

**Penny Bauder**  
**EPMT Biologist**  
**Denali National Park and Preserve**  
**2004 exotic plant report**

## **Introduction**

This report consists of information gathered about exotic plants species in Denali National Park and Preserve (DNA) during the 2004 field season (May-August). Exotic plants in DNA were inventoried using a Trimble GPS unit and controlled using only manual methods. The 2004 inventory built upon inventories conducted in 2000 and 2003. Any new exotic plants found were inventoried and certain highly infested areas were re-inventoried. Control events happened on a random basis and were dependent on time, tools necessary to perform the event and available manpower.

## **Inventory**

The 2004 exotic plant inventory focused chiefly on four locales: (1) the first two miles of the park road, (2) the headquarters area, (3) the George Parks Highway and (4) the village of Kantishna. Although inventories for exotic plants in DNA have been conducted for multiple years, the inventory this year produced seven species of exotic plants never documented before in the park. This suggests that our inventorying efforts are not over and that a priority for next year should be to inventory areas in DNA that have not been thoroughly inventoried. To illustrate, past inventories have never found *Linaria vulgaris* in the park, however, it is listed in the 2003 DNA vascular plant species list.

### 1. First two miles of park road

An inventory of the park road produced few surprises. However, of special concern is the alarming rate at which *Crepis tectorum* is spreading up the park road. Distribution of this species stretches east from the sewage lagoon (where *C. tectorum* originated) to the park entrance and west of the sewage lagoon, to about one half mile west of the visitor center. This is further than this species has been recorded in previous years. Additionally, the 2004 inventory unearthed a new medium-sized patch of *C. tectorum* in Kantishna, 88 miles away from the sewage lagoon breeding grounds, which suggests that this plant does indeed spread by vehicular movement. Further, Riley Creek campground was found to be infested with *C. tectorum* (plants at about every other campsite) which is disturbing due to the large number of potential seeds that could travel with visitors to at least Savage River.

*Melilotus officinalis* was found for the first time in Riley Creek campground at campsite 93. Though detected and eradicated in the park before, this species keeps resurfacing. This site should be monitored in the future to ensure that buried seed does not germinate.

## 2. Headquarters

*Sonchus arvensis* was found near the headquarters area. This plant has proven to be problematical. Its presence has been recognized for a few years and plucked, but it reappears year after year. It has also never been formally documented and should be next year. *S. arvensis* is a very effective competitor due to its expansive underground root system. This weed grows well along roadsides and in areas of high moisture, which is needed for seed germination. Each plant can produce up to 4,000 seeds that can remain dormant in the soil for several years.

## 3. Kantishna

Six new exotic plant species were detected in the old corral in Kantishna. *Brassica rapa*, *Phleum pretense*, *Polygonum convolvulus*, *Silene noctiflora*, *Spergula arvensis* and *Stellaria media* were all discovered growing in and around the corral. All of these infestations are small, but should be eradicated and monitored for two important reasons: (1) all of these species are found nowhere else in the park but for this half an acre and (2) the proximity of these species to a riparian area (moose creek) and the potential for seeds to spread downstream.

- *B. rapa* is an annual mustard with a five-week life cycle.
- *P. pretense* is an invasive grass common in Alaska, but not yet established in DENA.
- *P. convolvulus* is an invasive that has the habit of spreading rapidly through an ecosystem and should be watched closely. It can grow in a variety of soil types and its deep root system leaves it unaffected by drought or low nitrogen levels.
- *S. noctiflora* is considered an important weed. It is an annual that competes well for nutrients and sunlight and has been known to self-pollinate under certain conditions.
- *S. arvensis* is an annual and is mostly seen growing through, around and in between other weeds. It can grow up to 30 cm tall and the seeds can remain dormant for several years in the soil.
- *S. media* is a low-growing annual with many medicinal uses that is almost always in bloom. It has shallow, fibrous, fragile roots. It's easy to uproot, but will quickly recover if put back. If left unattended, it will grow into large extensive mats.

## 4. George Parks Highway

A medium-sized patch of *M. alba* was found growing at the park entrance, where it is pulled every year. Manual control of this plant works only moderately well. Buried seed continues to come up in established patches and tiny seedlings that are overlooked during manual control events flourish the following season. As long as sporadic manual control methods are used, *M. alba* is going to proliferate. In order to keep this exotic from completely infesting DENA like it has parts of South-Central Alaska, it is necessary to make sure that in addition to controlling *M. alba* within the park every year, that all

patches found within a few miles of the park entrance are completely eradicated as well. An inventory of the section of the George Parks highway just south of the entrance road showed a large infestation of *M. alba* at approximately mile 231.5 to 232.5 on both sides of the road. Moreover, an extremely large patch, possibly seeded by DOT, was discovered in the region of mile 233 on the east side of the highway. Evidently, there is also a substantial patch of *M. alba* on the George Parks highway at the railroad track crossing closest to the park, on the south side of the tracks, on the west side of the road. Roseanne Densmore decries this patch problematic as she keeps pulling it and it keeps coming back. I hunted for this elusive patch for a half an hour but could not find it. This patch would be of great consequence to find and inventory because it would constitute the closest, most sizeable patch nearest to the park entrance.

## **Control**

Control of exotic plants in DENA is a collaborative process. In addition to myself, other people that performed control work in the park this season were Rosanne Densmore, Wendy Mahovalic and Pat Owen. Those in the know about exotics in DENA seem to live by the pull first, document later creed. However, this season proved that sometimes there are drawbacks to this method. First, not all of the control work this season was documented, much less mapped, which can seriously interfere with knowledge about the utility of control methods and rate of exotic spread. Second, there is always the chance that entire species might slip through the initial inventory process, such as almost the case of the single *S. arvensis* found and pulled at headquarters by Wendy Mahovalic. Third, there is a tendency for certain areas to be overlooked if they are thought to be already “taken care of” by someone else. Fourth, budgeting time and projects between all parties proved to be challenging at times. Good and frequent communication and an exotic plant monitoring program would increase the efficiency of current inventory and control work. Exotic plants controlled during the 2004 season include *C. tectorum*, *Lappula squarrosa*, *Lepidium densiflorum*, *M. alba*, *M. officinalis*, *S. noctiflora*, *S. arvensis*, *Taraxacum officinale* and *Vicia Cracca*,

### *Crepis tectorum*

A major control effort towards *C. Tectorum* was undertaken this year by several parties including myself, Roseanne Densmore, Wendy Mahovalic, one Boy Scout troupe and a group of Hawaiian volunteers. The combined effort of those involved resulted in the removal of all of the known *C. Tectorum* infestations in the park. Controls attempts centered on the infestation at the sewage lagoon and adjacent sections of park road. Other areas included in the control effort against *C. Tectorum* are Riley Creek campground, the mercantile area and the corral in Kantishna. Not including the sewage lagoon, an estimated total of 3000 plants were pulled. A pull at the sewage lagoon involving a Boy Scout troupe yielded 104 pounds of *C. Tectorum*. Furthermore, all of the 48 plants discovered in the Kantishna area were also removed. This is the furthest west *C. Tectorum* has been found in the park. Effective control techniques against *C. Tectorum* involve manual pulling at least two times per season as this plant flowers more than once a year. During the 2004 season, a second pull was conducted spanning all areas about

four weeks after the first and yielded around 500 more plants. An attribute of *C. Tectorum* which makes control by manual means difficult is that it is remarkably hard to spot unless the plant is in full bloom. Monitoring of *C. Tectorum* next year is crucial to understanding how this species responds to manual control. One area of particular concern consists of a large infestation (about 1500 – 2000 plants before pulling) on the south side of the park road between the entrance to Riley Creek campground and the entrance to the mercantile. Another area to keep an eye on is a bad infestation about 0.5 miles west of the sewage lagoon road, on the north side of the road. The site is identifiable by the sign of semi-recent bulldozer activity and tracks. There is also a faint wide trail heading off into the forest.

#### *Lappula squarrosa*

One plant was pulled from the trailhead that starts directly across the road from the mercantile.

#### *Lepidium densiflorum*

Seven plants were pulled from a re-vegetated area off the park road at about mile 13, where it frequently comes up from buried seed.

#### *Melilotus alba*

*M. alba* was pulled at three locations, one inside of DENA and two outside of the park. 40 plants were pulled at the site inside the park, in the ditch on the north side of the park road at the intersection of the park road and the George Parks highway. Outside the park, directly across from the entrance on the east side of the George Parks highway, two full garbage bags of *M. alba* were collected. Also outside the park, at approximately mile 231.5 to 232.5 on the George Parks highway, nearly 100 plants were pulled from both sides of the road.

#### *Melilotus officinalis*

*M. officinalis* (one plant) was found in the Riley Creek campground at site 93 and was disposed of immediately.

#### *Silene noctiflora*

Two *S. noctiflora* plants, the first ever found in DENA, were removed from the corral in Kantishna.

#### *Sonchus arvensis*

One plant was pulled by the flagpole at headquarters.

### *Taraxacum officinale*

Wendy Mohovalic presided over the annual dandelion pull and is still the reigning dandelion queen. It was successful as always, although there is dissention among park folks who wonder at the practicality and effectiveness of the event. Certainly, it brings people together in the spirit of conservation, but can that energy and goodwill be put to better use? Is the pull actually working? It would be interesting to see maps of yearly control efforts compared with existing infestations.

### *Vicia Cracca*

*V. Cracca* has been found in previous years in exactly the same spot: 15 feet west of the “visitor center next left” sign on the south side of the first mile of the park road. Initially this infestation looks insignificant, but after closer inspection, one finds a total of roughly 100 plants twining up native spruce trees. This infestation has been hard to exterminate because of the fragileness of *V. Cracca*'s stems. One small tug yields a satisfying amount of plant, but no root. The root stays rooted in the ground and unless one is extremely diligent with every tiny spout, will continue to stay there. This said, though about 100 plants were pulled from this spot, there will probably still be *V. Cracca* there next year, just like there is every year. I suggest this area be monitored closely in the future to prevent future spread.

### **Education**

There is still a lot of room in the EPMT program for exotics education, particularly at DENA. The program and the public would benefit from presentations and events scheduled well before the field season begins in order to secure desirable time slots. Additionally there is a need for educational handouts, brochures and ID cards. Suggestions for next year include further involvement with the Denali Foundation and Murie Science Center, brown bag lunch talks, campfire talks at Riley Creek Campground and associations with local schools. This year the EPMT program put on two presentations and hosted one control event inside the park

- A PowerPoint presentation was given at the Murie Science Center to a group of approximately 50 people.
- A PowerPoint presentation sponsored by the Denali Foundation was given at the Charles Sheldon Center to 12 people.
- A *C. Tectorum* pull, involving five kids, was conducted at the sewage lagoon.

### **Exotic plant distribution**

We are getting a clear picture of the distribution of exotic plants in DENA. With the exception of park headquarters, Kantishna, and the smattering of dandelions along the park road, all of the exotics present in the park are in the first mile of park road. This could change quickly if the pace of *C. Tectorum* is not controlled. It is rumored that low

tolerance for the presence of weeds around headquarters is reaching the upper echelons of the National Park Service. Now would be a good time to propose a plan to do control work around this infested area. Kantishna is also infested and would benefit by several control projects, particularly at the corral. No weeds were reported or seen in the backcountry of DENA.

### **Suggestions and reminders**

- Research car washing possibilities, or at the very least, bus washing, using parks in the states as examples. This has been suggested as the highest priority concerning exotics by Roseanne Densmore.
- Consider using the fame of the dandelion pull to publicly bring attention to other exotic species in the park.
- Keep one EPMT stationed in the park (Wendy).
- Set up multiple group pulls at the beginning of the season. Areas that could use groups include *C. tectorum* at the sewage lagoon (2 pulls, one at the beginning of the season and one at the end), all weeds at headquarters and *M. alba* along the George Parks highway. The highway project should be saved for older groups. A pull at the corral to eradicate the six new species of exotic plants found there is also highly recommended.
- Schedule campfire talks to the RV crowd at Riley Creek campground. Consider a campground pull afterwards. If a good working relationship with the campground host and/or interpretation staff was established, this could be scheduled a few times during the season. Schedule early—time slots fill up fast.
- Set up at least a few brown bag lunch talks for park folks. Schedule early in the season, as actually setting it up is more difficult than it sounds. Go through Tom Meyers.
- Get involved with the Murie Science center. Contact David Tomeo, Program Manager of Denali Institute.
- Pursue seed collecting program late July to mid August. Possible design a program before the field season begins.
- Denali exotic plant brochure.
- Secure more education tools to hand out during talks and presentations.
- Design an exotic plant poster, either park specific or with just a few of the bad guys on it. Consider handing out at control events.
- There are a lot of weeds around headquarters. Consider setting up a kids group pull or asking for volunteers during a brown bag lunch talk.
- Use Wendy's seed-picking techniques as a model for the rest of the parks. Get her to produce a detailed report and find "Wendys" in other parks to mimic her activities.
- C-camp should be monitored closely for exotics because of the potential of spread by park employees to other areas of the park
- Control work at the corral.
- Kantishna needs to be thoroughly inventoried.
- Highway *M. alba* project with older kids due to the proximity to high speed cars.

- Acquire patches or pins to give out as thank you gifts. Not everyone can get a T-shirt.
- Denali needs an exotic plant monitoring plan.
- We should try to figure out a way to eradicate at least one exotic species from the park. This would be good publicity, possibly get us money and would be good for the park.
- Make maps of the location of all exotic species in the park. These would be excellent for education of the public and park staff alike.
- Contact Tim Hudson, Chief of Maintenance, about what we are trying to do to halt and control the spread of exotics.
- Find out how *L. vulgaris* made it on the DENA plant list.
- Make sure than all of the EPMTs in all parks have a good resource library. At the very least, secure copies of Hulten and the “Weeds of the West”.

## Summary

The dandelions are about the same. The *C. tectorum* in the sewage lagoon is better than last year, but it is getting worse along the park road. *V. cracca* and the *M. alba* are proving impossible to get rid of by manual control. In most of the spots where these invaders live, yearly manual control means have been used for some time with limited success. In the case of a drop in financial support of the EPMT program there is the chance these species could go unmonitored and uncontrolled for an indefinite period of time, which could prove disastrous in terms of exotic plant spread. Perhaps it is time to consider the possibility of small, careful applications of chemical control agents to get rid of these invaders of the far north, especially since it takes some time to design and implement such a program.

## Contacts

Pat Owen – Wildlife Biologist and IPM Coordinator	683-9547	
Carl Roland – Plant Ecologist/Monitoring	455-0672	
Holly Spoth – Denali Foundation scheduling	683-2597	
Jessica Baners – Chief of Interpretation	683-6209	
Nikki DeMers – Housing	683-9541	
Wendy Mahovlic – Vegetation Technician	683-6246	683-7480 (home)
Tom Meyers – Schedules brown bag lunches	683-9541	
Roseanne Densmore – Plant Ecologist, USGS-BRD	244-8163	683-1387 (Healy)
David Tomeo - Program Manager of Denali Institute	683-1269	
Tim Hudson – Chief of Maintenance for Alaska Region	644-3381	
Chuck Tomkiewicz – Trails Supervisor	683-9557	

## Exotic Plant List for Denali

1. *Achillea millefolium* (Yarrow)
2. *Bromus inermis* (Smooth brome)
3. *Capsella bursa-pastoris* (Shepard's purse)
4. *Chenopodium album* (Lambsquarters)
5. *Crepis tectorum* (Narrowleaf hawk's-beard)
6. *Descurania sophia* (Flixweed)
7. *Lappula squarrosa* (Stickseed)
8. *Lepidium densiflorum* (Common peppergrass)
9. *Leucanthemum vulgare* (Oxeye daisy)
10. *Linaria vulgaris* (Butter and eggs)
11. *Lupinus polyphyllus* (Streamside lupine)
12. *Matricaria discoidea* (Pineapple weed)
13. *Melilotus alba* (White sweetclover)
14. *Melilotus officinalis* (Yellow sweetclover)
15. *Plantago major* (Plantain)
16. *Polygonum aviculare* (Prostrate knotweed)
17. *Taraxacum officinale* (Dandelion)
18. *Trifolium hybridum* (Alsike clover)
19. *Trifolium pratense* (Red clover)
20. *Trifolium repens* (White clover)
21. *Vicia cracca* (Bird Vetch)
22. *Sonchus arvensis* L. (Perennial sow thistle) (new 2004)
23. *Silene noctiflora* (Night-blooming cockle) (new 2004)
24. *Spergula arvensis* L. (Corn spurry) (new 2004)
25. *Brassica rapa* (Field mustard) (new 2004)
26. *Polygonum convolvulus* (Wild buckwheat, Black bindweed) (new 2004)
27. *Phleum pratense* (Timothy) (new 2004)
28. *Stellaria media* (Common chickweed) (new 2004)