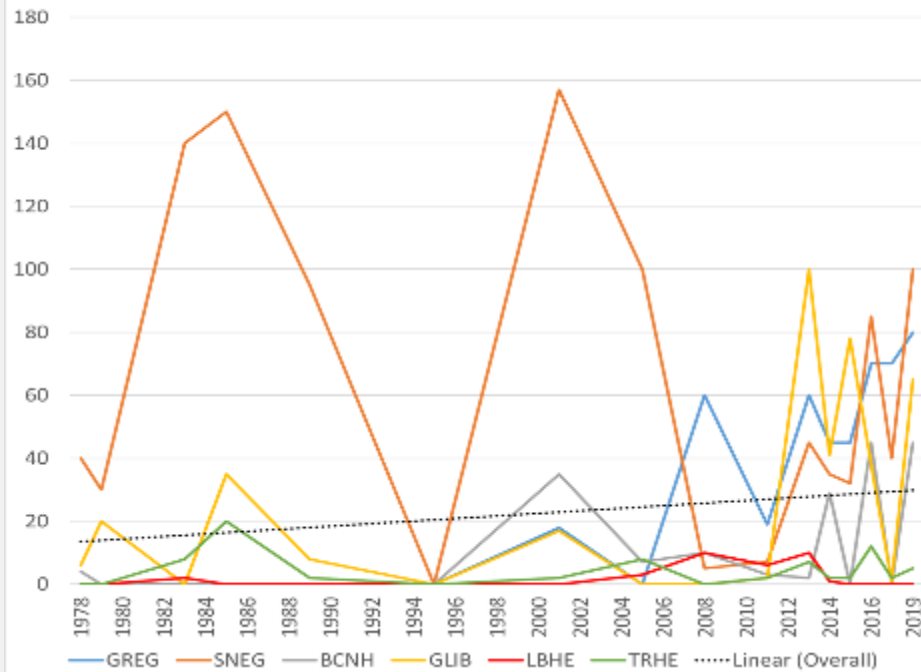


# Habitat Use and Reproductive Success of Wading Birds Nesting on Sturgeon and Gull Island

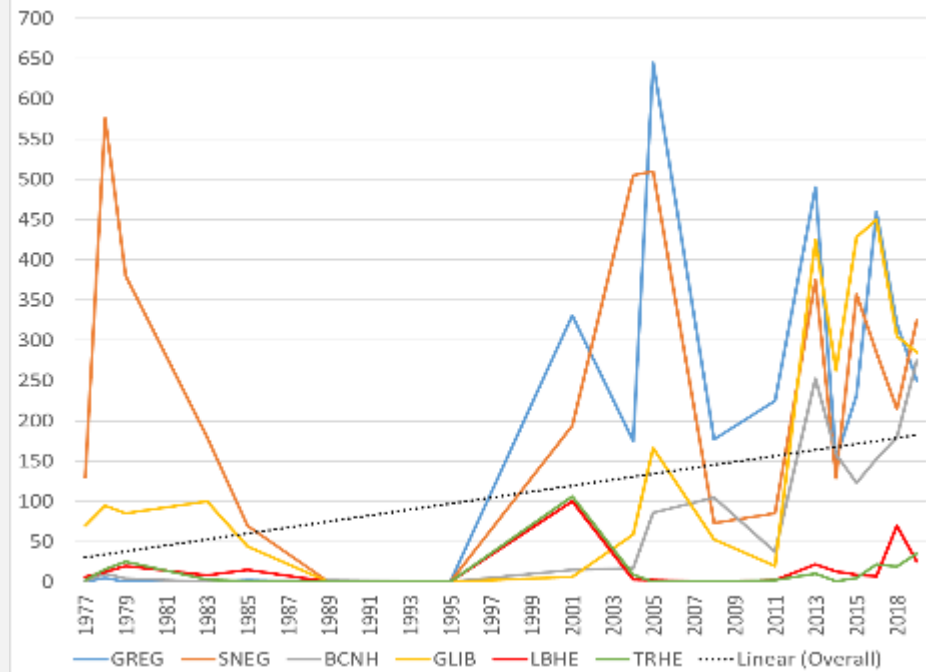


# AERIAL SURVEY TRENDS

Species Abundance, Sturgeon Island 1978-2019



Species Abundance, Gull Island 1977-2019



- Wading bird species statewide have experienced shifts in nesting abundance and distribution based on aerial surveys conducted by NJ Division of Fish and Wildlife (1977-2018)
- 2018 - ~4,581 individual wading birds, 31 colonies statewide; ~1,222 individual wading birds (~27%) on Gull/Sturgeon
- Increases in number of birds on island may be result of fewer suitable nesting colonies (43 colonies documented in 1995)
- Five species of nesting wading birds on Gull/Sturgeon considered priority Species of Greatest Conservation Need (BCNH, GLIB, LBHE, SNEG, TRHE)



# 2019 DIRECT SURVEYS GROUND COUNTS

## Sturgeon Island

Month	Species					Total
	GREG	SNEG	TRHE	GLIB	BCNH	
April	40	20	0	100	8	168
May	100	100	5	90	20	310
June	50	120	5	75	50	300

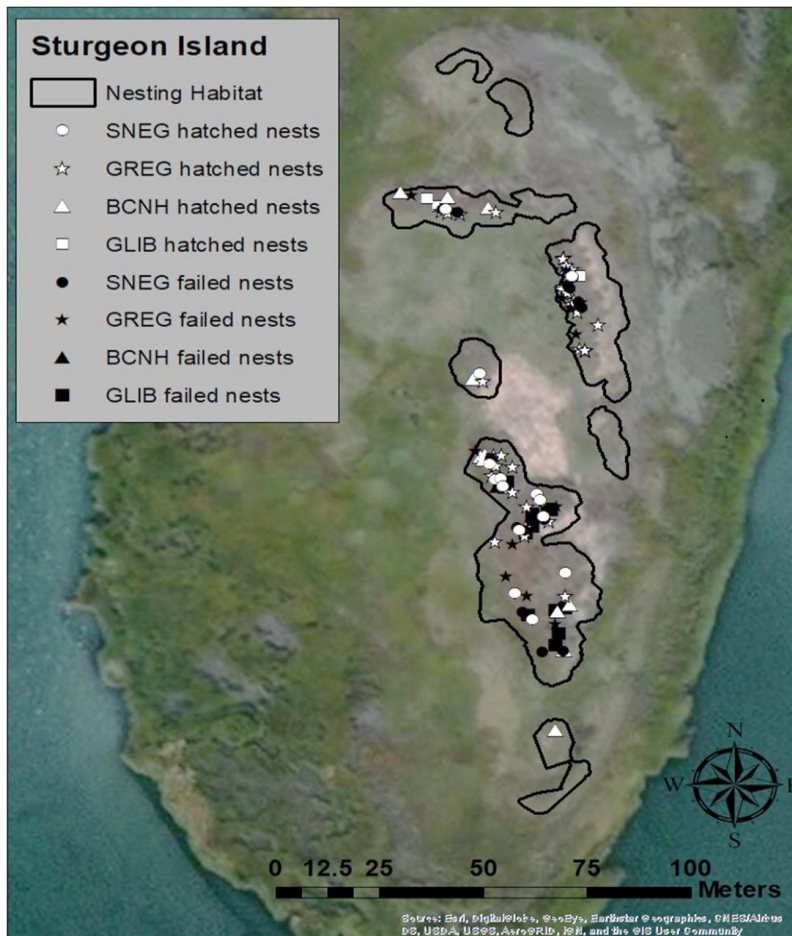


## Gull Island

Month	Species						Total
	GREG	SNEG	TRHE	GLIB	LBHE	BCNH	
April*	331	134	8	290	0	28	959
May	285	300	25	300	12	245	1,477
June	180	325	40	200	10	255	1,310

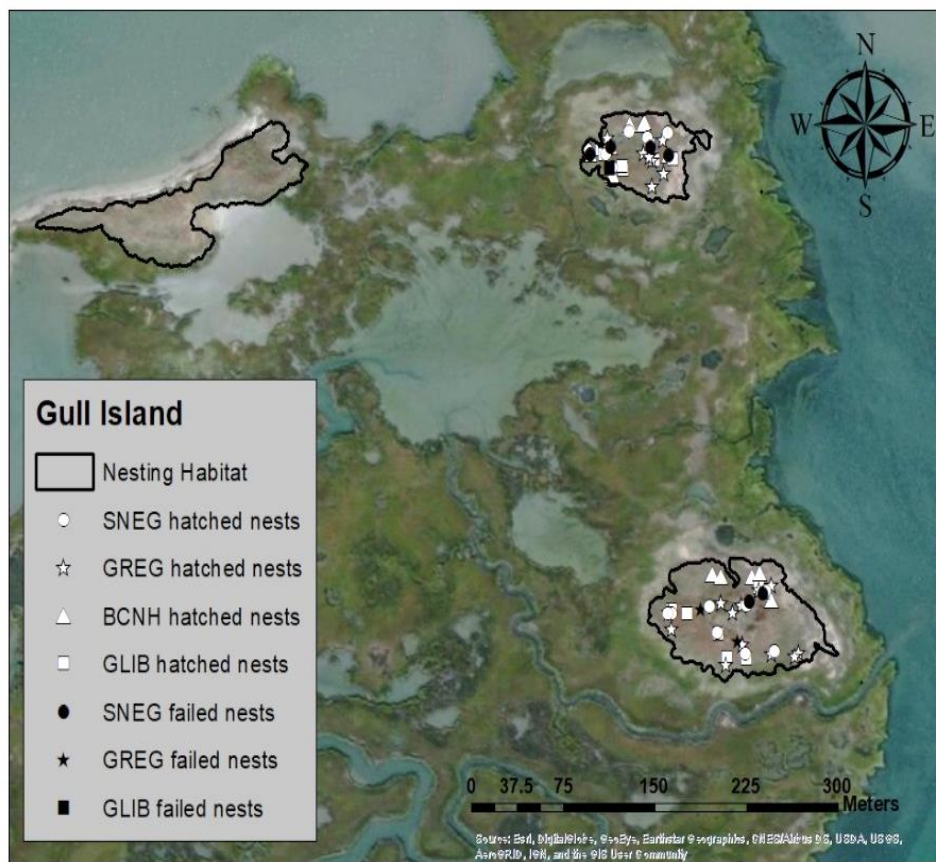
\*Estimates only include two of the three nesting areas on the island

# NEST SUCCESS – STURGEON ISLAND



	<i>N</i>	Apparent hatch success, ≥1 egg hatched (%)
Black-crowned Night Heron	12	11 (91.7)
Great Egret	49	36 (73.5)
Snowy Egret	32	15 (46.9)
Glossy Ibis	17	4 (23.5)
<b>TOTAL</b>	<b>110</b>	<b>66 (60)</b>

# NEST SUCCESS – GULL ISLAND



Species	<i>N</i>	Apparent hatch success, $\geq 1$ egg hatched (%)
Black-crowned Night Heron	12	12 (100)
Great Egret	23	21 (91.3)
Snowy Egret	20	14 (70)
Glossy Ibis	16	15 (93.8)
<b>TOTAL</b>	<b>71</b>	<b>62 (87.3)</b>

# NESTING HABITAT CHARACTERISTICS STURGEON ISLAND

- 0.59 acres occupied/0.67 acres of available nesting habitat (i.e., *Phragmites australis*, *Iva fructescens*) in 8 discontinuous patches
- Mean distance to edge ( $\pm$ SD) for all nests monitored on Sturgeon Island (n=110) was  $12.1 \pm 4.6$  ft.





# NESTING HABITAT CHARACTERISTICS GULL ISLAND



- 3.63 acres nesting habitat (all occupied) in 3 discontinuous patches ( $>0.77$  acres)



- Mean distance to edge ( $\pm$ SD) for all nests monitored ( $n = 71$ ) was  $121.1 \pm 61.7$  ft



# GREAT EGRET NESTS STURGEON ISLAND





# GREAT EGRET NESTS GULL ISLAND





# GLOSSY IBIS NESTS STURGEON ISLAND





# GLOSSY IBIS NESTS GULL ISLAND





# BLACK-CROWNED NIGHT-HERON NESTS STURGEON ISLAND





# BLACK-CROWNED NIGHT-HERON NESTS GULL ISLAND





# SNOWY EGRET NESTS STURGEON ISLAND





# SNOWY EGRET NESTS GULL ISLAND





# STURGEON NESTING HABITAT



## Mean ground elevations ( $\pm$ SD) of nests

BCNH  $2.27 \pm 0.73$ ft

GREG  $2.16 \pm 0.66$ ft

SNEG  $2.37 \pm 0.53$ ft

GLIB  $2.53 \pm 0.05$ ft

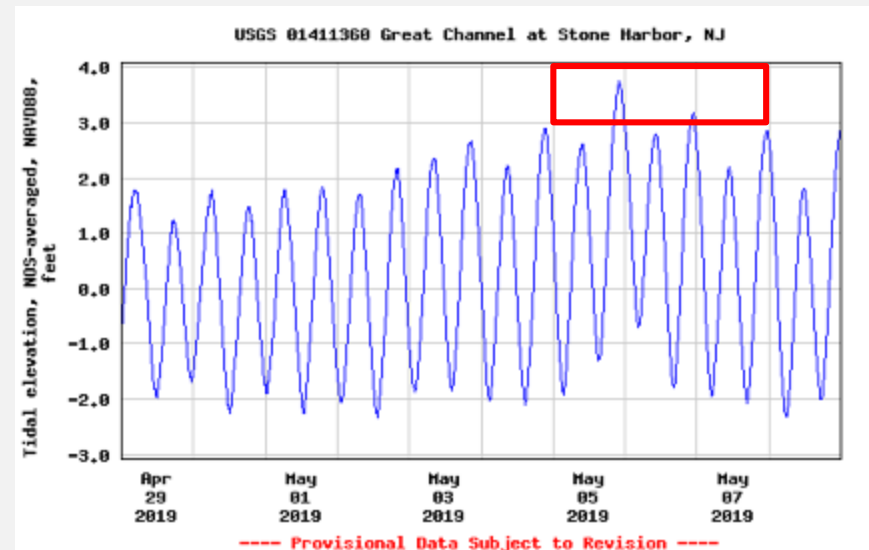
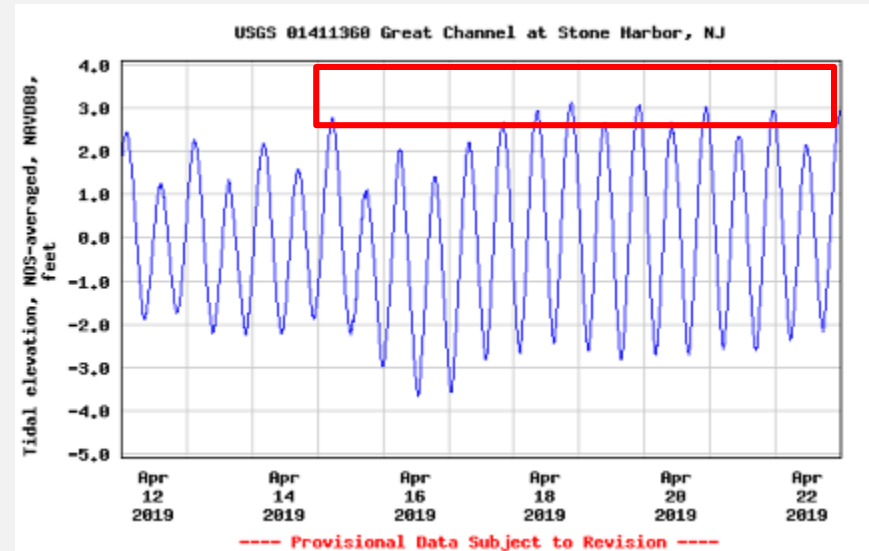
**ALL NESTS  $2.29 \pm 0.62$ ft**

	<i>Iva frutescens</i>	Mix	Phragmites	Wrack
Sturgeon	$2.18 \pm 0.67$	$2.26 \pm 0.61$	$2.38 \pm 0.57$	$1.58 \pm 0.31$



# OVERWASH – STURGEON ISLAND

- 5 GREG nests
  - Failed between April 12-22
  - Nest metrics:
    - 1.73 ± 0.79ft ground elevation
    - 0.87 ± 0.23ft AGL nest height
    - 2.6 ± 0.94ft nest elevation**
  
- 2 SNEG nests & 1 GLIB nest
  - Failed between April 29 - May 8
  - Nest metrics:
    - 2.67 ± 0.41ft ground elevation
    - 0.23 ± 0.34ft AGL nest height
    - 2.9 ± 0.75ft AGL nest elevation**





## NEST METRICS – STURGEON ISLAND

	<i>N</i>	Ground Elevation (± SD)	Nest Height (± SD)	Nest elevation (± SD)
Black-crowned Night Heron	12	2.27 ± 0.73	0.68 ± 0.33	2.95 ± 0.91
Great Egret	49	2.16 ± 0.66	0.97 ± 0.3	3.13 ± 0.74
Snowy Egret	32	2.37 ± 0.53	0.36 ± 0.33	2.73 ± 0.56
Glossy Ibis	17	2.53 ± 0.05	0.59 ± 0.28	3.11 ± 0.58
TOTAL	110	2.29 ± 0.62	0.71 ± 0.4	2.99 ± 0.70



# AVIAN PREDATION – STURGEON ISLAND



## TOTALS

- 4 GREG nests
- 2 SNEG nests
- 6 GLIB nests
- 1 BCNH nest



## POSSIBLE AVIAN NEST PREDATION

- ~100 nesting gull species on Sturgeon Island (more Great Black-backed Gulls than Herring Gulls)
- ~210 nesting gull species on Gull Island (more Herring Gulls and Great Black-backed Gulls)
- Fish Crows observed on both islands



# CONCLUSIONS

- Nest success lower on Sturgeon Island compared to Gull Island – statistical analyses supported differences in hatch success between nesting islands ( $p < .0001$ ).
- Snowy Egrets and Glossy Ibis had lowest nest success on Sturgeon Island (<50% hatch success).
- Evidence of avian predation (i.e., broken egg shells) and overwash on Sturgeon Island; not on Gull Island
- Nests monitored on Sturgeon Island were closer to the edge of the nesting area than nests monitored on Gull Island –vulnerable to avian nest predators (FICR, HERG, GBBG).
- Increasing the size and extent of available nesting habitat on Sturgeon Island would likely enhance reproductive success and create new areas to nest for sensitive wading bird species.





# ACKNOWLEDGEMENTS

## TWI Staff

Lisa Ferguson

Lenore Tedesco

Brittany Morey

Tyler Kovacs

Brian Williamson

Victoria Musumeci

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NJ Division of Fish and Wildlife

US Army Corps of Engineers





QUESTIONS?

