Modeling adoption of prevention practices for aquatic invasive species

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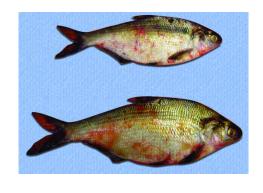
Preparing people to lead extraordinary lives

Prevention Practices



What are Invasive Species?

- "Invasive species means an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health." (Clinton's executive order 1999)
- Invasive species in Illinois are very diverse taxonomical groups

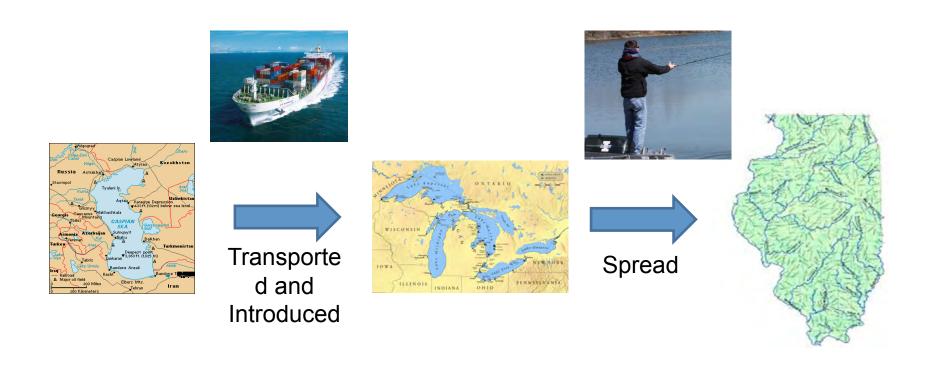




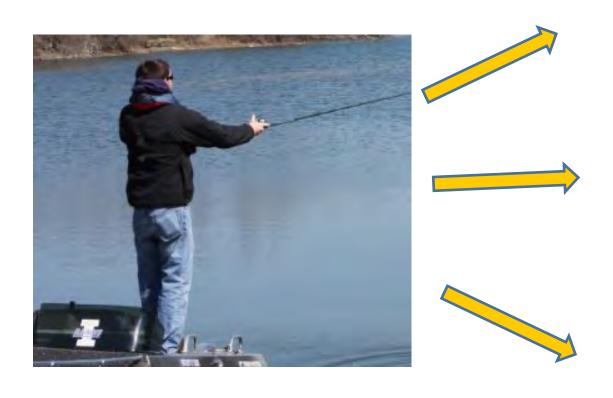




Invasion Pathway



Boaters and Anglers As Vectors









AIS Economic Cost

Cost of aquatic invasive species in U.S. (Pimentel, 2005)

- \$110 million for species of aquatic weeds
- \$5.4 billion for species of fish
- \$2.0 billion for species of mollusks
- Boaters and Anglers generate revenue for Illinois
 - ILDNR reports:
 - \$736 million generated by Illinois anglers from retail sales
 - Generates \$1.6 billion in economic output for the state

WORK WITH BOATERS AND ANGLERS ON HOW TO PREVENT SPREAD OF AIS

Management of AIS through Outreach

- Outreach Programs
 - Seek to modify actions of boaters and anglers
 - Preventative practices
 - » Ex. "Conduct visual inspections of boats and equipment and remove all animals and plants."
 - Can promote preventative practices thru:
 - » Preventative slogans







Outreach Seeks to Influence Boaters and Anglers











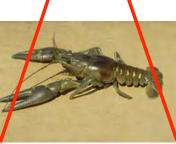












Research Questions

Q1) What prevention practices are performed by boaters and anglers in Illinois?

Q2) Can we map the outreach networks existing in Illinois?

Q3) Do prevention practices of boaters and anglers influence AIS spread throughout Illinois?

- Q1) What prevention practices are performed by boaters and anglers in Illinois?
 - Survey Technique
 - Mail survey sent to registered boaters and anglers in
 - 4. Please tell us how often you performed the following actions during the summer of 2013 by selecting all appropriate boxes. (Note: Select N/A if you do not use a boat or do not use angling equipment)

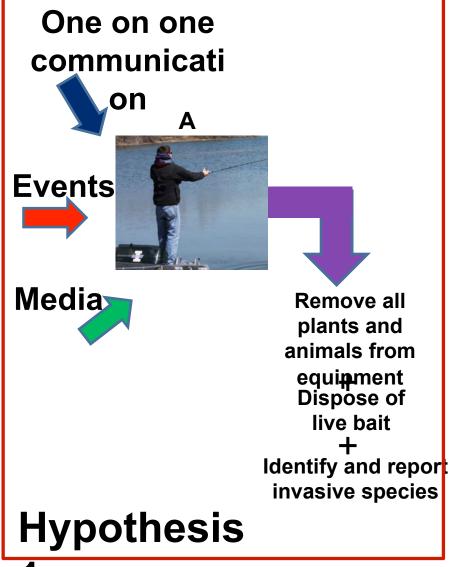
Table 4:	Always	Often	Sometimes	Rarely	Never	N/A
Conducted visual inspections of boat and removed al aquatic plants, animals and gelatinous globs		_		_	_	
Visually inspected all angling equipment (including tackle) and removed all aquatic plants, animals and gelatinous globs						
Drained waterfrom boats, including live wells, bilge, and bait buckets						
Flushed motor's cooling system with tap water						
Rinsed boat with high pressure and/or hot water						
Dried boat with a towel or allowed boat to dry for at least five days						
Identified and reported invasive species to appropriate authorities		_				
Disposed of live bait appropriately						
Never transported or released any animal or plant from one body of water to another		_	0			

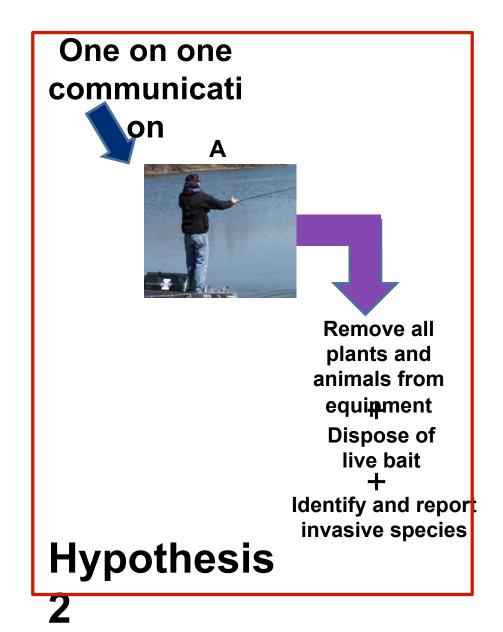
- Survey will examine:
 - Communication modes used by boaters and anglers
 - Media
 - Events

Bait shop vendor

<u>Ina an ana cammunication</u> Occasionally Rarely Never Very Table 5: Useful Useful Useful N/A Useful Useful Magazines or newsletter articles Television news or programs П Radio news or programs Television nublic service announcements Very Occasionally Rarely Never Table 6: Useful Useful Useful Useful Useful N/A Attending an aquatic invasive species workshop Viewing an educational exhibit or display Seeing a booth at a sports or fishing show Participating in surveys conducted at boat launches Occasionally Very Rarely Never Table 7: Useful Useful Useful Useful Useful N/A Members in my boating or angling club Family members, friends or neighbors

Predictions





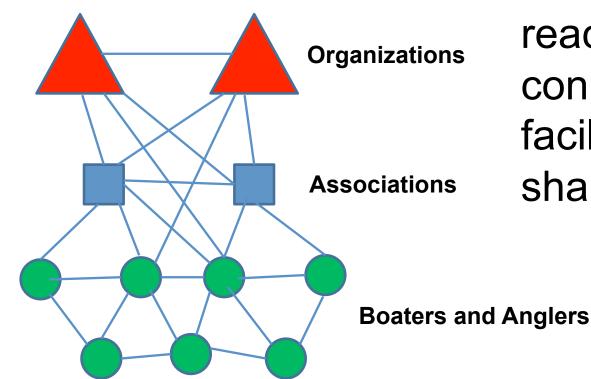
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Q2) Can we map existing outreach networks in Illinois?

Networks

- Interconnections between resource users and managers
 - Share information
 - Build partnerships & trust
 - Support changes in perceptions or practices

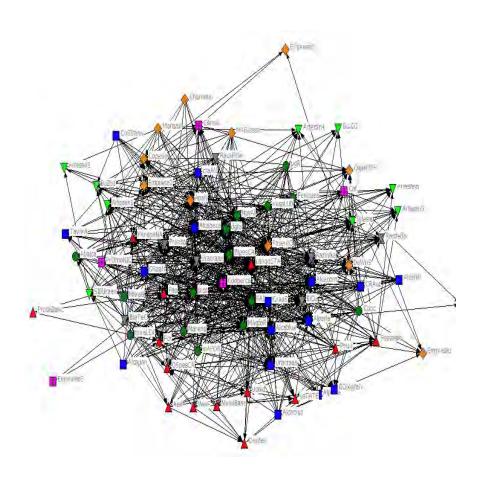
Network Diagram



Networks with high reachability and connection density facilitate information sharing.

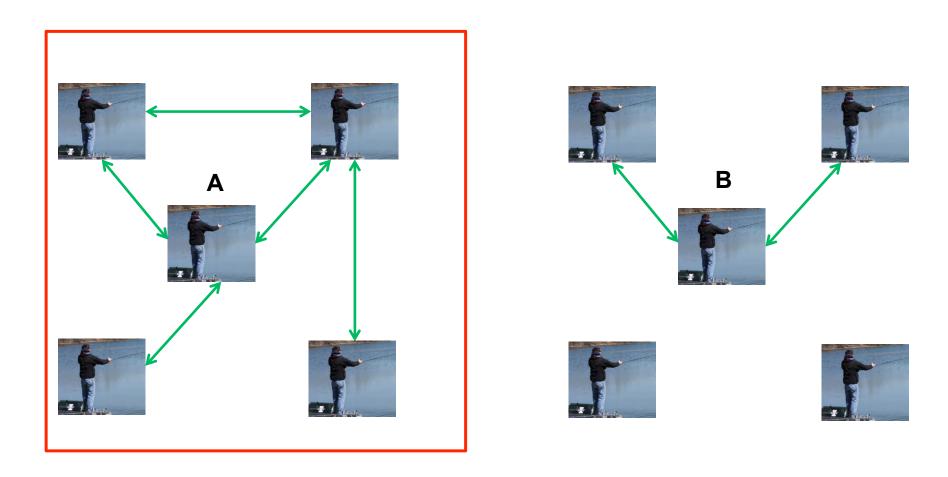
Prediction: Regions that are targeted by densely connected organizations will show a high rate of preventative practices performed by boaters and anglers.

Network Diagram



How do network characteristics influence which prevention practices are adopted and maintained by boaters and anglers?

Information Sharing and Adoption



Individual A has dense network of communication.

Individual A will adopt prevention practices at higher rate than Individual B.

Q3) Do prevention practices of boaters and anglers influence AIS spread throughout Illinois?

- Boater and angler survey data
 - Link with invasion patterns of AIS in Illinois
 - Jacobs and Keller (in progress)

Prediction: Regions of Illinois in which boaters and anglers practice multiple prevention practices frequently will show a low rate of invasion in Illinois.

Future Directions

- Measure prevention practices of boaters and anglers
 - Survey
- Create communication network diagram
 - Use network analysis software
- Map AIS invasion patterns with prevention practices of boaters and anglers
 - Jacobs and Keller (in progress)

Thank you.