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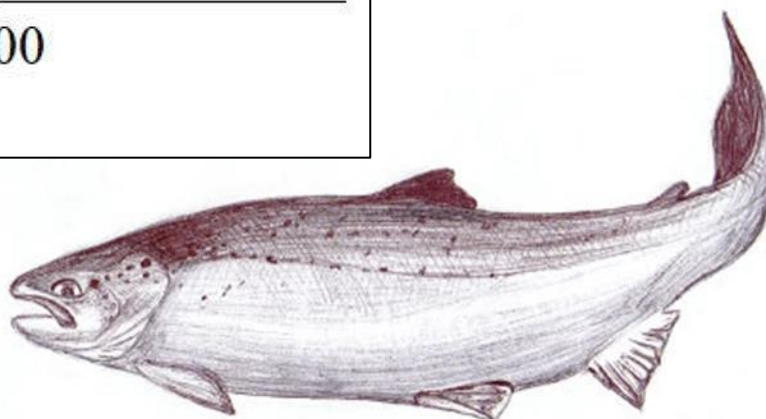
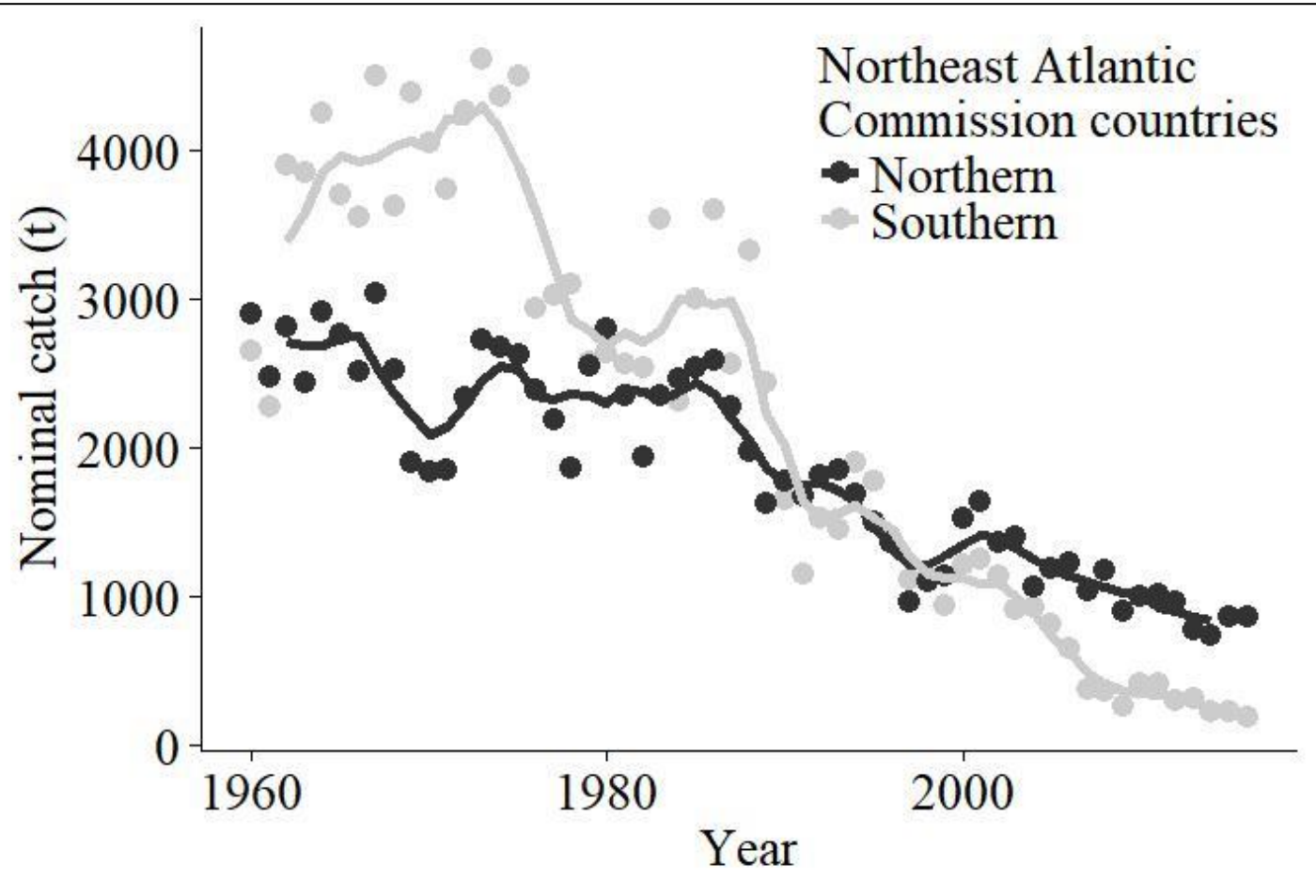
France (Channel
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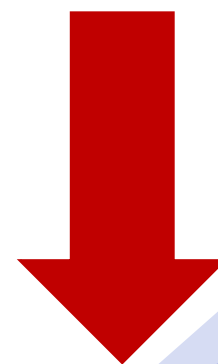
SAlmonid MAnagement Round the CHannel

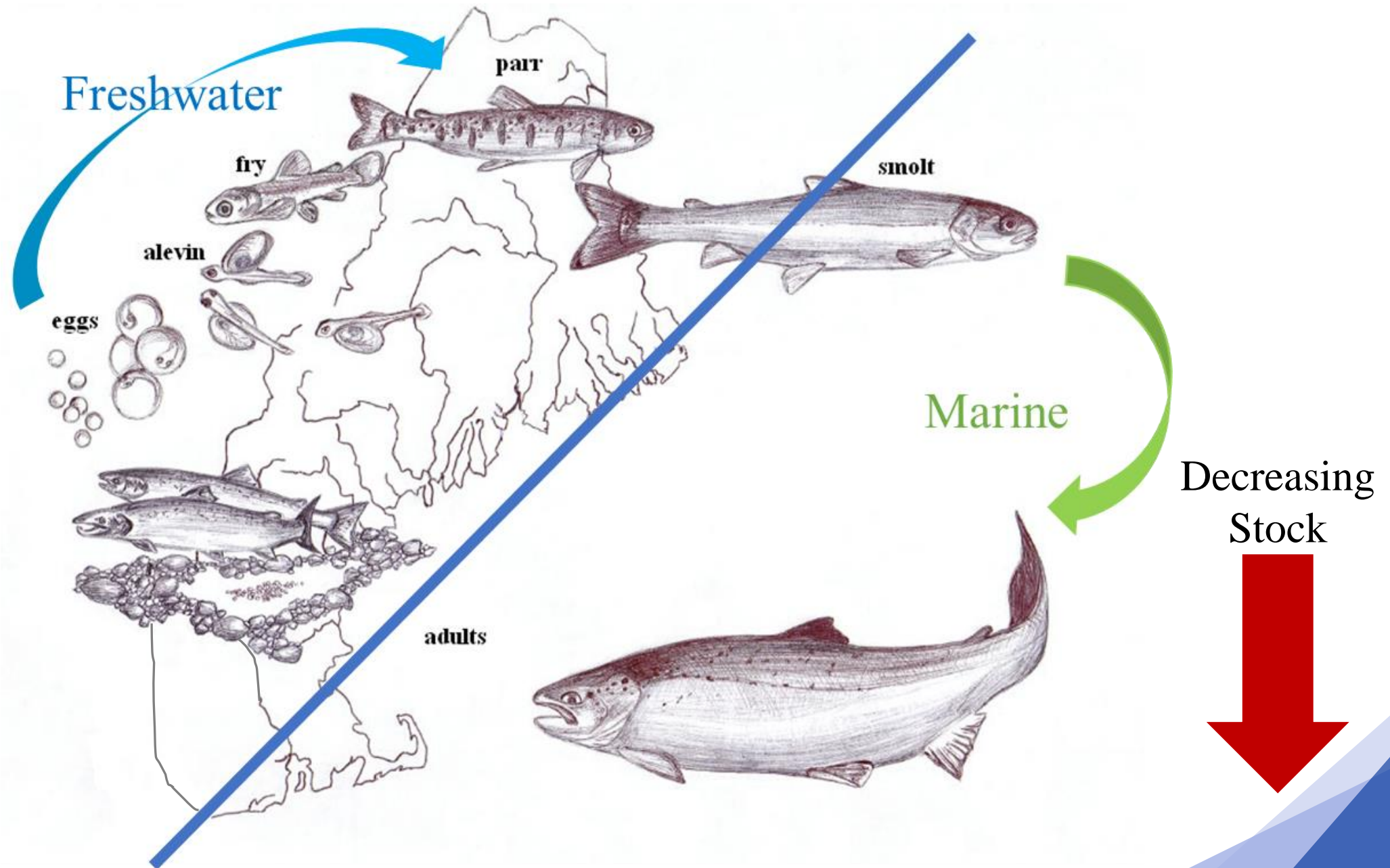
European Regional Development Fund

What are we learning about the R. Frome salmon?



Decreasing
Stock





Decline causes

Ocean climate influences on critical Atlantic salmon (*Salmo salar*) life history events

Kevin D. Friedland

Abstract: Ocean climate and ocean-linked terrestrial climate affect nearly all phases of Atlantic salmon (*Salmo salar*) life history. Natural mortality in salmon occurs in two main phases: juvenile stages experience high mortality during freshwater residency and pre-adult salmon experience high mortality in estuarine and ocean environments. Freshwater survivorship is well characterized and tends to be less variable than marine mortality. Sources of marine mortality are

Can. J. Fish. Aquat. Sci. 55(Suppl. 1): 119–130 (1998)

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Overview of the status of Atlantic salmon (*Salmo salar*) in the North Atlantic and trends in **marine** mortality

Gérald Chaput

Fisheries and Oceans Canada, PO Box 5030, Moncton, New Brunswick, Canada E1C 9B6; tel: +1 506 851 2022; fax: +1 506 851 2620;
Chaput, G. 2012. Overview of the status of Atlantic salmon (*Salmo salar*) in the North Atlantic and trends in marine mortality. – ICES Journal
of Marine Science, 69: 1538–1548.

Received 9 September 2011; accepted 3 January 2012; advance access publication 19 April 2012.

Since the early 1980s, the ICES Working Group on North Atlantic Salmon has collated and interpreted catch data, exchanged information on research initiatives, and provided advice to managers in support of conservation efforts for Atlantic salmon. During the past
life history, freshwater survivorship is

Can. J. Fish. Aquat. Sci. 55(Suppl. 1): 119–1

ICES Journal of Marine Science; doi:10.1093/icesjms/fsr208

The influence of the **freshwater** environment and the biological characteristics of Atlantic salmon smolts on their subsequent **marine** survival

Ian C. Russell^{1*}, Miran W. Aprahamian², Jon Barry¹, Ian C. Davidson³, Peder Fiske⁴,
Anton T. Ibbotson⁵, Richard J. Kennedy⁶, Julian C. Maclean⁷, Andrew Moore¹, Jaime Otero⁸,
Ted (E. C. E.) Potter¹, and Christopher D. Todd⁹

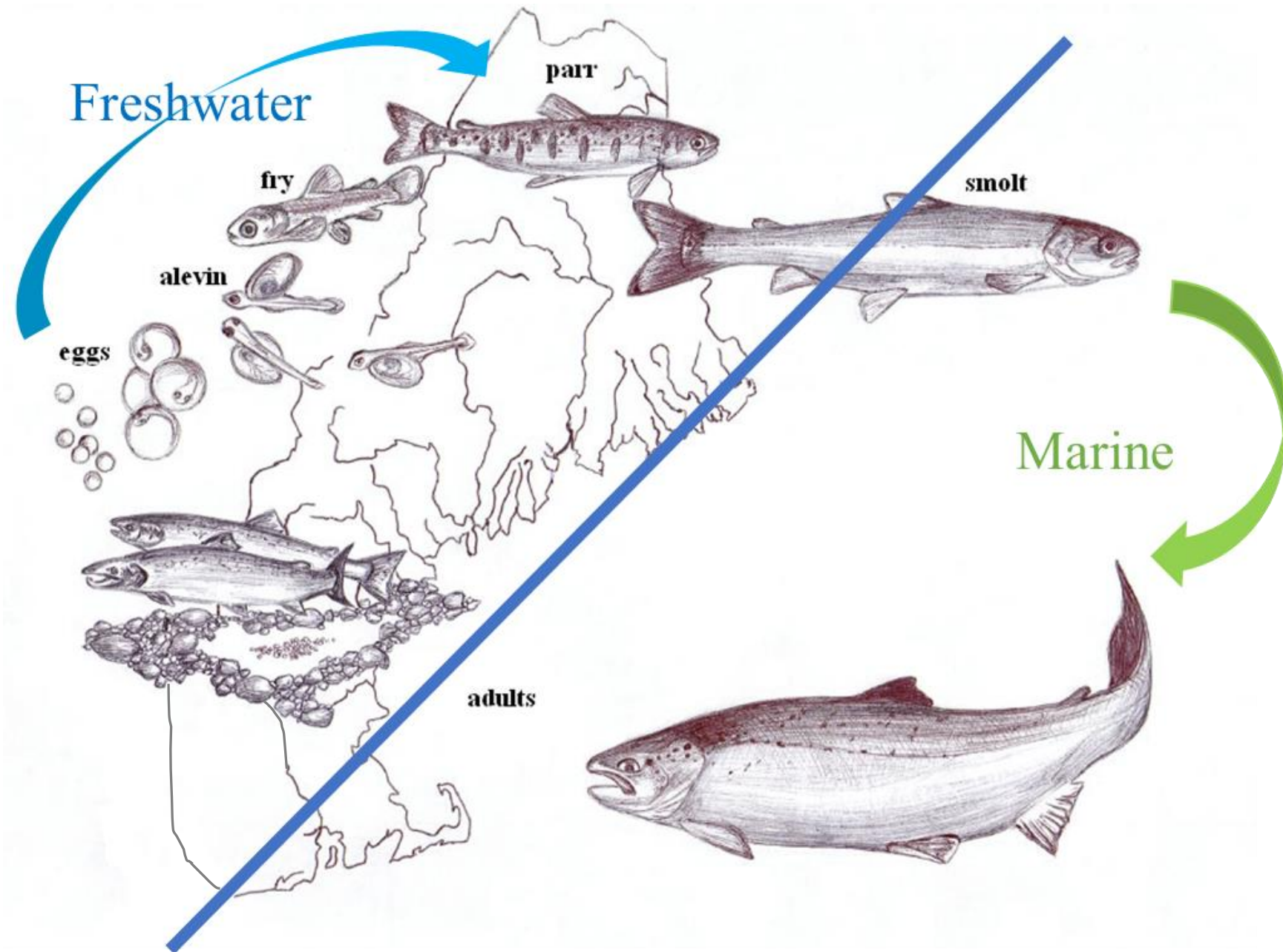
¹Cefas, Pakefield Road, Lowestoft, Suffolk NR33 0HT, UK

²Environment Agency, Richard Fairclough House, Knutsford Road, Warrington WA4 1HG, UK

³Environment Agency, Chester Road, Buckley, Flintshire CH7 3AJ, UK

⁴Norwegian Institute for Nature Research, PO Box 5685, Sluppen, Trondheim 7485, Norway

⁵Game and Wildlife Conservation Trust, Salmon and Trout Research Centre, The River Laboratory, East Stoke, Wareham, Dorset BH20 6BB, UK



Freshwater

Juvenile
habitat



Jessica Marsh

Juvenile
growth &
migration



Olivia Simmons

parr

smolt

Marine

adults

Smolt
estuary
migration



Céline Artero

Post-smolt
growth, sex
& sea age



Cécile Tréhin

Smolt size
& marine
return rate

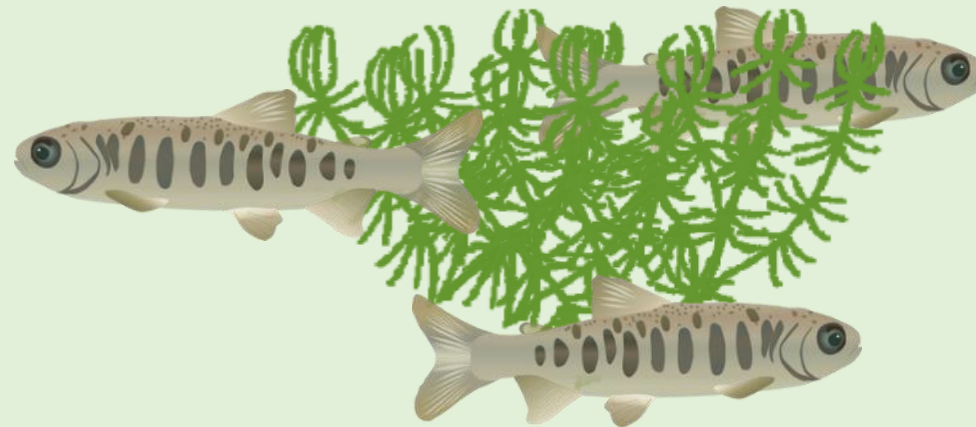


Stephen Gregory

Fresh

Juvenile
habitat

More juvenile habitat >> More & larger juveniles



lt
ry
ion

Post-smolt
growth, sex
& sea age

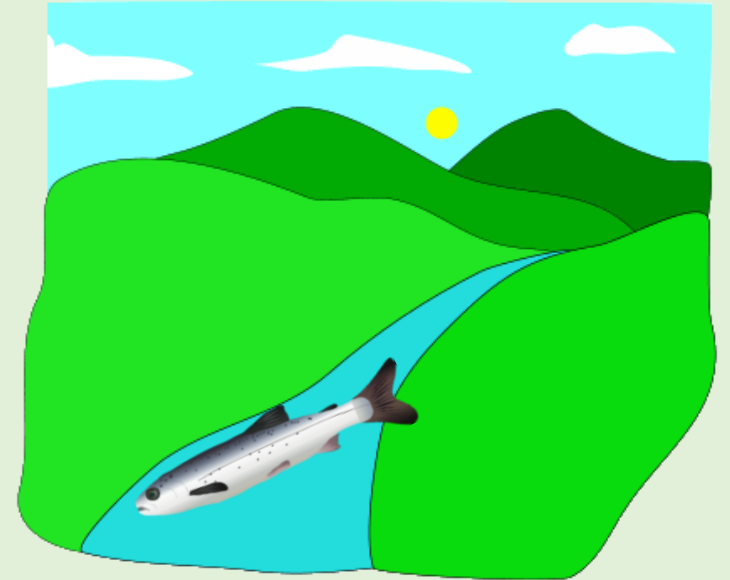
Freshwater

Juvenile
habitat

alevin

Juvenile
growth &
migrat

Warmer & wetter winters >> Larger & earlier
migrating smolts



Some evidence that larger smolts >> Higher survival through estuaries?



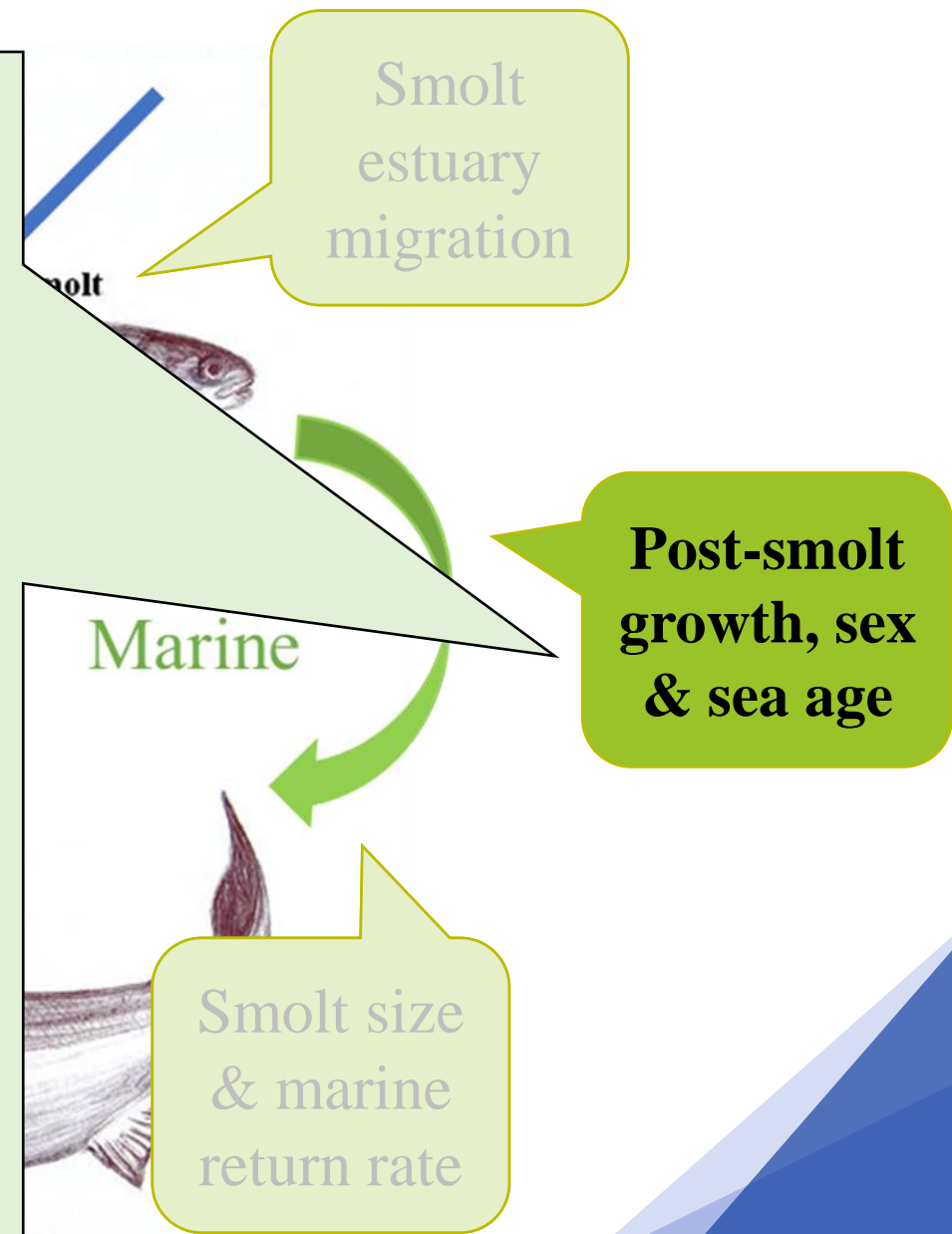
**Smolt
estuary
migration**

Marine

Post-smolt
growth, sex
& sea age

Smolt size
& marine
return rate

Better growing female post-smolts >> more likely to return after one year at sea



Larger smolts >> 3-4x more likely to survive their first year at sea



smolt



Smolt
estuary
migration

Marine

Post-smolt
growth, sex
& sea age

**Smolt size
& marine
return rate**

ICES Journal of Marine Science

ICES Journal of Marine Science (2019), 76(6), 1702–1712. doi:10.1093/icesjms/fsz066

Original Article

Atlantic salmon return rate increases with

Stephen D. Gregory^{1*}, Anton T. Ibbotson¹, William D. Riley², Rasmus B. Lauridsen¹, Ian C. Russell², J. Robert Britton⁵, Phillipa Olivia M. Simmons^{1,5}, and Etienne Rivot^{3,4}

¹Salmon and Trout Research Centre, Game and Wildlife Conservation Trust, FBA River Laboratory, Wareham, BH20 6BB, U.K., ²Freshwater Fisheries Laboratory, Marine Scotland Science, Faskally, Pitlochry, Perthshire, PH16 5LB, U.K. and ³Centre for Conservation Ecology and Environmental Sciences, Faculty of Science and Technology, Bournemouth University, Poole, Dorset, BH12 5BB, U.K.

Received: 19 November 2019 | Revised: 14 February 2020 | Accepted: 18 February 2020

DOI: 10.1111/eff.12542

ORIGINAL ARTICLE

Influence of environmental and overwinter growth rate of Atlantic salmon on

UK chalk stream

Olivia M. Simmons^{1,2} | John Robert Britton⁵ | Stephen D. Gregory²

¹Department of Life and Environmental Sciences, Faculty of Science and Technology, Bournemouth University, Poole, UK

²Salmon and Trout Research Centre, Game and Wildlife Conservation Trust, FBA River Laboratory, Wareham, UK

Abstract

Smolt lengths and marine survival return rates. I

ICES International Council for the Exploration of the Sea

Canadian Journal of Fisheries and Aquatic Sciences

Canadian Science Publishing

Canadian Journal of Fisheries and Aquatic Sciences

Growth during the first summer at sea modulates specific maturation schedule in Atlantic salmon

Canadian Journal of Fisheries and Aquatic Sciences

cjfas-2020-0236.R1

Article

24-Nov-2020

Check for updates

Ecology of FRESHWATER FISH WILEY

Trehin, Cecile; INRAE Bretagne-Normandie, Ecology and Evolution Research Unit

Rivot, Etienne; Institut Agro, UMR 0985 INRA / Institut Agronomique de l'INRAE, Bretagne-Normandie, Ecology and Evolution Research Unit

Freshwater Biology

Biological and environmental influences on the migration phenology of Atlantic salmon *Salmo salar* smolts in a chalk stream in southern England

Journal: Freshwater Biology

Manuscript ID FWB-P-Oct-20-0495

Wiley - Manuscript type: Original Article

Date Submitted by the Author: 29-Oct-2020

Complete List of Authors: Simmons, Olivia M.; Bournemouth University; Gregory, Stephen; Game and Wildlife Conservation Trust; Gilligham, Phillipa K.; Bournemouth University; Rivot, Etienne; Institut Agro, UMR 0985 INRA / Institut Agronomique de l'INRAE, Bretagne-Normandie, Ecology and Evolution Research Unit

Journal of FISH BIOLOGY

Journal of Fish Biology (2018) 92, 579–592

doi:10.1111/jfb.13550, available online at wileyonlinelibrary.com

Is bigger really better? Towards improved models for testing how Atlantic salmon *Salmo salar* smolt size affects marine survival

S. D. GREGORY^{1*}, J. D. ARMSTRONG² AND J. R. BRITTON³

¹Salmon & Trout Research Centre, Game and Wildlife Conservation Trust, FBA River Laboratory, Wareham, BH20 6BB, U.K., ²Freshwater Fisheries Laboratory, Marine Scotland Science, Faskally, Pitlochry, Perthshire, PH16 5LB, U.K. and ³Centre for Conservation Ecology and Environmental Sciences, Faculty of Science and Technology, Bournemouth University, Poole, Dorset, BH12 5BB, U.K.

Received: 7 October 2019 | Revised: 22 November 2019 | Accepted: 27 November 2019

DOI: 10.1111/eff.12529

ORIGINAL ARTICLE

Above parr: Lowland river habitat characteristics associated with higher juvenile Atlantic salmon (*Salmo salar*) and brown trout (*S. trutta*) densities

Jessica E. Marsh^{1,2} | Rasmus B. Lauridsen² | Stephen D. Gregory² | William R. C. Beaumont² | Luke J. Scott² | Pavel Kratina¹ | J. Iwan Jones¹

¹School of Biological and Chemical Sciences, Queen Mary University of London, London, UK

²Salmon and Trout Research Centre, Game and Wildlife Conservation Trust, The River Laboratory, Wareham, UK

Abstract

Understanding juvenile salmonid habitat requirements is critical for their effective management, but little is known about these requirements in lowland rivers, which include important but unique salmonid habitats. We compared the relative influence of in-stream *Ranunculus* cover, water depth, prey abundance, distance upstream and

Freshwater influences marine*

ICES Journal of Marine Science; doi:10.1093/icesjms/fsr208

The influence of the **freshwater** environment and the biological characteristics of Atlantic salmon smolts on their subsequent **marine** survival

Ian C. Russell^{1*}, Miran W. Aprahamian², Jon Barry¹, Ian C. Davidson³, Peder Fiske⁴,
Anton T. Ibbotson⁵, Richard J. Kennedy⁶, Julian C. Maclean⁷, Andrew Moore¹, Jaime Otero⁸,
Ted (E. C. E.) Potter¹, and Christopher D. Todd⁹

¹Cefas, Pakefield Road, Lowestoft, Suffolk NR33 0HT, UK

²Environment Agency, Richard Fairclough House, Knutsford Road, Warrington WA4 1HG, UK

³Environment Agency, Chester Road, Buckley, Flintshire CH7 3AJ, UK

⁴Norwegian Institute for Nature Research, PO Box 5685, Sluppen, Trondheim 7485, Norway

⁵Game and Wildlife Conservation Trust, Salmon and Trout Research Centre, The River Laboratory, East Stoke, Wareham, Dorset BH20 6BB, UK

* at least for the R. Frome

Wider Frome impact

Received: 13 February 2020 | Revised: 14 July 2020 | Accepted: 22 July 2020

DOI: 10.1111/fwb.13609



ORIGINAL ARTICLE

Freshwater Biology WILEY

Environmental conditions modify density-dependent salmonid recruitment: Insights into the 2016 recruitment crash in Wales

Stephen D. Gregory¹ | Victoria E. Bewes² | Andrew J.H. Davey^{2,3} | Dylan E. Roberts¹ | Peter Gough⁴ | Ian C. Davidson⁵

¹Salmon & Trout Research Centre, Game & Wildlife Conservation Trust, East Stoke, UK

²WRc plc, Blagrove, Swindon, UK

³APEM Limited, Abingdon, UK

⁴Natural Resources Wales, Cardiff, UK

⁵Natural Resources Wales, Buckley, UK

Correspondence

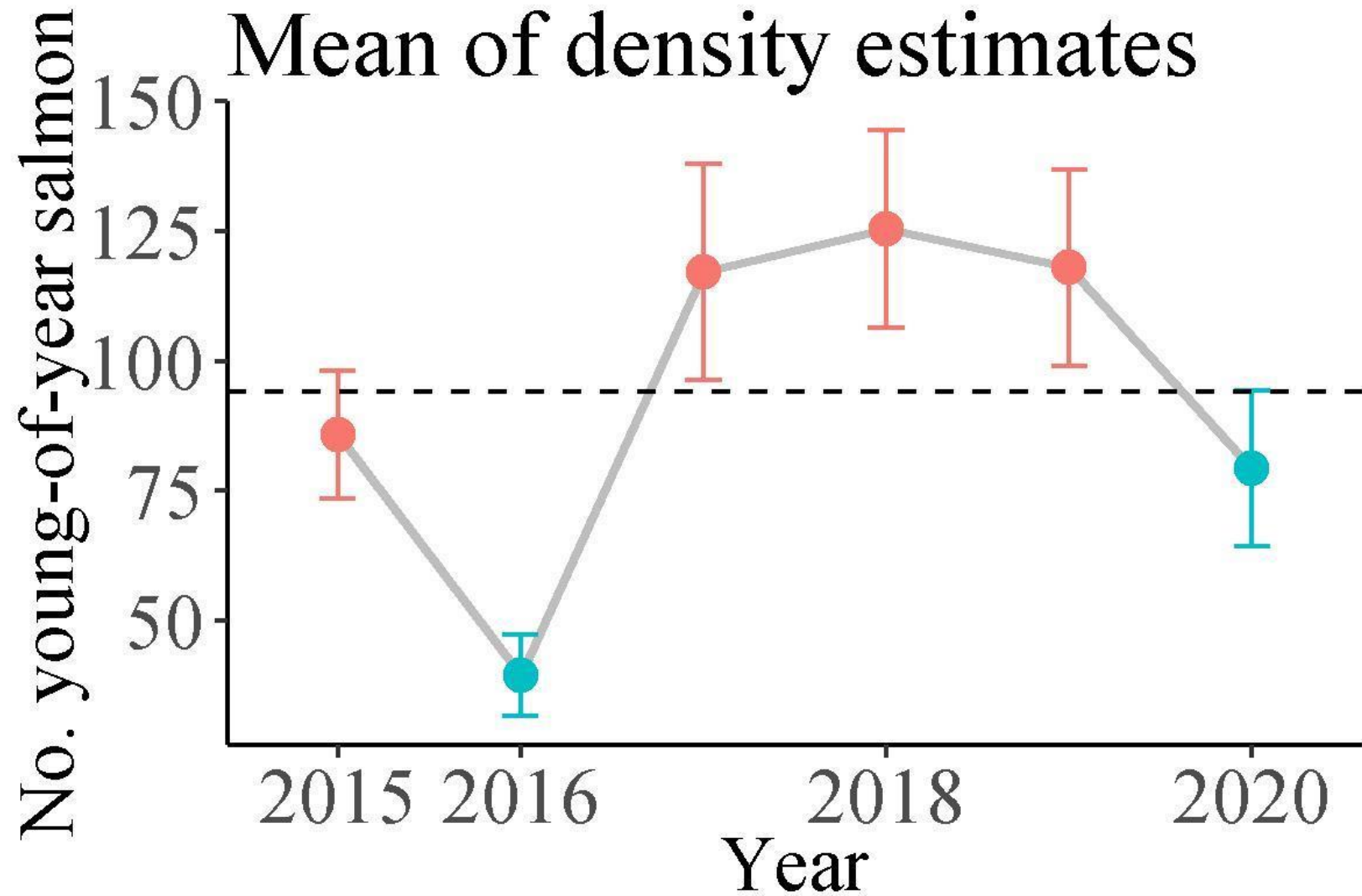
Stephen D. Gregory, Salmon & Trout

Abstract

1. Understanding the effects of density-dependent and density-independent factors on recruitment is often inhibited by difficulties quantifying their relative contributions in highly variable recruitment data. Use of data-driven statistical methods with data that include one or more extreme recruitment events could help overcome these difficulties.

2. Juvenile Atlantic salmon and trout abundances in Wales have declined over the

Wider Frome impact: local



Freshwater Biology WILEY

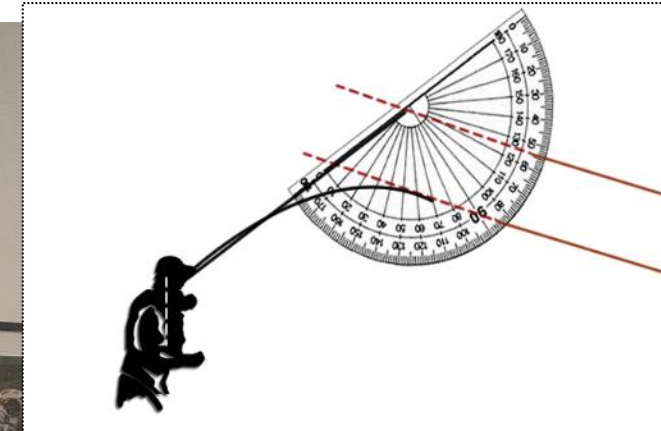
Density-dependent salmonid recruitment crash in Wales

Andrew J.H. Davey^{2,3} | Dylan E. Roberts¹ |

of density-dependent and density-independent factors is inhibited by difficulties quantifying their relative contributions using available recruitment data. Use of data-driven statistical models to analyse recruitment data, which include one or more extreme recruitment events could provide new insights into the underlying mechanisms.

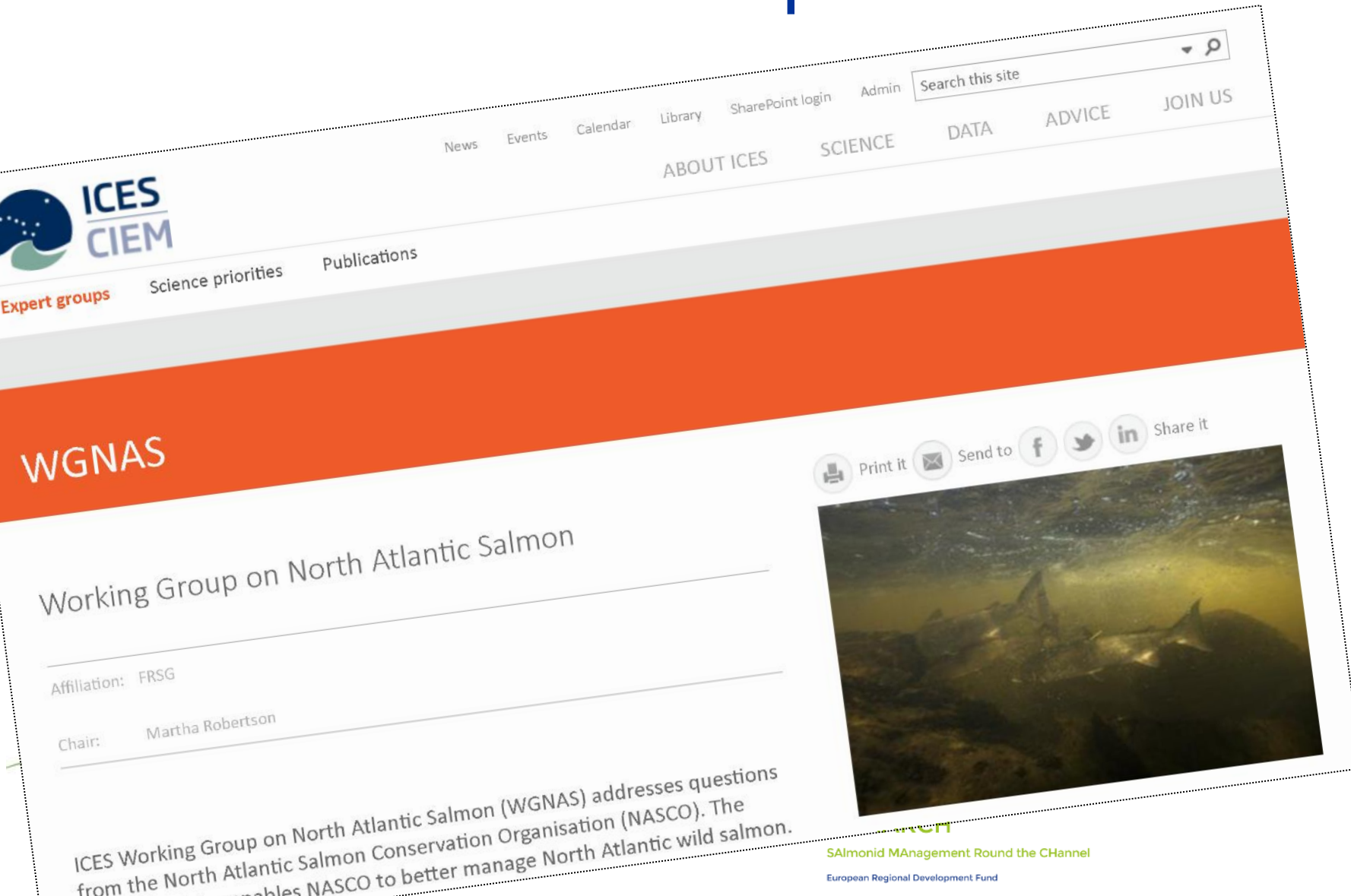
and trout abundances in Wales have declined over the

Wider Frome impact: national



$$\left(\begin{pmatrix} + \\ \smile \end{pmatrix} \right)$$

Wider Frome impact: international



Impact: international

**THE MISSING
SALMON ALLIANCE**

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Take Action

Likely Suspects Framework: An Evidence-based Approach to Support Salmon Management

Working Group on North Atlantic Salmon

Affiliation: FRSG

Chair: Martha Robertson

ICES Working Group on North Atlantic Salmon (WGNAS) addresses questions from the North Atlantic Salmon Conservation Organisation (NASCO). The group enables NASCO to better manage North Atlantic wild salmon.

Salmonid Management Round the Channel

European Regional Development Fund

And the future for Frome salmon...?

