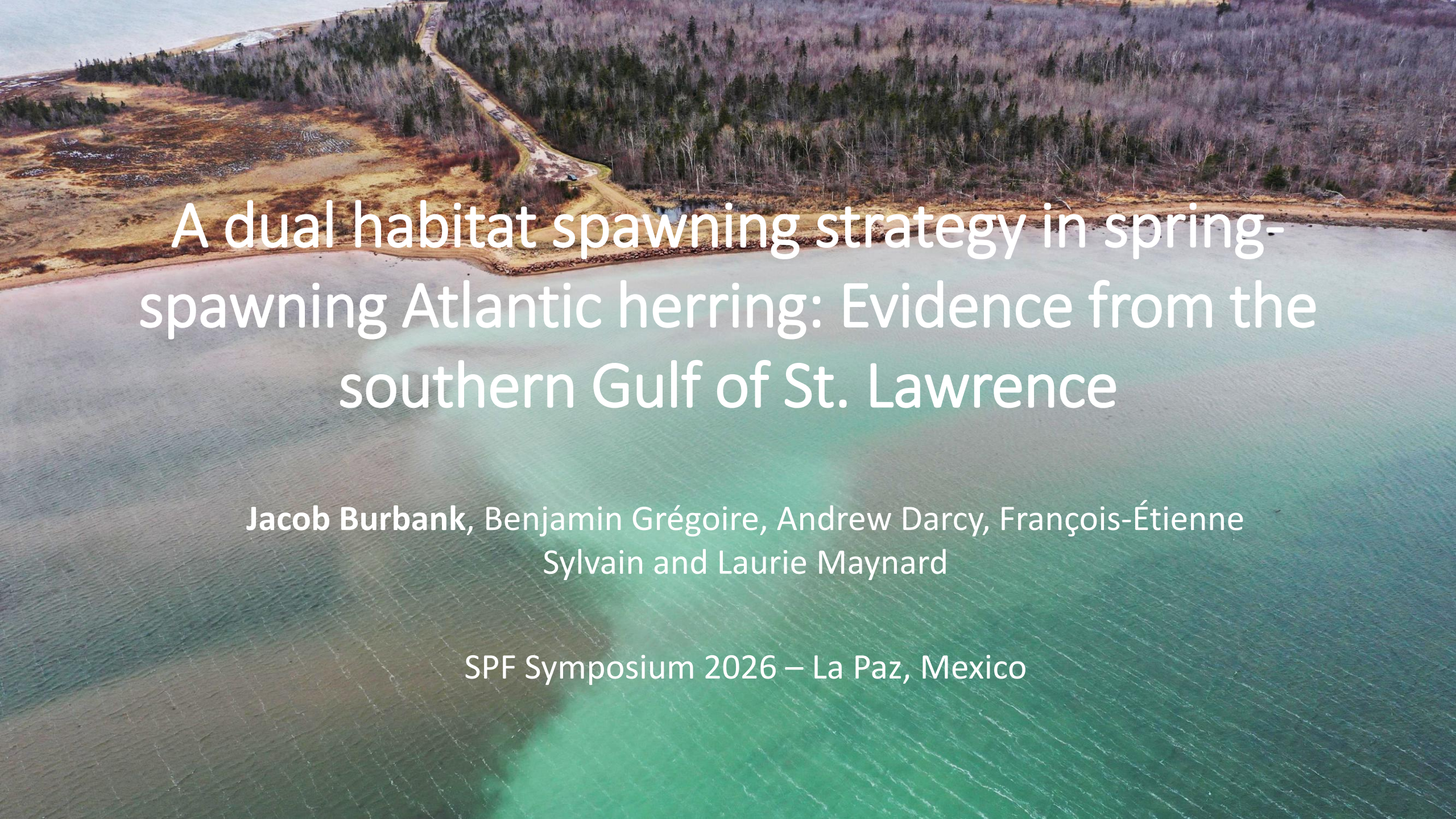
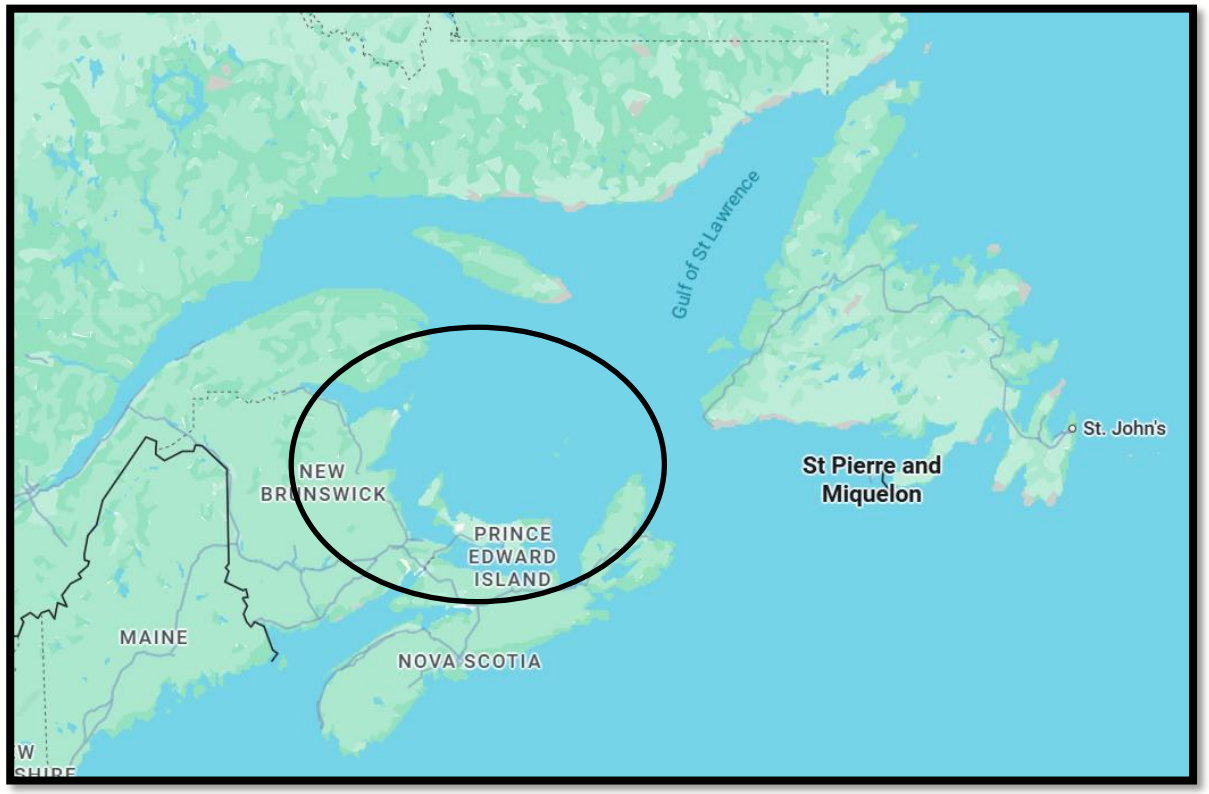


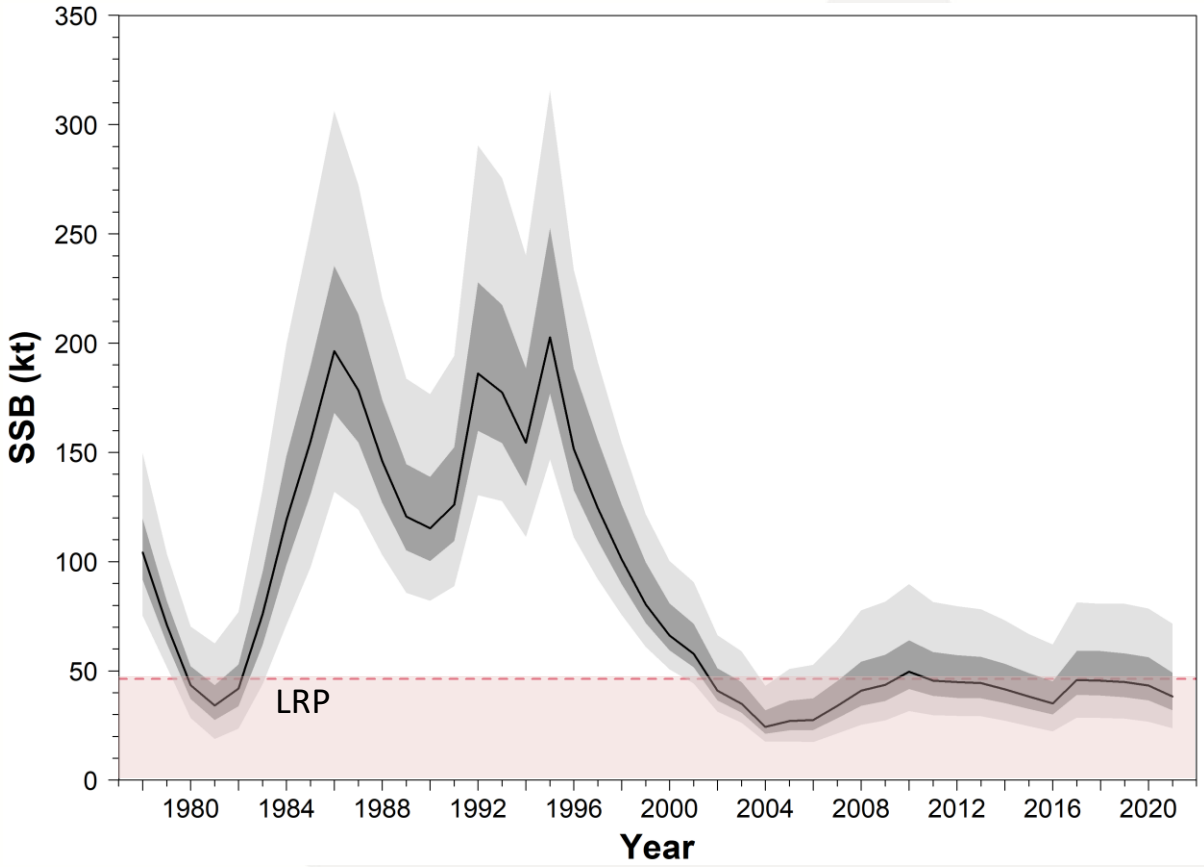
A dual habitat spawning strategy in spring-spawning Atlantic herring: Evidence from the southern Gulf of St. Lawrence

Jacob Burbank, Benjamin Grégoire, Andrew Darcy, François-Étienne Sylvain and Laurie Maynard

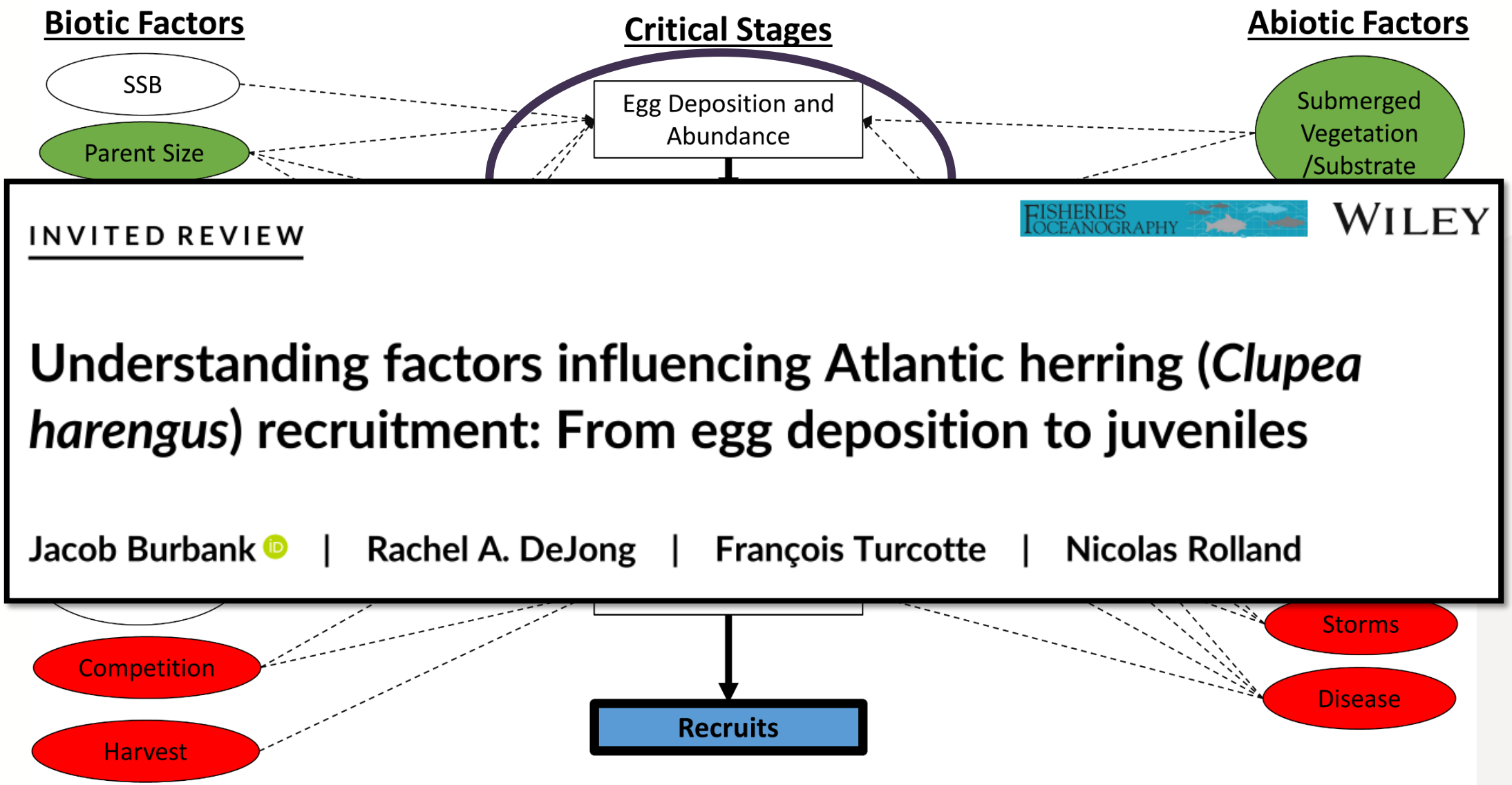
SPF Symposium 2026 – La Paz, Mexico

Southern Gulf of St. Lawrence Atlantic Herring





Rolland et al (2022)


Biotic Factors
Critical Stages
Abiotic Factors
SSB
Parent Size
Egg Deposition and Abundance
Submerged Vegetation /Substrate
INVITED REVIEW
FISHERIES OCEANOGRAPHY
WILEY
Understanding factors influencing Atlantic herring (Clupea harengus) recruitment: From egg deposition to juveniles
Jacob Burbank | Rachel A. DeJong | François Turcotte | Nicolas Rolland
Storms
Competition
Disease
Harvest
Recruits

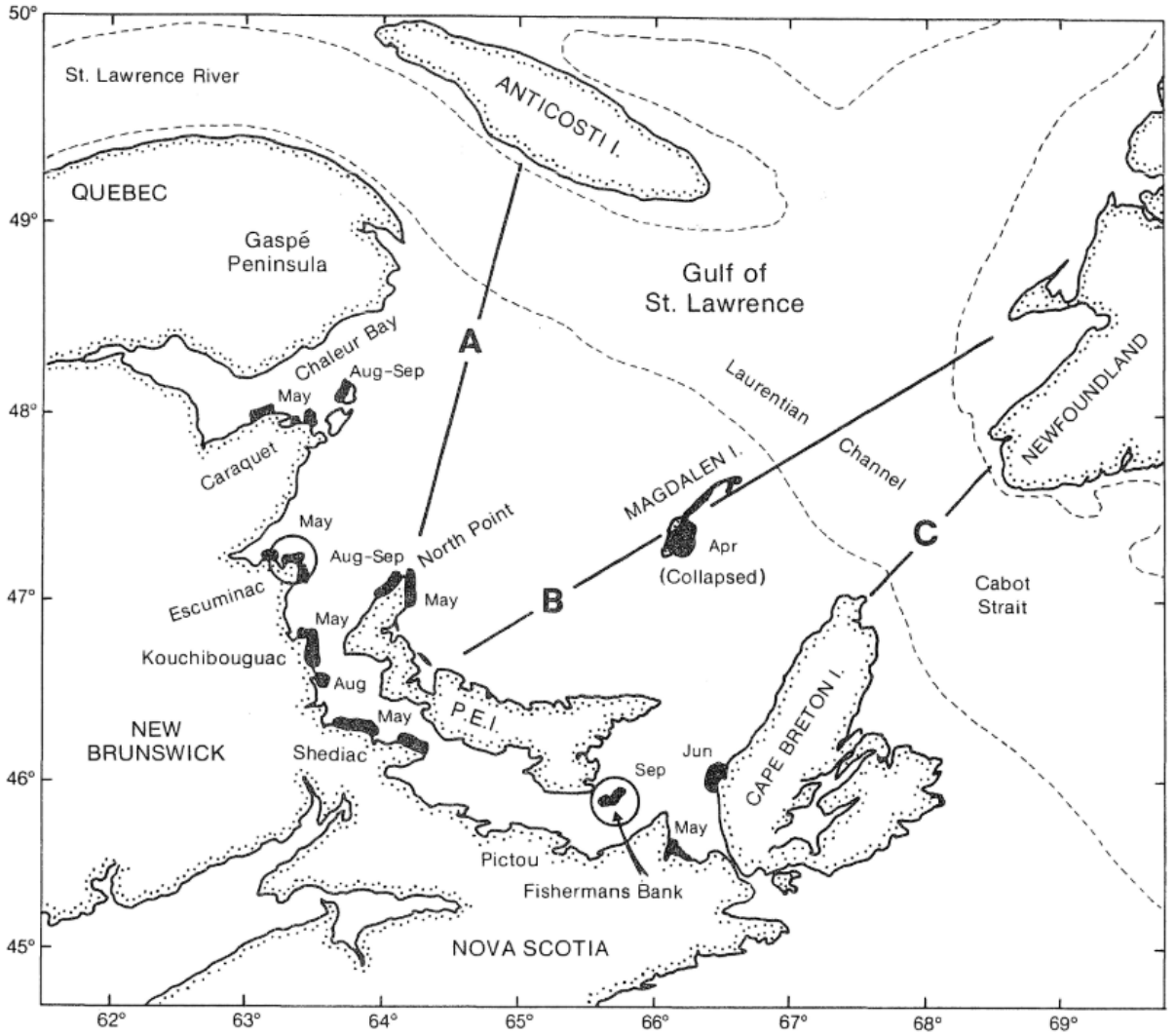


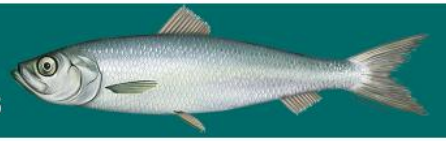
Fig. 1. Spring and autumn spawning grounds of herring in the southern Gulf of St. Lawrence, and three hydrographic sections for which temperature data were summarized. (Circled spawning locations were investigated by scuba-divers.)

Messieh SN. 1987. Some Characteristics of Atlantic Herring (*Clupea harengus*) Spawning in the Southern Gulf of St. Lawrence. NAFO Science Council Studies, 11: 53–61.

Fisheries and Oceans Canada | Pêches et Océans Canada

Help monitor Atlantic Herring spawning!

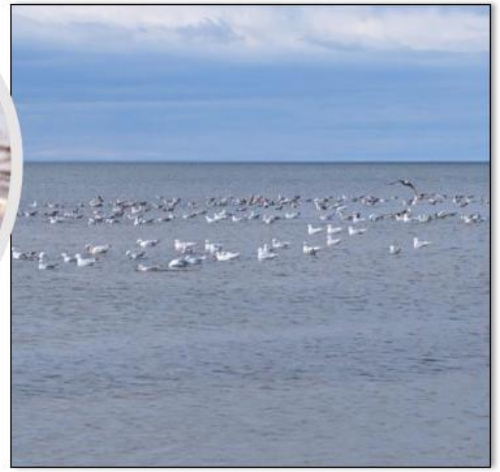
If you are spending time along the coast, **PLEASE keep an eye out for signs of spawning events**



MILKY WATER

EGGS
(on seaweed, sand, rocks, wharf, gear, etc.)

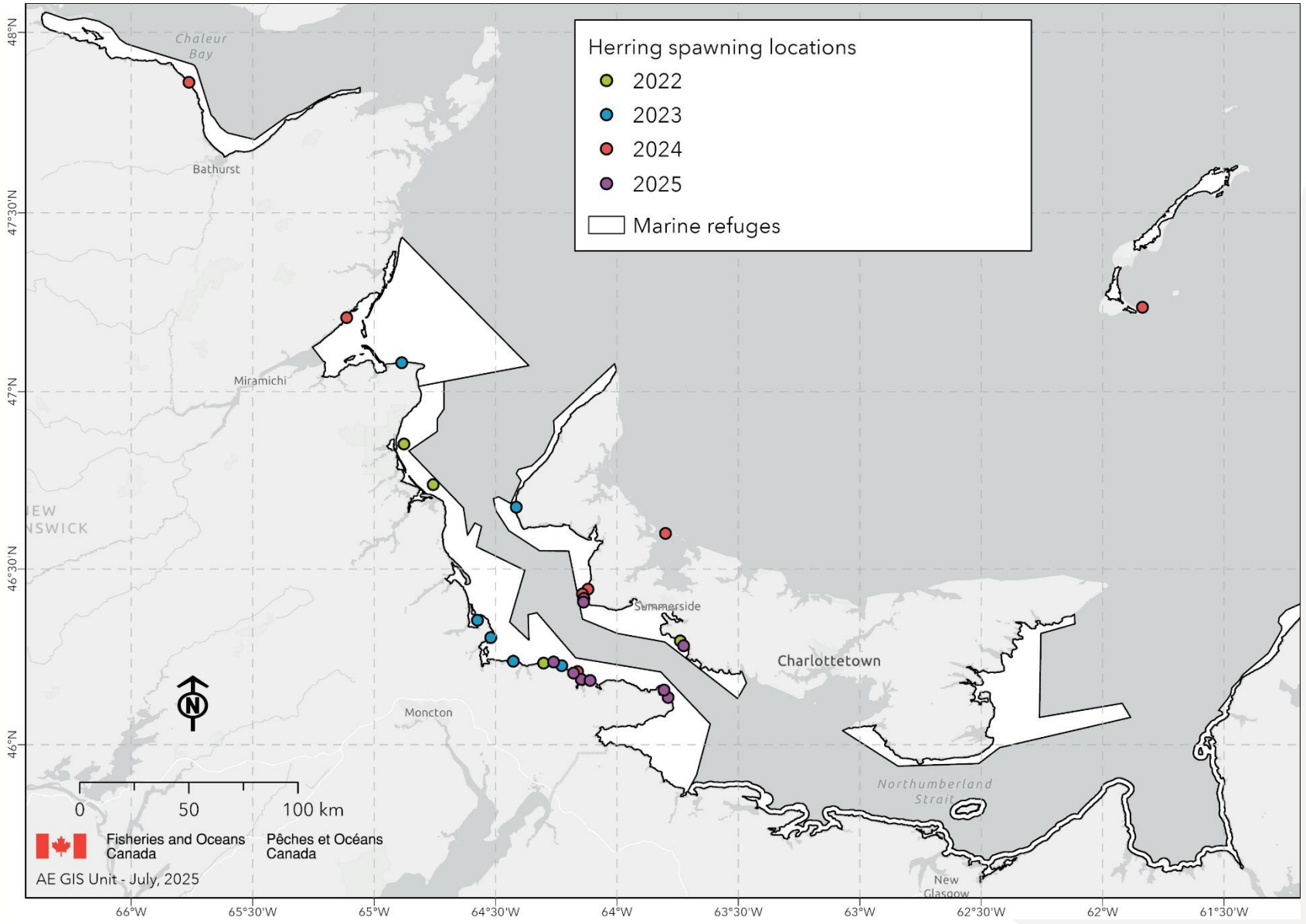
Large groups of diving
SEABIRDS



If seen, please **note the location (GPS or details), take pictures, and report it as soon as possible**

Call or text
506-378-9989 (Jacob) or 506-269-4274 (Laurie)

Your observations will help us improve our understanding of Atlantic Herring spawning patterns!

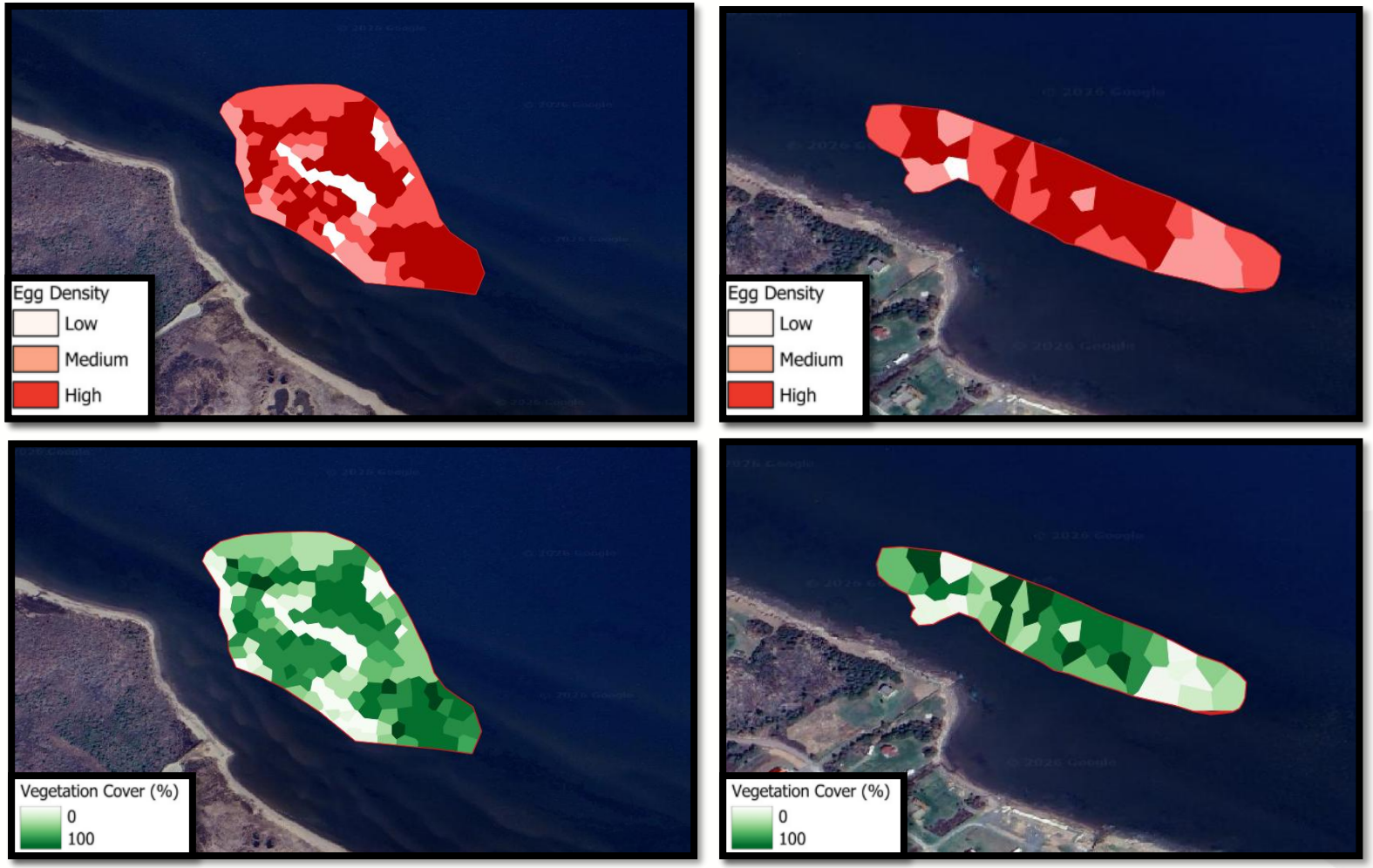

Herring spawning locations
2022
2023
2024
2025
Marine refuges
Chaleur Bay
Bathurst
Miramichi
Summerside
Charlottetown
Moncton
Northumberland Strait
New Glasgow
48°N
47°30'N
47°N
46°30'N
46°N
66°W
65°30'W
65°W
64°30'W
64°W
63°30'W
63°W
62°30'W
62°W
61°30'W
0
50
100 km
Fisheries and Oceans Canada
Pêches et Océans Canada
AE GIS Unit - July, 2025

DFO Gulf Region Crustacean Dive Team

Subtidal

Intertidal

Location	Estimated Spawn Date	Habitat Type	Vegetation Types Present	Main Sediment	Water Depth (m)
Cap-Pele, New Brunwick	14-Apr-25	Wharf	Ulva sp.	Wharf Wall and Mud Bottom	1.8 m
Cape Tormentine, New Brunwick	17-Apr-25	Intertidal	Fucus sp., Chondrus crispus, Zostera marina	Bedrock	0 - 1.2 m
Petit Cap, New Brunswick	19-Apr-25	Subtidal	Fucus sp., Chondrus crispus, Zostera marina, Furcellaria lumbricalis, Ulva sp., Codium fragile, Phyllophora pseudoceranoides, Polysiphonia	Sand and Boulder	1 - 3 m
Cape Egmont, Prince Edward Island	19-Apr-25	Subtidal	Fucus sp., Chondrus crispus, Zostera marina	Sand and Boulder	0.8 - 2.5 m
Cape Jouriman, New Brunswick	20-Apr-25	Intertidal	Fucus sp.	Bedrock, Boulder and Sand	0 - 1.5 m
Borden-Carelton, Prince Edward Island	23-Apr-25	Subtidal	Fucus sp., Chondrus crispus, Ulva sp., Zostera marina Saccharina latissima, Palmaria palmata, Desmarestia aculeata	Sand and Boulder	1 - 3 m
Trois-Ruisseaux, New Brunswick	25-Apr-25	Subtidal	Fucus sp., Chondrus crispus, Furcellaria lubricalis, Ulva sp.	Sand and Boulder	0.8 - 2.5 m
Johnson's Point, New Brunswick	25-Apr-25	Intertidal	Fucus sp., Chondrus crispus, Furcellaria lubricalis, Ulva sp., Zostera marina	Bedrock, Boulder and Sand	0 - 2 m
Walton Beach, New Brunswick	27-Apr-25	Intertidal	Fucus sp., Chondrus crispus, Furcellaria lumbricalis, Codium fragile	Sand and Boulder	0 - 1.2 m
Havre-Aubert, Quebec	30-Apr-25	Subtidal	Zostera marina and filamentous epiphytic algae	Sand	<1 m

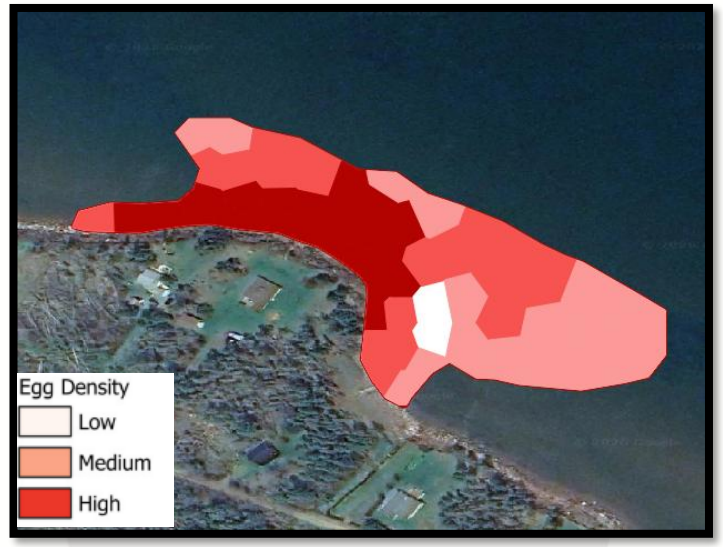


Subtidal Spawning Habitat

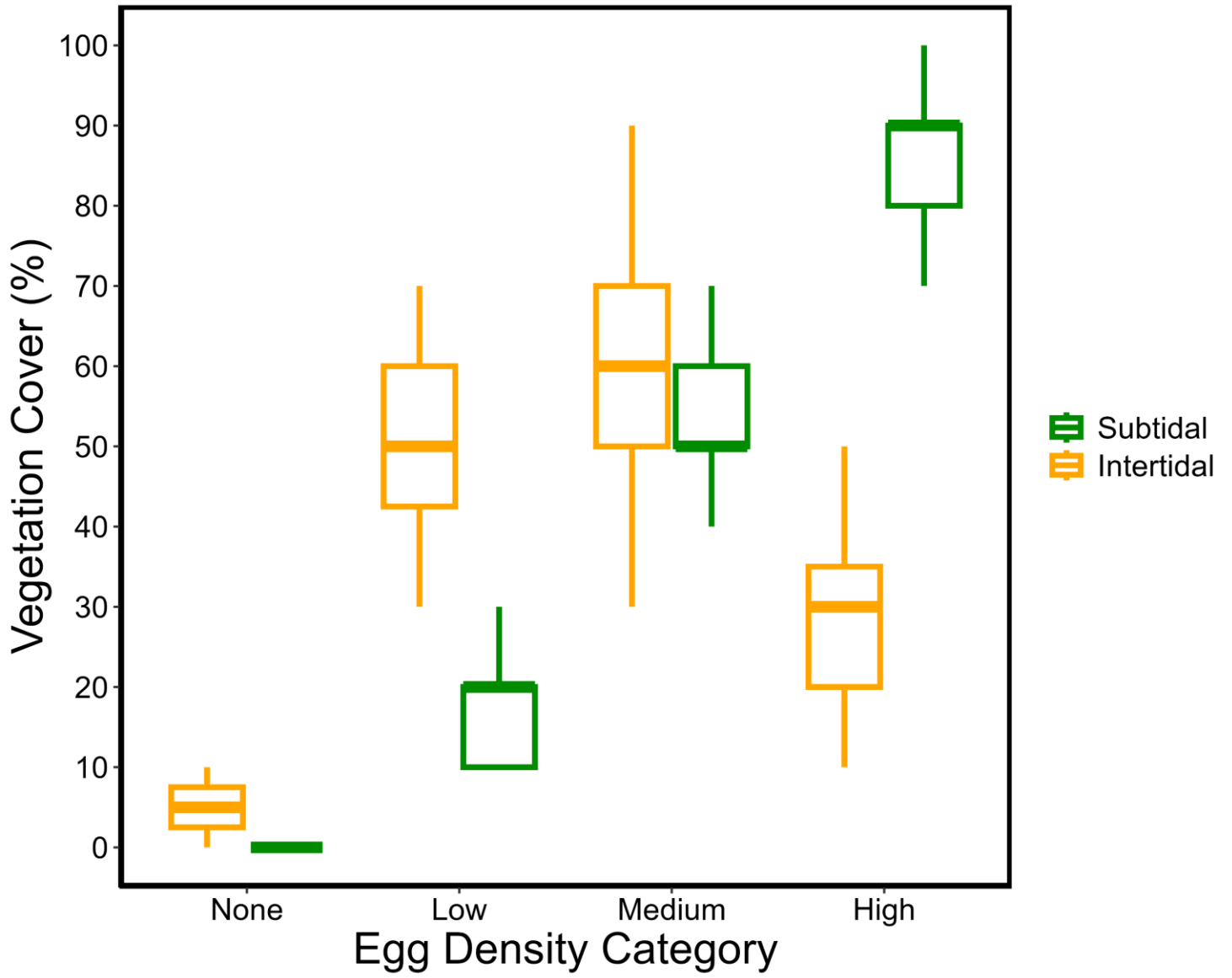
- High correspondence between vegetation cover and egg density
- Majority of spawn is present on aquatic vegetation
- Mean egg diameter of 1.43 ± 0.02 mm

Intertidal Spawning Habitat

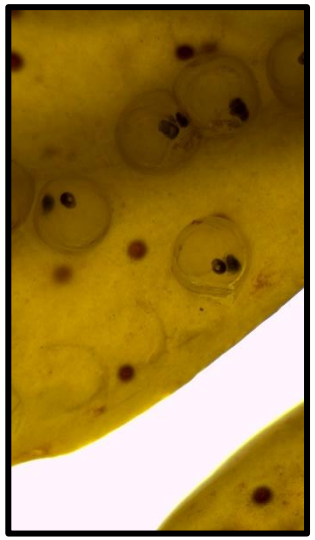
- In high-mid intertidal eggs exposed to air found on large flat rocks with sparser rockweed cover
- Eggs in lower intertidal on more dense rockweed beds
- Lower correspondence between vegetation cover and egg density
- Differential predator vulnerability
- Mean egg diameter of 1.46 ± 0.03 mm

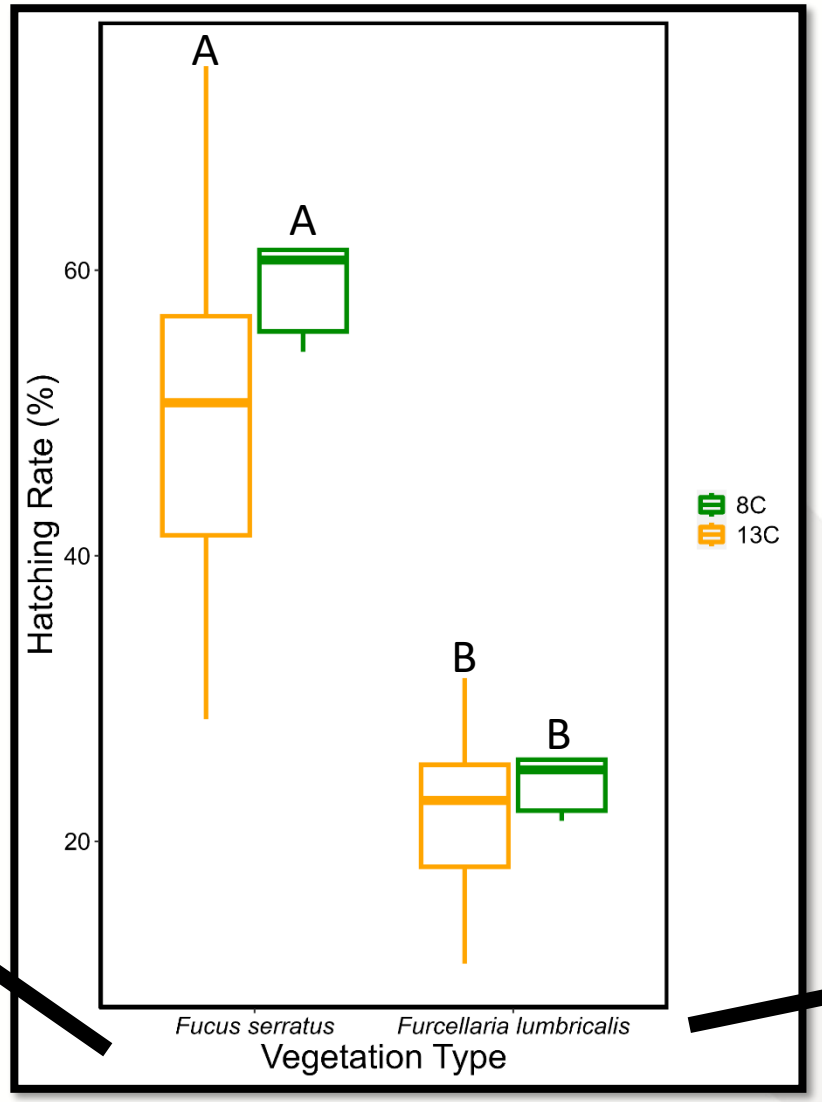


Vegetation Cover and Egg Density

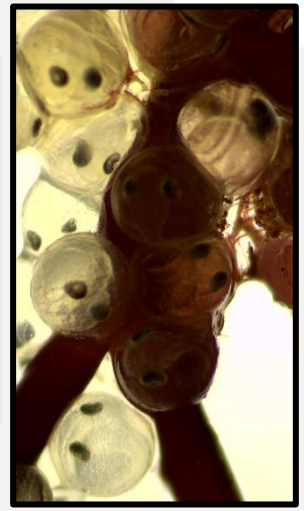


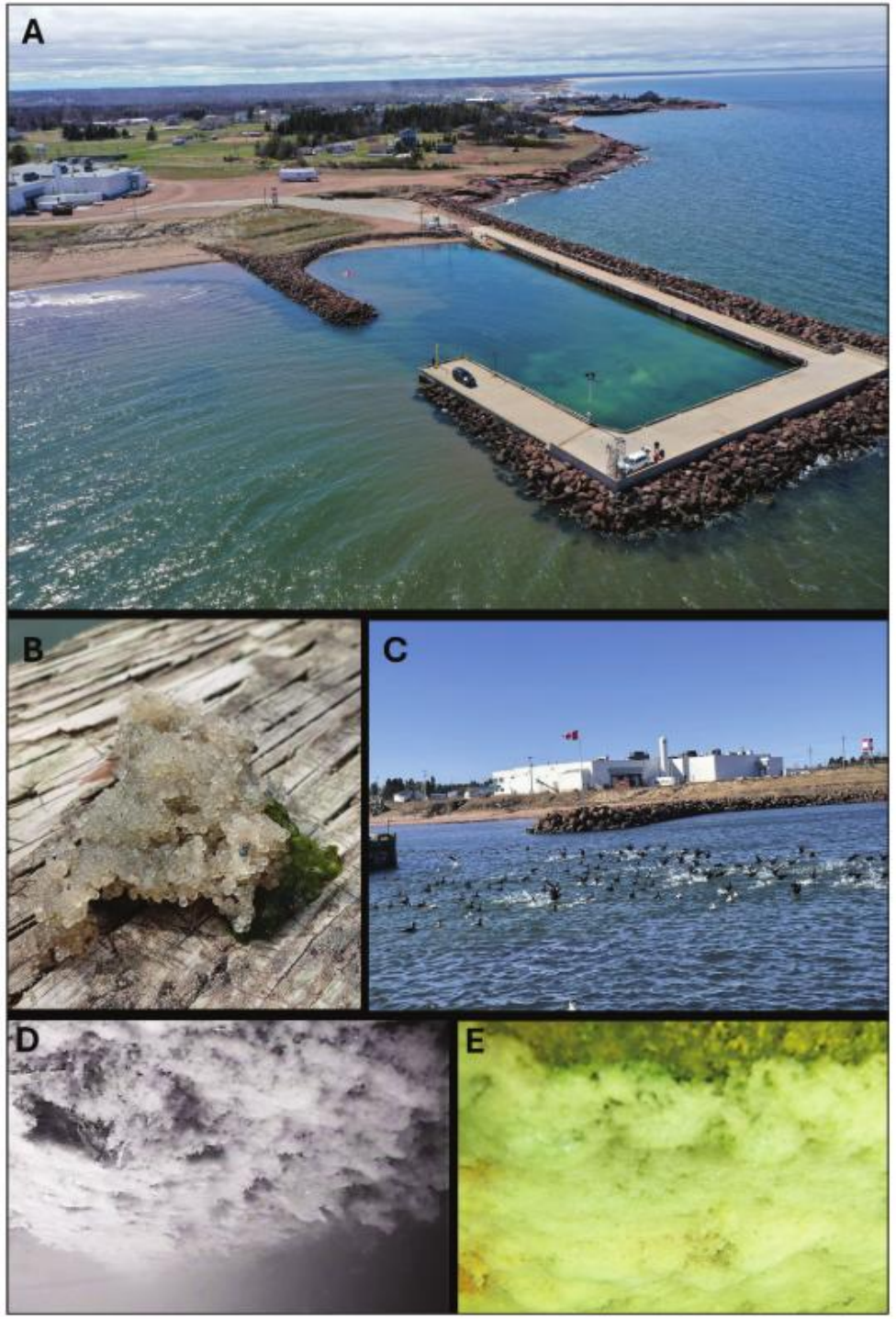
Lab Reared Hatching Rate Results





- Survival was significantly higher on Fucus ($F_{1,21}$=69.3, p<0.0001)
- No significant difference between temperature treatments ($F_{1,21}$=0.22, p=0.09)





2025 *NORTHEASTERN NATURALIST* NOTES 32(4):N70–N78

Extreme Predation on Atlantic Herring (*Clupea harengus*) Eggs by Waterbirds in an Anthropogenic Wharf Spawning Habitat

Jacob Burbank[1,*] and Andrew P. Darcy[1]

Take Home Message

- Southern Gulf of St. Lawrence Spring Spawning Atlantic Herring display a dual spawning habitat strategy spawning in subtidal and intertidal areas

- Spawn habitat matters in demersal spawning fish like Atlantic Herring

- Spawn habitat selection and quality has implications for egg survival

Acknowledgements

- Special thanks to Nicolas Rolland, Francois Turcotte, Dominique Robert and Etienne Germain.

- Big thanks to everyone who contributed to the research including Natalie Asselin, Trevor Bringloe, Sylvie Cormier, Izaak Lea, Marc-Andre Long, Tanya Arsenault, Supriyaa Sauba, Sylvie Robichaud, Joeleen Savoie, Daniel Ricard, William Laroche, Victoria Bogstad, Catherine Dally-Belanger, Patricia Hanley, Bruno Comeau, Eliane Aubry, Jillian Hunt, Carly White and Rachel DeJong.

Harrison David Burton & Homarus Inc.


Thank You
Questions?
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