



Council

CNL(18)47

***Presentation of the ICES Advice on
North Atlantic Salmon Stocks to the Council***

sal.oth.nasco

North Atlantic Salmon Stocks



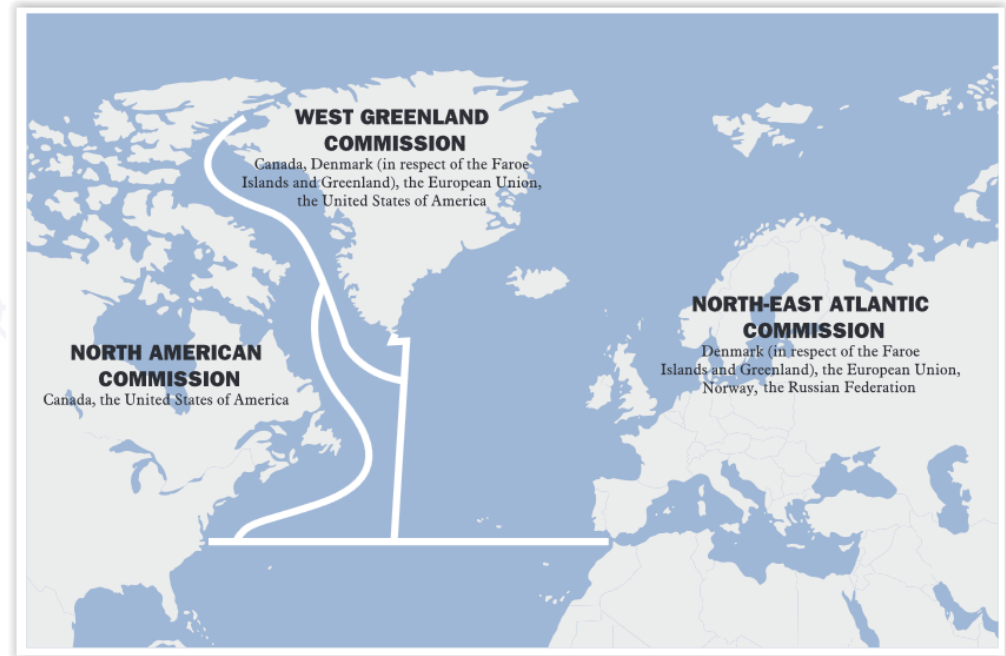
ICES
CIEM

Science for sustainable seas

Background

Management framework for Atlantic salmon in the North Atlantic

- NASCO's three Commission areas:
 - North American (NAC)
 - North-East Atlantic (NEAC)
 - West Greenland (WGC)



ICES Working Group on North Atlantic Salmon (WGNAS)



- WGNAS: ICES working group responsible for the annual salmon assessment and formulating catch advice for NASCO
 - Woods Hole, USA, 4–13 April 2018
 - 27 participants
 - 12 countries
 - 36 working documents



Terms of Reference



1. With respect to Atlantic salmon in the North Atlantic area:

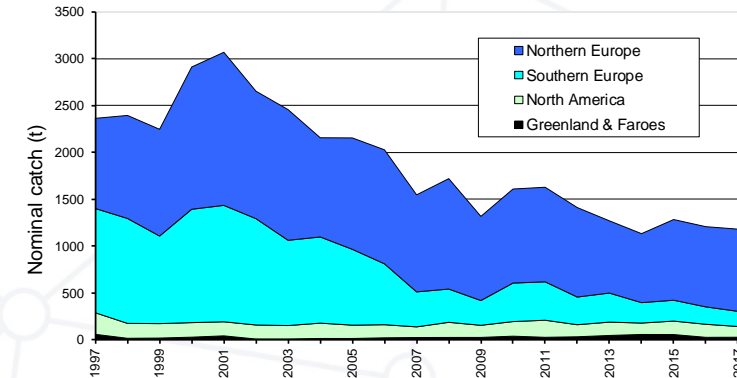
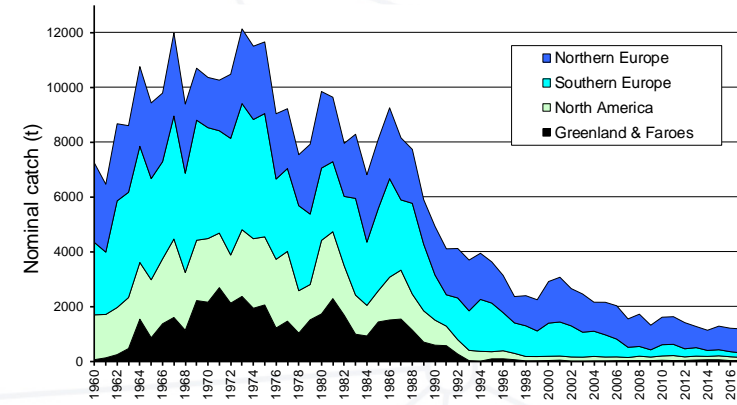
- 1.1 provide an overview of salmon catches and landings by country, including unreported catches and catch and release, and production of farmed and ranched Atlantic salmon in 2017;
- 1.2 report on significant new or emerging threats to, or opportunities for, salmon conservation and management;
- 1.3 provide a review of examples of successes and failures in wild salmon restoration and rehabilitation and develop a classification of activities which could be recommended under various conditions or threats to the persistence of populations;
- 1.4 provide a compilation of tag releases by country in 2017; and
- 1.5 identify relevant data deficiencies, monitoring needs and research requirements.

1.1 Nominal Catches



- total nominal catch for 2017: 1182 t
 - whole weight of fish caught and retained (harvest)
 - salmon caught and released are not included
 - 1960-2017 (sal.oth.nasco: Figure 1)
 - second lowest in the time-series, after 2014

Area	Catch (t)			
	2014	2015	2016	2017
NEAC	954	1083	1041	1039 (88%)
NAC	122	144	140	115 (10%)
WGC	58	57	27	28 (2%)
Total	1134	1284	1208	1182

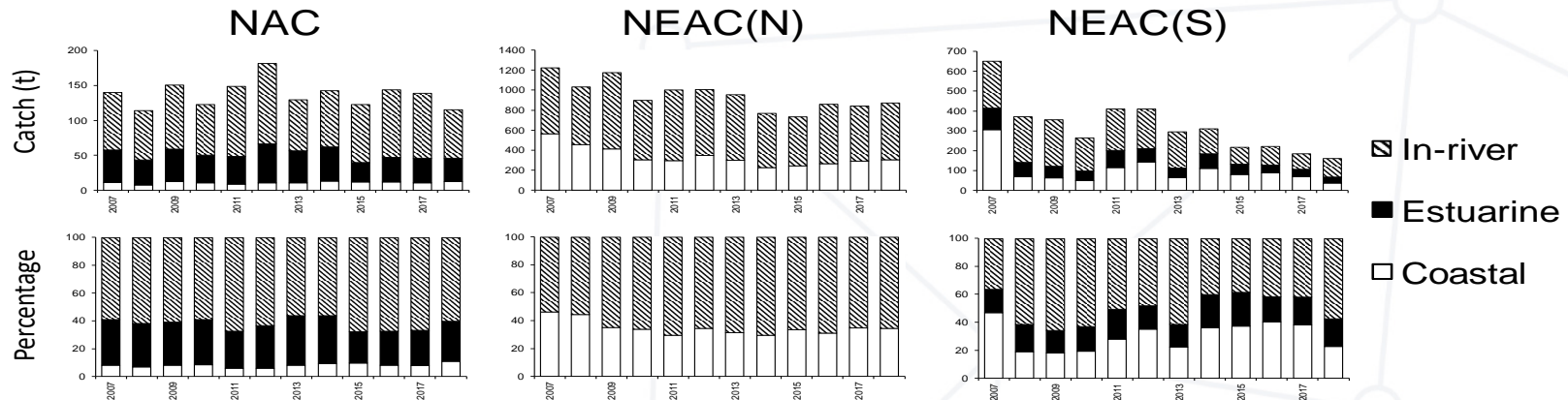


1.1 Location of Catches

Location of catches (sal.oth.nasco: Figure 2):

	% In-River	% Estuarine	% Coastal
NEAC :	64	3	33
NAC:	60	29	11
WGC:	0	0	100

- location of catches by country in sal.oth.nasco: Figure 3



1.1 Unreported Catches

- Total unreported catch in NASCO areas in 2017 was estimated at 353 t
 - 30% of total nominal catch
 - NEAC: 318 t
 - NAC: 25 t
 - WGC: 10 t
- no estimate for Russia, France, Spain, and St. Pierre and Miquelon in 2017

sal.oth.nasco: Table 3

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
NEAC	433	317	357	382	363	272	256	298	298	318
NAC	- *	16	26	29	31	24	21	17	27	25
WGC	10	10	10	10	10	10	10	10	10	10
Total	443	343	393	421	403	306	287	325	335	353

* Data not available for Canada in 2008

1.1 Catch and Release (C&R)

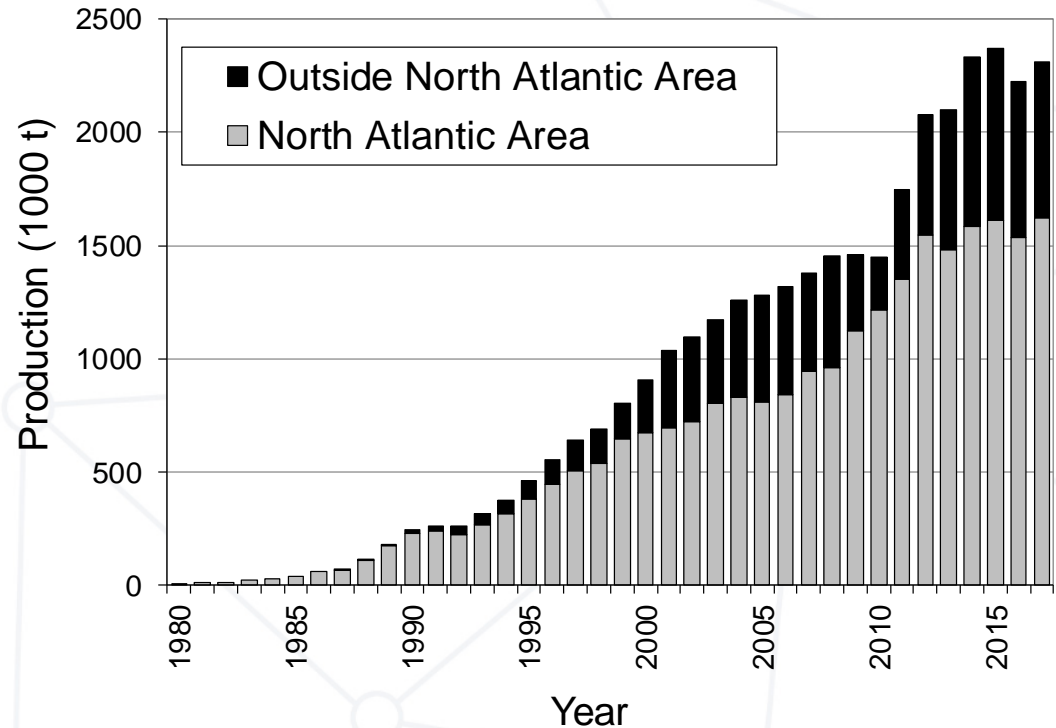
- 2017 C&R reported: 179 000 salmon (sal.oth.nasco Table 9)
 - Percentage of handled fish released ranged from 15% in Sweden to 90% in UK (Scotland)
 - Reflects varying management practices and angler attitudes
 - Practice of C&R generally increasing over time
- No catch and release restrictions in most countries
- C&R mortality used in some national assessments (WGNAS 2009 Section 2.6)



1.1 Production Farmed Salmon



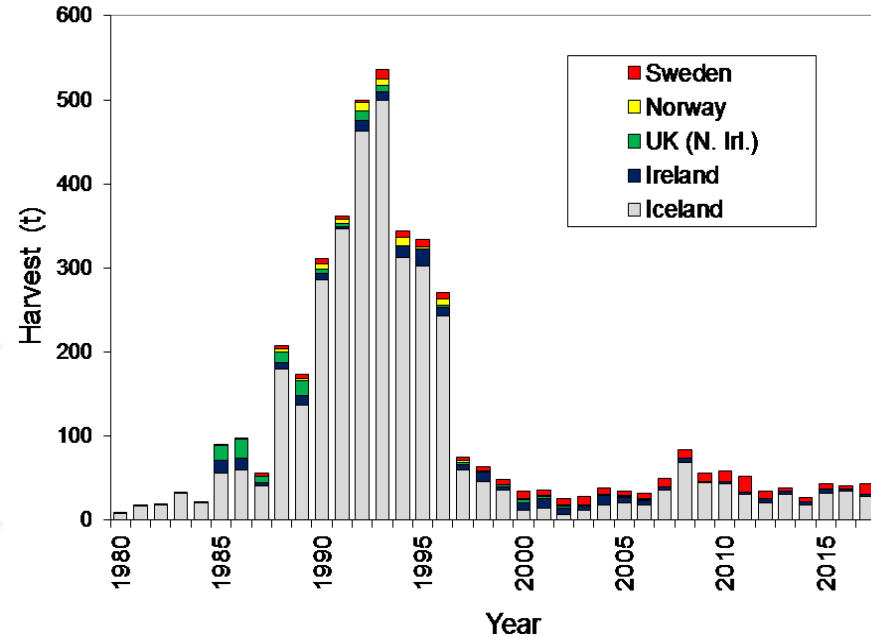
- North Atlantic
 - 2017: 1624 kt (2016: 1535 kt)
 - Norway (80%)
 - UK (Scotland) (11%)
- Worldwide
 - 2017: 2310 kt
 - > 2 million t since 2012
 - Chile (78%)



sal.oth.nasco: Figure 4

1.1 Production Ranched Salmon

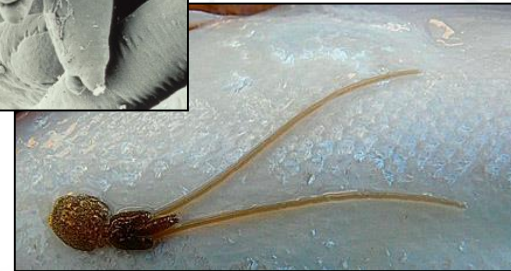
- Ranched
 - 2017: 42 t
(Iceland 67%, Sweden 29%, and Ireland 4%)
- No estimate for Norway, generally < 1 t
- UK (N. Ireland) not assessed since 2008



1.2 Emerging Threats or Opportunities

Diseases and Parasites - Updates

- Red vent syndrome (RVS, *Anisakiasis*) monitoring UK (England and Wales)
- Continued presence (since 2014) of undiagnosed diseased salmon in Sweden
- *Gyrodactylus salaris* eradication program in Norway and confirmed presence in two rivers in Russia in 2017
- Sea lice investigations and management programmes in Norway



1.2 Emerging Threats or Opportunities

Environmental and ecosystem interactions with Atlantic salmon



Information provided on:

- Consequences of poor juvenile recruitment in UK (England & Wales) observed in 2016
 - poor one-year old smolt run in 2017 and may result in lower two-year-old smolt run in 2018
 - juvenile recruitment in 2017 better than 2016
- Interaction with striped bass in eastern Canada
 - 5000 spawners in mid-1990s to one million in 2017
 - expansion beyond historical range in 2017
 - predation rate on salmon smolt estimated at 2.6% to 19.9% (Daniels et. al., in press)



1.2 Emerging Threats or Opportunities

Environmental and ecosystem interactions with Atlantic salmon



- Pink salmon observations in the North Atlantic area in 2017 at previously unrecorded levels
- many countries around North Atlantic on wide geographic scale
- Developing risk assessment in some countries (e.g. UK, Norway, Ireland)



Pukkellaks
Oncorhynchus gorbuscha

Pukkellaks er ein stíllibavelski með to þriggja línuvöðum sem hafa stöðugt verið í Þríeyri árið í Finnmark. Í títt klokkungu í öv um sjöunda drög ynglingar af íslöng, þó þau verða rædd og reitarnæver til öksa for yngling þau andra sammanen öfurr klokkungu. All pukkellaks deyja öfurr yngling.

Staður
Ráðgjörðun 2012: Hög mála (H)

faktaark

Inland Fisheries Ireland

Pink salmon

Non-native Fish Species Alert!

1-1.78 rays on anal fin
Atlantic salmon have 7-11 rays

Very fresh studies, much more than a well-aged Atlantic salmon

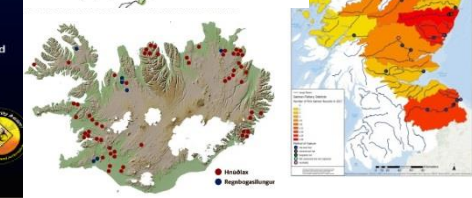
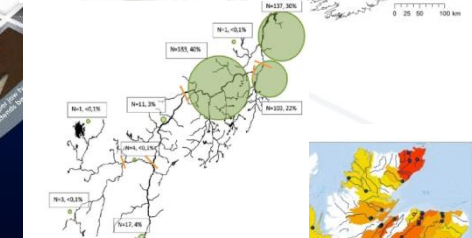
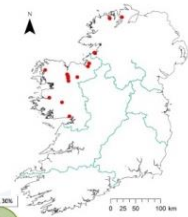
No dark spots on gill covers

Anglers who encounter pink salmon in Irish river systems are requested to contact us immediately and record:

- date and location of capture,
- length and weight of the fish,
- and take a photograph.

Such specimens should be retained for further inspection by IFL.

info@fisheriesireland.ie 01 8842600
To report any sightings of pink salmon please contact 1890 34 74 24

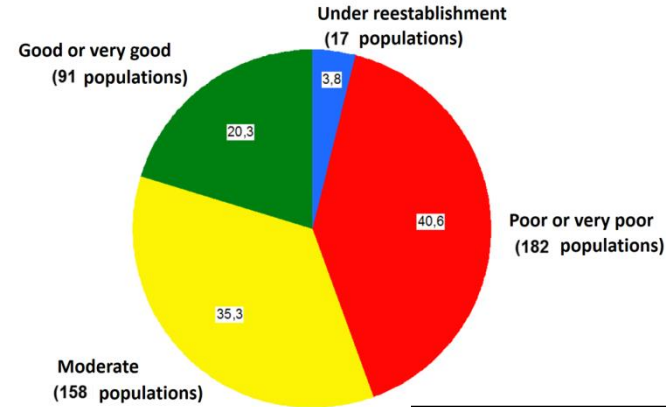


1.2 Emerging Threats or Opportunities

Opportunities for salmon conservation and management

Project updates

- Progress with implementing the Quality Norm for Norwegian salmon populations
 - classified all salmon rivers in 2018 (n=448)
- Impact of capture and tagging smolt
 - recent investigations on the River Frome (UK) provided evidence that the impact of smolt tagging was negligible in many years, and the results support ongoing investigations to derive marine return rates in support of national and international stock assessments

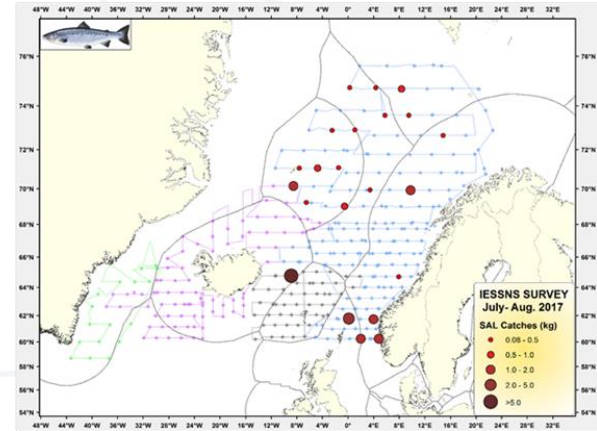


1.2 Emerging Threats or Opportunities



Opportunities for salmon conservation and management

- Update on opportunities for investigating salmon at sea
 - International Ecosystem Summer Survey of the Nordic Seas (IESSNS): 36 salmon in 2017
 - Screening program for bycatch in the Icelandic mackerel fishery: 847 salmon since 2010
 - Environmental DNA (eDNA): information on bycatch in pelagic fisheries by testing for salmon DNA in water from commercial landings of pelagic fish
 - PIT tag screening programs: detect bycatch in pelagic fisheries
 - Tracking and acoustic tagging studies: continued monitoring of salmon smolt and kelt survival through the Gulf of St Lawrence (Canada)

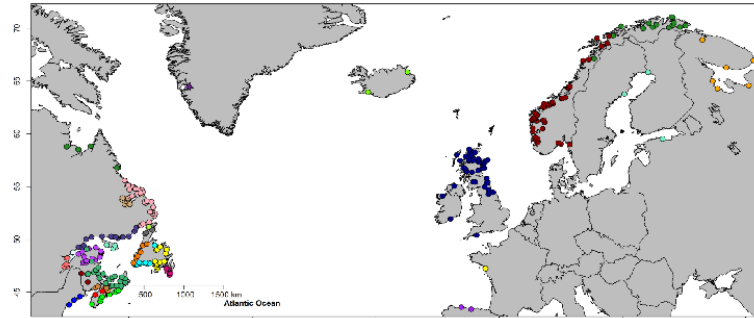


1.2 Emerging Threats or Opportunities



Opportunities for salmon conservation and management

- Advances in genetic stock identification and mixed stock fishery analysis: baseline for 29 groups in NAC and NEAC
- Progress in stock assessment models: extended to N-NEAC with future development of a single model
- A conceptual framework for evaluating marine mortality in Atlantic salmon: guide future research on marine survival (2017 workshop report Atlantic Salmon Trust website)
- Sampling, data, and archiving of historical samples: 2017 workshop concerning West Greenland fishery sampling database and sample archive
- Establishing permanent and secure scale archive repositories: common issues and solutions discussed



1.3 Wild salmon restoration and rehabilitation

Working Group on the Effectiveness of Recovery Actions for Atlantic Salmon (WGERAAS)

Database on Effectiveness of Recovery Actions for Atlantic Salmon (DBERAAS)

15 case studies from 568 individual river stocks

- Three improvements with most benefit:
 - river connectivity
 - water quality
 - habitat restoration
- Most success on stocks with relatively high marine survival
- ICES report currently being finalized



1.4 Tag Releases

- Data on tagged or marked salmon in 2017 are compiled as a separate report (ICES, 2018b)
- Summary sal.oth.nasco Table 5
 - 2.8 million salmon were marked in 2017 (3.2 million in 2016)
 - adipose clip (2.19 million) and coded wire microtags (CWT) (0.332 million)
 - 33 873 external tags
 - hatchery-origin juveniles (2.70 million), 76 712 wild juveniles (76 712) and 10 625 adults (10 625)
 - Increase in use of PIT tags, data storage tags (DSTs), and radio and/or sonic transmitting tags (pingers): 132 725 salmon in 2017 (more than double 2016 rate of 64 669 salmon)



1.5 Data deficiencies, monitoring needs and research requirements



- Scale archive workshop
- PIT tag database
- Complete and timely reporting of catch statistics from all fisheries of eastern Canada
- Improved catch statistics and sampling of the Labrador and Saint Pierre and Miquelon fisheries
- Additional monitoring be considered in Labrador to estimate stock status for that region
- Improve the reporting system of catch in the Greenland fishery
- Continuation of Greenland fishery phone survey (include non-licensed fishers)
- Broader geographic sampling programme of Greenland fishery (including Nuuk)
- In preparation for the next FWI update, a full suite of all potential input datasets for Southern-NEAC be evaluated against country-specific management objectives

