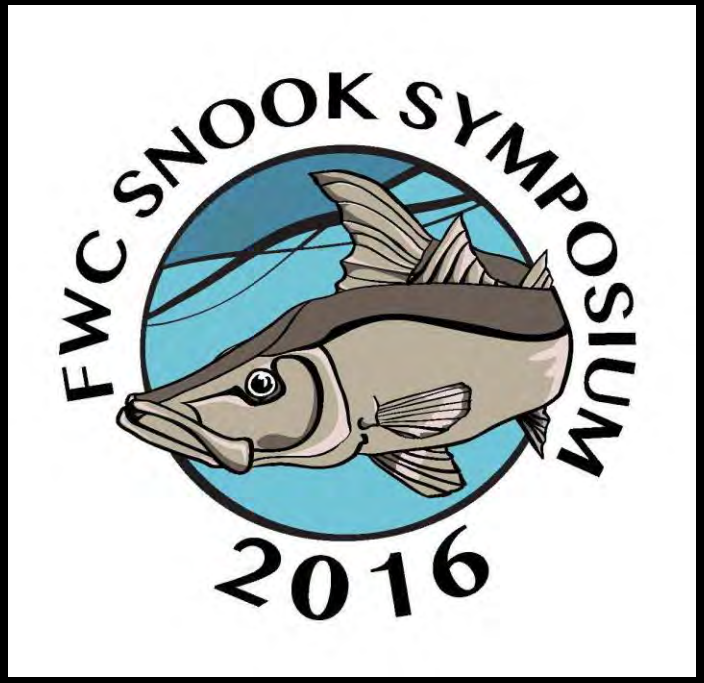


10:30 AM – 11:30 AM Cold Kill Update: Resilience across estuaries

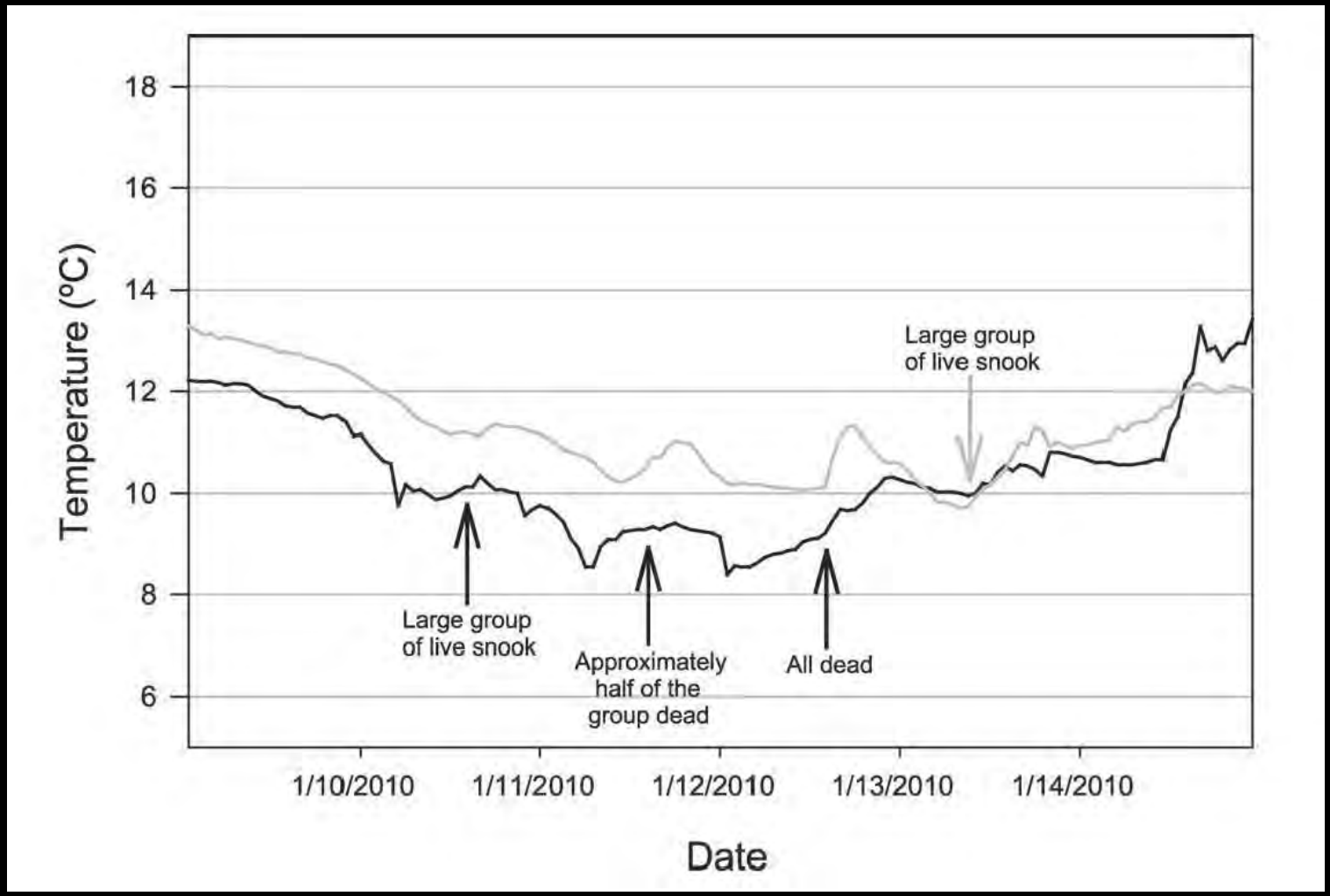
Philip Stevens, Research Scientist, FWRI

RESILIENCE OF A TROPICAL SPORT FISH POPULATION (COMMON SNOOK) TO A SEVERE COLD EVENT VARIES ACROSS FIVE ESTUARIES IN SOUTHERN FLORIDA

Philip W. Stevens, David A. Blewett, Ross E. Boucek, Jennifer S. Rehage, Brent L. Winner, Joy M. Young, Jim A. Whittington, and Richard Paperno

2010 Cold Event

Water temps below Snook lethal limit

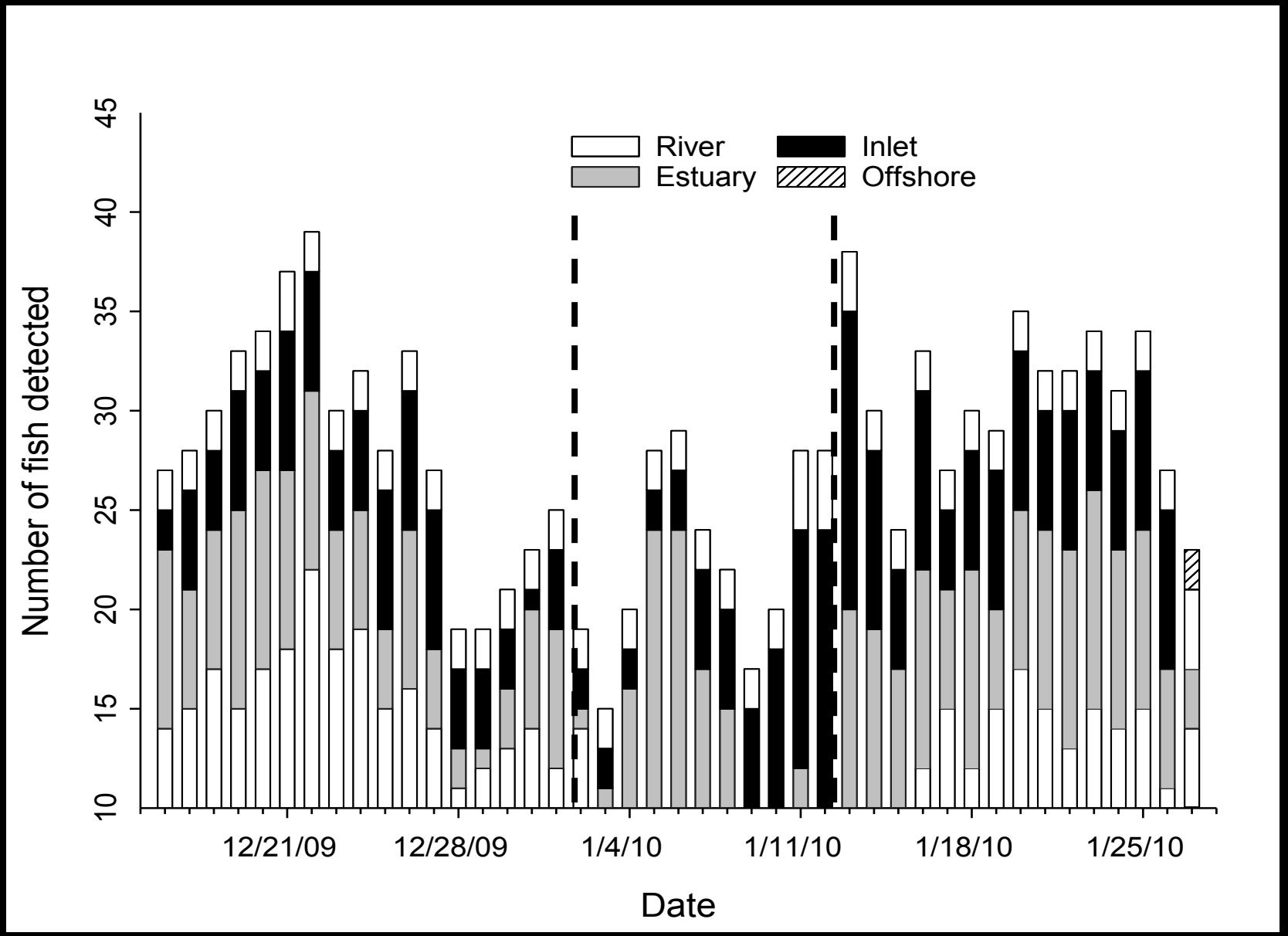


Blewett et al. 2014 – Water temperature loggers in Charlotte Harbor
Gray line: Marina (Canal system)
Black line: Deep, wind-protected site in Lemon Bay

Results from Acoustic Telemetry

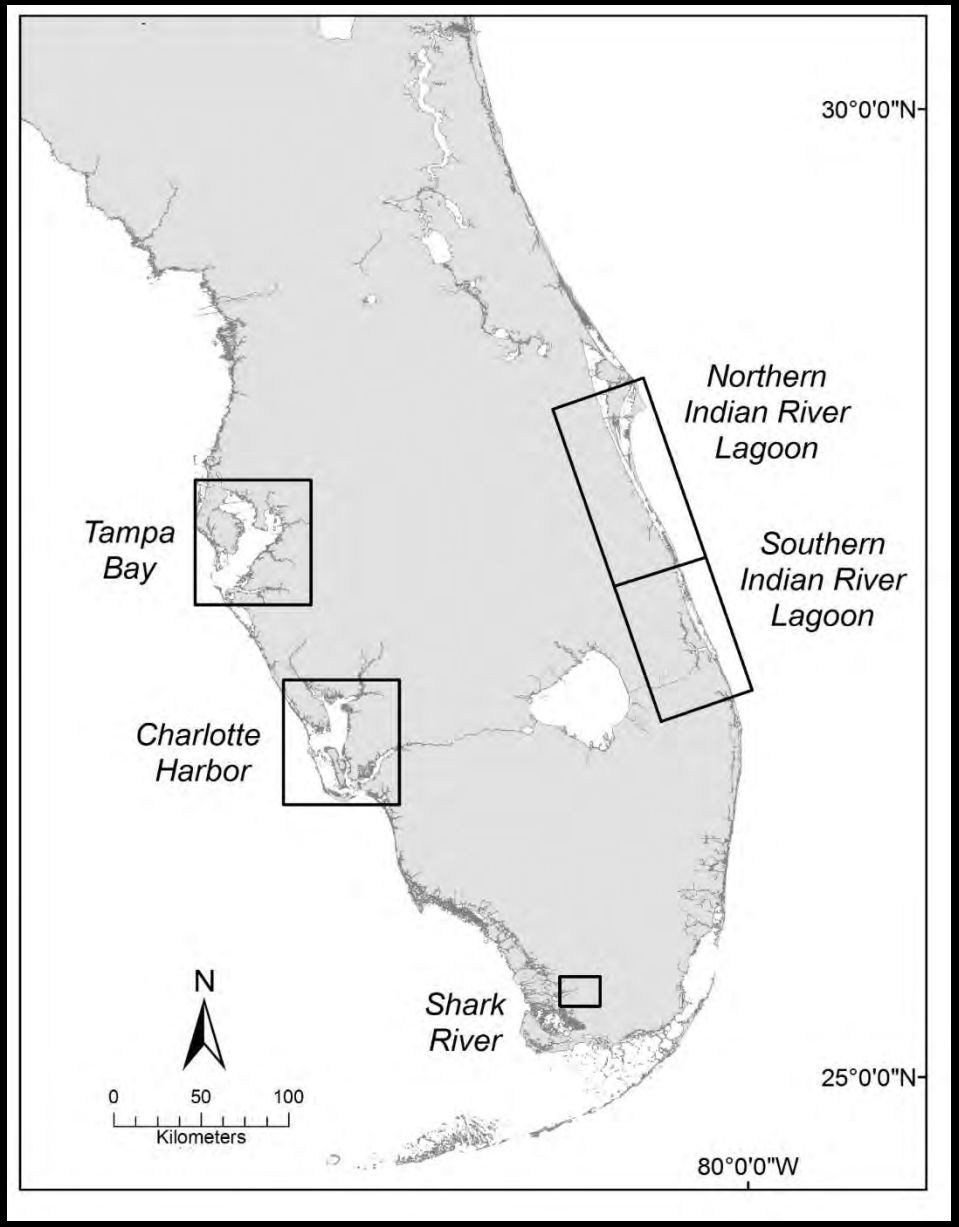
N=87 fish carrying tags during cold event, array of 200 receivers spanning > 300 km of coastline, Young et al. 2014

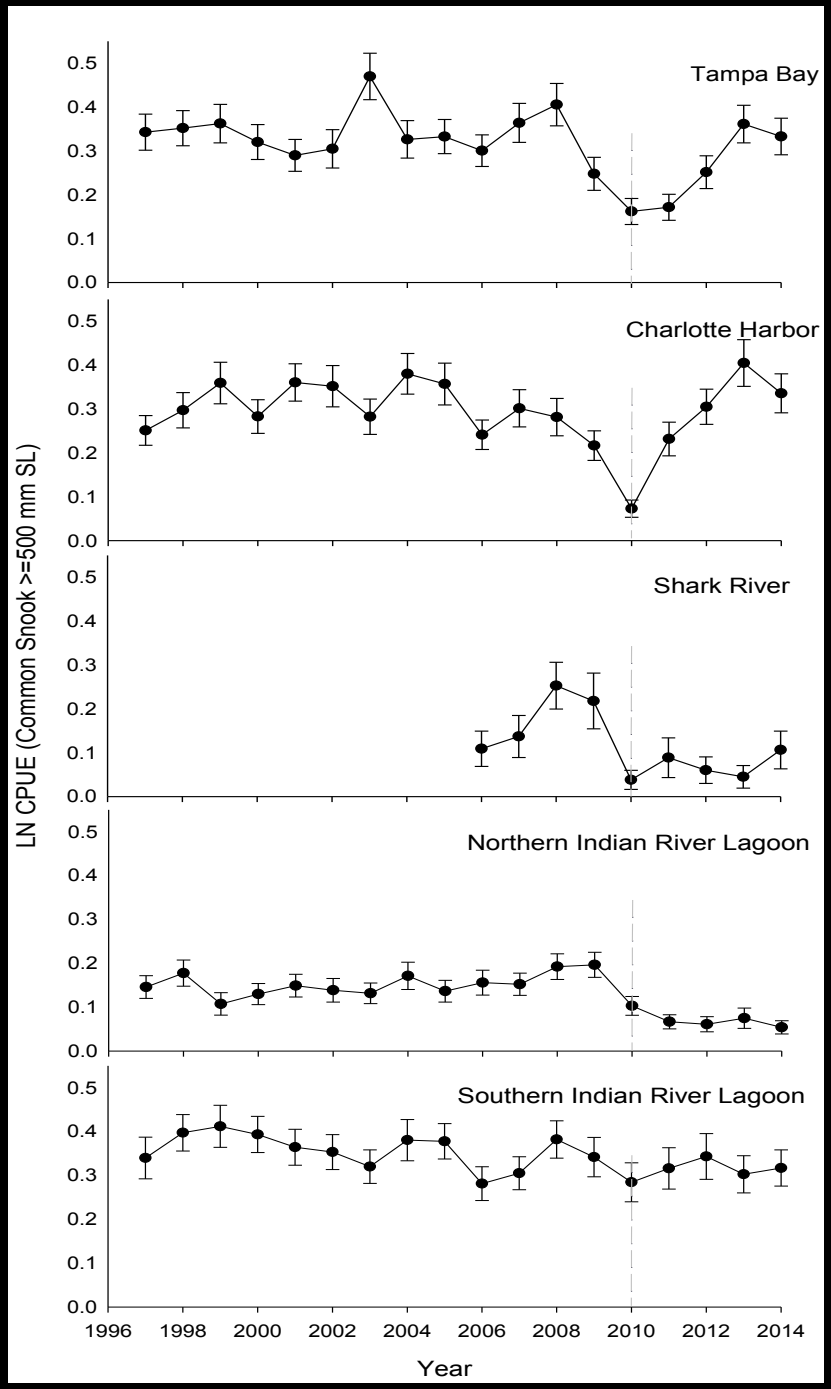
On east coast, >90% of tagged fish survived the cold event



Results from Fisheries-Independent Monitoring

Monitoring locations in South Florida



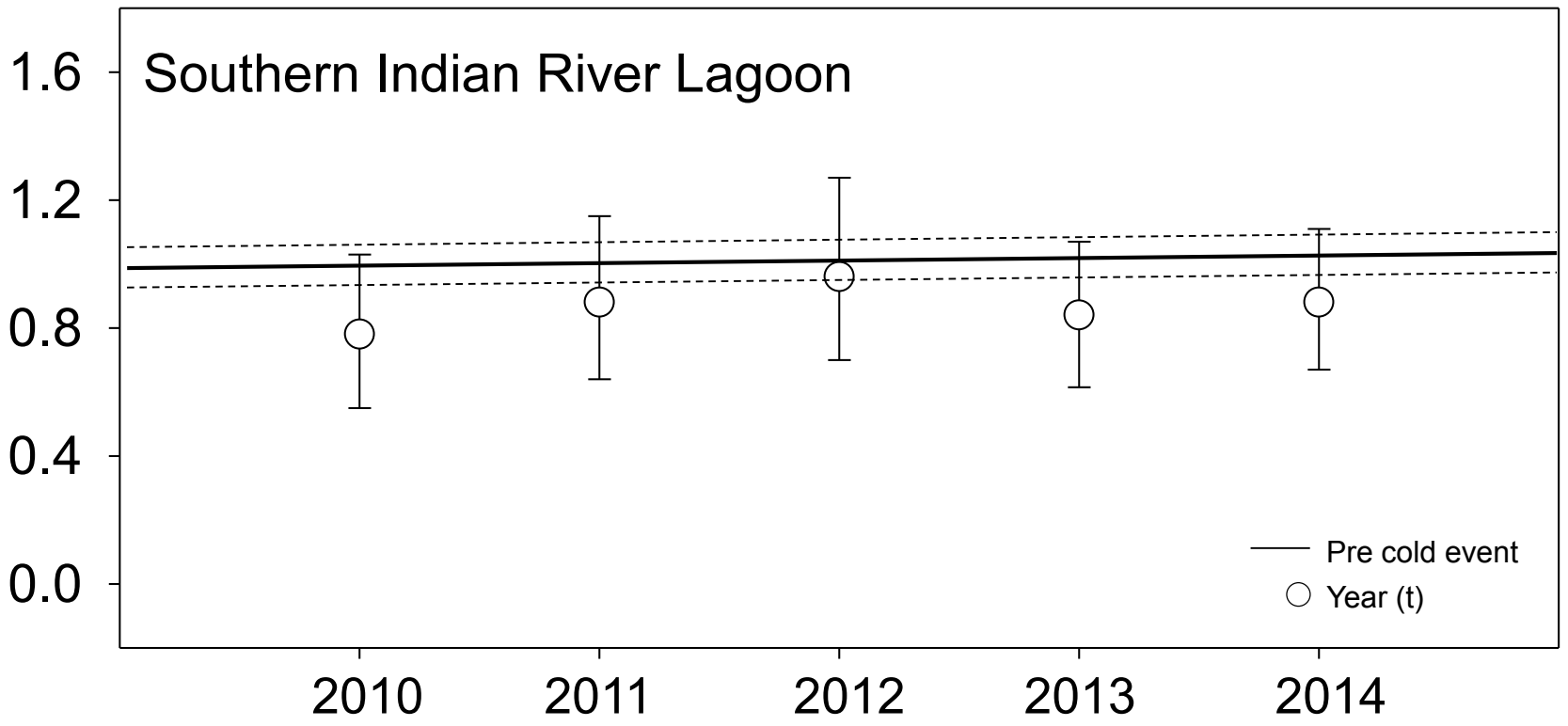


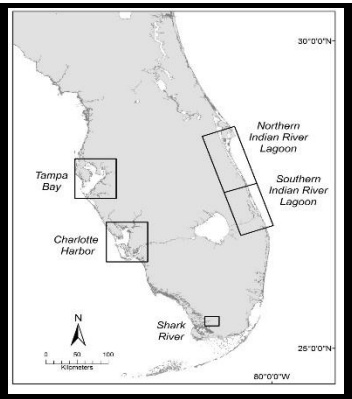
Trends in Common Snook catches from monitoring programs

(1997-2014)

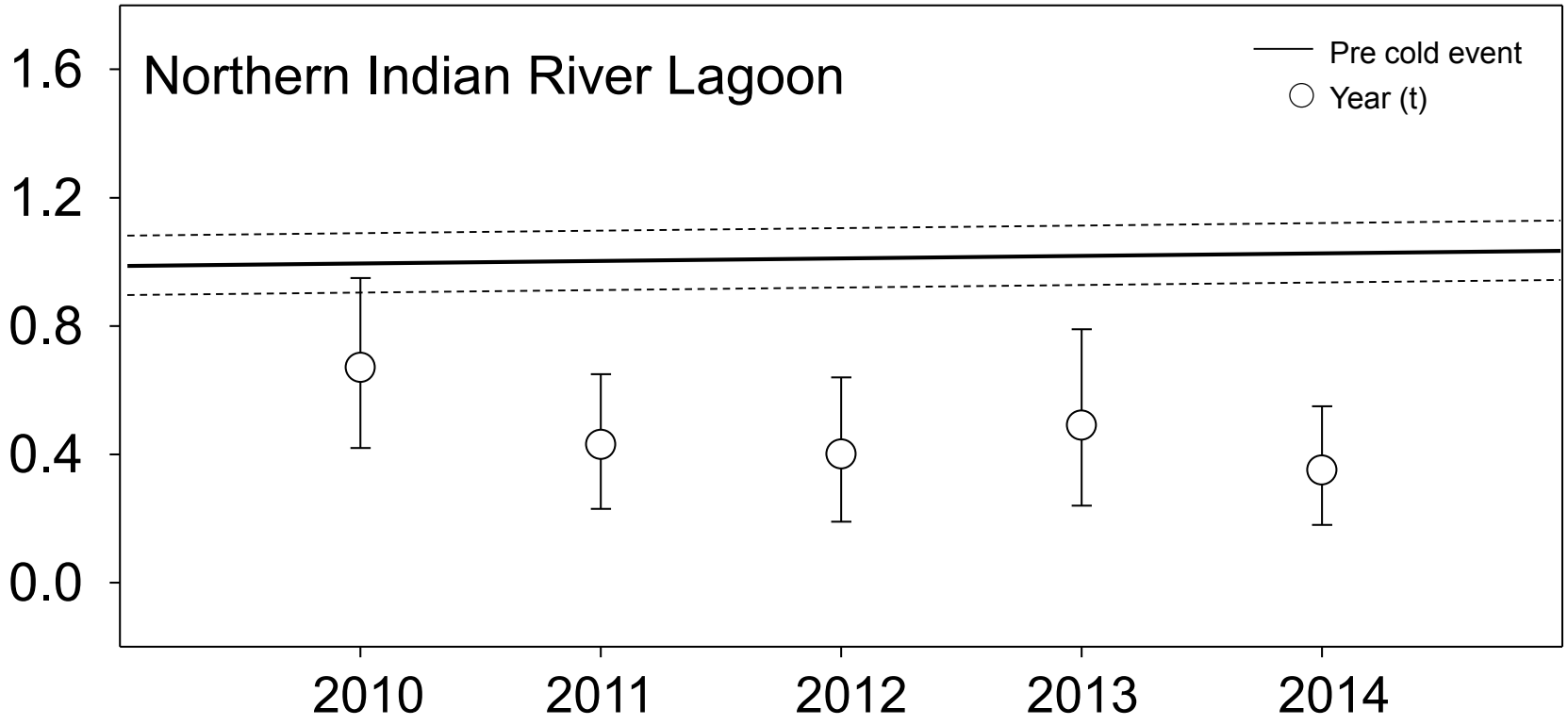
Let's zoom in on the freeze effects!

LN(Standardized abundance)

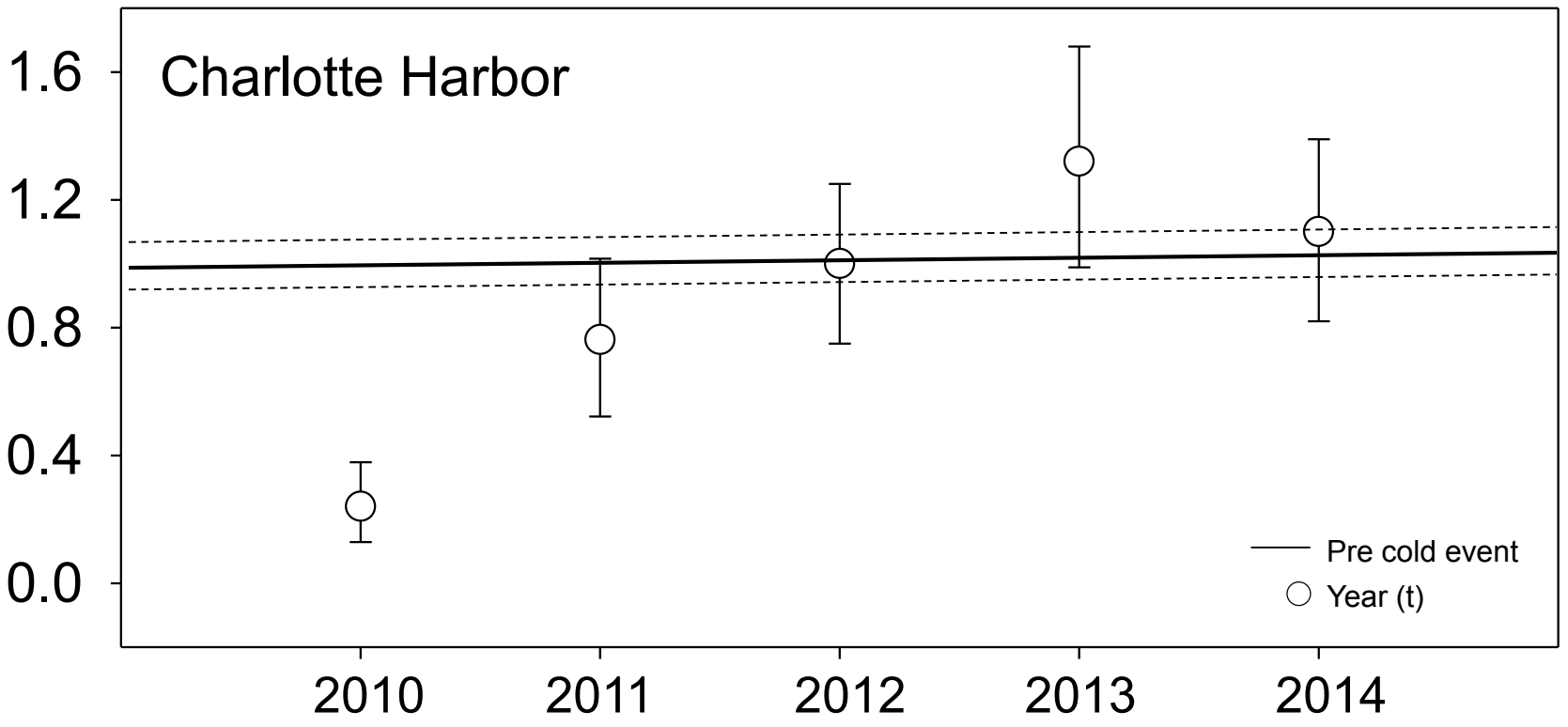




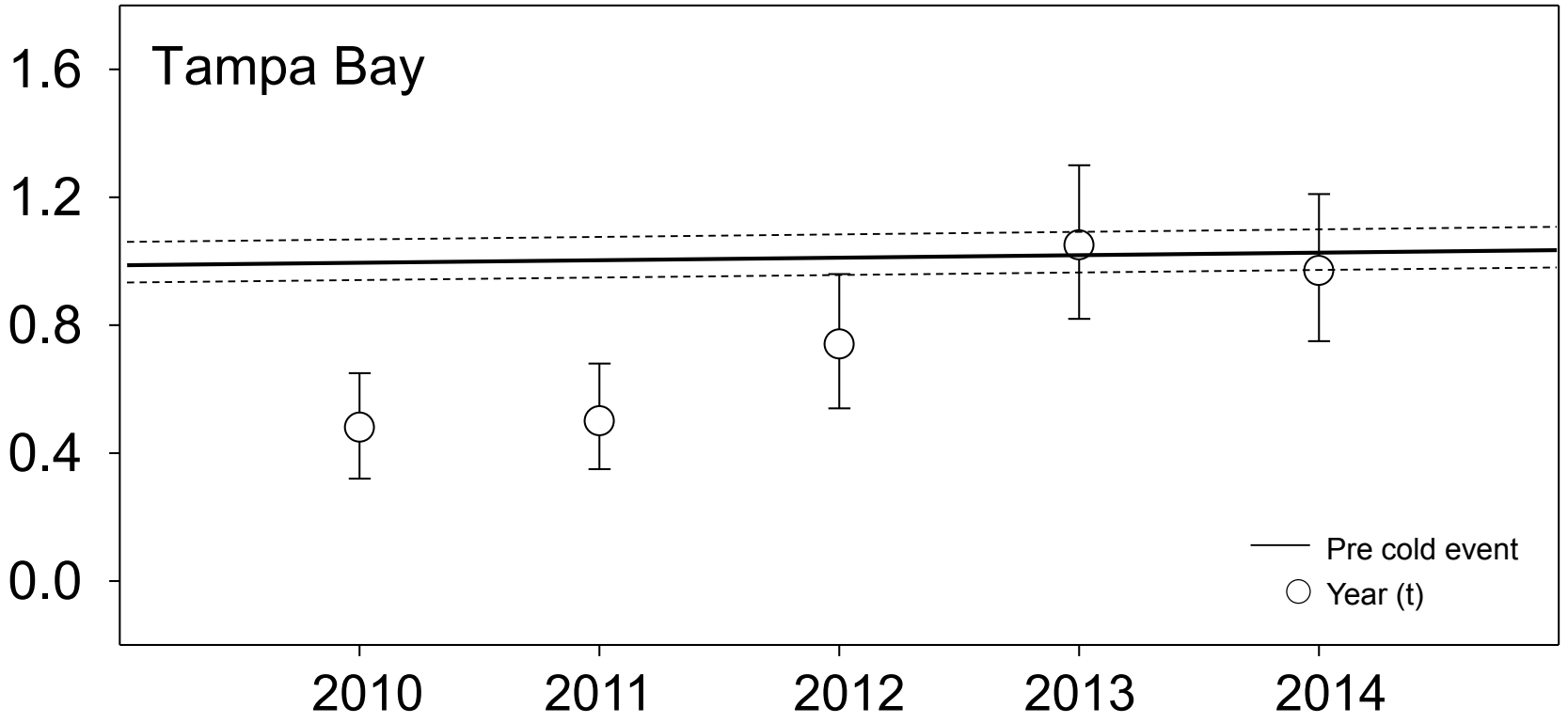
LN(Standardized abundance)



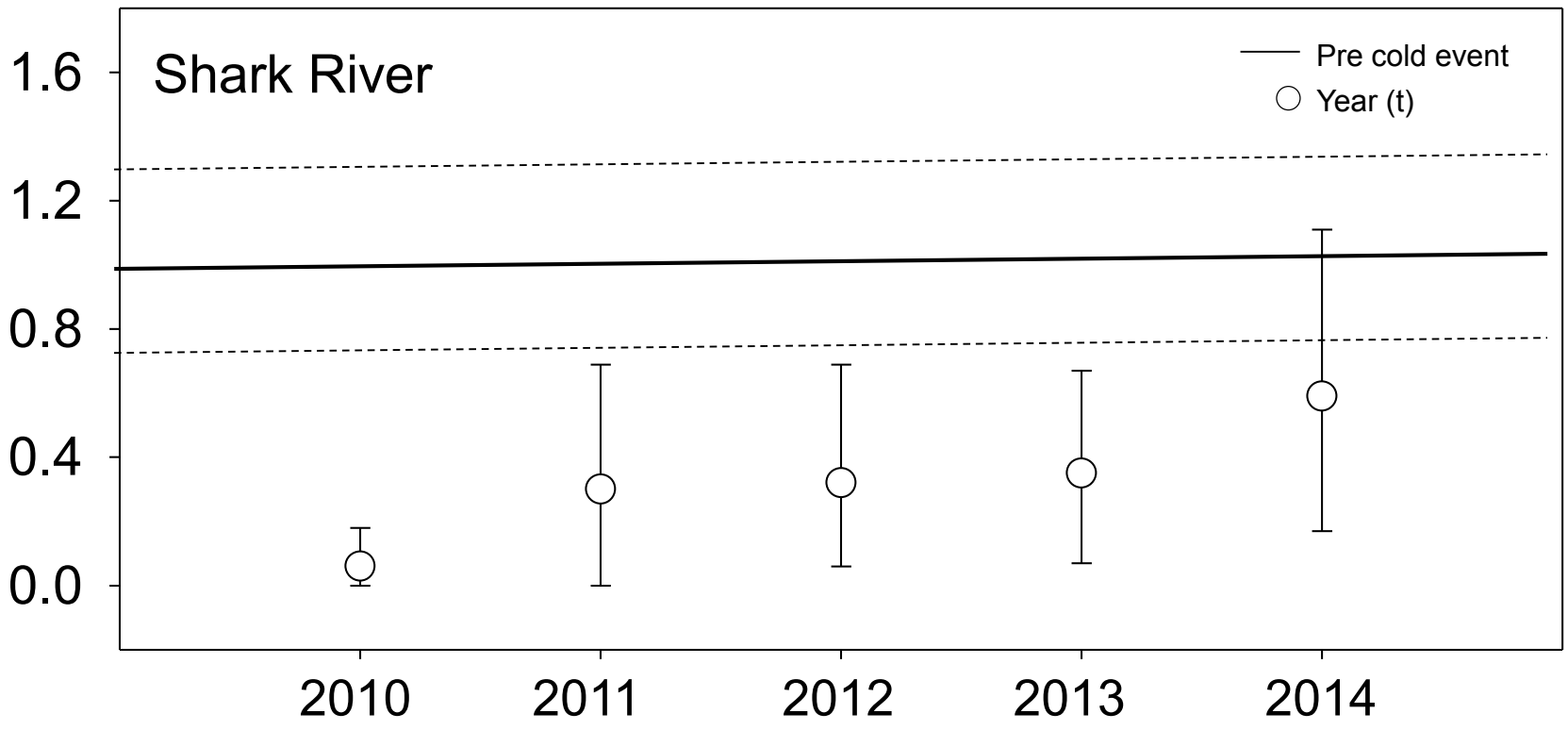
LN(Standardized abundance)

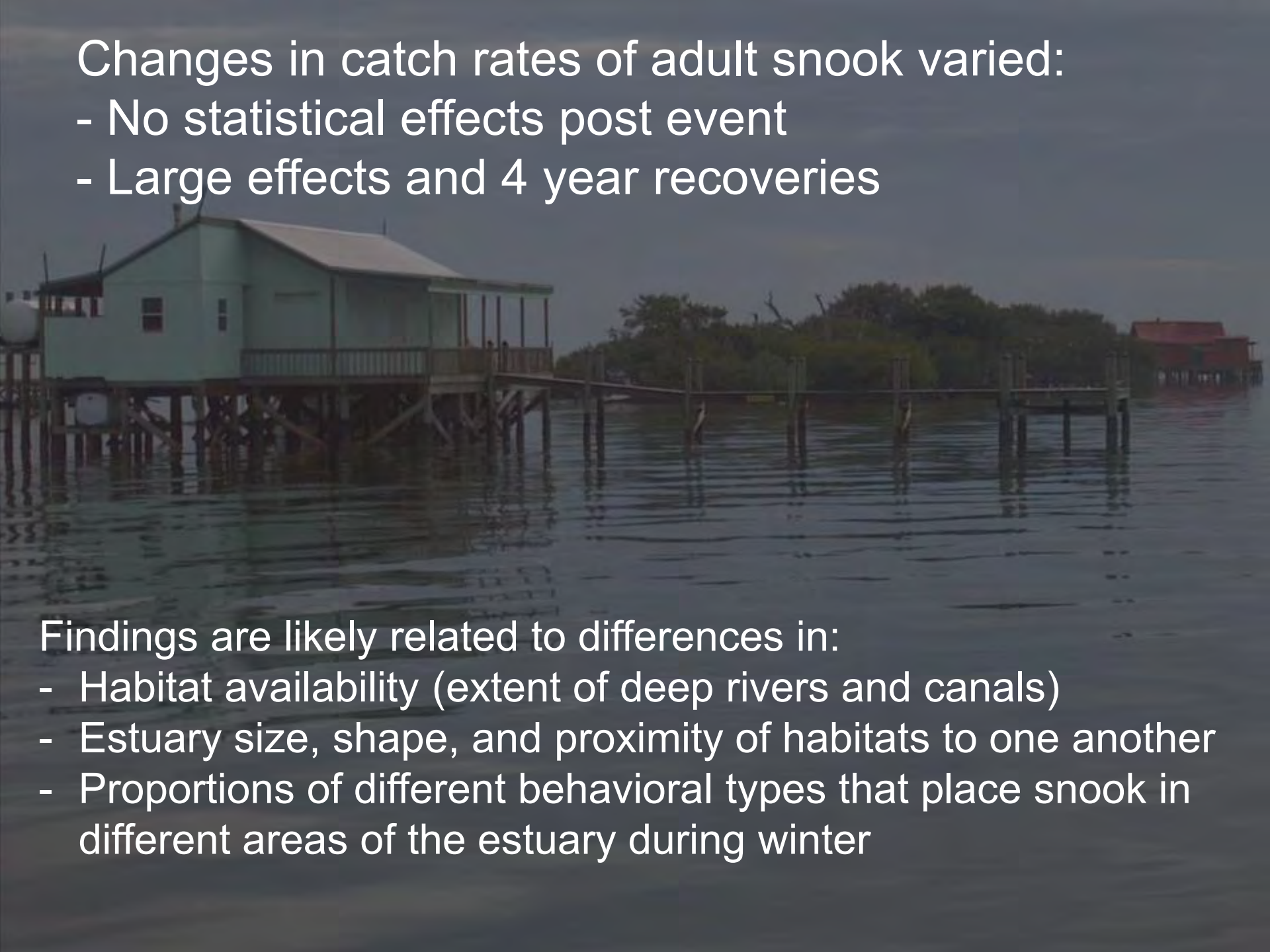


LN(Standardized abundance)



LN(Standardized abundance)





Changes in catch rates of adult snook varied:
- No statistical effects post event
- Large effects and 4 year recoveries

Findings are likely related to differences in:
- Habitat availability (extent of deep rivers and canals)
- Estuary size, shape, and proximity of habitats to one another
- Proportions of different behavioral types that place snook in different areas of the estuary during winter

Continue research that will improve understanding of population resilience to disturbance events:

-Investigate behavioral plasticity (proportions of population using different habitats)

-Identify overwintering sites (thermal refuge)

-Improve abundance indices in remote nursery habitats