

West Greenland Atlantic Salmon Sampling

A photograph of a fishing boat and gear in a coastal setting. The boat is yellow and has a wooden frame. It is surrounded by large piles of green and yellow fishing nets. In the background, there is a rocky cliff and a cloudy sky. A red container with the text 'DCSU 340 2261' is visible on the right side.

Introduction to Greenland

West Greenland Atlantic Salmon Fishery – History & Management

International Salmon Sampling Programme

Key insights gained from 50 years of tagging and fishery data

Future Research & Management

Kalaallit Nunaat - Greenland



World's largest island

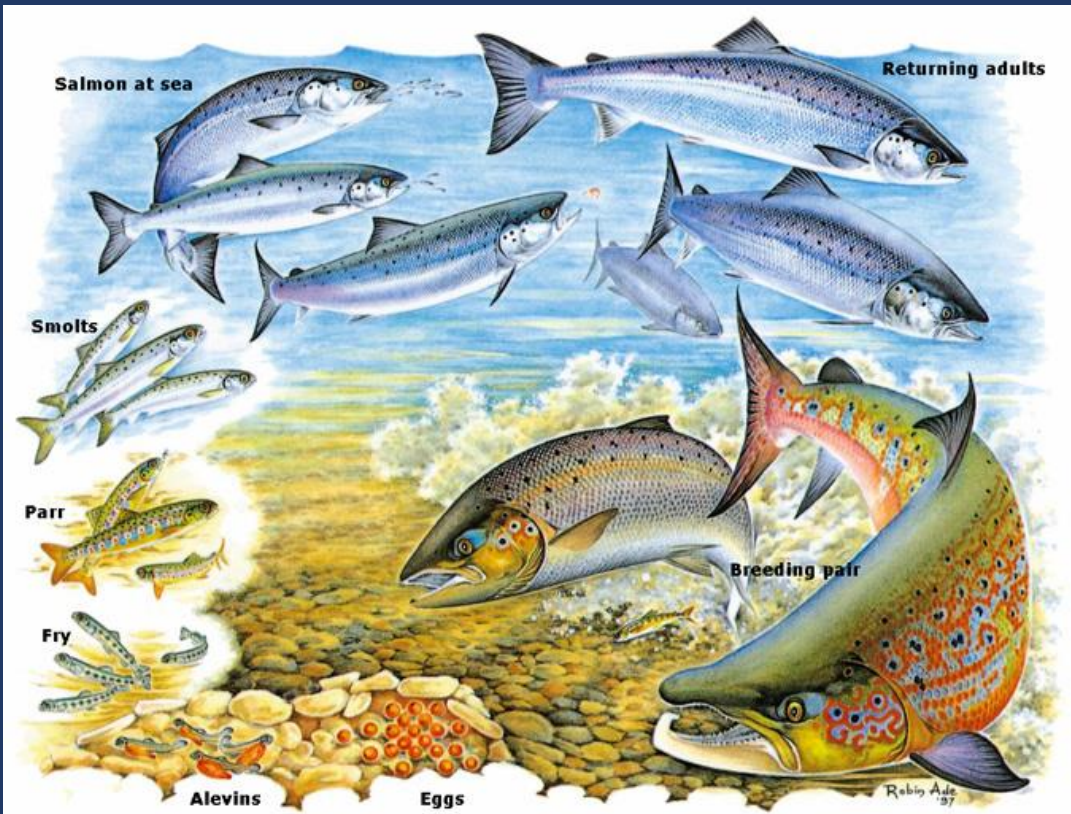
~80% ice covered

~85% Greenlandic Inuits, 15% Danes and others

Part of Denmark, progressively gaining independence. Population: 56,000

Transitioning economy: Fishing accounts for 90% of exports. Minerals and hydrocarbons

Atlantic Salmon *Salmo salar*



Life Cycle

Large multi sea-winter salmon

Origin: Canada, U.S.A, UK, Ireland, Faroes, France, Spain, Southern Norway, Greenland

Variable diet: Capelin, squid, amphipods, sand lance

West Greenland Salmon Fishery - History



Began in the 1960's and peaked in 1971 at 2700t (~1 million salmon)

1976: International vessels banned

1983: North Atlantic Salmon Conservation Organisation (NASCO) formed

1980's: Catch reduced to <800t

1985: Minimum gillnet mesh size of 140mm introduced

West Greenland Salmon Fishery - Management

A close-up photograph of a person's hand holding a fishing net. The hand is positioned in the center, with fingers spread, and the net is draped over it. The net is made of fine, clear mesh with small, reflective floats attached. The background is slightly blurred, showing more of the net and some white fabric with blue straps, possibly part of a fishing gear or boat.

1998: With the exception of 2001, the export of salmon from Greenland was banned

2002-2017: Fishery restricted to an internal-use only fishery of <50t annually

2018-2020: Quota reduced to 30t (approx. 9000 individual fish) for internal use only
Private subsistence consumption or sale at local markets only

Salmon not to be sold directly to fish processing factories or hotels and businesses

West Greenland Salmon Fishery - Management



Only hooks, fixed gillnets and driftnets are allowed to target salmon

Fishing season generally August 15th to October 31st

Fisherman are required to submit catches daily to the Government of Greenland

Role of International Council for the Exploration of the Seas (ICES)

Role of NASCO

International Sampling Programme

Sampling since 1960. Co-ordinated approach since 2002 (Tim Sheehan, NOAA/ ICES)

Samplers from Greenland, UK, Ireland, Canada and U.S.A

Min 14 days opportunistic sampling. (In 2017 20% of total reported catch sampled)


Biological characteristics, genetic, scale and sea lice samples

Fisherman name and fishing location

Sampling Experience



Sampling Experience



150 salmon fully sampled
Over 200 recorded landings
Maniitsoq market staff support
Importance of Kapisillit to the Greenlandic people

A close-up photograph of a fish scale, showing a central core surrounded by numerous concentric growth rings. The rings are closely spaced and form a roughly circular pattern. The scale is light-colored, possibly white or light blue, and is set against a dark background. A semi-transparent dark blue box is overlaid on the top left portion of the image, containing white text.

Photo by Jason Henry

3 or 4 years in freshwater

2 winters at sea

In 2017 European fish river age 2 (73%) and 3 (15%)

93% 1 sea winter at point of sampling (ICES, 2018)


Photo by Jason Henry

4 or 5 years in freshwater?

1 winter at sea?



Insights from 50 Years of Tagging Data



First ever Scottish (Conon) tag recovery at West Greenland was on 15th October 1956

Scottish recoveries include: Isle of Mull, Aberdeenshire Dee tributaries, North Esk, Tay

Since 1968 a total of 403 Scottish fish recovered

North American fish are more likely to be found in northern locations

No evidence that North American fish arrive before European fish
Inter-continental migrations

Sources: Menzies & Shearer (1957), Ó Maoiléidigh et al. (2018), Reddin et al. (2012), Reddin et al. (1984)

Origin & Composition of the Fishery



Tagging, morphometrics, scale and otolith analysis used to assign continent of origin

More recently genetic analysis can assign fish to 20 NA and 8 European groupings

~20% of catch is European salmon

Exploitation rate thought to have peaked at ~1 in 3 European fish in 1975

Exploitation rate now around 0.8% for the European stock component

Sources: ICES (2018), Jeffery et al. (2018)

Future Research

A fisherman wearing a grey cap, a patterned sweater, and green waders is standing on a boat, holding a large salmon. The boat is on a body of blue water with mountains in the background under a clear blue sky. A fishing rod is visible on the left side of the boat.

Improved understanding of ocean migrations and pressures
(Photo by Tim Sheehan/ Atlantic Salmon Federation)

Better data on catch and effort in space and time

Application of new genetic analysis capability to historical scale samples

Future Management

A scenic landscape photograph of a fjord with snow-capped mountains and a cloudy sky. The mountains are rugged and partially covered in snow, with some peaks shrouded in mist. The water is calm and reflects the sky. The overall tone is somewhat somber due to the overcast sky.

Mixed stock fishery generally against ICES management principals

Newfoundland, Quebec, Gulf of St Lawrence, Scotia-Fundy & U.S.A below CL

Labrador and Southern North East Atlantic (including Scotland) above CL

Ensure an internal-use only fishery

Need to address a range of pressures under our control in the freshwater environment

Find Out More



<http://fms.scot/seans-greenland-blog/>

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