

Modeling adoption of prevention practices for aquatic invasive species

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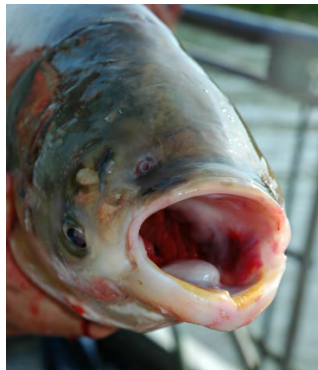
Preparing people to lead extraordinary lives

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



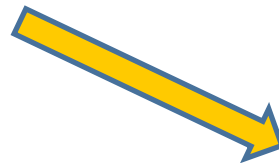
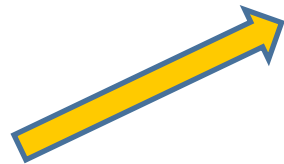
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Spread



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



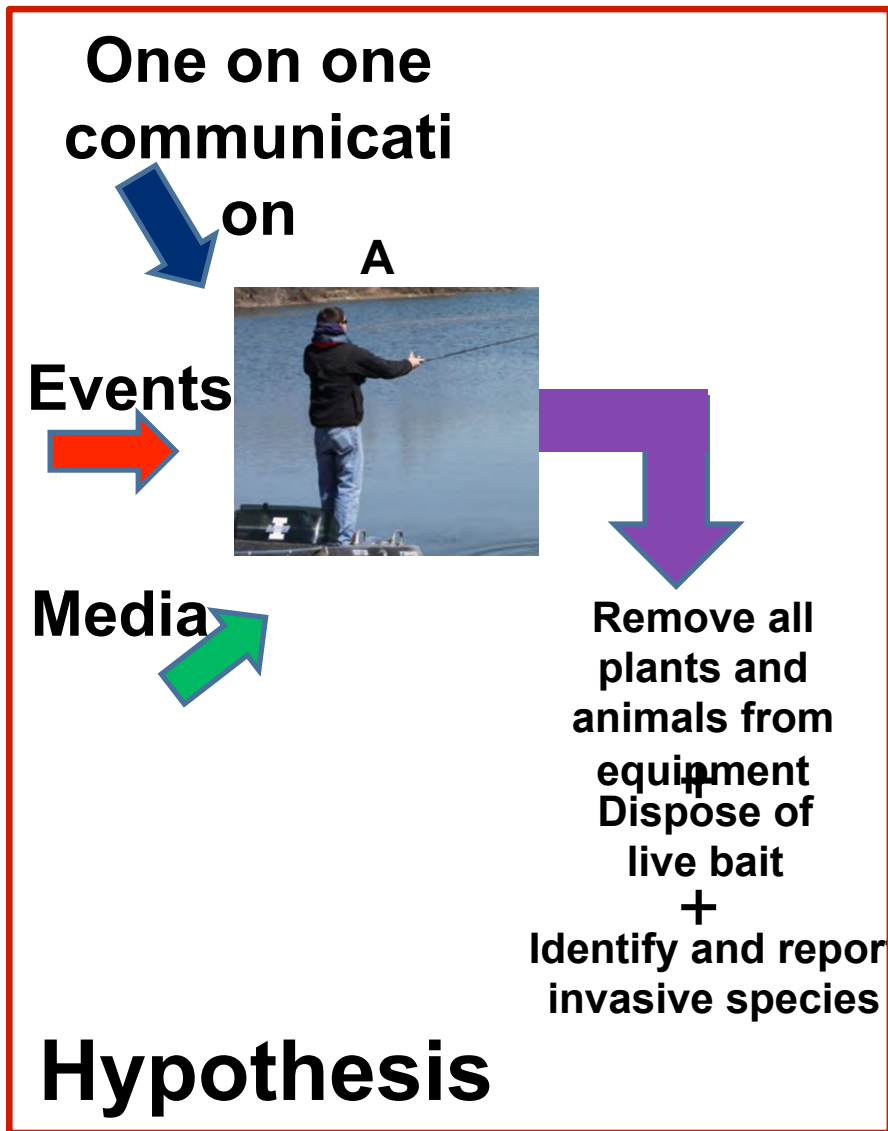
Research Questions

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?

Predictions



1



2

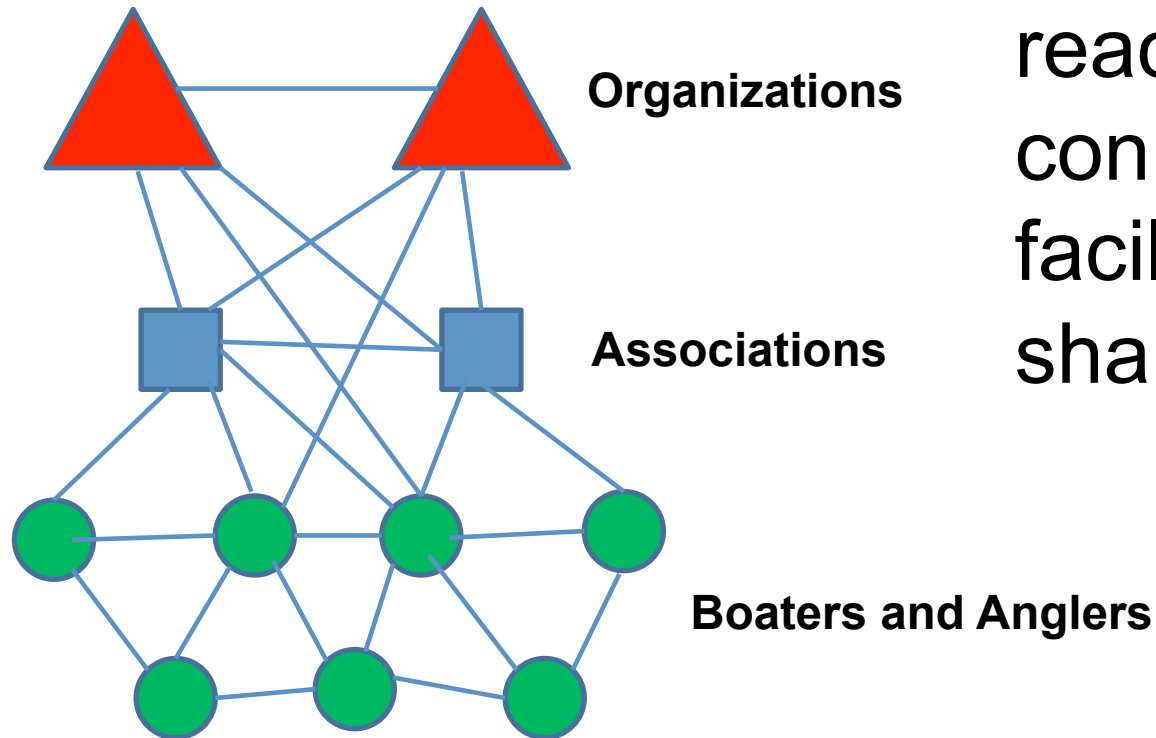
Q2) Can we map existing outreach networks in Illinois?

- Networks

- Interconnections between resource users and managers

- Share information
 - Build partnerships & trust
 - Support changes in perceptions or **practices**

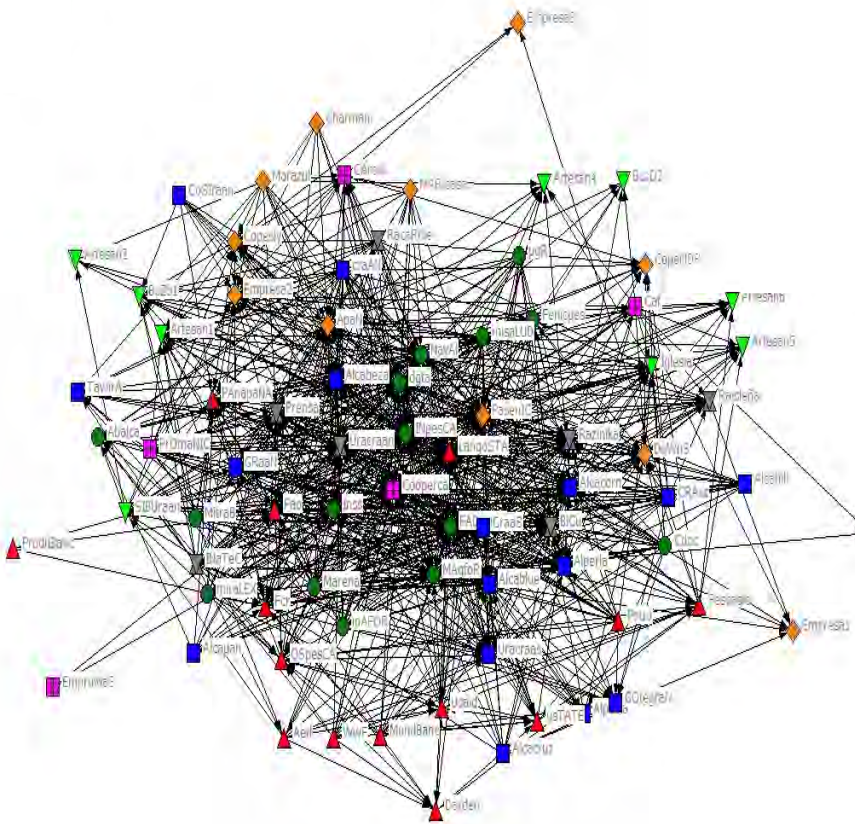
Network Diagram



Networks with high reachability and connection density facilitate information sharing.

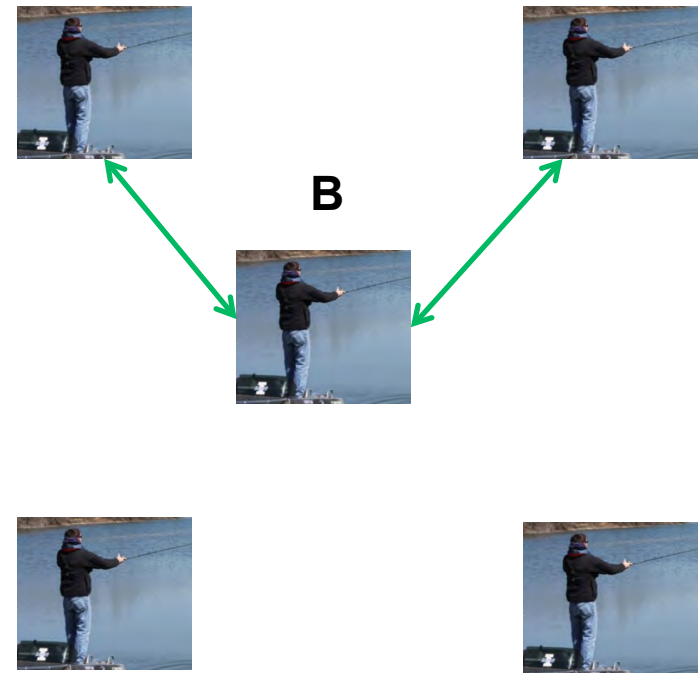
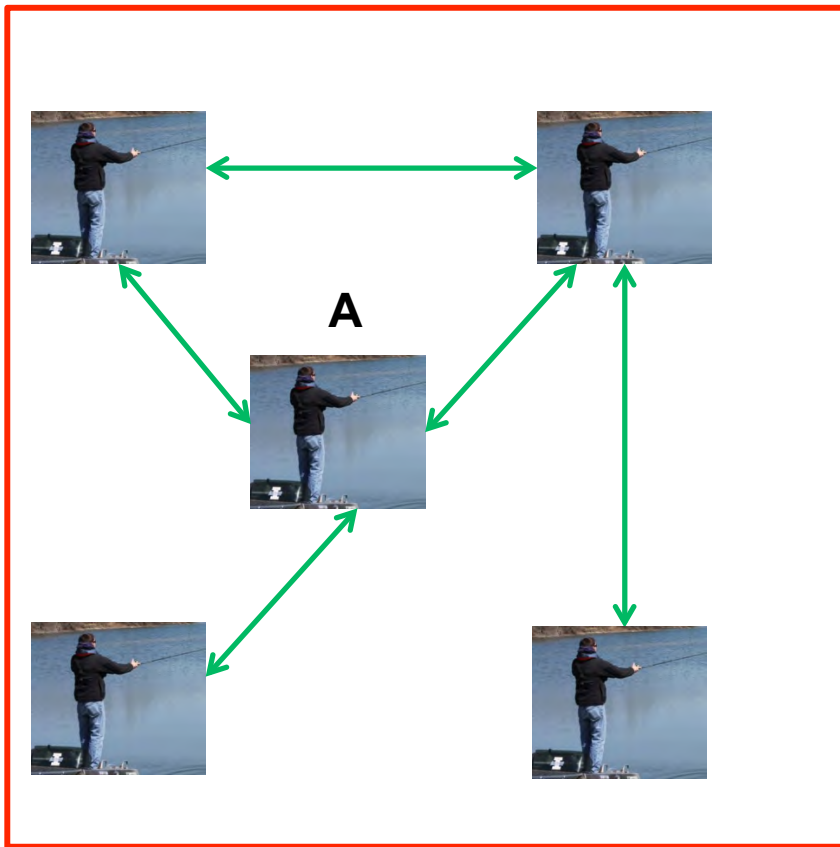
Prediction: Regions that are targeted by densely connected organizations will show a high rate of preventative practices performed by boaters and anglers.

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.