

Elodea:

Alaska's first submersed aquatic invasive plant takes root in Mat-Su's Remote Alexander Lake



Heather A.M. Stewart, DNR

18 November 2014

Mat-Su Salmon Science & Conservation Symposium

Elodea: An aggressive invader

- Reproduces asexually by fragmentation
- Survives in water columns up to 30' deep
- Continues photosynthesis under Alaskan ice conditions when native plants have senesced
- Creates mono-cultures, lowering biodiversity



Kenai Daniels Lake



Why should we care?

- Lowers lakeshore property values
 - Launch sites
 - Shore habitats
- Impedes recreation impairs safety
 - Fouls boat propellers
 - Swimming
 - Affects floatplane launching
- Degrades salmon spawning habitat
 - Slows stream velocities
 - Increases sedimentation rates
 - Increases dissolved oxygen
 - Prime invasive pike habitat

Fairbanks Chena Slough



Anchorage Sand Lake



Mat-Su Alexander Lake

History of elodea in Alaska

- 1982: Recorded in herbarium record in Eyak Lake at Cordova; first known site in AK
- 2009: Discovered in Fairbank's Chena Slough by USFS
- 2010: Found in Anchorage's Sand Lake by USFWS
- 2011: Found in 2 other Anchorage Lakes: Little Campbell and DeLong
- 2012: Stormy and Daniels Lake on the Kenai Peninsula
- 2013: Continued surveys and reports of both presence and absence records
- March 2014: Elodea quarantined along with 4 other potentially invasive aquatic invasive plants
- After 2014 field season: 3 additional remote sites found in Cordova, and 1 in the Mat-Su: Alexander Lake

Mapping *elodea* in Alaska

Anchorage
Mat-Su Valley

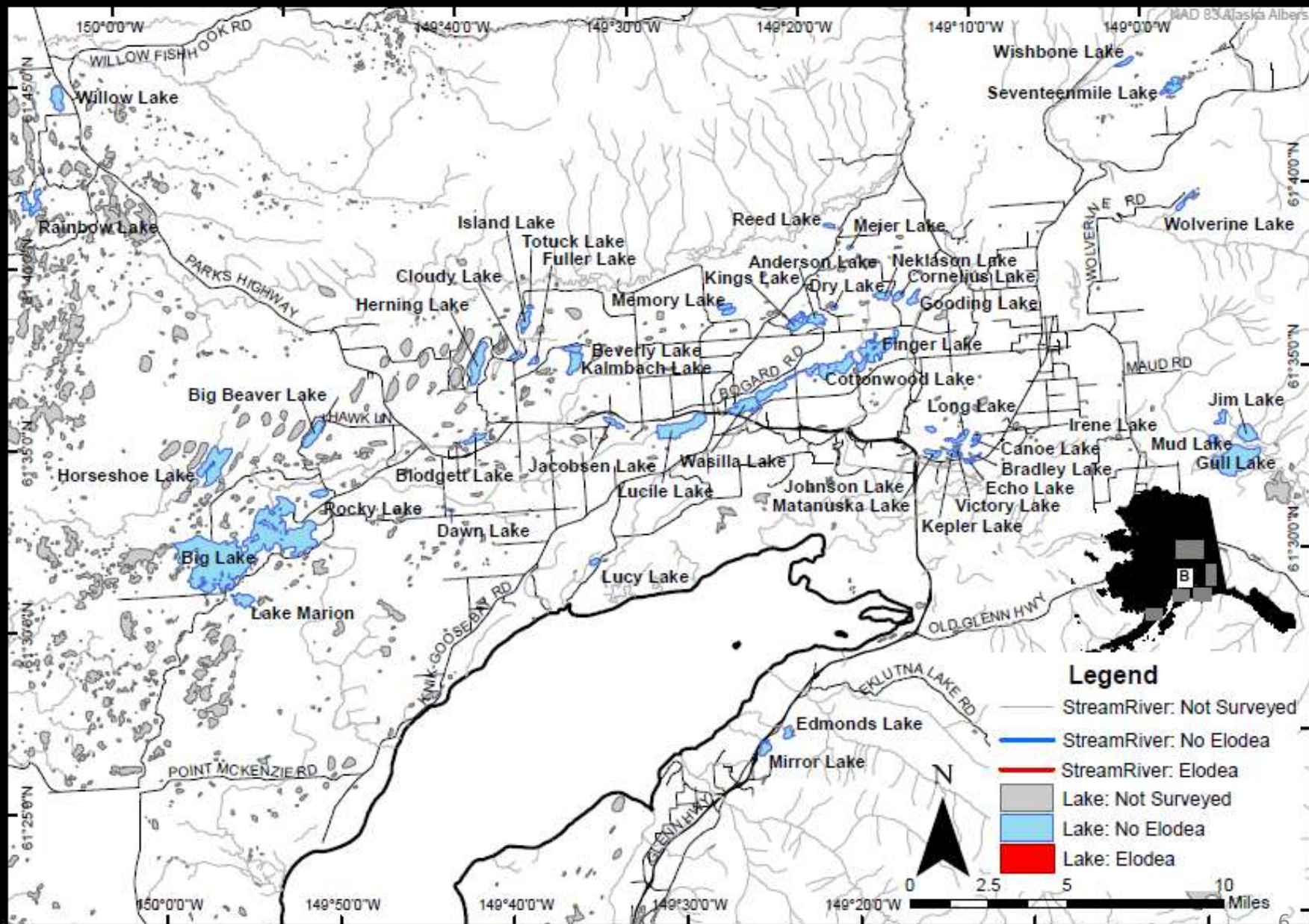
Fairbanks
Wrangell St. Elias NP
Kenai Peninsula

Vectors:

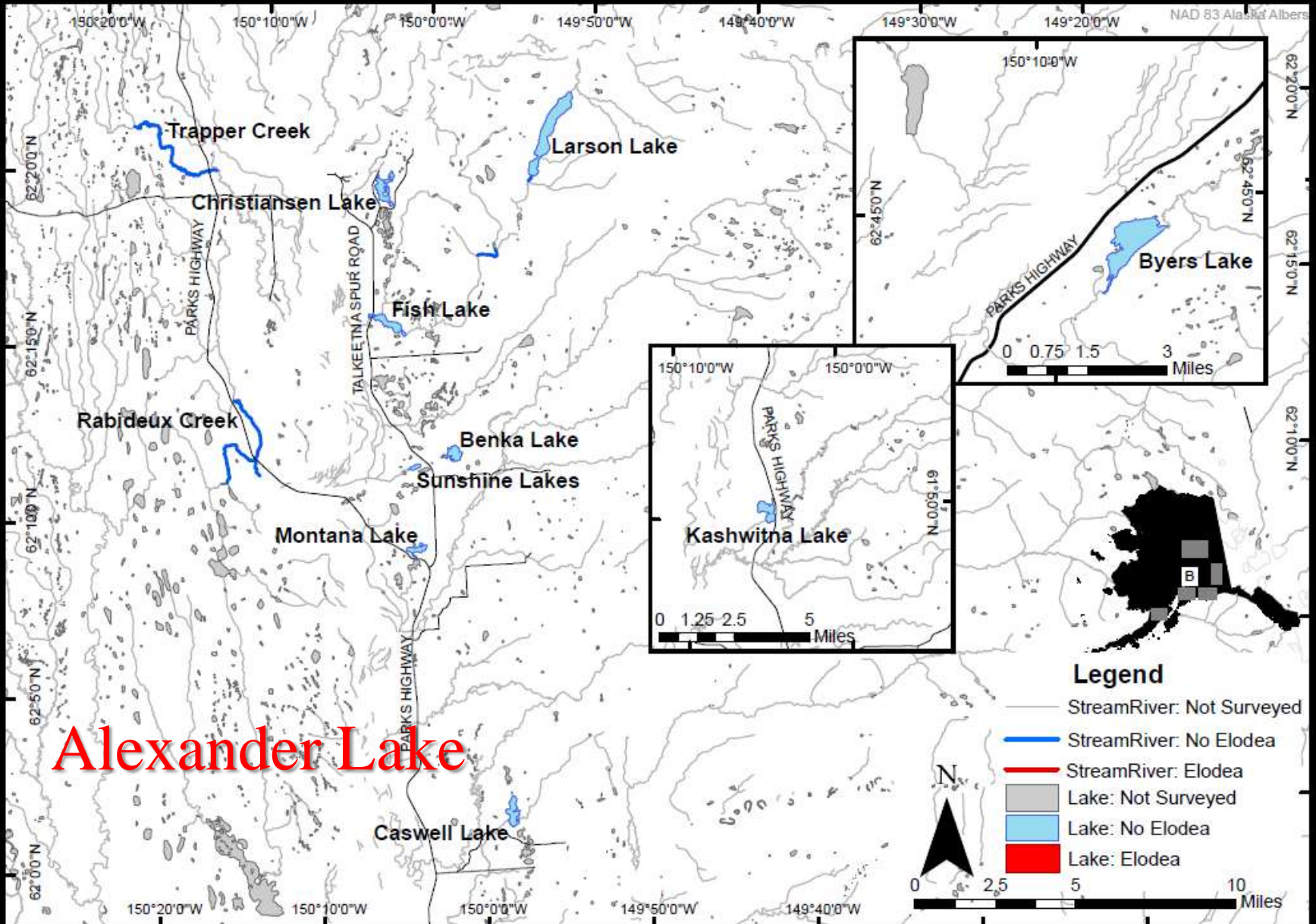
Contaminated boats
Float plane rudders
Aquarium trade

Katmai NP
Chugach National Forest

Matanuska-Susitna Valley Elodea Surveys



Upper Susitna Elodea Surveys



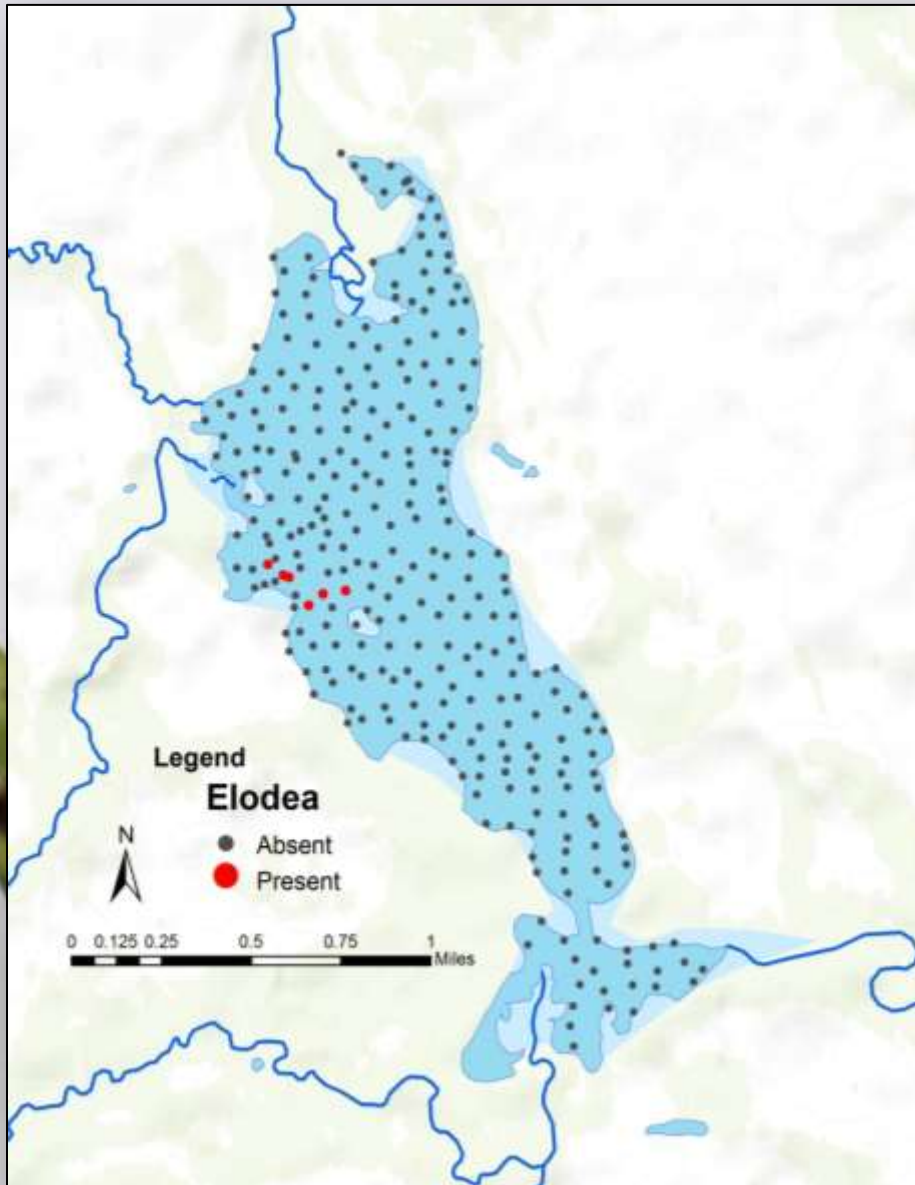
Alexander Lake

- Discovered August 21st, 2014
 - ADF&G Pike suppression project
 - Roughly surveyed

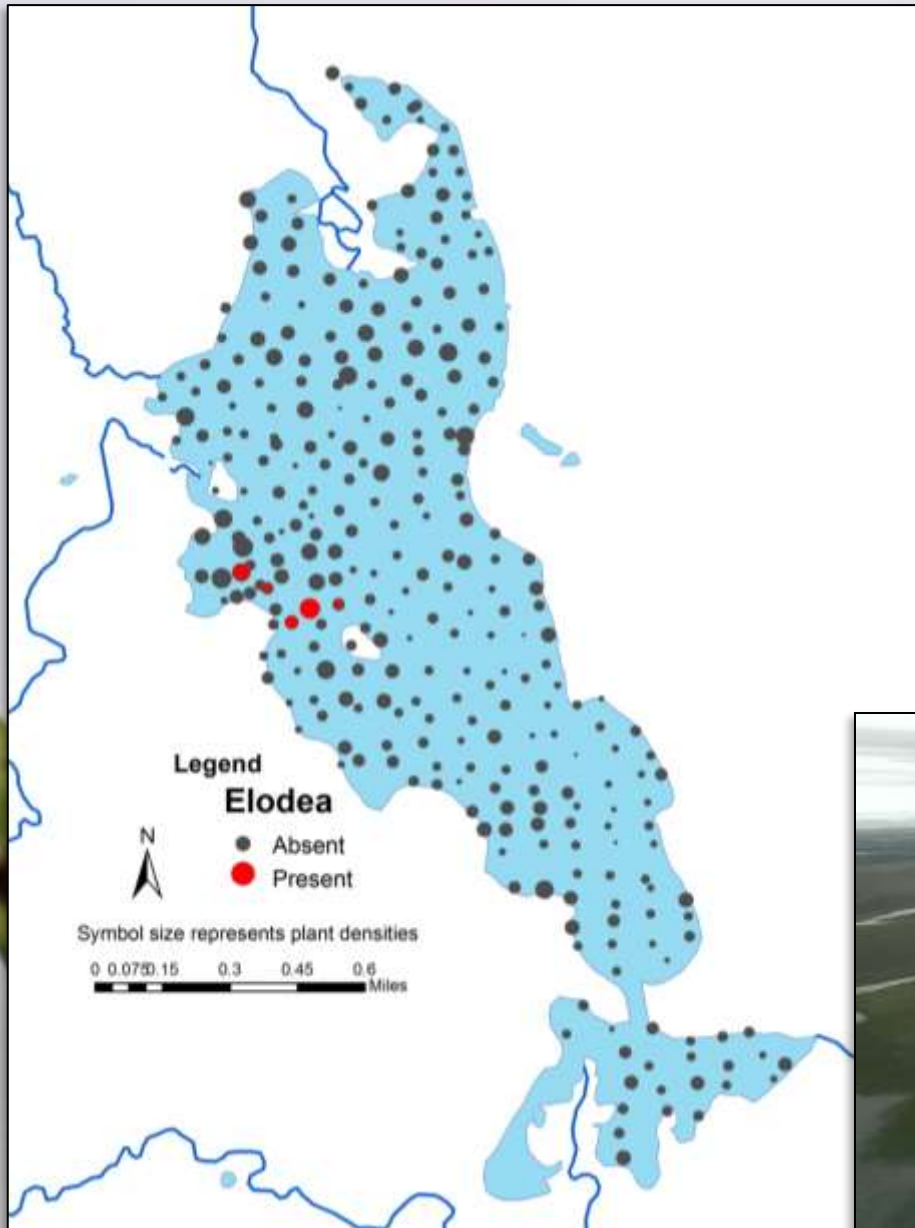
- Thorough vegetation survey September 8th and 9th by DNR and ADF&G
 - 20 species of both submersed and emergent vegetation



What did we find?



- Alexander Lake is ~750 surface acres
- Maximum depth is 6-8 feet (changes seasonally)
- Elodea is isolated to one area ~10 acres large (this estimate is generous)
 - Relatively patchy
- Very manageable infestation
 - Established ~4-5 years at most



- Elodea is in an area where there is the most diversity of native vegetation
 - (11 species at largest dot)
- Alter the biodiversity
- Hinder on-going efforts to bolster salmon productivity



Management Strategy: Eradication



- Management area = 40 acres
- Proposed prescription of flouridone treatment for the next 3 years.
 - \$1,170/acre
- 8 FasTEST sites for monitoring levels of concentrations

Alexander Lake Treatment Plan

Alexander Lake Treatment Plan					Treatment 1	Treatment 1	Treatment 2	Treatment 2	Treatment 3	Treatment 3	Treatment 4	Treatment 4
Acres	Mean Depth	Volume										
690.1	4.0	2760										
Treatment Area	Acres	Mean Depth	Volume	% of Lake Volume	PPB	# SonarONE	PPB	# SonarONE	PPB	# SonarONE	PPB	# SonarONE
Option 1	40	4.5	180	6.5%	90	875	45	437	90	875	60	583
			0	0.0%		0		0		0		0
			0	0.0%		0		0		0		0
			0	0.0%		0		0		0		0
			0	0.0%		0		0		0		0
	40		180	6.5%		875		437		875		583
*LWC - Lake-wide Concentration					\$\$\$	\$ 28,124.82		\$ 14,062.41		\$ 28,124.82		\$ 18,749.88
**In-water Concentration (lake-wide)					Theoretical LWC*	5.87		2.93		5.87		3.91
					Theoretical IWC**	3.52		1.76		3.52		2.35

Initial treatment in June 2015 would include the application of *Littora Aquatic Herbicide (Diquat)*

Treatment Area (Acres)	15	Estimated Cost	
Rate / Acre	1 Gallon		
Total Product	15		
Cost	\$ 1,170.00		
		Year 1	\$ 43,357.23
		Year 2	\$ 28,124.82
		Year 3	\$ 18,749.88
		Total	\$ 90,231.93

- Initial costs up front with equipment not included
 - FasTEST 8 sample sites, 24 samples/year ~\$7200 (3yr)
- Acreage, rate and other factors could be reduced with further refinement
- Factors to finalize treatment plan: Flow, mean seasonal depth

What's next?

- Ongoing for the Mat-Su
 - Find additional local sources of funding
 - Collaboration with other agencies
 - NEPA
- December 2014–January 2015
 - Permitting process
- January-June 2015
 - Field prep, logistics
- June 2015
 - First of 3 applications

Eradication is possible!

Thank you



Heather A.M. Stewart, DNR

heather.stewart@alaska.gov

907-745-8721