

# Harbor Heron – Citizen Science Update 2008-2010

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# Harbor Heron Citizen Science Surveys



- Collaborative effort of NJAS, NYCA and NJ Meadowlands Commission
- Fill gaps in knowledge in the New Jersey Wildlife Action Plan for coastal areas in the Hackensack Meadowlands and the Raritan Bay
- Collect information needed for the Harbor Heron Conservation Plan



# Harbor Heron Breeding Colonies



# Harbor Heron Feeding Areas

- **Birds fly from island nesting colonies to other areas where they forage**
- **Much more is known about breeding colonies than foraging sites**
  - **Surveys of herons away from breeding colony are more challenging**



# Where do birds from each island go to forage and loaf?

- Flight direction information
- Tagging and telemetry



# Where do birds from each island go to forage and loaf?

- Flight direction information
- Tagging and telemetry



# Citizen Science Survey Objectives

1. Determine the abundance and distribution of 'Harbor Herons' at foraging sites
  - Tide, time of day
  - Habitat, site factors
  - Seasonal patterns
2. Explore foraging behaviors
  - Foraging success
  - Time/activity budgets
  - Aggressive interactions
3. Mobilize, train, and coordinate citizen scientists



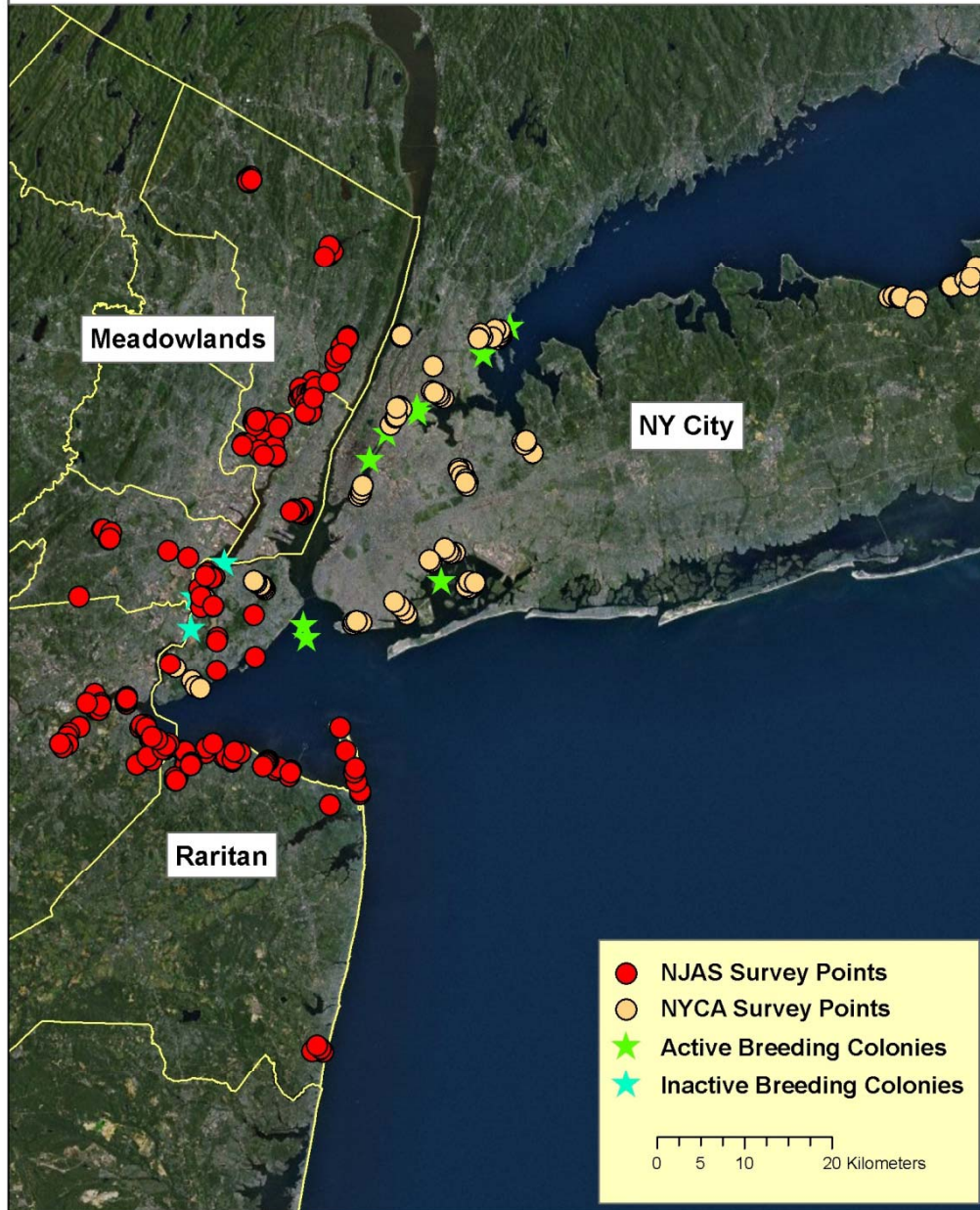
# Citizen Science Methodology



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## Harbor Heron Survey Points and Breeding Colonies



# Survey Sites

## NJA (2008-2010)

- 43 Sites
- 217 Points

## NYCA (2009-2010)

- 20 Sites
- > 110 Points



# Survey Methodology

- **Sites are visited ~ 10 times between May and October**
- **During each survey, and at each point the observer records:**
  1. **Point information: tide level, time of day, habitat and weather**
  2. **The total count of each heron and egret species**
  3. **Behavioral observations for selected birds**



# Target Species

- **Great Egret (GREG)**
- **Snowy Egret (SNEG)**
- **Black-crowned Night Heron (BCNH)**
- **Yellow-crowned Night-Heron (YCNH)**
- **Great Blue Heron (GBHE)**
- **Glossy Ibis (GLIB)**
- **Green Heron (GRHE)**
- **Little Blue Heron (LBHE)**
- **Tricolored Heron (TRHE)**



# Habitat Assessment

Habitat is characterized at each survey location as the percentage of each habitat type:

- Un-vegetated Habitats
  - MF – Mudflat
  - OW – Open water
    - OWA – Open Water above the (bird's) knee
    - OWB – Open Water below the knee
- Vegetated Habitats
  - Low Marsh (LM), High Marsh (HM) or Phragmites (PH)
  - FO – Forest
  - SC – Scrub/shrub



# Recording Tide Information

## Tide is recorded for every point visit:

1. Observers select whether the point is tidal or non-tidal
2. Using site specific tide tables, observers record the time of the nearest low tide. We use this to categorize visits into:
  - Low tide
  - High tide
  - Mid-outgoing
  - Mid-incoming



# Behavioral Observations

Observe each individual for 3 minutes and record:

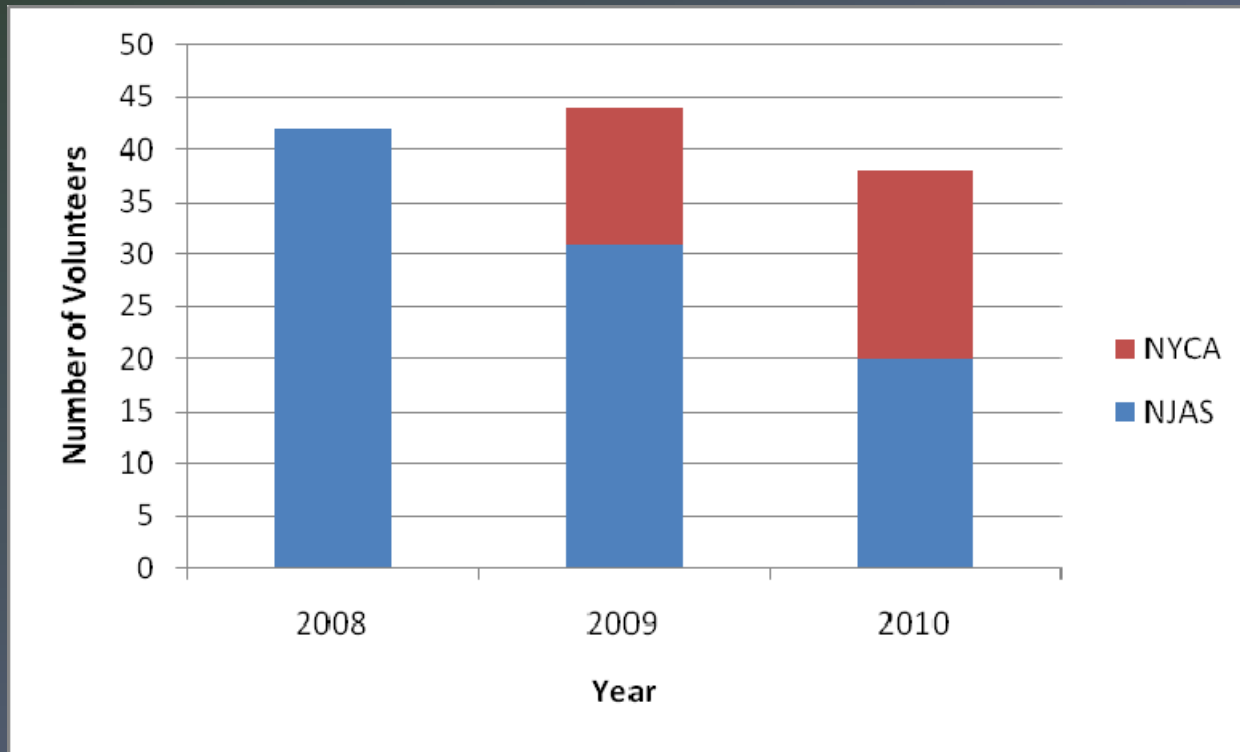
- Species and age (if known)
- Habitat
- Behavior
- Number of strikes
- Number of successes
- Neighbors
- Aggressive behavior



# 2008 - 2010: RESULTS



# Volunteer Participation

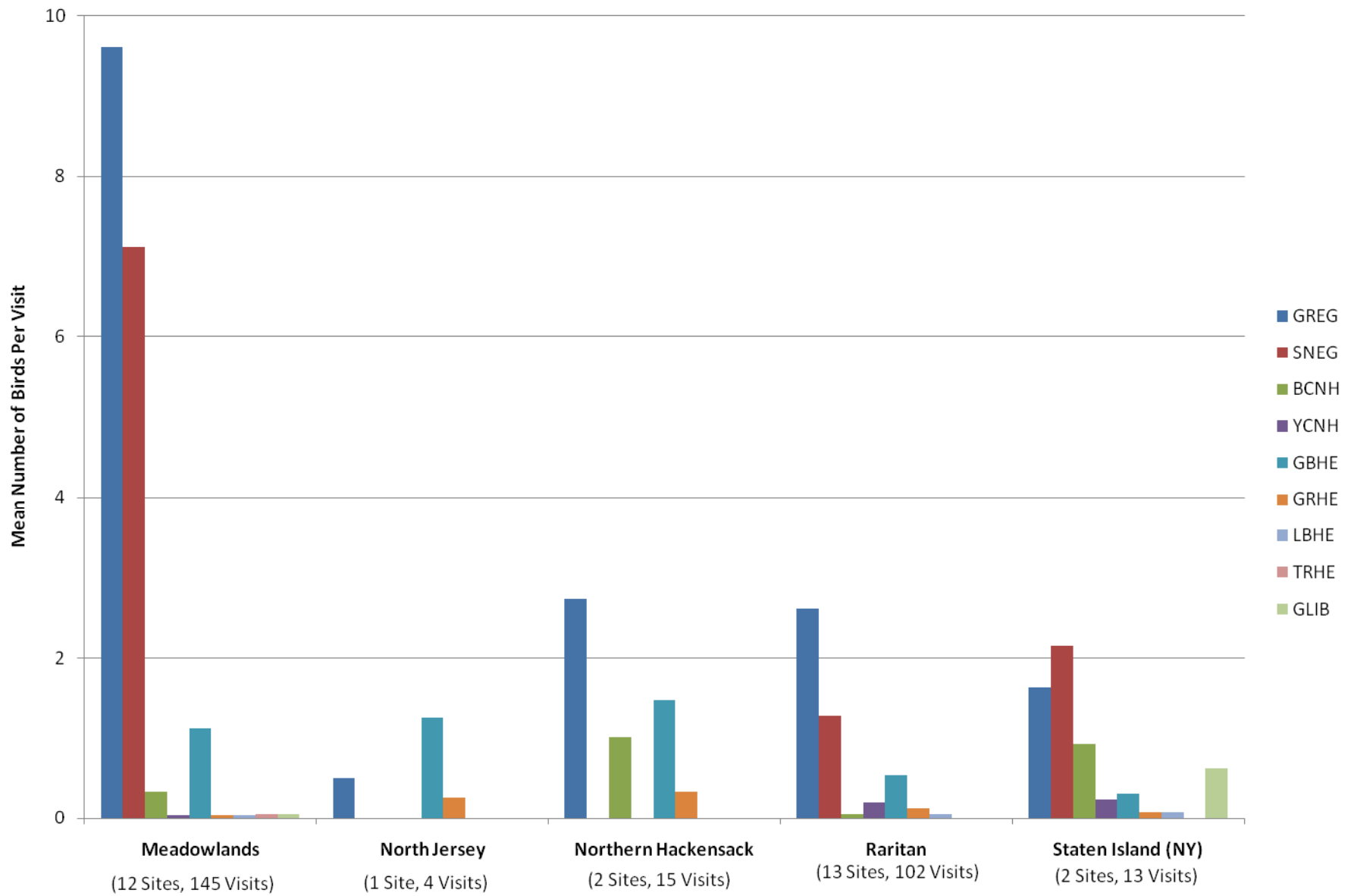


# 2008: Pilot Study

- 42 Volunteers surveyed 30 sites
- Conducted 279 site visits
- Made 1,567 point surveys
- Over 3,340 herons and egrets observed



## 2008 Sightings

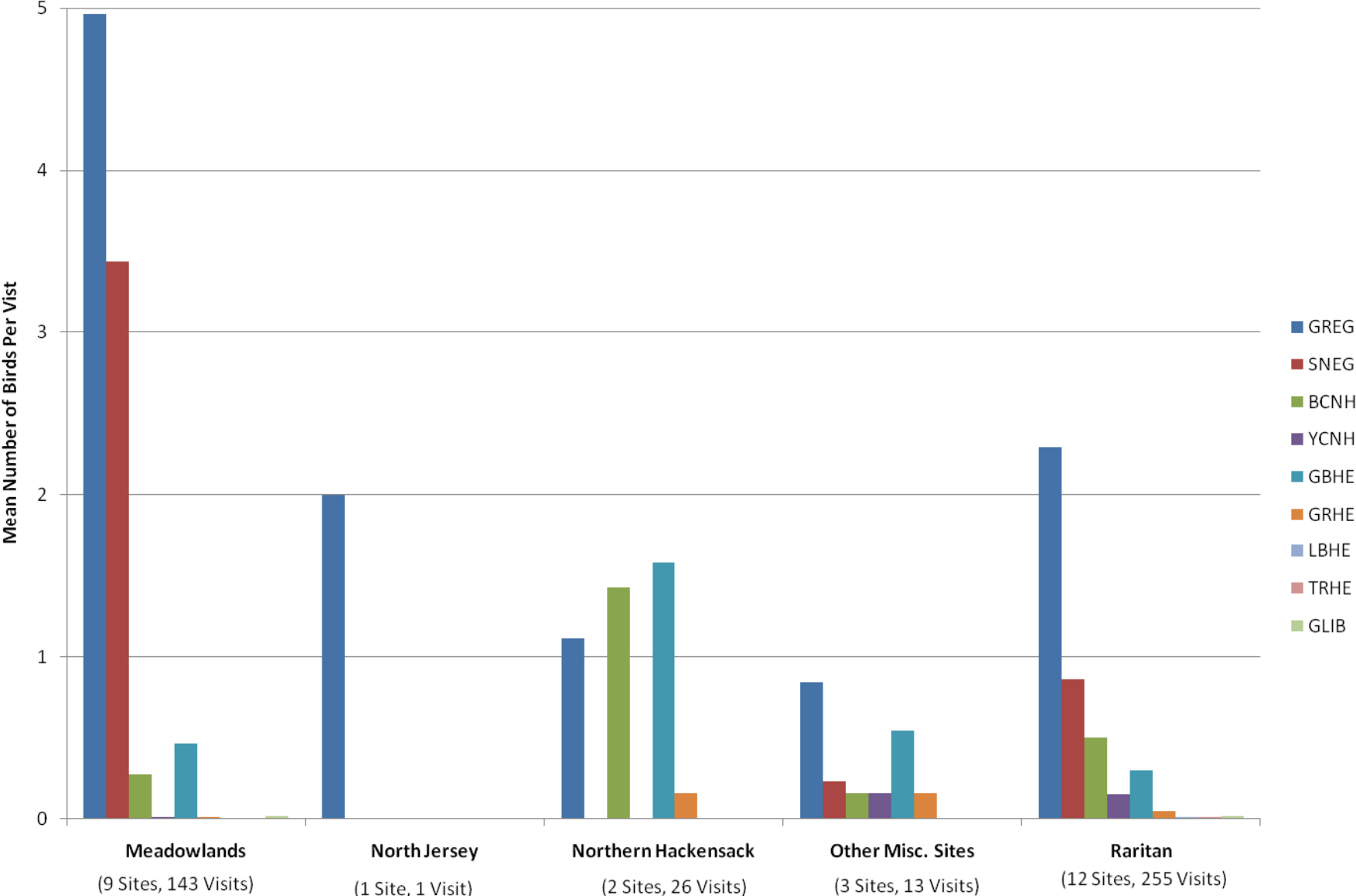


# 2009: Study expands

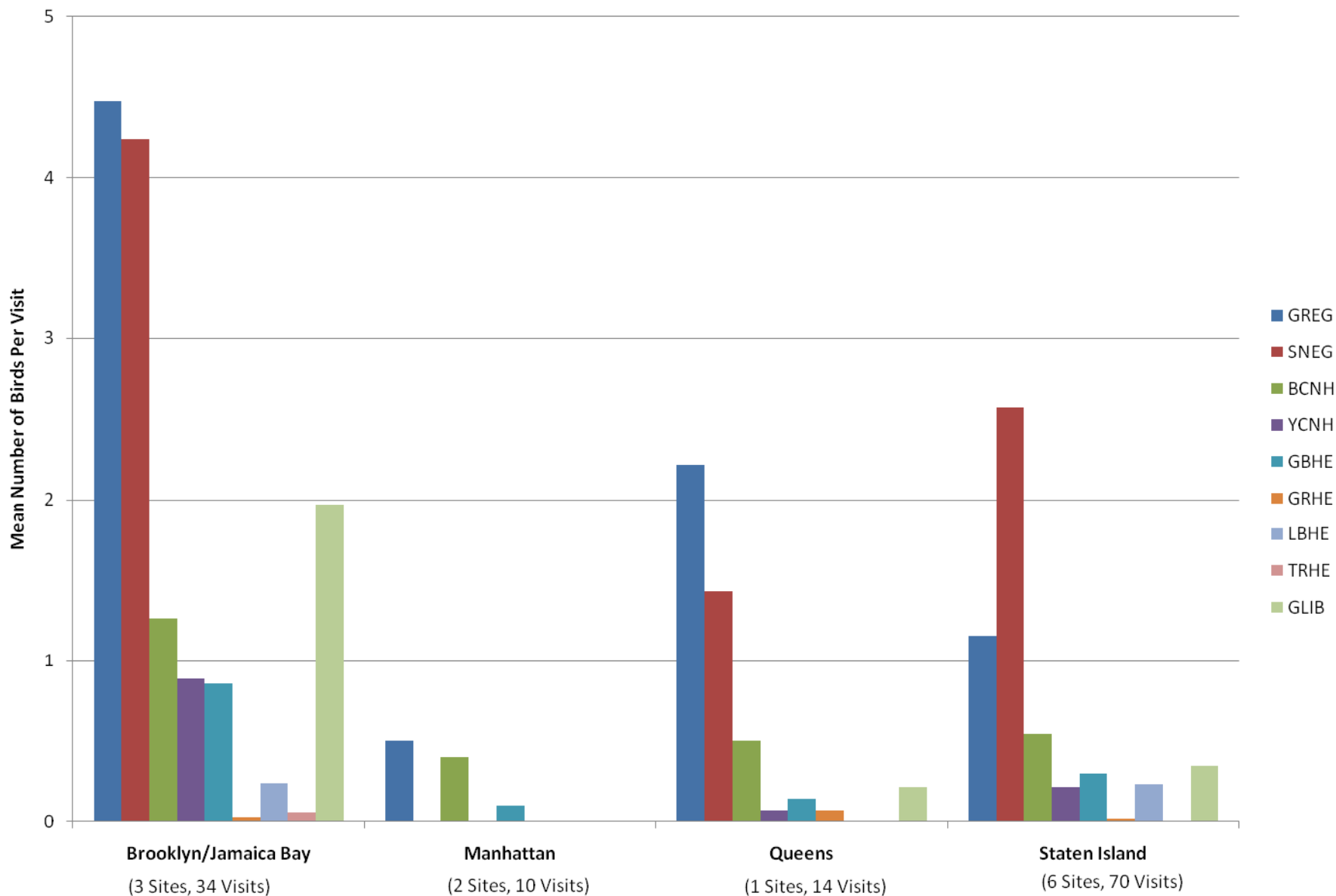
- 31 NJAS and 13 NYCA volunteers surveyed 39 sites
- Conducted 566 site visits
- Made 2,491 point surveys
- Observed 3,442 herons and egrets



# NJ: 2009 Sightings



## NY: 2009 Sightings

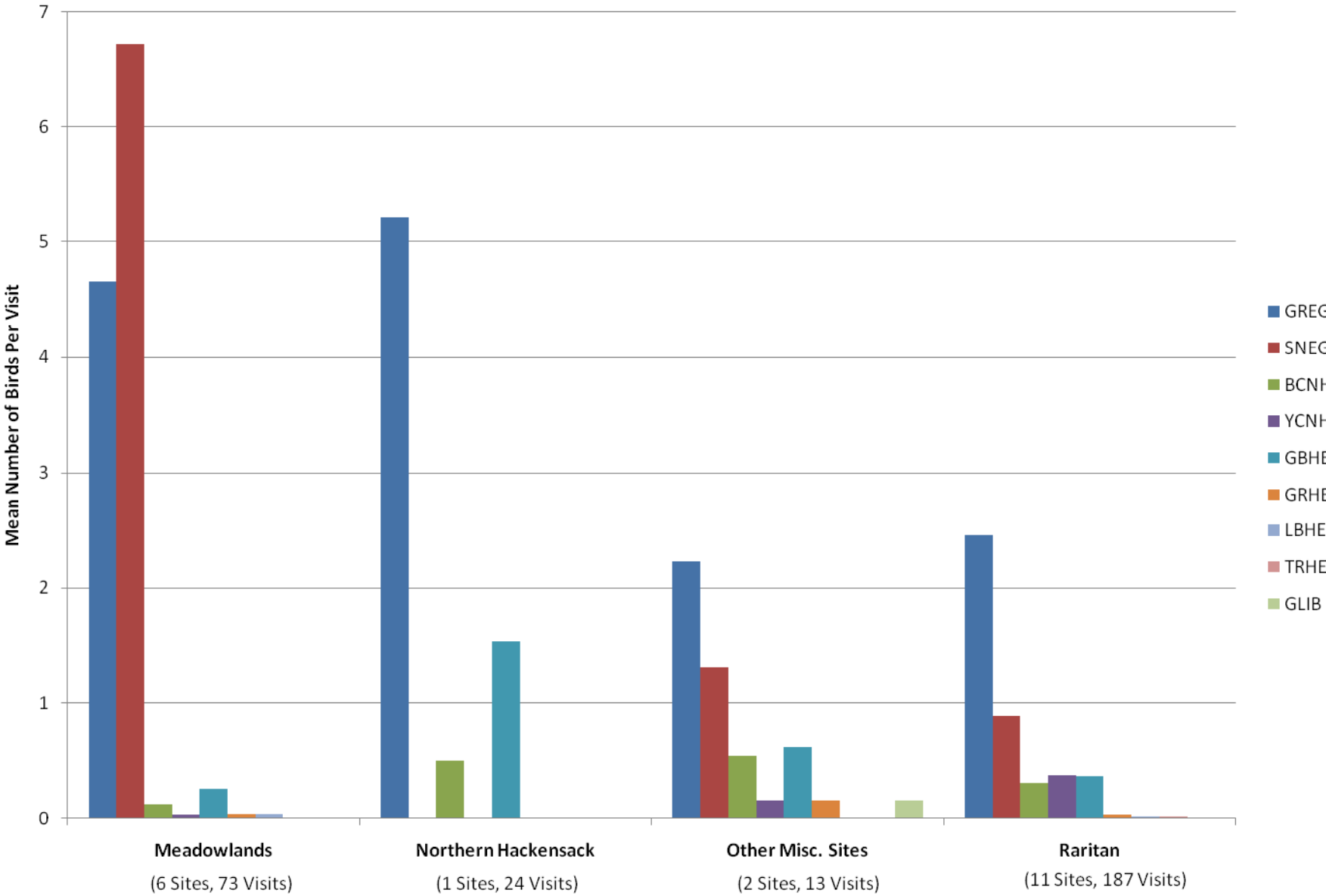


# 2010: Study maintained

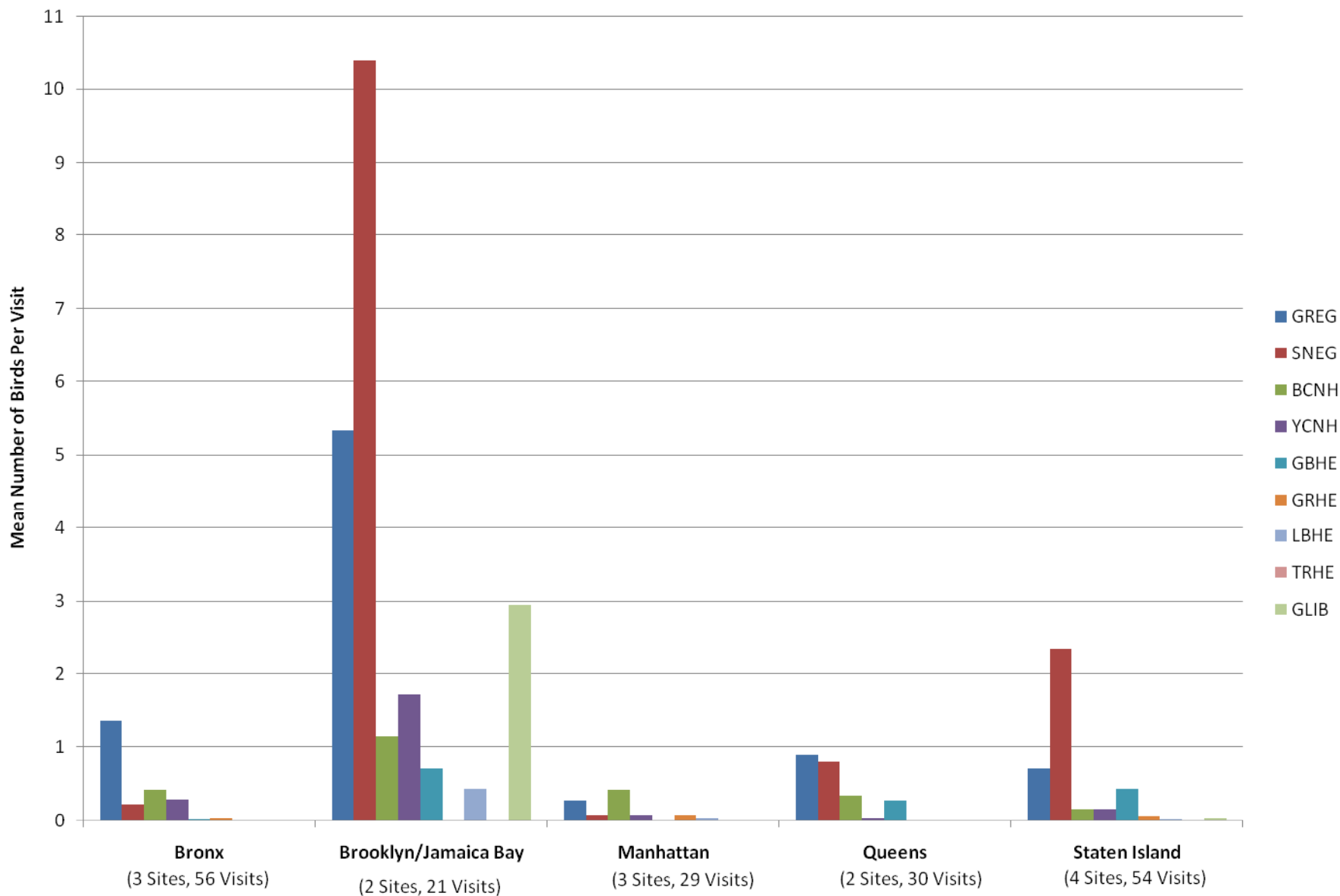
- 20 NJAS and 18 NYCA volunteers surveyed 34 sites
- Conducted 487 site surveys
- Made 2,303 point visits
- Observed 2,851 herons and egrets



# NJ: 2010 Sightings



## NY: 2010 Sightings



# NJ Primary Focal Areas

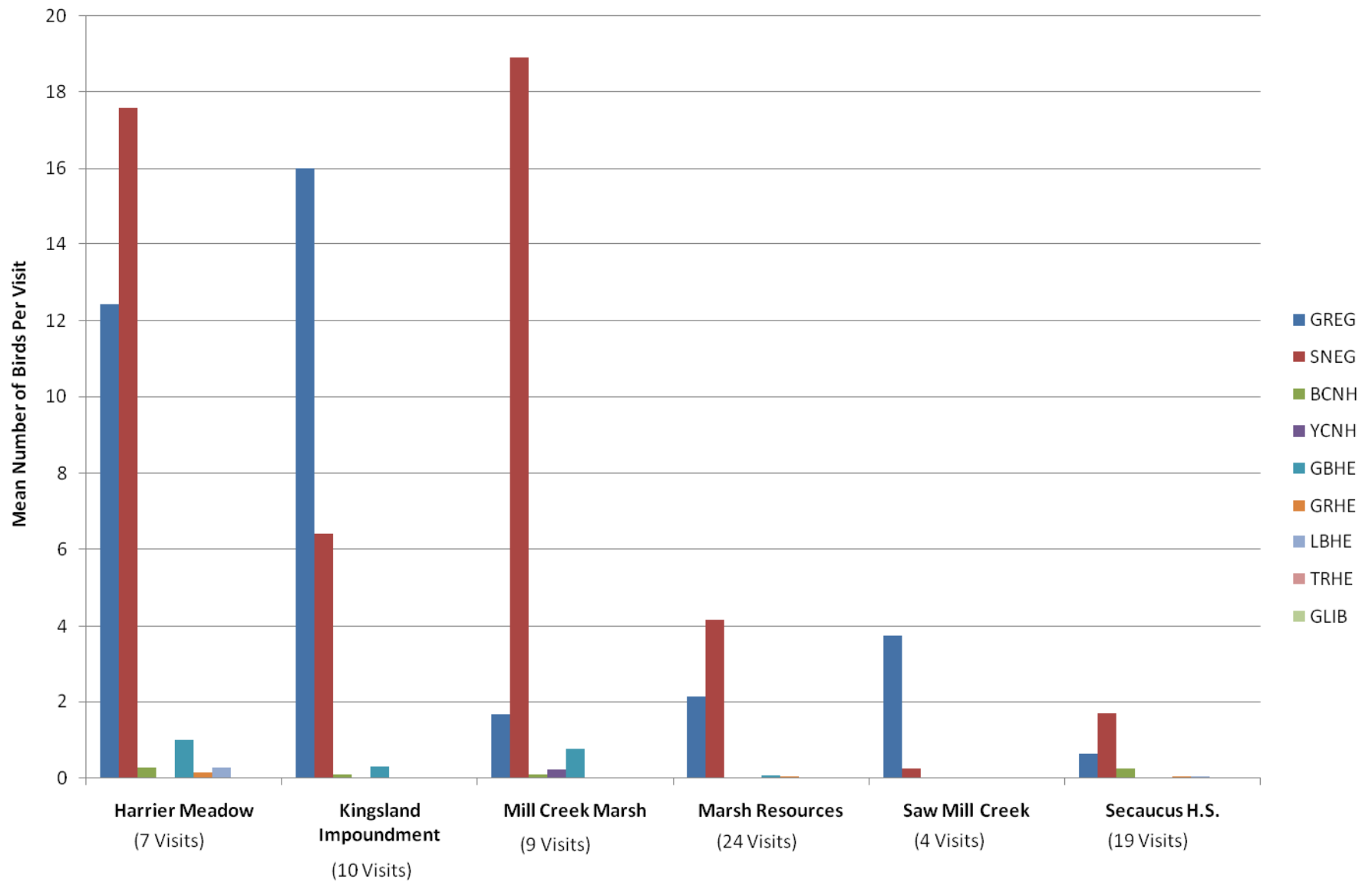


**Raritan**

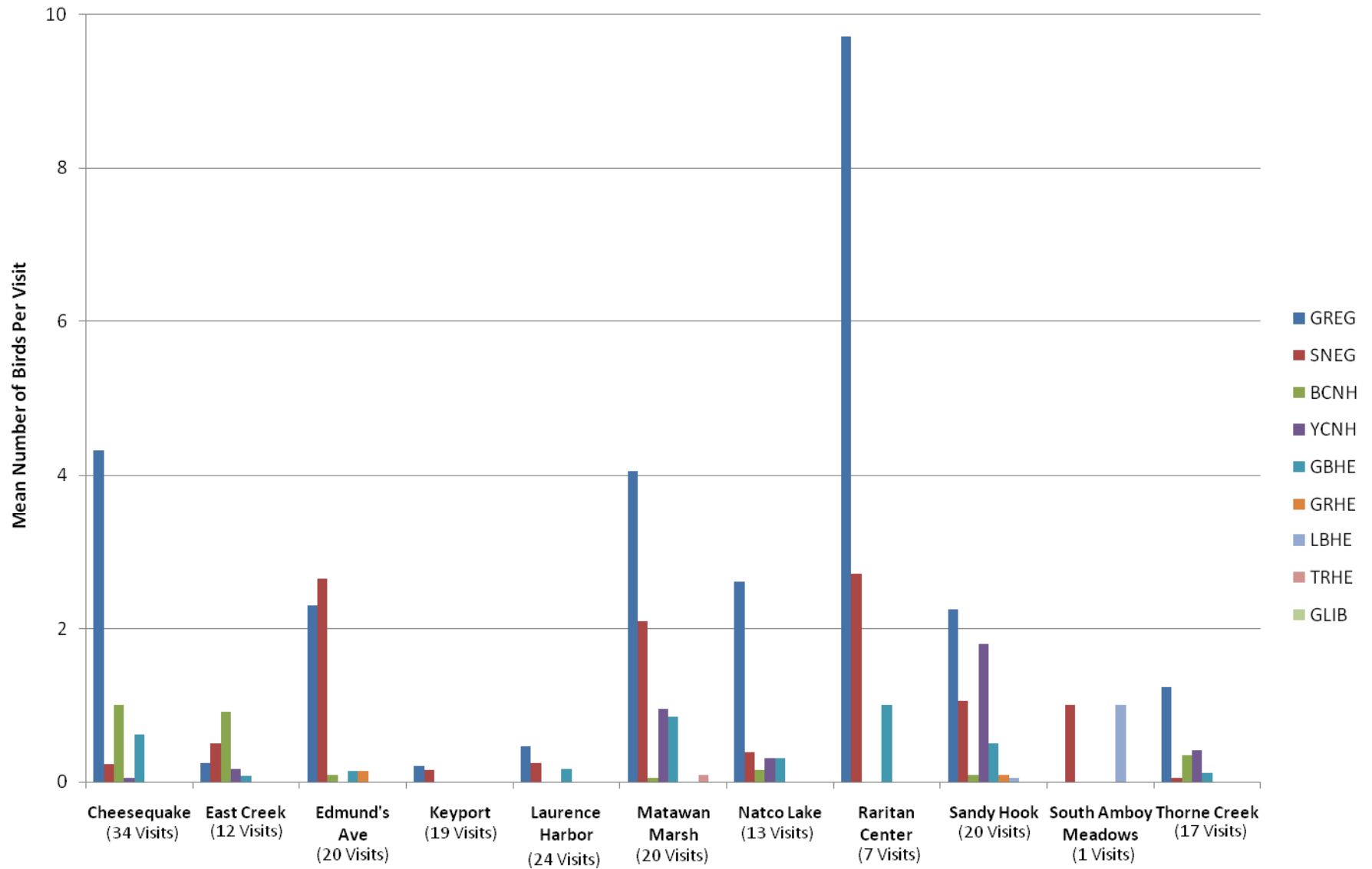
**Meadowlands**



## Meadowlands: 2010 Sightings



## Raritan: 2010 Sightings



# Conclusions

- **Great Egrets observed in all areas**
- **Snowy Egrets second most common**
- **Great Blue Heron commonly observed at North Hackensack**
- **2010 Increase in average number Snowy Egrets observed**



# Future Work

- Continue entering and proofing data
- Explore relationship between foraging, tide, and habitat use



# Acknowledgments

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