

The First Successful Satellite Tag Deployments on Wild-Captured Harbor Seals in Virginia, USA

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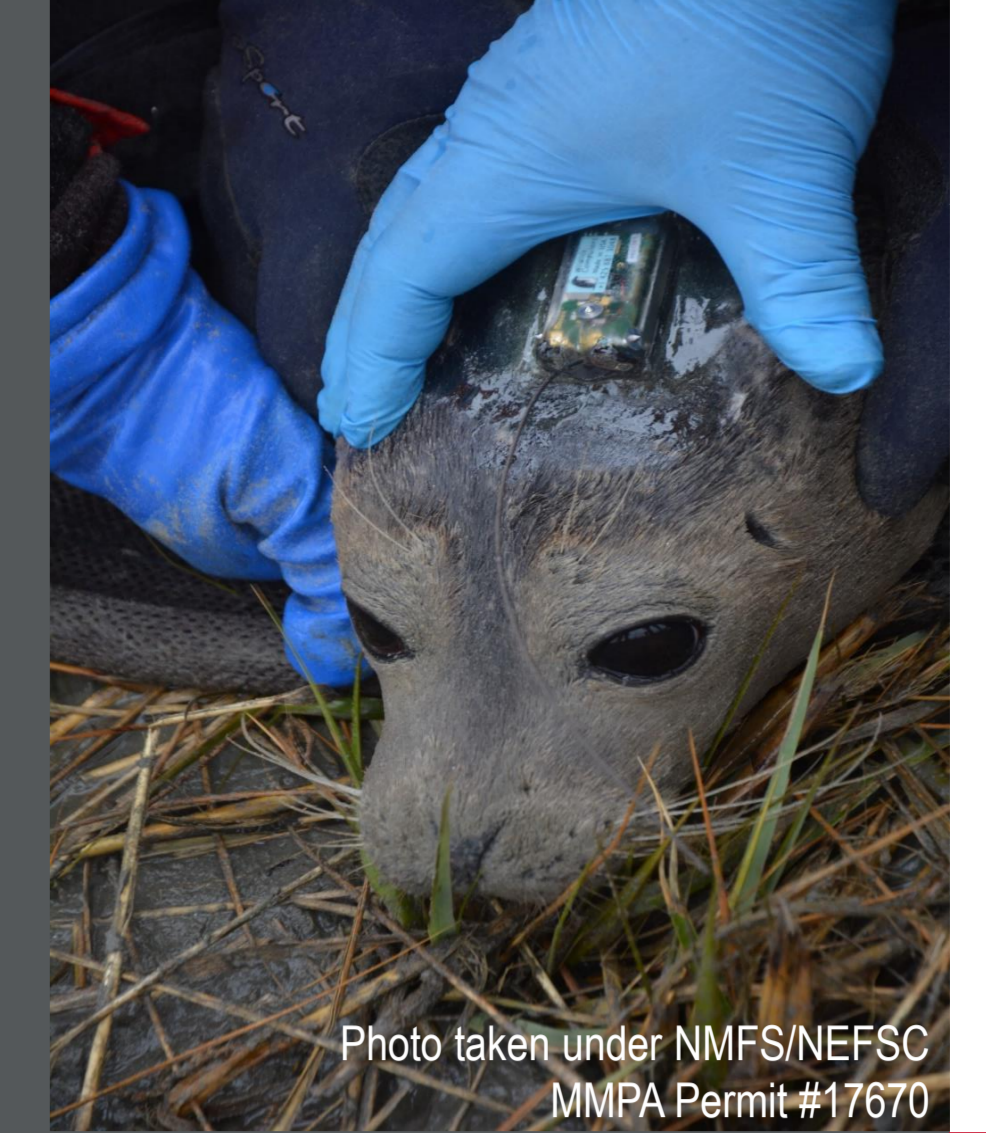


Photo taken under NMFS/NEFSC MMPA Permit #17670

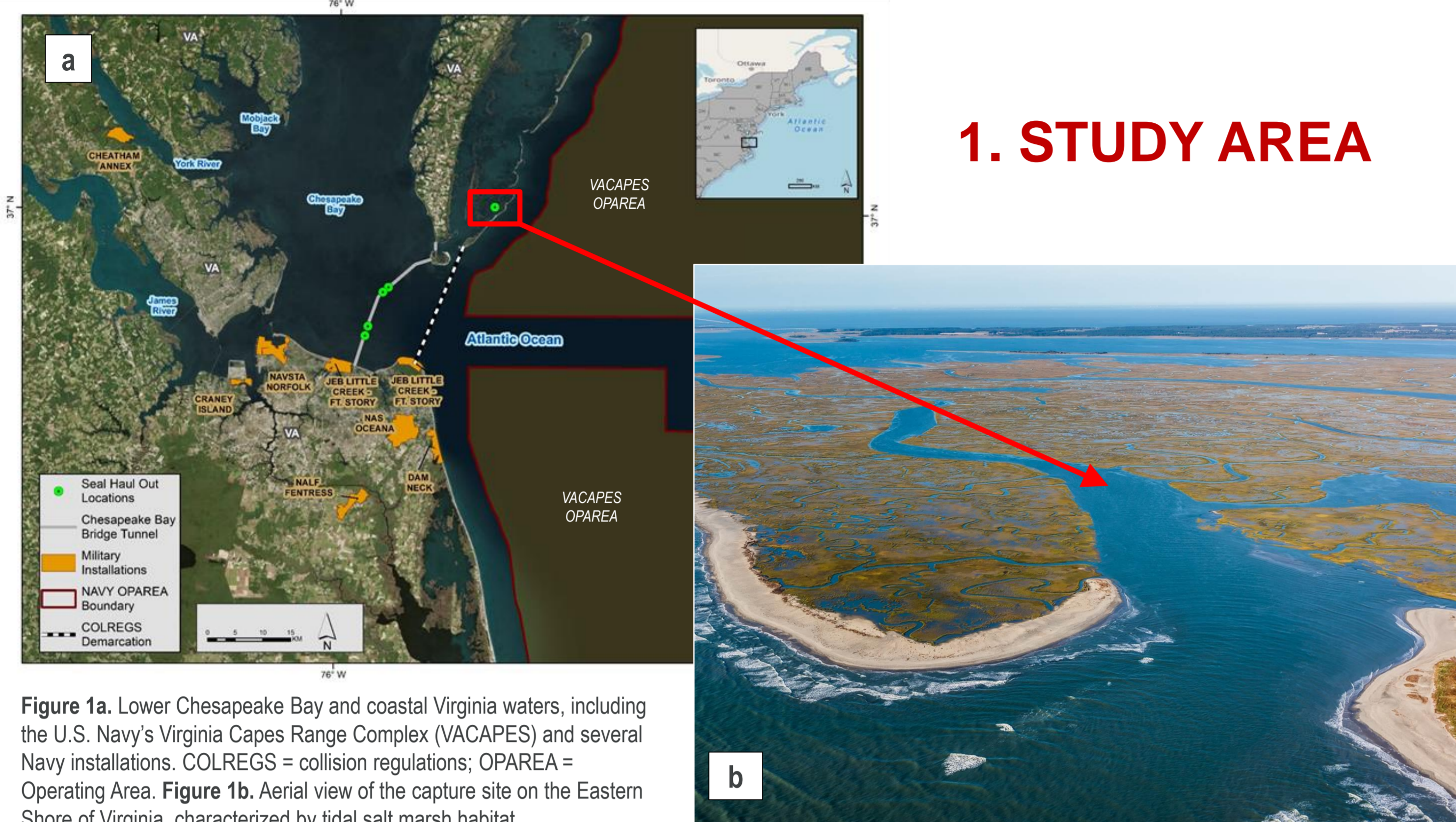


Figure 1a. Lower Chesapeake Bay and coastal Virginia waters, including the U.S. Navy's Virginia Capes Range Complex (VACAPES) and several Navy installations. COLREGS = collision regulations; OPAREA = Operating Area. Figure 1b. Aerial view of the capture site on the Eastern Shore of Virginia, characterized by tidal salt marsh habitat.

1. STUDY AREA

2. BACKGROUND/OBJECTIVES

- In recent decades harbor seals have expanded their range from Canada and New England southward along the U.S. East Coast, and are now observed seasonally (fall through spring) in coastal Virginia, an important area for the U.S. Navy (Figure 1a).
- To help characterize seals' at-sea movements, dive behavior, and habitat use in this expanded range, we tagged harbor seals on the Eastern Shore of Virginia in February 2018, marking the first time healthy wild harbor seals were successfully captured and tagged in the area, which is near the southern extent of this species' U.S. range in the Atlantic.

3. METHODS

- A modified seine net was deployed in water from flat-bottomed skiffs near the haul-out site (Figure 2). Seals were brought on shore for tagging and biological sampling, then released.
- Seals were instrumented with a combination of location-only SPOT tags (Wildlife Computers) and a depth-sensing SPLASH tag (Wildlife Computers).



Figure 2. Monitoring the deployed net (indicated by red arrows) for seal activity. Photo taken under NMFS research permit #19826-03.

4. RESULTS

Satellite Tags: SPOT (n=6) and SPLASH (n=1)

Table 1. Summary of tagged seals.

| Animal ID | Date Tagged | Date Left Virginia | Date of Last Transmission | Tracking Days | Distance Traveled (km) | Length (cm) | Girth (cm) | Weight (kg) | Sex | Estimated Age |
|-----------|-------------|--------------------|---------------------------|---------------|------------------------|-------------|------------|-------------|--------|---------------|
| 1801 | 2/4/18 | 4/15/2018 | 5/23/18 | 107 | 4,374 | 102 | 80 | 29.0 | Male | Juvenile† |
| 1802 | 2/4/18 | 4/01/2018 | 6/29/18 | 143 | 4,002 | 153 | 118 | 90.4 | Male | Adult |
| 1803 | 2/4/18 | 3/31/2018 | 5/6/18 | 90 | 3,543 | 129 | 99 | 58.8 | Female | Juvenile† |
| 1804 | 2/4/18 | 4/4/2018 | 5/26/18 | 108 | 3,652 | 143 | 119 | 74.8 | Female | Juvenile† |
| 1805 | 2/6/18 | 3/29/2018 | 4/9/18 | 61 | 2,670 | 121 | 97 | 49.8 | Female | Adult |
| 1806 | 2/6/18 | 4/14/2018 | 6/22/18 | 135 | 3,383 | 149 | 116 | 82.2 | Female | Adult |
| 1807 | 2/8/18 | CBD* | 4/26/18 | 77 | 3,438 | 93 | 77 | 24.8 | Female | YOY‡ |

Key: *Cannot be determined, since this seal did not leave Virginia waters during the tracking duration. †Juvenile = 2-4 years old; ‡YOY = Young of the year (up to 1.5 years old).

- Maximum dive depth recorded = 118.00 m, mean dive depth = 22.38 m (SD ±19.53).
- All tagged seals spent a cumulative 428 days in Virginia waters (Table 1), and on 83 of these days (19%) satellite tags reported locations within the VACAPES OPAREA.
- In April 2018, 6 of 7 tagged seals moved north from Virginia to known haul-out sites in New England, and 4 tagged seals traveled as far north as Maine (Figure 3) before tags were shed during the annual molt.

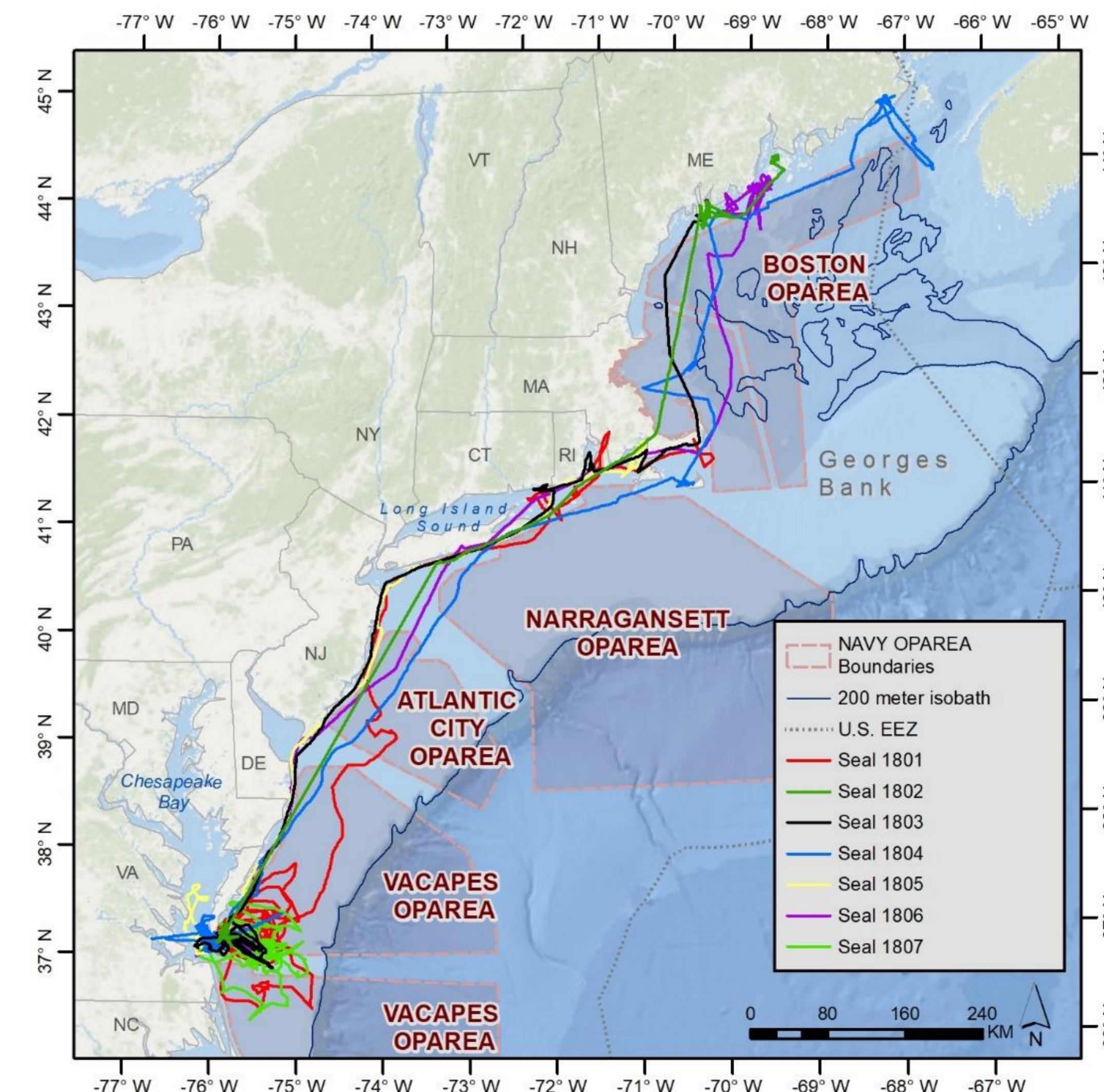


Figure 3. Reconstructed tracks of all seven seals tagged in coastal Virginia in February 2018 in relation to Navy operating areas (OPAREA). Maximum tag duration = 5 months; N=7. EEZ = Exclusive Economic Zone.

5. SUMMARY

- Seals seen at the Eastern Shore and Chesapeake Bay Bridge and Tunnel (CBBT) Islands are using habitat that overlaps with the Navy's VACAPES OPAREA.
- Our data provide preliminary insight into the movement patterns of harbor seals in relation to Navy training areas and installations in Virginia, and their seasonal distribution along the mid-Atlantic and northeast U.S. coast.

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