Iascach Intíre Éireann
Inland Fisheries Ireland

NASCO, IYS and Salmon Conservation in Ireland

11th October 2019

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Head of Research and Development

NASCO - A little background

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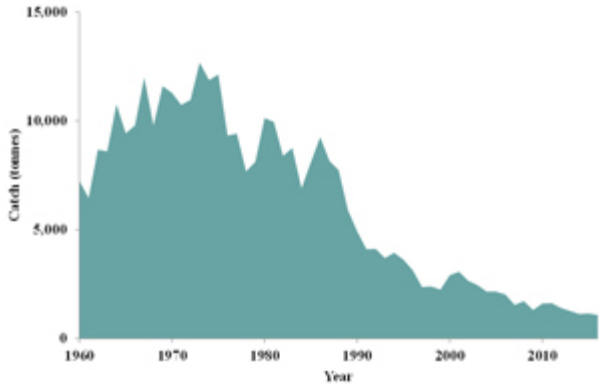
NASCO is an international organization, established by an inter-governmental Convention in 1984. The objective of NASCO is to conserve, restore, enhance and rationally manage Atlantic salmon through international co-operation taking account of the best available scientific information.

The Parties: Canada, Denmark (in respect of the Faroe Islands & Greenland), the European Union, Norway, the Russian Federation and the United States of America. France (in respect of St.Pierre & Miquelon) attends NASCO's meetings as an observer

"The NGOs have worked successfully together with NASCO Parties to facilitate much greater transparency in its work, notably the requirement for each jurisdiction to produce an implementation plan which now creates public accountability for wild salmon management around the North Atlantic



NASCO - Achievements

NASCO immediately prohibited fishing for salmon in most parts of the North Atlantic beyond 12 nautical miles from the coast creating a large protected zone or 'sanctuary', free of targeted fisheries.

Regulatory measures agreed by NASCO for the distant-water fisheries and measures taken by States of Origin have resulted in enormous reductions in fishing effort all around the North Atlantic.

NASCO Parties have adopted and are applying the Precautionary Approach in order to protect the resource and preserve the environments in which salmon

NASCO has developed a range of Precautionary Approach agreements in relation to:

- management of fisheries;
- habitat protection and restoration;
- impacts of aquaculture, introductions and transfers and transgenics;
- stock rebuilding programmes;
- use of socio-economic factors in management decisions.

Range of guidelines on topics such as catch and release and establishment of gene banks.

International Year of the Salmon

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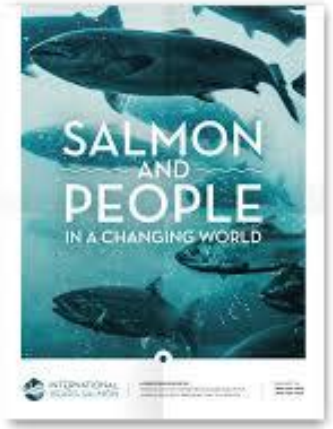
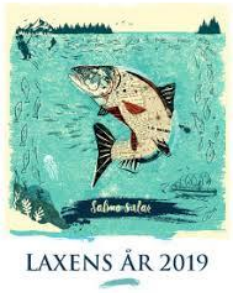
The International Year of the Salmon (IYS) is an initiative by the North Atlantic Salmon Conservation Organization (NASCO) and the North Pacific Anadromous Fish Commission (NPAFC).

Outreach, Engagement, and Education





ATLANTIC SALMON RESEARCH JOINT VENTURE | PLAN CONJOINT DE RECHERCHE SUR LE SAUMON ATLANTIQUE

ASEF FESA

INTERNATIONAL YEAR OF THE SALMON
ANNÉE INTERNATIONALE DU SAUMON

A little background - IFI

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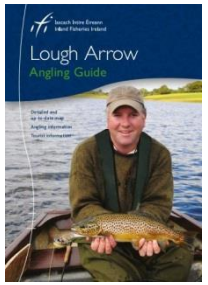
The conservation, protection, management, development and improvement of inland fisheries

National Angling Development Plan



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Pink salmon
Non-native Fish Species Alert!

National Strategy for Angling Development

Vissen in Ierland

The resource and fish

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- *74,000 km of rivers and streams*
- *128,000 HA of lakes*
- *Long rugged coast line*
- *29 species in Irish freshwater*
    - *angling species*
    - *conservation species & associated habitat*
- *Approx. 86 sea angling species*

Status of Salmon Stocks

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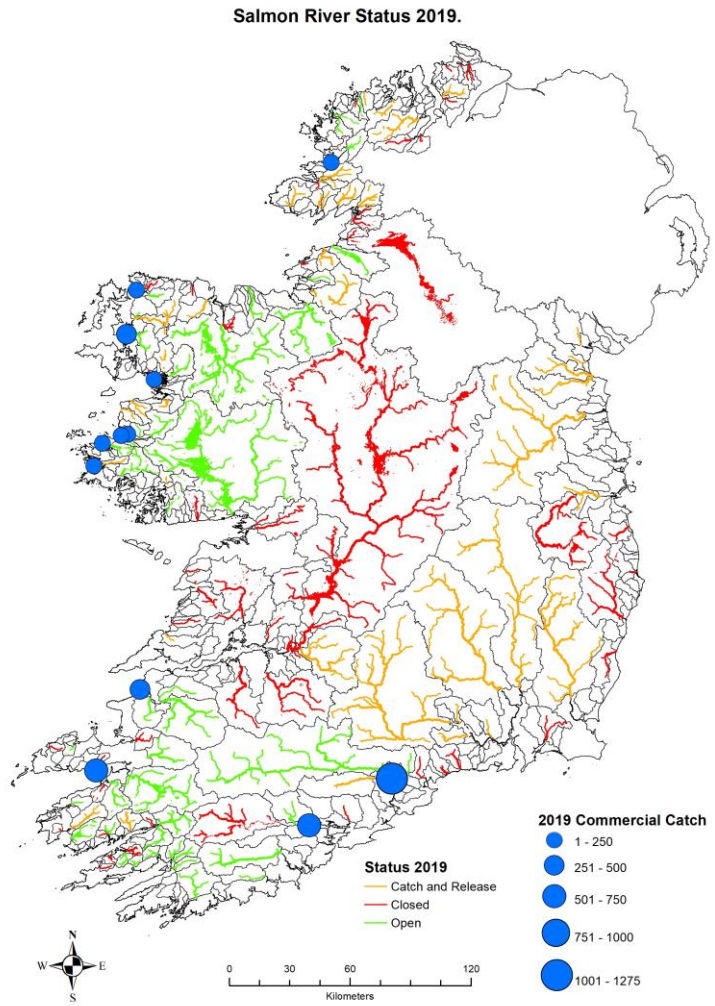

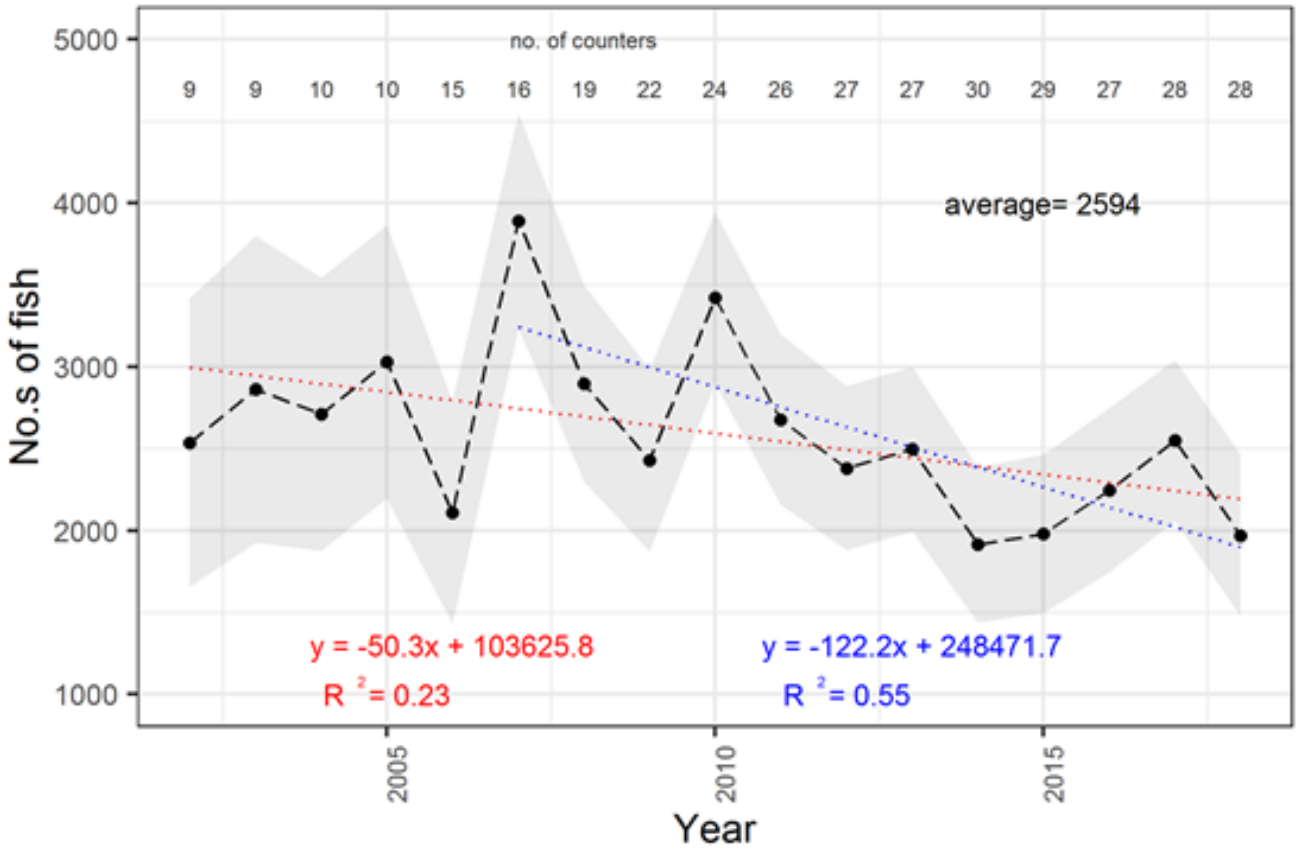

Applied Research Programmes to support management decisions

Strong focus on Conservation

Salmon survival through life stages

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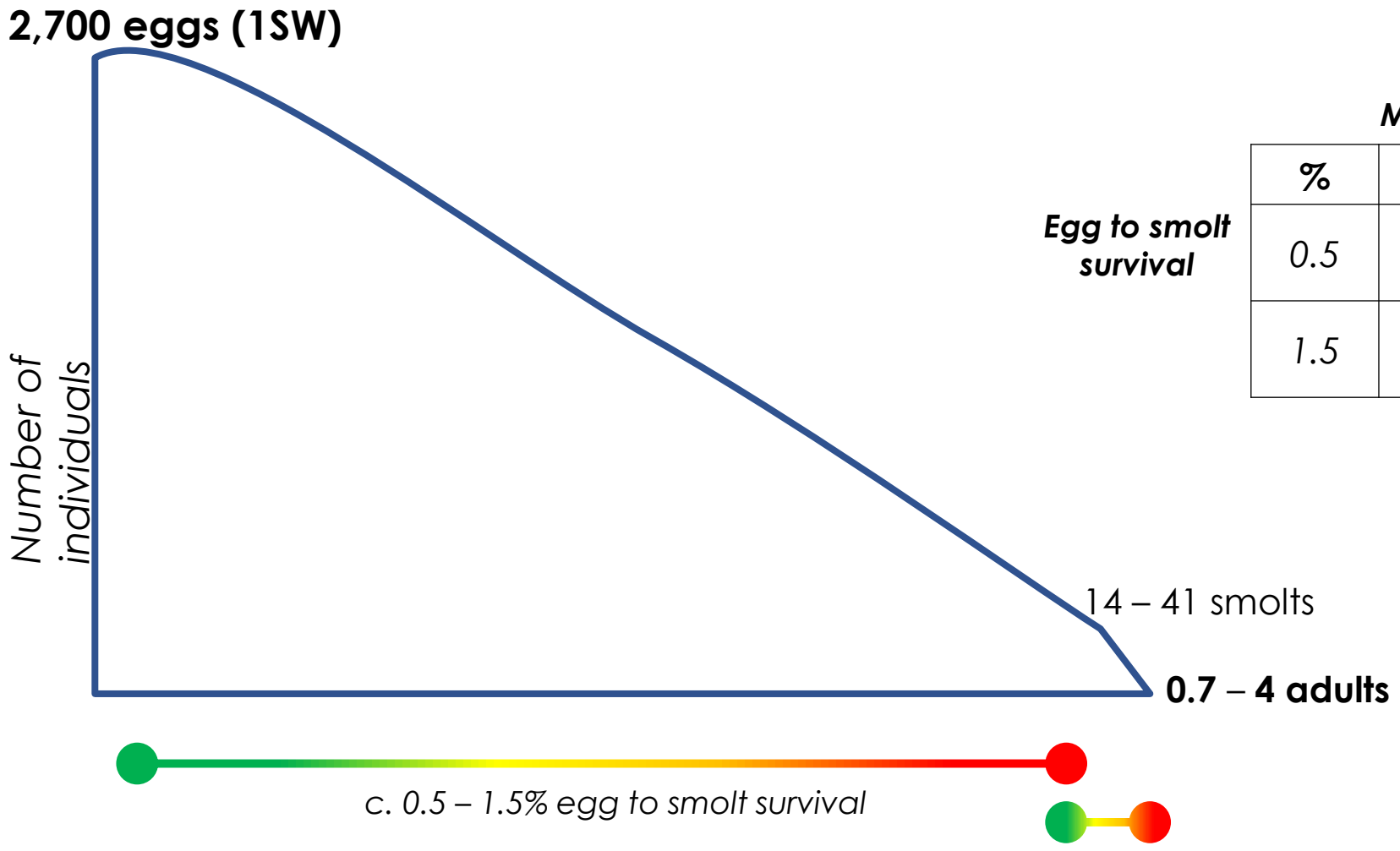

	Marine survival	
%	*5*	*10*
Egg to smolt survival *0.5*	**0.7**	**1.4**
1.5	**2**	**4**

NSIC – R. Erriff

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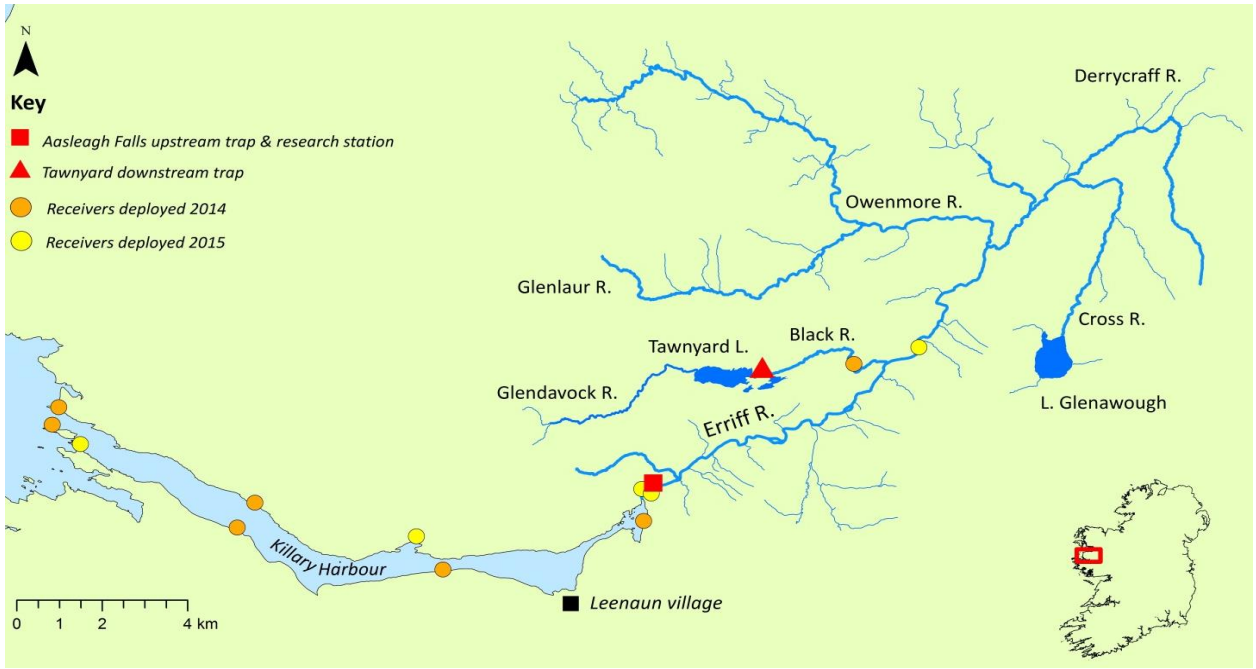

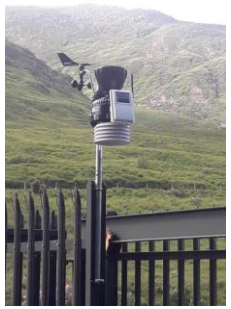

Fry Translocation

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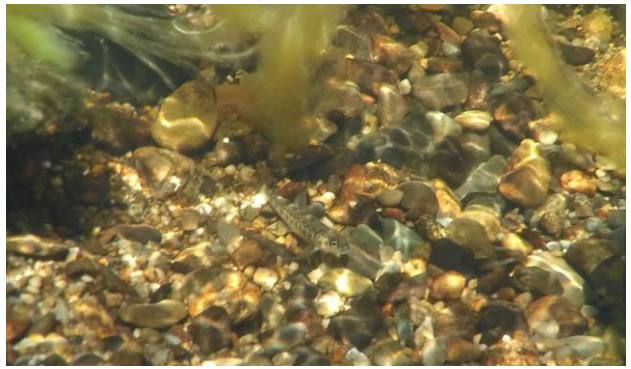
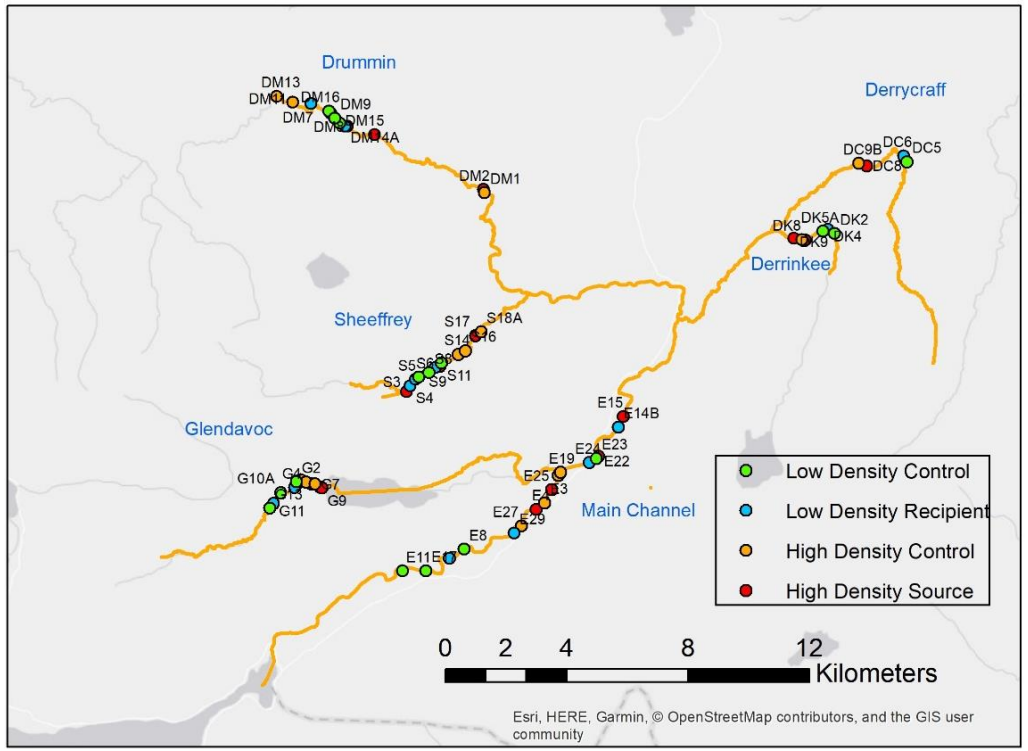
Saving the “doomed masses”



- 3 year research PhD
- 80 sites selected on the NSIC
- High & low density controls
- Translocations completed (1.2k)
- Initial results ☺ and ☹



Theory: fry translocated from these areas to low or non-productive sections of the same river where suitable habitat is present, in an effort to potentially boost the overall production of native wild salmon populations

Bournemouth University

Understanding Smolt Mortality

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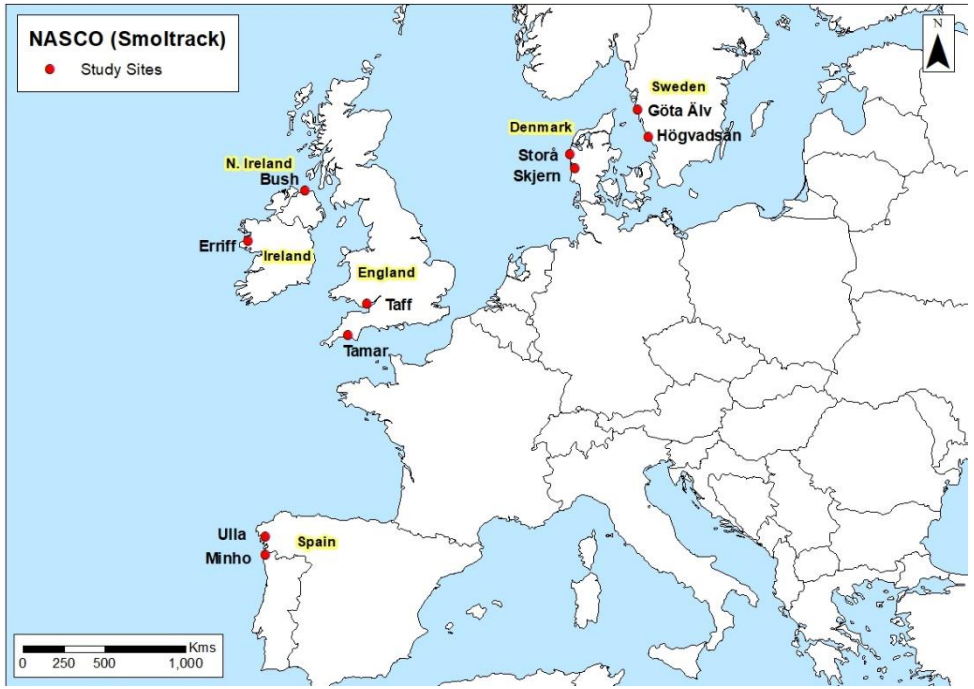

SMOLTRACK will help scientists to learn about survival rates of salmon smolts during their migration through the lower parts of rivers, estuaries and coastal areas, providing data on smolt run timing and migration behavior.

www.smoltrack.eu

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afbi Agri-Food and Biosciences Institute
XUNTA DE GALICIA
DTU
Cefas

Smolt Mortality

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SMOLTRACK II (2018)							
	Fish group	Tagged	Not Detected (%)	Predation (%) (Birds/Mammals)	Mortality (%)	Dis. In River (%)	FW Survival (%)
Erriff, Ireland	Wild	30	7	60	10	-	23
Bush, Northern Ireland	Wild	34	3	26	-	-	71†
† Detected on data logging receiver 1.1km before entering ocean, actual survival maybe lower							
	Hatchery	50	70		6		24

SMOLTRACK II (2019)							
	Fish group	Tagged	Not Detected (%)	Predation (%) (Birds/Mammals)	Mortality (%)	Dis. In River (%)	FW Survival (%)
Ulla, Spain	Wild	35	*	*	*	*	*
Minho, Spain	Wild	25	*	*	*	*	*
	Naturalized	10	*	*	*	*	*
Bush, Northern Ireland	Wild	35	*	*	*	*	*
Erriff, Ireland	Wild	43	2	5	40	7	47
							* Data still being processed

Estuary Smolt Mortality - LiceTrack

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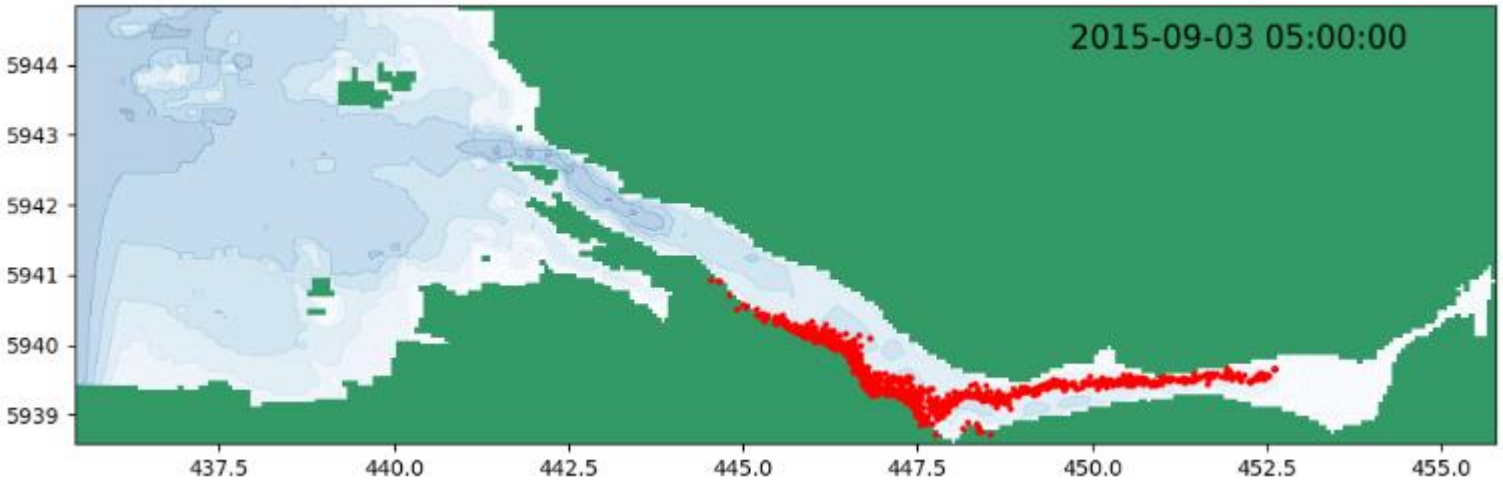

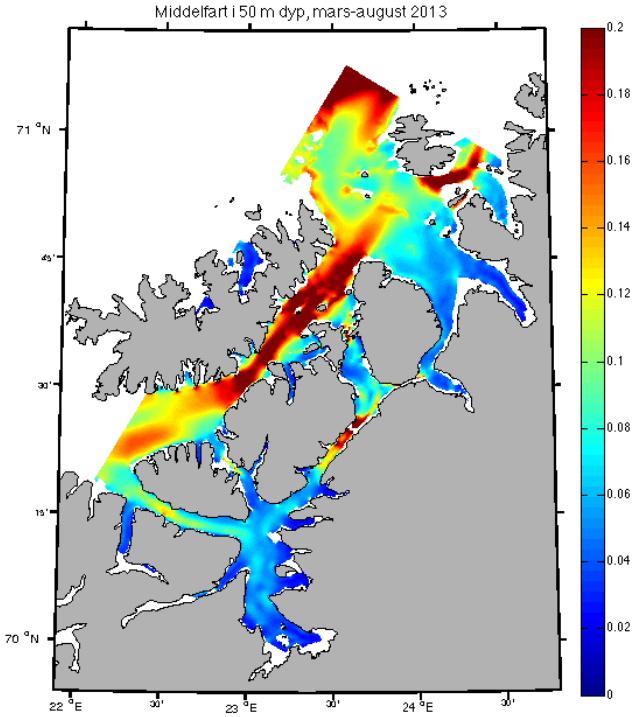

Meteorological model

Additional forcing:
- Regional meteorological model

Validation:
- Weather station

Hydrodynamic model

Additional forcing:
- Tides, temperature and salinity at open boundaries
- Rivers (catchments + meteorology)

Validation:
- Tide gauges
- Moorings
- Drifters
- Gliders

Lice dispersal model

Additional forcing:
- Site locations
- Site stocking
- Site lice counts

Validation:
- Sentinel cages
- Wild fish surveys
- Plankton trawls

Population model

Additional forcing:
- Treatment incidence/efficacy
- Site physical conditions (temperature/ salinity)

Validation:
- Site lice timeseries

Scottish Government
Riaghaltas na h-Alba
gov.scot

NINA

NUI Galway

Climate Change Mitigation Research

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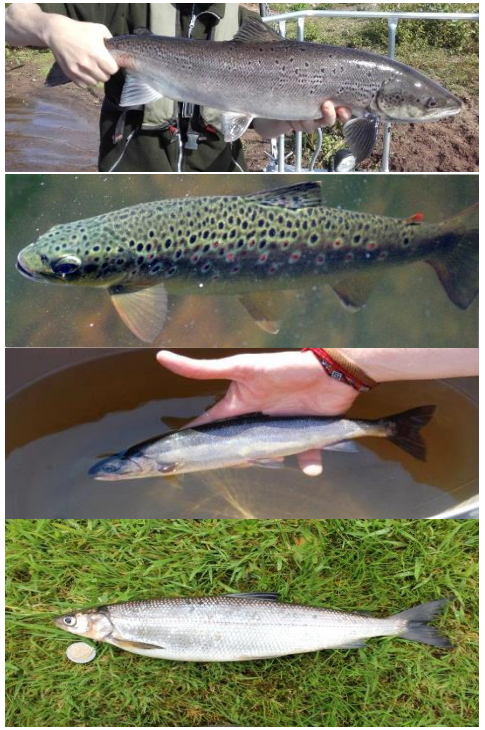
Climate change refers to shifts in ambient temperature regime, and to changes in the frequency and intensity of extreme weather and climate events

- 5 areas of Ireland to represent continental effect and environmental range include Lakes, Rivers and Estuaries (Index catchments)
- Approx. 350 monitored sites
- 4 regional climate models available
- Identify high risk areas for fish
- Lethal temperatures for salmonids 25c
    - In 2018 we saw 28c in the West
- Identify mitigation measures
- Identify priority areas for mitigation measures for fish



IFI Barrier Assessment tools

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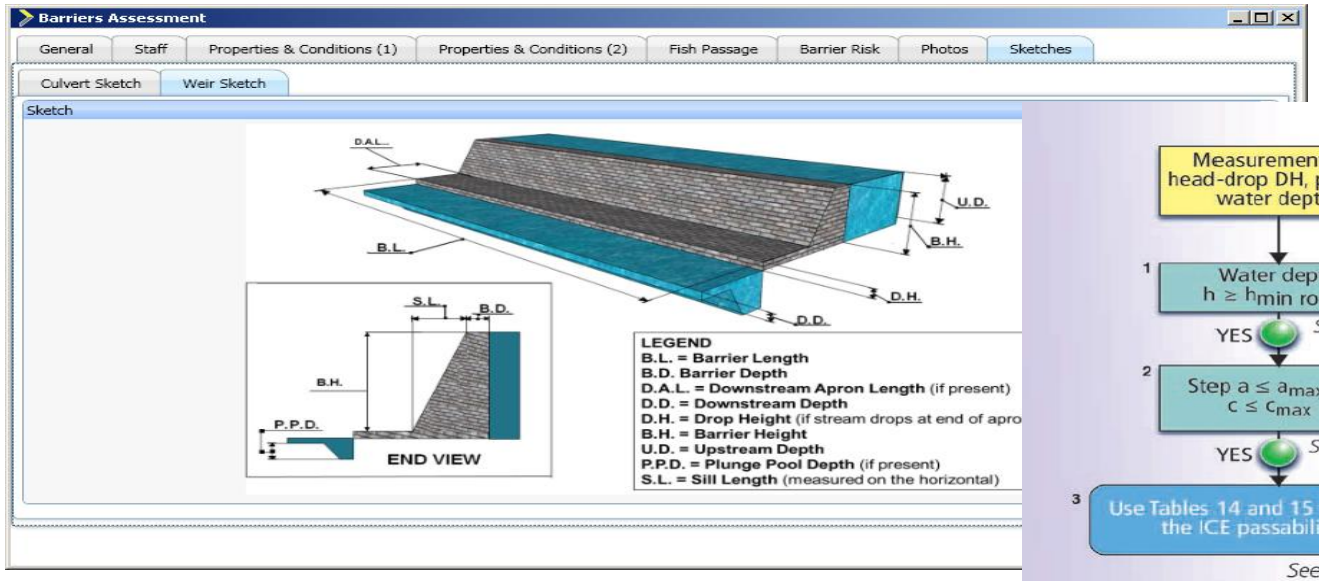
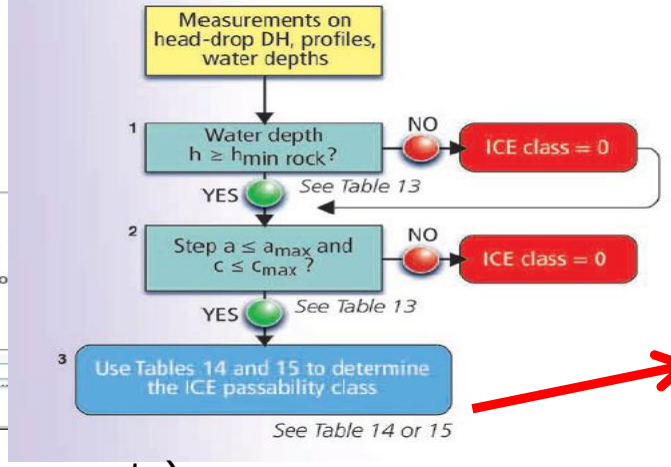
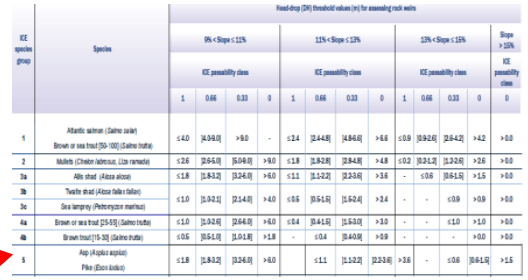
- National approach to support WFD
- Rapid Assessment Technique – SNIFFER & ICE
- Simple tools consistently applicable –each possible fish passage route surveyed
- Does not rely heavily on expert judgement (Depth/Velocity/Height Measurements)
- Data collected can be used to generate an ICE Score Passability index.
- developed to prioritise the removal or mitigation of man-made in-river structures







SNIFFER - mitigation works (in-depth, more measurements)
ICE - catchment-wide stream connectivity studies (fewer measurements, less equipment, faster)

IFI SNIFFER Assessment

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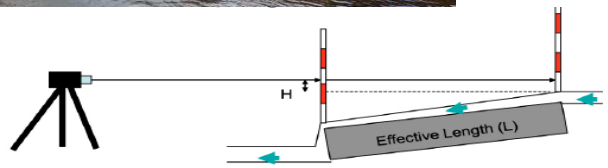

H = **hydraulic head.**

Hydraulic head (H) / effective length (L)= **Slope**. Express as percentage (%)

e.g. 0.50m hydraulic head (height gain) over a 10 m effective length would be (0.5/10)*100 = 5% slope

How big is the problem?

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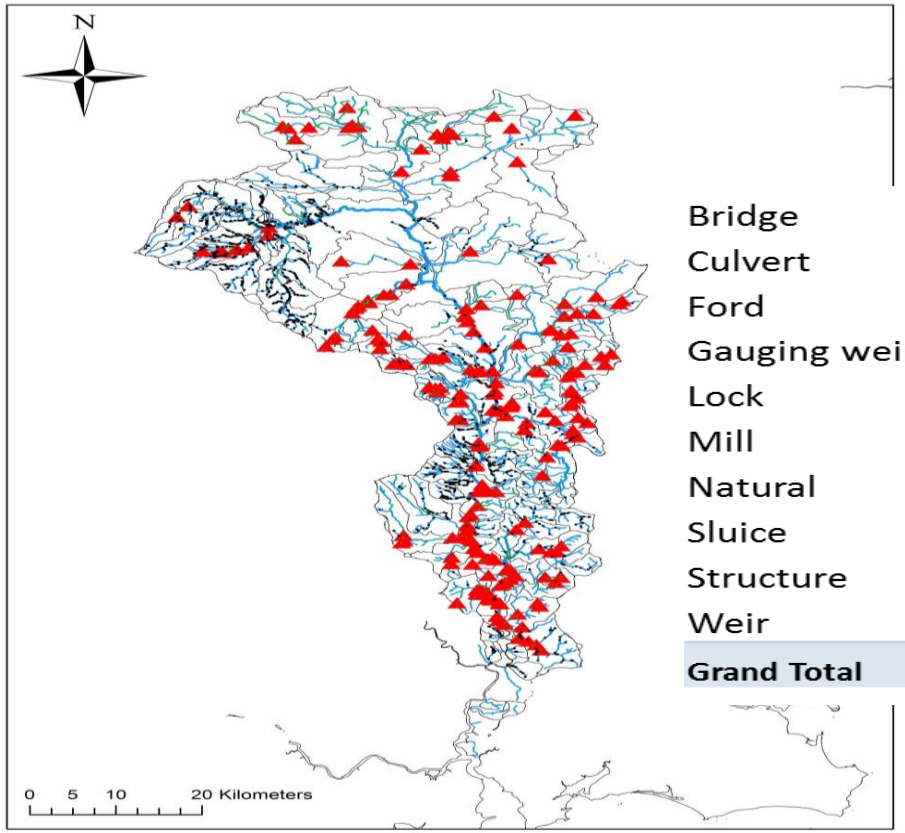
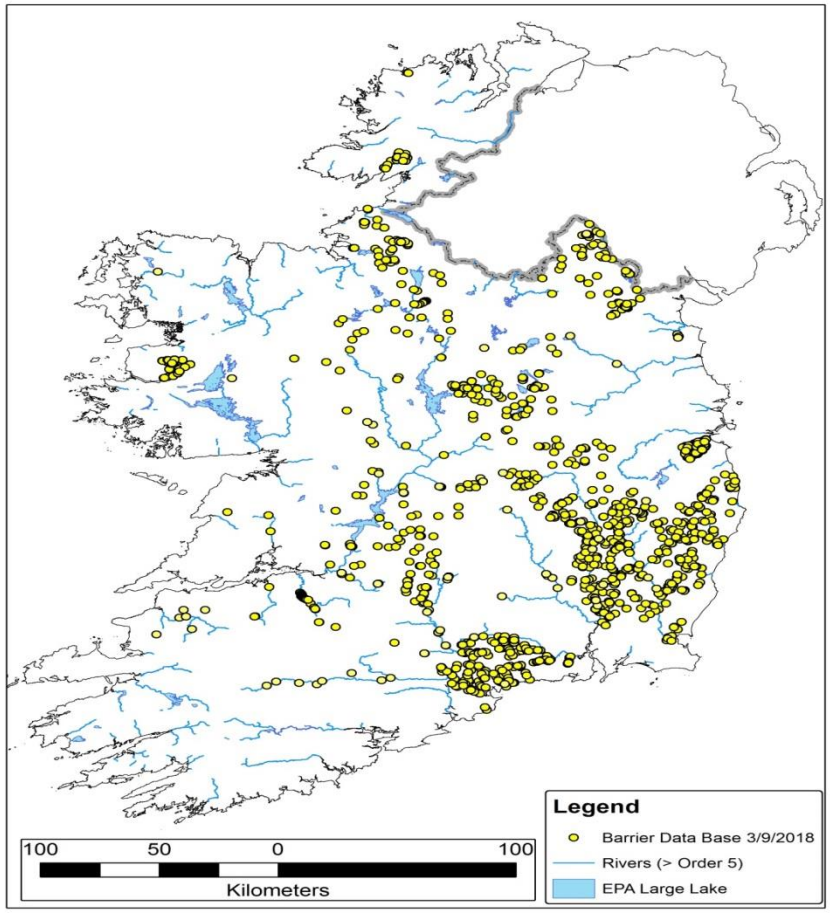
1,400 Identified from ~ 76,421 Potential Barriers



Bridge	178
Culvert	25
Ford	12
Gauging weir	9
Lock	22
Mill	5
Natural	6
Sluice	5
Structure	5
Weir	52
Grand Total	**319**



New Fish Pass

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Natural Fish Pass River Shannon

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Summary

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- Salmon stocks are in trouble
- Need evidence-based measures implemented
- Need to “control the controllable”
- Climate Change necessitate predictive modelling driven actions – step change in our mitigation measures
- Positive examples : Salmon restoration in Denmark

The Final goal – SOS Save Our Salmon

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Thank You