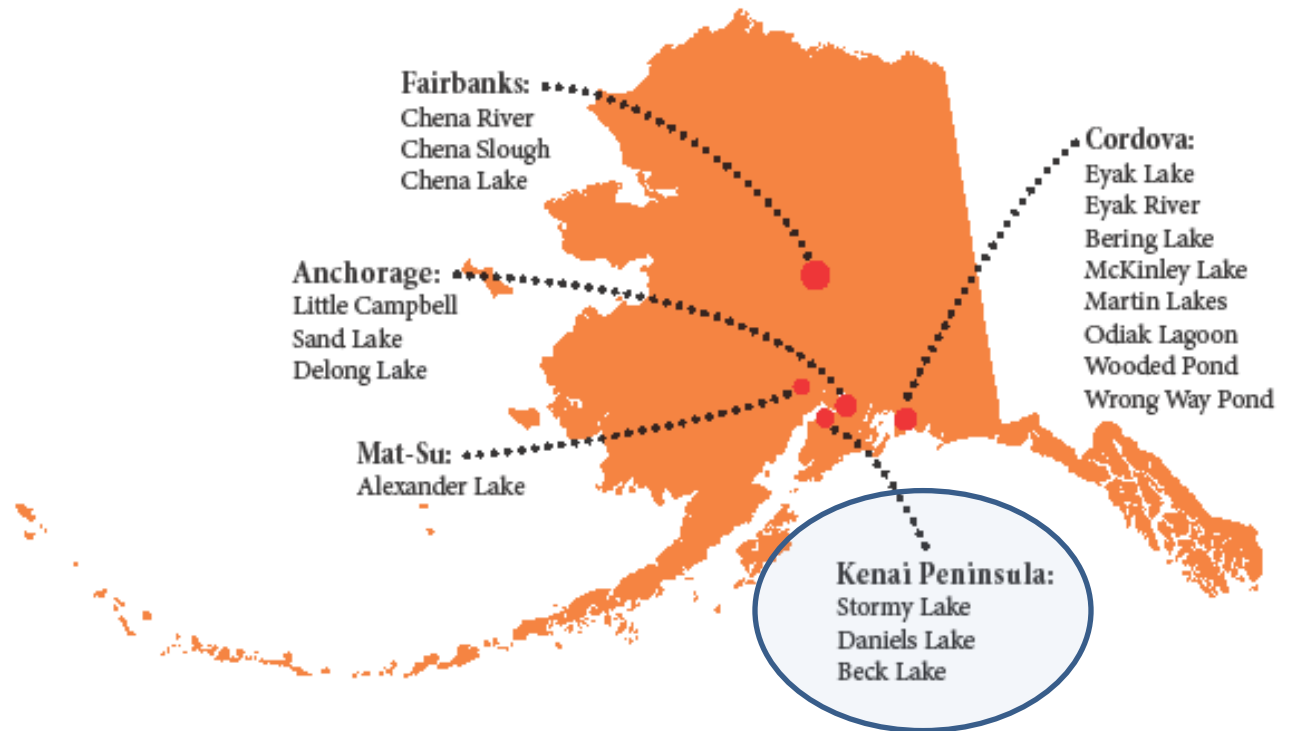


Eradicating Elodea from the Kenai Peninsula – success?

Known Locations of Elodea in Alaska



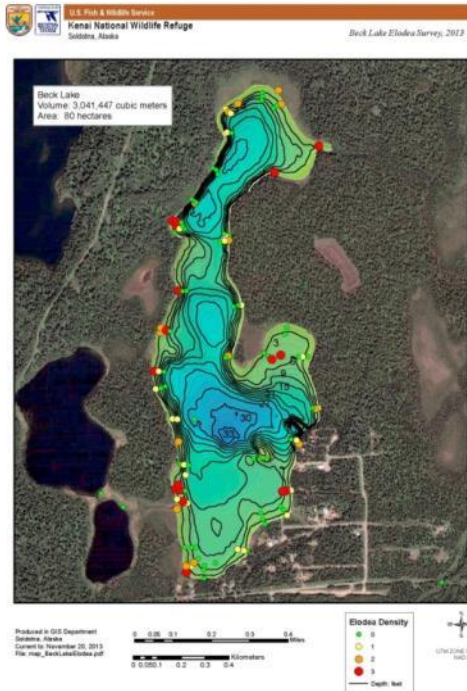
John Morton
Kenai National Wildlife Refuge



Elodea was recognized early as bad...

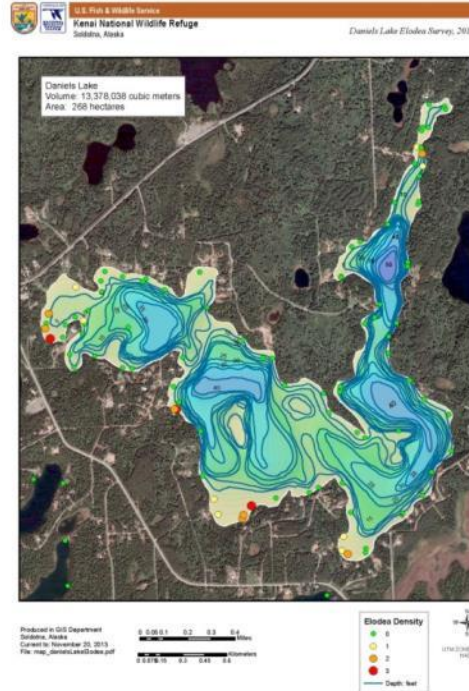
- ✓ It's prolific!
- ✓ Reproduces vegetatively
- ✓ Spreads easily
- ✓ Grows under the ice
- ✓ Severely impairs fish habitat
- ✓ Anoxic conditions in extreme cases
- ✓ Impedes boat traffic
- ✓ Reduces property values

Beck Lake (200 ac) whole treatment



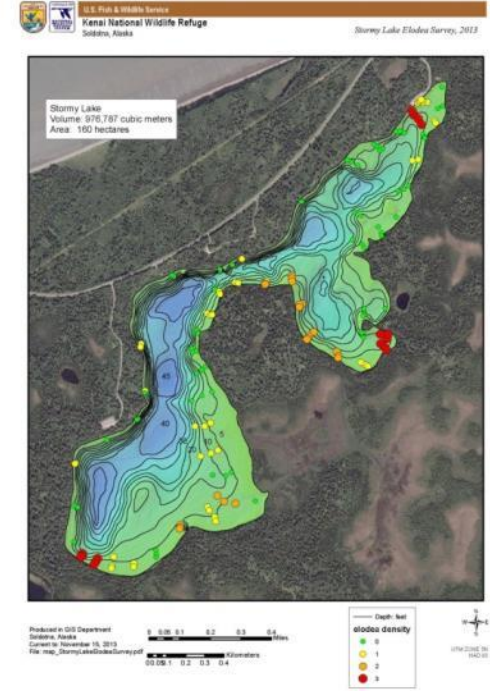
- Some private landowners
- Floatplanes
- NO public access
- Flows into Bishop Creek
- Rainbow trout

Daniels Lake (640 ac) partial treatment



- All private landowners
- Floatplanes
- 1 community boat launch
- Flows into Bishop Creek
- Sockeye salmon

Stormy Lake (400 ac) whole treatment



- State Parks/KENWR
- 1 public boat launch
- Flows into Swanson River
- Arctic char

Community Elodea Information Meeting

Nikiski Community Recreation Center
Mile 23.4 Kenai Spur Highway

Tuesday February 19th, 2013
6 - 8:30PM

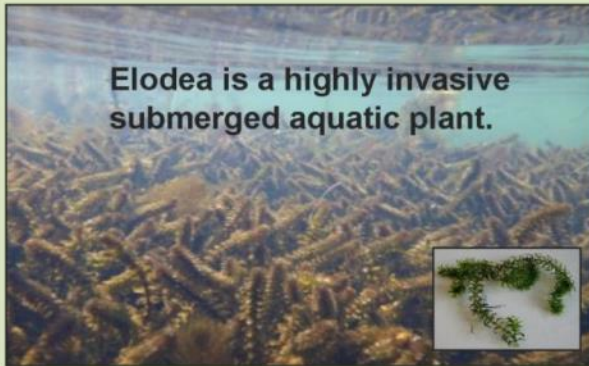


Please join us for a community meeting to discuss what to do about the discovery of Elodea in Stormy & Daniels Lakes.

Dr. Lars Anderson (USDA Agricultural Research Service and University of California-Davis), an aquatic invasive plant expert, will be at the meeting to provide information about Elodea, discuss options for management, and share his experiences in coping with aquatic infestations.

Elodea is not native to the Kenai Peninsula, and can cause serious, irreversible harm to fish and aquatic habitats if allowed to spread unchecked.

Elodea presence has recently been confirmed in Stormy and Daniels Lake on the Kenai Peninsula, and in some slow-moving waters in Anchorage, Fairbanks, and Cordova.



Elodea is a highly invasive submerged aquatic plant.



Why we don't want Elodea

Nuisance: impedes boat and float plane launching, navigation, and fishing

Ecological: degrades salmon spawning habitat

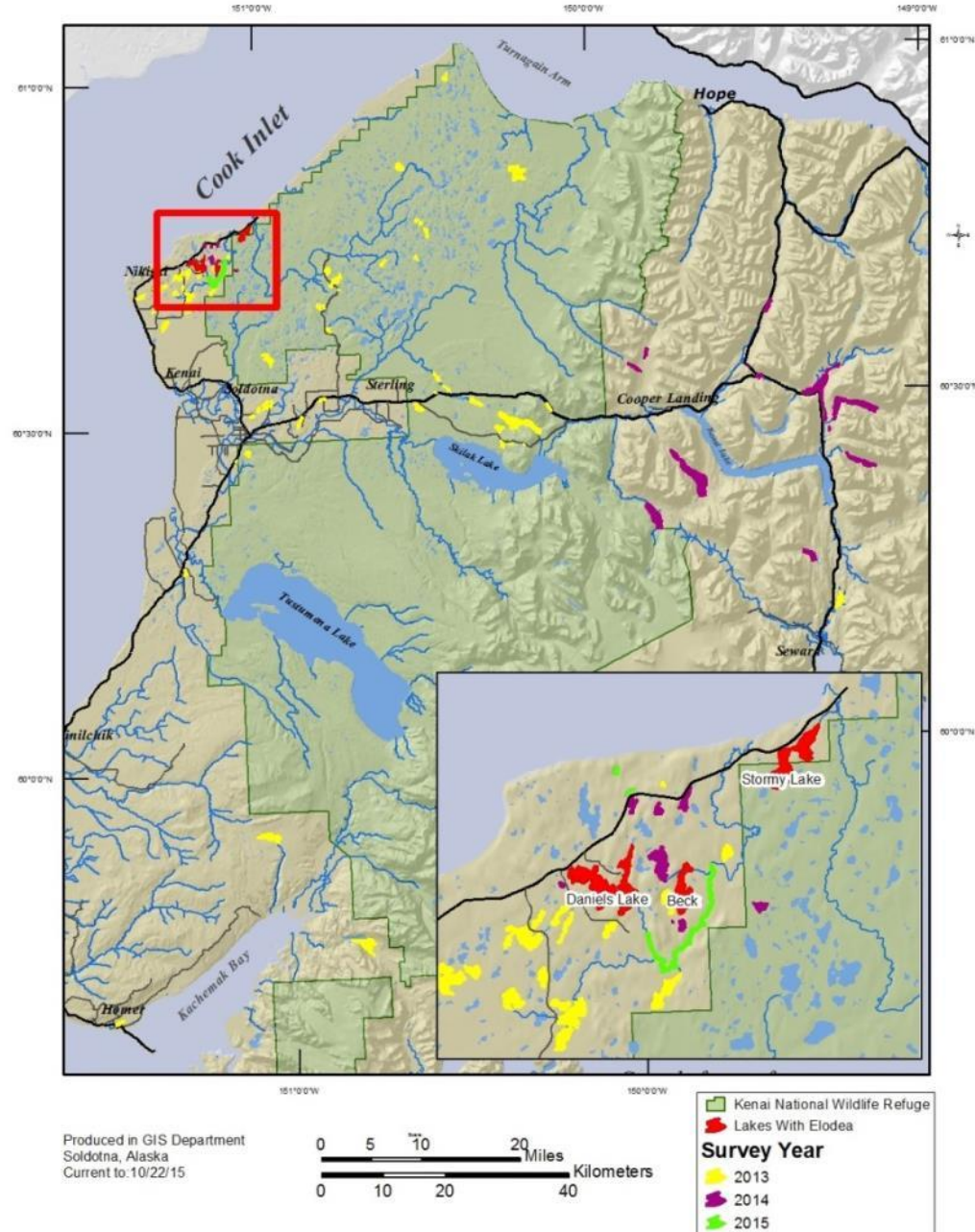
Safety: fouls float plane rudders and boat propellers

Economic: reduces property values by fouling launch sites and shore habitats





Surveyed >100 at-risk lakes before (and during) treatment to assess feasibility of peninsula-wide eradication...



INTEGRATED PEST MANAGEMENT PLAN FOR ERADICATING ELODEA FROM THE KENAI PENINSULA

April 2014

Prepared by
Elodea Subcommittee of the Kenai Peninsula Cooperative Weed Management Area

John M. Morton (USFWS Kenai National Wildlife Refuge, Soldotna)
Brianna N. Blackburn (AK Department of Natural Resources, Palmer)
Elizabeth Bella (USFWS Kenai National Wildlife Refuge, Soldotna)
Matt Steffy (Homer Soil & Water Conservation District, Homer)
Cheryl Anderson (USFWS Kenai Fish & Wildlife Field Office, Soldotna)
Rob Massengill (Alaska Department of Fish and Game, Soldotna)
Jack Blackwell (AK State Parks, Soldotna)
Lisa Ka'aihue (Cook Inlet Aquaculture Association, Kenai)
Rebecca Zulueta (Kenai Watershed Forum, Soldotna)
Janice Chumley (UAF Cooperative Extension Service, Soldotna)
Michele Aranquiz (Kenai Peninsula Borough Mayor's Office, Soldotna)
Cecil Rich (USFWS Regional Office, Anchorage)

In consultation with:

Lars Anderson (Waterweed Solutions, Davis)
Donald H. Les (University of Connecticut, Storrs)
Scott Schuler (SePRO Corporation, Carmel, IN)
Andrew Skibo (SePRO Corporation, Fort Collins, CO)



**Cooperative Weed
Management Area**



Fluridone kills elodea systemically and selectively with few nontarget effects

- ✓ Absorbed through roots and shoots (systemic)
- ✓ Inhibits photosynthesis and elodea is particularly sensitive (selective)
- ✓ Applied as liquid or slow-release pellets
- ✓ Degrades by photolysis, adsorption, absorption
- ✓ No restrictions on swimming, drinking or fishing
- ✓ Minimal irrigation precautions
- ✓ Needs to be in water column for 45 – 90 days



Four herbicide treatments over three years (2014-16) to eradicate elodea

	Beck	Stormy	Daniels	Cost
Acres	200	400	660 (100)	
Approach	WHOLE	WHOLE	PARTIAL	
June 2014	liquid/pellet fluridone	liquid/pellet fluridone	diquat pellet	\$360k
Sept 2014	pellet	pellet	pellet	
June 2015	pellet	pellet	pellet	\$144k
June 2016	pellet	pellet	pellet	\$116k
Cost	\$113K	\$320K	\$197K	\$620K

Funds received

Receiving Office	Funds Rec'd	Funding Source	Purpose
Kenai Fisheries Office (USFWS)	\$28K	KP Fish Habitat Partnership	Survey peninsula lakes
Kenai NWR (USFWS)	\$20K	USFWS R7 Invasive Species Management with Volunteers	Survey peninsula lakes
Kenai NWR (USFWS)	\$40K	Kenai Peninsula Borough	Support treatments
Kenai NWR (USFWS)	\$40K	National Fish and Wildlife Foundation	Support treatments
Kenai Peninsula Borough	\$400K	State capital funds appropriation	Support treatments
Kenai Fisheries Office (USFWS)	\$35K	USFWS R7 Aquatic Invasive Species Program	Nontarget effects study
Kenai NWR (USFWS)	\$120K	USFWS R7 Invasive Species Management with Volunteers	Support treatments
Kenai Watershed Forum	\$125K	KP Fish Habitat Partnership	Support treatments
Kenai NWR (USFWS)	\$90K	USFWS R7 One-time Invasive Species Funds	Support treatments



USFWS
BOATING
INSTRUCTOR

MAGNUM
River and Sea

HONDA
50



16 SPORTSMAN

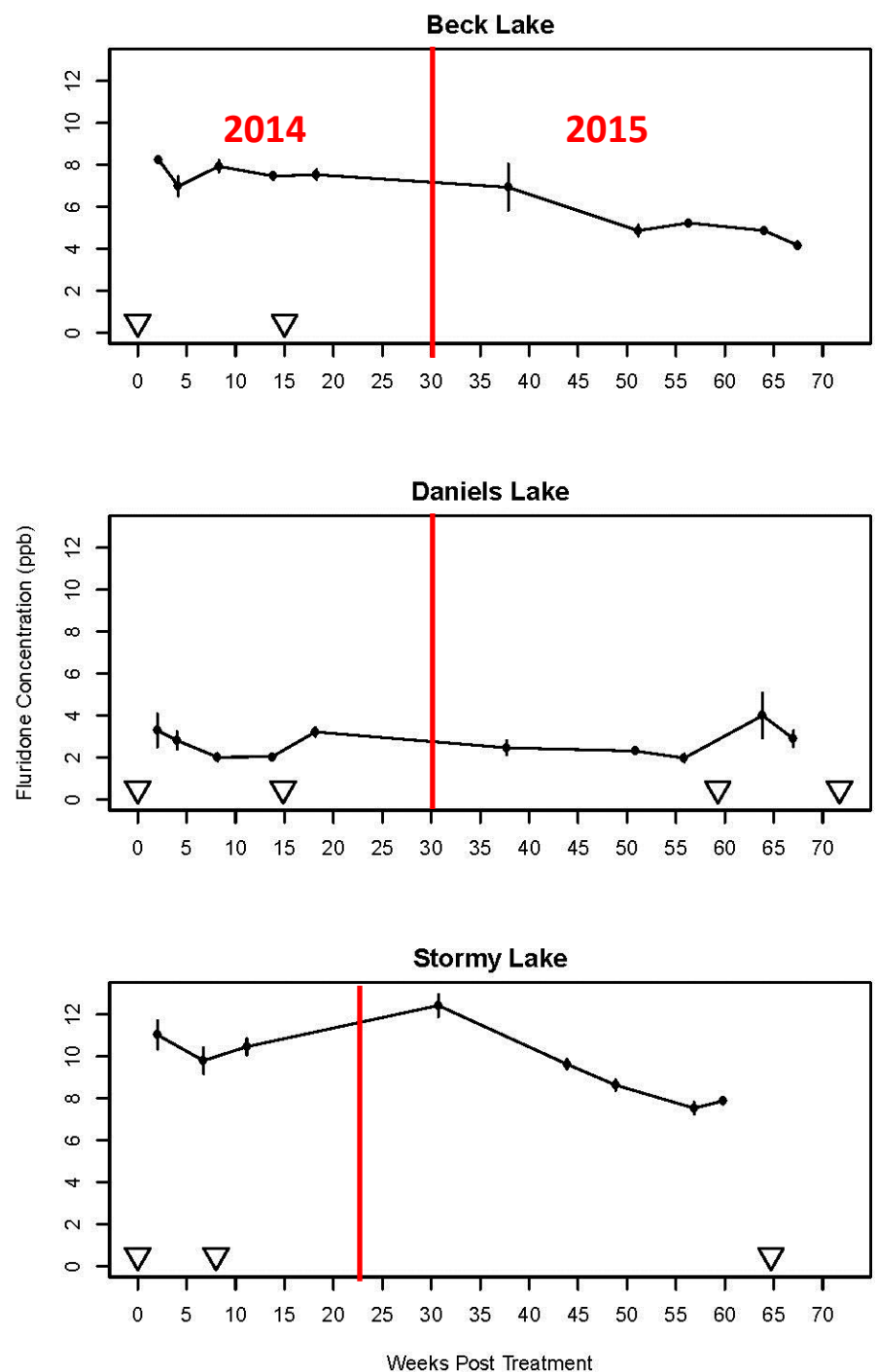
AK8821AG



Is it working?



- 1st application (Beck, Daniels) 3-4 Jun 14
- 1st application (Stormy) 23 Jul 14
- 2nd application (Beck, Daniels, Stormy) 16-17 Sep 14
- 3rd application (Daniels) 24 Jul 15
- 4th application (Daniels) 19 Oct 15



Is it working?



2 weeks (Stormy)

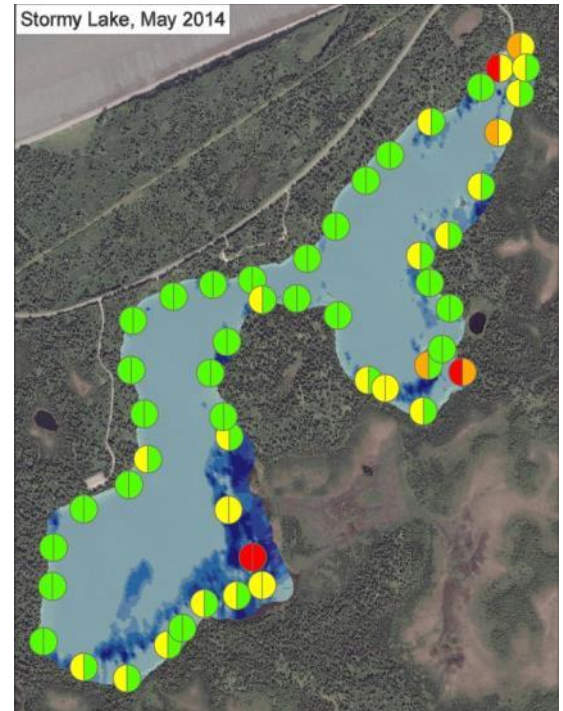
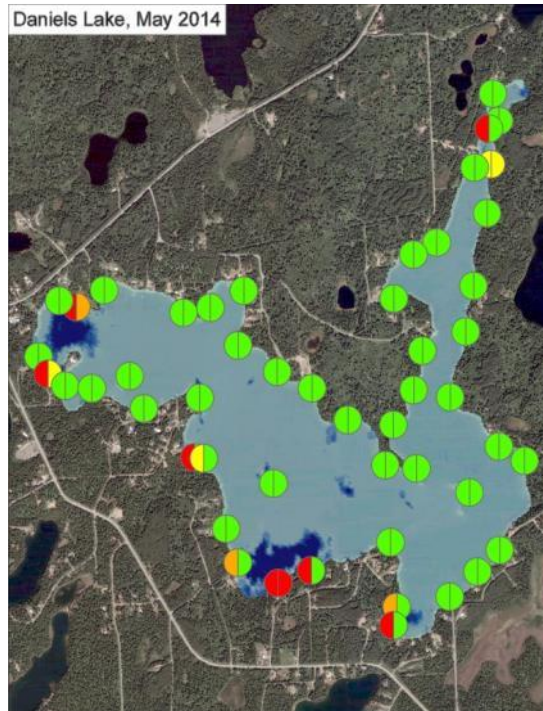
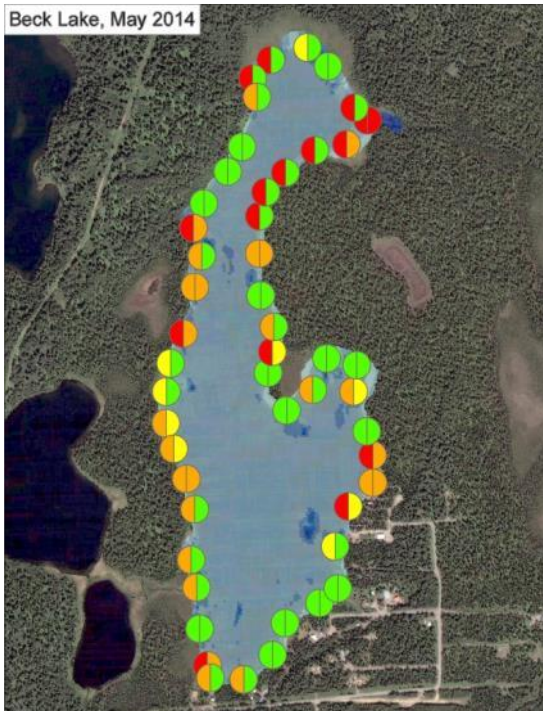


8 weeks (Beck)



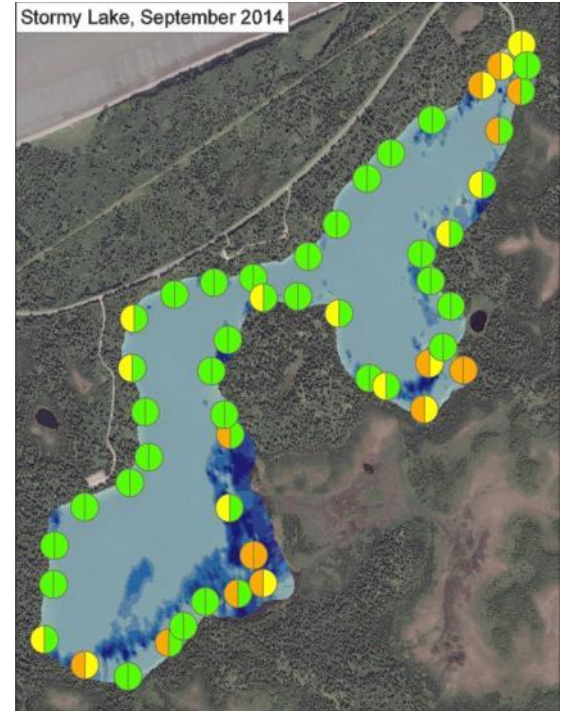
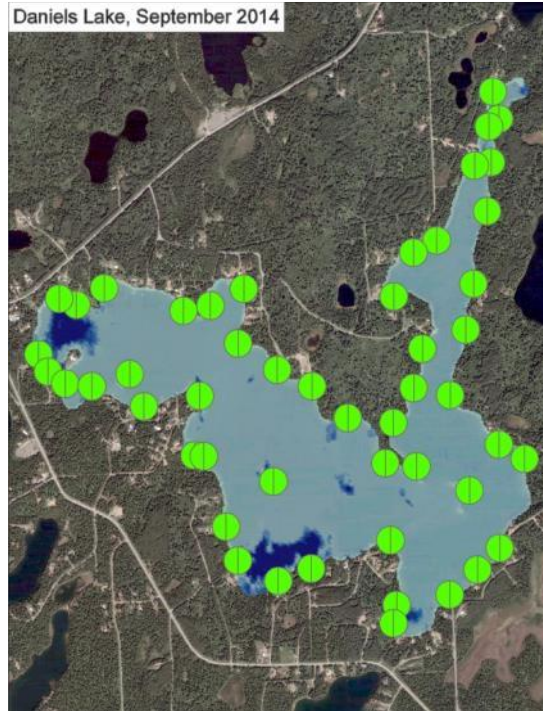
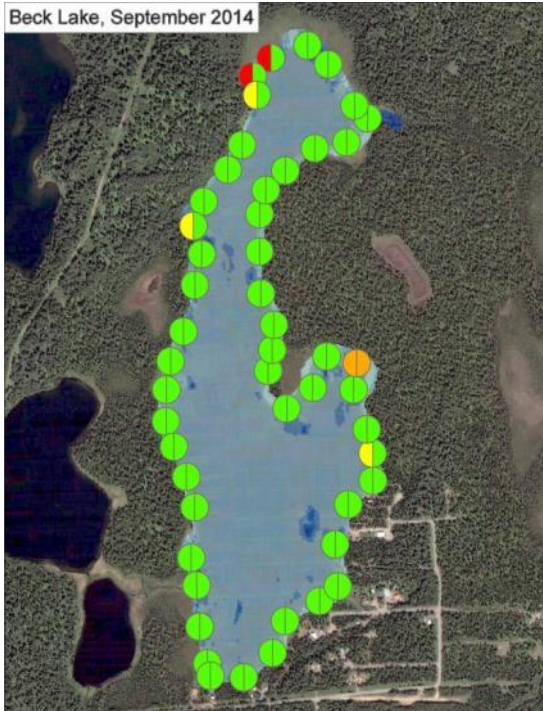
14 weeks (Beck)

Is it working?



SURVEY	LAKE		
	Beck	Daniels	Stormy
May 2014 (pre-trmt)	70	22	50

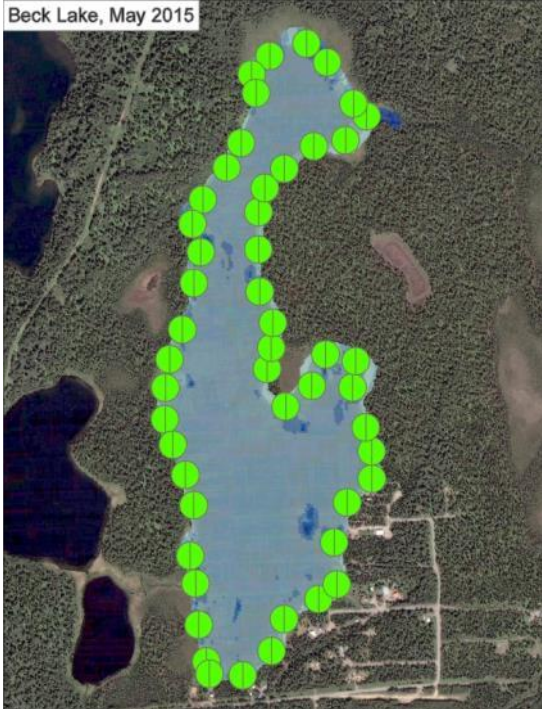
Is it working?



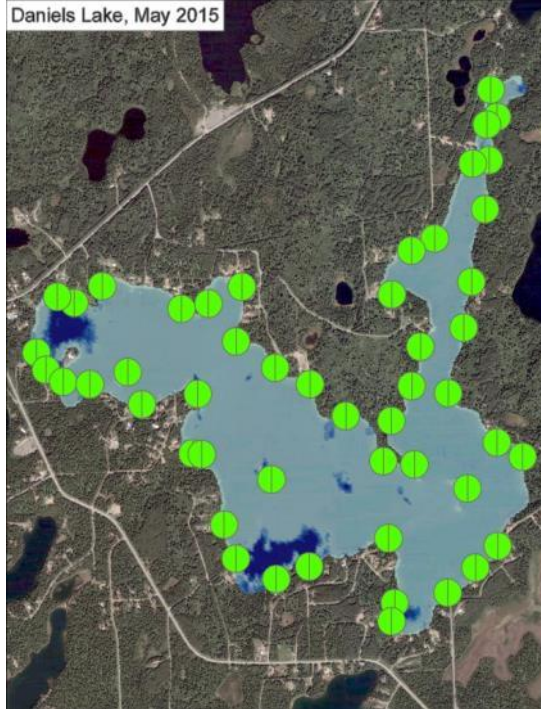
SURVEY	LAKE		
	Beck	Daniels	Stormy
May 2014 (pre-trmt)	70	22	50
Sept 2014 (post)	12	0	46

Is it working?

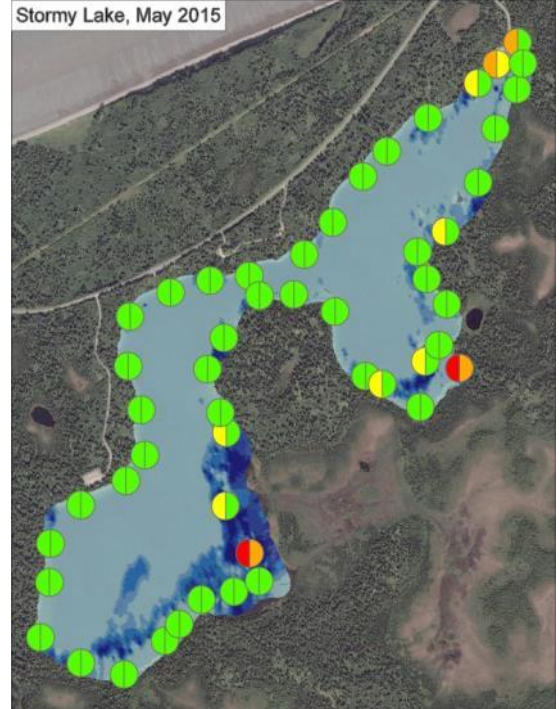
Beck Lake, May 2015



Daniels Lake, May 2015

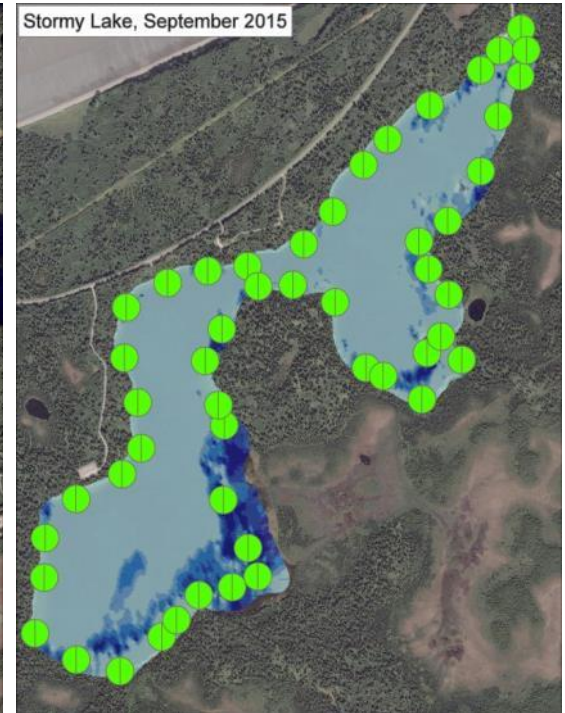
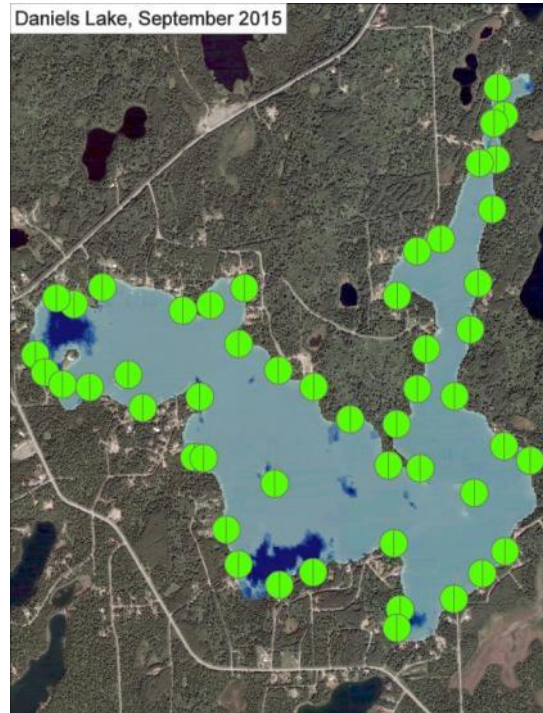
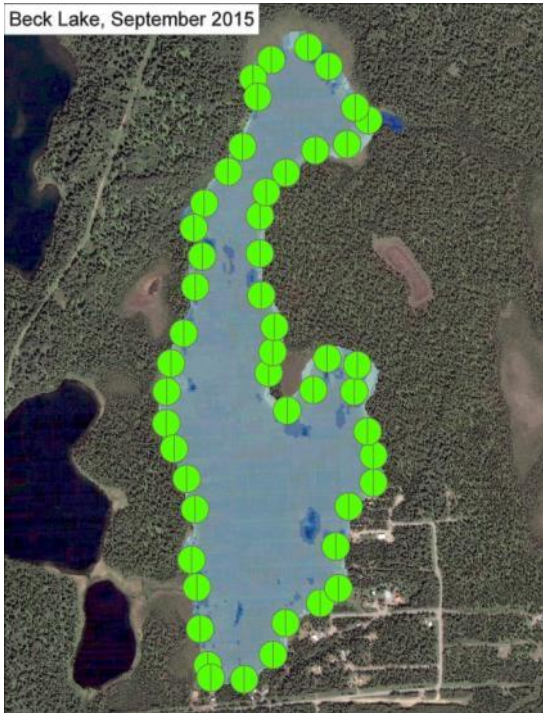


Stormy Lake, May 2015



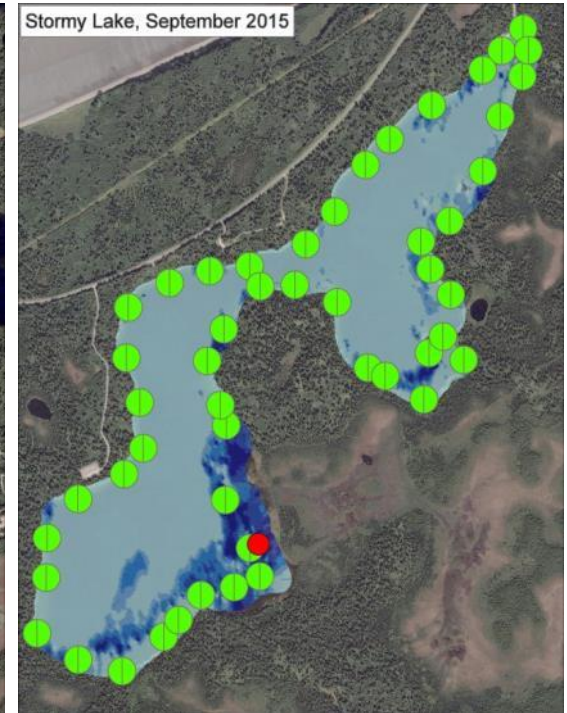
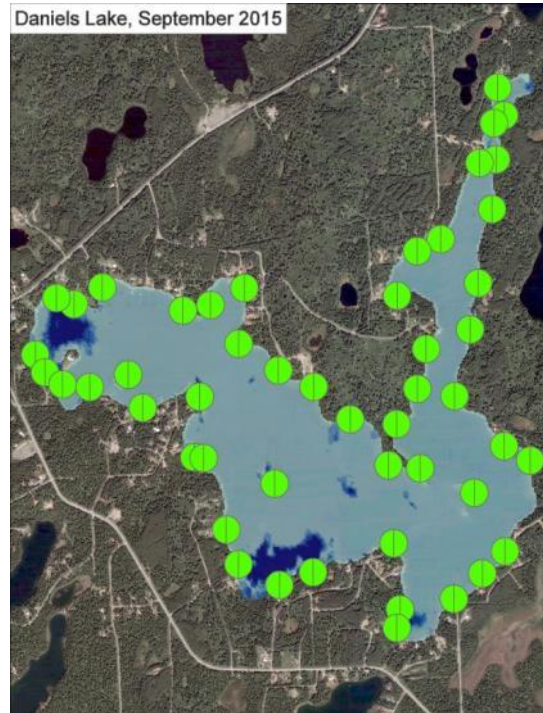
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Sept 2015 (post)	0	0	0*

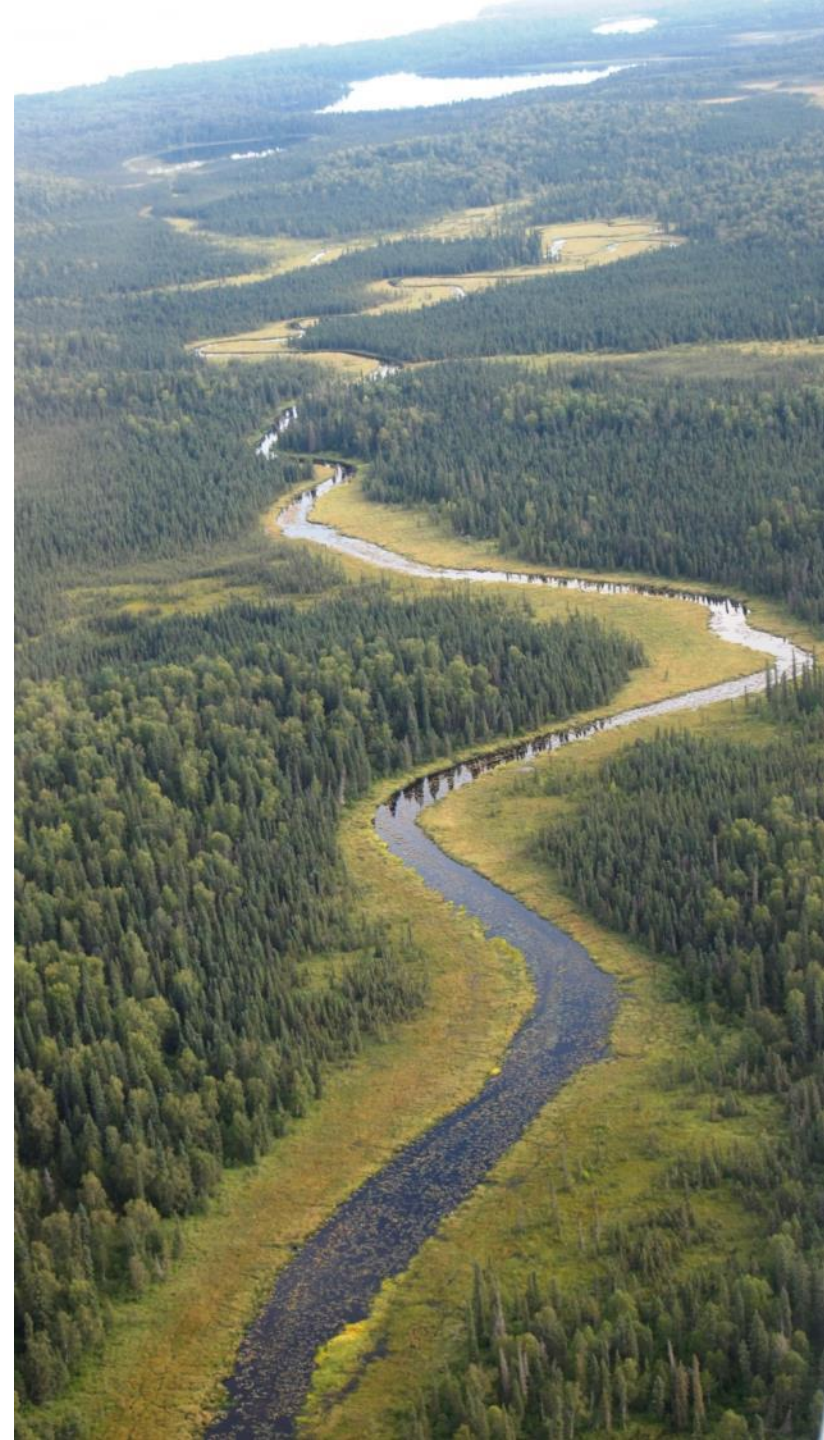
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May 2015 (post)	0	0	20
Sept 2015 (post)	0	0	0*

Next steps in 2016

- ✓ Continued monitoring to confirm success of eradication and assess post-treatment native flora response
- ✓ Herbicide residuals analysis with Wildlife International (Easton, MD)
- ✓ Continued fluridone sampling
- ✓ Re-open Stormy Lake boat launch in spring
- ✓ Continued outreach
- ✓ Continue working with other areas in the state



LAKE HOOD

Elodea Survey
June 24th, 2015

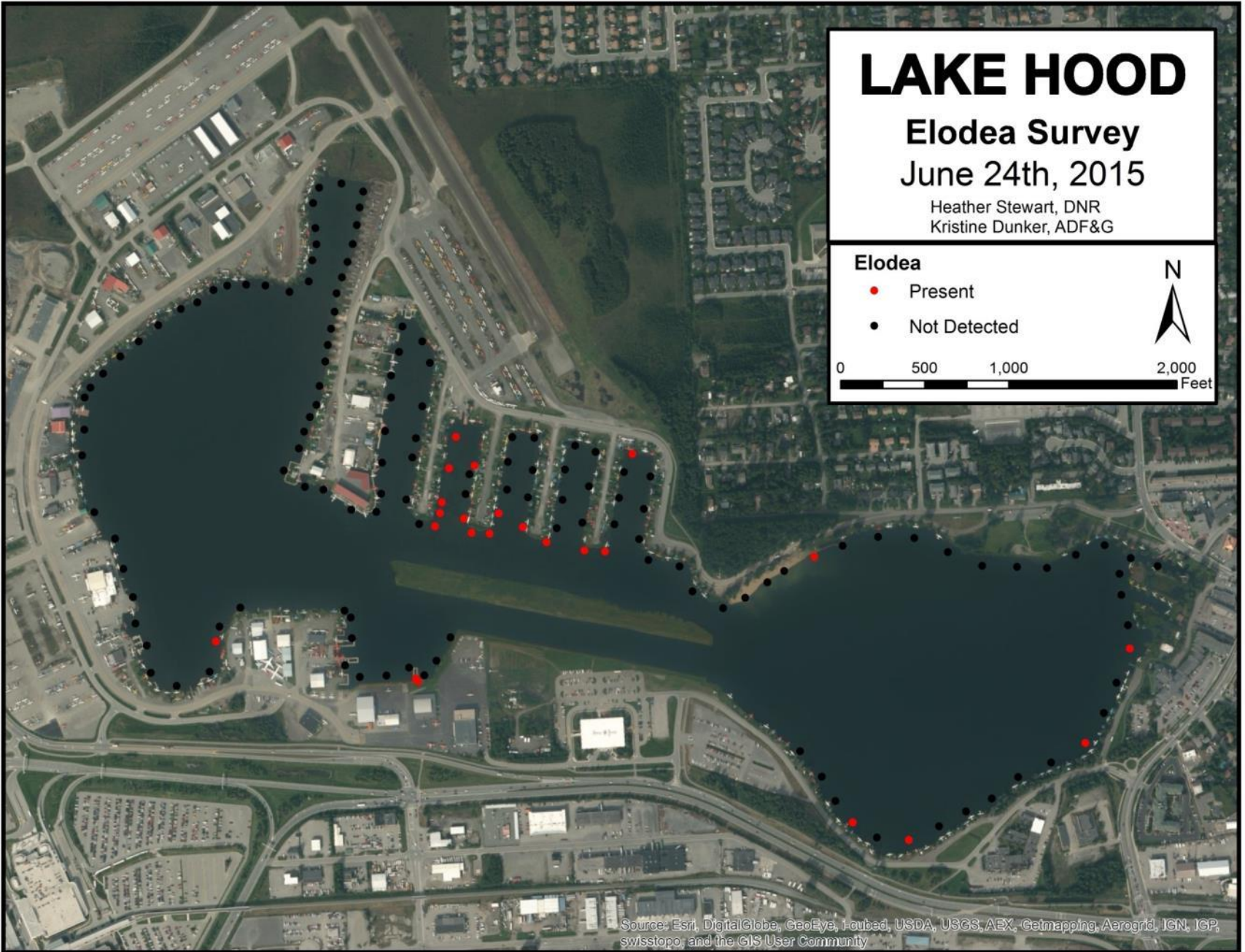
Heather Stewart, DNR
Kristine Dunker, ADF&G

Elodea

- Present
- Not Detected



0 500 1,000 2,000
Feet



Source: Esri, DigitalGlobe, GeoEye, iSat, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Thanks to KPB for support!

Questions???