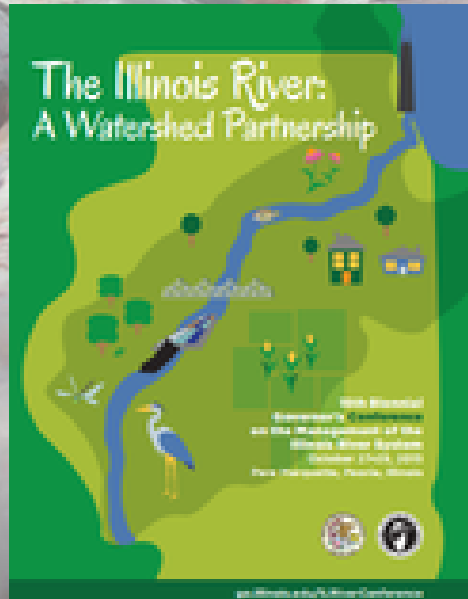


Using Commercial Fishing to Limit the Spread of Asian Carp

Kevin Irons, Illinois IDNR



David Wyffels, Matt O'Hara, Tristan Widloe, Blake Ruebush, Blake Bushman, Brennan Caputo, Luke Nelson, Mike McClelland, Victor Santucci

Southern Illinois University





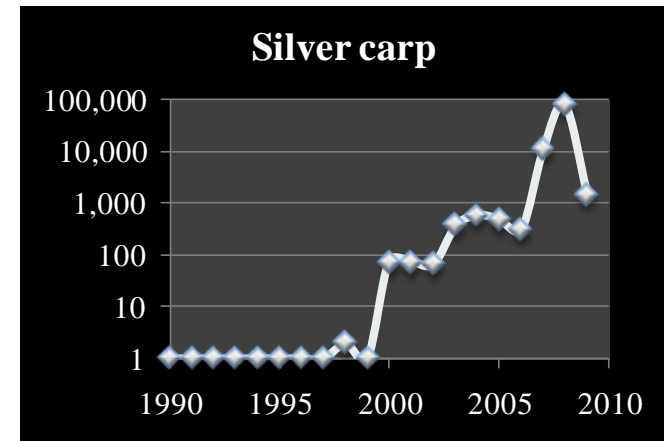
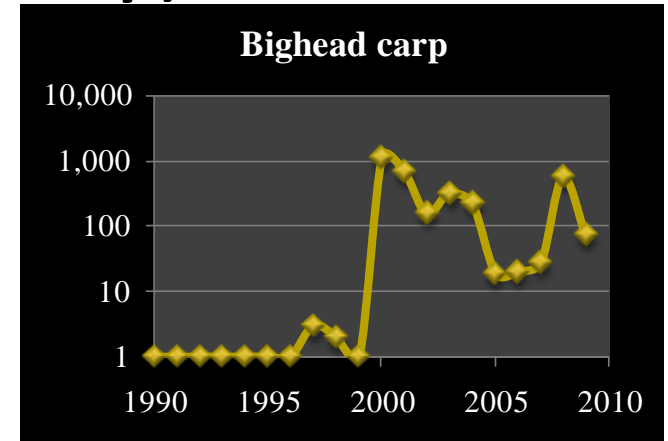
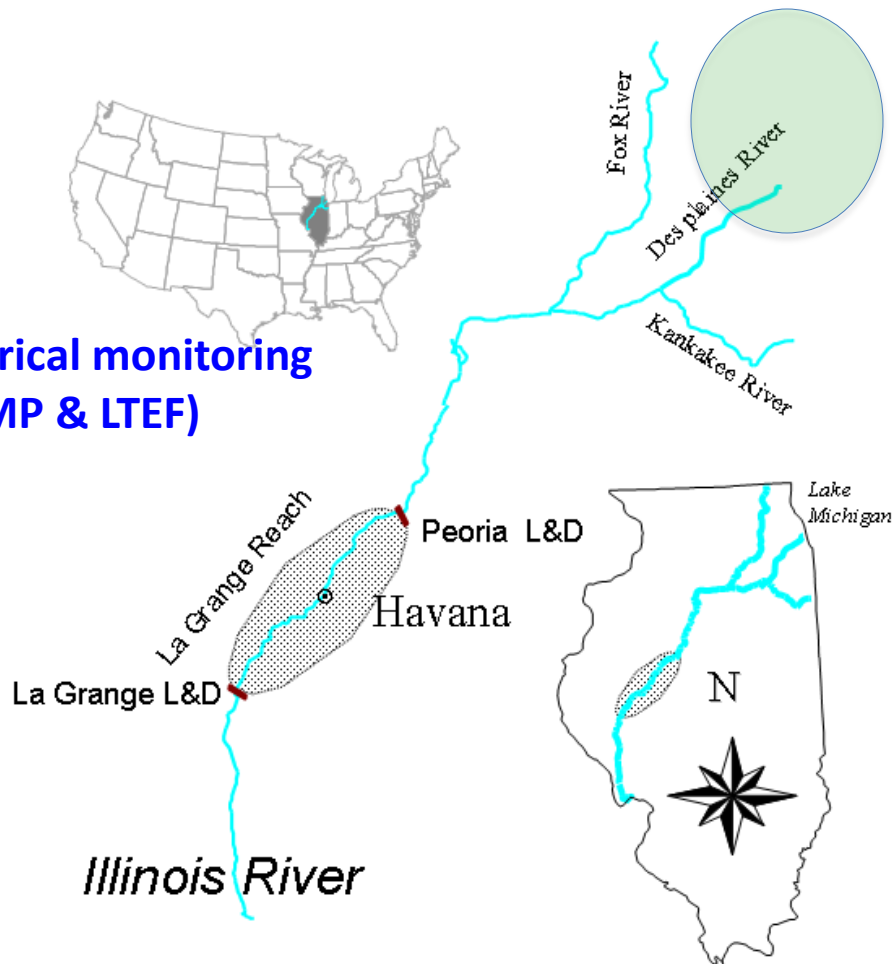
Large numbers Asian carp provide significant grazing on aquatic resources with deleterious effects on native species





Historical river monitoring has helped inform (Illinois Waterway)

Historical monitoring
(LTRMP & LTEF)

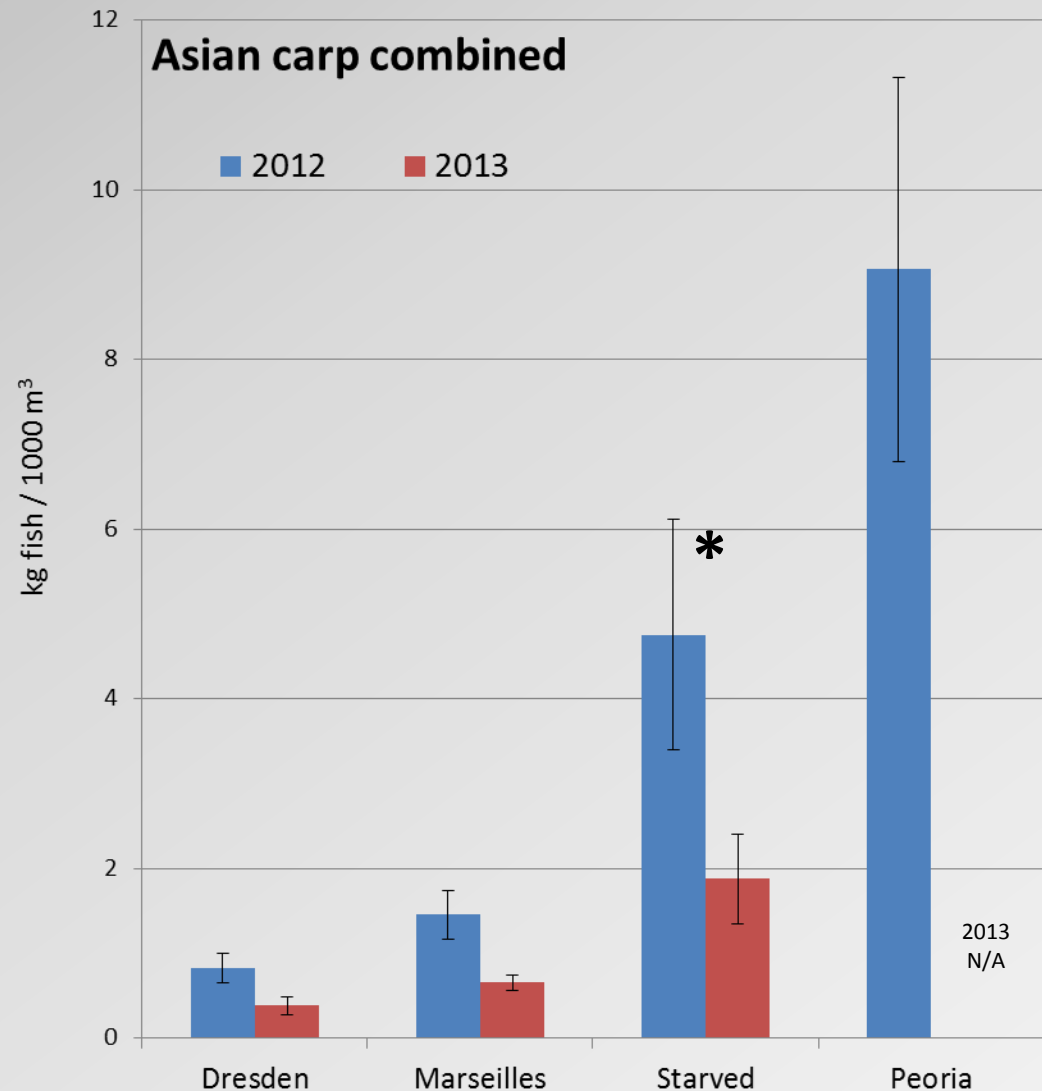


Hydroacoustic estimates of Asian carp 2012 vs. 2013

Mean density (kg of fish / 1000 m³)
declined in all upper reaches

% decline between 2012 & 2013

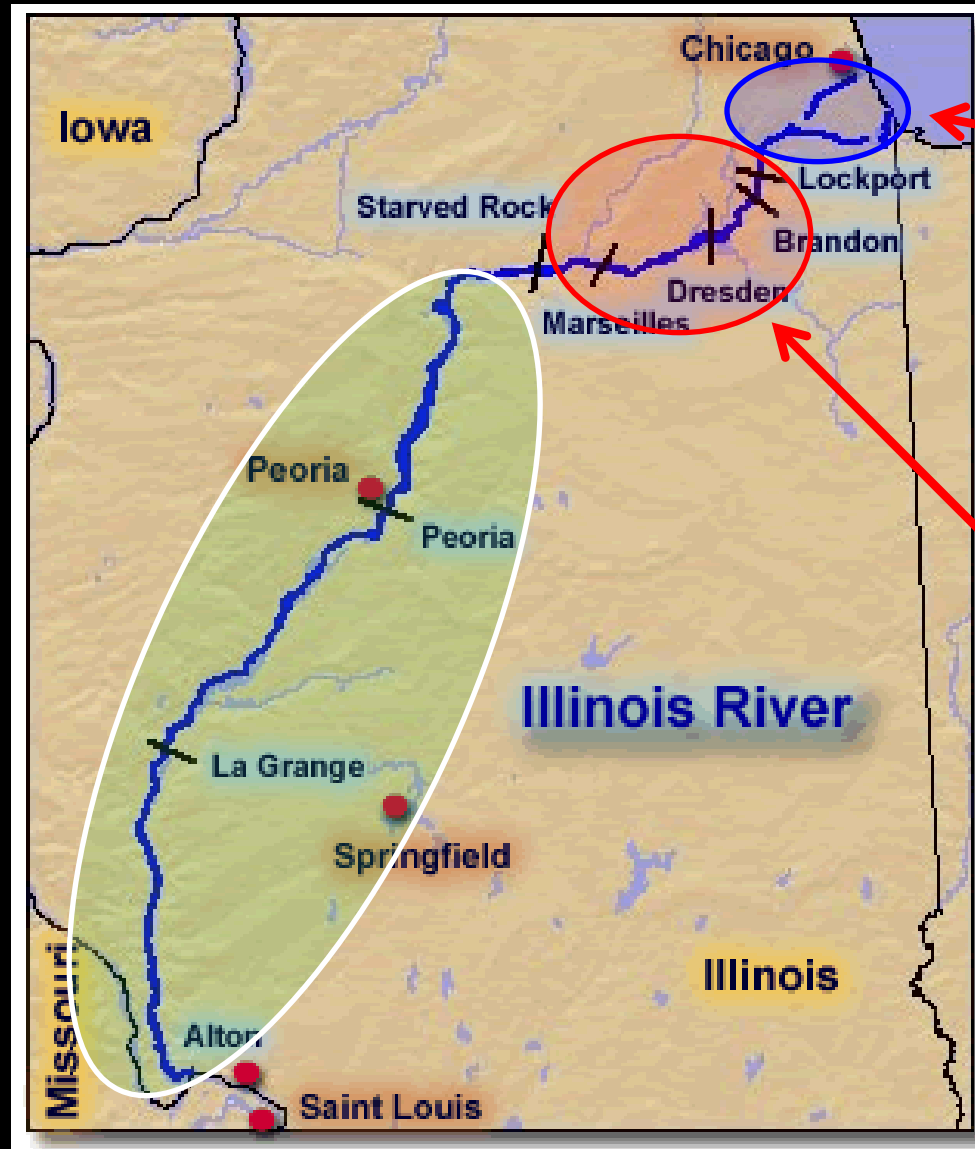
	SVCP	BHCP	AC
Dresden	58.4	52.9	53.5
Marseilles	23.1	74.7	54.8
Starv. Rock	56.1	67.4	60.6



Approach and Target Areas

Illinois River

- Independent Commercial Harvest as Control
 - China-US (TNC) partnership may help increase
 - Business development
 - Market driven
- Assessing Population Demographics and Response
- Content/contaminant



CAWS & Upper Des Plaines

- Physical Barriers
- Monitoring
- Response actions

Upper Illinois and Lower Des Plaines

- Detectable Population Front Monitoring
- **Contracted removal**
- Small fish monitoring
- Telemetry
- Demographics
- Modeling
- Integrated Pest Management

BARRIER DEFENSE

ASIAN CARP CONTRACTED HARVEST IN THE

UPPER ILLINOIS WATERWAY

Grant funded

COMMERCIAL FISHING

ASIAN CARP HARVEST IN THE LOWER

ILLINOIS WATERWAY

Commercial ventures for profit – market driven



Approach and Target Areas



Upper Illinois and Lower Des Plaines

- Detectable Population Front Monitoring
- **Contracted removal**
- Small fish monitoring
- Telemetry
- Demographics
- Modeling
- Integrated Pest Management

Barrier Defense



Small and Large Hoop nets



Gill and
Trammel nets



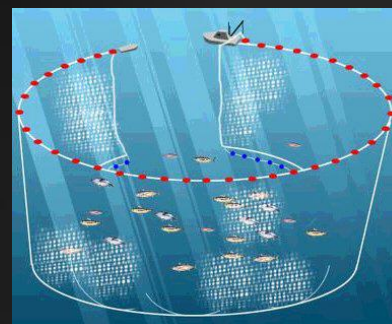
Electrofishing (Day and night)



Fyke nets (shoreline and tandem)



Mini fyke nets
(shoreline and
tandem)



Contracted removal where commercial efforts are not permitted.



Reduced propagule pressure





Barrier defense



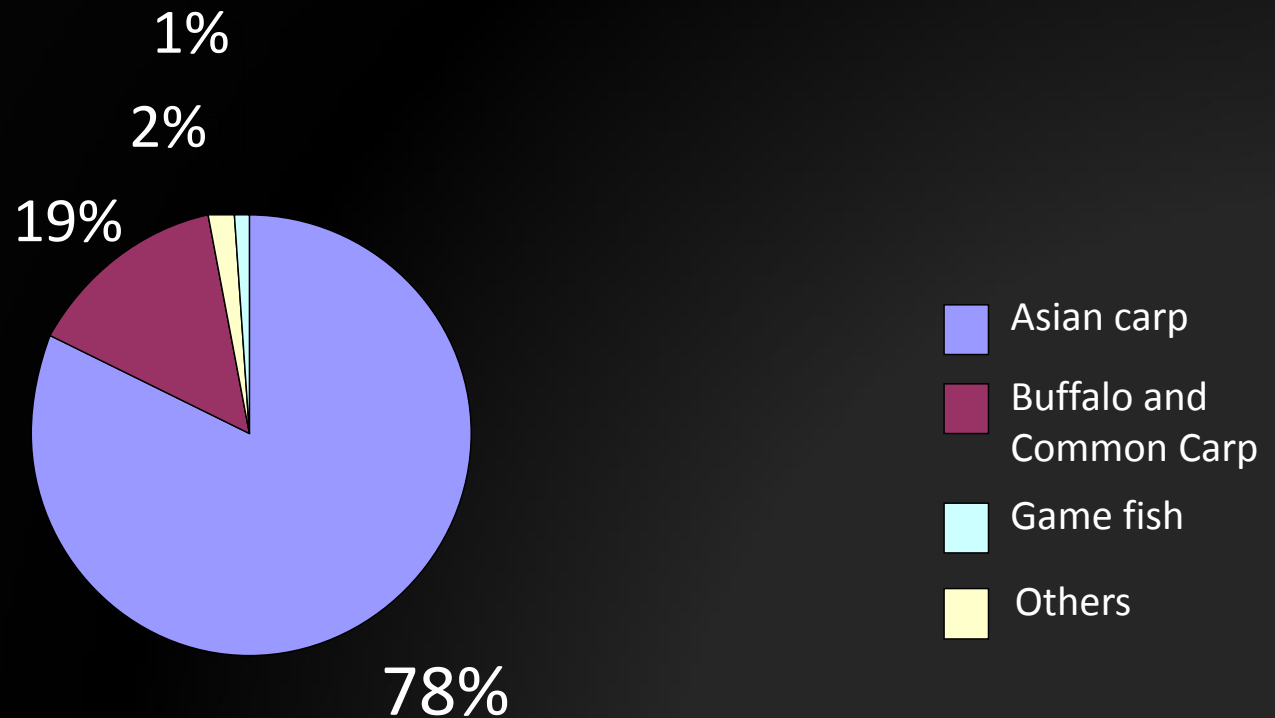


- Seine potentially had 1,000,000 lbs of AC



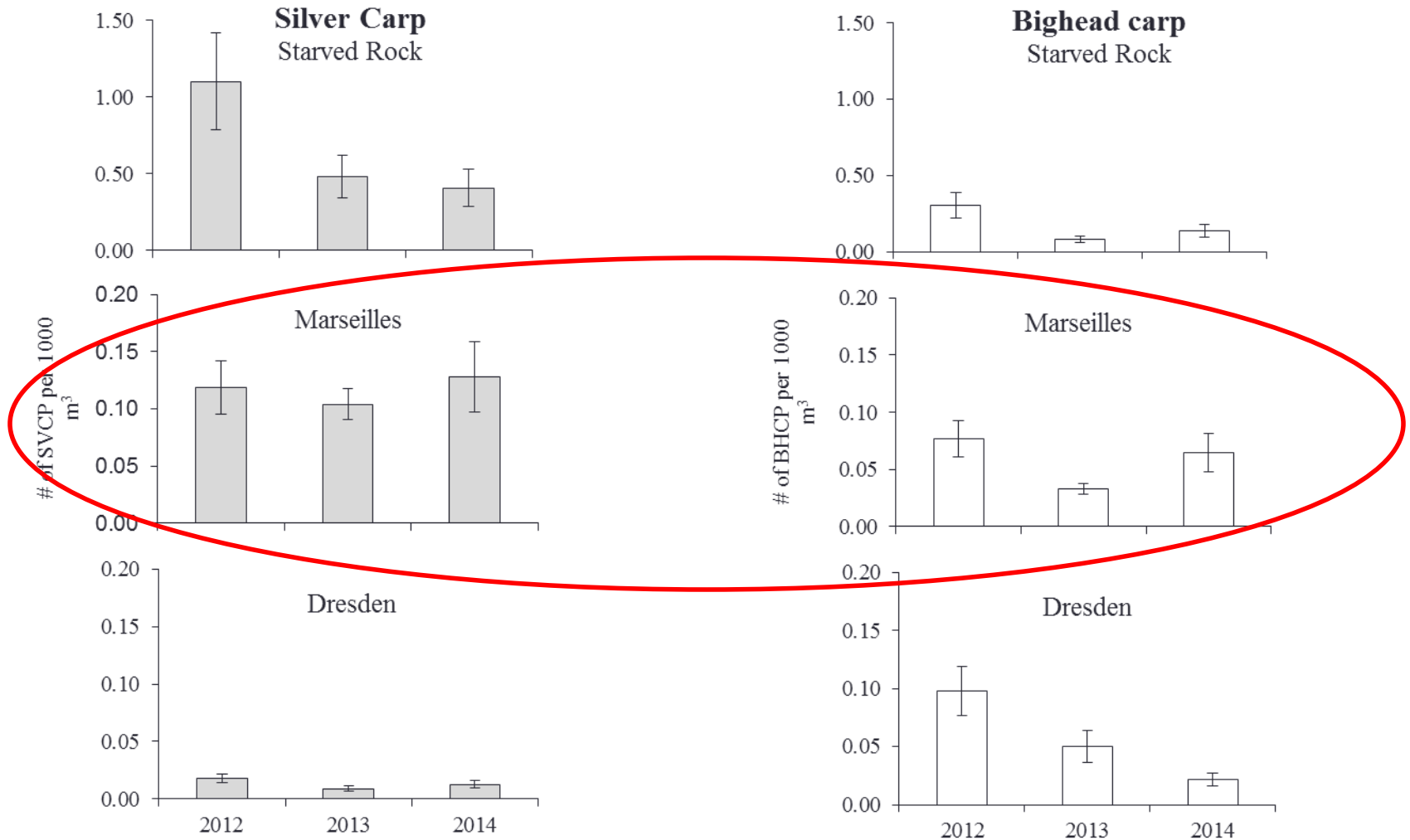
Commercial Fishing for Removal (barrier defense)

Percentage of Asian Carp to Other Species

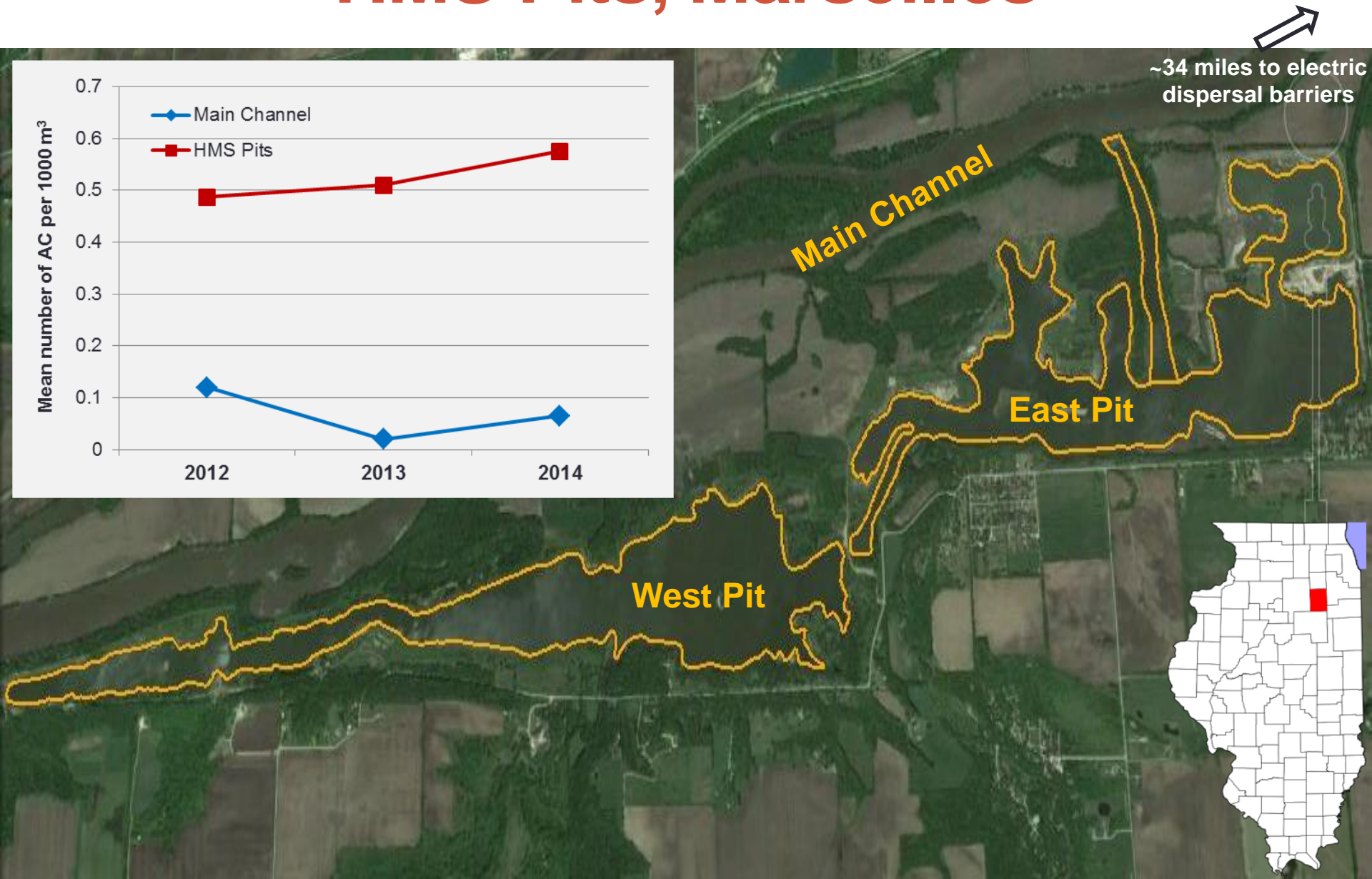
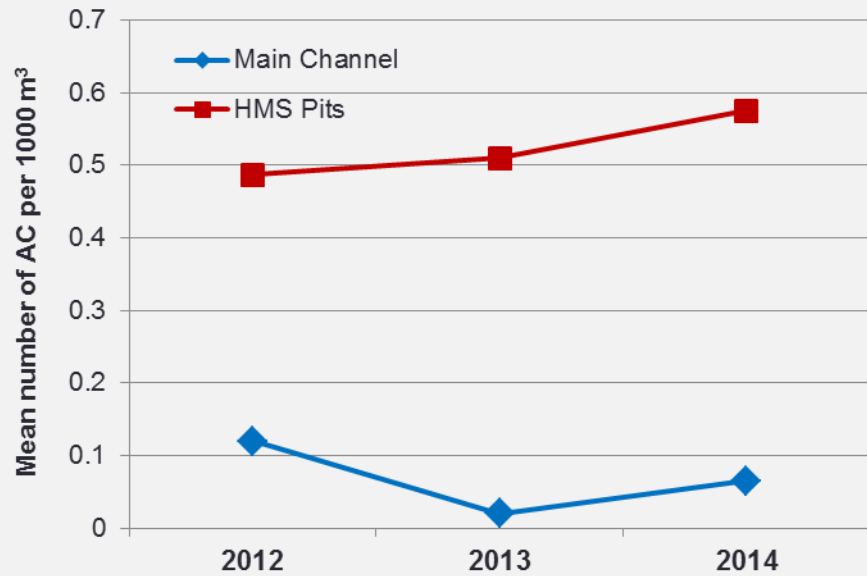


Data from 2011 collections

Species-specific densities

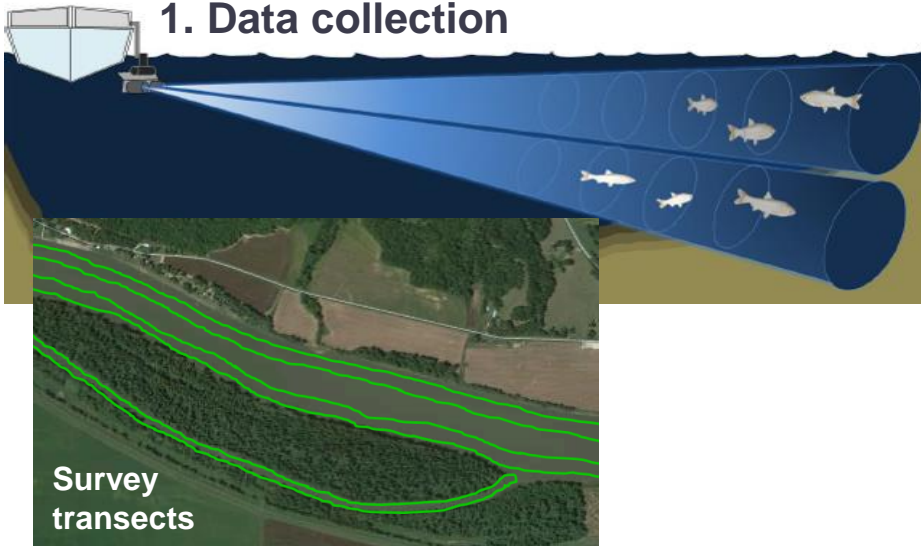


HMS Pits, Marseilles

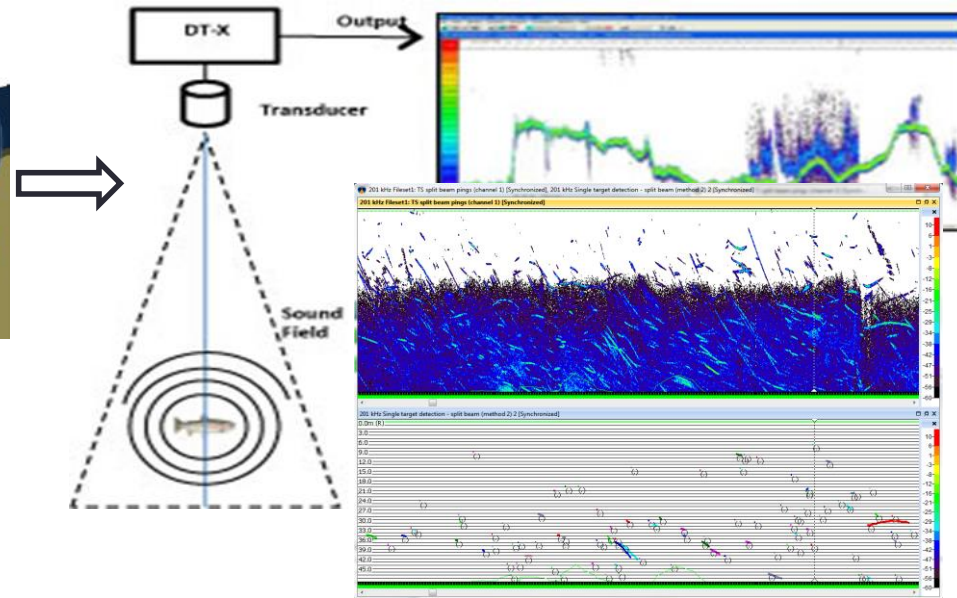


Hydroacoustics

1. Data collection



2. Post-processing



4. Asian carp population estimates

- Abundance
- Biomass
- Size structure

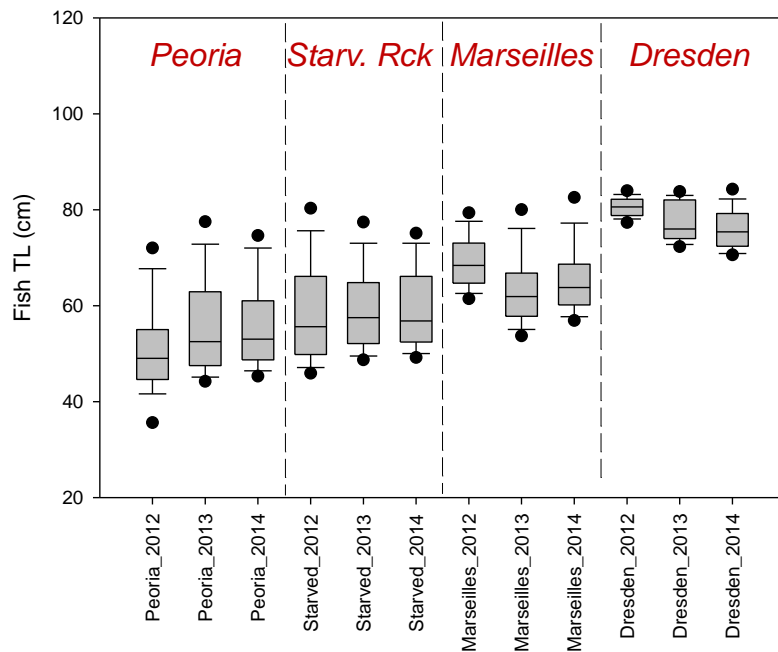


3. Data analysis and species composition

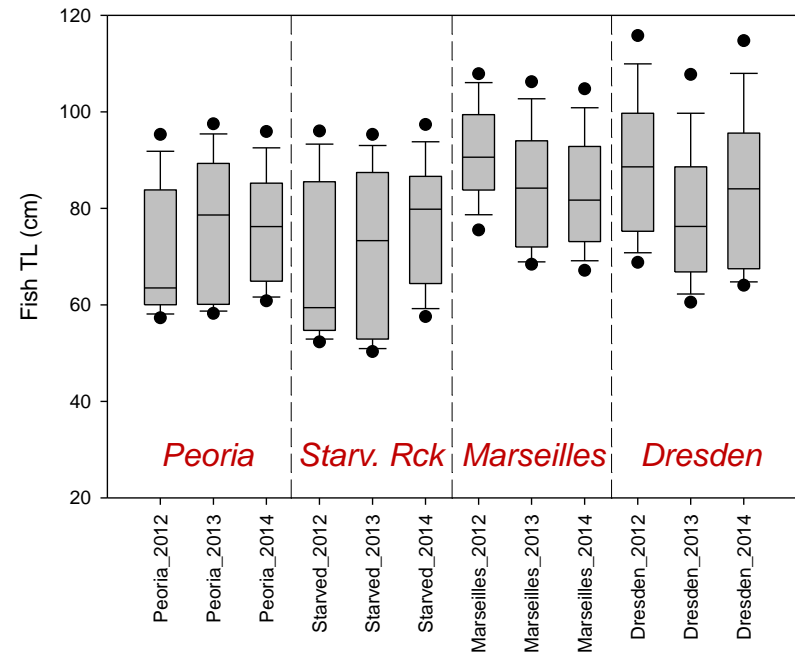
Population characteristics

- AC density ~2–3 times higher in lower River
- Size decrease in Marseilles and Dresden
→ harvest effect?
- Largest individuals (i.e. high reproductive potential) furthest upstream

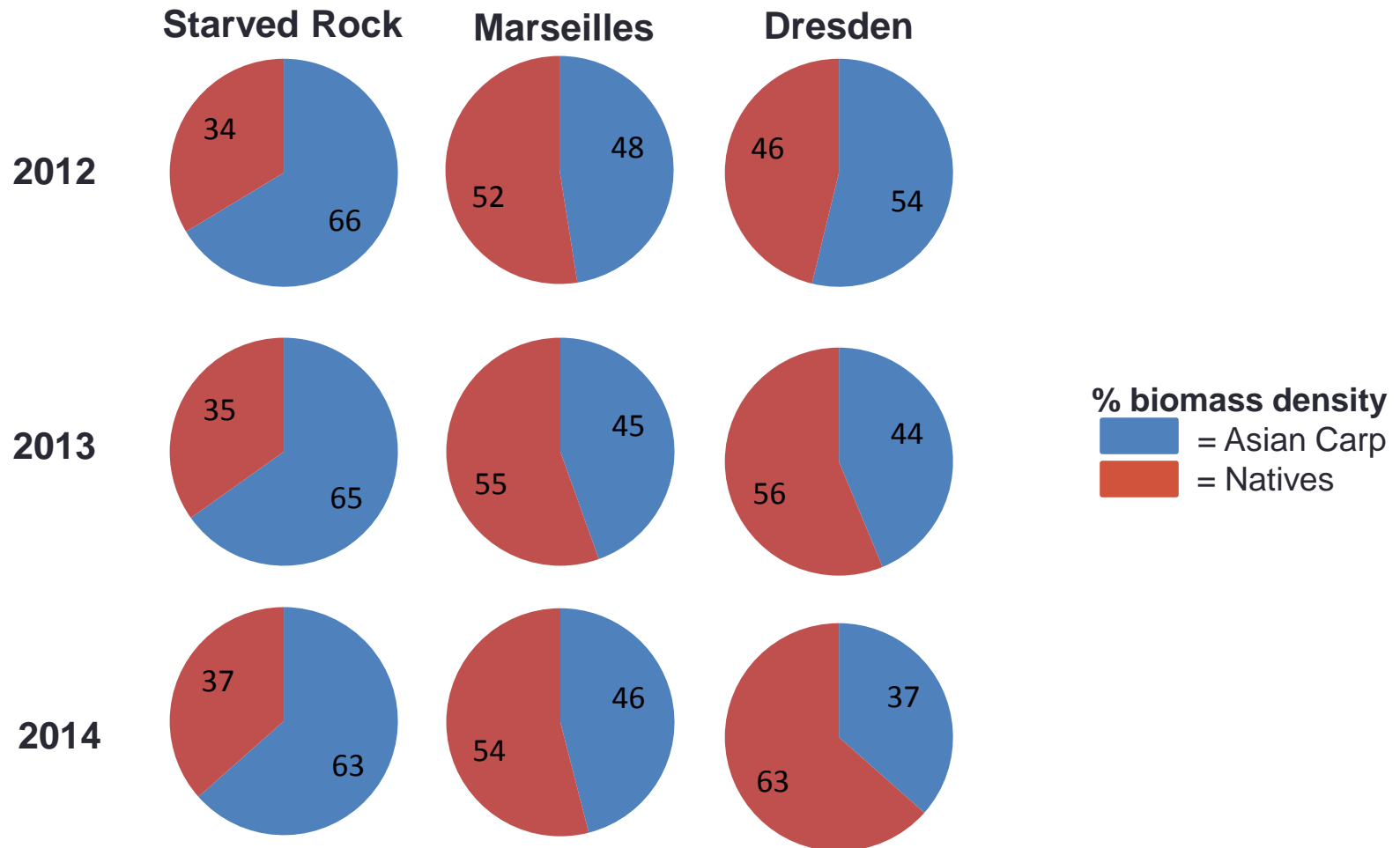
Silver carp



Bighead carp



Upper River fish community biomass



Telemetry and carp movement 2014

Fish tagged in 2014

	Bighead carp	Silver carp	Hybrid Asian carp
Marseilles	15	58	
Starved Rock	23	23	4
Peoria	15	23	12
La Grange	9	31	10
Alton		16	14

Redetection rates

YEAR	USACE	SIU	RECAP	Redetection Rate
2008	1			
2009	12			
2010	17	380	196	49.4%
2012	46	371	136	32.6%
2013	25	291	231	73.1%
2014	3	250	21	8.3%
SUM/Average	104	1,292	584	40.8%

****25 acoustic tagged fish redetected by fishermen,
and 49 \$5 jaw tagged fish captured**

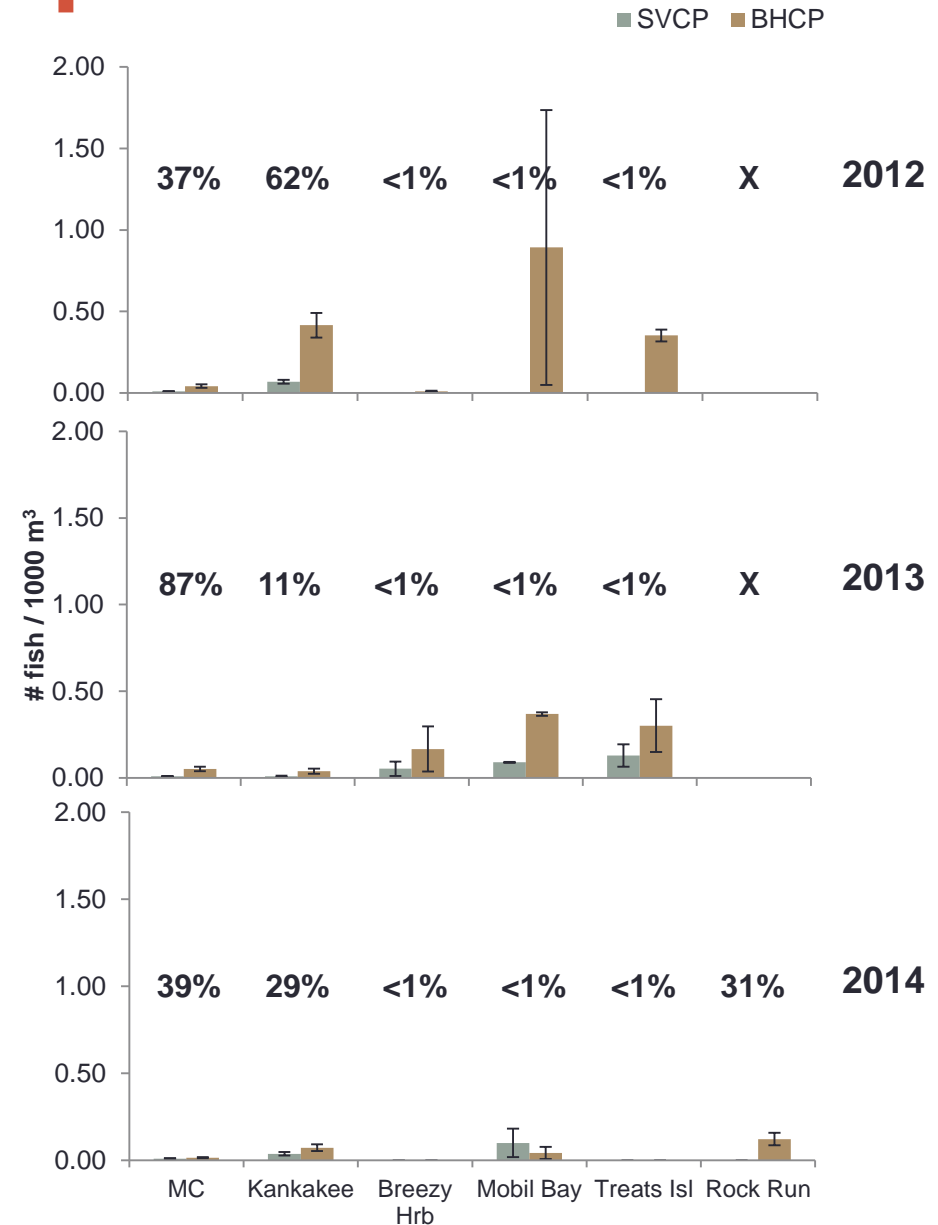


**Individually numbered \$50
reward tags**



Dresden pool – population front

- Spatial distribution in Dresden pool
 - Bars = mean density \pm 95 CI
 - Total AC abundance (percentages)
- Rock Run surveyed in 2014



Characterizing Risk: IWW and CAWS

Distances from Lake Michigan

37 miles Dispersal barriers

55 miles Adult Population Front

62 miles Presence of Adults/Potential Spawning

64 miles Observed Spawning activity (no larvae/YOY)

91 miles Established population: Closest observed juvenile Asian carp (Heritage Harbor Marina, Starved Rock Pool)

Overall leading edge of adult Asian carp invasion has not changed since 2006 (Dresden Island Pool; I-55)

Three captures of adult **BLACK CARP**

2010: RM 27.5 Triploid

2013: RM 24 Diploid

2014: RM 22.5 Diploid

Adult Population Front

Ottawa

Henry

**Presence of Adults/
Potential Spawning**

**Verified
Spawning**

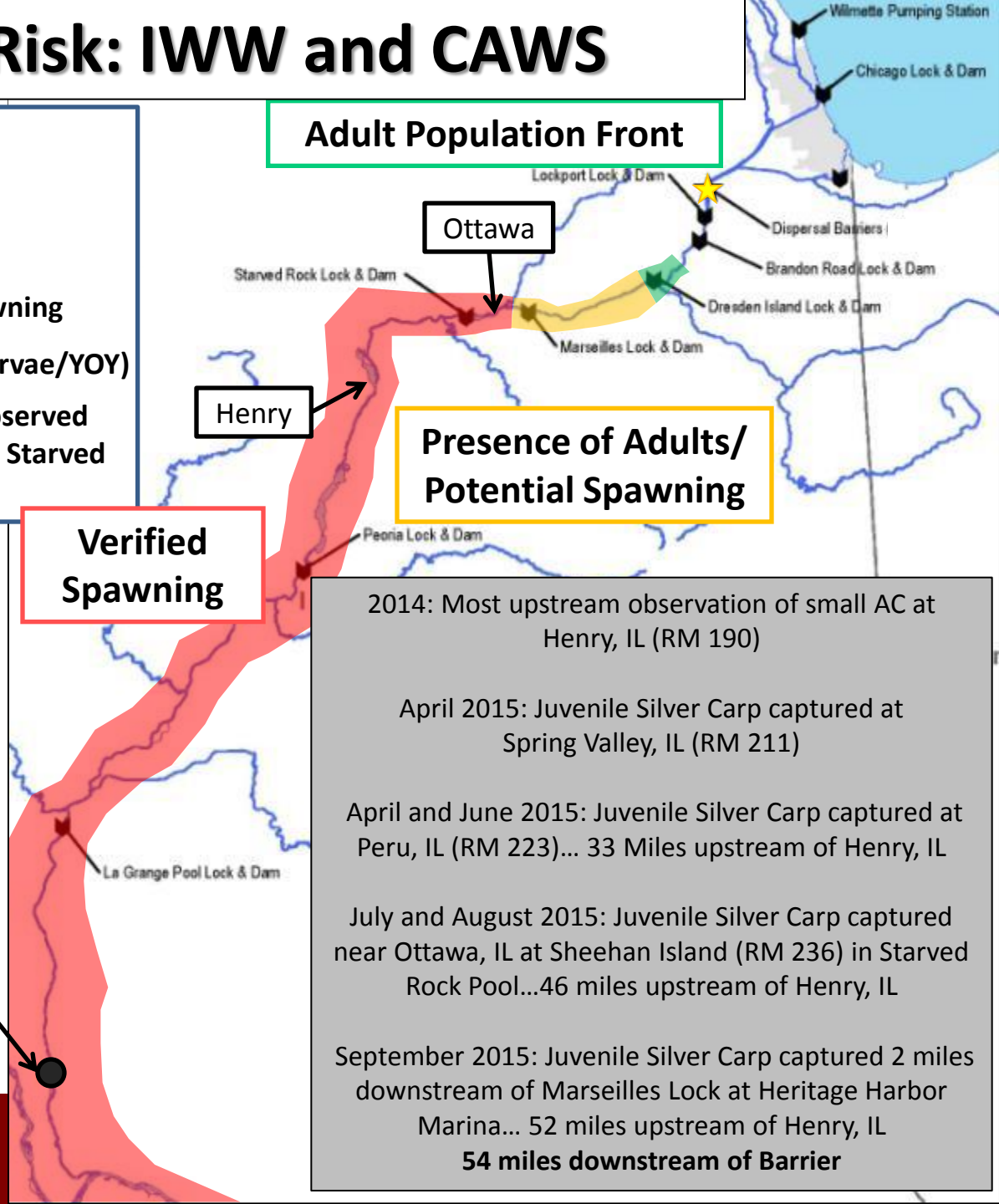
2014: Most upstream observation of small AC at Henry, IL (RM 190)

April 2015: Juvenile Silver Carp captured at Spring Valley, IL (RM 211)

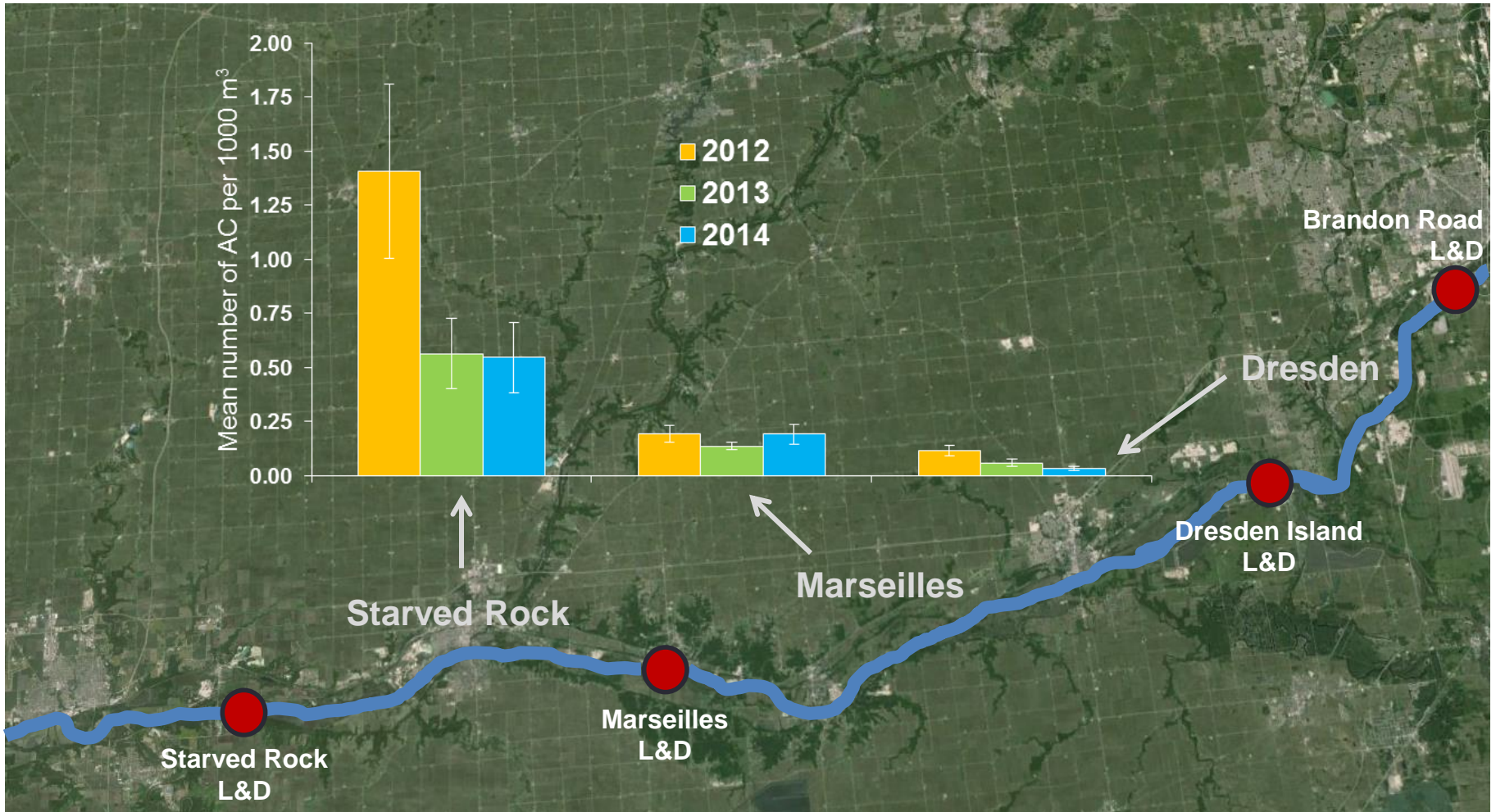
April and June 2015: Juvenile Silver Carp captured at Peru, IL (RM 223)... 33 Miles upstream of Henry, IL

July and August 2015: Juvenile Silver Carp captured near Ottawa, IL at Sheehan Island (RM 236) in Starved Rock Pool...46 miles upstream of Henry, IL

September 2015: Juvenile Silver Carp captured 2 miles downstream of Marseilles Lock at Heritage Harbor Marina... 52 miles upstream of Henry, IL
54 miles downstream of Barrier



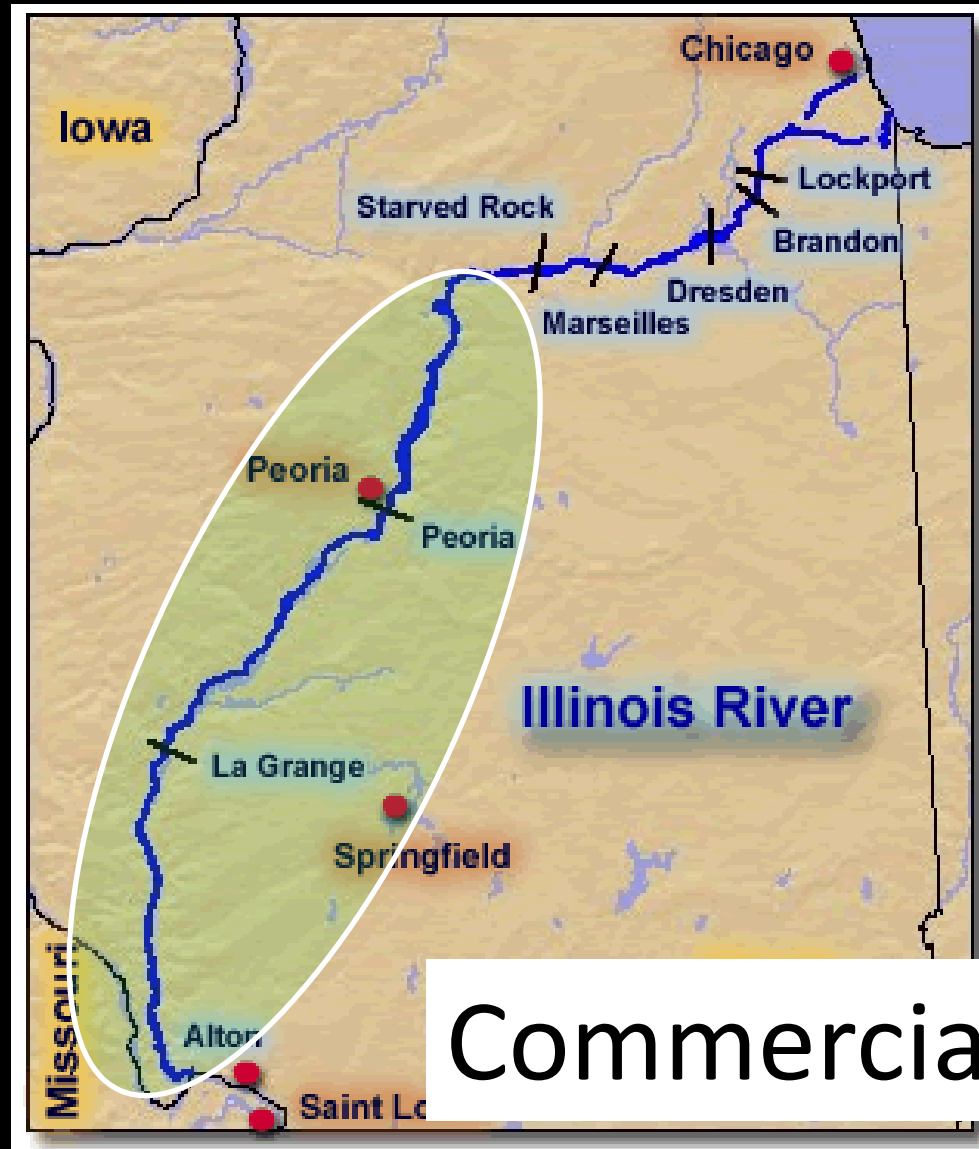
Upper River AC density



Approach and Target Areas

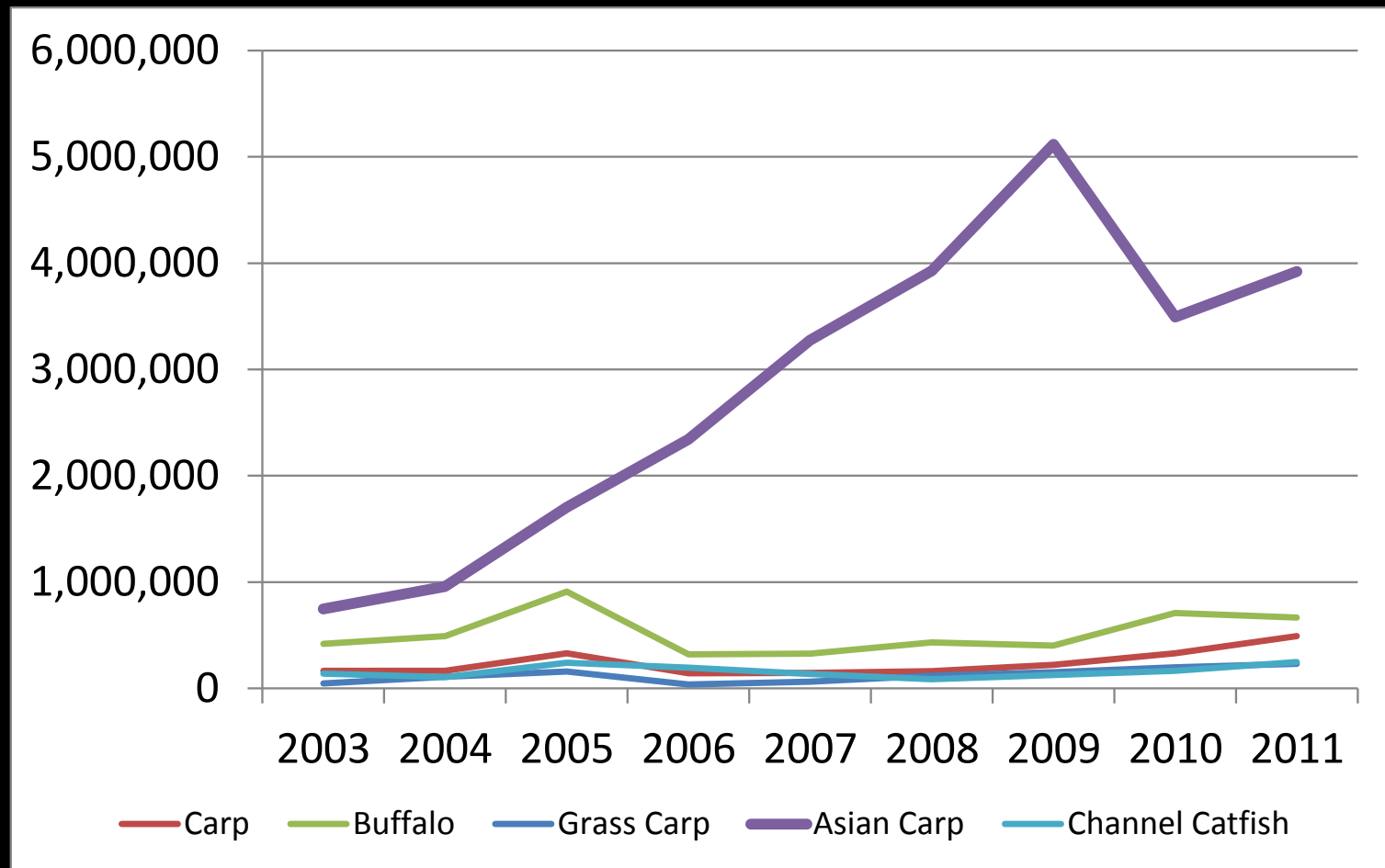
Illinois River

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- Assessing Population Demographics and Response
- Content/contaminant

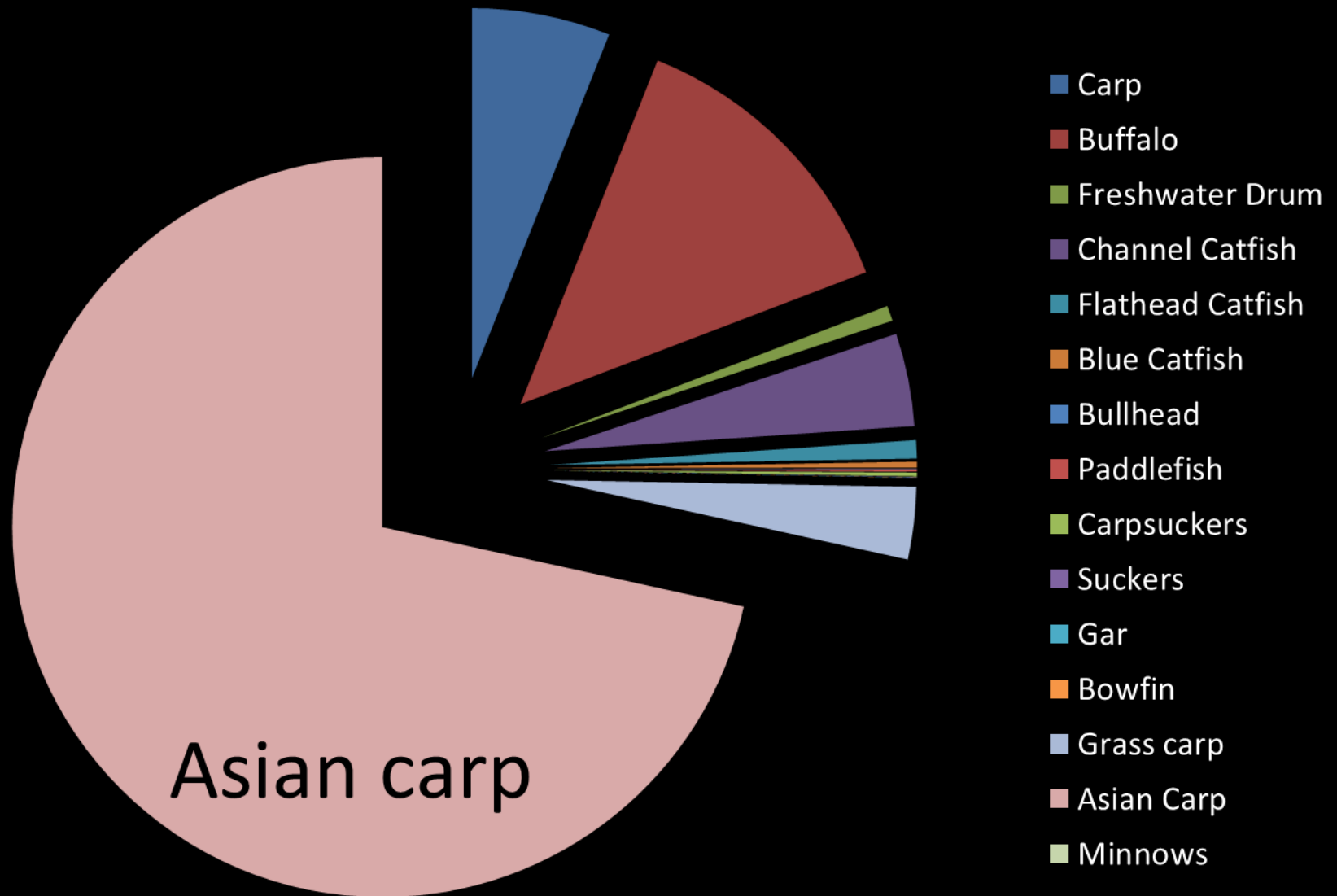


Commercial Fishing

Commercial harvest (pounds) from Illinois River

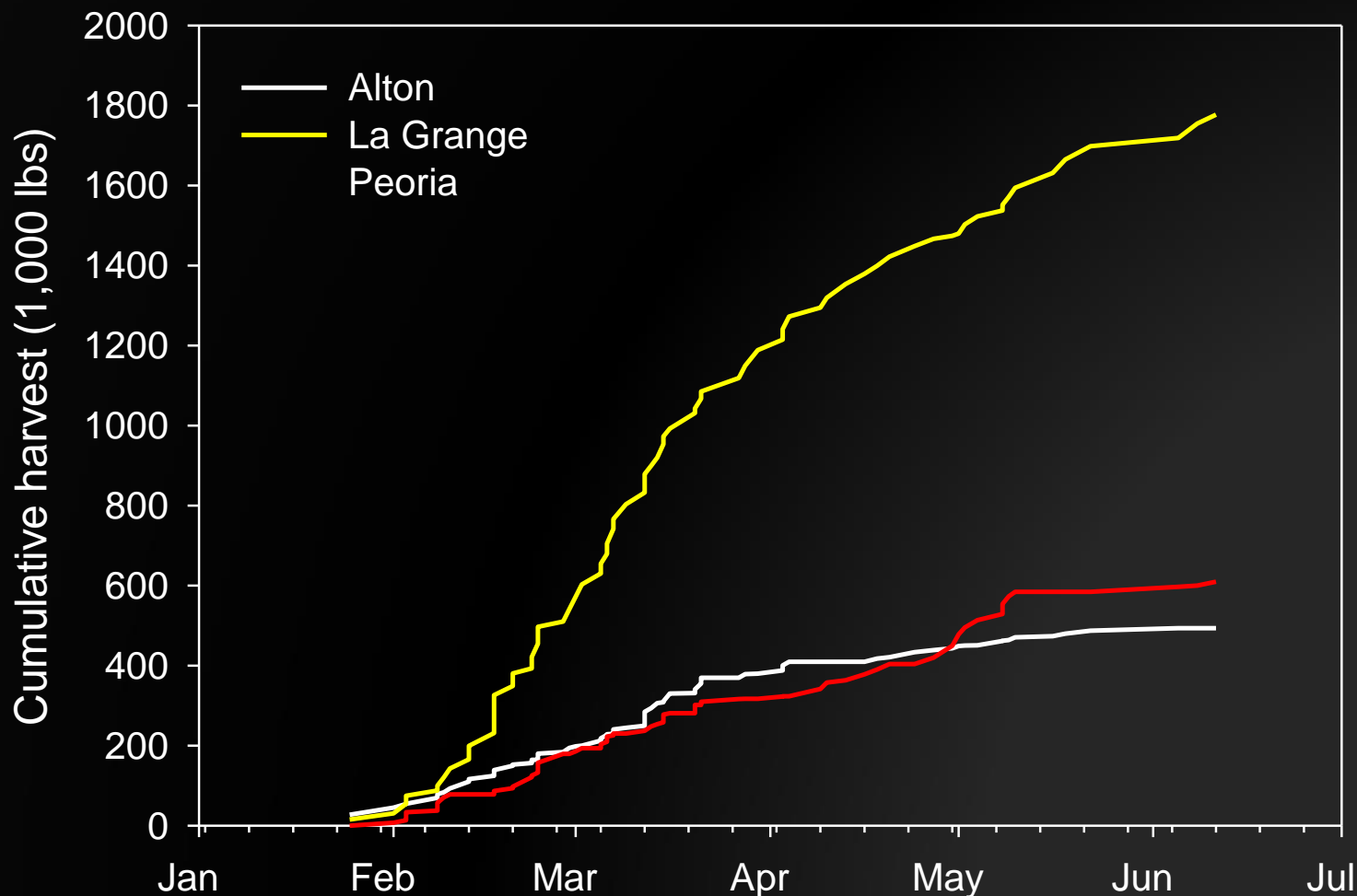


Commercial harvest 2003-2011



Monitoring Asian Carp Population Metrics and Control Efforts - SIUC

3 million lbs of Asian carp were harvested from the lower three reaches of the Illinois River (Fishing experiment, Meal)



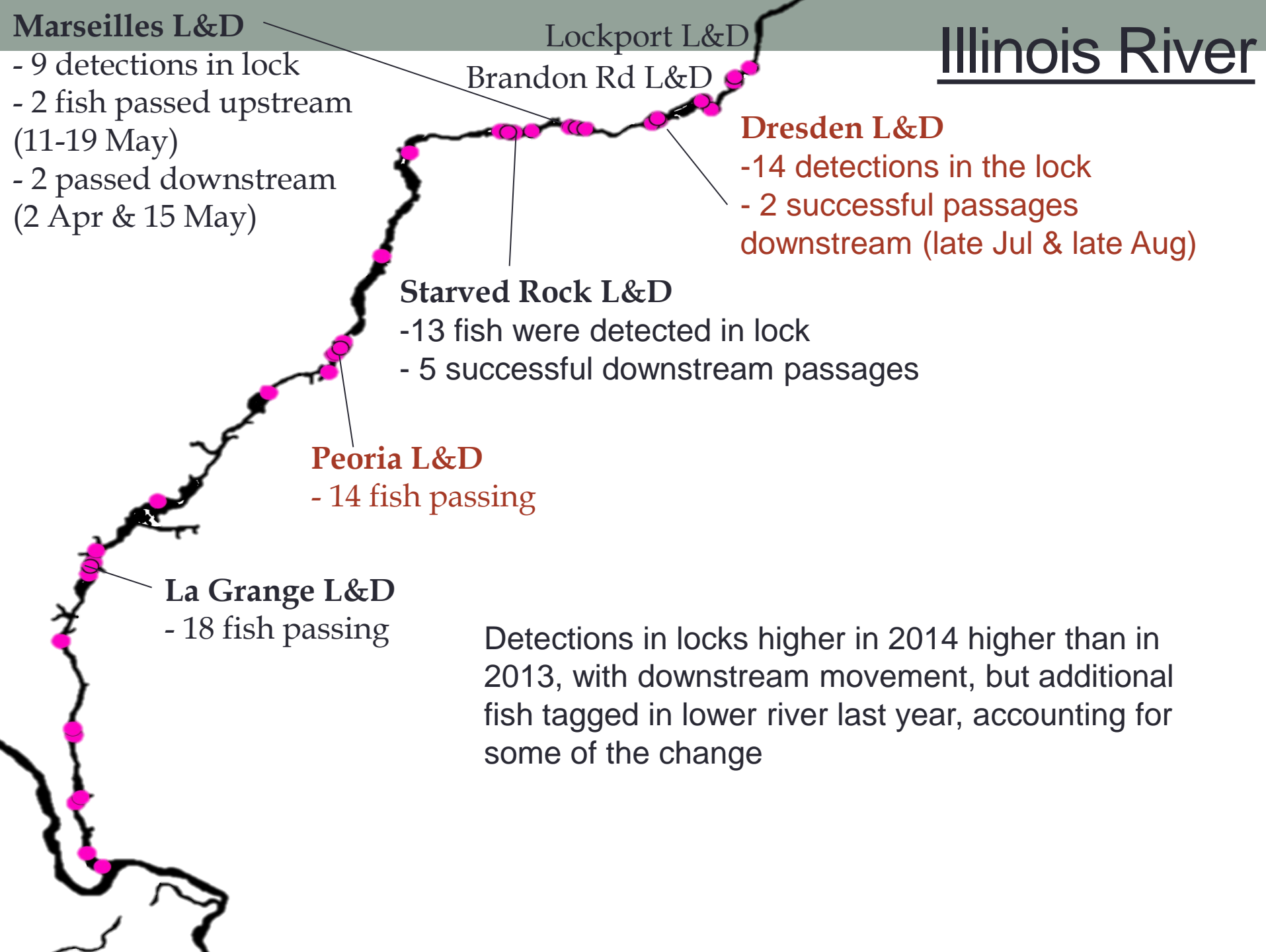
Monitoring Asian Carp Population Metrics and Control Efforts - SIUC

3 million lbs of Asian carp were harvested from the lower three reaches of the Illinois River (Fishing experiment, Meal)

Changes in the population size structure, relative abundance, and sex ratios were evident in 2012 relative to 2011 for silver carp in the three lower reaches of the Illinois River.

- Catch per unit effort (CPUE) was significantly reduced by at least 33%.
- Length-at-age was significantly smaller.
- 17% more males than females, possibly due to size selective harvest of larger females.
- No age-1 or YOY Asian carp were collected in the three lower reaches of the Illinois River in 2012, indicating that 2011 and 2012 were poor recruitment years.
- Illinois River does not exhibit large annual spawns but spawning sporadic, but highly successful (2014-2015 best on record)

Illinois River



Illinois River

Commercial harvest Incentives Market development

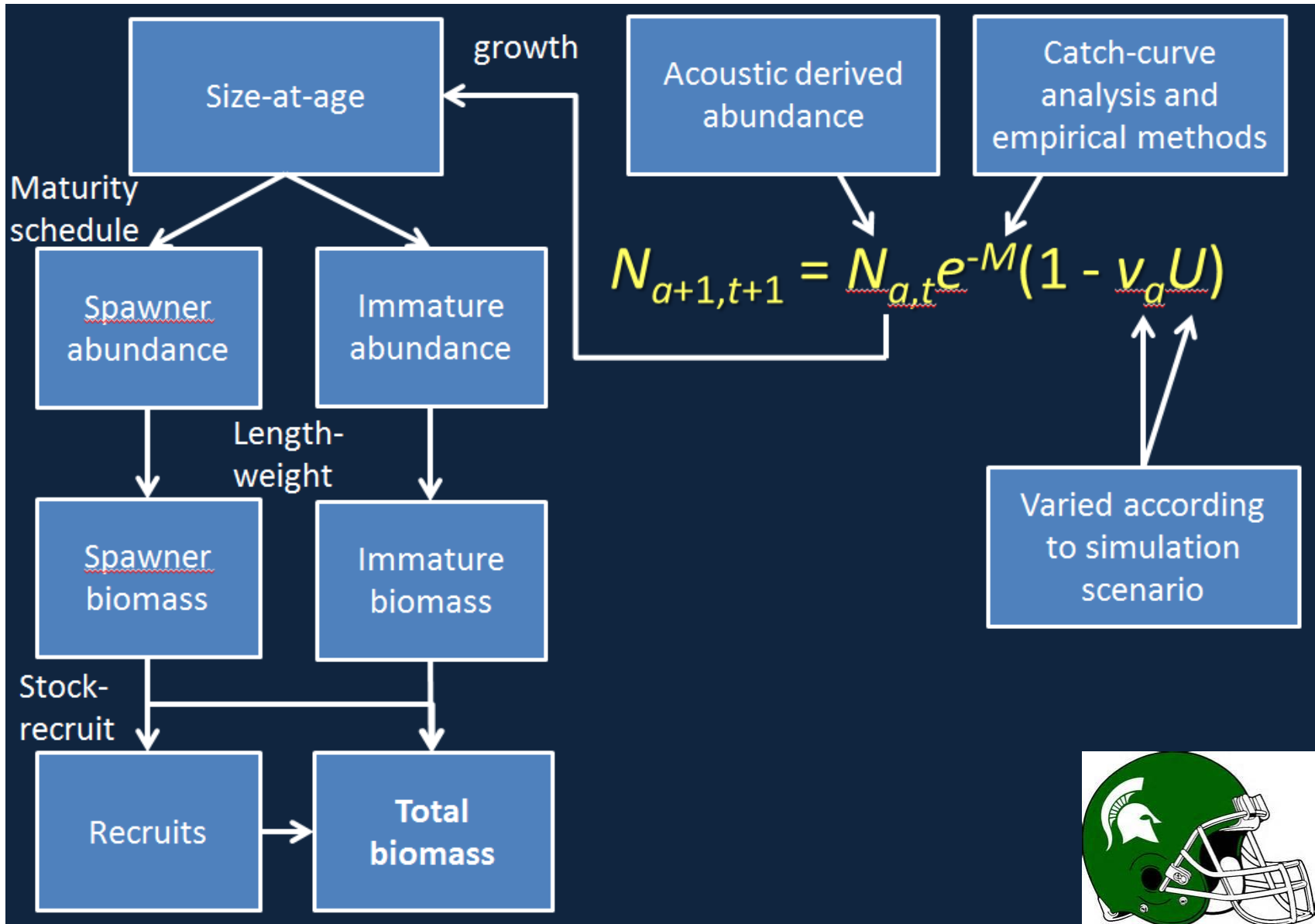


Innovative Kosher Products!

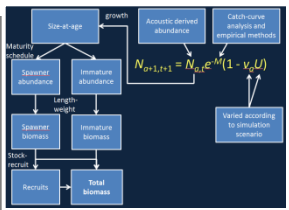
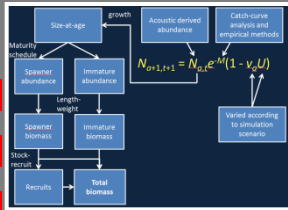
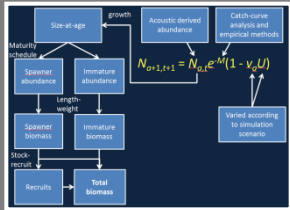
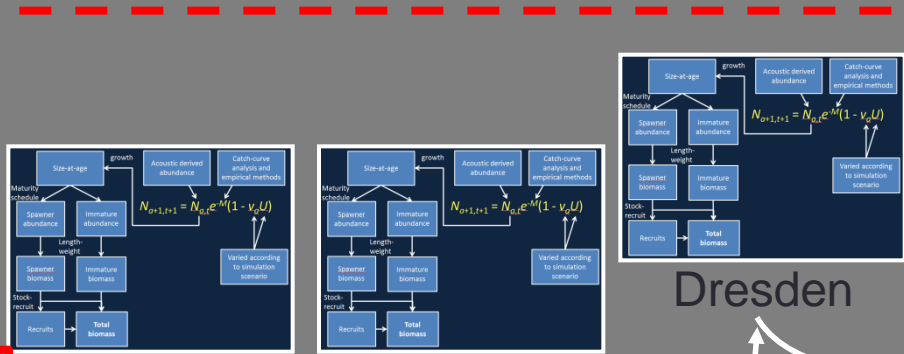
Franks	Gefilte Fish	Salami
NEW!	NEW!	NEW!
✓ You won't believe it's real Franks	✓ You won't believe it's real Franks	✓ You won't believe it's real Franks
✓ Kosher parve	✓ Kosher parve	✓ Kosher parve
✓ Fully cooked	✓ Fully cooked	✓ Fully cooked
✓ 1 lb (16oz) package with 8 hot dogs	✓ 1.5 lb (24oz) loaf	✓ 1 lb (16oz) tube
✓ High in protein	✓ Fully cooked, ready to eat	✓ High in protein
✓ High in omega-3	✓ Up to half the cost of other leading brands	✓ High in omega-3
✓ No MSG	✓ No MSG	✓ No MSG
✓ No GMO	✓ No GMO	✓ No GMO
✓ Gluten Free	✓ Gluten Free	✓ Gluten Free
✓ Low cholesterol and sodium	✓ Low cholesterol and sodium	✓ Low cholesterol and sodium
✓ 0% fat and only 90 calories	✓ Better than home-made	✓ 3.5% fat and only 70 calories
✓ Made from wild caught carp	✓ Stores for up to 6 months in refrigerator with no preservatives	✓ Made from wild caught carp and white fish or northern pike



Population Model, v.1 (Tsehaye *et al.* 2013)



Spatially explicit population model



Lockport

Brandon Rd

Dresden

Starved Rock Marseilles

Peoria

La Grange

Alton



Federal and Regional Partners

U. S. Fish and Wildlife Service

- Carterville, IL
- Lacrosse, WI
- Columbia, MO

U. S. Army Corps of Engineers

- Chicago District
- Rock Island District

U. S. Coast Guard

U. S. Environmental Protection Agency

U. S. Geological Survey

Great Lakes Fishery Commission

All Great Lakes States

Ontario and Canada

State, Local, and Research

Illinois Department of Natural Resources

Illinois Natural History Survey

Illinois Environmental Protection Agency

University of Illinois

Southern Illinois University

Western Illinois University

University of Notre Dame

Metropolitan Water Reclamation District



Local and Regional partnerships are valuable and necessary,

specifically for economic development.

(local efforts supported by State and Federal programs)

Leigh Ann Brown

City of Pekin

Economic Development/Tourism Coordinator

labrown@ci.pekin.il.us



EAST PEORIA, ILLINOIS

JULY 11, 2015

5 A.M. - 1 P.M.

WEIGH IN 2 P.M. AT BASS PRO SHOPS

\$120/TEAM OF UP TO FOUR

OPTIONAL BIG FISH POT \$25

\$7,500
CASH PRIZE MONEY

SAVE THE DATE

JULY 9-11, 2015

PEORIA, ILLINOIS

**SEIZE THE DAY...SEIZE THE CARP!
INTERNATIONAL CONFERENCE**

JULY 9

WELCOME RECEPTION

JULY 10

CONFERENCE 8 A.M. - 5 P.M.

KEYNOTE SPEAKERS

NATIONAL EXPERTS ON ASIAN CARP

PUBLIC/PRIVATE PARTNERSHIPS

SUPPLY/DEMAND

**INNOVATION & MARKET CONDITIONING
APPROACHES**

VISION OF OPPORTUNITY

**NEW & INNOVATIVE APPROACHES TO USE
OF ASIAN CARP**

**FISHING METHODS & CHALLENGES
STRATEGIES**

JULY 11

FLYING FISH FESTIVAL

10 A.M. - 3 P.M. - BASS PRO SHOPS

BOWFISHING TOURNAMENT

Mark Your Calendar

More Information

will be sent in February 2015!

peorianfishing@gmail.com

The image features a close-up, slightly blurred view of the American flag in the upper left and the Chinese flag in the lower right. The American flag's blue field with white stars and red and white stripes is visible. The Chinese flag's red field with yellow stars is also visible. The text is overlaid on the right side of the image.

Science
Catch
Economics