

# Assessments of the stressors impacting Atlantic salmon stocks in the United Kingdom



# Introduction



- The United Kingdom Party to NASCO consists of four administrations
- Each administration will present their stressors assessment separately
- The presentation order will be England, Wales, Northern Ireland, and Scotland



# An assessment of the stressors impacting Atlantic salmon stocks in England

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Centre for Environment  
Fisheries & Aquaculture  
Science



**Cefas**



**Environment  
Agency**

# Objectives

- 1) Collect questionnaire responses from a wide range of stakeholders to inform the assessment of stressor impacts on salmon stocks in England
- 2) Apply a classification system to evaluate the major threats to English salmon stocks
- 3) Identify the three top-ranked stressors with the greatest overall impacts on salmon stocks in England

## ICES Journal of Marine Science



ICES Journal of Marine Science (2017), doi:10.1093/icesjms/fsx020

### Review article

#### The major threats to Atlantic salmon in Norway

Torbjørn Forseth<sup>1\*</sup>, Bjørn T. Barlaup<sup>2</sup>, Bengt Finstad<sup>1</sup>, Peder Fiske<sup>1</sup>, Harald Gjøsæter<sup>3</sup>, Morten Falkegård<sup>1</sup>, Atle Hindar<sup>4</sup>, Tor Atle Mo<sup>1,5</sup>, Audun H. Rikardsen<sup>6</sup>, Eva B. Thorstad<sup>1</sup>, Leif Asbjørn Vøllestad<sup>7</sup>, and Vidar Wennevik<sup>3</sup>

Rev Fish Biol Fisheries (2022) 32:879–919  
<https://doi.org/10.1007/s11160-022-09714-x>

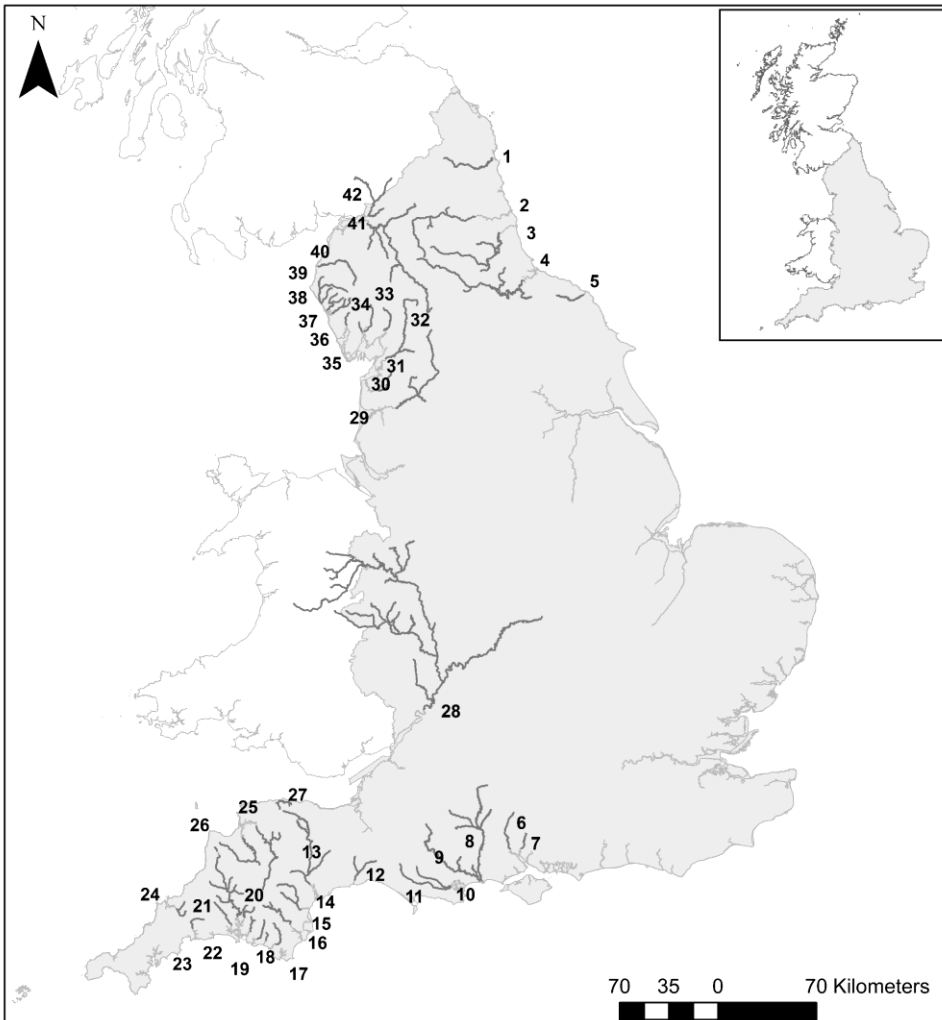
### REVIEWS



#### A review of marine stressors impacting Atlantic salmon *Salmo salar*, with an assessment of the major threats to English stocks

Jonathan P. Gillson<sup>1</sup> · Tea Bašić<sup>2</sup> · Phil I. Davison<sup>3</sup> · William D. Riley<sup>4</sup> · Lawrence Talks · Alan M. Walker<sup>5</sup> · Ian C. Russell

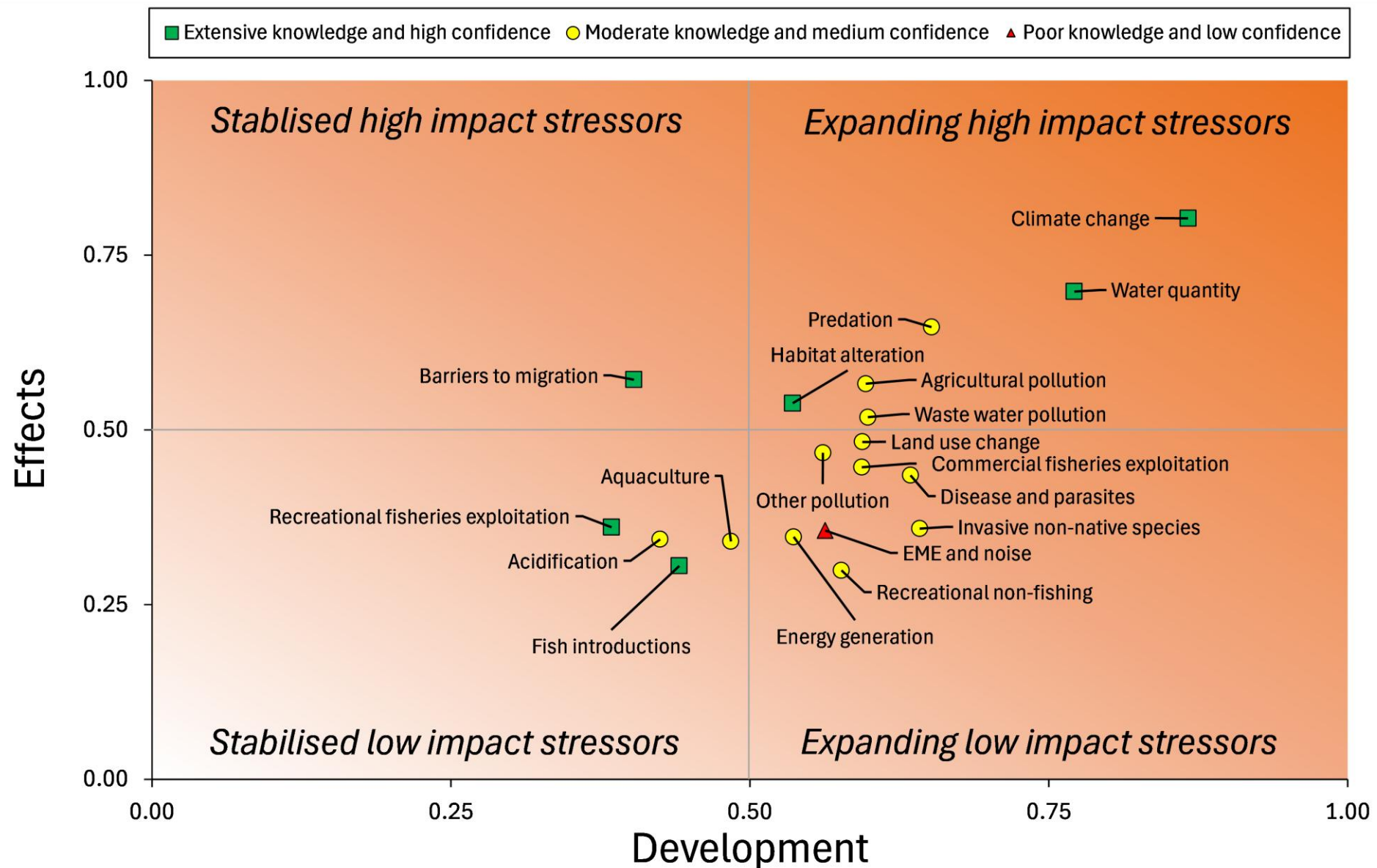
# Evidence gathering



- Nineteen stressors were identified as relevant to salmon stocks in England
- A questionnaire to score and assess stressor effects and development was designed and then distributed to governmental and NGO experts
- In total, 114 respondents provided stressor scores across 42 rivers
- Catchment-scale scores were aggregated to inform both regional- and England-wide assessments



# England-wide stressor rankings



# Future developments

- Confirm which stressors England will focus on and engage with stakeholders to develop appropriate mitigation measures
- Some questions under consideration are:
  - 1) Should climate change impacts be tackled in isolation, or considered in relation to each stressor?
  - 2) Would it be best to prioritise the management of anthropogenic factors (e.g., barriers) to alleviate naturally occurring (e.g., predators) stressors?
  - 3) What mitigation measures are suitable and achievable, and how can their effectiveness be assessed?
- As this assessment was based on expert opinion, a more data-driven approach to evaluate stressor impacts would be beneficial

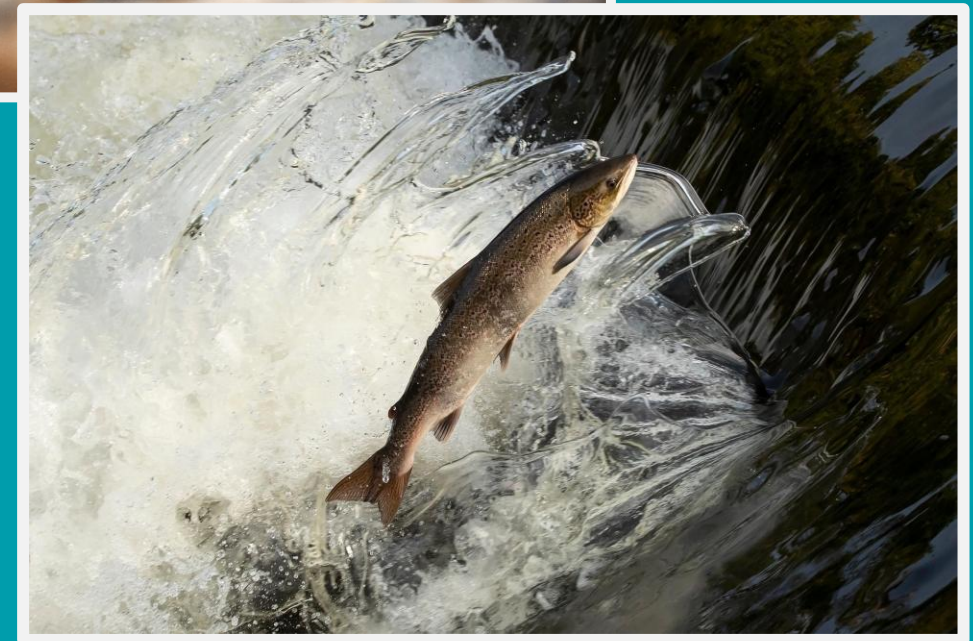


# UK Wales Salmon Stressor Analysis

Ben Wilson & David Mee



**Cyfoeth  
Naturiol**  
Cymru  
**Natural  
Resources**  
Wales



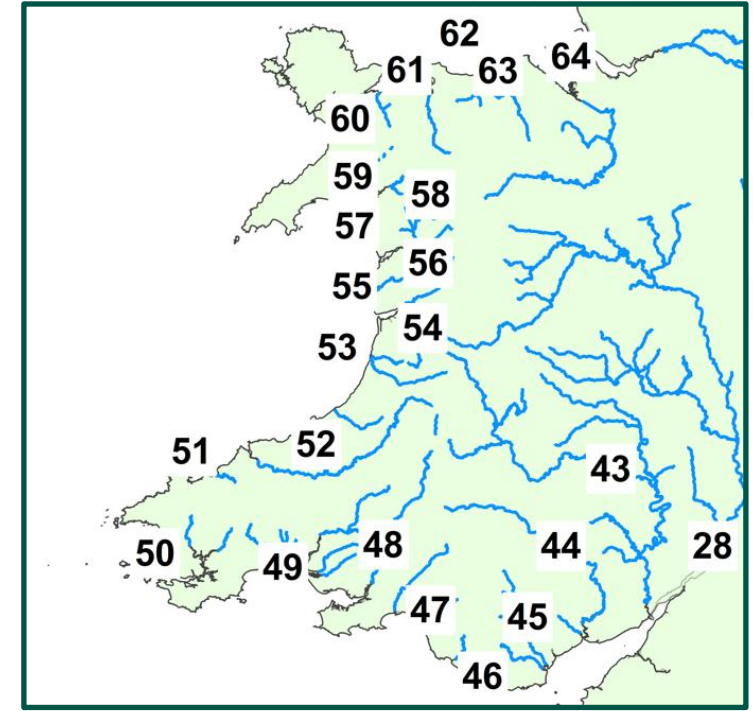


## Objectives

- Identify the top pressures affecting salmon in Wales
- Inform prioritisation of actions
  - NASCO Conservation Commitments Report (CCR) 4<sup>th</sup> Reporting cycle
  - Salmon and Sea Trout Plan of Action (PoA)
- Foresth *et al* 2017 Gilson *et al* 2020

## Scope / Evidence Gathering

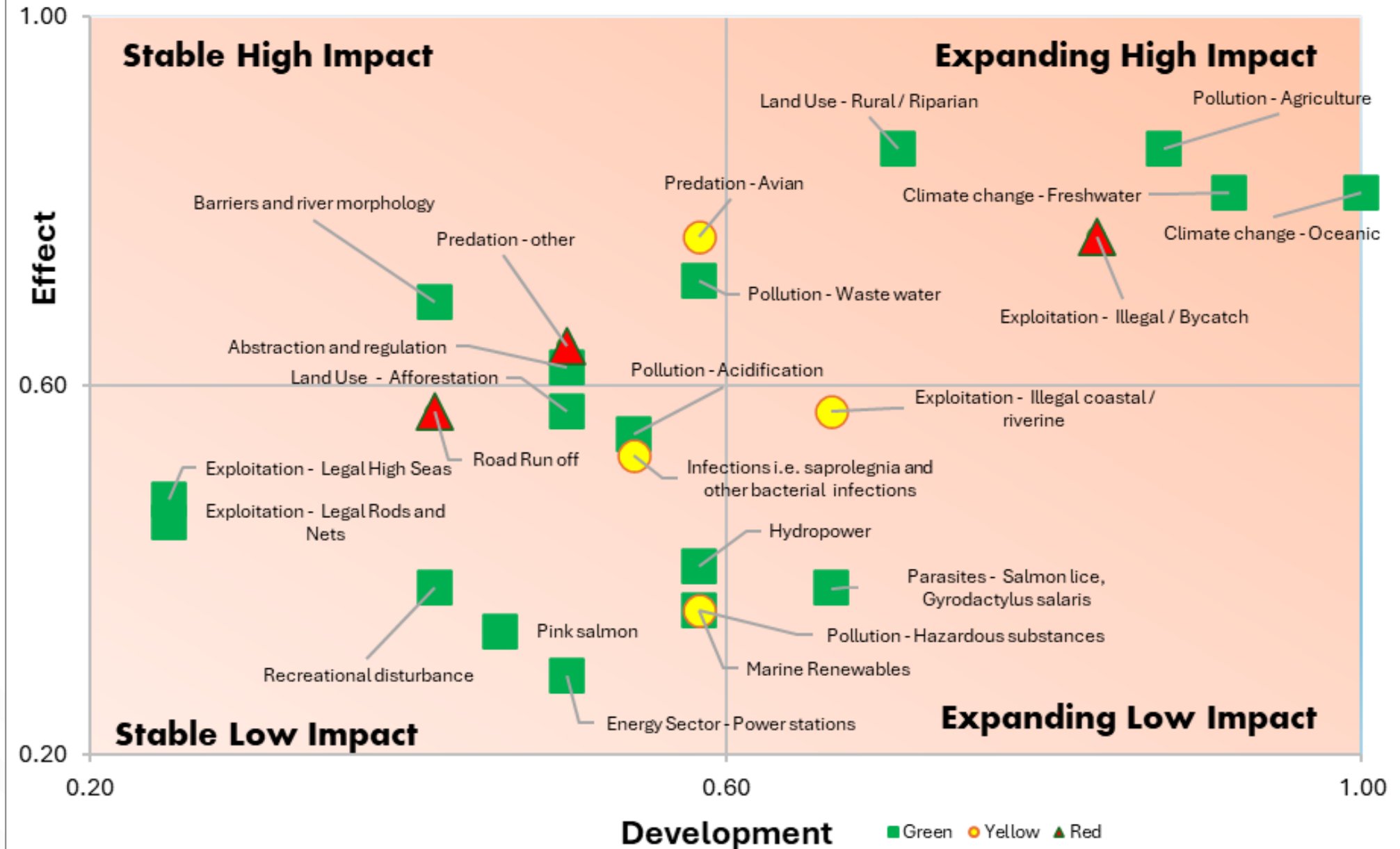
- Single All-Wales assessment
- Natural and Anthropogenic stressors
- 2020 Plan of Action - 7 Pressure Themes
- Expert Panel / Literature Review 23 stressors
- Survey Questionnaire: Dec 2023 / Jan 2024
- Internal and external
- 13 respondents



### Welsh river systems

43 Wye*\$	55 Dysynni*
44 Usk*\$	56 Mawddach*\$
45 Taff*	& Wnion*
46 Ogmore*	57 Dwyryd*
47 Tawe*	58 Glaslyn*
48 Tywi*	59 Dwyfach &
49 Taf*	Dwyfawr*
50 E & W Cleddau*	60 Seiont*
51 Nevern*	61 Ogwen*
52 Teifi*\$	62 Conwy*
53 Rheidol*	63 Clwyd*
54 Dyfi*	64 Dee*\$

## Results





## Future Developments

- Confirm top 3 stressors for Wales Conservation Commitments Report
  - Focus on those that we can make tractable changes
  - Those that we can measure baselines and impacts
- Identify and agree effective mitigation measures
  - Work with stakeholders (Wales Fisheries Forum and Afonydd Cymru)
  - For all pressures (not just top 3)
  - Scale at which can actions work
  - Who best placed to deliver them?
  - How are they funded?
  - What are the outcomes and milestones?
- Incorporate in the Wales Plan of Action and NASCO CCR for delivery in 2026 – 2032
- Sea Trout!



# UK (Northern Ireland) Salmon Stressors Analysis

NI Salmon Stressors Working Group

River Bush Salmon Station

[afbini.gov.uk](http://afbini.gov.uk)





# Evidence Gathering

## Consultation



## Stressor Identification

*Exploitation*

*Predation - Smolts*

*Predation – Returning Adults*

*Disease & Parasites*

*Barriers/abstraction*

*Water Quality*

*Habitat loss/Drainage*

*Climate change*

*Salmon aquaculture*

*Offshore energy*

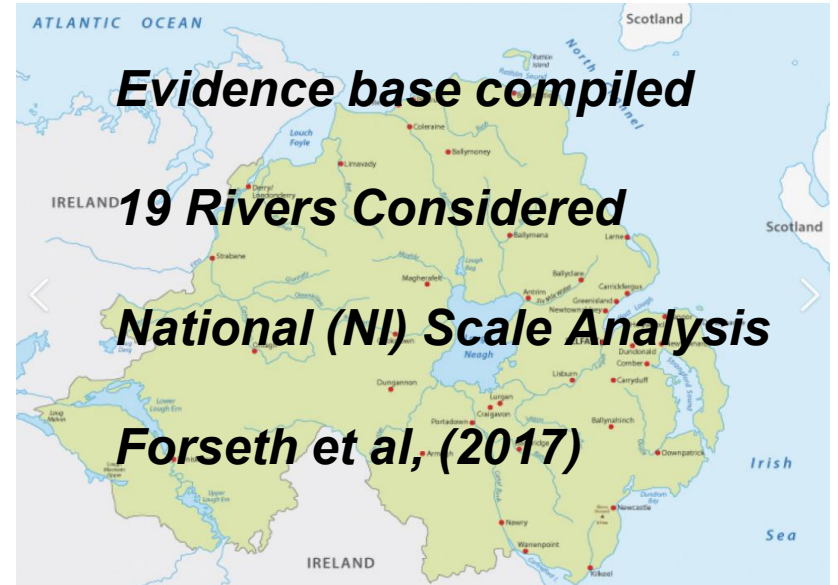
*Invasive species*

*Stocking*

*Nutrient enrichment/algae*



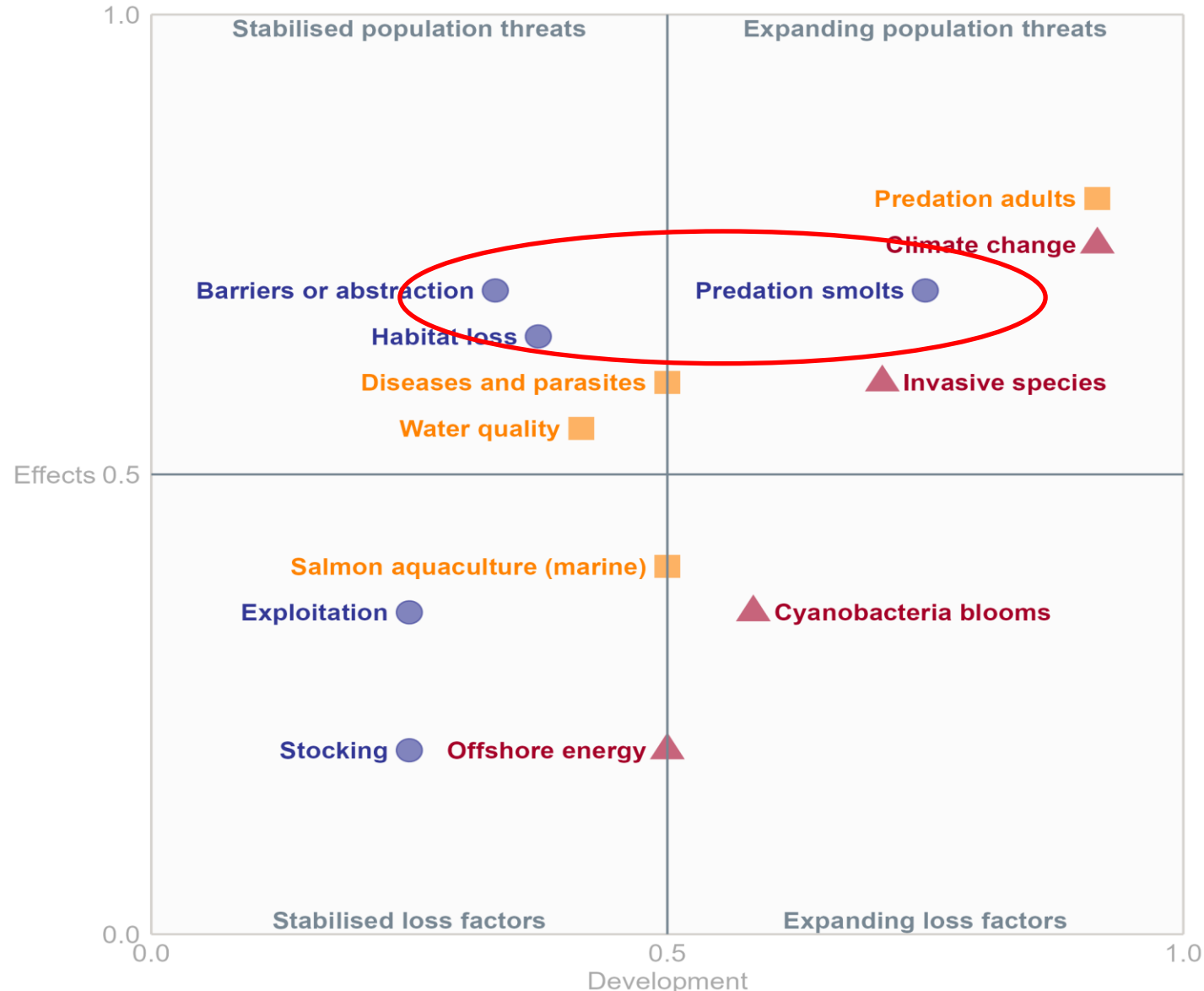
## Analysis



# Salmon stressor impact analysis: Northern Ireland 2024

The relative effect and development coefficients for the 13 stressors were mapped to an impact quadrant.

The confidence categories of the combined current effects of knowledge and uncertainty of future developments for each stressor were **low**, **moderate** or **extensive**.





# Future Developments

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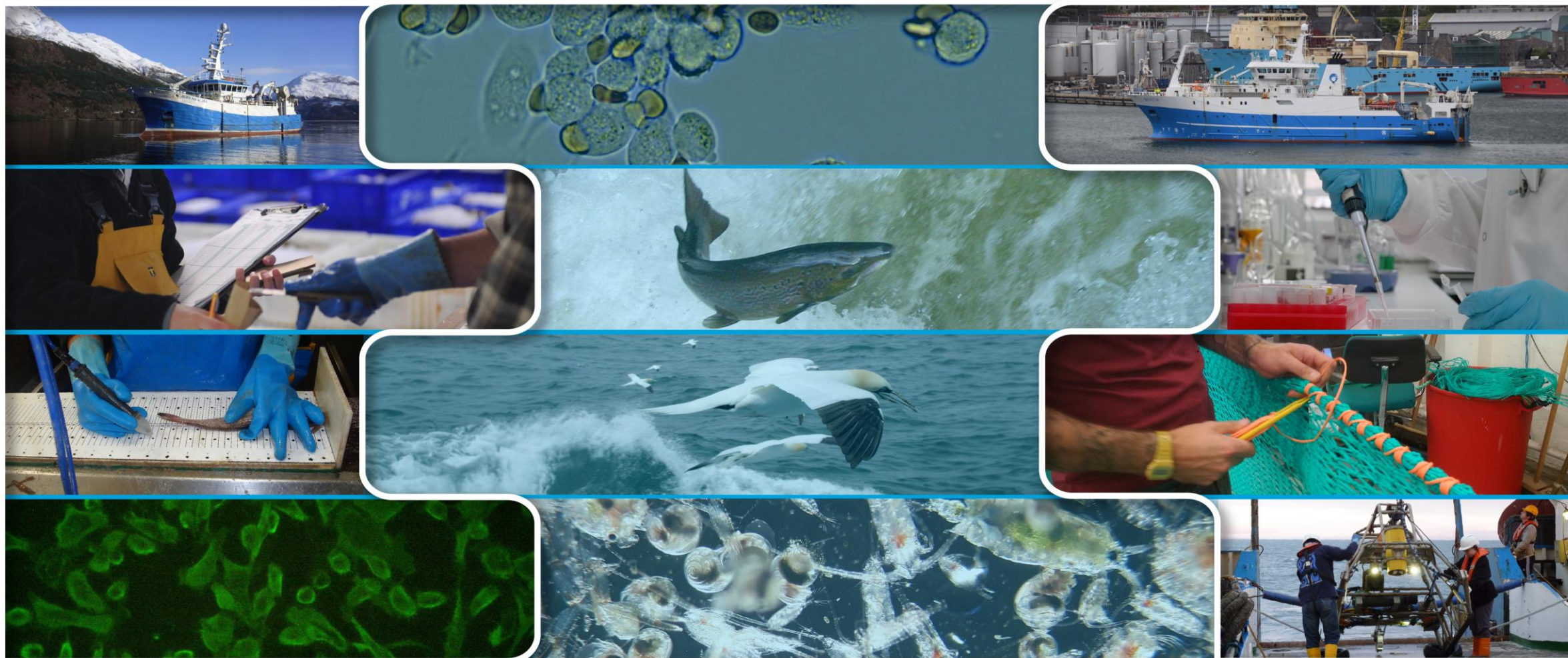
- The work represents the 1<sup>st</sup> Stressor Analysis for UK N Ireland and provides a useful benchmark for comparison with future reviews.
- The stressor analysis will inform DAERA salmon conservation priorities and the development of potential mitigation measures in conjunction with NI stakeholders.
- Inform development of NI reporting to NASCO under the 4<sup>th</sup> reporting cycle.

# U.K. (Scotland) stressors analysis



Scottish Government  
Riaghaltas na h-Alba

Marine Directorate

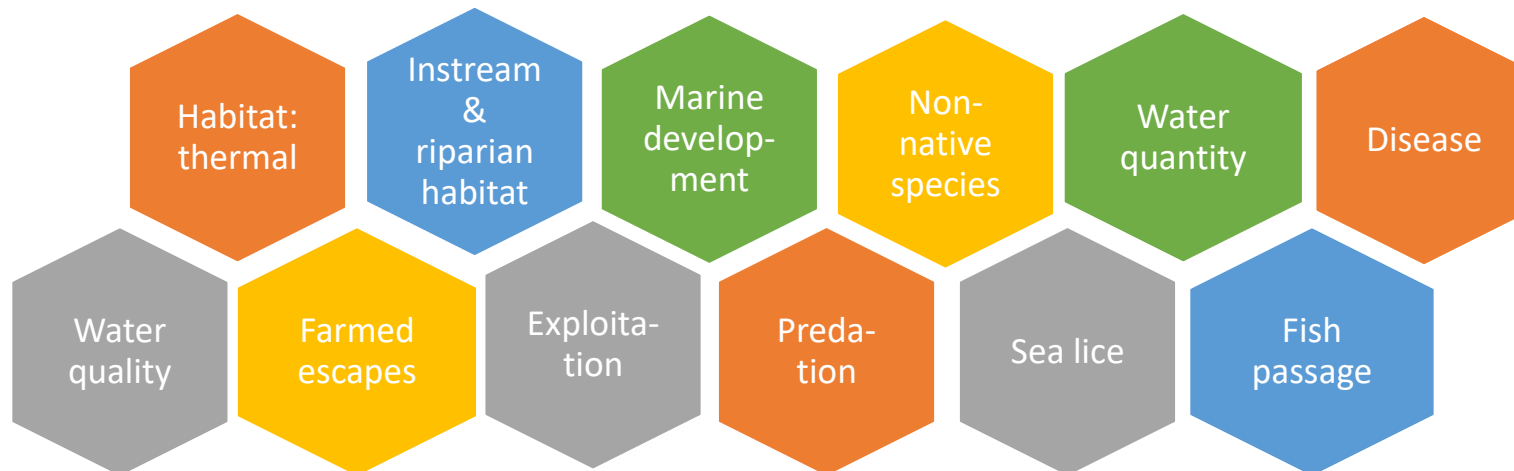






# Background

- **Aim:** *provide local, region and national summaries of pressures impacting on Atlantic salmon*
- To inform local (**Fishery Management Plans**) and national (**Wild Salmon Strategy**) management actions
- Completed in 2021, published in 2023
- 27 'pressures' grouped across 12 'themes'





# Methods

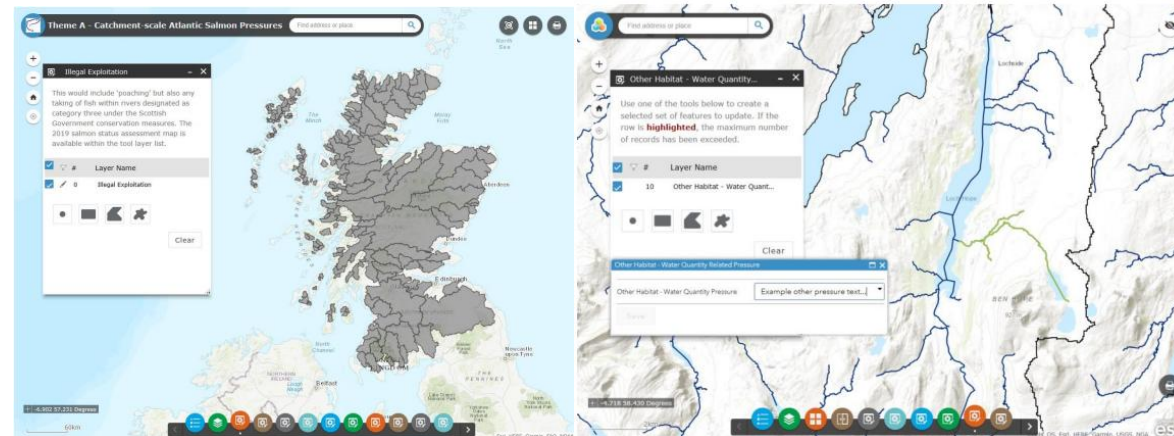
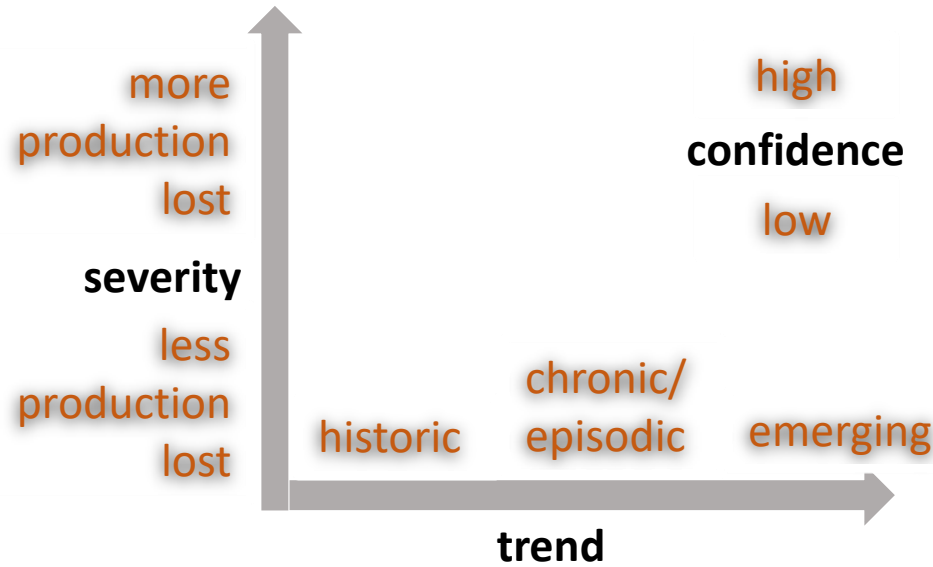
Adult assessments  
Juvenile assessments  
Local fisheries knowledge

Local fisheries  
managers

Pressures data  
(online GIS  
platform)

Summarise

River ecological status  
River temperature  
Barriers  
Aquaculture



- Categories → scores
- Weighting for **area** impacted
- Maps, plots, tables, accessible data

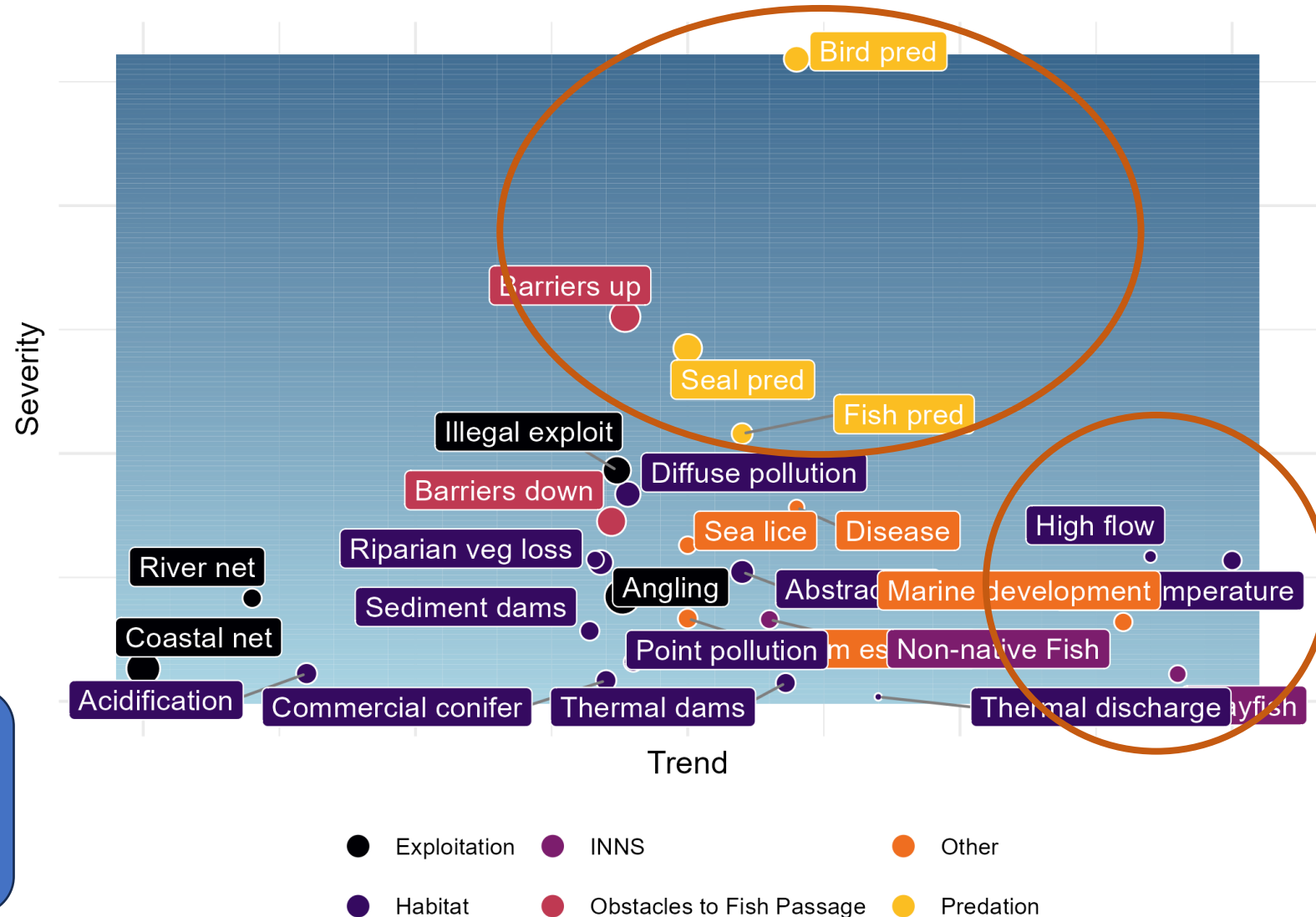
## Results – national scale

- “**top**” three ambiguous
- **Severity** = predation, barriers
- **Trend** = high temperature, high flows, marine development, crayfish
- Masks **regional variation**
- Dominated by **larger East coast rivers**

[Read report](#)

[View data](#)

[Explore interactive maps](#)





# Future development

- Used to inform national (**Wild Salmon Strategy**) and local (**Fishery Management Plans**) management actions

Collection

## Scotland's Fishery Management Plans

A collection of individual Fisheries Management Plans covering Scotland's salmon rivers.

Marine Scotland, Crown  
Estate Scotland, SFCC & FMS

Get started



1 Scotland's Fishery Management Plans



2 Tweed Fisheries Management Plan



3 Ness Fisheries Management Plan



4 River Ugie Fisheries Management Plan



5 Northern Fisheries District Management Plan



6 The North & West District Fisheries Management Plan

[change](#), [Marine and fisheries](#),  
[Programme for Government](#)  
ISBN: 9781805254164

## to 2028

s to be taken  
2028, to achieve  
the Scottish wild

salmon strategy published in January  
2022.

Wild Salmon Strategy  
Implementation Plan  
2023 - 2028

February 2023

Supporting  
documents



# Future development

- Used to inform local (**Fishery Management Plans**) and national (**Wild Salmon Strategy**) management actions
- Next, inform the development of **U.K. Scotland's reporting to NASCO** under the 4<sup>th</sup> reporting cycle
- Need to **consider**:
  - Further prioritization and consultation
  - What are **tractable, significant, and measurable actions** to include?
- **Alignment** with existing national strategy and implementation plan

# Questions

