

Salmon at Sea

Challenges and opportunities in managing Atlantic salmon - the international aspects

Peter Hutchinson, Secretary of NASCO

- The Convention
- Scientific advice
- Salmon fisheries
- Fairness and Balance
- Research on salmon at sea
- Implications for future management
- Future research priorities



Photos courtesy of Marine Institute, Ireland and Kai Benson

The Convention

Entered into force on 1 October 1983 and commits Parties *inter alia* to: conserve, restore, and rationally manage salmon; acquire, analyse and disseminate scientific information; consult non-NASCO Parties where actions adversely affect salmon

Created an enormous protected zone free of directed salmon fisheries

Allows for the establishment of regulatory measures where one Party harvests salmon originating in the rivers of another Party

Created a forum for consultation and cooperation on salmon matters (NASCO) and on research into mortality of salmon at sea (IASRB)



NASCO Parties

Canada

Denmark (in respect of the Faroe Islands & Greenland)

European Union

Norway

Russian Federation

United States of America

Iceland withdrew for financial reasons on 31 December 2009 but has indicated that it will re-join

Accession open to any State exercising fisheries jurisdiction in the North Atlantic or that is a State of Origin for salmon

France (in respect of St Pierre & Miquelon) participates in an observer capacity

NGO involvement

35 Non-Government Organizations have observer status

Range of organizations - general wildlife conservation, salmon conservation, salmon angling, commercial fishing and Aboriginal peoples

Contribution to NASCO's work welcomed and has been greatly broadened

- contribute to all agenda items
- receive all papers
- attend all meetings
- serve on review groups, steering committees



A new approach to sharing

In establish binding regulatory measures for fisheries conducted by one Party that harvest salmon originating in the rivers of other Parties the Convention requires that a range of factors are taken into account including:

- the best scientific advice, including advice from ICES
- conservation measures taken by States of Origin
- measures taken by other States
- the interests of dependent communities....



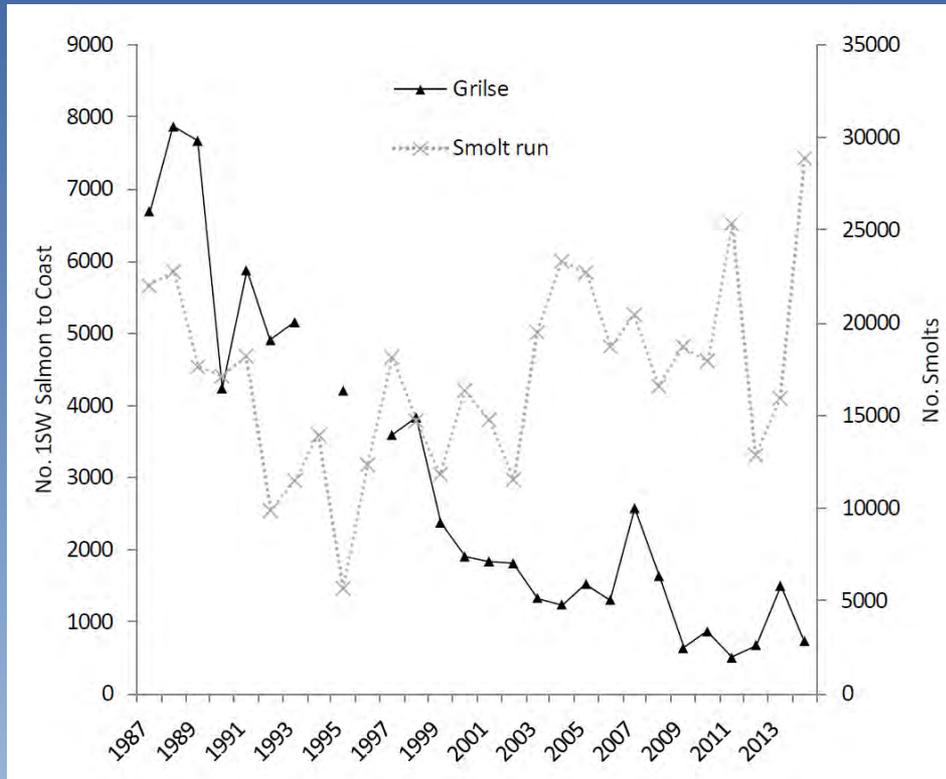
The issue

Working against a background of declining abundance

ICES advises that marine survival indices although variable remain low and the declining trend has persisted. The continued low abundance of many salmon stocks, despite significant fishery reductions, indicates that factors acting on survival in the first and second years at sea are constraining the abundance of Atlantic salmon

Marine survival indices

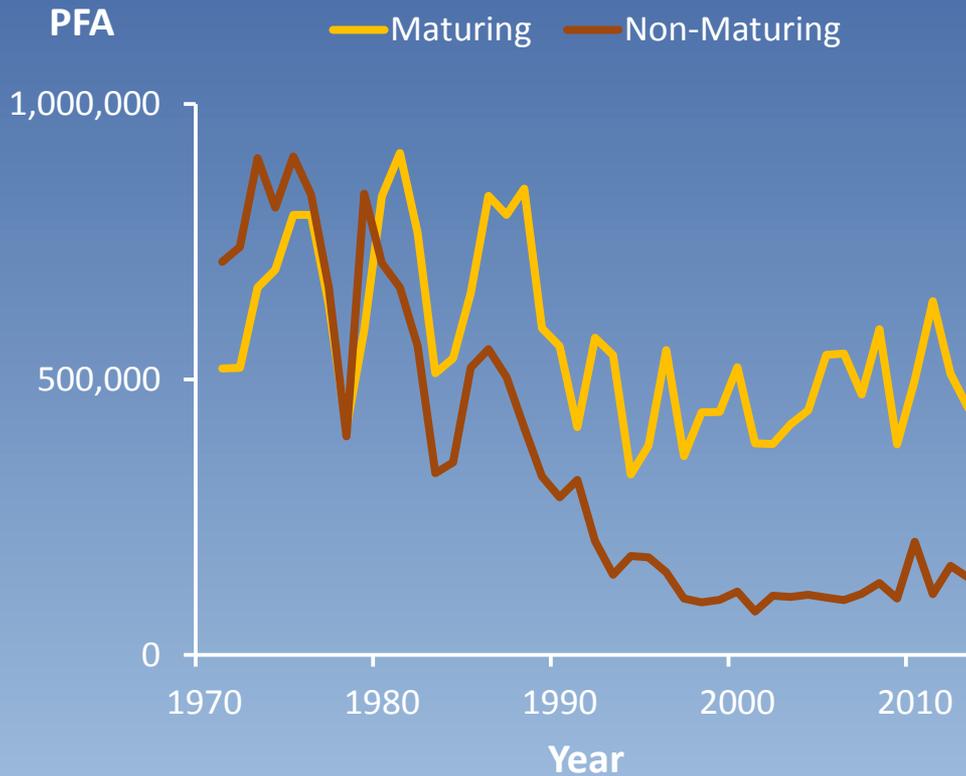
River Bush, Northern Ireland



Source: Richard Kennedy



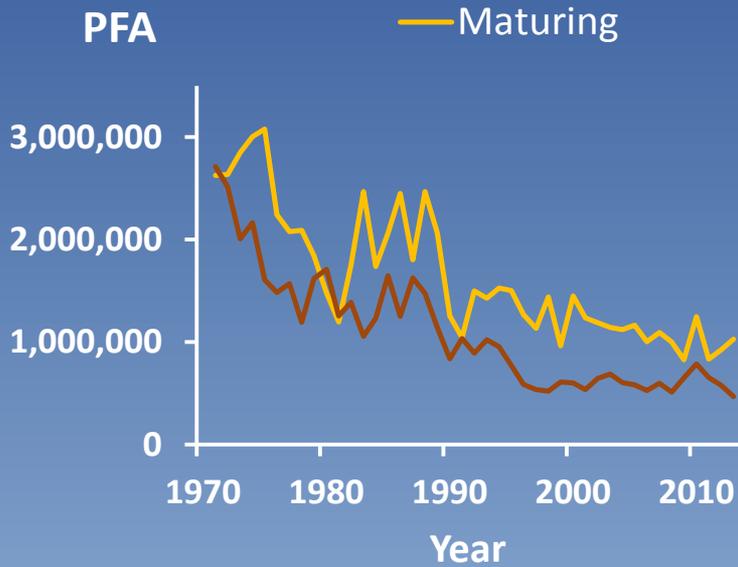
Estimates of Pre-fishery Abundance



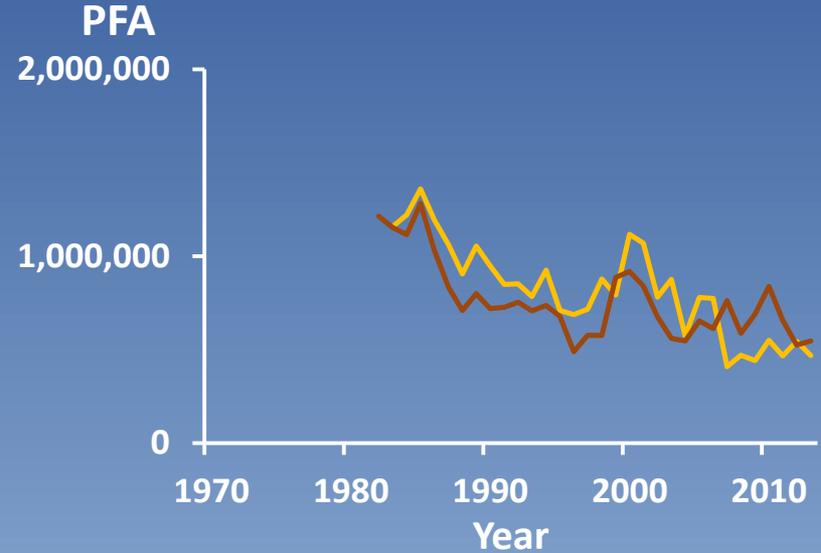
North American stocks

Source: ICES

Estimates of Pre-fishery Abundance



Southern European stocks



Northern European stocks

Attainment of Conservation Limits

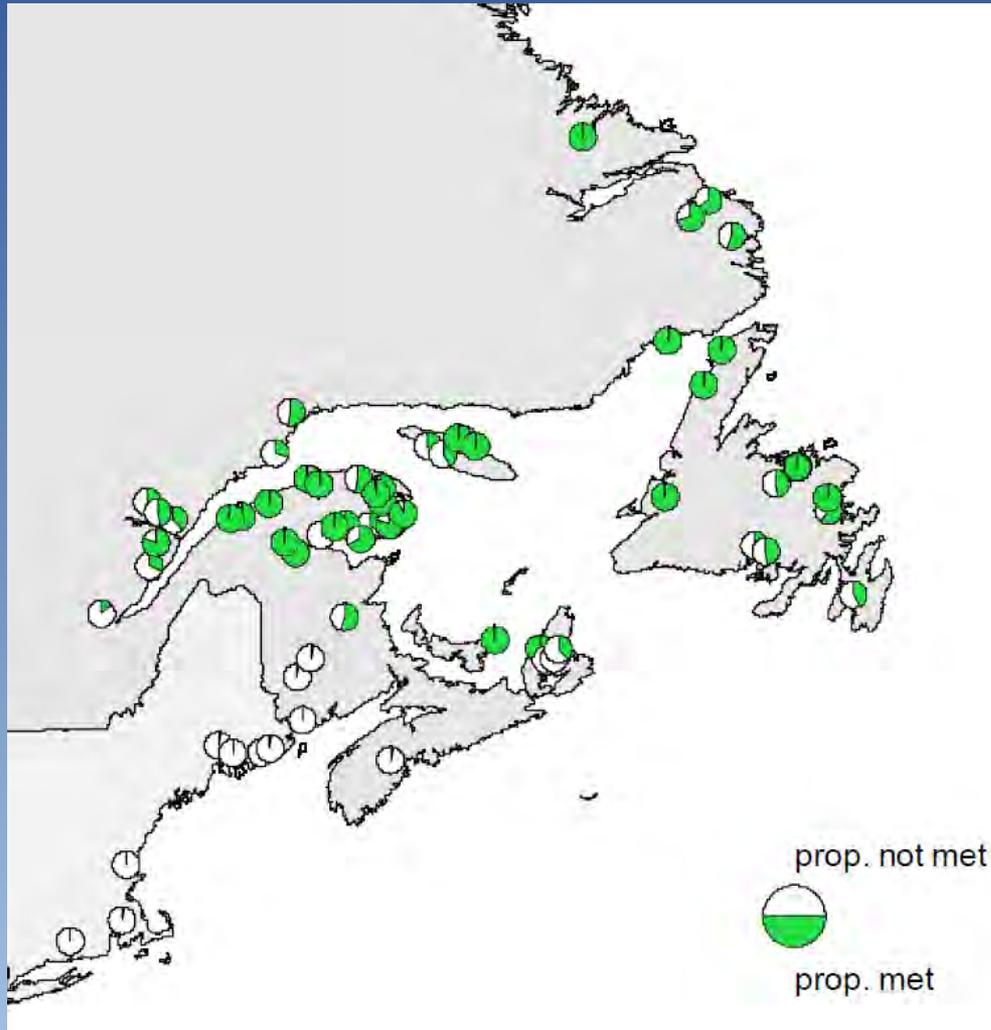


Photo courtesy of Jamie Snook

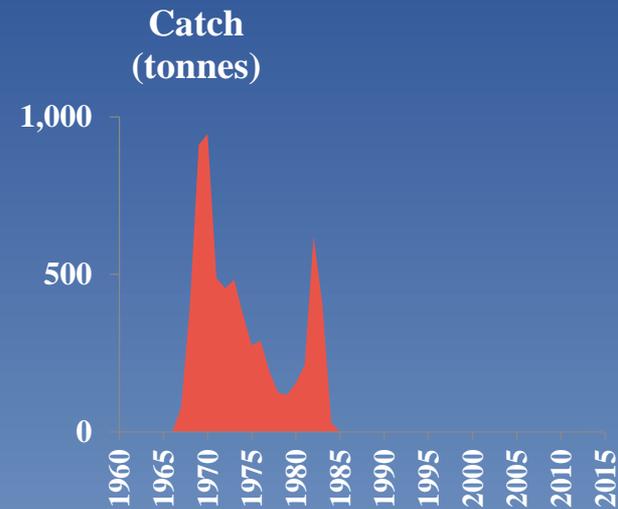
Distant-water salmon fisheries

Northern Norwegian Sea fishery ended in 1984 when the Convention entered into force

Fishing by non-NASCO vessels ended through diplomatic actions; surveillance improved and new information sought (NEAFC, NAFO, ICCAT). No sightings since 1993

Initially the burning issue was the fisheries at West Greenland and around the Faroe Islands

Regulatory measures can be, and have been, agreed for other fisheries e.g. Newfoundland



West Greenland salmon fishery

Expanded in the 1960s with the participation of foreign vessels and catches peaked at ~2,500 tonnes

Harvest both North American and Southern European salmon destined to return as MSW fish

Since 1984 quotas progressively reduced and since 1998 restricted to an internal use only fishery

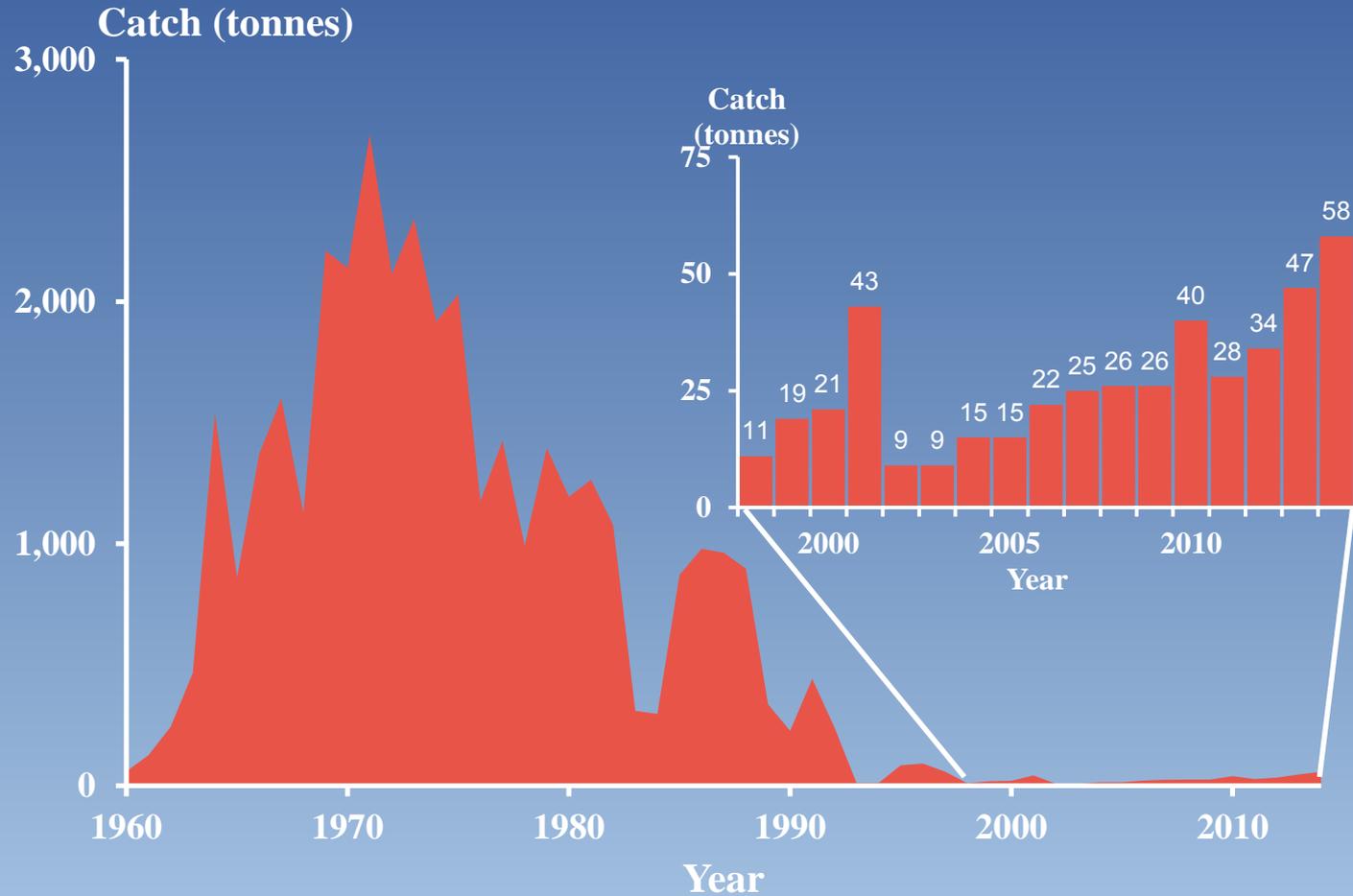
Until 2012 two components:

- unlicensed fishermen - sale of fish not permitted
- licensed fishermen - sell to open air markets, restaurants, hotels and institutions

Since 2012, some factory landings permitted

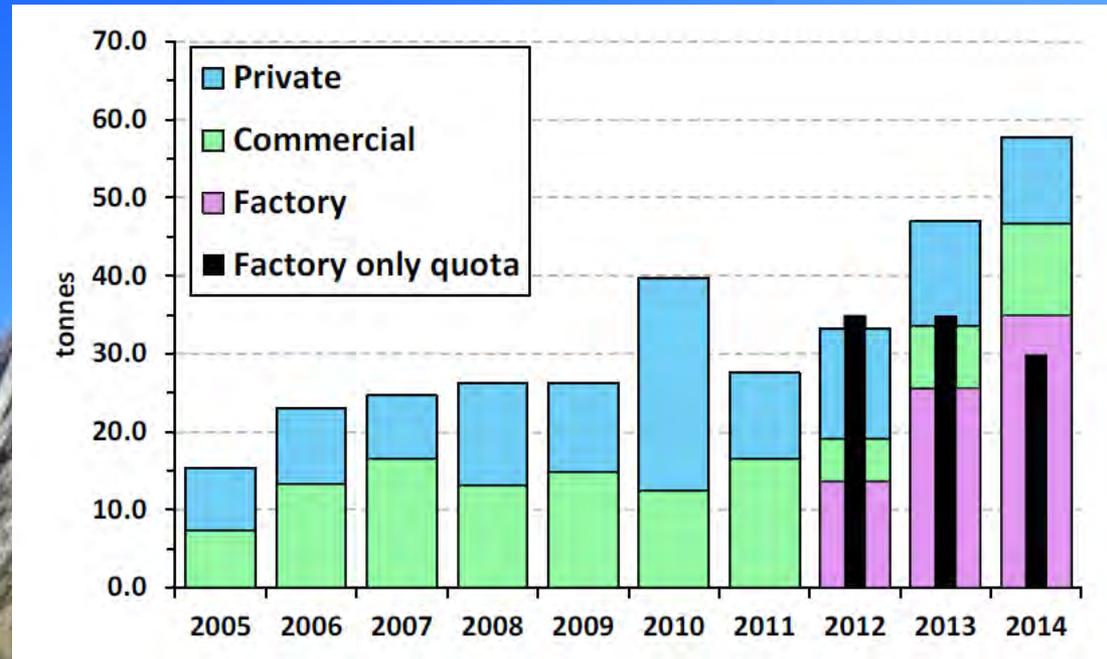


West Greenland salmon fishery



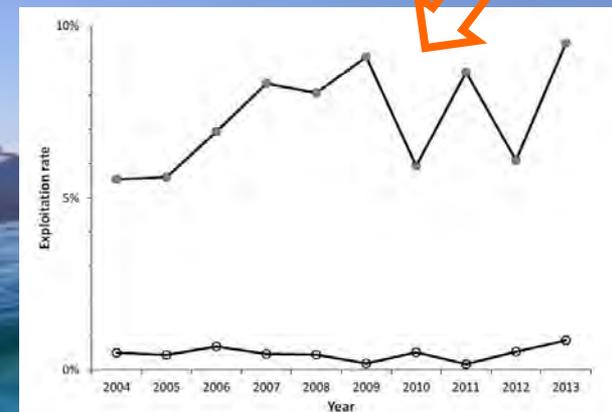
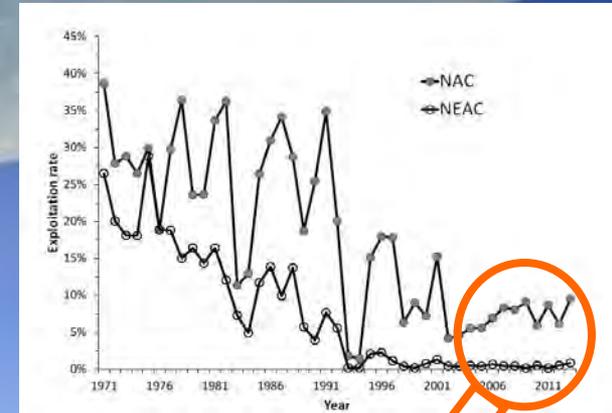
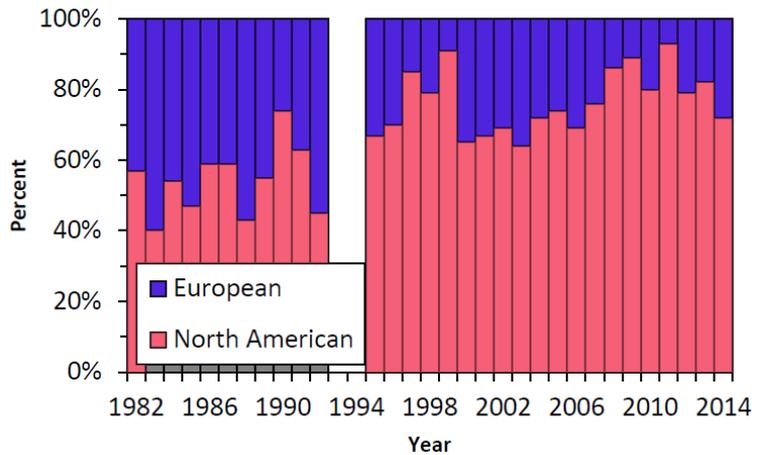
Photos courtesy of Kai Benson, Iain McLaren

West Greenland salmon fishery



West Greenland salmon fishery

Continent of origin & exploitation rate



2008-2012 avg: NAC 7.6% ; NEAC 0.4%
2013 NAC 9.5% NEAC 0.9%

West Greenland salmon fishery

Multi-annual Regulatory Measure 2015 -2017

- Greenland unilaterally committed to limit total annual catch for all components of its fishery to not more than 45t in 2015, 2016 and 2017
- No export of salmon or its products
- Fishery to open no earlier than 1 August and close no later than 31 October
- Any overharvest in a particular year will result in an equal reduction in catch in the following year
- Following evaluation (six tenets)
Greenland commits to improve monitoring and control; now applied to other Parties



Photo courtesy of Iain McLaren

West Greenland salmon fishery

Monitoring & Control Plan

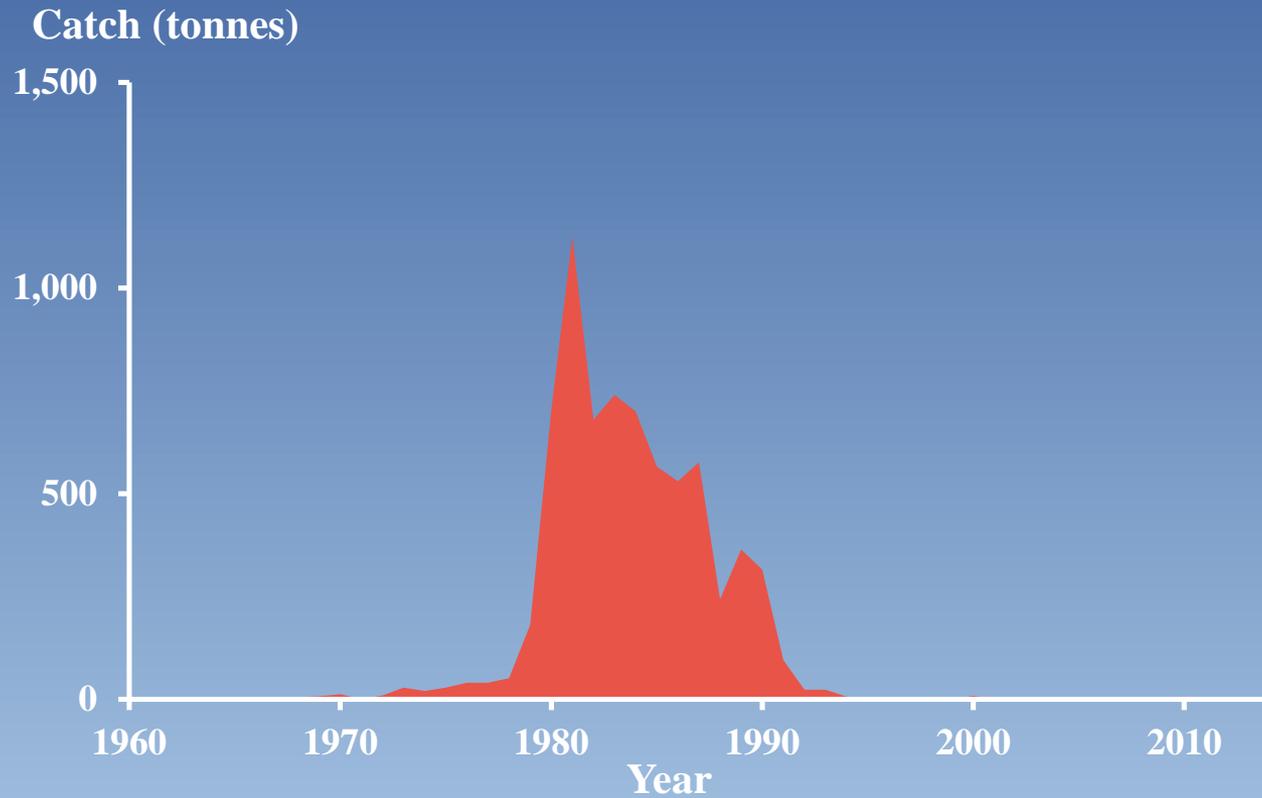
- All fishermen will require a licence; only licensed professional fishermen can supply the communities
- Authorised factories for salmon designated
- Fish factories report on a weekly basis (weight and number)
- In-season monitoring of the catch limit
- All licensed salmon fishermen will be required to provide a seasonal catch report within one month of season end
- No report, no license for following year(s)
- Fishermen will allow samplers to take samples of their catches



Faroese salmon fishery

- Catches peaked at >1,000 tonnes in the early 1980s
- Since 2001 NASCO decisions have not set a quota on the understanding that any fishery would be managed on the basis of the scientific advice from ICES, in a precautionary manner and with a view to sustainability.
- There has been no commercial salmon fishery at Faroes since 1993 with no licences issued for salmon fishing; no fishery at all since 2000
- Multi-annual advice received from ICES since 2006 and multi-annual measure set in 2012 (2013-2015) and 2015 (2015/16 – 2017/18). No catch options
- Recent genetic studies of samples from 1980s and 1990s indicate 56% from Northern Europe, 26% from Southern Europe and 16% North America

Faroese salmon fishery



Distantwater fisheries – share of catch

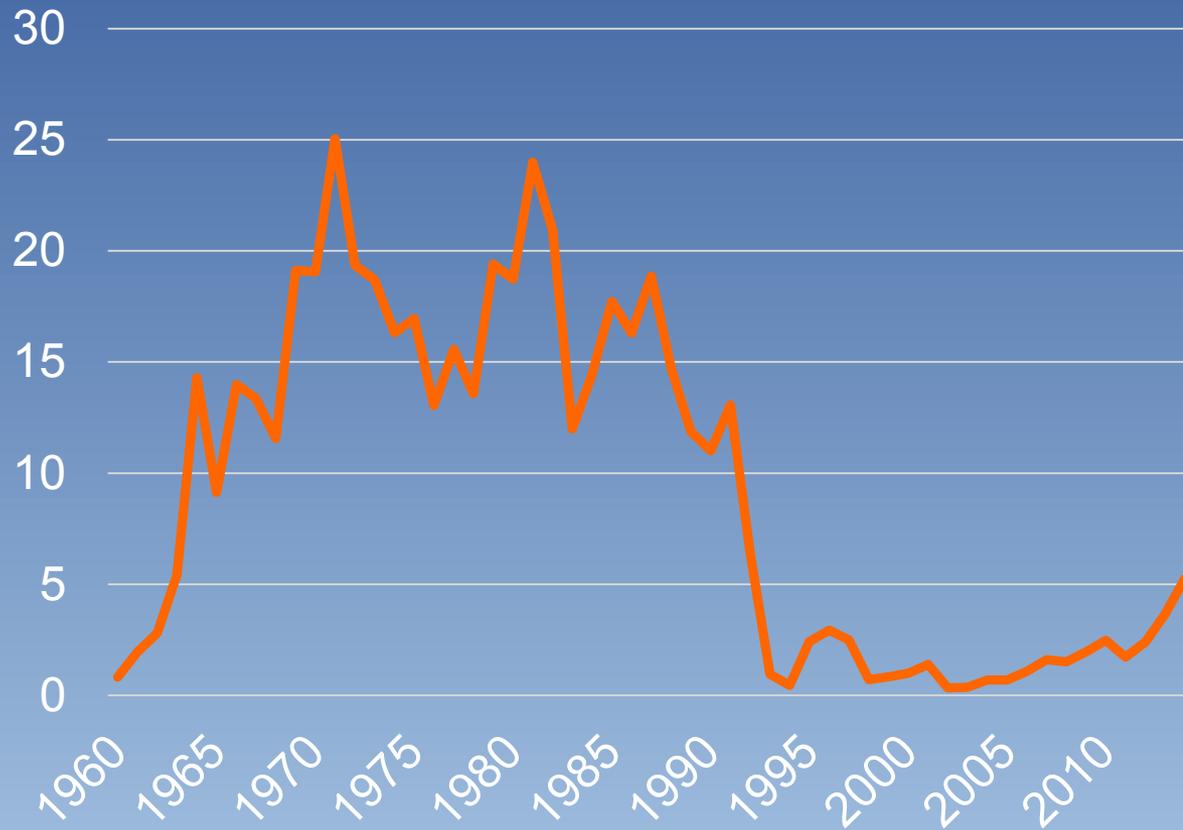
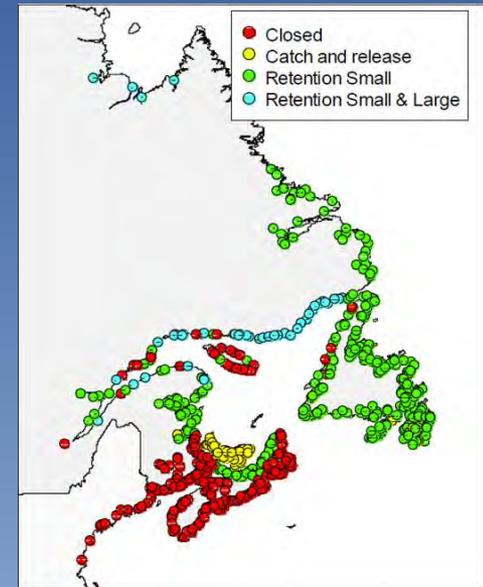


Photo courtesy of Tim Sheehan

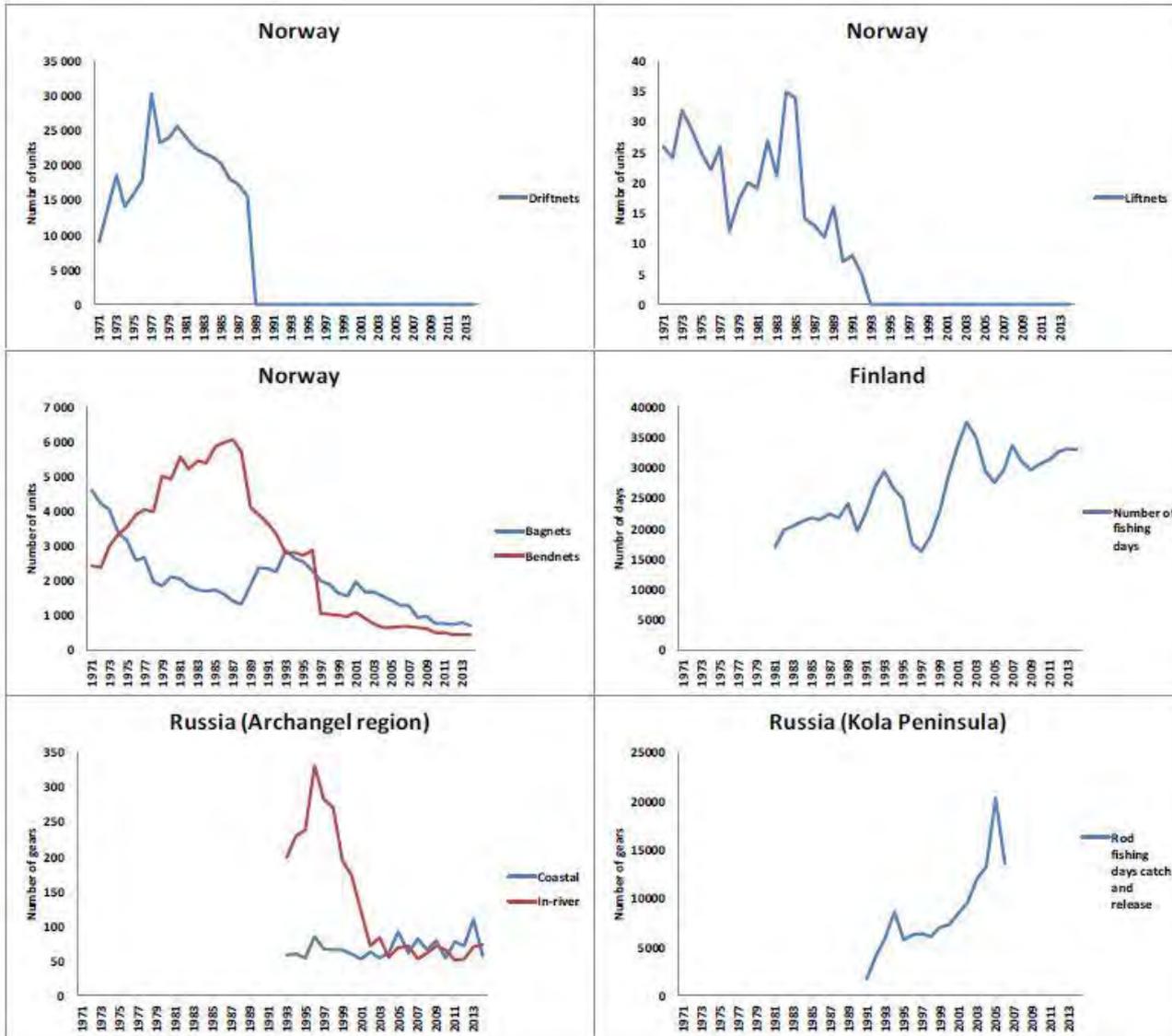
Fisheries by States of Origin

- Enormous reductions in fishing effort all around the North Atlantic partly in recognition of obligations under the Convention e.g. no commercial fisheries in Canada since 2000, closure of Irish drift net fishery in 2007, closure of remaining commercial nets in N. Ireland since 2010 (Loughs Agency) and 2012 (DCAL)
- Increasing use of catch and release in rod fisheries (>122,000 fish in 2014)
- MSFs (predominantly in coastal areas) present particular challenges for management - 35% (325t) of the catch in the NEAC area and 9% (9t) of the catch in the NAC area



Source: ICES
Photo courtesy of Sergey Prusov

Fisheries by States of Origin



Bycatch of salmon in pelagic fisheries

The concern

- post-smolt and adult salmon known to occur in catches of pelagic species e.g. mackerel
- very large discrepancy in the initial estimates of post-smolts taken as bycatch from 60 to over 1 million post-smolts (research or commercial catches)
- more knowledge gained about salmon distribution and migration (SALSEA Programme)
- new insights through screening of catches and landings, primarily by Iceland, and from the recent International Ecosystem Summer Survey of the Nordic Seas (IESSNS)



Photo courtesy of Jens Christian Holst

Bycatch of salmon in pelagic fisheries

ICES Conclusions

- estimates remain highly uncertain, informative to increase efforts to obtain reliable estimates
- ICES concludes that there are relatively low impacts (0.01 – 0.03% and <2% of NEAC PFA)
- comprehensive catch screening on commercial vessels in areas with known high densities of salmon – significant resources, coordination and funding and need NASCO Parties agreement
- integrate information and assess consequences for salmon productivity
- seeking cooperation from NEAFC, NAFO and ICCAT

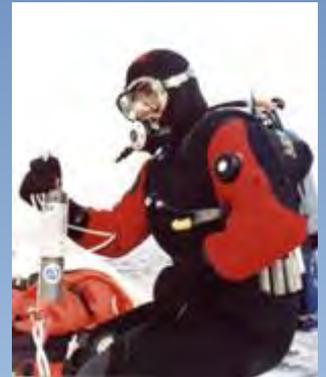
Fairness and Balance

- Greenland and Faroes seek 'fairness and balance' – they now harvest a greatly reduced share of the total catch
- internationally agreed guidelines and agreements on management of salmon fisheries, habitat protection and restoration and aquaculture and related impacts
- Implementation Plans - international scrutiny of measures through critical evaluation by a Review Group comprising representatives of the Parties and NGOs



SALSEA Programme

- little was known about where salmon were dying at sea or the factors responsible and this lack of understanding was an obstacle to rational management
- IASRB established to promote collaboration and cooperation on research into the causes of marine mortality of salmon and the opportunities to counteract it
- major, innovative programme of research, the SALSEA Programme, developed and supported through public/private partnerships
- fresh, estuarine and offshore components but major marine surveys in Northwest and North- East Atlantic and enhanced sampling at West Greenland



*Photos courtesy of Niall Ó Maoiléidigh,
Jens Christian Holst and Fred
Whoriskey*

SALSEA Programme

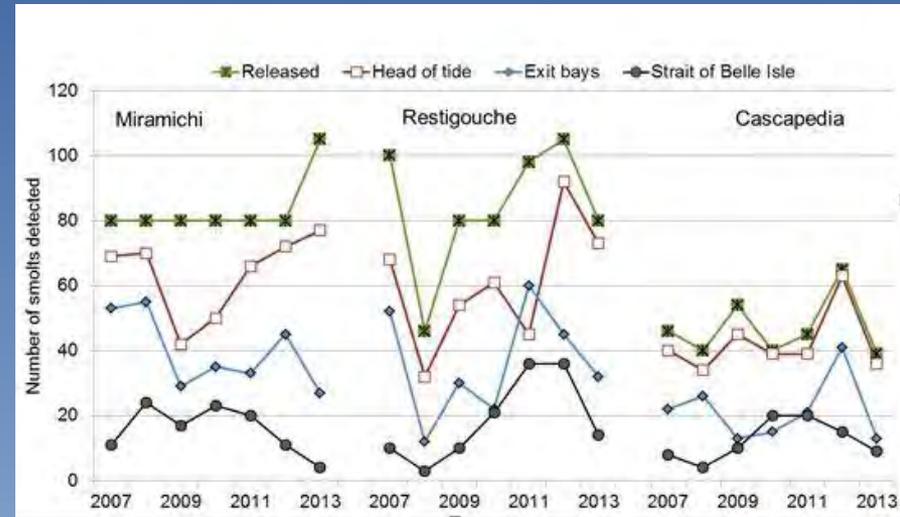
- delivered new tools such as migration models and genetic assignment protocols that can support management
- new insights into the life of salmon of salmon at sea including patterns of growth, feeding ecology, diseases and parasites
- finer scale assignment of salmon caught at West Greenland now being undertaken



Photos courtesy of Marine Institute

IASRB Current priorities

- IASRB encourages studies to partition marine mortality of migrating Atlantic salmon – SALSEA Track
- NASCO Parties to continue the development of local collaborative telemetry projects
- development of large international collaborative telemetry projects that together build upon and expand local efforts



Source: ICES



Photo courtesy of Gilbert van Ryckevorsel

Management Implications - General

- over the last forty years, increased mortality at sea, linked to a warming climate, has resulted in a dramatic decline in the abundance of Atlantic salmon
- management options in the ocean are limited so goal should be to maximise the number of healthy wild salmon that go to sea by focusing actions on impact factors in fresh, estuarine and coastal waters



Challenges and Opportunities - Fisheries

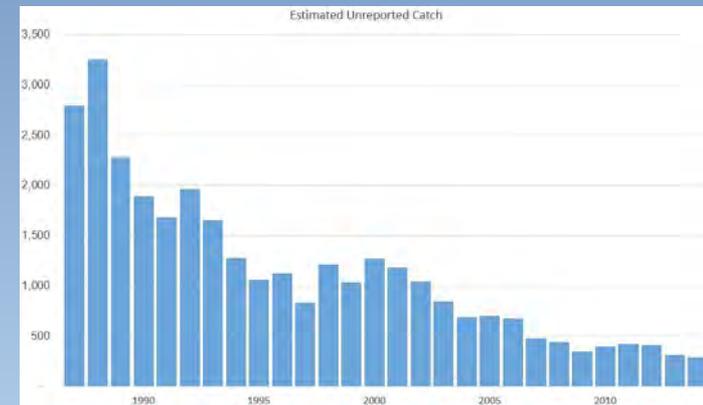
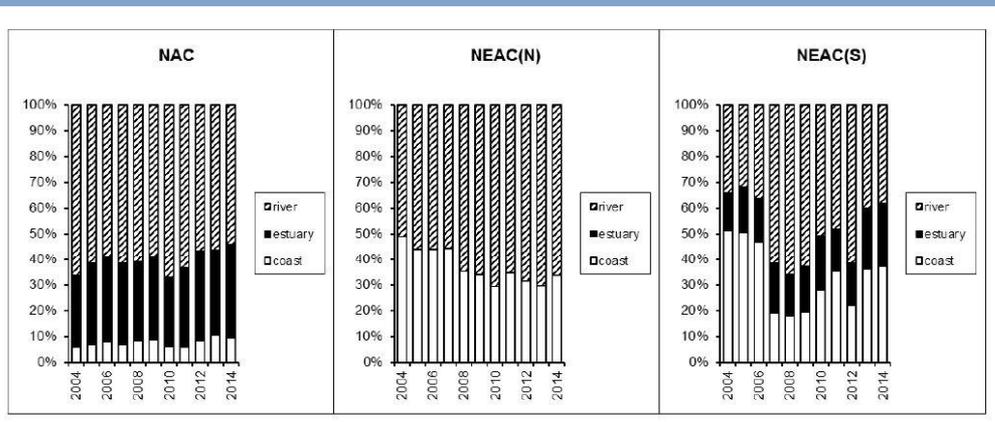
- major reductions in fishing effort in part reflecting international obligations; increasing use of catch and release no sightings of non-NASCO vessels, stability in distant-water fisheries
- despite sacrifices abundance remains low and managers face uncertainty due to a changing climate, particularly in the south
- fisheries should only exploit surpluses; some jurisdictions have not established CLs and others permit fishing where stocks below CLs
- reductions in condition of returning salmon and increased incidence of repeat spawners in some areas need to be considered



Photos courtesy of Sergey Prusov

Challenges and Opportunities - Fisheries

- MSFs remain even though it is unclear how weakest stocks are protected
- need to continue to cooperate in assessing bycatch in pelagic fisheries
- warming in freshwater may affect the benefits of catch and release fishing and this mortality needs to be considered
- estimated unreported catch remains significant



Source: ICES

Challenges and Opportunities - Other aspects

- maintain and improve the productive capacity of salmon habitat e.g. through coordinated catchment management planning, restoring degraded habitat, improving access
- planting of bankside vegetation to create shade and changes to land use and land drainage schemes may mitigate some of the expected effects of climate change
- increasing interest in stocking – need to consider the risks and benefits
- challenges remain to be addressed in managing impacts of salmon farming particularly concerning sea lice and escaped farmed salmon (resistance to lice treatments a concern) and introductions and transfers (*G.salaris*)
- transgenic salmon –challenge or opportunity?



www.nasco.int
www.salmonatsea.com

Photo courtesy of Gilbert van Ryckevorsel