

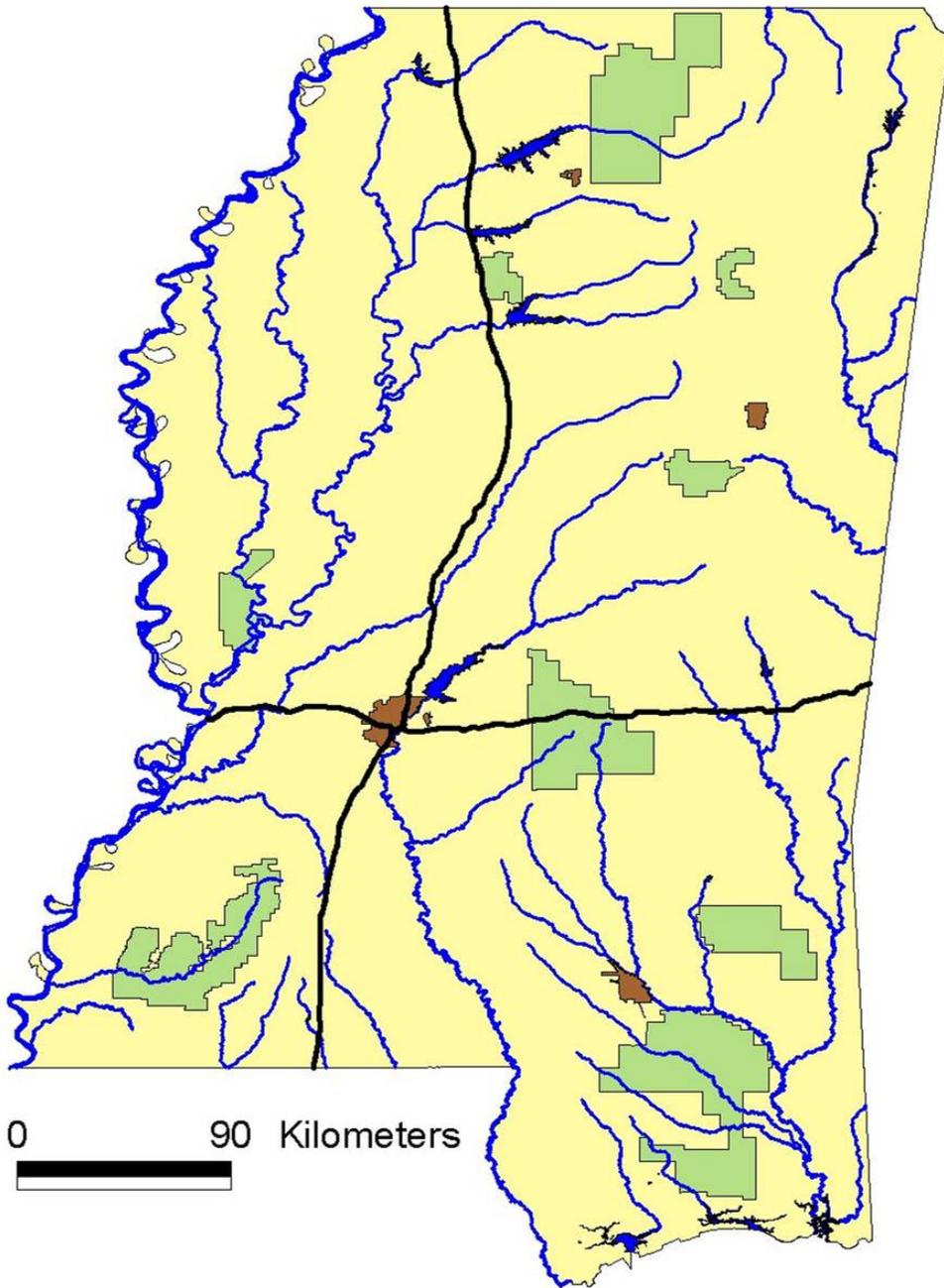
Stream crayfish in Mississippi: who's where and why



Susan B. Adams
Melvin L. Warren, Jr.

**USDA Forest Service, Southern Research Station
Center for Bottomland Hardwoods Research,
Oxford, MS**

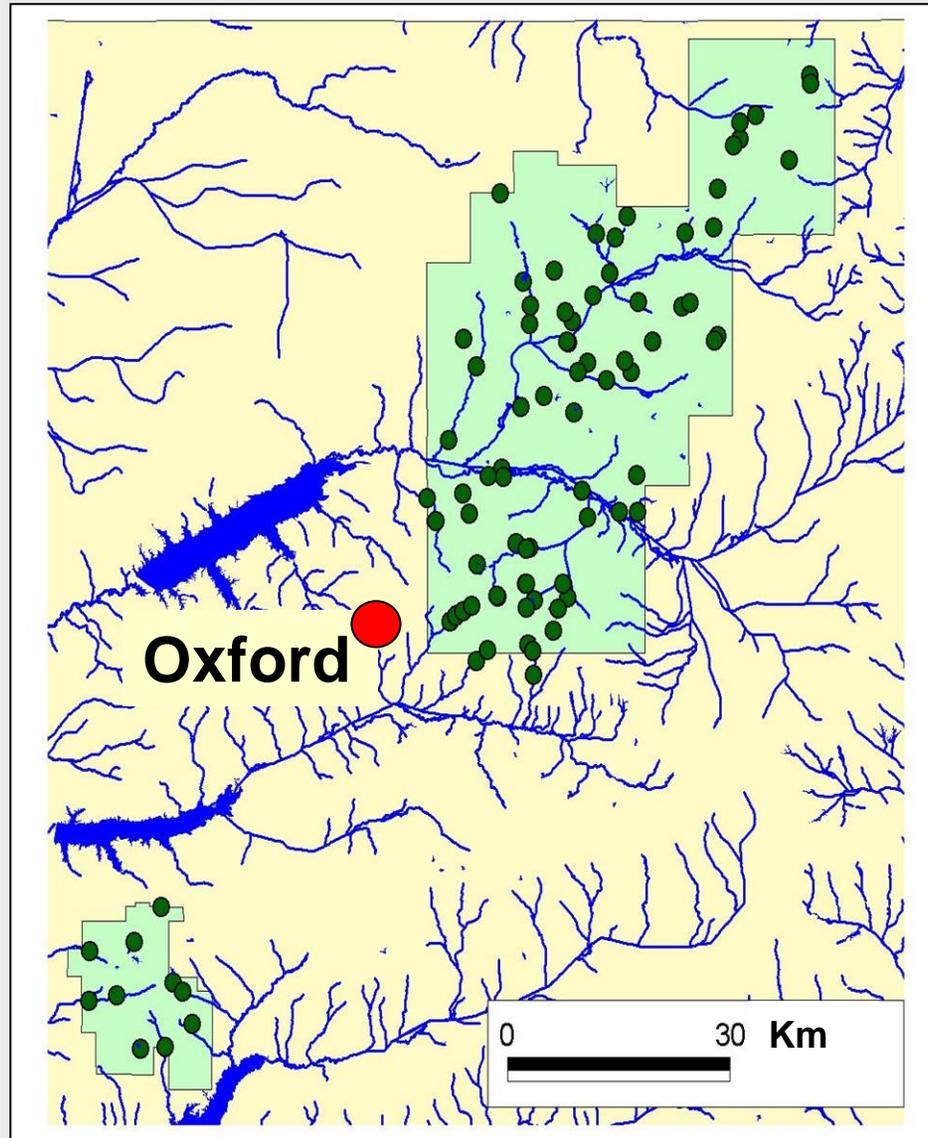
Presented to: Alabama Fisheries Assoc, Feb. 22-24, Orange Beach, AL



METHODS

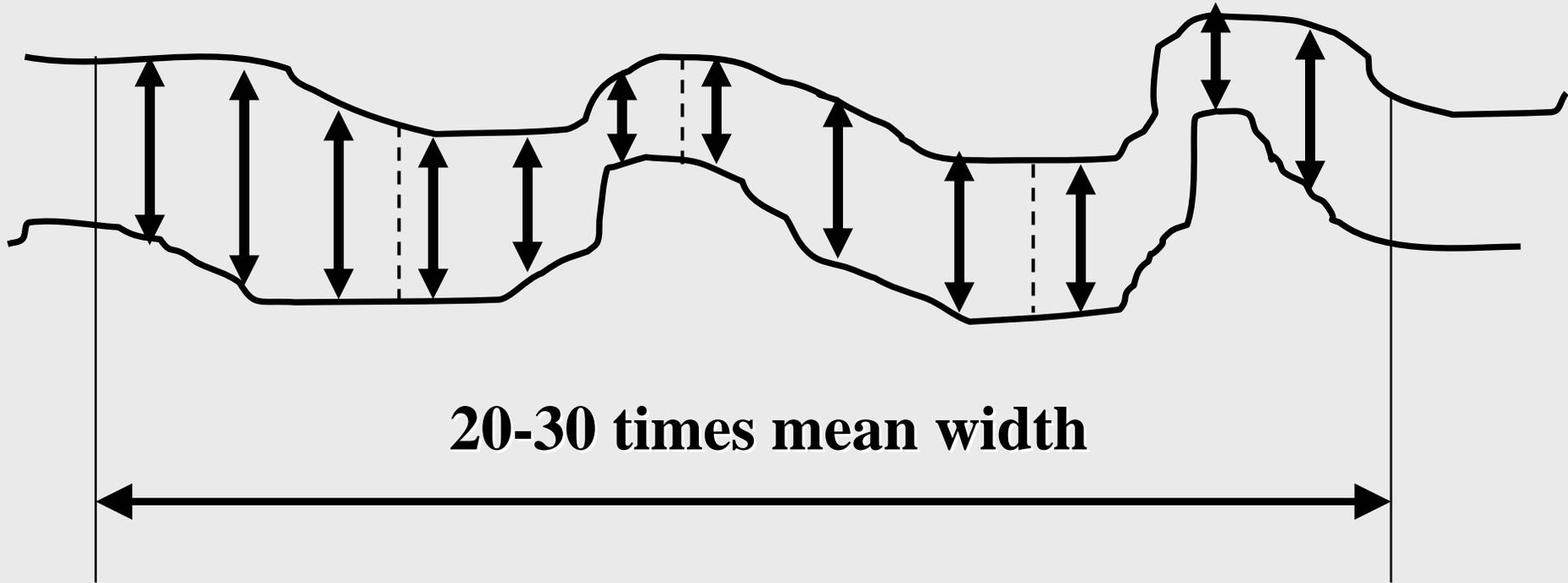


Holly Springs NF sites 1999-2000





Habitat



➤ **Transect endpoints**

width, bank height, bank veg

➤ **Points along transect**

depth, current, % canopy, substrate,
+/- of wood, detritus, and aquatic veg.

➤ **Watershed area**

RESULTS

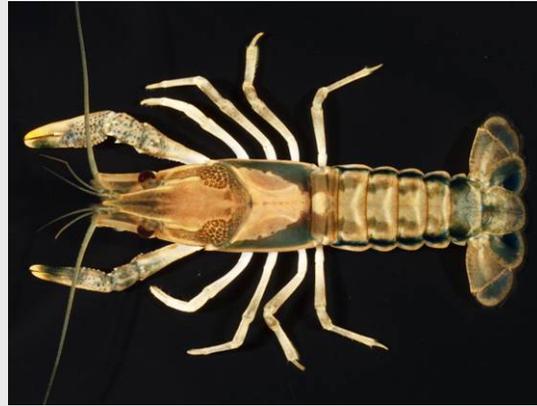


Crayfish diversity

1,200 specimens of at least 9 species



Orconectes chickasawae



Procambarus vioscai



Procambarus ouachitae



Procambarus hayi



Procambarus acutus

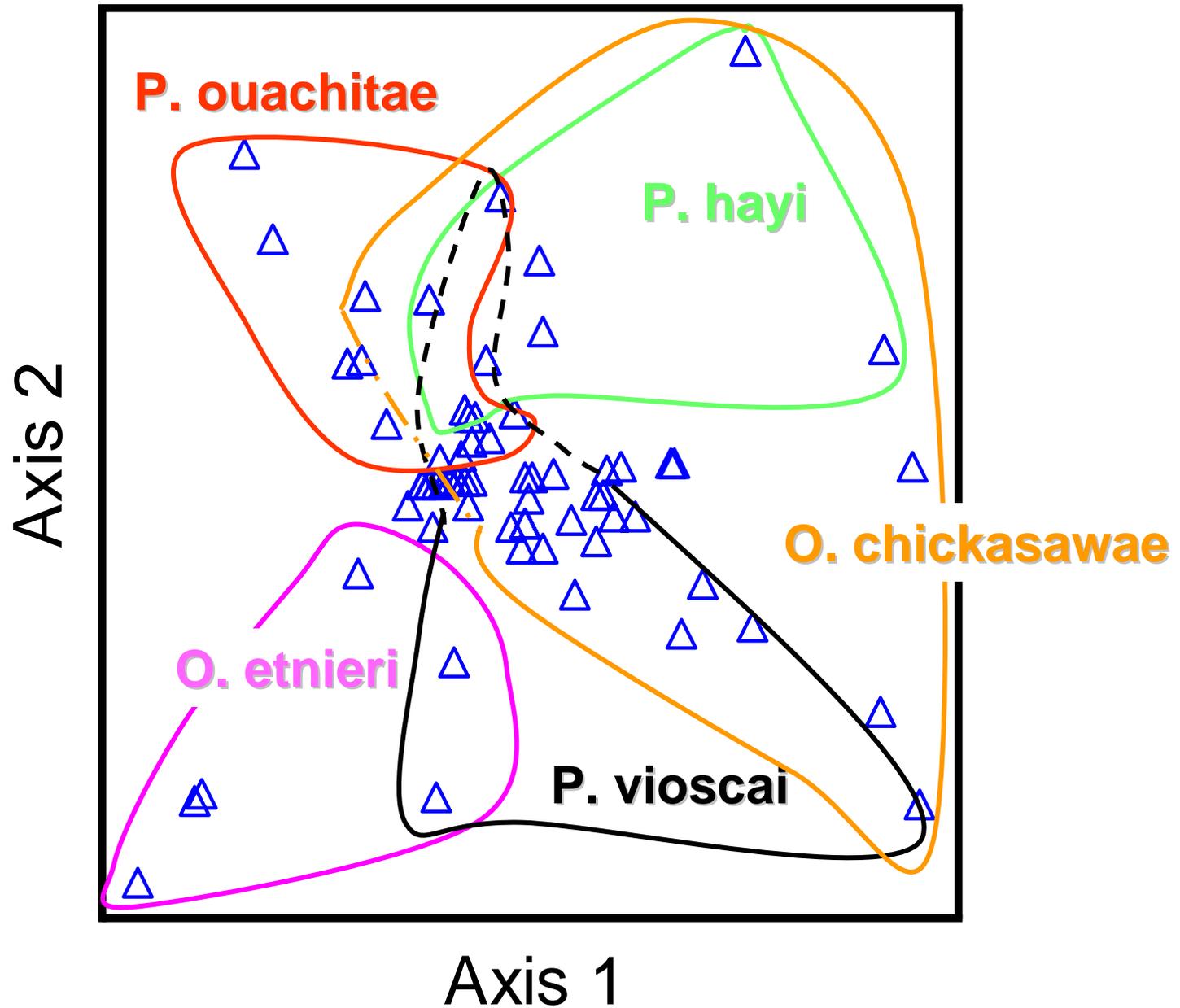


Cambarus diogenes

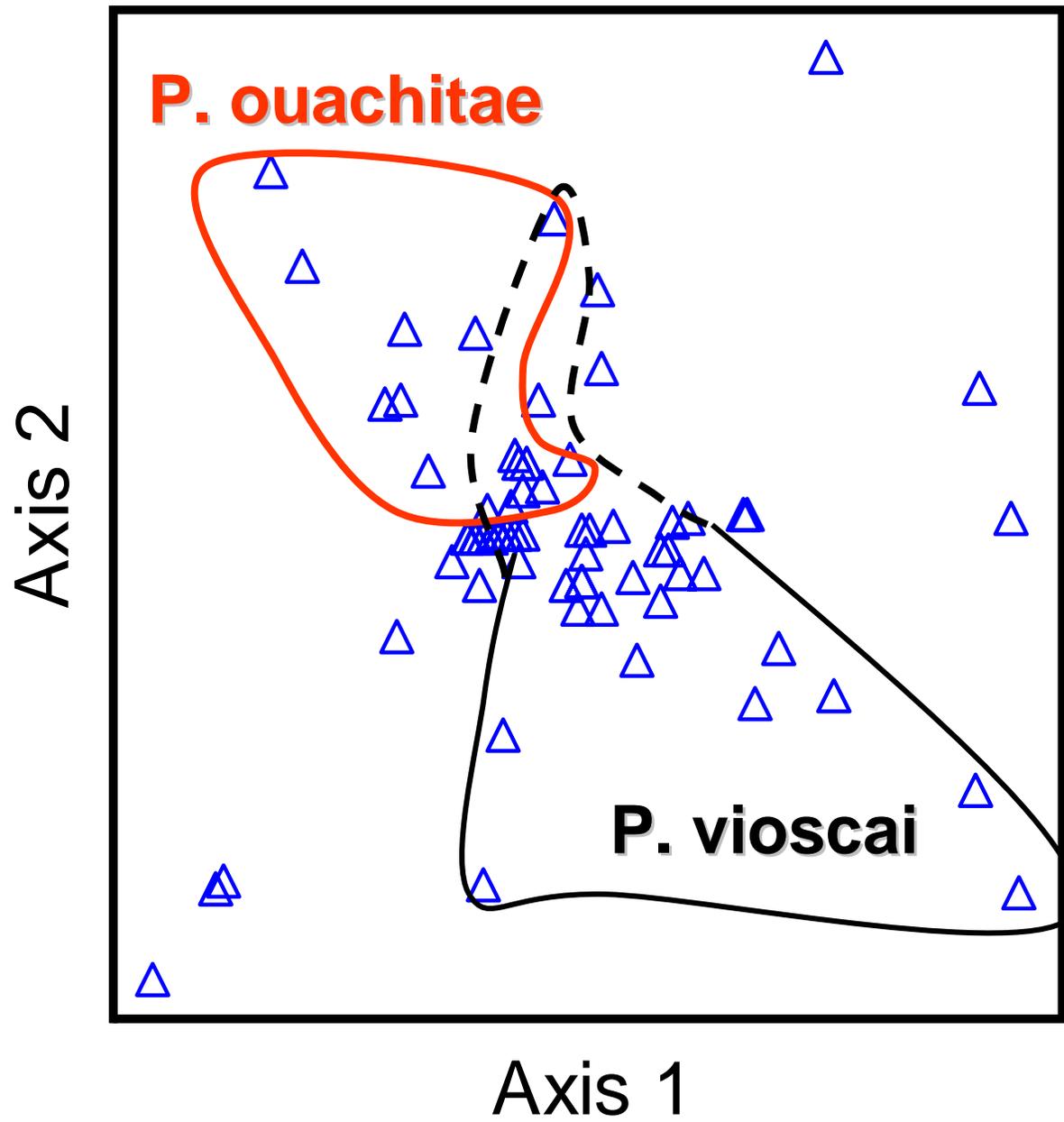
Co-occurrence analysis

- **Significant structuring of crayfish assemblages**
 - Co-occurrence $C = 8.9$, $P\text{-value} = 0.049$
 - Checkerboard score = 20 , $P\text{-value} = 0.319$
 - **Species combinations = 21, $P\text{-value} = 0.01$**

PCA plot of sample sites in species space







Crayfish and reach-scale habitat

- **PCA and Mantel tests**
 - **Crayfish density related only to stream size variables (not to wood, veg, substrate, canopy)**

Crayfish and reach-scale habitat

- PCA and Mantel tests
 - Crayfish density related only to stream size variables
- **Correlations: density by sp. vs. stream size**
 - **Most species, $r < 0$**
 - ***P. vioscai*, *P. ouachitae* no sig. correlation**
 - ***P. hayi* $r < 0$ with area but not depth**

Crayfish and reach-scale habitat

- PCA and Mantel tests
 - Crayfish density related only to stream size variables
- Correlations: density vs. stream size
 - Most spp. $r < 0$
 - *P. vioscai*, *P. ouachitae* no sig. correlations
 - *P. hayi* $r < 0$ with area but not depth
- **Species-area relationship negative!**

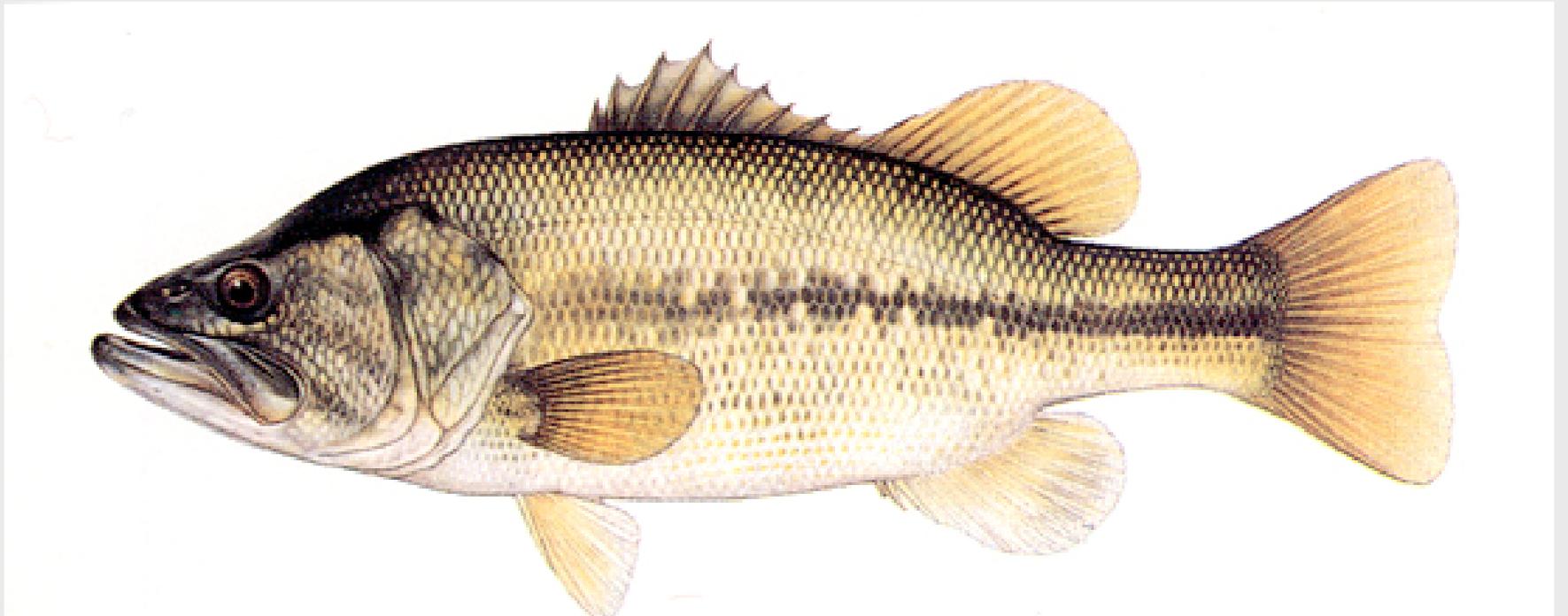
POSSIBLE EXPLANATIONS











William Pflieger

Catfish predation experiment



Experimental design



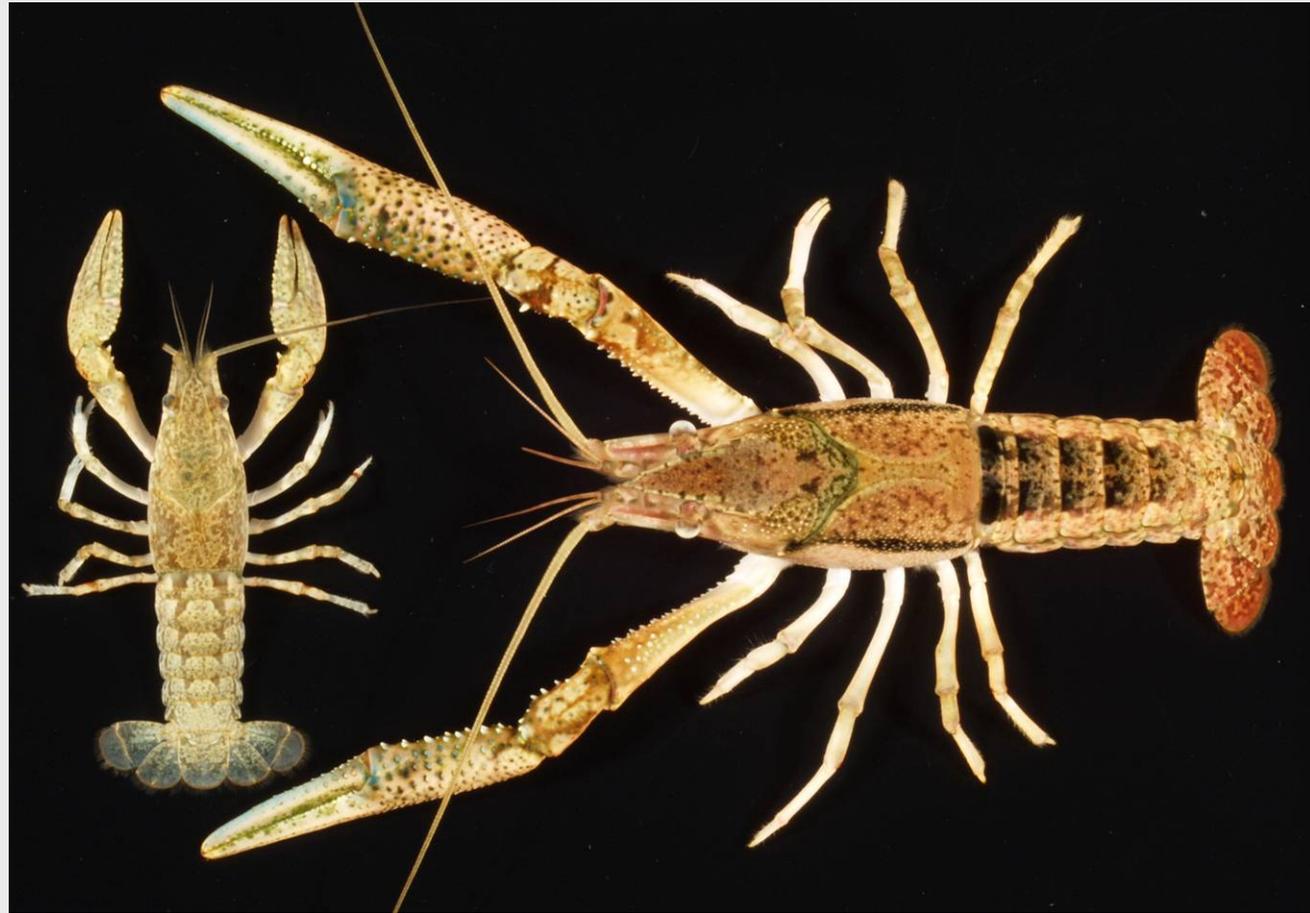
	No shelter	Shelter
No catfish	4	4
One catfish	4	4

- 2 trials
- 3 weeks each
- Count survivors nearly daily

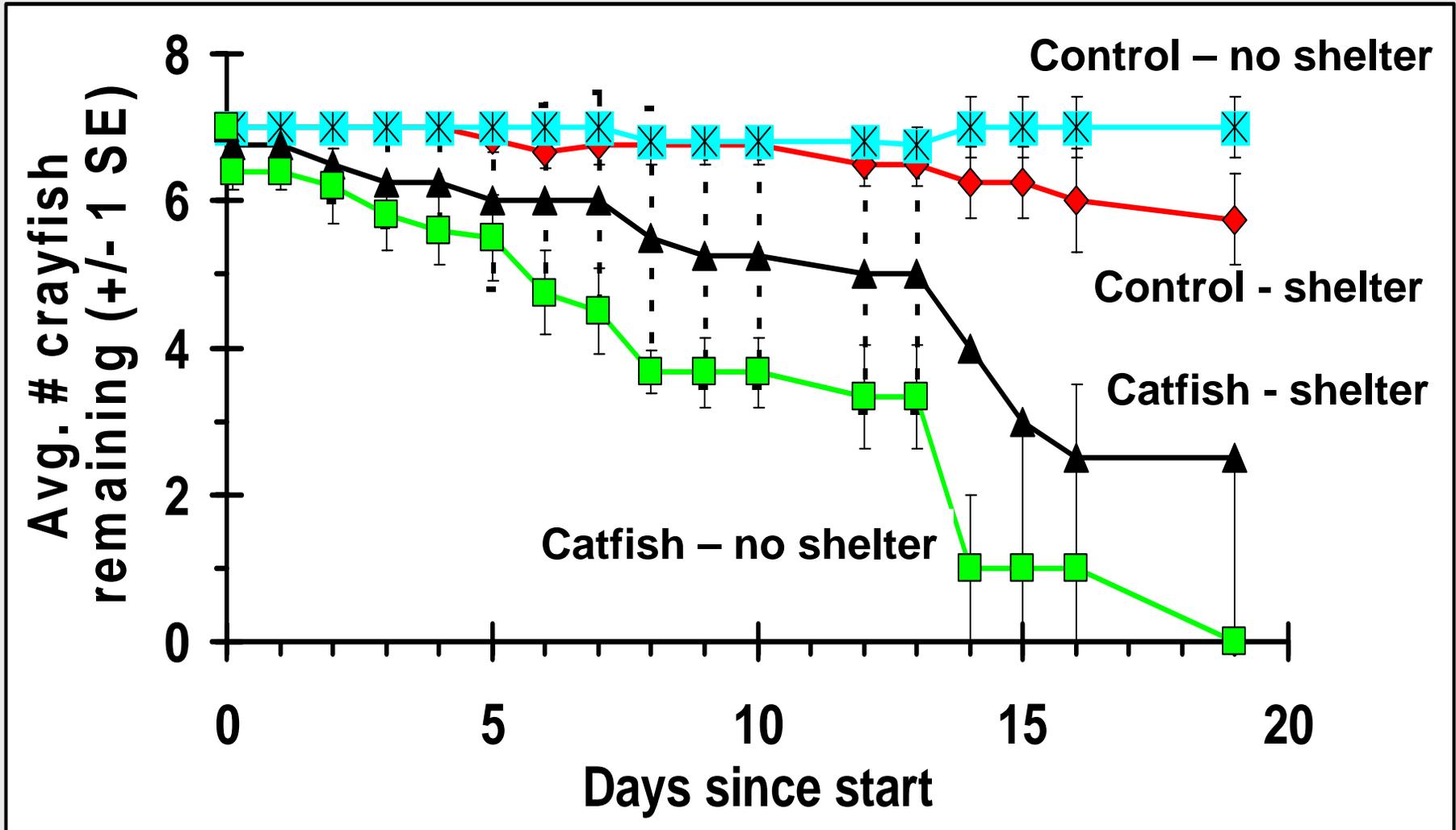


Results – trial one

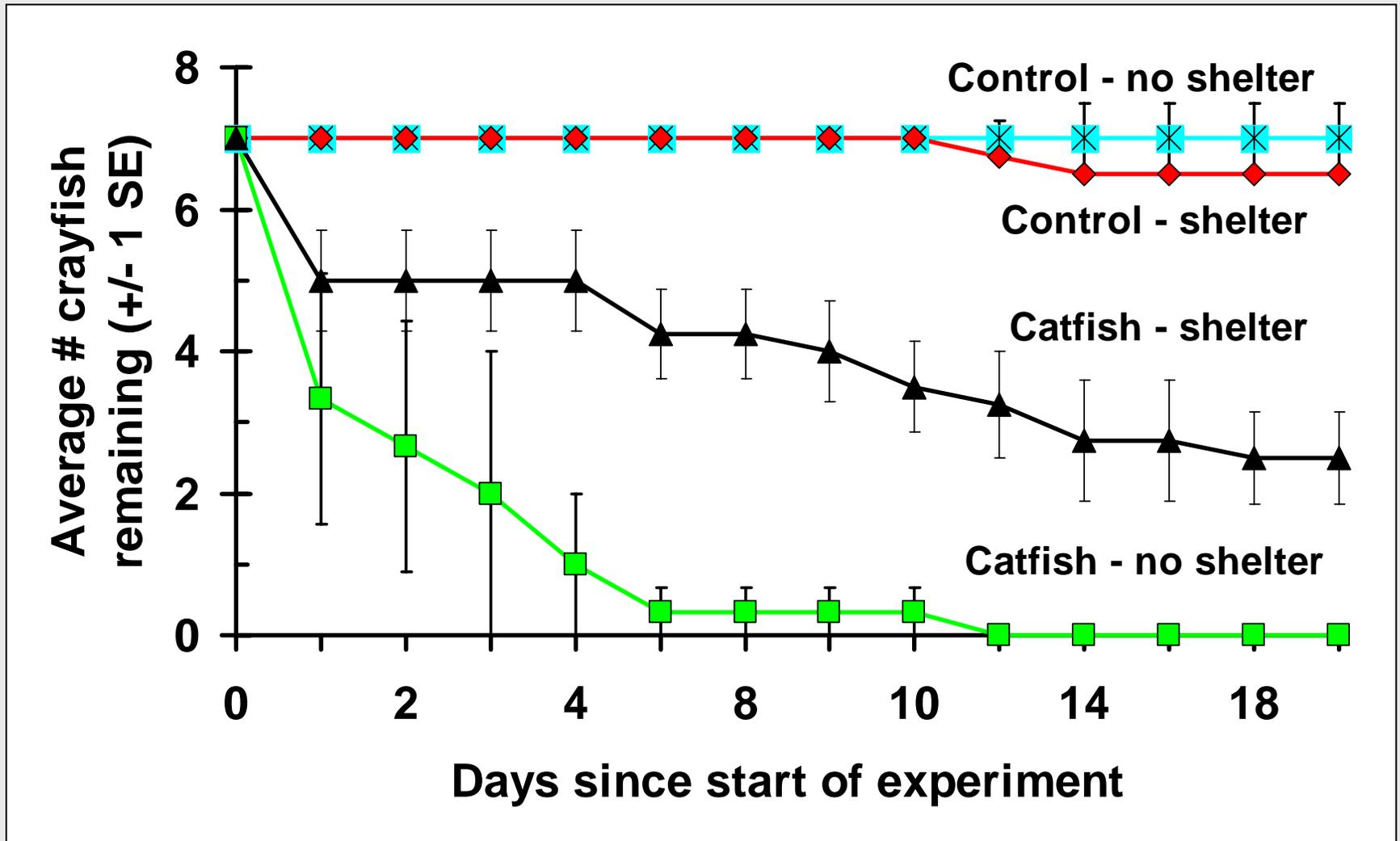
- **Catfish predation low on large *P. hayi*.**
- **Catfish will jump out of tanks!**

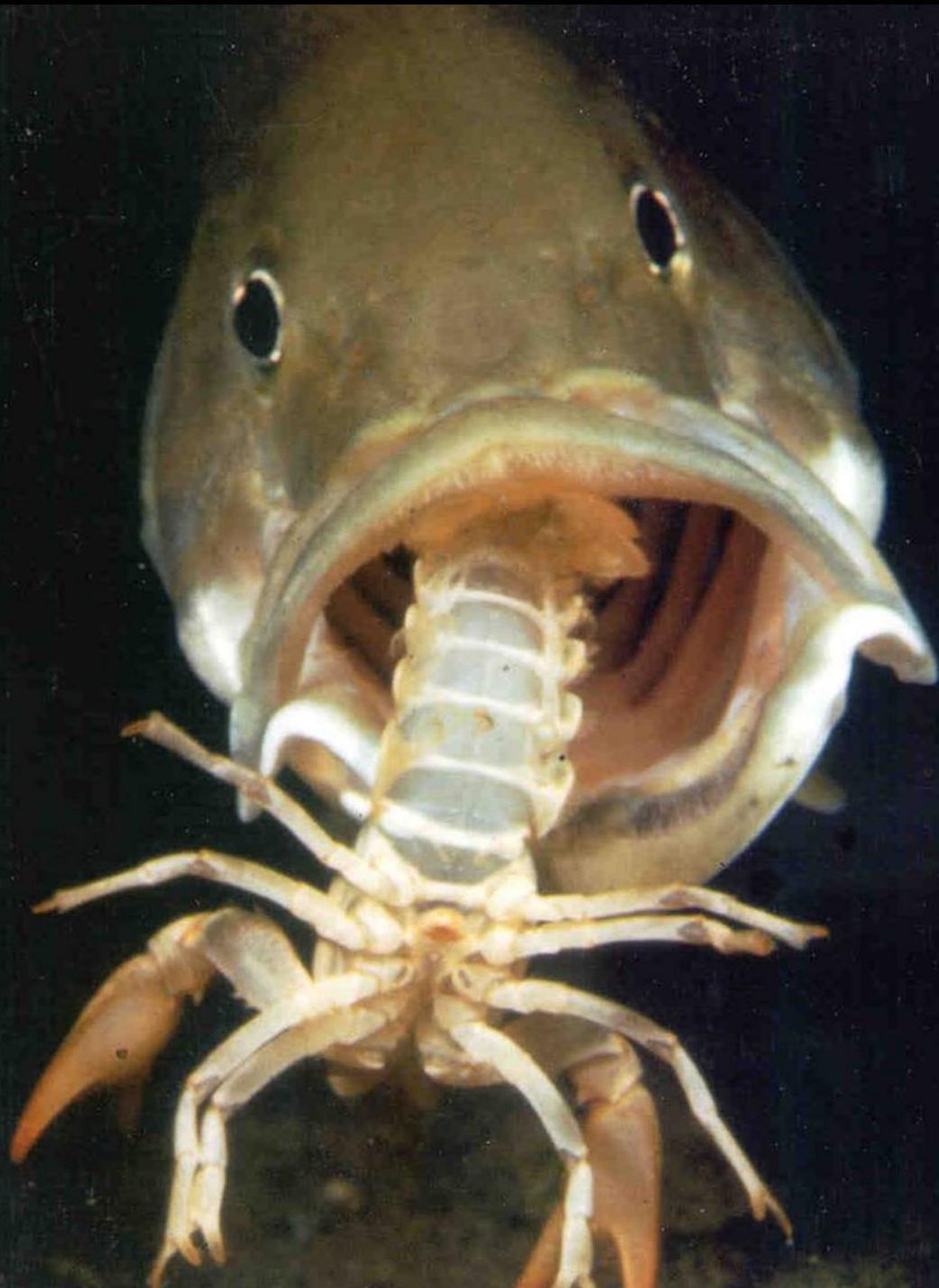


Results – trial 1



Results – trial 2









THANKS TO:

**Dr. Chris Taylor, INHS
Mr. Gordon McWhirter
Ms. Amy Commens
Dr. Wendell Haag
Mr. Clifford Harwell
Ms. Gayle Henderson
Ms. Leann Staton
Ms. Rebecca Reekston
& the many students
who worked so hard!**

**Funded by: National Forests of Mississippi & the
USFS Southern Research Station**