

REPORT OF ICES ADVISORY COMMITTEE
ON
NORTH ATLANTIC SALMON STOCKS
TO
NORTH ATLANTIC SALMON
CONSERVATION ORGANIZATION
NAC Area
CNL(11)8

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

- **new format for advice in 2011, standard template adopted by ICES for all stocks and advisory processes**
 - feedback on format is welcome
- **supporting information and details in the report of the ICES Working Group on North Atlantic Salmon available at: http://www.ices.dk/reports/ACOM/2011/WGNAS/wgnas_2011_final.pdf**

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

With respect to Atlantic salmon in the North American Commission area:

- 1. describe the key events of the 2010 fisheries (including the fishery at St Pierre and Miquelon)**
- 2. update age-specific stock conservation limits based on new information as available**
- 3. describe the status of the stocks**

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- ❖ **In the event that NASCO informs ICES that the framework of indicators (FWI) indicates that reassessment is required**
- 4. Provide annual catch options or alternative management advice for 2011–2014 with an assessment of risks relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding**
- ❖ In January 2011, NASCO indicated that no change to the management advice previously provided by ICES was required.

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 - ❖ In that assessment, no catch options for 2009 to 2012 in North America were consistent with the management objectives defined for this stock unit.

MSY approach and Conservation Limits

Atlantic salmon has characteristics of short-lived fish stocks

- ❖ *mature abundance is sensitive to annual recruitment because there are only a few age groups in the adult spawning stock*

For such fish stocks, the ICES MSY approach is aimed at achieving a target escapement ($MSY B_{escapement}$).

- ❖ *No catch should be allowed unless this escapement can be achieved.*

Conservation limits (CLs) for North Atlantic salmon stock complexes have been defined by ICES as the level of stock (number of spawners) that will achieve long-term average maximum sustainable yield ($MSY B_{escapement}$).

Conservation Limits

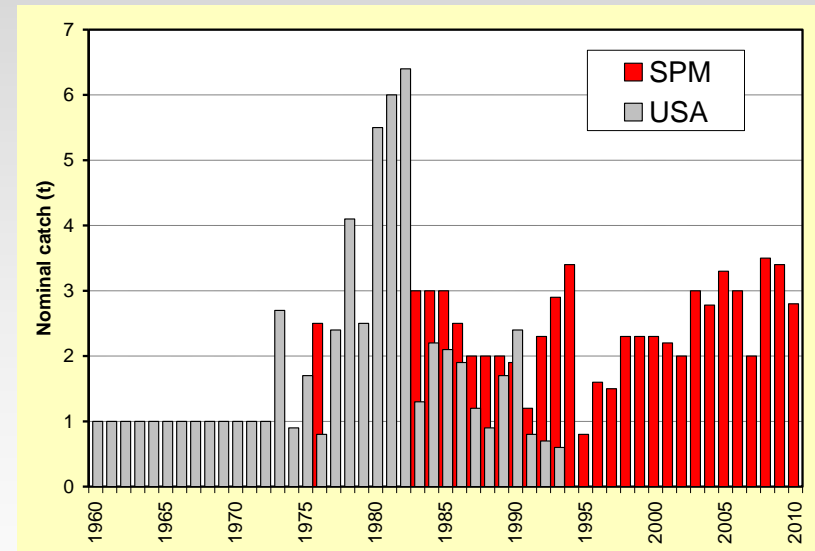
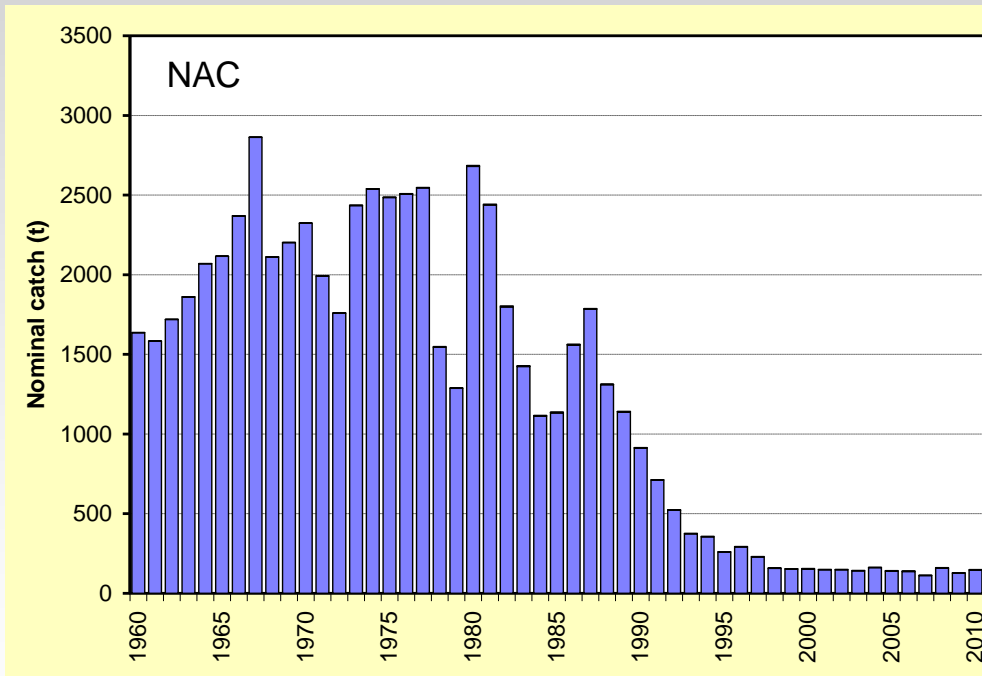
- No changes to CLs proposed
- Conservation limits for 2SW salmon to North America total 152 548 fish
 - 123 349 to Canada
 - 29 199 to USA

Key events of the 2010 fisheries

Gear and effort

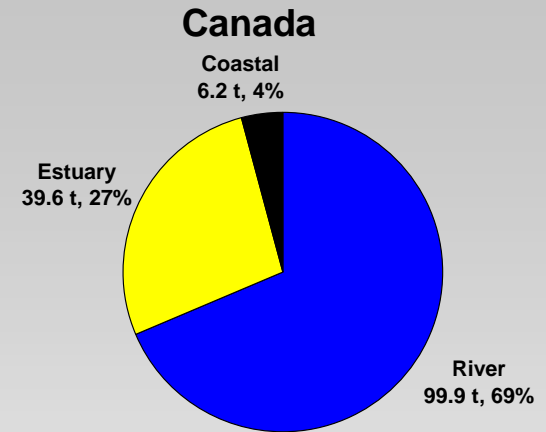
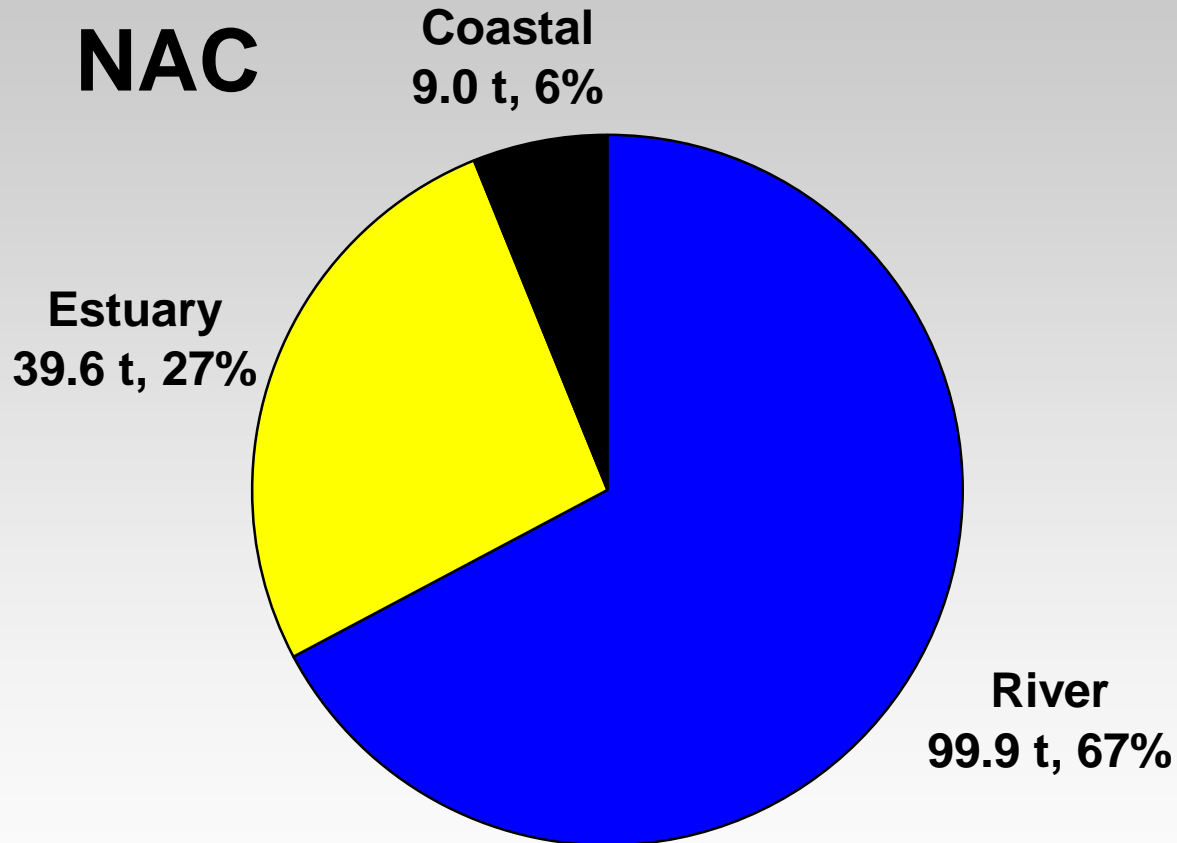
- Three groups exploited salmon in Canada in 2010;
 - Aboriginal peoples,
 - residents subsistence trout fishery in Labrador, and
 - recreational fishers
 - no commercial fisheries in Canada in 2010 (closed in 2000)
- No recreational or commercial fisheries for Atlantic salmon in USA in 2010
- France (Islands of St. Pierre and Miquelon)
 - Nine professional and 57 recreational gill net licences

In 2010	Canada	USA	St. P & M
Catch (t)	146	0	2.8
Unreported (t)	15*	0	na

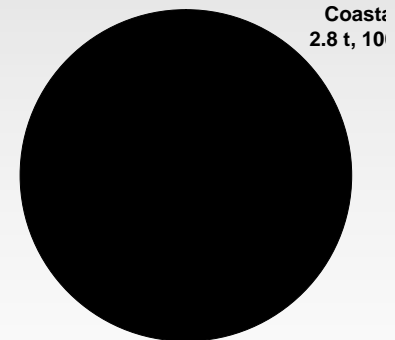


- Catch in 2010, +15% relative to 2009 (129 t)
- Large decline in catches post commercial fishery moratorium 1992

Location of Catches



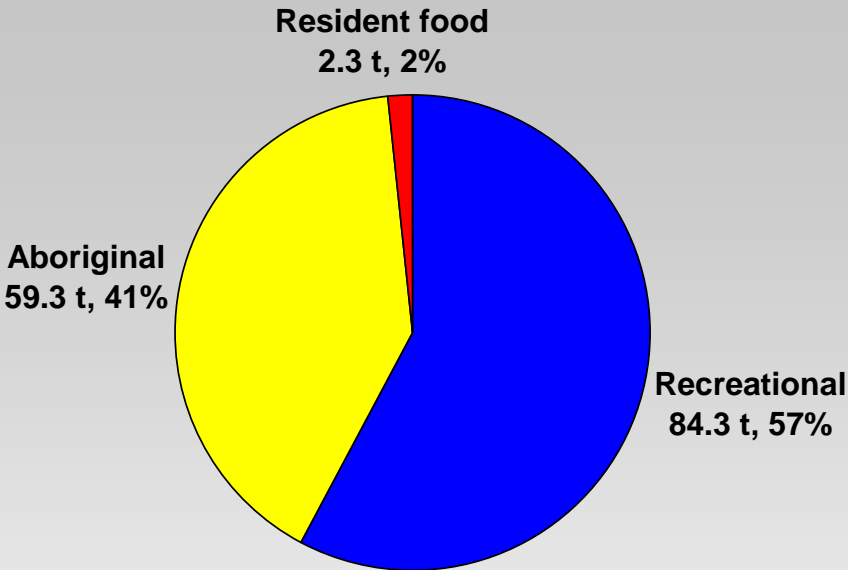
St. Pierre & Miquelon



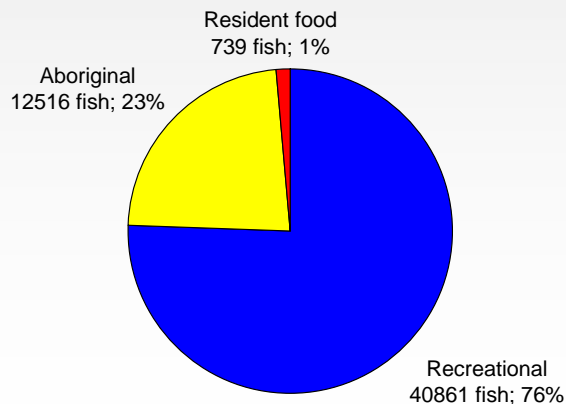
Catches by User Group

Canada

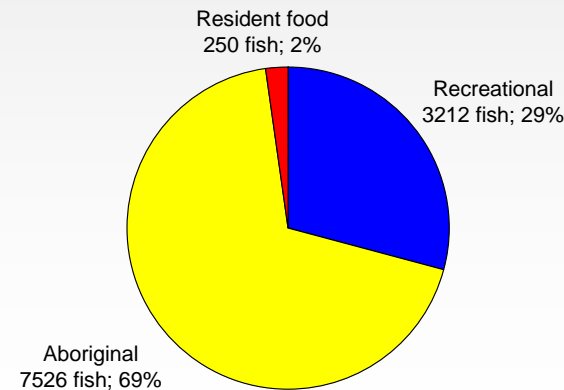
- largest catch by weight was in recreational fisheries
- recreational fisheries harvested the most small salmon by number
- aboriginal fisheries harvested the most large salmon by number



Small salmon, by number



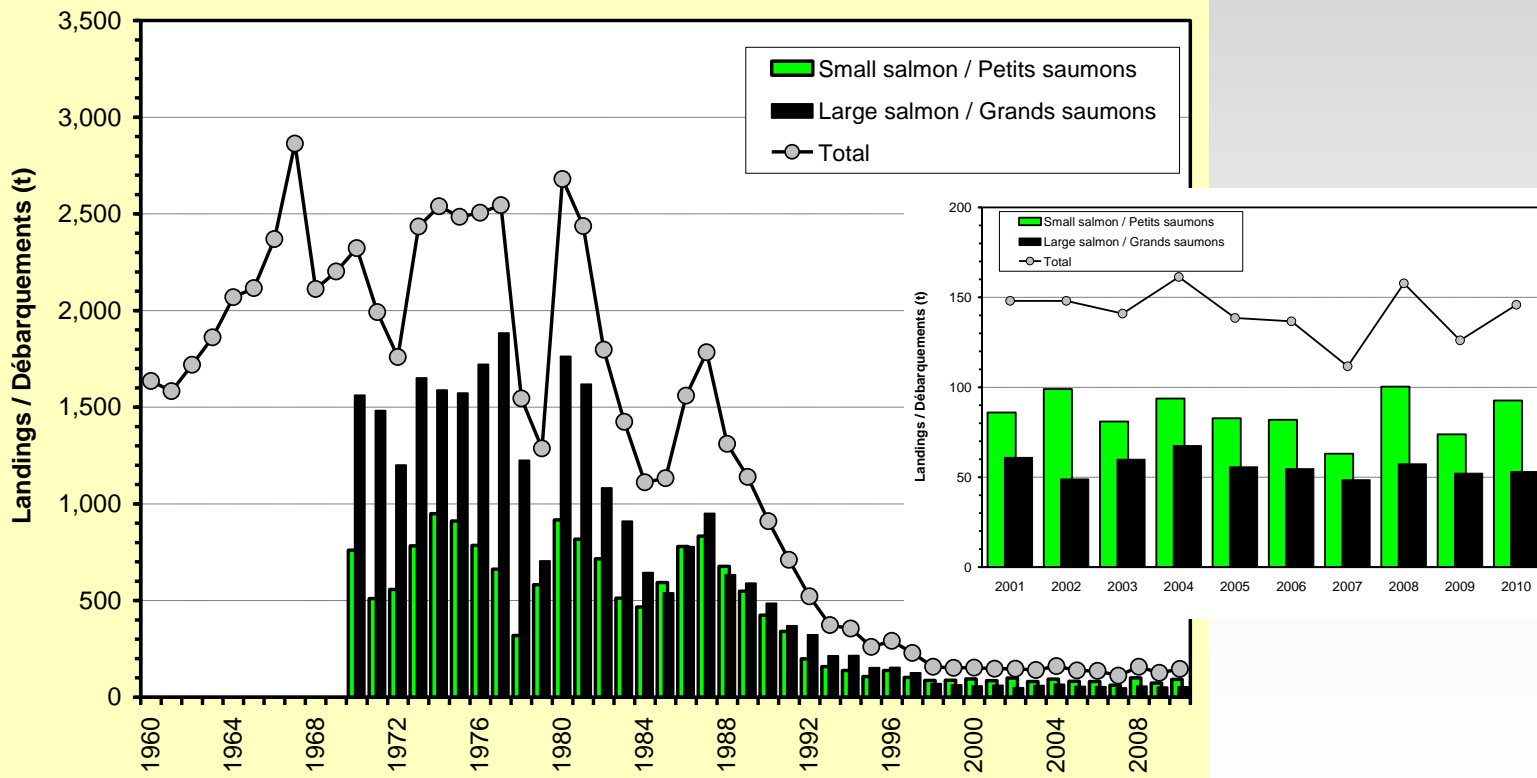
Large salmon, by number



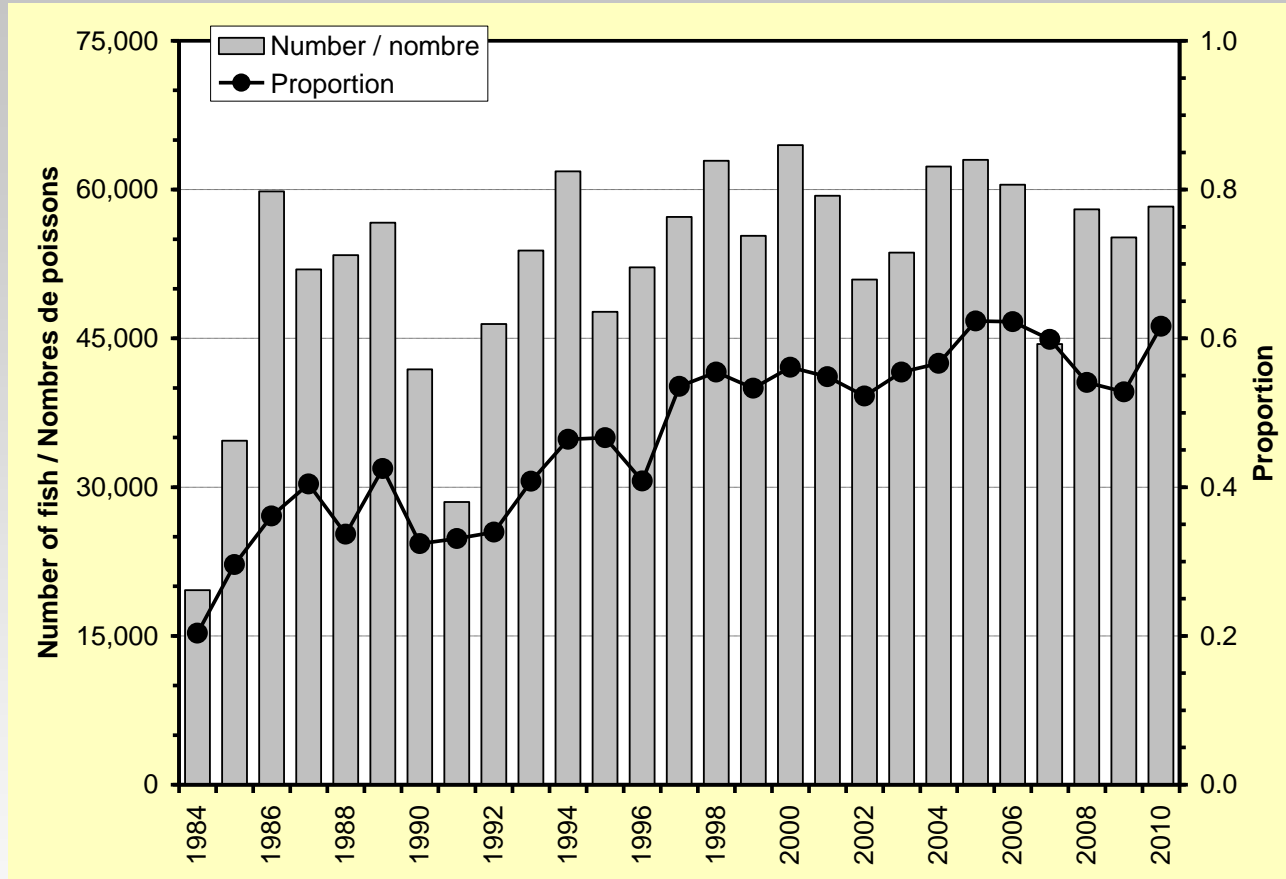
Catches by size group

Canada

- Total catch for 2010 : 146 t
 - 17% large by number
 - 30% above previous 5 years
 - 37% below previous 20 years



Catch and release in recreational fisheries



Canada

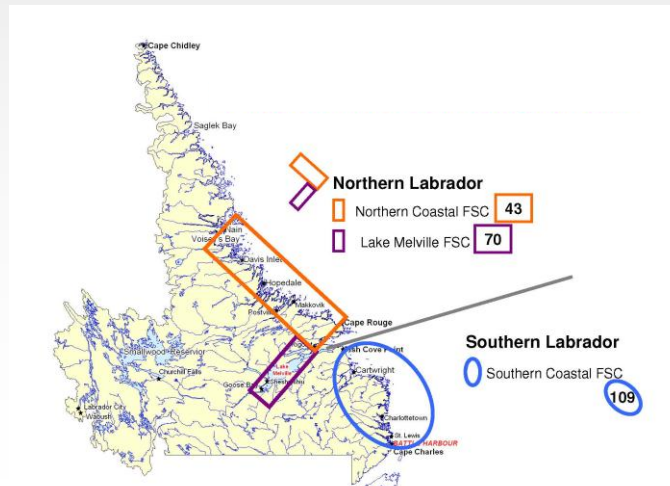
- over 58000 salmon (all sizes) were reported caught and released in 2010 (62% of total recreational catch)

Origin and composition of catch

No salmon tagged in other areas of North America were reported from the Aboriginal Peoples' and resident food fisheries in Labrador or the St. Pierre & Miquelon fisheries, in 2010.

Sampling Labrador subsistence food fisheries:

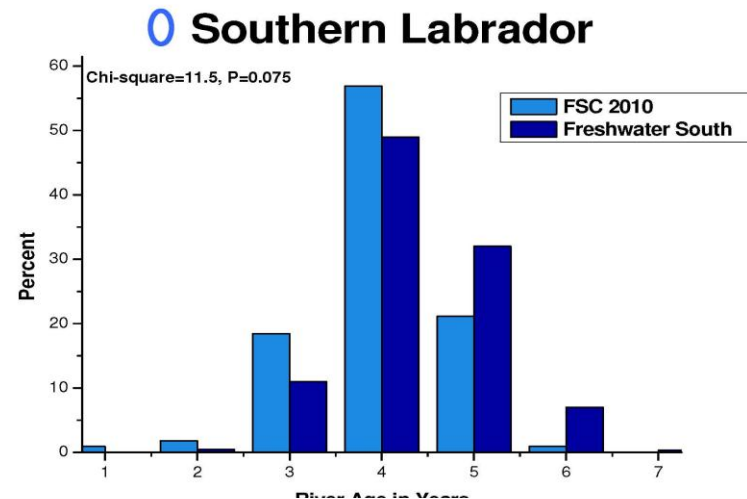
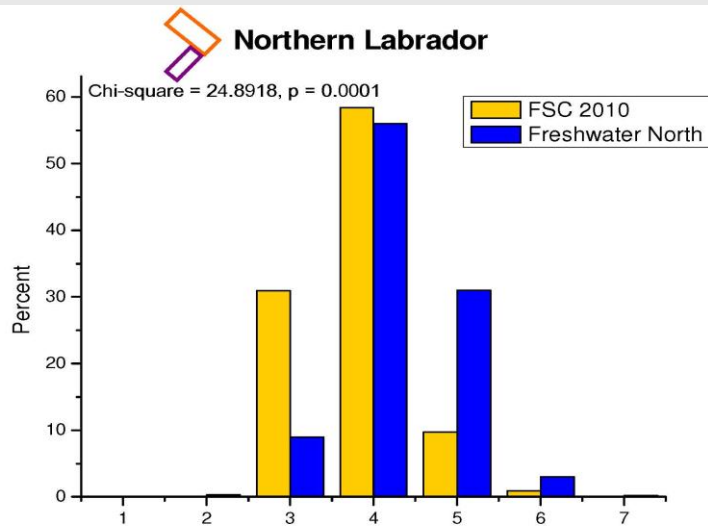
- landed fish were sampled opportunistically (fork length, weight, sex if possible and scales, presence of external tags, brands or elastomer marks, and adipose fin clips)
- in total, 222 samples collected from the subsistence fisheries
- 73% 1SW, 16% 2SW and 10% previously spawned salmon



Origin and composition of catch

Sampling Labrador subsistence food fisheries:

- river ages from subsistence fisheries compared to river ages in returns to monitored rivers
 - higher proportion river age 3 and lower proportion river age 5 in catches than in runs in monitored rivers
 - low proportions of river ages 1 and 2 years in catches suggests fisheries did not exploit southern North America stocks to any extent.
 - presence of river age 5 to 7 years in the samples indicates fisheries are exploiting northern area (predominantly Labrador but including Quebec and Newfoundland) stocks



Origin and composition of catch

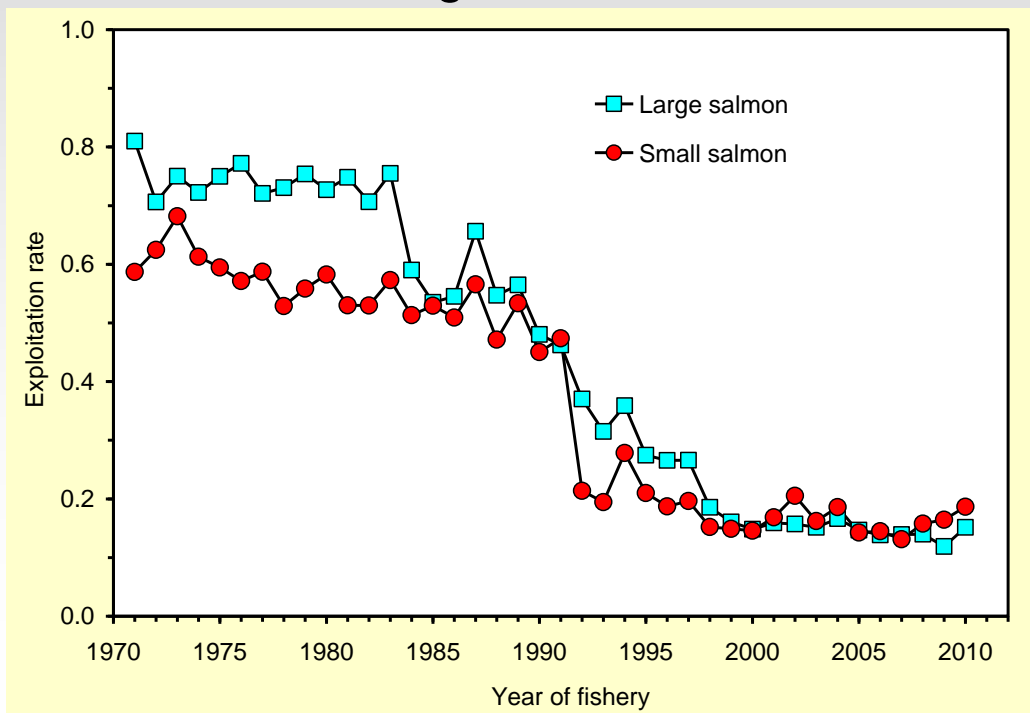
Sampling St. Pierre & Miquelon fishery

- 57 fish sampled
- 32 small, 25 large salmon
- 51 tissue samples for genetics
- all North America origin
- insufficient database for river-specific assignment
 - 3 rivers from Quebec
 - 1 from NB,
 - 2 from USA

- ICES welcomed the sampling efforts of catches at Saint-Pierre and Miquelon to estimate stock contributions to the harvest and recommend that sampling be continued in the future

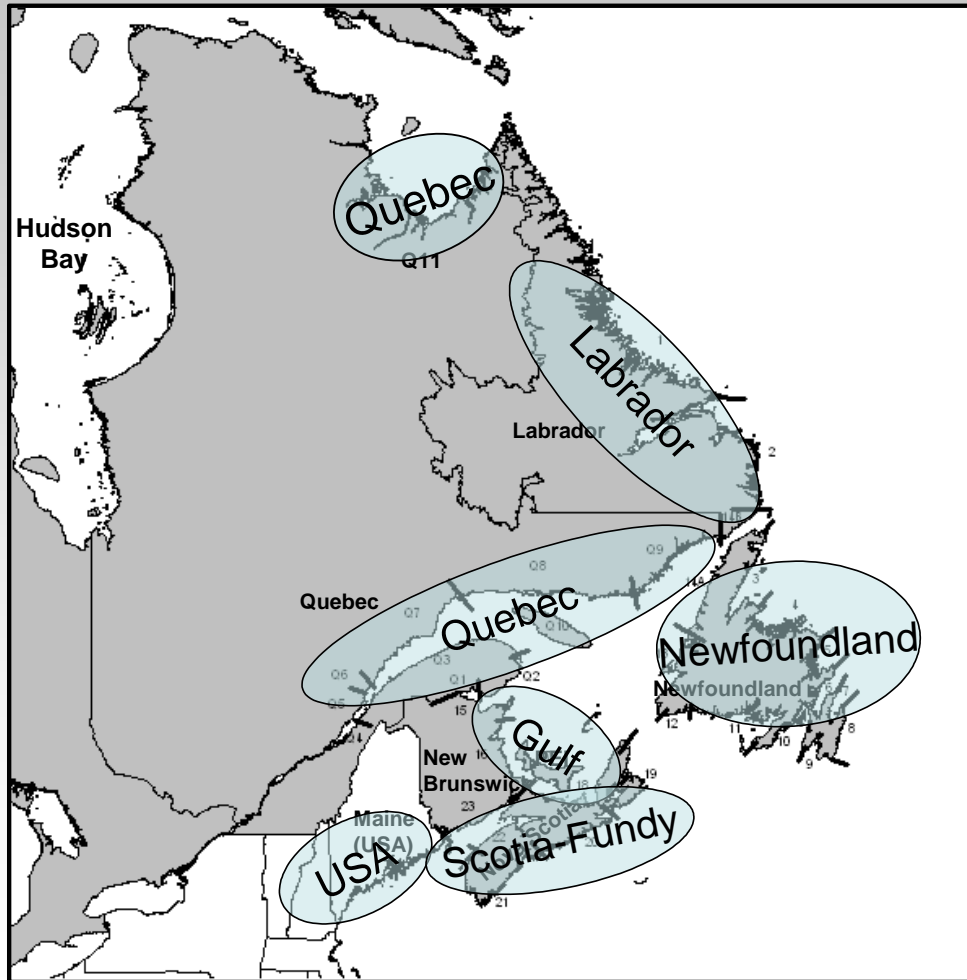
Exploitation Trends in NAC

- Exploitation of small salmon (mostly 1SW) declined after 1991 with closure of Newfoundland commercial fishery in 1992
- Declines continued in the 1990s with additional management controls in all fisheries to reduce exploitation
- In the last few years, exploitation rates on small and large salmon have remained at the lowest in the time-series, at about 15%
- Exploitation rates across regions within North America are highly variable.



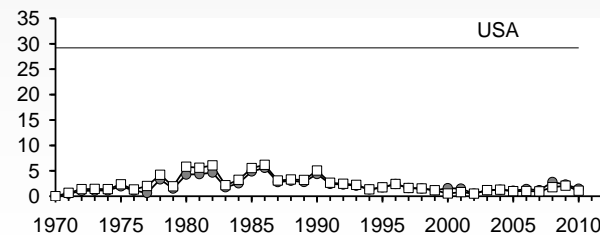
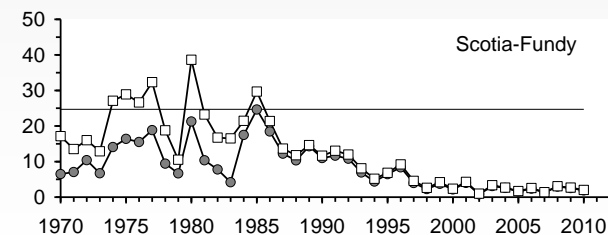
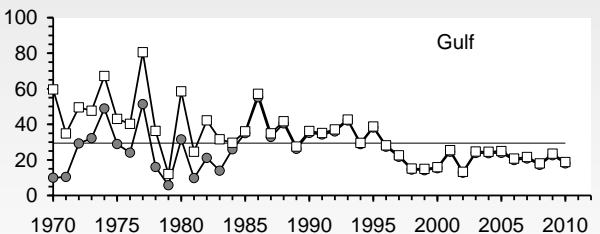
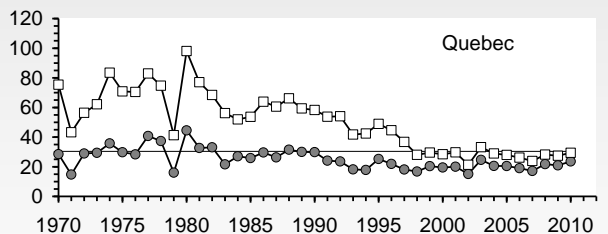
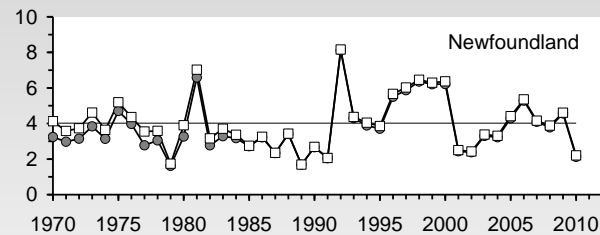
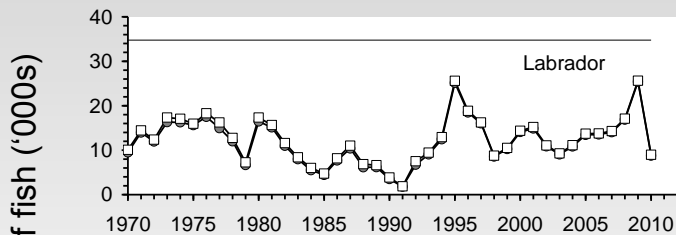
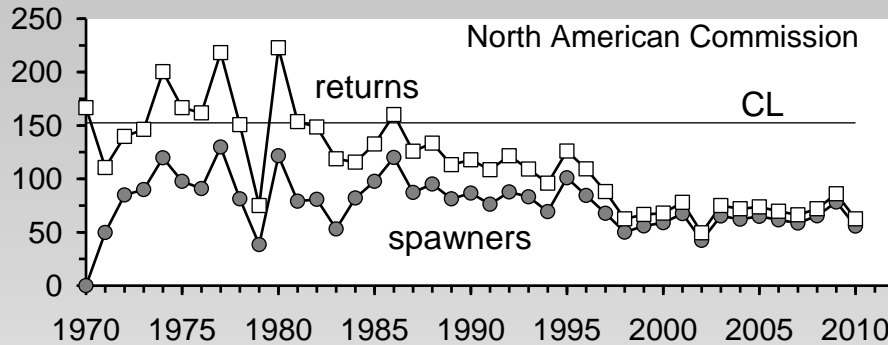
Describe the Status of the Stocks

- Status of stocks is described for six regions in North America



Describe the Status of the Stocks

- Abundance of adults (2SW) by geographic area



- generally, returns of 2SW in all areas declined in 2010 relative to 2009
- largest declines in Labrador and Newfoundland
- 2SW spawners were below region specific CLs in all areas and overall for NAC, suffering reduced reproductive capacity

Describe the Status of the Stocks

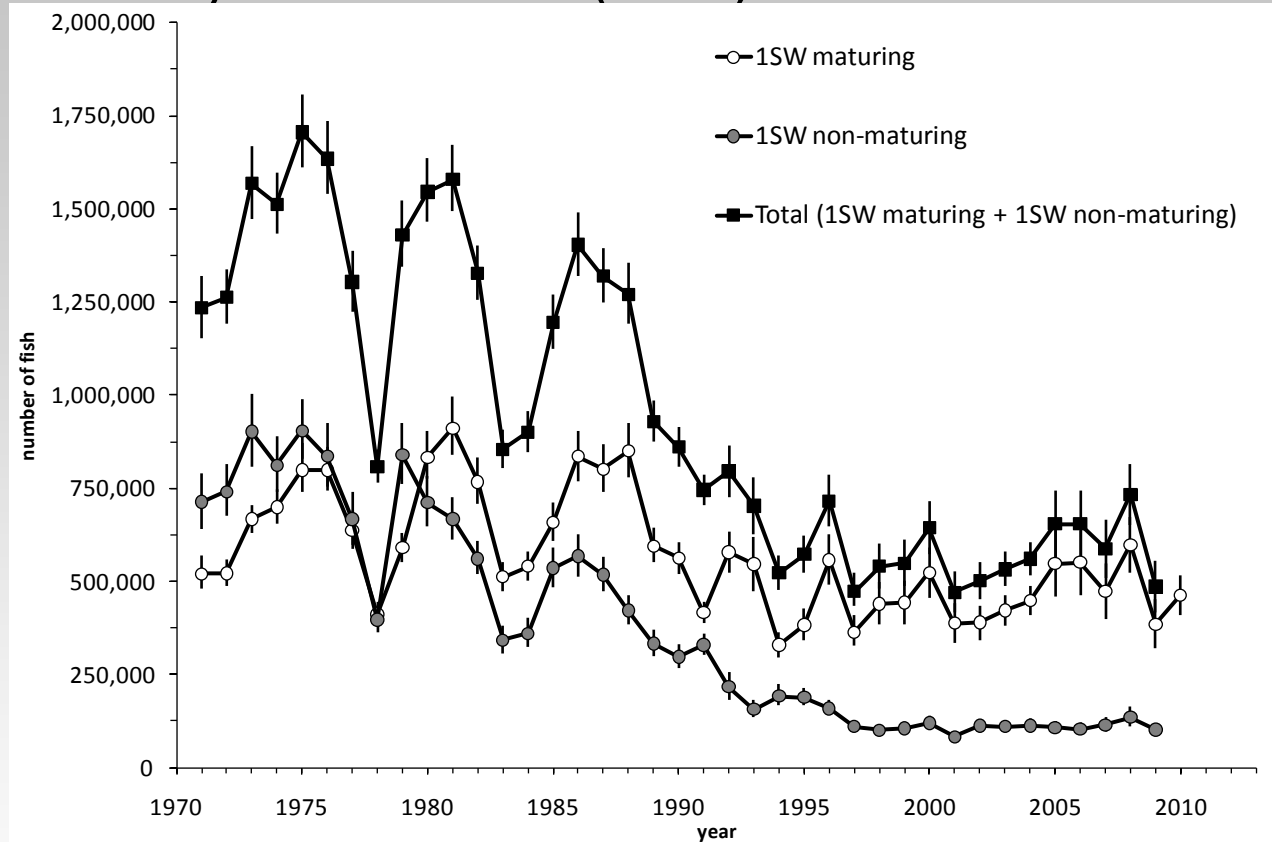
- Abundance of 1SW and 2SW by geographic area

REGION	RANK OF 2010 RETURNS IN 1971 TO 2010, (40=LOWEST)		RANK OF 2010 RETURNS IN 2001 TO 2010 (10=LOWEST)		MEDIAN ESTIMATE OF 2SW SPAWNERS AS PERCENTAGE OF CONSERVATION LIMIT
	1SW	2SW	1SW	2SW	(%)
Labrador	15	29	8	10	25
Newfoundland	5	37	3	10	53
Québec	22	31	5	3	77
Gulf	16	34	2	8	61
Scotia-Fundy	28	37	2	7	8
USA	12	33	2	5	5

- 2SW returns in Labrador and Newfoundland in 2010 were the lowest of the previous ten years.
- Small salmon returns in all areas except Labrador were among the highest of the previous ten years.
- Region-specific 2SW spawners were all below the 2SW CLs, with the poorest performance in the southern regions, followed by Labrador (25%)

Describe the Status of the Stocks

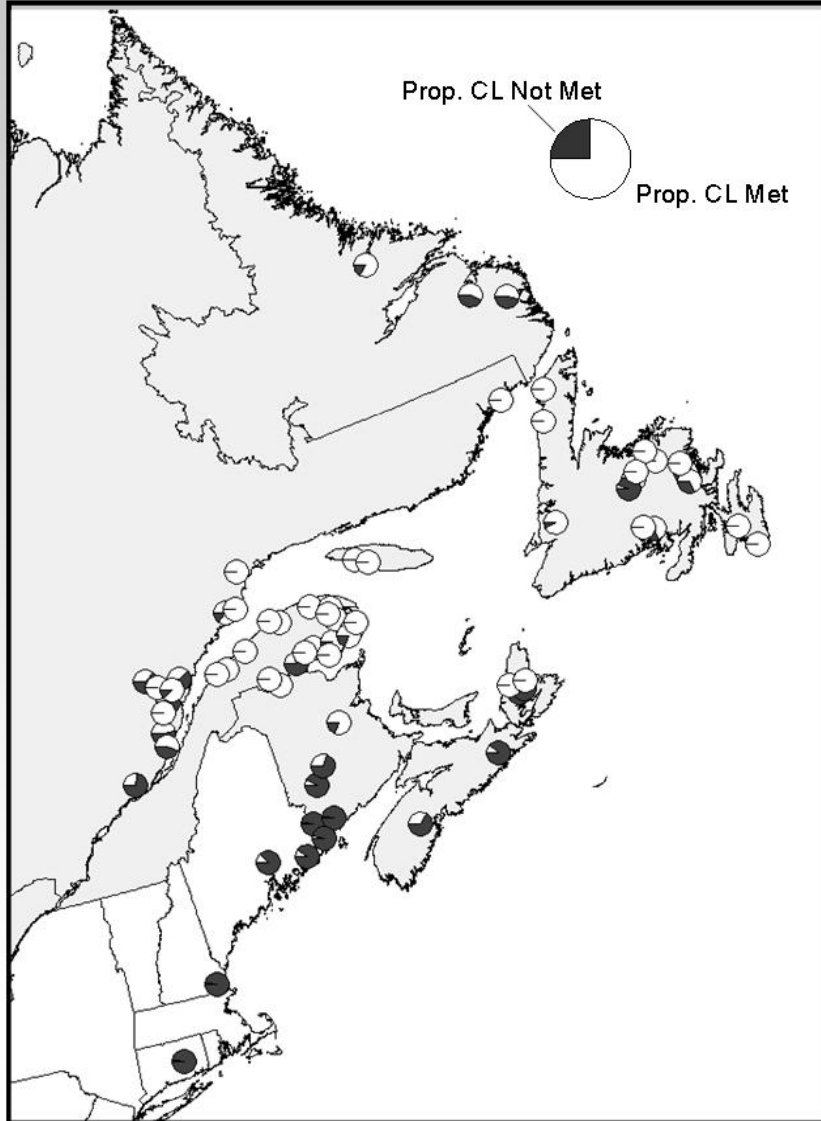
- Pre-Fishery Abundance (PFA)



- Non-maturing 1SW salmon in 2009 is the third lowest in the 39 year time-series (1971 to 2009)
- Maturing 1SW salmon in 2010 is 17% above 2009
- Total 1SW cohort abundance in 2009 was 34% below 2008, third lowest of time series

Describe the Status of the Stocks

- Egg depositions in rivers in 2010



- Equalled or exceeded river specific CLs in 31 of 71 rivers (44%)
- Less than 50% of CLs in 19 rivers (37%)
- Important deficits in the southern areas of North America (USA, Scotia-Fundy)

Summary of Stock Status

- All 2SW salmon stocks are suffering reduced reproductive capacity, with particularly large deficits in the southern areas (Bay of Fundy, Atlantic coast and USA)
- Despite major changes in fisheries management 18 to 25 years ago and increasingly more restrictive fisheries measures since, returns remained near historical lows and many populations are currently threatened with extirpation
- In 2009, the estimated PFA of 1SW cohort was the third lowest value in the time series
- Continued low abundance of salmon stocks across North America, despite significant fishery reductions, further strengthens the conclusions that factors other than fisheries are constraining production

Recommendations

See general recommendations

Also

- ICES recommends that sampling of the Labrador and St. Pierre and Miquelon fisheries be continued and expanded if possible in 2011 and future years. As well, scale samples from in-river fisheries (recreational), in Labrador should be collected to determine the river age distributions of the salmon populations not presently being monitored by the limited assessment facilities in Labrador.
- In support of the management objective from NASCO to ensure that individual river stocks meet their conservation limits, ICES recommends that additional monitoring data or analyses of existing monitoring data (catches, juvenile surveys, short-term count data), be considered to augment the river specific data used to develop the stock status and to improve management advice in both NAC and NEAC areas.

Acknowledgements

Members (24) of participating countries (14) to Working Group on North Atlantic Salmon, March 22-31, 2011

- **NAC subgroup chair: Tim Sheehan (USA)**