The U. S. Navy's Efforts to Track Atlantic Sturgeon Movements in the Chesapeake Bay

Christian Hager, Carter Watterson, Keith Dunton, Dewayne Fox, Matthew Breece, Matthew Balazik, and David MacDuffee

Navy Receiver Array in the Lower Chesapeake Bay

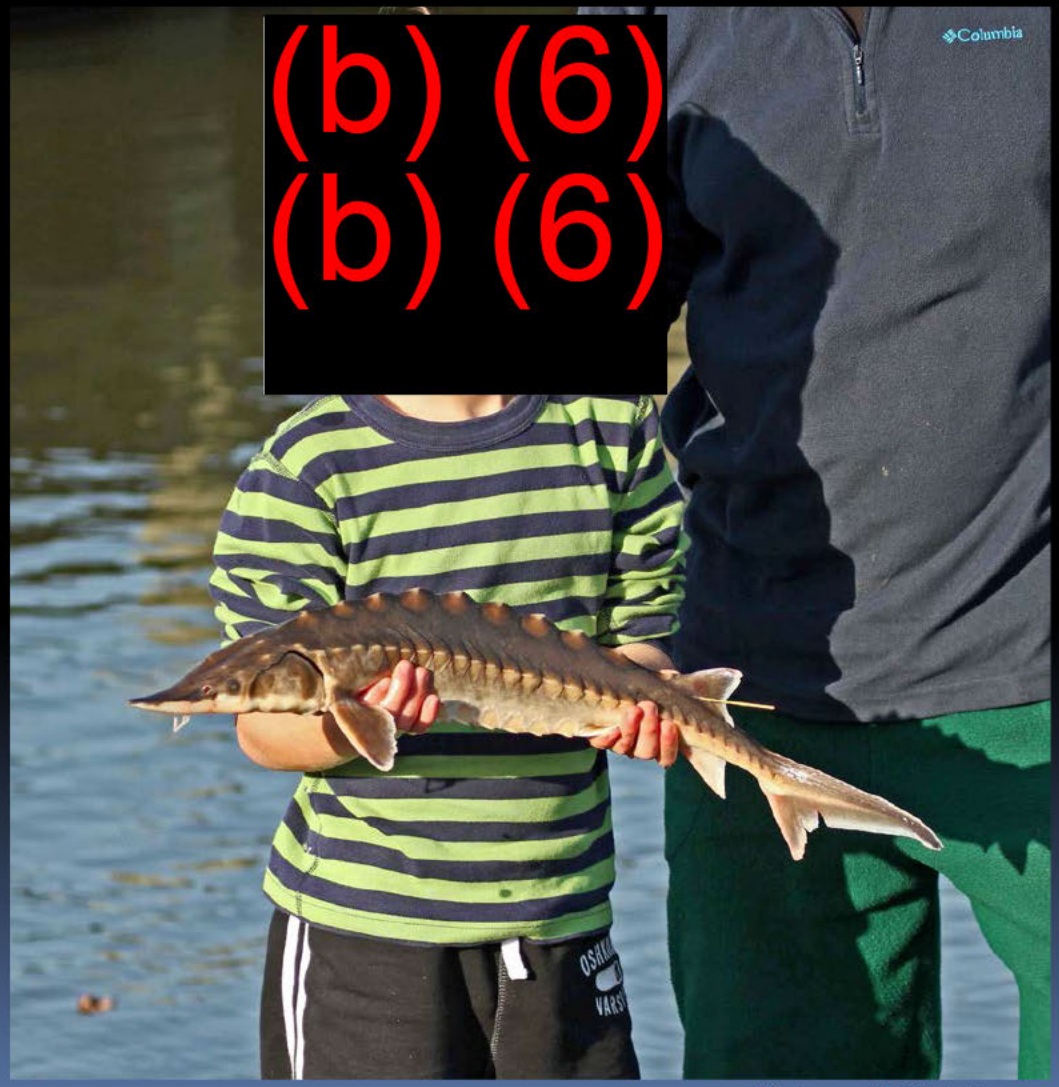


Photo credit: Chris Hager

Navy Receiver Array in the Lower Chesapeake Bay

Photo credit: Chris Hager

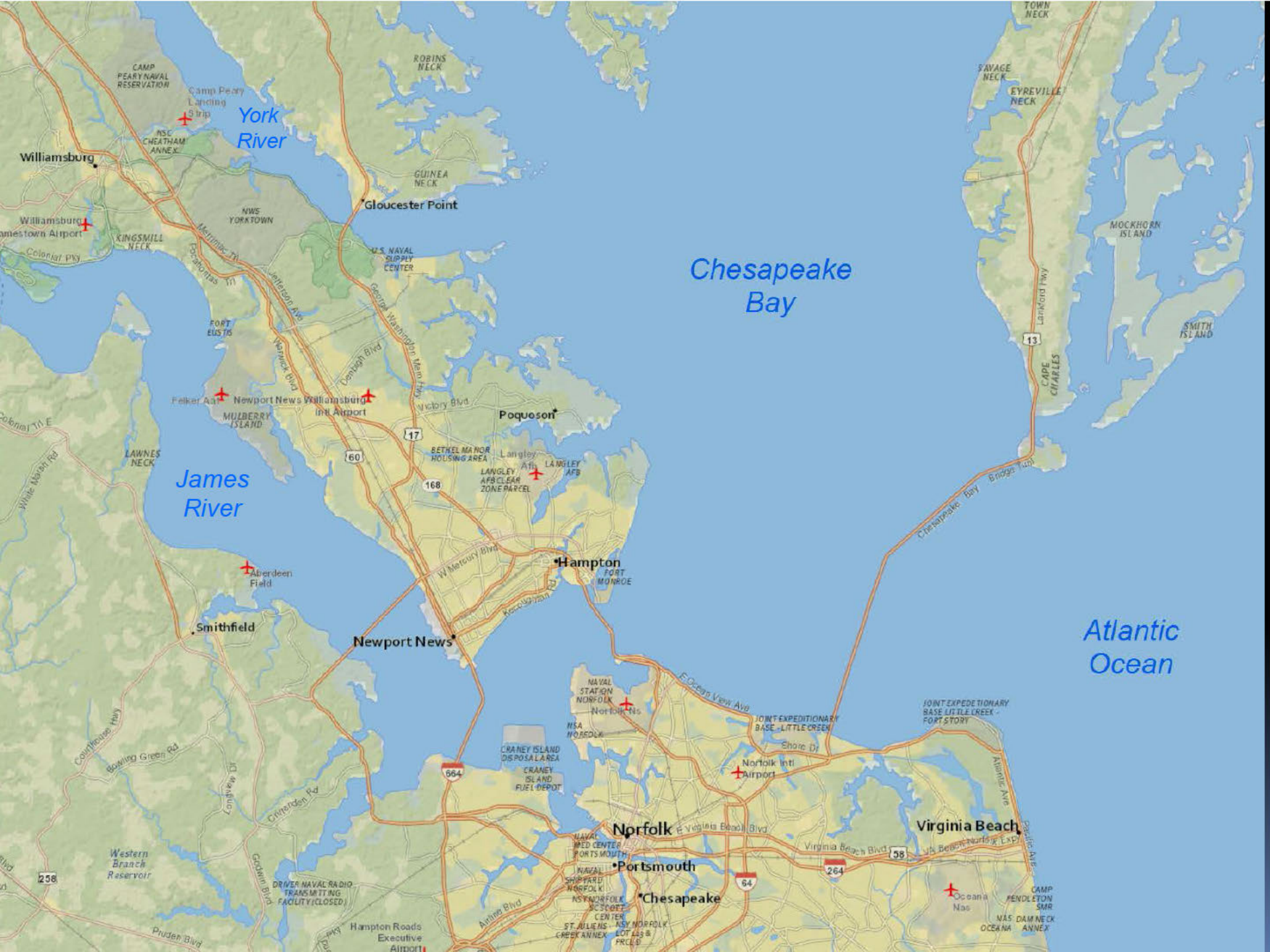
Photo credit: Matt Balazik

Navy Receiver Array in the Lower Chesapeake Bay

Atlantic sturgeon can grow up to 14 feet and weigh in excess of 800 pounds

Why is the Navy Concerned About Atlantic Sturgeon?

- Atlantic sturgeon were listed under the ESA on 31 January 2012.
- As part of this listing, the Chesapeake Bay distinct population segment was listed as endangered
- It is the Navy's responsibility to minimize impacts to the species to the extent practicable and aid in its recovery where possible



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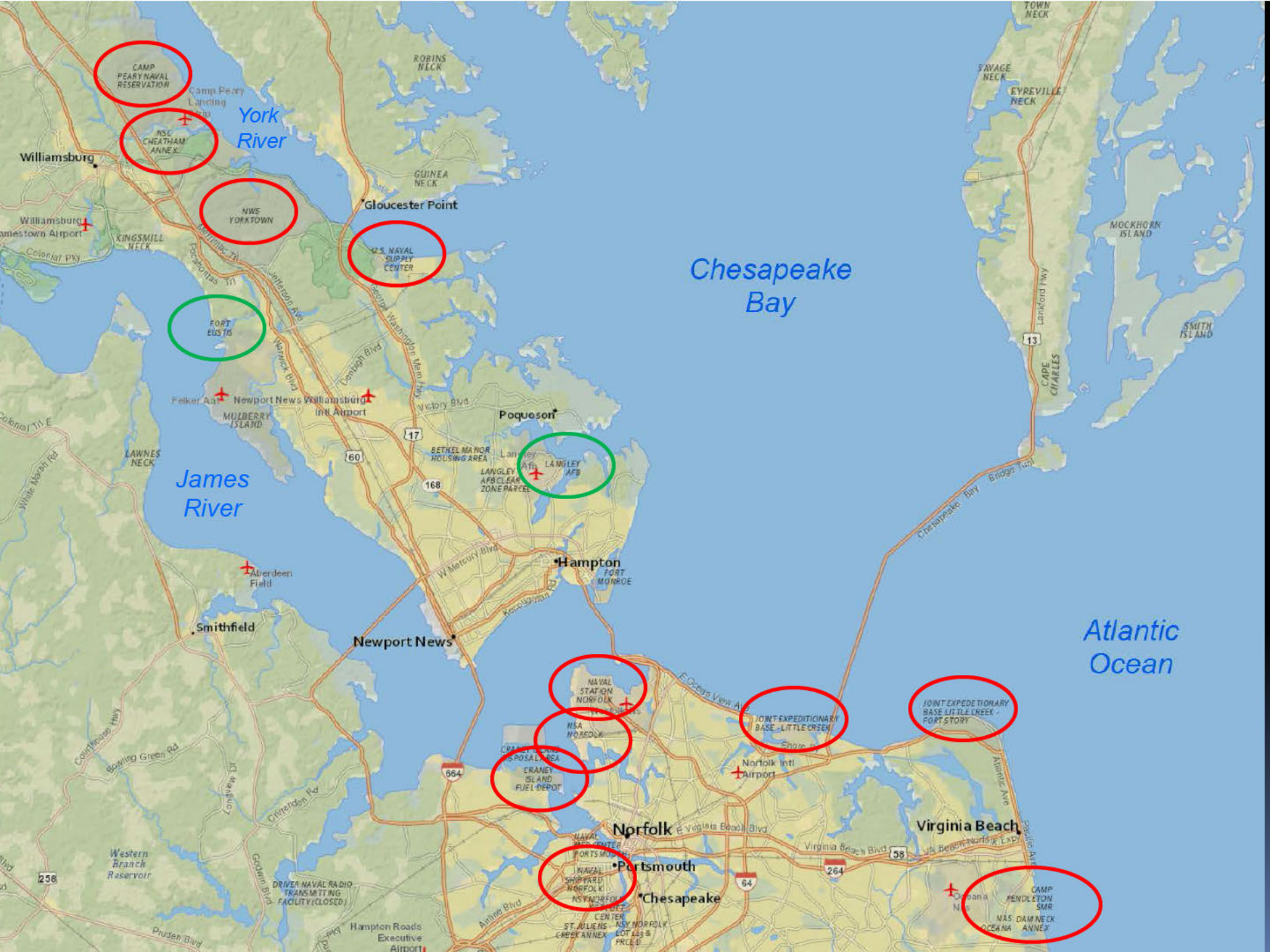

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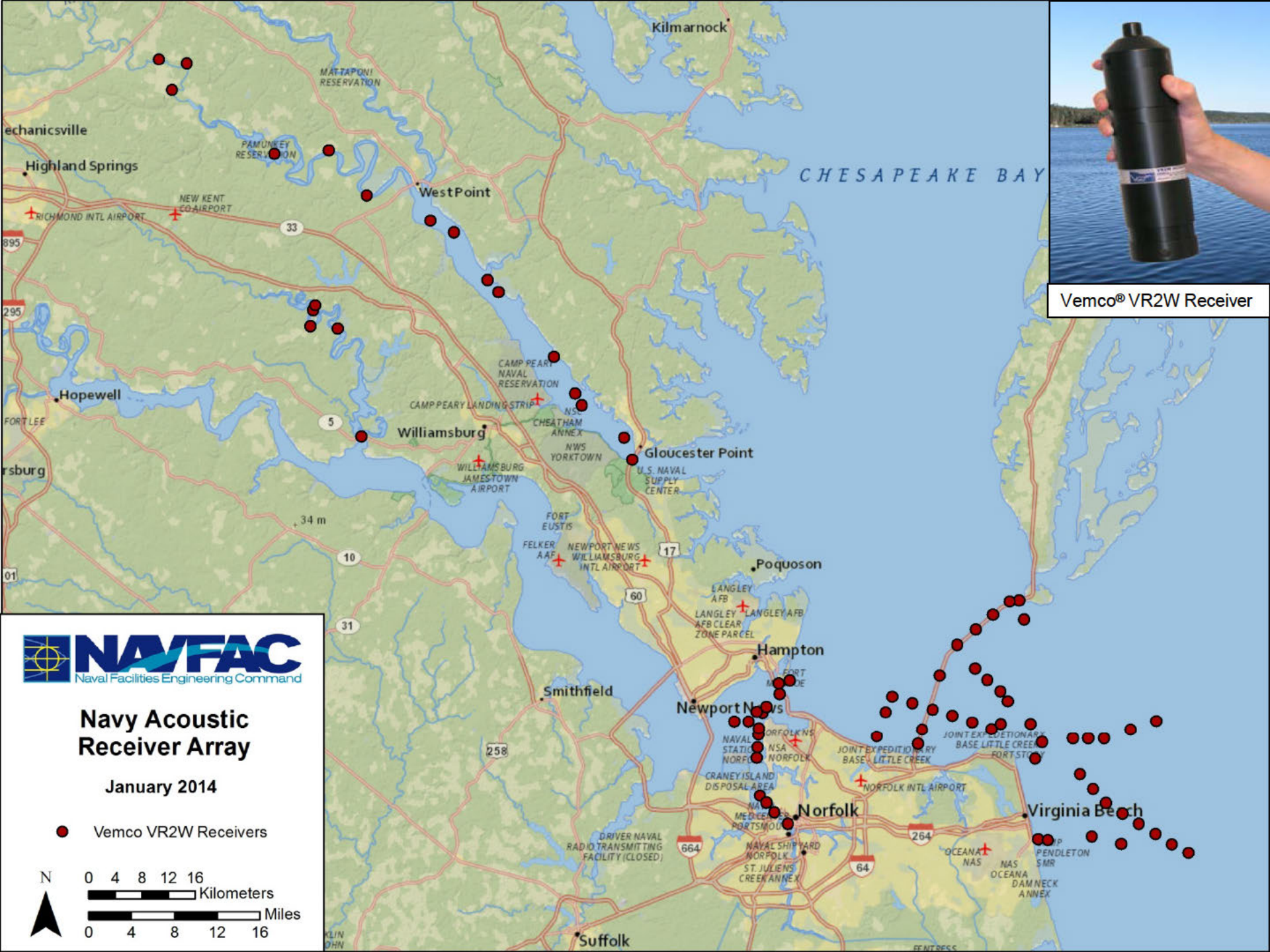
Identified Data Gaps for the Chesapeake Bay

- When are sturgeon present within the Bay?
- What areas of the Bay are they utilizing?
- How long are they staying at any given location?
- What are their seasonal movement patterns?
- What are the areas and periods of overlap between the Navy's and the sturgeon's use of the Bay?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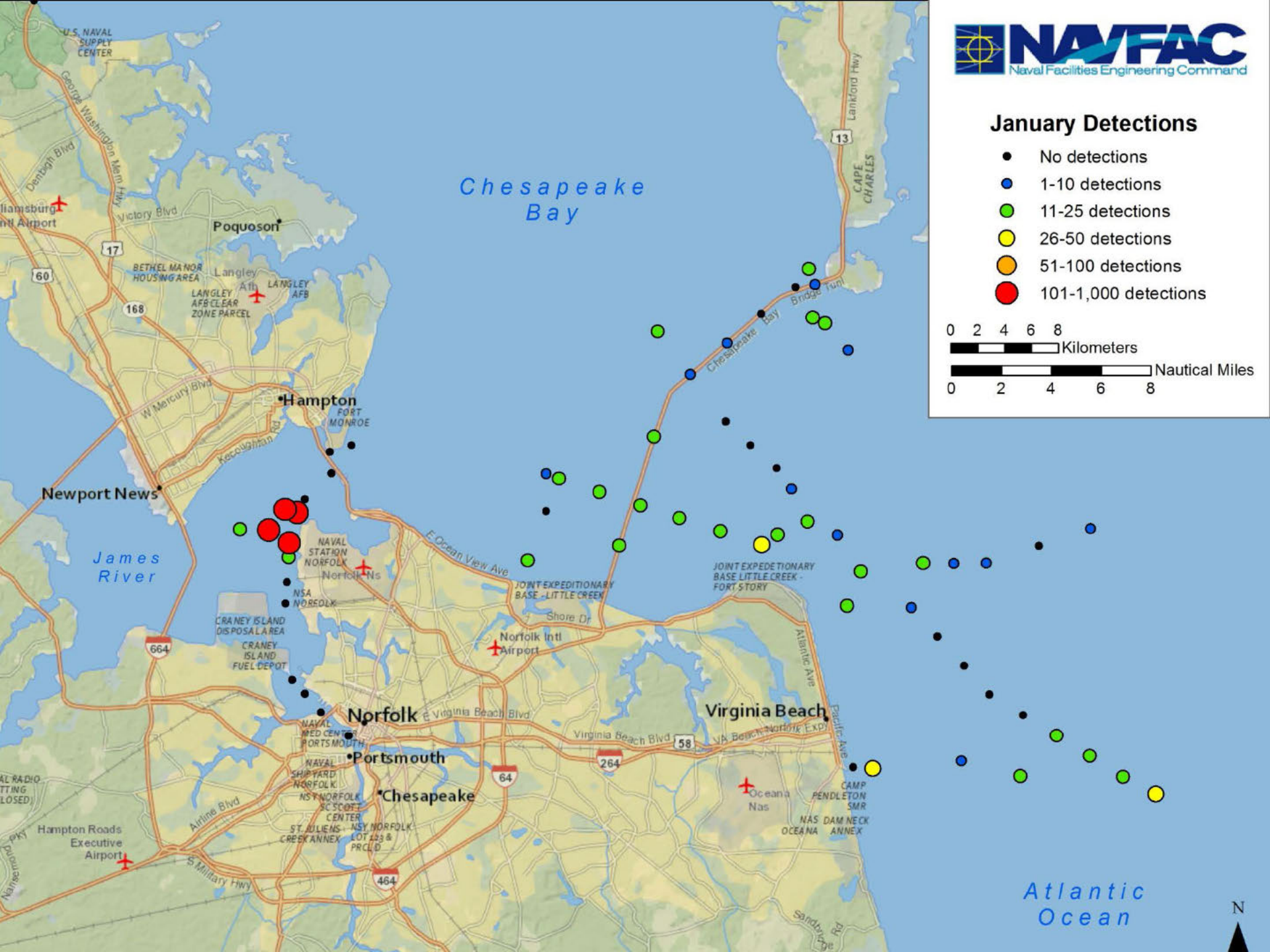
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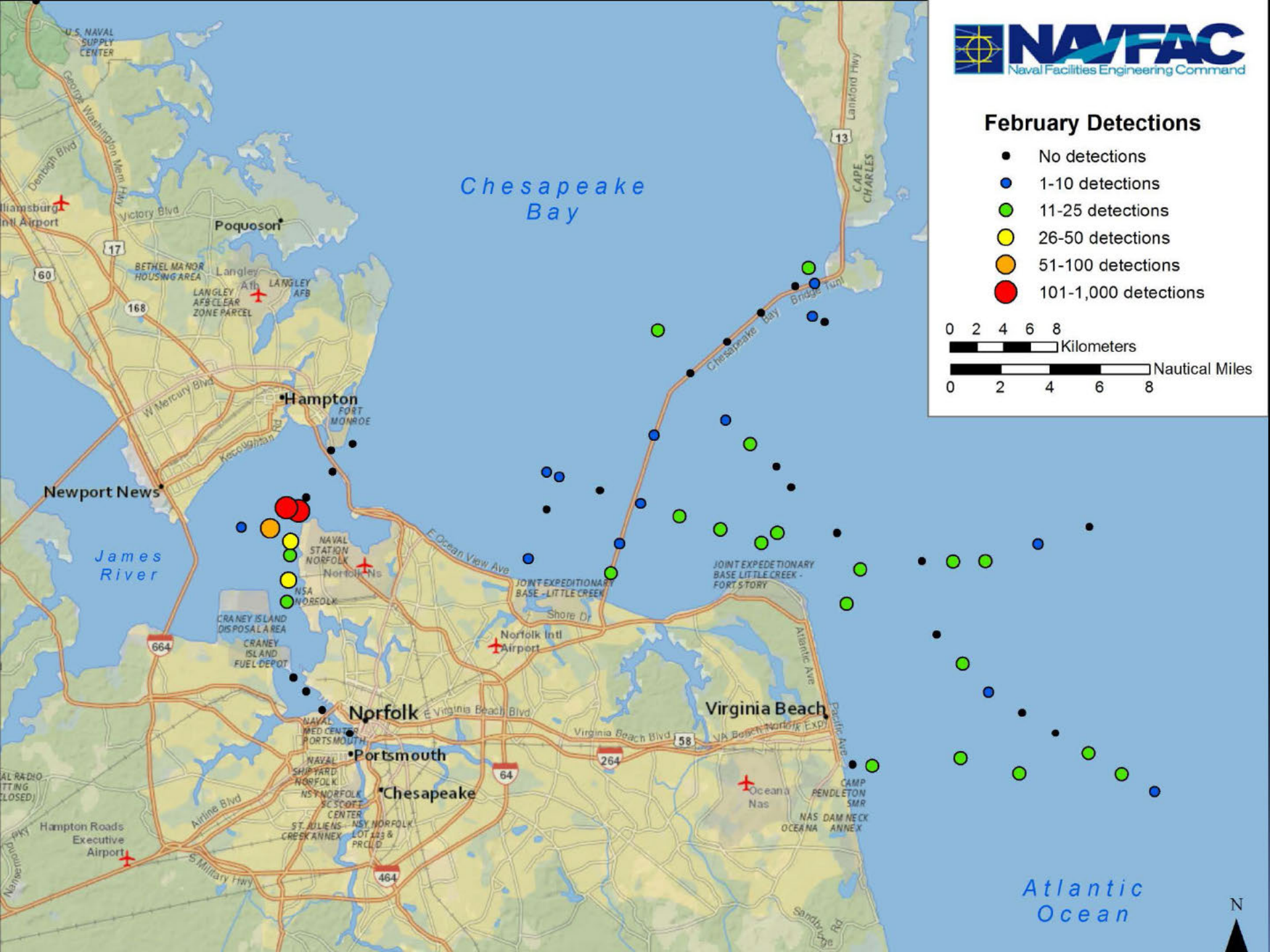
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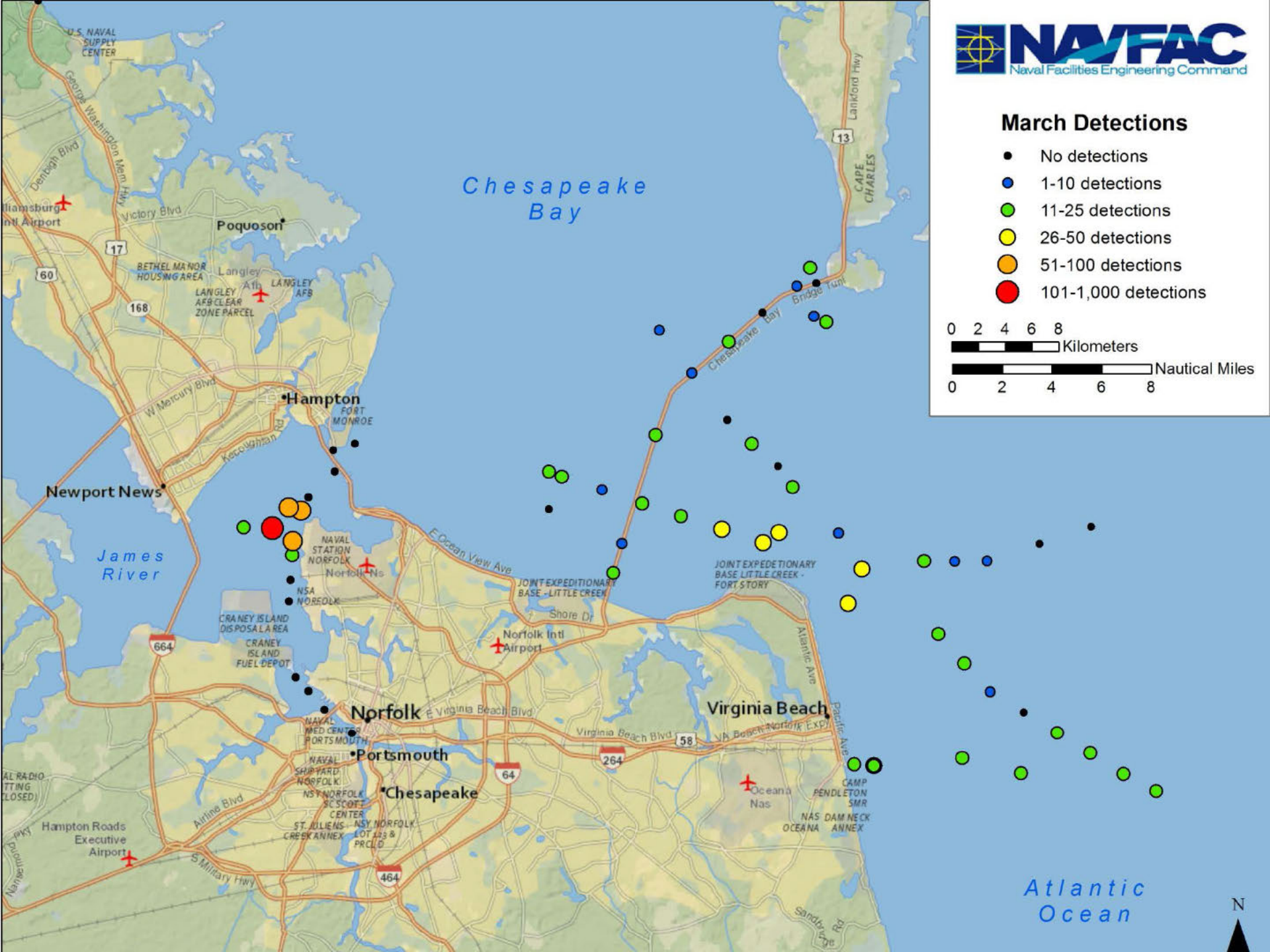
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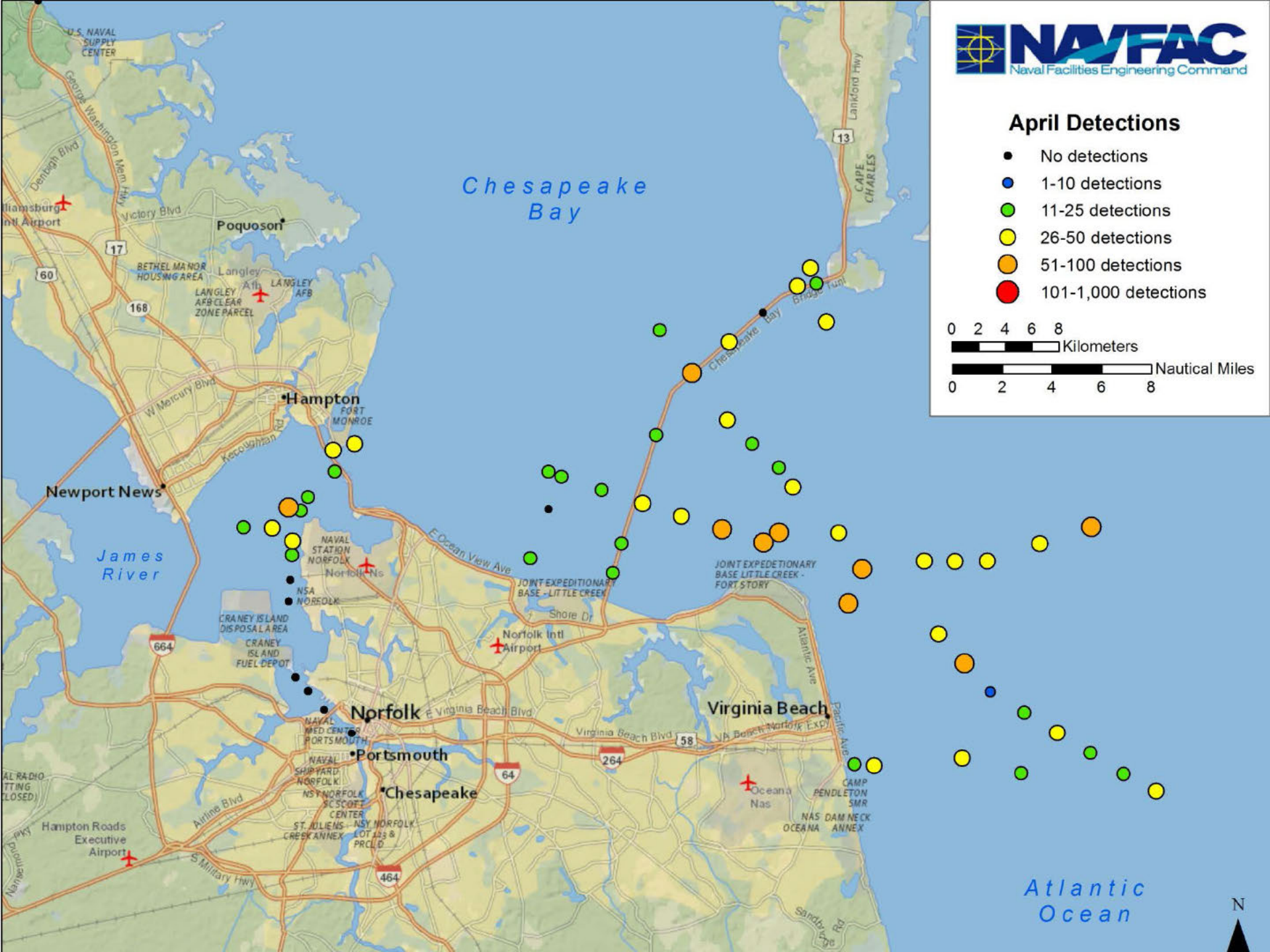
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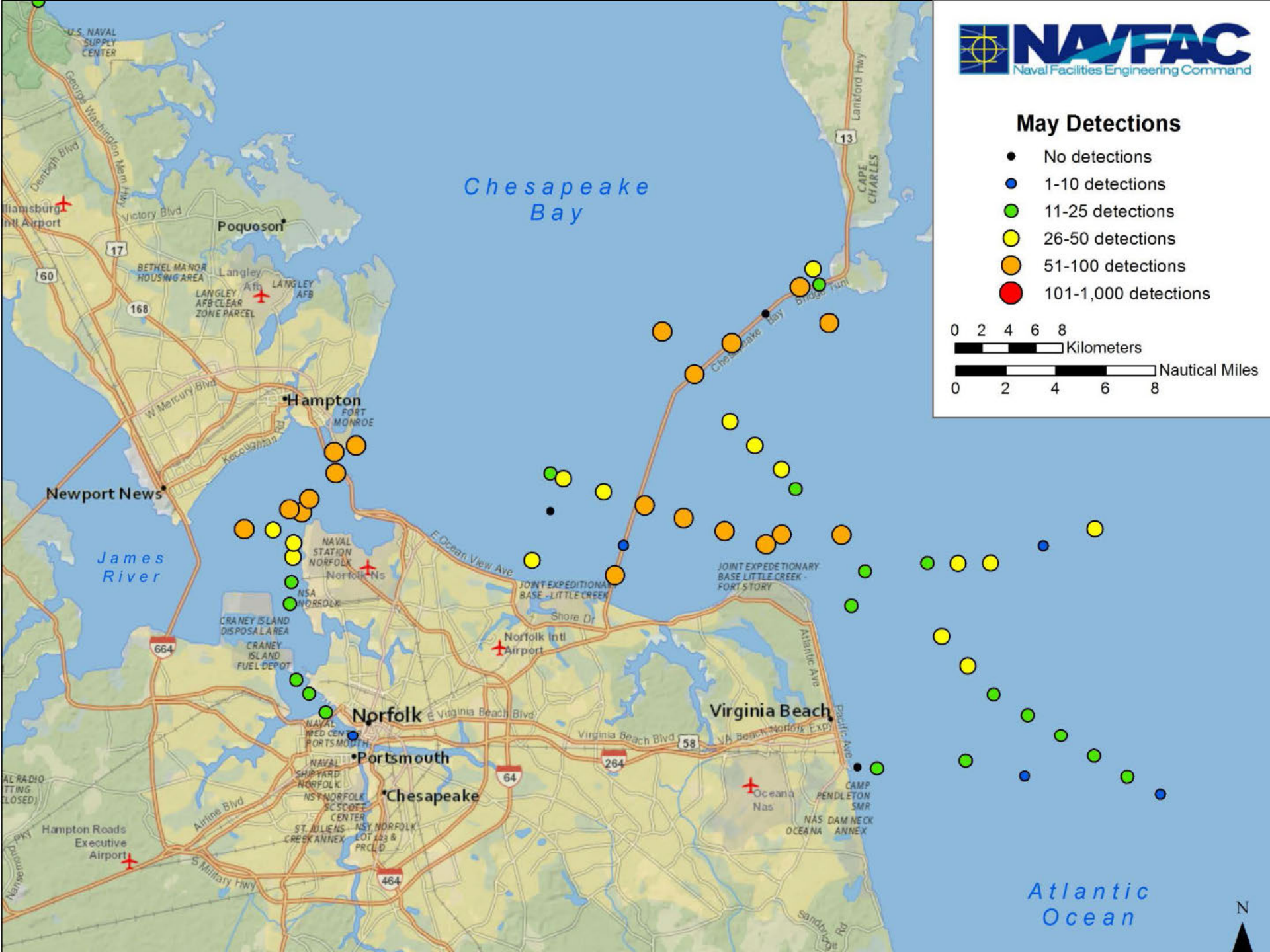
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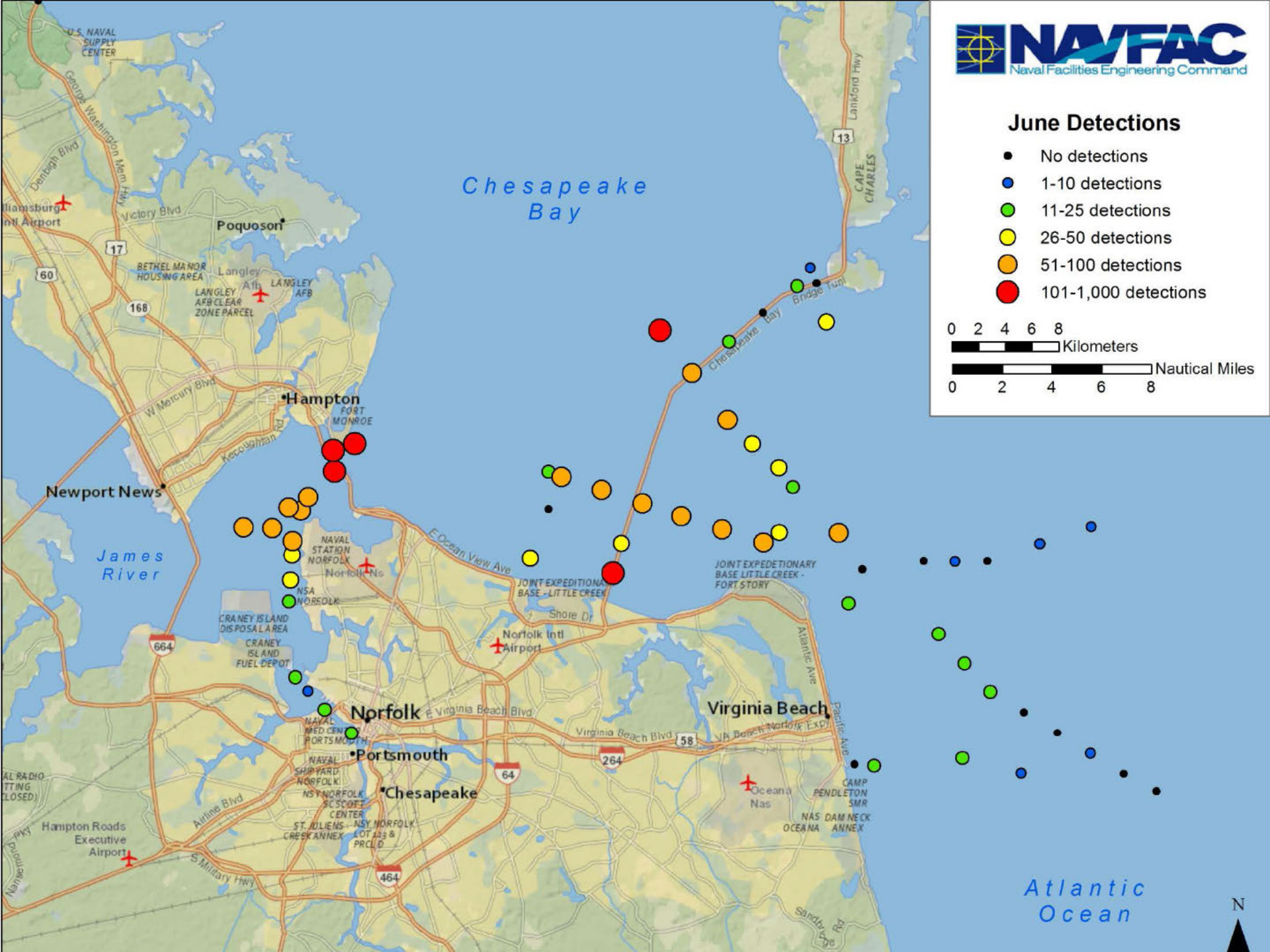
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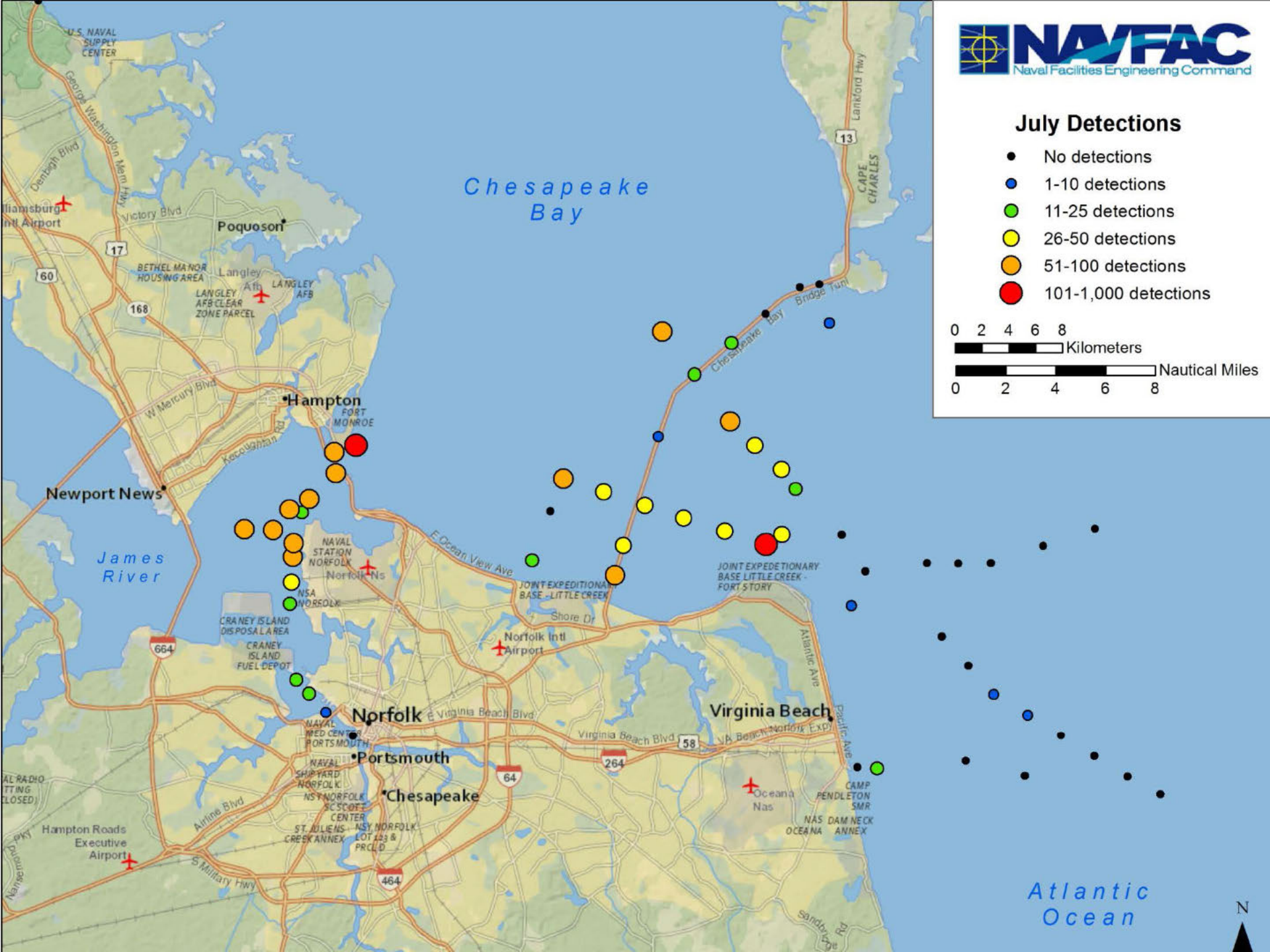
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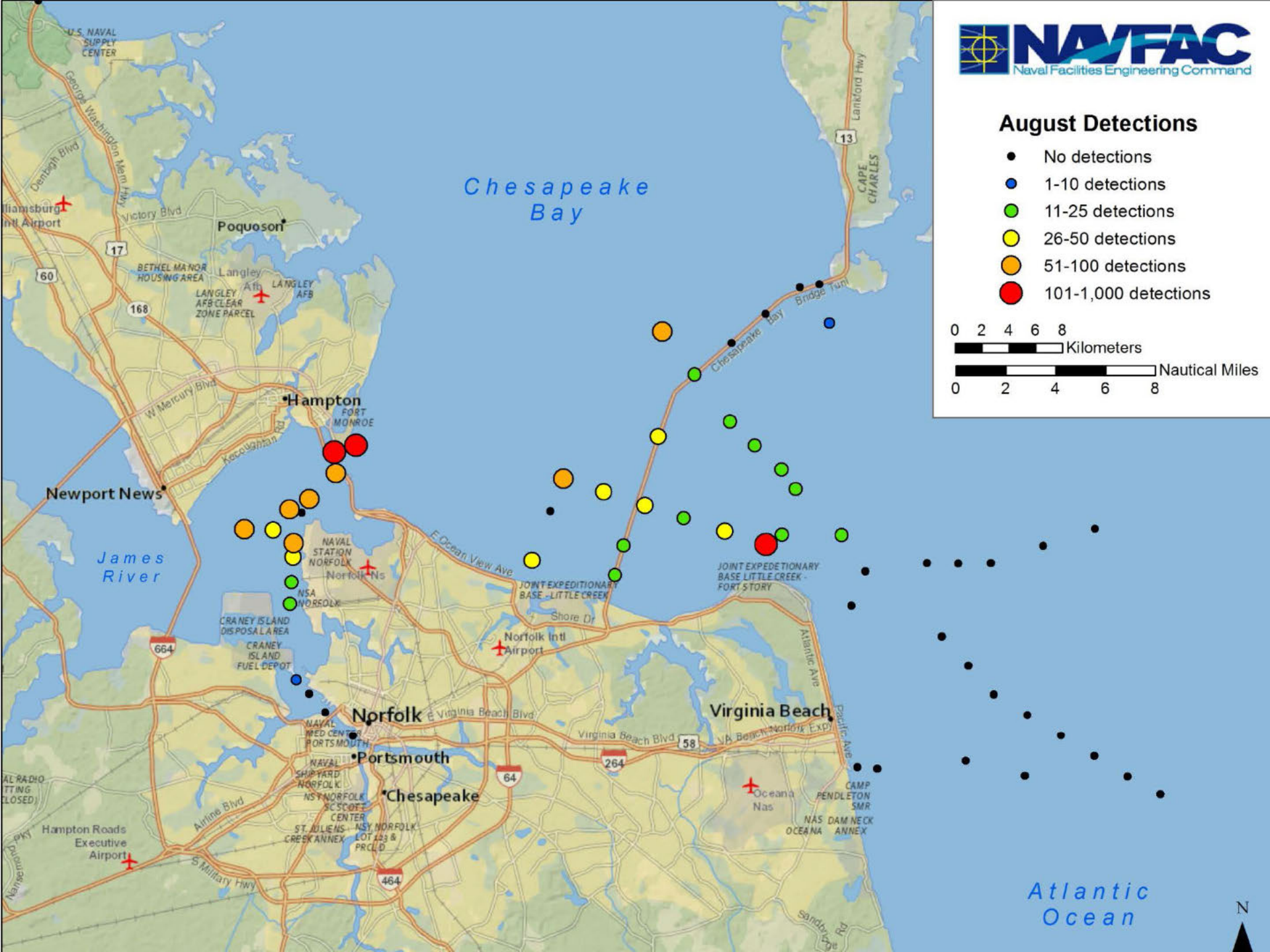
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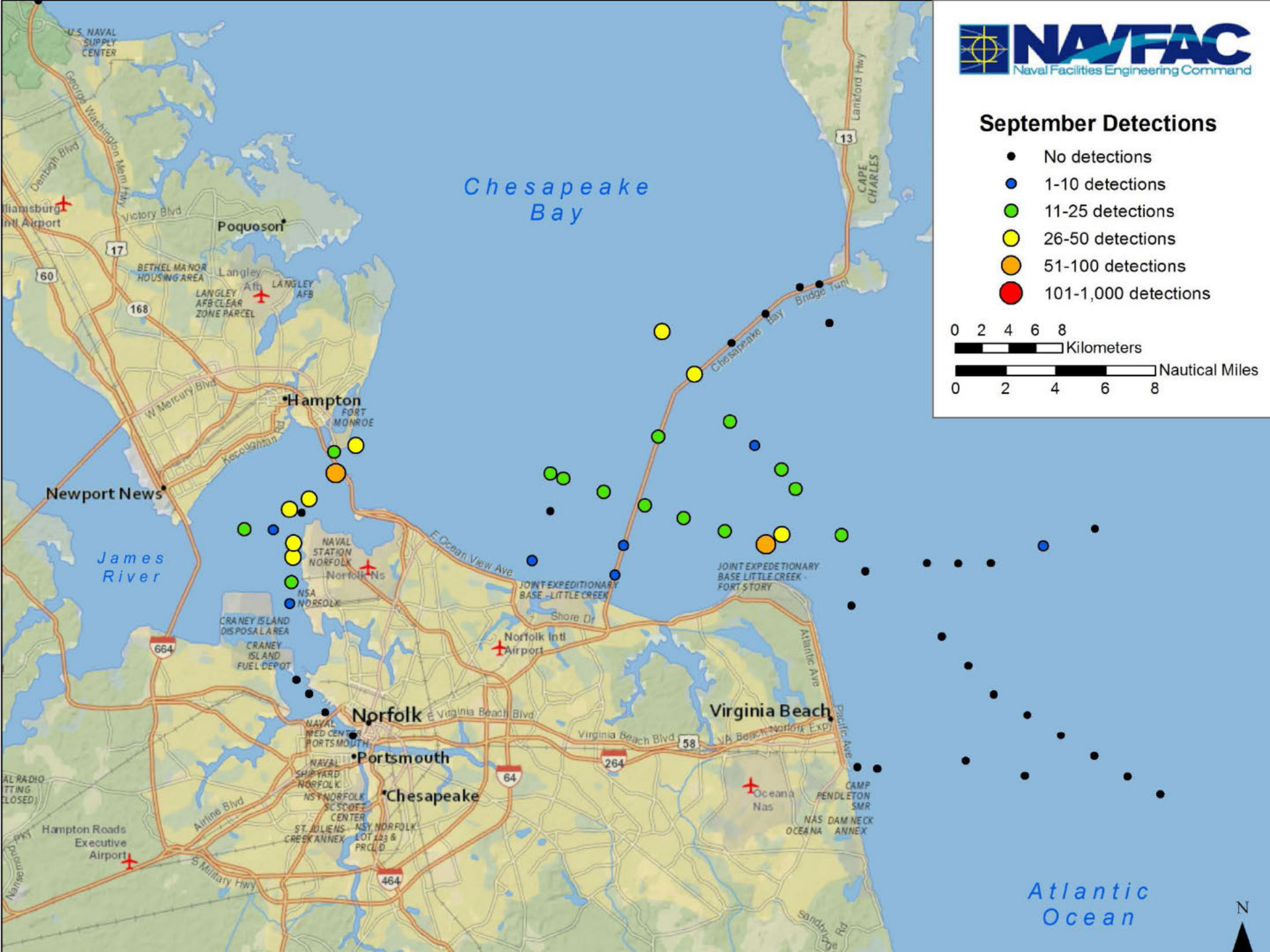
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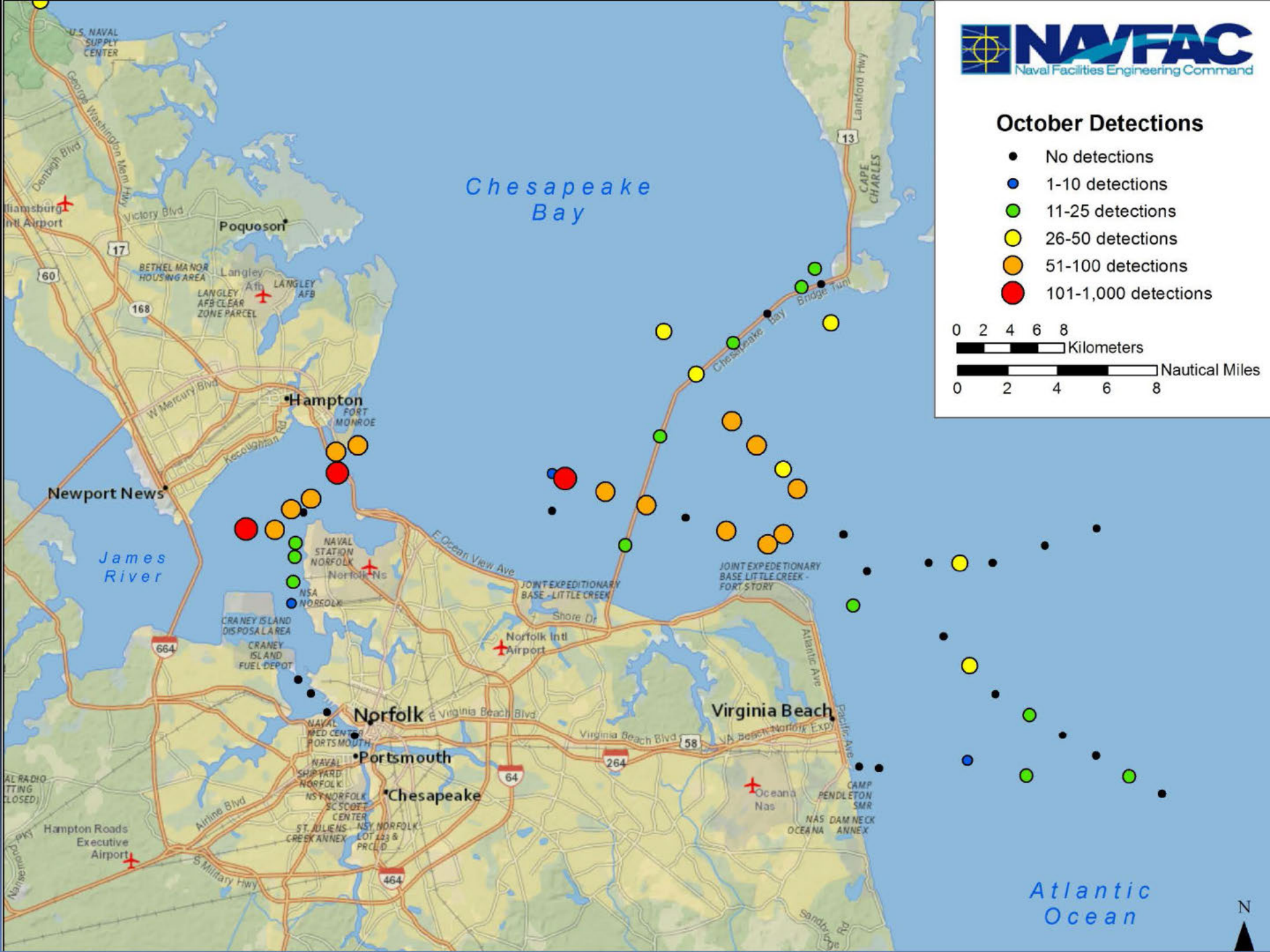
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CRANEY ISLAND FUEL DEPOT
JOINT EXPEDITIONARY BASE - LITTLE CREEK
JOINT EXPEDETIONARY BASE LITTLE CREEK - FORT STORY
NAVAL MED CENTER PORTSMOUTH
NAVAL SHIPYARD NORFOLK
NSY NORFOLK SC SCOTT CENTER
ST. JULIENS CREEK ANNEX
NSY NORFOLK LOT 123 & PRCL D
CAMP PENDLETON SMR
NAS OCEANA
DAM NECK ANNEX
CAPE CHARLES
Chesapeake Bay Bridge Tunl
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Shore Dr
E Virginia Beach Blvd
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VA Beach Norfolk Expy
Atlantic Ave
Pacific Ave
Airline Blvd
S Military Hwy
Kecoughtan Rd
W Mercury Blvd
Victory Blvd
Denbigh Blvd
George Washington Mem Hwy
Lankford Hwy
Sandbridge Rd
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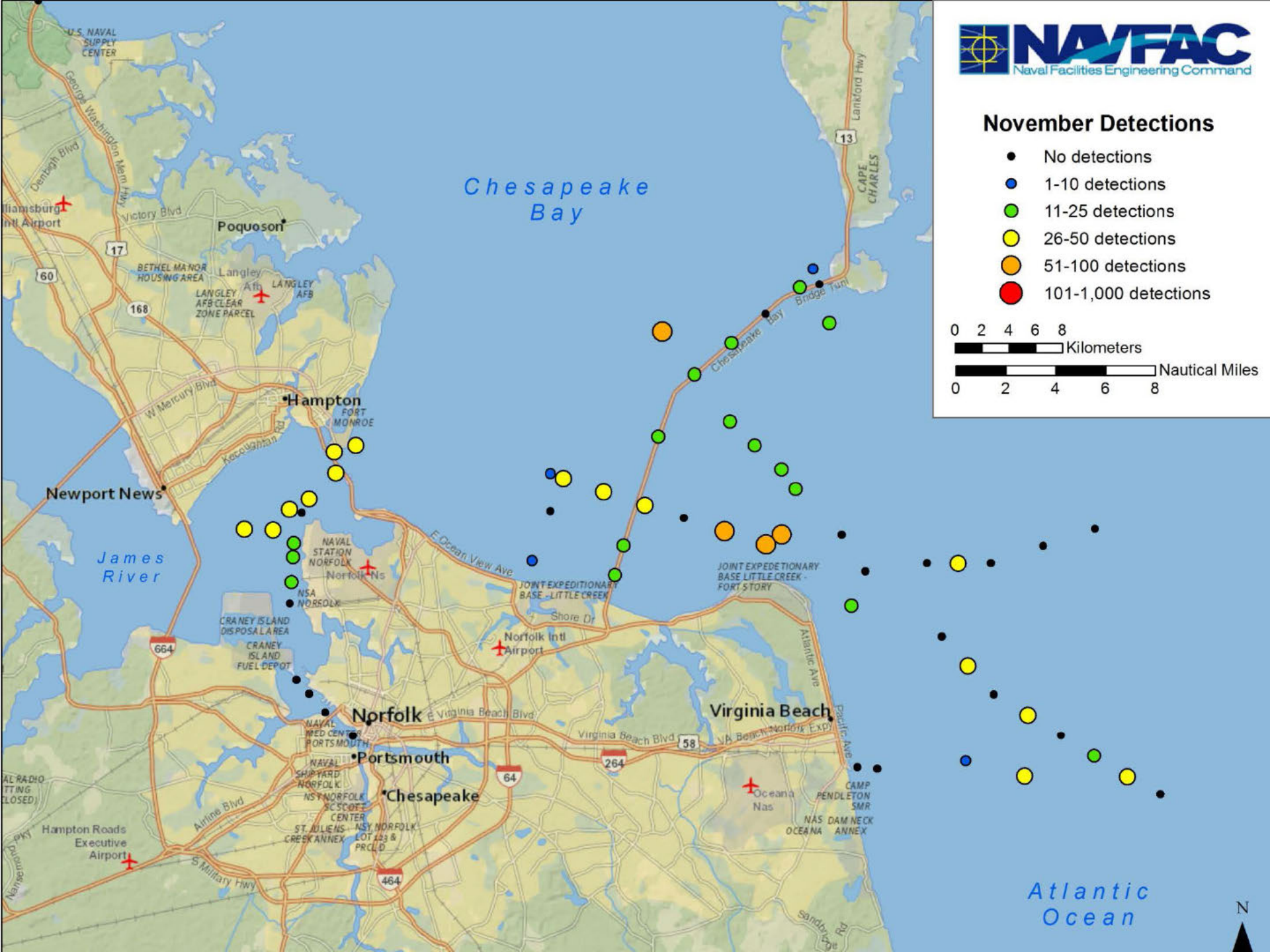
NAVFAC
Naval Facilities Engineering Command
November Detections
No detections
1-10 detections
11-25 detections
26-50 detections
51-100 detections
101-1,000 detections
0 2 4 6 8
Kilometers
Nautical Miles
0 2 4 6 8
Chesapeake Bay
James River
Atlantic Ocean
Poquoson
Hampton
Newport News
Norfolk
Portsmouth
Chesapeake
Virginia Beach
Norfolk Intl Airport
Hampton Roads Executive Airport
Oceana Nas
NAVAL STATION NORFOLK
NSA NORFOLK
JOINT EXPEDITIONARY BASE - LITTLE CREEK
JOINT EXPEDETIONARY BASE LITTLE CREEK - FORT STORY
CRANEY ISLAND DISPOSAL AREA
CRANEY ISLAND FUEL DEPOT
LANGLEY AFB
BETHEL MANOR HOUSING AREA
FORT MONROE
CAMP PENDLETON SMR
NAS OCEANA
DAM NECK ANNEX
CAPE CHARLES
U.S. NAVAL SUPPLY CENTER
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Denbigh Blvd
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Sandbridge Rd
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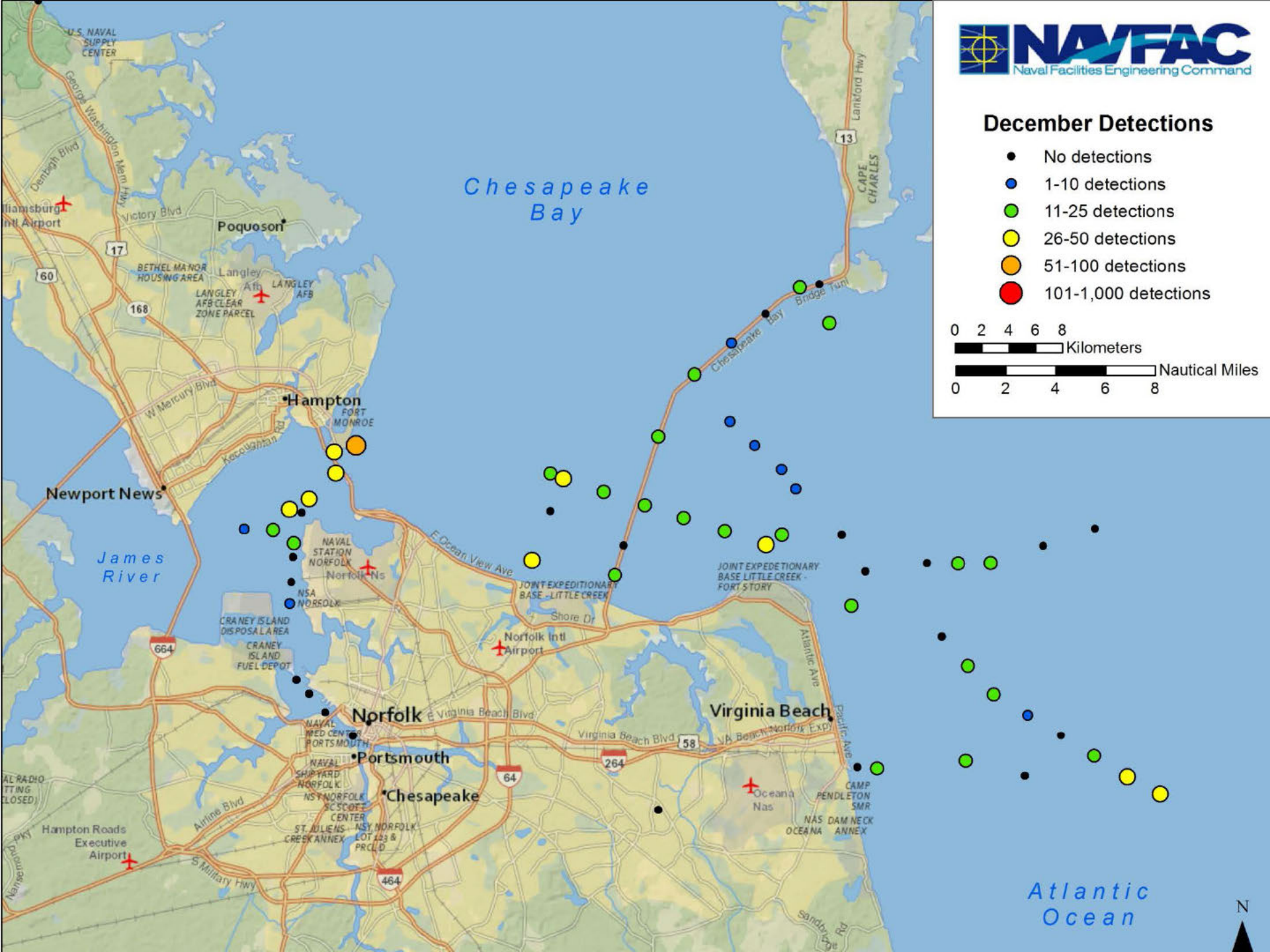
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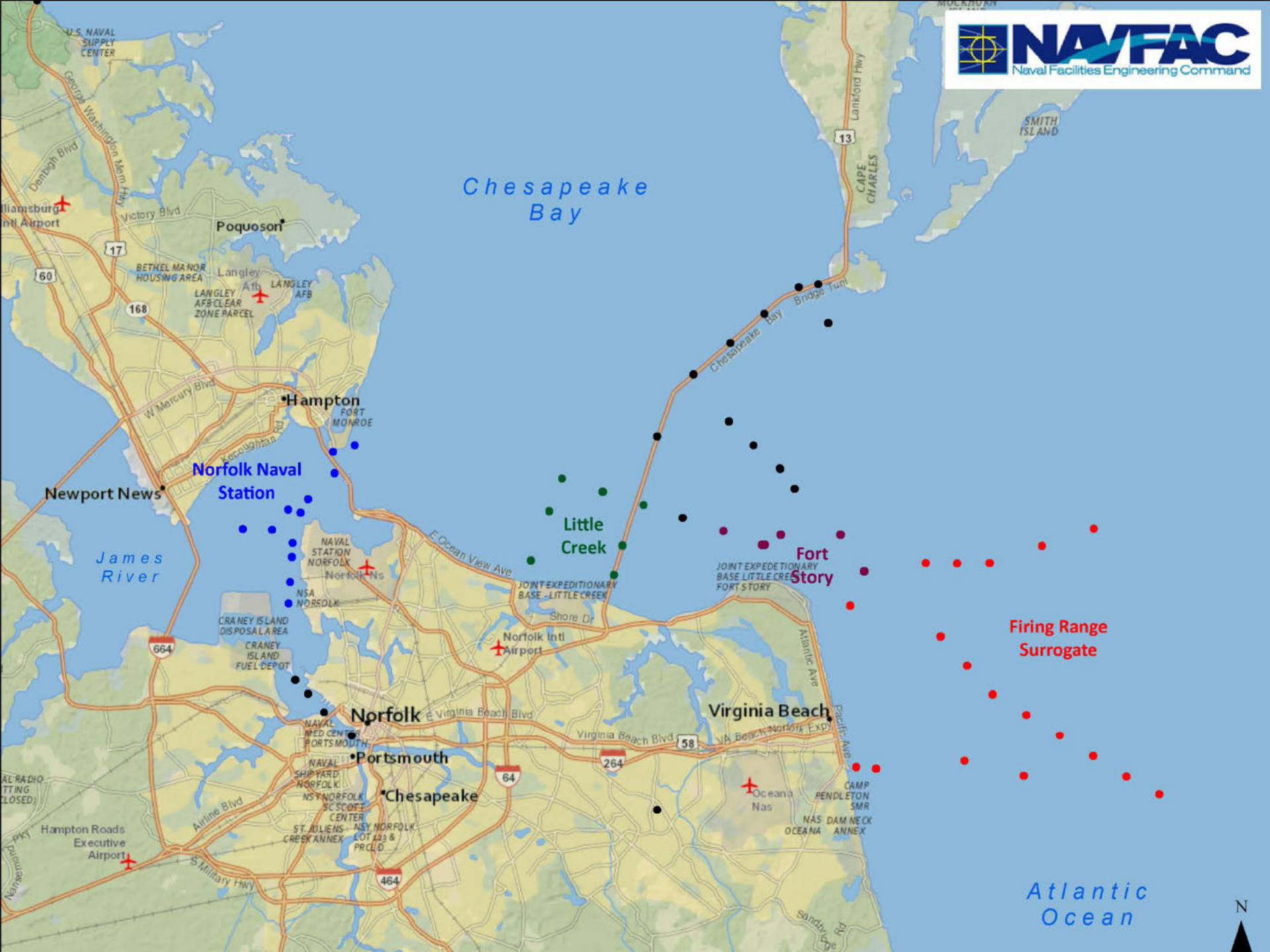
NAVFAC
Naval Facilities Engineering Command
Chesapeake Bay
James River
Atlantic Ocean
Norfolk Naval Station
Little Creek
Fort Story
Firing Range Surrogate
Newport News
Hampton
Poquoson
Norfolk
Portsmouth
Chesapeake
Virginia Beach
U.S. NAVAL SUPPLY CENTER
George Washington Mem Hwy
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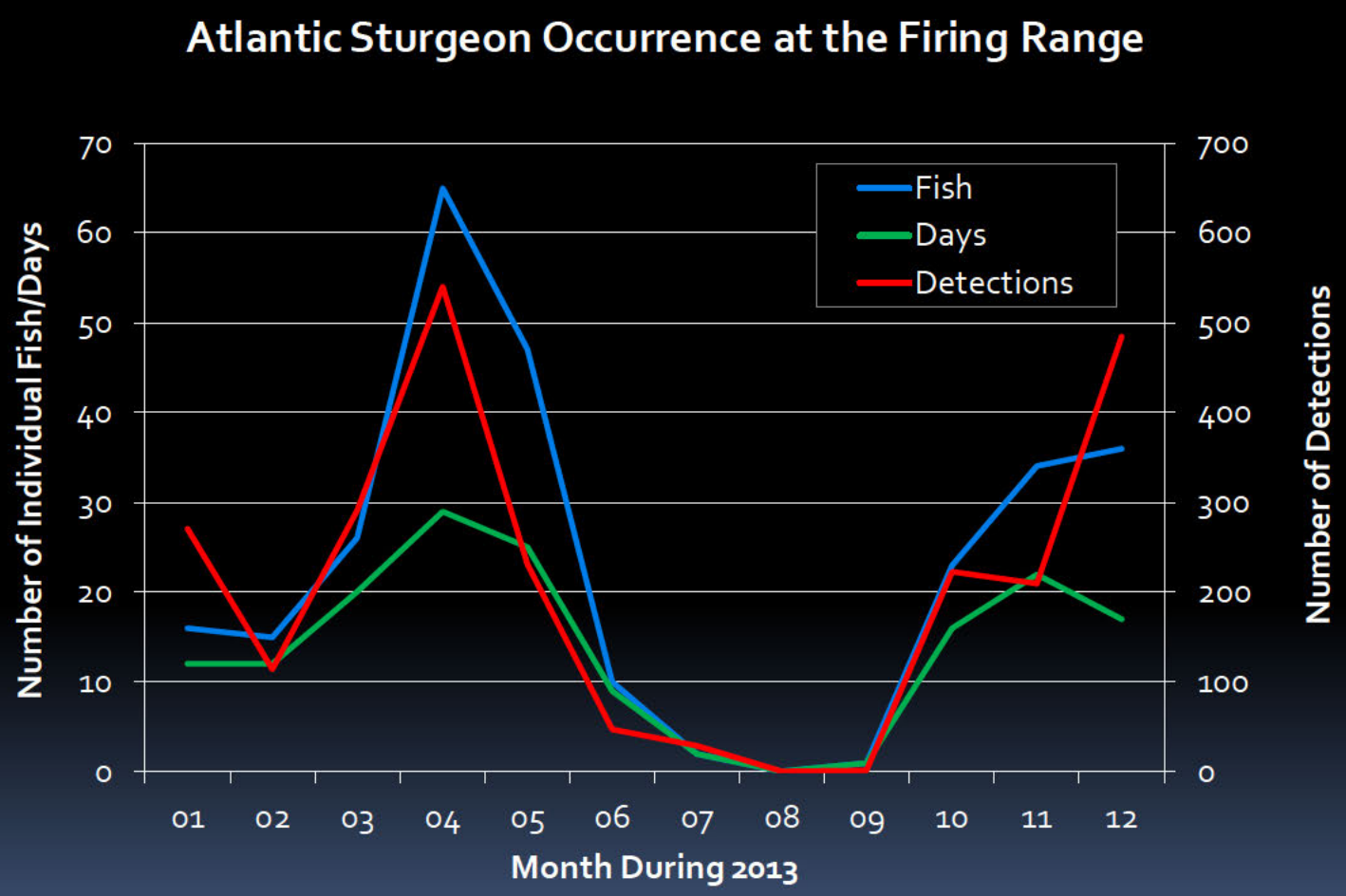
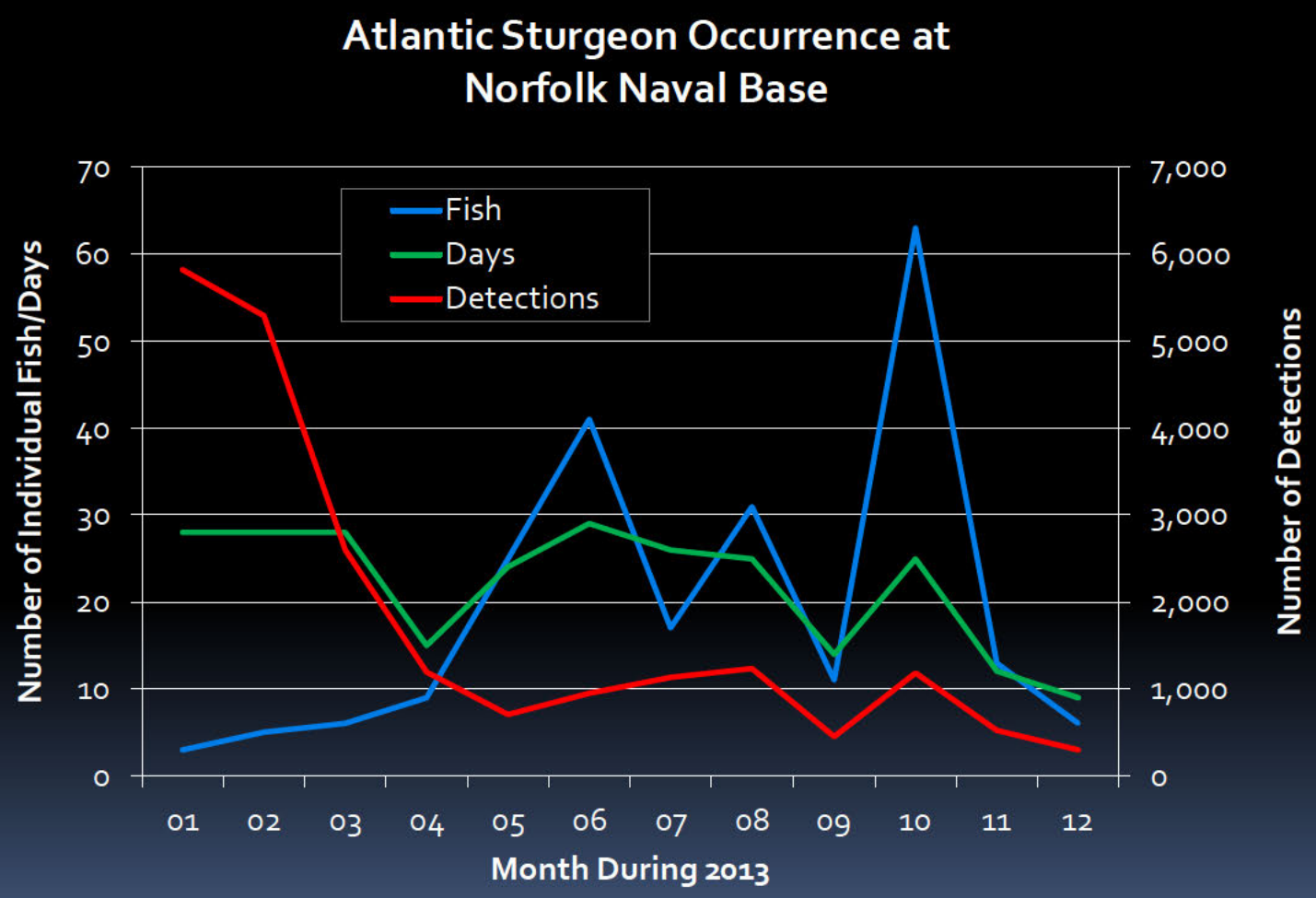
Navy Receiver Array in the Lower Chesapeake Bay



Navy Receiver Array in the Lower Chesapeake Bay



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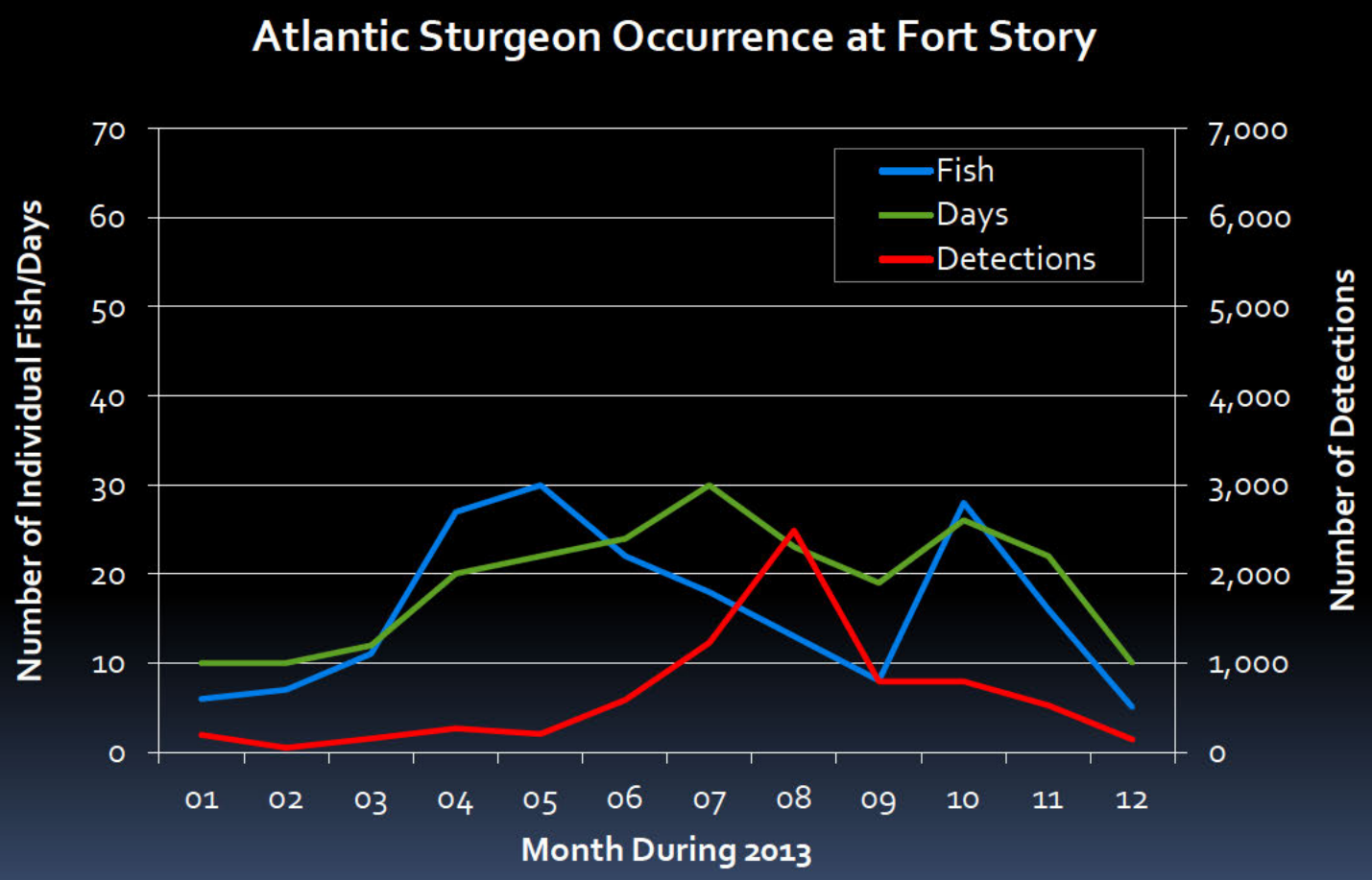
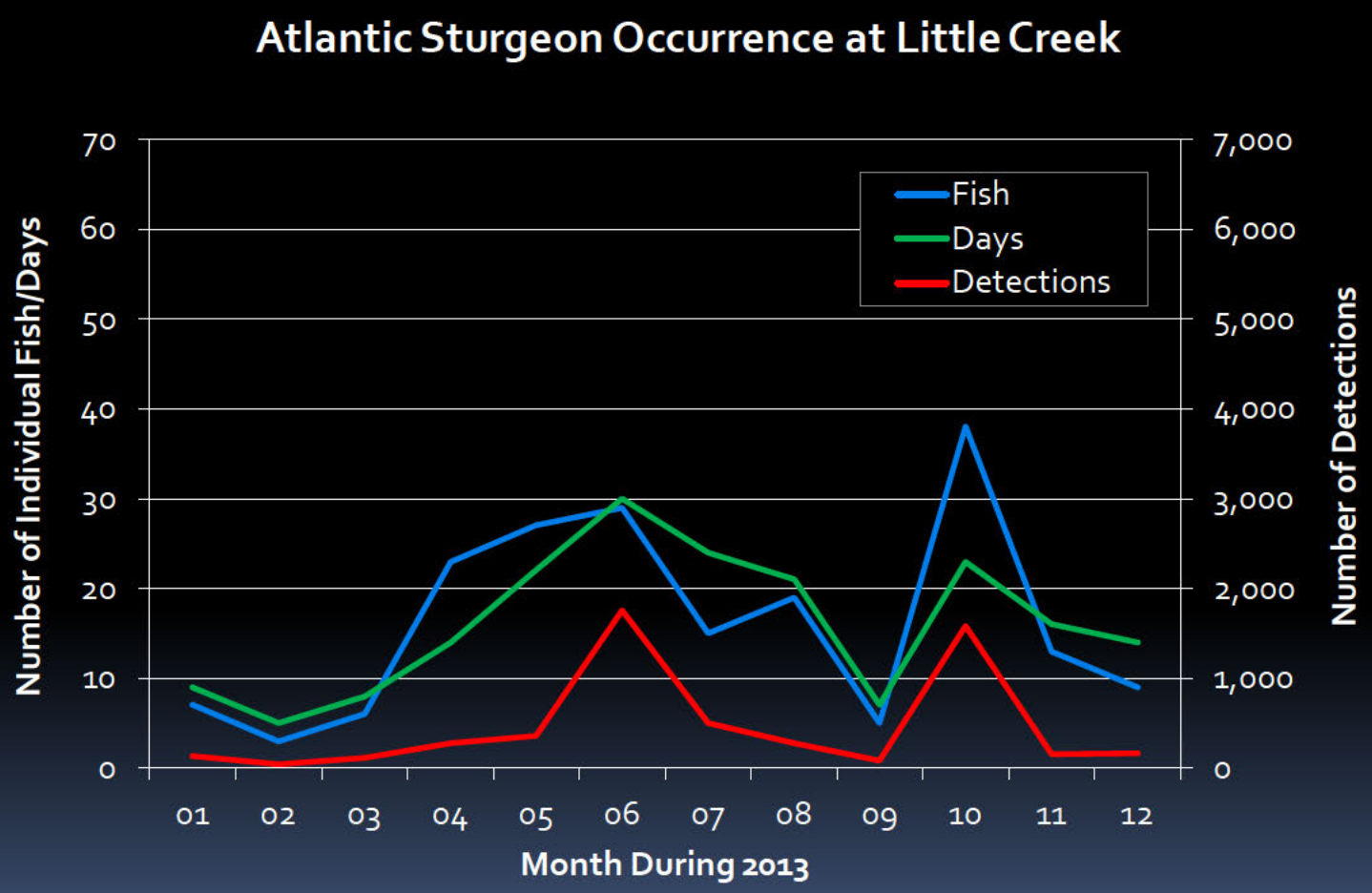


Navy Receiver Array in the Lower Chesapeake Bay

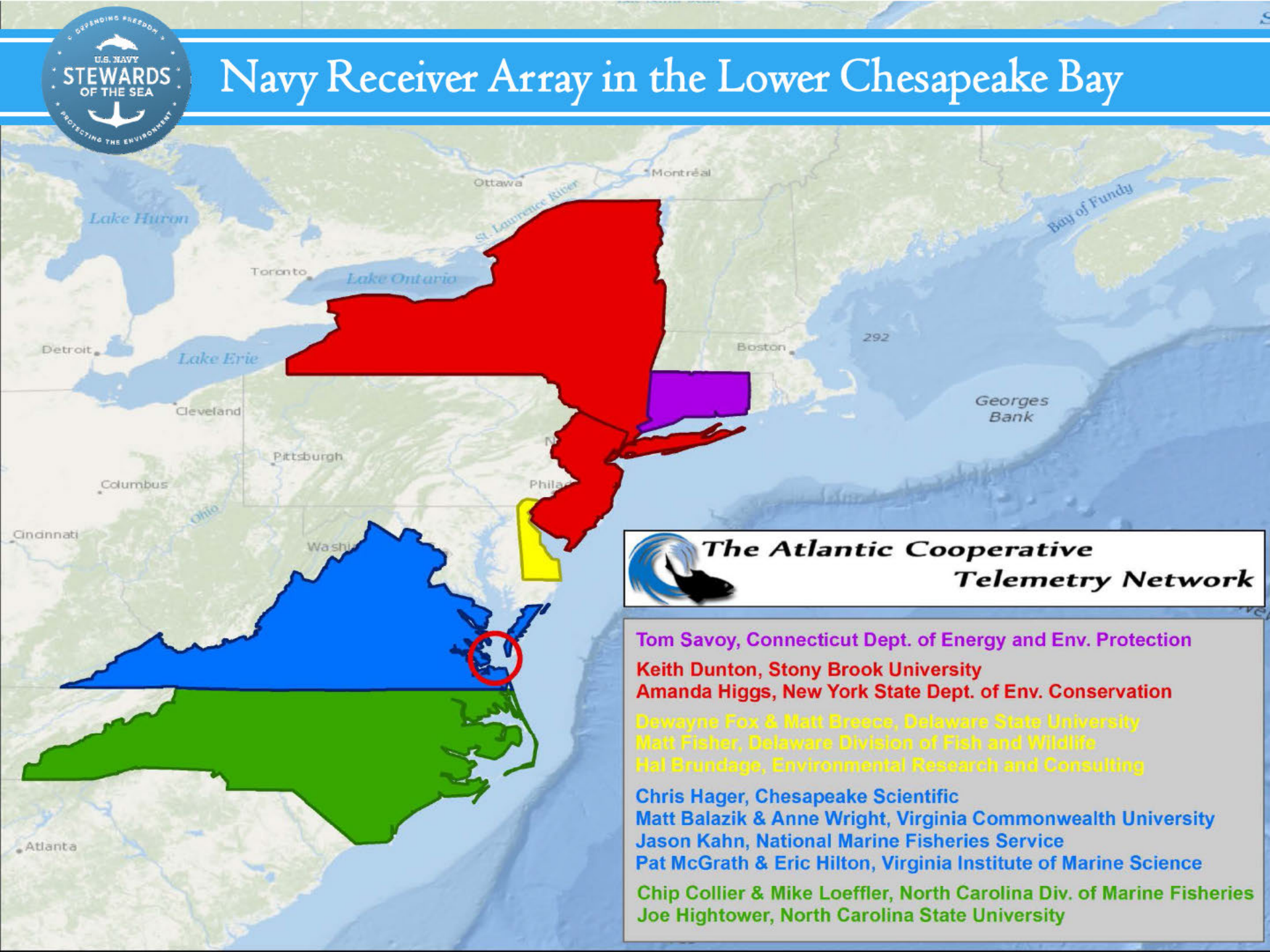


Navy Receiver Array in the Lower Chesapeake Bay

The data collected from the array will enable the Navy to determine:

- When sturgeon are present within the Bay
- What areas of the Bay they are utilizing
- How long sturgeon are staying at any given location within the Bay
- Their seasonal movement patterns
- Areas and periods of overlap between the Navy's and the sturgeon's use of the Bay

Navy Receiver Array in the Lower Chesapeake Bay



Tom Savoy, Connecticut Dept. of Energy and Env. Protection

Keith Dunton, Stony Brook University
Amanda Higgs, New York State Dept. of Env. Conservation

Dewayne Fox & Matt Breece, Delaware State University
Matt Fisher, Delaware Division of Fish and Wildlife
Hal Brundage, Environmental Research and Consulting

Chris Hager, Chesapeake Scientific
Matt Balazik & Anne Wright, Virginia Commonwealth University
Jason Kahn, National Marine Fisheries Service
Pat McGrath & Eric Hilton, Virginia Institute of Marine Science

Chip Collier & Mike Loeffler, North Carolina Div. of Marine Fisheries
Joe Hightower, North Carolina State University

Navy Receiver Array in the Lower Chesapeake Bay

From December 2012 through January 2014 the Navy's Chesapeake Bay receiver array had 156,545 detections of 679 individual fish:

Species	# of Fish Detected
Atlantic sturgeon†	359
Black drum	2
Blueback herring*	45
Green turtle*	1
Kemp's ridley turtle*	1
Lemon shark	1
Loggerhead turtle*	7
Sand tiger shark	107
Sandbar shark	19
Spiny dogfish	7
Striped bass	18
White shark	2

* Navy tagged; † partially Navy tagged

Navy Receiver Array in the Lower Chesapeake Bay

NAVFAC

United States Fleet Forces Command

National Oceanic and Atmospheric Administration NOAA U.S. Department of Commerce

U.S. Fish & Wildlife Service

USGS science for a changing world

NASA

Connecticut Energy Environment

Delaware Department of Natural Resources and Environmental Control

District Department of the Environment

Maine DMR Marine Resources

Maryland Department of Natural Resources

MassDEP

North Carolina Marine Fisheries

Virginia Aquarium

Virginia Department of Game & Inland Fisheries

Delaware State University

East Carolina University

North Carolina State University

Stony Brook University

University of Delaware

University of Maryland 1856

University of Massachusetts Dartmouth 1895

West Virginia University

Virginia Commonwealth University MCV RPI 1838

William & Mary VIMS Virginia Institute of Marine Science School of Marine Science

Information on the U. S. Navy's Environmental Initiatives

U. S. Navy Stewards of the Sea
https://www.facebook.com/USNavyStewardsoftheSea

U. S. Navy Marine Species Monitoring Program
http://www.navymarinespeciesmonitoring.us/

U.S. Navy Living Marine Resources Program
http://www.lmr.navy.mil/

Office of Naval Research Marine Mammals & Biology Program
http://www.onr.navy.mil/Science-Technology/Departments/Code-32.aspx

U. S. Navy Energy, Environment, and Climate Change
http://greenfleet.dodlive.mil/environment/