# Preserving Alaska's resources by managing invasive species.

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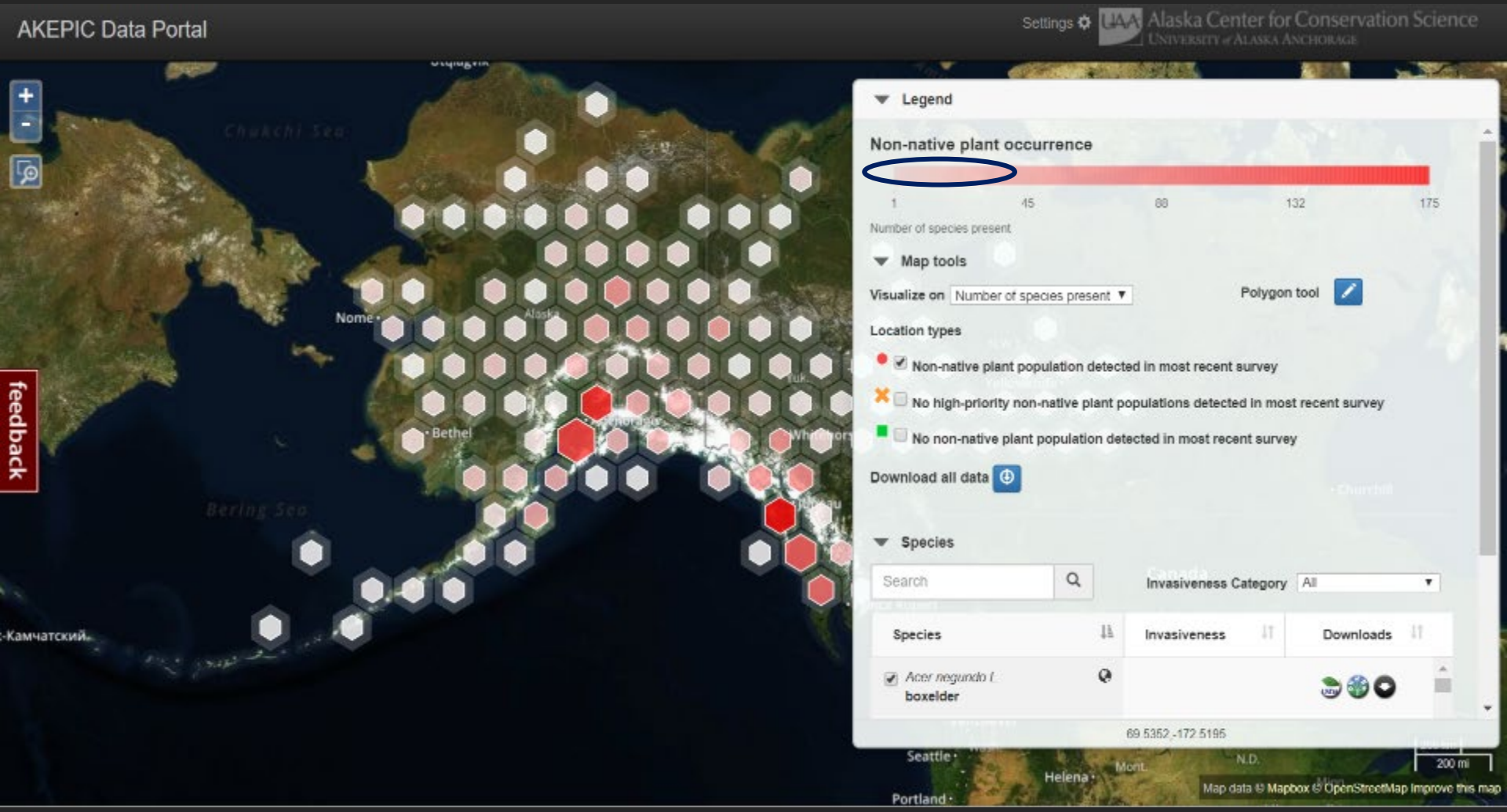
AKISP
ALASKA INVASIVE SPECIES PARTNERSHIP

# What is at stake?

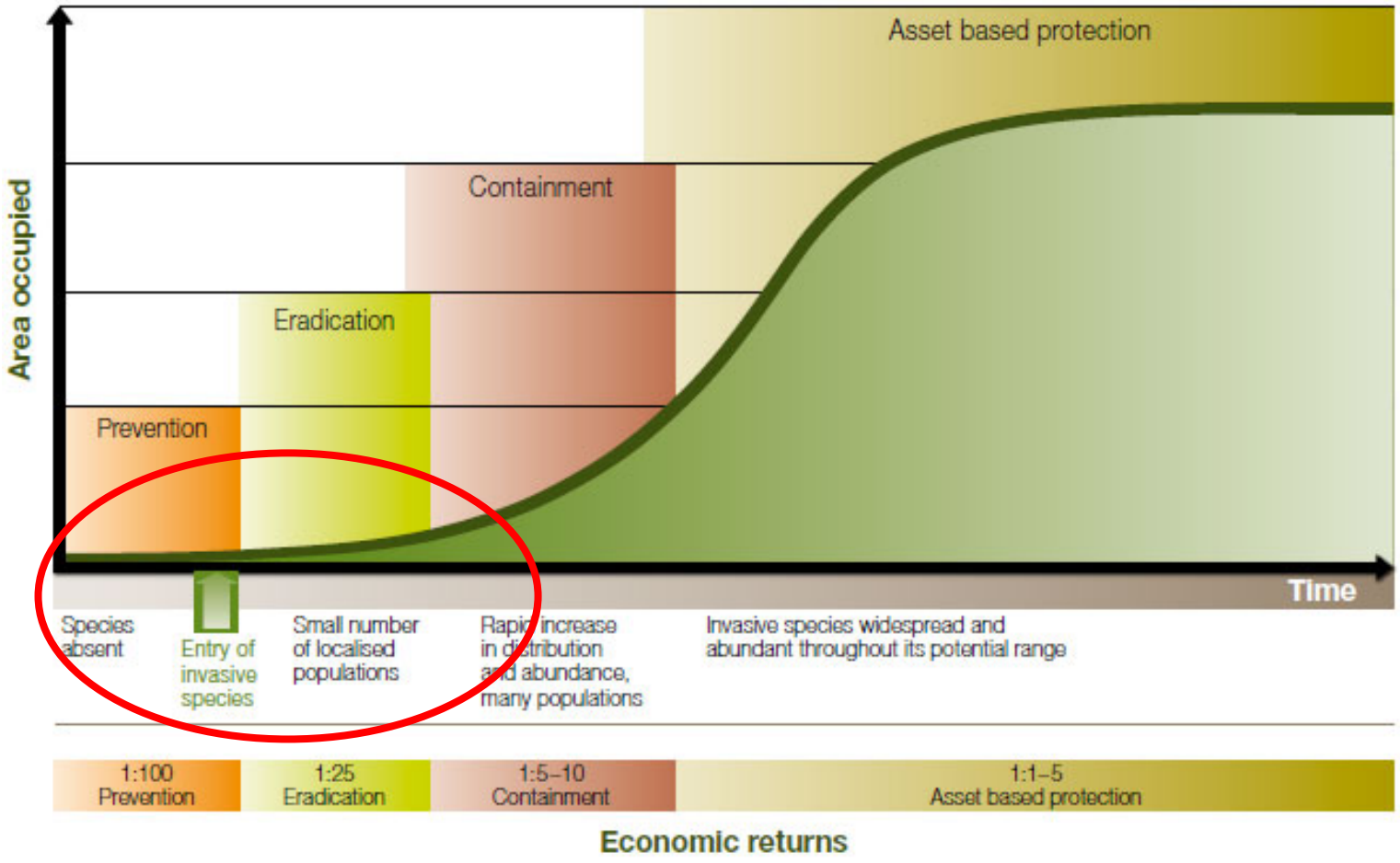
- Infrastructure:
  - Hydropower facilities:
    - 21% of the state's power
  - Watercraft:
    - 68,616 registered watercraft (1/every 9 Alaskans)
    - **$587M** annual economic impact
  - Floatplanes:
    - 114 floatplane bases (40% of all towns)
    - Lake Hood floatplane base
      - ✓ **$56 Million**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

Photo credits: 1) Salty Dog Boating News, 2) USFWS


AKEPIC Data Portal
Settings
Alaska Center for Conservation Science
University of Alaska Anchorage
feedback
Legend
Non-native plant occurrence
1
45
88
132
175
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
Search
Invasiveness Category
All
Species
Invasiveness
Downloads
Acer negundo L.
boxelder
69.5352, -172.5195
Nome
Bethel
Bering Sea
Chukchi Sea
Seattle
Helena
Portland
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

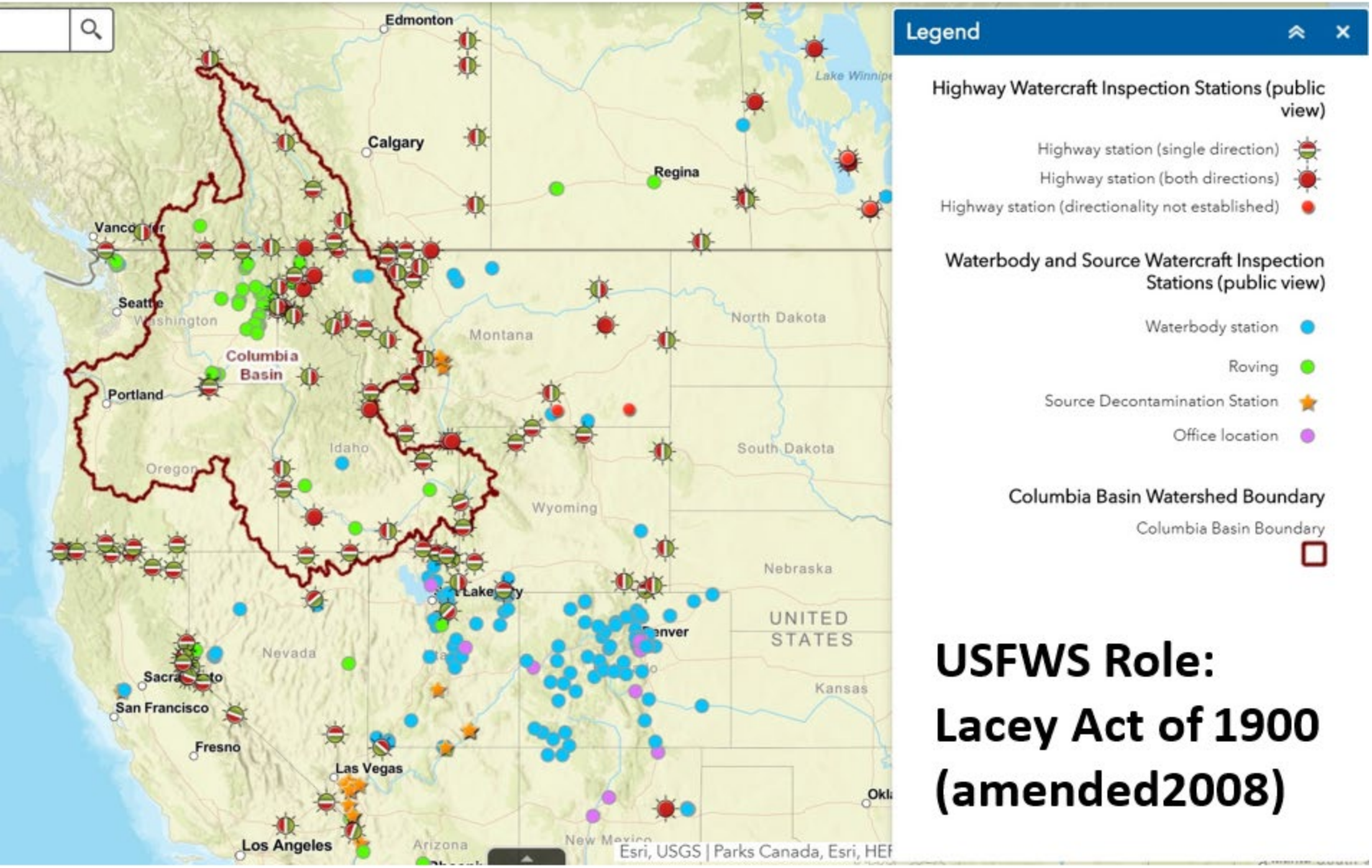
*Dreissena polymorpha and D. rostriformis bugensis*

USGS
science for a changing world

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

*Map produced by the U.S. Geological Survey*
*Nonindigenous Aquatic Species Database, August 12, 2019.*

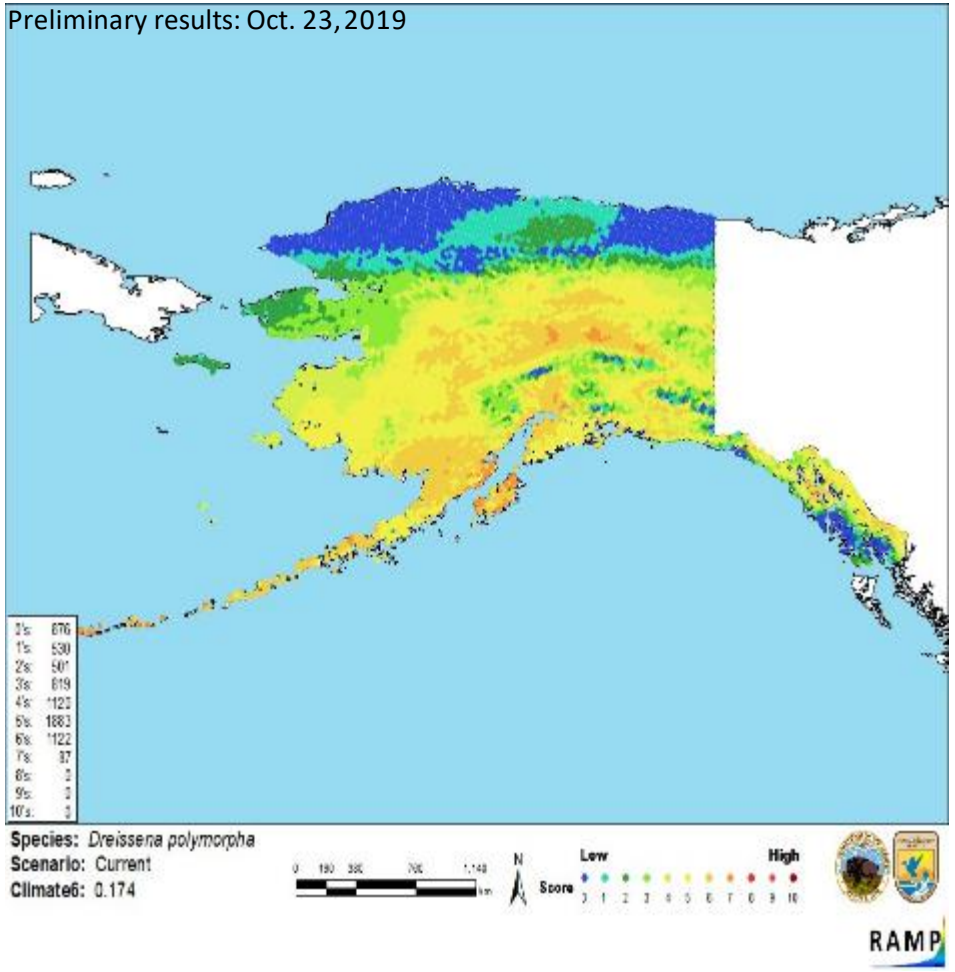
# Western Watercraft Inspection and Decontamination Stations




**USFWS Role: Lacey Act of 1900 (amended2008)**

# 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



# Quagga and Zebra Mussels

- 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

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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.

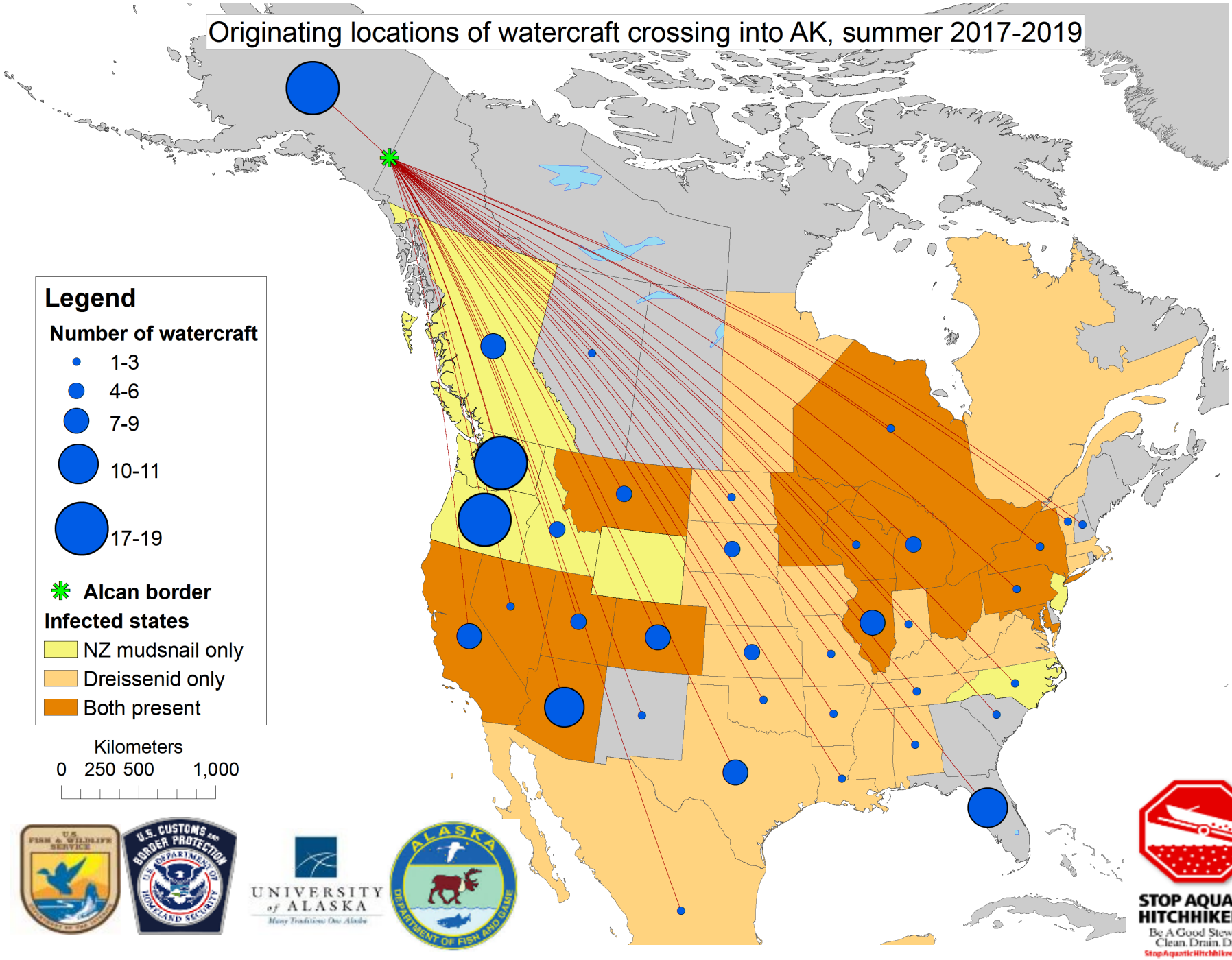
Zebra mussels can quickly take over once they get established in a waterbody and cause significant damage including disrupting the food chain, changing the chemistry of the water (which can cause more blue green algae outbreaks or offensive taste), and clogging water intake and delivery systems. The 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 Hitchhhikers
- Aquatic Invasive Species Coordinators

Moss ball and Zebra mussel. Photo by IDFW

Zebra mussels can quickly take over once they get established in a waterbody and cause significant damage.


Originating locations of watercraft crossing into AK, summer 2017-2019
Legend
Number of watercraft
1-3
4-6
7-9
10-11
17-19
Alcan border
Infected states
NZ mudsnail only
Dreissenid only
Both present
Kilometers
0 250 500 1,000
U.S. FISH & WILDLIFE SERVICE
U.S. CUSTOMS AND BORDER PROTECTION
U.S. DEPARTMENT OF HOMELAND SECURITY
UNIVERSITY of ALASKA
Many Traditions One Alaska
ALASKA
DEPARTMENT OF FISH AND GAME
STOP AQUATIC HITCHHIKERS!™
Be A Good Steward.
Clean. Drain. Dry.
StopAquaticHitchhikers.org

# 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

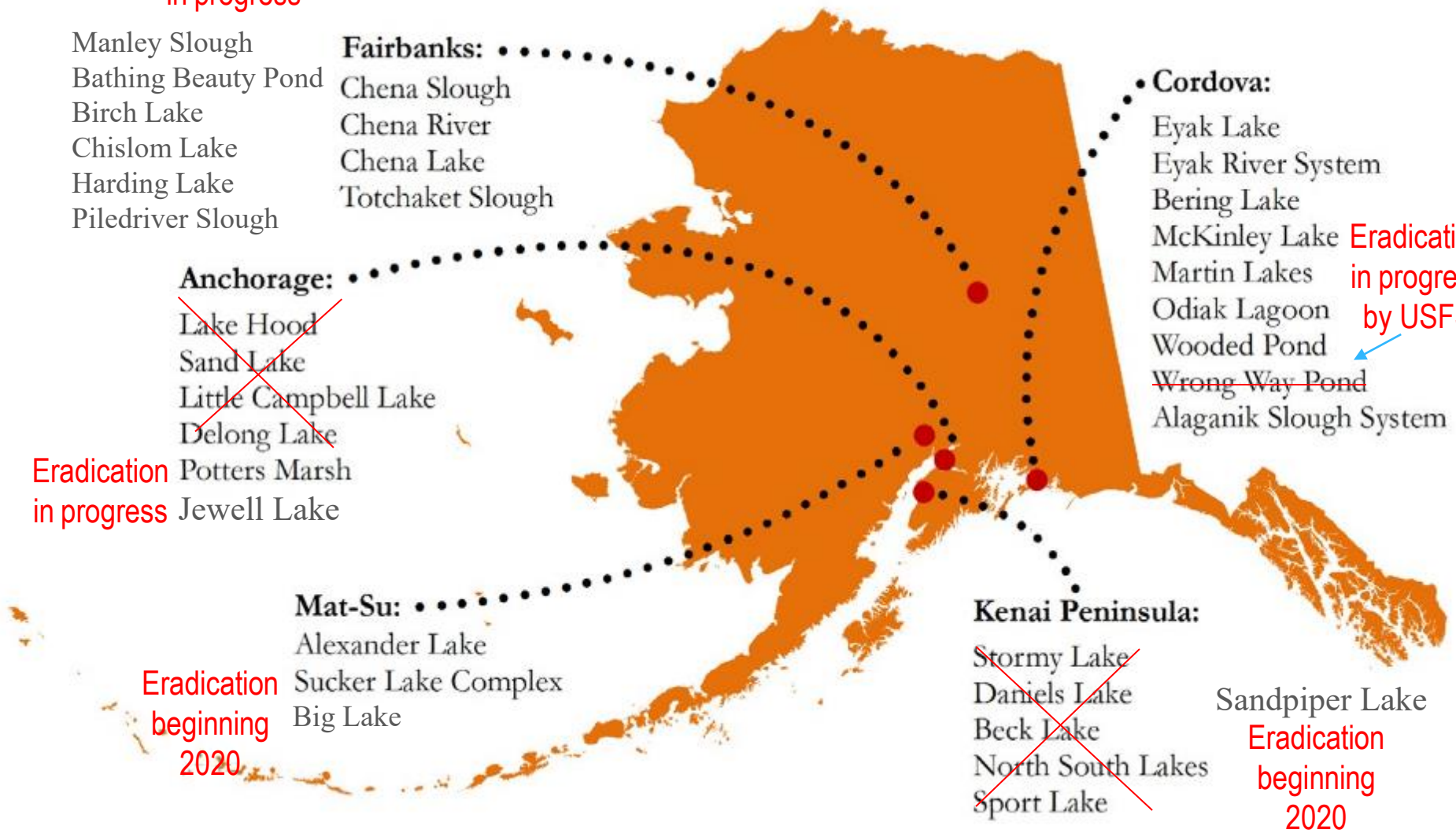
# Prevention and Eradication: Elodea

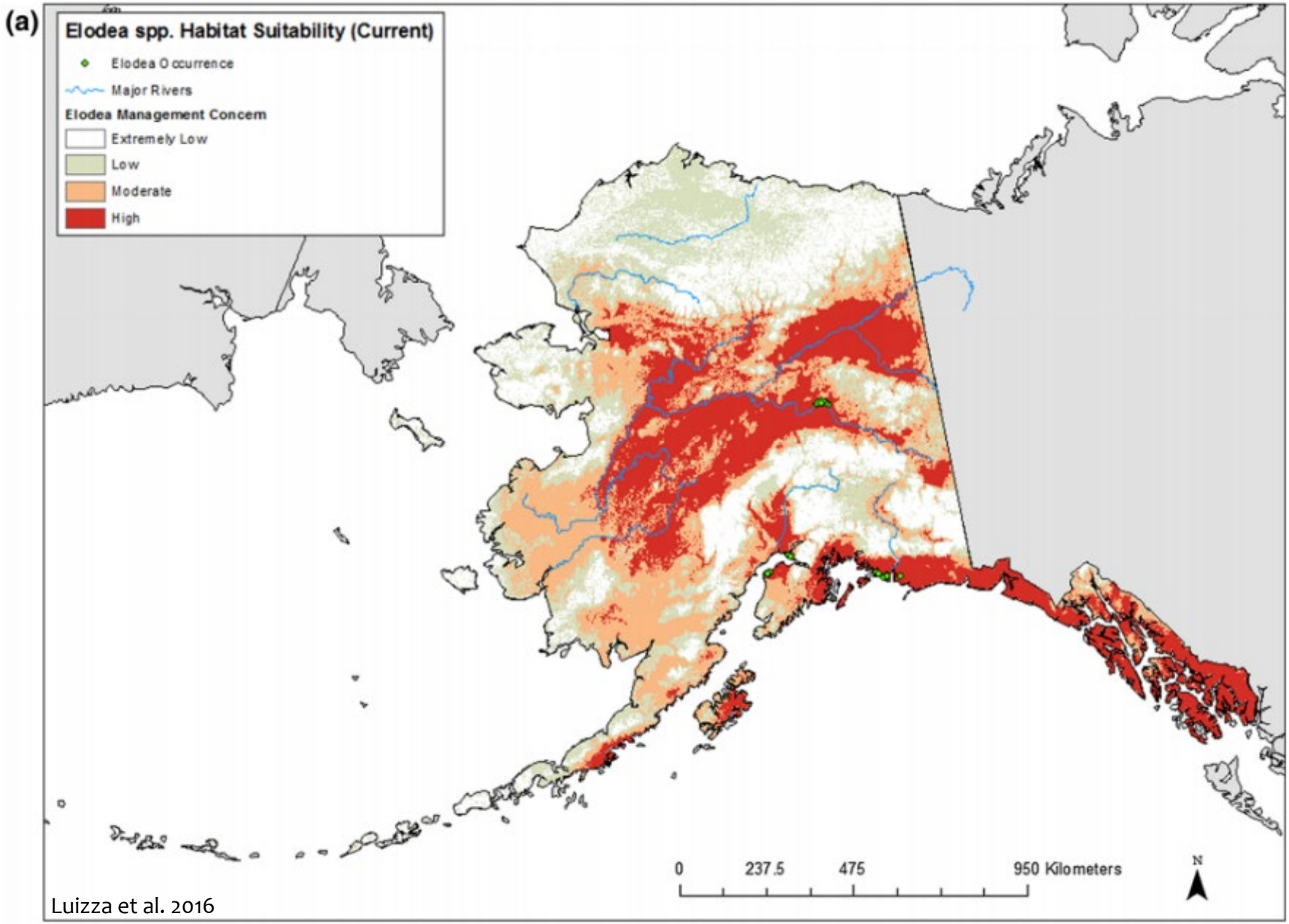
- Economic analysis:
  - Impact Potential: Annual loss of $159M to the sockeye salmon fisheries if not stopped (Schwoerer et al 2019).
  - Ship-borne AIS impacts in the Great Lakes: Annual cumulative loss of $138M/year to sportfishing, commercial fishing and water use. (Rothlisberger et al 2019).

Photo credit: Jason Ching

Photo credit: USFWS

# Known Elodea Infestations in Alaska





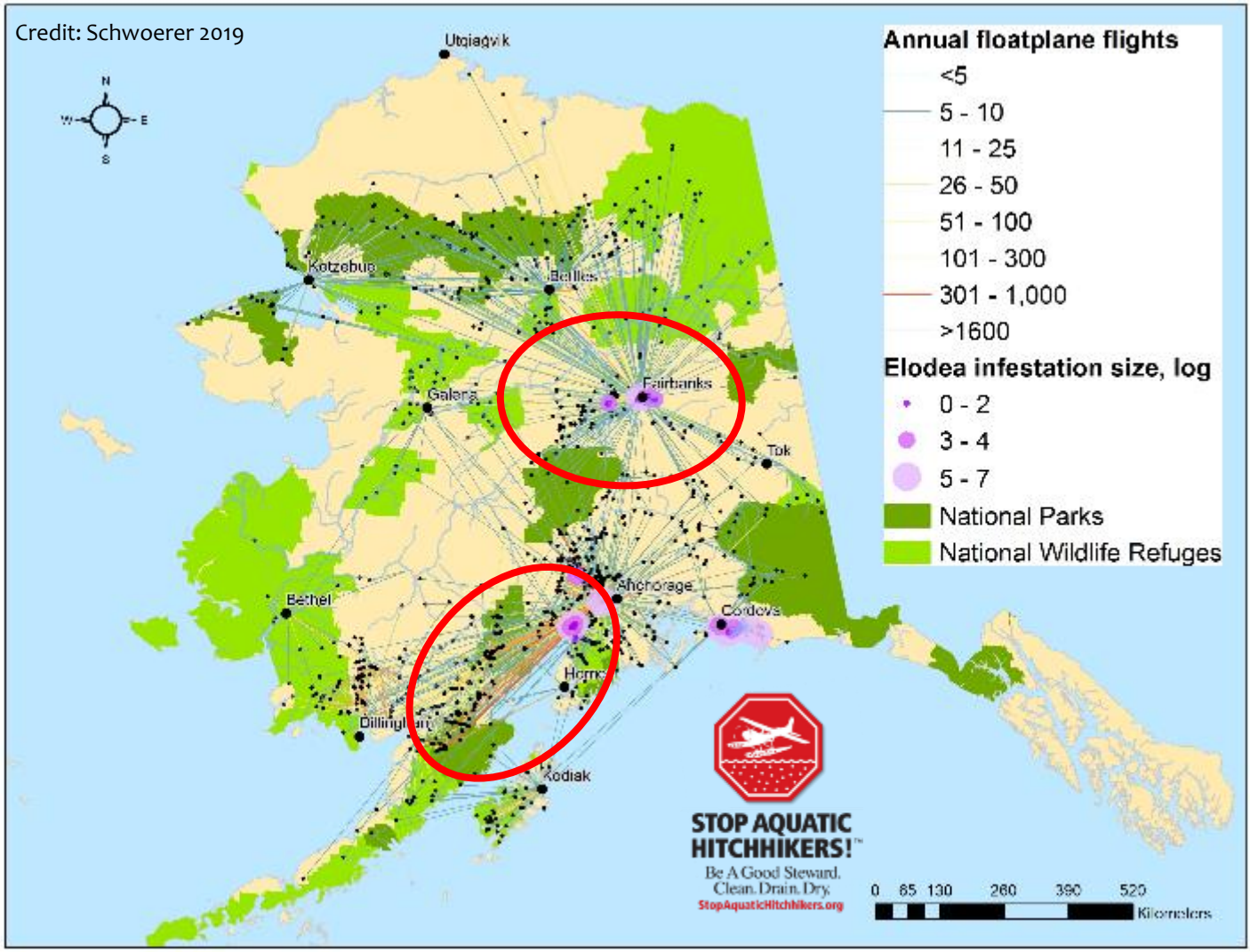

Luizza et al. 2016

# Freshwater Vectors – *Floatplanes*



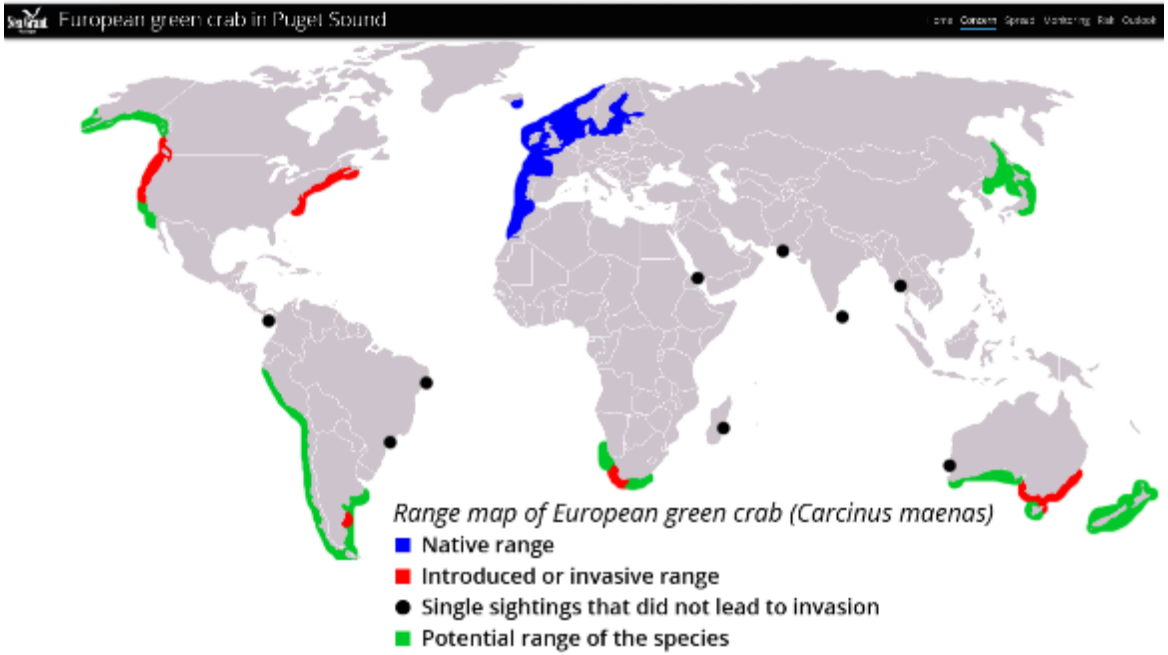
Floatplanes' first-leg flight paths between freshwater start and destination locations. Data from a survey with pilots about their 2015 flights. Schwoerer et al. 2017.

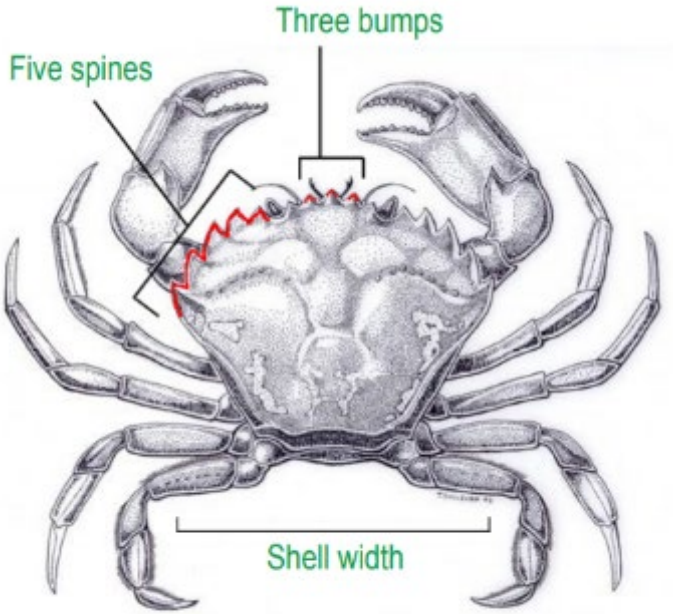
***Elodea canadensis***



# 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



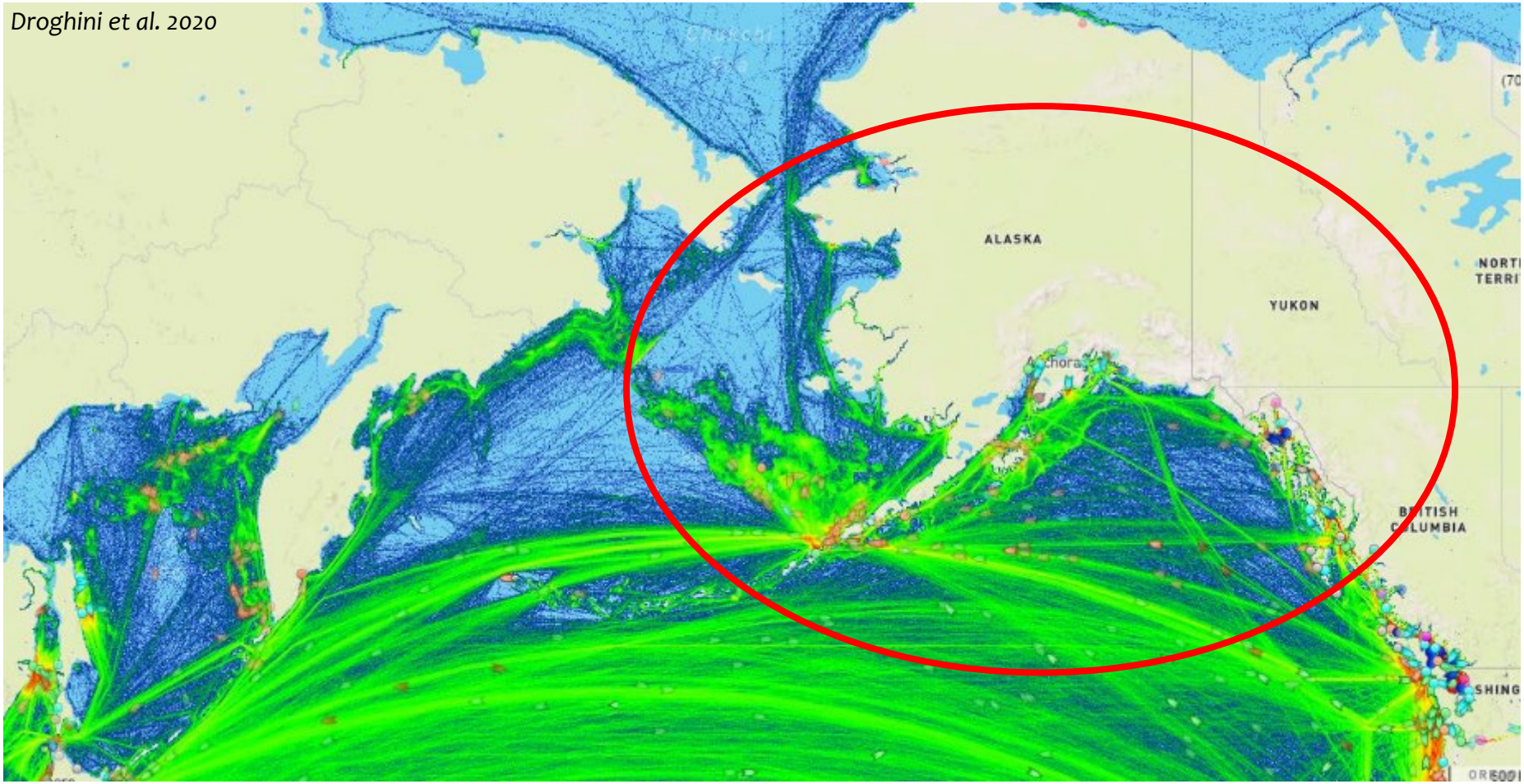




Green crabs can be identified by their unique shell shape. Adults can have shells up to four inches across in width.

Credit: NOAA

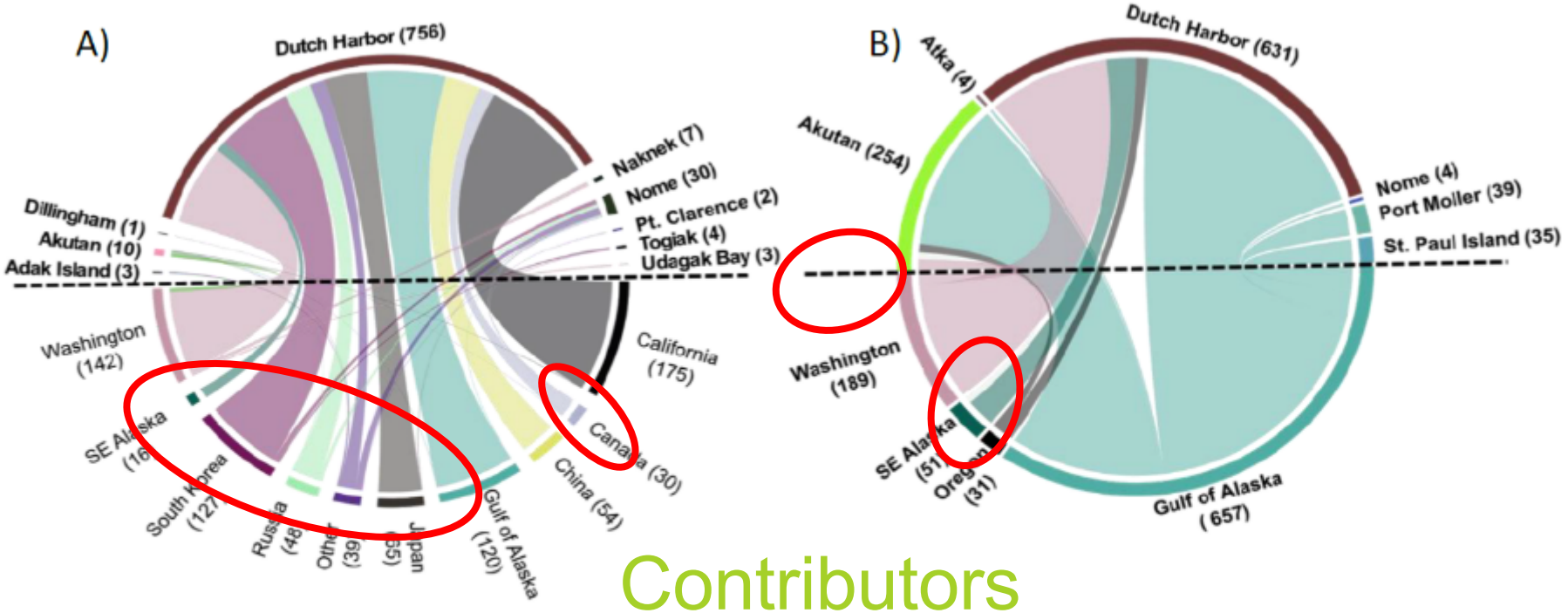
# Prevention and Preparedness: European Green Crabs

Commercial boating traffic in the North Pacific (2015).



# Prevention and Preparedness: European Green Crabs

## Receivers




## Contributors

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

*Droghini et al. 2020*

# 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

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