Tobias (Toby) Schwoerer
Research Assistant Professor of Natural Resource Economics

WEBSITE
tobyschwoerer.info

EMAIL ADDRESS
tschwoerer@alaska.edu

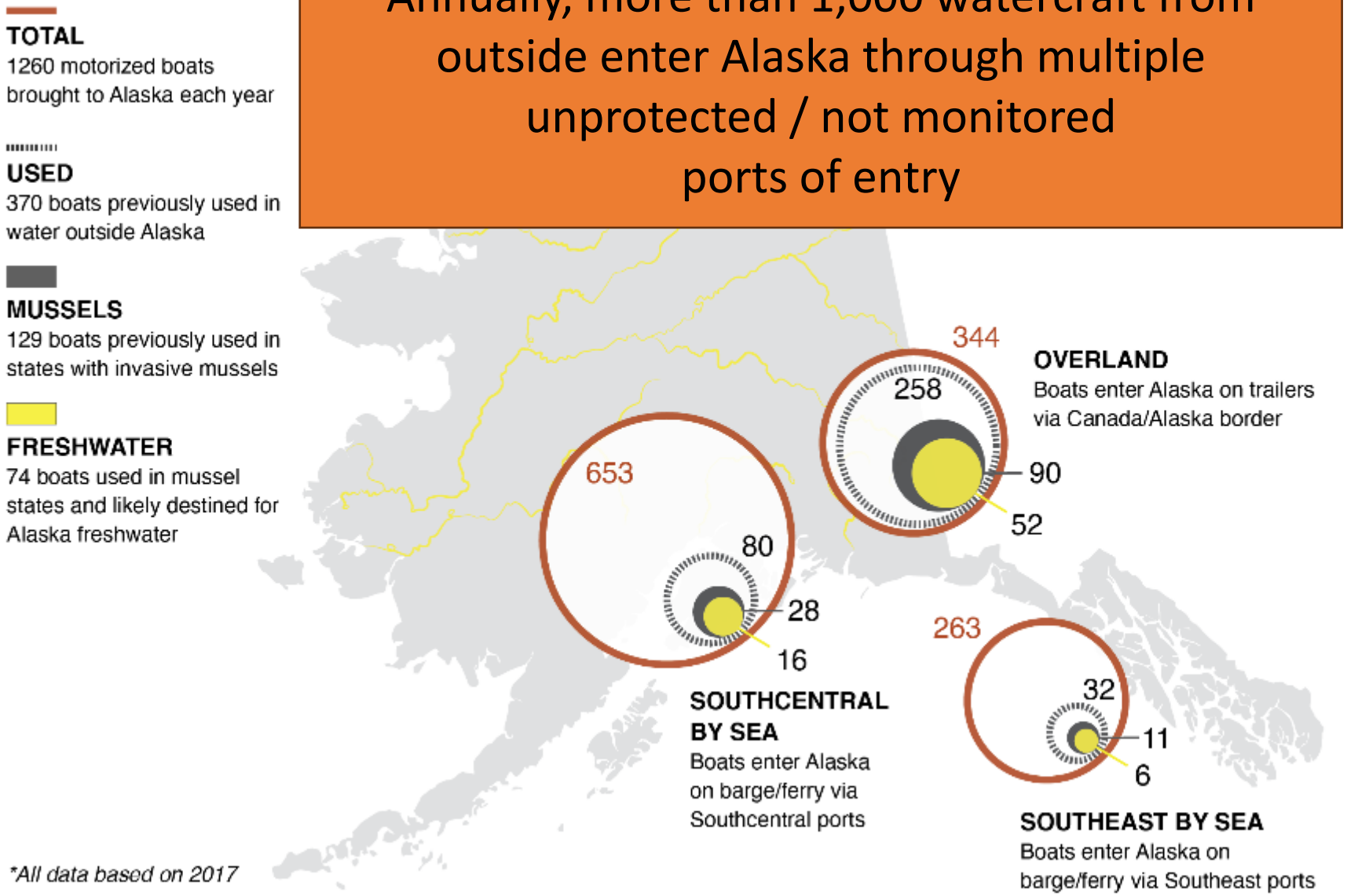
International Arctic Research Center

UNIVERSITY OF ALASKA FAIRBANKS

Alaska's increasing biosecurity risk

Is Alaska prepared?

Annually, more than 1,000 watercraft from outside enter Alaska through multiple unprotected / not monitored ports of entry



Schwoerer et al. 2023

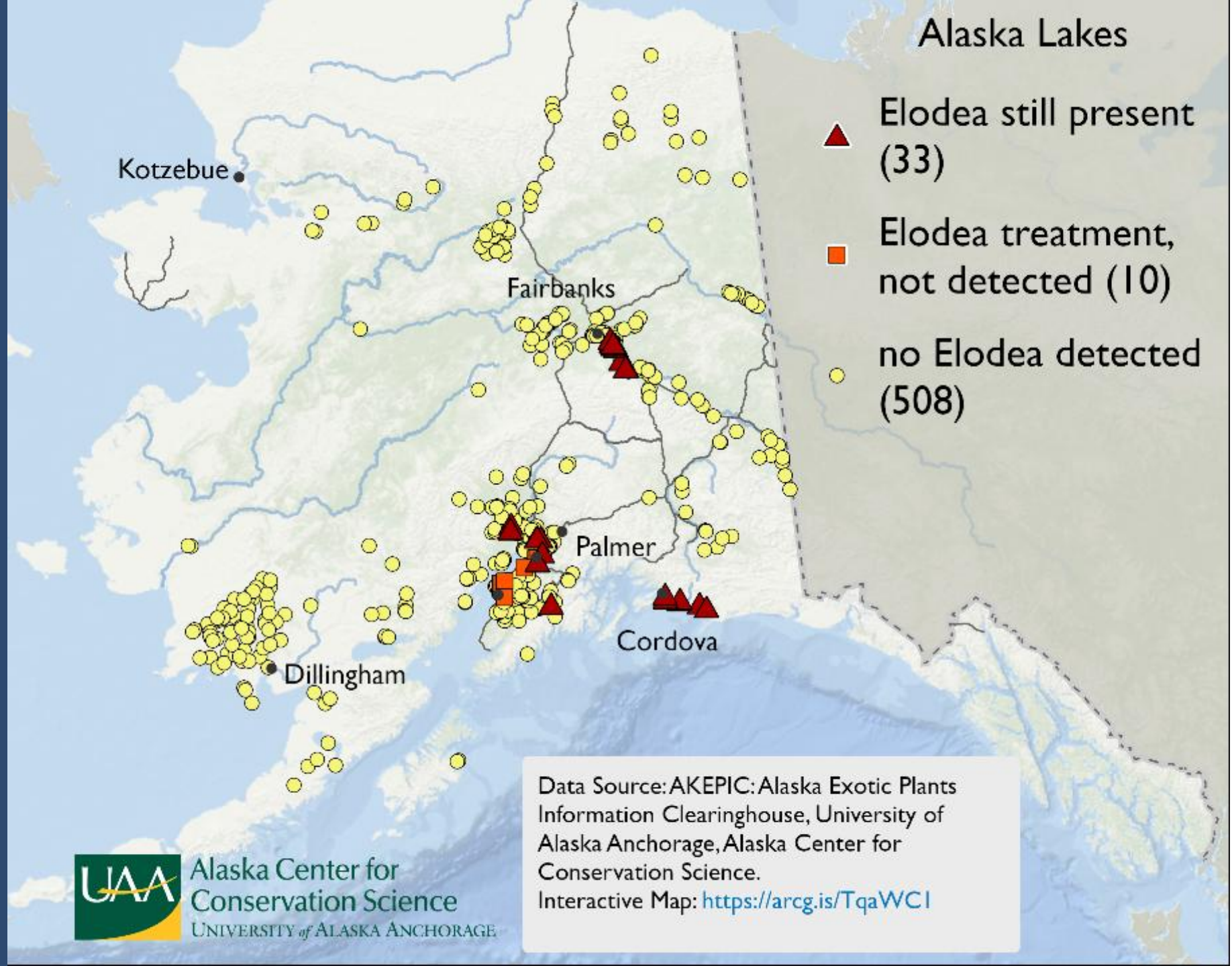
Example:

Elodea response

- Current cum. damages from Elodea: > $1,000 million
- Current cum. spending managing Elodea: $7 million
  - ~$1 million in inefficiencies
- Insufficient resources, personnel flat
- Fragmented decision
- Need for strategy, efficiency, and coordination
- Need for *resource emergency response plan*

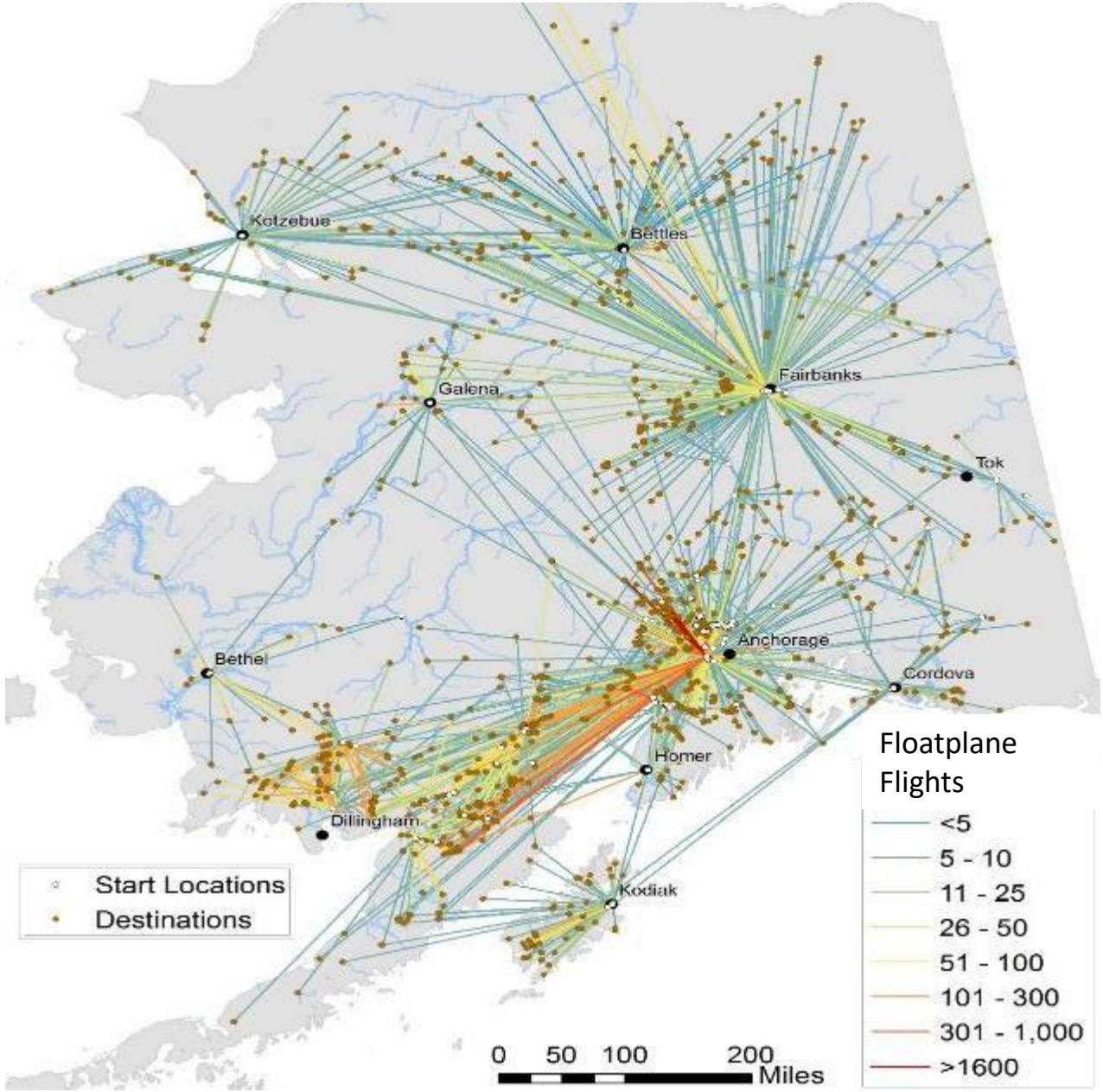
Elodea infestation

Elodea infestations - current status



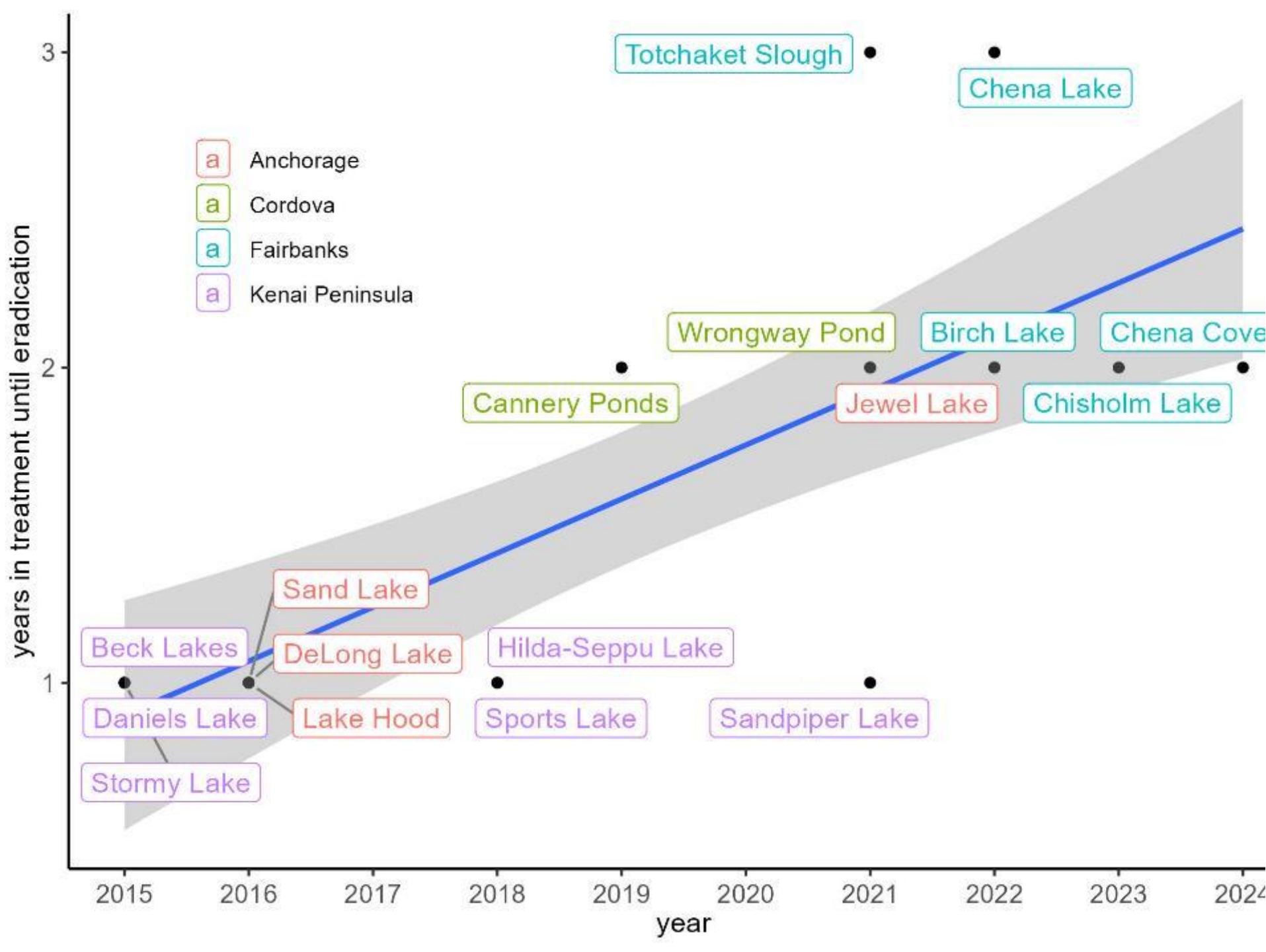
Floatplanes transport Elodea

Increasingly remote & complex infestations



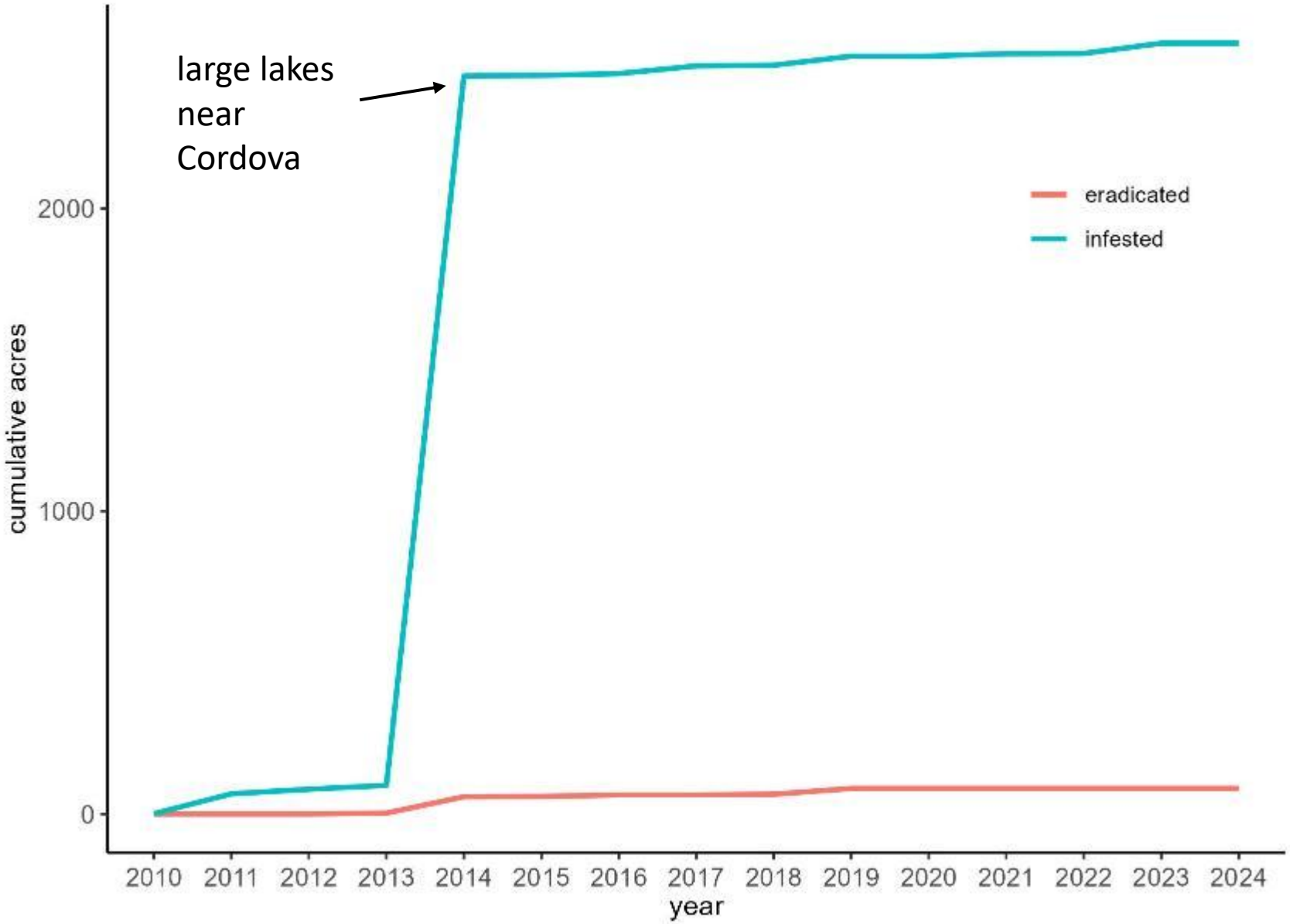
Schwoerer et al. 2019

Under-resourced response = longer, more costly response



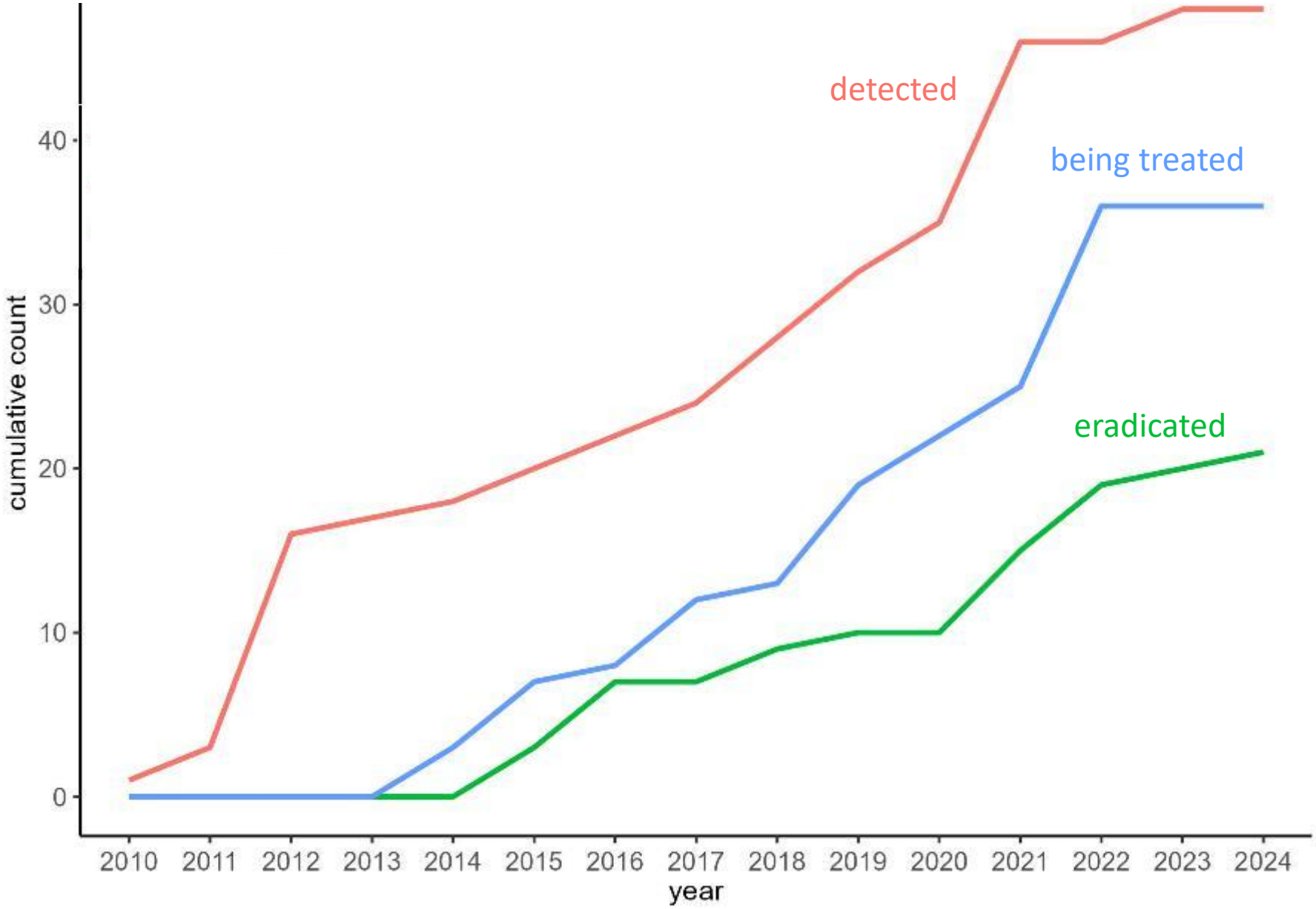
Larger infestations = higher cost = higher spread

Elodea-infested acreage



The Elodea eradication failure

Number of Elodea-infested waterbodies



Cost of not cleaning up Elodea

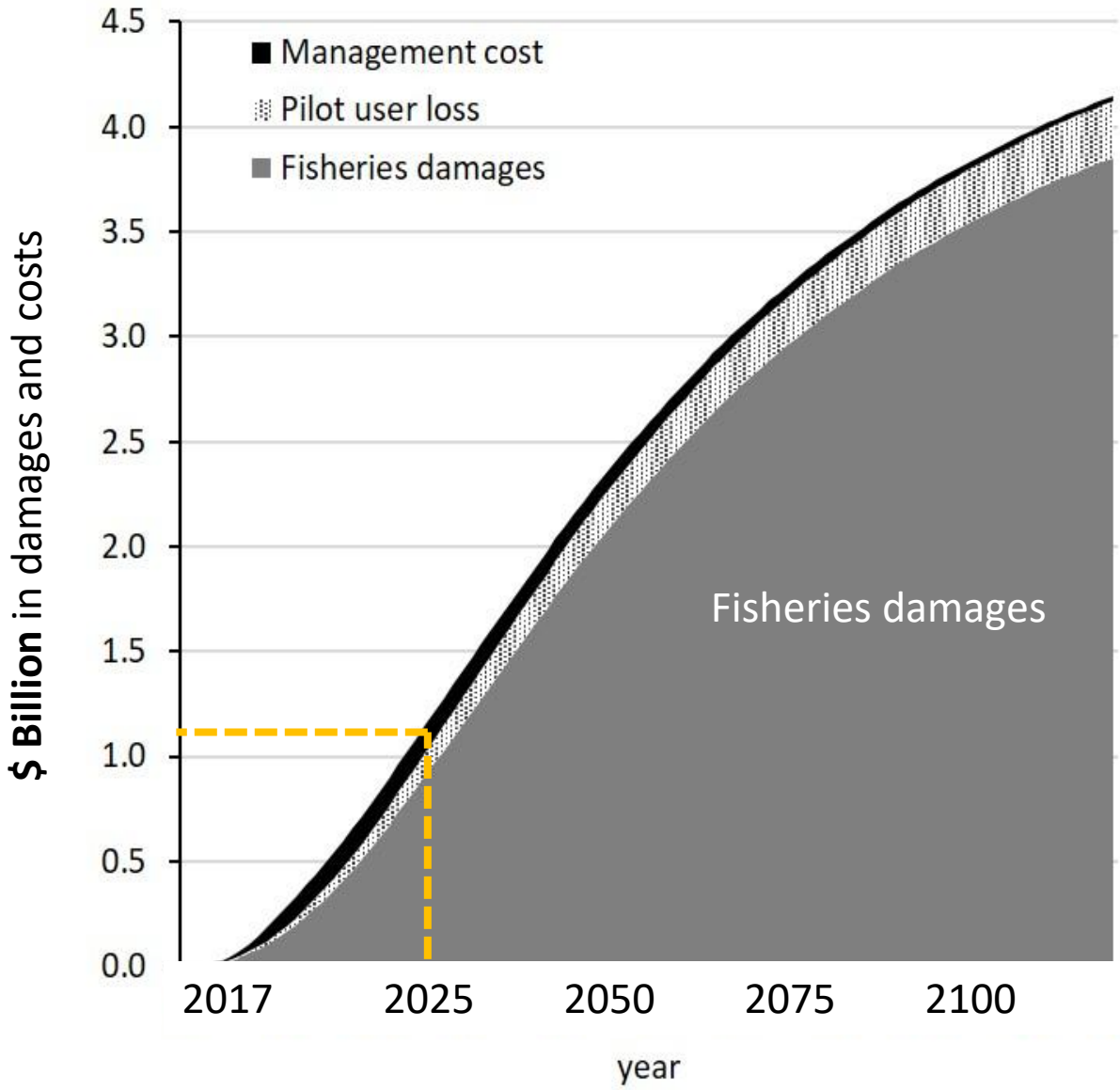
Biol Invasions (2023) 25:1509–1525
https://doi.org/10.1007/s10530-022-02992-3

ORIGINAL PAPER

***Elodea* mediates juvenile salmon growth by altering physical structure in freshwater habitats**

Michael P. Carey · Gordon H. Reeves · Suresh A. Sethi · Theresa L. Tanner · Daniel B. Young · Krista K. Bartz · Christian E. Zimmerman

Hidden fisheries damages



Sources

Carey, Michael P., et al. 2023. “Elodea Mediates Juvenile Salmon Growth by Altering Physical Structure in Freshwater Habitats.” *Biological Invasions*, February.

Schwoerer, T. et al. 2019. “Aquatic Invasive Species Change Ecosystem Services from the World’s Largest Wild Sockeye Salmon Fisheries in Alaska.” *Journal of Ocean and Coastal Economics* 6 (1).

Schwoerer, T. et al. 2020. “Hitchhikers on Floats to Arctic Freshwater: Private Aviation and Recreation Loss from Aquatic Invasion.” *Ambio* 49 (8): 1364–76.

Schwoerer, T. et al. 2022. “Flight Plan for the Future: Floatplane Pilots and Researchers Team up to Predict Invasive Species Dispersal in Alaska.” *Biological Invasions* 24: 1229-1245

Schwoerer, T. et al. 2023. “Batten down the Hatches: Opportunities to Protect Alaska from Biological Invasions through Watercraft Trade and Traffic.” *Marine Policy* 148 (February): 105448.

Schwoerer, T. et al. in preparation. “Lessons learned from Alaska’s 15 years of Elodea response.” *Biological Invasions*.