

Atlantic Salmon Colloquium

Des Saumons et Des Hommes

Brioude, France 19th and 20th October 2023

Some Major Advances in Identifying Migration and Distribution Patterns of Atlantic Salmon

Ken Whelan – Vice President
Atlantic Salmon Trust

Jon Carr – Vice President, Research & Environment
Atlantic Salmon Federation



Atlantic Salmon Federation
Fédération du Saumon Atlantique



- 
- The background of the slide is a photograph of a river. In the foreground, a large, light-colored fish, possibly a salmon or trout, is swimming over a bed of mossy rocks. The water is clear, and the rocks are covered in green moss. In the background, the river flows over more rocks, and the water is slightly turbulent. The overall scene is a natural, outdoor setting.
- SALSEA – 2002 to 2011
 - Moray Firth - 2019 to 2022
 - West Coast Tracking Project – 2020 to 2023
 - Combing Forces – 2016 to 2023
 - What the Future Holds ?

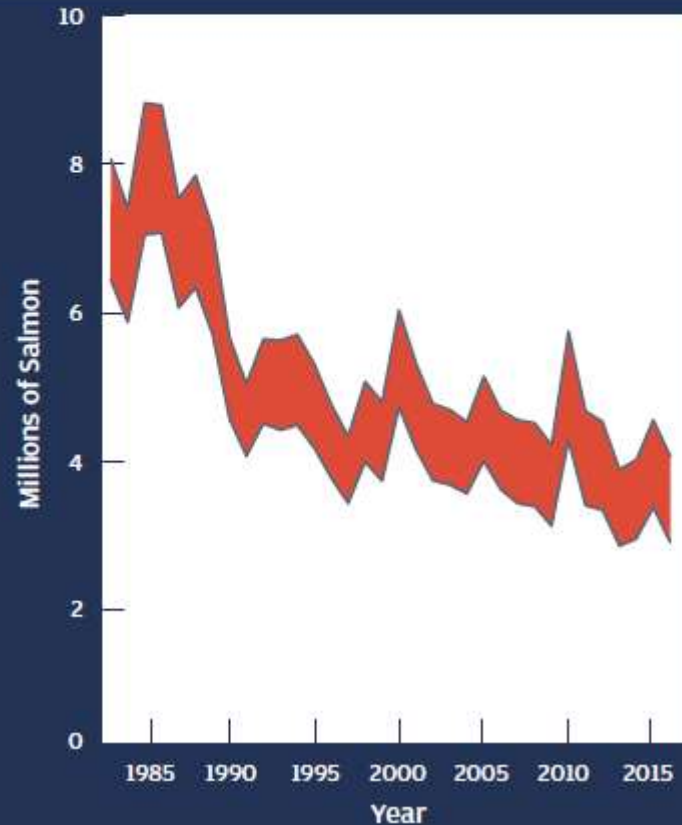
PRIOR TO 1990

1,000 eggs = one salmon surviving
first year at sea



FROM 2007 TO 2016

2,000 eggs = one salmon surviving
first year at sea

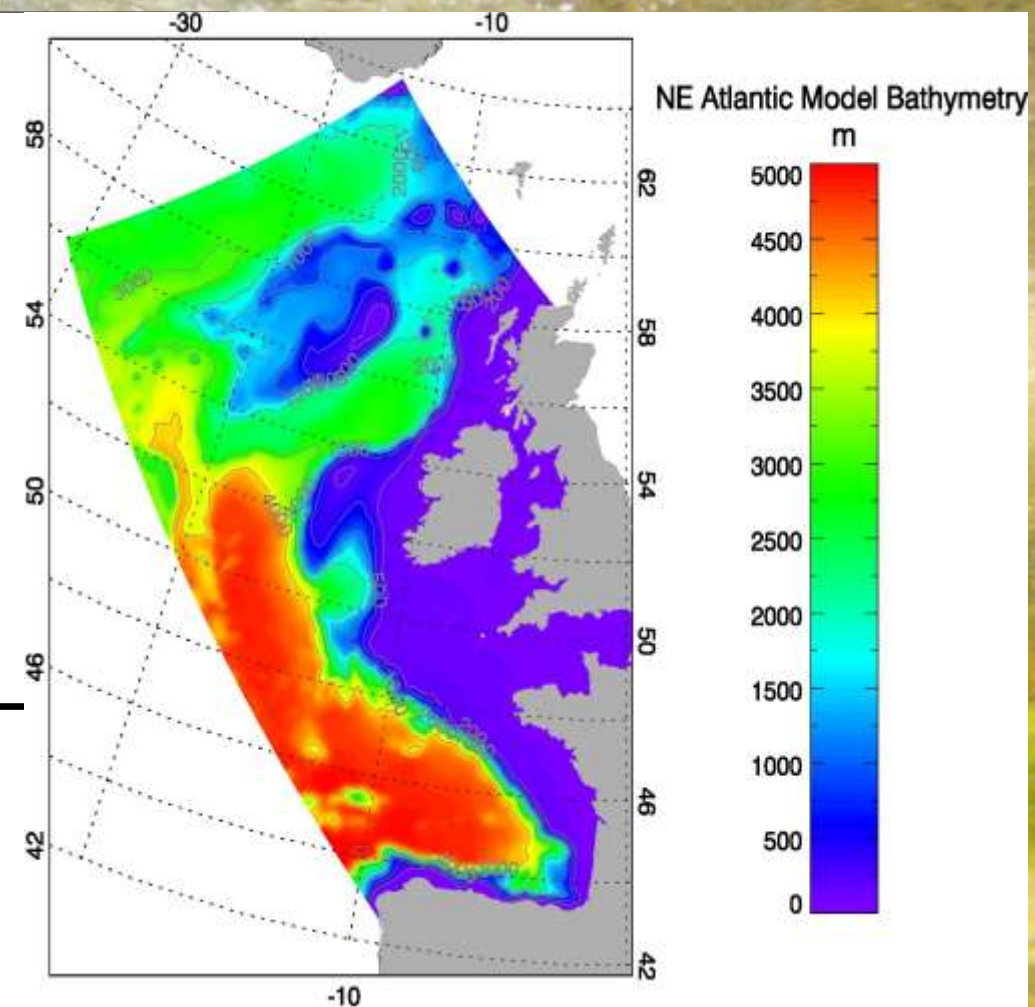
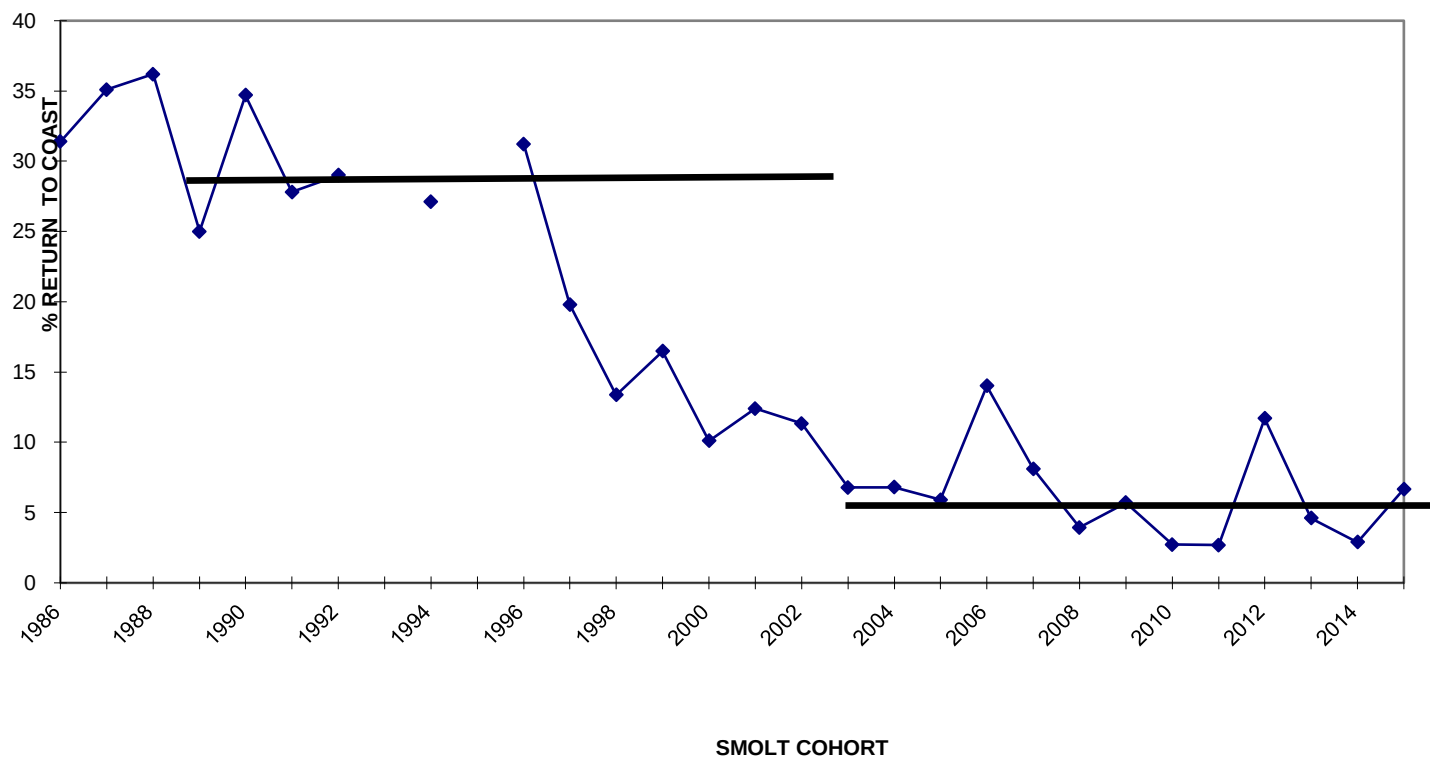


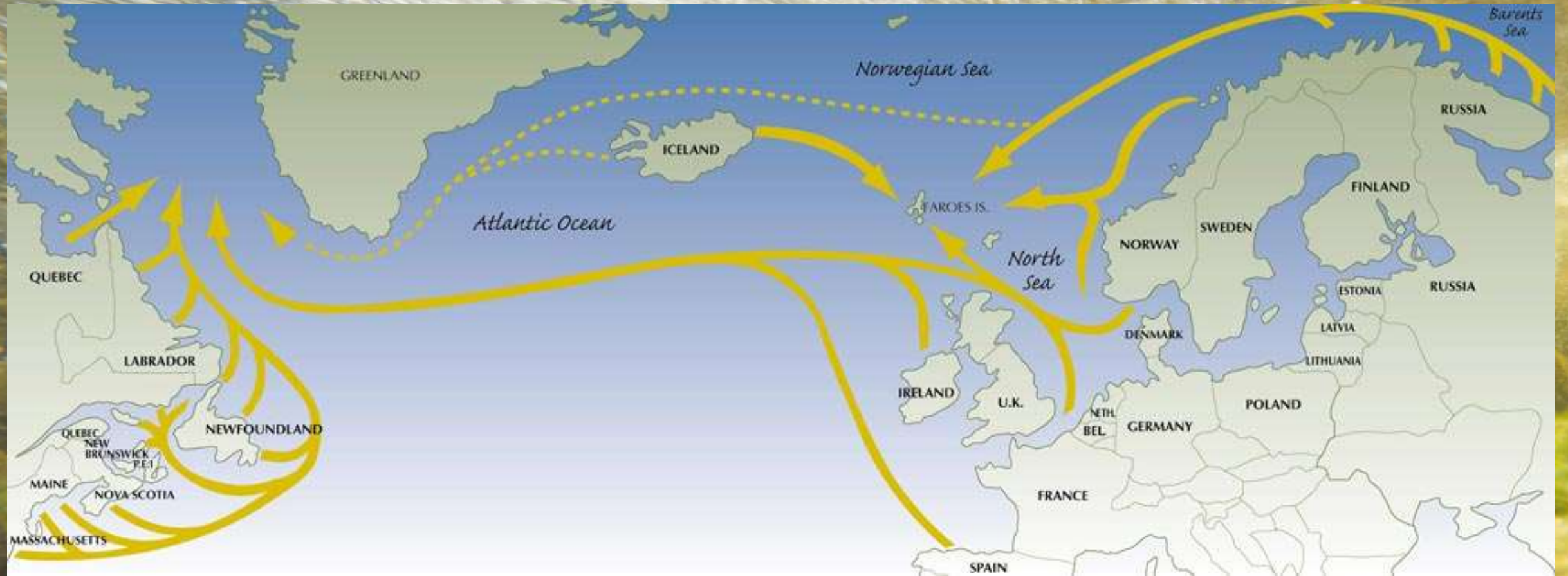
SALMON ABUNDANCE

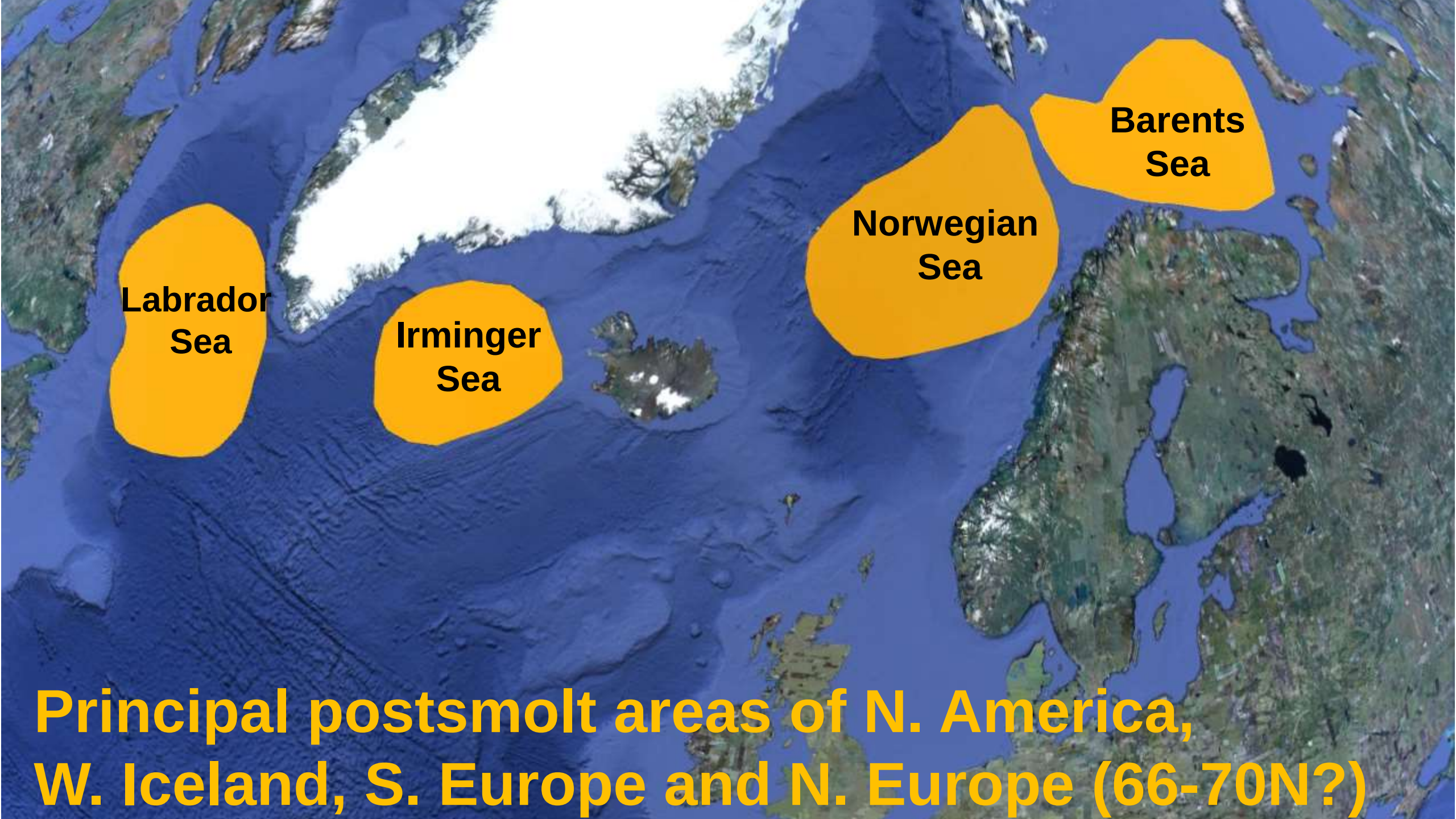
From 1983 to 2016, there was an alarming decline in salmon numbers prior to any fishery

Further data on the tonnage of wild salmon in specific areas of the North Atlantic prior to 1983 highlights an even more dramatic decline than shown here

Return rate of R. Bush wild 1SW salmon to the Irish coast







Labrador
Sea

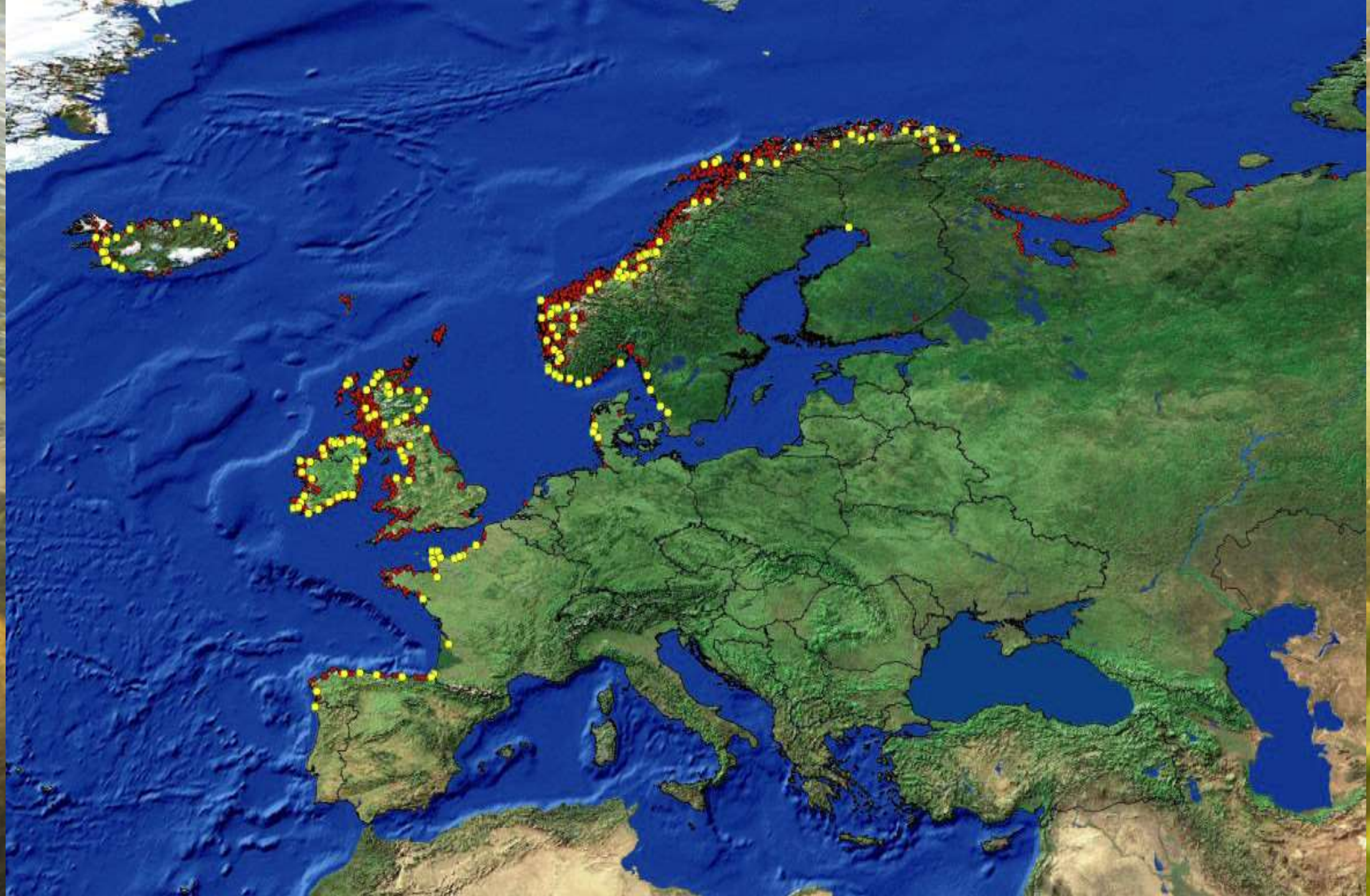
This satellite map shows the North Atlantic and Arctic regions. Four specific areas are highlighted with orange overlays: the Labrador Sea to the west of Greenland, the Irminger Sea south of Greenland, the Norwegian Sea east of Iceland, and the Barents Sea further north. The landmasses of North America, Greenland, Iceland, and Europe are visible in their natural colors, while the surrounding ocean is a deep blue.

Irminger
Sea

Norwegian
Sea

Barents
Sea

**Principal postsmolt areas of N. America,
W. Iceland, S. Europe and N. Europe (66-70N?)**



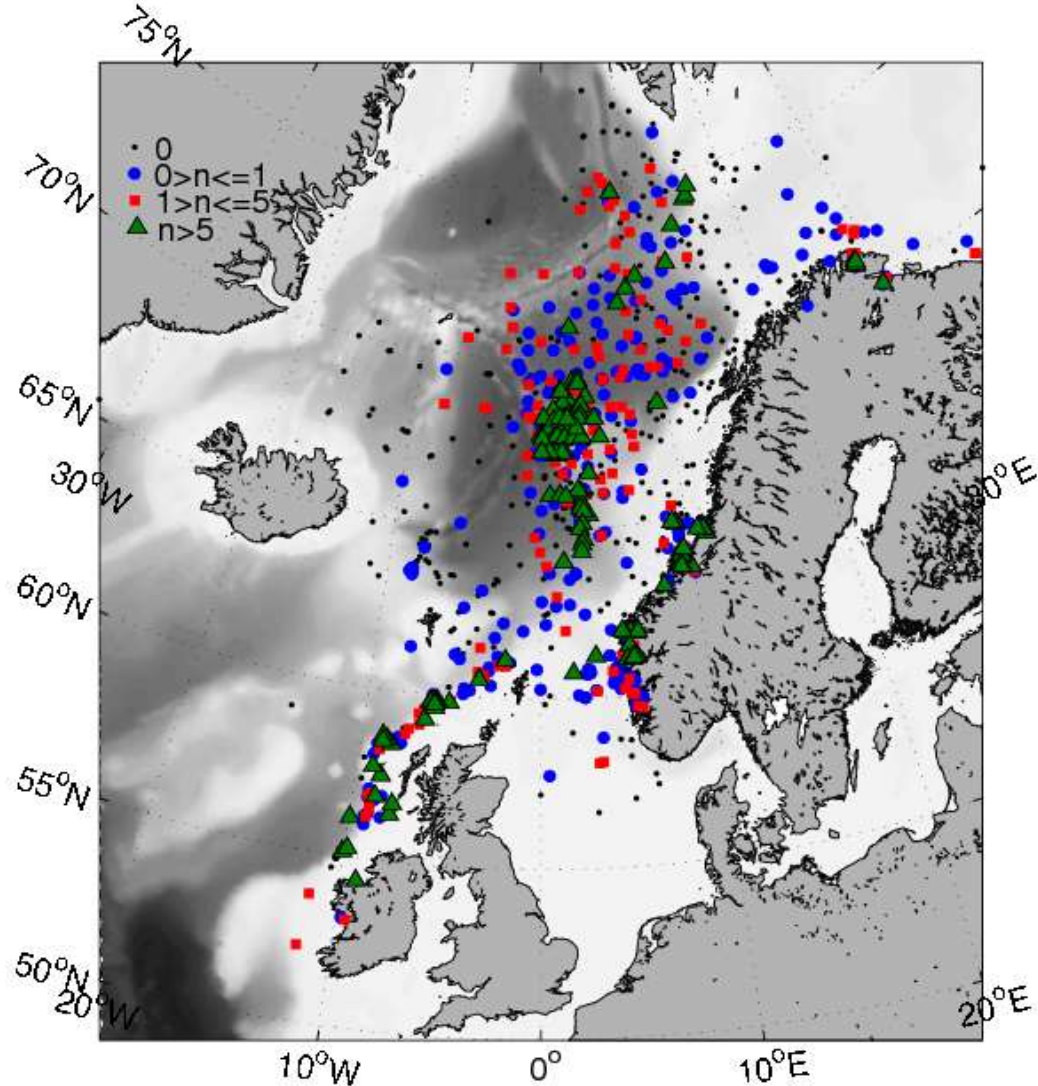




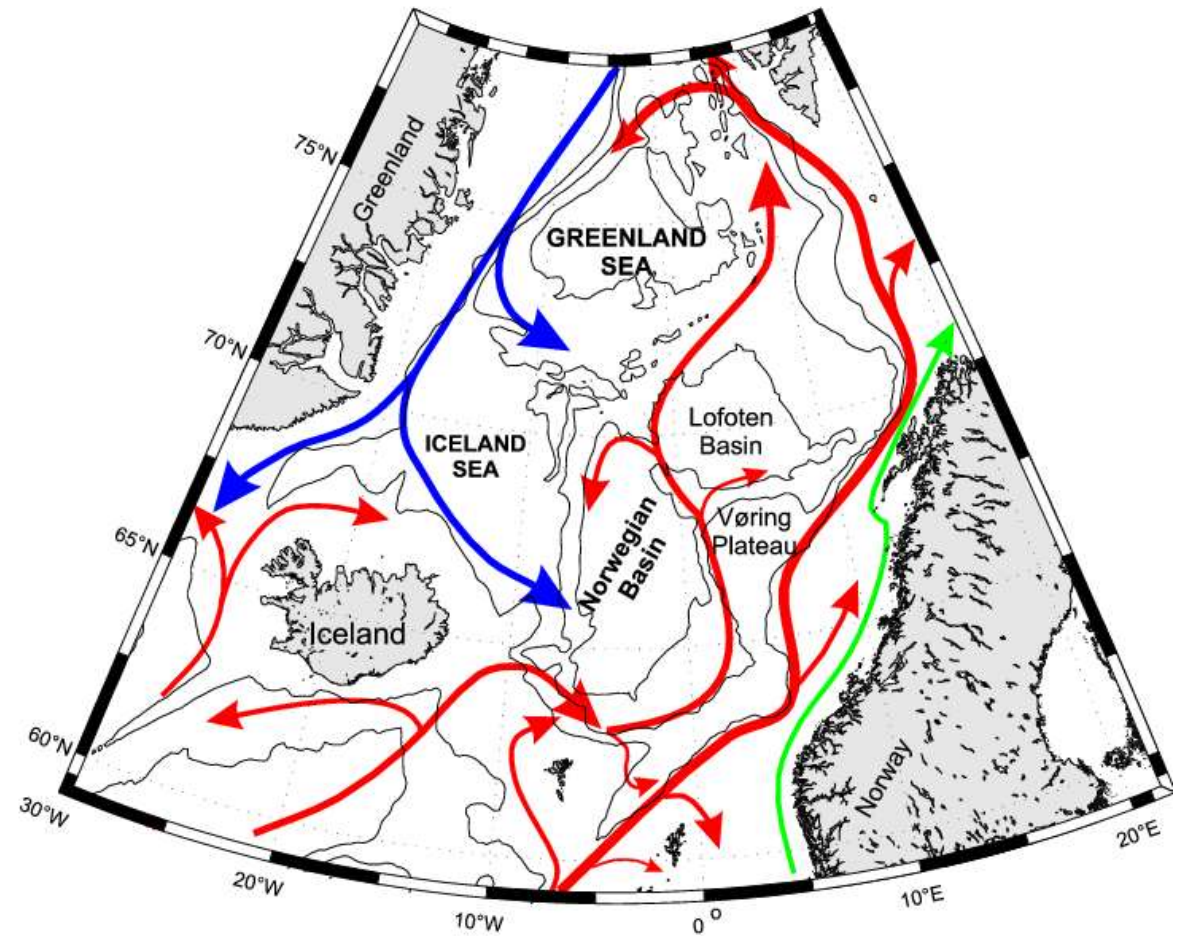




Distribution of salmon post smolts



Number of captured post smolts (n) per trawl hour



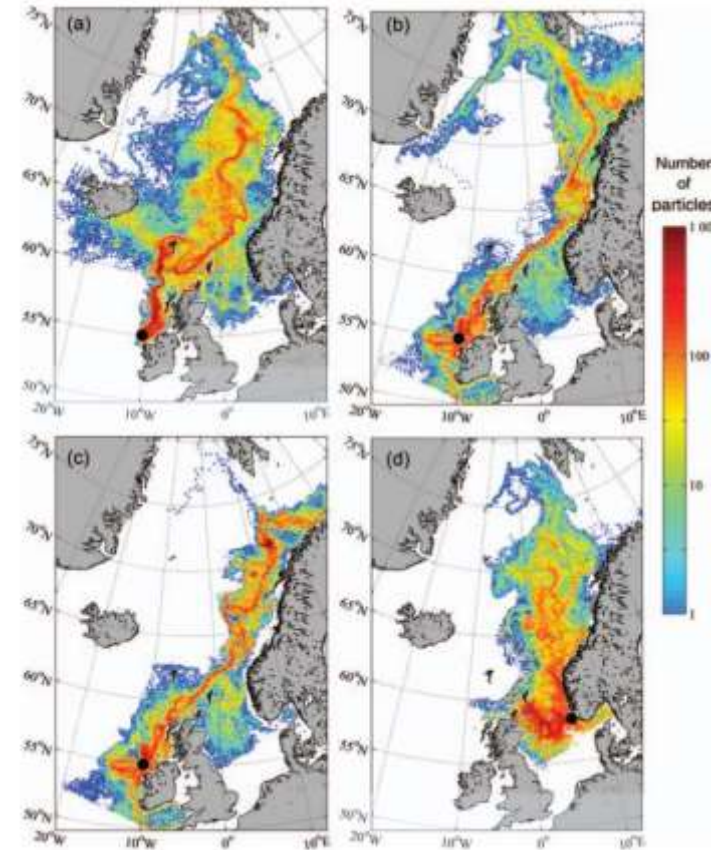
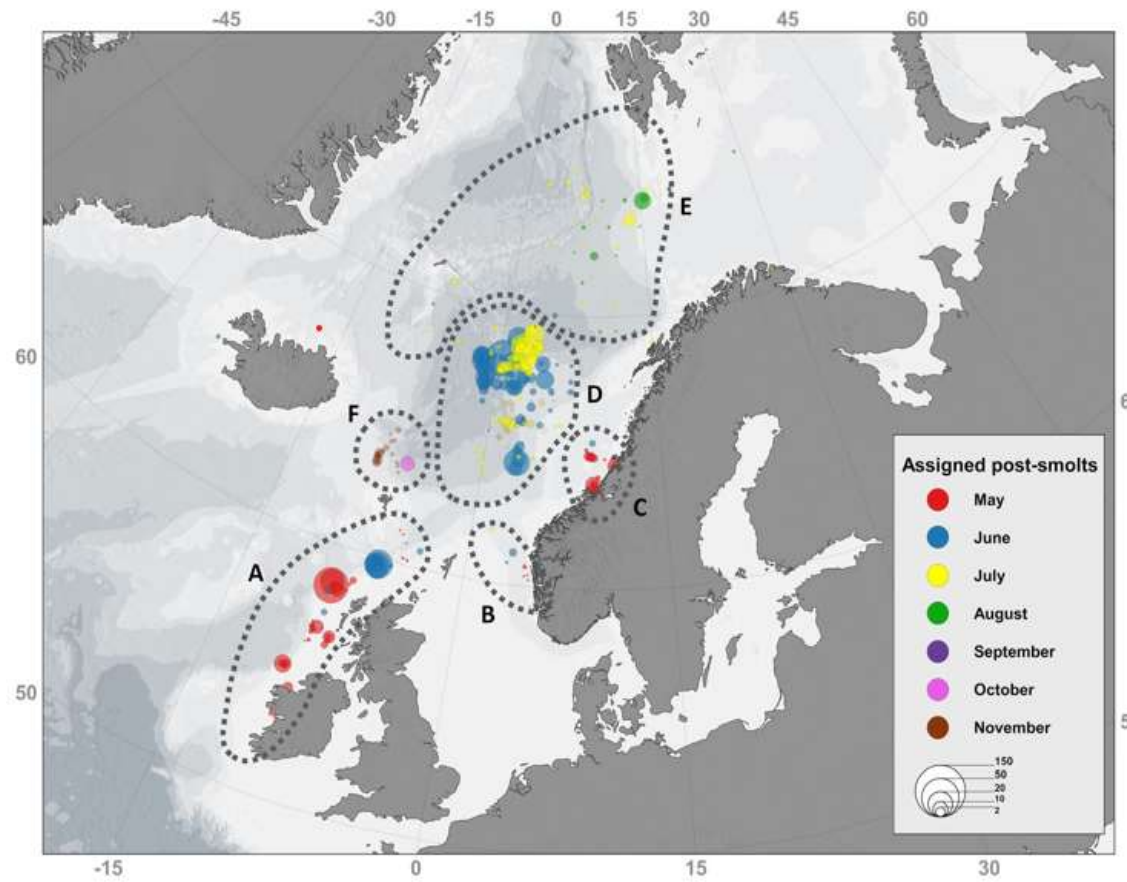
Main surface currents:

Red arrows: Warm and salt Atlantic Water

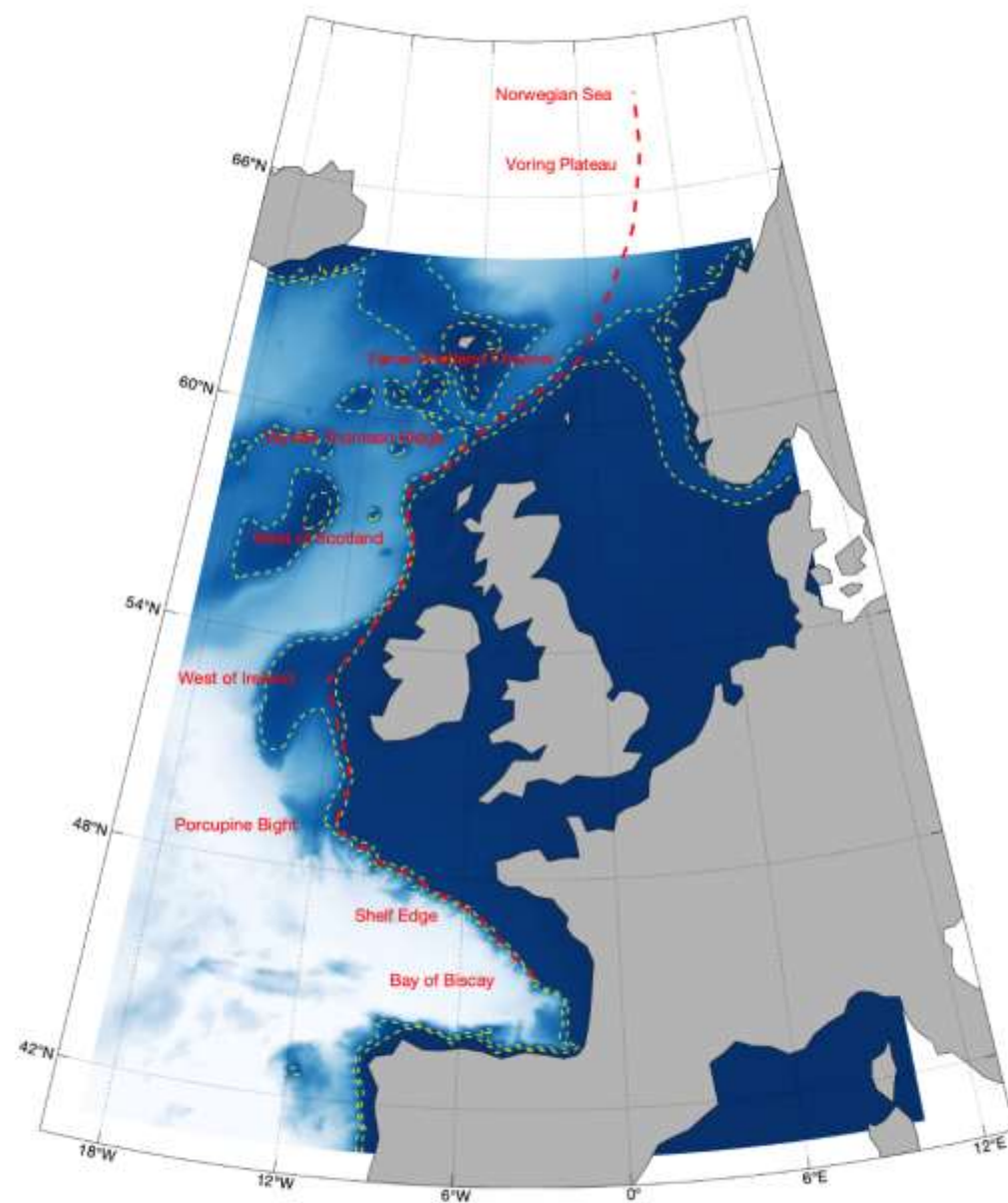
Blue arrows: Cold and less saline Arctic Water

Importance of the Vøring Plateau

Gilbey et al., 2021



From Mork et al.2012

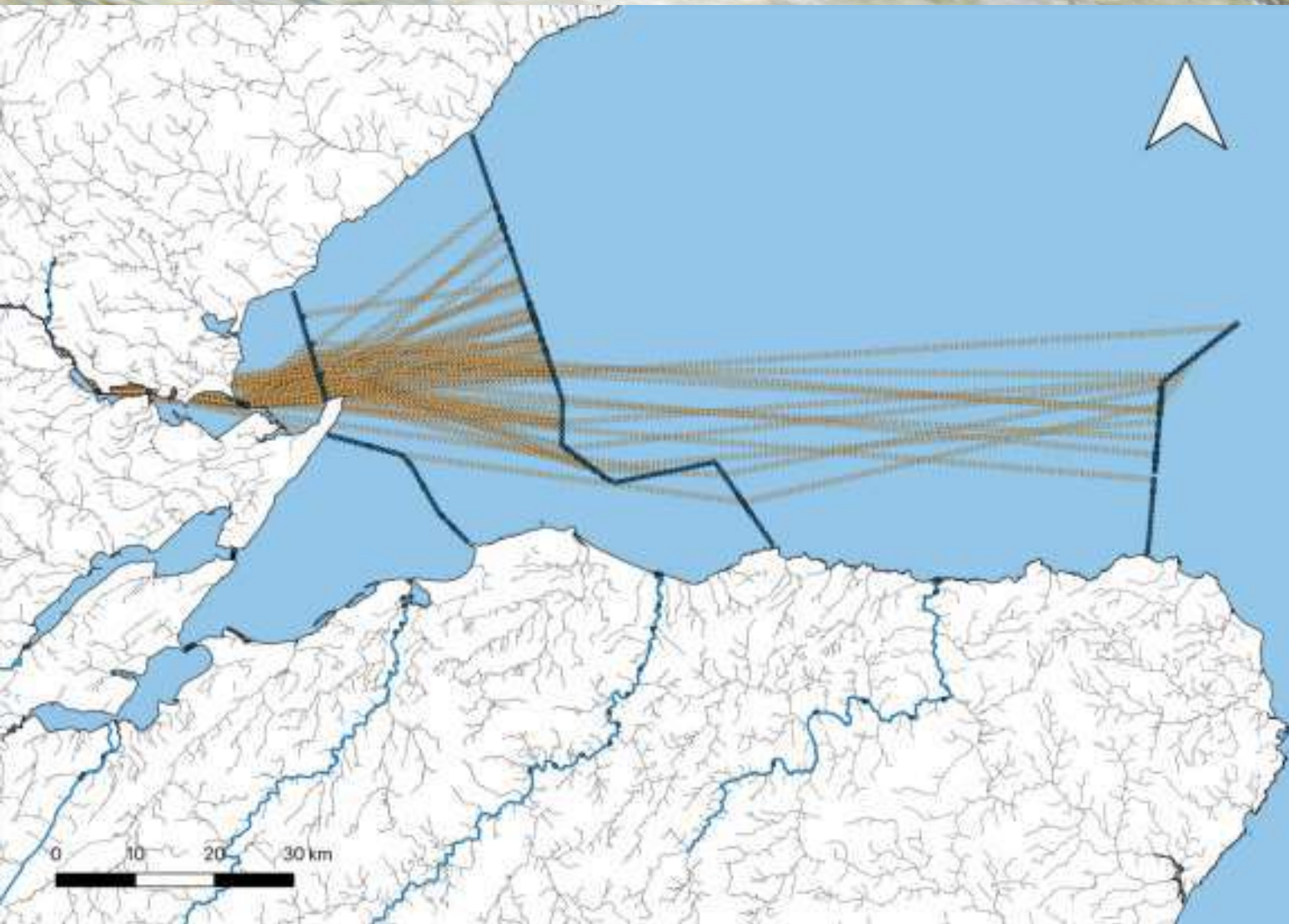
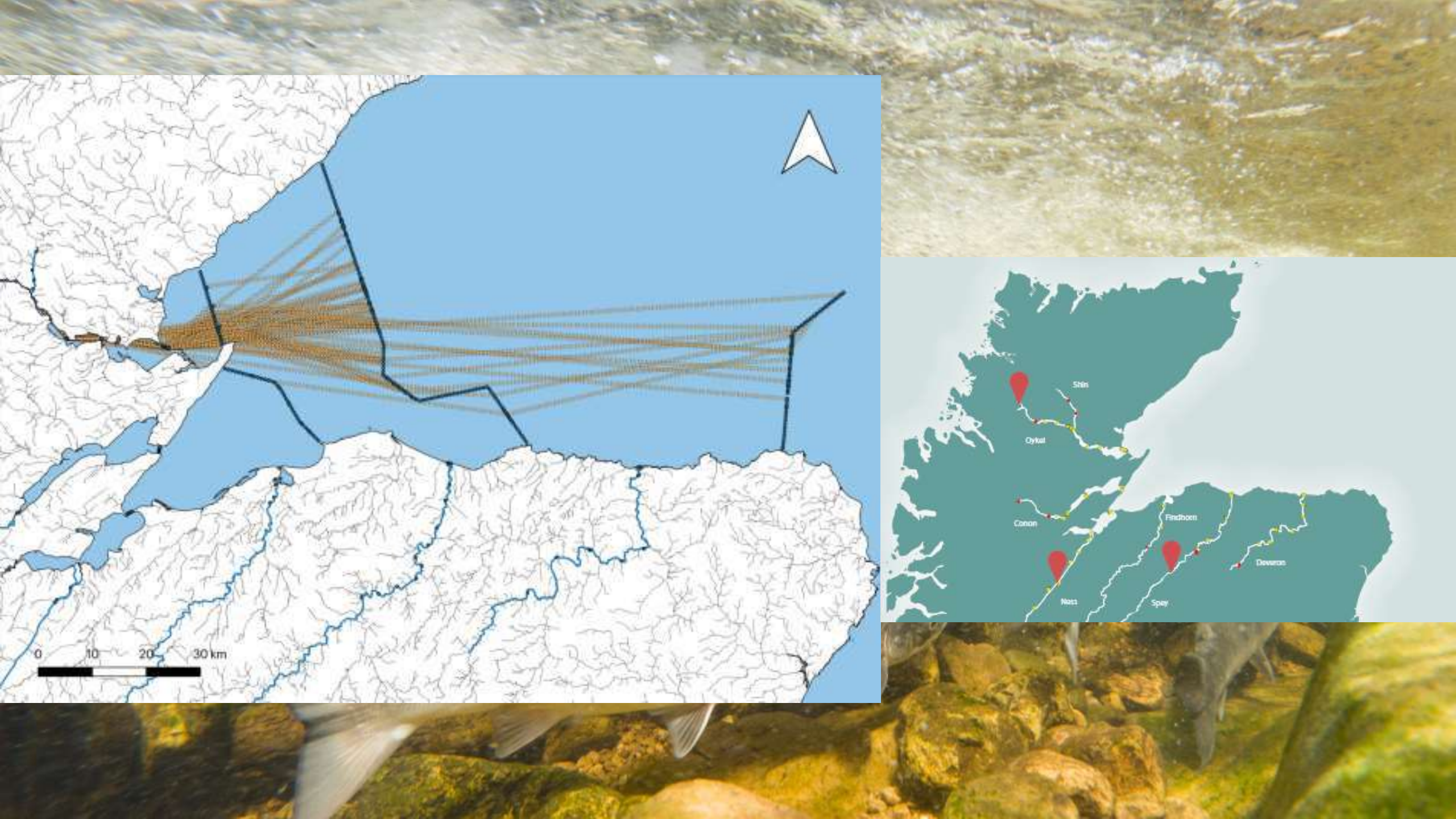


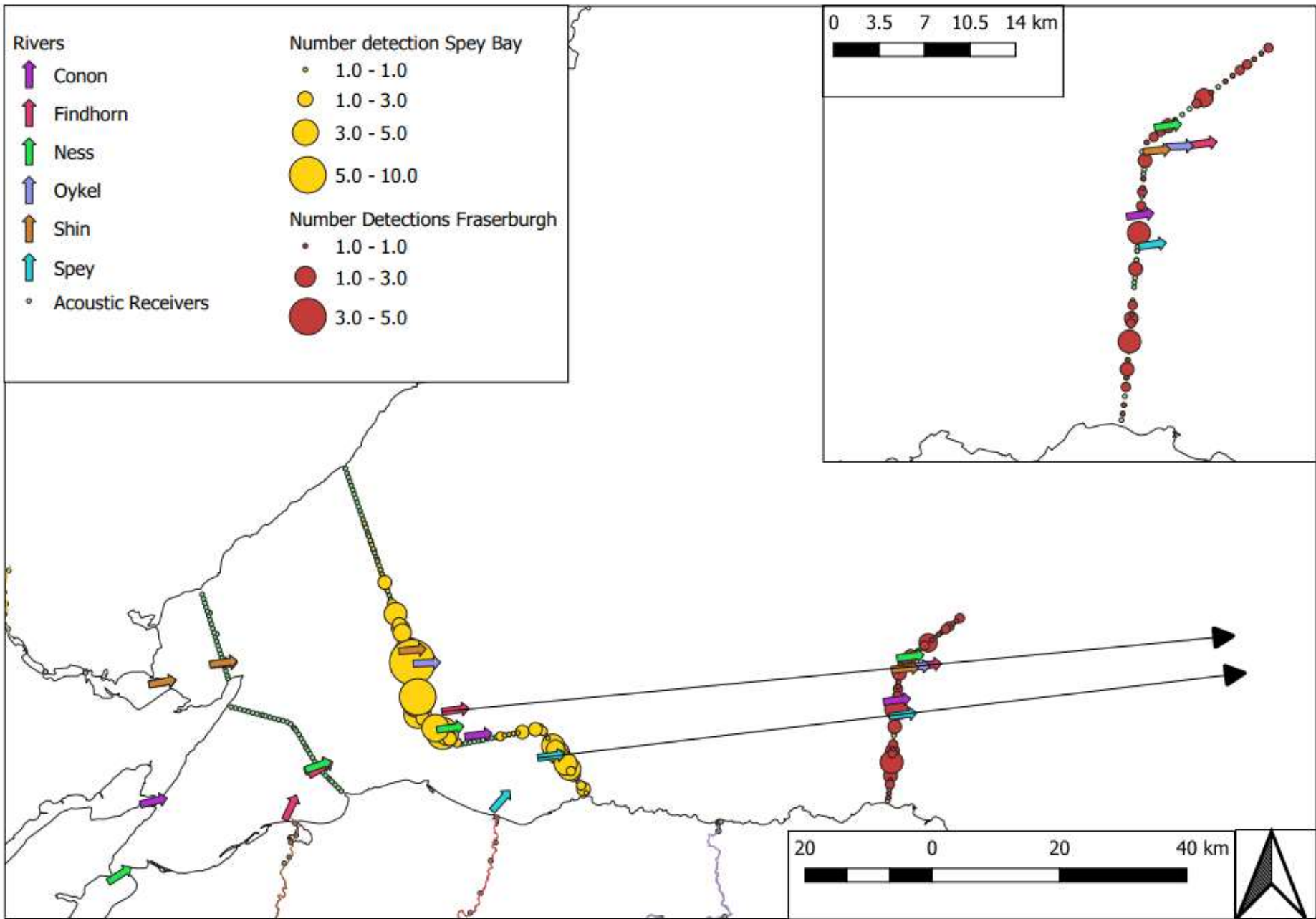




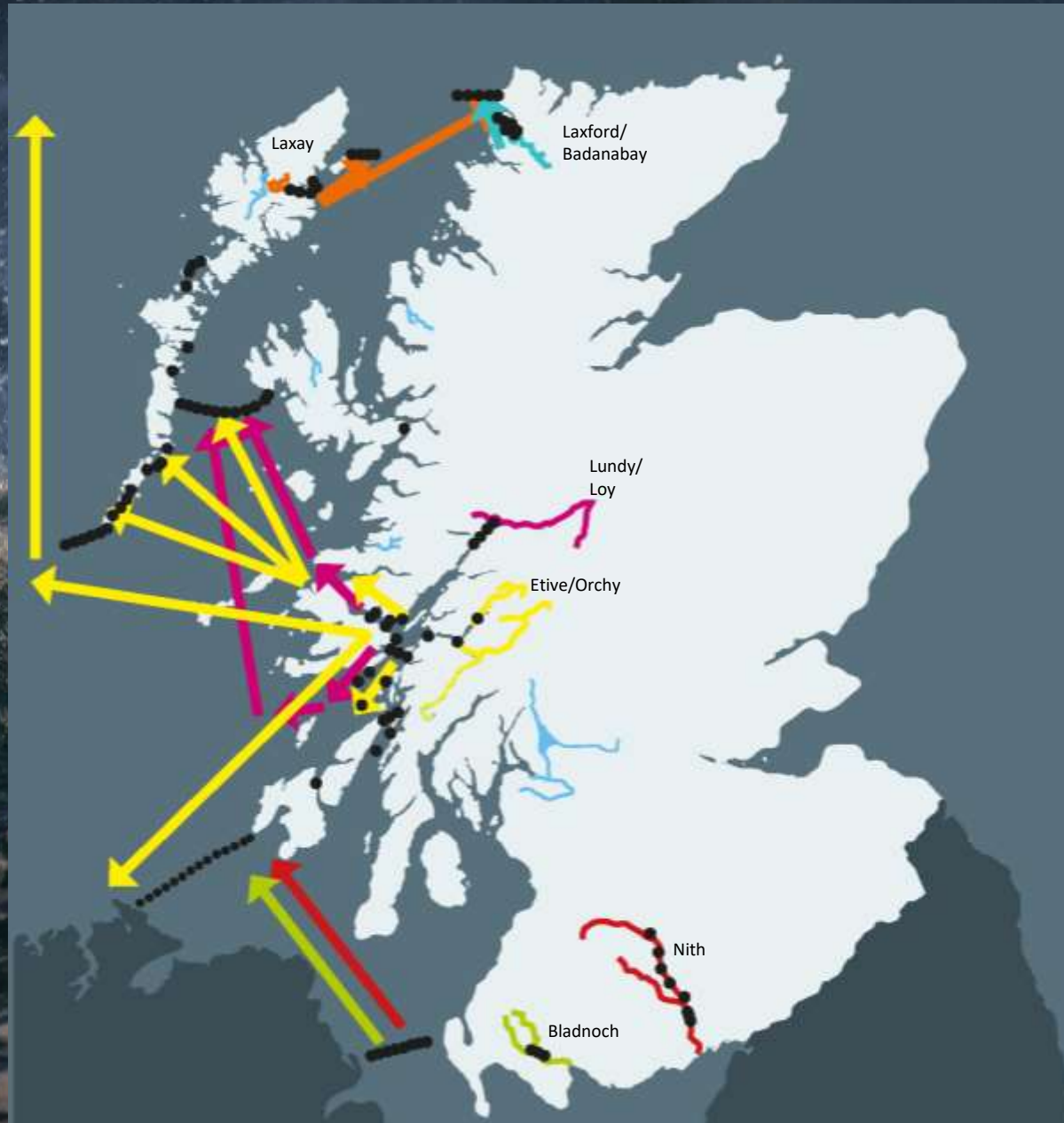
Beatrice Wind Farm – Moray Firth



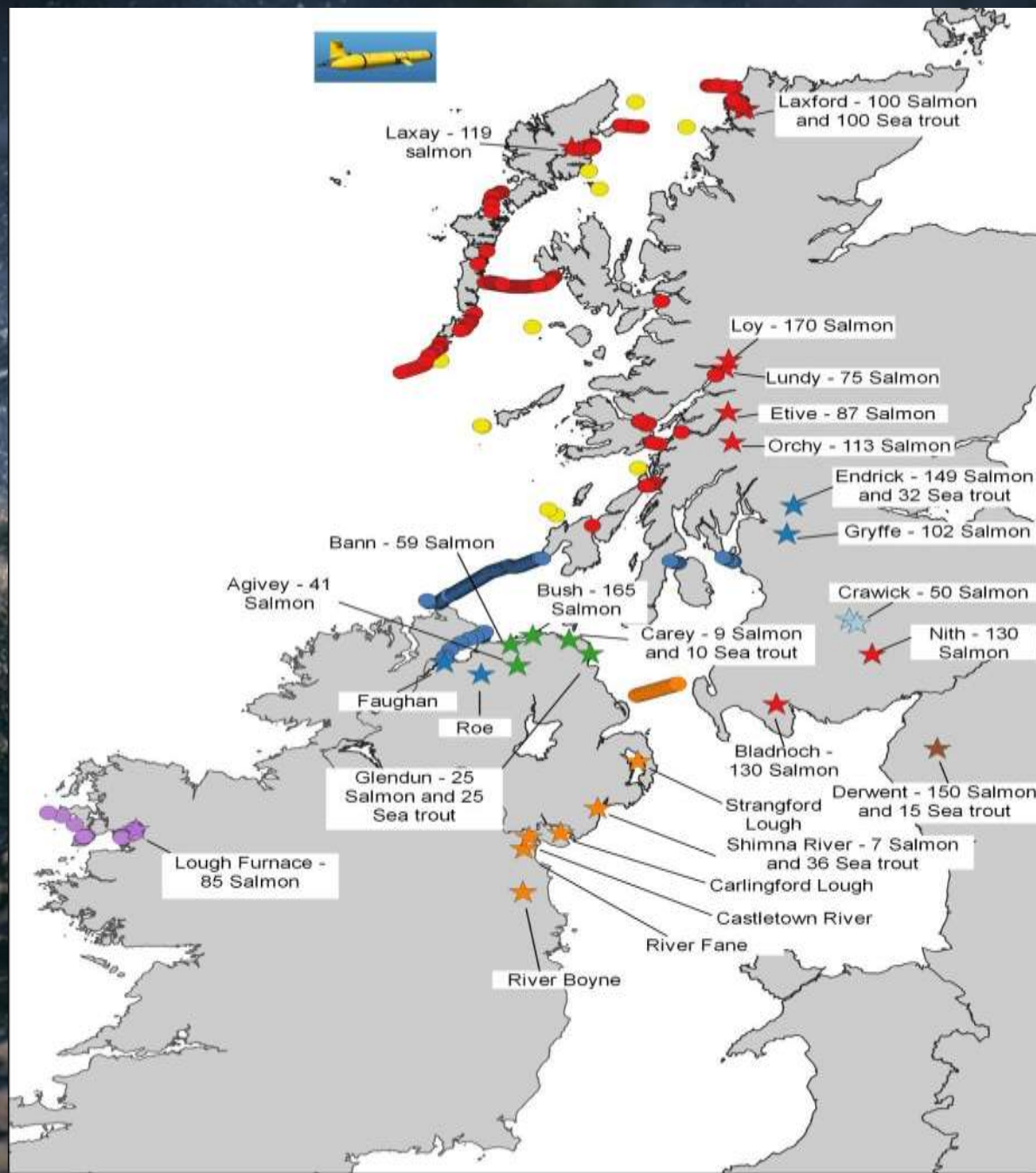


















QAAQORTOQ GREENLAND



2010 and 2022



West Greenland Salmon Tagging

Map marine distribution and migration patterns of adults feeding in coastal waters of West Greenland.

Examine biological and physical oceanographic features to assess how they relate to growth and survival of salmon.

Project began in 2017

Total 102 fish tagged with PSATs in first three years





Greenland

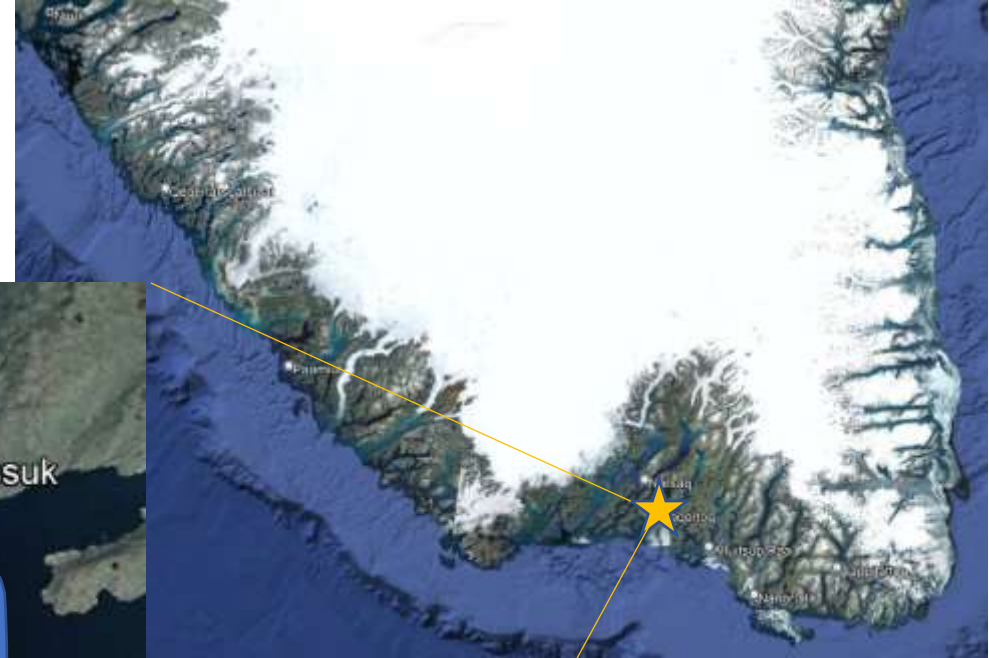
Iceland

Labrador Sea

NEWFOUNDLAND
AND LABRADOR

Ireland

Fishing Area



South Greenland





Research Team



Heather Perry (ASF)



David Roth (CRI)



Carole-Anne Gillis (GMRC)



Jon Carr (ASF)



Chantelle Burke (DFO)



Ken Whelan (AST)



Martha Robertson (DFO)



Tim Sheehan (NOAA)

Local Team



Brian Jensen



Peter



Malu Ravn



Lili Petersen





Greenland Satellite Tagging

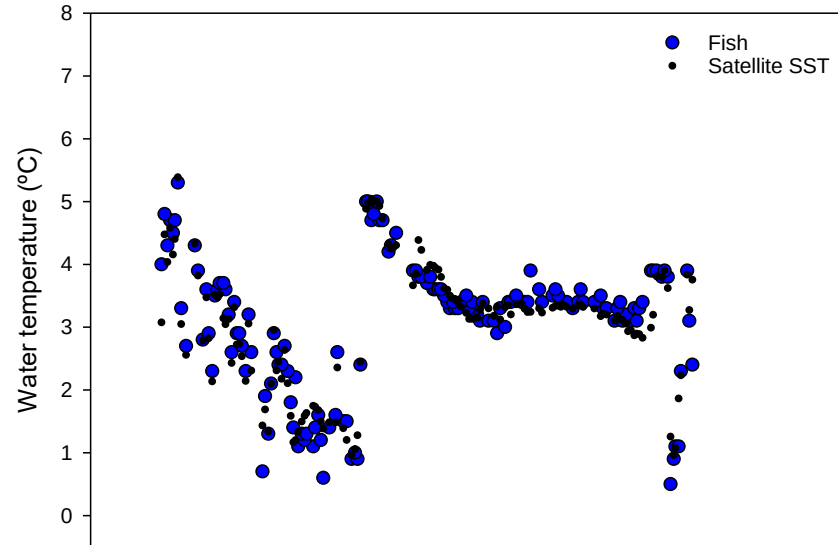
- Adult migration from Greenland back to rivers in North America
- Atlantic Salmon Federation, NOAA, and ESRF Atlantic Salmon collaborative effort
 - Qaqortoq: September – October
 - 2018: 12 satellite tags and 2 acoustic tags
 - 2019: 20 satellite tags and 4 acoustic tags
 - 2021: 70 satellite tags
 - 2022: 114 satellite tags and 95 acoustic tags

Year	North America	Europe	PSAT Total
2018	57%	43%	12
2019	67%	33%	20
2021	53%	47%	70
2022	84%	16%	114

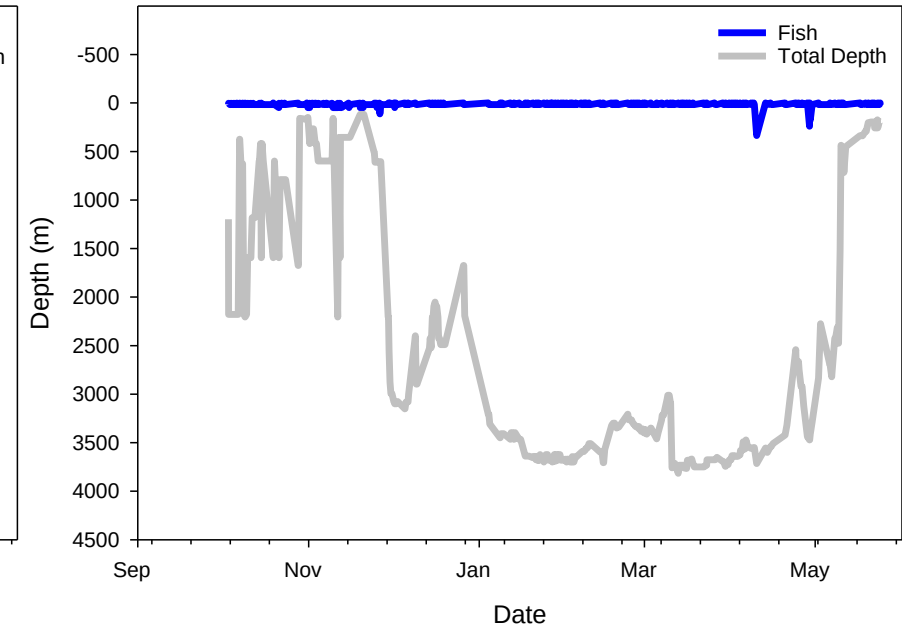
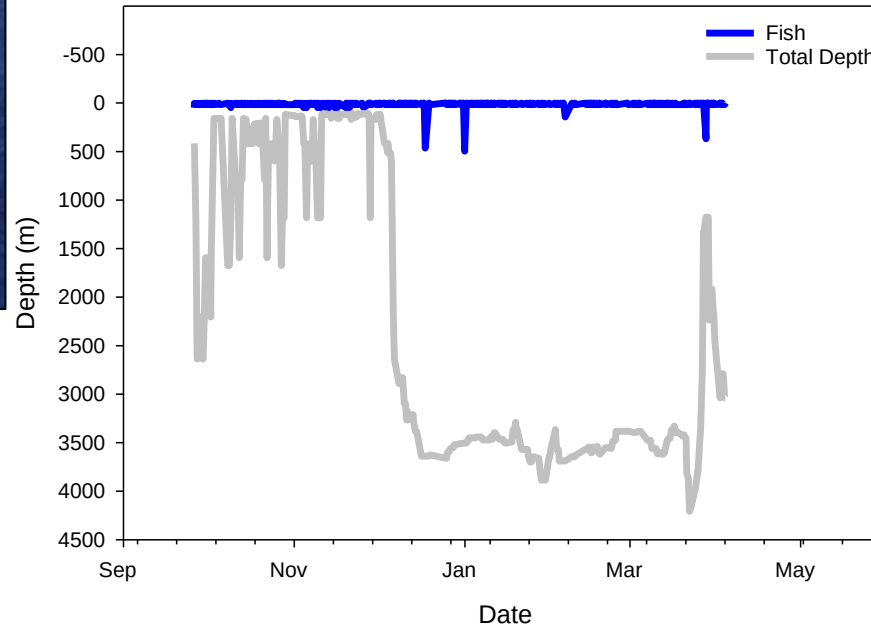
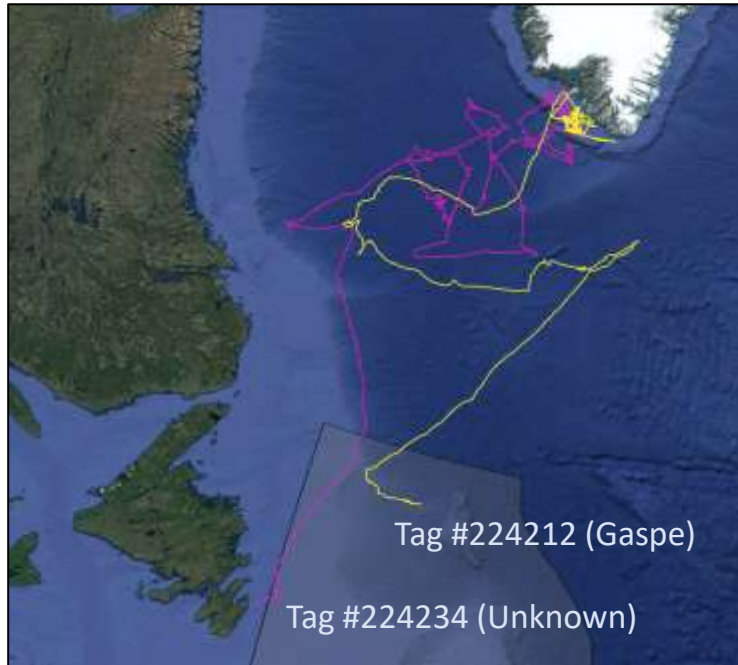
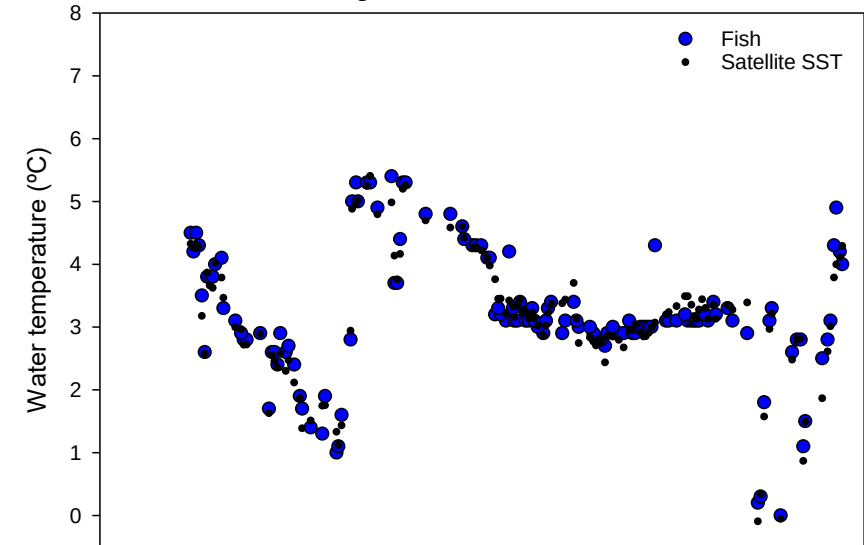


Greenland Satellite Tagging 2021

Tag #224212 Gaspe



Tag #224234 Unknown





Prey Items



Squid



Sandlance Larvae

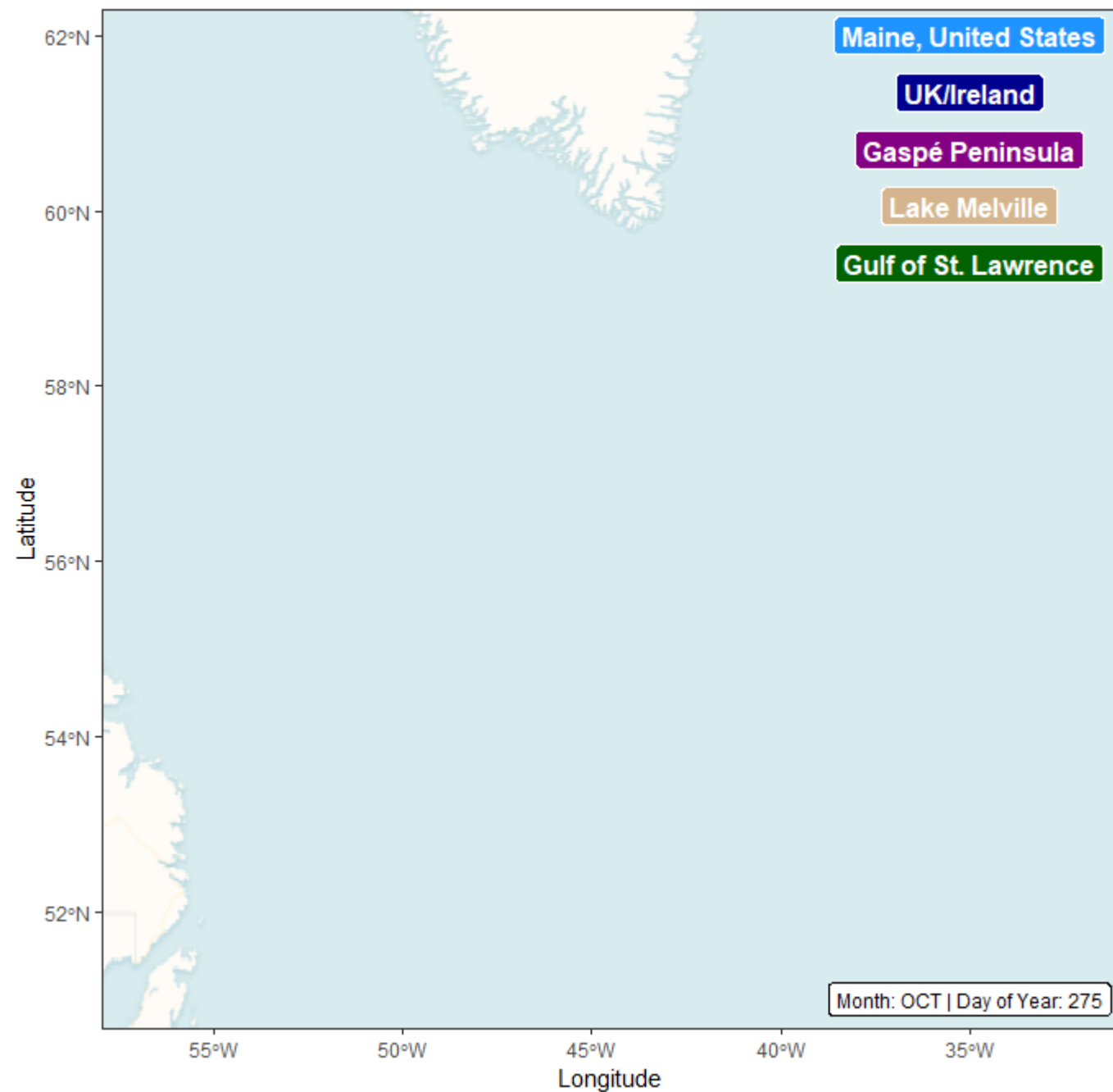


Sandlance



Capelin

2018-2019 West Greenland PSAT Tracks



All-Ireland Marine Observation Network

Legend

Jurisdictional
boundary



Existing
SeaMonitor/other
arrays



Existing
SeaMonitor
species tagging sites



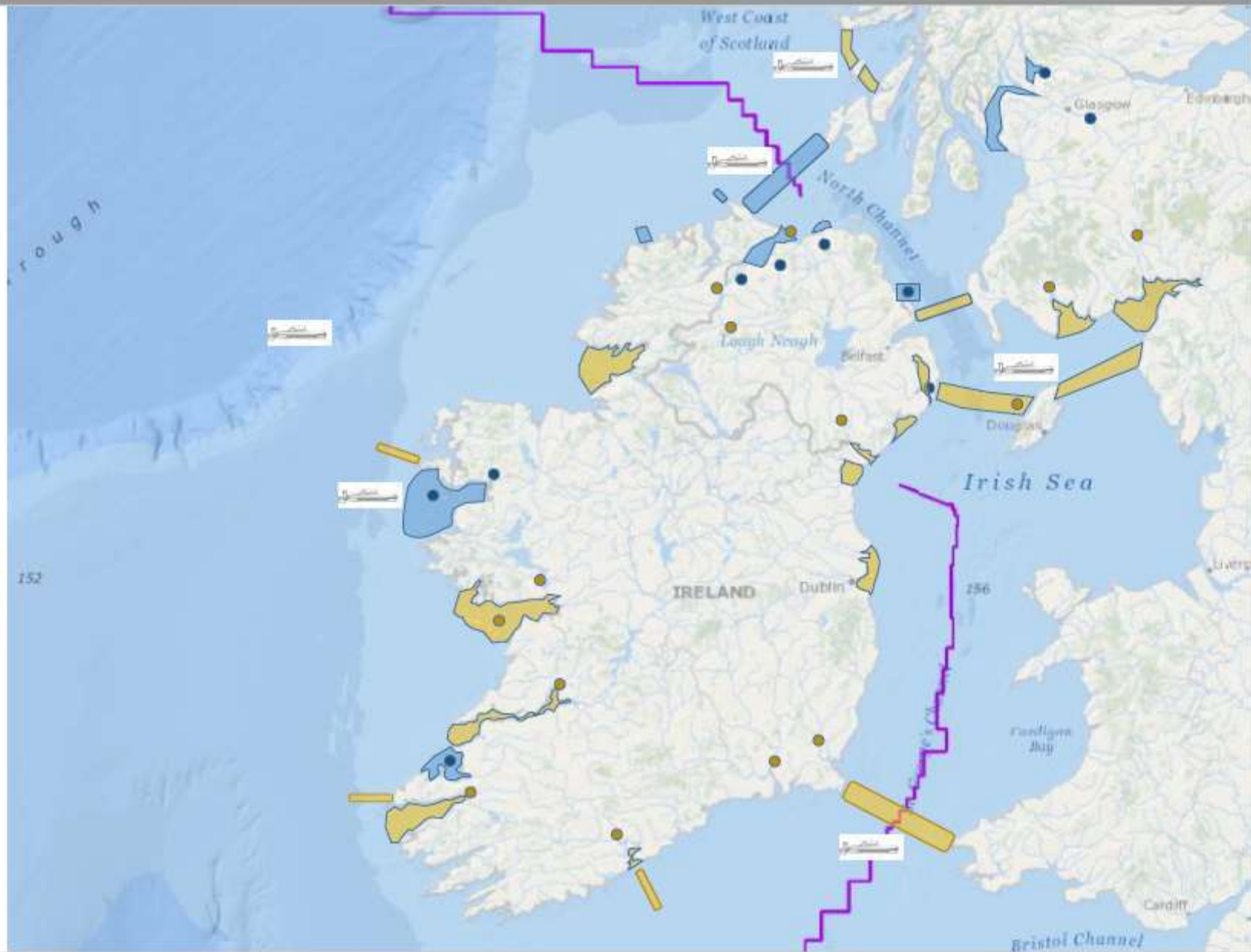
Potential
new arrays



Potential new
species tagging sites



Potential glider
missions





Thank You



 Atlantic Salmon Federation
Fédération du Saumon Atlantique