



Invasive Plant Management in Kenai Fjords National Park Summer 2008 Field Season Report

Kenai Fjords National Park

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Table of Contents

Abstract	3
Keywords	3
Introduction	4
Highlights and Observations from 2008.....	4
History at Kenai Fjords National Park.....	4
Significance of Exotics in the Park.....	4
Status of Exotic Species in the Park.....	5
Methods and Materials	6
Results	7
Exit Glacier Road.....	7
Exit Glacier Parking Lot.....	8
Campground.....	8
Employee Cabin Area.....	8
Main Trail.....	9
Nature Trail.....	9
Overlook Trail.....	9
Harding Icefield Trail.....	9
Nike Stripe.....	10
South Side of Exit Creek.....	10
Maintenance Yard.....	12
Outer Coast.....	12
Accomplishments and Highlights	13
Community Weed Pull Day.....	13
Education.....	13
Recommendations for the 2009 Field Season	14
Volunteers.....	15
Data Files.....	16
Useful Resources and Contacts.....	16
References	17
Appendix 1: Known Exotic Plant Locations: Kenai Fjords National Park Outer Coast	18
Appendix 2: Weed Pull Day 2008 announcement	19

Table of Figures

Figure 1. KEFJ EPMT staff mapping and controlling common dandelions at the Nike Stripe....	10
Figure 2. KEFJ staff crossing Exit Creek to map and control dandelion infestations on the Outwash Plain.....	11
Figure 3. Before and after picture of the SCA crew pulling pineapple weed at the maintenance yard.....	12
Figure 4. Before and after pictures of the USFS Resurrection River Trailhead information sign at the Community Weed Pull.....	13

Tables

Table 1. Exotic plant species observed in Kenai Fjords National Park (EPMT 2008).....	5
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Abstract

2008 marks the fifth season that Kenai Fjords National Park has monitored and controlled for nonnative plants according to the Alaska Exotic Plant Management Team protocol. Exotic plant management efforts were focused in the Exit Glacier area. Two locations on the outer coast, in Beauty Bay and Aialik Bay, were monitored in conjunction with other field projects. A total of 793 pounds of weeds were pulled throughout the summer.

Keywords

exotic plant, nonnative, invasive, weed, Kenai Fjords National Park, Kenai Peninsula, Exit Glacier, outer coast, dandelion

Introduction

Highlights and Observations from 2008

- Common dandelion (*Taraxacum officinale*) populations notably decreased at the Nike Stripe area
- Yellow toadflax (*Linaria vulgaris*) population slightly decreased along Exit Glacier Road
- Red clover (*Trifolium pratense*) did not reappear on Exit Glacier Road this year
- Sheep sorrel (*Rumex acetosella*) population at Exit Glacier notably decreased
- A new population of common dandelions (*Taraxacum officinale*) was discovered and controlled on a corner of the Overlook Trail
- A large population of pineapple weed (*Matricaria discoidea*) appeared in the Maintenance Yard
- A new, large dandelion infestation was documented and mapped on the outwash plain on the south side of Exit Creek
- 793 pounds of weeds were controlled in Kenai Fjords National Park
- Exotic plant monitoring was conducted in Beauty Bay and Aialik Bay
- A map and informational sheets were compiled of known exotics on the Kenai Fjords National Park outer coast for park employees

History at Kenai Fjords National Park

2008 marks the fifth consecutive year of systematic inventory, monitoring and manual control of exotic plants in Kenai Fjords National Park (KEFJ). Data collected during the 2008 summer field season documented the continued spread of exotic plants and control efforts by park staff and volunteers. The most current proposed management plan for exotic plants at KEFJ (Martin 2003) focuses only on the Exit Glacier area. Infestations have since been documented and controlled in coastal areas of the park as well. In 2004, the NPS Alaska Exotic Plant Management Team (EPMT) partnered with KEFJ to document weed infestations and incorporate the data into a regional database, joining KEFJ to a larger network of exotic plant managers. Monitoring and collection is now conducted according to a regional data collection protocol. During the 2007 and 2008 field seasons one Biological Science Technician at KEFJ, partially funded by the EPMT, monitored documented infestation sites, mapped new infestations, and coordinated manual control efforts in high-priority areas.

Significance of Exotics in the Park

Nonnative plants threaten natural ecosystems by competing with native flora for resources such as light, water, and soil. They also interfere with nutrient cycles and hydrologic regimes, and can alter natural plant succession (Martin 2003). Interference with natural plant succession is a major concern in the Exit Glacier area. Invasive plants establish easily in disturbed areas such as roadsides, mines, burned areas, and physically disturbed soil. As Exit Glacier continues to recede it creates an outwash plain of naturally disturbed soil. The outwash plain provides an ideal environment for invasive plants to establish, creating competition for early-succession plant populations, such as the native fireweed (*Epilobium angustifolium*) and alder (*Alnus rubra*).

Several new trail building and improvement projects have been completed in the past three years around the Exit Glacier Nature Center. These new trails have been identified as potential vectors for the spread of new and existing exotic plant species in the park. The coastal areas are still relatively free of exotic plants. Management-related changes such as increased visitor use of

camping beaches and new commercial development at Pederson Lagoon may also contribute to the spread of invasive plants along the coastal area.

Status of Exotic Species in the Park

In 2008 the EPMT identified nine exotic plant species growing within the park (see Table 1): pineapple weed (*Matricaria discoidea*), common dandelion (*Taraxacum officinale* ssp. *officinale*), white clover (*Trifolium repens*), yellow toadflax (*Linaria vulgaris*), common plantain (*Plantago major*), alsike clover (*Trifolium hybridum*), common sheep sorrel (*Rumex acetosella*), timothy grass (*Phleum pratense*), and curled dock (*Rumex crispus*). Five species that were documented in 2007 did not reappear in 2008 including: oxeye daisy (*Leucanthemum vulgare*), tall buttercup (*Ranunculus acris*), red clover (*Trifolium pratense*), foxtail barley (*Hordeum jubatum*), and narrowleaf hawksbeard (*Crepis tectorum*). Red top (*Agrostis gigantea*), mouse-ear chickweed (*Cerastium fontanum*), and blue grass (*Poa annua*) were all documented in the 2004 Vascular Plant Inventory (Carlson et al 2004) conducted for the National Park Service (NPS) Inventory and Monitoring Program, but KEFJ staff schedules and resources did not allow for these sites to be revisited and monitored during the 2008 field season. The Alaska region EPMT maintains the official reference list of exotic plants documented in KEFJ.

Table 1. Exotic plant species observed in Kenai Fjords National Park (EPMT 2008)

Common Name	Taxon	Area	Observed in 2008?
red top, common chickweed	<i>Agrostis gigantea</i>	Outer Coast	n/a
mouse-ear chickweed	<i>Cerastium fontanum</i>	Outer Coast	n/a
narrowleaf hawksbeard	<i>Crepis tectorum</i>	EG Road	N
yellow toadflax	<i>Linaria vulgaris</i>	EG Road	Y
pineapple weed	<i>Matricaria discoidea</i>	Exit Glacier	Y
common timothy	<i>Phleum pratense</i>	EG, Nuka Bay	Y
common plantain	<i>Plantago major</i>	Exit Glacier	Y
blue grass	<i>Poa annua</i>	Outer Coast	n/a
common sheep sorrel	<i>Rumex acetosella</i>	EG Parking lot	Y
curled dock	<i>Rumex crispus</i>	Employee Cabins	Y
common dandelion	<i>Taraxacum officinale</i> ssp. <i>officinale</i>	Parkwide	Y
alsike clover	<i>Trifolium hybridum</i>	Exit Glacier	Y
red clover	<i>Trifolium pratense</i>	EG Road	N
white clover	<i>Trifolium repens</i>	EG Road	Y

Five species of concern grow just outside the park boundary on U.S. Forest Service land along the Exit Glacier Road. Black medic (*Medicago lupulina*) is abundant along the road corridor. Narrowleaf hawksbeard (*Crepis tectorum*), yellow sweetclover (*Melilotus officinalis*), oxeye daisy (*Leucanthemum vulgare*) and red clover (*Trifolium pratense*) grow around the Resurrection River trailhead, which borders KEFJ’s road entrance to the Exit Glacier area. Populations of purple alfalfa (*Medicago sativa*) and yellow alfalfa (*Medicago falcata*) have been observed along the road corridor further away from the park boundary. This summer white sweetclover (*Melilotus alba*) was observed growing at the intersection of Exit Glacier Road and the Seward Highway.

In 2006 the Alaska Department of Transportation (AKDOT) completed roadwork on the Seward Highway including construction of a hike and bike trail. Upon completion of this project, AKDOT reseeded the roadside with a seed mix to discourage erosion and facilitate revegetation. This mix apparently included a nonnative, biennial sweetclover (*Melilotus sp.*) which sprouted up in full-flower along the highway in town and along Exit Glacier Road. In addition to the roadside populations, a less accessible population of sweetclover colonized an island in the Resurrection River, just downstream of KEFJ's boundary. There is concern amongst local natural resource managers that this population could spread upriver and form large monospecific stands along the river corridor. In September 2008 the local conservation group, Resurrection Bay Conservation Alliance (RBCA), organized two weed pulls to remove the most invasive nonnative plants from the highways including yellow sweetclover (*Melilotus officinalis*), white sweetclover (*Melilotus alba*), bird vetch (*Vicia cracca*), and scentless false mayweed (*Tripleurospermum perforate*). Although these control efforts occurred outside the park, they are very relevant to KEFJ's exotic plant efforts as these populations provide the nearest and most likely seed source for the introduction of these species into the park.

Methods and Materials

Monitoring and control in KEFJ is conducted according to the EPMT data collection protocol (Rapp 2008). A Trimble GeoXT GPS unit loaded with legacy exotic plant data was used to locate previous infestations and to monitor and map new infestations. KEFJ EPMT staff experienced some nuisances due to the GPS unit this summer. On multiple occasions the GPS unit required one hour or more to connect to the satellites. Fortunately, this was resolved when the regional EPMT office loaned KEFJ a different GPS. At the end of the field season KEFJ intends to trade-in the current GPS for a new one for future fieldwork. The legacy data that was used was collected by each park and compiled and distributed by the regional EPMT office. This data is organized by species and includes all exotic plant data for every park in the region. This large dataset slowed the GPS and took additional memory on the unit. Since each park is only dealing with their own exotics, it would be better if each park could have individual data layers for each species within their park and not the data from the rest of the region.

The 2008 field season lasted from June through early September and was organized by a Biological Science Technician working out of Seward, Alaska. A Youth Conservation Corps (YCC) member assisted with some field work, but was not consistently available throughout the season. When available, this employee required extra supervision, impeding the efficiency of the EPMT staff. This reduced the full time capacity of KEFJ's EPMT efforts to one person and resulted in lower productivity than was desired. Southeast Alaska Guidance Association (SAGA) and Student Conservation Association (SCA) volunteers were recruited to help with several control events.

Deep snows that persisted late into the spring delayed the start of the field season and, in general, offset the seasonal phenology by about one month. According to the NRCS Basin-Wide Snowpack Summary for May 2008, the Exit Glacier Snow Course had 231% of the snowfall of the previous year and 186% of average snowfall (Natural Resource Conservation Service, 2008). On May 1, 2008 the snowpack at Exit Glacier measured 62" settled depth and 24.7" snow water equivalence. In Seward, April-August were characterized by below-average monthly

temperatures (1-5 degrees below normal). April, May, and August experienced below-average precipitation, while June and July experienced above-average precipitation.

Deep snow remained on the road in May. Exit Glacier Road was not completely plowed until May 30 and the Exit Glacier Nature Center did not open to the public until June 1. Although all outdoor work in the park was delayed by the snow, exotic plant management efforts were particularly challenged because volunteer crew schedules were set based on previous year's green-up schedules. As a result of this year's delayed phenology, the large SAGA crew was here before most dandelions (one of the early season exotics in KEFJ) had emerged. In order to prevent this from happening again, it would be preferred that volunteer crews were not scheduled to assist KEFJ earlier than mid-June.

Logistically, KEFJ is separated into two parts: the Exit Glacier area and coastal fjords area. Past control and monitoring efforts focused mainly on the Exit Glacier area, which contains the most extensive infestations. The road-side, trail-side, and parking lot areas of Exit Glacier are the most easily-accessible areas in the park and serve as the main human use corridors. Monitoring and control work was performed in those areas weekly.

The old glacial moraines and outwash plain along the south side of Exit Creek were visited three times to determine the extent of dandelion populations there. Starting at previously-known infestations, game trails and disturbance areas were followed to identify current boundaries of the infestation. Once again, however, the snow levels, along with creek levels and volunteer schedules, limited the amount of time available to work in this location. Due to these logistics and additional time spent mapping a new infestation in this location, some of the most distant sites documented in previous years were not revisited.

This summer backcountry locations in Nuka Bay, along KEFJ's outer coast, were inventoried for exotic plants in cooperation with a mine closure project at Harrington Mine and a barrel removal project at Glass-Heifner Mine in Beauty Bay. Other KEFJ staff assisted with exotic plant monitoring in association with a campsite monitoring protocol development fieldtrip in Aialik Bay (specifically in Bear Cove, McMullin Cove, and Holgate Kayak Beach (next to the public cabin)) on the KEFJ outer coast.

Results

Exit Glacier Road

The gravel fill material that lines the sides of Exit Glacier Road provides habitat for the most extensive and dense population of invasive plants in the park. The roadside is dominated by common dandelion (*Taraxacum officinale* ssp. *officinale*), interspersed with common plantain (*Plantago major*), many white clover (*Trifolium repens*) some alsike clover (*Trifolium hybridum*), and a small population of yellow toadflax (*Linaria vulgaris*). This season the SAGA crew arrived to assist with the KEFJ EPMT program during the second week of June. At this time in the season, the only exotic plants that had emerged in the park were dandelions growing on the east end of Exit Glacier Road where the plows first cleared the snow a few weeks earlier. Although the dandelions at the east end of the road are not one of KEFJ's priority locations, the SAGA crew had arrived and was ready to work, so their first few days were spent controlling the newly emerged dandelions at the far end of the road. After a few days, more dandelions emerged

in the parking lot and along the road closer to the parking lot so control efforts were refocused to these higher priority areas. Dandelions along the road were controlled again for one afternoon in late July with the SCA crew.

Despite repeated control work on Exit Glacier Road, there were still numerous dandelions along the entire stretch of it. Shortly before the dandelions along the road went to seed, KEFJ EPMT staff and two YCC volunteers walked the road from the entrance fee building to the campground and pulled all flowering heads to prevent them from going to seed. The remaining time spent on controlling exotics along the road focused on yellow toadflax (*Linaria vulgaris*), white clover (*Trifolium repens*), and common plantain (*Plantago major*). The most dense white clover and common plantain populations are found near the welcome sign, along the south side of Exit Glacier Road where approximately 50% of the clover population was controlled. In 2009, KEFJ EPMT should make it a priority to control all of the clover on Exit Glacier Road in an effort to eradicate it. In addition, we mapped and controlled 100% of the yellow toadflax (*Linaria vulgaris*) located on the south side of the road across from the welcome sign.

In 2007 one red clover (*Trifolium pratense*) plant was found and controlled on the north side of Exit Glacier Road near the welcome sign at the park entrance. This species did not reappear this year. This is another example of the success of Early Detection and Rapid Response (EDRR). Oxeye daisy (*Leucanthemum vulgare*) was found and controlled along Exit Glacier Road in past years but, for a second year in a row, the plants were found to be eradicated from the park. Narrowleaf hawksbeard (*Crepis tectorum*) was also not observed along the road.

Exit Glacier Parking Lot

Common dandelion (*Taraxacum officinale* ssp. *officinale*) is the most prevalent species growing around the Exit Glacier parking lot. With repeated control events and the help of a SAGA crew, a SCA crew, two Biological Technicians and two YCC members, control efforts succeeded in pulling 95-100% of dandelions found in this area, 95-100% of common plantain (*Plantago major*), and 100% of white clover (*Trifolium repens*) plants (which appeared to be noticeably less dense than in 2007). Common sheep sorrel (*Rumex acetosella*) returned along the north side of the parking lot near the bus pullout, but was reduced in number. 100% of sheep sorrel and 95-100% of pineapple weed (*Matricaria discoidea*), which was found around the Nature Center, along the south side of Exit Glacier parking lot, and around the east side of Alder Cabin, were controlled. A couple individual common timothy (*Phleum pratense*) plants were located, mapped and pulled between the parking lot and the Nature Center.

Campground

Exit Glacier campsites remain free of invasive plants. Scattered individuals of common plantain (*Plantago major*) and common dandelion (*Taraxacum officinale* ssp. *officinale*) were documented and completely controlled in the campground parking lot area.

Employee Cabin Area

Each of the three staff housing cabins in the Exit Glacier area have exotic plants growing around them. Willow cabin had a curled dock (*Rumex crispus*) plant growing along the front deck, which has been documented and controlled every year since 2005. The curled dock plants were much easily controlled in a matter of minutes. Cottonwood cabin has a small dandelion (*Taraxacum officinale* ssp. *officinale*) patch outside the back door and around the campfire area,

which continues to reduce in size. A small dandelion infestation was observed near the front of the Alder cabin in July, followed by pineapple weed (*Matricaria discoidea*) in August. All infestations were mapped and completely removed.

Main Trail

The Main (paved) Trail was monitored regularly throughout the season and was treated for common dandelion (*Taraxacum officinale* ssp. *officinale*) and common plantain (*Plantago major*). In previous years common timothy (*Phleum pratense*) was documented along the trail. This year common timothy (*Phleum pratense*) was not observed here but several patches of native timothy (*Phleum alpine*) were. Special care should be given to the identification of common timothy as these two species can be difficult to differentiate.

In early September KEFJ interpretive staff reported a population of the nonnative bladder Campion (*Selene vulgaris*) behind the bridge on the Overlook Loop Trail. By the time EPMT staff learned about this, the plant had already seeded making identification difficult. EPMT staff should search for this population in 2009. If the population consists of numerous specimens, one individual should be collected to obtain a positive identification. If it is identified as a new addition to our exotic plant list, a quality specimen should be acquired for our collections and the rest of the population should be controlled. It is important to be careful when collecting specimens without a positive identification. If there is only one or very few individuals in a population, determine the identification of the species first or simply remove a flower or leaf for identification before you remove the entire plant.

Nature Trail

The dandelion population growing on the 1917 Moraine, along the un-paved Nature Trail, returned and was documented and controlled again this season.

Overlook Trail

A small patch of common dandelions (*Taraxacum officinale* ssp. *officinale*) was observed and mapped for the first time this summer along the Overlook Trail beneath some alders growing in moss directly on top of bedrock. This population was monitored several times throughout the season and each time 100% of the plants that had emerged since the previous visit were controlled. It is believed that none of these flowers went to seed, even though they were in full flower when they were first detected. This patch of dandelions is closer to Exit Glacier than any other population of exotics. Therefore, it is even more important to closely monitor and control this patch to prevent seeds from spreading up the newly disturbed terrain exposed by the glacier.

Harding Icefield Trail

A large patch of common dandelion (*Taraxacum officinale* ssp. *officinale*) occurs along the Harding Icefield Trail (HIT), a quarter mile beyond the trail register, in the corner across from the rock staircase. This patch has been monitored and controlled each year and appears to be getting less dense. The new HIT reroute, scheduled to be completed and open to the public in 2009, bisects the lowest edge of this population. In addition to monitoring the new reroute, this population will continue to be monitored as will the existing trail.

There are a few scattered common plantain (*Plantago major*) and common dandelion plants growing along the first half-mile of the HIT. In 2007 one dandelion was found growing at Marmot Meadows (1.25 miles), which is the farthest any exotic plants have been documented along the trail. This individual was documented and controlled again this season and should be monitored again next year.



Figure 1. KEFJ EPMT staff mapping and controlling common dandelions at the Nike Stripe.

Nike Stripe

The backcountry location north of Exit Glacier Road, known as the Nike Stripe (Figure 1), was visited several times this year, with two trips designated specifically to map and control 95-100% of the common dandelion (*Taraxacum officinale* ssp. *officinale*) infestation. The Nike Stripe was visited three other times for a sound monitoring effort, and a few individual dandelions were opportunistically pulled. Overall, this population appears to have decreased since last year.

South side of Exit Creek

A small dandelion population was reported in the Outwash Plain on the south side of Exit Creek by an NPS Inventory and Monitoring crew in 2003. In 2006, the infestation was documented in the EPMT geodatabase and was controlled, though the plants had already gone to seed. The site was visited and controlled three separate days in 2007 when it

was discovered that the dandelion infestation was larger and more widespread than previously thought. Unfortunately, the EPMT team had a similar experience this season when a large infestation extending further east than previously mapped was discovered. The plants in the new infestation were very large flowering individuals. This population was growing in dense alder and willow patches, in an area that had been naturally disturbed by historic glacial and/or stream scouring and is currently disturbed by wildlife. There are numerous game trails crossing the area, and it is prime moose habitat.

The south side of the outwash plain is often difficult to access in the summer because of high water levels in Exit Creek. It was possible to cross in June and July, using hip waders, crossing at heavily- braided sections, and on cloudy, cool days when meltwater was minimal (Figure 2).



Figure 2. KEFJ staff crossing Exit Creek to map and control dandelion infestations on the outwash plain.

The first foray across the creek to the south side of the outwash plain was with the SAGA crew in early June. It was disappointing to make it to the site only to find that very few dandelions had emerged for the season and the few that were up were very small. Our efforts to get to the infestation far outweighed our effort to control dandelions in this location at that time. At the end of the season it was noted in the SAGA feedback and evaluation form that “SAGA’s Risk Management plan states that no AmeriCorps member may cross rivers where the water comes above the knees without specialized training. If a river crossing is anticipated, sponsor should communicate training plan to SAGA staff before proceeding.”

A second mapping and control effort was implemented in early July with three resource management employees. Control efforts were minimal during this trip as a new, large infestation was discovered and the day was dedicated to mapping the extent of the newly-discovered infestation. A third control effort had been planned for the outwash plain in late July when the SCA crew was assisting KEFJ’s EPMT program. However, the SCA crew leaders felt that there was a safety issue with crossing the creek, so control efforts were focused along Exit Glacier Road instead.

Accessing the outwash plain across Exit Creek will always be an issue. Due to the isolated nature of this population and the potential that the dandelions in this area will spread into more remote backcountry locations, this area is a priority for control efforts. Unfortunately, KEFJ does not have the resources to effectively manually control this population. Due to access issues (high water in the creek), a late start in the season due to snow levels, and extra time spent mapping newly discovered populations on the outwash plain, KEFJ EPMT staff were not able to remap all dandelion populations that had been mapped in 2007.

Maintenance Yard

Invasive plant populations at the maintenance yard on Old Exit Glacier Road increased this year. This increase may be due to the importation of new gravel fill and road construction that had been completed in the yard in 2007. Because of its proximity to town, the maintenance yard has the potential to host invasive species that currently do not grow in the park. It is necessary to routinely monitor this location to employ early detection and rapid response strategies to eliminate new species that may appear and to prevent them from being spread by maintenance tools and equipment into other areas of the park.

In past years, common plantain (*Plantago major*) and common dandelion (*Taraxacum officinale* ssp. *officinale*) were documented growing in the yard and were controlled opportunistically on a few occasions during the field season (Wetherbee 2007). In 2008, control efforts in the maintenance yard were prioritized as this site has the potential to become a source from which exotics could be introduced to other areas of the park. A large patch of pineapple weed (*Matricaria discoidea*) (Figure 3) was mapped and controlled (with the help of the SCA crew) in the maintenance yard. Although pulling weeds at this facility located outside KEFJ's public boundaries may not be very appealing to volunteers it was very productive and efficient to have the SAGA and SCA crews and two YCC staff spend time controlling at this location.



Figure 3. Before and after pictures of the SCA crew pulling pineapple weed at the maintenance yard.

Outer Coast

Exotic plant management on the KEFJ outer coast varies from year to year depending on available resources. In 2008, resources were not available for extensive exotic plant surveying and monitoring on the outer coast. Opportunistic surveying and monitoring were conducted when time and scheduling allowed EPMT staff to share resources with other projects occurring in these remote locations.

In 2008 EPMT staff was able to revisit the known common timothy (*Phleum pratense*) population in Beauty Bay (the northwestern arm of Nuka Bay) in cooperation with a mine closure project at Harrington Mine and a barrel removal project at Glass-Heifner Mine. No common timothy (*Phleum pratense*) was observed in Beauty Bay, but numerous native timothy patches (*Phleum alpinum*) were observed. One of two conclusions may be drawn from this: KEFJ efforts eradicated the nonnative timothy population (150 plants were pulled in 2006 and 30 plants were pulled in 2007 (Wetherbee 2007)), or the native and nonnative species hybridized and are no longer easy to distinguish in the field.

Other KEFJ staff assisted with exotic plant monitoring in association with a campsite monitoring protocol development fieldtrip in Bear Cove, McMullin Cove, and Holgate Kayak Beach (next to the public cabin) located in Aialik Bay. No exotic plants were observed in these surveys.

EPMT staff created a map of known exotic plant locations on the outer coast (Appendix 1). This map may be printed out and laminated for KEFJ staff to take with them on outer coast trips for a quick reference sheet of known exotics to assist with opportunistic monitoring on the remote coast.

Accomplishments and Highlights

Community Weed Pull Day

In recognition of the annual State of Alaska Invasive Weed Awareness Week, KEFJ collaborated with RBCA to organize a community weed pull event. In past years, this effort was organized by the Seward Ranger District of the Chugach National Forest. This season there was no vegetation staff employed at the Seward Ranger District, so RBCA took the lead. The event was held in the afternoon and evening (1- 6 pm) of June 26th and focused on two areas along Exit Glacier Road in Chugach National Forest: the Resurrection River Trailhead and the Exit Glacier Overlook pullout. The event was poorly attended due to various reasons including unknown schedule conflicts with trainings at KEFJ. Two maintenance YCCs, one Resource Management YCC, and three Resource Management staff attended from KEFJ along with two RBCA members. With this limited help 162 pounds of black medic (*Medicago lupulina*) and common dandelion (*Taraxacum officinale* ssp. *officinale*) were controlled.



Figure 4. Before and after pictures of the USFS Resurrection River Trailhead information sign at the Community Weed Pull.

Education

In addition to surveying, monitoring and controlling exotic plants in KEFJ, EPMT staff presented information about exotic plants to five visiting crews (SAGA, 2 SCA crews, the chip seal construction crew, and the Rocky Mountain blasting crew) to help them understand the EPMT program and their role in helping to prevent the spread of exotic plants.

Recommendations for the 2009 Field Season

To Keep in Mind:

- Attend the Kenai Peninsula Weed Workshop in May.
- Work with Resurrection Bay Conservation Alliance to organize two Community Weed Pulls, one for late June to focus on weeds on the east side of the Resurrection River on USFS land, and one for late August/early September to focus on sweetclover in town and on Exit Glacier Road.
- Consider having informational weed pamphlets available at the Seward Fourth of July Celebration.
- Bladder campion (*Silene vulgaris*) was reported on the Overlook Trail by KEFJ Interpretive staff (Ann Fineman) at the very end of the 2007 season. Look for this population, obtain a positive identification, and manage accordingly.
- Common dandelion (*Taraxacum officinale*) was located, mapped, and controlled on the right side of the Overlook Trail under alders. Use the GPS data collected in 2008 to relocate, monitor, and control this population.
- The single dandelion located on the end of the little moraine (revegetation area) on the right side of the HIT as one enters Marmot Meadows reappeared and was mapped and controlled again this year. Revisit this site next season to be sure this stubborn individual has been successfully and finally removed.
- Monitor for and control pineapple weed (*Matricaria discoidea*) and curled dock (*Rumex crispus*) at employee housing.
- Pull all white clover (*Trifolium repens*) and yellow toadflax (*Linaria vulgaris*) located on the south side of Exit Glacier Road across from the KEFJ welcome sign.
- Monitor and control weeds in the maintenance yard including common dandelion (*Taraxacum officinale*), pineapple weed (*Matricaria discoidea*), and common plantain (*Plantago major*).
- Create exotic plant observation cards for employees to report exotic plant discoveries.
- Sort out KEFJ's legacy GPS data from the regional data before installing on the GPS.
- Consider developing a plan to collect seeds or grow plants to reveg the road with an aggressive native such as *Calamagrostis canadensis*. Maybe consider starting with a test plot at the east end of the road near the bridge before taking on the entire road.

Suggested Priorities:

1. Remote sites: Nike Stripe, Outwash Plain
2. Trail system: Harding Icefield Trail (old and new reroute), Overlook Trail, Main Trail, Nature Trail
3. Exit Glacier Area: Pump House, Nature Center, Restrooms, Employee Housing, Parking Lot, Campground (common dandelion (*Taraxacum officinale*), common timothy (*Phleum pratense*), white clover (*Trifolium repens*), common plantain (*Plantago major*), pineapple weed (*Matricaria discoidea*), sheep sorrel (*Rumex acetosella*))

4. Exit Glacier Road: yellow toadflax (*Linaria vulgaris*), common timothy (*Phleum pratense*), white clover (*Trifolium repens*), alsike clover (*Trifolium hybridum*)
5. Maintenance yard (common dandelion (*Taraxacum officinale*), common plantain (*Plantago major*), pineapple weed (*Matricaria discoidea*))
6. Continue collecting specimens for voucher collections and check on status of specimens collected in 2007 and submitted in May 2008 to the Alaska Natural Heritage Program (AKNHP) for a positive identification

Suggested Schedule:

May- Plan for the season and early control of common dandelion along Exit Glacier Rd. Contact volunteer groups. Coordinate with USFS and/or RBCA for Statewide Weed Pull Day in June on Exit Glacier Road near Resurrection River Trailhead. Communicate with Maintenance regarding volunteer crews to pull and schedule plans with them if they are available. Check in with AKNHP on the status of identification of specimens submitted in May 2008.

June- Monitor and control dandelions at Nike Stripe, Harding Icefield Trail, South side of Exit Creek and Exit Glacier parking lot.

July- Control pineapple weed, plantain, sheep sorrel and dandelions in Exit Glacier parking lot and along Nature Trail. Check on yellow toadflax along roadside. Control clover along roadside and curled dock and pineapple weed around employee cabins. Continue monitoring dandelion populations on the south side of Exit Creek. If possible, control infestations in Nuka Bay, McCarty Fjord, and Aialik Bay as room is available on other trips.

August- Control timothy grass in Exit Glacier parking lot, clover along Exit Glacier Road, and all exotics along the outer coast. Monitor high-use areas in Northwestern Fjord and Pederson Lagoon in Aialik Bay for new infestations. Work with RBCA to coordinate a late August/ early September sweetclover pull on the Seward Highway and Exit Glacier Road.

September- data management, report writing, continue monitoring for late-growing exotics

Volunteers

Volunteer groups are useful in the control of exotics in the Exit Glacier area when put in the right location and given some basic instruction. Manual control of dandelions can be time-consuming and tedious for one person. May is a good month to contact groups interested in being involved in a weed control project. June and July, when plants are most visible and abundant, and before they have gone to seed, are the most appropriate times to have groups involved.

Although it is ideal to have a large group pull on the outwash plain, groups like SCA and SAGA may not be comfortable or even permitted by their organization to cross Exit Glacier Creek. Check with groups before they arrive to see if they would be willing to travel to this site and if they can bring appropriate footwear for the crossing.

Outward Bound Wilderness conducts 7 to 50-day backcountry trips with adults and teens and often uses the Exit Glacier campground and Harding Icefield Trail. They have a long history of service projects with the park and often are looking for a half to full day of work for their groups.

Contact:

Cathy Fornaris, Assistant Program Director
Outward Bound Wilderness

(907)224-7073

cforanaris@outwardboundwest.org

KEFJ's own volunteer coordinator, CJ Rea, can connect EPMT staff with several local individuals interested in volunteering for the park. She can also organize groups and provide contacts for large-scale volunteer efforts such as Statewide weed-pull day and National Public Lands Day. These two established service days are a great opportunity to gather volunteers for weed pulling and to provide outreach to the community.

Contact:

CJ Rea

Education Specialist and Volunteer Coordinator

Kenai Fjords National Park

(907)224-2121

Data Files

The local project folder **H:\Projects_Completed\Flora\KEFJ_2008_Exotic_Plants** contains spreadsheets, reports, spatial data, and GPS files. These files were also sent to the Regional EPMT team according to protocol. Spatial data is processed and stored on the ARO drive: **W:\ARONaturalResources\EPMT\Park_Specific**

Useful Resources and Contacts

Alaska Natural Heritage Program. USDA Forest Service. 2006. Weed Ranking Project. Available online at http://akweeds.uaa.alaska.edu/akweeds_ranking_page.htm

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USDA Forest Service. 2002. A Chance to Catch the Problem Early. Available online at http://www.fs.fed.us/r10/spf/success/Noxious_Weed_Story_2002.pdf

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Bryden, W. 2002. Final Report: Exotics Inventory for Exit Glacier Study Area, Kenai Fjords National Park, Summer 2002.

Carlson, M.L., R. Lipkin, M. Sturdy, and J.A. Michaelson. 2004. Kenai Fjords National Park Vascular Plant Inventory Final Technical Report. Alaska Natural Heritage Program.

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Kriedeman, C. 2005. Final Report: Exotic Plant Management Team 2005. Kenai Fjords National Park.

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Martin, E.L. 2003. Exotic Vegetation Management Plan for Exit Glacier. Kenai Fjords National Park.

Natural Resource Conservation Service. 2008. <http://www.wcc.nrcs.usda.gov/snow/snotel-wereports.html>

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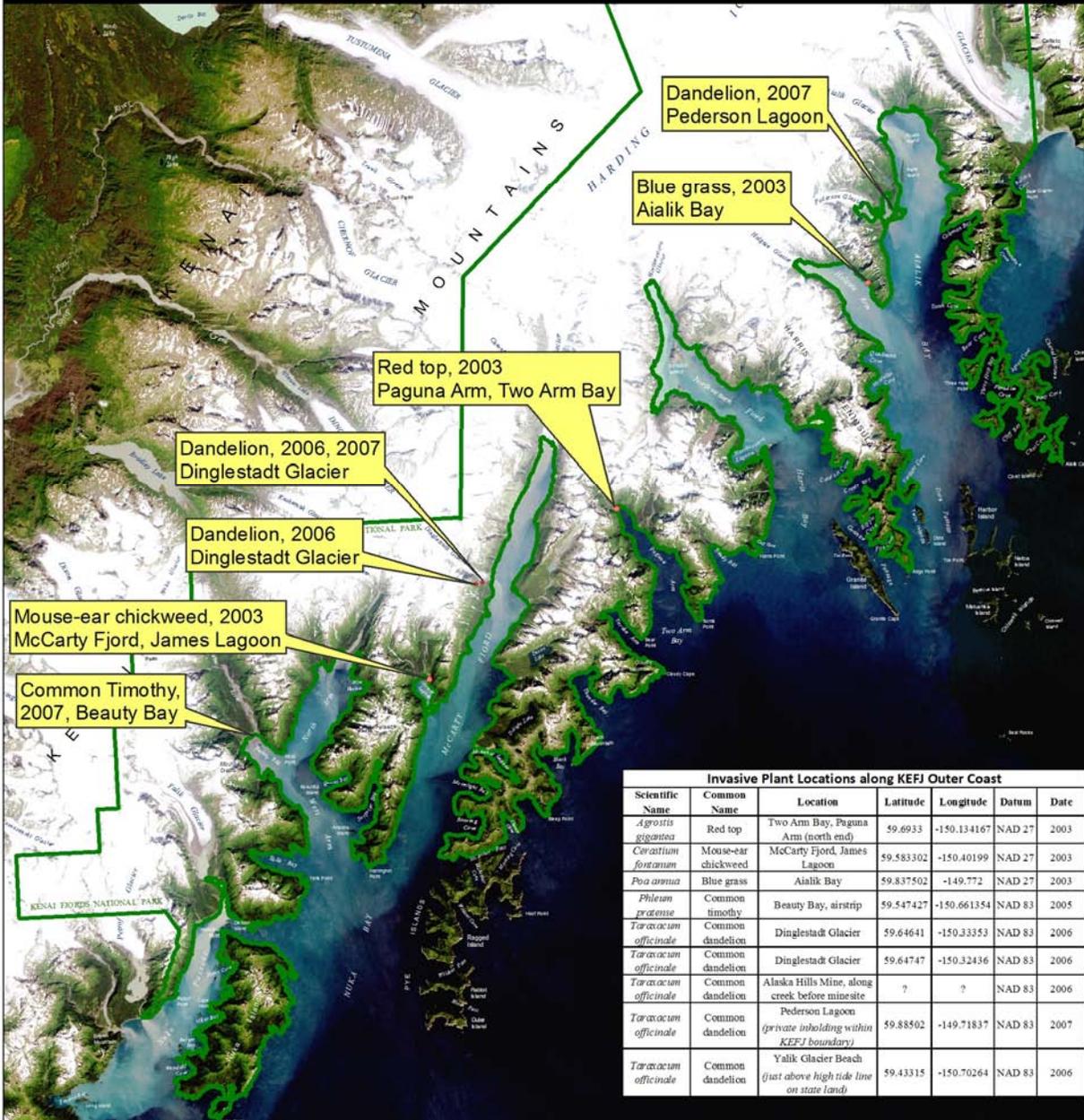
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Wetherbee, H. 2007 Invasive Plant Management in Kenai Fjords National Park; Summer 2007 Field Report. Kenai Fjords National Park. National Park Service.

Appendix 1.

Known Exotic Plant Locations

Kenai Fjords National Park- Outer Coast



Invasive Plant Locations along KEFJ Outer Coast						
Scientific Name	Common Name	Location	Latitude	Longitude	Datum	Date
<i>Agrostis gigantea</i>	Red top	Two Arm Bay, Paguna Arm (north end)	59.6933	-150.134167	NAD 27	2003
<i>Cerastium fontanum</i>	Mouse-ear chickweed	McCarty Fjord, James Lagoon	59.583302	-150.40199	NAD 27	2003
<i>Poa annua</i>	Blue grass	Aialik Bay	59.837502	-149.772	NAD 27	2003
<i>Phleum pratense</i>	Common timothy	Beauty Bay, airstrip	59.547427	-150.661354	NAD 83	2005
<i>Taraxacum officinale</i>	Common dandelion	Dinglestadt Glacier	59.64641	-150.33353	NAD 83	2006
<i>Taraxacum officinale</i>	Common dandelion	Dinglestadt Glacier	59.64747	-150.32436	NAD 83	2006
<i>Taraxacum officinale</i>	Common dandelion	Alaska Hills Mine, along creek before mine site	?	?	NAD 83	2006
<i>Taraxacum officinale</i>	Common dandelion	Pederson Lagoon (private inholding within KEFJ boundary)	59.88502	-149.71837	NAD 83	2007
<i>Taraxacum officinale</i>	Common dandelion	Yalik Glacier Beach (just above high tide line on state land)	59.43315	-150.70264	NAD 83	2006

Known exotic plant locations on the outer coast of KEFJ based on observations made 2003- 2007.

Blue grass and mouse-ear chickweed discovered by AKNHP during 2003 plant inventory. All other species discovered by KEFJ staff.



National Park Service
Alaska Regional Office
GIS Team

Appendix 2.

Exit Glacier Road Weed Pull

Thursday, June 26, 2008

1:00- 7:00 pm

Exit Glacier Road at the Resurrection River Trailhead Parking Area



Please join the Alaska SeaLife Center, the National Park Service, Resurrection Bay Conservation Alliance (RBCA) and the U.S. Forest Service in this annual weed-pulling event!

Thursday, June 26th, from 1 to 7 pm.

Volunteers can help at any time during these hours. We will concentrate our efforts on the area around the **Resurrection River Trail Head** and along the road across the bridge as well as towards town. Please check in with organizers at the trail-head parking lot to get your weeding assignment. RBCA will provide refreshments from 4 to 5 pm.

Volunteers should bring bright clothing for working along the road shoulder. Working gloves are highly recommended. We have a limited number of weed pullers. If you have a weed puller, please bring it. Remember to dress for the conditions.

If you have any question please call RBCA at 224-4621 or email Matt Gray at mgrayrbc@gmail.com.

Come out and help keep this special place free of nonnative weeds!