

Preserving Alaska's resources by managing invasive species.



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What is at stake?

- Infrastructure:

- Hydropower facilities:
 - 21% of the state's power
- Watercraft:
 - 68,616 registered watercraft (1/every 9 Alaskans)
 - **\$587M** annual economic impact
- Floatplanes:
 - 114 floatplane bases (40% of all towns)
 - Lake Hood floatplane base
 - ✓ **\$56 Million** (labor + economic activity)

- Food security and industries

- Sport fishing - \$2.4B
- Salmon commercial fisheries - \$4.2B
- 229 Federally recognized tribes, 12 ANCs
- Hunting and wildlife viewing - \$7.5B





▼ Legend

Non-native plant occurrence

14580132175

Number of species present

▼ Map tools

Visualize on

Number of species present ▼

 Polygon tool

Location types

☒ Non-native plant population detected in most recent survey

☐ No high-priority non-native plant populations detected in most recent survey

☐ No non-native plant population detected in most recent survey

Download all data

▼ Species

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Invasiveness Category

All ▼

Species

Invasiveness

Downloads

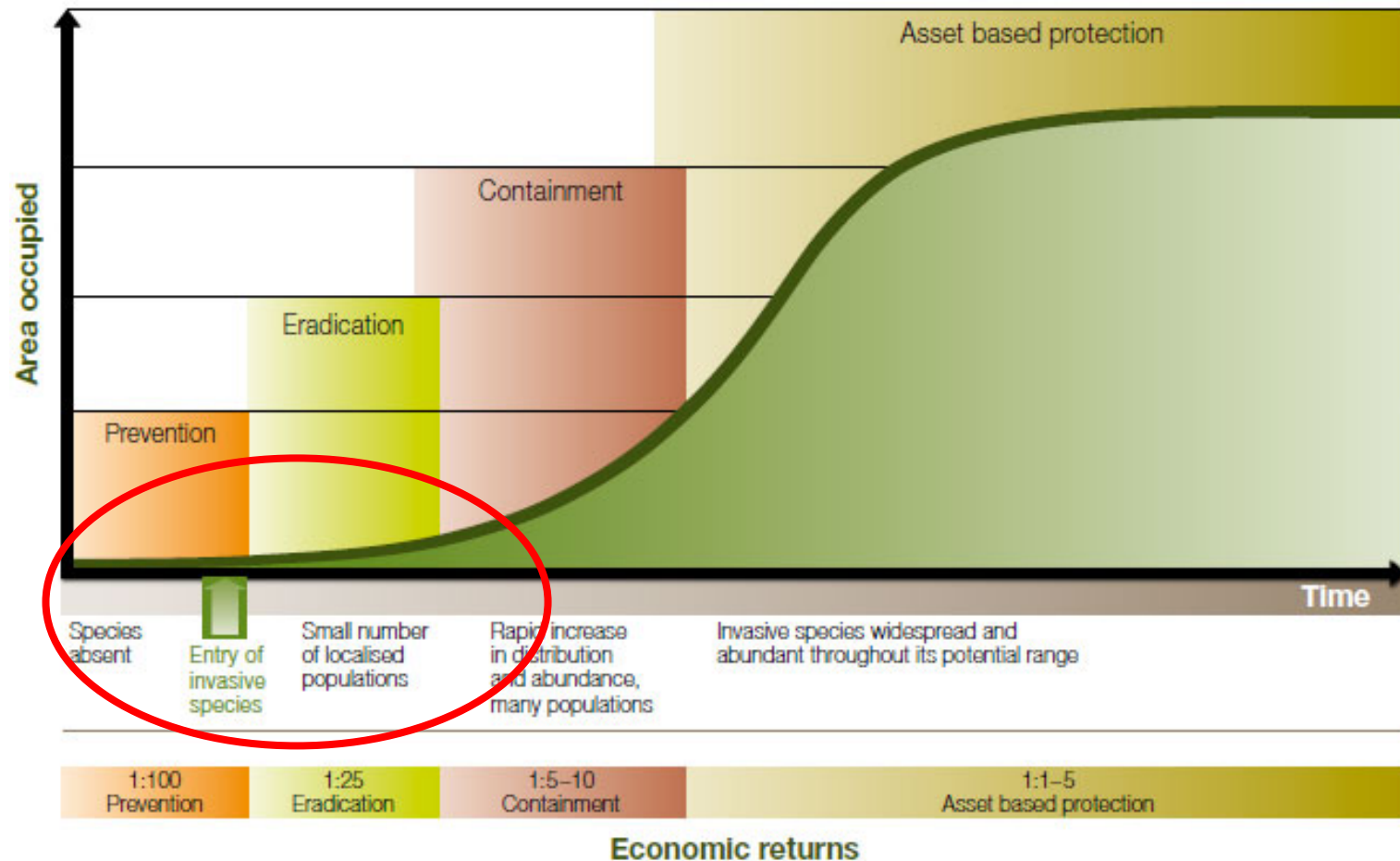
☒ *Acer negundo* L.
boxelder

69 5352 -172 5195

200 mi

Map data © Mapbox © OpenStreetMap Improve this map

Credit: State of Victoria, Department of Primary Industries, 2010.



First step in prevention is to understand risk
= vectors and suitability.

Prevention: Quagga and Zebra Mussels

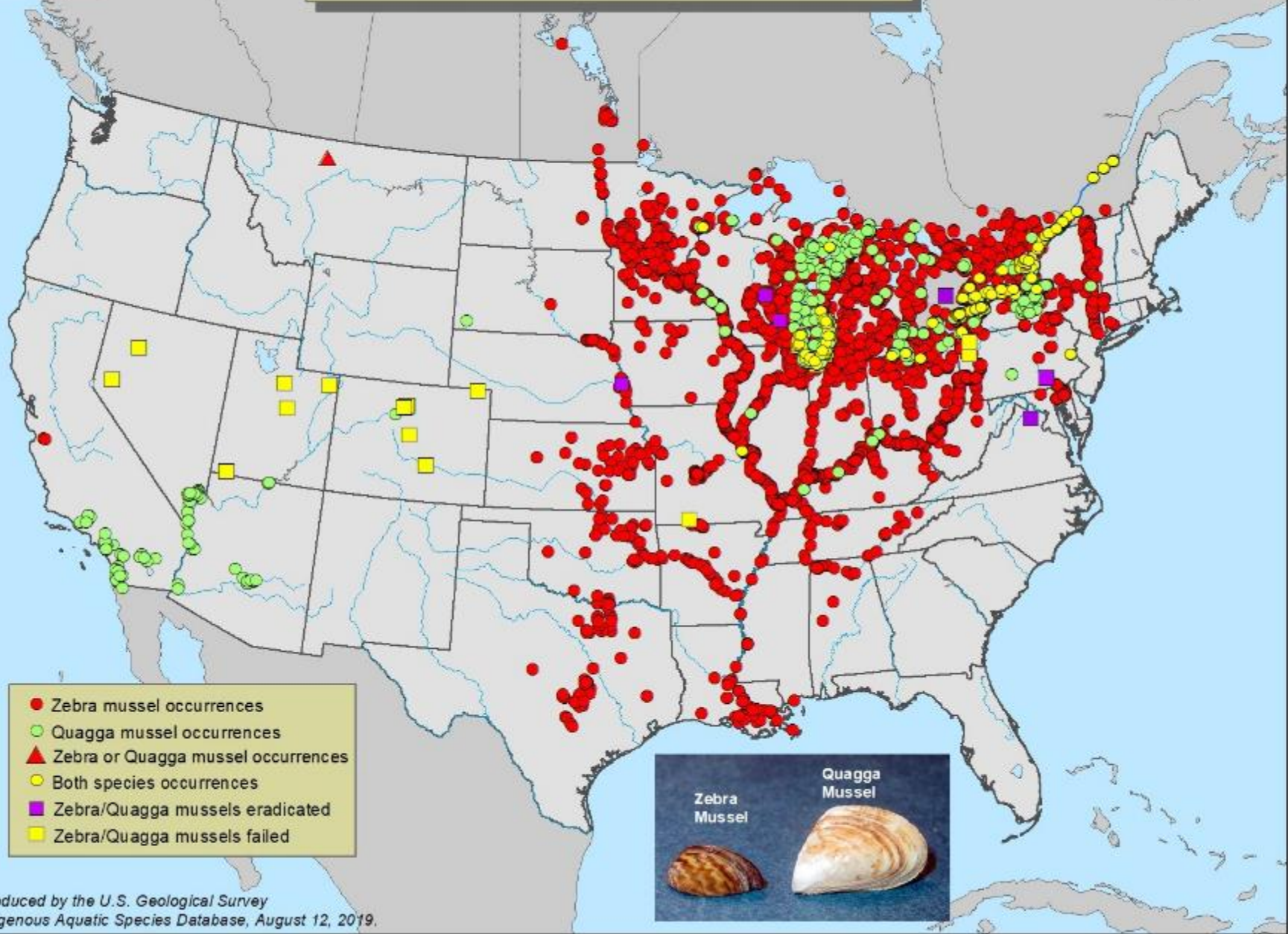


Zebra Mussels



Quagga Mussels

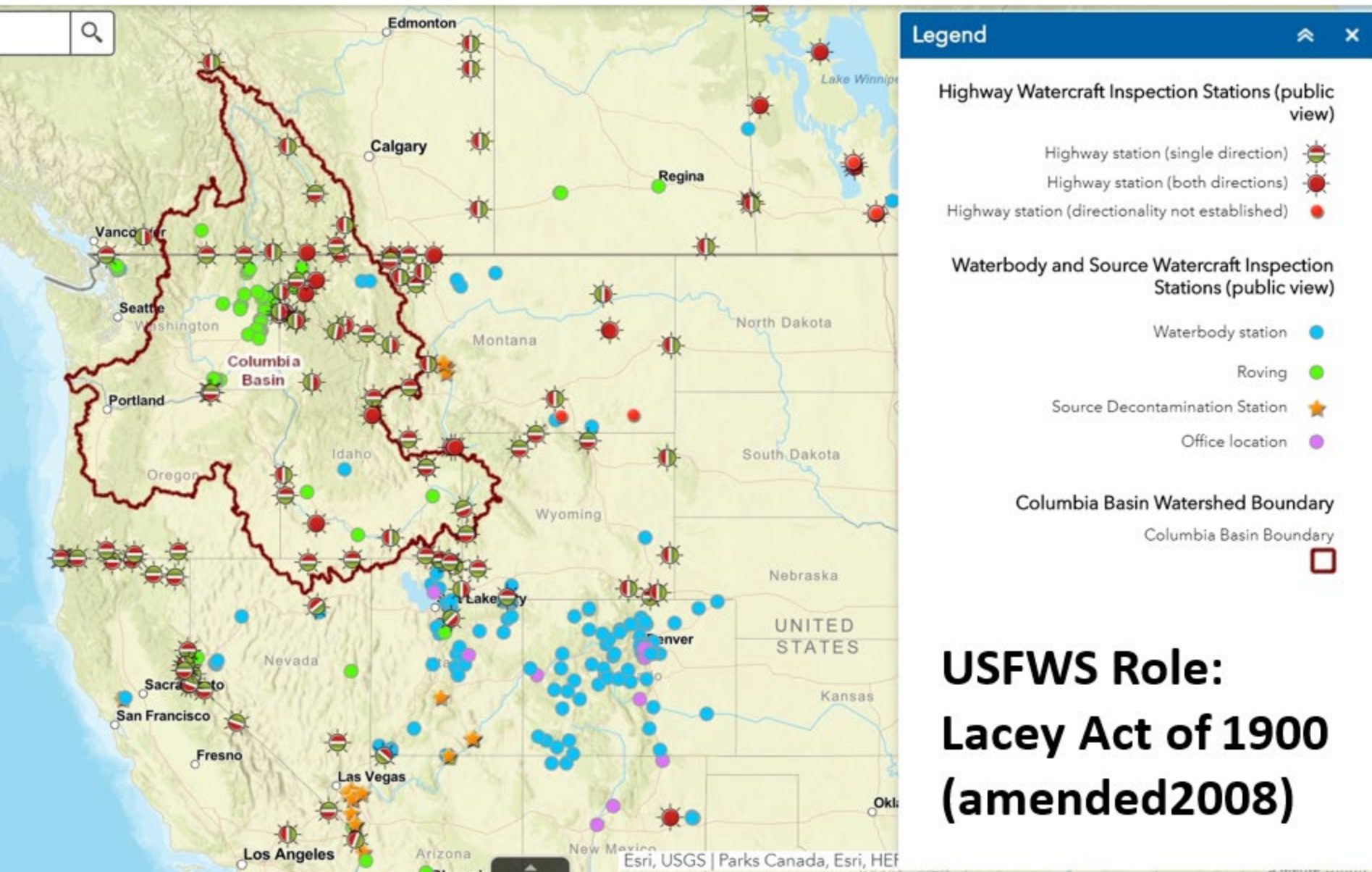
Zebra and Quagga Mussel Sightings Distribution *Dreissena polymorpha* and *D. rostriformis bugensis*



- Zebra mussel occurrences
- Quagga mussel occurrences
- ▲ Zebra or Quagga mussel occurrences
- Both species occurrences
- Zebra/Quagga mussels eradicated
- Zebra/Quagga mussels failed



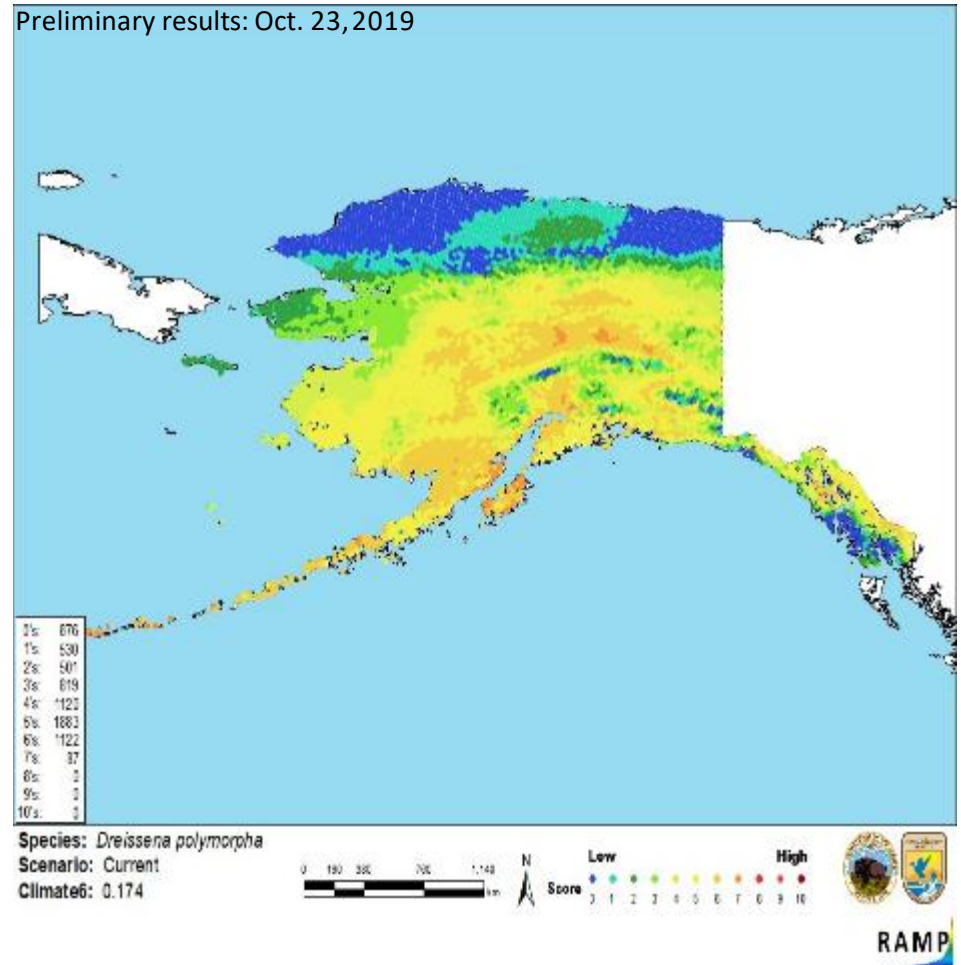
Western Watercraft Inspection and Decontamination Stations



Results



- Research suggests high habitat suitability for invasive mollusks.
- No confirmed reports of invasive mollusks **in the wild**.
 - Smith et al. 2005
 - D. Bogan 2012 – AKISP presentation Kodiak 2012



- Alaska has 3 native mussels and 21% of state's power comes from hydropower facilities.
- 226 watercraft inspected (2017-19) at Alcan Port of Entry:
 - 70% not inspected in route, 30% inspected in-route
 - 38% coming from a state with Q/Z mussels, 62% coming from states without
- No live mussels detected yet, but...
- Currently assessing other critical control points in BC, WA, and OR.

Sailboat being decontaminated, Tok AK July 2019



PSA – Zebra Mussels in moss balls

March 3, 2021



U.S. Fish & Wildlife Service

Fish and Aquatic Conservation

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Destroy! Don't Dump!

Invasive zebra mussels have been found in "moss balls," an aquarium plant product sold at aquarium and pet supply stores. Zebra mussels are regarded as one of the most destructive invasive species in North America.

Zebra mussels can quickly take over once they get established in a waterbody and cause significant damage including disrupting the food chain, changing the chemistry of the water (which can cause more blue green algae outbreaks or offensive taste), and clogging water intake and delivery systems. The concern is that live mussels released into a storm drain or flushed could be introduced into a waterway.

Quick Links

- [Aquatic Nuisance Species Task Force](#)
- [Habitattitude](#)
- [Stop Aquatic Hitchhikers](#)
- [Aquatic Invasive Species Coordinators](#)



Moss ball and Zebra mussel. Photo by IUFW

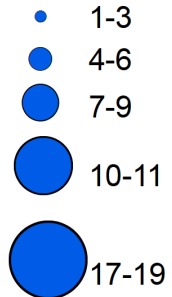


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Originating locations of watercraft crossing into AK, summer 2017-2019

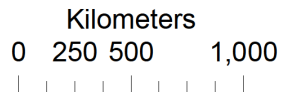
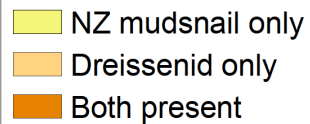
Legend

Number of watercraft



Alcan border

Infected states



STOP AQUATIC HITCHHIKERS!
Be A Good Steward.
Clean. Drain. Dry.
StopAquaticHitchhikers.org

Keep Alaska Wild & Free of Invasive Species

Green leaves in clusters of 3, occasionally 4 →

Elodea

Long trailing stem →

Grows in a tangled mass
Can survive when frozen in ice
Endangers safe float plane operation
Degrades fish habitat and displaces native plants
By law, cannot be brought into or moved around the state
Can form new plants from broken segments, roots, and seeds
Makes boat travel difficult and reduces recreation opportunities



Prevention and Eradication: Elodea

- Background:

- Alaska's 1st submerged aquatic invasive plant
 - Native to the Pacific Northwest and New England
- Introduced through aquarium dumps

- Impacts:

- Habitat degradation/ loss for fish and wetland obligate species
- Reduced biodiversity, fishing opportunities, floatplane and watercraft safety
- Increased sedimentation



FAIRBANKS SOIL & WATER
CONSERVATION DISTRICT



Homer Soil & Water
CONSERVATION DISTRICT

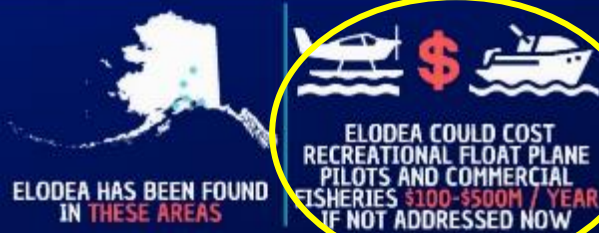
Keep Alaska Wild & Free of Invasive Species

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✓ CLEAN	✓ DRAIN	✓ DRY
Remove all visible mud, plants, and fish/animals from equipment	Eliminate water from all equipment before transporting; pull the plug	Dry everything for at least five days OR dry thoroughly before next launch

Report anything suspected to be an **invasive species**:

- Note its location: Get GPS coordinates
- Describe its habitat
- Snap some photos

INVASIVE HOTLINE: 1-877-INVASIV (468-2748)

Prevention and Eradication: Elodea

• Economic analysis:

- Impact Potential: Annual loss of \$159M to the sockeye salmon fisheries if not stopped (Schwoerer et al 2019).
- Ship-borne AIS impacts in the Great Lakes: Annual cumulative loss of \$138M/year to sportfishing, commercial fishing and water use. (Rothlisberger et al 2019).

Photo credit: Jason Ching



Photo credit: USFWS



Known Elodea Infestations in Alaska

Eradication
in progress

Manley Slough
Bathing Beauty Pond
Birch Lake
Chislom Lake
Harding Lake
Piledriver Slough

Fairbanks:
Chena Slough
Chena River
Chena Lake
Totchaket Slough

Anchorage:
~~Lake Hood~~
~~Sand Lake~~
~~Little Campbell Lake~~
~~Delong Lake~~
Potters Marsh
Jewell Lake

Eradication
in progress

Eradication
beginning
2020

Mat-Su:
Alexander Lake
Sucker Lake Complex
Big Lake

Cordova:
Eyak Lake
Eyak River System
Bering Lake
McKinley Lake
Martin Lakes
Odiak Lagoon
Wooded Pond
~~Wrong Way Pond~~
Alaganik Slough System

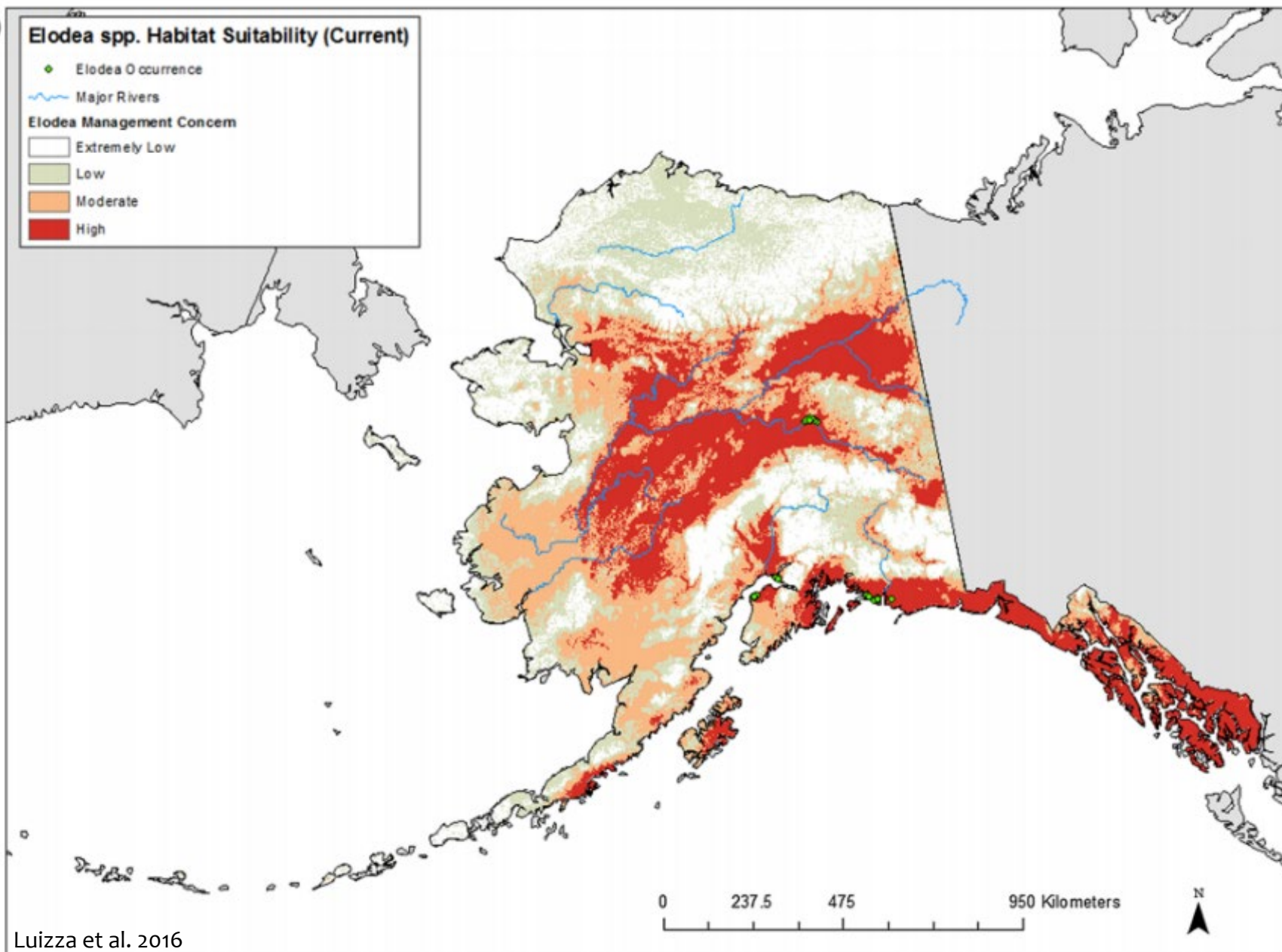
Eradication
in progress
by USFS

Kenai Peninsula:

~~Stormy Lake~~
~~Daniels Lake~~
~~Beck Lake~~
North South Lakes
~~Sport Lake~~

Sandpiper Lake
Eradication
beginning
2020

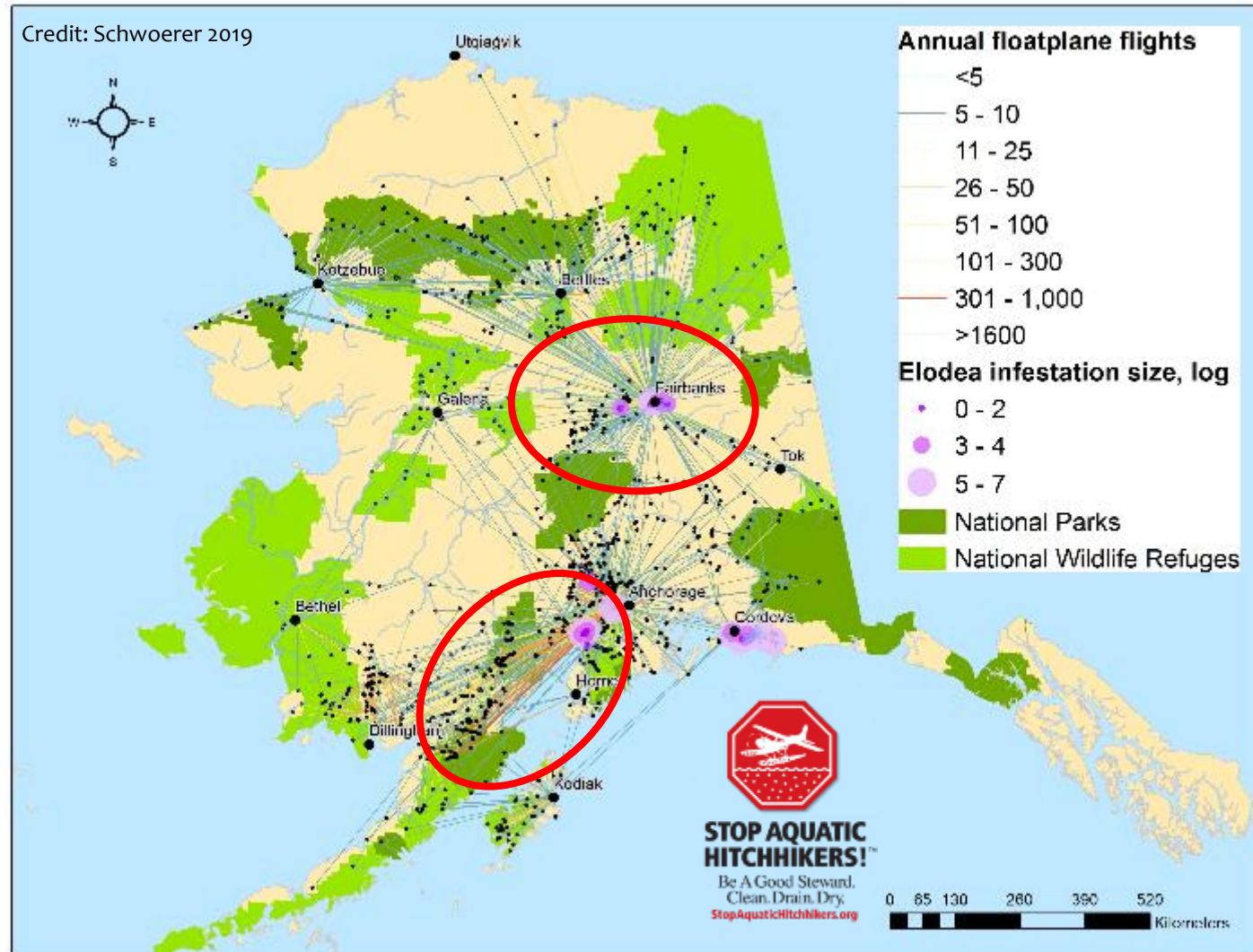
(a)



Freshwater Vectors – Floatplanes

16

Floatplanes' first-leg flight paths between freshwater start and destination locations. Data from a survey with pilots about their 2015 flights. Schwoerer et al. 2017.

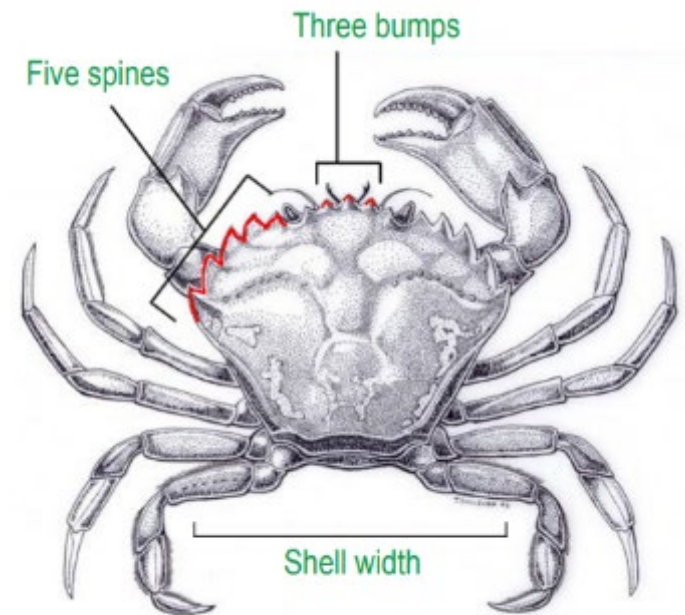
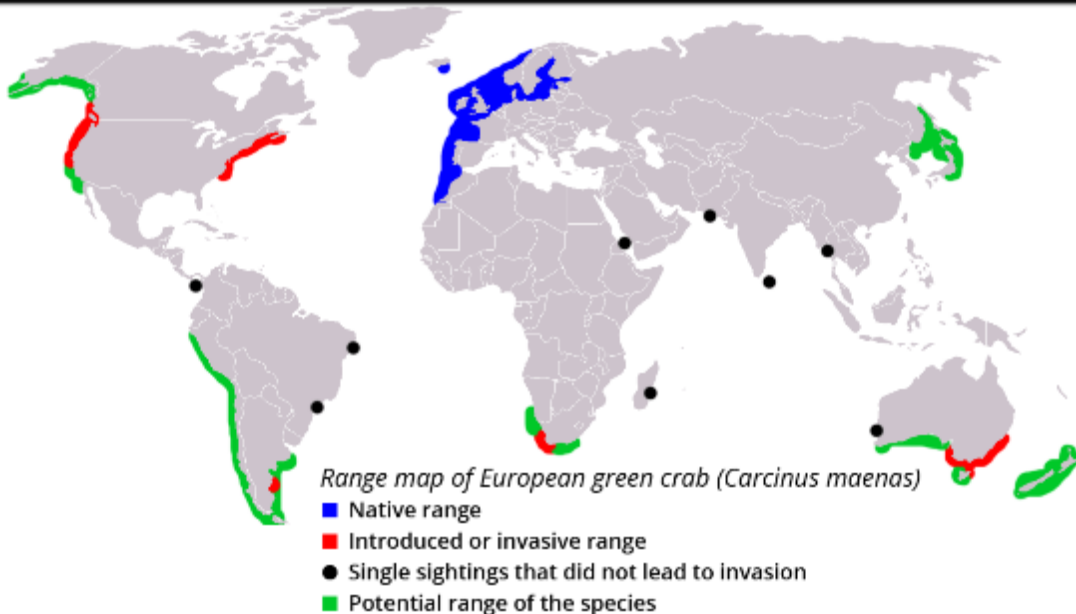


Prevention and Preparedness: European Green Crabs

- Introduced through ballast water and now currents
- Considered one of world's worst 100
- Impacts:
 - Eats native oysters, clams, mussels
 - Damages estuaries and bays

European green crab in Puget Sound

one Green Crab Vetting Kit Outfit



Green crabs can be identified by their unique shell shape. Adults can have shells up to four inches across in width.

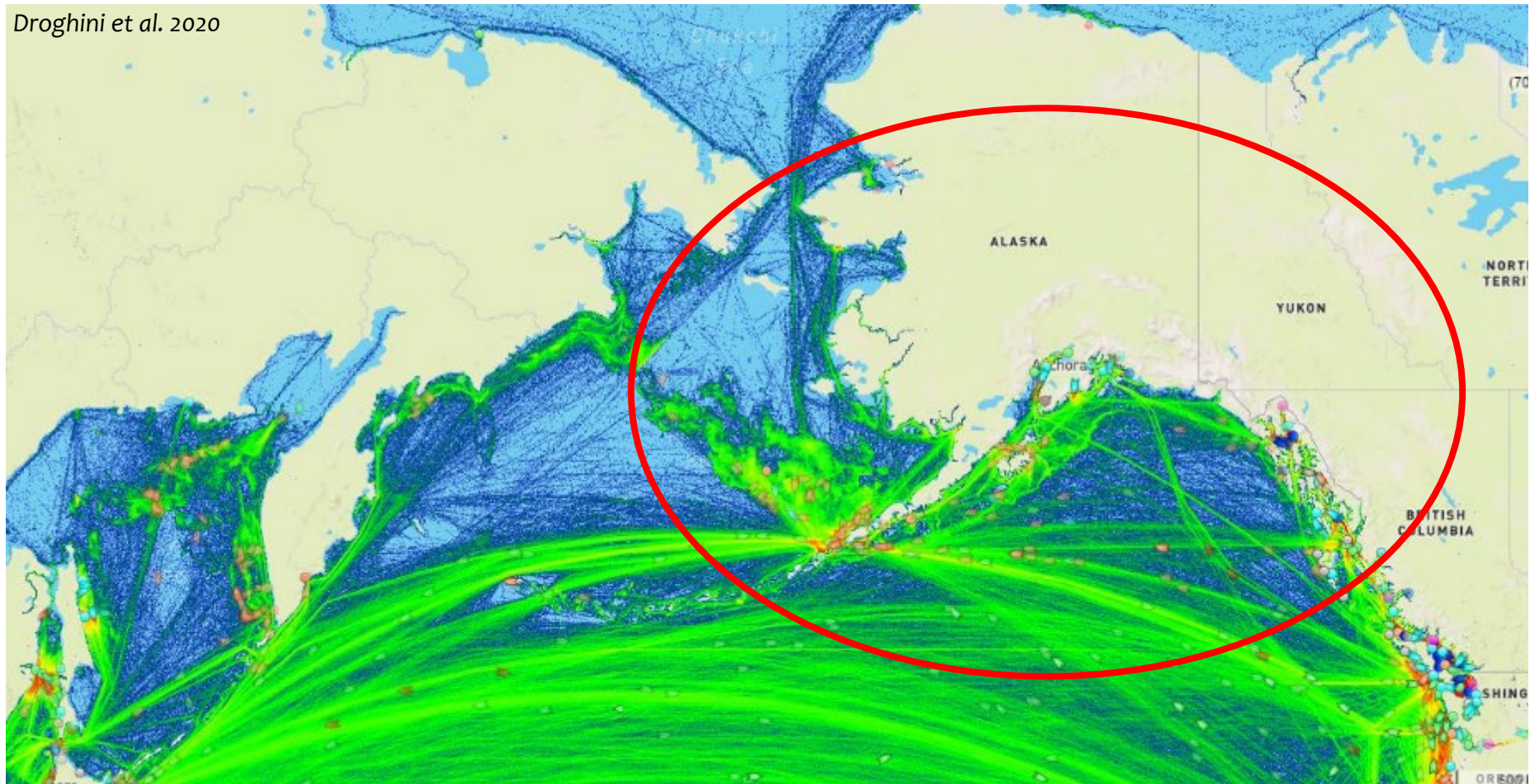
Credit: NOAA



Prevention and Preparedness: European Green Crabs

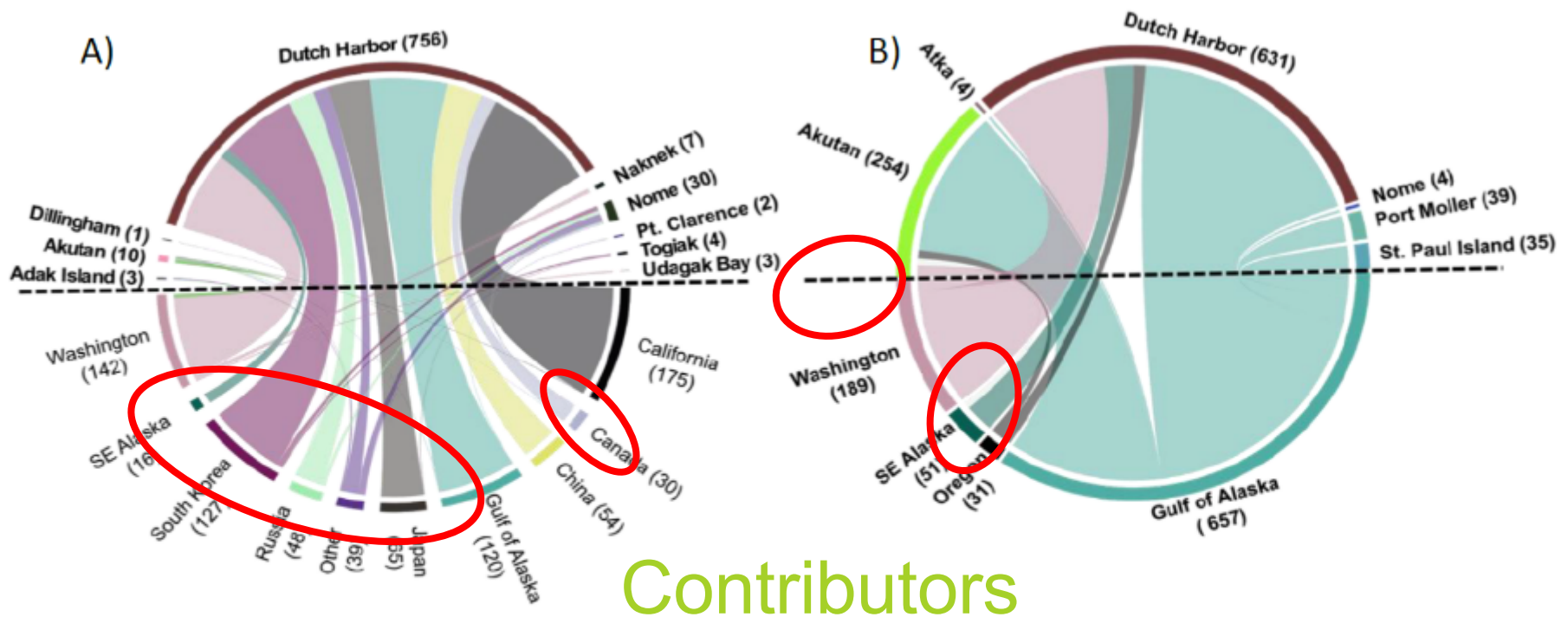
Commercial boating traffic in the North Pacific (2015).

Droghini et al. 2020



Prevention and Preparedness: European Green Crabs

Receivers



Transit origins outside of the Bering Sea and the Bering Sea destination, 2014-2016 for **A) all marine vessels** and **B) commercial fishing vessels**.

Key Takeaways

- Alaska's way of life and industries are at risk.
- Keep invasive species diversity and distribution low.
- Solidify foundation:
 - Increase awareness and prevention
 - Build on organization and capacity among partnerships



KEEP ALASKA WILD AND FREE... OF INVASIVE PLANTS AND ANIMALS

TO LEARN MORE ABOUT INVASIVE SPECIES AND THE DAMAGE THEY DO IN YOUR AREA: GO TO THE INVASIVE SPECIES PAGE AT WWW.ADFG.ALASKA.GOV



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