

Herring in the Firth of Clyde - setting the total allowable catch for 2022: consultation

July 2022

1. Introduction

This consultation relates to the 2022 Total Allowable Catch (TAC) for herring in the Firth of Clyde.

The Clyde herring stock is defined as the stock in the maritime area situated to the north-east of a line drawn between the Mull of Kintyre (55° 17,9' N, 05° 47,8' W), a point at position (55° 04' N, 05° 23' W), and Corsewall Point (55° 00,5' N, 05° 09,4' W). This area is shown in section 3.

Marine Scotland is carrying out this consultation on behalf of the UK Fisheries Administrations, to seek views on the level of the 2022 TAC, to permit the allocation of Clyde herring quota to UK fishermen.

1.1 Requirements for determining the TAC

As set out in ANNEX FISH.2F of the [UK-EU Trade and Cooperation Agreement](#), the Clyde herring stock is present only in UK waters, and is not a shared stock with the EU. Clyde herring is located exclusively in Scottish waters.

Setting the TAC for Clyde herring is therefore the sole responsibility of the UK. It should be noted that, similarly, responsibility for setting the Clyde herring TAC was delegated to the UK by the EU prior to 2021, in line with Article 6 of the EU TAC and Quota Regulation (Council Regulation (EU) 2020/123).

1.2 Control measures, data collection and sampling

There is no analytical assessment of the Clyde herring stock. Current knowledge of the stock is uncertain, and insufficient to be able to quantify a scientific basis for a TAC.

To inform TAC setting, Marine Scotland Science (MSS) produces an annual report on acoustic and fisheries data (included in section 5). This typically includes data from the Q1 International Bottom-Trawl Survey (IBTS), however in 2022, due to a vessel breakdown, this survey could not take place. Therefore, the report produced by MSS for 2022 is based on pre-existing data and information.

As fishery managers, we must act responsibly even in the absence of comprehensive scientific information.

Marine Scotland introduced additional control measures and a data collection and sampling programme in 2011. This was implemented through new licence conditions in order to improve our knowledge and management of the stock. A full list of the requirements in place can be found in section 4 and supporting information from Marine Scotland Science is given in section 5.

2. Proposed TAC

The TAC and landings data for the last eleven years are as follows:

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
TAC(t)	720	720	648	648	583	583	583	583	583	583	583
Landings(t)	90	302	25	0	0	0	0	0	0	0	180

On consideration of the Marine Scotland Science report (section 5) we note that:

- The herring fishery in the Clyde has declined from its peak in the 1960s, with catches typically less than 500 tonnes over the last 20 years and only 180 tonnes landed in 2021.
- Scientific surveys suggest that the herring population currently found in the Clyde is heavily dominated by young age classes (1- and 2-year old herring). These fish are below the minimum landing size in place for this area.
- Clyde herring are known to be linked to other herring stocks to the west of Scotland, which are currently in poor condition.
- There is no evidence that the current total allowable catch (TAC) for the Clyde should be increased beyond its current level of 583 tonnes.
- There is also no evidence to suggest that the TAC should be reduced, nor that the other management measures in place for herring in the Clyde should be changed.

Current knowledge of the stock is uncertain, particularly with the Q1 IBTS survey unable to take place this year, and insufficient to be able to quantify a precautionary TAC. Given these uncertainties, and signals from the scientific information that is available to us from previous years, a cautious approach to setting the TAC in 2022 would be prudent.

We therefore propose two options for the TAC in 2022:

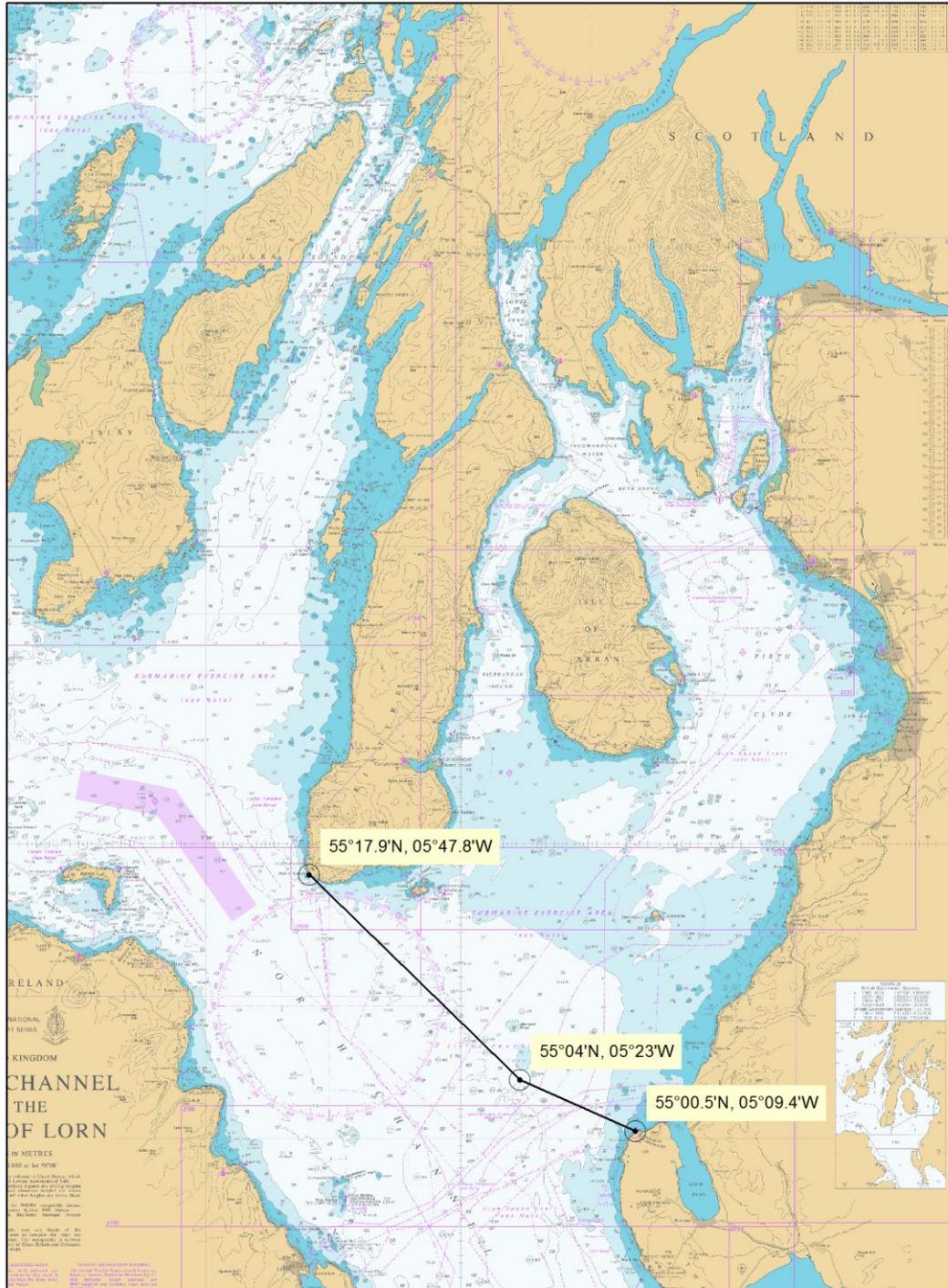
- a. Rollover the 2021 TAC at **583 tonnes**.
- b. Apply a precautionary buffer, i.e. a 20% reduction on the 2021 TAC. This would equate to a TAC in 2022 of **466 tonnes**. This option would mirror the approach taken by ICES for some category 3-6 stocks, when the stock status is unknown.

Question 1: What is your view on the options above for a proposed TAC level for Clyde herring in 2022?

Should you wish to meet with Marine Scotland to discuss these options, please email clydeherring@gov.scot to request this.

3. Firth of Clyde herring stock

Firth of Clyde Herring stock (VI Clyde HER/06ACL)



NOT FOR NAVIGATION. Created by Scottish Government (Marine Scotland) 2015. gj0889. © Crown Copyright. All rights reserved. OceanWise License No. EK001-201404001. Projection: Mercator. Datum: WGS 1984. Standard Parallel: 55°30'0.00"N Scale at A4 1:600,000

The Clyde herring stock is defined as the stock in the maritime area situated to the north-east of a line drawn between the Mull of Kintyre (55° 17,9' N, 05° 47,8' W), a point at position (55° 04' N, 05° 23' W) and Corsewall Point (55° 00,5' N, 05° 09,4' W).

4. Control measures and data collection requirements

The control measures and data collection requirements in place are:

1. A complete ban on herring fishing from 1 January to 30 April¹;
2. A complete ban on all forms of active fishing from 1 February to 1 April, on the Ballantrae Bank spawning grounds, to protect the demersal spawn and prevent disturbance of the spawning shoals (from [Scottish Statutory Instruments. 2004. No. 276](#));
3. A ban on fishing with mobile or active gear in the Firth of Clyde between 00:00 Saturday morning and 24:00 Sunday night (from [Scottish Statutory Instruments. 2004. No. 276](#));
4. Vessels are required to enter the Clyde empty with prior notification, and can only land at notified ports. Vessels wishing to land herring at other ports, including abroad, shall first gain permission from the UKFMC and adhere to a certain conditions, as set out in the licence;
5. Vessels are required to relinquish other herring licences prior to fishing for Clyde Herring;
6. Vessels are required to provide acoustic and GPS data (where they have the facility to do so) and provide a haul by haul log of catches and time fishing associated with each haul; and
Vessels are required to provide a 15 kg sample of the herring taken during each trip for analysis by Marine Scotland Science to determine age, length, weight/length and maturity;
7. A ban on fishing for all sea fish in the area described in The Sea Fish (Prohibition on Fishing) (Firth of Clyde) (No. 2) Order 2022 (SSI 2022/35), from 14 February to 30 April in both 2022 and 2023.

¹ This condition was included previously in EU Council Reg. No. 850/98 Article 20. This Regulation is no longer in force, and the condition is now included in the Clyde herring licence.

5. Scientific information on the status of herring (*Clupea harengus*) in the Clyde Sea (ICES Statistical Rectangles 39E4 - 40E5) in 2022

Dr Neil Campbell and Dr Campbell Pert, Marine Scotland Science

Marine Scotland Science, 375 Victoria Road, Aberdeen, AB11 9DB

Executive Summary

The herring fishery in the Clyde has declined from its peak in the 1960s, with catches typically less than 500 tonnes over the last 20 years and only 180 tonnes landed in 2021.

Scientific surveys suggest that the herring population currently found in the Clyde is heavily dominated by young age classes (1- and 2-year old herring). These fish are below the minimum landing size in place for this area.

Clyde herring are known to be linked to other herring stocks to the west of Scotland, which are currently in poor condition.

There is no evidence that the current total allowable catch (TAC) for the Clyde should be increased beyond its current level of 583 tonnes.

There is also no evidence to suggest that the TAC should be reduced, nor that the other management measures in place for herring in the Clyde should be changed.

History of the fishery

The Firth of Clyde is a fjordic like system, reaching over 100 km into the southwest coast of Scotland which has a centuries-long history of fishing. Advances in fishing gears and vessels, and a succession of fishery management regulations have altered the fishery and the fish stocks of the Clyde.

The herring fishery in the Firth of Clyde was one of the most economically important species to fishers during the first half of the 20th century. Annual landings of herring between 1900 and 1940 were typically 10 – 20,000 tonnes/year and reached its peak between the late-1950s and mid-1960s. From the mid-1960s to 1980s landings fluctuated between 2,000 and 5,000 tonnes. A TAC was first introduced in 1984; the TAC was 1,000 tonnes from 1993 until 2007, and has been gradually reduced since (Table 1). The TAC since 2015 has been 583 tonnes per year.

Over time, the fishery has been prosecuted by Scottish and Northern Irish vessels. Between 1995 and 2000 the majority of the catch was taken by Scotland vessels. During the 2000s the majority of the catch was been taken by Northern Ireland although from 2013 there were no reported landings until 2021 when a Northern Irish vessel had a single landing of 180 tonnes (Figure 1).

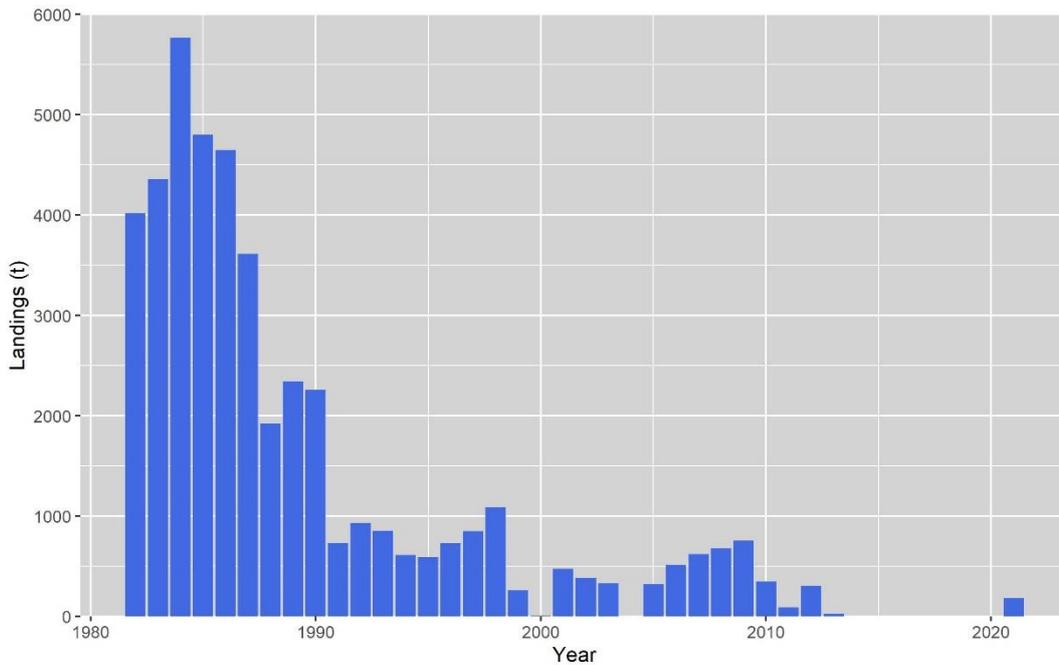


Figure 1. Landings of herring from the Clyde, 1982 - 2021.

Since 1995 there has been virtually no unallocated catch or discarding in the Clyde herring fishery. Landings data are available from 1955, with data for 1982 – 2020 presented in Figure 1 and Table 1, but catch and sampling data are incomplete resulting in a large proportion of the data being estimated; sampling effort has been low and the numbers-at-age data are unavailable from 2002 to 2010 and in 2021. Nevertheless, it is possible to track cohorts of herring as they move through the population. Figure 2 shows there have been no strong year classes found in the Clyde since the 1990s.

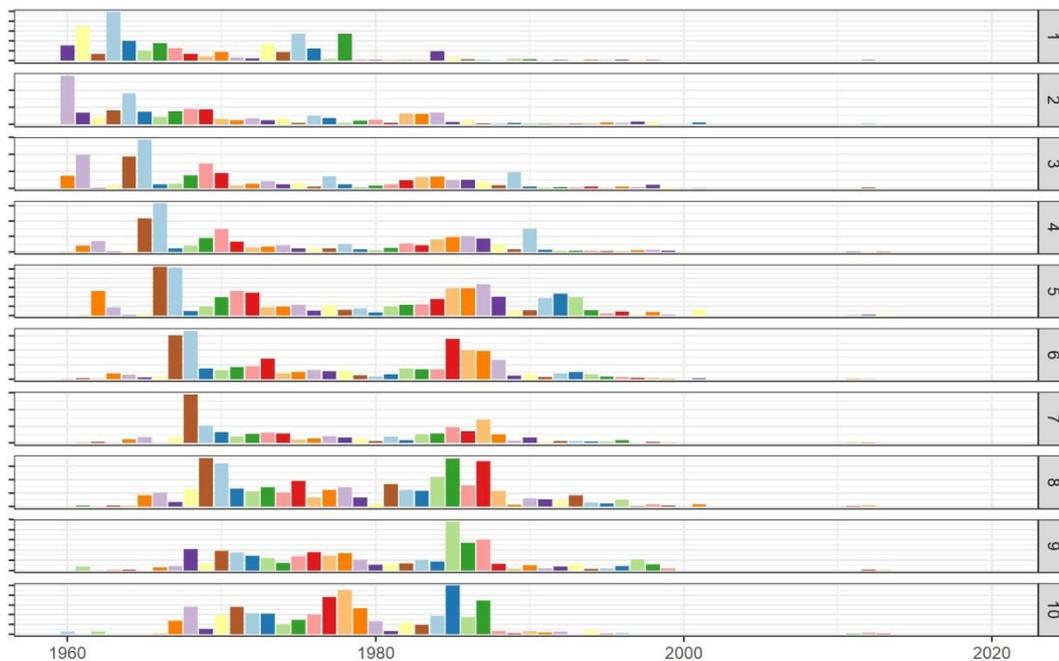


Figure 2. Catch of herring at ages 1 - 10 in the Clyde (1960 – 2000 and 2010 - 2020), showing the relative strength of each year class as it moves through the population over time.

Table 1. Herring from the Firth of Clyde. Catch in tonnes by country, 1982–2018. Spring and autumn-spawners combined.

Year	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Scotland	2 506	2 530	2 991	3 001	3 395	2 895	1 568	2 135	2 184	713	929	852	608	392
Other UK	-	273	247	22	-	-	-	-	-	-	-	1	-	194
Unallocated ¹	262	293	224	433	576	278	110	208	75	18	-	-	-	-
Discards	1 253	1 265	2 308 ³	1 344 ³	679 ³	439 ⁴	245 ⁴	. ²						
Agreed TAC			3 000	3 000	3 100	3 500	3 200	3 200	2 600	2 900	2 300	1 000	1 000	1 000
Total	4 021	4 361	5 770	4 800	4 650	3 612	1 923	2 343	2 259	731	929	853	608	586

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Scotland	598	371	779	16	1	78	46	88	-	-	-	163	54	266
Other UK	127	475	310	240	0	392	335	240	-	318	512	458	622	488
Unallocated ¹	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Agreed TAC	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	800	800	800
Total	725	846	1 089	256	1	470	381	328	0	318	512	621	676	754

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Scotland	48	90	118	21	0	0	0	0	0	0	0	0
Other UK	301	0	184	0	0	0	0	0	0	0	0	180
Agreed TAC	720	720	720	648	648	583	583	583	583	583	583	583
Total	349	90	302	25	0	0	0	0	0	0	0	180

¹ Calculated from estimates of weight per box and/or by-catch in the sprat fishery

² Reported to be at a low level, assumed to be zero, for 1989-1995.

³Based on sampling.

Information collected since 2011

Fishery data

In 2011 the targeted sampling of Clyde herring landings was successfully resumed in collaboration with the Marine Scotland Compliance fishery office in Campbeltown. During the 2011 herring season a total of 6 samples were collected from a total of 7 landings (Table 2). Length information was collected from 693 herring and otoliths were taken and aged from 229 fish.

The fish ranged in size from 18 to 31 cm with a modal length around 27 cm (Figure 3). The landings were composed of fish spanning the full range of ages from 1 to 10 years. Around 40% of the landed fish were 4 years or older.

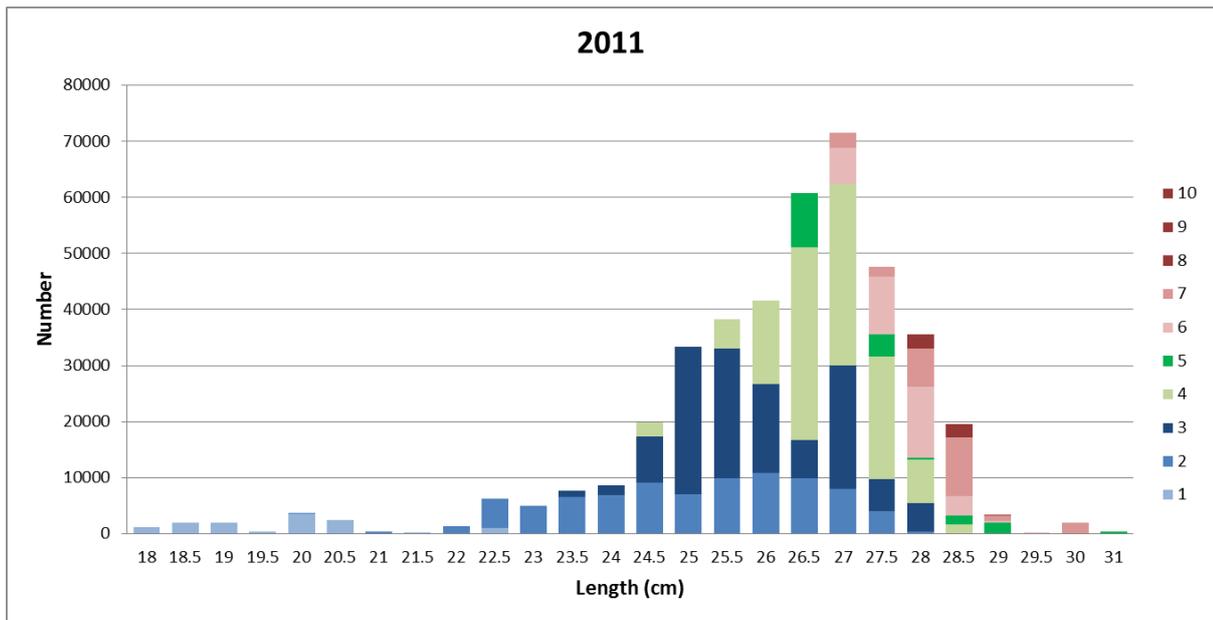


Figure 3. Herring from the Firth of Clyde. Raised numbers at length and age in 2011 landings. Colour coding of vertical bars indicate proportion of each age at a given length as indicated by colours in legend. Blue colours indicate herring between 1 and 3. Green and red colours indicate herring of age 4 and above.

The 2012 fishery was pursued by two vessels from Scotland operating as a pair team and one from Northern Ireland. The two Scottish vessels made a total of 11 trips and the Northern Irish vessel made one, which accounted for 61% of the total landings (Table 1). From these 12 trips a total of 6 samples were collected. A total of 683 herring were measured and 191 fish were aged (Table 2).

Table 2. Summary of level of catch sampling of Clyde herring, 2011 - 2020.

Year	Landings	Landings sampled	Proportion Sampled	Measured herring	Aged herring
2011	7	6	86%	693	229
2012	12	6	50%	683	191
2013	4	2	50%	420	280
2014	0	-	-	-	-
2015	0	-	-	-	-
2016	0	-	-	-	-
2017	0	-	-	-	-
2018	0	-	-	-	-
2019	0	-	-	-	-
2020	0	-	-	-	-
2021	1	0	-	-	-

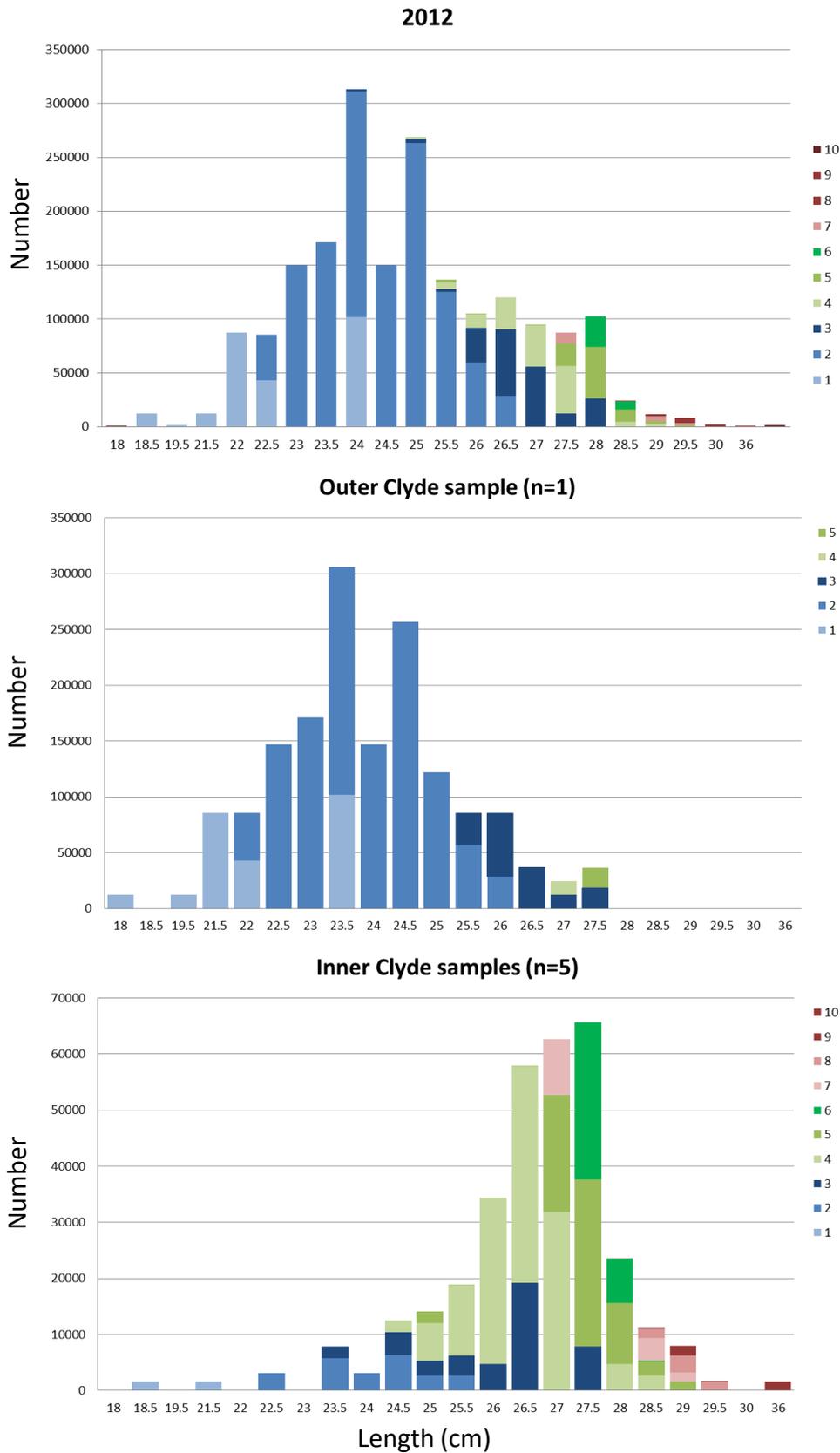


Figure 4. Herring from the Firth of Clyde. Raised numbers at length and age in 2012 landings. Colour coding of vertical bars indicate proportion of each age at a given length as indicated by colours in legend. Blue colours shows herring of age 1 to 3. Green and red colours shows herring of age 4 and above. Top panel shows the combined raised samples. Middle and bottom panel shows the composition of landings from inner and outer Clyde.

The modal length of the 2012 landings was smaller than in 2011 at 24 cm and the landings were dominated by fish between 1 and 3 years (Figure 4). However the results were dominated by one large landing caught at the outer edge of the Firth of Clyde in contrast to all the other landings sampled in both 2011 and 2012 (Pers. Comm. SFO Campbeltown). The remaining samples all came from the Inner Firth of Clyde and Figure 2 indicates that the samples from this area were distinctly different. The large landing from the outer Clyde was composed solely of smaller, young herring (modal length 23.5 and age range 1 to 5 with 95% of the fish age 3 or below, Figure 3, middle panel). The catches from the Inner Clyde were markedly different and were of a composition much more similar to 2011 (Figure 3, bottom panel). These catches were of fish of a modal length of 27.5 cm spanning the full range of ages. Fish of age 4 or above accounted for 67% of these catches.

The numbers at age in the catch in 2011 were dominated by 2 – 4 year old fish with a reasonable number of older fish (Figure 3). In contrast the 2012 samples are completely dominated by age 2 fish with a very small proportion of older fish. This is, however, entirely driven by the composition of the one very large landing as mentioned above.

In 2013 the fishery was very small with only 21t of registered landings (Table 1). Two out of the 4 trips carried out by the Scottish pair team pursuing the fishery were sampled (Table 2). Length measurements were collected from 420 fish and 280 fish were aged.

The length range of fish from the 2013 fishery was much wider (11.5 to 29 cm) than in previous year although the modal range was similar at 27.5 cm (Figure 5). The landings were dominated by age 5 fish (35%) and close to 90% of the fish were age 5 or below (Figure 6).

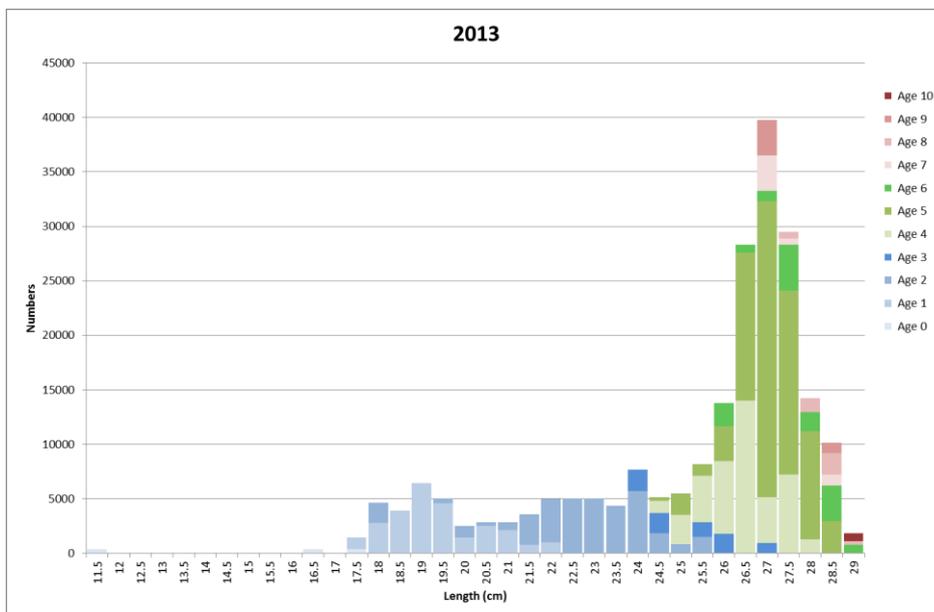


Figure 5. Herring from the Firth of Clyde. Raised numbers at age and length in 2013 landings. Colour coding of vertical bars indicate proportion of each age at a given length as indicated by colours in legend. Blue colours shows herring of age 1 to 3. Green and red colours shows herring of age 4 and above.

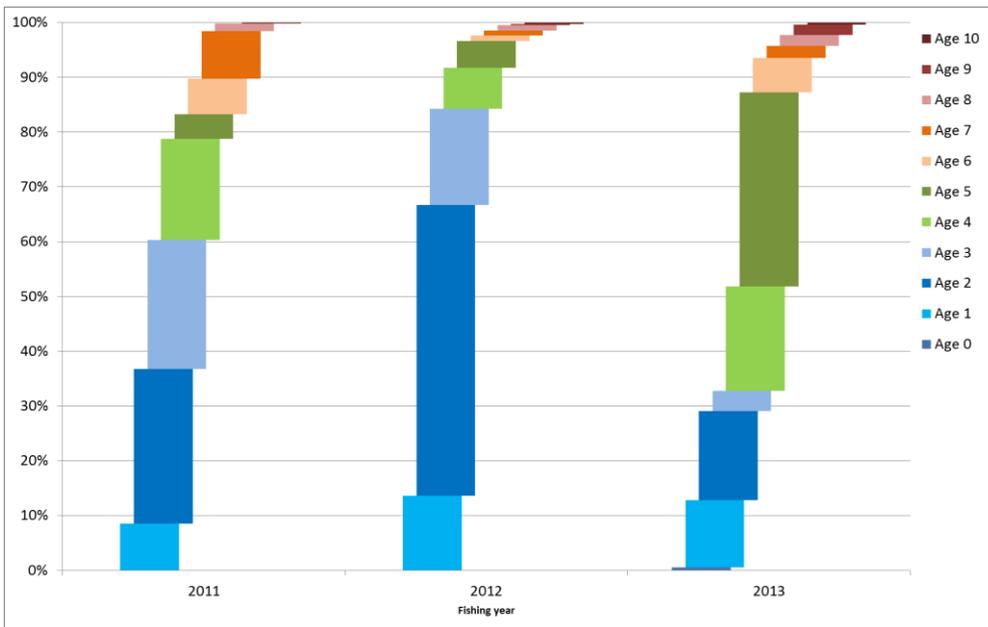


Figure 6. Herring from the Firth of Clyde. Raised numbers at age in 2011 - 2013 commercial landings.

Figure 7 provides a length against age plot, which suggests a fairly rapid growth in the first couple of years, followed by slower growth over a protracted period. This does not fully track the growth of individual year classes and should be treated as a preliminary analysis. Data from the three years from which this data exists so far is in good agreement.

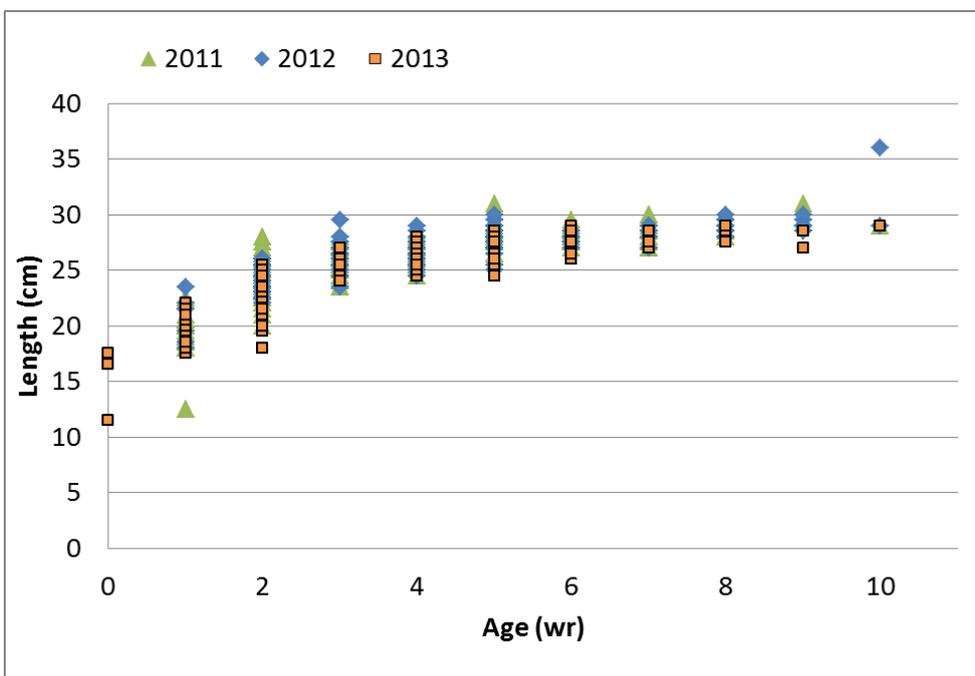


Figure 7. Herring from the Firth of Clyde. Length against age plot for fish caught commercially in 2011 - 2013.

Since 2013 there has only been a single official landing of Clyde herring. During 2021 there was a single landing of 180t of herring, however no samples were provided.

Additional licence conditions for vessels operating in the Clyde fishery require the supply of GPS data from the vessels operating in the area and a haul by haul log of catches.

Together with the specific sample information described above this will play an important role in furthering our knowledge of the state of the stock.

2. Assessment and surveys

Prior to 2011

The last analytical assessment for Clyde herring was performed in 1990. Spring trawl surveys were carried out from 1985 to 1993. Egg surveys (on spring spawners) were carried out from 1988 to 1993. Acoustic surveys were carried out in July from 1987 to 1990 and again in 2008-2009 (Table 3, Figure 8 and Figure 9).

The 2008 and 2009 acoustic surveys showed a higher biomass than in earlier years (33kt and 24kt respectively, Figure 12). The biomass was predominantly within the boundaries of the Clyde, and composed solely of juveniles (2008: 86% 1-group, 13% 2-group; 2009: 99% 1-group, 1% 2-group) and a complete lack of herring of the size targeted by the fishery (Figure 13).

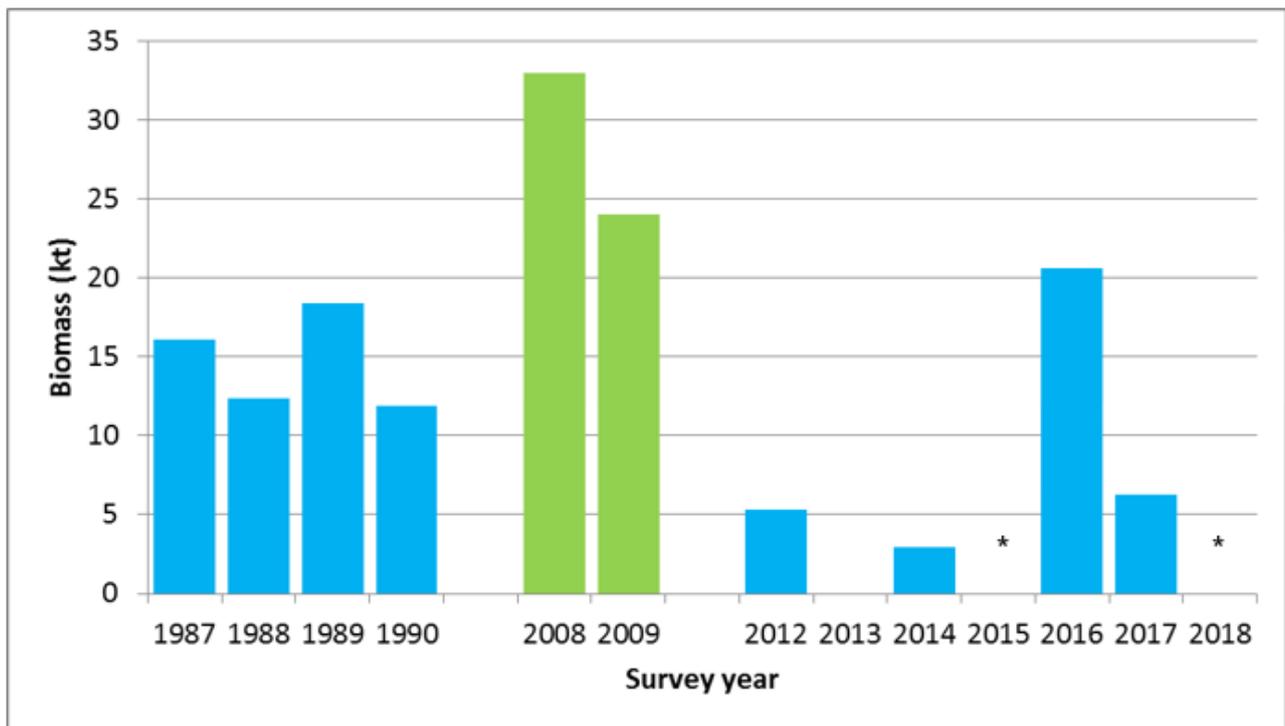


Figure 8. Time series of herring abundance in Clyde acoustic surveys. Surveys presented by blue bars were carried out by Marine Scotland Science Marine Laboratory. Surveys in green were carried out by AFBI, Northern Ireland. Surveys up to 2009 were carried out in July, surveys from 2012 onwards are carried out in October/November. * Total Biomass results from 2015 and 2018 are unavailable.

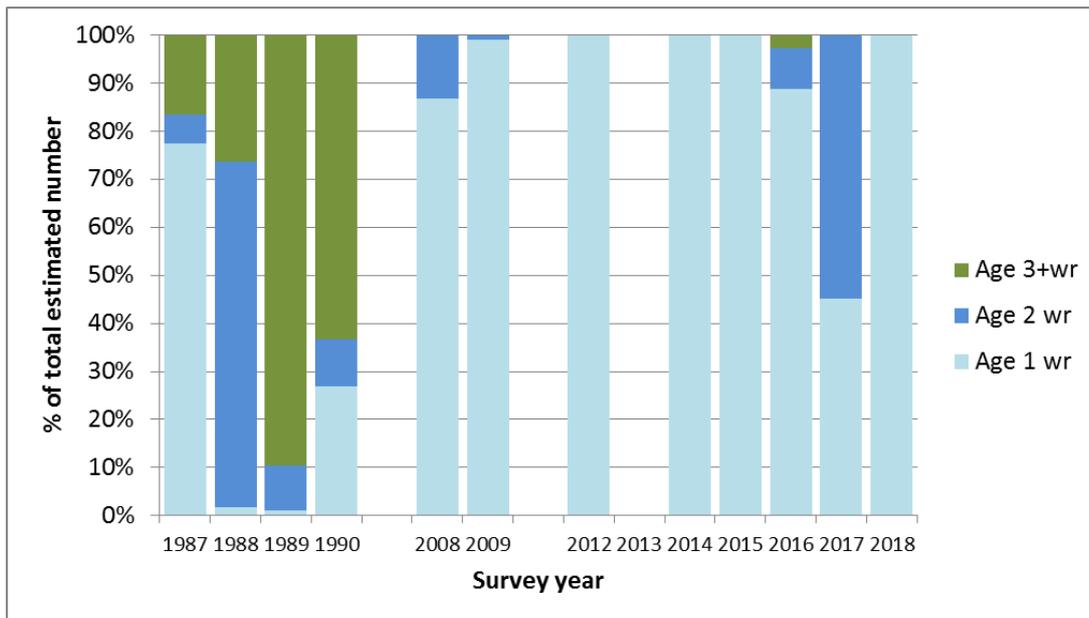


Figure 9. Age composition of herring in Clyde acoustic surveys historic and recent. Surveys 1987 – 2009 were carried out in July. Surveys 2012 to 2018 were carried out in October / November. No survey carried out in 2013. Note that age composition of 2015 and 2018 is known even though total biomass estimates are not available presently. Age 0 fish have accounted for a significant proportion of the biomass since 2016 but are not included here for consistency as these were not reported on quantitatively in the earlier surveys.

Table 3. Estimated numbers (millions) at age and total biomass (Kt) of Clyde herring from acoustic surveys in July 1987 - 1990 and 2008 - 2009.

Age (year)	1987	1988	1989	1990	2008	2009
1	148.2	1.6	1.2	19.9	86	99
2	11.5	67.4	9.5	7.1	13	1
3	9.2	6.2	80.3	5.5	0	0
4	11.5	4.8	6.7	33.3	0	0
5	5.7	5.5	2.4	4.0	0	0
6	3	3.6	1.8	2.5	0	0
7	1.2	2.8	1.1	0.7	0	0
8	0.7	1.5	0.32	0.6	0	0
>9	0.4	0.4	0.1	0.2	0	0
Biomass	16.1	12.4	18.4	11.9	33	24

Acoustic surveys 2012 - 2018

A new series of pelagic acoustic surveys in the Clyde was carried out each October between 2012 and 2018, apart from 2013 where the survey was cancelled due to vessel breakdown.

In 2015 and 2018 intermittent faults with the 38kHz transducer means that it was not possible to estimate total biomass for these years. The results with regards to the size and age composition of herring as well as the distribution of herring and sprat in the Clyde is however available from those years.

Distribution of herring in the surveys were similar amongst the years with the majority of herring encountered in the Inner Clyde to the west and south of Isle of Bute and in the deeper parts to the east and southeast of Arran (Figure 10 – 15). Biomass estimates from all surveys apart from 2016 were low compared to previous surveys series, in most cases less than half of the estimates from previous surveys in the late 1980s (Figure 8). In 2016 the biomass estimate was comparable to the estimates from the earlier survey series. In contrast to these earlier surveys the biomass has been almost exclusively composed of small immature herring in recent times, including 2016 (Figure 9).

Although the total biomass estimate for 2015 and 2018 surveys are not available this does not change the perception of the stock composition (i.e. one which is entirely composed of small juvenile herring) regardless of whether they show higher or lower abundance than previous or later surveys.

The methods used as well as size and capabilities of the survey vessel were similar between the surveys in the 1980's and the lack of larger adult herring in the recent surveys is not an effect of changes in the approach to the survey. However, there is a difference in season (summer vs. winter survey) and total area covered between the earlier surveys and the new series of surveys meaning the results are not directly comparable. Given the fishery was mainly been pursued in the early winter in recent years it was deemed more appropriate to carry out the survey to coincide with the fishery.

These surveys were not conducted during the years 2019 - 2021.

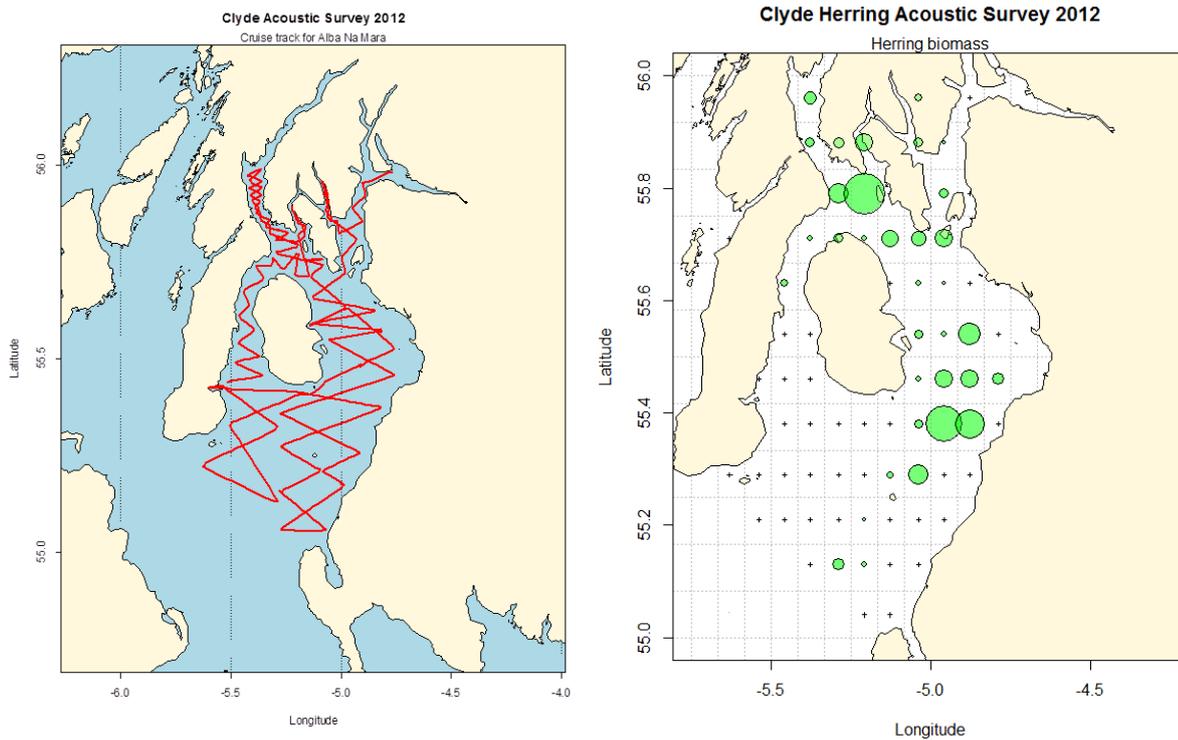


Figure 10. Herring from the Firth of Clyde. Cruise track for MRV *Alba na Mara* (left panel) and distribution of herring biomass in Clyde pelagic acoustic survey 2012 (right panel). Circles represent total biomass encountered in each 5x5' square and are centered in the square. The largest circle represents a biomass of 1,000 t. A "+" represents surveyed squares where no herring was encountered.

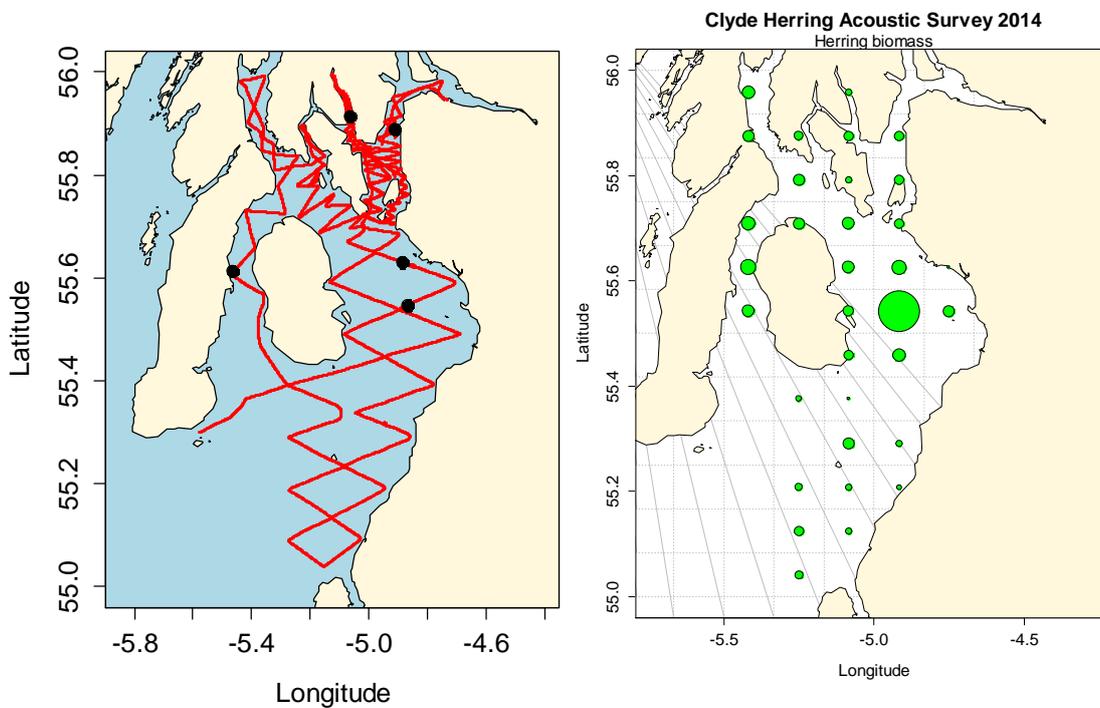


Figure 11. Clyde pelagic acoustic survey 2014. Left panel; Cruise track (red line) and haul locations (black dots) for MRV *Alba na Mara*. Right panel; Distribution of herring biomass. Circles represent total biomass encountered in each 10x5' square and are centered in the square. The largest circle represents a biomass of 1,094 t.

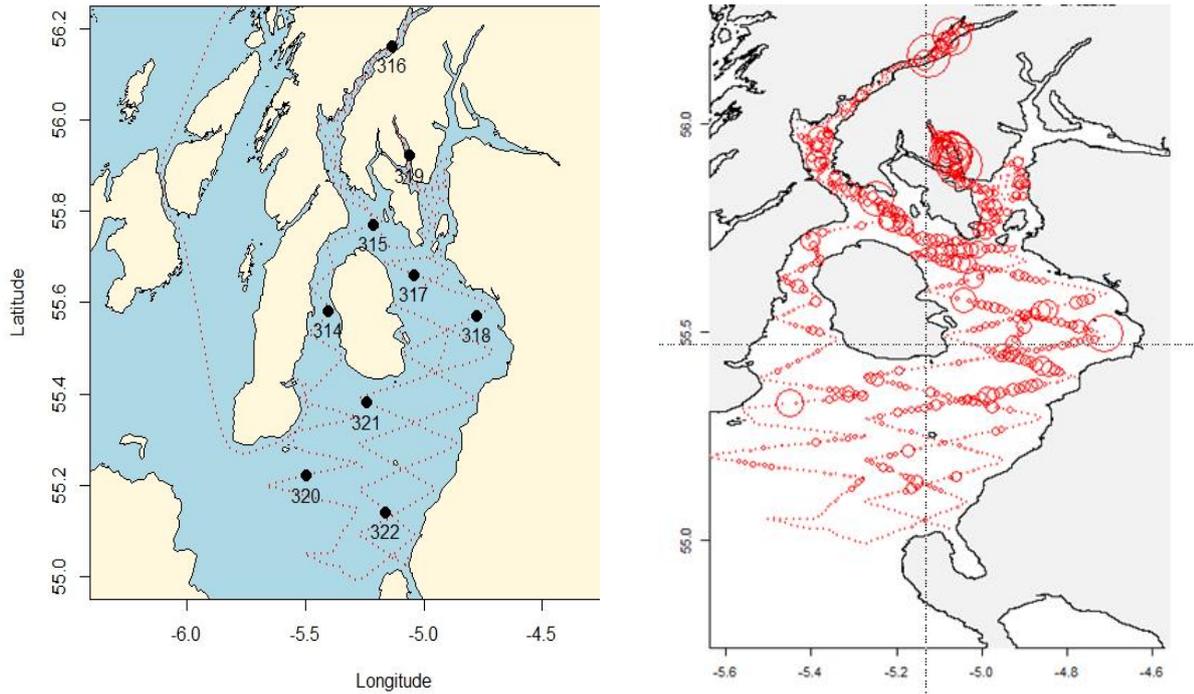


Figure 12. Cruise track for MRV *Alba na Mara* with haul positions (left) and density of clupeids (right) during Clyde pelagic acoustic survey in 2015. Abundance of herring is a small proportion of the observed clupeid traces.

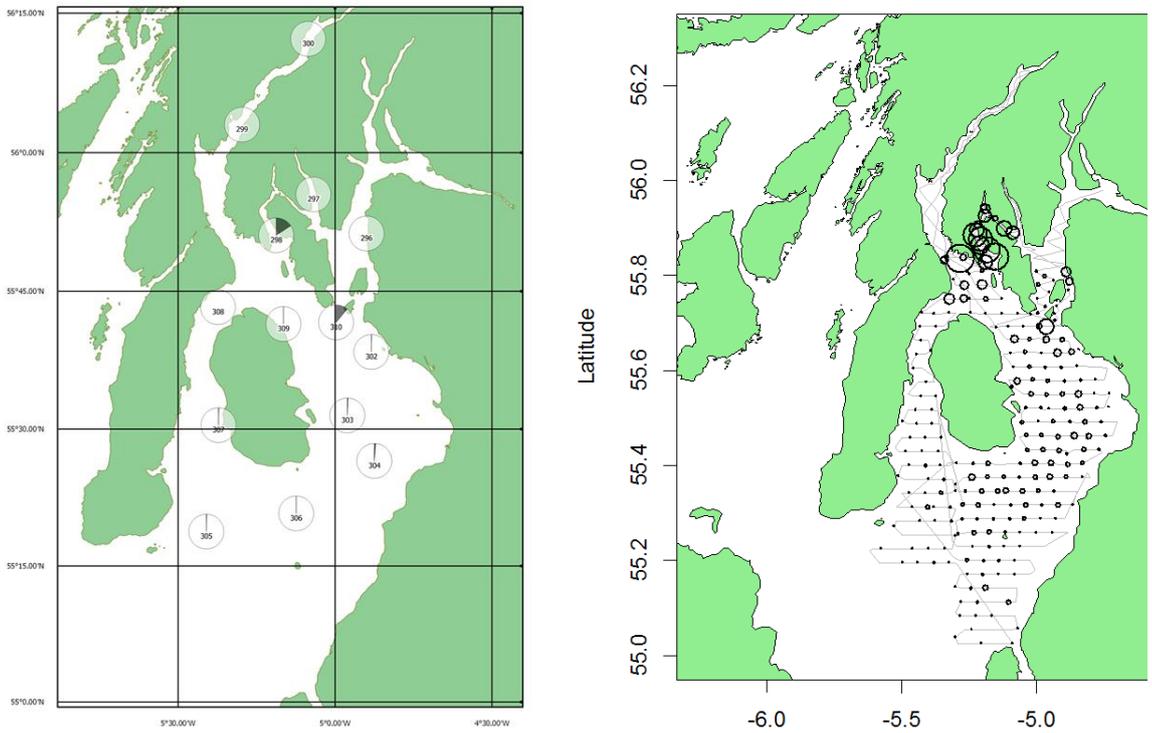


Figure 14. Cruise track for MRV *Alba na Mara* with haul positions and proportion herring in hauls (black slice of pies, left) and density of herring along the cruise track (right) during Clyde pelagic acoustic survey in 2017.

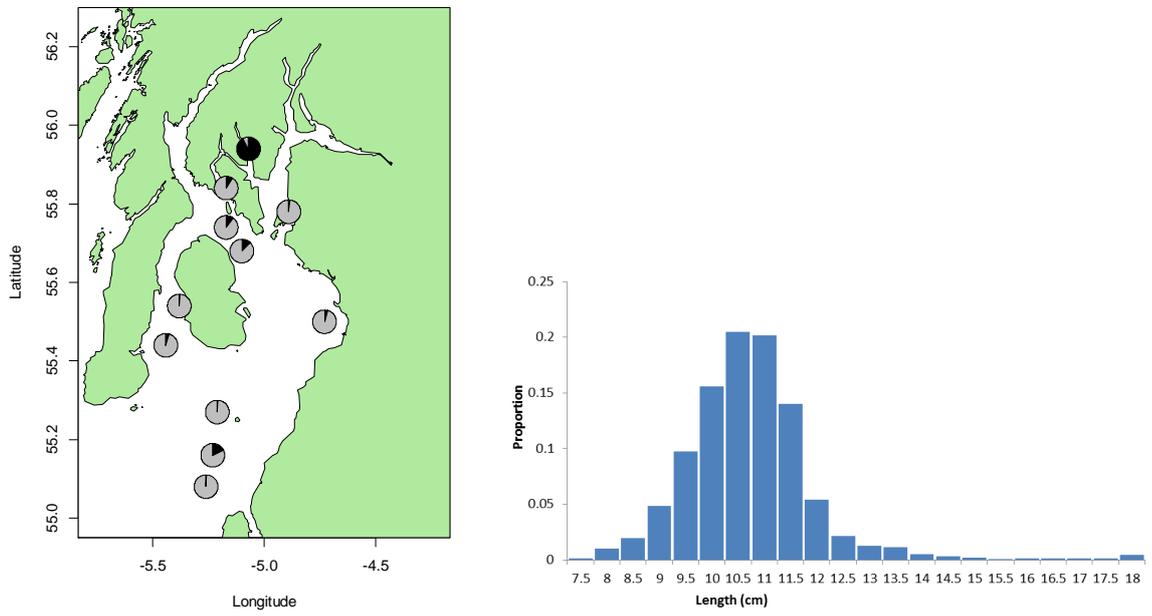


Figure 15. Clyde pelagic acoustic survey 2018. Left: Haul positions with proportion herring in hauls (black slice of pies). Right; Length distribution of herring in the Clyde pelagic acoustic survey in 2018. All herring under 15cm were age 0 winter ring.

Bottom Trawl Survey Data

Marine Scotland Science (MSS) carries out two annual bottom trawl surveys in West of Scotland waters with stations in the Firth of Clyde. The time series extends from 1986 and 1997 to 2021 for Q1 and Q4 respectively – the Q1 2022 survey did not take place due to technical issues with the vessel. While a bottom trawl survey is not ideal for capturing the dynamics of a pelagic species such as herring, these surveys were recently both included in the assessment of the neighbouring West of Scotland herring stocks.

An analysis of trends in catch per unit effort (CPUE) reveals that the mean catch rate of herring in tows within the Clyde remains low, and uncertainty around these figures remains high, due to the small number of tows carried out each year (Figure 16). Catches are consistently higher in quarter 1, compared to quarter 4, which may be explained by the herring overwintering in areas further up the Clyde sea lochs where the survey does not operate.

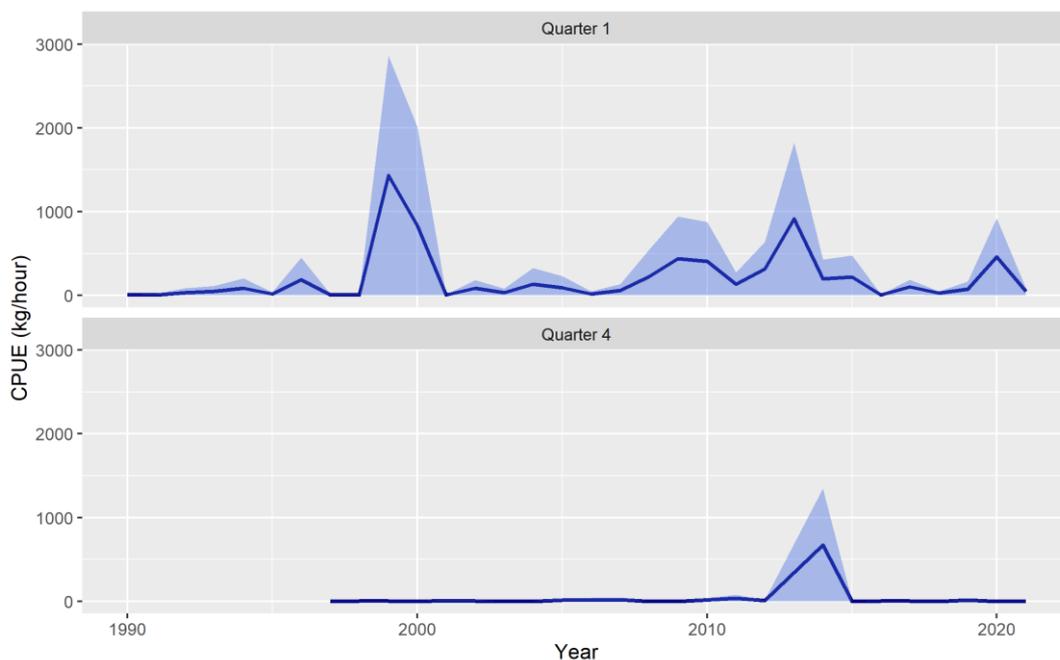


Figure 16. IBTS Survey time series of herring catch per unit effort, standardised to 1 hour tows. Confidence intervals are \pm two standard errors.

An examination of the spatial distribution of catches in the IBTS surveys suggests that herring are not evenly distributed throughout the Clyde, but rather have a patchy distribution, leading to a perception of the stock which can be strongly influenced from year to year depending on whether a large haul, such as those seen in some years in Ayr Bay, is taken (Figure 17, Figure 18).

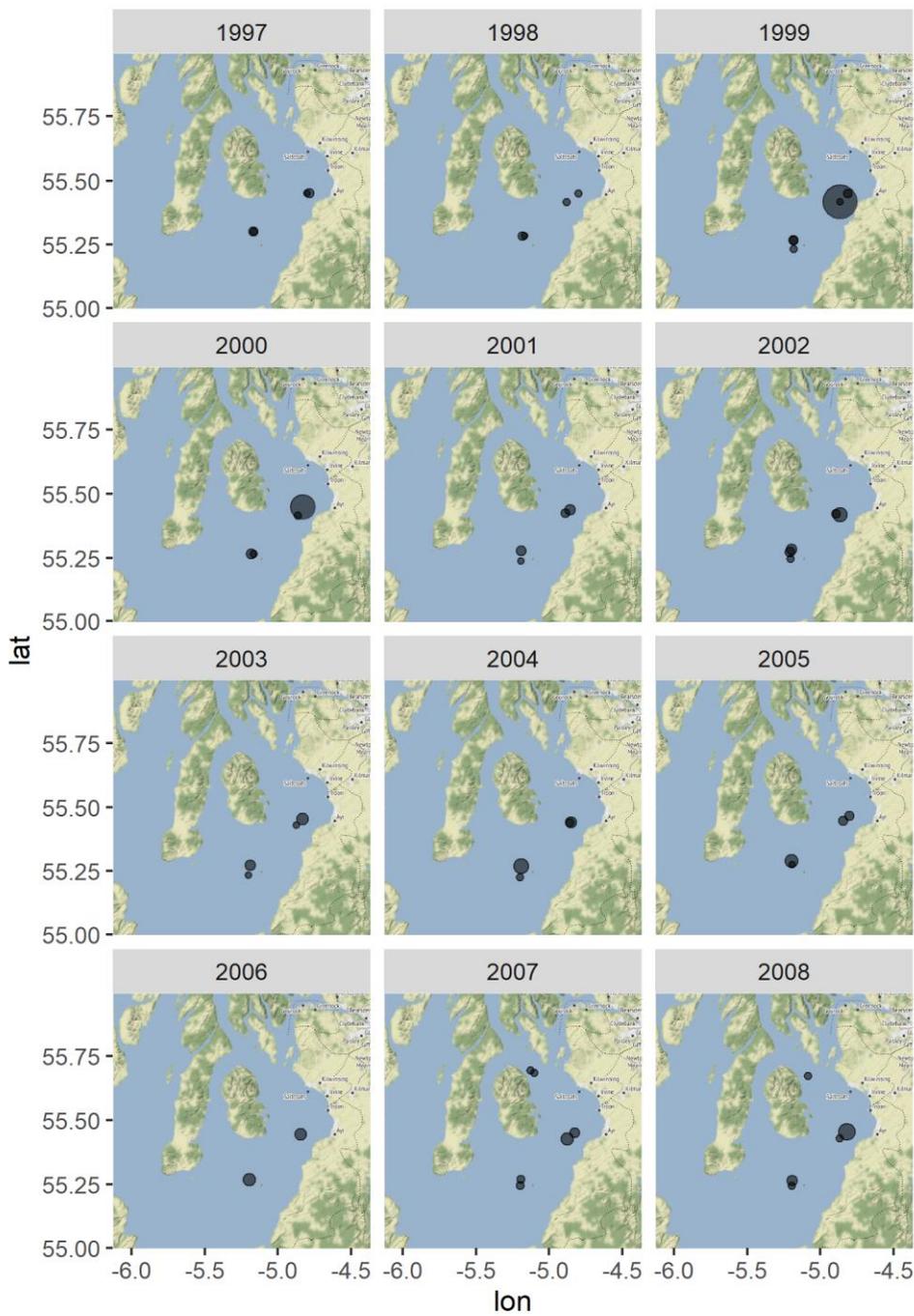


Figure 17. Herring abundances on IBTS tows, 1997 - 2008, in the Clyde area (ICES Rectangles 39-40 E4 & E5).

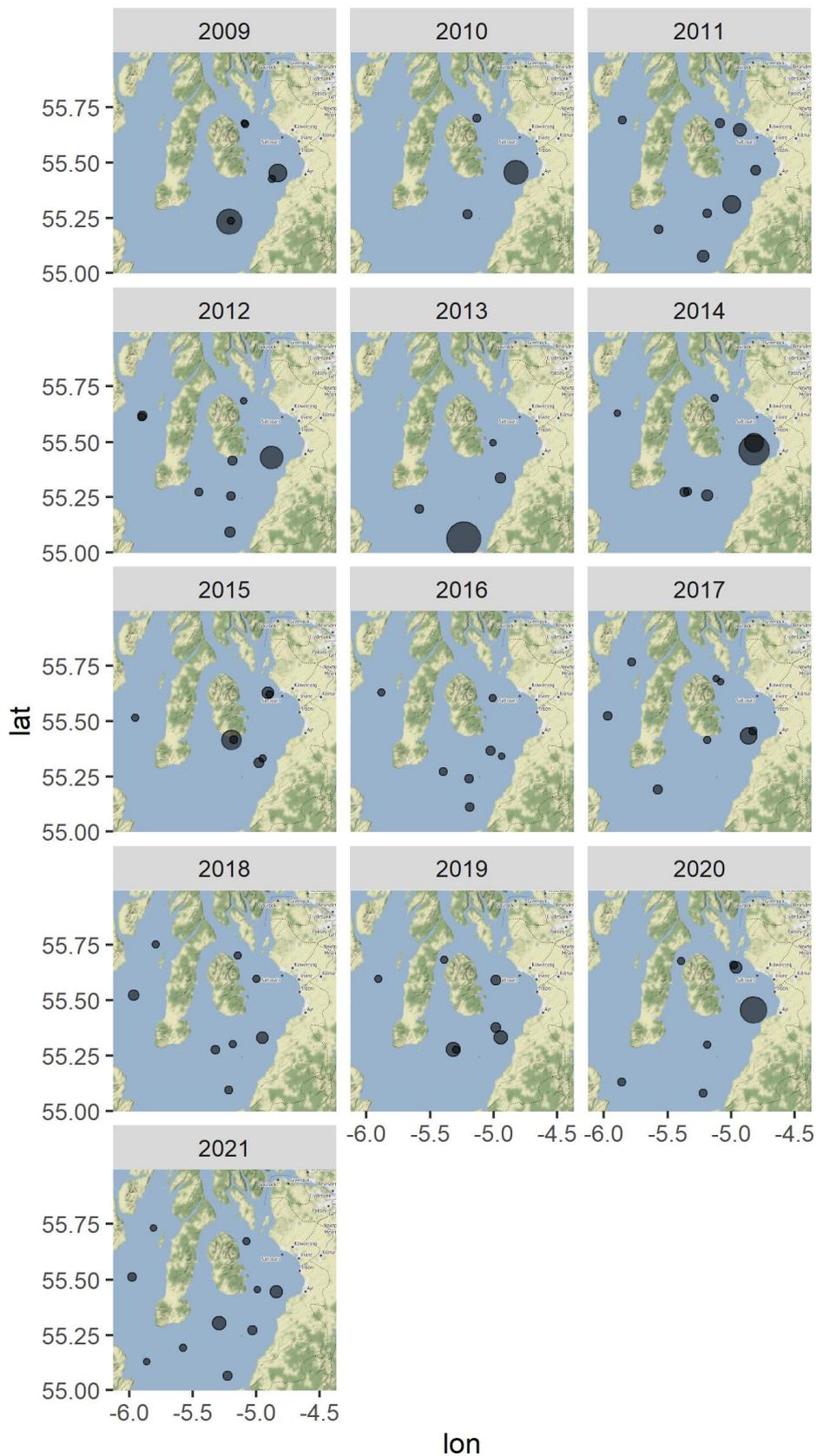


Figure 18. Herring abundances on IBTS tows, 2009 - 2021, in the Clyde area (ICES Rectangles 39-40 E4 & E5).

An analysis of the length-frequencies of herring in IBTS catches shows the Clyde herring stock to have been dominated by small fish in the 0-2 size range, with very few older larger

fish seen, particularly in recent years (Figure 19 - Figure 22). With a minimum landing size of 20cm in place for this area, it is likely that a fishery targeting herring in the Clyde would encounter significant quantities of undersized fish.

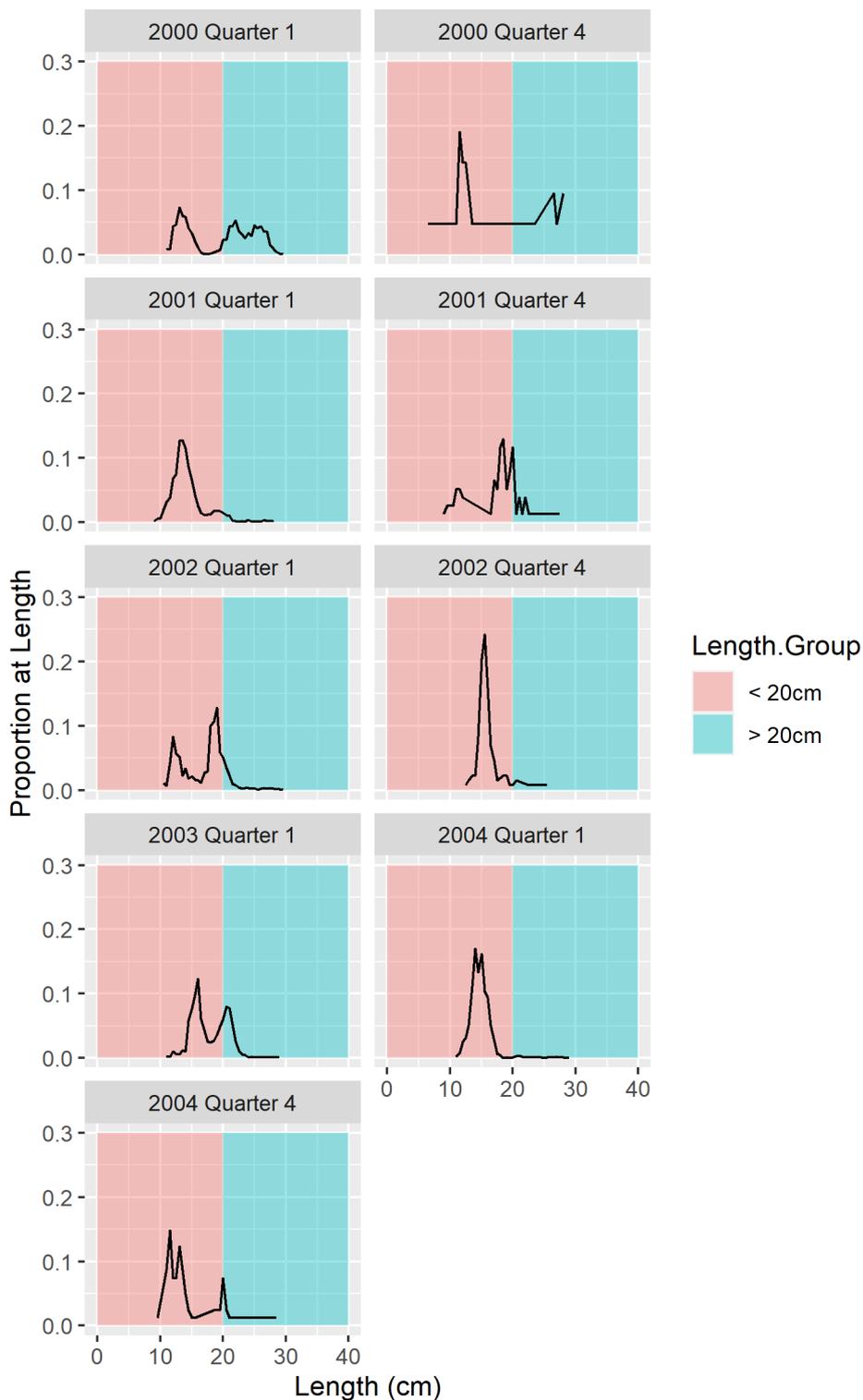


Figure 19. Proportion of herring at length from IBTS Catches in Q1 and Q4, 2000 - 2004.

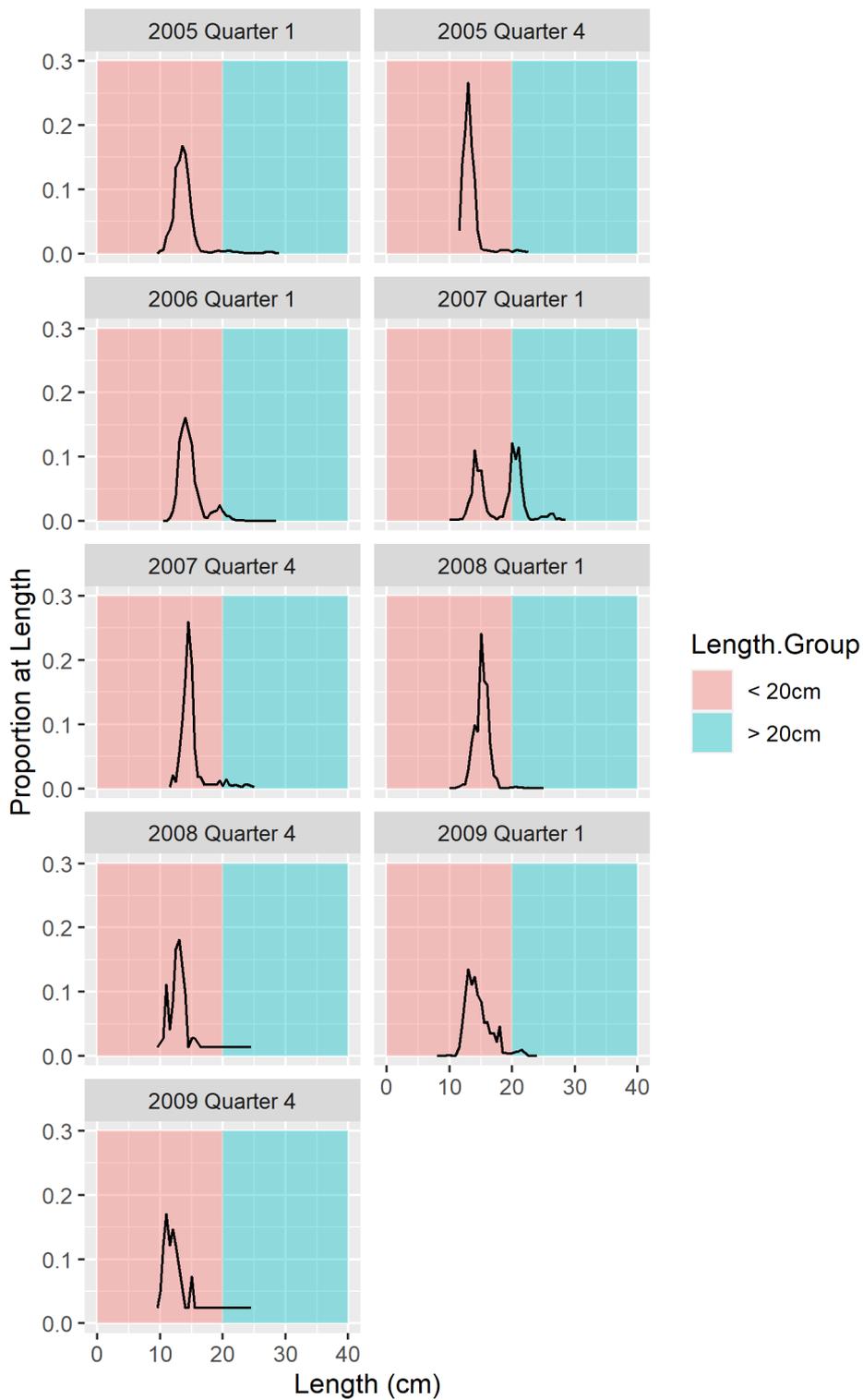


Figure 20. Proportion of herring at length from IBTS Catches in Q1 and Q4, 2005 - 2009.

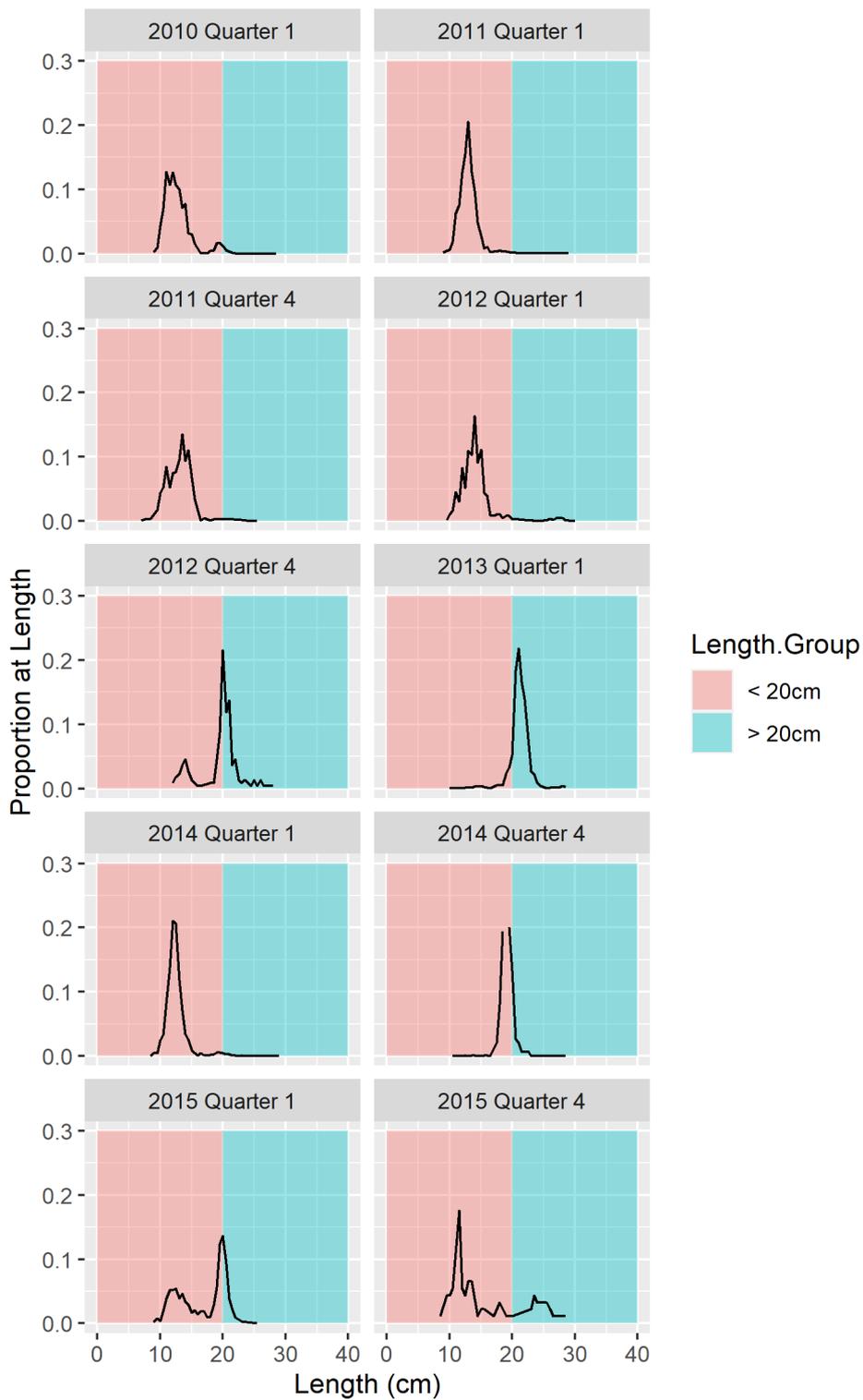


Figure 21. Proportion of herring at length from IBTS Catches in Q1 and Q4, 2010 - 2015.

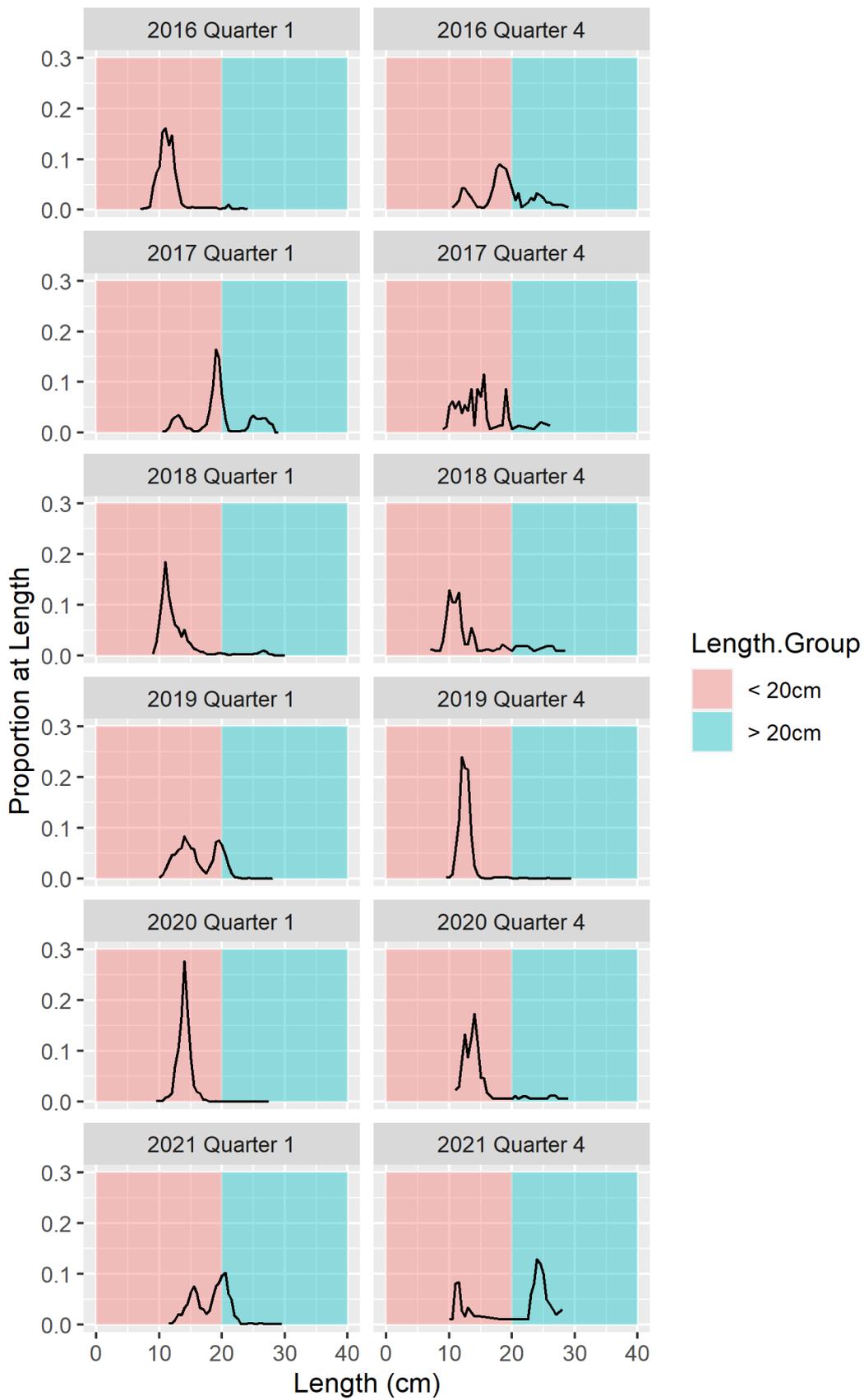


Figure 22. Proportion of herring at length from IBTS Catches in Q1 and Q4, 2016 - 2021.

Industry perception

The commercial samples taken in 2011 to 2013 indicate a significant portion of the landed fish were age 4 or older herring. The failure of the 2012 to 2018 surveys to capture these adult fish that form the basis for the fishery was seen as problematic. The issue was discussed with industry members pursuing the herring fishery in meetings in 2014, 2015 and 2019.

Many of the commercial landings sampled were caught close inshore in areas that are too shallow for the MSS survey vessel to practically survey or deploy fishing gear in due to its size. There were concerns also that the survey is carried out during the day and that adult herring in the Clyde are perceived by the fishermen to rise off the bottom in the night time and become more readily detected acoustically and easier to catch. Finally the difference in the timing of the fishery and survey was discussed as a potential cause of differences in perception due to possible migration of adult herring into the Clyde after survey completion (particularly the summer surveys in 2008 and 2009). However, the timing of the fishery does not appear to be guided by availability of large herring, but rather availability of time to pursue the fishery (which is quite opportunistic). It was mentioned that locating commercially viable sized herring is time consuming and requires detailed local knowledge.

3. Discussion and conclusion

The lack of adult herring in the acoustic surveys conducted in the Clyde in recent times (2008, 2009, 2012 - 2018) and the discrepancy with the information collected from the fishery in 2011 - 2013 has been a cause for concern. Historical acoustic surveys (1987 to 1990; Table 3) in the Firth of Clyde were carried out in similar fashion to the present day surveys but did not have problems locating and sampling schools of larger adult herring.

The acoustic survey in 2016 and the trawl surveys since Q4 of 2015 have encountered some larger mature herring, however, these made up a very small proportion of the overall biomass and almost none were encountered in the 2017 or 2018 acoustic survey or in the Q1 trawl surveys.

It is possible that this to some extent is due to differences in the fishing practices employed between commercial and research vessels. The commercial catches are mainly taken in very shallow water unavailable to the survey vessel, and only located after prolonged searching. This would indicate a typical pattern of decreased stock size in pelagic fish, where school size is maintained, but the number of schools is decreased and the encounter rate in the survey reduced. The lack of catch data since 2014 hinders further comparisons with recent survey results.

However, the distinct shift in age composition was also observed in the results from the MSS bottom trawl survey series indicating that this shift in perception of the age composition is not caused by a failure of the survey to capture older fish. The re-appearance of mature fish in the 2016 survey (and confirmed in the bottom trawl survey in 2016) indicates that the survey in its present form is able to detect the presence of these older fish.

The herring biomass in the Firth of Clyde is predominantly composed of young immature individuals. It is not known whether these juvenile herring originate from herring spawning within the Clyde, but based on studies from other nursery areas there is a strong likelihood that herring in the Clyde comprise a mixture of different biological populations; the mix of stocks is uncertain but it is likely that the Clyde also contains juvenile Irish Sea herring for example.

It is not possible to estimate Maximum Sustainable Yield (MSY) from currently available data sources, particularly given the likely mixing with other West of Scotland herring stocks. The present data collection programme will continue to contribute to the assessment of the stocks.

The continued absence of adult fish in the surveys in 2019 - 2021 warrant continued conservative management of the resource. Given the poor state of several of the herring stocks to the west of Scotland, and the high likelihood that the juvenile herring in the Clyde are from one or more of these stocks, consideration should be given to continue to offer protection for these in the Clyde so as not to adversely impact neighbouring stocks.

In the light of the available evidence there is no support for an increase in the TAC for 2022. Neither is there a strong case for further reducing the TAC as long as the strict control measures² in place already, including the minimum landing size and temporal closures³, stay in place. Efforts to ensure catches by vessels fishing in the Clyde are properly sampled should be heightened.

² Vessels are required to land at notified ports. Furthermore vessels are required to enter the Clyde empty with prior notification and to relinquish other herring licences prior to fishing for Clyde herring.

³ See section 4.

6. Consultation period and responses to the consultation

This **consultation will run for 3 weeks**, with a **closing date for responses of 3rd August 2022**.

The consultation Respondent Information Form (RIF) (Point 7) should be completed and sent by email to clydeherring@gov.scot

Handling your response

We need to know how you wish your response to be handled. Please complete and return the Respondent Information Form which forms part of the consultation questionnaire as this will ensure that we treat your response appropriately.

The views and suggestions detailed in consultation responses are analysed and used as part of the decision making process, along with a range of other available information and evidence. Depending on the nature of the consultation exercise the responses received may:

- indicate the need for policy development or review;
- inform the development of a particular policy;
- help decision to be made between alternative policy proposals; or,
- be used to finalise legislation before it is implemented.

Final decisions on the issues under consideration will, if appropriate, also take account of a range of other factors, including other available information. While details of particular circumstances described in a response to a consultation exercise may usefully inform the policy process; consultation exercises cannot address individual concerns and comments, which should be directed to the relevant public body.

Privacy

Your responses, which will include personal information, are being processed as a public task. You have the right to object to this processing.

Your information will be held securely on the Scottish Government IT system and will only be accessible by authorised officials.

You have the right to ask for any personal information we hold about you.

We will only collect as much information about you as we need and will not share it with anyone outside of Scottish Government. If we share your responses, we will remove your personal details. We will only store your personal information for as long as we need it.

We will only contact you about your responses if you have given consent for us to do so. If you give consent for us to contact you then you have the right to withdraw that

consent and you will no longer hear from us. We will continue to process your response information.

If you are unhappy about how your information is being handled then you can contact our data protection officer dataprotectionofficer@gov.scot.

All respondents should be aware that the Scottish Government is subject to the provisions of the Freedom of Information (FOI) (Scotland) Act 2002 and would therefore have to consider any request made to it under the Act for information relating to responses made to this consultation exercise. In the event of an FOI request, personal details would be redacted.

If you have any comments about how this consultation exercise has been conducted, please send them to the same address as for your response.

7. Respondent information form

Herring in the Firth of Clyde - setting the total allowable catch for 2022: consultation

RESPONDENT INFORMATION FORM

Please Note this form **must** be returned with your response to ensure that we handle your response appropriately

1. Name/Organisation

Title Mr Ms Mrs Miss Dr Please tick as appropriate
Surname

Forename

2. Postal Address

<input type="text"/>		
Postcode	Phone	Email

3. Privacy

We will share your response internally with other Scottish Government policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for Scottish Government to contact you again in relation to this consultation exercise?

Please tick as appropriate Yes No



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Any enquiries regarding this publication should be sent to us at

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