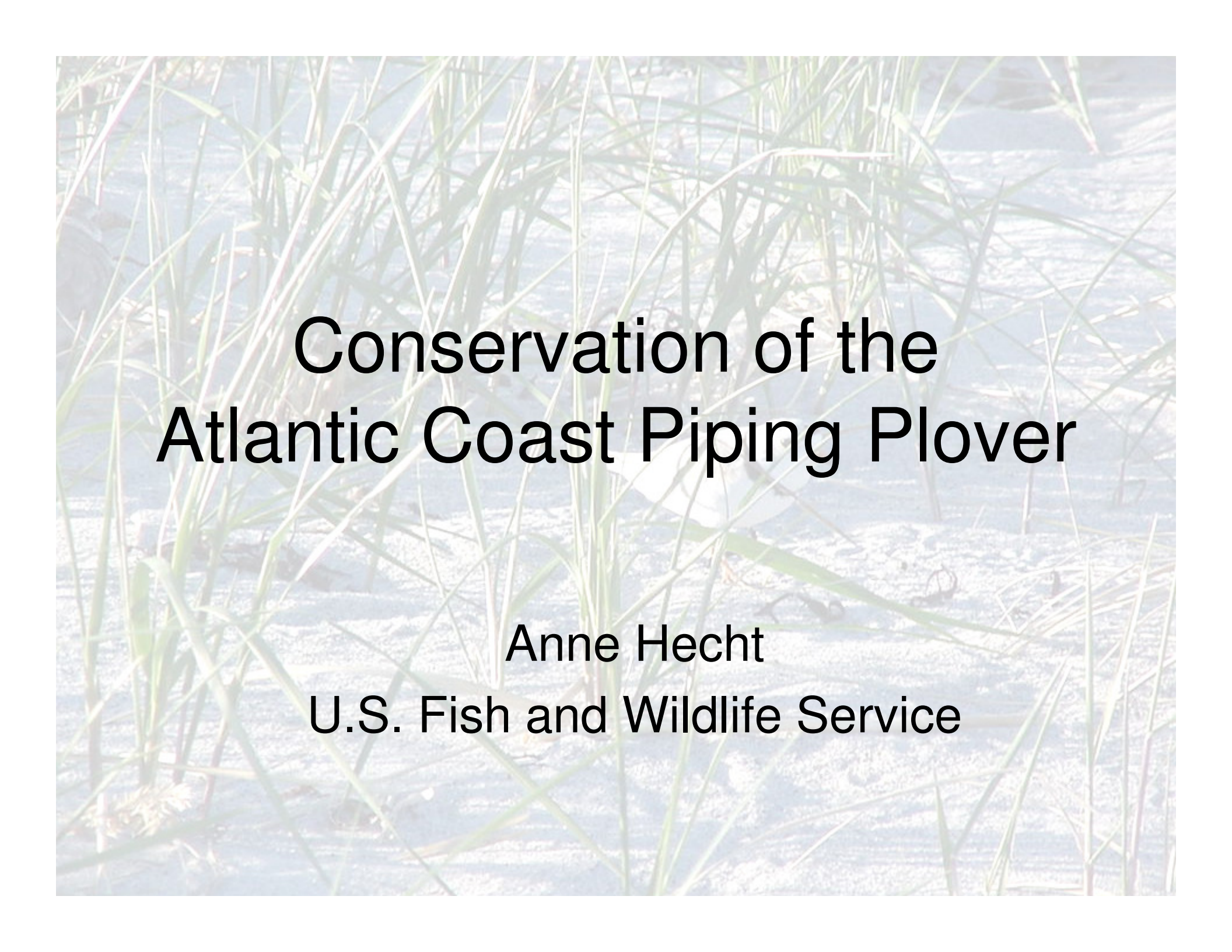


A photograph of an Atlantic Coast Piping Plover, a small white bird with a dark band across its eye, standing in a marshy area with tall grasses and sand. The bird is positioned in the center of the frame, partially obscured by the text.

# Conservation of the Atlantic Coast Piping Plover

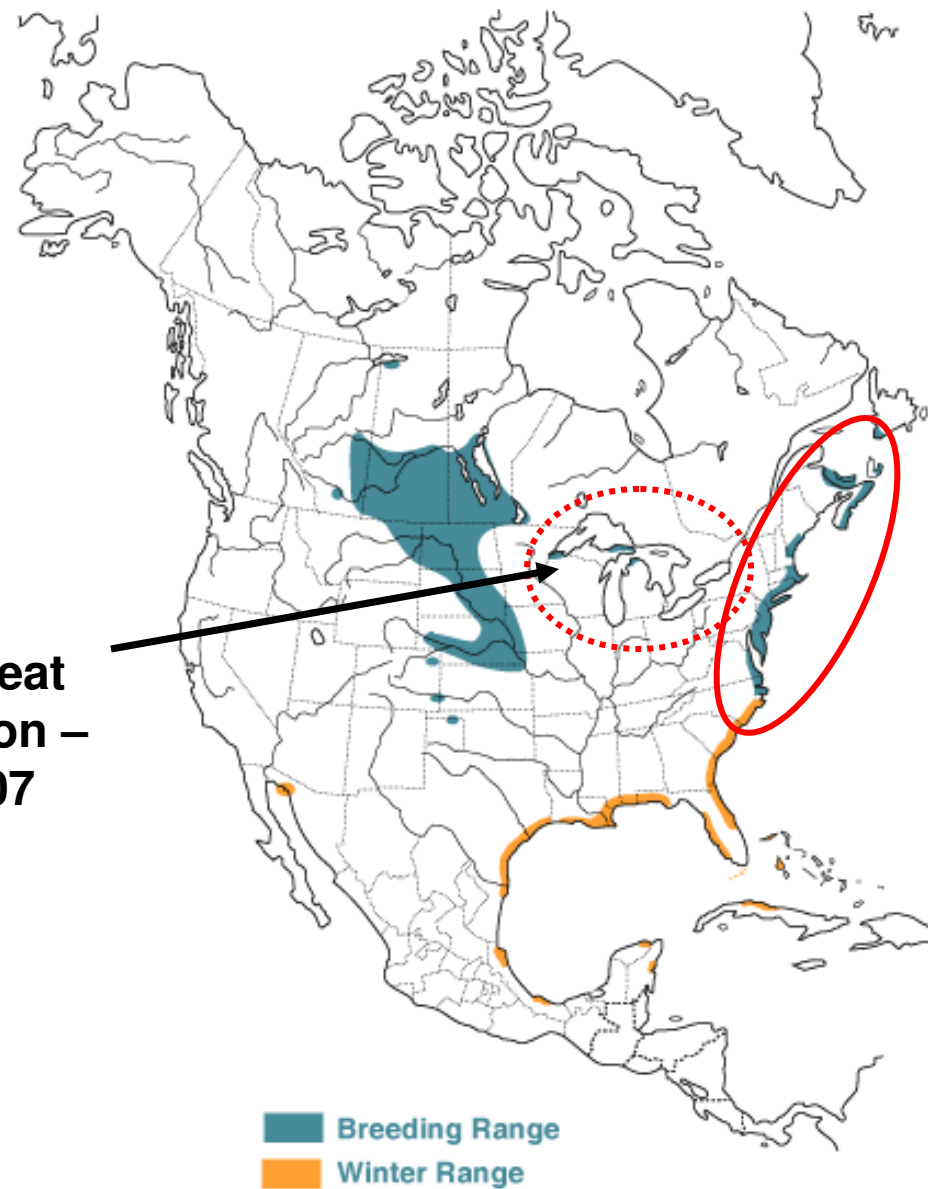
Anne Hecht

U.S. Fish and Wildlife Service



Credit: Haig and Elliott-Smith(2004). *The Birds of North America Online*.

**Endangered Great  
Lakes Population –  
~63 pairs in 2007**



Credit: Haig and Elliott-Smith(2004). *The Birds of North America Online*.



Suzi Fox



Richard Kuzminski



Richard Kuzminski



Laurie MacIvor



Laurie MacIvor



USFWS photo



USFWS photo



*Richard Kuzminski*



Peter Trull



Richard Kuzminski



# Piping Plover Courtship Behaviors

- Parallel runs (up to 100 meters), aerial displays, tilt displays, vocalizations
- Multiple scrapes (nests)
- Full-time incubation usually commences with 3<sup>rd</sup> or 4<sup>th</sup> egg
- Detailed descriptions in Cairns (1982 and 1977)



Richard Kuzminski

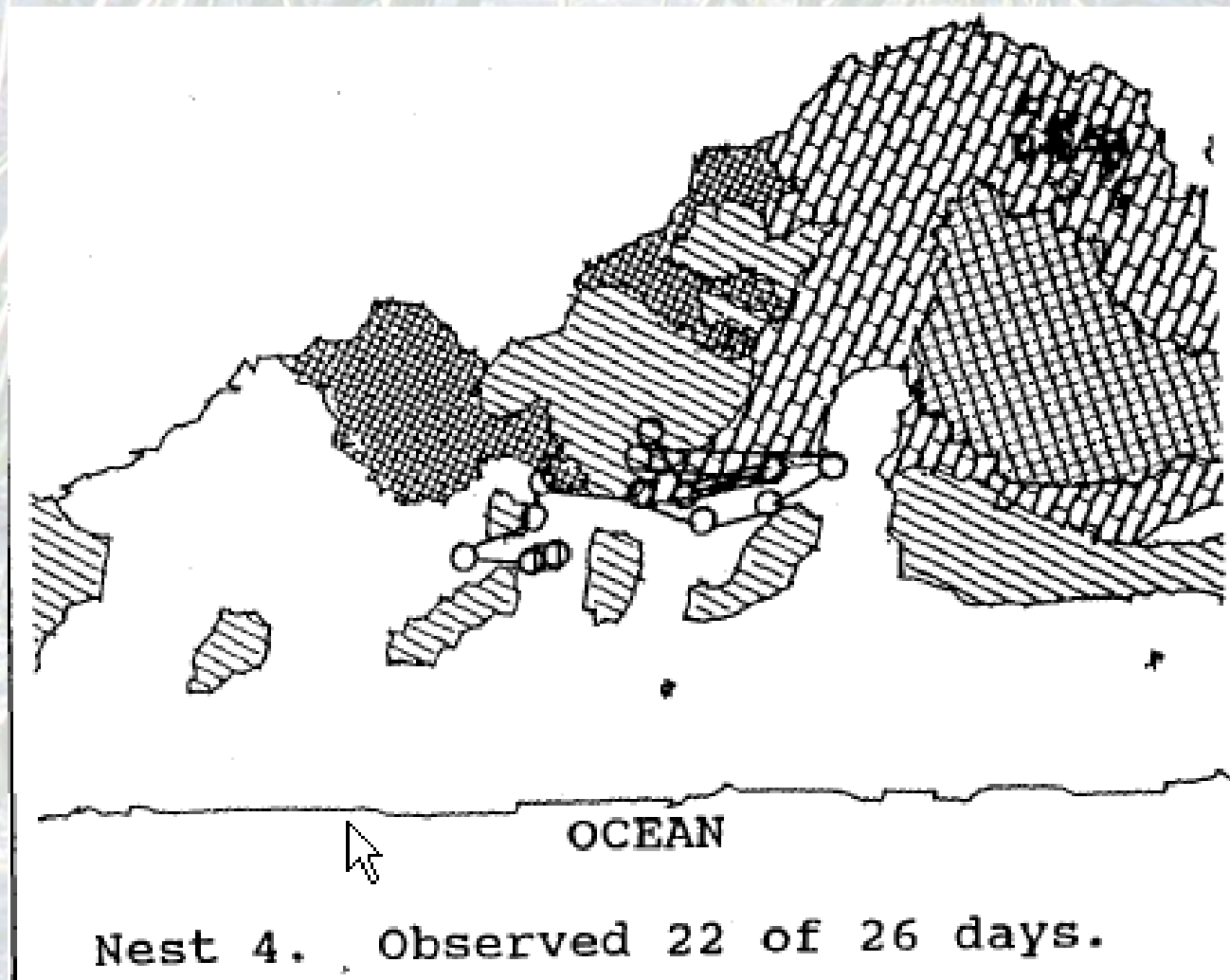
# Flushing Distances

(incubating birds, pedestrians)

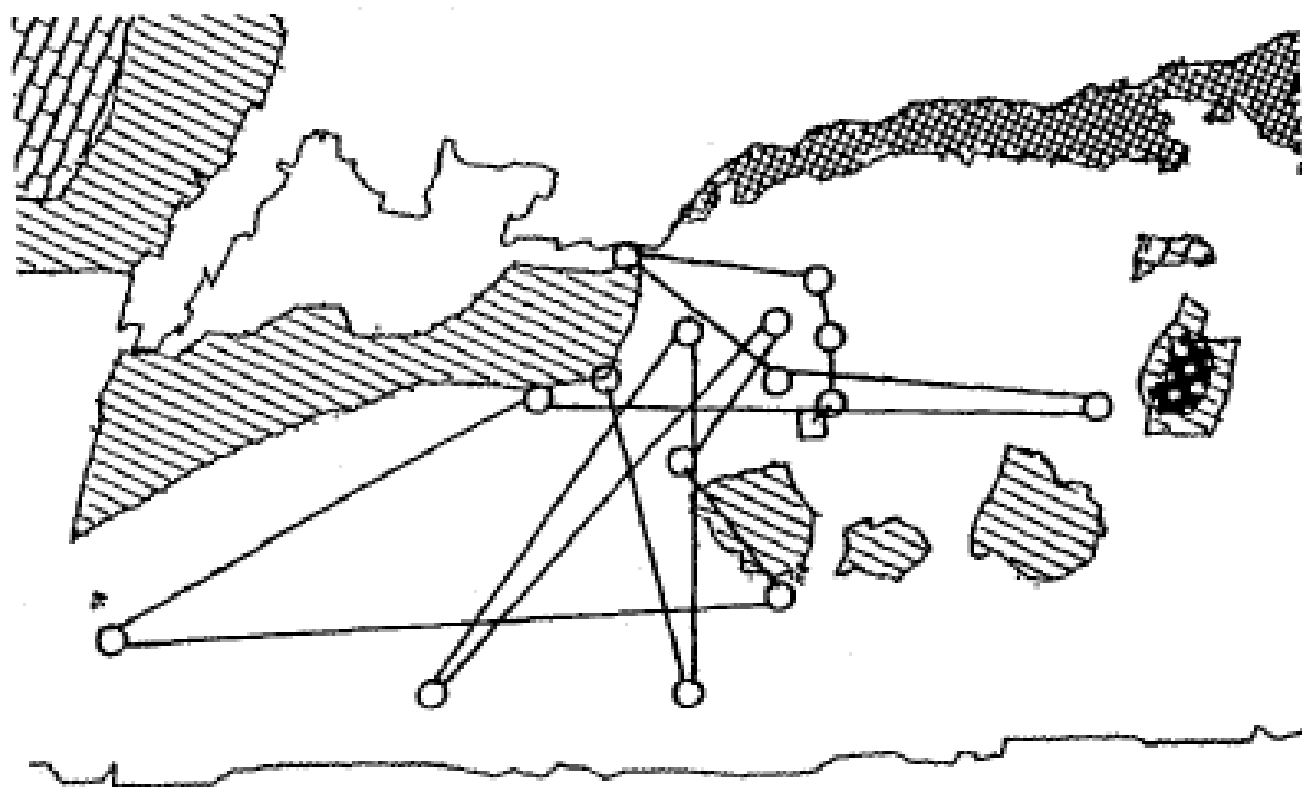
- Table 3, 1996 Atlantic Coast Piping Plover Recovery Plan summarizes 5 studies with data for incubating plovers, 2 studies with data for non-incubating birds

| <b>Flushing distances for incubating piping plovers,<br/>Southern Recovery Unit</b> |                 |                                                        |                                     |
|-------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------|-------------------------------------|
|                                                                                     | <b>Mean (m)</b> | <b>Range (m)</b>                                       | <b>n (sample size)</b>              |
| <b>Loeering 1992<br/>(MD)</b>                                                       | <b>78</b>       | <b>20 - 174</b>                                        | <b>43 nests</b>                     |
| <b>Cross 1996 (VA)</b>                                                              | <b>32</b>       | <b>2 – 120<br/>(excluding one<br/>extreme outlier)</b> | <b>613 instances,<br/>112 nests</b> |
| <b>Cross and<br/>Terwillinger 1993<br/>(VA)</b>                                     | <b>58</b>       | <b>6 - 183</b>                                         | <b>201 nests</b>                    |

# Brood movements, Assateague Island Seashore, 1993

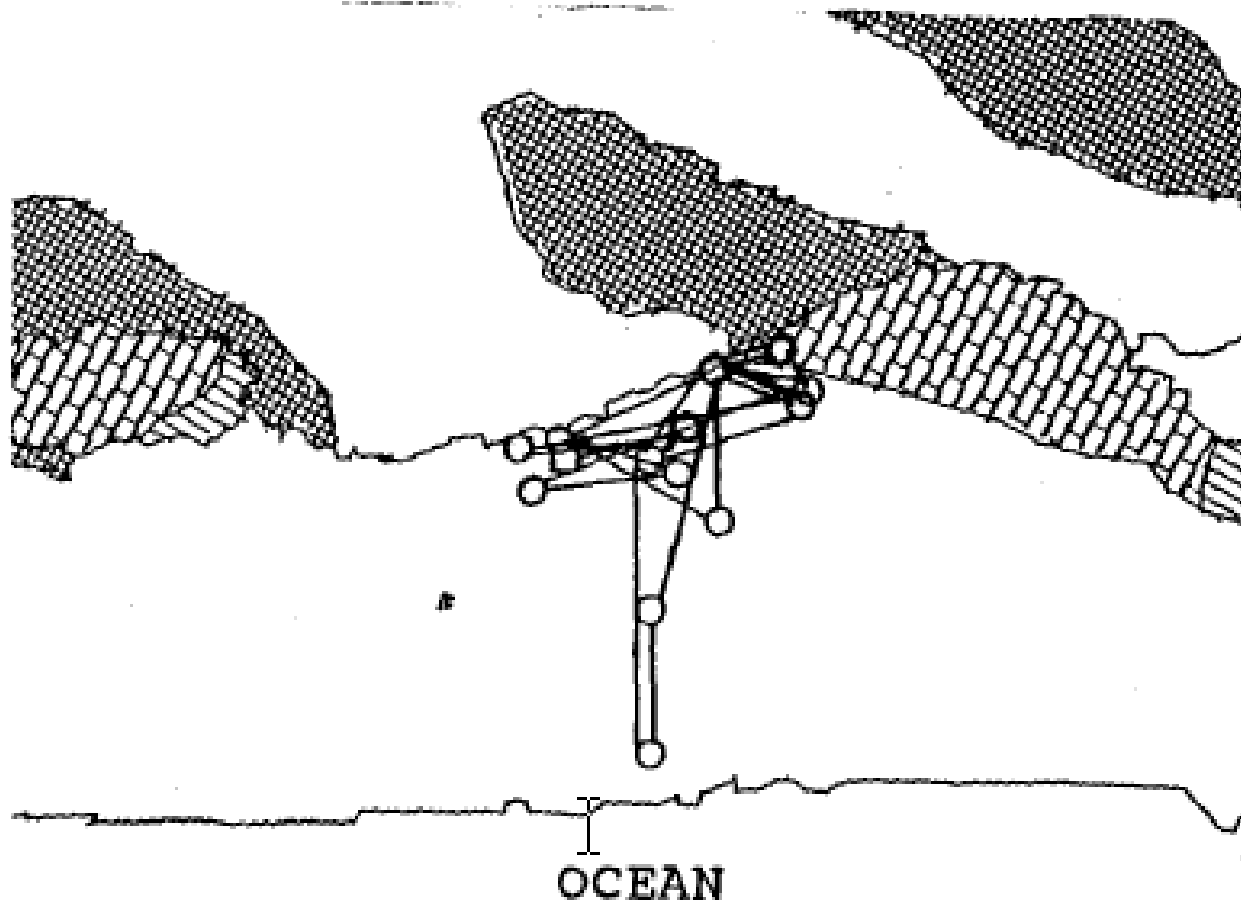


# Brood movements, Assateague Island Seashore, 1993



Nest 9. Observed 21 of 26 days.

# Brood movements, Assateague Island Seashore, 1993



Nest 30. Observed 26 of 26 days.

# Habitat use by chick age class interval, Assateague Island Seashore, 1993

(from NPS & Maryland DNR, 1993, table 8)

| Age class (days) | No. observations | Ocean beach      |                                       |
|------------------|------------------|------------------|---------------------------------------|
|                  |                  | No. observations | Percent of observations for age class |
| 0-5              | 85               | 2                | 2                                     |
| 6-10             | 75               | 4                | 5                                     |
| 11-15            | 74               | 5                | 7                                     |
| 16-20            | 67               | 7                | 10                                    |
| 21-25            | 60               | 4                | 7                                     |

# Observed movements of broods, Overwash Zone, Chincoteague Refuge, Virginia, 2004

| Brood Number | Date in<br>intertidal zone | Time observed                   | # of Chicks<br>Observed | Date obsrved back<br>in overwash zone | Time observed<br>in overwash | Age of<br>Chicks (days) |
|--------------|----------------------------|---------------------------------|-------------------------|---------------------------------------|------------------------------|-------------------------|
| OV 04/06     | 6/12                       | 1006                            | 3                       | 6/12                                  | 1850                         | 12                      |
| OV 07/23     | 7/5                        | 1615                            | 2                       | 7/5                                   | 1832                         | 19                      |
| OV 07/23     | 7/6                        | 615                             | 2                       | 7/6                                   | 1830                         | 20                      |
| OV 08/24     | 6/9                        | 848                             | 3                       | 6/9                                   | 1800                         | 2                       |
| OV 08/24     | 6/20                       | 1846                            | 3                       | 6/21                                  | 950                          | 14                      |
| OV 08/24     | 6/23                       | 1130, 1152                      | 3                       | 6/24                                  | 731                          | 17                      |
| OV 08/24     | 6/26                       | 1355, 1511                      | 3                       | 6/26                                  | 1723                         | 20                      |
| OV 08/24     | 6/28                       | 1553                            | 3                       | 6/28                                  | 1553                         | 22                      |
| OV 08/24     | 6/30                       | 615                             | 3                       | 6/30                                  | 1737                         | 24                      |
| OV 09/28     | 6/19                       | 1000                            | 2                       | 6/19                                  | 1842                         | 1                       |
| OV 09/28     | 6/20                       | 1120, 1354                      | 3                       | 6/20                                  | 1537                         | 2                       |
|              | 6/20                       | 1634, 1713, 1914                | 3                       |                                       |                              | 2                       |
| OV 09/28     | 6/21                       | 0650, 1015, 1220,<br>1508, 1720 | 3                       | 6/21                                  | 1730                         | 3                       |
| OV 09/28     | 7/9                        | 604                             | 2                       | 7/9                                   | 626                          | 21                      |
| OV 10/33     | 6/20                       | 0840, 1913                      | 3                       | 6/21                                  | 729                          | 14                      |
| OV 11/44     | 6/27                       | 803                             | 3                       | 6/27                                  | 1816                         | 8                       |
| OV 11/44     | 7/5                        | 1906, 1934                      | 3                       | 7/6                                   | 604                          | 16                      |
| OV 11/44     | 7/6                        | 1811                            | 3                       | 7/7                                   | 552                          | 17                      |
| OV 11/44     | 7/7                        | 0708, 0934                      | 3                       |                                       |                              | 18                      |
| OV 11/44     | 7/8                        | 600                             | 3                       | 7/8                                   | 1745                         | 19                      |

# Piping plover chick mobility

- Table 1, 1996 Atlantic Coast Piping Plover Recovery Plan summarizes data from 6 studies

Table 6. Average distance (meters) piping plover broods were observed from nests on Cape Hatteras National Seashore 1989.

|               | # of<br>Broods | # of<br>Obs. | $\bar{x}$<br>(m) | SE  | Min.<br>Value | Max.<br>Value |
|---------------|----------------|--------------|------------------|-----|---------------|---------------|
| Cape Point    | 7              | 37           | 133              | 120 | 0             | 435           |
| Hatteras Spit | 1              | 6            | 335              | 32  | 322           | 400           |
| Ocracoke      | 3              | 45           | 261              | 183 | 0             | 725           |
| TOTAL         | 11             | 88           | 212              | 167 | 0             | 725           |

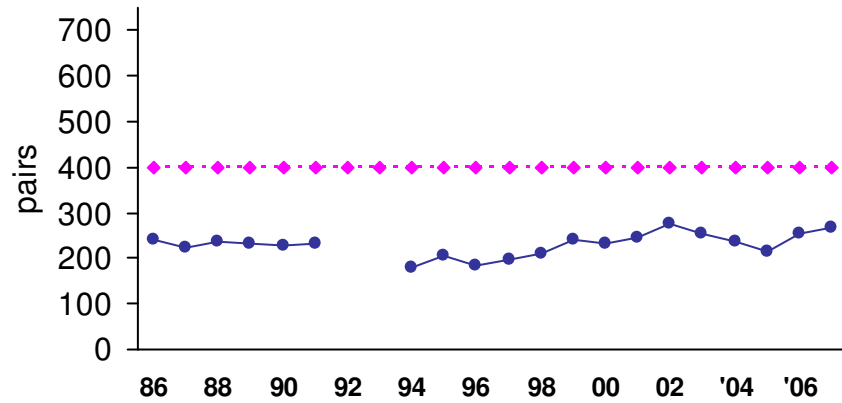
From Coutu et al. 1990; 5 chicks survived >10 days

# 2007 Annual Piping Plover Report, Cape Hatteras National Seashore

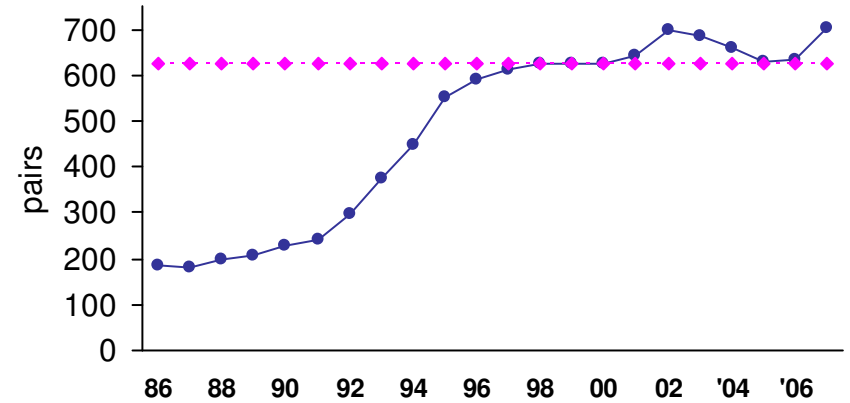
- “The brood from Nest 5 moved ~900 feet from the nest enclosure...”
- “The four chicks from Brood 7 on Ocracoke moved approximately 2000 feet...”
- After Brood 9 hatched, the adults and the surviving chick move more than 1,600 feet east ...

# Breeding Pairs, 1986-2007

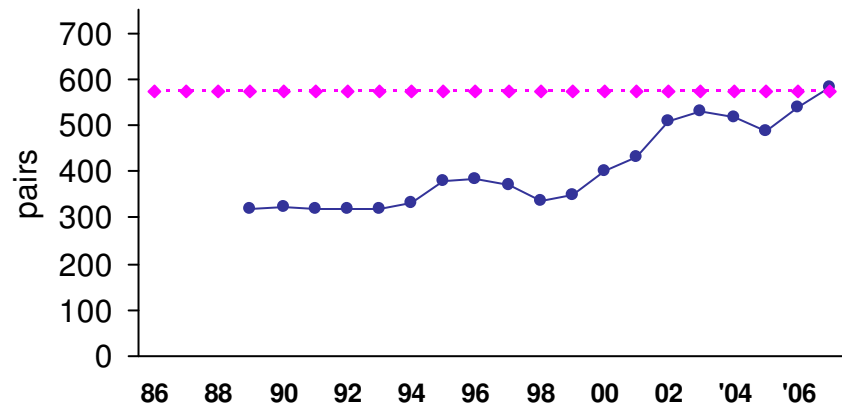
## Eastern Canada



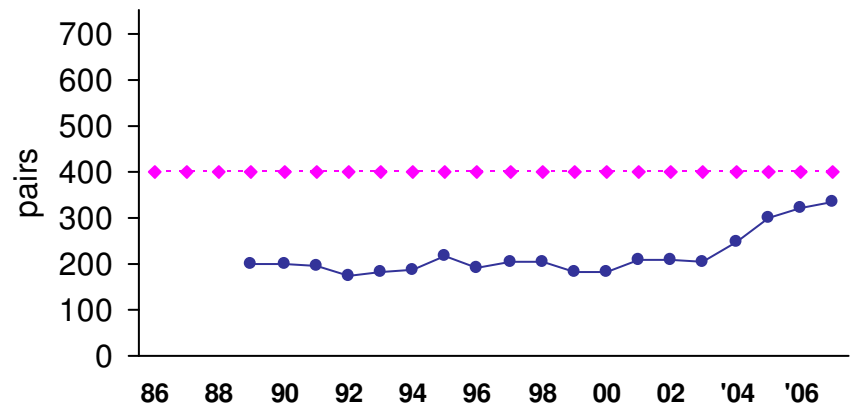
## New England



## NY-NJ



## Southern



# Prognosis

- Decreasing near-term extinction risk, *but*:
  - Unrelenting pervasive threats
  - Wide-ranging, sparsely-distributed species
  - Labor-intensive protection activities

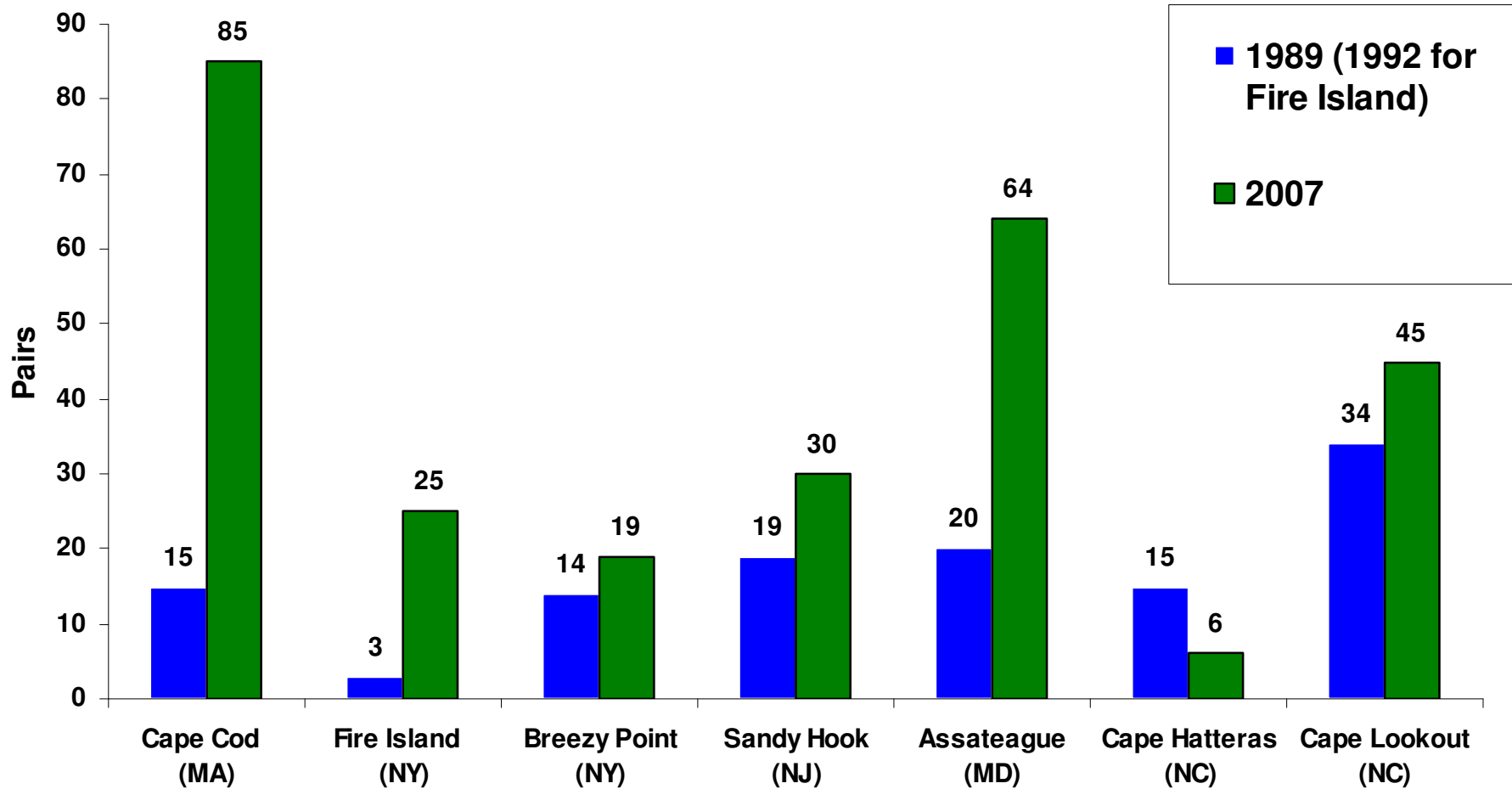
# Five Delisting Criteria

1. 2000 pairs for five years distributed among four recovery units:
  - Atlantic Canada: 400 pairs
  - New England: 625 pairs
  - New York-New Jersey: 575 pairs
  - **Southern: 400 pairs**

# Delisting Criteria

2. Verify adequacy of 2000 pairs to maintain long-term heterozygosity and allelic diversity
3. 5-year avg. productivity of 1.5 chicks per pair in each recovery unit
4. **Long-term agreements to ensure protection and management sufficient to maintain criteria 1 and 3**
5. Long-term maintenance of wintering habitat to maintain survival rates for a 2000 pair population

## Abundance of Breeding Piping Plovers, Atlantic Coast National Park Service Units



Supplementary slides used in  
Q&A

# Courtship Protection Issues (general)

- Detection and interpretation challenges
- Territories may expand or shift
- New monitors still familiarizing themselves with habitats

# Courtship Protection Issues (Cape Hatteras Seashore)

- Expansive habitats with extensive visibility (from plover perspective)
- Interspersion of foraging and nesting habitats
- High levels of human activity (past)
- Limited authority for monitors to expand protective fencing

# Distribution of piping plovers on Outer Cape Cod, 1988 - 1993

