

# SHARP

## Saltmarsh Habitat & Avian Research Program

Co-PIs: Chris Elphick, Tom Hodgman, Brian Olsen, Greg Shriver, Adrienne Kovach, Jonathan Cohen

5 Universities  
10 States  
14 Graduate students  
4 Postdocs/Staff

## 2011-12 surveys for competitive State Wildlife Grant

2012 Survey Coverage by Region

- 1 - Coastal Maine
- 2 - Cape Cod to Casco Bay
- 3 - Southern New England
- 4 - Long Island
- 5 - Coastal New Jersey
- 6 - Delaware Bay
- 7 - Coastal Delmarva
- 8 - Eastern Chesapeake Bay
- 9 - Western Chesapeake Bay

### Storm path

### Our study area

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## BACI study design

Before

After

Control - Impact

2011-2012

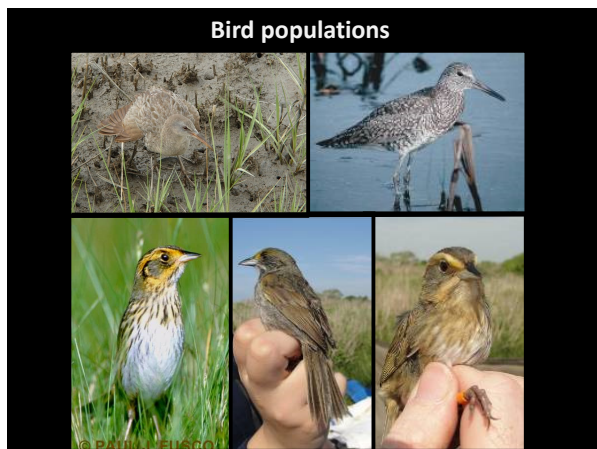
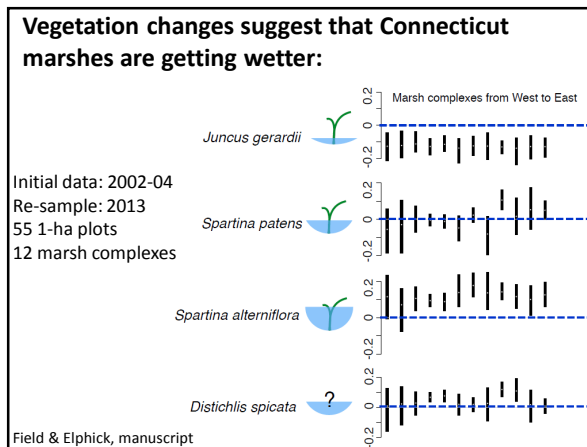
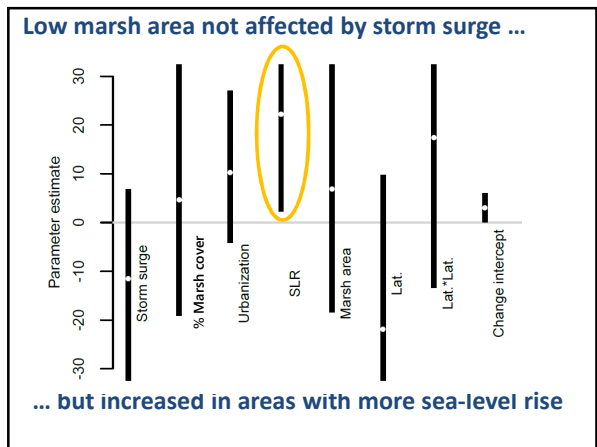
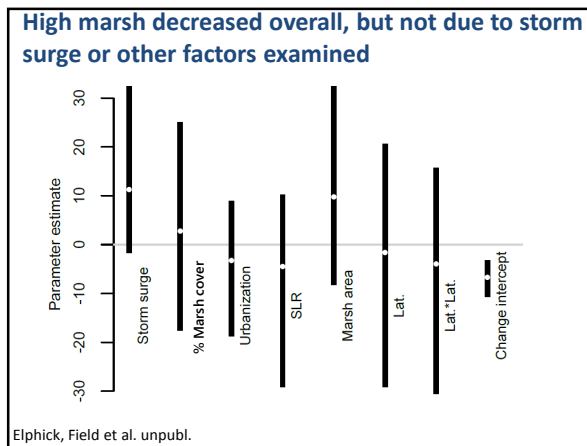
2013-2014

## QUESTIONS

1. What effects do hurricanes have?
  - habitat change
  - bird abundance
  - demography

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1. What effects do hurricanes have?
  - habitat change
  - bird abundance
2. What influences resistance to change?
  - reduced by chronic stressors?
    - marsh size
    - urbanization
    - sea-level rise
  - increased by land protection?



### 2012 vs 2013

	Storm surge	Marsh cover (1 km)	Urban (1 km)	Sea-level rise	Marsh size	Latitude	Other change
Willet	.	.	.	.	.	.	.
Clapper rail	.	.	.	.	.	.	.
Seaside sparrow	.	.	.	.	.	.	.
Saltmarsh sparrow	.	.	.	.	.	.	.
Nelson's sparrow	.	.	.	.	.	.	.

+ = positive effect; - = negative effect; . = no evidence for any effect


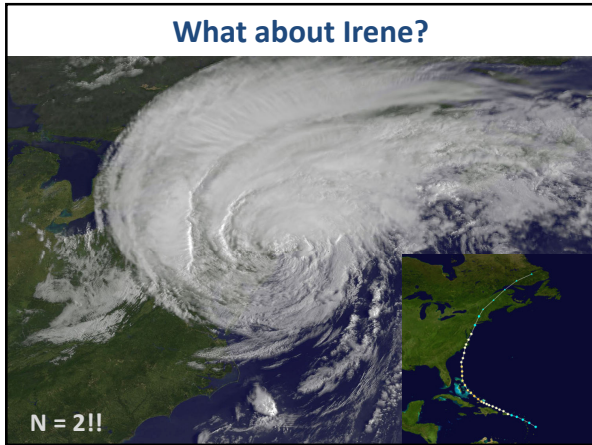
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**No declines linked to bigger storm surge**

### QUESTIONS

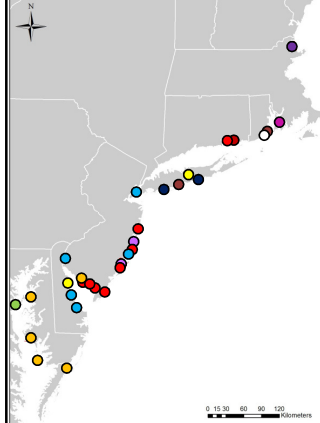
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### QUESTIONS

1. What effects do hurricanes have?
  - bird abundance
  - habitat
2. What influences resilience to change?
  - reduced by chronic stressors?
  - increased by land protection?
3. Does restoration work?
  - pre/post comparisons
  - control comparisons
  - regional variations

### Restoration activities



- alter hydrology
- sediment additions
- living shorelines
- assisted migration

} multiple methods

**MORE INFORMATION:**  
<http://www.tidalmarshbirds.org/>  
<https://www.facebook.com/TidalMarshBirds>  
 #SHARPBirds

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