Recent advances in management of invasive plants in the Kodiak National Wildlife Refuge

Bill Pyle, Kodiak NWR/USFWS, 1390 Buskin River Rd., Kodiak, AK 99615, 907-487-0228, Bill_Pyle@fws.gov

Kodiak National Wildlife Refuge initiated management of invasive plants in 2003. Since then, the refuge has gradually acquired knowledge of the type and scope of threat, engaged many partners, especially the Kodiak Soil and Water Conservation District, and continued to evolve and refine management. In this presentation, I summarize accomplishments and lessons learned since implementation of a 2010 strategic plan. Species addressed include orange hawkweed, Canada thistle, oxeye daisy, creeping buttercup, and reed canarygrass.

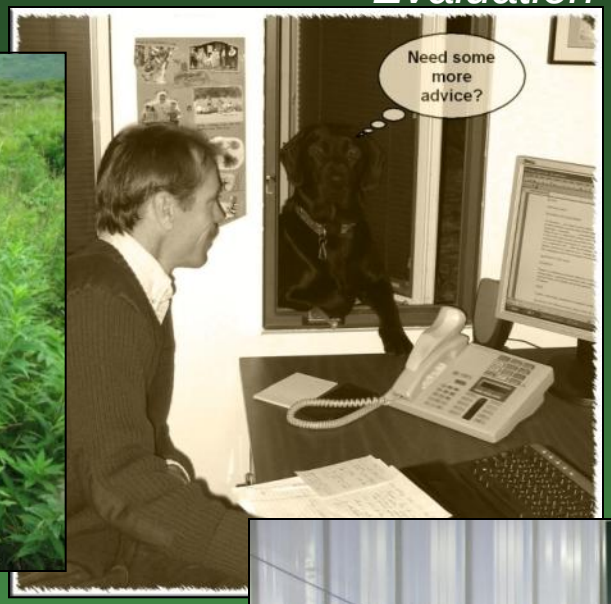
Advances in Management of Invasive Plants at Kodiak National Wildlife Refuge

Bill Pyle, U.S. Fish & Wildlife Service

IPM

Identification

Evaluation

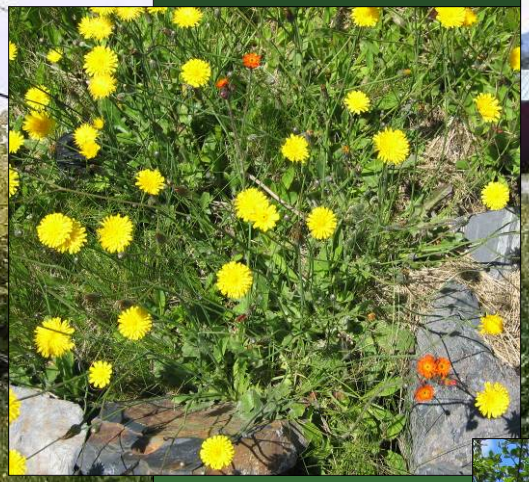


Outreach

Monitoring

Control

Source: USFWS

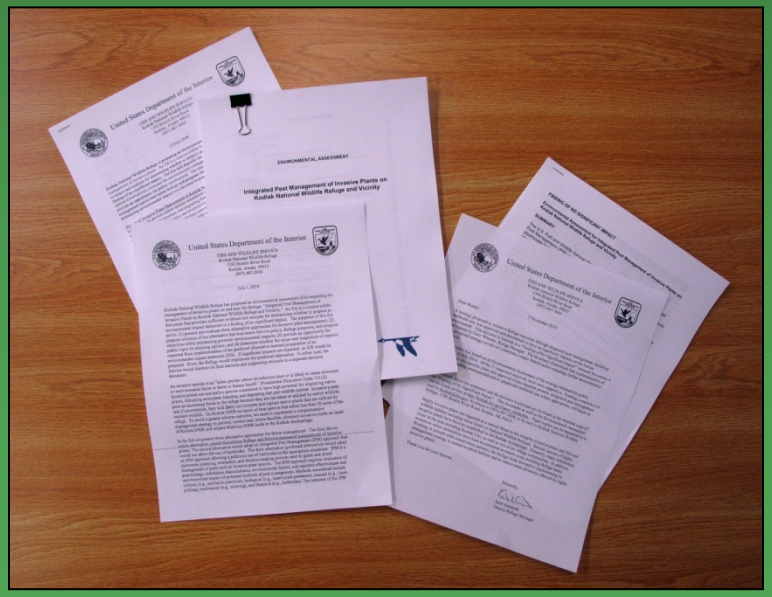


Planning

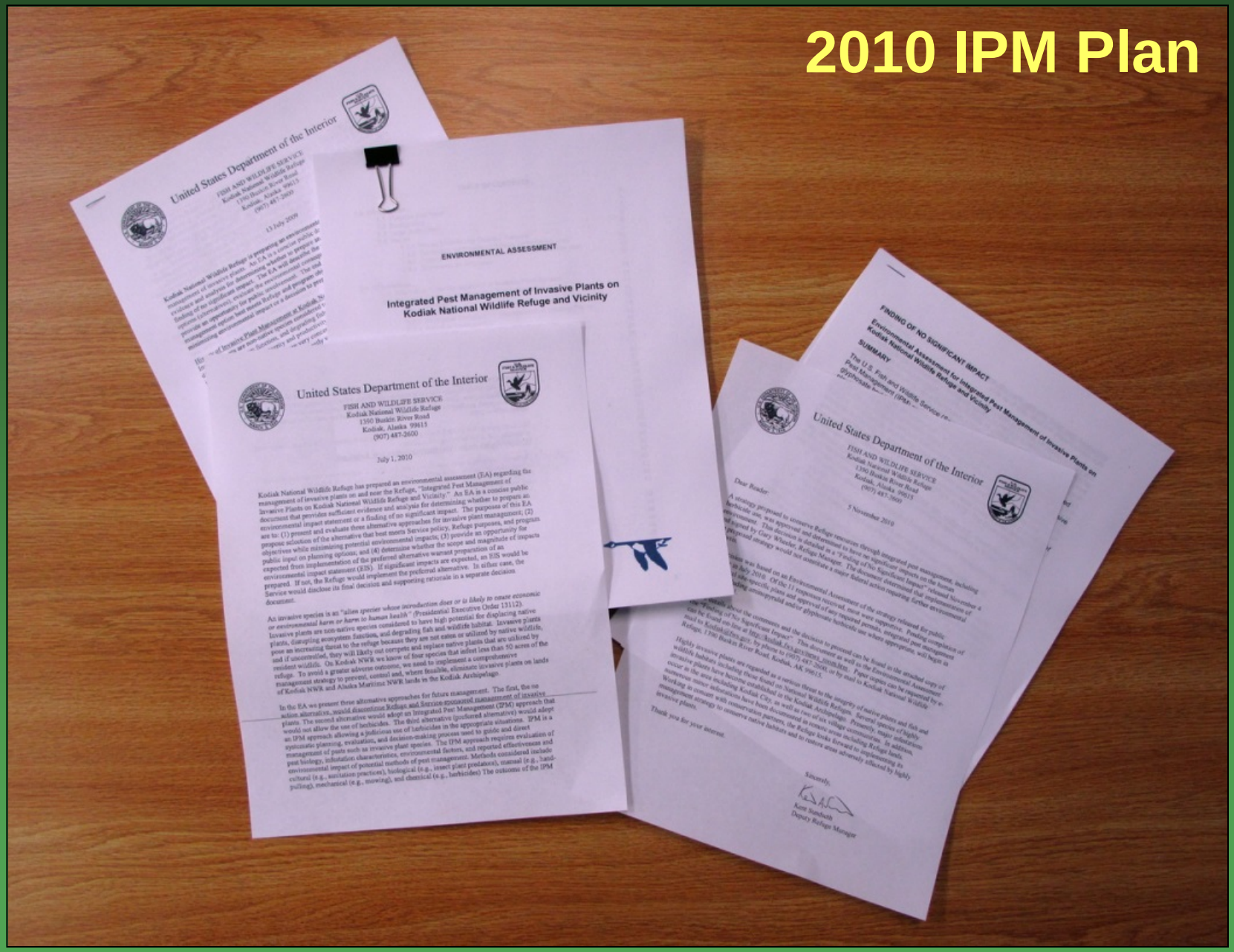
- Lawsuit
- Suspension of herbicide use
- National implications for FWS-supported IPM
- IPM with herbicide—address via NEPA

IPM Programmatic Plan

- Identified invasive species targets
- Delineated action thresholds
- Selected lowest risk, most effective herbicides
- Expanded geographic & jurisdiction scope
- Devised framework for IPM on non-Refuge lands

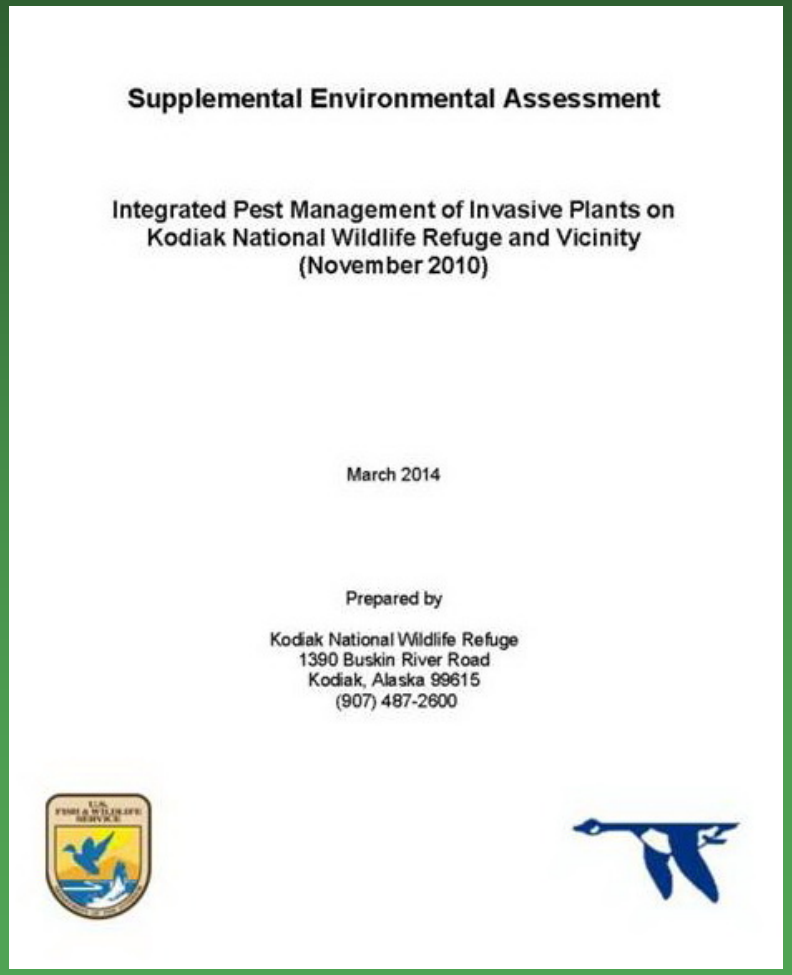


2010 IPM Plan



2014 IPM Plan Supplement

- Two alternatives
- Expand scope of action
- Direct priority of action



Supplemental Environmental Assessment

Integrated Pest Management of Invasive Plants on Kodiak National Wildlife Refuge and Vicinity (November 2010)

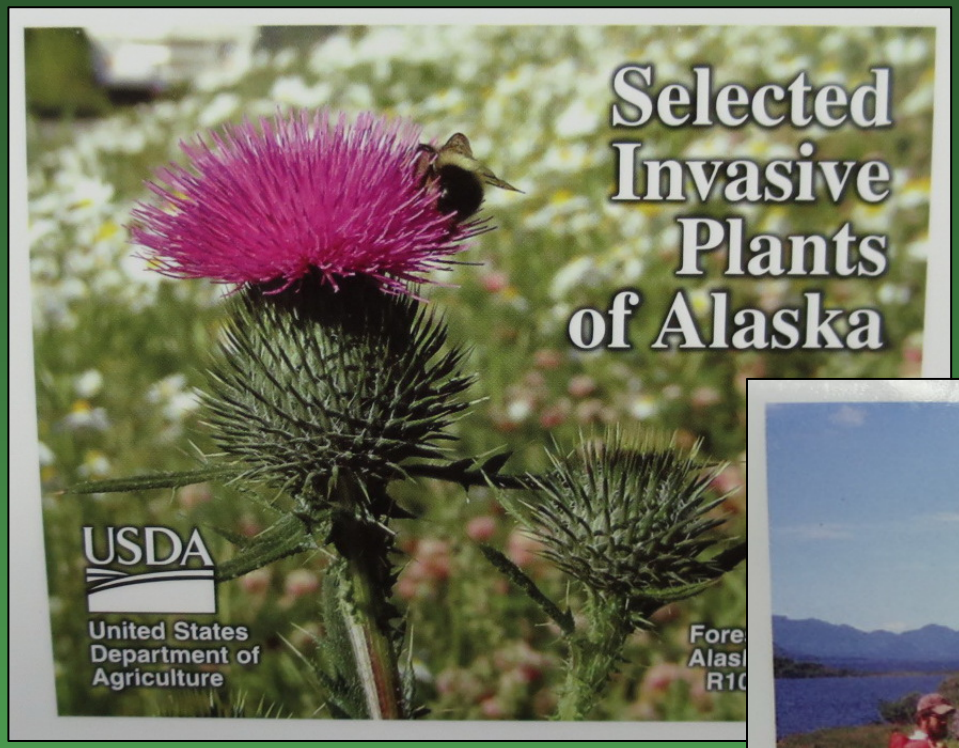
March 2014

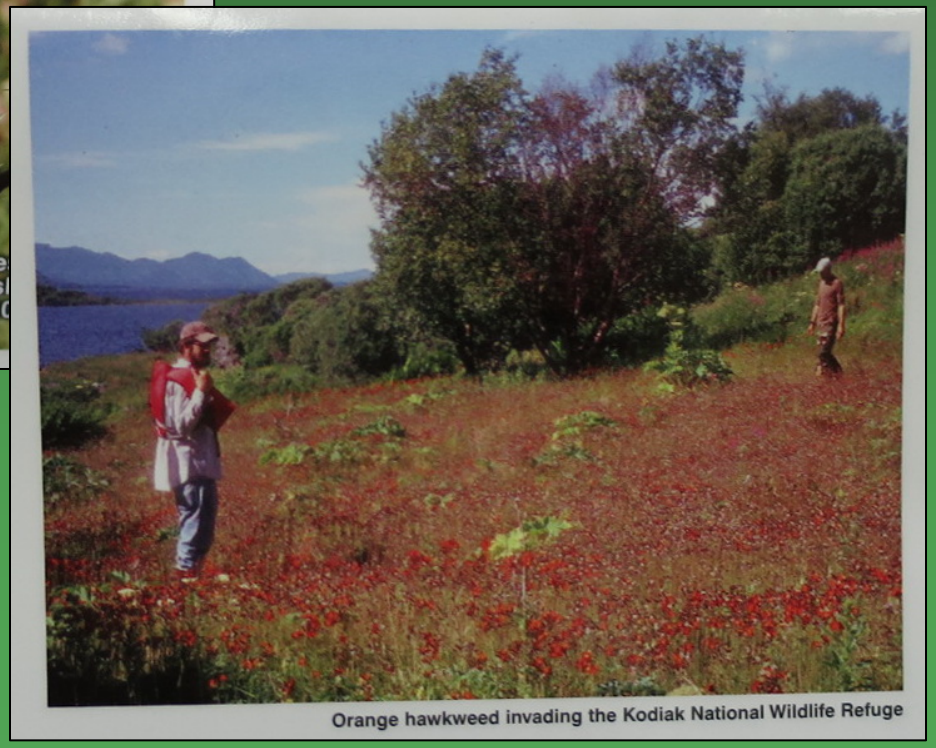
Prepared by

Kodiak National Wildlife Refuge
1390 Buskin River Road
Kodiak, Alaska 99615
(907) 487-2600

Critical Control Points

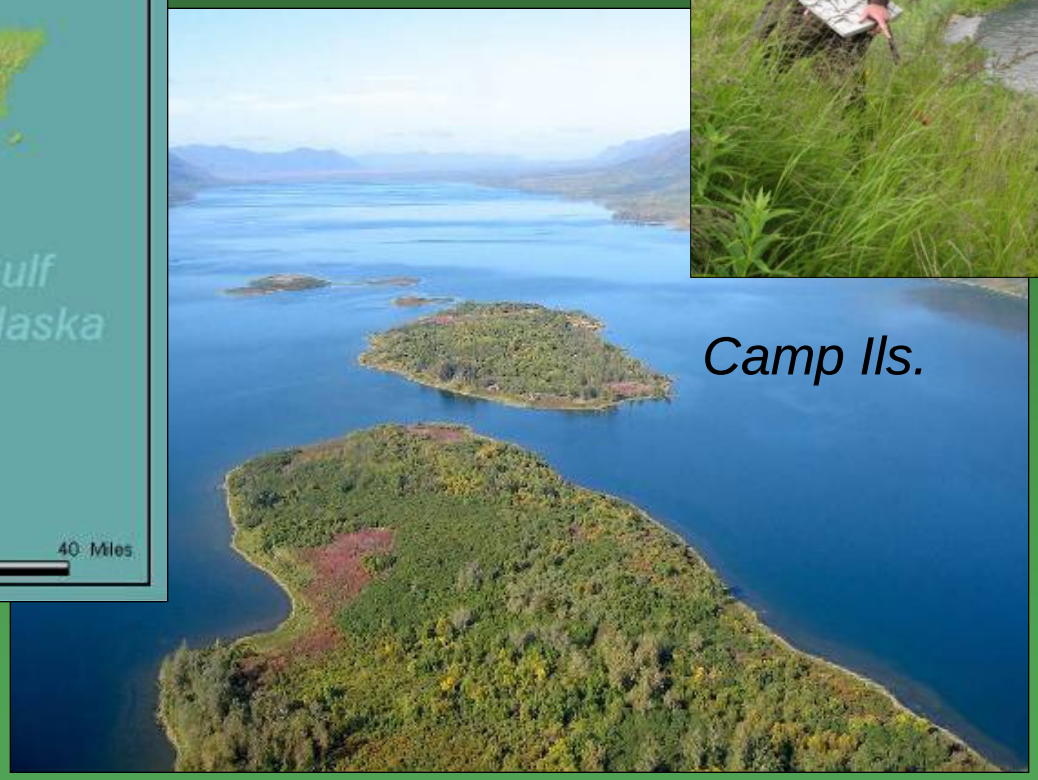
Case Study – Hawkweed at Camp Island





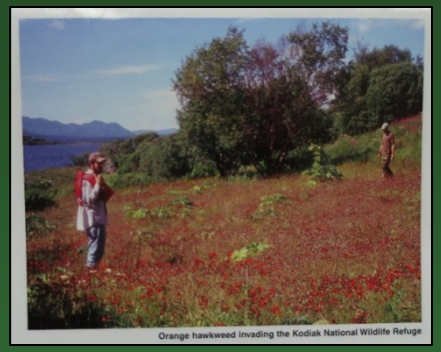
Orange hawkweed invading the Kodiak National Wildlife Refuge

Camp Island vicinity, Karluk Lake



Source: USFWS

Annual Cycle of Actions



- Initial project planning
- Apply for funding support
- Recruit assistants (volunteers, techs, aids)
- Complete work plan
- Request cooperation (access) of non-fed. landowner
- PUP renewal
- Schedule fieldwork & coordinate logistics
- Supplies & equipment purchased *as needed*
- Training *as needed* including water ditching
- Fieldwork (surveys, monitoring, control)
- Data analysis, interpretation, & reporting
- PUP usage report

July 2003

May 2005

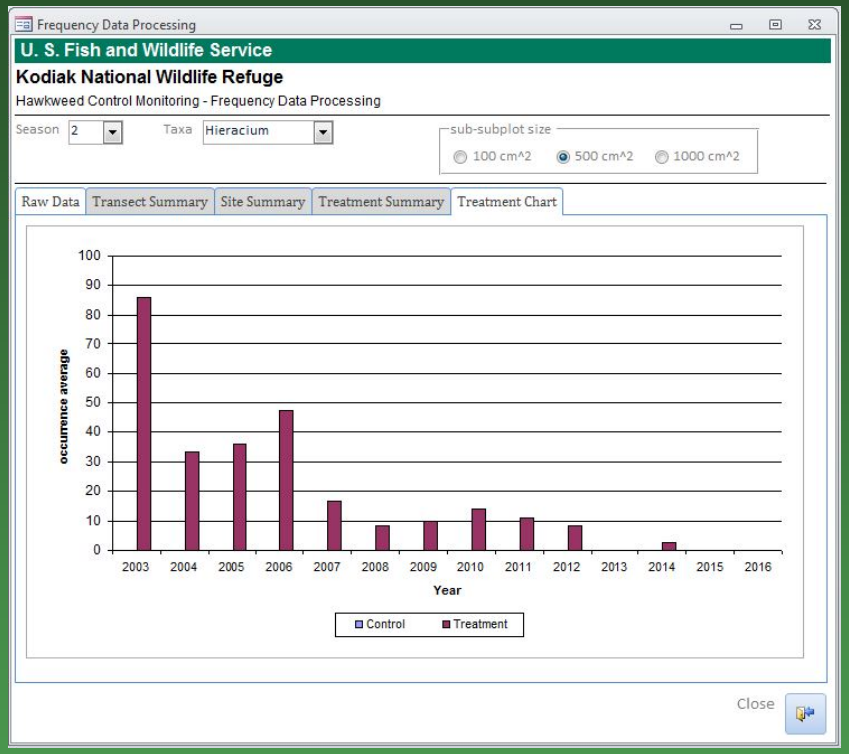
Where's the hawkweed?

Tactical Updates

- Dedicated strike team
- Partnered assistance as needed
- Monthly action, May-September
- Other missions – focus on survey & control
- Flower removal, site prep., herbicide appl.
- Record keeping & regular record updates

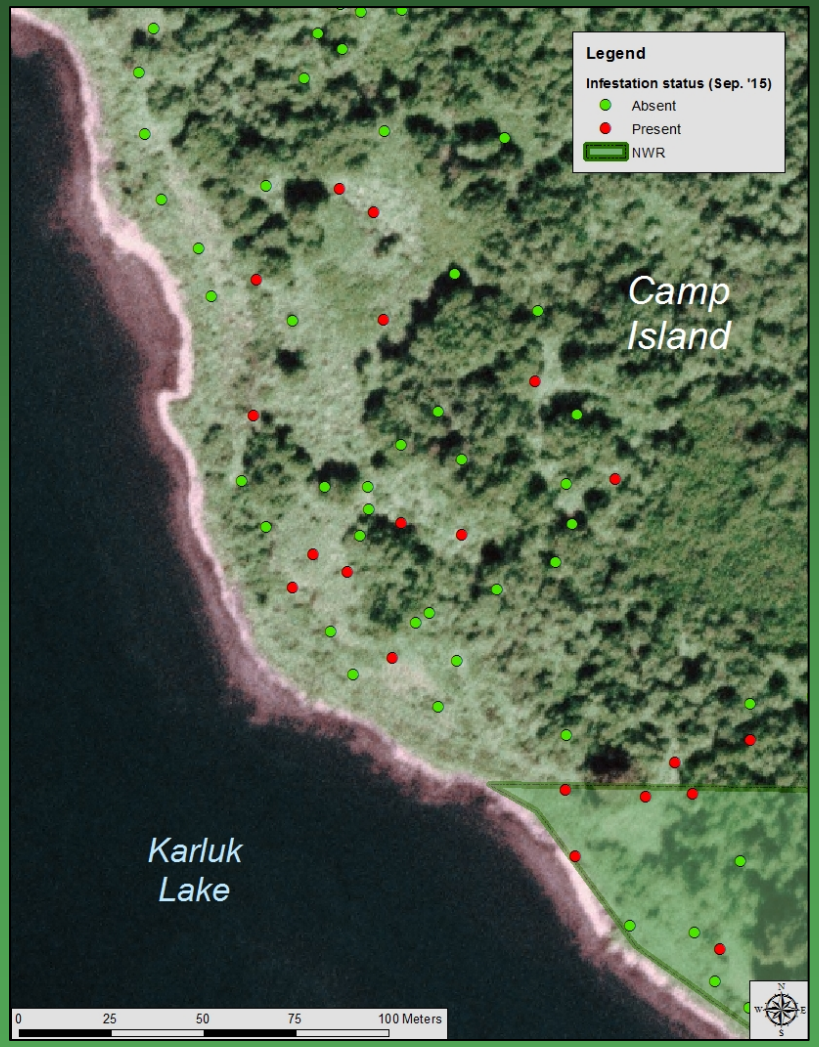
Strike team 2016

Intensive Monitoring



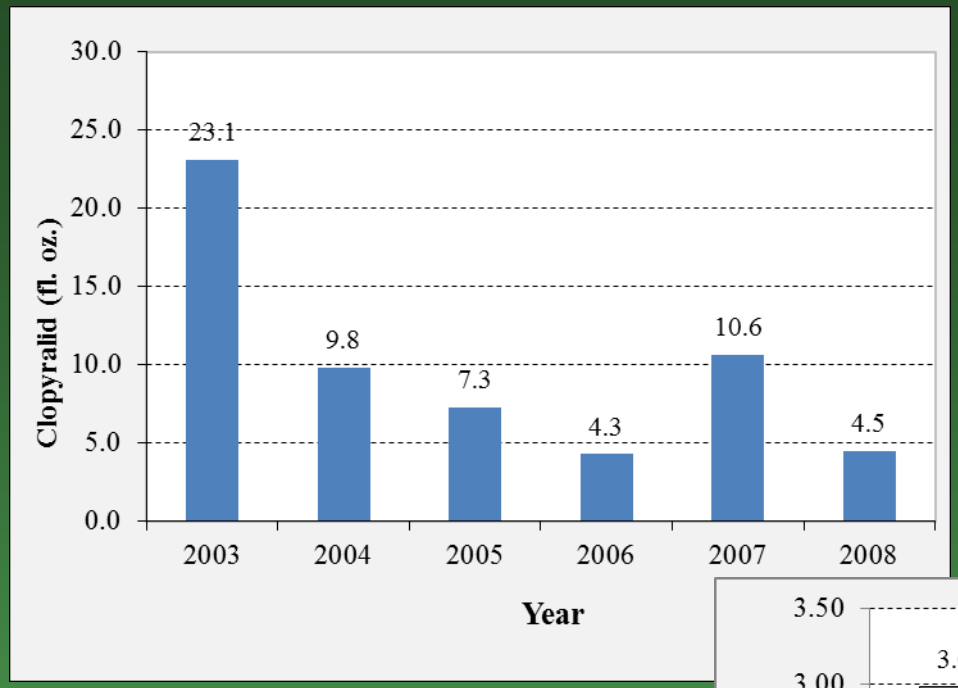
Hawkweed

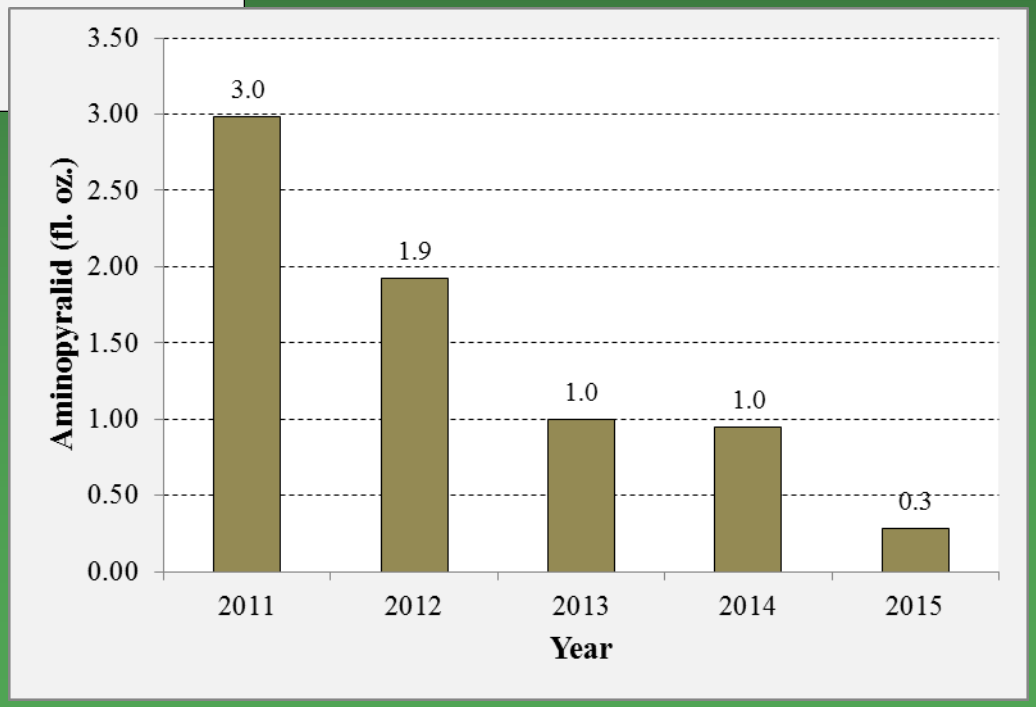
Extensive Monitoring

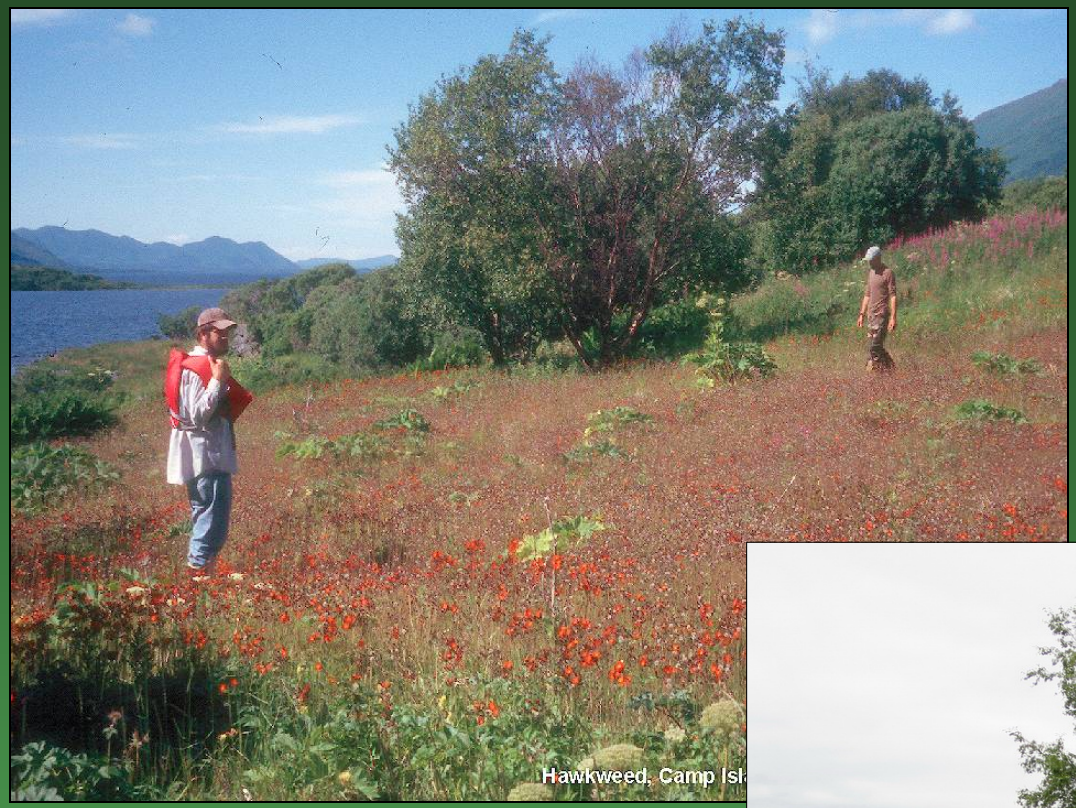


Extensive Survey Results

	Year					
Category	2010	2011	2012	2013	2014	2015
Total surveyed sites (no.)	153	142	194	184	261	247
Sites with hawkweed (no.)	103	82	93	74	57	67
Sites with hawkweed (%)	67	58	48	40	22	27


30.0
25.0
20.0
15.0
10.0
5.0
0.0
Clopyralid (fl. oz.)
23.1
9.8
7.3
4.3
10.6
4.5
2003
2004
2005
2006
2007
2008
Year


3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Aminopyralid (fl. oz.)
3.0
1.9
1.0
1.0
0.3
2011
2012
2013
2014
2015
Year



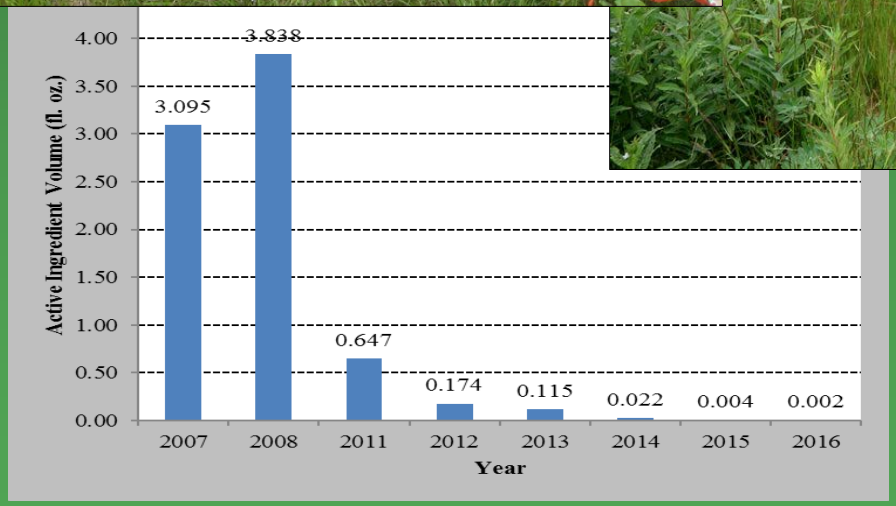
July 2002

July 2016

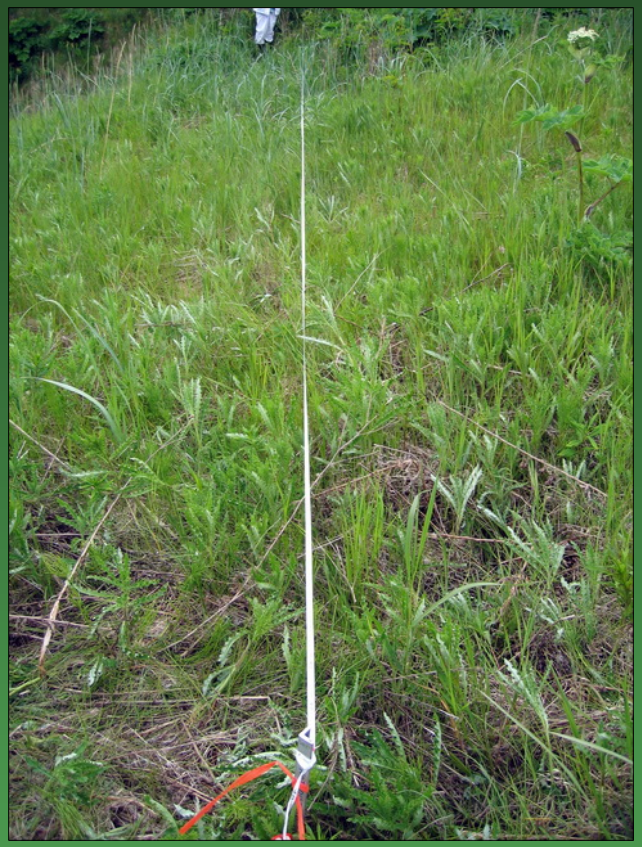
Oxeye Daisy

July 2006

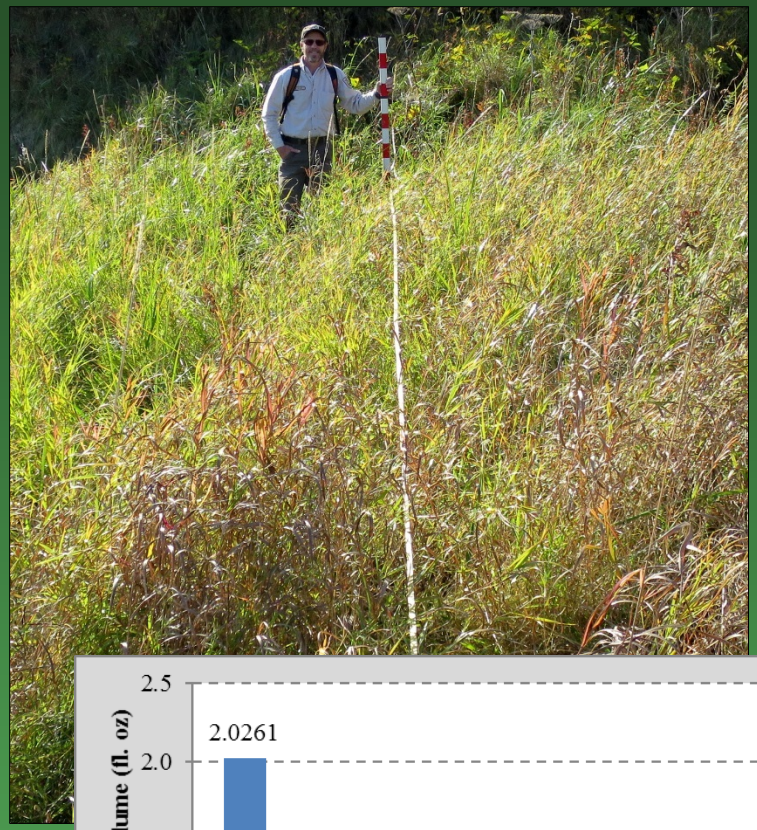
July 2016

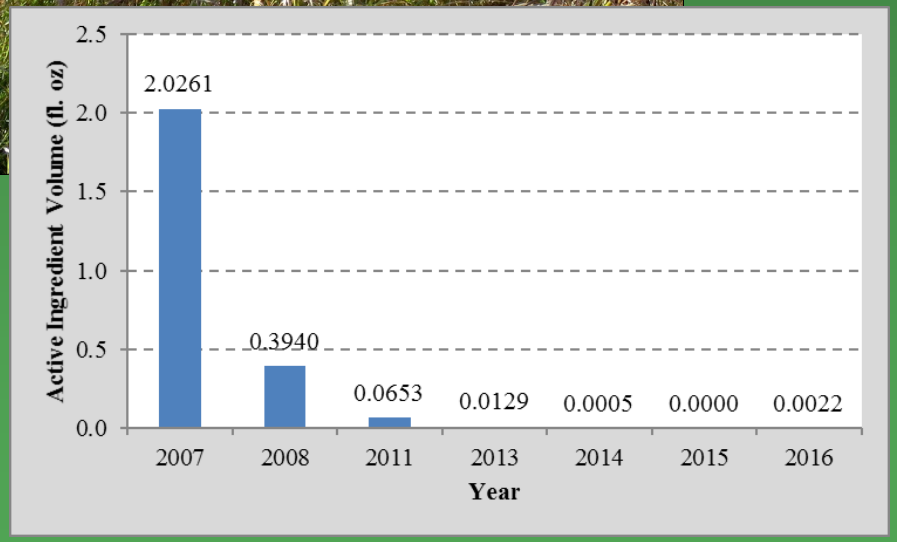


June 2006



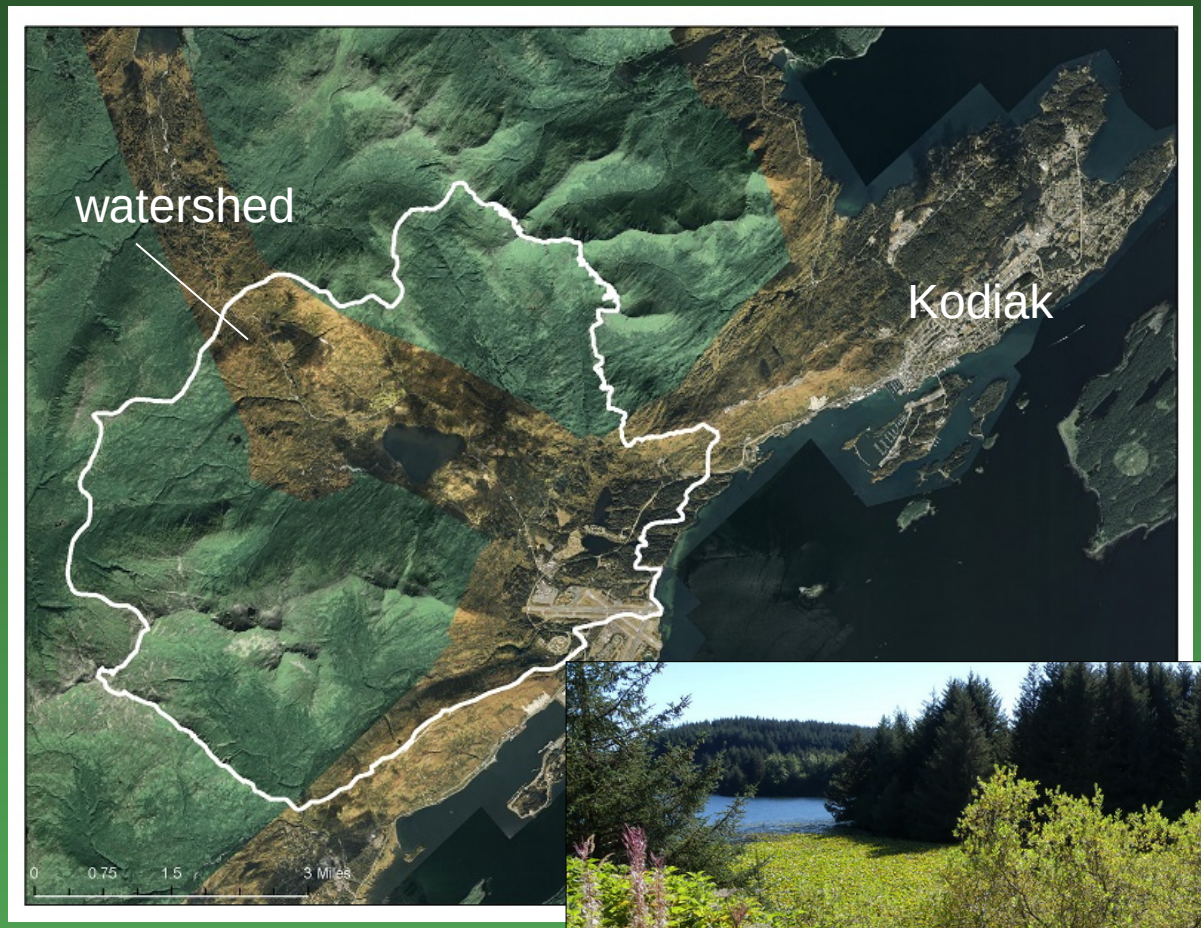
September 2016



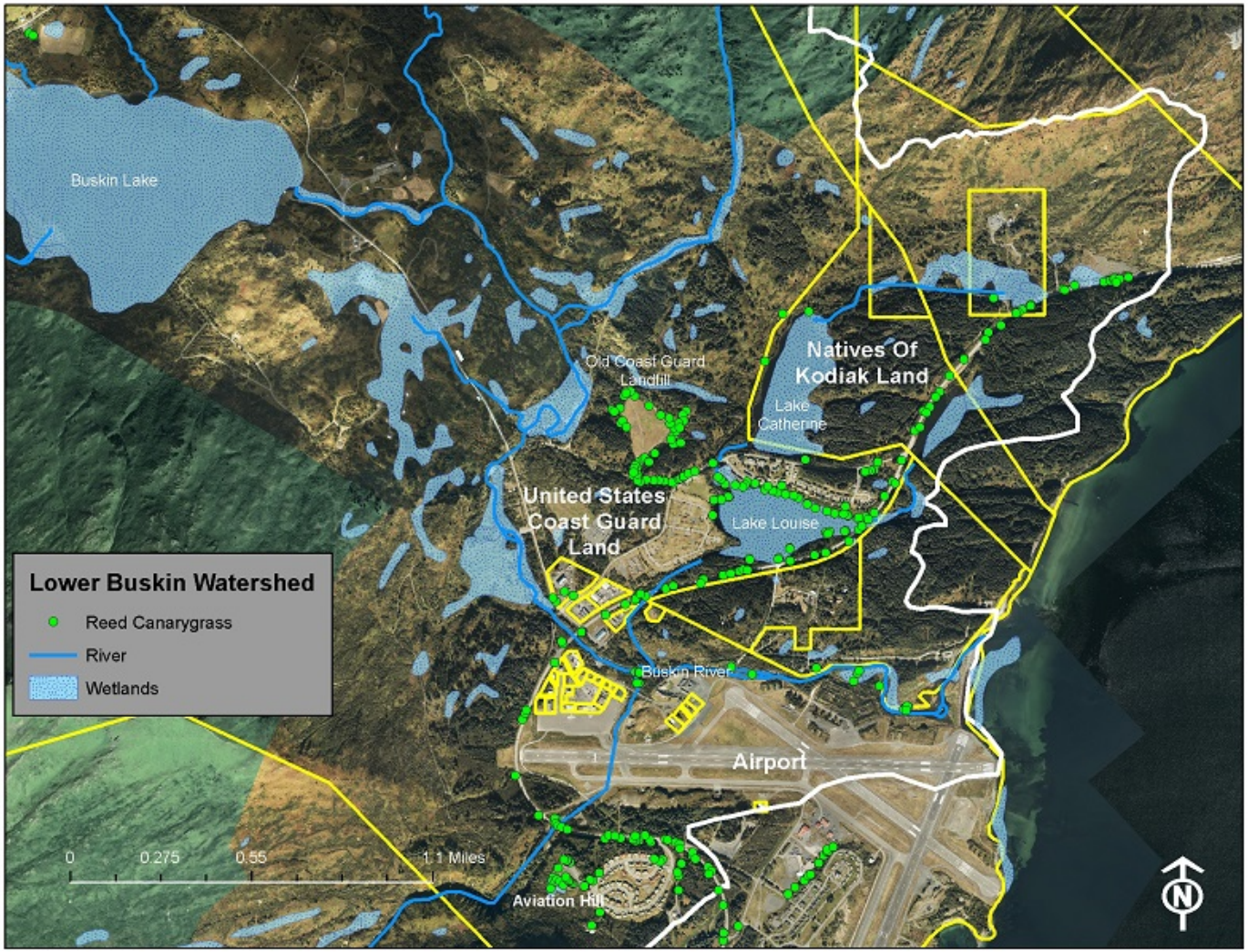


Canada Thistle

Reed Canarygrass



Infestation Area



Stakeholder Meeting

Application Methods

Initial Results

Acknowledgements