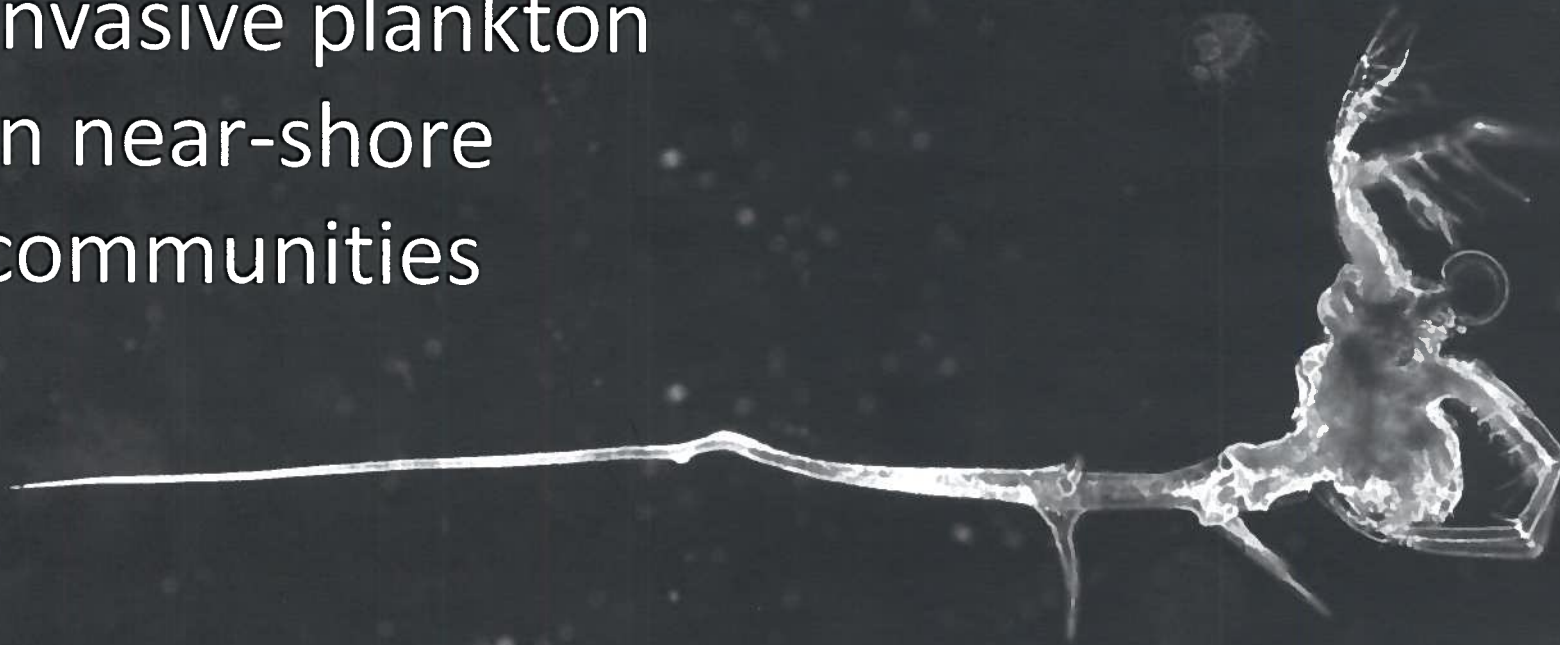


Invasive plankton in near-shore communities



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Management of Invasive Species

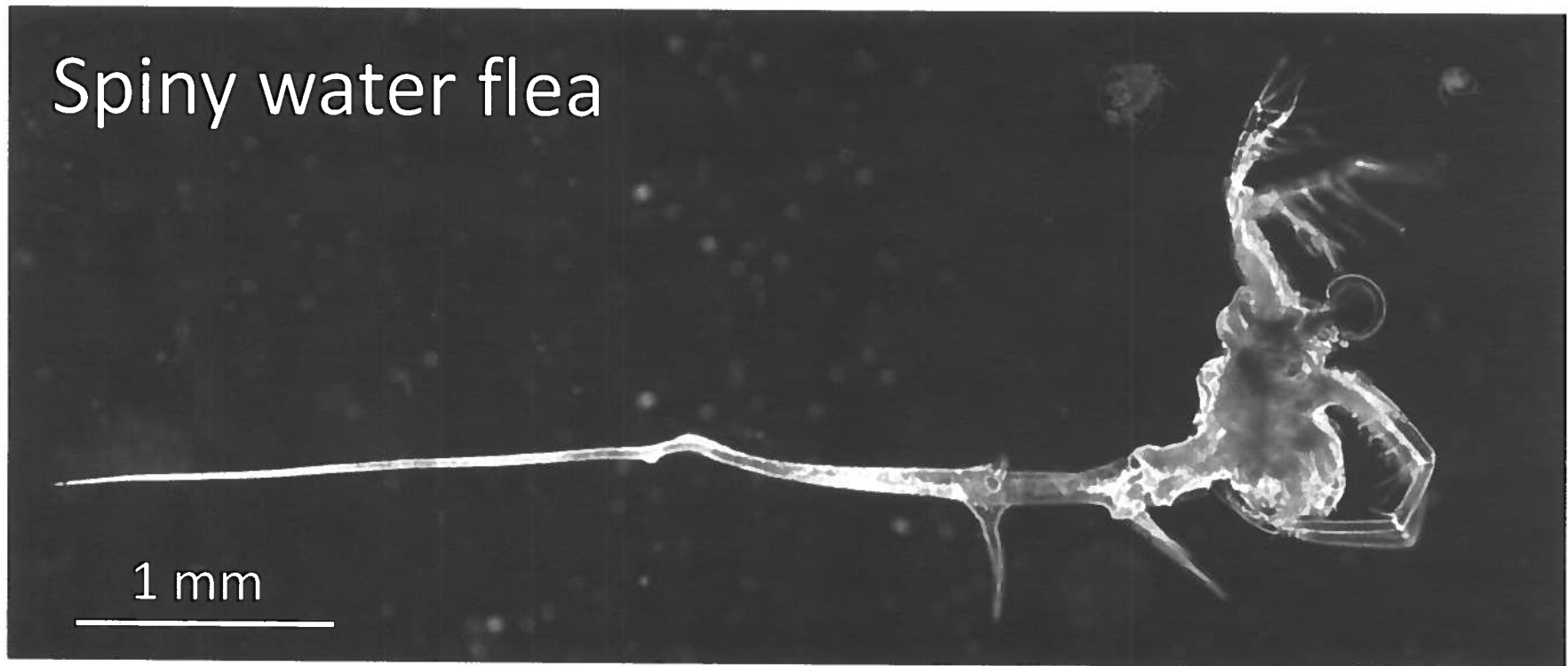
An inherently spatial problem

- Where did they come from?
- Where are they going?
- How well do they do at a given location?



Movement of Invasive Species

- Many aquatic invasive species exhibit planktonic stages



Movement of Invasive Species

- Many aquatic invasive species exhibit planktonic stages



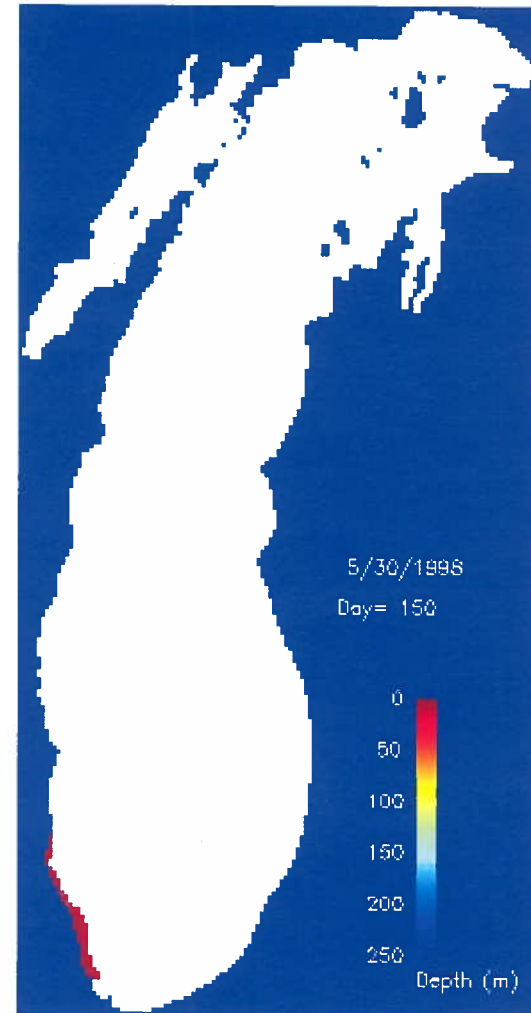
Round goby



Zebra and quagga mussels

Movement of Invasive Species

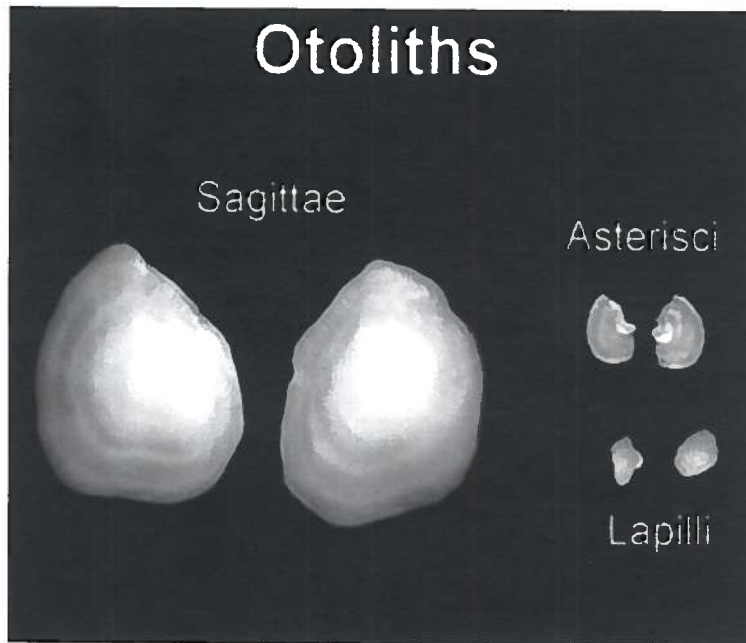
- Predict movement of plankton using particle-tracking models
- Water currents can disperse plankton long distances in short period



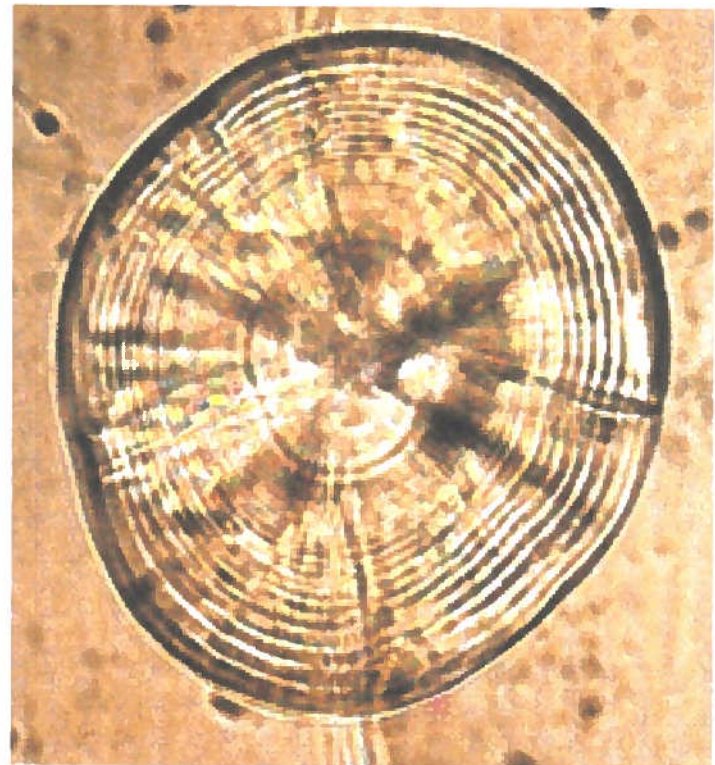
Rutherford et al. (NOAA)

Origin of Invasive Species

- Chemical signatures in otoliths (ear stones)

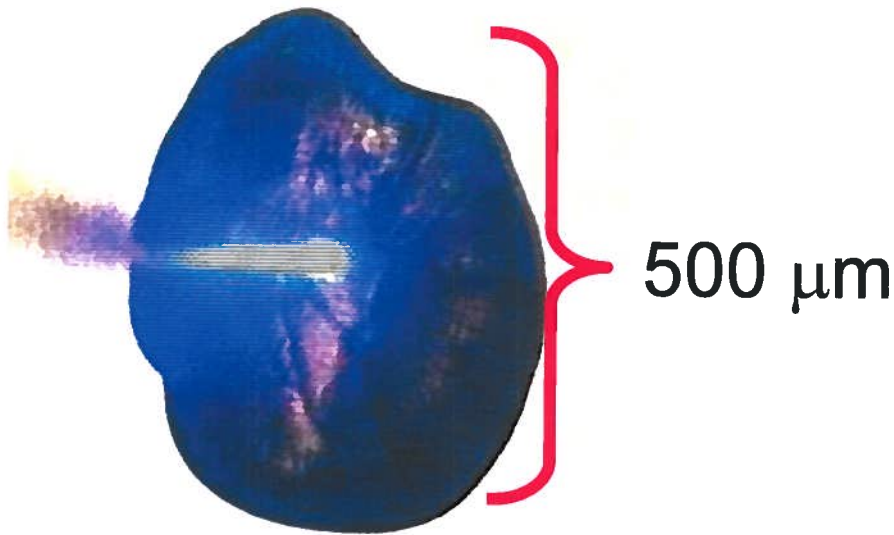


Source: elkhornslough.org



Origin of Invasive Species

- Chemical signatures in otoliths (ear stones)
 - Incorporates trace elements from water
 - Creates as a 'natural' tag



Origin of Invasive Species

- Initial application on game species successful



Lake Erie Yellow Perch



Lake Michigan Steelhead

Origin of Invasive Species

- Current application on invasive grass carp in Lake Erie in collaboration with Michigan DNR



Management of Invasive Species

- Where are they going?
Movement of invasive plankton can be long in distance, predictable
- Where did they come from?
Origins can be identified using natural tags and cutting edge chemistry



Acknowledgments

