

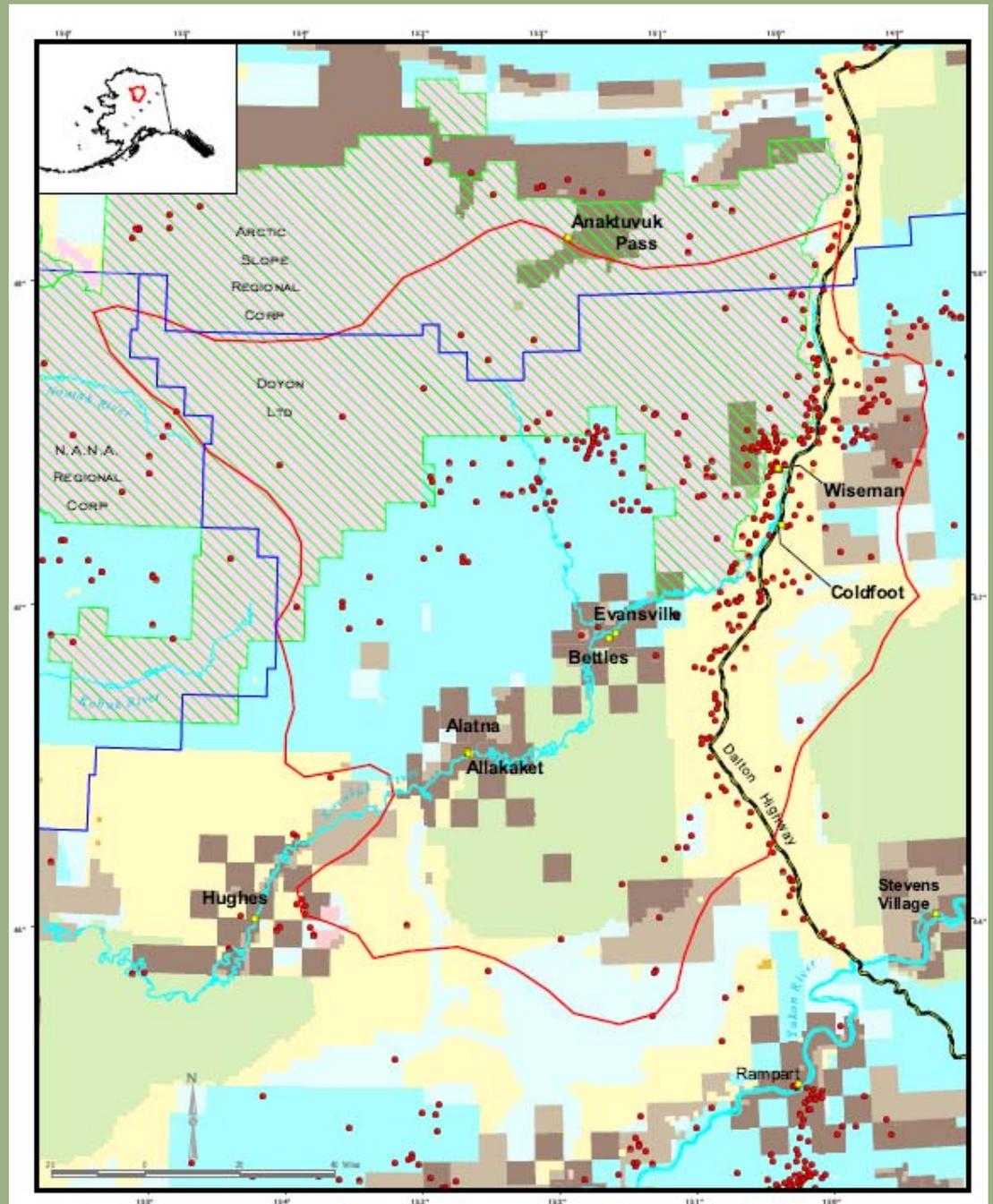
MANAGING NONNATIVE INVASIVE PLANT SPECIES AT MINING AND MINERAL EXTRACTION SITES

NORTHERN LATITUDES MINE
RECLAMATION WORKSHOP MAY 2011

Ingrid McSweeney, Mining Compliance NRS
Ruth Gronquist, Wildlife Biologist
Ryan Lane, Biological Technician, Plants



Koyukuk Mining District and Dalton Management Area (DMA)



OVERVIEW:

What are Nonnative Invasive Plants (NIP)

Why is it Important to Manage NIP

**Surveys of Mineral Extraction sites within
the Koyukuk Mining District**

Preventing Introduction and Spread of NIP

Resources and Publications

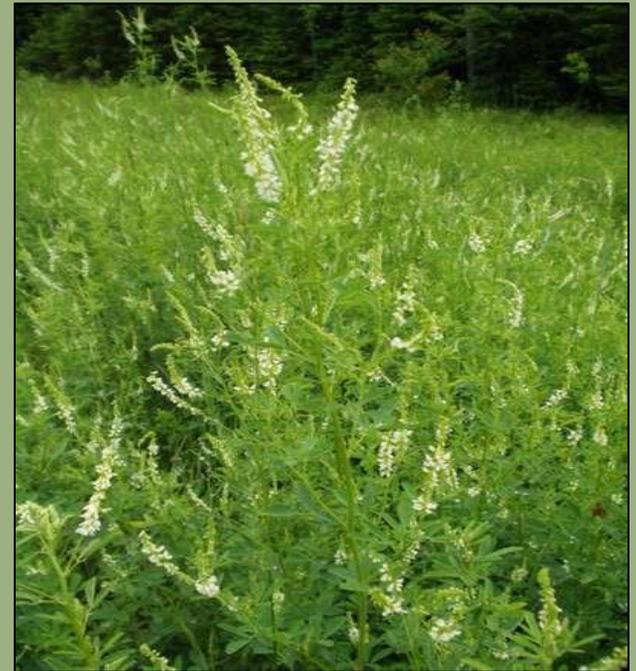
Definitions: Invasive Species

A life form that aggressively spreads into and takes over a site

May be:
native or non-native
noxious or
non-noxious



Sweetclover near Broddetorp,
Västra Götalands, SE



Sweetclover (*Melilotus officinalis*) in US

Definitions: Noxious Weed

Plants designated by law as undesirable or requiring control

Usually nonnative and highly invasive or poisonous



11 AAC 34.020 Noxious Weed Statute

Linaria vulgaris (Yellow toadflax)

11 AAC 34.020. Prohibited and restricted noxious weeds

(a) The following are prohibited noxious weeds:

Bindweed, field (*Convolvulus arvensis*);

Hempnettle (*Galeopsis tetrahit*);

Orange Hawkweed (*Hieracium aurantiacum*);

Purple Loosestrife (*Lythrum salicaria*);

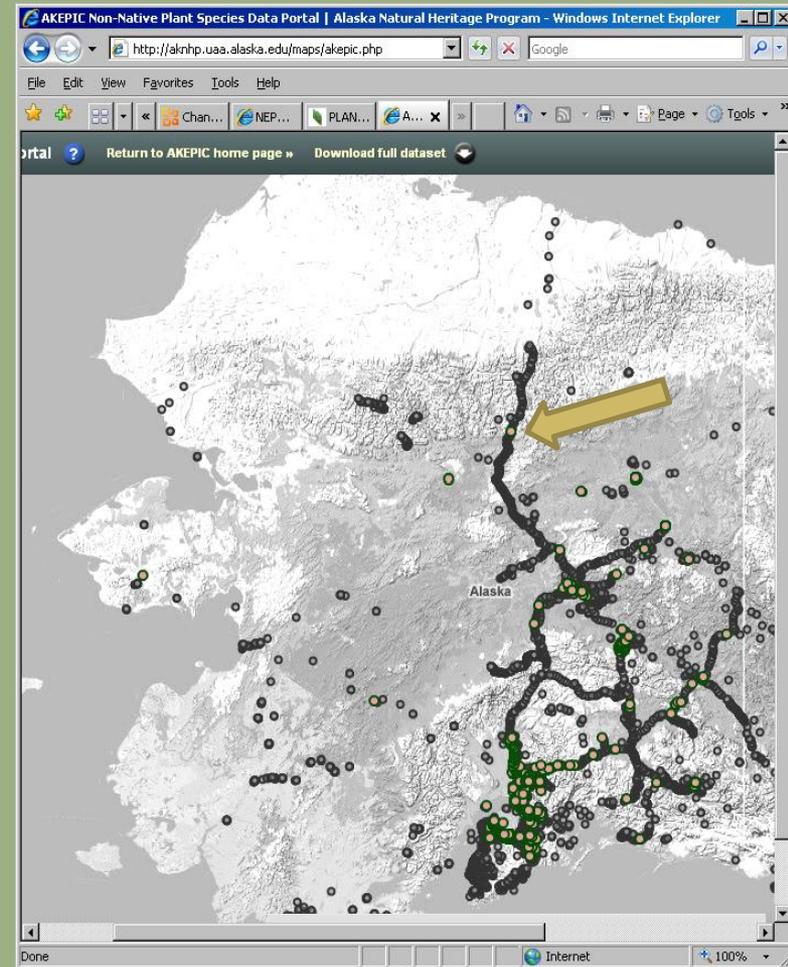
Quackgrass (*Elymus repens*);

Sowthistle, perennial (*Sonchus arvensis*);

Thistle, Canada (*Cirsium arvense*);

These occur in Alaska!

Farthest north record of Quackgrass ,
Coldfoot Airport



11 AAC 34.020. Prohibited and restricted noxious weeds

(a) The following are prohibited noxious weeds (Continued):

Fieldcress, Austrian (*Rorippa austriaca*);

Galensoga (*Galensoga parviflora*);

Horsenettle (*Solanum carolinense*);

Knapweed, Russian (*Centaurea repens*);

Lettuce, blue-flowering (*Lactuca puichella*);

Spurge, leafy (*Euphorbia esula*);

Whitetops and its varieties

(*Cardaria draba*, *C. pubescens*,
Lepidium latifolium).



Hoary cress (*Cardaria draba*) recently documented in seed mix in AK

These have not been recorded in Alaska yet

11 AAC 34.020. Prohibited and restricted noxious weeds

(b) The following are restricted noxious weeds, with their maximum allowable tolerances:

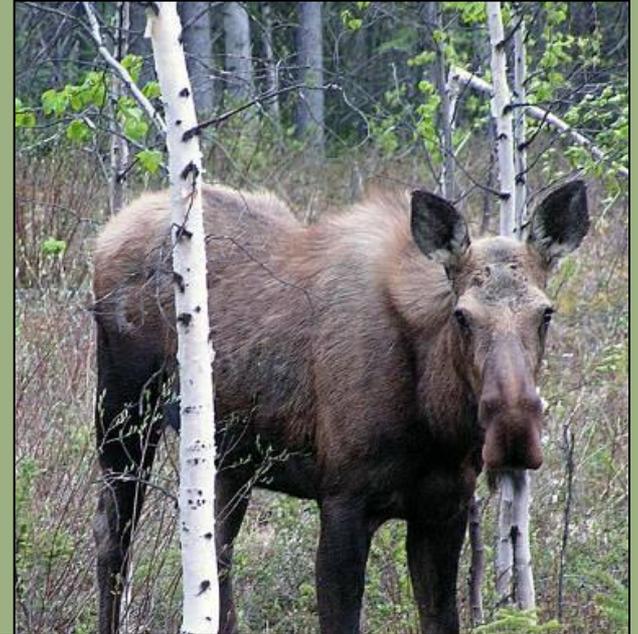
- Annual bluegrass (*Poa annua*), 90 seeds per pound;**
- Blue burr (*Lappula echinata*), 18 seeds per pound;**
- Mustard (*Sinapis arvensis*), 36 seeds per pound;**
- Oats, wild (*Avena fatua*), seven seeds per pound;**
- Plantain, buckhorn (*Plantago* sp.), 90 seeds per pound;
- Radish (*Raphanus raphanistrum*), 27 seeds per pound;
- Toadflax, yellow (*Linaria vulgaris*), one seed per pound;**
- Vetch, bird (*Vicia cracca*), two seeds per pound;**
- Wild Buckwheat (*Polygonum convovulus*), two seeds per pound.

History: In effect before 7/28/59; am 3/2/78, Register 65; am 10/28/83, Register 88; am 7/28/2007, Register 183

Why is it important to manage NIP?

Laws and policy:

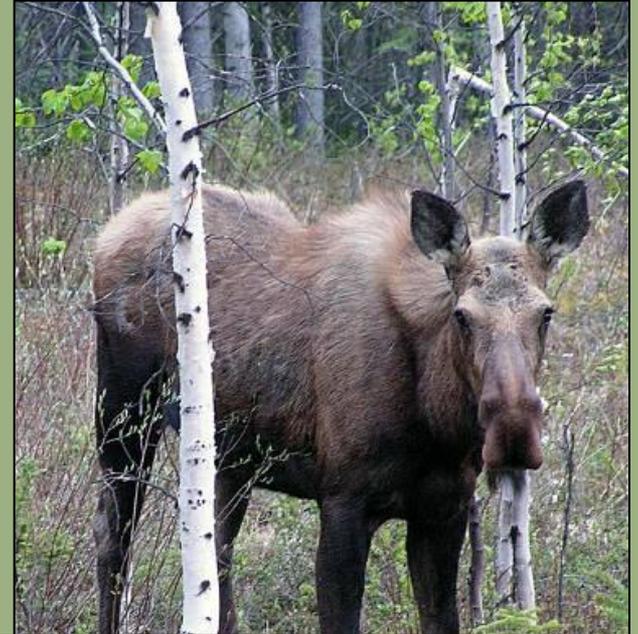
- œ Executive Order 13112, Invasive Species (1999)
- œ WO-IM-099-178 BLM NEPA Critical Elements
- œ BLM-AK-IM-2011-001 Noxious Weeds and Invasive Species Management



Why is it important to manage NIP?

Ecological Impacts:

- ❧ Loss of terrestrial wildlife habitat and species diversity
- ❧ Changes in fire regime
- ❧ Changes in soil composition
- ❧ Loss of fish habitat
- ❧ Loss of native plant composition and diversity
- ❧ Reduction of the biological, recreational and economic value of the land



Why is it important to manage NIP?

Continued:

- ⌘ Cost to eradication and control
- ⌘ Liability for allowing NIP to spread to adjacent areas (litigation)

NIP invasion is considered the second most serious threat to natural habitats, after habitat fragmentation and loss

(Randall, 1996)



Koyukuk Mining District NIP Surveys 2010

| Common Name | Scientific Name | # Sites |
|-----------------------|------------------------------|---------|
| Lambsquarter | <i>Chenopodium album</i> | 4 |
| Narrowleaf hawksbeard | <i>Crepis tectorum</i> | 13 |
| Foxtail barley | <i>Hordeum jubatum</i> | 31 |
| Pineapple weed | <i>Matricaria discoidea</i> | 9 |
| Sweetclover (White) | <i>Melilotus officinalis</i> | 8 |
| Common plantain | <i>Plantago major</i> | 9 |
| Prostrate knotweed | <i>Polygenum arviculare</i> | 4 |
| Common dandelion | <i>Taraxicum officinale</i> | 12 |
| Alsike clover | <i>Trifolium hybridum</i> | 3 |
| Flixweed | <i>Descurainia sophia</i> | 4 |
| Narrowleaf hawkweed | <i>Hieracium umbellatum</i> | 2 |
| Common peppergrass | <i>Lepidium densiflorum</i> | 11 |
| Bird Vetch | <i>Vicia cracca</i> | 1 |

Koyukuk and Central Mining Districts NIP Surveys 2010 Gravel Material Site Data

| Species | Number of pits infested | Percent of pits infested |
|-----------------------|-------------------------|--------------------------|
| White sweetclover | 61 | 39% |
| Bird Vetch | 1 | <1% |
| Narrowleaf hawksbeard | 32 | 20% |
| Foxtail barley | 82 | 52% |
| Narrowleaf hawkweed | 5 | 3% |
| Clean | 25 | 6% |

Data Collection

FF 93007 MP 145 on Right side of Road heading South
Huge Pit - Active

Invasive Plant Survey Form

Dalton Highway Mining-Related Disturbances

Site Name: 092-3.1 (Aleyeska Pit) Personnel: Ingrid McSweeney
Christine McCabe

Latitude/Longitude: \checkmark WGS84 Γ NAD83 Date: 7/28/2010
N 66° 53.757, W 150° 31.611 LN 66.8960, W 150.5269

Define the boundary of the site surveyed (as defined by the observer)

Presence/Absence and Estimates of Population Size

| Species | Present? | Stem Count (if possible) | Class (if too many to count) | Notes |
|--|-------------------------------------|-----------------------------|---------------------------------|----------------------------------|
| White Sweetclover (<i>Menisilus alba</i>) | <input checked="" type="checkbox"/> | | H | lots of slopes of gravel cuts |
| Oxeye Daisy (<i>Leucanthemum vulgare</i>) | <input type="checkbox"/> | | | |
| Bird Vetch (<i>Vicia cracca</i>) | <input type="checkbox"/> | | | |
| Common Toadflax (<i>Linaria vulgaris</i>) | <input type="checkbox"/> | | | |
| Foxtail | <input checked="" type="checkbox"/> | | J | all over area |

Classes:

A: 1 - 3 D: 31 - 60 G: 201 - 500 J: > 5001
B: 4 - 10 E: 61 - 100 H: 501 - 1000
C: 11 - 30 F: 101 - 200 I: 1001 - 5000

Photograph Log

| Photo Number | Taken from | Taken to |
|--------------|------------|----------|
| | | |
| | | |
| | | |
| | | |
| | | |

Notes: (Disturbance type; treatment, if any; samples collected; phenology of plants, etc.)



BLM Standard Operating Procedures for mineral extraction

- ☞ Yearly inventory
- ☞ Prompt reporting on NIP within area of operation
- ☞ Control
- ☞ Revegetation with certified weed free seed

“The permittee/contractor is responsible for familiarizing him/herself and affiliates with the identification of invasive plant species that may occur in the area, particularly the ones listed in this document. The permittee/contractor will promptly report to the BLM, the location and extent of any invasive plant infestations observed at, or near, the permitted mineral site.”

Why is it Important to Survey for NIP?

EARLY DETECTION RAPID RESPONSE (EDDR)

Allows us to:

- ✎ Eradicate new populations of NIP while they are small
- ✎ Prevents the spread of new species and populations
- ✎ Increases operator awareness of invasive plant issues



BLM Best Management Practices for mineral extraction

- ❧ Do not move equipment through NIP infested areas
- ❧ Clean all equipment prior to moving onto site of operation



Certified Weed Free Gravel

Alaska regulations only prohibit movement of material containing prohibited noxious weeds

Standards would be based on:

- ☞ North American Weed Management Association
- ☞ Voluntary program for producers
- ☞ Inspections every 30 days during growing season
- ☞ Three levels of certification
- ☞ Species on list tailored to Alaska

NIP readily colonize disturbed areas, such as roadsides, trails and mineral extraction sites



Bird vetch at mine site on
Tramway Bar



Sweetclover, Elliott Highway Material Site

NIP infestations at disturbed sites within the DMA and Koyukuk Mining District



Foxtail barley at Minnie Creek Material Site and Tricon Mine

Be on the watch: Early Detection Rapid Response (EDRR)

Orange hawkweed

Quackgrass

Perennial sowthistle

Canada thistle

Yellow toadflax/butter & eggs

Bird vetch/tufted vetch

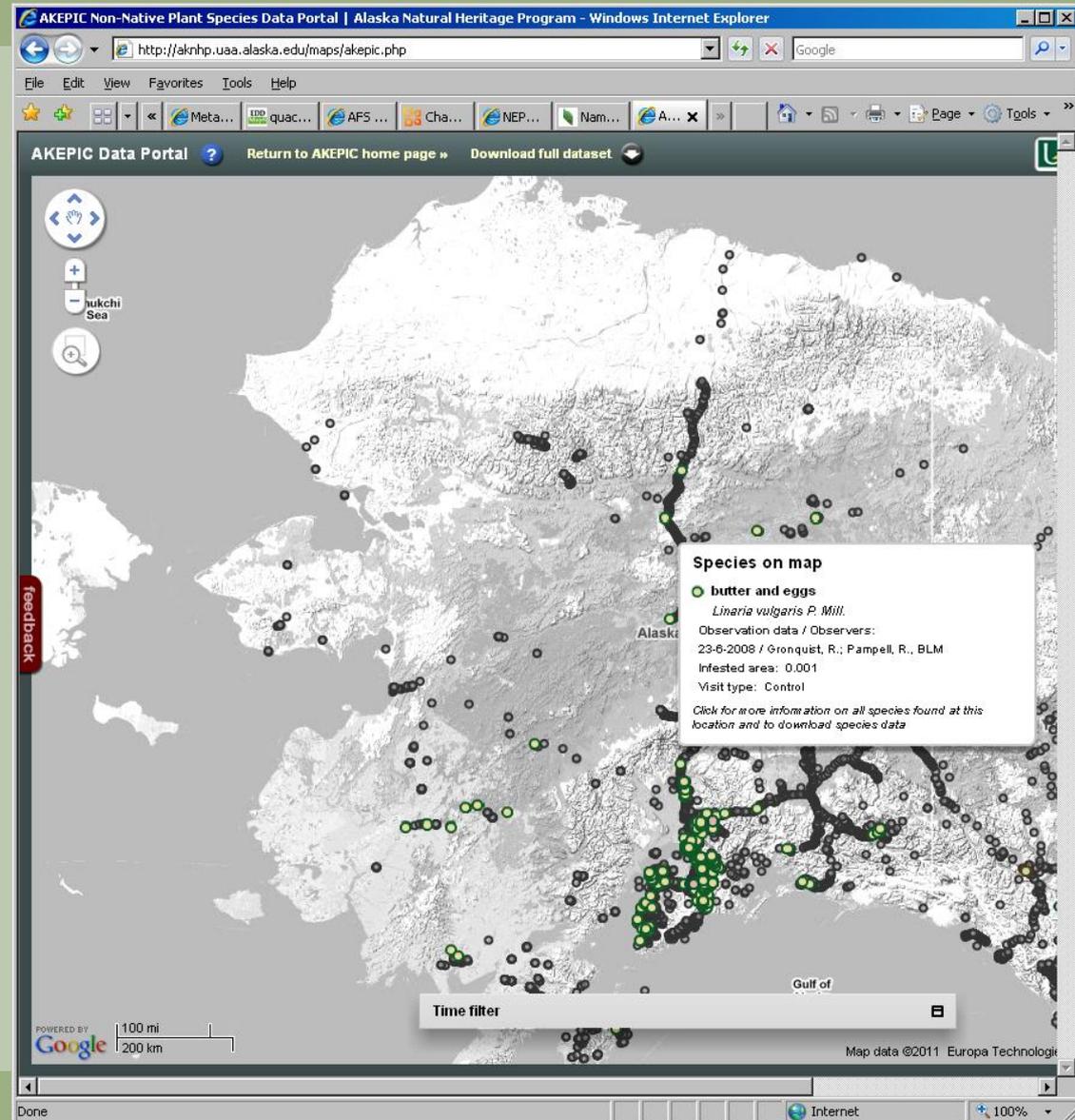
Sweetclover

Common tansy

Oxeye daisy

Narrowleaf hawksbeard

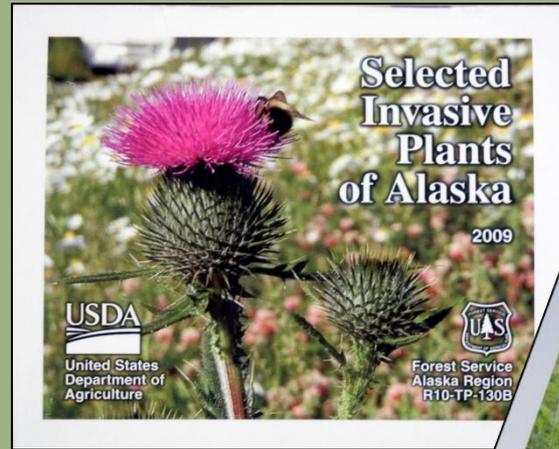
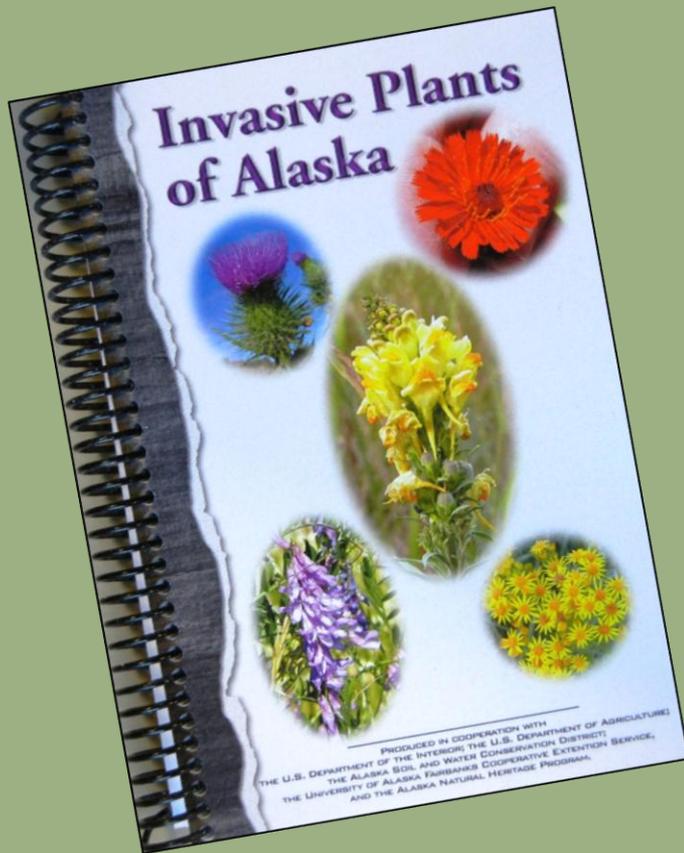
Birdsfoot trefoil



Conclusions

- ❧ Fortunate to have few invasive species and relatively few acres infested in Alaska
- ❧ NIP most common at disturbed sites
- ❧ NIP have been documented at placer mines and material sites in the Koyukuk and other Mining Districts in Interior Alaska
- ❧ Some of these NIP are of highest concern for Alaska
- ❧ Survey data helps develop reclamation protocols
- ❧ BLM is involving permittees/contractors NIP management

Resources and Publications



rgronqui@blm.gov

<http://plants.alaska.gov/invasives/index.php>

<http://www.uaf.edu/ces/cnipm/>

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