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Industry-science collaboration to enhance traditional fisheries data collection

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Scottish Pelagic Fisheries

- 21 Scottish pelagic vessels
- Herring, mackerel, blue whiting fisheries
- Landing into Scottish and overseas ports
- From ~1970 data for stock assessment collected from onshore sampling programme (limited to Scottish ports)
- Scope to enhance information with industry sampling & data collection
- 2018-2021 pilot industry sampling scheme undertaken



Industry sampling pilot

- Collaborative industry-science initiative

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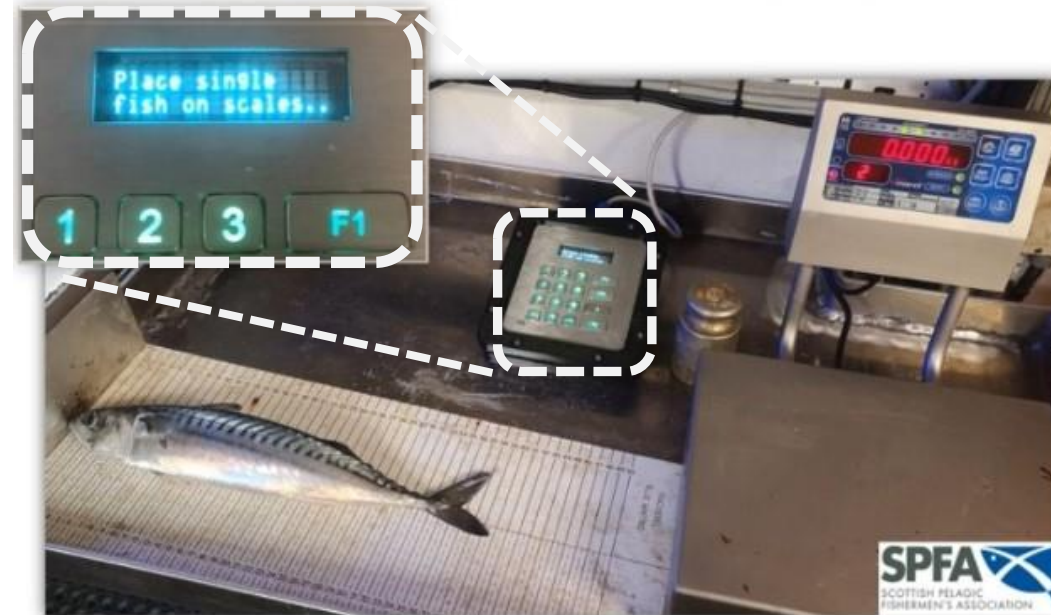
**marinescotland
science**

- Aims:
 - *recruit pelagic vessels to voluntarily participate;*
 - *develop and evaluate methods for sampling and data collection onboard;*
 - *examine data utility/application*
- Objective:
 - *establish and maintain a programme which provides data to ICES for use in stock assessment and scientific research*



Industry sampling pilot

- Design → test → evaluate → develop ↻
- Initial focus on crew self-sampling for length and weight data
- Addition of frozen sample collection for length, sex, maturity and age data
- Crew training (engagement & feedback)
- Building collaboration with partners
- Wider engagement with ICES for data utilisation
- Growth of programme to near full fleet voluntary participation (20 out of 21 vessels)

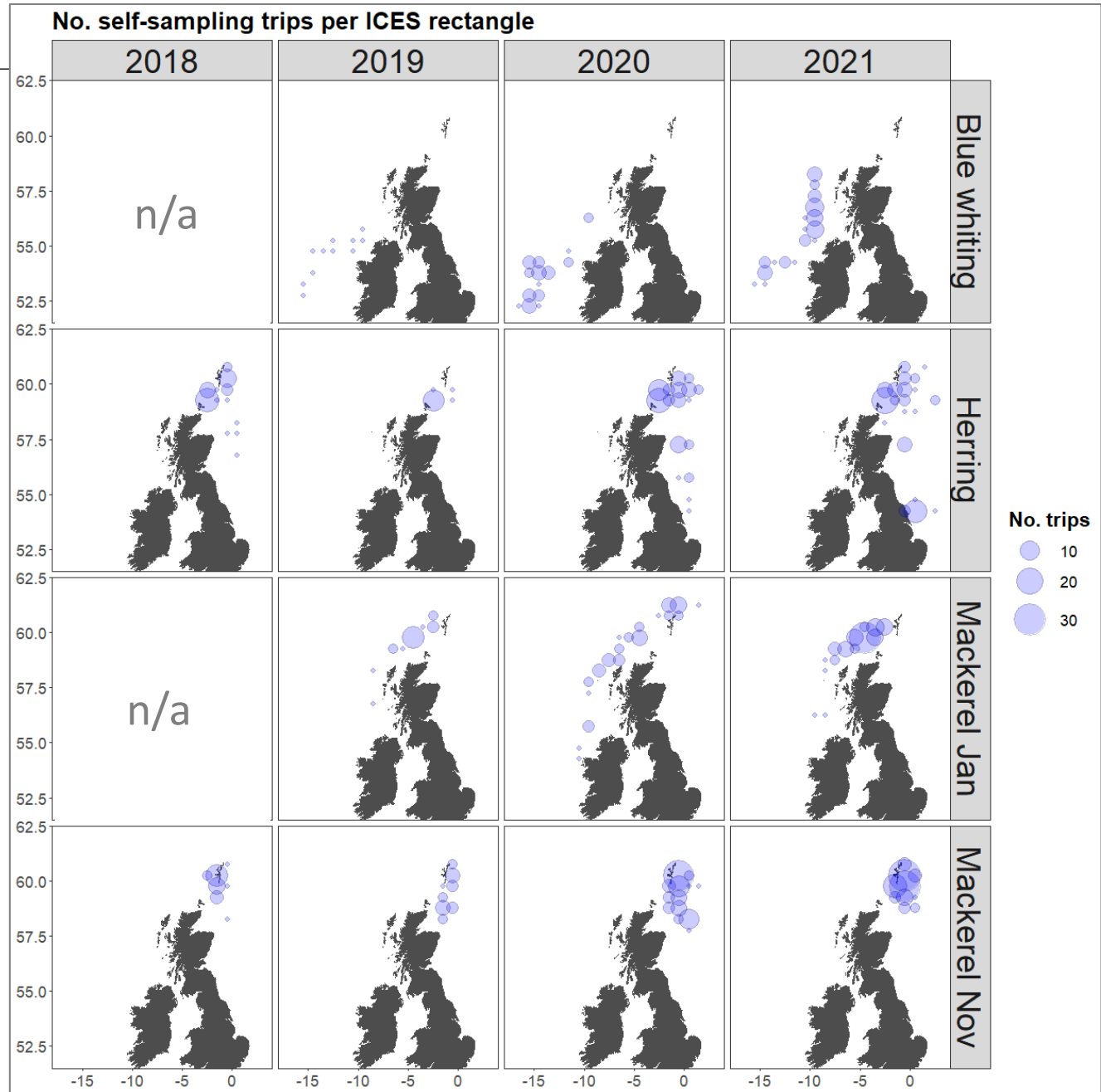


	2018	2019	2020	2021
WHB				
No. vessels	n/a	1	5	9
No. trips	n/a	4	20	40
No. hauls	n/a	16	69	125
No. fish	n/a	1893	8002	15170

	2018	2019	2020	2021
HER				
No. vessels	7	5	15	16
No. trips	41	14	65	64
No. hauls	73	30	128	149
No. fish	7882	3640	15396	17225

	2018	2019	2020	2021
MAC Jan				
No. vessels	n/a	7	14	18
No. trips	n/a	23	45	67
No. hauls	n/a	42	82	138
No. fish	n/a	4862	9140	15851

	2018	2019	2020	2021
MAC Nov				
No. vessels	7	7	15	19
No. trips	29	20	67	88
No. hauls	53	39	133	178
No. fish	6165	4191	15119	19872

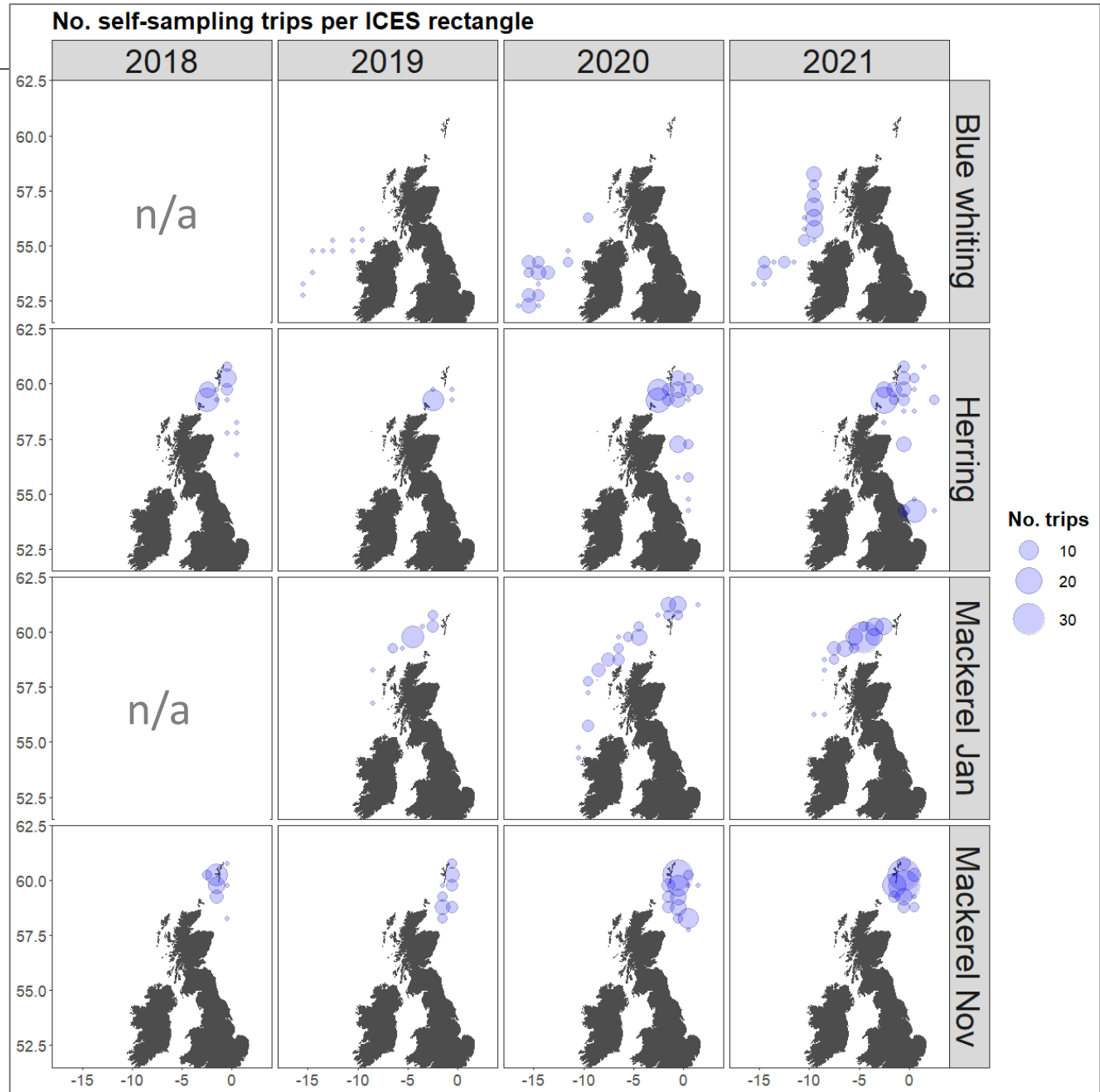


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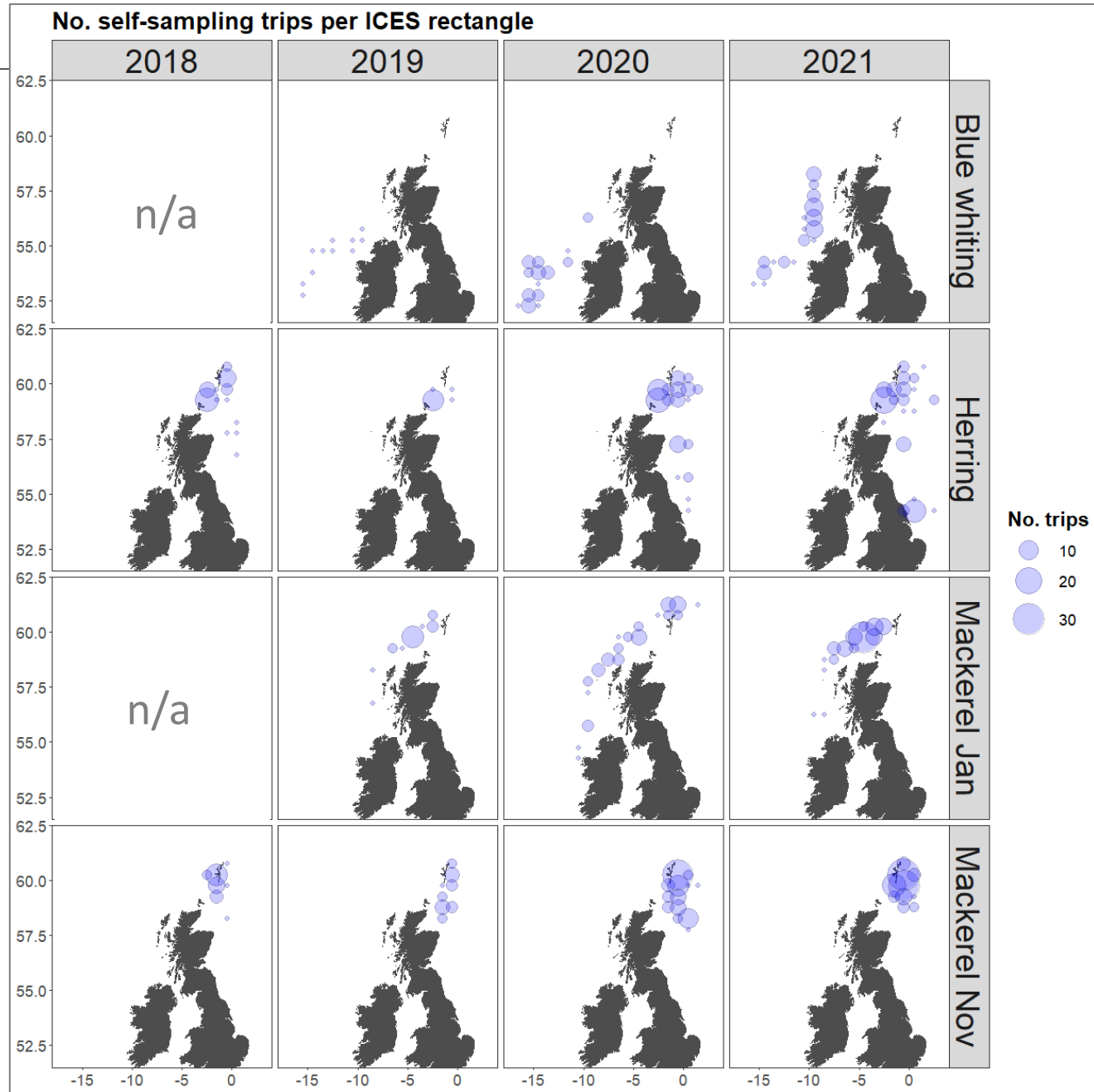


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Industry-Science Data Collection Programme

- Following pilot, in 2022, commitment from all partners to long-term programme
- Established programme comprises 2 elements:
 - **Self-sampling:** length & weight (with haul info.)
 - **Co-sampling:** age, length, sex & maturity
- Self-sampling provides new information
- Co-sampling mirrors onshore data collection carried out since 1970s
- In Jan 2022, co-sampling replaced onshore sampling (source of data provided to ICES)



What can industry collected data provide?

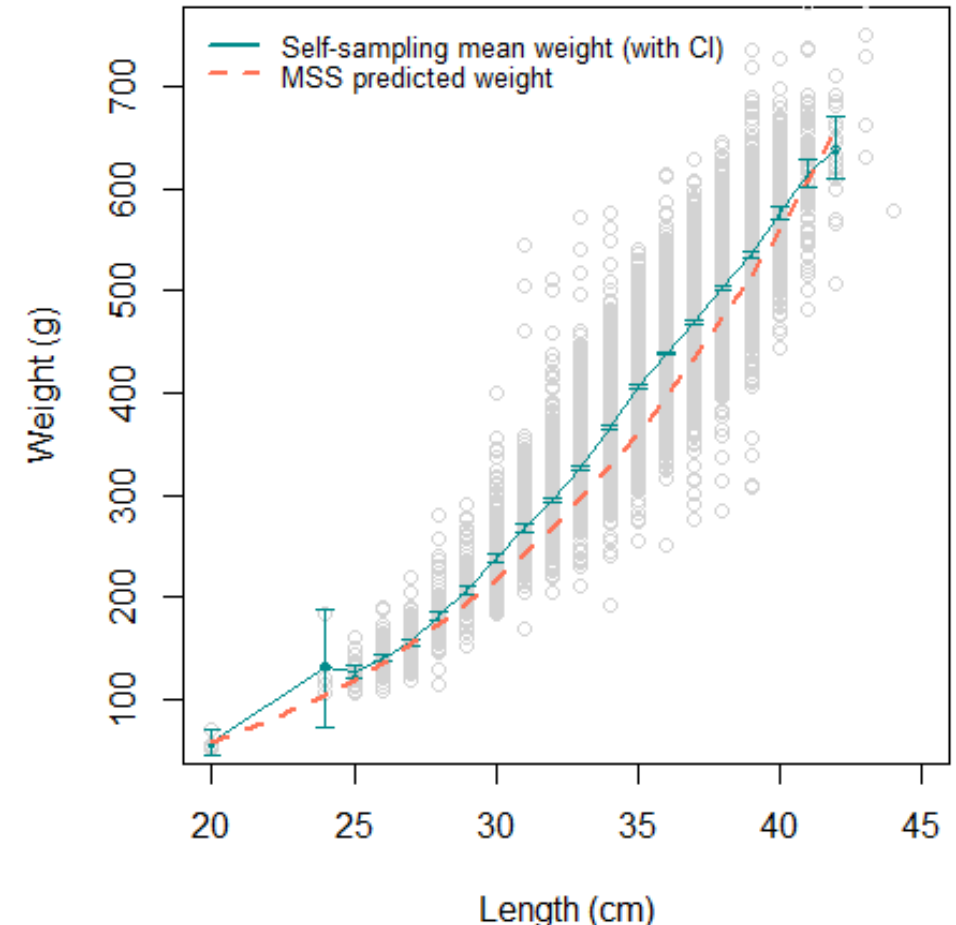
- Comparing mackerel length-weight relationships:

Self-sampling (Mean weight-at-length)

Onshore sampling (Predicted weight-at-length)

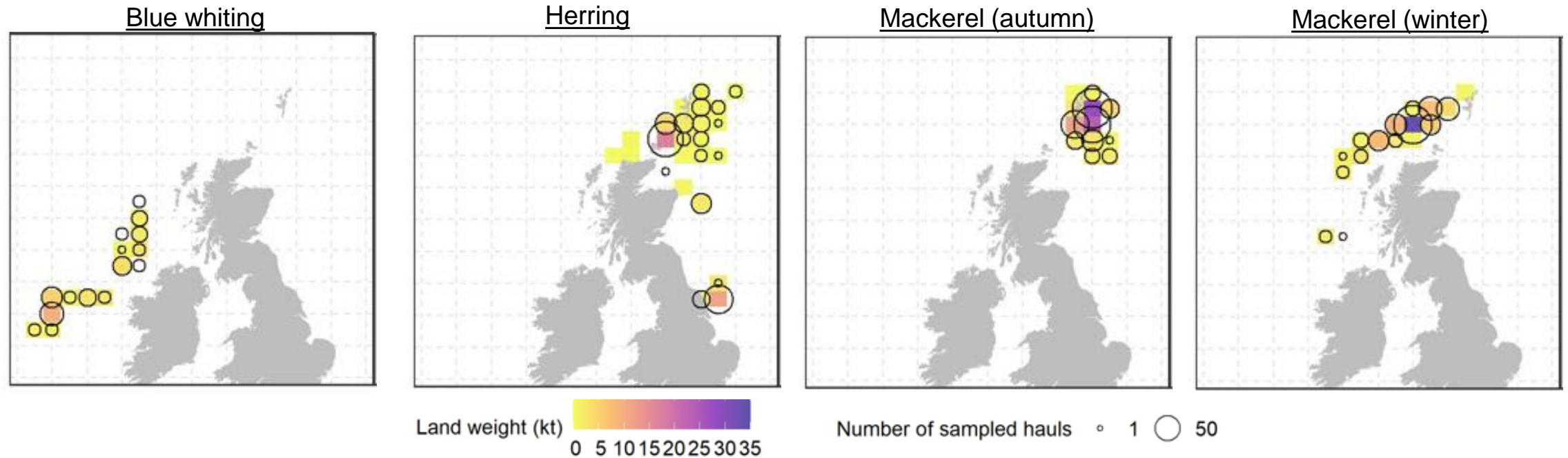
- Self-sampling collects length *and* weight data (for every haul)
- Onshore sampling collected length (no weight), with weight calculated from LWR
- Self-sampling weight data indicate greater weight-at-length than onshore sampling prediction
- Sampling lengths *and* weights provides fundamental information on fish growth

Mackerel (winter) Jan 2021



What can industry collected data provide?

Self-sampling data (2021):



- Representative coverage of whole fleet's activities provides statistically sound data
- Sampling & data collection at the haul level provides finely resolved data

What can industry-science initiatives provide?

- Stronger relationships with industry; improved routes of communication \rightleftarrows
- Foundation for further collaboration and data collection
- Fisher experiential knowledge
- Vessels (state-of-the-art) as research platforms



What is needed for industry collected data to be used?

- Confidence in data (methodologies and data output)

→ Documented processes
 (scottishpelagic.co.uk)

SPFA Data Collection Strategy

SPFA Science Data Policy

SPFA-SUHI-MSS Data Sharing Agreements

Methods Manual Video guides 

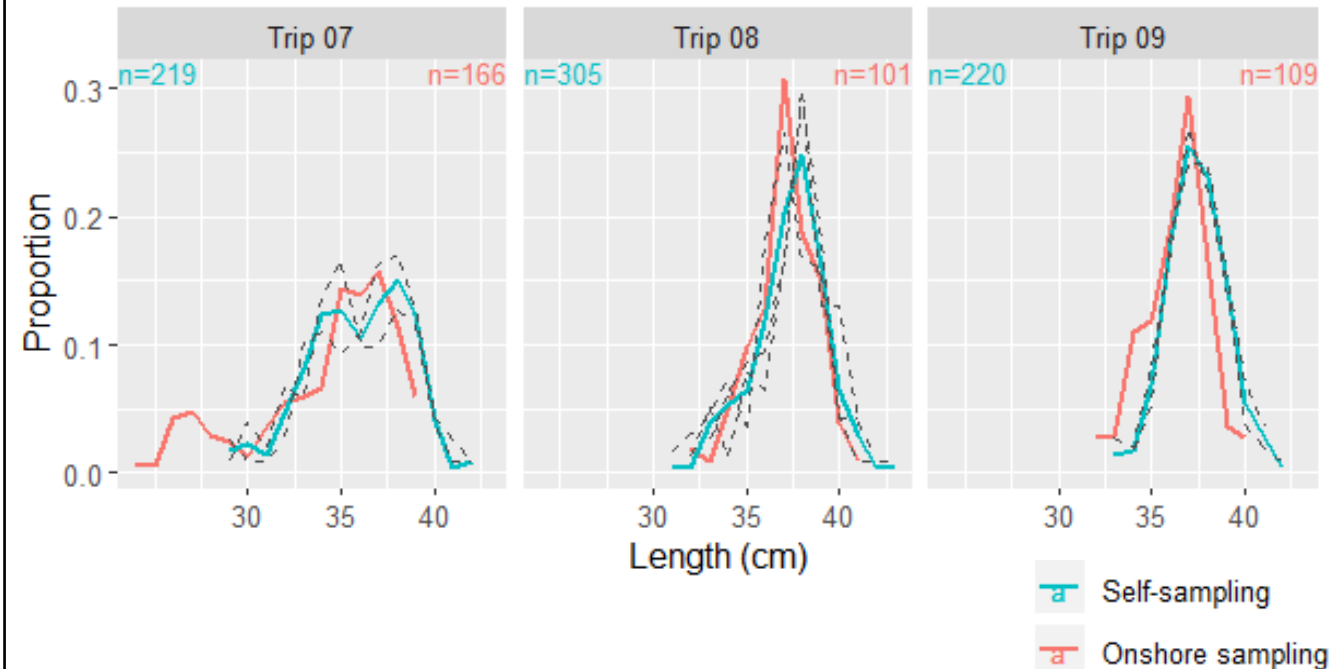
Sampling protocols & data recording templates

Data QC Guide Data chain of custody

ICES Catch Sampling Summary

→ Data examination & scrutiny

Mackerel (winter) 2021:



What is needed for industry collected data to be used?

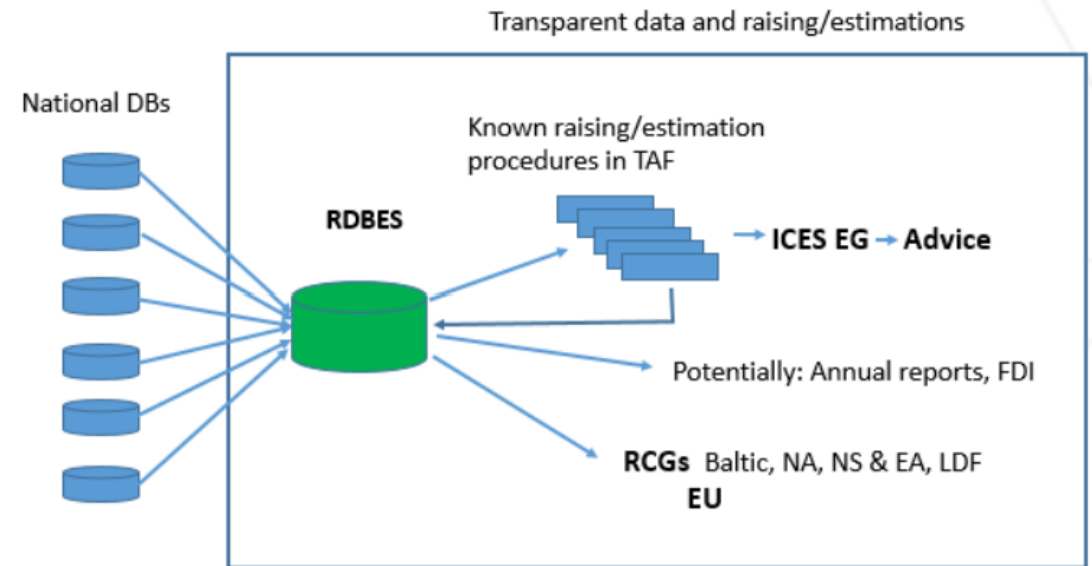
- Mechanism to receive data

ICES Regional Database & Estimation System (RDBES)



- Engagement with MSS & ICES
- Workshops and Working Groups
- Use and development of best practice

- Commitment from ICES
- Shift toward to co-management



Next steps for Scottish Pelagic Industry-Science Data Collection Programme

- Maintain programme (→ test → evaluate → develop ↻)
- Continue engagement (partners; ICES)
- CATSAM Project (regional catch sampling)
- ‘Catch to batch’ project (inclusion of factory information for traceability)
- Programme webpage (access and information for partners and public)



Summary

- Industry collected data has potential to enhance traditional data collection:
 - new data streams
 - increased coverage
 - opportunities for collaboration
 - basis for further data collection
- Effective data collection requires:
 - thorough testing & evaluation
 - full documentation & QC
 - commitment & engagement
 - mechanism to receive & utilise



Thank you

The Scottish Pelagic Industry-Science Data Collection Programme is a collaboration between Shetland UHI; the Scottish Pelagic Fishermen's Association; and the Marine Scotland Directorate of the Scottish Government.

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