N: Plot 2: 10m. @ 215° UTM m. E UTM m. N [15] 5434032 Douglas-fir (10) 5434032 Notes Wither trunks within the circle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. Pin N: Plot 2: 10m. @ 215° UTM m. E UTM m. N [5] 5434032 Douglas-fir (10) 0000 0000 0000 0000 0000 0000 0000		- •						4.0%
Blue Wildrye 2.0%								15.0%
Pin N: Plot 2: 10m. @ 215° UTM m. E UTM m. N Forested Shrubland Grassland Wetland Lodgepole Pine 36.0° (1th) 0641109 (1th) 5434032 Lodgepole Pine 36.0° Notes Only trees with their trunks within the circle are included. Overhanging branches not factored, Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. Notes Red Raspberry 0.75% Wild Strawberry 6.0% Wild Strawberry 1.0% Wild Strawberry 6.0% Wild Strawberry 6.0% Wild Strawberry 8.0% Wild Strawberry 6.0% Woodland Strawberry 8.0% Woodland Strawberry 8.0% Field Pusystoes 34.0% Small-flowered Willowherb 0.1% Blue Wildrye 12.0% Small-flowered Willowherb 0.1% Blue Wildrye 12.0% Early Blue Violet 0.1% Early Blue Violet 0.1% Early Blue Violet 0.1% Lyall's Anemone 0.1%		il. A UTM (NAD					Field Pussytoes	18.0%
Pin N: Plot 2: 10m. @ 215° UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species % Cow C1th 0641109 (1th 5434032) Notes Only trees with their trunks within their trunks within their cle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. None of the circle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. None of the circle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. None of the circle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. Red Raspberry 0.759. Wild Strawberry 0.759. Woodland Strawberry 0.99. Woodland Strawberry 0.99. Lupines (sp. Arctic and Silvery) 25.09. Field Pussytoes 34.09. Small-flowered Willowherb 0.11%. Blue Wildrye 12.09. Blue Wildrye 12.09. Early Blue Violet 0.1%. Lyall's Anemone 0.15%.	27) was taken.						Blue Wildrye	2.0%
Pin N: Plot 2: 10m. @ 215° UTM m. E UTM m. N Forested Shrubland Grassland Wetland Lodgepole Pine 36.0° Notes Only trees with their trunks within Dull Oregon-grape 35.0° the circle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. A UTM (NAD 27) was taken. Pin N: Plot 2: 10m. @ 215° UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species % Cov (1°) old (10°) old (Wild Strawberry	4.0%
UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species % Cov (1st) 0641109 (1st) 5434032 Lodgepole Pine 36.09 Notes Douglas-fir 4.09 Notes Birch-leaved Spirea 1.09 Orange Honeysuckle 1.09 Orange Honeysuckle 1.09 Dull Oregon-grape 35.09 Baldhip Rose 1.09 oranches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. Red Raspberry 0.759 Wild Strawberry 6.09 Woodland Strawberry 8.09 Lupines (sp. Arctic and Silvery) 25.09 Field Pussytoes 34.09 Small-flowered Willowherb 0.19 Blue Wildrye 12.09 Early Blue Violet 0.19							Non-vegetated	25.0%
UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species % Cov (1st) 0641109 (1st) 5434032 Lodgepole Pine 36.09 Notes Douglas-fir 4.09 Notes Dirch-leaved Spirea 1.09 Orange Honeysuckle 1.09 Orange Honeysuckle 1.09 Dull Oregon-grape 35.09 Baldhip Rose 1.09 branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. Red Raspberry 0.759 Wild Strawberry 6.09 Woodland Strawberry 8.09 Lupines (sp. Arctic and Silvery) 25.09 Field Pussytoes 34.09 Small-flowered Willowherb 0.19 Blue Wildrye 12.09 Early Blue Violet 1.09 Lyall's Anemone 0.19								
UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species % Cov. (1st) 0641109 (1st) 5434032								
UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species % Cov. 1st 0.641109 (1st 5.434032								
UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species % Cov. 1st 0.641109 (1st 5.434032								
UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species % Cov. (1*) 0641109 (1*) 5434032 Lodgepole Pine 36.09 Notes Douglas-fir 4.0% Notes Birch-leaved Spirea 1.0% Notes Dull Oregon-grape 35.09 Granches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. Red Raspberry 0.759 Woodland Strawberry 6.0% Wild Strawberry 6.0% Woodland Strawberry 8.0% Small-flowered Willowherb 0.1% Blue Wildrye 12.0% Early Blue Violet 0.1% Lyall's Anemone 0.1%								
UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species % Cov (1st) 0641109 (1st) 5434032 Lodgepole Pine 36.09 Notes Douglas-fir 4.09 Notes Dirch-leaved Spirea 1.09 Notes Dull Oregon-grape 35.09 branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. Red Raspberry 0.759 Wild Strawberry 6.09 Wild Strawberry 6.09 Woodland Strawberry 8.09 Lupines (sp. Arctic and Silvery) 25.09 Field Pussytoes 34.09 Small-flowered Willowherb 0.19 Blue Wildrye 12.09 Early Blue Violet 0.19		1						
Comparison of the circle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. UTM (NAD 28) UTM (NAD 29) UTM (NAD 2					.			
Douglas-fir 4.0% Notes Orange Honeysuckle 1.0% Notes Only trees with their trunks within the circle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. Doull Oregon-grape 35.0% Baldhip Rose 1.0% Falsebox 4.0% Red Raspberry 0.75% Wild Strawberry 1.0% Wild Strawberry 6.0% Woodland Strawberry 6.0% Woodland Strawberry 8.0% Lupines (sp. Arctic and Silvery) 25.0% Field Pussytoes 34.0% Small-flowered Willowherb 0.1% Blue Wildrye 12.0% Early Blue Violet 0.1% Lyall's Anemone 0.1%			Forested	Shrubland	Grassland	Wetland		
Notes Only trees with their trunks within the circle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. A UTM (NAD 27) was taken. Orange Honeysuckle Birch-leaved Spirea 1.0% Dull Oregon-grape 35.0% Falsebox 4.0% Red Raspberry 7.5% Wild Strawberry 6.0% Woodland Strawberry 8.0% Lupines (sp. Arctic and Silvery) 5.0% Field Pussytoes 34.0% Small-flowered Willowherb 0.1% Blue Wildrye 12.0% Early Blue Violet 1.0% Constitution of the circle are included. Overhanging and the circle are included. O	(1°) 0641109	(1°) 5434032		20.00				
Notes Only trees with their trunks within the circle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. A UTM (NAD 27) was taken. Birch-leaved Spirea 1.0% Baldhip Rose 1.0% Falsebox 4.0% Red Raspberry 0.75% Wild Strawberry 5.0% Woodland Strawberry 8.0% Lupines (sp. Arctic and Silvery) 25.0% Field Pussytoes 34.0% Small-flowered Willowherb 0.1% Blue Wildrye 12.0% Early Blue Violet 0.1% Lyall's Anemone 0.1%						<u> </u>		
Only trees with their trunks within the circle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. A UTM (NAD 27) was taken. Dull Oregon-grape 1.0% Falsebox 4.0% Red Raspberry 0.75% Wild Strawberry 6.0% Woodland Strawberry 8.0% Lupines (sp. Arctic and Silvery) 25.0% Field Pussytoes 34.0% Small-flowered Willowherb 0.1% Blue Wildrye 12.0% Early Blue Violet 0.1% Lyall's Anemone 0.1%		<u> </u>	7507					
the circle are included. Overhanging branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. A UTM (NAD 27) was taken. Baldhip Rose Falsebox Red Raspberry 0.75% Wild Strawberry 6.0% Woodland Strawberry 8.0% Lupines (sp. Arctic and Silvery) 5.0% Field Pussytoes 34.0% Small-flowered Willowherb 0.1% Blue Wildrye 12.0% Early Blue Violet 0.1%				1 27 232				
branches not factored. Non-vegetated area is made up mostly by the trail. A UTM (NAD 27) was taken. Falsebox Red Raspberry O.75% Wild Strawberry 6.0% Woodland Strawberry 8.0% Lupines (sp. Arctic and Silvery) 5mall-flowered Willowherb 0.1% Blue Wildrye 12.0% Early Blue Violet O.1% Lyall's Anemone O.75%								
A UTM (NAD 27) was taken. Red Raspberry Twinflower Wild Strawberry 6.0% Woodland Strawberry Lupines (sp. Arctic and Silvery) 5.0% Field Pussytoes Small-flowered Willowherb Dlue Wildrye Early Blue Violet Lyall's Anemone 0.75% 0.75% 0.75% Red Raspberry 0.75% Woodland Strawberry 8.0% Blue Wildrye 12.0% Early Blue Violet 0.1%							Baldhip Rose	
A UTM (NAD 27) was taken. Twinflower 1.0%				10.00				
Wild Strawberry 6.0%								0.75%
Woodland Strawberry 8.0% Lupines (sp. Arctic and Silvery) 25.0% Field Pussytoes 34.0% Small-flowered Willowherb 0.1% Blue Wildrye 12.0% Early Blue Violet 0.1% Lyall's Anemone 0.1%	A UTM (NAD 2	7) was taken.				,		1.0%
Lupines (sp. Arctic and Silvery) 25.09 Field Pussytoes 34.09 Small-flowered Willowherb 0.1% Blue Wildrye 12.09 Early Blue Violet 0.1% Lyall's Anemone 0.1%		•						6.0%
Field Pussytoes 34.0% Small-flowered Willowherb 0.1% Blue Wildrye 12.0% Early Blue Violet 0.1% Lyall's Anemone 0.1%					2			8.0%
Small-flowered Willowherb 0.1% Blue Wildrye 12.0% Early Blue Violet 0.1% Lyall's Anemone 0.1%					š			25.0%
Blue Wildrye 12.09 Early Blue Violet 0.1% Lyall's Anemone 0.1%				1 2 2				34.0%
Early Blue Violet 0.1% Lyall's Anemone 0.1%							Small-flowered Willowherb	0.1%
Lyall's Anemone 0.1%					24 34		Blue Wildrye	12.0%
							Early Blue Violet	0.1%
								0.1%
				100000				22.0%
				· ·				
	· .			<u> </u>		<u> </u>		

	Denis and Angela				Whitworth Forest Horse Car	
Γwo 2m. radius	plots are located nea	ar each lette	ered pin. The center	of plot one	is the lettered pin. The center of p	olot two is 10-
along the trail fi	rom the lettered pin	unless othe	rwise specified. The	first plot c	enter is on the right hand side of	the trail leadi
away from the ho	orsecamp. The center	of the train	ils marks the plot cen	ter for the se	econd plot.	
Pin O	Plot 1	1				
UTM m. E	UTM m. N	Forested	Shrubland Grasslan	Wetland	Plant Species	% Cove
(1 st) 0641054	(1 st) 5434073		75.000000000000000000000000000000000000		Lodgepole Pine (DBH 10cm)	30.0%
(1) 00.100.	(2) 0 10 10 10			 	Douglas-fir	8.0%
	+				Saskatoon	27.0%
7	Notes	12.00		 	Falsebox	8.0%
	he eastern base of a				Tall Oregon-grape	2.0%
	10m at 250° from			 	Dull Oregon-grape	17.0%
	of the kiosk. Non-			+	Black Huckleberry	3.0%
	s made up mostly by				Red-stemmed Ceanothus	3.0%
ne trail. A UTM (NAD 27) was		1911 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			Kinnikinnick	3.0%
iken.				-	Orange Honeysuckle	3.0%
·				+	Broad-leaved Starflower	3.0%
				 		2.0%
		grant files		-	Prince's Pine / Pipsissewa	
		4.02			Tiger Lily	1.0%
					Wild Strawberry	5.0%
					Lyall's Anemone	0.7%
				-	Lupine (sp.)	13.0%
		100		<u> </u>	Twinflower	2.0%
		8.000			Western Fescue	1.0%
					Non-vegetated area	20.0%
		<u> </u>	<u> </u>			
		<u> </u>				
Pin O:	Plot 2: 10	m. @ 2	50°			
UTM m. E	UTM m. N	Forested	Shrubland Grasslan	d Wetland	Plant Species	% Cove
(1 st) 0641054	(1 st) 5434073				Lodgepole Pine	26.0%
					Douglas-fir	5.0%
			4 4000400000-0000	T	Willow sp.	1.0%
		Angel to Angel				
	Notes				Saskatoon	7.0%
Non-vegetated a	rea is made up				Saskatoon	4.0%
Non-vegetated a					Saskatoon Black Huckleberry Falsebox	4.0% 9.0%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape	4.0% 9.0% 13.0%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape Spreading Dogbane	4.0% 9.0% 13.0% 14.0%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape Spreading Dogbane Orange Honeysuckle	14.0% 4.0%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape Spreading Dogbane Orange Honeysuckle Wild Strawberry	4.0% 9.0% 13.0% 14.0% 4.0% 4.0%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape Spreading Dogbane Orange Honeysuckle Wild Strawberry Lupine (sp.)	4.0% 9.0% 13.0% 14.0% 4.0% 4.0%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape Spreading Dogbane Orange Honeysuckle Wild Strawberry Lupine (sp.) White-flowered Hawkweed	4.0% 9.0% 13.0% 14.0% 4.0% 4.0% 17.0% 0.1%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape Spreading Dogbane Orange Honeysuckle Wild Strawberry Lupine (sp.) White-flowered Hawkweed Western Fescue	4.0% 9.0% 13.0% 14.0% 4.0% 4.0% 17.0% 0.1% 12.0%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape Spreading Dogbane Orange Honeysuckle Wild Strawberry Lupine (sp.) White-flowered Hawkweed Western Fescue Blue Wildrye	4.0% 9.0% 13.0% 14.0% 4.0% 4.0% 17.0% 0.1% 12.0% 1.0%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape Spreading Dogbane Orange Honeysuckle Wild Strawberry Lupine (sp.) White-flowered Hawkweed Western Fescue	4.0% 9.0% 13.0% 14.0% 4.0%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape Spreading Dogbane Orange Honeysuckle Wild Strawberry Lupine (sp.) White-flowered Hawkweed Western Fescue Blue Wildrye	4.0% 9.0% 13.0% 14.0% 4.0% 4.0% 17.0% 0.1% 12.0% 1.0%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape Spreading Dogbane Orange Honeysuckle Wild Strawberry Lupine (sp.) White-flowered Hawkweed Western Fescue Blue Wildrye	4.0% 9.0% 13.0% 14.0% 4.0% 4.0% 17.0% 0.1% 12.0% 1.0%
Non-vegetated a mostly by the tra	rea is made up				Saskatoon Black Huckleberry Falsebox Dull Oregon-grape Spreading Dogbane Orange Honeysuckle Wild Strawberry Lupine (sp.) White-flowered Hawkweed Western Fescue Blue Wildrye	4.0% 9.0% 13.0% 14.0% 4.0% 4.0% 17.0% 0.1% 12.0%

B.C.'s WILD HERITAGE VEGETATION PLOT DATA:

Surveyor Denis and Angela Date 07/12/99 Site Name Whitworth Forest Horse Camp

Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot.

UTM m. E	Plot 1						
	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cover
1 st 0640922)	(1 st 5434096)					Saskatoon	14.0%
						Dull Oregon-grape	8.0%
						Birch-leaved Spirea	9.0%
	Notes					Baldhip Rose	3.0%
At the beginning	of the trail to the			2.5		Thimbleberry	0.5%
	1m @ 320° behind	8				Kinnikinnick	20.0%
oost with no ridi						Yellow Woodland Violet	1.5%
	made up mostly by					Wild Strawberry	17.0%
	M (NAD 27) was					Lupine sp.	30.0%
aken.		12.5		CLUT HAVE BEEN		Lyall's Anemone	0.1%
		Section 2				Orange Honeysuckle	3.0%
						Western Fescue	30.0%
					- 1-1-1	Non-vegetated area	7.0%
				and the same			
				_			
Pin P:	Plot 2: 10	m. @ 3	30°				
Pin P:	Plot 2: 10			Grassland	Wetland	Plant Species	% Cove
UTM m, E	UTM m. N			Grassland	Wetland	Plant Species Douglas-fir	
				Grassland	Wetland	Douglas-fir	0.5%
UTM m, E	UTM m. N			Grassland	Wetland	Douglas-fir Saskatoon	
UTM m. E (1 st 0640922)	UTM m. N (1 st 5434096)			Grassland	Wetland	Douglas-fir Saskatoon Birch-leaved Spirea	0.5% 6.0% 7.0%
UTM m. E (1 st 0640922)	UTM m. N (1 st 5434096)			Grassland	Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick	0.5% 6.0% 7.0% 55.0%
UTM m. E (1st 0640922) Non-vegetated as	UTM m. N (1st 5434096) Notes rea is made up			Grassland	Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape	6.0% 7.0% 55.0% 5.0%
UTM m. E (1st 0640922) Property of the strain of the str	UTM m. N (1 st 5434096)			Grassland	Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry	0.5% 6.0% 7.0% 55.0% 5.0% 3.0%
UTM m. E (1st 0640922) Non-vegetated as	UTM m. N (1st 5434096) Notes rea is made up				Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry Lupine (two sp.)	0.5% 6.0% 7.0% 55.0% 5.0% 3.0% 20.0%
UTM m. E (1st 0640922) Property of the strain of the str	UTM m. N (1st 5434096) Notes rea is made up				Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry Lupine (two sp.) Violet sp.	0.5% 6.0% 7.0% 55.0% 5.0% 3.0% 20.0% 1.0%
UTM m. E (1st 0640922) Property of the strain of the str	UTM m. N (1st 5434096) Notes rea is made up				Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry Lupine (two sp.) Violet sp. Field Pussytoes	0.5% 6.0% 7.0% 55.0% 5.0% 3.0% 20.0% 1.0% 30.0%
UTM m. E (1st 0640922) Property of the strain of the str	UTM m. N (1st 5434096) Notes rea is made up	Forested			Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry Lupine (two sp.) Violet sp. Field Pussytoes Western Fescue	0.5% 6.0% 7.0% 55.0% 5.0% 3.0% 20.0% 1.0% 30.0% 4.0%
UTM m. E (1st 0640922) Property of the strain of the str	UTM m. N (1st 5434096) Notes rea is made up				Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry Lupine (two sp.) Violet sp. Field Pussytoes	0.5% 6.0% 7.0% 55.0% 5.0% 3.0% 20.0% 1.0% 30.0%
UTM m. E (1st 0640922) Property of the strain of the str	UTM m. N (1st 5434096) Notes rea is made up	Forested			Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry Lupine (two sp.) Violet sp. Field Pussytoes Western Fescue	0.5% 6.0% 7.0% 55.0% 5.0% 3.0% 20.0% 1.0% 30.0% 4.0%
UTM m. E (1st 0640922) Property of the strain of the str	UTM m. N (1st 5434096) Notes rea is made up	Forested			Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry Lupine (two sp.) Violet sp. Field Pussytoes Western Fescue	0.5% 6.0% 7.0% 55.0% 5.0% 3.0% 20.0% 1.0% 30.0% 4.0%
UTM m. E (1st 0640922) Property of the strain of the str	UTM m. N (1st 5434096) Notes rea is made up	Forested			Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry Lupine (two sp.) Violet sp. Field Pussytoes Western Fescue	0.5% 6.0% 7.0% 55.0% 5.0% 3.0% 20.0% 1.0% 30.0% 4.0%
UTM m. E (1st 0640922) Property of the strain of the str	UTM m. N (1st 5434096) Notes rea is made up	Forested			Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry Lupine (two sp.) Violet sp. Field Pussytoes Western Fescue	0.5% 6.0% 7.0% 55.0% 5.0% 3.0% 20.0% 1.0% 30.0% 4.0%
UTM m. E (1st 0640922) Property of the strain of the str	UTM m. N (1st 5434096) Notes rea is made up	Forested			Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry Lupine (two sp.) Violet sp. Field Pussytoes Western Fescue	0.5% 6.0% 7.0% 55.0% 5.0% 3.0% 20.0% 1.0% 30.0% 4.0%
UTM m. E (1st 0640922) Property of the strain of the str	UTM m. N (1st 5434096) Notes rea is made up	Forested			Wetland	Douglas-fir Saskatoon Birch-leaved Spirea Kinnikinnick Dull Oregon-grape Wild Strawberry Lupine (two sp.) Violet sp. Field Pussytoes Western Fescue	0.5% 6.0% 7.0% 55.0% 5.0% 3.0% 20.0% 1.0% 30.0% 4.0%

B.C.'s WILD HERITAGE VEGETATION PLOT DATA: Surveyor Denis and Angela 07/12/99 Site Name Whitworth Meadow Date Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot. Plot 1 Pin O UTM m. E. UTM m. N Forested Shrubland Grassland % Cover Wetland Plant Species 1st 0640705) 5434199) 1.0% Douglas-fir 18.0% Tall Oregon-grape Kinnikinnick 25.0% 6.0% Birch-leaved Spirea **Notes** Orange Honevsuckle 6.0% Spike 7m @ 170° from large Douglas-fir (DBH 60cm) towards 2.0% Falsebox smaller Douglas-fir (DBH 15cm), Saskatoon 3.0% near where trail enters meadow. 3.0% Baldhip Rose Non-vegetated area is made up 40.0% Lupine sp. (may be two sp.) mostly by the trail. A UTM (NAD Tiger Lily 0.4% 27) was taken. Wild Strawberry 6.0% 5.0% Yarrow Yellow Woodland Violet 1.0% Blue Wildrye 0.4% Falkland Island Sedge 1.0% Western Fescue 60.0% 3.0% Non-vegetated area Plot 2: 10m. @ 260° Pin Q: UTM m. E UTM m. N Forested Shrubland Grassland Wetland Plant Species % Cover 1st 0640735) (1st 5434199) 0.5% Douglas-fir Western Red Cedar 1.0% Birch-leaved Spirea 1.0% Baldhip Rose 4.0% Notes 80.0% Non-vegetated area is made up Kinnikinnick mostly by the trail. A UTM (NAD Lupine sp. 8.0% 27) was taken. Yarrow 3.0% 1.5% Death Camas Wild Strawberry 15.0% Narrow-leaved Collomia 0.1% Western Fescue 26.0% Blue Wildrye 2.0% Non-vegetated area 6.0%

B.C.'s WILD HERITAGE VEGETATION PLOT DATA: Date 07/13/99 Surveyor Denis and Angela Site Name Whitworth Meadow Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot. Pin R Plot 1 UTM m. E UTM m. N Forested Shrubland Grassland Wetland **Plant Species** % Cover 1st 0640595) (1st 5434148) 4.0% Lupine sp. 2.0% Yarrow Western Fescue 80.0% **Notes** Timber Oat-grass 0.5% Spike located at the Y in the road at 1.0% Agrostis sp. (Grass) the far end of the meadow, 20m @ 2.0% Wild Strawberry 210° from double Douglas-fir tree. 0.5% Red-seeded Dandelion 11cm² rock placed at center, above Sheep Sorrel 4.0% spike. Non-vegetated area is made up Pink Twink 0.5% mostly by the trail. A UTM (NAD) Non-vegetated area 20.0% 27) was taken. Plot 2: 10m. @ 270° Pin R: UTM m. E UTM m. N Forested Shrubland Grassland Wetland **Plant Species** % Cover 1st 0640595) (1st 5434148)Tall Oregon-grape 32.0% 2.0% Baldhip Rose Lupine sp. 17.0% **Notes** Yarrow 7.0% Non-vegetated area is made up Sheep Sorrel 1.5% mostly by the trail. A UTM (NAD Pink Twink 0.2% 27) was taken. Narrow-leaved Collomia 0.4% Butter and Eggs 2.0% Death Camas 0.1% Timber Oat-grass 0.5% Western Fescue 45.0% Non-vegetated area 20.0%

						is the lettered pin. The center of p	
						enter is on the right hand side of	the trail leading
	orsecamp. The cente	r of the tra	ils marks th	e plot cente	r for the se	cond plot.	
Pin S	Plot 1	,					
UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cover
(1 st 0640619)	(1 st 5434080)					Kinnikinnick	2.0%
						Lupine sp. (may be two sp.)	25.0%
						Yarrow	20.0%
	Notes					Wild Strawberry	4.0%
Spike is located	20m @ 200° from				······································	Vetch sp.	1.0%
	r in the center of the	 	 		*	Pink Twink	1.0%
	egetated area is made					Sheep Sorrel	0.4%
up mostly by the						Field Chickweed	13.0%
(NAD 27) was 1						Red-seeded Dandelion	1.0%
ì			 			Western Fescue	35.0%
			 			Blue Wildrye	0.1%
			-				
						Timber Oat-grass	0.4%
•			<u> </u>			Non-vegetated	8.0%
					·		
		<u></u>				<u></u>	
	·						·
Pin S:	Plot 2: 101	m. @ 2	00°				
UTM m. E	UTM m. N		Shrubland	Greeland	Wetland	Plant Species	% Cover
(1 st 0640619)	(1 st 5434080)	Toresteu	SIM GUIANG	Grassianu	Wettanu	Lupine (two sp.)	31.0%
(1 0040019)	(1 3434080)					Yarrow	25.0%
				a S		Field Chickweed	20.0%
· · · · · · · · · · · · · · · · · · ·	<u> </u>		- 	2 5 10 4 5 10 10 10 10 10 10 10 10 10 10 10 10 10			
	Notes	ļ	<u> </u>			Red-seeded Dandelion	2.0%
Non-vegetated a			<u> </u>			Wild Strawberry	3.0%
	ail. A UTM (NAD			**		Pink Twink	1.0%
27) was taken.						Blue Wildrye	15.0%
						Western Fescue	35.0%
						Non-vegetated area	5.0%
,							
				1			
					i		•
						•	

B.C.'s WILD HERITAGE VEGETATION PLOT DATA:

Surveyor Denis and Jason Date 06/16/99 Site Name Skagit Chittenden Meadow

Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot.

Pin X Plot 1

Pin X	Plot 1		·			
UTM m. E	UTM m. N	Forested	Shrubland Grassland	Wetland	Plant Species	% Cove
1 st 0641104) (1 st 5430955)				Tall Oregon-grape	45.0%
		Ī .			Rose sp.	6.0%
					Pink Pussytoes	0.1%
No	tes				Field Pussytoes	0.1%
Small Pine in mea	dow. Non-				Pink Twink	0.1%
egetated area is m	ade up mostly by				Wild Strawberry	5.0%
he trail. A UTM	(NAD 27) was				Field Chickweed	1.0%
aken.					Yarrow	0.2%
					Arctic Lupine	2.5%
					Showy Daisy	0.5%
					Common Snowberry	2.0%
					Falkland Island Sedge	5.0%
					Ox-eye Daisy	1.5%
					(i)Timothy	0.2%
					Blue Wildrye	1.0%
					Bulb Grass	0.5%
					Oak Grass	2.0%
					Non-vegetated area	20.0%
Pin X:	Plot 2: 10:	m (a)				

Pin X:	Plot 2: 10r	n. @					
UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cover
0641174 54	430861					Tall Oregon-grape	3.0%
						Rose sp.	0.5%
						Snowberry	0.5%
Notes						Hardhack	0.5%
Non-vegetated area is	made up					St. John's Wort	5.0%
mostly by the trail. A	UTM (NAD					Arctic Lupine	1.0%
27) was taken.						Wild Strawberry	4.0%
						Pink Pussy Toes	0.1%
						Field Chickweed	1.5%
						Falkland Island Sedge	7.0%
						Oat Grass	1.0%
						Bunch Grass	3.0%
				0.0		Timothy	1.0%
						Blue Common Grass	10.0%
						Non-vegetated area	20.0%

	Denis and Jason		te <u>06/10</u>				
						is the lettered pin. The center of	
						center is on the right hand side of	i the trail leadir
Pin Y	Plot 1	r of the tra:	ns marks ui	e pioi cente	r for the se	econa piot.	
		<u> </u>	lor	[C. 1. 1]	337 /3 3	Di de	9/ 6
UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cover
(1 st 0641072)	(1 st 5430782)	<u> </u>				Hardhack	0.7%
		ļ			-	Woodland Strawberry	5.0%
			<u> </u>			Wild Strawberry	0.5%
	Notes		Pink Twink			Pink Pussytoes	0.1%
	small pine. Non-						
	made up mostly by	<u> </u>			-,	Cinquefoil sp.	3.0%
	M (NAD 27) was					Field Chickweed	3.0%
taken.						Falkland Island Sedge	9.0%
						Slender Wheatgrass	5.0%
						Oniongrass (Melic sp.)	0.5%
						Timothy	20.0%
						Non-vegetated area	12.0%
	•						
			 				
		<u> </u>	<u> </u>		<u> </u>		
		<u> </u>					
			 	ļ			
D*. 37.	DI 40 40			<u> </u>		<u></u>	
Pin Y:	Plot 2: 10		Ta:				
UTM m. E	UTM m. N	Forested	Shrubland	Grassland	Wetland	Plant Species	% Cover
0641055	5430803	 	<u> </u>			Nootka Rose	0.5%
		<u> </u>	 			Hardhack	4.0%
·		<u> </u>				St. John's Wort	2.0%
	Notes	<u> </u>				Cinquefoil sp	1.5%
Non-vegetated a						Woodland Strawberry	10.0%
	il. A UTM (NAD			2		Ox-eye Daisy	5.0%
27) was taken.						Field Chickweed	2.0%
						Timothy	3.0%
						Falkland Island Sedge	15.0%
						Blue Wildrye	2.0%
						Arctic Lupine	0.5%
						Non-vegetated area	20.0%
					-		
			 			<u> </u>	
						 	
		 	+			 	
			 	 			
1		 	 			<u> </u>	
		_					

B.C.'s WILD HERITAGE VEGETATION PLOT DATA:

Date 06/16/99 Site Name Skagit Chittenden Meadow Surveyor Denis and Jason Two 2m. radius plots are located near each lettered pin. The center of plot one is the lettered pin. The center of plot two is 10-m. along the trail from the lettered pin unless otherwise specified. The first plot center is on the right hand side of the trail leading away from the horsecamp. The center of the trails marks the plot center for the second plot. Pin Z Plot 1 UTM m. N UTM m. E Forested Shrubland Grassland Wetland Plant Species % Cover 5.0% (1st 0641085) (1st 5430748) Hardhack 0.4% Saskatoon 12.0% Nootka Rose Dull Oregon-grape 17.0% **Notes** Across from Douglas-fir and Oxeve Daisv 1.5% Western Hemlock, Non-vegetated Arctic Lupine 1.0% area is made up mostly by the trail. Graceful Cinquefoil 0.5% A UTM (NAD 27) was taken. Showy Daisy 1.0% Yarrow 0.1% St. John's Wort 0.1% 0.25% Field Pussytoes Pink Pussytoes 0.1% Early Blue Violet 0.2% 11.0 Pink Twink 0.1% Wild Strawberry 2.0% Field Chickweed 0.2% Death Camas 0.1% Tiger Lily 0.1% 30.0% Sedge sp. Falkland Island Sedge 3.0% Western Fescue 6.0% Timothy 0.1% 0.1% Grass sp. Oak Grass 0.1% Non-vegetated area 17.0% Pin Z: Plot 2: 10m. @ UTM m. E UTM m. N Forested Shrubland Grassland Wetland **Plant Species** % Cover 2.0% 0641126 5430749 Saskatoon Tall Oregon-grape 15.0% 3.0% Dull Oregon-grape Field Pussy Toes 5.0% Notes Pink Pussy Toes 0.5% Ox-eye Daisy 1.0% Non-vegetated area is made up mostly by the trail. A UTM (NAD Woodland Strawberry 7.0% 27) was taken. Arctic Lupine 4.0% Field Strawberry 3.0% 0.5% Yarrow Oniongrass (Melic sp.) 0.5% Timothy 5.0% **Bunch Grass** 4.0% Falkland Island Sedge 3.0% 3.0% Oat Grass Blue Common Fescue 3.0%

Non-vegetated area

15.0%

APPENDIX F ALIEN PLANT SPECIES IN THE SKAGIT VALLEY PROVINCIAL PARK

The following list of alien plant species was compiled for the entire park during a two year ecological study (Knopp 2000)

Habitat Types

The species was observed -

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#1 = Deciduous Forest

#2 = Coniferous Forest

#3 = Grassland - Chittenden and Whitworth Meadows

#4 = Rock Outcrop

#5 = Wetland

#6 = Riparian - River/Gravelbar

#7 = Disturbed/Roadside

i = Introduced or non-native plant species

Common Name	Latin Name	#1	#2	#3	#4	#5	#6	#7
		Deciduous	Coniferous	Grassland	Rock Outcrop	Wetland	Riparian/ River/	Disturbed/ Roadside
							Gravelbar	
TREES								
European Mountain Ash (i)	Sorbus aucuparia		to a second					
SHRUBS		<u> </u>		21	<u> </u>	<u></u>		
Common Wormwood (i)	Artemesia absinthium					·		
HERBS		· · · · · · · · · · · · · · · · · · ·				<u></u>		
Tower Mustard (i)	Arabis glabra							
Common Burdock (i)	Arctium minus	of Constants.					1	4
Little-podded Falseflax (i)	Camelina microcarpa							
Spotted Knapweed (i)	Centaurea maculosa						11.	
Mouse-ear Chickweed (i)	Cerastium vulgatum							
Lamb's-quarters (i)	Chenopium album							

APPENDIX F ALIEN PLANT SPECIES IN THE SKAGIT VALLEY PROVINCIAL PARK

Common Name	Latin Name	#1 Deciduous	#2 Coniferous	#3 Grassland	#4- Rock " Outcrop	#5 Wetland	#6 Riparian/ River/ Gravelbar	#7 Disturbed/ Roadside
Canada Thistle (i)	Cirsium arvense							
Bull Thistle (i)	Cirsium vulgare							132,8181.5
Hare's Ear (i)	Conringia orientalis	Great Artist						j.
Smooth Hawksbeard (i)	Crepis capillaris							
Eastern Eyebright (i)	Euphrasia officinalis							
Wall Lettuce (i)	Lactuca muralis	and the second	of the second	freit exemple.				
Ox-eye Daisy (i)	Leucanthemum vulgare	and organization	Party Service					
Common Toadflax (i)	Linaria vulgaris							196
Black Medic (i)	Medicago lupulina							2.9
White Sweet-Clover (i)	Melilotus alba						- 1	
English Plantain (i)	Plantago lanceolata		Al a series					
Broad-leaved Plantain (i)	Plantago major							
Tall or Meadow Buttercup (i)	Rannunculus acris	4						
Creeping Buttercup (i)	Ranunculus repens		41 - 100					
Sheep Sorrel (i)	Rumex acetosella	24 22 3 8				j		
Curly Dock (i)	Rumex crispus	file of the						
Sheep Sorrel (i)	Rumex acetosella							
Broad-leaved Dock (i)	Rumex obtusifolius		en de la companya de					
Procumbent Pearlwort (i)	Sagina procumbens							
Perennial Sow-thistle (i)	Sonchus arvensis							
Chickweed (i)	Stellaria media				- J			

APPENDIX F ALIEN PLANT SPECIES IN THE SKAGIT VALLEY PROVINCIAL PARK

Enter Enter

Common Name	Latin Name		#2	 #3	#4		- // 6	# 7 14 11
		Deciduous	Conferous	Grassland	Rock Outcrop	Wetland	Riparian/ River/ Gravelbar	Disturbed/ Roadside
Common Tansy (i)	Tanacetum bipinnatum							
Common Dandelion (i)	Taraxacum officinale		9.41			<u> </u>		
Yellow Salsify (i)	Tragopogon dubius							
Hare's Foot (i)	Trifolium arvense							
Red Clover (i)	Trifolium pratense							
White Clover (i)	Trifolium repens							
Mullein (i)	Verbascum thapsus						130 Tage	
Common Speedwell (i)	Veronica officinalis	3.00						
Hairy Vetch (i)	Vicia hirsuta							
GRASSES			<u> </u>	<u></u>			<u> </u>	
Colonial Bentgrass (i)	Agrostis capillaris	100	Sec.					
Creeping Bentgrass (i)	Agrostis stolonifera							
Water Foxtail (i)	Alopecurus geniculatus							
Orchard Grass (i)	Dactylis glomerata							fits 27 is
Timothy (i)	Phleum pratense			10				
Fowl Bluegrass (i)	Poa palustris					100		
Kentucky Bluegrass (i)	Poa pratensis	7.25						



Photo A: Brown-headed cowbird flock



Photo B: An immature Brown-headed Cowbird feeding on insects on the horse hoof



Photo E: Disturbance at the entrance to the horse camp, spring 1999



Photo F: Alien weed species invasion at the entrance to the Whitworth Forest horse camp, summer 1999.

APPENDIX G PHOTOGRAPHS



Photo C: Iron pegs mark the center of the first plot in each pair of plots



Photo D: Typical vegetation sample plot