

**EXOTIC PLANTS IN ALASKA NATIONAL PARKS
2003 FIELD SEASON REPORT**

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Introduction

The summer of 2003 marked the third year of an effort to survey Alaska's national parks for exotic vascular plants. The National Park Service (NPS) defines exotic plants as those occurring in an area as a result of human actions (Densmore et. al 2001). These plants out compete native species for resources and can even change the structure and function of ecosystems through alterations of geochemical and geophysical processes (Vitousek et. al 1996, Gordon 1998). In protected areas such as national parks exotics threaten the biodiversity and genetic integrity of native flora (D'Antonio et. al 2001) and can degrade habitat for resident wildlife (Trammel and Butler 1995). Parklands serve as living laboratories to evaluate the extent of environmental change brought on by biological invasions (Vitousek et. al 1996).

Most exotic plants are associated with areas of human disturbance, with roads and other forms of linear disturbance (trails, airstrips) being the major vectors of introduction, particularly in parklands (Hall and Kuss 1998, Pauchard and Alaback 2002). Changes in soil nutrient regimes, repeated disturbance of topsoil, and the constant influx of propagules from vehicles and foot traffic allow exotics to become established along these corridors (Schmidt 1989, Panetta and Hopkins 1991, Lonsdale and Lane 1994). In Alaska, national parks have remained relatively immune to exotic plant invasion due to their remoteness and harsh climatic conditions (Densmore et. al 2001), but ongoing global climate change may increase the range of more pernicious species into Alaska.

Until recently, baseline information on the numbers and distribution of exotic plants in Alaska's national parks was lacking, and factors influencing their establishment and spread were poorly understood (Spencer 2001). The purpose of fieldwork during summer 2003 was to survey areas of current and historical human use within Wrangell-St. Elias National Park and Preserve (WRST) and add to a statewide database containing the locations and identities of exotic vascular plants encountered in these areas. In addition, I initiated data collection for my masters thesis to determine factors influencing the diversity and abundance of exotic plants species in areas of anthropogenic disturbance in WRST. This report details the results of these surveys and describes some initial thesis related data.

Study Area

Wrangell-St. Elias National Park and Preserve is located in the southeastern section of the Alaska mainland (Figure 1) and is the largest national park in the nation. The park contains 4 major mountain ranges and a diverse assemblage of vegetation types ranging from coastal Western Hemlock-Sitka Spruce Forest to Interior Highlands (Gallant et. al 1995). Climatic conditions are also extremely variable with precipitation averaging 338 cm and temperatures ranging from 15° C to -9° C in the coastal area at Yakutat to 20 cm of precipitation and temperatures ranging from 20° C to -25° C in the interior regions near Slana (Cook and Roland 2002).

Survey Sites

Survey areas in WRST were prioritized based on discussions I had with WRST personnel. Sites receiving the heaviest human use were the first to be surveyed with other sites being visited as time permitted. The following areas were identified as high priority by NPS personnel: ATV trails off of the Nebesna Road (Copper, Tanada, Reeves, Batzulnetas, Trail Creek, Lost Creek), ATV trails off of the McCarthy Road (Kuskulana/Kotsina), Chisana and May Creek airstrips and associated NPS buildings, Crsytalline Hills and Skookum Creek hiking trails, backcountry use cabins of high use and associated airstrips (Chelle Lake, Peavine, and Huberts Landing), high

use airstrips (Chitina, Nizina, and Tana River sites, Bremner), and current grazing leases. In addition to these areas both the Nebesna and McCarthy Roads were resurveyed after initial visits in 2000 as were the Kennicott mining area and associated trails (Bonanza Ridge, Root Glacier).

Methods

Vascular plant lists for WRST compiled by the Alaska Natural Heritage Program were used to give me an idea of the species likely to be encountered in the park. A list of exotics known to occur in WRST was provided by Mary Beth Cook, botanist for WRST and ranges for exotic plants known to occur in Alaska were obtained from Hulten (1968). All nomenclature followed Kartesz and Meacham (1999). Fieldwork commenced on 20 June and ended on 1 August.

Surveys were conducted by car, ATV, and foot. Roadside surveys were conducted by keeping the vehicle between 8 and 16 kilometers per hour and scanning both sides of the roadside for exotic species. When an exotic plant was encountered, a standardized data collection protocol was used. For each species encountered, an estimate of population size was made, along with a site description, GPS location, elevation, and digital photograph. Plants were classified into one of several classes based on stem counts for each species (1-5, 6-25, 26-50, 51-150, 151-250, 250-500, and >500). Notes on habitat and associated disturbance were also collected.

Along with the data collected for site surveys, additional information was collected for the thesis related portion of the study. For each exotic plant location, cover estimates and stem counts were made for each exotic species present within a square meter sampling frame. For each sample site, the following information was collected: slope, aspect (degrees true north), elevation, topographic position (riparian, valley bottom, lowerslope, midslope, ridge), distance to exotics source (in kilometers), disturbance type (road, ATV trail, hiking trail, cabin, airstrip, mine, grazing lease), % cover vascular natives, % cover non-vascular natives, % cover bare soil and rock, % cover litter, total number of exotic species within plot, evidence of natural disturbance, and size of disturbance. Soil samples were taken for each sample site and will be analyzed for texture, soil nutrients (N, P, K), % organic matter, and pH. A minimum of two soil sub samples were taken and combined for each site. Total stem count of each exotic species within the disturbance was also recorded along with a qualitative description of the area. Placement of the sampling frame at each site was determined using a random number generator. For large infestations, multiple samples were taken and averaged for each unique location. This was generally only applicable in areas of high disturbance such as roadside pullouts, campsites, or trailheads. Placement of the sampling frame in such areas was randomly determined and the minimum number of samples taken was such that the majority of the exotic infestation was sampled.

In addition to sampling areas with exotic species, waypoints were taken along areas of human disturbance in which no exotics were found. The purpose of this effort was to come up with a predictive range for where exotics may show up in the future, based on the conditions in areas in which they were found in the park. An attempt was made to establish waypoints along the entire elevational gradient of these disturbances. Descriptive notes were taken at each of these waypoints and included the size of the disturbance, dominant vegetation, and canopy cover.

Results

A total of 177 unique locations for exotic plants were found in WRST. Of these, 113 were located along the two roads in the park. The remaining locations were in the Kennicott Mine

area, Bonanza Ridge trail, Root Glacier trail and the May Creek area. A full list of species locations is included in Table 1.

A total of 18 exotic vascular plant species were found in the park: *Achillea millefolium*, *Bromus inermis*, *Capsella bursa-pastoris*, *Chenopodium album*, *Crepis tectorum*, *Descurainia sophia*, *Elymus repens*, *Lappula squarrosa*, *Lepidium densiflorum*, *Leucanthemum vulgare*, *Matricaria discoidea*, *Melilotus alba*, *Plantago major*, *Polygonum aviculare*, *Taraxacum officinale*, *Trifolium hybridum*, *Trifolium repens*, and *Trifolium pratense*. Of these, *T. officinale* and *P. major* were by far the most common exotic species encountered, accounting for 83% of all exotics present in study plots.

The Nebesna Road was surveyed from the junction with the Tok cutoff to Mile 42 by vehicle, with the final 4 miles being surveyed by foot. A total of 51 exotic plant locations were recorded (Figure x). Exotics were generally located along the road edge and rarely present beyond 2 meters from the roadside. The total area covered by the survey on this road was approximately 209 acres. Of this acreage, approximately 4 acres contained exotic species.

The McCarthy Road was surveyed entirely by vehicle from the Copper River Bridge to the Kennicott River footbridge. A total of 63 exotic plant locations were recorded (Figure x). As along the Nebesna Road, exotic plants rarely extended beyond 2 meters from the road edge. The total area covered by the survey of this road was approximately 229 acres. Of this acreage, approximately 16 acres contained exotic species.

The Kennicott mine area and associated trails (Bonanza Ridge, Root Glacier) were surveyed by foot. A total of 35 exotic plant locations were recorded in this area (Figure x). Exotic species were confined mostly to trail and road edges in this area, though some species extended up to a meter into the understory on the Bonanza Ridge trail. Only two exotic locations were found along the Root Glacier trail, both of them being *T. officinale*. All of the exotics found along the Bonanza Ridge trail were *T. officinale* and this species was common to 1000 meters in elevation, at which point no more specimens were found. The total area covered by the survey of this area was 22 acres. Of this total, approximately 0.2 acres contained exotic species.

The May Creek area and associated disturbances were surveyed by foot and by ATV. A total of 28 exotic plant locations were recorded in this area (Figure x). Several disturbance types were encountered and surveyed in this area including ATV trails, cabins and associated infrastructure and airstrip. Due to time constraints, not all of the ATV trails in this area were thoroughly surveyed, though an attempt was made to survey at least a portion of all of them. The total area covered by the survey of this area was 51 acres. Of this total, approximately XX acres contained exotic species.

Chisana airstrip, ATV trails and associated NPS infrastructure (public use and historical cabins) were surveyed by foot and by ATV. The ATV trail from the “commissioners” cabin to Chathenda Creek was surveyed, but did not yield any exotics. The Chisana airstrip yielded only a single specimen of *Lappula squarrosa*. The only exotic species present in any appreciable numbers in this area was *Bromus inermis*, which was found growing along the edge of the ATV trail from the airstrip to the NPS historical buildings (Figure x). This species was abundant (stem count of >500) around the historical buildings, but did not encroach into undisturbed areas. Six specimens of *Descurainia sophia* and one specimen of *Capsella bursa-pastoris* were found and removed from in front of the “commissioners” cabin. The total area covered by this survey was approximately 10 acres. Of this total, approximately 0.1 acres contained exotic species.

There were several other areas of the park that were surveyed that did not contain any exotic species. These include the Skookum Volcano and Crystalline Hills hiking trails, ATV trails on Trail Creek, Lost Creek, Caribou Creek, and Batzulnetas, and remote landing strips at Hubert's Landing, Tana River, Jakes Bar, and the Nizina River. The landing strip at Peavine had 18 specimens of *T. officinale officinale*, but other exotic species were absent. The total area covered by the surveys of these areas was approximately 20 acres. Of this total, 0.1 acres contained exotic species.

Initial data from the thesis related portion of the study has yielded some interesting results. The diversity and abundance of exotic plant species appears to differ between the two roads going into the park. The average number of exotic species per plot was twice as high on the McCarthy Road than on the Nebesna Road (3.4 species/plot vs. 1.7 species/plot). In addition, the total number of exotic species present was higher on the McCarthy (10) than on the Nebesna (7). The Nebesna Road had several areas where the native dandelion, *Taraxacum officinale ceratophorum* was found, whereas on the McCarthy Road, all dandelions found were of the exotic variety.

Discussion

The majority of exotic plant species were found on roadsides within WRST. Most of the visitation to WRST is via one of the two roads into the park (citation????), and most of the development within the park is associated with these corridors. Areas surveyed off of these corridors had little or no exotic species associated with them. Repeated disturbance associated with road maintenance and other human activities are perpetuating a favorable environment for the growth of non-native species. On the McCarthy Road, the Athna Native Corporation is conducting tree-thinning activities associated with a spruce bark beetle infestation. In some areas of thinning, there are significant infestations of exotics. The north side of the road from milepost 6 to 7 has an almost continuous growth of several non-native species including *Chenopodium album*, *Lepidium densiflorum*, *Polygonum aviculare*, *Lappula squarrosa*, and *Crepis tectorum*. In addition, several areas of this road have been seeded with the non-native grass *Bromus tectorum*, including the area around the Kuskulana Bridge (Mile 15) and several areas near Long Lake (Mile 47).

On the Nebesna Road, there were two species of exotic plants found that were not present during initial surveys in 2000. At the junction with the Tok cutoff, a large population of *Melilotus alba* was growing on either side of the road, and approximately 200 specimens of *Crepis tectorum* were found on the north side of the road at the post office in Slana. In addition, a single specimen of *C. tectorum* was found at the Lost Creek trailhead near mile (?). Of particular concern is *M. alba*. This species is an aggressive colonizer of disturbed areas and has also been found growing and spreading in areas of natural disturbance along river drainages on the Stikine River in southeast Alaska (Jeff Conn, personal communication 2003) and along the Nenana River near Denali National Park and Preserve (R. Densmore, personal communication 2003). The potential spread of this species along river corridors in WRST is very real.

By far the most common exotic plant in WRST is *Taraxacum officinale officinale*, particularly along the length of the McCarthy Road and the Kennicott mine and surrounding areas. The problem is probably more aesthetic than biological, since *T. officinale officinale* is mainly confined to areas of anthropogenic disturbance and it is probably not practical for the NPS to attempt control measures for this species. However, there is evidence that it may be moving into areas of natural disturbance. Nearly 100 specimens of *T. officinale officinale* were found growing along the floodplain of McCarthy Creek, along with a few specimens of *Bromus inermis*. This drainage could provide a corridor for the spread of these species into more remote areas of WRST. This area should be monitored carefully.

Due to time constraints, it was not possible to visit all areas of interest in 2003. Along the Nebesna Road, ATV trails to Tanada and Cooper Lakes and Reeves Field will need to be surveyed. Along the McCarthy Road, ATV trails along the Kuskulana and Kotsina Rivers will also need to be visited. Remote sites at Chelle Lake, Gold Hill and Orange Hill will also be surveyed along with the active grazing leases in WRST. A two-week time period will be set aside for these surveys in 2004.

Table 1. Locations for exotic plant locations in Wrangell-St. Elias National Park and Preserve, Alaska, 2003.

Site Code*	Species Present**	Latitude	Longitude
BR001	TAROFF	61.4881636	-142.8900921
BR002	TAROFF	61.4876099	-142.8873398
BR003	TAROFF	61.4880800	-142.8869655
BR004	TAROFF	61.4916085	-142.8832871
BR005	TAROFF	61.4919518	-142.8812521
BR006	TAROFF	61.4917049	-142.8789598
BR007	TAROFF	61.4914785	-142.8768715
BR008	TAROFF	61.4907338	-142.8752771
BR009	TAROFF	61.4946245	-142.8723245
BR010	TAROFF	61.4942298	-142.8707691
BR011	TAROFF	61.4959065	-142.8643770
BR012	TAROFF	61.4985980	-142.8616227
BR013	TAROFF	61.4842145	-142.8877971
KN001	TAROFF	61.4868663	-142.8904980
KN002	TAROFF	61.4867351	-142.8903892
KN003	TAROFF, TRIHYB	61.4859536	-142.8894494
KN004	TAROFF	61.4848430	-142.8885317
KN005	TAROFF, TRIHYB, TRIREP	61.4847770	-142.8881879
KN006	TAROFF	61.4840011	-142.8877435
KN007	TAROFF, TRIHYB	61.4835218	-142.8874638
KN008	TAROFF	61.4828211	-142.8868077
KN009	TAROFF	61.4826326	-142.8866824
KN010	TAROFF	61.4819371	-142.8859392
KN011	TAROFF, TRIHYB	61.4815215	-142.8854903
KN012	TAROFF	61.4833163	-142.8870491
KN013	TAROFF, TRIHYB	61.4828123	-142.8863064
KN014	TAROFF	61.4821407	-142.8853306
KN015	TAROFF, TRIHYB	61.4853159	-142.8850032
KN016	TAROFF, PLAMAJ	61.4865188	-142.8871598
KN017	TRIHYP, TRIPRA	61.4804480	-142.8854718
KN018	MATDIS, TRIHYB, POLAVI	61.4802887	-142.8848837
KN019	LEUVUL	61.4817319	-142.8865653
KN020	LEUVUL	61.4815989	-142.8864173
MC001	CRETEC	61.5363580	-144.3759822
MC002	TAROFF	61.5213221	-144.3328130
MC003	LAPSQU, POLAVI, TAROFF	61.5214664	-144.3320566
MC004	BROINE	61.5219378	-144.3287919
MC005	PLAMAJ	61.5225319	-144.3139000
MC006	PLAMAJ	61.5260967	-144.3086027
MC007	TAROFF, PLAMAJ	61.5264212	-144.3079125
MC008	PLAMAJ	61.5276439	-144.3013135
MC009	TAROFF	61.5259758	-144.2942505
MC010	CRETEC, CHEALB, POLAVI	61.5216805	-144.2840875
MC011	POLAVI, LEPDEN, CHEALB, LAPSQU	61.5214034	-144.2828048
MC012	TAROFF, LEPDEN, CHEALB, LAPSQU	61.5209064	-144.2804696
MC013	CHEALB, LEPDEN	61.5206854	-144.2753156
MC014	LEPDEN, CHEALB, LAPSQU	61.5206590	-144.2753156
MC015	TAROFF	61.5224720	-144.2566305
MC016	PLAMAJ, TAROFF	61.5219440	-144.2469834
MC017	PLAMAJ	61.5224390	-144.2244524
MC018	PLAMAJ	61.5202827	-144.1965948
MC019	TRIHYP	61.5194138	-144.1809279

Table 1 Continued

Site Code*	Species Present**	Latitude	Longitude
MC020	TAROFF, PLAMAJ, TRIHYB	61.5252809	-144.1512948
MC021	TAROFF	61.4920237	-144.0208589
MC022	TRIHYP, BROINE	61.4870911	-144.0167890
MC023	TAROFF	61.4811372	-144.0086291
MC024	TAROFF	61.4765320	-144.0055190
MC025	TAROFF	61.4741966	-143.9904411
MC026	TAROFF, PLAMAJ	61.4726816	-143.9781139
MC027	TAROFF	61.4675997	-143.9371606
MC028	TAROFF	61.4692471	-143.9294887
MC029	TAROFF	61.4634516	-143.8668653
MC030	TAROFF	61.4620586	-143.8646789
MC031	TAROFF, LAPSQU	61.4619002	-143.8551999
MC032	TRIHYP	61.4509760	-143.7562269
MC033	TAROFF, PLAMAJ	61.4423746	-143.7380292
MC034	TAROFF	61.4377131	-143.7287822
MC035	TAROFF, TRIHYP	61.3912876	-143.6522492
MC036	TAROFF	61.3632275	-143.5257334
MC037	LAPSQU, TRIHYP	61.3626488	-143.4997143
MC038	TRIHYP	61.3626402	-143.4985326
MC039	TAROFF	61.3632322	-143.4817678
MC040	TAROFF, TRIHYP	61.3652005	-143.4446403
MC041	TAROFF, TRIHYP, PLAMAJ	61.3666818	-143.4301590
MC042	TAROFF	61.3713855	-143.3733051
MC043	TAROFF	61.3742458	-143.3510325
MC044	BROINE	61.3866156	-143.2454038
MC045	BROINE, TRIHYP	61.3869797	-143.2446596
MC046	BROINE, TRIHYP	61.3870329	-143.2387648
MC047	TAROFF, PLAMAJ	61.3871082	-143.1743514
MC048	TAROFF	61.3949019	-143.1550954
MC049	TAROFF, PLAMAJ	61.3952475	-143.1540899
MC050	PLAMAJ	61.3992221	-143.1402349
MC051	TAROFF	61.3997963	-143.1359173
MC052	TAROFF	61.4012678	-143.1281941
MC053	TAROFF	61.4011403	-143.1246034
MC054	TAROFF	61.4039763	-143.1010082
MC055	TAROFF	61.4044653	-143.0918561
MC056	TAROFF	61.4041804	-143.0760075
MC057	TAROFF	61.4082657	-143.0584447
MC058	TAROFF	61.4153295	-143.0182403
MC059	TAROFF	61.4187795	-143.0093642
MC060	TAROFF, ELYREP	61.4270129	-142.9911577
MC061	TAROFF	61.4361343	-142.9653909
MC062	TAROFF	61.4358994	-142.9620278
MC063	TAROFF	61.4340782	-142.9463991
NB001	PLAMAJ	62.7106711	-143.9838365
NB002	MATDIS	62.7109417	-143.9843207
NB003	PLAMAJ	62.6923937	-143.9121198
NB004	PLAMAJ, ACHMIL	62.6883734	-143.9068423
NB005	PLAMAJ	62.6875749	-143.9042183
NB006	PLAMAJ	62.6757127	-143.8783656
NB007	PLAMAJ	62.6756679	-143.8780168
NB008	PLAMAJ, TAROFF	62.6404986	-143.7720352
NB009	PLAMAJ, ACHMIL	62.6321355	-143.7409559
NB010	TAROFF, ACHMIL	62.6234057	-143.7130881
NB011	TAROFF	62.6222437	-143.7062328
NB012	PLAMAJ	62.6213093	-143.7029281

Table 1 Continued

Site Code*	Species Present**	Latitude	Longitude
NB013	PLAMAJ, TAROFF, ACHMIL	62.6211605	-143.7024272
NB014	ACHMIL, PLAMAJ	62.6153215	-143.6786336
NB015	PLAMAJ, ACHMIL	62.6138695	-143.6749955
NB016	PLAMAJ, ACHMIL	62.6137268	-143.6748896
NB017	TAROFF, PLAMAJ, MATDIS	62.6006357	-143.6197284
NB018	PLAMAJ	62.5748861	-143.5277289
NB019	PLAMAJ	62.5714757	-143.5036839
NB020	PLAMAJ, ACHMIL	62.5636546	-143.4168834
NB021	PLAMAJ, MATDIS	62.5639500	-143.4166687
NB022	PLAMAJ	62.5638521	-143.4169621
NB023	PLAMAJ, MATDIS	62.5632132	-143.4131699
NB024	PLAMAJ	62.5625222	-143.4132265
NB025	TAROFF	62.5538950	-143.3959776
NB026	TAROFF, ACHMIL, PLAMAJ	62.5484380	-143.3643154
NB027	TAROFF	62.5486771	-143.3548786
NB028	PLAMAJ	62.5443703	-143.3262802
NB029	TAROFF	62.5314130	-143.2806961
NB030	TAROFF	62.5303949	-143.2782079
NB031	DESSOP, ACHMIL	62.5295451	-143.2531031
NB032	DESSOP	62.5293965	-143.2524634
NB033	TAROFF	62.5209495	-143.2147518
NB034	TAROFF	62.5200784	-143.2107511
NB035	TAROFF	62.5190518	-143.2057913
NB036	TAROFF	62.5190748	-143.2026591
NB037	TAROFF	62.5134200	-143.1698014
NB038	TAROFF	62.5127912	-143.1696366
NB039	TAROFF	62.5015496	-143.1558855
NB040	TAROFF	62.4103490	-143.0038191
NB041	CRETEC, TAROFF, PLAMAJ	62.7066032	-143.9697521
NB042	PLAMAJ	62.3705268	-143.0104033
NB043	DESSOP	62.3717194	-143.0067325
NB044	PLAMAJ	62.3757161	-143.0011988
NB045	PLAMAJ	62.3854485	-143.0000133
NB046	PLAMAJ	62.3936131	-142.9991948
NB047	PLAMAJ	62.3946245	-142.9945524
NB048	DESSOP	62.5109477	-143.1644766
NB049	MATDIS	62.5764872	-143.5351453
NB050	MATDIS	62.5936675	-143.5927134
NB051	MELALB	62.7130047	-143.9878318
RG001	TAROFF	61.5043676	-142.8989607
RG002	TAROFF	61.5061829	-142.9014524
MYC001	TAROFF	61.3478050	-142.7059360
MYC002	TAROFF	61.3477893	-142.7055943
MYC003	TAROFF	61.3480258	-142.7054444
MYC004	TAROFF	61.3477759	-142.7063830
MYC005	TAROFF	61.3476124	-142.7068021
MYC006	TAROFF, PLAMAJ	61.3476400	-142.7072039
MYC007	TAROFF, PLAMAJ	61.3472247	-142.7085756
MYC008	TAROFF	61.3470752	-142.7136966
MYC009	TAROFF, TRIHYB	61.3468777	-142.7157139
MYC010	TAROFF, PLAMAJ	61.3485056	-142.7263991

Table 1 Continued

Site Code*	Species Present**	Latitude	Longitude
MYC011	TAROFF	61.3450681	-142.7192160
MYC012	TAROFF	61.3310982	-142.6801179
MYC013	TAROFF	61.3343362	-142.6835447
MYC014	TAROFF	61.3375026	-142.6871250
MYC015	TAROFF	61.3406276	-142.6908042
MYC016	TAROFF	61.3227091	-142.6643996
MYC017	TAROFF, TRIHYB	61.3253406	-142.6702446
MYC018	TAROFF, PLAMAJ	61.3271688	-142.6724707
MYC019	TAROFF, PLAMAJ	61.3304663	-142.6798137
MYC020	TAROFF	61.3426174	-142.6925349
MYC021	TAROFF, PLAMAJ, TRIREP	61.3474244	-142.7015119
MYC022	TRIHYB	61.3474633	-142.6981822
MYC023	TAROFF	61.3656850	-142.6961312
MYC024	TRIREP	61.3578514	-142.6982630
MYC025	PLAMAJ	61.3511460	-142.6966683
MYC026	TAROFF	61.3326793	-142.6823861
MYC027	TAROFF	61.3359530	-142.6858695
MYC028	TAROFF	61.3391856	-142.6890263

* See Table 2 for Site Codes

** See Table 3 for Plant Codes

Table 2. Site Codes for sample sites in Wrangell-St. Elias National Park and Preserve, Alaska, Summer, 2003.

<u>Site Name</u>	<u>Site Code</u>
Bonanza Ridge Trail	BR
Kennicott Mine	KN
McCarthy Road	MC
May Creek Area	MYC
Nebesna Road	NB
Root Glacier Trail	RG

Table 3. Exotic plant list for Wrangell-St. Elias National Park and Preserve, Alaska, Summer, 2003.

<u>Plant Name</u>	<u>Plant Code</u>
<i>Achillea millefoilum</i>	ACHMIL
<i>Bromus inermis</i>	BROINE
<i>Capsella bursa-pastoris</i>	CAPBUR
<i>Chenopodium album</i>	CHEALB
<i>Crepis tectorum</i>	CRETEC
<i>Descurania sophia</i>	DESSOP
<i>Elymus repens</i>	ELYREP
<i>Lappula squarrosa</i>	LAPSQU
<i>Lepidium densiflorum</i>	LEPDEN
<i>Leucanthemum vulgare</i>	LEUVUL
<i>Matricaria discoidea</i>	MATDIS
<i>Melilotus alba</i>	MELALB
<i>Plantago major</i>	PLAMAJ
<i>Polygonum aviculare</i>	POLAVI
<i>Taraxacum officinale officinale</i>	TAROFF
<i>Trifolium hybridum</i>	TRIHYP
<i>Trifolium repens</i>	TRIREP
<i>Trifolium pratense</i>	TRIPRA