

Island Habitats for Wading Birds



A critically-limiting resource in the predator-rich northeast coastal zone

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- Short-distance migrants
- Most east coast birds winter in US southeast and Caribbean
- Some northern individuals winter in New England
- Return to breeding sites in early spring



Herons return to nest-sites used successfully in the past



Many species are highly colonial



**Clutch size ranges
from 3-5 eggs**





Wading birds commute to foraging habitats within 20 km of colony



Nestling production reflects wetland quality

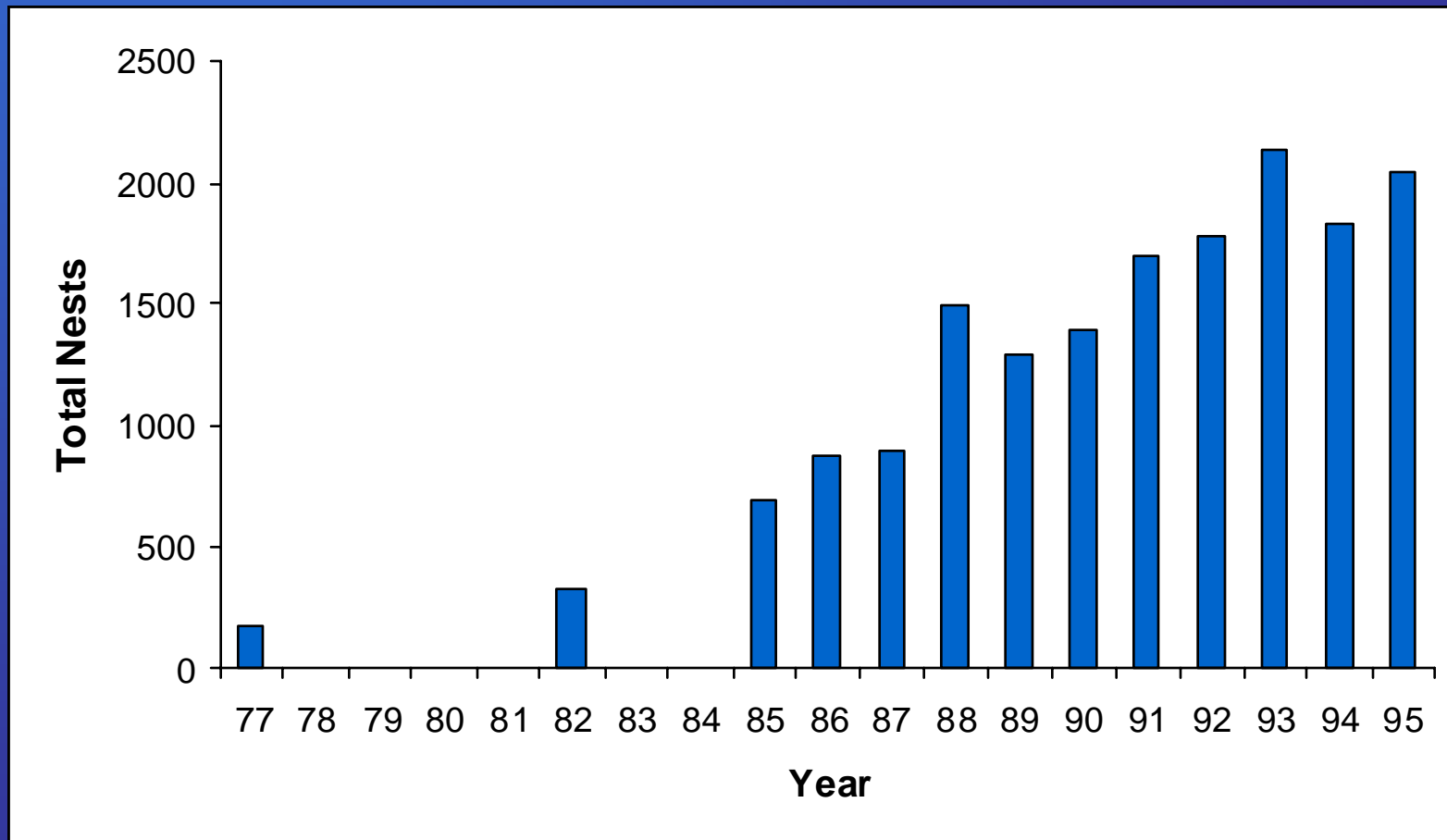




Common wading birds in NYH



Heron populations grow in NYH



Passage of Clean Water Act reduces raw sewage inputs to harbor

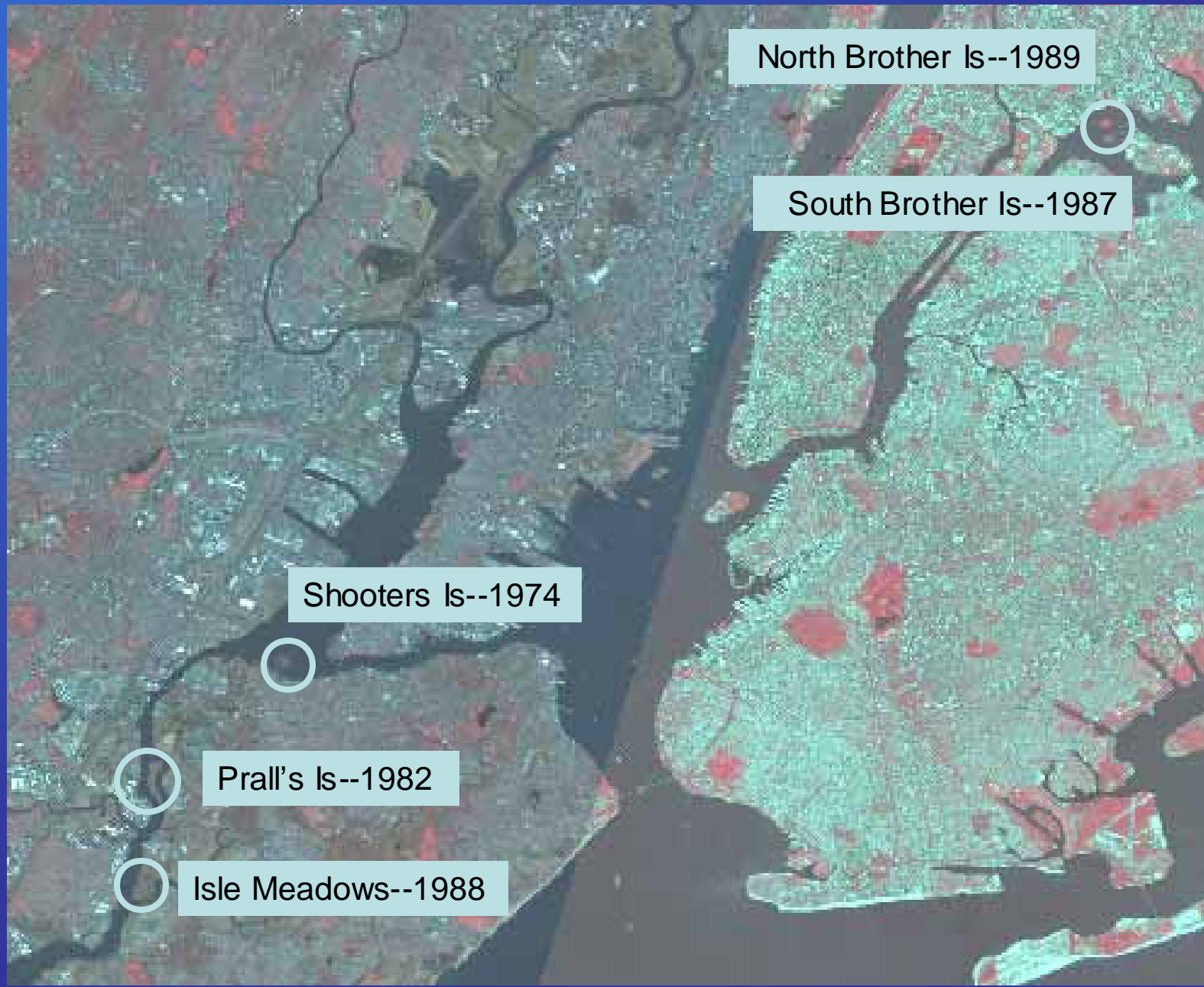


Aquatic food chain re-established in inner harbor waterways



Inner harbor islands colonized





North Brother Is--1989



South Brother Is--1987

Shooters Is--1974



Prall's Is--1982

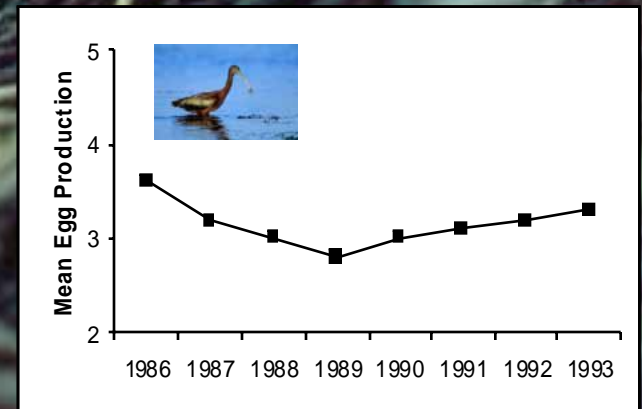
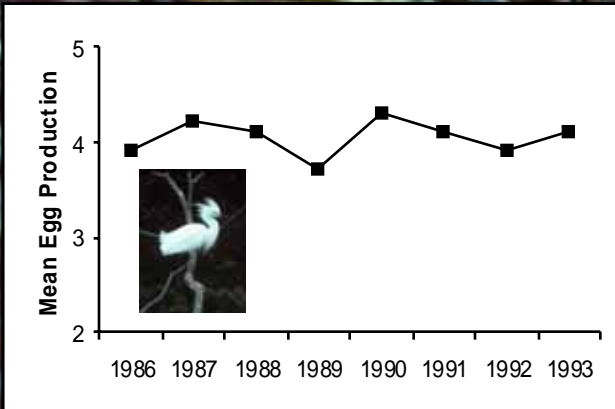
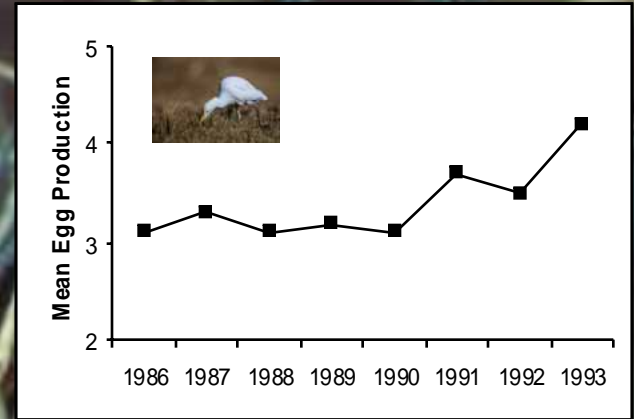
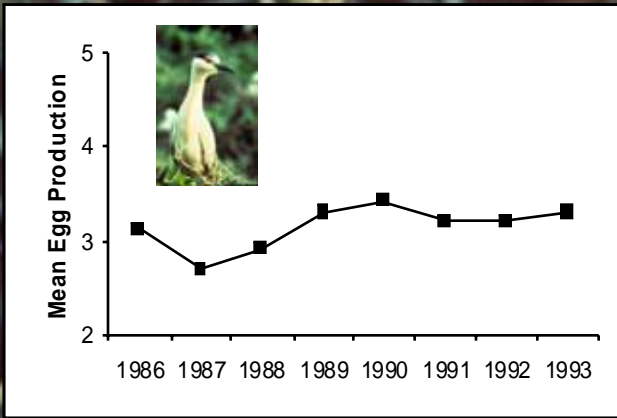


Isle Meadows--1988



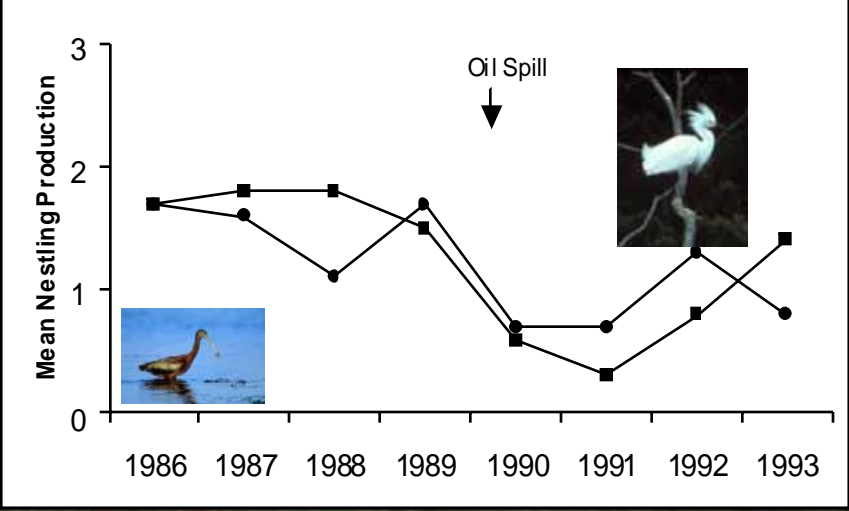
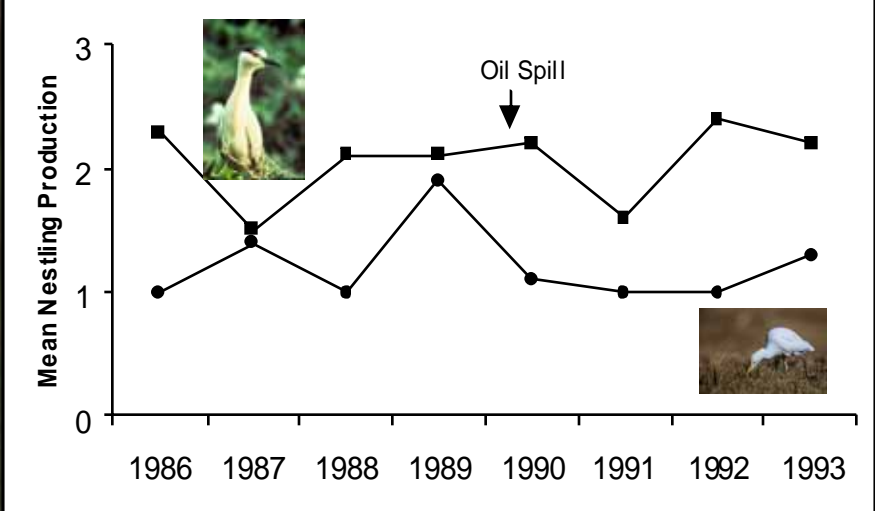
Partnerships developed to study and conserve herons





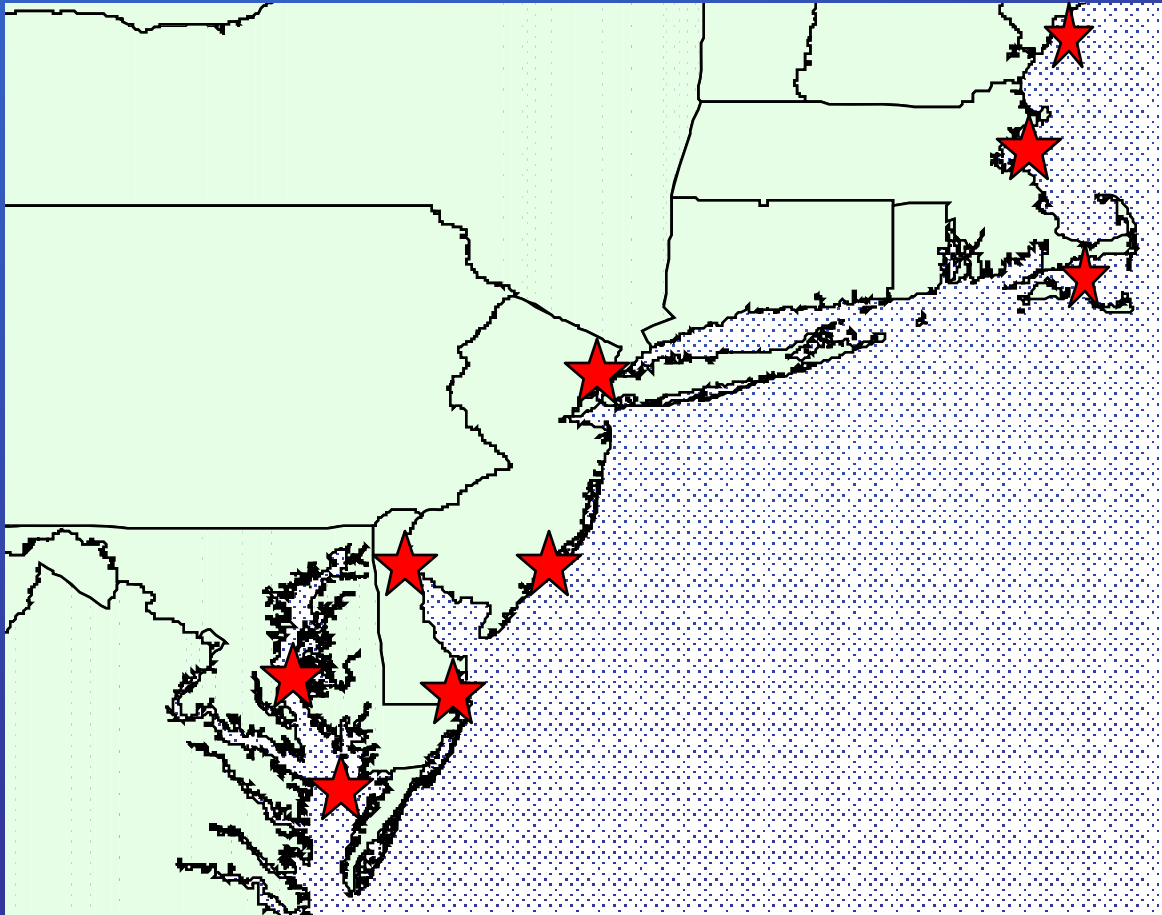
Oil spills of 1990 killed wintering birds and degraded tidal wetlands







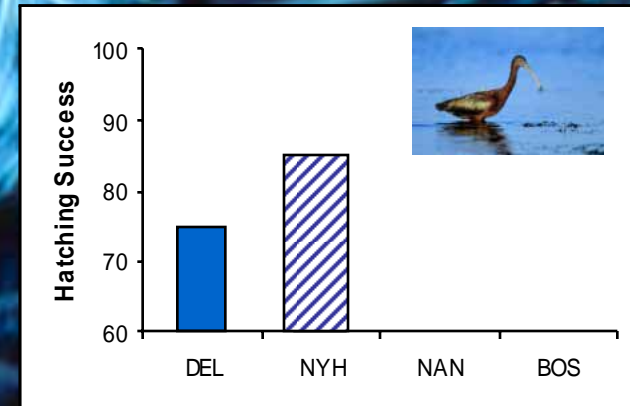
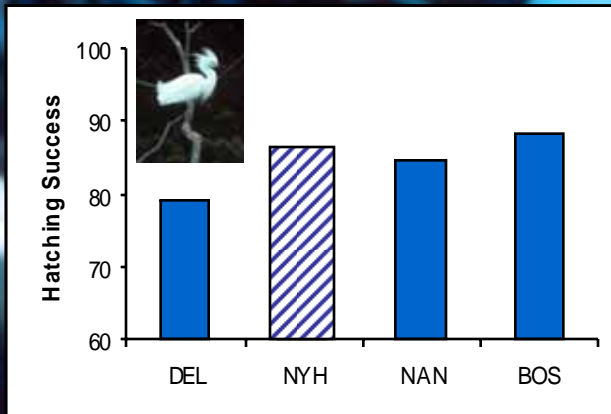
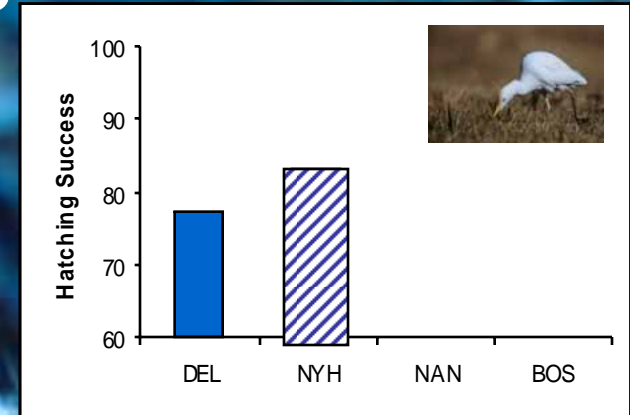
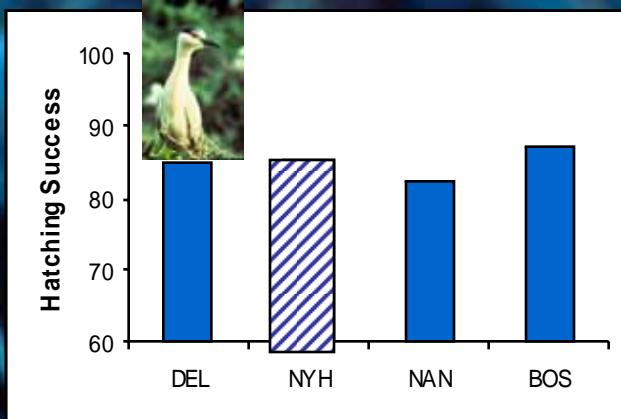
Manomet's regional wading bird research and conservation projects



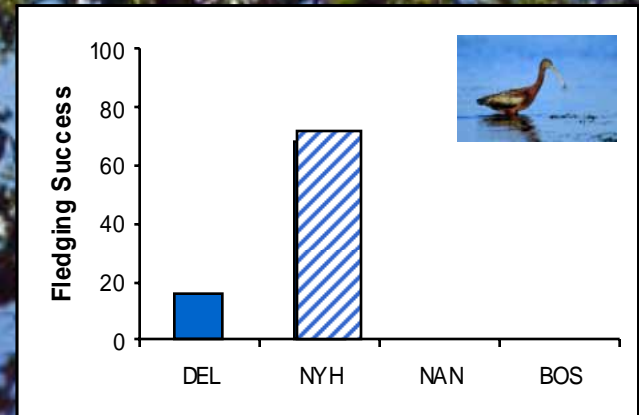
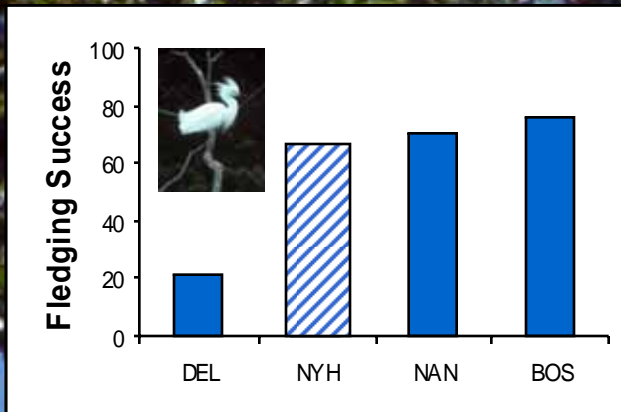
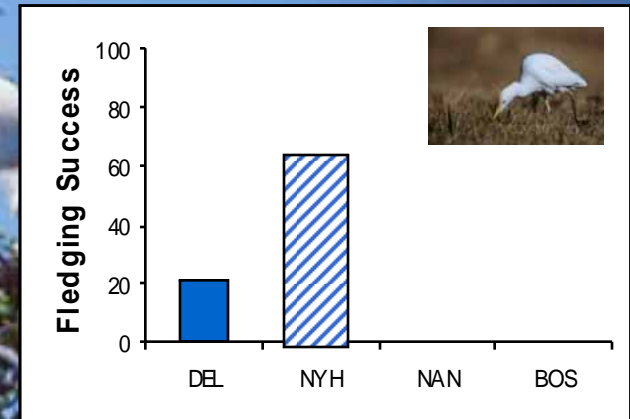
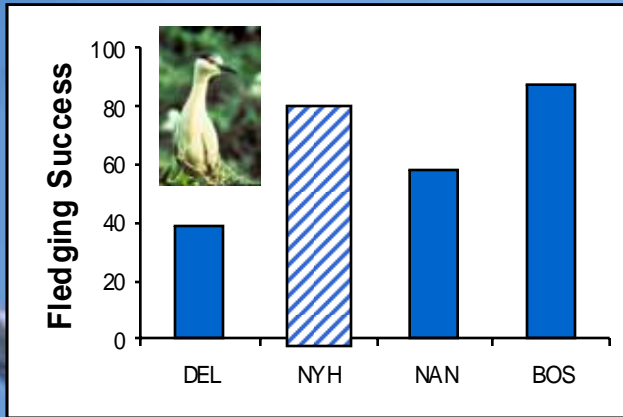
- Breeding
- Foraging
- Toxicology
- Management
- Coalitions



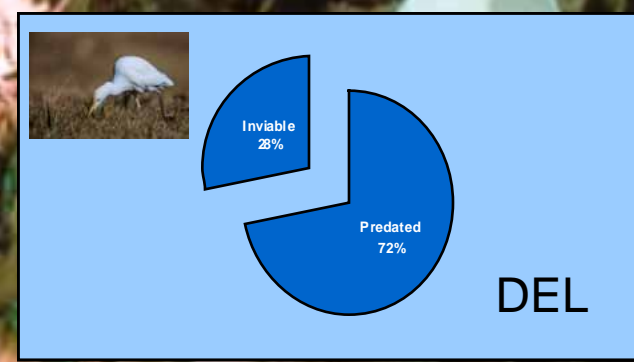
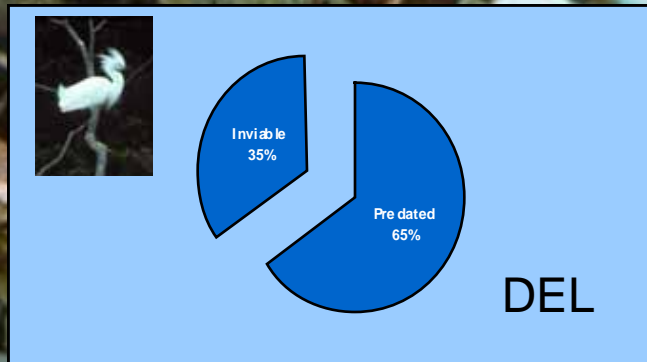
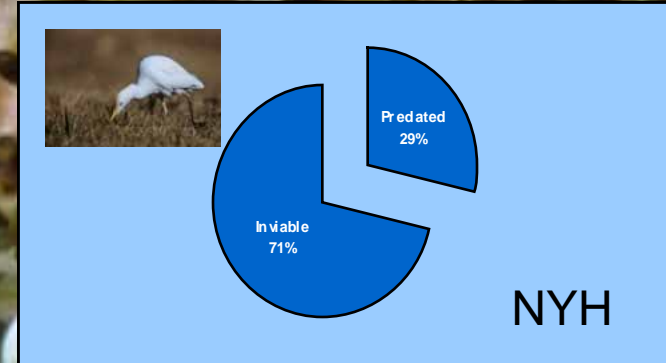
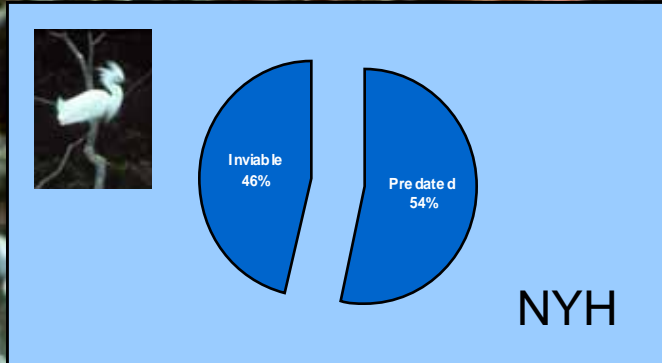
Hatching success higher in urban estuaries

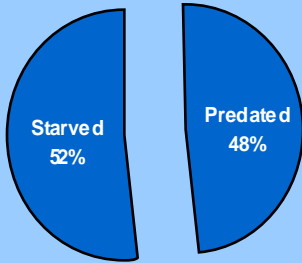


Fledging success higher in urban estuaries

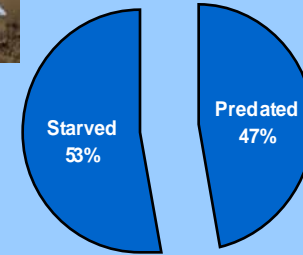


Egg inviability—urban estuaries; Egg predation—non-urban estuaries



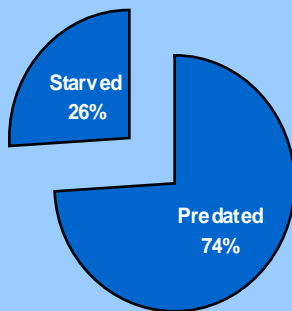


NYH

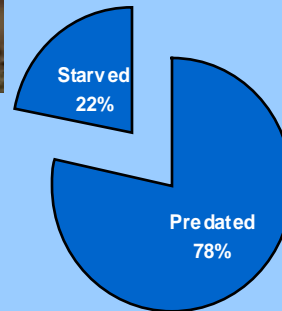


NYH

Nestling predation—non-urban estuaries

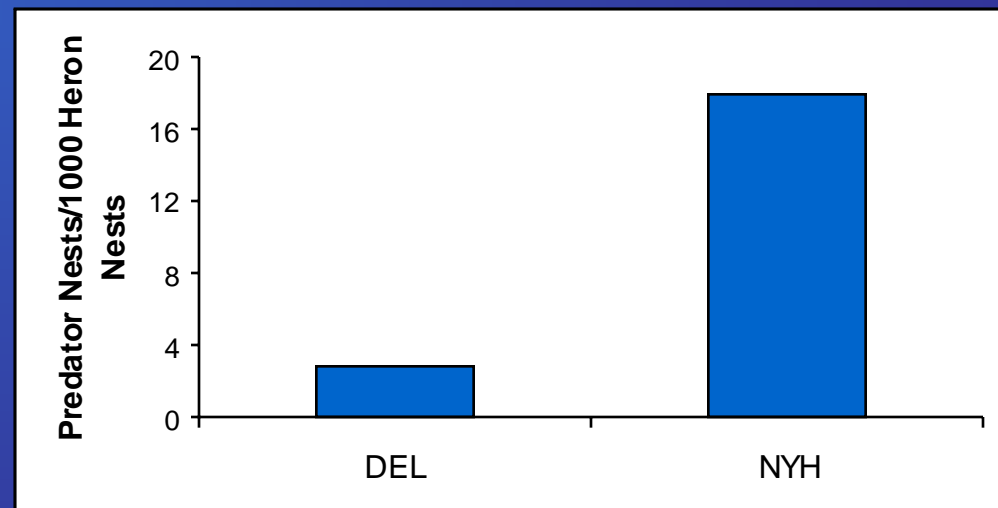


DEL



DEL

Why are predators having such a devastating impact in non-urban heronries?



Manomet's toxicological studies in non-urban estuaries show pesticide exposure in wading birds



Wading birds are exposed to new generation (post-DDT) insecticides



through skin



through diet



Pesticides detected in heron diet and on skin



- Diet—dimethoate, parathion, malathion, methamidophos, chlorpyrifos
- Skin—phorate, naled



Neurotoxic pesticides deplete key enzymes in exposed birds



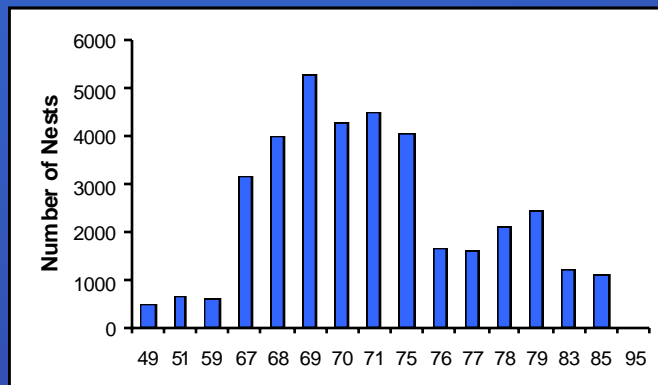
Mean cholinesterase levels are 10-20% lower in non-urban estuaries than in New York Harbor



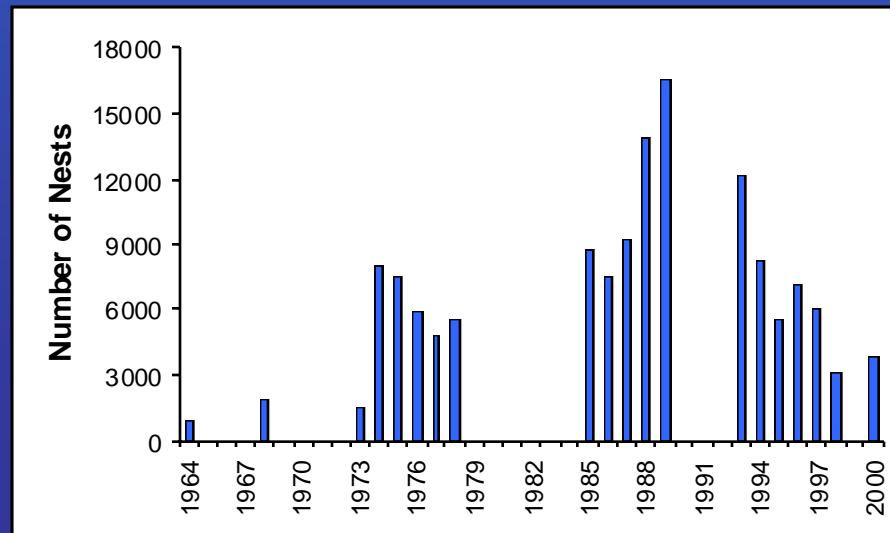
Low cholinesterase increases vulnerability to predators



Predators cause nest-site and colony-site abandonments



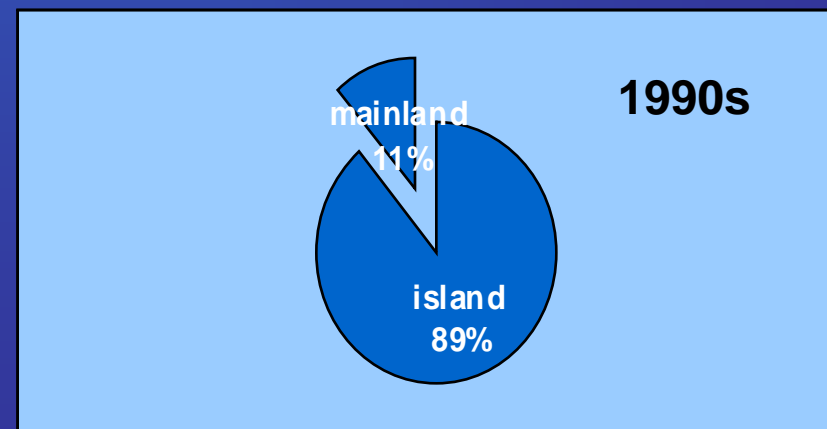
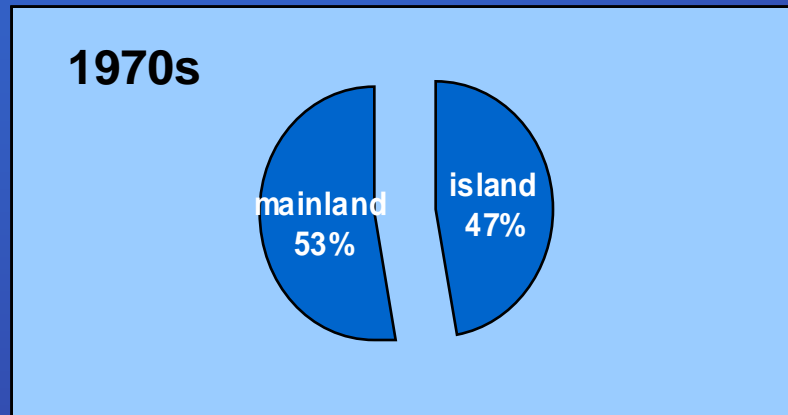
Stone Harbor—
New Jersey's
largest heronry



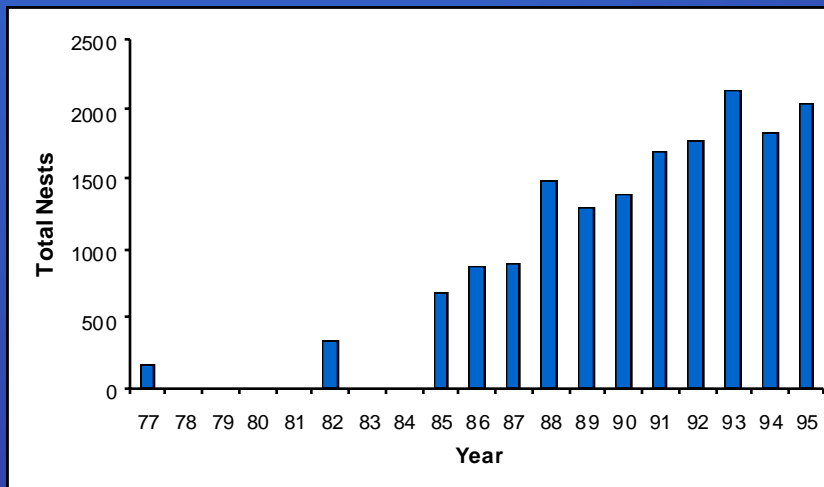
Pea Patch Island—
largest heronry on
the east coast



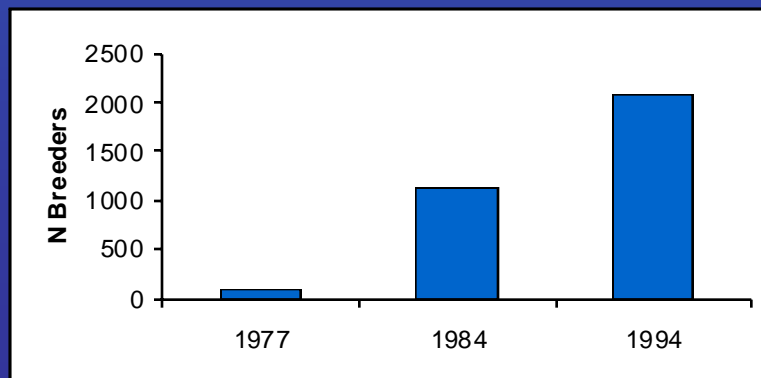
Colony-site selection since 1970s increases isolation of nesting birds



Wading birds actively colonize urban estuaries mid-1970s to mid-1990s



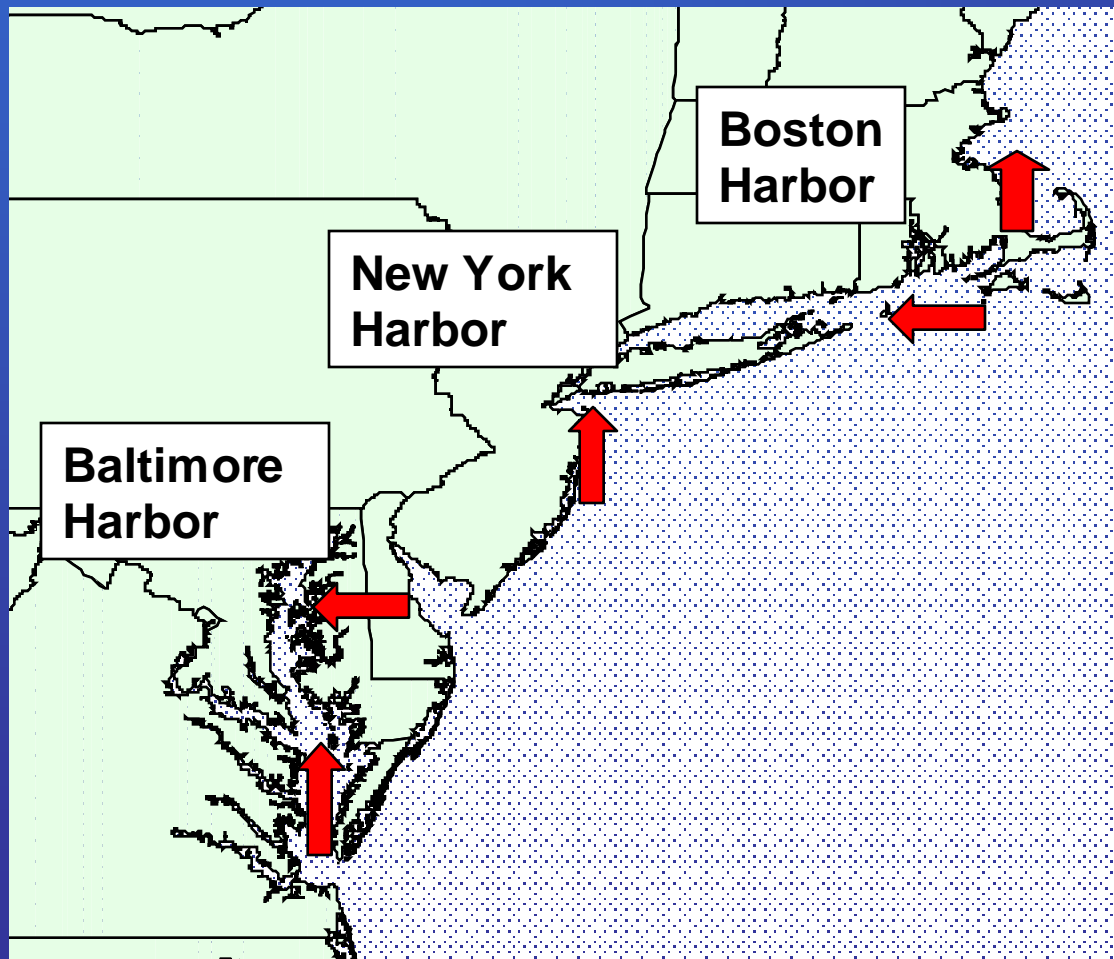
New York Harbor—
15% increase



Boston Harbor—
114% increase



Wading birds move to urban estuaries

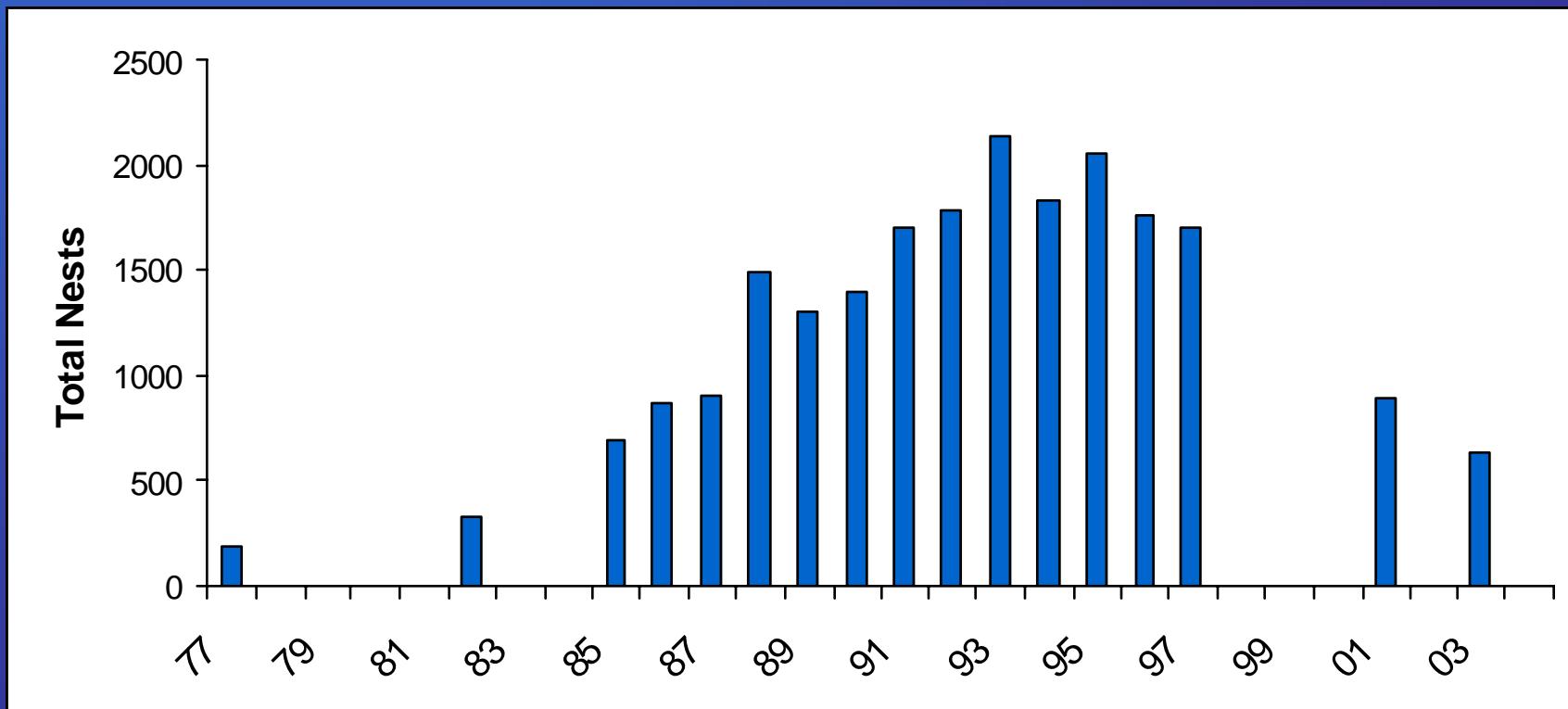


- Island “rich”
- Pesticide use minimal

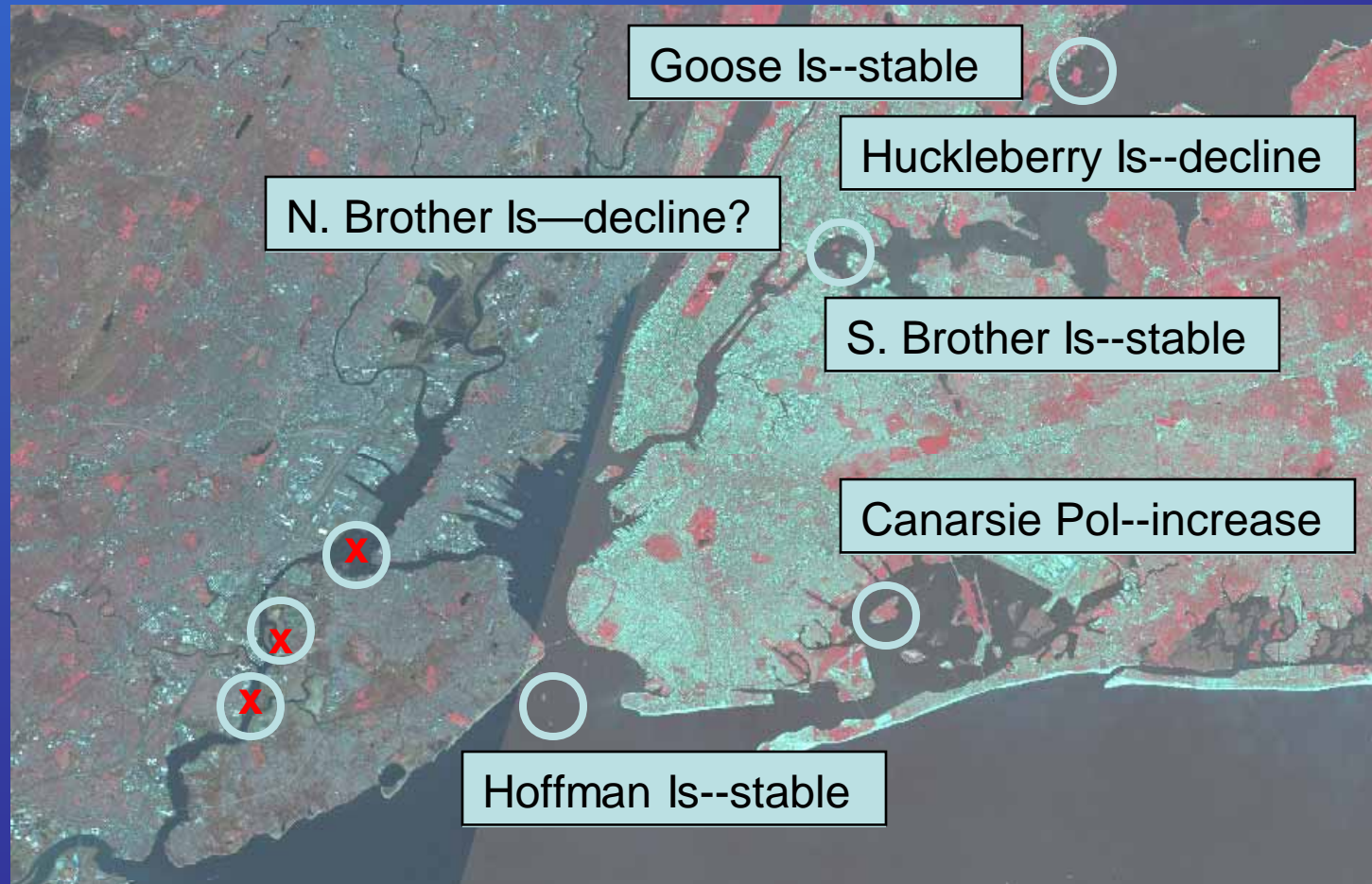




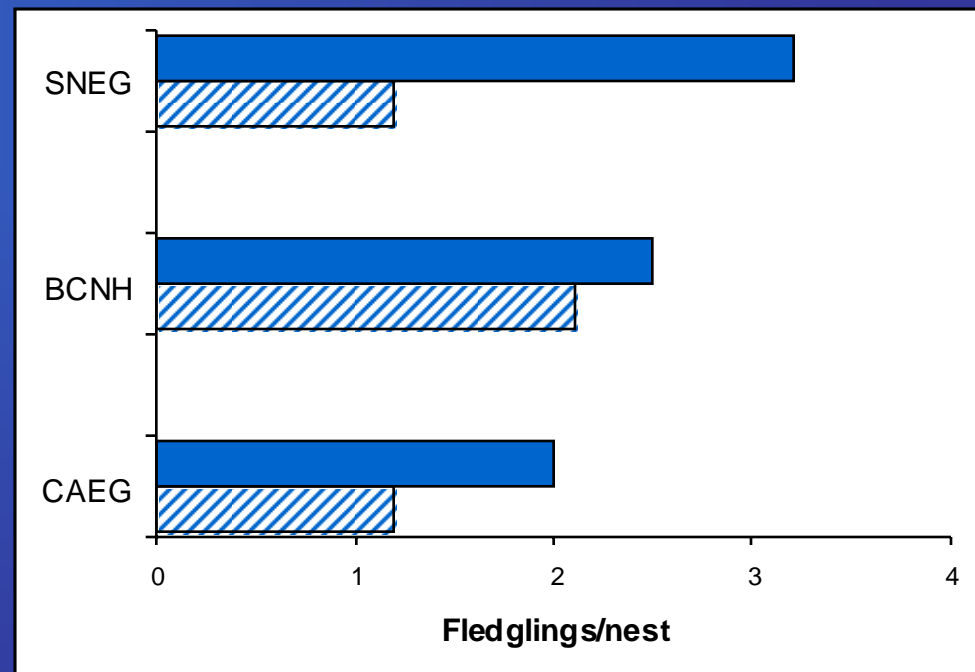
NYH – inner harbor wading bird populations have declined since mid-1990s



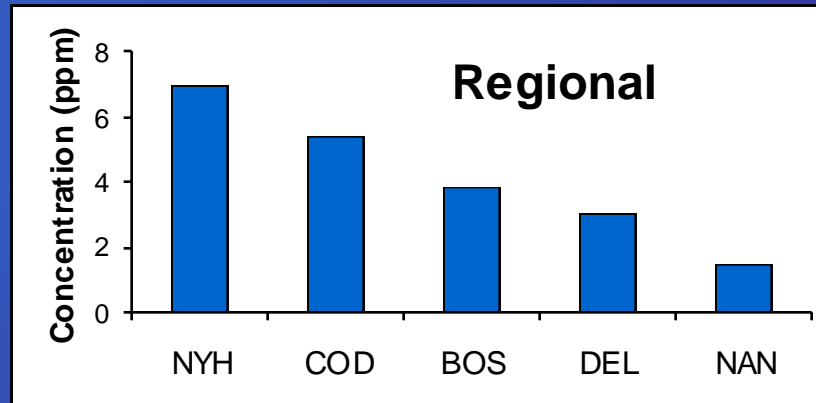
Inner harbor islands abandoned; Outer harbor islands colonized



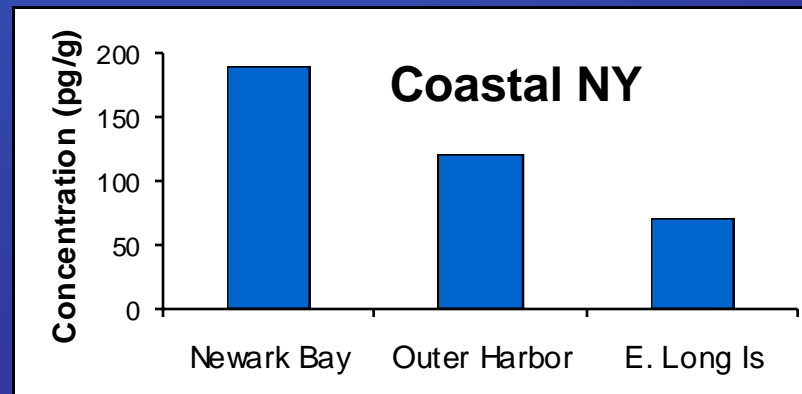
Productivity in inner harbor not sustainable



Low productivity results from industrial contaminants



PCBs

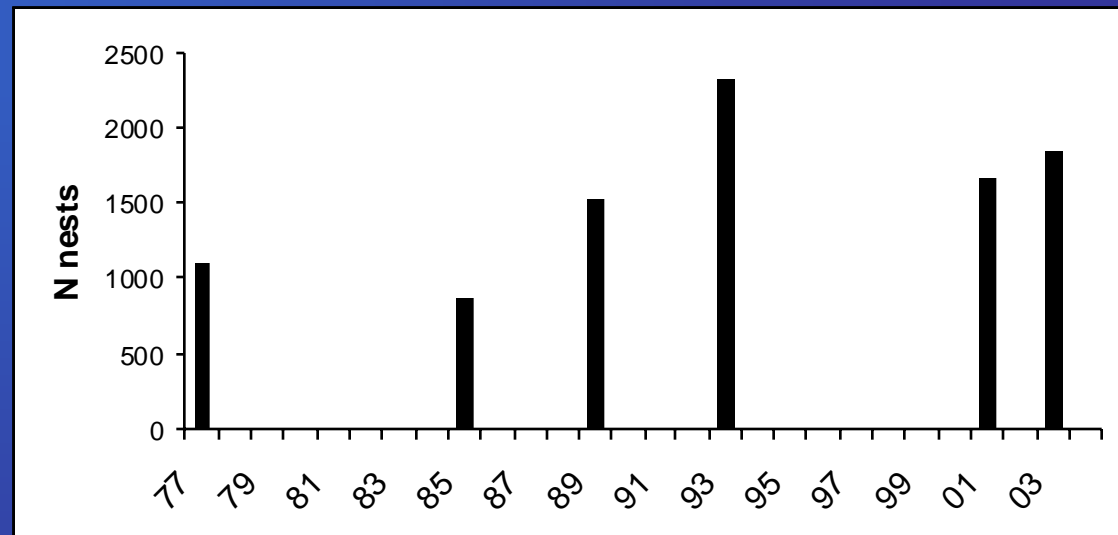


dioxins

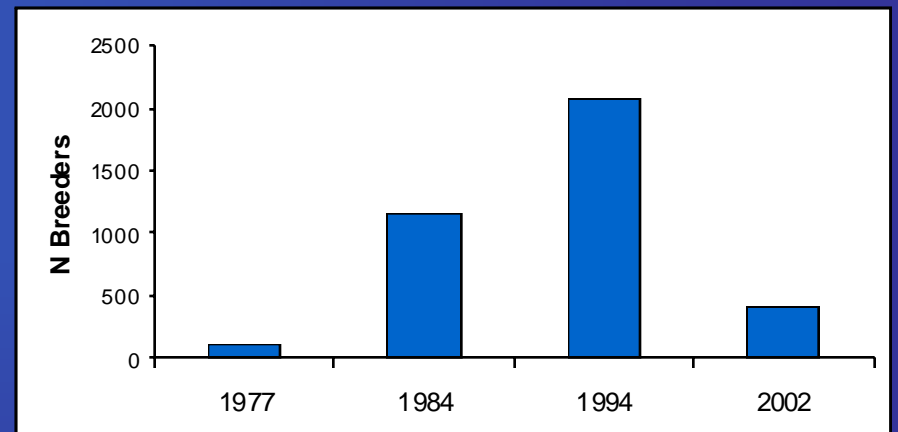




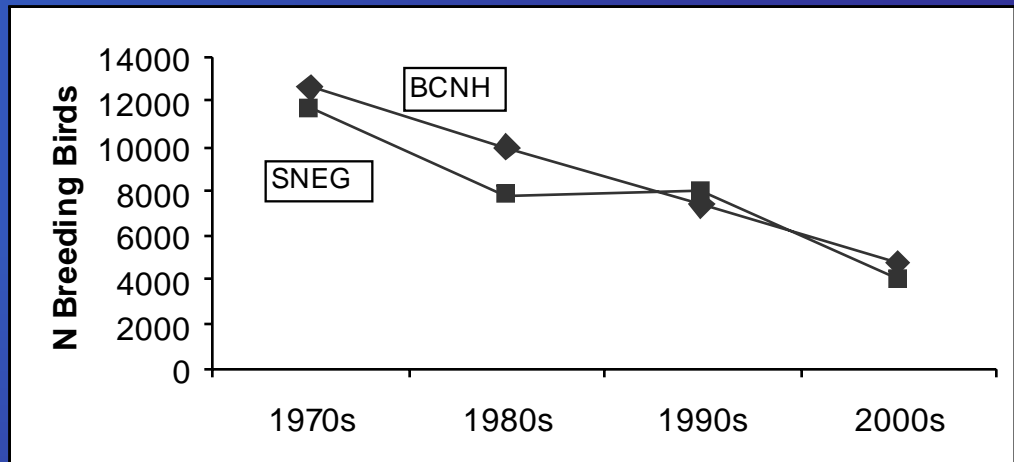
Total NY/NJ Harbor Estuary populations peaked in mid-1990s



Boston Harbor populations decimated



Coastal wading birds declining regionally



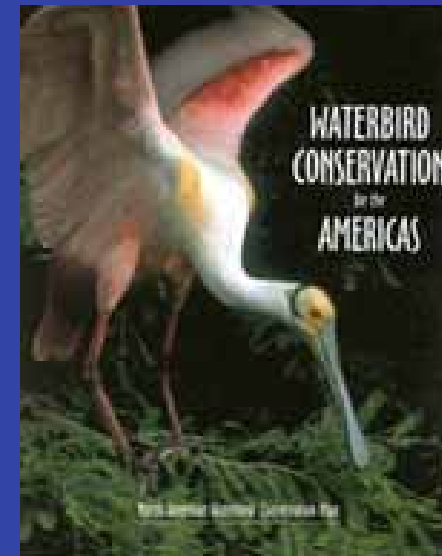
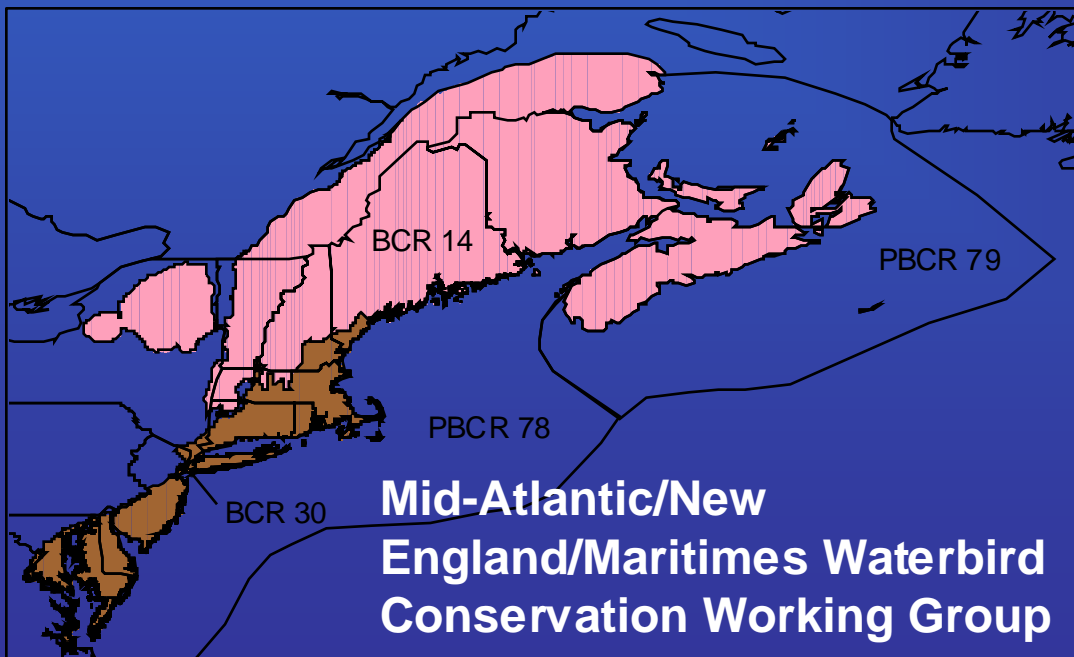


- In non-urban estuaries, wading birds exposed to pesticides
- Neurotoxins increase vulnerability to predators
- Non-urban heronries abandoned due to high predation rates
- Wading birds colonize New York Harbor
- In NYH and other urban estuaries, wading birds exposed to industrial contaminants
- Productivity below sustainable level for more than a decade
- Adults in population not replaced
- In region, total wading bird populations decline by nearly 40%





Waterbird Conservation



NYH clean-up efforts



- Toxics Work Group
 - Contaminants Assessment and Reduction Project
- Dredged Material Management Integration Work Group
- Habitats Work Group



Protection from pesticides



- Food Quality Protection Act
- National Pesticides Coalition
- Research needs more apparent
- Wildlife-Human linkages



Manomet's continuing commitment



- Pesticide Best Management Practices
- Wildlife/Human Health Coalition
- Waterbird Conservation
- Toxics monitoring



The Science of Saving Nature



As one of the nation's oldest independent environmental research organizations, Manomet conducts original research on natural systems and wildlife. We use our science to bring people together and guide them in the development of practical strategies that improve conditions for wildlife, habitats and people.



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