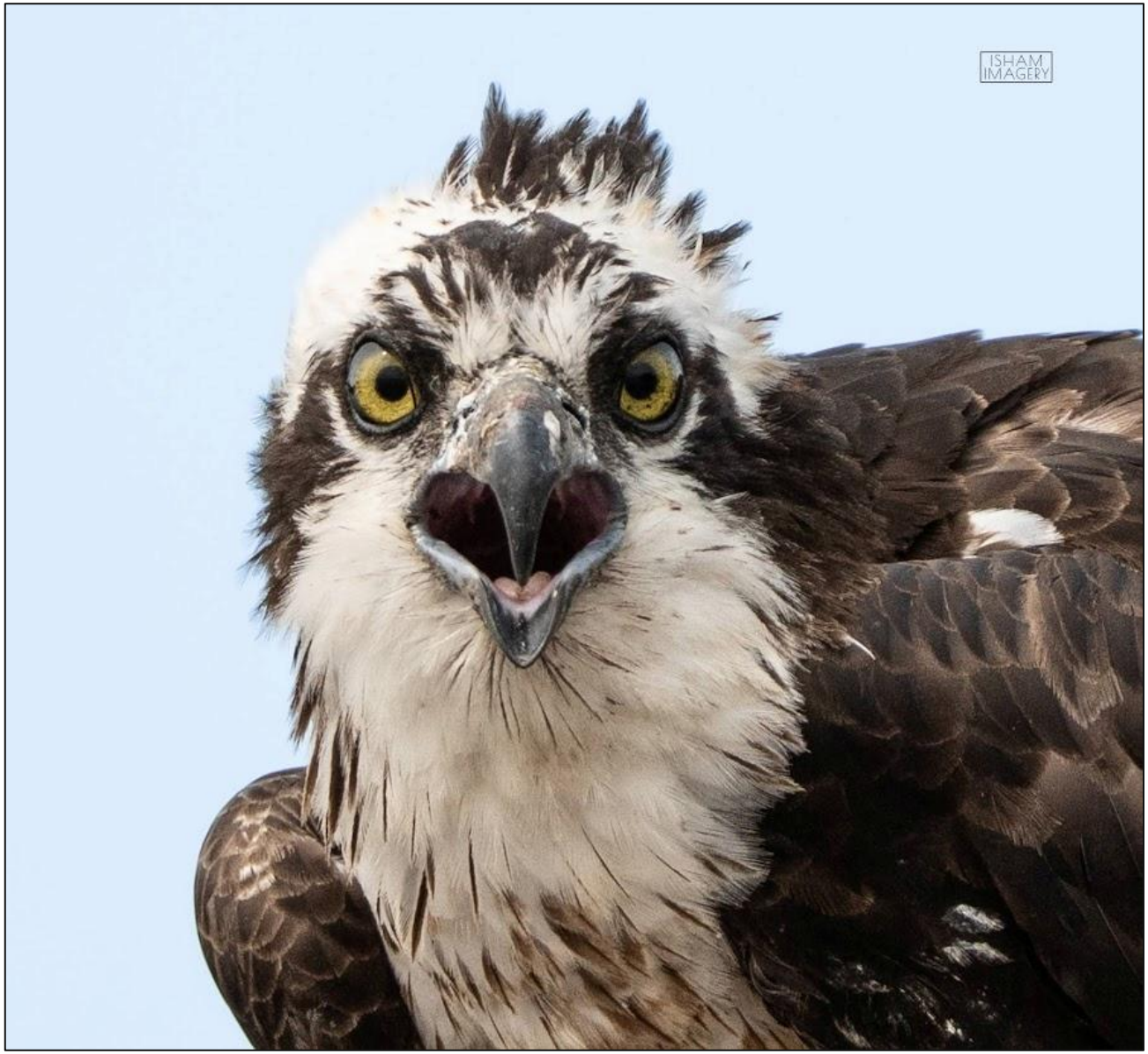
Ospreys in The Severn River Watershed

Dr. Ken Green
President

Arundel on the Bay Community

March 2026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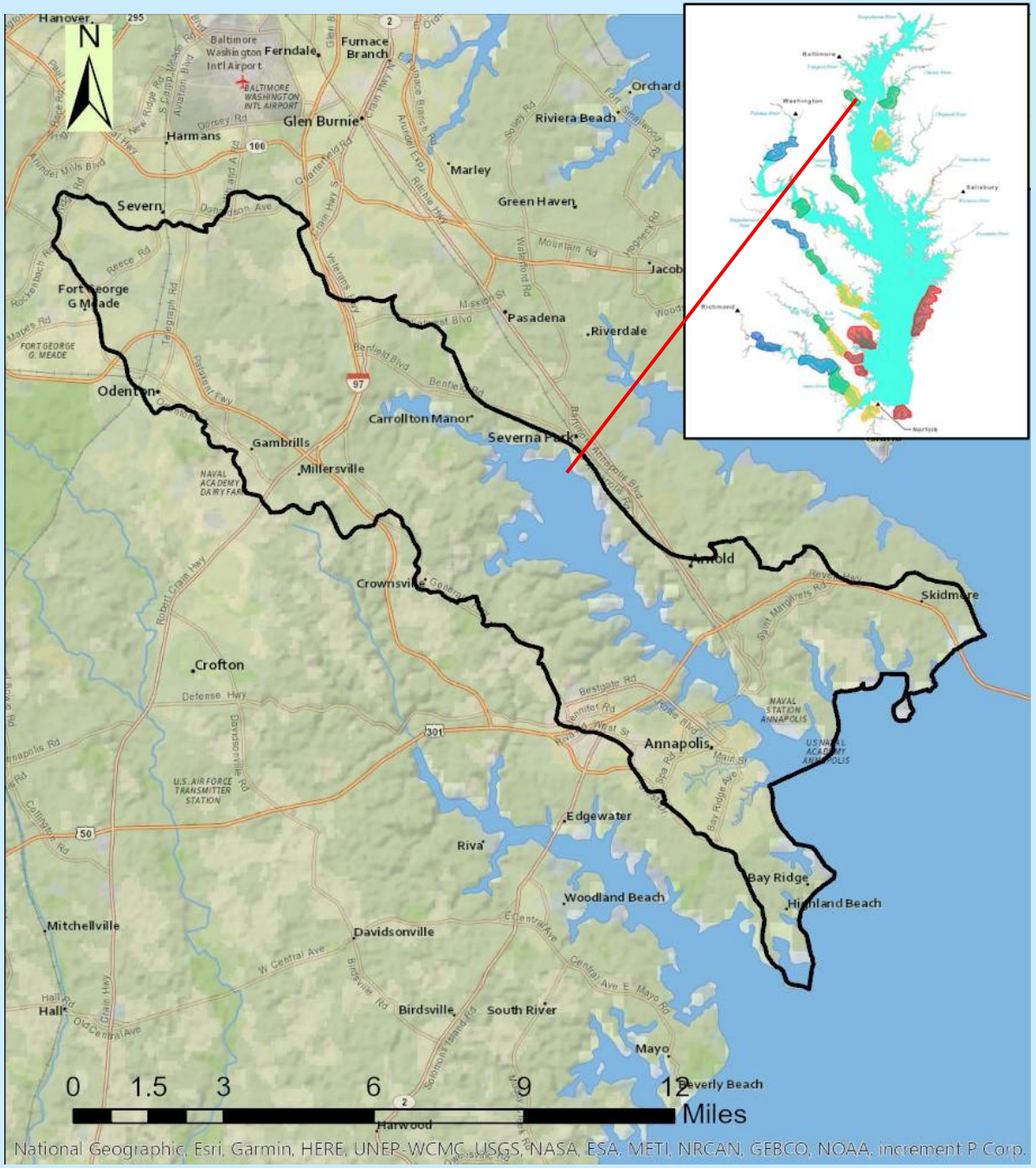
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Arnold
Skidmore
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NAVAL STATION ANNAPOLIS
Annapolis
U.S. AIR FORCE TRANSMITTER STATION
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South River
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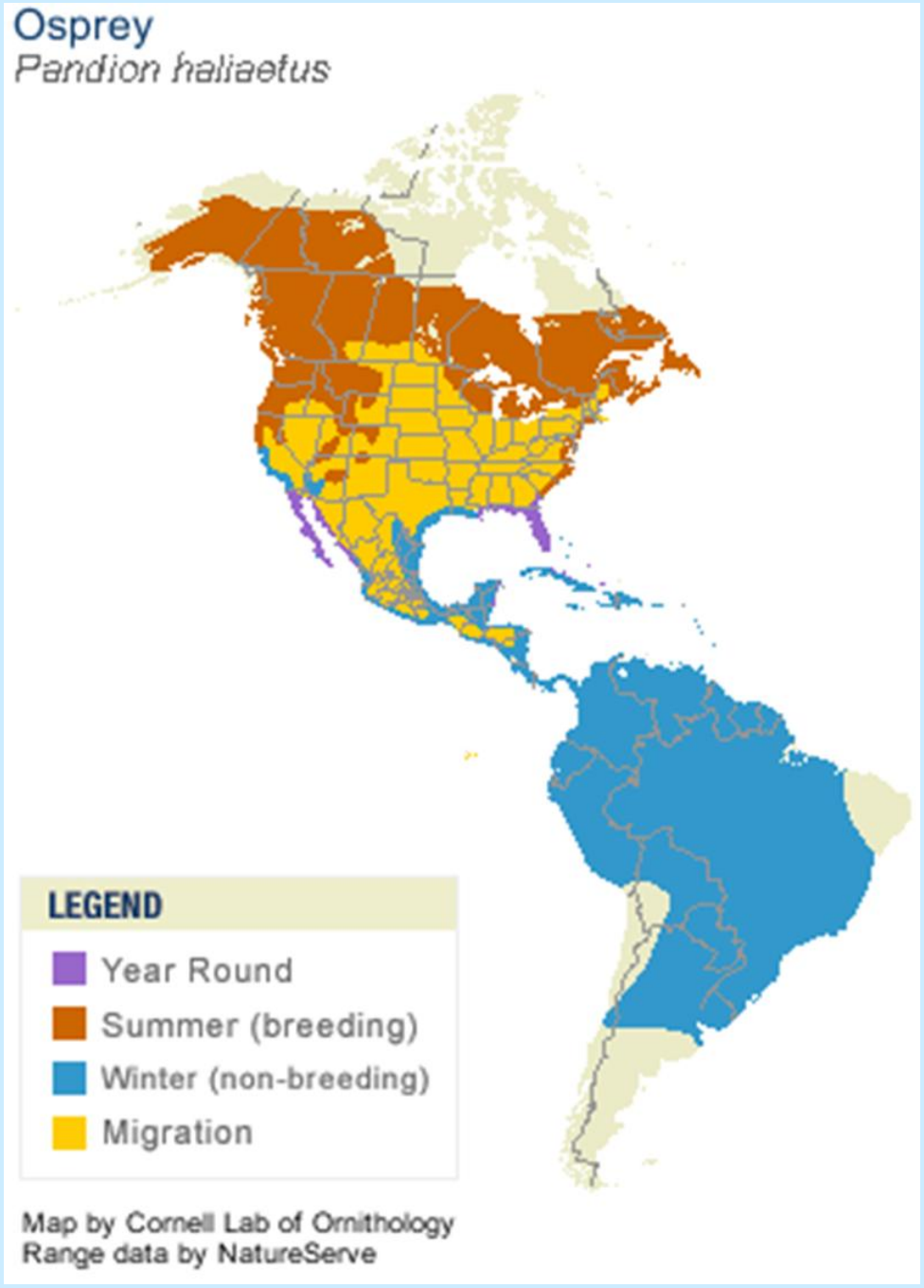
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.


Osprey
Pandion haliaetus
LEGEND
Year Round
Summer (breeding)
Winter (non-breeding)
Migration
Map by Cornell Lab of Ornithology
Range data by NatureServe

Mission Statement

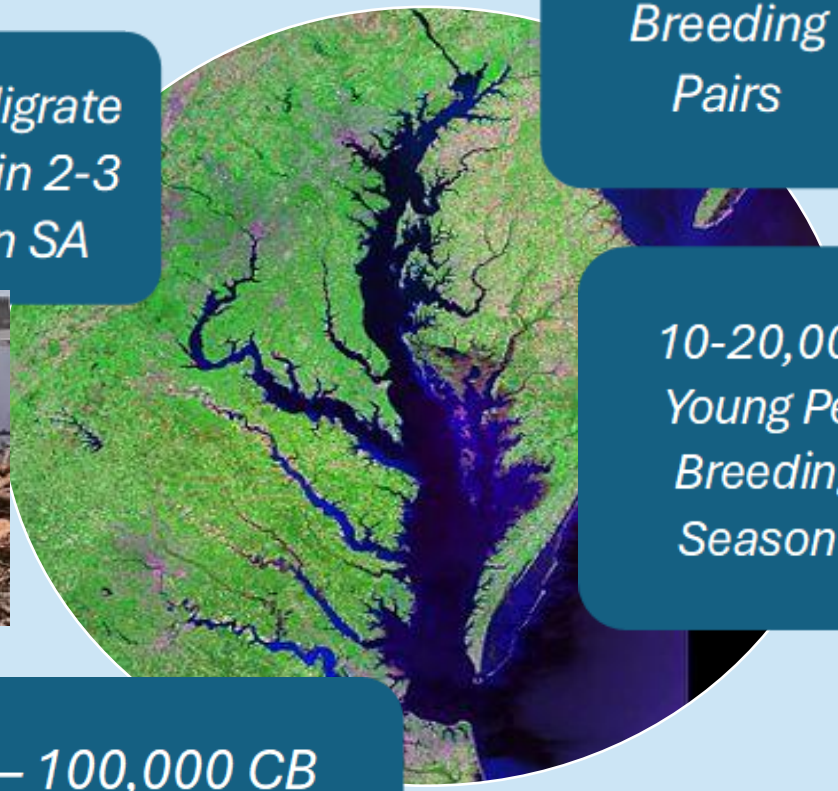
Conduct annual Osprey nesting and population ***Survey*** in the Severn River watershed. ***Engage*** and ***Educate*** the public about Osprey migratory life and behaviors. The Osprey serves as a touchstone of the health of our aquatic ecosystem since their survival is completely dependent on harvesting fish from our waters.

The Chesapeake Bay Osprey Garden – 25% World's Population

10-12,000 Breeding Pairs

20-24,000 Adult Birds

Young Migrate & Remain 2-3 Years in SA



10-20,000 Young Per Breeding Season*

70 – 100,000 CB Osprey Annually Winter in SA*

Osprey Behavior

Nest Building

A nesting pair often return to the same nest site for the next breeding season. The male first around mid March. The female follows within a week or two and they reacquaint with each other through a long established greet and meet ritual.

Osprey Behavior
Mating

The male lands on the female back and pairs copulate 100-200 times for each clutch.

Osprey Behavior

Egg Laying & Incubation

Egg laying takes place between March and April and the female is on the nest almost nonstop for 8-9 weeks. The male works from dawn to dusk providing fish to the female during her incubation period.

Osprey Behavior

Tending to the eggs

As a 24/7 hausfrau, the female keeps her young warm on cold days, cool on hot days and dry on rainy days

Osprey Behavior
Hatching & Chicks

The chicks hatch from the end of May through June. The female helps the chicks emerge from the eggs and begins to tear small bites of fish delivered by the male to place into their tiny beaks.

Osprey Behavior
Fledglings

Rapid growth of the young require more fish. At first the female must rip pieces of fish to feed the Nestlings until they are big and strong enough to feed on their own.

Osprey Behavior

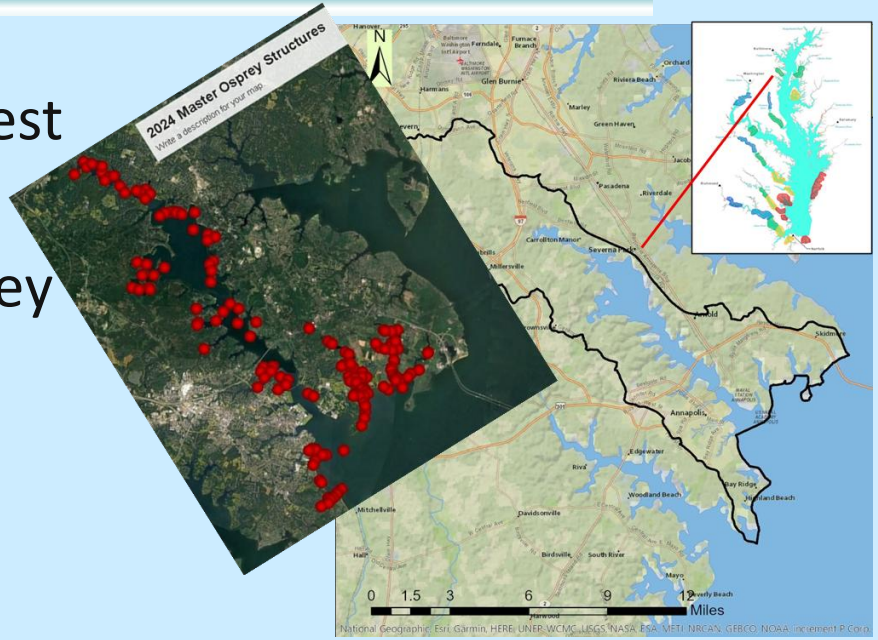
Juveniles

Juveniles flap on their nests until they muster the courage to fly off. Early flight consists of short excursions away from the nest and back again. By the end of June and early July, these Juvies can take longer excursions often perching in nearby trees and on sailboat masts. On these training flights, they continuously screech for attention from their moms.


Jul 19 2025 01:22:01 PM

Our Program in the Severn River Watershed - Chesapeake Bay

- Operation Osprey has conducted nest surveys since 2023
- Identified & mapped over 180 osprey nest structures
- Focused on 60 “occupied” nests for 2025 season
- Monthly visits March to September to track eggs & chicks
- Enlisted over two dozen waterfront property stewards
- Installed webcams for round-the-clock monitoring



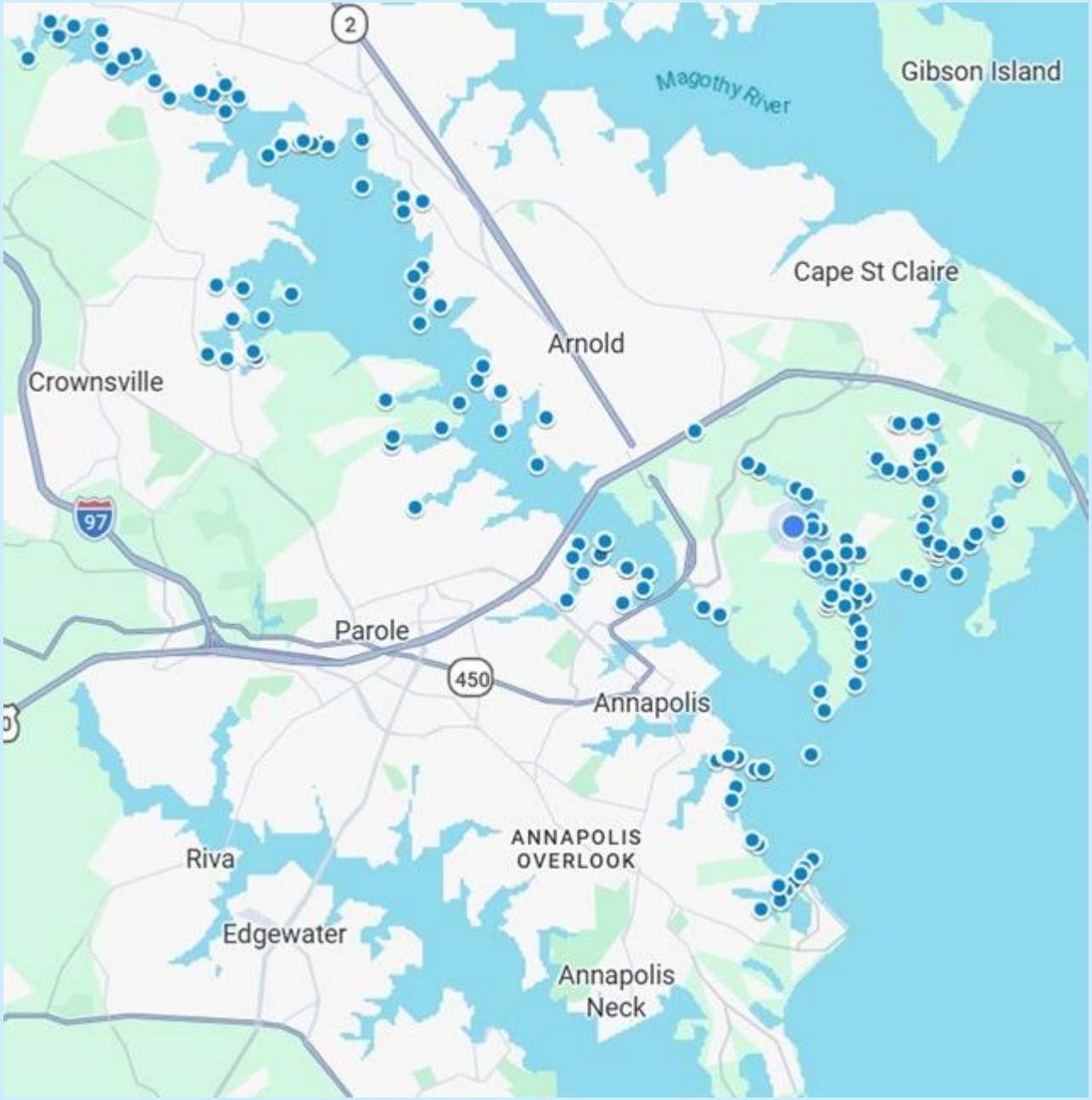
Data and Monitoring Manager

Kingten Osprey Fellow
Fish Ecologist

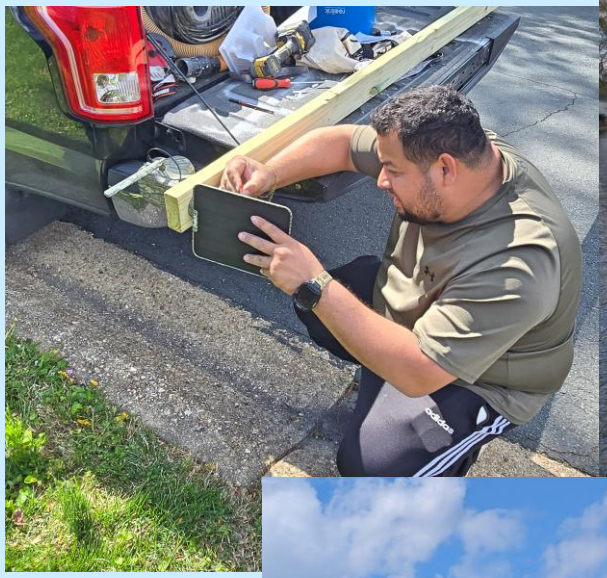
Operations & Outreach Coordinator

Water Quality Data Manager


10


2
Magothy River
Gibson Island
Cape St Claire
Arnold
Crownsville
97
Parole
450
Annapolis
ANNAPOLIS
OVERLOOK
Riva
Edgewater
Annapolis
Neck

Osprey Stewards – Install Cameras

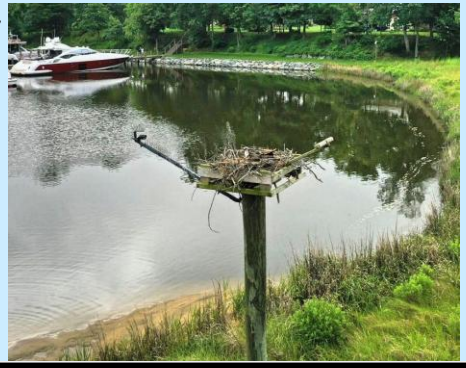


Osprey Stewards – Install Cameras

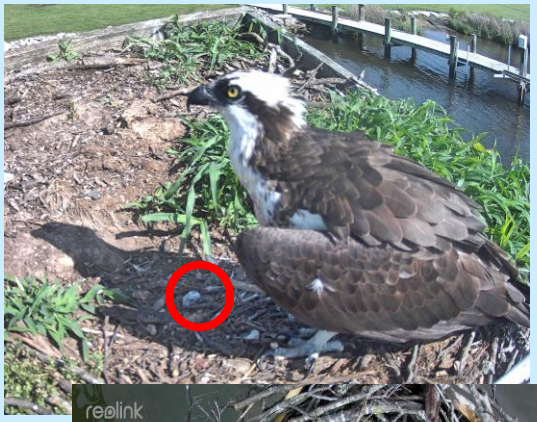
Engagement— 2024 Travel to Colombia

Our Osprey Activities

- Tested drone flights to assess the practicality of observing inaccessible nests
- Replaced dilapidated Steward nest boxes
- Educated the public via media outlets about the monitoring program
- Analyzed hundreds of nest fish delivery videos to ID prey type
- Integrated other NGO water quality data for trend analysis
- Partnered with Colombian birders for wintering data



2025 Survey Highlights

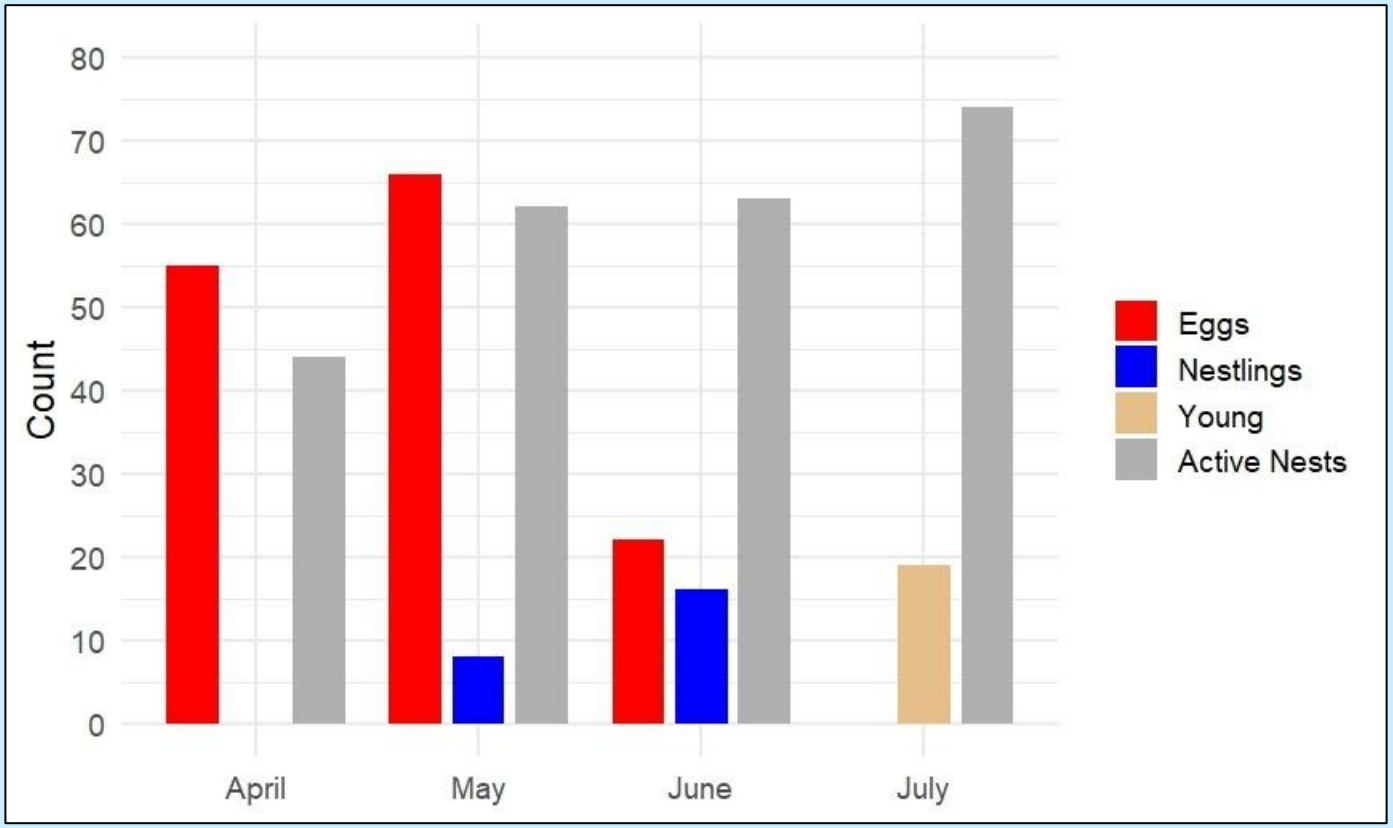


Surveys from March to July revealed a concerning trend :

- ❖Delayed egg and chick production,
- ❖ abandoned nests,
- ❖and low young survival ,

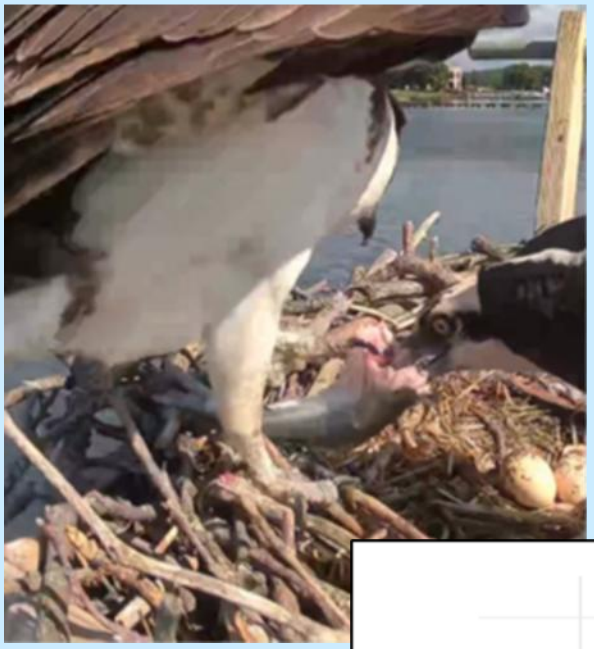
LESS THAN ONE-THIRD OF ACTIVE CCB NESTS CONTAINED YOUNG, INDICATING A RELATIVELY LOW REPRODUCTIVE RATE PRIMARILY DUE TO NEST FAILURE.

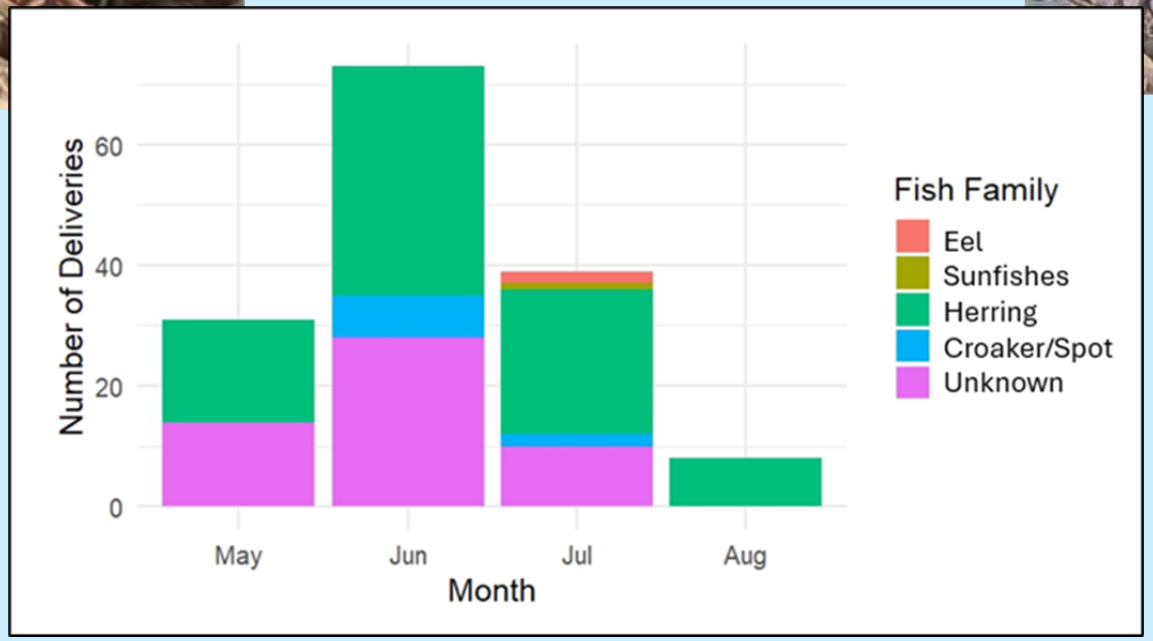
2025 Survey Highlights



2025 Fish Nest Study

2025 Fish Nest Study



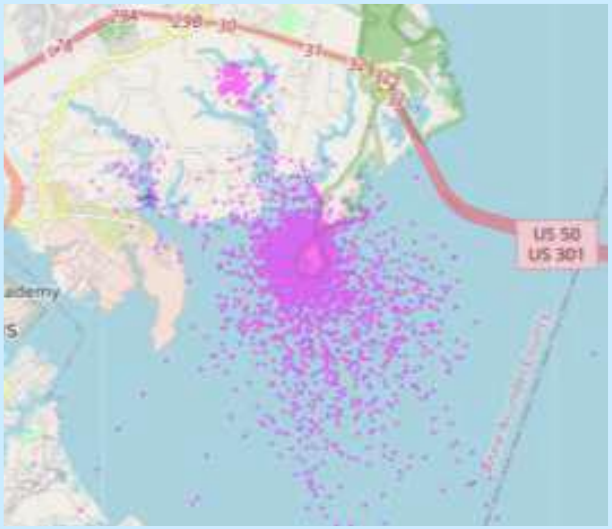


Osprey Migration

Banding, satellite tracking and field observations provide a wealth of migration information on our Ospreys. The Ospreys start their early fall Bay exodus flying down the east coast to Florida, then to Cuba, Hispaniola, and Puerto Rico. They then cross over the Caribbean to winter from Central America across to Colombia, Venezuela, the Guyana's and into Brazil. Tracked Ospreys from the Bay are known to travel greater than 3,000 miles even winter in Amazon river basin.

Whitehall Bay to South America

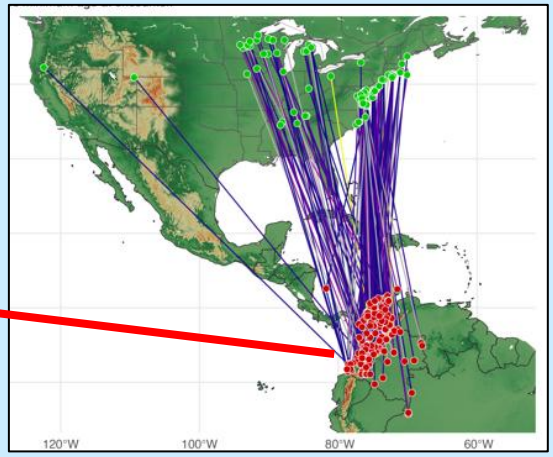
Hackett

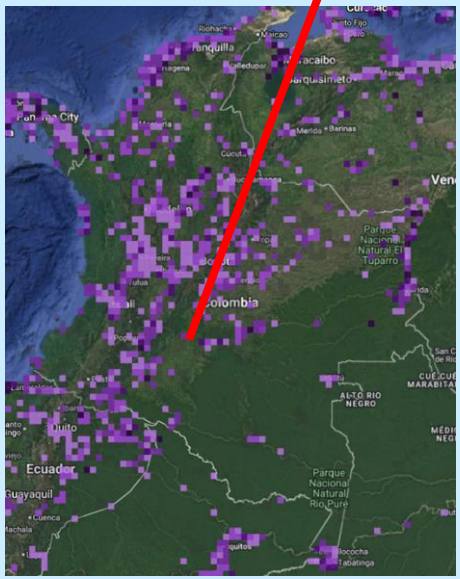


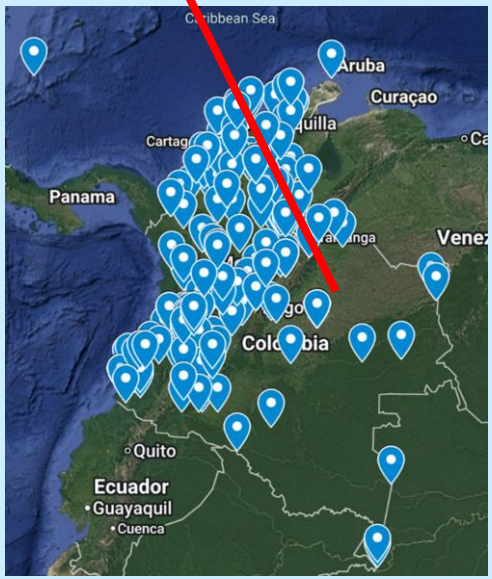
Holly

Osprey Band Recoveries & eBird

- Extracted 500 BBL Osprey encounters from N. America to South America
- 200 BBL encounters Colombia
- Downloaded raw and abundance eBird data for nesting & wintering seasons

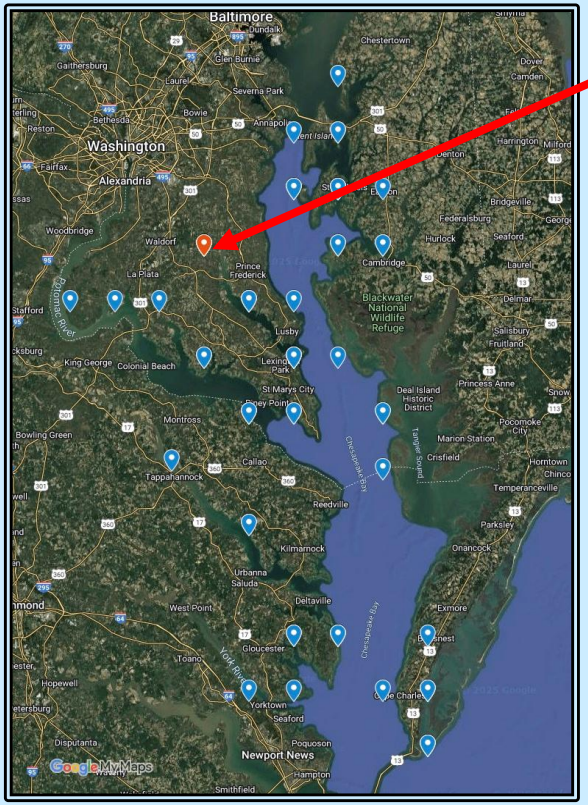






Osprey Band Recoveries Chesapeake Bay to Colombia

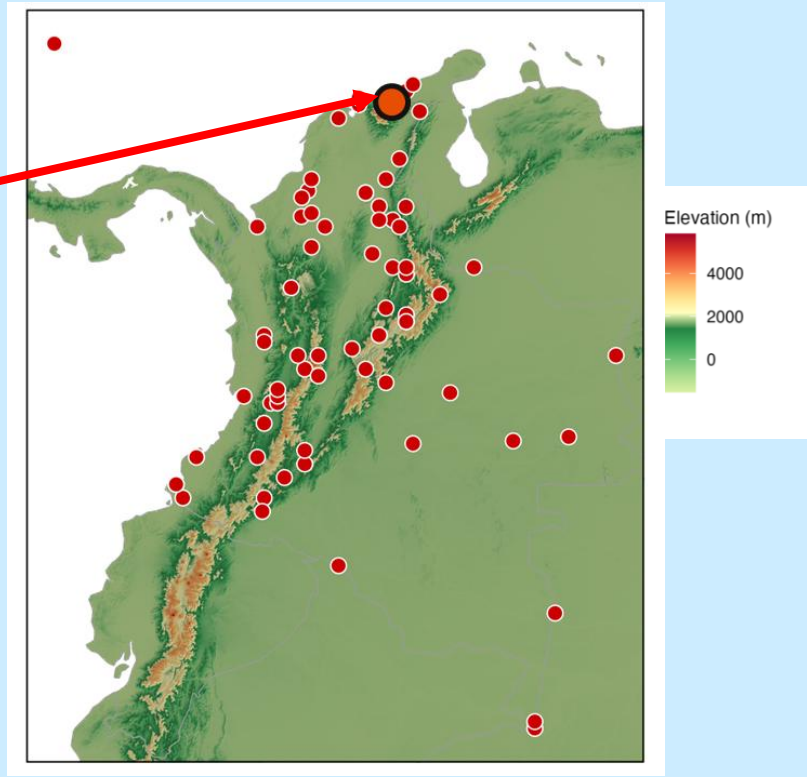
Banding location



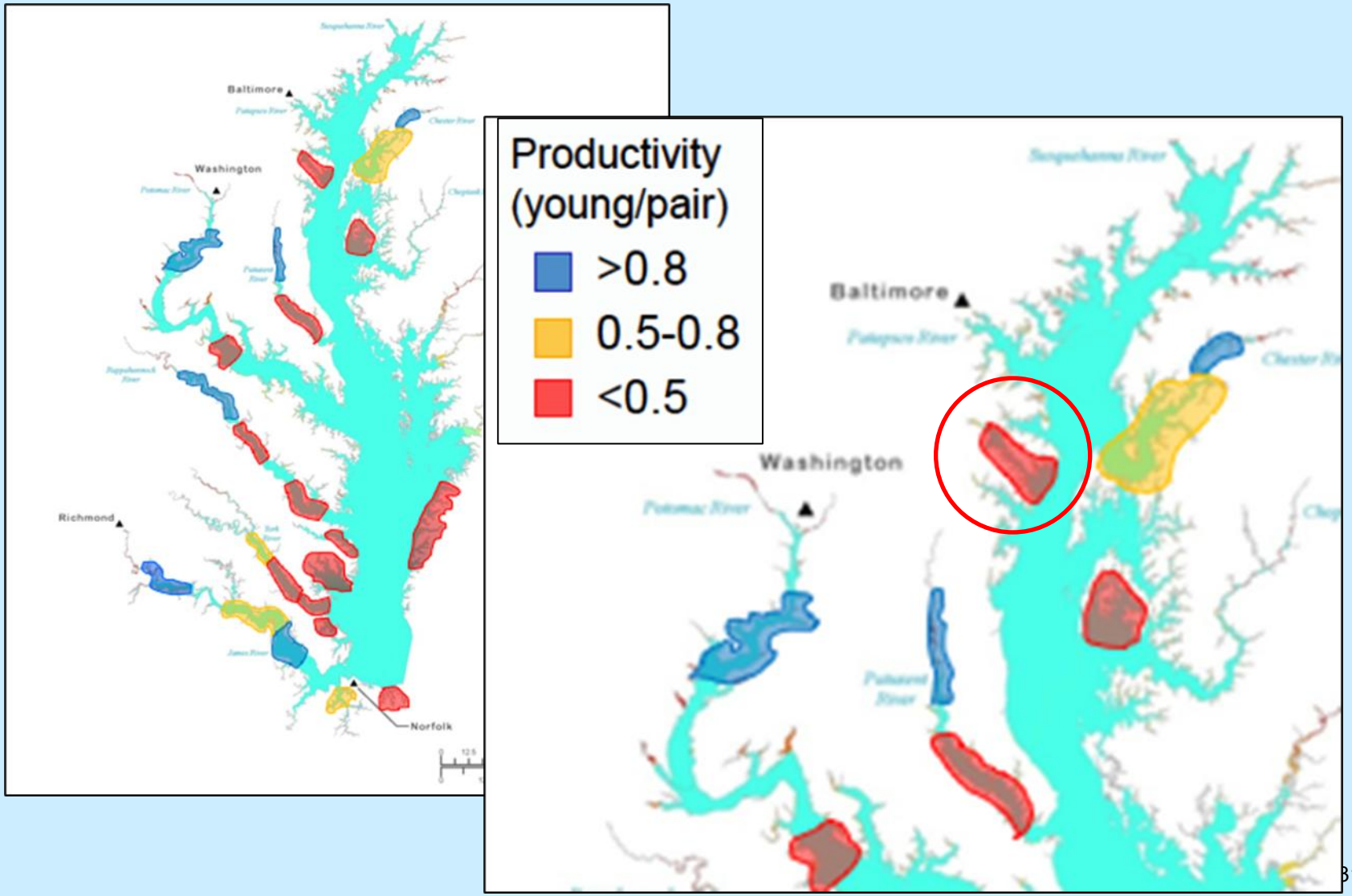
Banded as a chick in the Upper Patuxent Watershed June 12, 1998

Encountered dead August 18, 2014
Minimum age 16 YO

Encounter location



2025 Bay Study 23 Sites



Current Osprey Survival Concerns

Breeding season failures have been documented throughout monitored locations. What is causing the lower reproductive rates we have become accustomed to seeing? 3 factors are driving failures, (i) decreased Osprey reproduction because of reduced fish stocks, (ii) predation, and (iii) climate change.

If the food source—fish stock—decreases, adult Osprey may not be able to provide sufficient food to the chicks and young as they grow in the nests. The William and Mary Center for Conservation and Biology have studied the Bay Osprey for more than 25 years

In 2023 2024 and 2025, Osprey reproductive rates dropped to their lowest level in decades. The cause is not chemicals but hunger with chicks starving in their nests due to a lack of the small, high-fat forage fish the Atlantic menhaden. Conservationists say those menhaden declines are due to overfishing by a single company Omega Protein, based in the lower Bay.

By Gregory S. Schneider

September 22, 2024 at 6:00 a.m. EDT

The Washington Post

Mystery of disappearing ospreys might have controversial explanation

A new study suggests osprey chicks are starving in parts of the Chesapeake Bay because of a lack of menhaden primary source of food but also a major industry.

The Last Front in the Battle to Save the 'Most Important Fish' in the Atlantic

Fishermen, environmentalists, and residents say the Chesapeake Bay's menhaden population is likely suffering. The last big company that's catching them disputes the evidence and is pushing back.

BY LISA HELD • FEBRUARY 20, 2024

Mark Robichaux

It's the 'most important fish in the sea.' And it's disappearing.

The Washington Post

November 20, 2025










© Terry Sohl


Environmental Drivers in the Severn River

Prey Base & Food Web Effects

Reduced Forage Fish

- Atlantic menhaden
- Shad
- River herring
- Other estuarine forage species

Fish Relocation or Decline

- Movement to cooler/deeper waters
- Avoidance of hypoxic zones
- Population depletion from fishing pressure

Food Scarcity & Provisioning Constraints

Osprey Impacts & Reproductive Outcomes

Adult Stress

- Increased energy expenditure
- Reduced body condition
- Delayed return trips
- Nest abandonment risk

Chick-Level Effects

- Starvation
- Uneven brood survival
- Slower growth rates
- Increased exposure mortality

Final Outcomes

Fewer Chicks

- Fewer chicks fledged
- Lower productivity per nest

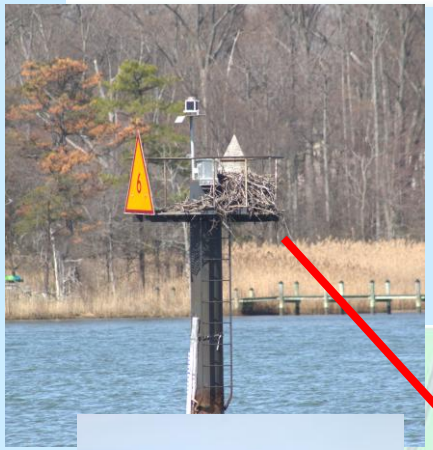
High Nest Failure

- Higher nest failure rates
- Long-term population instabllity

Innovative 2026 Plans

- Trap and attach e-obs GPS trackers to 10 adults
- Integrate WQM data into Osprey surveys
- Expand Nest Camera coverage
- Continue Nest Fish Delivery analysis
- Link specific bird foraging patterns to GPS transmitters
- Gather supplemental fish presence and availability information from commercial waterman and fish guides
- Explore options for incorporating DNR harvest data

Arundel on the Bay Stewards Brigade




RECENTLY AWARDED BY THE
State
WHOLE WATERSHED PROGRAM
Managed by a Multi-Departmental Management Team
Innovative Nature-Based Restoration & Conservation
Community Outreach & Engagement
THE SEVERN
Restoring Shallow Water Habitats, Wetlands & Shorelines
Sustain Healthy Fisheries
Enhance Ecosystem Resilience
Improve Wildlife Habitats


REEDVILLE, VA OPERATIONS
6 AIRCRAFT
9 VESSELS
46,000 ST FISH MEAL
8,000 MT FISH OIL
>$100 MILLION
ECONOMIC IMPACT
$23 MILLION
PAYROLL / BENEFITS
260 OMEGA / OH EMPLOYEES
250 INDIRECT EMPLOYEES


PROMEGA


Fish Oil
Liquid
Omega-3
Dr. TOBIAS
OPTIMUM
OMEGA3
FISH OIL
NOW
Super
Omega
3-6-9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Cooke
CANADA
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SCOTLAND
MORUBEL
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Figure 1-1: Tier 1 Study Selected Corridor Alternative

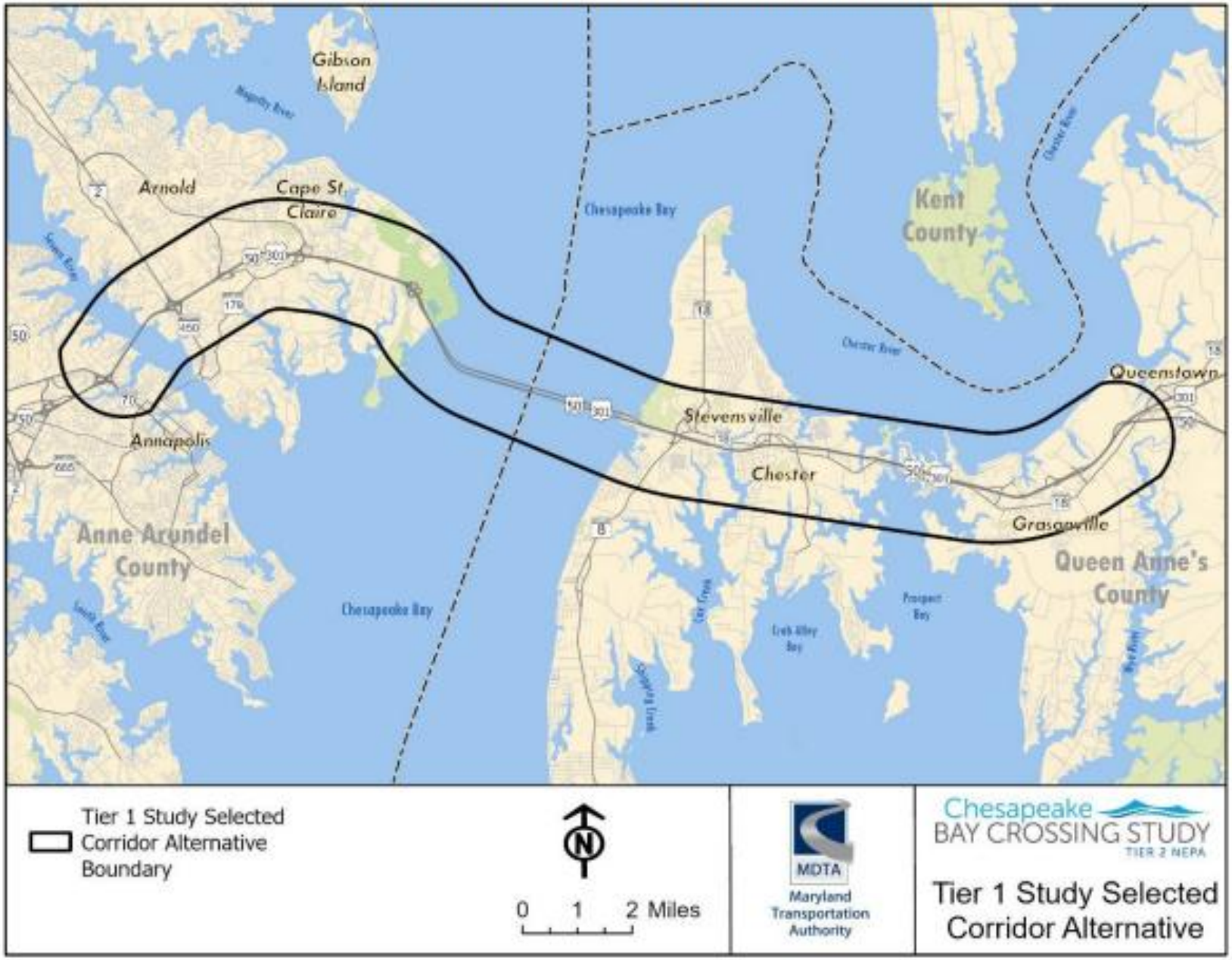
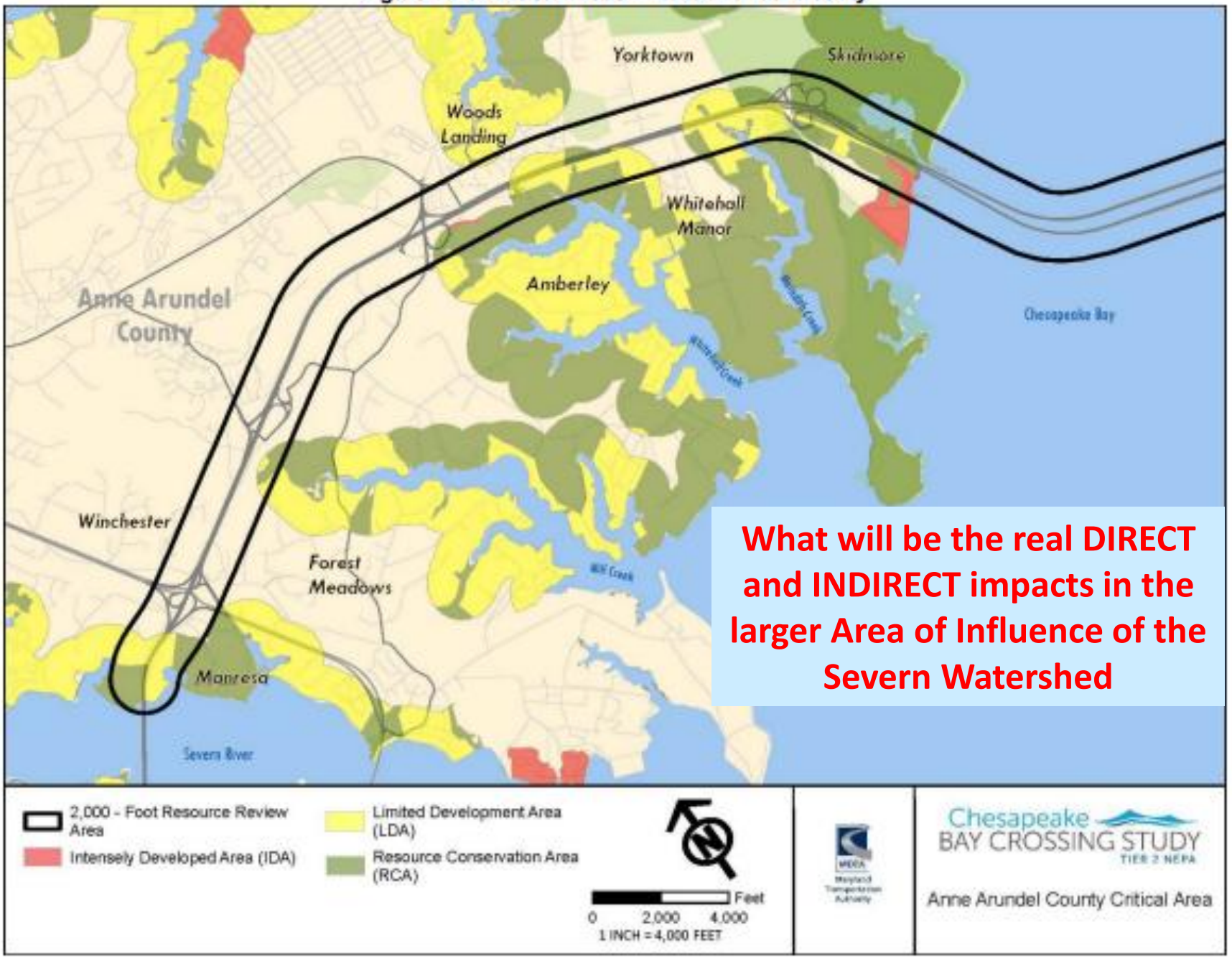


Figure 12-1: Critical Areas – Anne Arundel County



What will be the real DIRECT and INDIRECT impacts in the larger Area of Influence of the Severn Watershed

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https://operationosprey.org/