REPORT OF ICES ADVISORY COMMITTEE

ON

NORTH ATLANTIC SALMON STOCKS

TO

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

WGC Area

CNL(14)8

Advice generated by ICES in response to terms of reference from NASCO

10.4 With respect to Atlantic salmon in the West Greenland Commission area:

1. **describe the key events of the 2013 fisheries**
2. **describe the implications for the provision of catch advice of any new management objectives proposed for contributing stock complexes (relates to NAC(13)4)**
3. **describe the status of the stocks**

N.B. No catch advice provided – West Greenland Framework of Indicators (applied January 2014) did not signal a significant change in stock status. Previous multi-year agreement continues and no reassessment required.

Atlantic salmon in the West Greenland Commission area

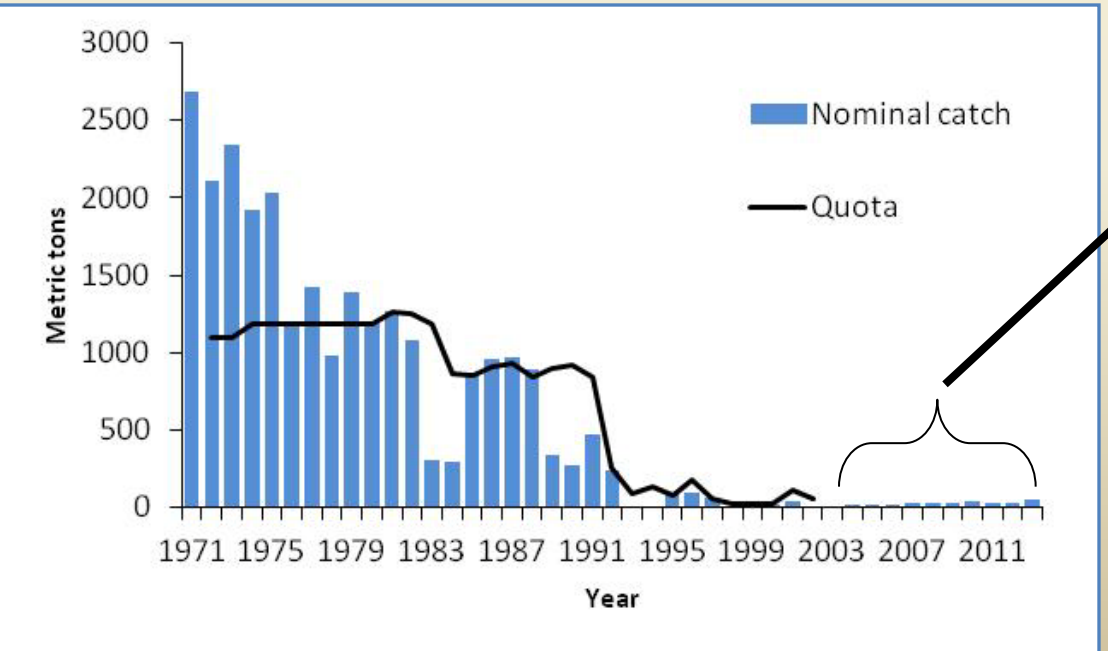
- Salmon from NAC and NEAC in their 2nd summer and autumn at sea go to West Greenland to feed
- Most of the salmon are 1SW non-maturing fish, destined to become 2SW (or older) fish if not caught

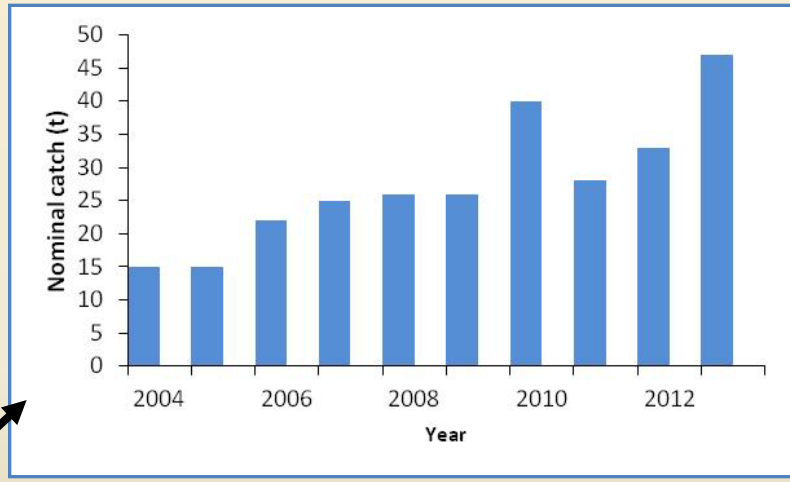
The West Greenland Fishery

- Fishing season in 2013 - 1 August to 31 October
- Fishery open to licensed fishermen (commercial / can use 20 nets) and unlicensed fishermen (private / use 1 net)
- Licensed fishers allowed to sell to hotels, institutions and local markets; unlicensed fishers for personal consumption
- Since 2012, licensed fishers also allowed to sell to factories. Greenland authorities set 35 t quota for factories (independent of other landings)
- All catches must be reported to Greenland authorities, but no longer a need to report daily (seasonal logbook); factories report weekly on line
- Export ban continues - all fish sold within Greenland

Key events of the 2013 fisheries

- Reported catch of 47.0 t (<0.03 t in E. Greenland)
- 2013 catch increased by 44% on 2012 (32.6 t)
- Catch breakdown - factory landings (25.6 t); private consumption (13.4 t); commercial (7.9 t)
- Unreported catch of 10 t





Catch distribution in 2013

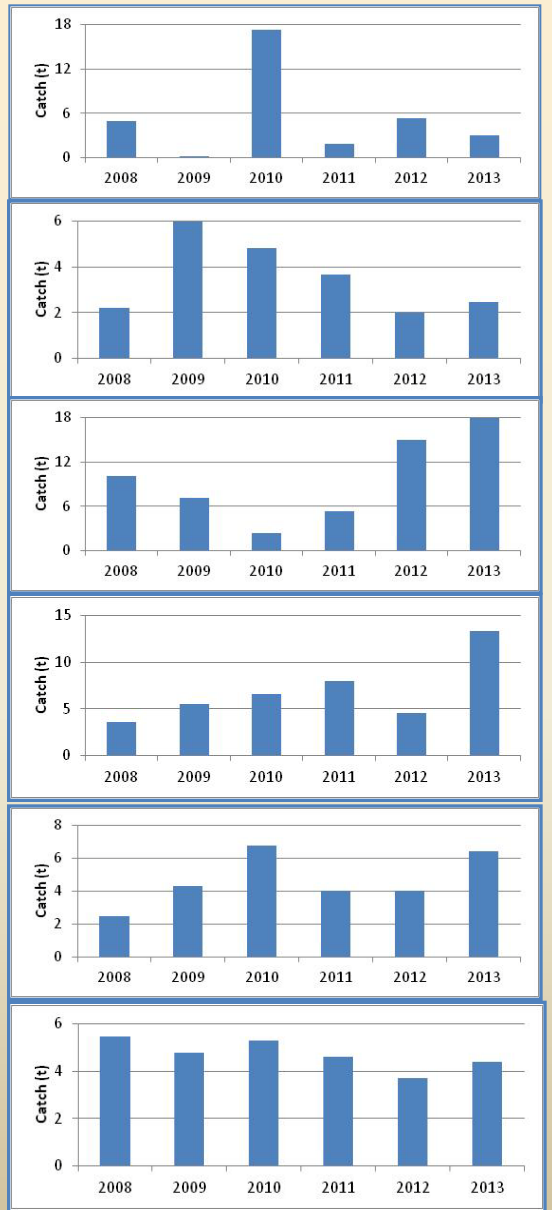
Y-axis scales differ

- Some year to year variation – e.g. high catch in Div. 1A in 2010
- Highest catch in last 2 years in Div. 1C
- In 2013, factories took fish in:

  - 1C (2 communities)

  - 1D (1 community)

  - 1E (1 community)



Effort and Landings

- 533 reports from 95 fishers in 2013 (553 reports from 122 fishers in 2012)
- In recent years (except 2006 & 2011), in at least one of the Divisions where international samplers were present, the sampling team saw more fish than were reported as being landed.
- In 2013 there were discrepancies in 2 NAFO areas. The total discrepancy was 0.7 t and the adjusted catch (used in assessments) was 47.7 t

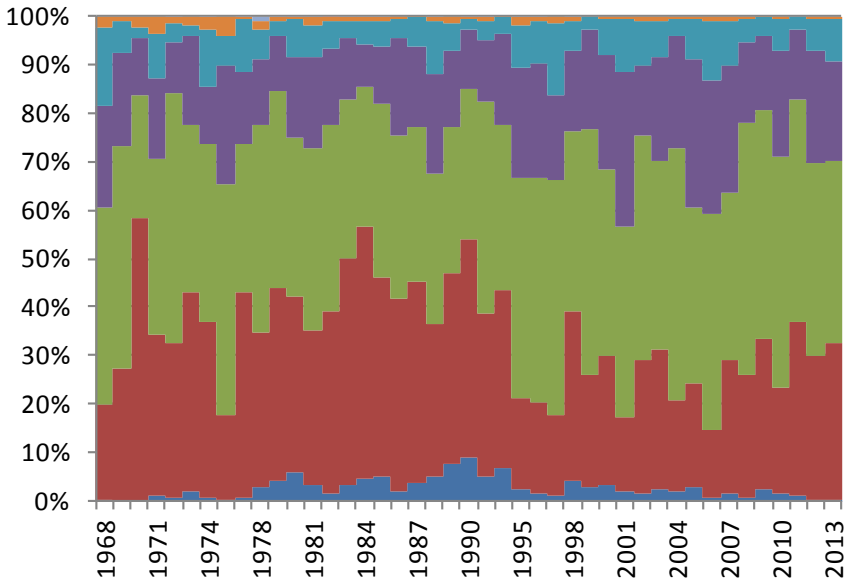
Year		Catch by NAFO Division (kg)						
		1A	1B	1C	1D	1E	1F	Total
2006	Reported	5427	2611	3424	4731	2636	4192	23 021
	Adjusted							
2007	Reported	2019	5089	6148	4470	4828	2093	24 647
	Adjusted						2252	24 806
2008	Reported	4882	2210	10024	1595	2457	4979	26 147
	Adjusted				3577		5478	28 627
2009	Reported	195	6151	7090	2988	4296	4777	25 496
	Adjusted				5466			27 975
2010	Reported	17263	4558	2363	2747	6766	4252	37 949
	Adjusted		4824		6566		5274	43 056
2011	Reported	1858	3662	5274	7977	4021	4613	27 407
	Adjusted							
2012	Reported	5353	784	14991	4564	3993	2951	32 636
	Adjusted		2001				3694	34 596
2013	Reported	3052	2359	17 950	13 356	6442	3774	46 933
	Adjusted		2461				4408	47 669

International sampling programme

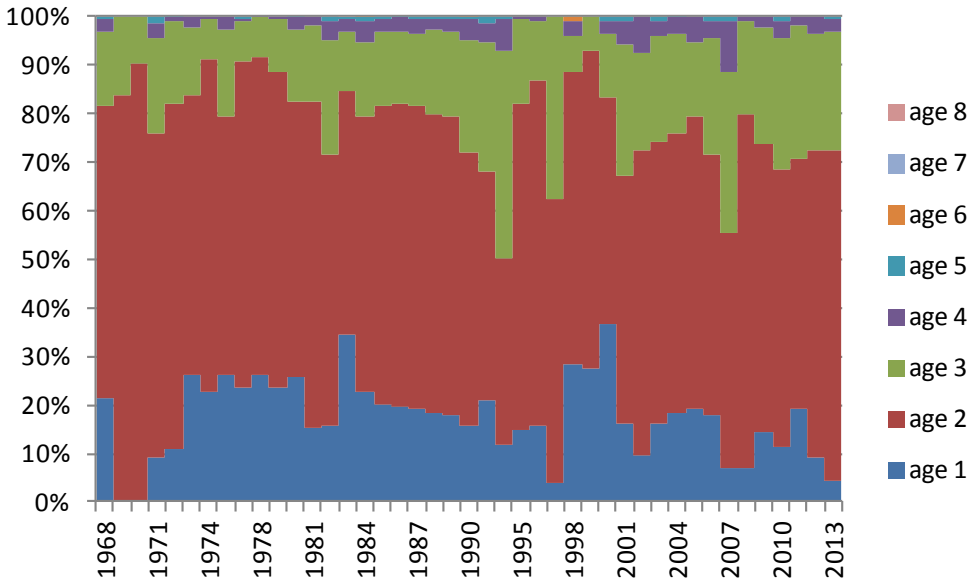
- International sampling programme initiated by NASCO in 2001, continued in 2013
- Samplers from USA, Canada, Ireland, UK (Scotland), and UK (England & Wales) supported by Greenland Institute of Natural Resources,
- Sampling August to October
  - 82 sampling days
  - covering 7 of the 14 weeks
- Samplers located in 3 of the 6 NAFO Divs: Sisimiut (1B), Maniitsoq (1C), Qaqortoq (1F)
  - Unable to sample at Nuuk (1D) - difficulties with access to fish
  - No sampling in East Greenland
- 1,156 fish sampled (~9% of total reported catch - by weight). Information collected on:
  - Length & Weight
  - Tags
  - Scale samples (age)
  - Tissue samples for DNA analysis

Biological Characteristics – River Age

North American



European



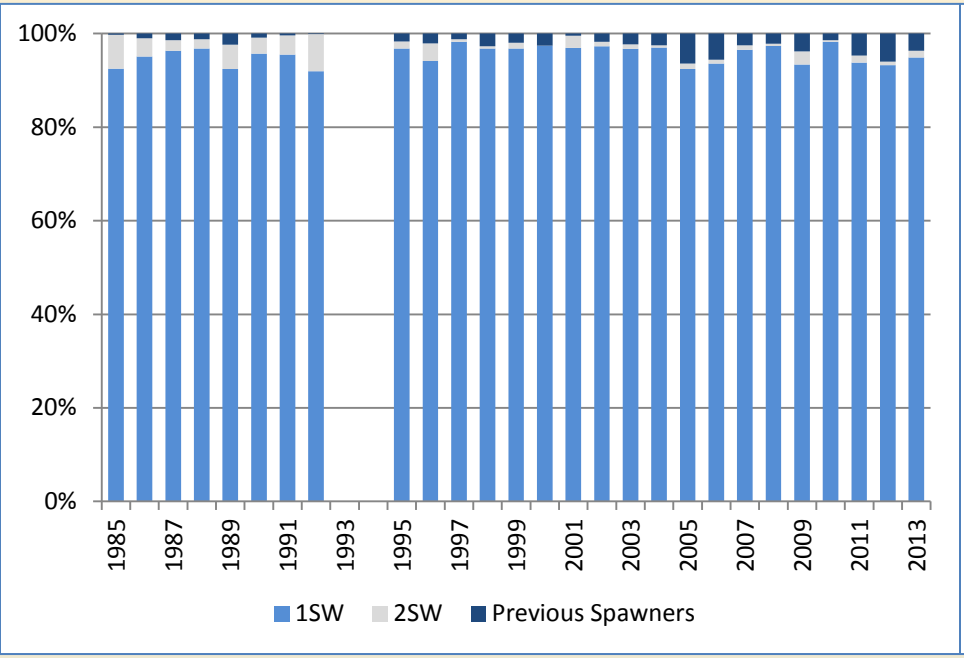
	age 1	age 2	age 3	age 4	age 5	age 6
2011	1.0	35.9	45.9	14.4	2.8	0
2012	0.3	29.8	39.4	23.3	6.5	0.7
2013	0.1	32.6	37.3	20.8	8.6	0.6

age 1	age 2	age 3	age 4	age 5	age 6
19.0	51.7	27.6	1.7	0	0
9.3	63.0	24.0	3.7	0	0
4.5	68.2	24.4	2.5	0.5	0

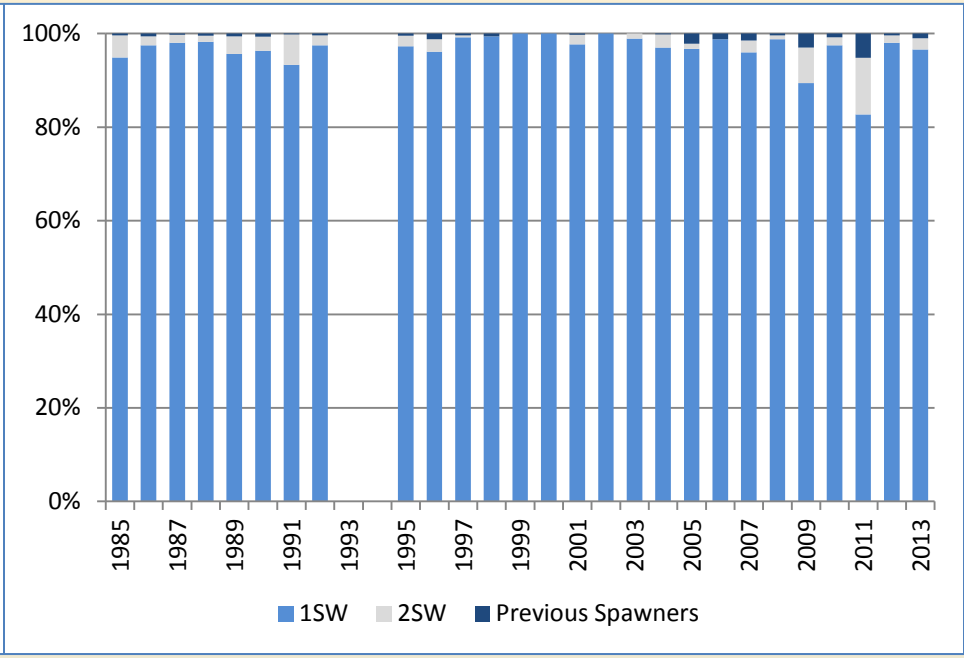
- Wider range and older ages for NA salmon - in 2013, 91% river-age 2 to 4
- European salmon typically younger - in 2013 93% river-age 2 to 3

Biological Characteristics – Sea Age

North American



European

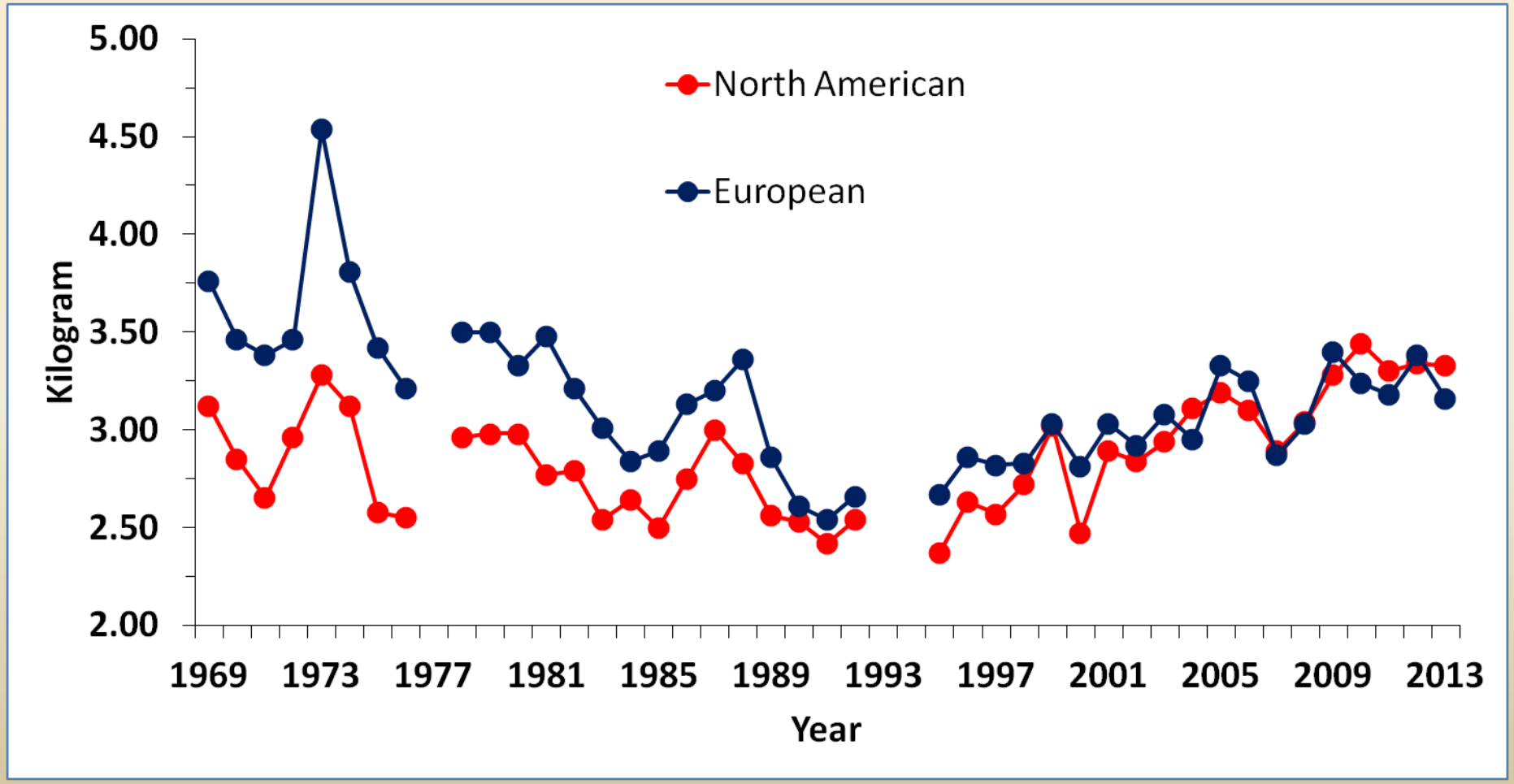


	% 1SW	% 2SW	% PS
2011	93.8	1.5	4.7
2012	93.2	0.7	6.0
2013	94.9	1.4	3.7

	% 1SW	% 2SW	% PS
2011	82.8	12.1	5.2
2012	98.0	1.6	0.4
2013	96.6	2.4	1.0

Biological Characteristics – Mean Whole Weight 1SW salmon

- Mean weights have been increasing since mid 1990's
- Mean weights of NEAC origin 1SW salmon recently similar to NAC - in contrast to early part of time series when NEAC salmon heavier



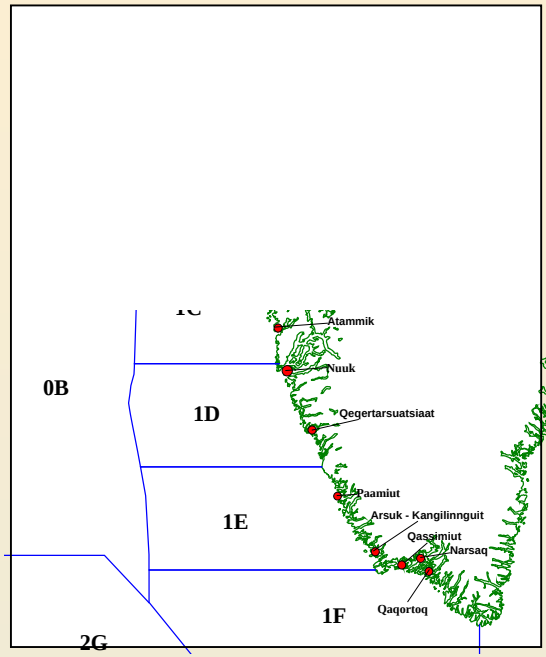
Tag recoveries in 2013

- 13 adipose fin-clipped salmon observed by samplers, none carried tags

- 2 tags reported (returned to Nature Inst.):

NAFO 1C

1. Norway, Imsa smolt release May 2012

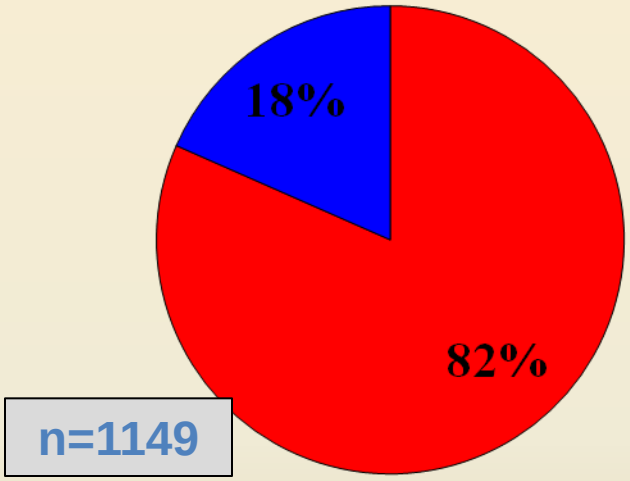


NAFO 1B between Aasiaat and Aqunaaq

2. Wild smolt released on River Ure – UK (England & Wales) in 1975 (tag found in freezer)

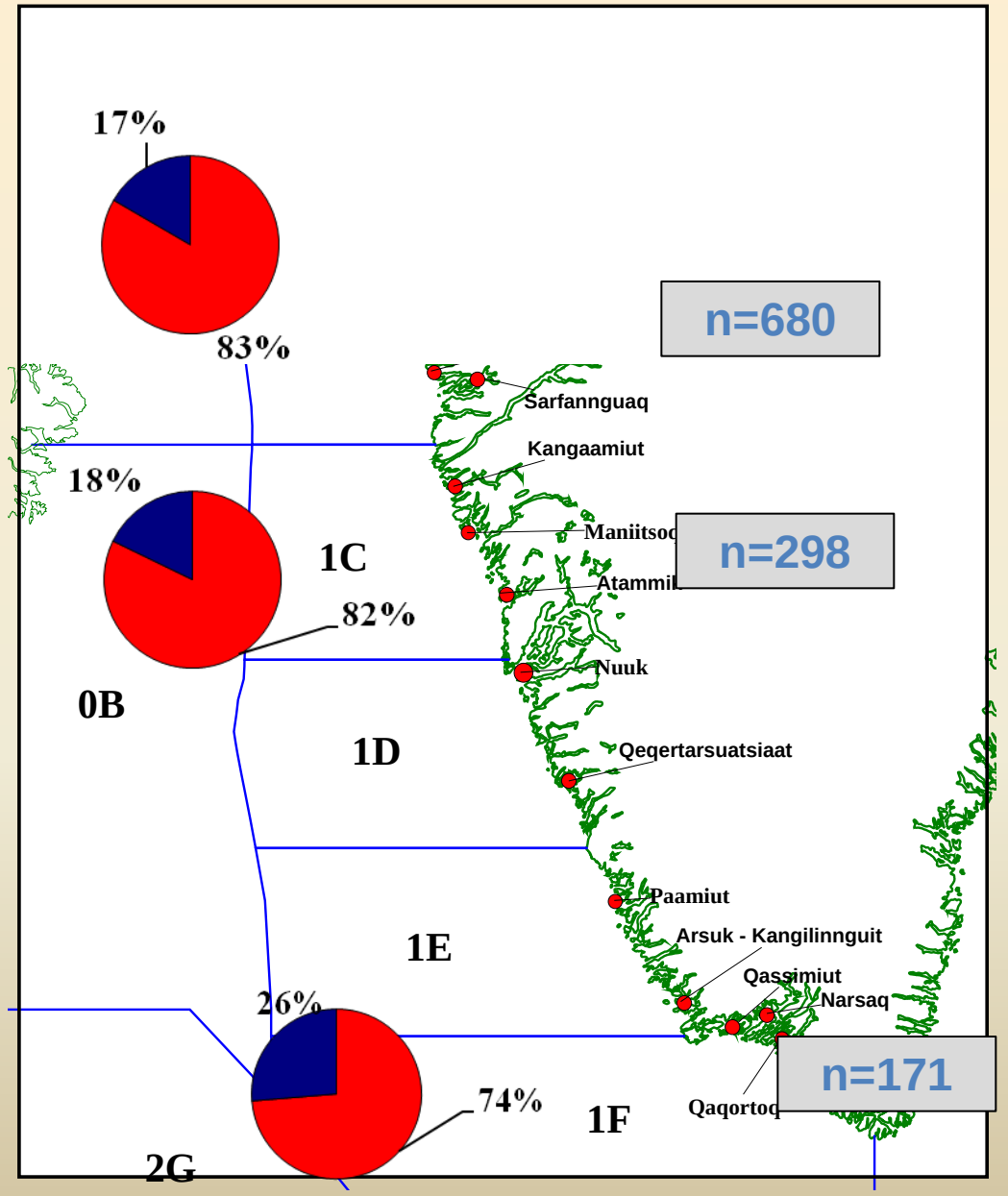
Continent of Origin - 2013

2013 Continent of Origin by NAFO Divisions

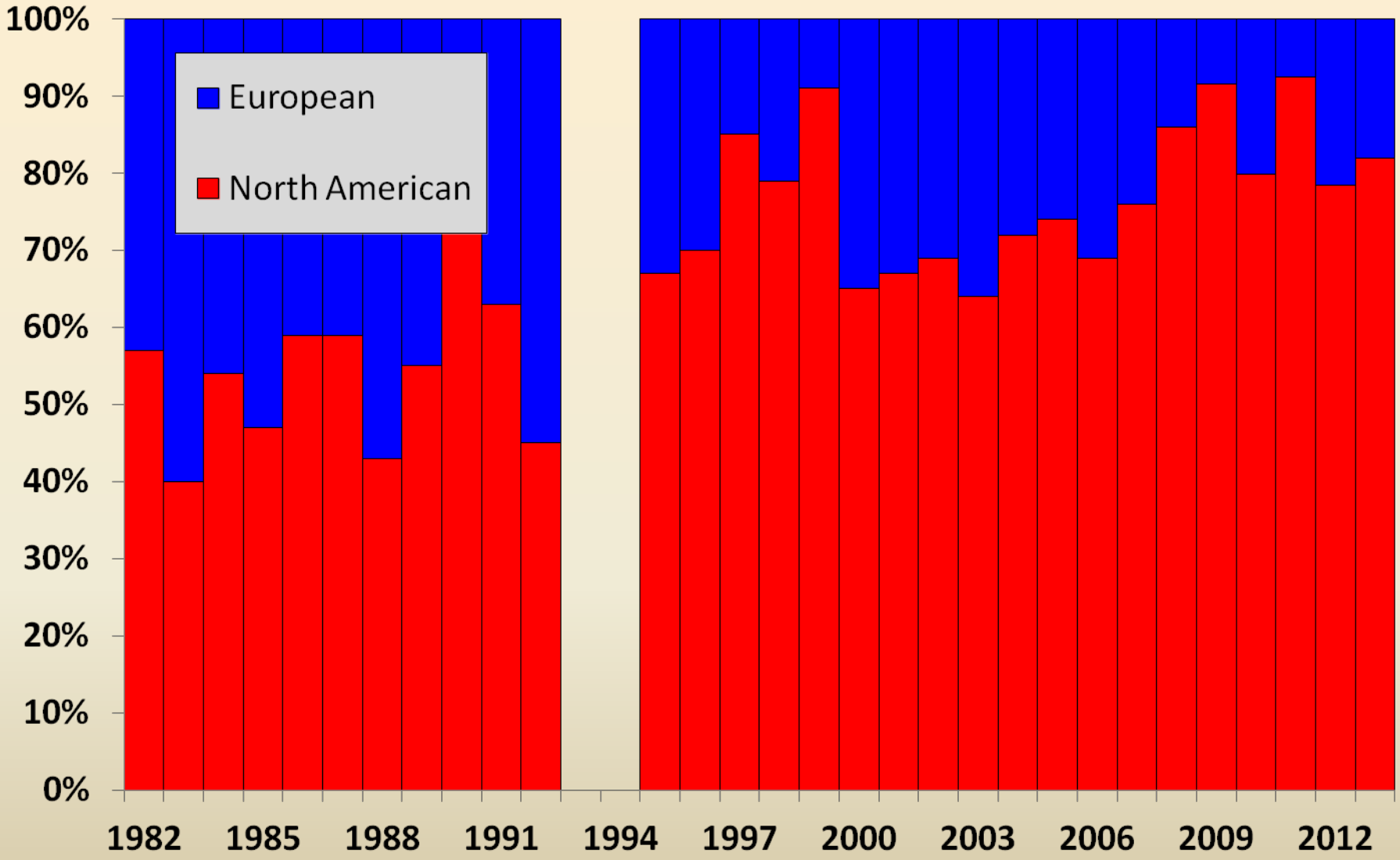


North American Origin

European Origin



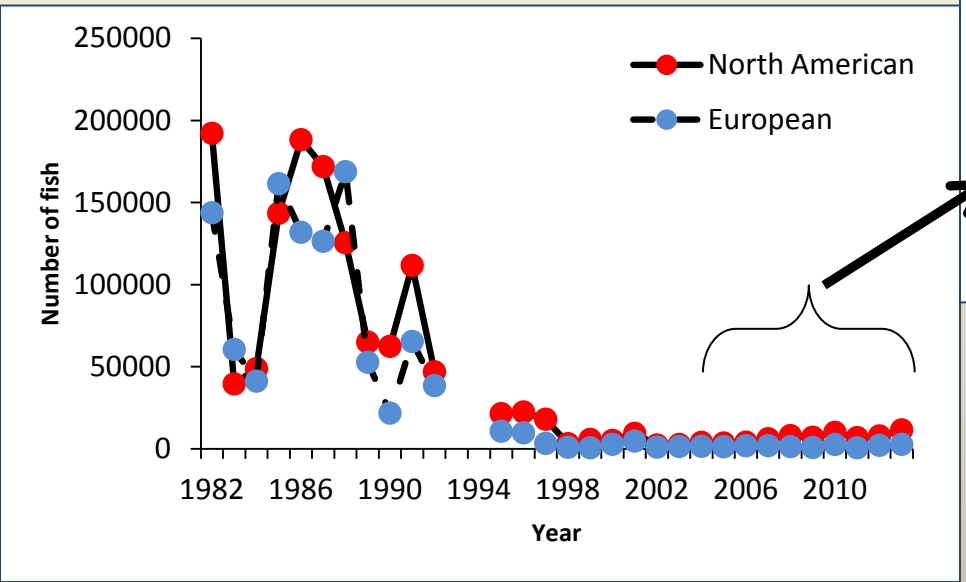
Continent of Origin

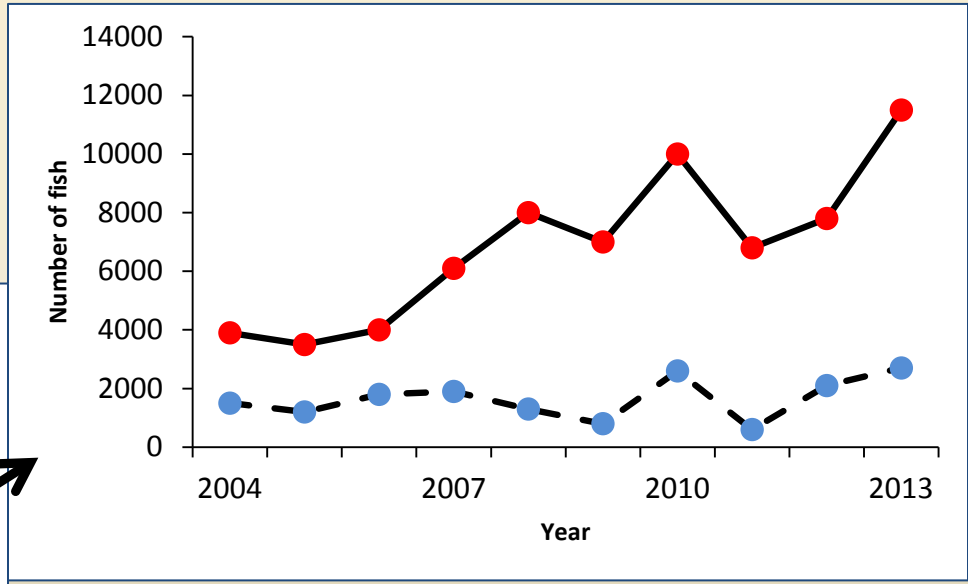


- Proportion NAC origin has been increasing since early 1980's

Number of salmon caught at WG

- Number of salmon caught at WG in 2013
  - 11,500 from NAC
  - 2,700 from NEAC
- Among lowest in full time series, but highest for NAC & NEAC in last 10 years





NASCO has asked ICES to describe the implications for the provision of catch advice of any new management objectives proposed for contributing stock complexes

Background

❑ Proposals outlined at 2013 NASCO meeting (NAC(13)4 - Management Objectives for Atlantic Salmon in the United States**)**

Current reference points

❑ Provision of catch advice on fish exploited at West Greenland – 75% probability of simultaneous attainment of seven management objectives:

- Meet the 2SW CLs for the 4 northern areas of NAC (Labrador, Newfoundland, Quebec, Gulf)
- Achieve a 25% increase in returns of 2SW salmon from the average returns in 1992-1996 for the Scotia-Fundy and USA regions
- Meet the MSW southern NEAC CL

❑ These proposed due to strongly divergent trends in status of stocks between southern & northern regions of NA. Thus, fishery at WG could be constrained by weakest stocks having no hope of meeting CLs even if production from northern areas became very high and in excess of CLs

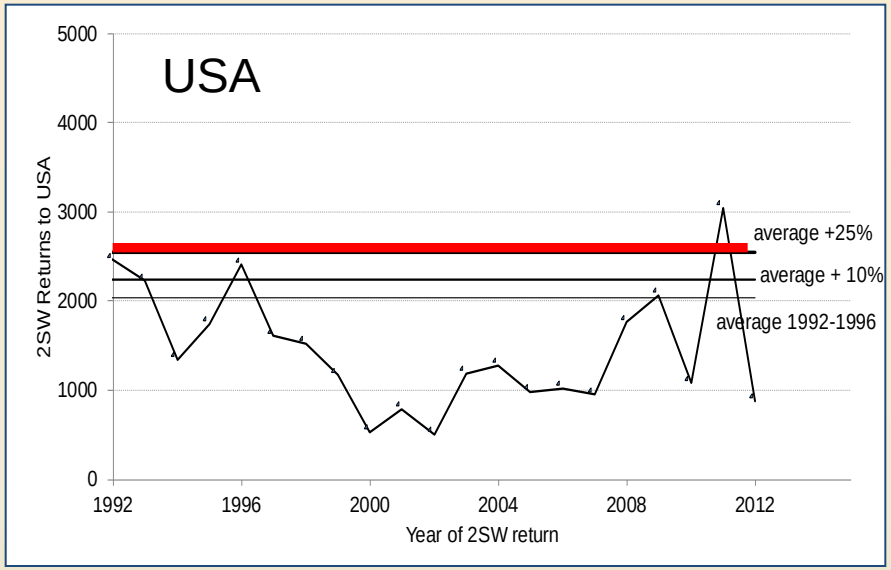
Implications for the provision of catch advice of any new management objectives

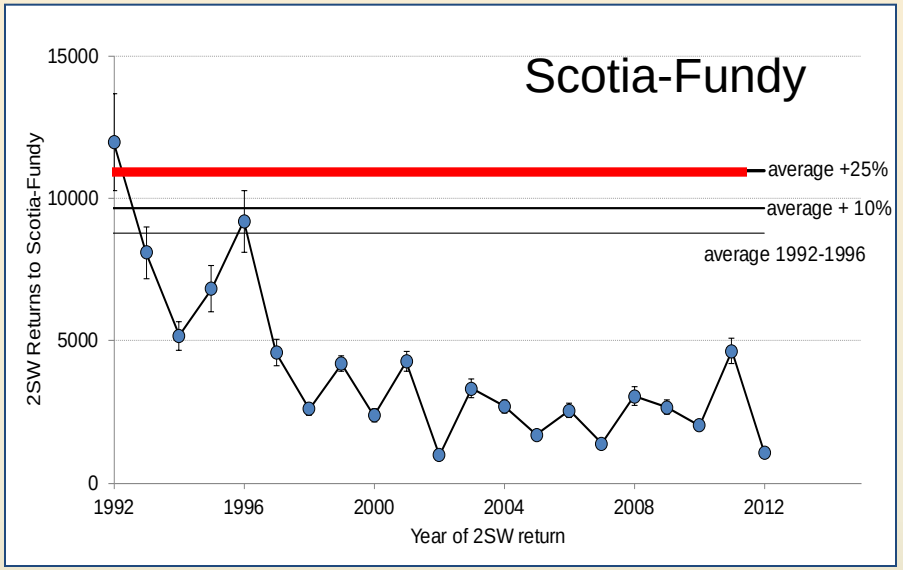
Proposed revised MO for USA

- ❑ At last NASCO meeting, USA proposed new MO
- ❑ Rebuilding objective reflecting extremely depleted state of US stocks
- ❑ At odds with interim recovery criteria for US stocks protected by the Endangered Species Act (ESA) and also with PA & NASCO Guidelines for management of salmon fisheries
- ❑ Recommended that MO for US stock complex should be aligned with recovery criteria for remnant stocks currently protected by ESA
- ❑ One requirement of ESA is defining objective measurable criteria for determining when Atlantic salmon may be considered for de-listing from ESA
- ❑ Draft criteria are a population abundance of 6000 returns of all sea ages
- ❑ This converted to 2SW returns (the age group relevant to W. Greenland catch advice) using the mean % of 2SW fish in US returns 2003-12 (75.8%)
- ❑ **Results in requirement for 4549 2SW returns - proposed that this should replace the current requirement of 2548**

Implications for the provision of catch advice of any new management objectives

- Since these management objectives have been in place, USA has achieved a higher proportion of its MO than Scotia-Fundy





- Scotia-Fundy MO of 10,976 2SW fish is 44% of 2SW CL (24,705)
- Current US MO of 2,548 2SW fish is 9% of 2SW CL (29,199)

Implications for the provision of catch advice of any new management objectives

Review of Management Objective for Scotia-Fundy

❑ Canada reviewed case for revised MO for S-F based on recent Recovery Potential Assessments (RPAs) for the 3 Designatable Units in S-F.

❑ Concluded that the current MO of a 25% increase in returns from the average of 1992-1996 can be retained for the following reasons:

1. The current management objective for S-F is aimed at rebuilding the stocks which are well below the 2SW conservation limit for the Scotia-Fundy region (i.e. 44% of the 2SW CL)
2. Recovery objectives in terms of number of fish have not yet been proposed in scientific RPAs for two of the three DUs in the Scotia-Fundy region; and
3. If the current MO is lower than recovery objectives that will be identified from river specific recovery objectives that have yet to be developed in recovery plans, then there is a low risk of impacting management advice to West Greenland in the short-term.

Implications for the provision of catch advice of any new management objectives

Impact of proposed revised MO for USA for catch advice

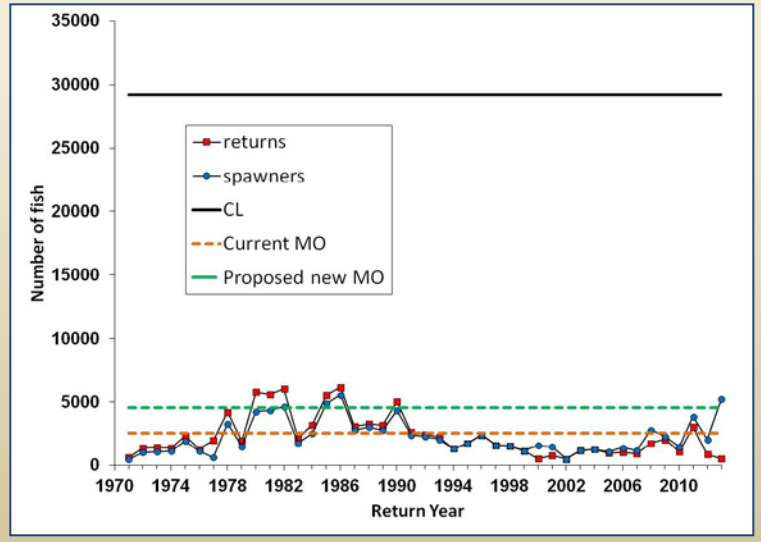
❑ Impact evaluated by re-analysis of the last catch options provided for the WG fishery (2012)

Year	Probability of meeting MO for:	
	USA	All MOs simultaneously
Applying previous MO for US stock complex		
2012	0.89	0.05
2013	0.75	0.07
2014	0.86	0.08
Applying proposed new MO for US stock complex		
2012	0.66	0.05
2013	0.50	0.06
2014	0.70	0.07

❑ 0.16-0.23 difference in probabilities for US

❑ 0.01 (1%) difference for simultaneous achievement of all 7 MOs.

❑ Negligible impact on catch advice for 2012-2014 fishing years



Implications for the provision of catch advice of any new management objectives

Further Considerations

- ❑ The protocols for updating the MOs for the WG fishery if and when stocks recover have not been developed.
- ❑ The MOs for the southern regions of N. America are interim objectives intended to guide management in assessing progress in increasing abundance of Atlantic salmon while not unduly restricting Greenland and domestic governments from exploiting stocks that are at high abundance and achieving their conservation objectives.
- ❑ Ultimately, the catch options for the fishery at W. Greenland should be assessed against the 2SW conservation limits for each of the contributing regions.

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Summary of Stock Status

- For West Greenland, stock status of 1SW non-maturing salmon (destined to be 2SW salmon) from North America and the Southern NEAC MSW complex are relevant

- Stock status summarised in terms of:
  - Recruitment (expressed as Pre-Fishery Abundance - PFA)
  - Spawners
  - Exploitation rates

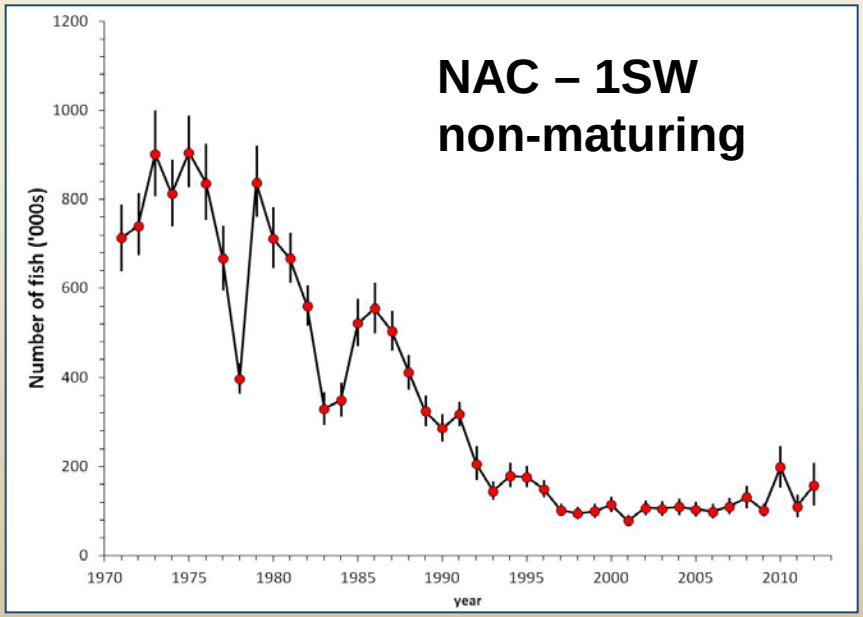
Stock Status – PFA

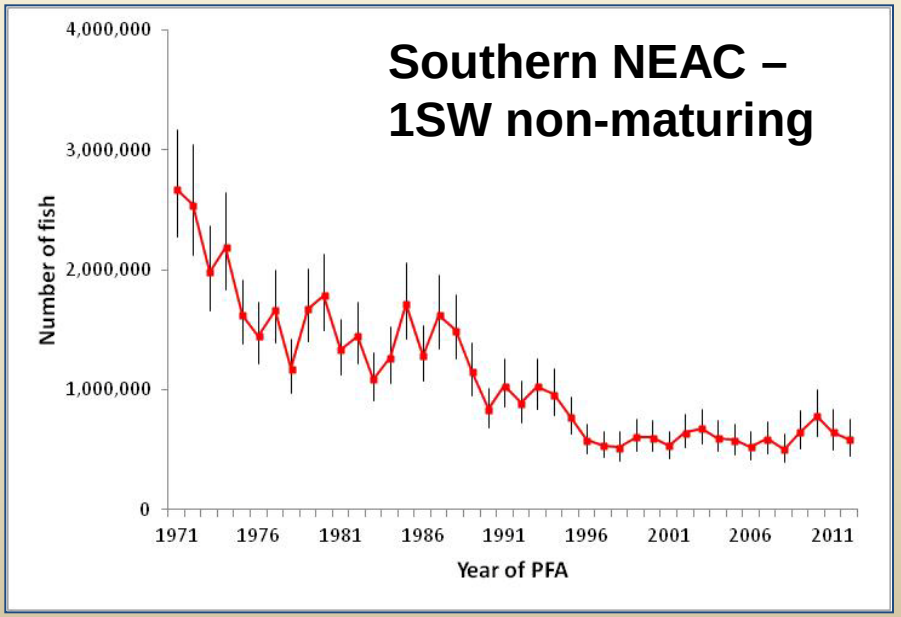
NAC:

- PFA of non-maturing 1SW salmon suggests continued low abundance
- PFA in 2012 increased by 43% from 2011; ranked 26th of 42-year time series

Southern NEAC:

- PFA of non-maturing 1SW complex has declined to low levels since 1996
- PFA in 2012 decreased by 10% from 2011; ranked 35th of 42-year time series

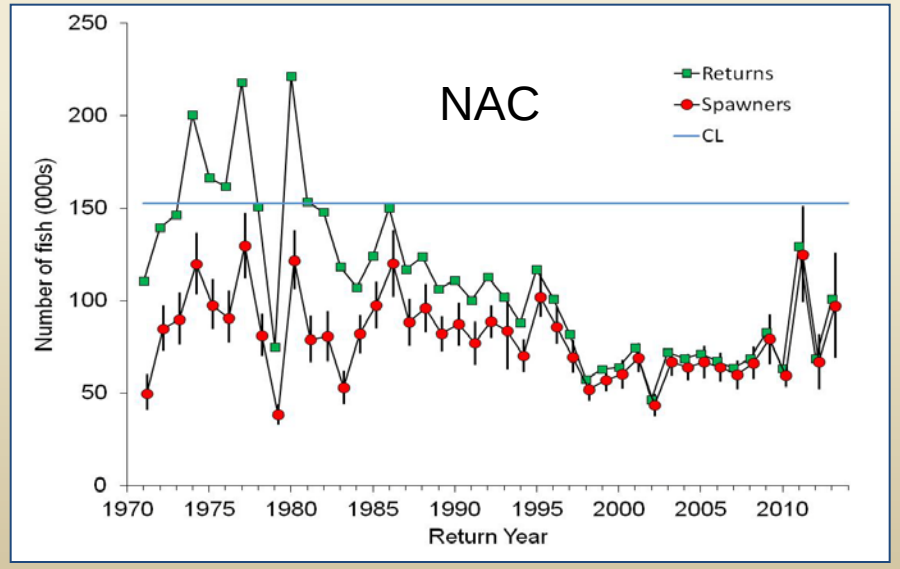




Stock Status - Spawners

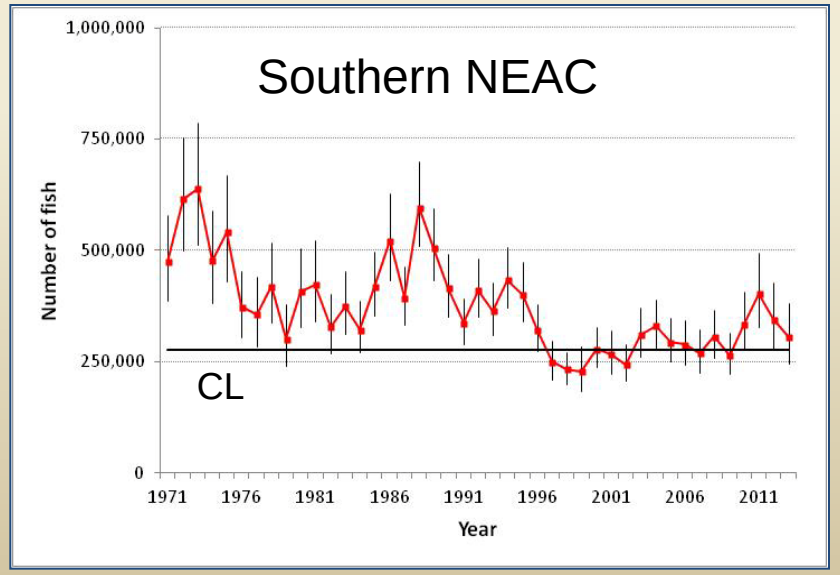
NAC:

- 2SW spawner estimates below CLs in five of the six regions in 2013 (not Labrador) and for NAC overall during the entire time series
- Varying numbers of river stocks failing to meet CLs, particularly in Scotia-Fundy and USA



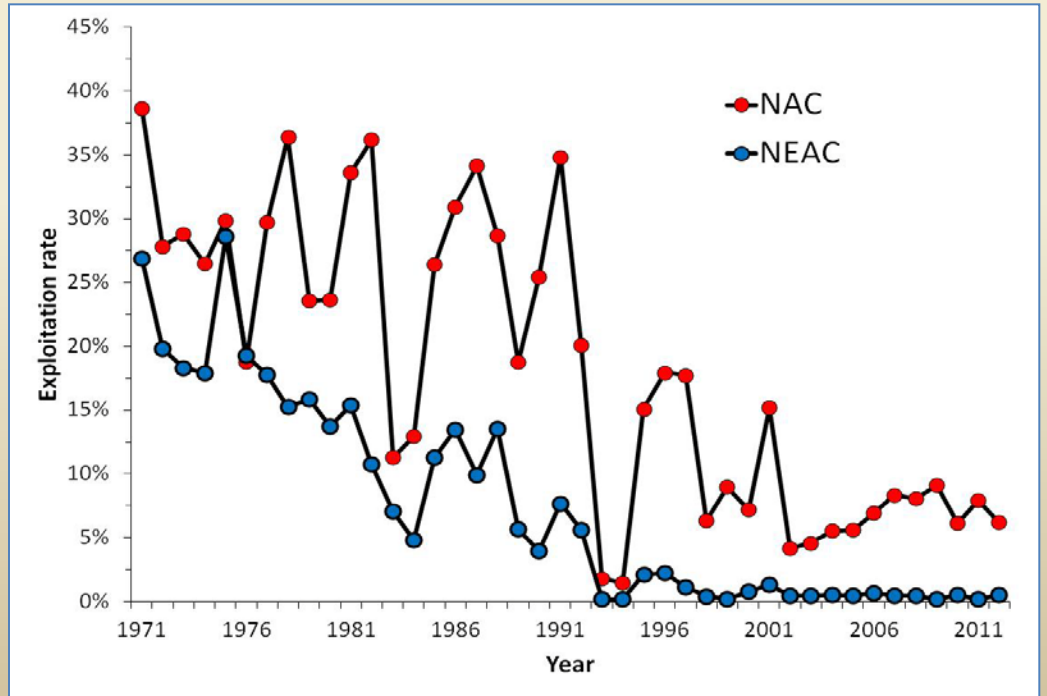
Southern NEAC:

- Overall decline in MSW spawner numbers
- Since 1997, often either suffering or at risk of suffering reduced reproductive capacity
- At risk of suffering …… in 2013
- Within all countries, individual river stocks are not meeting CLs



Stock Status – Exploitation rate

- Exploitation rates derived by dividing the recorded harvest at WG by the PFA estimate for the corresponding year for each complex [N.B. latest estimate for 2012]
- 2012 exploitation rate for NAC was 6.2%, a decrease on 2011 and the previous 5-year mean (both 7.9%) [Peak value in 1971 of 39%]
- 2012 exploitation rate for NEAC was 0.5%, a slight increase from the previous year's estimate (0.2%), but among the lowest in the time series [Peak value in 1975 of 29%]



Summary of Stock Status

- The overall abundance of stocks contributing to the West Greenland fishery is very low compared to historical levels and among the lowest levels recorded.
- Five of the seven stock complexes exploited at West Greenland are currently below conservation limits and thus suffering reduced reproductive capacity.
- Despite increasingly more restrictive fishery management measures in recent decades, returns in these regions have remained near historical lows and many populations are currently threatened with extirpation.
- Continued low abundance of salmon stocks across North America and in the North East Atlantic further strengthens the conclusions that factors other than fisheries are constraining production.

Recommendations

- ICES recommends that the Greenland catch reporting system continues and that logbooks be provided to all fishers. Efforts should continue to encourage compliance with the voluntary logbook system. Detailed statistics related to catch and effort should be made available to ICES for analysis.
- ICES recommends that the Government of Greenland facilitate the coordination of sampling within factories receiving Atlantic salmon, if landings to factories are allowed in 2014. Sampling could be conducted by samplers participating in the international sampling program or by factory staff working in close coordination with the sampling Program Coordinator. ICES also recommends that arrangements be made to enable sampling in Nuuk as a significant amount of salmon is reported as being landed in this community on an annual basis.
- ICES recommends that the longer time-series of sampling data from West Greenland should be analysed to assess the extent of the variation in fish condition over the time period corresponding to the large variation in productivity as identified by the NAC and NEAC assessment and forecast models. Progress has been made compiling the West Greenland sampling database and should be available for analysis prior to the 2015 ICES meeting.
- ICES recommends a continuation and expansion of the broad geographic sampling programme at West Greenland (multiple NAFO divisions) to more accurately estimate continent of origin in the mixed stock fishery.

Advice generated by ICES in response to terms of reference from NASCO

Supporting information and details in the report of the ICES Working Group on North Atlantic Salmon available at:
http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2014/WGNAS/wgnas_2014.pdf?guardian-download=1400083057,8082,0,986c554d2c9792b5dd78cd8b24b3e0f4bbd3fbe4

Acknowledgements

Members (21) of participating countries (12) to the Working Group on North Atlantic Salmon, 19-28 March 2014

WGC sub-group chair: Tim Sheehan (USA)