



# Trends in harbor and gray seal counts and habitat use at southern New England and Long Island index sites.

Robert A. DiGiovanni<sup>1</sup>, Stephanie A. Wood<sup>2</sup>, Gordon T. Waring<sup>2</sup>, Allison Chaillet<sup>1</sup> and Elizabeth Josephson<sup>2</sup>.  
 1) Riverhead Foundation for Marine Research and Preservation, Riverhead, NY; 2) Northeast Fisheries Science Center, Woods Hole, MA



## Introduction

Harbor seal and gray seals have increased and expanded their range in the northeast U.S. since passage of the U.S. Marine Mammal Protection Act, (1972). Aerial survey data have demonstrated that both harbor (*Phoca vitulina concolor*) and gray seals (*Halichoerus grypus*) are predictably found at seasonal haul-out sites along the Southern New England and Eastern Long Island coastlines (Barlas 1999; Payne and Selzer 1989). The number and species proportion at these sites varies throughout the year and reflects the ecology of the species. Here we compare recent observations with survey data collected since the late 1980's and late 1990's to describe the seasonal patterns in seal abundance and species composition at selected haul-outs. These data indicate that harbor and gray seals are extending both their geographic range and time spent at these haul-out sites. Archaeological and historic records demonstrate that harbor and gray seals were distributed along this coast line prior to their extirpation. The distribution and abundance we describe here is likely a re-expansion into former range rather than a new colonization event and could bring with it an increase in both interspecific and human/seal interactions.



Figure 1. Harbor and gray seals hauled-out together in Chatham Harbor, MA (near Monomoy Island), in 2007. Photo by G. Waring.

## Materials and Methods

- Surveys were flown in a variety of small aircraft (e.g. Cessna 172, 202, Skymaster, Twin Otter)
- In order to maximize the number of seals available for counting, surveys were flown at 1 hour before low tide during the 1986-7 seasons and +/- 2 hours of low tide for the surveys flown from 1999 on
- Index sites were photographed from the side window of the plane, producing oblique images
- Trained observers counted the images
- A subset of images were double counted to ensure accuracy

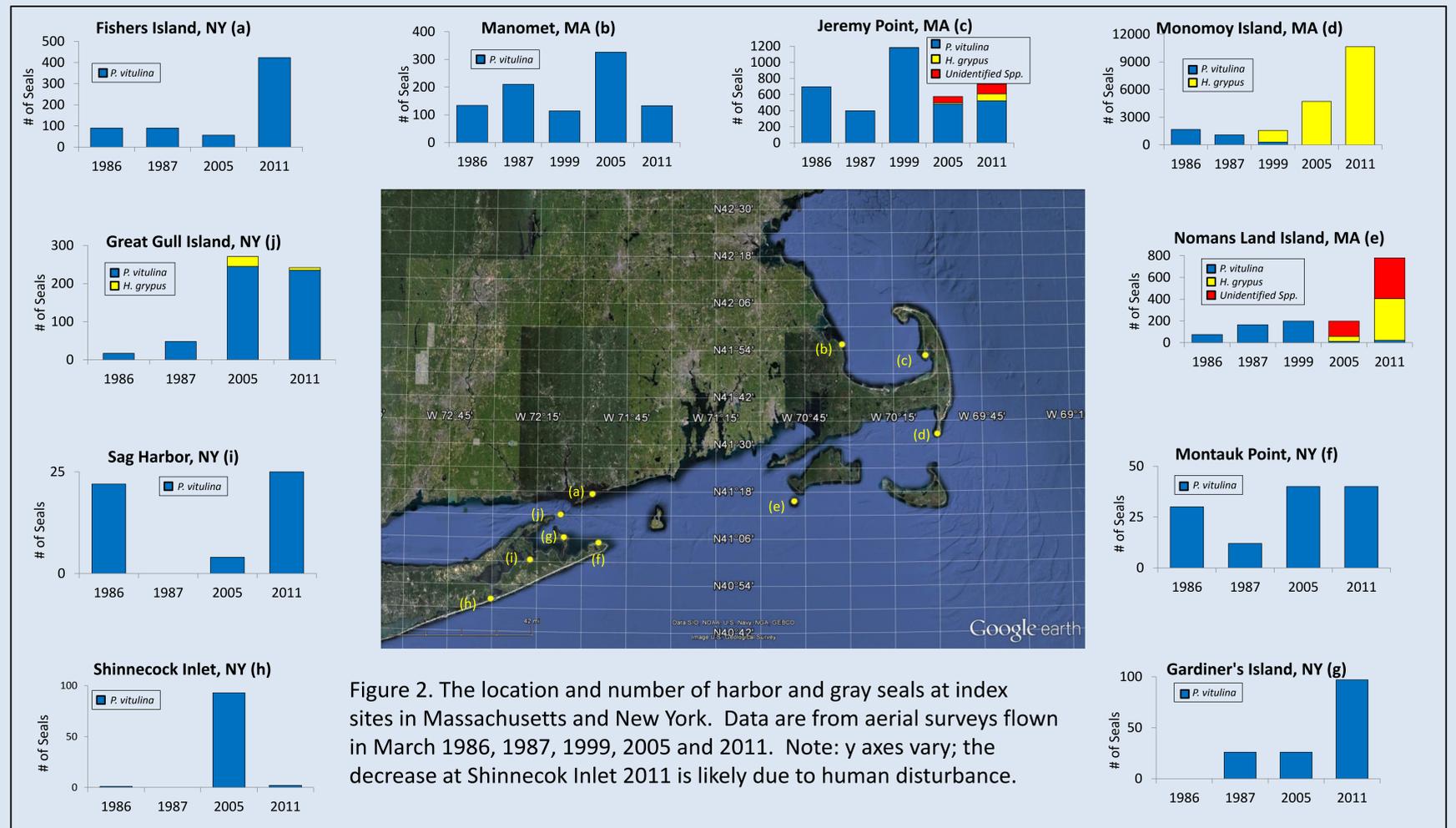


Figure 2. The location and number of harbor and gray seals at index sites in Massachusetts and New York. Data are from aerial surveys flown in March 1986, 1987, 1999, 2005 and 2011. Note: y axes vary; the decrease at Shinnecock Inlet 2011 is likely due to human disturbance.



Figure 3. Aerial images of index sites: a. Fishers Island, NY; b. Great Gull Island, NY; c. Nomans Land Island, MA; d. Monomoy Island, MA. All photos taken in March 2011 (a. and b. by R. DiGiovanni; c. and d. NEFSC right whale aerial survey team).

## Results and Future Direction

- The number of seals counted at these sites has increased over time from 2,738 in 1986 to 13,115 in 2011 (raw counts)
- Only harbor seals were observed in 1986, by 2011 a majority of seals counted were gray seals (n= 11,040, 84%) - most of these seals were observed on Monomoy Island, MA
- It appears that gray seals have displaced harbor seals on Monomoy Island, MA and may be displacing them on Nomans Land Island, MA
- Gray seals are being observed in higher numbers and during more months of the year in NY waters
- Additional analyses are underway (of these and other index sites) that will provide further information on the ecology of these species in the northeast U.S.
- Electronic tagging is a high priority to better understand seasonal movements and habitat use

### Acknowledgements

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### References

- Barlas, M. E. 1999. The distribution and abundance of harbor seals (*Phoca vitulina concolor*) and gray seals (*Halichoerus grypus*) in southern New England winter 1998-summer 1999. MA thesis. Boston University, Boston, MA.
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