NON-NATIVE PLANT SPECIES INVENTORY of SOUTHEAST ALASKA: JUNEAU and HAINES

SUMMARY OF 2007 SURVEY FINDINGS

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1. Introduction

The USDA Forest Service is dedicated to gaining a better understanding of the number, identity and biology of non-native plants in Alaska and how these species may be impacting intact plant communities and timber-producing areas. To address these concerns, the Forest Health Protection State and Private Forestry and the USDA Forest Service initiated a contract to survey and identify non-native plant species infesting the road systems of Juneau and Haines. From August 8th through August 24th of 2007 botanists from Turnstone Environmental Consultants, Inc. surveyed an estimated 189 miles of state, local, and Forest Service roads on main road systems throughout the region. This report summarizes the initial findings from our field season of research and data collection.

Alaska is in a unique position to prevent large scale infestations of non-native species as parts of the state are in the first stages of experience with non-native plant species (Borchett, 2004). While its remote location and the lack of terrestrial connectivity of many regions have enabled many types of habitats to remain free of non-native infestations, Alaska is now entering a phase of both increased introductions and establishment of non-native species (Carlson and Shephard, 2007). The importance of early detection and control cannot be overstated in the early phases of establishment.

The native plant communities of Southeast Alaska in general are vulnerable to aggressive competition from invasive, non-native species. The roads traversing the region's terrain provide open pathways in which non-native species can travel and colonize new areas. Industrial logging, mining, and road building are prevalent, providing ideal vectors for invasive plant dispersal. Plants commonly hitch rides on the large equipment and machinery used in these operations, helping to spread the species. Infestations of invasive exotic species in rock pits are common, with the population dispersing out along the neighboring roads. Additionally, urban places like the cities Juneau and Haines attract horticulturists who often unknowingly introduce threatening species to the island ecosystem. Towns become dispersal vectors as enterprising garden escapees spread outwards.

The goal of the project is to assess the extent of non-native plant populations on the Juneau and Haines road systems. As other past survey efforts have focused on other parts of the Tongass National Forest including Prince of Wales Island, Ketchikan, Wrangell Island, Mitkof Island, and Kupreanof Island, this inventory concentrated on mainland but isolated road systems and communities of Juneau and Haines. The data collected for this project are intended to help guide future management and control efforts.

Specifically, the project involved the following data collection and deliverables:

- AKEPIC Inventory Field Data Sheets were completed for each point surveyed along the roads, regardless of whether invasive species were found.

- Maps provided by the Forest Service are submitted showing the locations of all high priority species/areas of interest.
- A summary report giving a synopsis of the contract work and findings.
- Data entry into the AKEPIC database for future tracking and management.
- Digital photos of High Priority populations
- Two voucher specimens of each species located were collected, pressed, dried, and labeled and will be submitted to the appropriate herbarium for use as a teaching collection.

2. Methods

Field data on non-native plants was collected on road right-of-ways on state and local lands and Forest Service controlled road rights-of-way on private land. An estimated 204 miles of road right-of-way were inspected for survey suitability, with 189 miles thoroughly surveyed using the AKEPIC protocol. The discrepancy in mileage likely comes from a combination of map inaccuracy, inaccessible road systems, and odometer inconsistencies. Forest Service roads slated for survey were designated as maintenance levels 3 and 4 (suitable for passenger car and moderate degree of user comfort). The reasoning for surveying the more major road systems was to capture areas of heavier use, and therefore more susceptible to invasion by non-native species.

Table 1. Road miles slated for survey at each location involved in the study.

Road System	Local/ State	USFS	Total
Juneau	102	7	109
Haines	95	0	95
Total miles			***204***

Surveyors walked an area every ¼ mile along the roads. At each survey point the botanists surveyed both sides of the road for 25 meters each direction, recording all non-native plant species encountered. We also surveyed the area around each road intersection, Recreation Site, pull-out, rock pit, and parking area as specified by the contract. Occasionally survey points were spaced slightly more or less then the required ¼ mile interval. Some roadsides, particularly the highways around Juneau, did not offer safe locations to park and we parked at the nearest possible location. The police prohibited us from stopping along the shoulder for several miles.

Safety was a paramount concern during our surveys. We did not cross the highway on foot due to high traffic volumes and speeds on the main highways, and often there was only room to park on one side of the highway. On these occasions, we noted the area surveyed and other parking limitations on the data forms. At other times we altered the survey point slightly to include a nearby visible area of higher disturbance and therefore higher likelihood of the presence of non-native species. A few additional times we did not survey a point due to extraordinary conditions. Private property or areas difficult to deduce jurisdiction such as backyards bordering right-of-ways were not systematically searched, but presence of high priority species and other exotic plants was noted when observed from a distance. It is also worth noting that we did not make special stops for private driveways when in urban environs in the interest of time and efficiency.

Non-native species were assigned to one of three categories by the agencies prior to survey work. Class One species are those which are known or potential invasives, Class Two species are very common throughout Alaska, and High Priority Species are those species singled out for extra effort and concern. When a Class One invasive species was found, we noted its extent on the data form. When high priority species were

encountered, the site was flagged with white flagging and location data recorded. Flagging was labeled with species name, surveyor's initials, and date. When Class Two invasive species were encountered, presence was recorded but the extent of the populations was not noted, as these species are ubiquitous throughout Alaska.

Table 2. Designated High Priority Species for the Haines and Juneau Road Systems

Scientific Name	Common Name
Alliara petiolata	garlic mustard
Centaurea biebersteinii DC	spotted knapweed
Cirsium arvense (L.) Scop.	Canada thistle
Cirsium vulgare	bull thistle
Convulvulus arvensis	field bindweed
Polygonum convulvulus	black bindweed
Geranium robertianum	herb-Robert
Hieracium aurantiacum L.	orange hawkweed
Hieracium caespitosum Dumort.	meadow hawkweed
Hieracium umbellatum L. H. pilosella, H. lachenalii	mouse-ear, narrow-leaved, and common hawkweed
Impatiens glandulifera	ornamental jewelweed
Lythrum salicaria	purple loosestrife
Sonchus arvensis	perennial sowthistle
Linaria vulgaris	butter and eggs
Melilotus alba	white sweetclover
Polygonum x bohemicum	bohemian knotweed
Polygonum cuspidatum	Japanese knotweed

Field surveys were conducted using protocols developed by the Alaska Exotic Plants Mapping Program (see http://aknhp.uaa.alaska.edu/). Data forms were also developed by AKEPIC and are consistent with their data dictionary and recording methods. Data recorded in the surveys includes presence or absence of non-native plants, specific location, type of disturbance, lists of exotic plants at each locality, canopy cover, and area of infestation. 595 points were taken throughout our survey work. At each site, area surveyed ranged from 0.1 acre to 4 acres. Most sites were considered 0.1 acre, which was a pre-determined standard number for a roadside survey point 50 m long and 8 m wide (not including the roadway itself). Area of infestation for each species identified the acreage within the survey point containing individuals of that species. Canopy cover was estimated as the percentage of cover occupied by the species within its area of infestation. For high priority species, we also recorded stem counts of the population and noted its extent in the comments.

We utilized and researched lists generated by various agencies to guide our survey efforts. Lists were developed by the USFS to highlight species with a high likelihood of occurrence, and we researched these species prior to the commencement of field work to ensure accurate observations. Lists used include:

- "State of Alaska Prohibited and Restricted Noxious Weeds", Alaska Department of Natural Resources
- "Class 1 Known and Potential Invasive Plants of Concern",

- "Class 2 Widespread Lower-Priority Invasive Plants"
- "USDA Forest Service, Alaska Region Sensitive Plant List"
- High Priority Noxious Weed Species (provided under RFQ #AG-0109-S-07_0007

Field survey work was performed from August 8-24, 2007. Data was collected using a standard form along roadsides and other disturbed areas. Utilizing two field crews, the field surveys began in Haines. The crews then traveled to Juneau via the Alaska Marine Highway and continued their survey efforts.

More than 100 voucher specimens were collected. Collections were made of all non-native species encountered during our surveys, with a few exceptions due to phenological reasons or contract specifications. Specimens will become part of a teaching collection and also to verify identifications made during the course of the project. For a complete list of voucher specimens, see Appendix D.

Data was collected on all known non-native plants encountered. A few exceptions to the "Class 1 Known and Potential Invasive Plants of Concern" list (see Appendix A) were made. Based on pre-field work conversations with Michael Shephard, former Vegetation Ecologist for Forest Health and Protection, State and Private Forestry, Rob Develice, and Betty Charnon, we incorporated into our survey effort recent updates to the AKEPIC list. Based on the species listed in the *Species removed from AKEPIC plant list* (Shephard, personal comm.), we did not consider yarrow *(Achillea millefolium)* or silverweed *(Potentilla anserina)* to be non-native. We also considered pearly everlasting *(Anaphalis margaritacea)* to be a native species. Although these species were rarely observed outside the disturbance footprint, they were considered native for our purposes. Therefore, when encountered these species were not recorded on our field forms.

3. Results

In all, a total of 595 sites were surveyed throughout all the Haines and Juneau road systems in the 2007 surveys. The survey area includes an estimated 189 miles of state, local, and Forest Service roads. The length of road miles surveyed is less than the originally expected 204 miles due to map or odometer inaccuracies, land ownership discrepancy, changes in road conditions and maintenance levels since the generation of the maps. Spur roads occasionally ended prematurely, often due to the removal of culverts or overgrown alders. The latter occurred more frequently in the remote reaches of our survey roads.

The surveys recorded 73 non-native species along the roads and adjacent disturbed areas. This represents approximately 37% of the 197 known exotic species in Alaska. Additional species may have been present, but escaped notice.

3.1 Species Diversity

The areas of our surveys typically with the greatest weed diversity were residential areas, towns, paved state roads, pullouts with scenic views, and rock pits. The diversity was at its highest in these areas and then decreased with distance. This trend is also apparent on Forest Service spur roads; diversity at these roads is at its highest at the junction with the paved state roads, and then systematically decreases with distance away. Sites directly nearby towns and along the state highways contained up to 20 species of exotics. Stretches of paved state road in between communities typically contained around 10-12 species of exotics. Locations with lowest number of weed species were stretches of Forest Service roads farthest from main population centers or paved roads, these often contained only the 2-4 most common species.

The most common species encountered differed from Haines to Juneau but were somewhat consistent with the findings of previous survey work. Of a noticeable abundance at both localities was reed canary grass (Phalaris arundinacea), common plantain *(Plantago major),* annual bluegrass *(Poa annua),* white clover *(Trifolium repens),* alsike clover *(Trifolim hybridum),* strawberry clover *(Trifolium pretense),* and common dandelion *(Taraxacum officinale).*

For the purposes of discussion, survey results from the Haines and Juneau are discussed separately due to the relative isolation of the road systems from one another. Overall, the two locations had differing floras of invasive weeds, with many species not overlapping.

Haines

Haines contained an extremely diverse array of exotic species, with certain aggressive species exhibiting infestation rates not seen elsewhere. Our surveys on the Haines road system recorded 61 non native species, representing approximately 31% of the 197 known exotic species in Alaska. 20 species recorded were unique to the Haines region from the other localities in SE Alaska we surveyed during this field season.

Contributing to the relatively high diversity was the ratio of state and private survey miles to federal survey miles. On the Haines road system, all 95 miles of road surveyed were under private and state jurisdiction. State and private roads tend to be more diverse due to their structure, location, and amount of use received when compared with the more remote Forest Service roads. The Haines Highway, which comprised 40 of the 95 miles we surveyed, serves as the main transportation corridor for the region and contains a typically larger disturbance footprint than other areas.

Species diversity on the Haines road systems loosely followed a trend with the environs around the town and the well-traveled Haines Highway experiencing higher degrees of diversity. The town of Haines had the highest diversity of weed infestations on the Chilkat peninsula, with an average diversity of 15 species per plot. Much of the town of Haines contained very little native vegetation; rather, thick swathes of weeds were encountered including very aggressive populations of Canada thistle *(Cirsium arvense)*. Populations of butter and eggs *(Linaria vulgaris)*, blanketed the Haines Highway to such an extent that it had to be temporarily removed from the High Priority list to avoid such copious documentation.

Besides the common species ubiquitous throughout Alaska, other plants common along the roadsides in Haines included white sweetclover *(Melilotus alba),* reed canary grass *(Phalaris arundinacea),* sheep sorrel *(Rumex acetosella),* and garden sorrel *(Rumex acetosa ssp. acetosa)*. Areas of concern here include the well established patches of Canada thistle *(Cirsium arvense)* choking the town and the burgeoning spotted knapweed *(Centaurea bieberstenii)* population located just outside of town. Also, the yellow sweetclover (*Melilotus officinalis),* was reported behaving aggressively just outside the border of town.

Weed diversity thinned out with distance from town, although many aggressive species continued to dominate along the Haines Highway. Additionally, a gravel road traveling to a lake just outside of Haines by the eagle reserve also had a high diversity of weeds, but this was an exception. Typically gravel roads connecting the more remote communities remained relatively weed free.

Notable species that occurred on the Haines road system but not Juneau included tumbling mustard *(Sisymbrium altissimum),* yellow sweet clover *(Melilotus officinalis)*, cypress spurge *(Euphorbia cyparíassias)*, wormseed wallflower *(Erysiumum cheiranthoides)*, and perennial cornflower *(Centaurea montana)*.

Juneau

Our surveys on the Juneau road systems recorded 53 non-native species, representing approximately 27% of the 197 known exotic species in Alaska. 1Twelve species recorded were unique to the Juneau area from the other localities we surveyed during this field season.

Juneau also followed typical patterns of weed diversity with areas in town exhibiting the highest number of infestations. Species commonly recorded include common dandelion *(Taraxacum officinale)*, all three common *Trifolium spp.*, and Bohemian knotweed *(Polygonum x bohemicum)*. Many gardens in town also contained some weeds that are plants of concern, including dame's rocket (*Hesperis matronalis)*. High priority infestations pose a significant problem in the Juneau area. Populations of bohemian knotweed *(Polygonum x bohemicum)*, orange hawkweed *(Hieracium aurantiacum)*, and Herb Robert *(Geranium robertianum)* were all located on the Juneau road system.

Problems were had in Juneau concerning the restrictions on stopping alongside the road. Crews were continually stopped by the Juneau Police, and a large portion of the highway had "No Stopping Within 8' of the Pavement" posted. Surveys were compromised when trying to follow the protocol. Occasionally the areas with the most potential for weed infestations were those that the police did not allow the crews to survey. The data that was collected does give an idea about the diversity and variety of weeds in the area, but there remain distances of several miles in some areas for which no survey plots were taken. These areas predominantly appeared mowed and weed identification would have been difficult from a moving vehicle.

Notable species that occurred on the Juneau road system and not in Haines were campion bellflower *(Campanula rapunculoides),* Robert's geranium *(Geranium robertianum)*, dame's rocket *(Hesperis matronalis)*, fall dandelion *(Leontondon autumnalis)*, and Bohemian knotweed *(Polygonum x bohemicum)*.

3.2 Canopy Cover

Most species at most sites had a percent canopy cover of fewer than 10% with a few exceptions. Only a few species occurred in larger densities, but often did so consistently. Attaining high covers were all three *Trifolium spp.,* which occasionally had covers up to 40%. Reed canary grass *(Phalaris arundinacea),* when present, often had a canopy cover of 30-40%. On roadsides where Timothy grass *(Phleum pretense)* was seeded, this species also attained high covers of 25% or higher. White sweetclover *(Melilotus alba)* also tends to form monotypic stands and reached high levels of cover in both Haines and Juneau. Butter and eggs *(Linaria vulgaris)* was incredibly abundant in the Haines area and was occasionally recorded at covers as high as 30%. In the Juneau area, large mats of orange hawkweed *(Hieracium aurantiacum)* were recorded at canopy covers of over 50%.

Other species had consistent low levels of cover, typically around 1-5%. These species were nearly always present within the disturbance footprint, but scattered throughout and nonaggressive. Annual bluegrass (Poa annua), common dandelion *(Taraxacum officinale),* and pineapple weed *(Matricaria discoidea)* are examples of such species.

3.3 Aggressiveness

Aggressive species are typically those that are invading out of the "disturbance footprint" (AKEPIC Database 2005). The most commonly aggressive species encountered were *Trifolium repens, Trifolium hybridum, Trifolium pratense,* and *Phleum pratense.* These species were often observed extending out of the road footprint and entering marginal areas or clearcuts of forests and meadows. Other species were less common, but were also spotted behaving aggressively. Reed canary grass *(Phalaris arundinacea)* was spotted entering riparian areas in both Juneau and Haines.

Particular areas where some species were behaving extremely aggressively include the orange hawkweed *(Hieracium aurantiacum)*, located just north of Juneau. Several surveyors remarked that it was competing heavily with native species in this area and moving out of the disturbance footprint. White sweetclover *(Melilotus alba)* was also reportedly observed moving off the roadsides on both Juneau and Haines, and yellow sweetclover *(Melilotus officinalis)* was noted behaving aggressively in Haines near the border of the town. Also in Haines, the ornamental jewelweed *(Impatiens glandulifera)* was noted outside the disturbance footprint.

4. Discussion

4.1 Overview of Non-native Species Patterns

Surveys of 595 sites along roadsides on the Haines and Juneau road systems revealed 73 non-native taxa (see Appendix C). This represents 37% of the 197 recorded non-native species in Alaska.

Non-native species were not evenly distributed. The roads in and around the residential and urban areas of Haines and Juneau contained the highest diversity of non-native species and also had more extensive invasions. In particular, the paved state highways also had higher diversities which spiked around recreational pullouts, rest areas, and trailheads. The Haines Highway, of which 40 miles was surveyed from Haines northwest to Pleasant Camp, and the Juneau Highway which connects Juneau with Douglas Island contained a great diversity of weed species as well as numerous infestations of High Priority Species. The state roads generally have a much larger footprint and utilize a greater amount of heavy equipment, making them more susceptible to invasions.

High diversities and large infestations were largely limited to state and local roads on the road systems. Unpaved roads consistently had reduced levels of diversity and cover. Factors seemingly affecting the infestation rate on roads are: the type and rate of seeding that occurred after the road was built, the type and habit of traffic the road receives, the number of pullouts and other recreational sites available for travelers and the amount of rock pits, staging areas for equipment, and log transfer facilities existing along the road.

Traffic. The type and habits of traffic on the roads seems to affect the composition of species. On roads with heavy traffic and recreation opportunities, the diversity of weeds appears to be higher. Pullouts for fishing areas, scenic views, and picnic areas have a higher concentration of weeds then do pullouts serving as "j-holes", which drivers use on one lane roads in the north to make room for oncoming traffic while not typically getting out of their vehicles.

Rest areas. Diversity of non-native plants typically increased at rest areas and recreational stops. The problem is potentially exacerbated by tourists walking through the infestations to snap a photo and inadvertently carrying the seeds to the next stop. These types of sites tend to serve as the population centers for high priority species and species unrecorded elsewhere.

Patterns of species composition and diversity occur at each roadside profile. With some exceptions for severe infestations, there was generally a constant, low degree of infestation. This usually took the form of minimal percent cover (typically 1% throughout) of annual bluegrass *(Poa annua)* on the road itself and of common plantain *(Plantago major)* and common dandelion *(Taraxacum officinale)* at the edge of the road. Moving away from the roadbed species of clover *(Trifolium spp.)* and mouse-ear

chickweed *(Cerastium fontanum)* become more common and have an increased cover (1-5%). Just beyond, exotic grasses *(Dactylis glomerata, Festuca arundinacea, Phleum pretense, Phalaris arundinacea))* predominate at collective percent covers of around 20-30%. Other less common species tend to occur at preferred areas along the profile. Species such as fall dandelion *(Leontodon autumnalis)* and oxeye daisy *(Leucanthemum vulgare)* grow amongst the exotic grasses and seem to prefer disturbed slopes.

Ornamental jewelweed (*Impatiens glandulifera)* (Haines only), white sweetclover *(Melilotus alba)* (Haines only)*,* yellow sweetclover (Melilotus alba) (Haines only), orange hawkweed (Hieracium aurantiacum) (Juneau only), Reed canary grass *(Phalaris arundinacea)*, and the three common clovers *(T. repens, pretense,* and *hybridum)* were observed out-competing native species and entering intact forests, muskegs, and riparian areas.

4.2 High Priority Species

Nine non-native species were identified under the contract as "high priority", due to their invasiveness rankings, land managers' concerns, or burgeoning infestation patterns in Alaska. Species identified in this category differed on each locality and in some cases, jurisdiction to jurisdiction. All of them are considered below.

Garlic mustard *(Alliara petiolata):* 0 populations
Garlic mustard is a high priority for both the Juneau and Haines road systems. No populations of garlic mustard were located during our surveys.

Spotted knapweed *(Centaurea biebersteinii):* 1 population
This species was found along the Haines Highway, about 23 miles north of town. Only one plant was located, as is seemingly typical of this species.

Canada thistle *(Cirsium arvense)*: 15 populations.
This species was common in and around the town of Haines; all 15 encountered populations were located on the Haines road system. This species forms large dense colonies that out compete most other vegetation, and it is difficult to control. Many of the populations encountered were highly aggressive and should be immediately addressed.

Bull thistle *(Cirsium vulgare)*: 0 populations
Bull thistle is a high priority species for both the Juneau and Haines road systems. No populations of bull thistle were located during our surveys.

Field bindweed *(Convolvulus arvense):* 0 populations
Field bindweed is a high priority species for both the Juneau and Haines road systems.
No populations of field bindweed were located during our surveys.

Black bindweed *(Polygonum convolvulus):* 0 populations

Black bindweed is a high priority species for both the Juneau and Haines road systems. No populations of black bindweed were located during our surveys.

Robert's Geranium *(Geranium robertianum):* 3 populations
Populations of Robert's Geranium were located on the Juneau road system only. This species should be addressed as it seems to thrive in the shady understory of forest habitats.

Orange hawkweed *(Hieracium aurantiacum):* 3 populations (Haines) 10 populations (Juneau)
3 populations of orange hawkweed were located on the Haines road system with the remaining 7 populations located on the Juneau road system. In Haines, the populations were recorded at a variety of locales: Haines Highway, Mud Bay Road, and Young Road. In Juneau, large mats of the species were noted just north of town. These sites seemed particularly aggressive.

Meadow hawkweed (Hieracium caespitosum): 0 populations
Meadow hawkweed is a high priority species for both the Juneau and Haines road systems. No populations of meadow hawkweed were located during our surveys.

Mouse-ear, narrow leaved, and common hawkweed *(Hieracium umbellatum, pilosella, and lachanellii):* 0 populations
Mouse ear, narrow leaved, and common hawkweed are all high priority species for both the Juneau and Haines road systems. No populations of any of these hawkweed species were located during our surveys.

Ornamental jewelweed *(Impatiens glandulifera):* 3 populations
Ornamental jewelweed is a high priority species for both the Haines and Juneau road systems. 3 populations of jewelweed were located during our surveys.
Purple loosestrife *(Lythrum salicaria)*: 0 populations
Purple loosestrife is a high priority species for both the Haines and Juneau road systems. No populations of purple loosestrife were located during our surveys.

Perennial sowthistle *(Sonchus arvensis)*: 0 populations
Perennial sowthistle is a high priority species for both the Haines and Juneau road systems. No populations of perennial sowthistle were located during our surveys.

Butter and eggs *(Linaria vulgaris):* 45 populations
Butter and eggs is a high priority species for both the Haines and Juneau road systems. Butter and eggs turned out to be quite common on the Haines Highway, and surveyors mapped 45 populations before the decision was made to temporarily remove the plant from the High Priority list. The populations were mostly concentrated in and around the urban area of Haines, and populations thinned out dramatically with distance from the town.

White sweetclover *(Melilotus alba)*: 11 populations
White sweetclover is a high priority species for both the Haines and Juneau road systems. It was commonly encountered on the Haines highway.

Bohemian knotweed (*Polygonum x bohemicum)*: 9 populations
Bohemian knotweed is a high priority species for both the Haines and Juneau road systems. It was unfortunately fairly common on the Juneau road system, with all 9 populations occurring there.

Japanese knotweed *(Polygonum cuspidatum)*: 0 populations
Japanese knotweed is a high priority species for both the Haines and Juneau road systems. No populations were encountered during our surveys.

4.3 Species suggested for immediate control

Selected species with high invasiveness rankings are of particular concern to the island ecosystems of Southeast Alaska. Additionally, burgeoning infestations are of particular interest because they may be responsive to early control effort. Species discussed below are recommended for immediate control or further observation in addition to the high priority species detailed above. These species were selected because they have been awarded high invasiveness rankings by the Alaska Natural Heritage Program (2004), or because they have been observed invading natural areas.

High Priority Species
All of the high priority species located during our surveys are recommended for immediate control. Of these a few populations in particular are important due to the early state of the infestation. They are highlighted below.

Table 4. High Priority populations recommended for immediate control.

Species	*Road System*	*ID*	*Location*	*Comments*
Canada thistle (*Cirsium arvense)*	Haines	HRD_HP21	59.21834 135.44834	6-25 plants located on Mud Bay Road, near River Road
	Haines	HRD_HP_073	59.39177, 135.86229	Only 1 plant located on Haines Highway at pullout
	Haines	HRD_HP3	59.16794 135.37949	6- 25 plants also located on Mud Bay Road, near an electric box
Spotted knapweed *(Centaurea biebersteinii)*	Haines	HRD_HP_074	59.41626, 135.92860	Only 1 plant located along Haines Highway, also only population of CEBI encountered during surveys.

Robert's Geranium *(Geranium robertianum)*	Juneau	see Appendix	see Appendix	All populations of Robert's Geranium are recommended for immediate removal. This is an aggressive, shade tolerant species.
Orange hawkweed *(Hieracium aurantiacum)*	Haines	HRD_HP30	59.23978, 135.44193	6-25 plants located on Mud Bay Road.
	Haines	HRD_HP_041	59.23987, 135.47419	At Haines Highway and Piedad Road, only 1-5 plants.
	Juneau	JRD_HP2_201	58.62344, 134.93395	Located on the Douglas Hwy, this is the outer extent of a larger population.
	Juneau	JRD_HP2_221	58.38255, 134.63689	This population on Douglas Hwy appeared to be the edge and should be eradicated.
Ornamental jewelweed *(Impatiens glandulifera)*	Juneau	see Appendix	see Appendix	All 3 populations of ornamental jewelweed encountered in Juneau are recommended for immediate removal.
White sweetclover *(Melilotus alba)*	Haines	HRD_HP_046	59.24239, 135.48084	First patch encountered while heading out on the Haines Highway- a good starting point for eradication.
	Haines	HRD_HP_054	59.36159, 135.79270	On Haines Highway, only one plant and fairly isolated from other populations.
	Haines	HRD_HP_081	59.42317, 136.01415	Farthest patch encountered on Haines Highway- good starting point for eradication.
Bohemian Knotweed *(Polygonum x bohemicum)*	Juneau	JRD_HP2_217, JRD_HP2_216	58.42127, 134.75535	These were the farthest populations of Bohemian knotweed from town, and good candidates for control with only 20 plants at each locality.

Yellow sweetclover *(Melilotus officinalis),* has an invasiveness ranking of 65 and is significantly less common than white sweetclover, having only been recorded in 3 plots in Haines. However, the plant is threatening to native plant communities in a similar manner to its congener, by fixing nitrogen, altering soil composition, and changing species diversity by shading out many smaller herbaceous species (AKEPIC 2005). Manual control has the potential to be effective due to the relatively few locations of this species.

Creeping bellflower (*Campanula rapunculoides)* has an invasiveness ranking of 64 and was seen on both Haines and Juneau. Since creeping bellflower is extremely difficult to eradicate, it is recommended for early control efforts. Additionally, creeping bellflower

likely reduces soil moisture and nutrients (Royer and Dickinson, 1999) and negatively impacts native plant communities.

Foxtail barley *(Hordeum jubatum)* has an invasiveness ranking of 63. While grasses are often overlooked by weed managers since they are typically difficult to eradicate, controlling the spread of harmful species such as foxtail barley is recommended. For the most part, our surveys have found that foxtail barley is, in many places, only beginning to colonize. Early control efforts could stem the associated ecological side effects of an infestation.

4.4 Species for further observation

Several species are recommended for further observation. These are species whose invasive character is not yet known, or those whose colonization habits in Alaska are uncertain.

Fall dandelion *(Leontodon autumnalis)* has not been assigned an invasiveness ranking, but where it does occur it behaves somewhat aggressively and occasionally forms homogenous populations.

Dame's rocket *(Hesperis matronalis)* was observed in several ornamental planter boxes in and around Juneau. This plant is a popular ornamental with an invasiveness ranking of 41. Some public education about invasive species in gardens would raise awareness of potential invaders.

Cypress spurge (*Euphorbia cyparissias)* was noted in Haines in a downtown planter box. Given the impact of its close cousin, leafy spurge *(Euphorbia esula),* in the lower 48 states, it might be a good idea to closely watch that this plant does not naturalize.

5. References

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Appendix A- Class I Species List

Appendix A.

Class 1. Known and Potential Invasive Plants of Alaska that may occur on around Haines and Juneau road systems. Two vouchers of each of these species will be collected.

CODE	Scientific name (Hulten 1968; or Kartesz *)	common name	family
ACFI	Achillea filipendulina Lam.	fernleaf yarrow	Asteraceae
AGCA5	Agrostis capillaris L.	colonial bentgrass	Poaceae
AGGI2	Agrostis gigantea Roth	creeping bentgrass, red top	Poaceae
AGST2	Agrostis stolonifera L.	creeping bentgrass, red top	Poaceae
ALGE2	Alopecurus geniculatus L.	water foxtail	Poaceae
ALPE4	Alliaria petiolata (Bieb.) Cavara & Grande	garlic mustard	Brassicaceae
ALPR3	Alopecurus pratensis L.	meadow foxtail	Poaceae
AMRE	Amaranthus retroflexus L.	redroot pigweed	Amaranthaceae
ANCO2	Anthemis cotula L.	mayweed	Asteraceae
ANTI	Anthemis tinctoria L.	yellow chamomile	Asteraceae
ARGL	Arabis glabra (L.) Bernh.	Tower rockcress	Brassicaceae
ASCI4	Astragalus cicer L.?*	chickpea milkvetch, cicer milkvetch	Fabaceae
ASPR	Asperugo procumbens L.	German-madwort	Boraginaceae
AVFA	Avena fatua L.	wildoats	Poaceae
BEIN2	Berteroa incana	Hoary false madwort	Brassicaceae
BEPE3	Betula pendula	European white birch	Betulaceae
BICE	Bidens cernua L.	bur-marigold, nodding beggar-ticks	Asteraceae
BRHO2	Bromus hordeaceus L.	soft brome	Poaceae
BRINI	Bromus inermis Leyss. Ssp. Inermis	smooth brome	Poaceae
BRJU	Brassica juncea (L.) Czern.	indian mustard	Brassicaceae

BRNA	Brassica napus L.	Rape	Brassicaceae
BRRA	Brassica rapa L.	field mustard	Brassicaceae
BRRAR	Brassica rapa L.var. rapa	Purple-topped Turnip	Brassicaceae
BRSE	Bromus secalinus L.	rye brome, cheat	Poaceae
BRTE	Bromus tectorum L.	cheatgrass, downy brome	Poaceae
CEBI2	Centaurea biebersteinii	Spotted knapweed	Asteraceae
CEFO2	Cerastium fontanum Baumg.	larger mouse-eared chickweed	Caryophyllaceae
CEGL2	Cerastium glomeratum Thuill.	Sticky chickweed	Caryophyllaceae
CHBE4	Chenopodium L.berlanderieri	Pitseed goosefoot	Chenopodiaceae
CHLE4	Chenopodium leptophyllum (Moq.) Nutt. Ex S. Wats.	Narrowleaf goosefoot	Chenopodiaceae
CIAR4	Cirsium arvense (L.) Scop.	Canada thistle	Asteraceae
CIIN	Cichorium intybus L.	chicory	Asteraceae
CIVU	Cirsium vulgare (Savi) Ten.	Bull thistle	Asteraceae
COLI2	Collomia linearis	Tiny trumpet	Polemoniacea
COAR4	Convolvulus arvensis	field bindweed	Convolvulaceae
COCA5	Conyza canadensis	Canadian horseweed	Asteraceae
COCO7	Cotula coronopifolia L.	Brass Buttons	Asteraceae
CRTE3	Crepis tectorum L.	Narrowleaf hawksbeard	Asteraceae
CYSC4	Cytisis scoparius (L.) Link	Scotch Broom	Fabaceae
DEEL	Deschampsia elongata (Hook.) Munro	slender hairgrass	Poaceae
DEPI	Descurainia pinnata	Western tansy mustard	Brassicaceae
DESO2	Descurainia sophia (L.) Webb ex Prantl	tansy mustard	Brassicaceae
DIDE	Dianthus deltoides L.	Maiden pink	Caryophyllaceae
ELSI	Elymus sibiricus L.	Siberian wild rye	Poaceae
ERCI6	Erodium cicutarium	Redstem stork's bill	Geraniaceae
ERCH9	Erysimum cheiranthoides L.	wormseed mustard	Brassicaceae
ERGA	Erucastrum gallicum (Willd.) O.E. Schulz*	common dogmustard	Brassicaceae
FRAN	Fragaria ananassa Duchesne (pro	Domestic	Rosaceae

	sp.) [chiloensis x virginiana]	strawberry	
GABI3	Galeopsis bifida Boenn.	splitlip hempnettle	Lamiaceae
GATE2	Galeopsis tetrahit L.	brittlestem hempnettle	Lamiaceae
GNPA	Gnaphalium palustre	Marsh cudweed	Asteraceae
HEAN3	Helianthus annuus L.	annual (common) sunflower	Asteraceae
HIAU	Hieracium aurantiacum L.	Orange Hawkweed	Asteraceae
HICA10	Hieracium caespitosum Dumort.	meadow hawkweed	Asteraceae
HILA8	Hieracium lachenalii K.C. Gmel.	Common hawkweed	Asteraceae
HIPIP	Hieracium pilosella L.	mouseear hawkweed	Asteraceae
HIUM	Hieracium umbellatum	Narrow-leaf Hawkweed	Poaceae
HOJU	Hordeum jubatum L.	Foxtail barley	Poaceae
HOLA	Holcus lanatus L.	Common velvetgrass	Poaceae
HOMUL	Hordeum murinum L. spp leporinum (Link)	Leporinum barley	Clusiaceae
HYPE	Hypericum perforatum L.	Common St. Johnswort	Asteraceae
HYRA3	Hypochoeris radicata L.	cat's-ears	Asteraceae
IMGL	Impatiens glandulifera	Oramental jewelweed	Balsaminaceae
LACO3	Lapsana communis	Common nipplewort	Boraginaceae
LASC	Lappula myosotis Moench	European beggar's lice	Asteraceae
LASE	Lactuca serriola L.	Prickly lettuce	Asteraceae
LEAU2	Leontodon autumnalis L.	fall dandelion	asteraceae
LEHI4	Leontodon hirtus L.	Rough hawkbit	Brassicaceae
LEDE	Lepidium densiflorum Schrad	common peppergrass	Brassicaceae
LERA2	Lepidum ramosissimum	Manybranched pepperwood	Asteraceae
LEMA8	Leucanthemum maximum	Shasta daisy	Scrophulariaceae
LIVU2	Linaria vulgaris P. Mill.	butter and eggs	Poaceae
LOAR10	Festuca arundinacea (Schreb.) S.J. Darbyshire	tall fescue	Poaceae
LOPEM2	Lolium multiflorum Lam.	Italian rye grass	Poaceae

LOPEP	Lolium perenne L.	perennial rye grass	Fabaceae
LOCO6	Lotus corniculatus	Bird's foot trefoil	Fabaceae
LOPE80	Lotus pedunculatus	Big trefoil	Fabaceae
LUPOP4	Lupinus x pseudopolyphyllus*	Kenai lupine	Fabaceae
LUPOP4	Lupinus polyphyllus Lindl.	large-leaf lupine	Caryophyllaceae
LYCH3	Lychnis chalcedonica L.	maltesecross	Lythraceae
LYHY2	Lythrum hyssopifolia L.*	hyssop loosestrife	Lythraceae
LYSA2	Lythrum salicaria	Purple Loosestrife	Fabaceae
MELU	Medicago lupulina L.	black medic, hop clover	Fabaceae
MEMI	Medicago minima L.	burr medic	Fabaceae
MESAF	Medicago falcata L.	yellow alfalfa	Lamiaceae
MESP3	Mentha spicata L.	spearmint	Scrophulariaceae
MIOR	Antirrhinum orontium L.	snapdragon	Asteraceae
MYMU	Mycelis muralis L.	wall lettuce	Boraginaceae
MYSC	Myosotis scorpioides L.	true forget-me-not	Halagoraceae
MYSP2	Myriophyllum spicatum L.	Eurasian watermilfoil	Brassicaceae
NEPA3	Neslia paniculata (L.) Desv.	ball mustard	Asteraceae
ONAC	Onopordum acanthium	Scotch Thistle	Fabaceae
ONVI	Onobrychis viciifolia Scop.*	sainfoin, saintfoin	Papaveraceae
PANU3	Papaver nudicaule L.	Iceland poppy	Poaceae
PHCA5	Phalaris canariensis L.	Canary grass	Plantaginaceae
PLLA	Plantago lanceolata L.	ribgrass, buckhorn, English plantain	Polygonaceae
POAV	Polygonum aviculare L.	knotweed	Poaceae
POCO	Poa compressa L.	Canada bluegrass	Polygonaceae
POCO10	Polygonum convolvulus L.	black bindweed, wild buckwheat	Polygonaceae
POCU6	Polygonum cuspidatum Sieb. & Zucc.	Japanese knotweed	Rosaceae
POGR9	Potentilla gracilis Dougl. ex Hook.	slender cinquefoil	Polygonaceae
POLA4	Polygonum lapathifolium L.	willow weed	Rosaceae
POPE3	Polygonum persicaria l.	lady's-thumb	Poaceae
POPRI2	Poa subcoerulea Sm.	spreading bluegrass	Poaceae
POPRP2	Poa angustifolia L.	Kentucky bluegrass	Poaceae
POTR2	Poa trivialis L.	rough bluegrass	Ranunculaceae
RAAC3	Ranunculus acris L.	tall buttercup	Brassicaceae
RASA2	Raphanus sativus L.	cultivated radish	Brassicaceae

ROSY	Rorippa sylvestris (L.) Bess.*	creeping yellowcress	Polygonaceae
RUACA	Rumex acetosella L. spp. Acetosa	Garden sorrel	Polygonaceae
RUAC3	Rumex acetosella L. ssp. acetosella	sheep sorel	Polygonaceae
RUAC3	Rumex acetosella L. ssp. angiocarpus (Murb.) Murb.	sheep sorel	Polygonaceae
RUOB	Rumex obtusifolius L.	bitter dock	Caryophyllaceae
SAOF4	Saponaria officinalis L.	Bouncingbet	Cyperaceae
SCMA8	Scirpus paludosus A. Nels.	bayonet grass	Asteraceae
SEJA	Senecio jacobea L.	Tansy ragwort, Stinky willie	Poaceae
SEVI4	Setaria viridis (L.) Beauv.	Green bristlegrass	Brassicaceae
SIAL2	Sisymbrium altissimum L.	tumbling mustard	Brassicaceae
SIAL5	Sinapis alba L.	white mustard	Brassicaceae
SIAR4	Sinapsis arvensis L.	charlock	Caryophyllaceae
SILA21	Silene latifolia Poir.	Bladder campion	Caryophyllaceae
SINO	Melandrium noctiflorum (L.) Fries	night-flowering catchfly	Asteraceae
SOAR2	Sonchus arvensis L.	Perennial Sowthistle	Rosaceae
SOAU	Sorbus aucuparia L.	European mountain ash	Asteraceae
SOOL	Sonchus oleraceous L.	Common sowthistle	Rosaceae
SOSO2	Sorbaria sorbifolia (L.) A.Braun	False spirea	Caryophyllaceae
SPAR	Spergula arvensis L.	spurry	Caryophyllaceae
SPRU	Spergularia rubra (L.) J.& K. Presl	purple sand spurry	Boraginaceae
SYOF	Symphytum officinale L.	common comfrey	Asteraceae
TALA2	Taraxacum scanicum Dahlst.	rock dandelion	Asteraceae
TAVU	Tanacetum vulgare L.	Common Tansy, golden buttons	Brassicaceae
THAR5	Thlaspi arvense L.	pennycress	Fabaceae
TRDU2	Trifolium dubium Sibthorp	Suckling clover	Poaceae
TRAE	Triticum aestivum L.	wheat	Asteraceae
TRDU	Tragopogon dubius Scop.	yellow salsify, goatsbeard	Asteraceae
TRPE21	Tripleurospermum inodorum (L.) Schultz-Bip.	scentless mayweed	Scrophulariaceae
VESES	Veronica serpyllifolia L. subsp. serpyllifolia	thyme-leaf speedwell	Caprifoliaceae

VIOP	Viburnum opulus	American cranberrybush	Fabaceae
VICRC	Vicia cracca L. ssp. Cracca	bird vetch, dog pea	Fabaceae
VITR	Viola tricolor L.	johnny jumpup	Violaceae

Appendix B- Class II Species List

Appendix B.

Class 2. Widespread, lower priority plants (invasive plants that are widespread across Southeast Alaska). One voucher for each of these species will be collected.

CODE	Scientific name (Hulten 1968; or Kartesz *)	common name	family
ACPT	*Achillea ptarmica* L.	sneezeweed	Asteraceae
AGCR	*Agropyron cristatum* (L.) Gaertn.	crested wheatgrass	Poaceae
CABU2	*Capsella bursa-pastoris* (L.) Medik	shepherd's purse	Brassicaceae
CHAL7	*Chenopodium album* L.,	lambsquarters	Chenopodiaceae
DAGL	*Dactylis glomerata* L.	orchard grass	Poaceae
DIPU	*Digitalis purpurea* L.,	purple foxglove	Scrophulariaceae
ELRE4	*Elymus repens* (L.) Gould	quackgrass	Poaceae
GEPU2	*Geranium pusillum* L.*	small geranium	Geraniaceae
LEVU	*Leucanthemum vulgare* Lam.	oxeye daisy	Asteraceae
MADI6	*Matricaria discoidea* DC.	disk mayweed or pineappleweed	Asteraceae
MESA	*Medicago sativa* L.	alfalfa	Fabaceae
MEAL12	*Melilotus alba Medikus*	white sweetclover	Fabaceae
MEOF	*Melilotus officinalis* (L.) Lam.	yellow sweetclover	Fabaceae
PASM	*Pascopyrum smithii* (Rydb.) A. Love., synonym *Agropyron smithii* Rydb.	western wheatgrass	Poaceae
PHAR3	*Phalaris arundinacea*	reed canary grass	Poaceae
PHPR3	*Phleum pratense* L.	common timothy	Poaceae
PLMA2	*Plantago major* L.	common plantain	Plantaginaceae
POAN	*Poa annua* L.	annual bluegrass	Poaceae
POPR	*Poa pratensis* L.	Kentucky bluegrass	Poaceae
RARE3	*Ranunculus repens* L.	creeping buttercup	Ranunculaceae
RUCR	*Rumex crispus* L.	curly dock	Polygonaceae
RULO2	*Rumex longifolius DC*.	garden dock	Polygonaceae
SEVU	*Senecio vulgaris* L.	common groundsel	Asteraceae
SOAS	*Sonchus asper* (L.) Hill	spiny sowthistle	Asteraceae
STME2	*Stellaria media* (L.) Vill	common chickweed	Caryophyllaceae
TAOF	*Taraxacum officinale* G.H. Weber ex Wiggers	common dandelion	Asteraceae

TRAU2	*Trifolium aureum* Pollich	golden clover	Fabaceae
TRHY	*Trifolium hybridum* L.	alsike clover	Fabaceae
TRPR2	*Trifolium pratense* L.	red clover	Fabaceae
TRRE3	*Trifolium repens* L.	white clover	Fabaceae

Appendix C- Non-Native Species Lists

Table C.1 Non-native species recorded during the 2007 surveys on the Haines and Juneau Road Systems.

Code	Species	Common name	Family	Class
ALPR2	Alopecurus pratensis	meadow foxtail	Poaceae	1
ANCO3	Anthemis cotula	stinking chamomile	Asteraceae	1
ARGL	Arabis glabra	tower rockcress	Brassicaceae	1
ASCI4	Astragulus cicer	chickpea milkvetch	Fabaceae	1
BRRA	Brassica rapa	field mustard	Brassicaceae	1
BRINI	Bromus inermis ssp. inermis	smooth brome	Poaceae	1
BRSE	Bromus secalinus	rye brome	Poaceae	1
CARA	Campanula rapunculoides	rampion bellflower	Campanulaceae	1
CABU2	Capsella bursa-pastoria	shepard's purse	Brassicaceae	2
CEBI2	Centaurea biebersteinii	spotted knapweed	Asteraceae	HP
CEMO	Centaurea montana	perennial cornflower	Asteraceae	1
CEFO2	Cerastium fontanum	mouse ear chickweed	Caryophyllaceae	2
CHAL7	Chenopodium album	lamb's quarters	Chenopodiaceae	2
CIAR4	Cirsium arvensis	Canadian thistle	Asteraceae	HP
CRTE3	Crepis tectorum	narrow hawk's beard	Asteraceae	1
DAGL	Dactylis glomerata	orchard grass	Poaceae	2
DIPU	Digitalis purpurea	foxglove	Scrophulariaceae	2
ELRE4	Elymus repens	quackgrass	Poaceae	2
ELSI	Elymus sibericus	Siberian wild rye	Poaceae	1
ELTR7	Elymus trachycaulis	slender wheatgrass	Poaceae	1
ERCH9	Erysimum cheiranthoides	wormseed wallflower	Brassicaceae	1
EUCY2	Euphorbia cyparissias	cypress spurge	Euphorbiaceae	1
EUNE3	Euphrasia nemorosa	common eyebright	Scrophulariaceae	1
	Festuca 1			
FRAN	Fragaria ananassa	domestic strawberry	Rosaceae	1
GABI3	Galeopsis bifida	hemp nettle	Lamiaceae	1
GERO	Geranium robertianum	Robert's Geranium	Geraniaceae	HP
GNPA	Gnaphalium palustre	cudweed	Asteraceae	1
HEMA3	Hesperis matronalis	Dame's violet	Brassicaceae	1
HIAU	Hieracium aurantiacum	orange hawkweed	Asteraceae	HP
HOJU	Hordeum jubatum	foxtail barley	Poaceae	1
IMGL	Impatiens glandulifera	ornamental jewelweed	Balsaminaceae	HP
LEAU	Leontondon autumnalis	fall dandelion	Asteraceae	1
LEVU	Leucanthemum vulgare	oxeye daisy	Asteraceae	2
LIVU2	Linaria vulgaris	butter-n-eggs	Scrophulariaceae	HP
LOPEM2	Lolium multiflorum	Italian ryegrass	Poaceae	1
LOPEP	Lolium perenne	perennial ryegrass	Poaceae	1
LUPOP4	Lupinus polyphyllus	Kenai lupine	Fabaceae	1
MAGL2	Madia glomerata	mountain tarweed	Asteraceae	1
MADI6	Matricaria discoidea	pineapple weed	Asteraceae	2
MELU	Medicago lupulina	black medick	Fabaceae	1
MEAL12	Melilotus alba	white sweetclover	Fabaceae	HP

MEOF	Melilotus officinale	yellow sweetclover	Fabaceae	2
MYSC	Myosotis scirpoides	forget me not	Boraginaceae	1
PASM	Pascopyrum smithii	western wheatgrass	Poaceae	1
PHAR3	Phalaris arundinacea	reed canary grass	Poaceae	2
PHPR3	Phleum pratense	common Timothy	Poaceae	2
PLMA2	Plantago major	common plaintain	Plantaginaceae	2
POAN	Poa annua	annual bluegrass	Poaceae	2
POCO	Poa compressa	Canada bluegrass	Poaceae	1
POPR	Poa pratensis	Kentucky bluegrass	Poaceae	2
POAV	Polygonum aviculare	knotweed	Polygonaceae	1
POBO10	Polygonum x bohemicum	Bohemian knotweed	Polygonaceae	HP
PONO3	Potentilla norvegica	silverweed	Rosaceae	1
RAAC3	Ranunculus acris	tall buttercup	Ranunculaceae	1
RARE3	Ranunculus repens	creeping buttercup	Ranunculaceae	2
RORU	Rosa rugosa	rugosa rose	Rosaceae	1
RUACA	Rumex acetosea ssp. acetosea	green sorrel	Polygonaceae	1
RUAC3	Rumex acetosella	sheep sorrel	Polygonaceae	1
RUCR	Rumex crispus	curly dock	Polygonaceae	2
SEVI2	Senecio viscosus	viscid groundsel	Asteraceae	1
SEVU	Senecio vulgaris	old man's beard	Asteraceae	2
SIAL2	Sisymbrium altissimum	tumbling mustard	Brassicaceae	1
SPAR	Spergula arvense	spurry	Caryophyllaceae	1
SPRU	Spergularia rubra	purple sand spurry	Boraginaceae	1
STME2	Stellaria media	chickweed	Caryophyllaceae	2
TAVU	Tanacetum vulgare	common tansy	Asteraceae	1
TAOF	Taraxacum officinale	common dandelion	Asteraceae	2
THAR5	Thlaspi arvense	pennycress	Brassicaceae	1
TRHY	Trifolium hybridum	alsike clover	Fabaceae	2
TRPR2	Trifolium pratense	strawberry clover	Fabaceae	2
TRRE3	Trifolium repens	white clover	Fabaceae	2
VESES	Veronica serpyfolia ssp. serpyfolia	thyme leaved speedwell	Scrophulariaceae	1

Haines Non-Native Species List

Table C.2 Non-native Species Recorded on the Haines Road System

Code	Species	Common name	Family	Class
ALPR2	Alopecurus pratensis	meadow foxtail	Poaceae	1
ARGL	Arabis glabra	tower rockcress	Brassicaceae	1
ASCI4	Astragulus cicer	chickpea milkvetch	Fabaceae	1
BRRA	Brassica rapa	field mustard	Brassicaceae	1
BRINI	Bromus inermis ssp. inermis	smooth brome	Poaceae	1
BRSE	Bromus secalinus	rye brome	Poaceae	1
CABU2	Capsella bursa-pastoria	shepard's purse	Brassicaceae	2
CEBI2	Centaurea biebersteinii	spotted knapweed	Asteraceae	HP
CEMO	Centaurea montana	perennial cornflower	Asteraceae	1
CEFO2	Cerastium fontanum	mouse ear chickweed	Caryophyllaceae	2
CHAL7	Chenopodium album	lamb's quarters	Chenopodiaceae	2
CIAR4	Cirsium arvensis	Canadian thistle	Asteraceae	HP
CRTE3	Crepis tectorum	narrow hawk's beard	Asteraceae	1
DAGL	Dactylis glomerata	orchard grass	Poaceae	2
DIPU	Digitalis purpurea	foxglove	Scrophulariaceae	2
ELRE4	Elymus repens	quackgrass	Poaceae	2
ELSI	Elymus sibericus	Siberian wild rye	Poaceae	1
ELTR7	Elymus trachycaulis	slender wheatgrass	Poaceae	1
ERCH9	Erysimum cheiranthoides	wormseed wallflower	Brassicaceae	1
EUCY2	Euphorbia cyparissias	cypress spurge	Euphorbiaceae	1
EUNE3	Euphrasia nemorosa	common eyebright	Scrophulariaceae	1
FRAN	Fragaria ananassa	domestic strawberry	Rosaceae	1
GABI3	Galeopsis bifida	hemp nettle	Lamiaceae	1
GNPA	Gnaphalium palustre	cudweed	Asteraceae	1
HIAU	Hieracium aurantiacum	orange hawkweed	Asteraceae	HP
HOJU	Hordeum jubatum	foxtail barley	Poaceae	1
IMGL	Impatiens glandulifera	ornamental jewelweed	Balsaminaceae	HP
LEVU	Leucanthemum vulgare	oxeye daisy	Asteraceae	2
LIVU2	Linaria vulgaris	butter-n-eggs	Scrophulariaceae	HP
MAGL2	Madia glomerata	mountain tarweed	Asteraceae	1
MADI6	Matricaria discoidea	pineapple weed	Asteraceae	2
MEAL12	Melilotus alba	white sweetclover	Fabaceae	HP
MEOF	Melilotus officinale	yellow sweetclover	Fabaceae	2
MYSC	Myosotis scirpoides	forget me not	Boraginaceae	1
PASM	Pascopyrum smithii	western wheatgrass	Poaceae	1
PHAR3	Phalaris arundinacea	reed canary grass	Poaceae	2
PHPR3	Phleum pratense	common Timothy	Poaceae	2
PLMA2	Plantago major	common plaintain	Plantaginaceae	2
POAN	Poa annua	annual bluegrass	Poaceae	2
POCO	Poa compressa	Canada bluegrass	Poaceae	1
POPR	Poa pratensis	Kentucky bluegrass	Poaceae	2
POAV	Polygonum aviculare	knotweed	Polygonaceae	1
PONO3	Potentilla norvegica	silverweed	Rosaceae	1

RAAC3	Ranunculus acris	tall buttercup	Ranunculaceae	1
RARE3	Ranunculus repens	creeping buttercup	Ranunculaceae	2
RUACA	Rumex acetosea ssp. acetosea	green sorrel	Polygonaceae	1
RUAC3	Rumex acetosella	sheep sorrel	Polygonaceae	1
RUCR	Rumex crispus	curly dock	Polygonaceae	2
SEVI2	Senecio viscosus	viscid groundsel	Asteraceae	1
SEVU	Senecio vulgaris	old man's beard	Asteraceae	2
SIAL2	Sisymbrium altissimum	tumbling mustard	Brassicaceae	1
SPAR	Spergula arvense	spurry	Caryophyllaceae	1
SPRU	Spergularia rubra	purple sand spurry	Boraginaceae	1
STME2	Stellaria media	chickweed	Caryophyllaceae	2
TAVU	Tanacetum vulgare	common tansy	Asteraceae	1
TAOF	Taraxacum officinale	common dandelion	Asteraceae	2
THAR5	Thlaspi arvense	pennycress	Brassicaceae	1
TRHY	Trifolium hybridum	alsike clover	Fabaceae	2
TRPR2	Trifolium pratense	strawberry clover	Fabaceae	2
TRRE3	Trifolium repens	white clover	Fabaceae	2
VESES	Veronica serpyfolia ssp. serpyfolia	thyme leaved speedwell	Scrophulariaceae	1

Juneau Non-Native Species List

Table C.3 Non-native Species Recorded on the Juneau road systems

Code	Species	Common name	Family	Class
ALPR2	Alopecurus pratensis	meadow foxtail	Poaceae	1
ANCO3	Anthemis cotula	stinking chamomile	Asteraceae	1
BRRA	Brassica rapa	field mustard	Brassicaceae	1
CARA	Campanula rapunculoides	rampion bellflower	Campanulaceae	1
CABU2	Capsella bursa-pastoria	shepard's purse	Brassicaceae	2
CEFO2	Cerastium fontanum	mouse ear chickweed	Caryophyllaceae	2
CRTE3	Crepis tectorum	narrow hawk's beard	Asteraceae	1
DAGL	Dactylis glomerata	orchard grass	Poaceae	2
DIPU	Digitalis purpurea	foxglove	Scrophulariaceae	2
ELRE4	Elymus repens	quackgrass	Poaceae	2
ELSI	Elymus sibericus	Siberian wild rye	Poaceae	1
	Festuca 1			
FRAN	Fragaria ananassa	domestic strawberry	Rosaceae	1
GABI3	Galeopsis bifida	hemp nettle	Lamiaceae	1
GERO	Geranium robertianum	Robert's Geranium	Geraniaceae	HP
HEMA3	Hesperis matronalis	Dame's violet	Brassicaceae	1
HIAU	Hieracium aurantiacum	orange hawkweed	Asteraceae	HP
IMGL	Impatiens glandulifera	ornamental jewelweed	Balsaminaceae	HP
LEAU	Leontondon autumnalis	fall dandelion	Asteraceae	1
LEVU	Leucanthemum vulgare	oxeye daisy	Asteraceae	2
LIVU2	Linaria vulgaris	butter-n-eggs	Scrophulariaceae	HP
LOPEM2	Lolium multiflorum	Italian ryegrass	Poaceae	1
LOPEP	Lolium perenne	perennial ryegrass	Poaceae	1
LUPOP4	Lupinus polyphyllus	Kenai lupine	Fabaceae	1
MADI6	Matricaria discoidea	pineapple weed	Asteraceae	2
MELU	Medicago lupulina	black medick	Fabaceae	1
MEAL12	Melilotus alba	white sweetclover	Fabaceae	HP
MYSC	Myosotis scirpoides	forget me not	Boraginaceae	1
PASM	Pascopyrum smithii	western wheatgrass	Poaceae	1
PHAR3	Phalaris arundinacea	reed canary grass	Poaceae	2
PHPR3	Phleum pratense	common Timothy	Poaceae	2
PLMA2	Plantago major	common plaintain	Plantaginaceae	2
POAN	Poa annua	annual bluegrass	Poaceae	2
POCO	Poa compressa	Canada bluegrass	Poaceae	1
POPR	Poa pratensis	Kentucky bluegrass	Poaceae	2
POAV	Polygonum aviculare	knotweed	Polygonaceae	1
POBO10	Polygonum x bohemicum	Bohemian knotweed	Polygonaceae	HP
PONO3	Potentilla norvegica	silverweed	Rosaceae	1
RAAC3	Ranunculus acris	tall buttercup	Ranunculaceae	1
RARE3	Ranunculus repens	creeping buttercup	Ranunculaceae	2
RUACA	Rumex acetosea ssp. acetosea	green sorrel	Polygonaceae	1

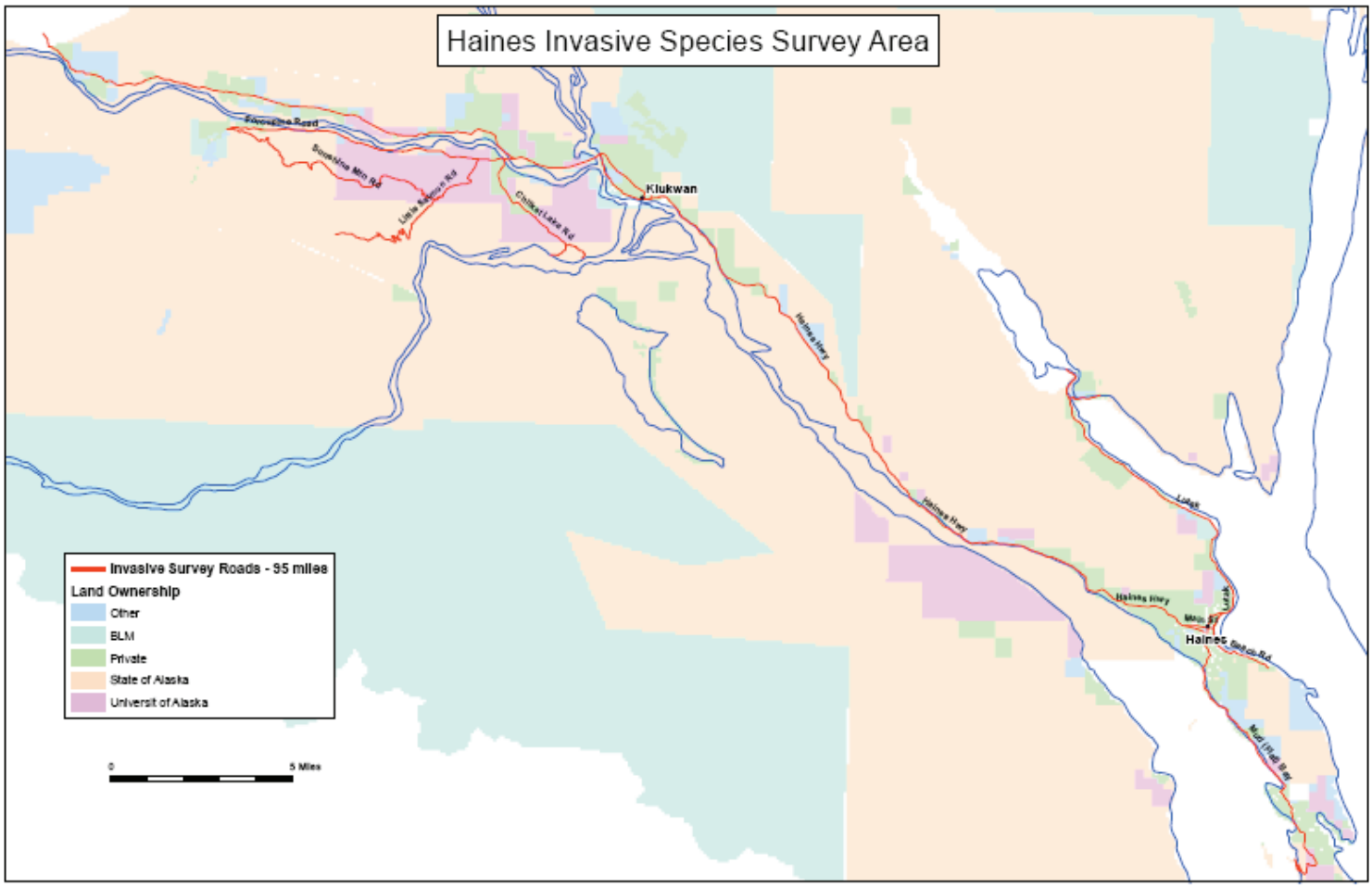
RUAC3	Rumex acetosella	sheep sorrel	Polygonaceae	1
RUCR	Rumex crispus	curly dock	Polygonaceae	2
SEVU	Senecio vulgaris	old man's beard	Asteraceae	2
SPAR	Spergula arvense	spurry	Caryophyllaceae	1
SPRU	Spergularia rubra	purple sand spurry	Boraginaceae	1
STME2	Stellaria media	chickweed	Caryophyllaceae	2
TAVU	Tanacetum vulgare	common tansy	Asteraceae	1
TAOF	Taraxacum officinale	common dandelion	Asteraceae	2
TRHY	Trifolium hybridum	alsike clover	Fabaceae	2
TRPR2	Trifolium pratense	strawberry clover	Fabaceae	2
TRRE3	Trifolium repens	white clover	Fabaceae	2
VESES	Veronica serpyfolia ssp. serpyfolia	thyme leaved speedwell	Scrophulariaceae	1

Appendix D- List of Voucher Specimens

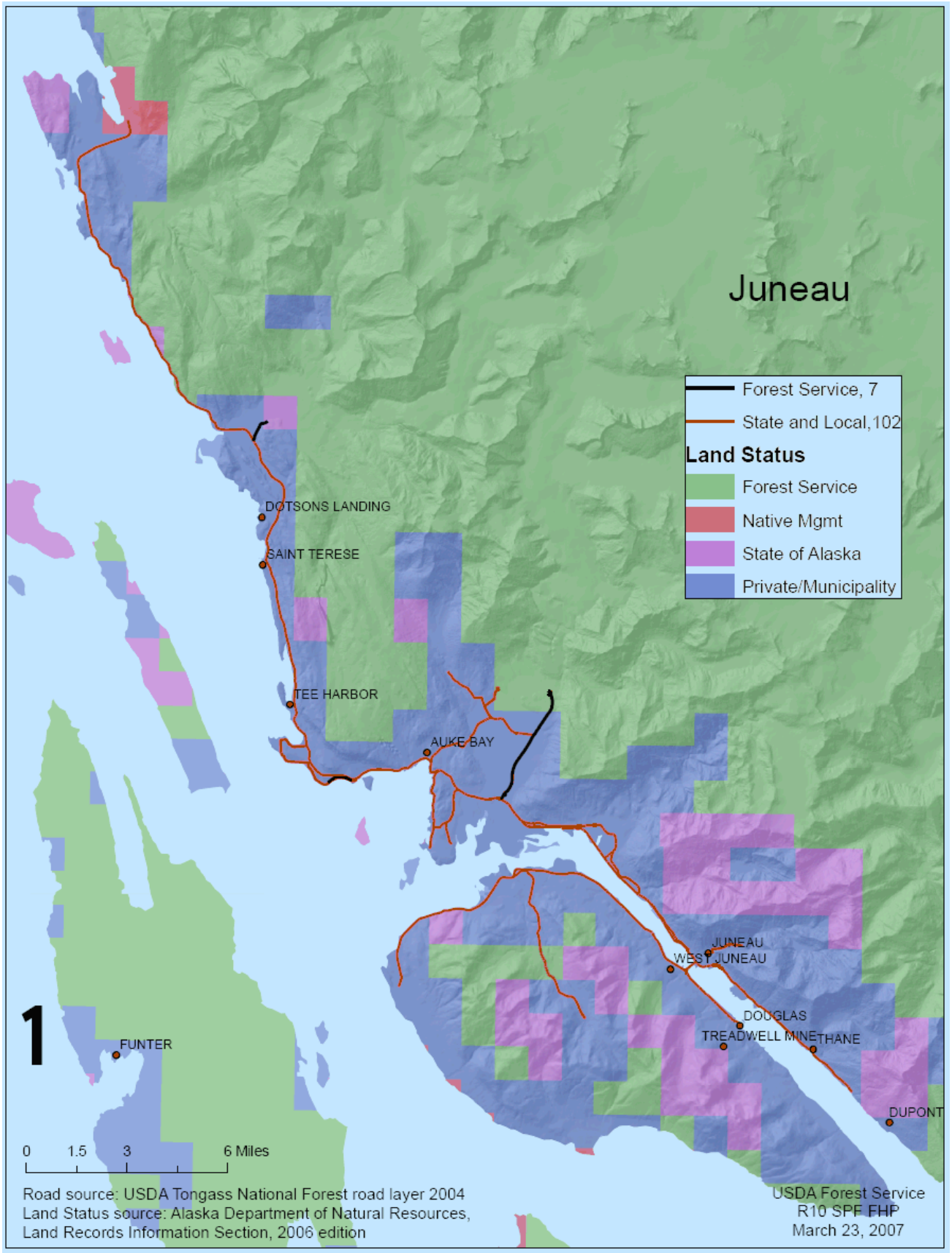
Collection ID	Scientific name	Common name	Latitude	Longitude	Location Notes	Collector
ZBM_002	Agropyron sp.	quack grass	59.38252	135.84135	Haines	Z. Million
KC_139	Alopecurus pratensis	meadow foxtail	58.39528	134.74572	Juneau	K. Cutler
ZBM_001	Astragalus cicer	cicer milkvetch	59.43509	136.23774	Haines	Z. Million
KC_119	Brassica rapa	field mustard	59.26527	135.58809	Haines	K. Cutler
KC_133	Campanula rapunculoides	bellflower	58.54282	134.85213	Juneau	K. Cutler
KC_112	Capsella bursa-pastoris	shephard's purse	59.23499	135.44568	Haines	K. Cutler
KC_117	Centaurea biebersteinii	spotted knapweed	59.28792	135.68488	Haines	K. Cutler
KC_130	Centaurea montana	perennial cornflower	59.24065	135.43804	Haines	K. Cutler
KC_103	Cerastium fontanum	mouse ear chickweed	59.14727	135.34534	Haines	K. Cutler
LMC_113	Chenopodium album	lambs quarters	59.41496	136.0919	Haines	L. Corlis
LMC_102	Cirsium arvense	Canada thistle	59.14727	135.34524	Haines	L. Corlis
LMC_115	Crepis tectorum	narrowleaf hawksbeard	59.30934	135.71495	Haines	L. Corlis
KC_140	Dactylis glomerata	orchard grass	58.38258	134.63261	Juneau	K. Cutler
KC_125	Digitalis purpurea	common foxglove	59.23713	135.44486	Haines	K. Cutler
LMC_107	Elymus repens	quack grass	59.14727	135.34534	Haines	L. Corlis
KC_115	Elymus sibiricus	Siberian wild rye	59.24446	135.51112	Haines	K. Cutler
KC_129	Elymus trachycaulus	slender wheatgrass	59.37665	135.83506	Haines	K. Cutler
KC_123	Euphorbia cyparissias	cypress spurge	59.23499	135.44568	Haines	K. Cutler
KC_147	Euphrasia nemorosa	common eyebright	59.24994	135.54059	Haines	K. Cutler
KC_143	Festuca sp.	fescue	58.64162	134.94195	Juneau	K. Cutler
KC_111	Fragaria ananassa Duchesne	domestic strawberry	59.32491	135.54288	Haines	K. Cutler
LMC_101	Galeopsis bifida	hemp nettle	59.14727	135.32534	Haines	L. Corlis
KC_134	Geranium robertianum	Robert's geranium	58.60949	134.92581	Juneau	K. Cutler
KC_122	Gnaphalium palustre	cudweed	59.30441	135.70984	Haines	K. Cutler
KC_145	Hesperis matronalis	dames rocket	58.38537	134.74257	Juneau	K. Cutler
KC_116	Hieracium aurantiacum	orange hawkweed	59.23987	135.47419	Haines	K. Cutler
KC_144	Hordeum jubatum	foxtail barley	59.33221	135.74756	Haines	L. Corlis
KC_141	Impatiens glandulifera	oranmental jewelweed	58.42812	134.75768	Juneau	K. Cutler
LMC_114	Leontodon autumnalis	fall dandelion	58.41594	134.54572	Juneau	L. Corlis
KC_107	Leucanthemum vulgare	oxeye daisy	59.18984	135.40728	Haines	K. Cutler
LMC_103	Linaria vulgaris	butter n' eggs	59.14727	135.34534	Haines	L. Corlis
KC_135	Lolium perenne ssp. multiforum	ryegrass	58.52293	134.79196	Juneau	K. Cutler
KC_124	Lupinus polyphyllus	bigleaf lupine	59.22763	135.44615	Haines	K. Cutler
KC_120	Madia glomerata	mountain tarweed	59.23978	135.44193	Haines	K. Cutler
LMC_105	Matricaria discoidea	pineapple weed	59.14727	135.34534	Haines	L. Corlis
KC_132	Medicago lupulina	black medick	58.64808	134.93072	Juneau	K. Cutler
KC_127	Melilotus alba	white sweet clover	59.41025	135.9644	Haines	K. Cutler
KC_108	Melilotus officinalis	yellow sweet clover	59.17552	135.38656	Haines	K. Cutler
LMC_109	Myosotis scirpoides	forget me not	59.23873	135.48135	Haines	L. Corlis
KC_146	Phalaris arundinacea	reed canary grass	58.60173	134.91422	Juneau	K. Cutler
KC_106	Phleum pratense	Timothy grass	59.15644	135.36282	Haines	K. Cutler

LMC_104	Plantago major	common plantain	59.14727	135.34534	Haines	L. Corlis
LMC_116	Poa annua	annual bluegrass	58.53148	134.78203	Juneau	K. Cutler
KC_128	Poa compressa	Canadian bluegrass	59.38716	135.85011	Haines	K. Cutler
KC_137	Poa pratensis	Kentucky bluegrass	58.39528	134.74572	Juneau	K. Cutler
KC_113	Polygonum aviculare	prostrate knotweed	59.23499	135.44568	Haines	K. Cutler
KC_131	Polygonum x bohemicum	Bohemian knotweed	58.63412	134.94015	Juneau	K. Cutler
KC_150	Potentilla norvegica	silverweed	59.1729	135.3826	Haines	K. Cutler
LMC_110	Ranunculus acris	tall buttercup	59.41259	136.02272	Haines	L. Corlis
KC_136	Ranunculus repens	creeping buttercup	58.66091	134.90139	Juneau	K. Cutler
KC_126	Rosa rugosa	rugosa rose	59.23713	135.44486	Haines	K. Cutler
KC_142	Rumex acetosa	garden sorrel	59.23014	135.44042	Haines	K. Cutler
KC_138	Rumex crispus	curly dock	58.46979	134.77841	Juneau	K. Cutler
KC_105	Senecio viscosus	sticky ragwort	59.23987	135.47419	Haines	K. Cutler
KC_109	Senecio vulgaris	common groundsel	59.18984	135.40728	Haines	K. Cutler
LMC_108	Sisymbrium altissimum	tall tumblemustard	59.39941	135.88415	Haines	L. Corlis
KC_121	Spergula arvensis	corn sputty	59.30441	135.70984	Haines	K. Cutler
LMC_106	Spergularia rubra	red sand spurry	59.14727	135.34534	Haines	L. Corlis
LMC_012	Stellaria media	common chickweed	59.41496	136.0919	Haines	L. Corlis
LMC_111	Tanacetum vulgare	common tansy	59.41259	136.02272	Haines	L. Corlis
KC_114	Thlaspi arvense	field pennycress	59.21834	135.44834	Haines	K. Cutler
KC_110	Trifolium hybridum	alsike clover	59.16127	135.3759	Haines	K. Cutler
KC_102	Trifolium pratense	strawberry clover	59.14727	135.34534	Haines	K. Cutler
KC_101	Trifolium repens	white clover	59.14727	135.34534	Haines	K. Cutler
LMC_112	Veronica serpyllfolia ssp. serpyllfolia	thyme leaved speedwell	59.37554	135.95959	Haines	L. Corlis

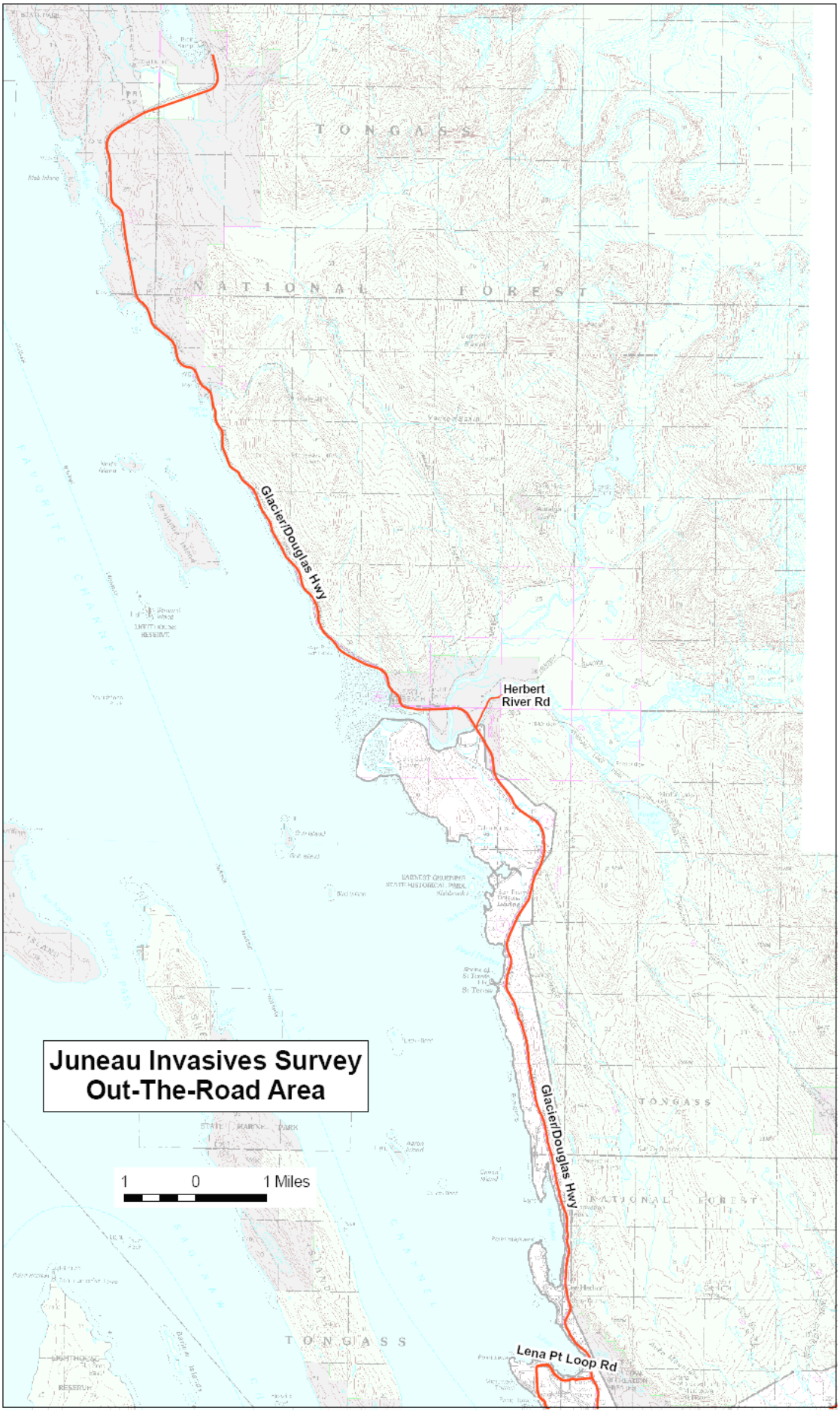
Appendix E- Maps of Survey Areas

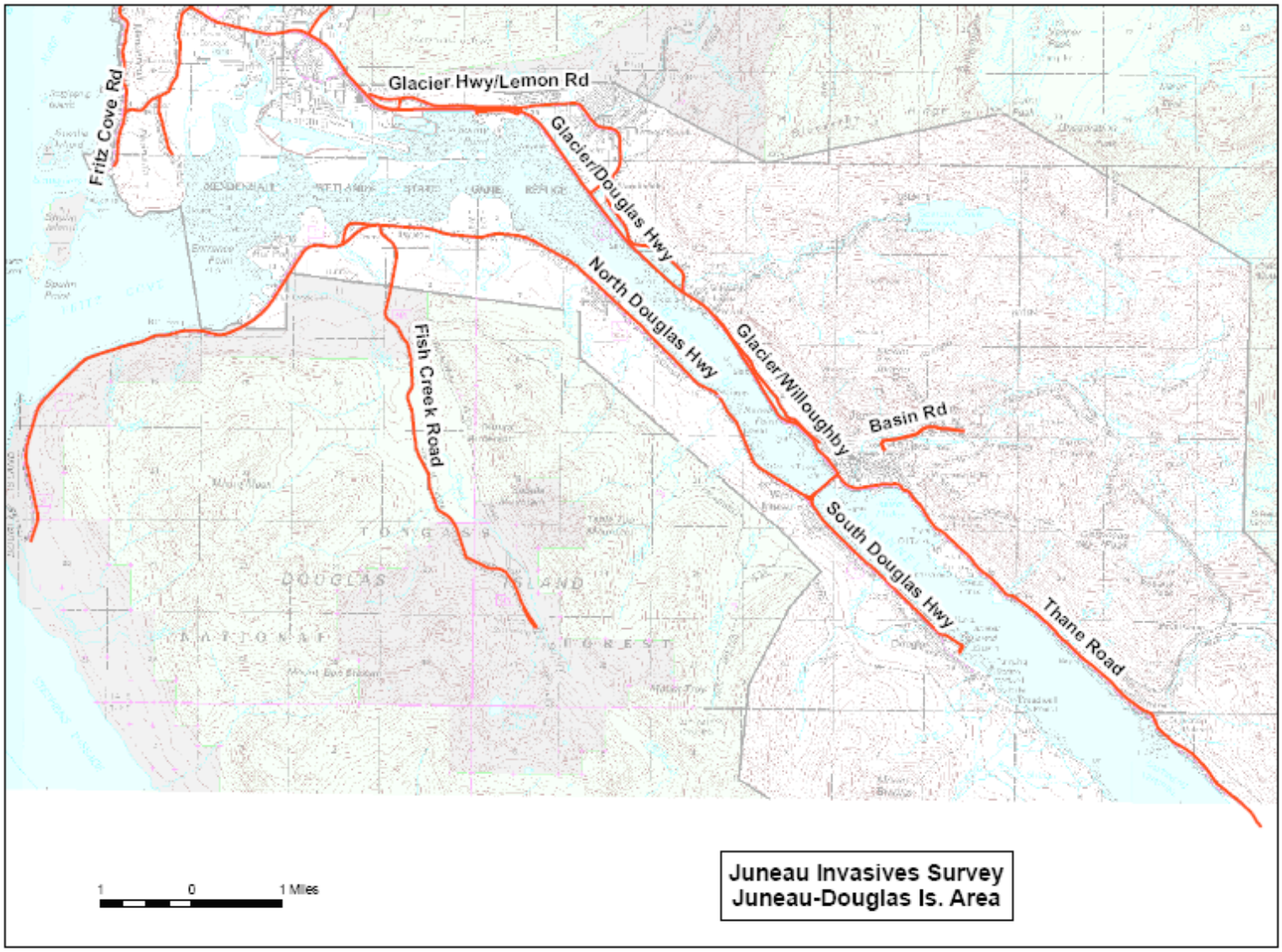


Haines Area Enlargement Invasive Survey


Juneau
Forest Service, 7
State and Local,102
Land Status
Forest Service
Native Mgmt
State of Alaska
Private/Municipality
DOTSONS LANDING
SAINT TERESE
TEE HARBOR
AUKE BAY
JUNEAU
WEST JUNEAU
DOUGLAS
TREADWELL MINE
THANE
DUPONT
FUNTER
1
0 1.5 3 6 Miles
Road source: USDA Tongass National Forest road layer 2004
Land Status source: Alaska Department of Natural Resources,
Land Records Information Section, 2006 edition
USDA Forest Service
R10 SPF FHP
March 23, 2007


Juneau Invasives Survey
Mendenhall Valley Area
Glacier/Douglas Hwy
Montana Creek Rd
Mendenhall Glacier Rd
Mendenhall Loop Rd
Lena Pt Loop Rd
Glacier/Douglas Hwy
Engineers Cutoff Rd
Fritz Cove Rd
Egan Hwy
TONGASS
NATIONAL FOREST
MENDENHALL GLACIER RECREATION AREA (FS)
Auke Mountain
Mendenhall Valley
Point Louisa
Indian Point
Indian Island
Coghlan Island
Suedia Island
Spuhn Island
Gunnship Island
MENDENHALL WETLANDS STATE
1 0 1 Miles


Juneau Invasives Survey
Out-The-Road Area
Glacier/Douglas Hwy
Herbert
River Rd
Glacier/Douglas Hwy
Lena Pt Loop Rd
1 0 1 Miles
TONGASS
NATIONAL FOREST


Fritz Cove Rd
Glacier Hwy/Lemon Rd
Glacier/Douglas Hwy
North Douglas Hwy
Glacier/Willoughby
Basin Rd
Fish Creek Road
South Douglas Hwy
Thane Road
1 0 1 Miles
Juneau Invasives Survey
Juneau-Douglas Is. Area

Appendix F- High Priority Species Locations

Table F.1 Juneau High Priority Species

Date	Location ID	Species	# of plants	Data point	GPS Coordinates	Comments
8/19/2007	JRD_HP2_200	POBO10	100	JRD_GDH_012	58.63412, 134.94015	Population located on west side of Douglas highway
8/19/2007	JRD_HP2_201	HIAU2	5	JRD_GDH_015	58.62344, 134.93395	Population located on east side of Douglas highway
8/19/2007	JRD_HP2_202	HIAU2	500+	JRD_GDH_016	58.61976, 134.93266	Located on both sides of theDouglas highway, scattered in some places and forming mats in others
8/19/2007	JRD_HP2_203	GERO	5	JRD_GDH_019	58.60949, 134.92581	Located at pullout on west side of Douglas highway, near North end of guardrail
8/19/2007	JRD_HP2_204	POBO10	50 - 100	JRD_GDH_025	58.59368, 134.90315	Near private drive on Douglas Hwy.
8/19/2007	JRD_HP2_205	POBO10	100 - 200	JRD_GDH_030	58.57665, 134.88948	Population located in pull-out on Douglas Hwy
8/19/2007	JRD_HP2_206	HIAU2	250 - 500	JRD_GDH_031	58.57259, 134.88238	Population on East side o fDouglas highway, plants have been mowed down
8/19/2007	JRD_HP2_207	POBO10	50	JRD_GDH_032	58.56983, 134.87999	Located at Turnout on West side of Douglas highway, north of guardrail
8/19/2007	JRD_HP2_208	POBO10	100 - 200	JRD_GDH_037	58.53751, 134,83885	10.5 miles South from end of Douglas Hwy., in pull-out on ocean side
8/19/2007	JRD_HP2_209	POBO10	500+	JRD_GDH_038	58.53257, 124.82800	11 miles from end of Douglas Hwy., in pull-out on ocean side
8/24/2007	JRD_HP2_223	HIAU2	25 - 50	JRD_GDH_082	58.37239, 134.61472	1.3 miles South from end of Douglas Hwy. on Fritz Rd at intersection with Sherwood Ln.
8/20/2007	JRD_HP2_210	HIAU2	50 - 100	JRD_GDH_046	58.50974, 134.77910	Population throughout plot on West side of Douglas Highway
8/20/2007	JRD_HP2_211	HIAU2	500+	JRD_GDH_047	58.50681, 134.77274	Population located throughout plot on Douglas Hwy.

8/20/2007	JRD_HP2_212	HIAU2	5	JRD_GDH_049	58.50070, 134.76681	1.75 miles south of Herbert River Rd on Douglas Hwy.
8/20/2007	JRD_HP2_213	POBO10	10	JRD_GDH_056	58.47510, 134.78003	3.5 South of Herbert River Rd. at Pull-out on East side of Douglas Hwy.
8/20/2007	JRD_HP2_214	HIAU2	2	JRD_GDH_058	58.46965, 134.77797	4.0 miles S. of Herbert River Rd. on Douglas Hwy.
8/20/2007	JRD_HP2_214a	IMGL	25 - 50	JRD_GDH_069	58.42812, 134.75768	Both sides of Douglas Hwy, garden excapee
8/20/2007	JRD_HP2_215	GERO	1	JRD_GDH_070	58.42487, 134.75562	7.0 miles South of Herbert River Rd. on West side of Douglas Hwy.
8/20/2007	JRD_HP2_216	POBO10	26 - 50	JRD_GDH_070	58.42297, 134.75571	7.0 miles South of Herbert River Rd. in turnout across from 19 mile marker on West side ofDouglas Hwy.
8/20/2007	JRD_HP2_217	POBO10	20	JRD_GDH_071	58.42127, 134.75535	7.25 miles South of Herber River Rd. at pull-out on West side of Douglas Hwy.
8/20/2007	JRD_HP2_218	HIAU2	26 - 50	JRD_GDH_072	58.415003, 134.75561	7.6 miles South of Herbert River Rd. on Douglas Hwy.
8/20/2007	JRD_HP2_219	GERO	26 - 50	JRD_GDH_072	58.41500, 134.75560	7.6 South of Herbert River Rd. on Douglas Hwy.
8/21/2007	JRD_HP2_221	HIAU2	100 - 200	JRD_GDH_079	58.38255, 134.63689	0.5 miles from intersection of West end of Mendenhall Loop Rd and Glacier/Douglas Hwy. Across from small pull-out

Table F.2 Haines High Priority Species

	Location ID	Species	# of plants	Data point	GPS Coordinates	Comments
8/10/2007	HRD_HP1	LIVU2, CIAR4	6 to 25	HRD_MBR_001	59.14727 135.34534	Both species have 6-25 plants
8/11/2007	HRD_HP3	CIAR4	6 to 25	HRD_MBR_010	59.16794 135.37949	Located at electric box
8/12/2007	HRD_HP21	CIAR4	6 to 25	HRD_MBR_030	59.21834 135.44834	Mud Bay Road, near River Rd.
8/12/2007	HRD_HP26	CIAR4	500 plus	HRD_MBR_035	59.23228 135.44648	at intersection of 3rd Street and Haines Highway. Plants are spread through entirity of plot, on both sides of roadway.
8/12/2007	HRD_HP28	CIAR4	6 to 25	HRD_MBR_037	59.23713, 135.44486	at intersection w/ Dalton St. at 3rd
8/12/2007	HRD_HP30	HIAU2	6 to 25	HRD_MBR_038	59.23978, 135.44193	at intersection w/ lynnview Intak Rd.
8/12/2007	HRD_?	HIAU2	100 to 200	N/A	59.24330, 135.44164	up Young Rd on the way to Ripinski Trail.
8/12/2007	HRD_HP_032	CIAR4	6 to 25	HRD_HHB_001	59.23014, 135.44042	at intersection of Front St and Haines Highway
8/12/2007	HRD_HP_034	CIAR4	100 to 250	HRD_HHB_002	59.23444, 135.45133	across from pool
8/12/2007	HRD_HP_037	CIAR4	500 plus	HRD_HHB_003	59.23490, 135.45436	throughout plot
8/12/2007	HRD_HP_038	CIAR4	250-500 plus	HRD_HHB_004	59.23575, 135.46267	intersection of Main St. and Haines Highway
8/12/2007	HRD_HP_040	CIAR4	26 to 50	HRD_HHB_005	59.23694, 135.46772	At Spruce Grove Rd.
8/12/2007	HRD_HP_041	HIAU2	1 to 5	HRD_HHB_006	59.23987, 135.47419	At Haines Hwy and Piedad Road
8/12/2007	HRD_HP_042	CIAR4	100 to 200	HRD_HHB_006	59.23987, 135.47419	At Haines Hwy and Piedad Road
8/12/2007	HRD_HP_046	MEAL12	26 to 50	HRD_HHB_007	59.24239, 135.48084	2.0 miles from Haines Hwy/Front St. intersection. This is the first patch of MEAL12 that we have seen heading out of Haines on this hwy. Perhaps a good starting point for eradication.
8/12/2007	HRD_HP_044	CIAR4	100 to 200	HRD_HHB_007	59.24239, 135.48084	
8/12/2007	HRD_HP_049	CIAR4	50 to 100	HRD_HHB_009	59.24332, 135.49567	2.5 miles from Haines Hwy/Front

						St.
8/14/2007	HRD_HP_070	MEAL12	150 to 200	HRD_HHB_049	59.34080, 135.75726	14.7 miles N of Haines Hwy/Front St. jct on Haines Hwy
8/14/2007	HRD_HP_054	MEAL12	1	HRD_HHB_054	59.36159, 135.79270	17.0 miles N of Haines Hwy/Front St. jct on Haines Hwy
8/14/2007	HRD_HP_072	MEAL12	5	HRD_HHB_061	59.37665, 135.83506	19.0 miles N of Haines Hwy/Front St. jct on Haines Hwy
8/14/2007	HRD_HP_073	CIAR4	1	HRD_HHB_065	59.39177, 135.86229	20.5 miles N of Haines Hwy and Frontage Rd jct. @ pullout with info kiosk
8/14/2007	HRD_HP_074	CEBI2	1	HRD_HHB_074	59.41626, 135.92860	23.7 miles N of Haines Hwy and Front Rd jct at north end of bridge
8/14/2007	HRD_HP_075	MEAL12	5	HRD_HHB_077	59.41016, 135.95873	
8/14/2007	HRD_HP_076	MEAL12	6 to 25	HRD_HHB_078	59.41025, 135.96440	25.0 miles N of Haines Hwy and Front St. Jct
8/14/2007	HRD_HP_077	MEAL12	6 to 25	HRD_HHB_080	59.41288, 135.98385	25.7 miles N of Haines Hwy and Front St jct
8/14/2007	HRD_HP_078	MEAL12	1	HRD_HHB_081	59.41390, 135.98842	25.9 miles N of Haines Hwy and Front St jct
8/14/2007	HRD_HP_079	MEAL12	1	HRD_HHB_082	59.41334, 135.99601	26.2 miles N of Haines Hwy and Front St jct
8/14/2007	HRD_HP_080	MEAL12	1	HRD_HHB_083	59.41715, 135.00681	26.6 miles N of Haines Hwy and Front St jct @ pullout
8/14/2007	HRD_HP_085	CIAR4	51 to 100	HRD_HHB_085	59.42317, 136.01415	At intersection of Mosquito Rd and Haines Hwy
8/14/2007	HRD_HP_081	MEAL12	6 to 25	HRD_HHB_085	59.42317, 136.01415	At intersection of Mosquito Rd and Haines Hwy
8/13/2007	HRD_HP_057	LIVU2	6 to 25	HRD_HHB_020	59.26284, 135.57634	We are not filling separate sheets for LIVU2 anymore.
8/13/2007	HRD_HP_056	LIVU2	50 to 100	HRD_HHB_018	59.25832, 135.55239	5.05 miles N of Front St on Haines Hwy
8/13/2007	HRD_HP_055	LIVU2	6 to 25	HRD_HHB_017	59.25726, 135.54877	Haines Hwy, 4.75 miles from Front St.

8/13/2007	HRD_HP_054	LIVU2	6 to 25	HRD_HHB_015	59.24994, 135.54059	Haines Hwy, sign about Hooligans Turnout
8/12/2007	HRD_HP_029	LIVU2	50 to 100	HRD_MBR_037	59.23713, 135.44486	Intersection of 3rd Ave and Dalton Street, small amount scattered throughout plot
8/12/2007	HRD_HP_031	LIVU2	6 to 25	HRD_MBR_038	59.23478, 135.44193	At intersection of Lynnview and Lutuk Roads
8/12/2007	HRD_HP_027	LIVU2	6 to 25	HRD_MBR_036	59.23503, 135.44567	At intersection of 3rd and Main St.
8/12/2007	HRD_HP_026	LIVU2	26 to 50	HRD_MBR_035	59.23228, 135.44648	At intersection of 3rd St and Haines Hwy, spread lightly throughout plot
8/12/2007	HRD_HP_025	LIVU2	26 to 50	HRD_MBR_034	59.22840, 135.44707	Roadside, major Street/3rd Ave intersection. No flagging placed here
8/12/2007	HRD_HP_033	LIVU2	1 to 5	HRD_MBR_033	59.22763, 135.44615	intersection with Ft. Seward Road
8/12/2007	HRD_HP_024	LIVU2	26 to 50	HRD_MBR_032	59.22425, 135.44368	intersection of Mud Bay Road and small Trail
8/12/2007	HRD_HP_023	LIVU2	6 to 25	HRD_MBR_031	59.22215, 135.44564	Small patch on Mud Bay Road in a residential area, not flagged.
8/12/2007	HRD_HP_022	LIVU2	100	HRD_MBR_030	59.21834, 135.44834	Mud Bay Road, near River Rd. Throughout plot
8/12/2007	HRD_HP_020	LIVU2	6 to 25	HRD_MBR_029	59.21564, 135.44700	Mud Bay Road, 6.5 miles from end, spread lightly throughout plot
8/12/2007	HRD_HP_019	LIVU2	50 to 100	HRD_MBR_028	59.21172, 135.44651	Mud Bay Road, 6.25 miles from end, in front of residence along road
8/12/2007	HRD_HP_018	LIVU2	6 to 25	HRD_MBR_027	59.20933, 135.44327	On roadside, not flagged as adjacent to driveway
8/12/2007	HRD_HP_017	LIVU2	6 to 25	HRD_MBR_026	59.20583, 135.43838	Mud Bay Rd, 5.75 miles from end, small amounts throughout
8/12/2007	HRD_HP_016	LIVU2	26 to 50	HRD_MBR_025	59.20407, 135.43488	Pullout on Mud Bay Road, 0.1 miles from small tracts intersection

8/12/2007	HRD_HP_015	LIVU2	100 to 200	HRD_MBR_024	59.20393, 135.43033	intersection of Mud Bay Rd and small tract intersection. Throughout plot.
8/12/2007	HRD_HP_014	LIVU2	5 to 10	HRD_MBR_023	59.20230, 135.42885	Roadside. Has been chopped with the mower.
8/12/2007	HRD_HP_053	LIVU2	50 to 100	HRd_HHB_013	59.24945, 135.52826	3.7 miles from Haines Hwy/Front St jct on Haines Hwy
8/12/2007	HRD_HP_052	LIVU2	50 to 100	HRD_HHB_012	59.24614, 135.51963	
8/12/2007	HRD_HP_051	LIVU2	6 to 25	HRD_HHB_011	59.24446, 135.51112	
8/12/2007	HRD_HP_050	LIVU2	50	HRD_HHB_010	59.24360, 135.50368	2.8 miles from Haines Hwy/Front st jct on Haines Hwy
8/12/2007	HRD_HP_048	LIVU2	6 to 25	HRD_HHB_009	59.24332, 135.49566	
8/12/2007	HRD_HP_047	LIVU2	6 to 25	HRD_HHB_008	59.24354, 135.48753	2.25 miles from Haines Hwy/Front St. intersection
8/12/2007	HRD_HP_045	LIVU2	26 to 50	HRD_HHB_007	59.24239, 135.48084	2 miles from Haines Hwy/Front St. intersection on Haines Hwy
8/12/2007	HRD_HP_042	LIVU2	6 to 25	HRD_HHB_006	59.23987, 135.47419	Haines Hwy and Piedad Rd
8/12/2007	HRD_HP_039	LIVU2	6 to 25	HRD_HHB_004	59.23575, 135.46267	Haines Hwy and Main St intersection
8/12/2007	HRD_HP_036	LIVU2	6 to 25	HRD_HHB_003	59.23490, 135.45436	At Allen Road on Haines Hwy
8/12/2007	HRD_HP_033	LIVU2	26 to 50	HRD_HHB_001	59.23014, 135.44042	Intersection of Haines Hwy and Mud Bay Rd, just a few throughout plot
8/11/2007	HRD_HP_013	LIVU2	6 to 25	HRD_HHB_021	59.19670, 135.41965	
8/11/2007	HRD_HP_012	LIVU2	1 to 5	HRD_HHB_020	59.19485, 135.41539	A few plants, scattered.
8/11/2007	HRD_HP_011	LIVU2	6 to 25	HRD_MBR_014	59.19320, 135.41234	
8/11/2007	HRD_HP_010	LIVU2	10	HRD_MBR_018	59.18984, 135.40728	Along the east side of road. Location obvious.
8/11/2007	HRD_HP_009	LIVU2	6 to 25	HRD_MBR_017	59.18631, 135.40400	Pullout around Piped Springs
8/11/2007	HRD_HP_008	LIVU2	100	HRD_MBR_015	59.18350, 135.40031	throughout plot
8/11/2007	HRD_HP_007	LIVU2	51 to 100	HRD_MBR_016	59.18213, 135.39853	pullout on oceanside
8/11/2007	HRD_HP_006	LIVU2	200 to 300	HRD_MBR_014	59.17552, 135.38656	Throughout pullout and plot

8/11/2007	HRD_HP_005	LIVU2	6 to 25	HRD_MBR_013	59.17290, 135.38260	
8/11/2007	HRD_HP_004	LIVU2	6 to 25	HRD_MBR_012	59.17100, 135.38511	At turnout near Feed Em Fish and Haines Packing
8/10/2007	HRD_HP_002	LIVU2	100 to 200	HRD_MBR_002-005	59.15113, 135.34768	Roadside

Appendix G- Complete List of Roads Surveyed

Table G.1 Total Road Miles

Road System	Miles completed	Data points
Haines Ranger District	90.75	375
Juneau Ranger District	98.2	220
TOTAL	***188.95***	***595***

Table G.2 Haines Road Miles

Road #	Road System	Miles completed	Data points	Comments
Chilkat State Park	Haines Ranger District	1.25	5	Complete, no HP.
Mud Bay Road	Haines Ranger District	8.4	39	Complete, no HP.
Dirt Road 1	Haines Ranger District	0.5	3	Complete, no HP.
Chilkat Lake Road	Haines Ranger District	4.25	20	Complete, no HP.
Main Street	Haines Ranger District	0.5	3	7 high priority species located
Klukwan Road	Haines Ranger District	1.5	6	1 high priority species located
Beach Road	Haines Ranger District	1.75	8	7 high priority species located
Front Street	Haines Ranger District	1	4	9 high priority species located
Chillkoot Road	Haines Ranger District	10.35	39	1 high priority species located
State Park Road	Haines Ranger District	1	4	Complete, no HP.
Little Salmon Road	Haines Ranger District	4.5	19	Complete, no HP.
Sunshine Mountain	Haines Ranger District	7.75	31	Complete, no HP.
Porcupine Road	Haines Ranger District	8	38	Complete, no HP.
Haines Highway	Haines Ranger District	40	160	Numerous populations of Linaria vulgaris
TOTAL		**90.75**	**379**	

Table G.3 Juneau Road Miles

Road #	Road System	Miles completed	Data points	Comments
Mendenhall Loop Road	Juneau Ranger District	6.75	16	Complete, 3 high priority species located
Mendenhall Peninsula Road	Juneau Ranger District	1	3	Complete, no HP.
Montana Creek Road	Juneau Ranger District	2	8	Complete, no HP.
Skaters Cabin Road	Juneau Ranger District	0.7	4	Complete, 2 high priority species located
Fish Creek Road	Juneau Ranger District	5	20	Complete, no HP.
South Douglas Hwy	Juneau Ranger District	3	4	Complete, 2 high priority species located, unable to safely stop for most of road
North Douglas Hwy	Juneau Ranger District	12.4	17	Complete, 1 high priority species located, unable to safely stop at times
Mendenhall Glacier Road	Juneau Ranger District	1.45	7	Complete, no HP.
Fritz Cove Road	Juneau Ranger District	2.2	3	Complete, 1 high priority species located, unable to safely stop at times
Herbert River Road	Juneau Ranger District	0.75	3	Complete, no HP.
Basin Road	Juneau Ranger District	1	5	Complete, no HP.
Engineers Cutoff Road	Juneau Ranger District	1.45	5	Complete, no HP.
Glacier Hwy 1	Juneau Ranger District	0.8	3	Complete, no HP.
Glacier Hwy 2	Juneau Ranger District	1.9	6	Complete, 3 high priority species located
Glacier Hwy 3	Juneau Ranger District	3.1	9	Complete, no HP.
Lena Point Loop Road	Juneau Ranger District	2	4	Complete, no HP.
Glacier/Douglas Hwy	Juneau Ranger District	48	89	Complete, 13 high priority species located, unable to safely stop at times
Thane Road	Juneau Ranger District	4.7	14	Complete, 1 high priority species located.
TOTAL		**98.2**	**220**