

An Invasive Aquatic Plant, Elodea, Threatens Alaska's Fisheries and Aquatic Resources

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Benefits of native aquatic plants

- Food
- Habitat
- Cover
- Housing supplies
- Erosion control
- Nutrient cycling
- Resistance to invasion by exotic plants



Impacts of invasive aquatic plants

- **Safety:** *fouls float plane rudders/boat propellers*
- **Nuisance:** *impedes launching, navigation, and fishing*
- **Economic:** *reduces property values (up to 41%)*
- **Ecological**
 - *simplifies aquatic habitat structure*
 - *alters nutrient availability*
 - *overgrows native submerged plants*
 - *decreases stream velocity/increases sedimentation*
 - *can degrade salmon spawning habitat*
 - *alters predator-prey interactions*

Elodea carpet on Lake Harkort, Germany

Meet *Elodea*: Alaska's first known invasive submerged aquatic plant!

- *Popular aquarium plant (“oxygen weed”)*
- *Not native to Alaska*
- *In the same family as Hydrilla, Eurasian watermilfoil, Brazilian Elodea*

Elodea nuttallii



Elodea canadensis



Vectors

- Home and school aquaria
- Float planes
- Boat trailers and boats



Sand Lake, Anchorage

FIG. 1. An extreme example of the entanglement of aquatic macrophytes on recreational boats and trailers. The photograph was taken at the boat launch area of the Ensign Public Access Site, Lake St. Clair, Michigan, USA, in the summer of 1993.

In Johnson et al. 2001. Overland dispersal of aquatic invasive species: a risk assessment of transient recreational boating. *Ecological Applications* 11(6): 1789-1799.



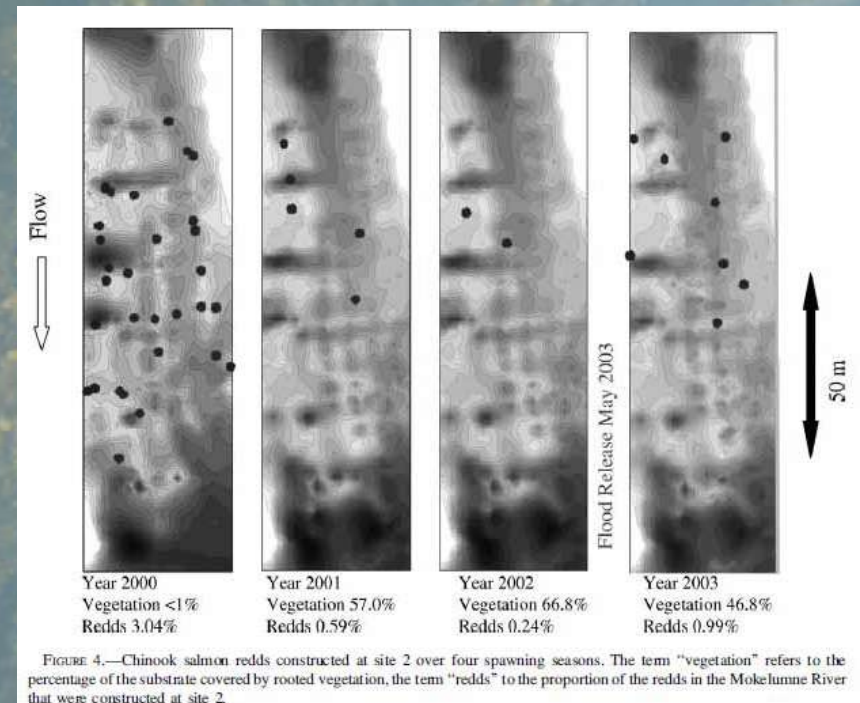
Physical and Chemical Impacts

Chinook salmon spawning areas impacted by *Elodea* (CA)

- Plants invaded spawning sites
- Female salmon avoided these areas
- Following flow event salmon spawning increased
- Merz et al. 2008

Sockeye salmon spawning/rearing impacted by Eurasian watermilfoil (BC)

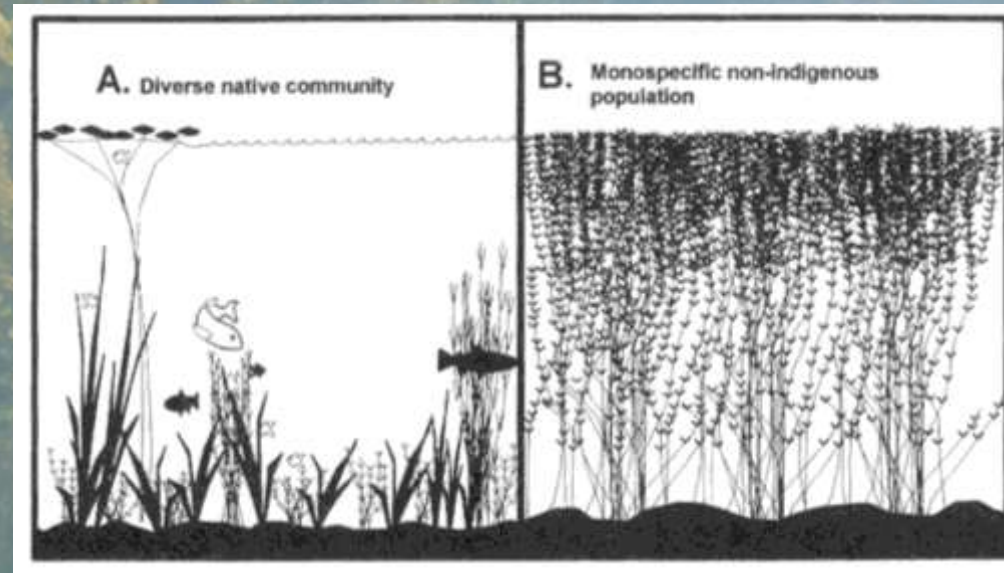
- Cultus Lake
 - “adversely affects sockeye spawning ground quality and quantity, decreasing the available spawning habitat. It also extends the rearing habitat for juvenile northern pikeminnow, perhaps increasing pikeminnow survival and consequently predation pressure on sockeye juveniles” (Newroth 1985; Mossop 2004)



Physical and Chemical Impacts

Habitats created by dense growth of invasive plants can favor nonnative fish species.

- Invasive Elodea species have been termed “ecosystem engineers” altering habitat structure
- Northern pike prefer highly vegetated areas (80+% vegetated) from which to ambush prey
- Elodea invasion may “pave the way” increasing habitat suitability for pike



Simplifies aquatic habitat & community

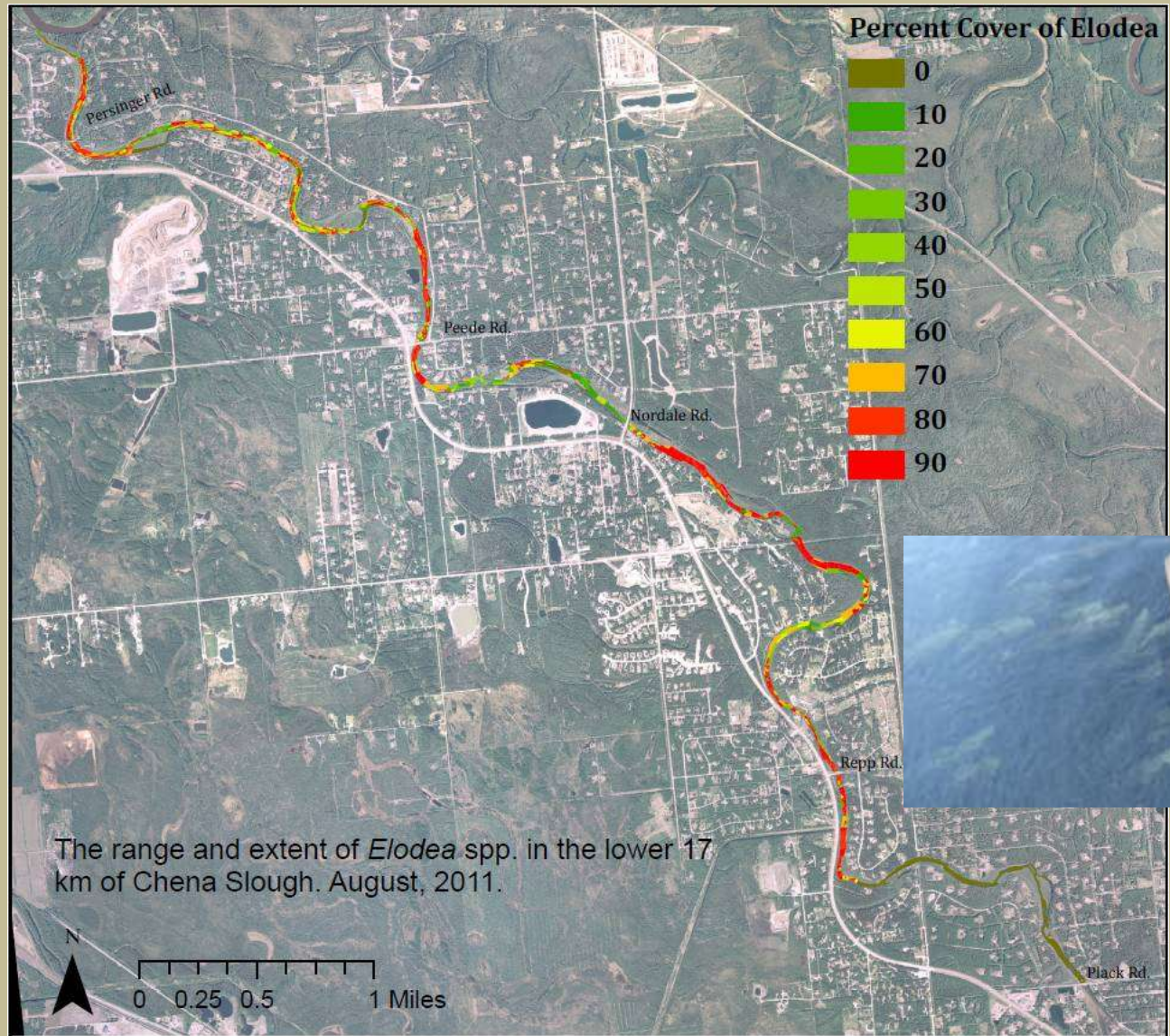
Dense growths of Elodea have been shown to have diel fluctuations of oxygen as much as 8 mg/l (Ondok et al. 1984) commonly dropping to <1-2 mg/l .

Known/Confirmed Locations

- **Fairbanks:**
 - Chena Slough
 - Chena River
 - Chena Lake



Chena Lake



Known/Confirmed Locations

- **Anchorage:**
 - *Little Campbell Lake*
 - *Delong Lake*
 - *Sand Lake*



Known/Confirmed Locations

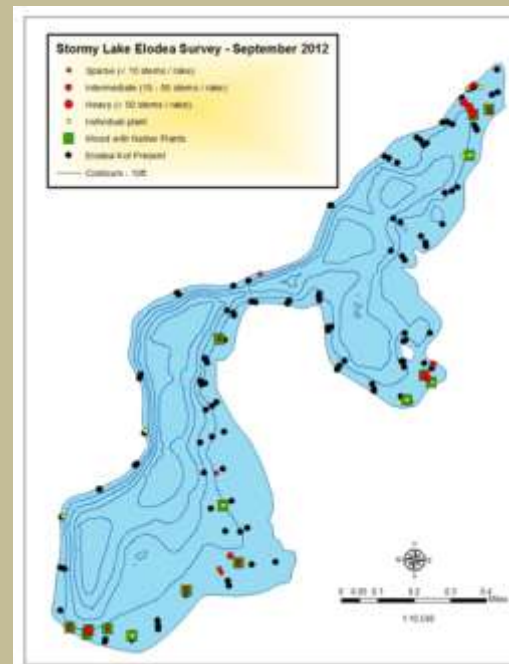
Cordova Area

- *Eyak Lake/River*
- *McKinley Lake*
- *Martin Lake*
- *Alaganik Slough*



Kenai Peninsula

- Stormy Lake
- Daniels Lake



Known/Confirmed Locations

Mat-Su

➤ *No detections so far!*

Efforts to date

- Surveys to document infested water bodies
- Feasibility trials of mechanical control efforts
 - *Fairbanks working group tested control methods (manual hand cutting and suction dredging trials)*
- Localized public outreach
- Formation of statewide coordination/outreach groups
- Elodea focus: 2011 and 2012 AK Invasive Species Conference
- Elodea presentations at 2012 American Fisheries Society meeting
- Development of BMPs for culvert replacement projects where Elodea is present-Chena Slough
- Legislative appropriation 2012 – Anchorage and Fairbanks
- DNR, Division of Agriculture as state lead

Next Steps

- Develop Statewide Elodea Action Group
 - *Response plan*
 - *Coordinate implementation of plan*
 - *Secure funding for eradication(s)*
- Broaden scope of physical surveys
- Communication group will
 - *generate support and capacity for response*
 - *create educational materials about preventing further spread and new introductions*

How you can help

- Recognize and report Elodea (and other invasives)
 - *Float plane operator, field crews, boaters, anglers, guides...*
 - *Introduction to Common Native and Potential Invasive Freshwater Plants in Alaska. Copies? tammy.davis@alaska.gov*
Also available online.
- Report sightings : 1-877-INVASIV



How you can help

- Support prevention, control, and eradication efforts
- Don't dump aquarium life in waterbodies or move aquatic life between waterbodies
- Clean your plane/boat /trailer before entering/leaving a waterbody: <http://www.protectyourwaters.net/>



Protect Your Waters

Protect Your Waters and Stop Aquatic Hitchhikers!

Welcome to a site for recreational users who want to help stop aquatic invasive species. In Minnesota, we love to spend time on the water. Protecting these resources is an important part of our natural enjoyment. A concern we must all address is the spreading of harmful plants, animals and other organisms. These aquatic nuisance species can take a toll on our fishing, boating, and other water activities. When we go to another lake or stream, the nuisance species can be released. And, if the conditions are right, these introduced species can become established and create other results.

So what can we do? By following a simple procedure each time we leave the water, we can stop aquatic hitchhikers. Knowing which waters contain nuisance hitchhikers is not an option — as doing the procedure every time we leave any lake, stream or coastal area. Click on the link for details on what to do!

Simple Procedures

- Remove all plants and animals from your boat, kayak, canoe or watercraft
- Drain all water from your boat, kayak, canoe or watercraft
- Clean and dry your boat, kayak, canoe or watercraft with a brush, hose, and clean water
- Don't release plants, fish or animals into a body of water unless they came out of that body of water



Stop Aquatic Hitchhikers!
Click on the link below

Take home messages

- Alaska's lakes and slow moving rivers are at risk – GET INVOLVED. *Elodea* will impact the value of Alaskan freshwater ecosystems, aesthetics, recreational, subsistence, and commercial opportunities.
- We have a short window of opportunity to eradicate *Elodea* in some locations and stop spread/introductions into others. Without human intervention *Elodea* will spread
- We need to act fast: a coordinated effort between agencies, NGOs, recreationalists, pilots, field crews etc.
- There are safe and effective ways to eradicate *Elodea*. Support those efforts
- Spread the word, not the weed!

Acknowledgements

Elodea Statewide Coordination group and others interested/involved with initial Elodea efforts.

Thanks!

What needs to be done?

- Vigilance: detection of additional infestations
- Education to prevent spread/new introductions
- Total eradication where feasible (herbicides)
- Control to prevent spread where eradication isn't possible
- Regulation – prohibit species from being sold in AK



Coordination!