



Ducks Unlimited Canada

Landscape-scale Restoration : Coastal Systems, Fish Connectivity and Wetlands



Ducks Unlimited Canada

Who we Are

DUC Mission – Conserves, restores and manages wetlands and associated habitat for waterfowl. These habitats also benefit other wildlife and people

Priorities –

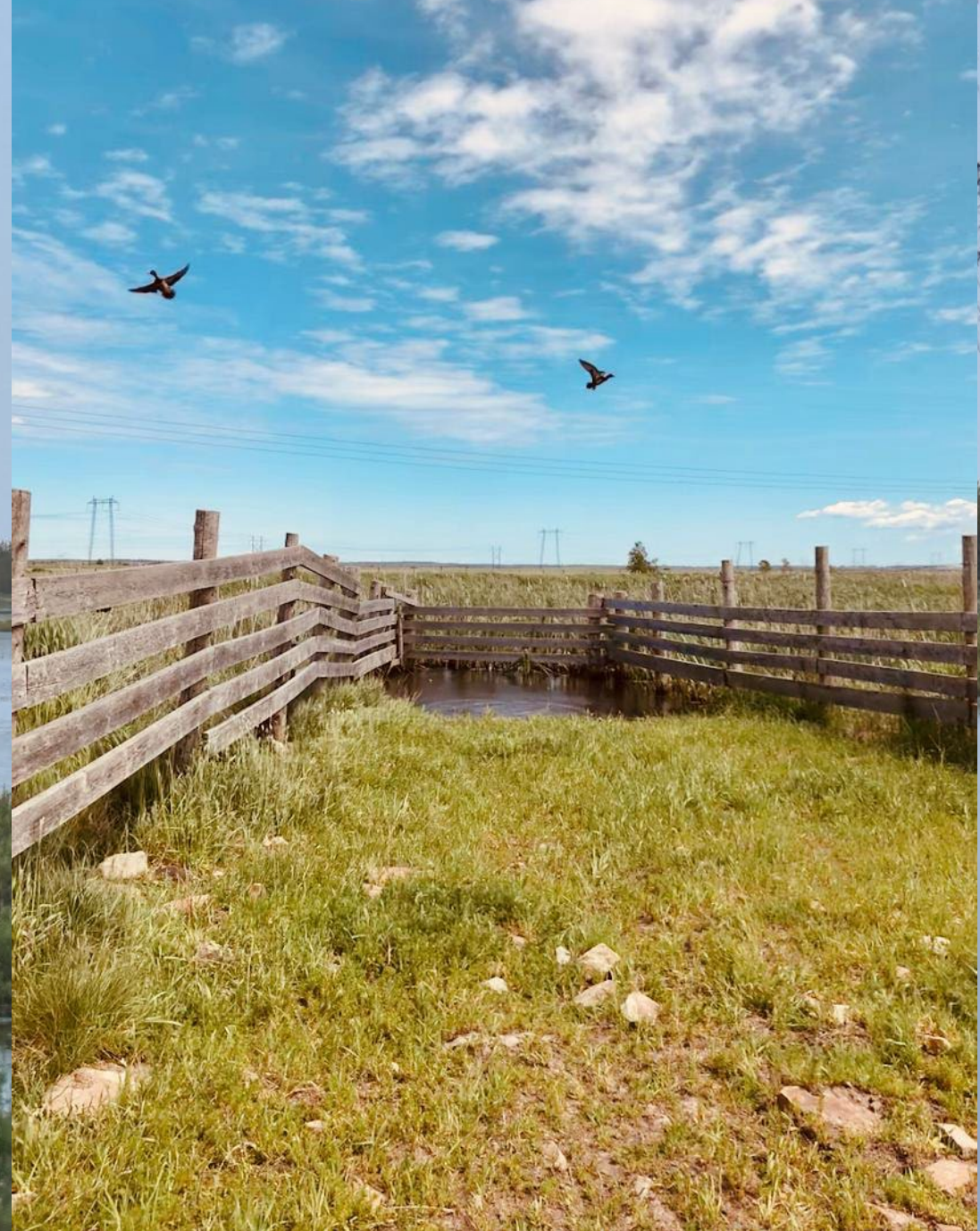
- Wetland Conservation – Restoration, Securement, Management
- Public Policy – Federal and Provincial Wetland Policies
- Research – Science Based Conservation
- Education – Public Environmental Immersive Education



Ducks Unlimited Canada

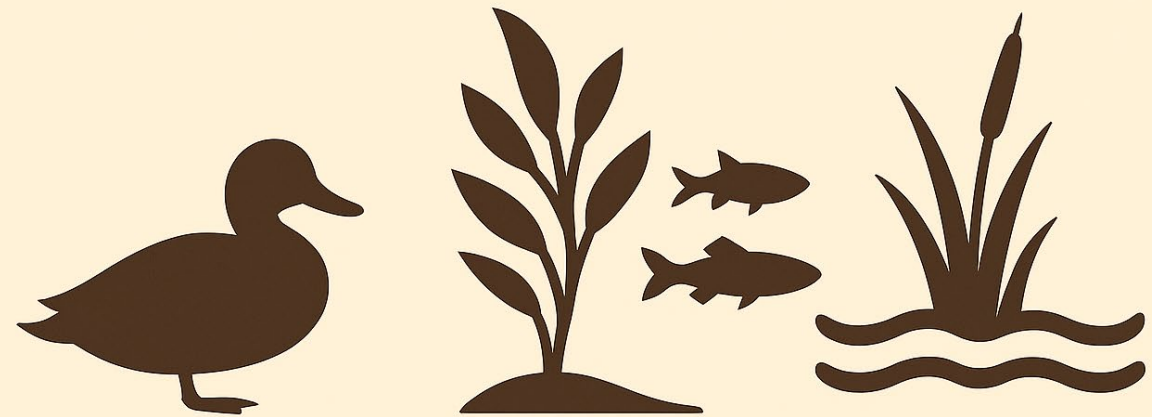
What we do

- Restore wetlands – big and small
- Manage habitat for maximum productivity
- Secure Habitat for long term protection





More than
Ducks!



**MORE THAN JUST
DUCKS**



Salt Marsh Restoration

Learning as we go:

Long-term monitoring with (UNB, Mt. A.)

- Sediment, elevation, and water levels
- Plants, inverts, and fish (salt pools)
- Abiotic conditions (pH, DO, salinity, etc.)
- Carbon storage and source
- Compare restorations to reference saltmarshes
- Compare between B of Fundy and N. Strait

Many student projects – Mitacs Accelerate



Salt Marsh Restoration

Examples of research themes

- Fish Usage (UNB)
 - Understanding fish species, stage, when, why (stomach content/isotopes)
 - Hydroperiods of salt marshes and creek/pool connectivity
- Carbon storage (Mt.A, UNB, ECCC)
 - Cores
 - Accretion (marker horizons, core dating Cs/Pb)
 - Source of carbon (stable isotope analyses)
 - Gas Flux (EC towers - starting)



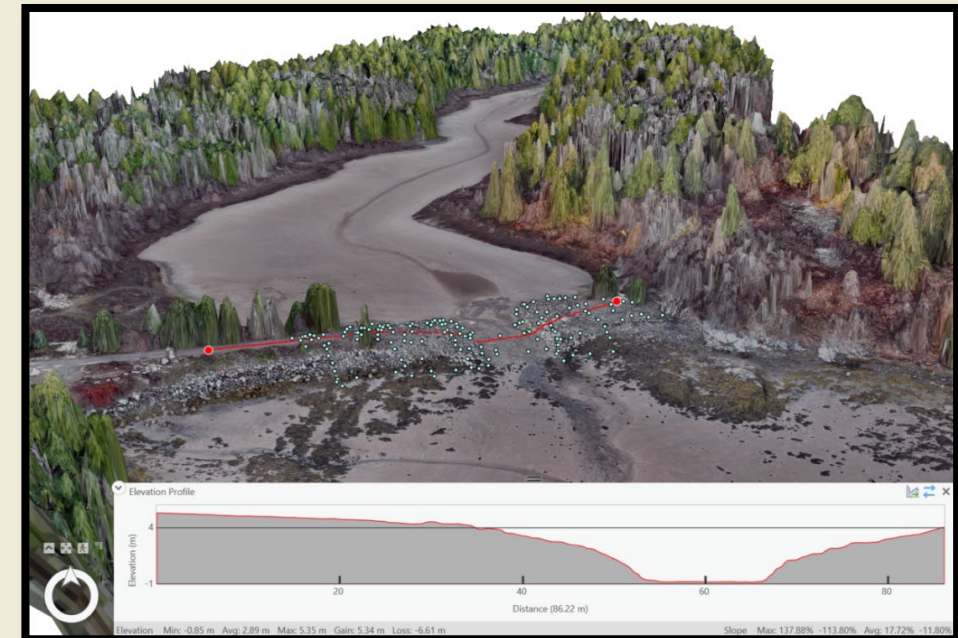
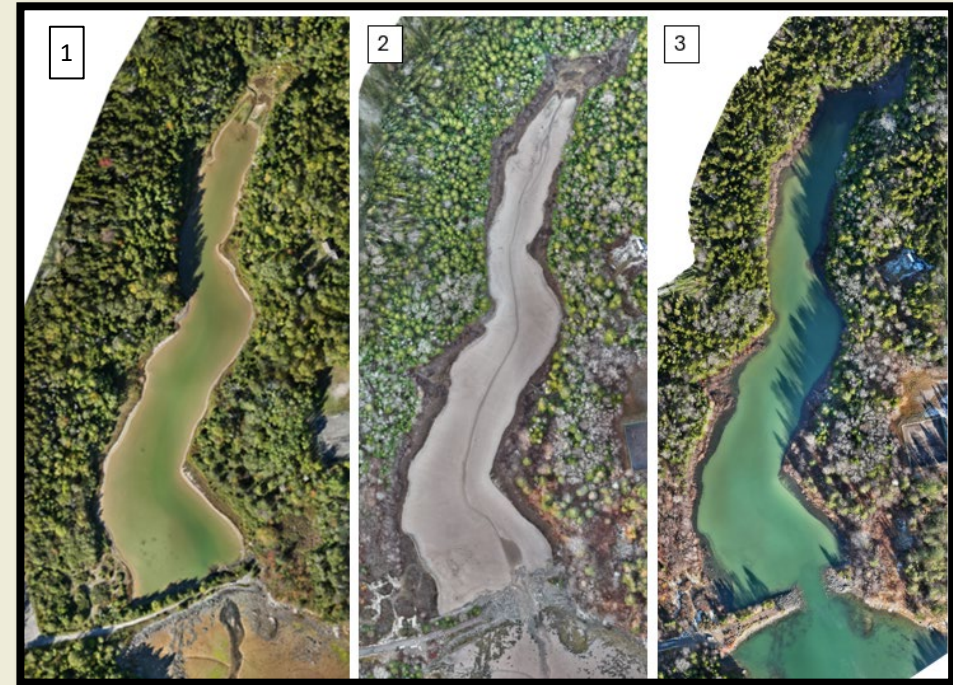
Ollerhead et al. 2024 – carbon results for Musquash



Campobello Island

Fish barrier removal

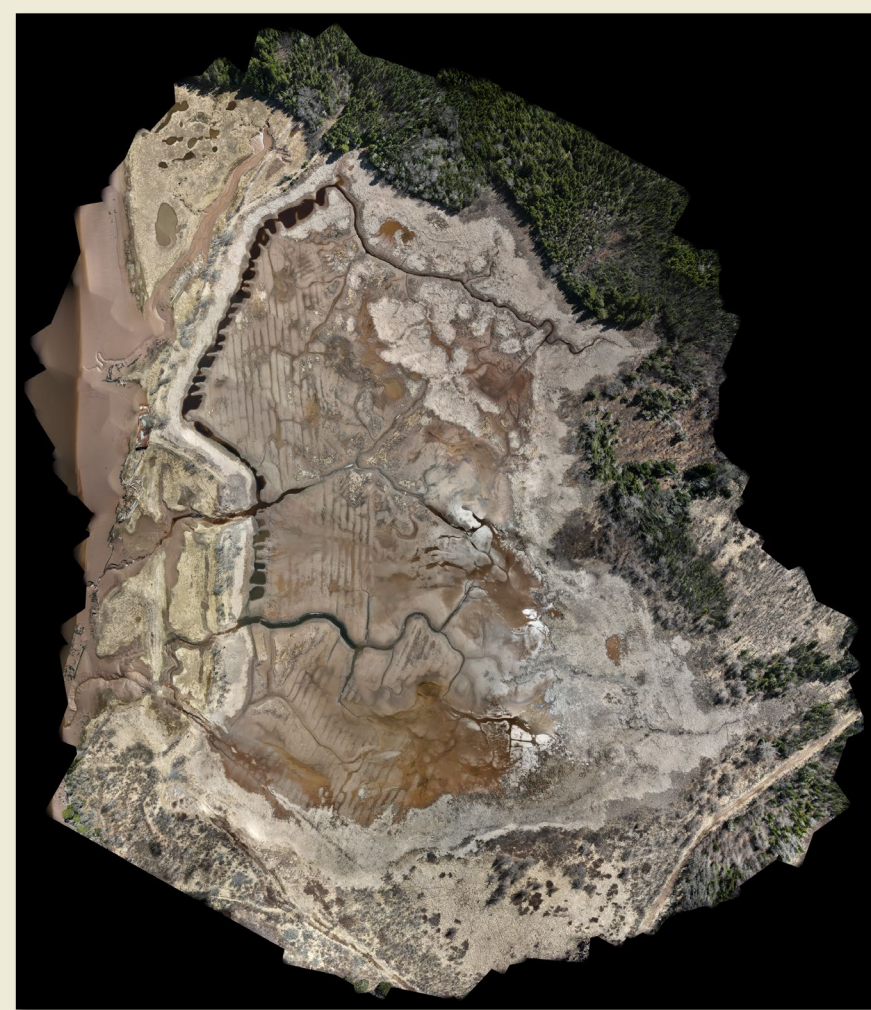
- Reinstating connectivity to 21,800 m² of habitat upstream
- Restoring intertidal mud flat
- Increased coastal wetland and functions
 - Storm surge interceptions
 - Fish habitat



South Musquash

Coastal Wetland Restoration – 12 ha

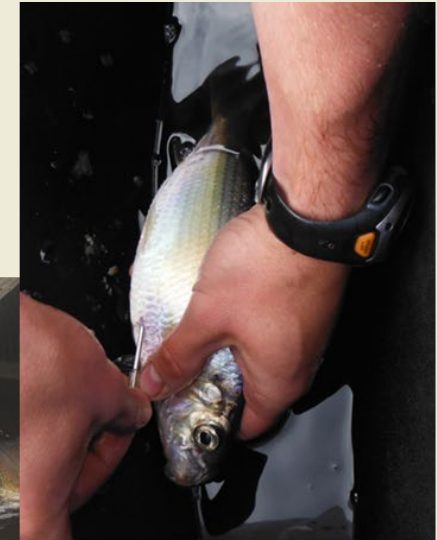
- Fish and wetland benefits
- Restoration activities began in 2024
- Long-term Monitoring with University of New Brunswick



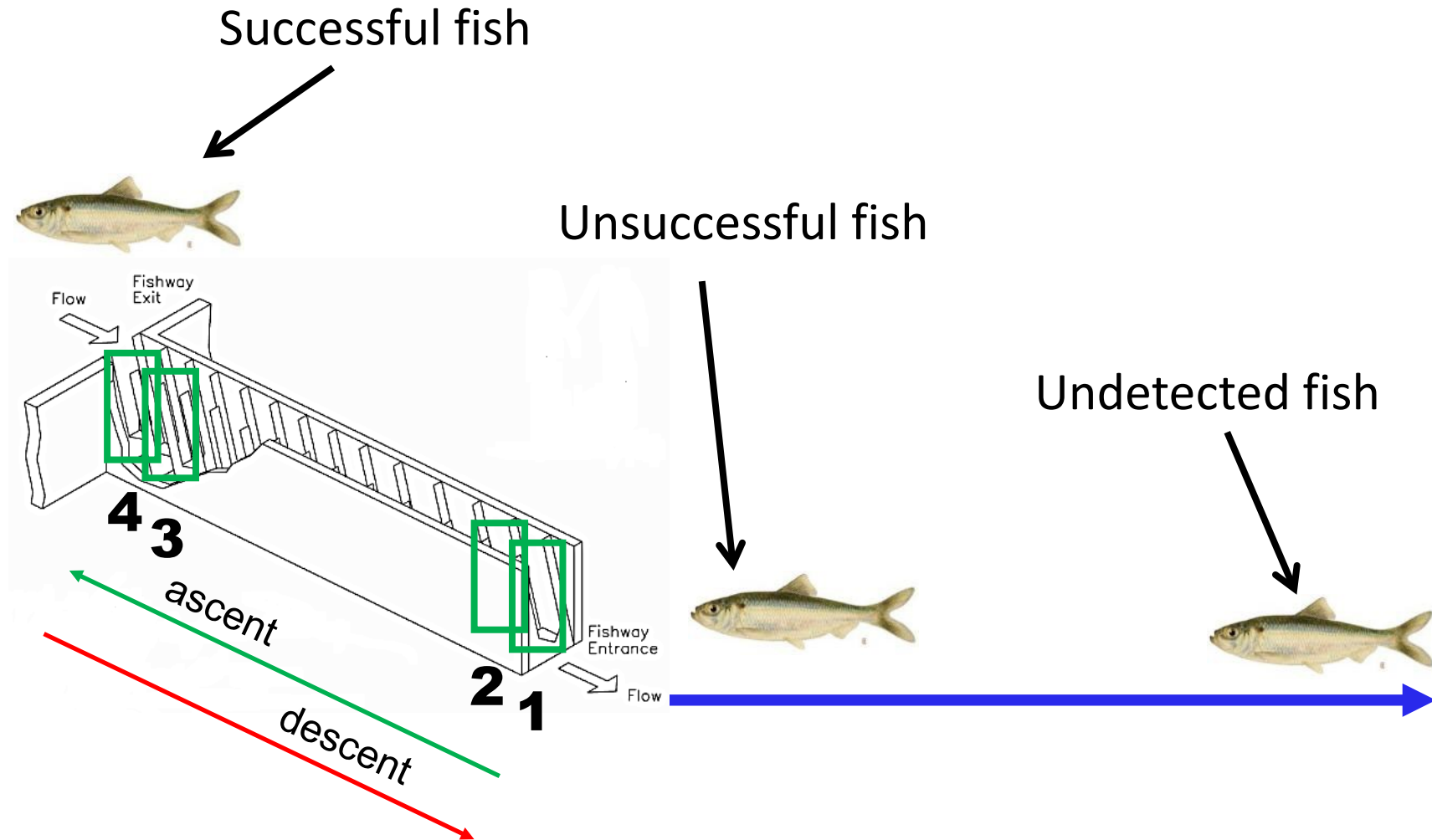
Alewife Research

Fish passage

- Improve management of ~150 fishways in Atlantic
- Assess passage, timing of migrating fish
- Tagged >16,500 alewife since 2013 (Acadia University)
- Watershed connectivity – other barriers
- Population and ecological questions
- Other species
 - American eel – ramps, vertical
 - Rainbow smelt – (UPEI)



Fishway Tracking



Alewife Research

Outcomes

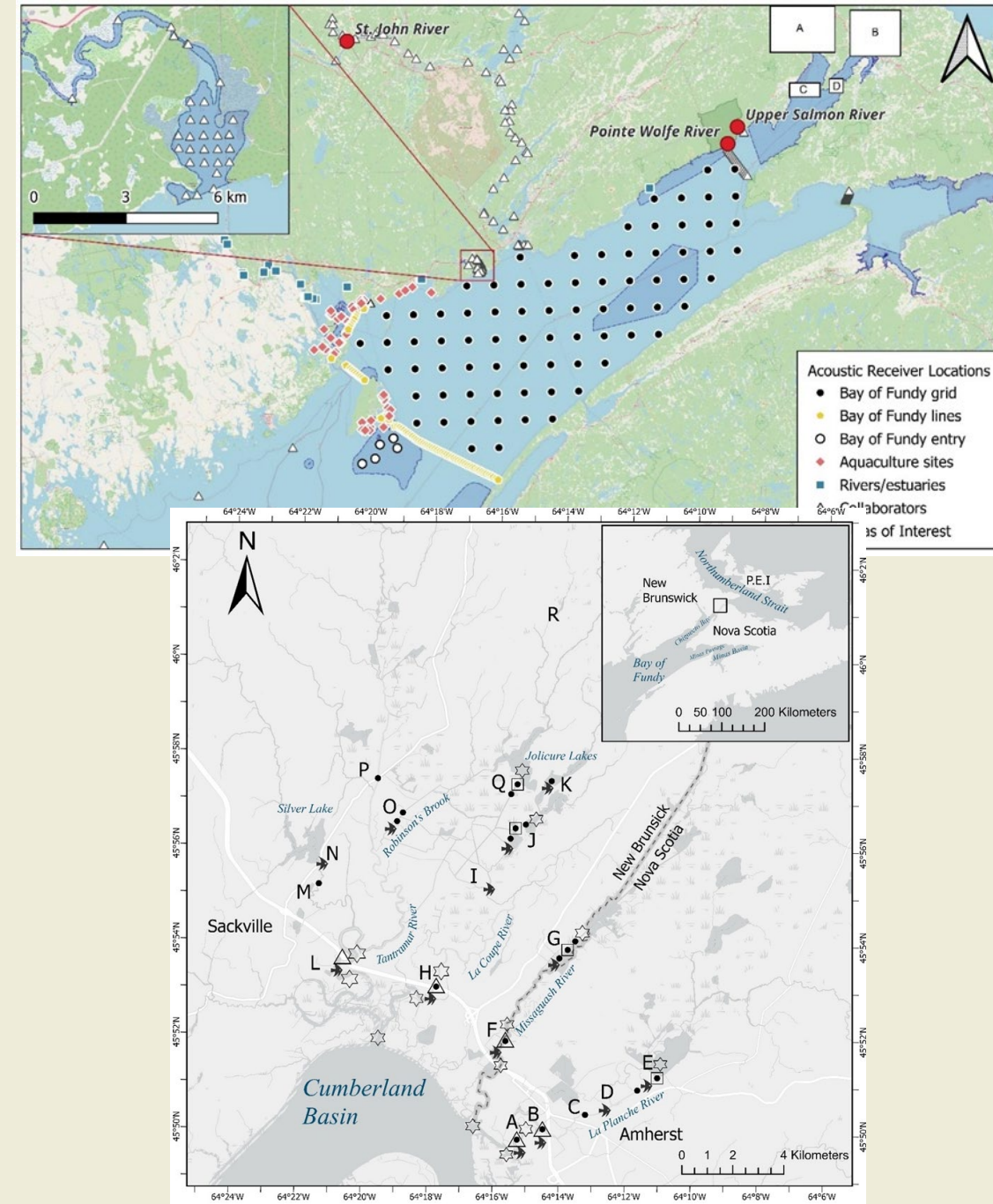
- Denil styles work better than pool and weir (nature-like best – but need more assessment)
- Freshwater feeding discovered
- Survival (~40% annual – Spares et al. 2023)
- Tide gates – assessed and improved passage – informing Chignecto Isthmus design
- Juvenile output (fyke net monitoring 2025)
- Pop. Estimates
- Sex ratios above barriers
- Net nutrient model (in and out)
 - Uses many parameters measured.
- eDNA proxy for passage, abundance, juv., (DFO science)



Alewife Research

Acoustics

- Fill in gaps from PIT tagging
- 175 tagged alewife (2026)
- 33 Acoustic receivers deployed
- Spawning grounds, fishways, above and below tide gates, salt marsh creeks, and along Cumberland Basin.
- Hoping for returning fish – to assess upstream passage through tidegates.
- Habitat usage in Bay (pre-post spawn)
- Tantramar River (main branch)





Common Eider

Population Changes

Socio-Ecological Practice Research
<https://doi.org/10.1007/s42532-021-00083-6>

RESEARCH ARTICLE



Expert opinion on American common eiders in eastern North America: international information needs for future conservation

Kristen Noel¹ · Nic McLellan² · Scott Gilliland³ · Karel A. Allard³ · Brad Allen⁴ · Shawn Craik⁵ · Anaïs Demagny⁶ · Matthew D. English³ · Antony Diamond⁷ · Jean-François Giroux⁸ · Alan Hanson³ · H. W. Heusmann⁹ · Laura E. King¹⁰ · Christine Lepage¹¹ · Heather Major¹² · Daniel McAuley¹³ · Dustin E. Meattey¹⁴ · G. Randy Milton^{15,16} · Jay Osenkowski¹⁷ · Anthony Roberts¹⁸ · Gregory J. Robertson¹⁹ · Marie-Claude Roy²⁰ · Lucas Savoy¹⁴ · Kelsey Sullivan⁴ · Mark L. Mallory¹

The Journal of Wildlife Management 1–10; 2021; DOI: 10.1002/jwmg.22122

Research Article

Estimating Population Growth and Recruitment Rates Across the Range of American Common Eiders

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AVIAN CONSERVATION
& ECOLOGY

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Gutowsky, S., G.J. Robertson, M.L. Mallory, N.R. McLellan, and S.G. Gilliland. 2023. Redistribution of wintering American Common Eiders (*Somateria mollissima dresseri*). Avian Conservation and Ecology 18(2):8. <https://doi.org/10.5751/ACE-02510-180208>
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Research Paper

Redistribution of wintering American Common Eiders (*Somateria mollissima dresseri*)

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Severe declines in numbers of male American Common Eiders *Somateria mollissima dresseri* during spring counts over the past two decades in the southwestern Bay of Fundy, Canada

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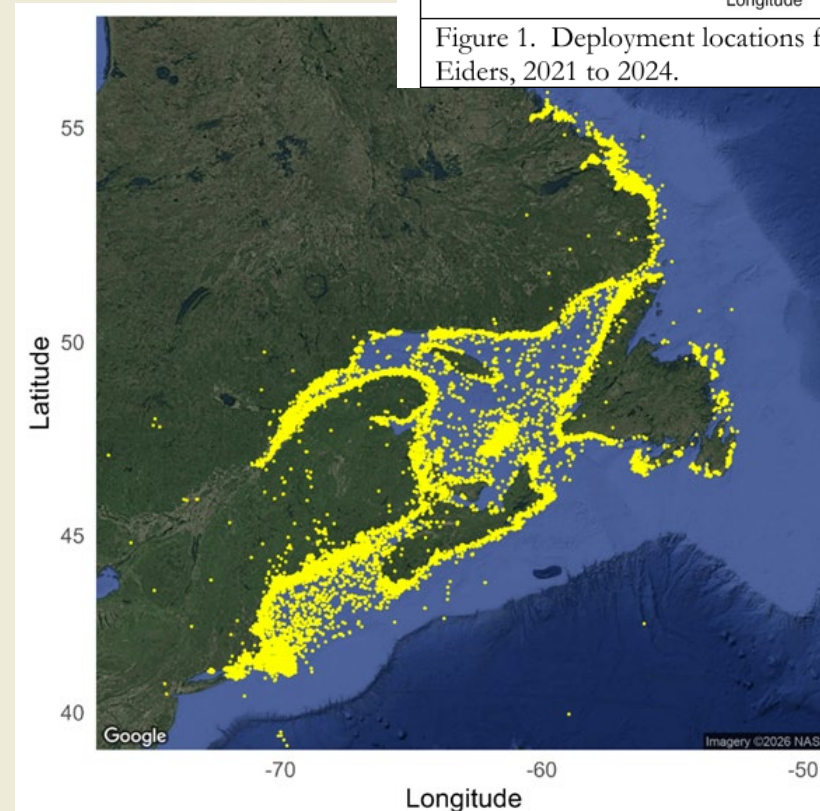
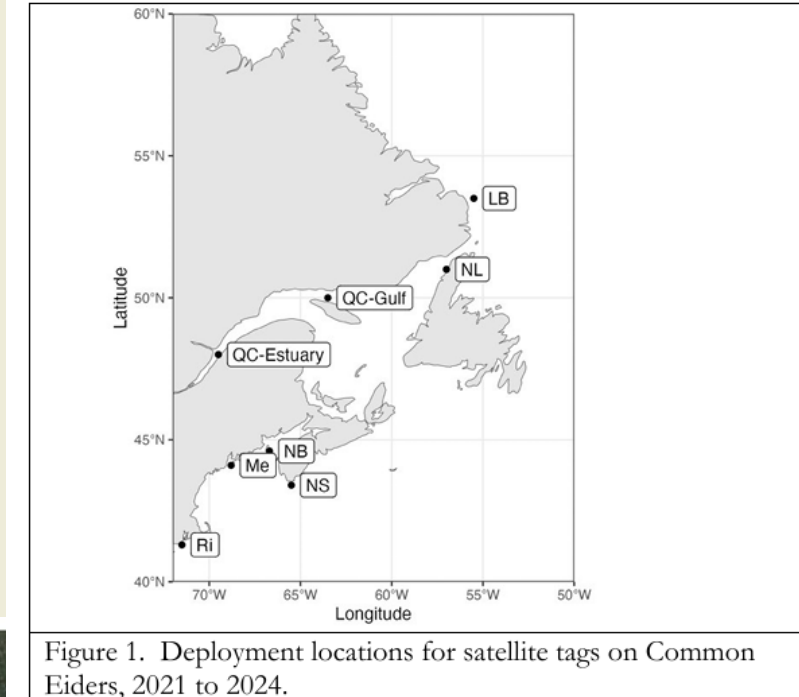
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Common Eider

Satellite Telemetry

- 235 PTT transmitters on hens across breeding range from RI to Labrador
- 3 years of data from birds
- Habitat use – conservation actions, risk management
- Hot spots – Nantucket (birds from across range winter here)
- Assess reproduction across range (e.g. breeding propensity)

[Where have all the eiders gone? - Sea Duck Joint Venture](#)



Questions?
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