

Herring in the Firth of Clyde - Setting the Total Allowable Catch for 2023 Consultation

May 2023

1. Introduction

This consultation relates to the 2023 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 4.

Marine Scotland is carrying out this consultation on behalf of the UK Fisheries Administrations, to seek views on the level of the 2023 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 6). This includes data from the Q1 West of Scotland Groundfish Survey (SCOWCGFS).

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 5, and supporting information from Marine Scotland Science is given in section 6.

2. Proposed TAC

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

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
TAC (tonnes)	720	720	648	648	583	583	583	583	583	583	583	466
Landings (tonnes)	90	302	25	0	0	0	0	0	0	0	180	0
Estimated discards (tonnes)	20	2	53	25	5	4	6	3	5	*	*	*

* Estimated to be at a low level, currently unknown.

In 2022, there were increased levels of uncertainty with regards to the state of the Clyde herring stock, due to the breakdown of a survey vessel, which meant that the Q1 survey could not take place. Taking into account the best available scientific information and the views submitted through the consultation process, the TAC was set at 466 tonnes: a 20% reduction on the 2021 TAC, following the principle of a precautionary buffer. This mirrored the approach taken by ICES for some category 3-6 stocks, when the stock status is unknown, and balanced the arguments for rolling over or increasing the TAC, with the arguments for setting a 0 or de minimis TAC.

2023 TAC

On consideration of the Marine Scotland Science report (section 6) 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. Excluding 180 tonnes caught in 2021, catches have remained at zero tonnes since 2014.
- 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 regulation minimum landing size (20 cm) for this area.
- Clyde herring are known to be linked to other herring stocks to the west of Scotland, which are currently at low biomass levels.
- There is no evidence that herring stocks had significantly decreased since 2021, the last year for which Q1 survey data was available. However, there is no scientific evidence to suggest an increase above the 2021 TAC of 583 tonnes would be appropriate. Similarly, the data do not suggest that the TAC should be reduced below the 2022 level of 466 tonnes.
- Due to the lack of available data for Clyde herring, the current control measures should remain in place. Fishers should ensure compliance with the measures specific to this fishery.

Our goal is to be responsible fisheries managers, but also responsive to the evidence we have available, as well as that which may come in future.

In 2022, the TAC level was set taking into account increased levels of uncertainty resulting from a lack of available evidence.

The evidence now available for the stock indicates that there is no strong case for a reduction beneath the TAC level set between 2015 and 2021. In light of this evidence we propose that the TAC should be set at 583 tonnes.

Question 1: What is your view on the proposed TAC level for Clyde herring in 2023?

An open meeting for any stakeholders who wish to discuss the options included in the consultation paper with officials will be held on 01 June. Please email clydeherring@gov.scot to register, or to request a separate discussion if you are unable to attend on this date.

3. Data collection

Following the TAC setting process for 2023, Marine Scotland are requesting any relevant additional data that fishers, research organisations, universities or other stakeholders may hold on this stock. Consideration will be given to any data which:

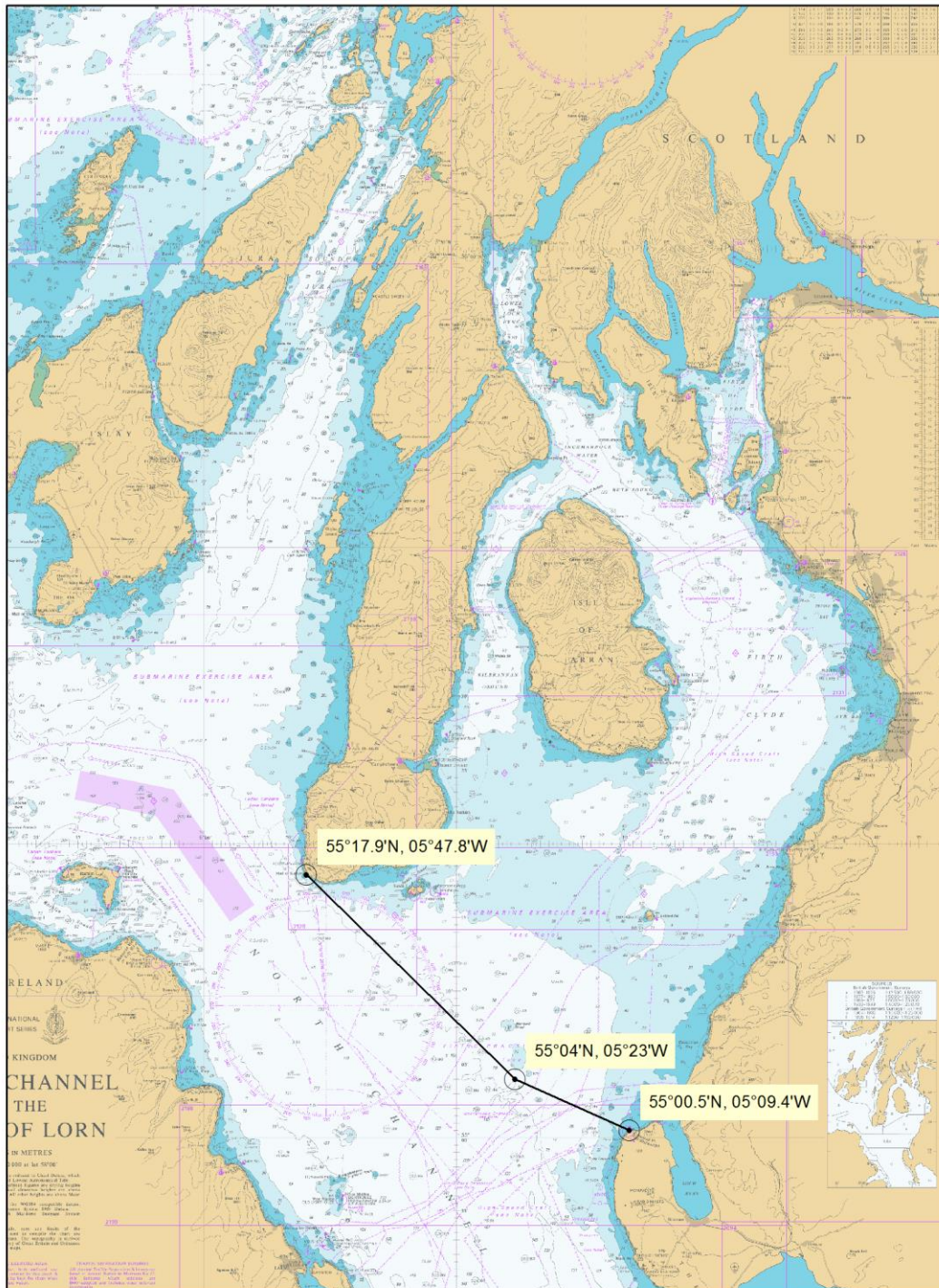
- Is verified numerical data.
- Records some or all of: fish weights, lengths, ages, and maturities.

Examples may include herring surveys, herring sampling data, fishers' logbook data (detailing catch, location, reported landings).

Please submit any data to mss.fisheries.advice@gov.scot by 31 December 2023, to allow for consideration during 2024.

4. 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).

5. 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 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.

6. Scientific Information on the Status of Herring (*Clupea harengus*) in the Clyde Sea (ICES Statistical Rectangles 39E4 – 40E5) in 2023

Eleanor MacLeod, Campbell Pert and Steven O'Connell

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6.1 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. Excluding 180 tonnes caught in 2021, catches have remained at zero tonnes since 2014.

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 regulation minimum landing size (20 cm) for this area.

Clyde herring are known to be linked to other herring stocks to the west of Scotland, which are currently at low biomass levels.

There is no evidence that herring stocks had significantly decreased since 2021. However, there is no scientific evidence to suggest an increase above the 2021 TAC of 583 tonnes would be appropriate. Similarly, the data do not suggest that the TAC should be reduced below the 2022 level of 466 tonnes.

Due to the lack of available data for Clyde herring, the current control measures should remain in place. Fishers should ensure compliance with the measures specific to this fishery.

6.2 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 10,000 to 20,000 tonnes/year, and landings reached a peak between the late 1950s and mid-1960s. From the mid-1960s to 1980s landings fluctuated between 2,000 and 5,000 tonnes (Figure 1). A Total Allowable Catch (TAC) was first introduced in 1984; the TAC was 1,000 tonnes from 1993 until 2007, and has been gradually reduced since (Table 1). In 2022, due to the cancellation of the west coast survey in quarter 1 following the research vessel *Scotia* suffering a mechanical breakdown, no fishery-independent data on herring in the Firth of Clyde were available. The TAC was therefore set at 466 tonnes, as a precautionary measure.

Over time, the fishery has been dominated by Scottish and Northern Irish vessels. The majority of the catch was taken by Scottish vessels from 1995 to 2000, but by Northern Irish vessels from 2000 to 2012. From 2013 to 2022 there were no landings from the Clyde, apart from 2021 where a Northern Irish vessel reported a single landing of 180 tonnes (Table 1).

Since 1995 there has been virtually no unallocated catch or discarding reported for Clyde herring. Landings data are available from 1955, with data for 1982 – 2020 presented in

Figure 1 and Table 1. 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 2002-2010 and in 2021. In the historical data (with numbers at age) 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 catches since the 1990s.

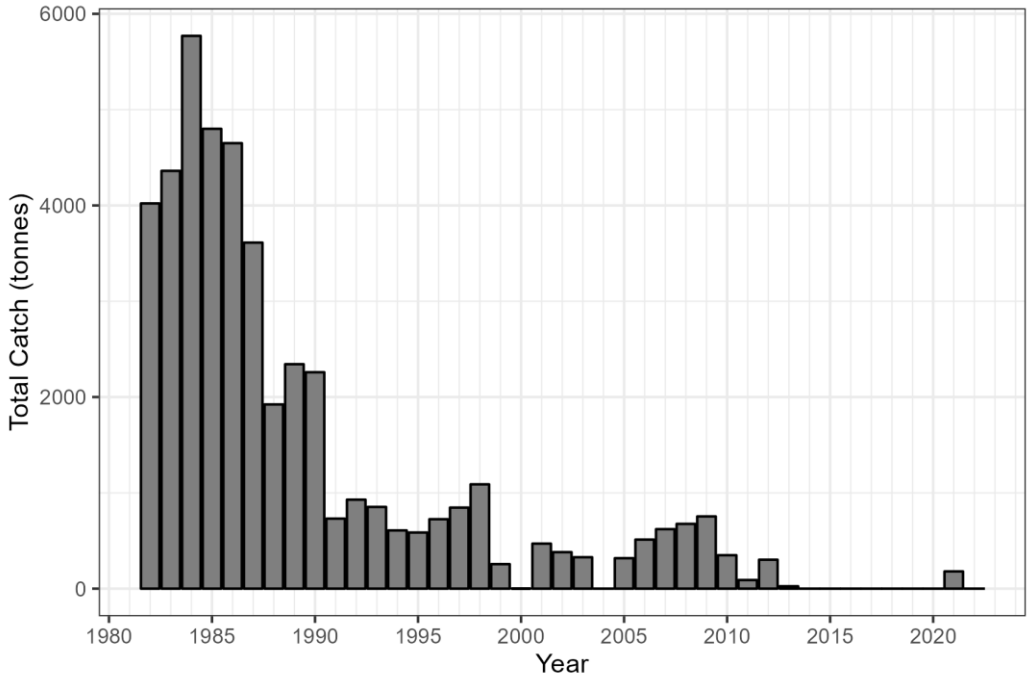


Figure 1. Catches of herring from the Clyde, 1982 – 2022.

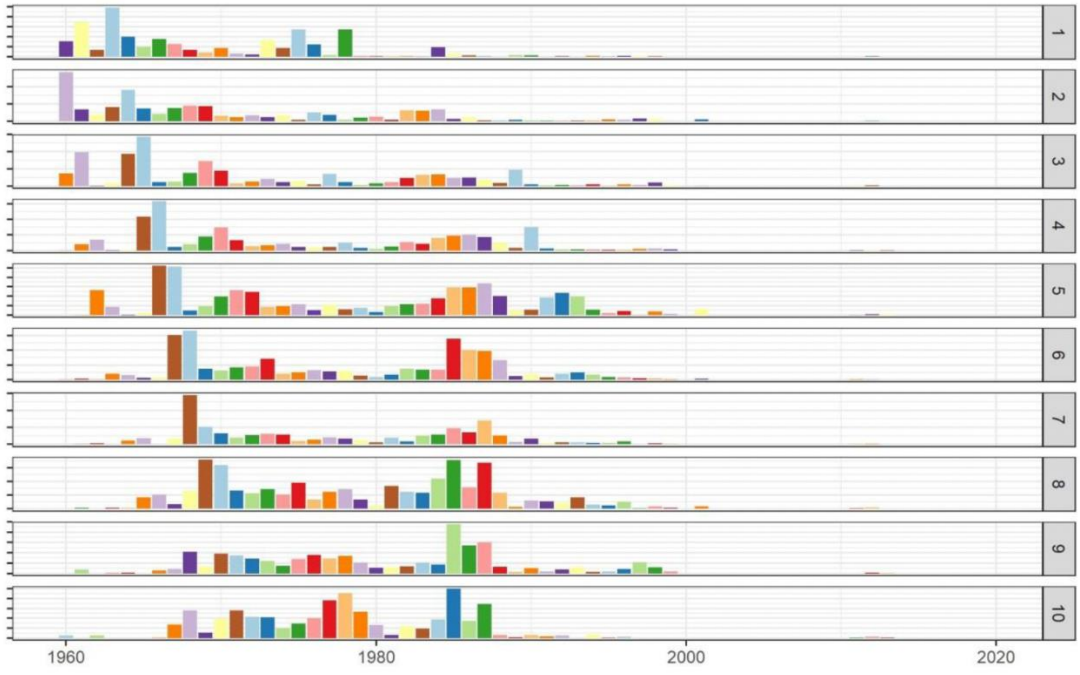


Figure 2. Catch of herring at ages 1 – 10 in the Clyde (1960 – 2000, 2010 – 2020 and 2022), showing the relative strength of each year class as it moves through the population over time.

Table 1. Herring from the Firth of Clyde. Catch in tonnes by country, 1982 – 2022. 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 ²	1 344 ²	679 ²	439	245	³	³	³	³	³	³	³
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Discards	³	³	³	³	³	³	³	³	³	³	³	³	³	46
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	1089	256	1	470	381	328	0	318	512	621	676	800

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Scotland	48	90	118	21	0	0	0	0	0	0	0	0	0
Other UK	301	0	184	0	0	0	0	0	0	0	0	180	0
Discards	255	20	2	53	25	5	4	6	3	5	³	³	³
Agreed TAC	720	720	720	648	648	583	583	583	583	583	583	583	466
Total	604	110	304	78	25	5	4	6	3	5	0	180	0

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

²Based on sampling.

³ Estimated to be at a low level, currently unknown

6.3 Landings Data Collected Since 2011

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 six samples were collected from seven hauls (Table 2) in the inner Firth of Clyde. Length information was collected from 693 herring and otoliths were taken and aged from 229 fish. Fish ranged in size from 18 to 31 cm, with a modal length of 27 cm (Figure 3). Landings were composed of fish spanning the full age range (1 – 10 years). Approximately 40% of the fish landed were four years or older.

The 2012 fishery was carried out by two Scottish vessels operating as a pair team, alongside one Northern Irish vessel. The two Scottish vessels made a total of 11 trips, whereas the Northern Irish vessel made one trip that accounted for 61% of the total landings (Table 1). Landings were dominated by this one large landing caught at the outer edge of the Firth of Clyde in 2012 (pers. comm. SFO Campbeltown). Overall, 6 samples were collected from the 12 trips. Similar to 2011, 5 of these samples were collected in the inner Firth of Clyde. A total of 679 herring were measured and 189 fish were aged (Table 2).

Table 2. Summary of landings sampling of Clyde herring, 2011 – 2022.

Year	Landings	Landings sampled	Proportion Sampled	Measured herring	Aged herring
2011	7	6	86%	693	229
2012	12	6	50%	679	189
2013	4	2	50%	420	280
2014	0	-	-	-	-
2015	0	-	-	-	-
2016	0	-	-	-	-
2017	0	-	-	-	-
2018	0	-	-	-	-
2019	0	-	-	-	-
2020	0	-	-	-	-
2021	1	-	-	-	-
2022	0	-	-	-	-

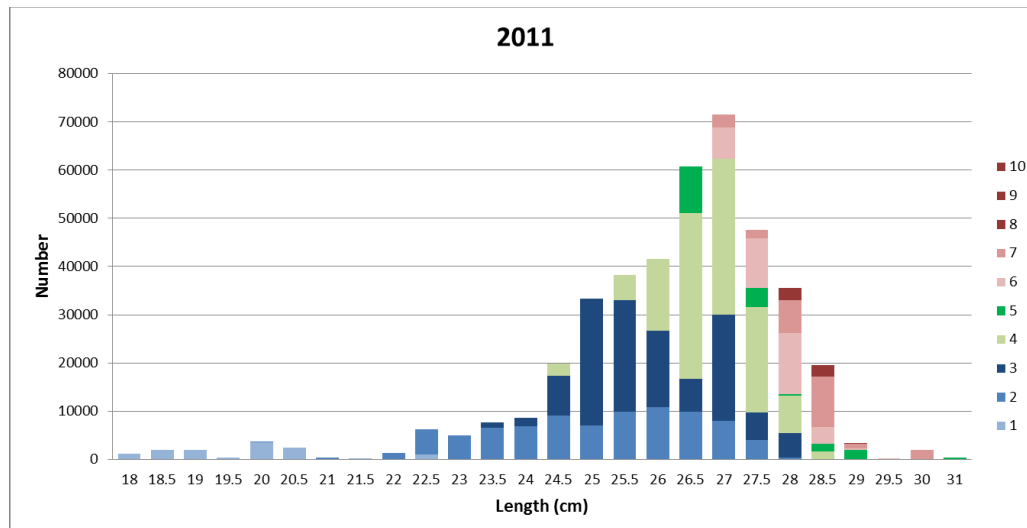


Figure 3. Herring from the Firth of Clyde. Raised numbers at length and age in 2011 landings. Colour coding of vertical bars indicates the proportion of each age at a given length as indicated by colours in the legend.

In 2012 fish ranged from 18 to 36 cm, with a modal length of 24 cm. Landings were dominated by fish between 1 – 3 years (Figure 4). The large landings from the outer Clyde were composed solely of smaller younger herring (modal length 23.5 cm and age range of 1 – 5 years, 95% of fish aged 3 or below). In contrast the landings from the inner Clyde were more similar in composition to 2011 (modal length 27.5 cm, spanning the full age range, 67% of fish landed were 4 years or older).

The dominance of the large sample from the outer Clyde results in the numbers at age in the landings being very different in 2012 compared to 2011. The proportion of fish at older ages in 2012 is much lower than in 2011, but this is entirely driven by the composition of the one large landing from the outer Clyde.

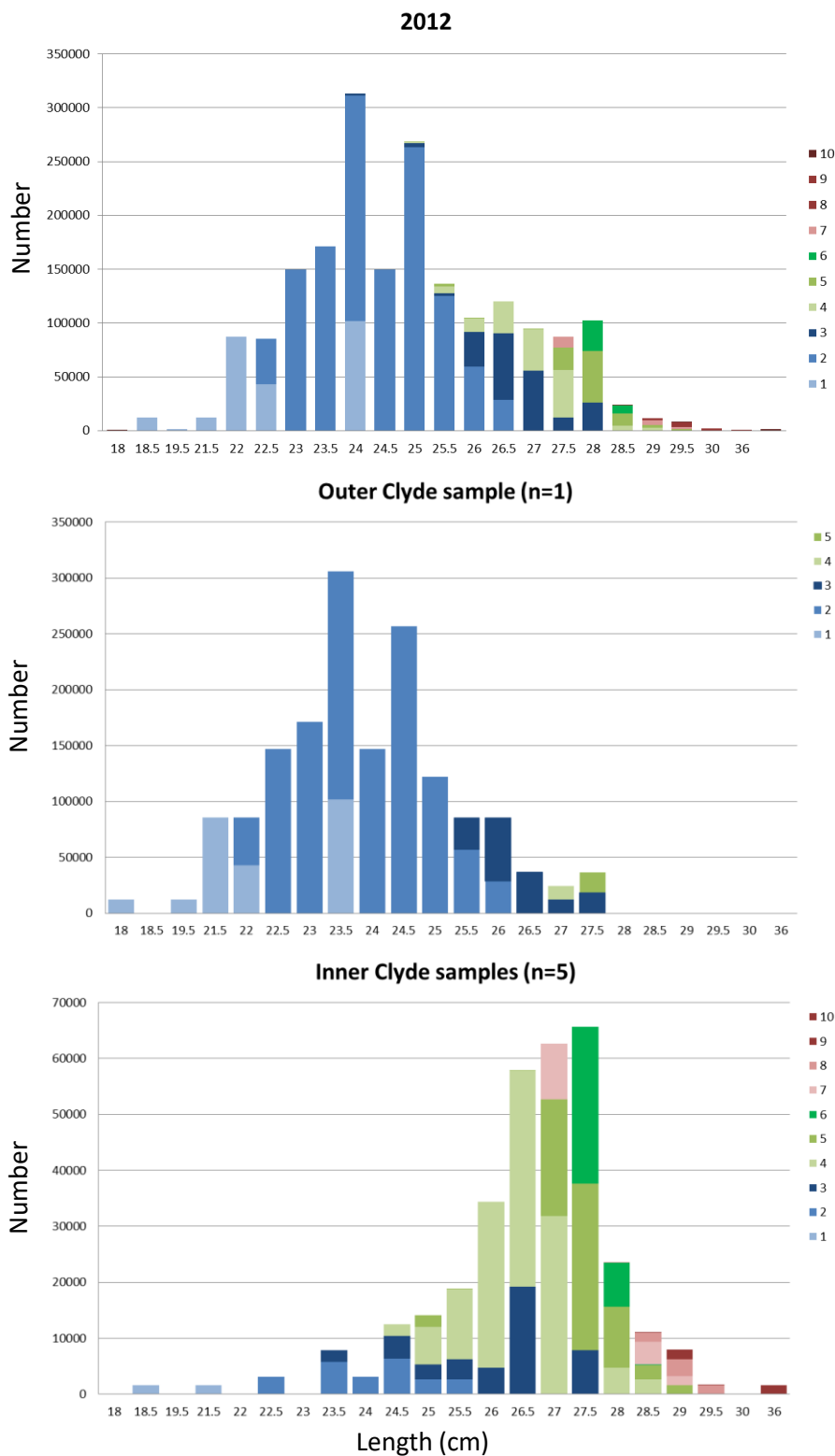


Figure 4. Herring from the Firth of Clyde. Raised numbers at length and age in 2012 landings. Colour coding of vertical bars indicates the proportion of each age at a given length as indicated by colours in the legend. Top panel shows the combined raised samples, middle and bottom panels show the composition of landings from the inner and outer Clyde.

In 2013 the fishery was very small, with only 21 tonnes of registered landings (Table 1). Half of the 4 trips carried out by Scottish vessels were sampled (Table 2). A total of 420 herring were measured and 280 fish were aged.

Fish ranged from 11.5 to 29 cm, with a modal length of 27 cm that was similar to previous years. Landings were dominated by age 5 fish (35%, Figure 5).

Since 2013 there has only been one official landing of Clyde herring, in 2021 a single landing of 180 tonnes was landed into Belfast by a Northern Irish vessel, however no samples were provided by the vessel. Therefore no landings sample data for this year are presented.

From the three years of landings samples available, the proportion of herring older than age 5 tends to be low. Landings are dominated by different ages over the three years (Figure 6), although the sample data in 2012 are dominated by the one large landing in the outer Clyde. Length against age plots (Figure 7) suggests a fairly rapid growth in the first few years followed by slower growth over a protracted period. This plot does not fully track the growth of individual year classes and should be treated as a preliminary analysis. The data from the three years available are in good agreement with one another.

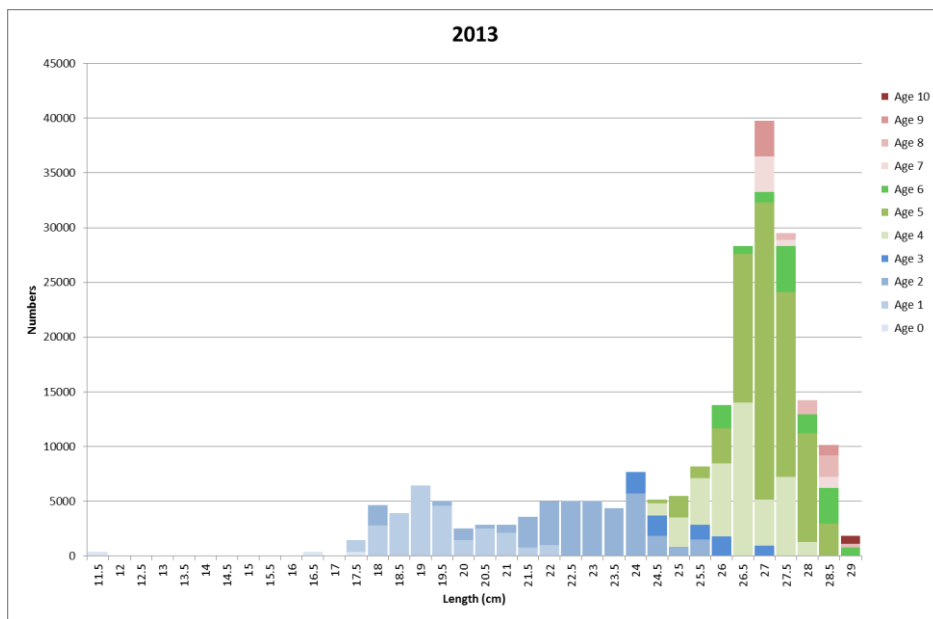


Figure 5. Herring from the Firth of Clyde. Raised numbers at length and age in 2013 landings. Colour coding of vertical bars indicates the proportion of each age at a given length as indicated by colours in the legend.

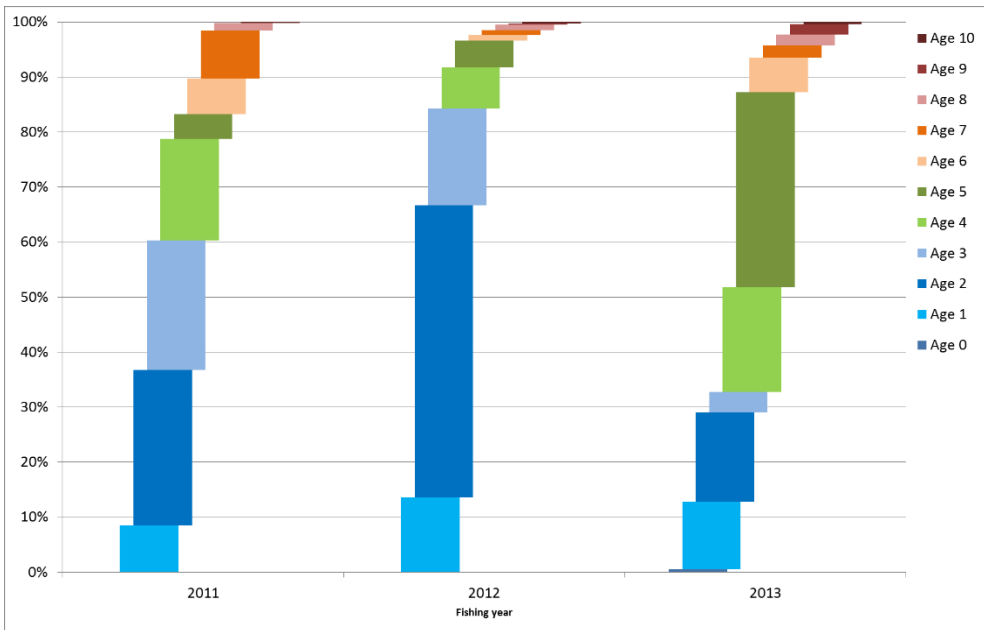


Figure 6. Herring from the Firth of Clyde. Proportion of raised numbers at age in 2011 – 2013 commercial landings.

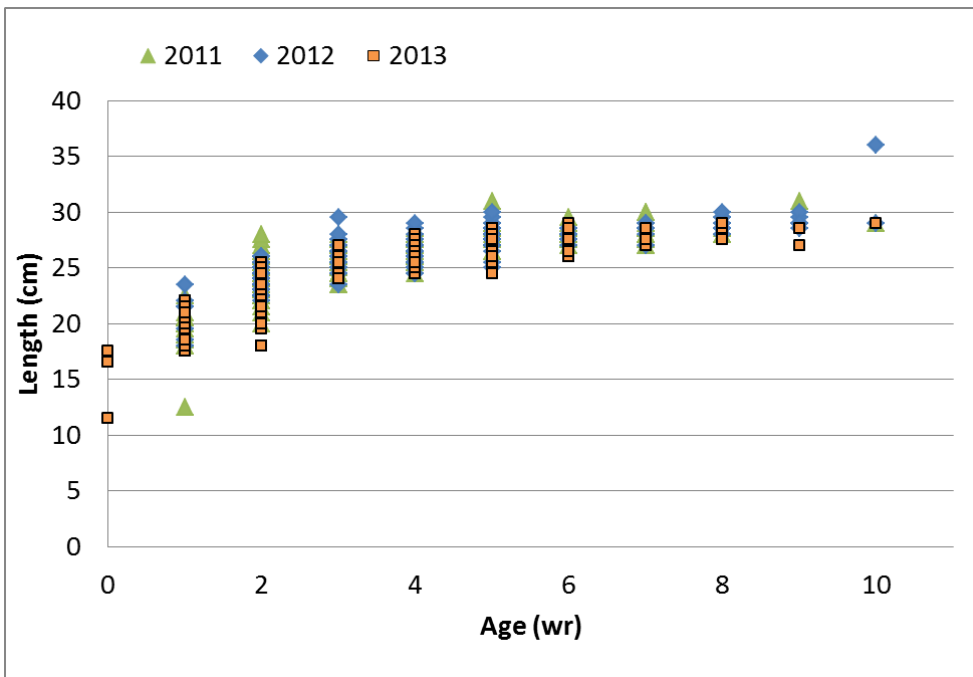


Figure 7. Herring from the Firth of Clyde. Length against age (winter rings) plot for individuals landed commercially in 2011 – 2013.

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.

6.4 Discard Data

Examination of the dataset held by MS suggests there has not been consistent sampling of herring discards in the Clyde throughout the timeseries. Until 1988 discards were estimated but from 1989 to 2008, discard levels are unknown (Table 1). From 2009 -2019, discard estimates from the *Nephrops* fishery are available from observer trips. It should be noted that there are relatively few trips sampled each year, so estimates are highly variable. There have been no observer trips since 2019 due to the Covid-19 pandemic, so estimates in the most recent years are not available. Estimates of discards from 2012 - 2019 have been low compared to earlier years and historical levels (Figure 8).

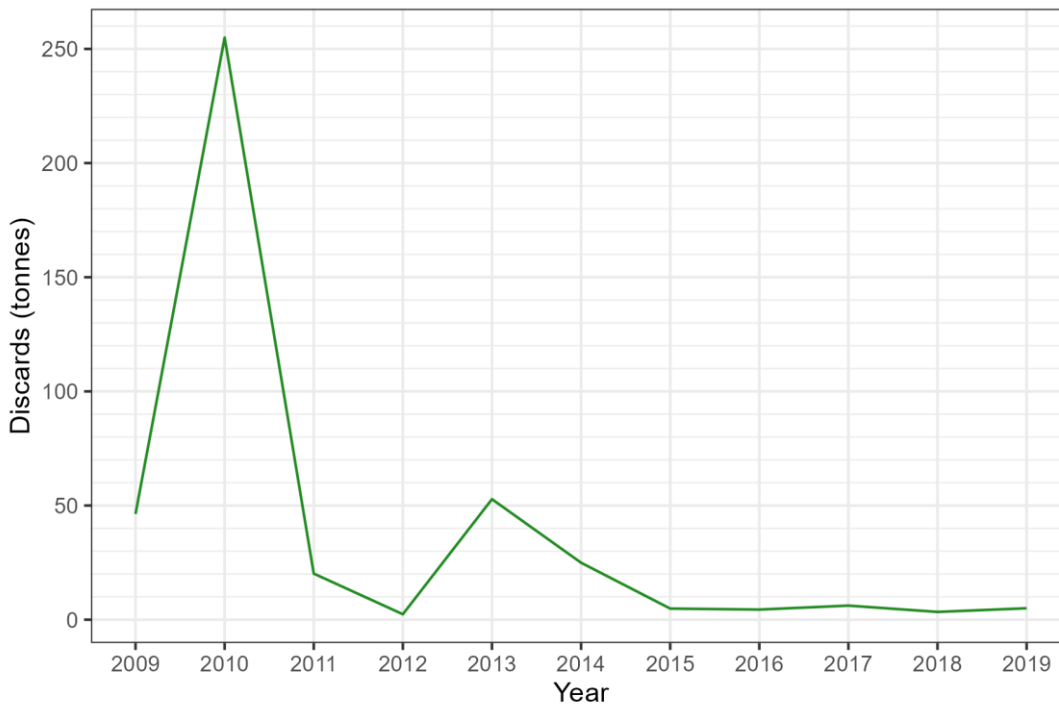


Figure 8. Discards of Clyde herring from the Nephrops fishery 2009 – 2019. Note that there are relatively few trips sampled each year, so estimates are highly variable.

Discards from 2009 – 2019 are dominated by small herring (Figure 9), and are often smaller in size than herring sampled from the commercial sampling programme (Figures 3 - 5). It is possible that the *Nephrops* fishery could have an impact on juvenile herring that have not yet matured and had the opportunity to spawn. However, in some years a larger proportion of the herring discarded by the *Nephrops* fishery are of commercial landing size (Figure 9).

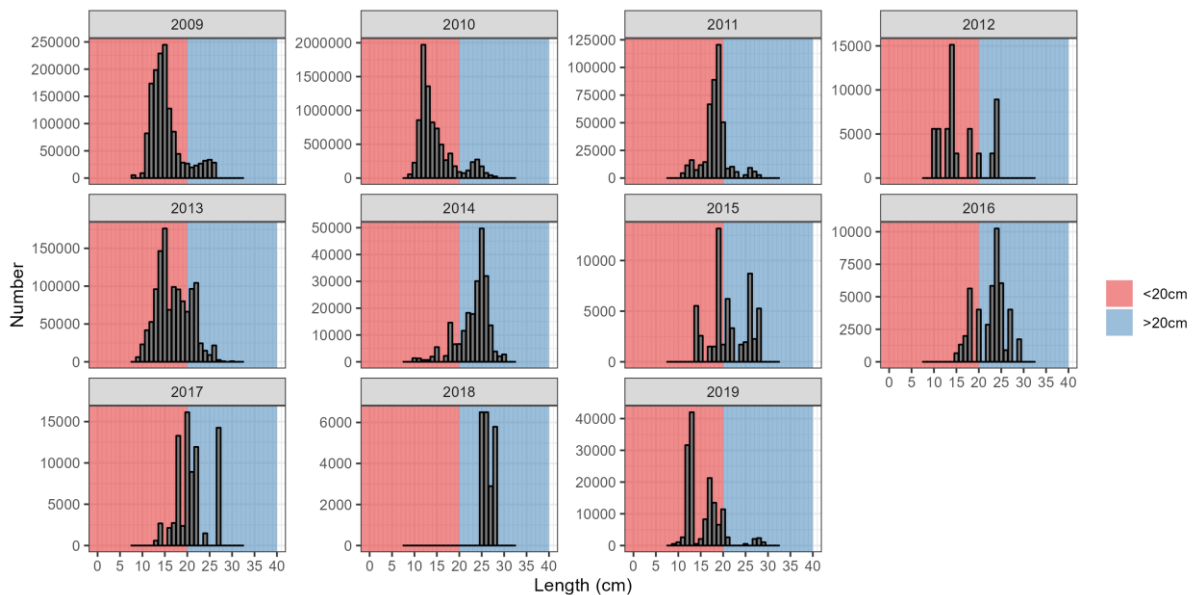


Figure 9. Length frequencies of herring caught as bycatch in the *Nephrops* fishery in the Clyde. Note that there are relatively few trips sampled each year, so estimates are highly variable.

6.5 Survey Data

Historical Surveys

Spring trawl surveys were carried out from 1985 to 1993. Egg surveys were conducted by the FRV “Clupea” during March – April from 1988 to 1993 around Ballantrae Bank and South Arran. These surveys aimed to collect samples of spring-spawning herring in spawning condition and to discover areas of herring spawn on the gravel beds in these areas.

Acoustic Surveys Prior to 2012

Acoustic surveys were carried out in July from 1987 to 1990 and again in 2008 – 2009 (Table 3, Figure 10, Figure 11). These surveys aimed to provide an estimate of age-disaggregated abundance/biomass indices using acoustic equipment alongside pelagic trawls.

The 2008 and 2009 acoustic surveys showed a higher biomass than in earlier years (Figure 10). The biomass was predominately within the boundaries of the Clyde area, and composed solely of aged one and two (juvenile) herring (Figure 11) rather than herring of a size targeted by the fishery (over 20 cm).

Table 3. Estimated numbers (millions) 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

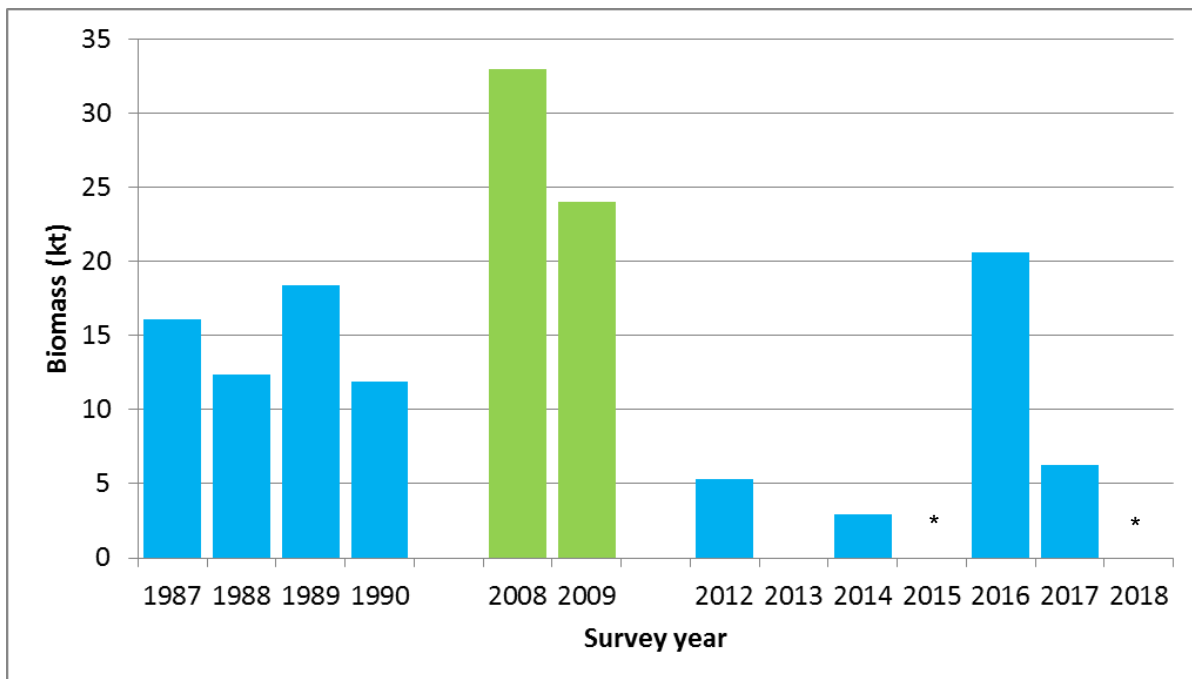


Figure 10. Time series of herring biomass in Clyde acoustic surveys. Surveys represented by blue bars were carried out by Marine Scotland Science, while surveys represented by green bars were conducted by AFBI (Northern Ireland). Surveys 1987 – 2009 were carried out in July, surveys from 2012 onwards were carried out in October/November. Note there was no survey in 2013 due to vessel breakdown. *Total biomass results are unavailable for 2015 and 2018.

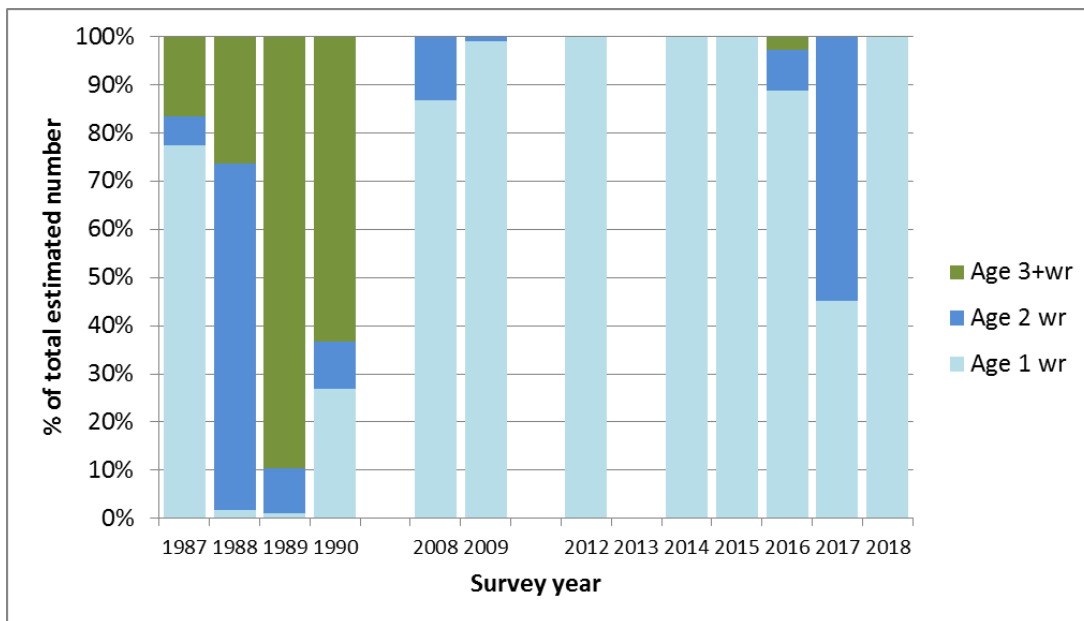


Figure 11. Age composition of herring in Clyde acoustic surveys historic and recent. Surveys 1987 – 2009 were carried out in July, surveys from 2012 onwards were carried out in October/November. Surveys in 2008/2009 were conducted by AFBI, other surveys were conducted by Marine Scotland Science. Note there was no survey in 2013 due to vessel breakdown. Age composition of 2015 and 2018 is known even though total biomass estimates are not available. Age 0 fish have been excluded for consistency as these were not reported quantitatively in the earlier surveys.

Acoustic Surveys 2012 – 2018

A new series of pelagic acoustic surveys in the Clyde were carried out each October between 2012 and 2018, apart from 2013 where the survey was cancelled due to vessel breakdown (Figure 10). In 2015 and 2018 intermittent faults with the 38kHz transducer meant that it was not possible to estimate total biomass for these years. Information on size and age composition are still available for those years (Figure 11).

The size and capabilities of survey vessels used in the older and more recent surveys are comparable, as are the methods used. However, there are differences in season (summer vs winter survey) and total area covered. Given that the fishery has mainly taken place during the early winter it was deemed more appropriate to conduct acoustic surveys that coincide with the fishery when acoustic surveys resumed in 2012. While the lack of adult herring in the more recent surveys is not a product of changes in survey approach, the results are not directly comparable.

Distributions of herring in the surveys were similar between years, with the majority of herring encountered in the inner Clyde to the west and south of the Isle of Bute and in the deeper parts to the east and southeast of Arran. Apart from 2016, biomass estimates in recent years are significantly lower than estimates from the previous survey series (Figure 10). Contrasting earlier surveys, herring biomass in more recent years is almost entirely composed of immature herring (Figure 11).

No acoustic surveys have taken place since 2018.

Bottom Trawl Survey Data

Marine Scotland carries out two annual bottom trawl surveys in West of Scotland waters, with stations in the Firth of Clyde. The time series extends back from 1986 and 1997 to 2023 and 2022 for quarter 1 and quarter 4 respectively. In 2022 the quarter 1 survey was cancelled due to a vessel mechanical breakdown. While bottom trawl surveys are not ideal for capturing the dynamics of a pelagic species such as herring, they provide a long continued time series and are sometimes included in stock assessments for herring stocks.

An analysis of mean log number per standard tow reveals that the mean catch rate of herring in the Clyde remains low, and uncertainty around these figures remains high due to the low number of tows carried out each year (Figure 12). 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 this survey does not operate.

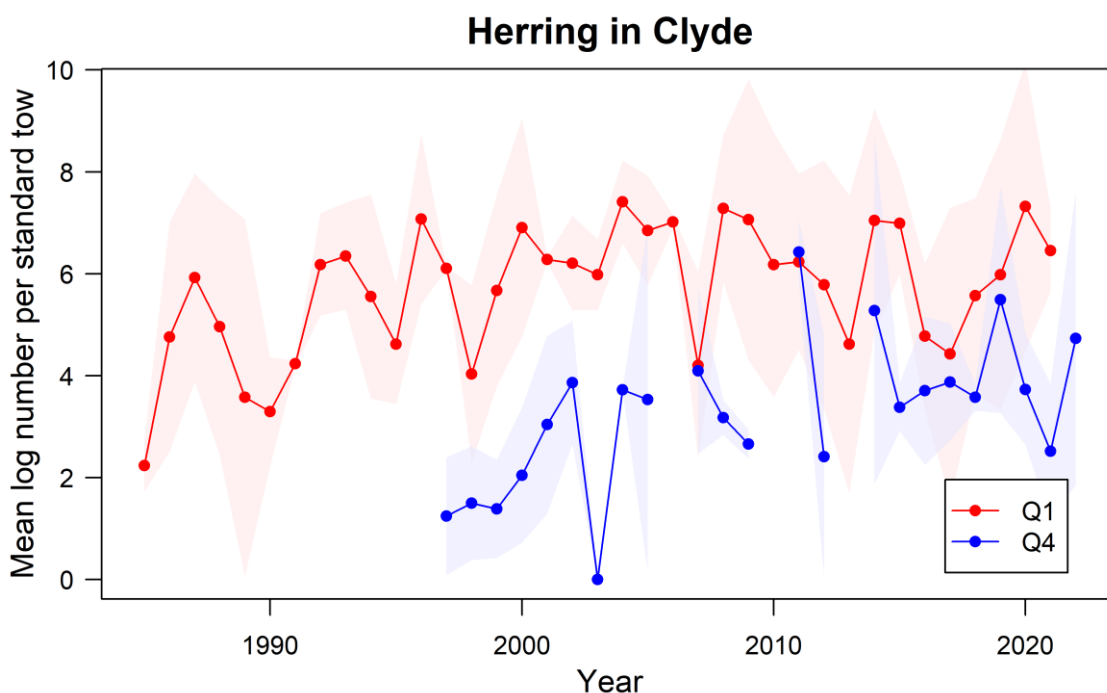


Figure 12. Mean log number per standard tow of herring in the Clyde from bottom trawl surveys in Quarters 1 and 4. Note that this is based on low sample sizes (2 – 4) hauls per year in the Clyde and bootstrapping has been used to calculate confidence intervals. Gaps refer to years where no survey took place.

An analysis of the spatial distribution of catches in the IBTS surveys suggests that herring are not evenly distributed throughout the Clyde, but have a patchy distribution. Therefore the stock perception can be strongly influenced from year to year depending on whether a large haul, such as those seen in Ayr Bay some years, is taken (Figure 13, Figure 14).

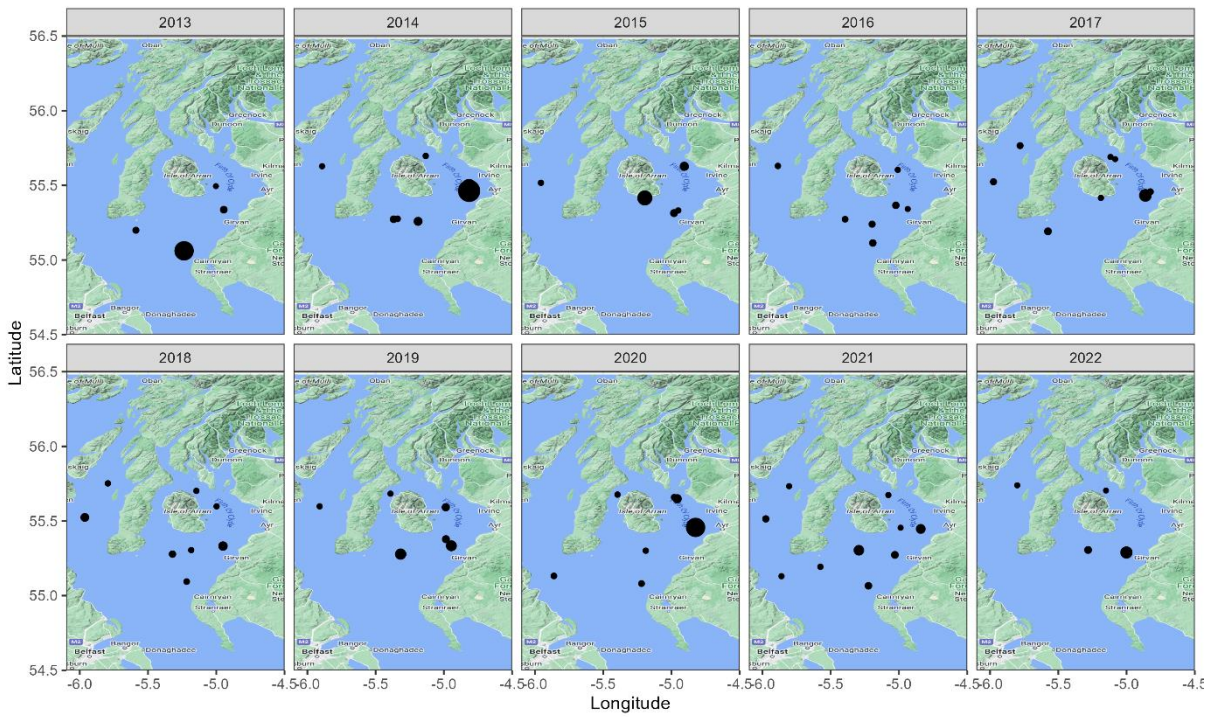


Figure 13. Herring haul weight on IBTS tows, 2013 to 2022 in the Clyde area (ICES rectangles 39-40 E4 & E5). Note no survey took place in quarter 4 2013 and quarter 1 2022.

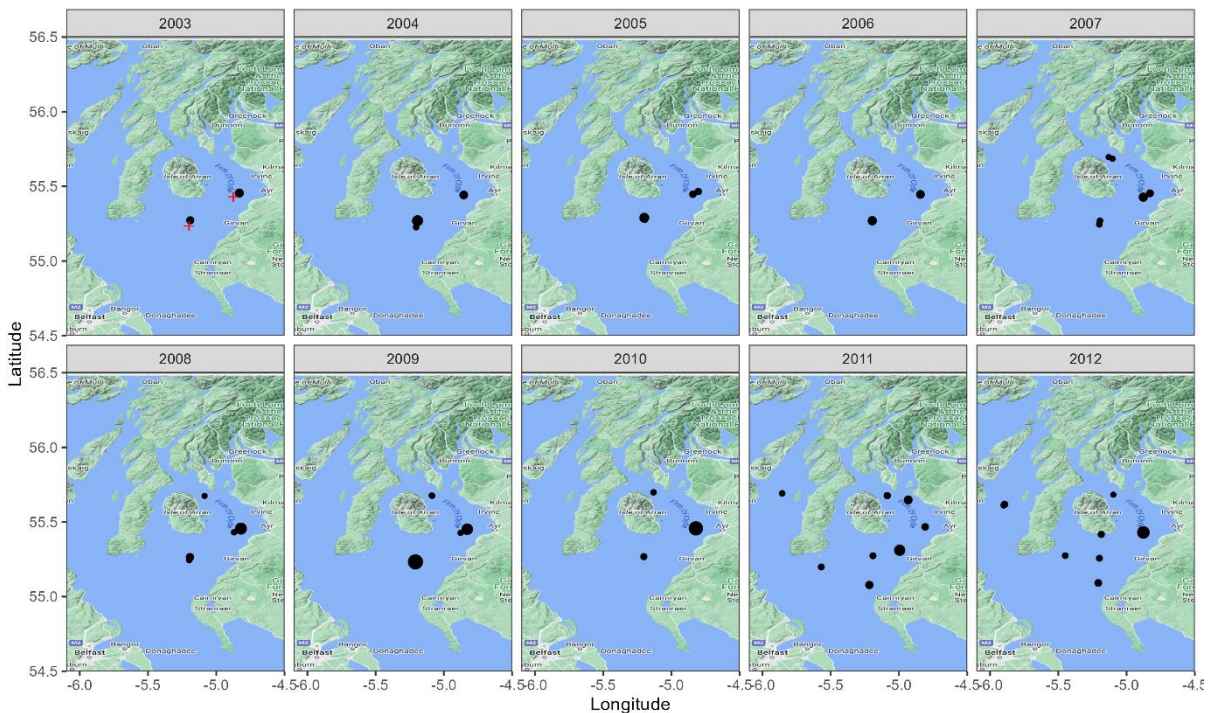


Figure 14. Herring haul weight on IBTS tows, 2003 to 2012 in the Clyde area (ICES rectangles 39-40 E4 & E5). Note no survey took place in, quarter 4 2006 and quarter 4 2010. No herring were caught in quarter 4 2003 and zero hauls are represented by red crosses.

An analysis of the length-frequencies of herring from IBTS catches shows the Clyde herring stock being dominated by small fish in the 0 – 2 age range with very few older, typically larger fish being observed, particularly in recent years (Figure 15 – Figure 18).

With a minimum landing size of 20 cm in place for this area, it is likely that a fishery targeting herring in the Clyde would encounter significant quantities of undersize fish.

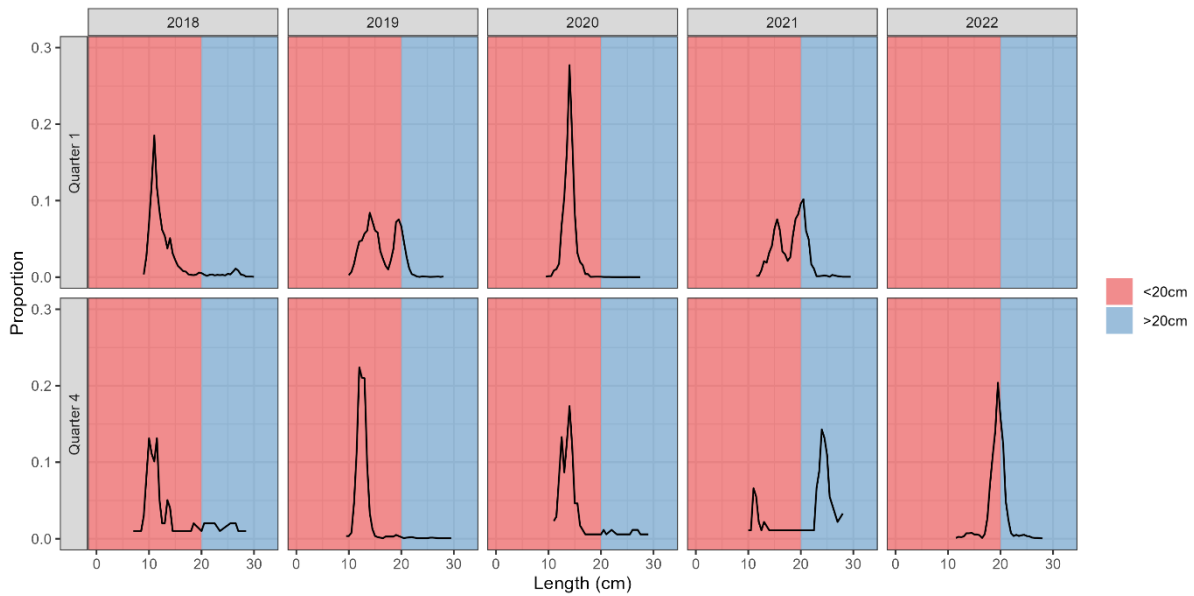


Figure 15. Proportion of herring at length from IBTS catches in quarter 1 and quarter 4, 2018 - 2022. Note there was no survey in quarter 1 during 2022.

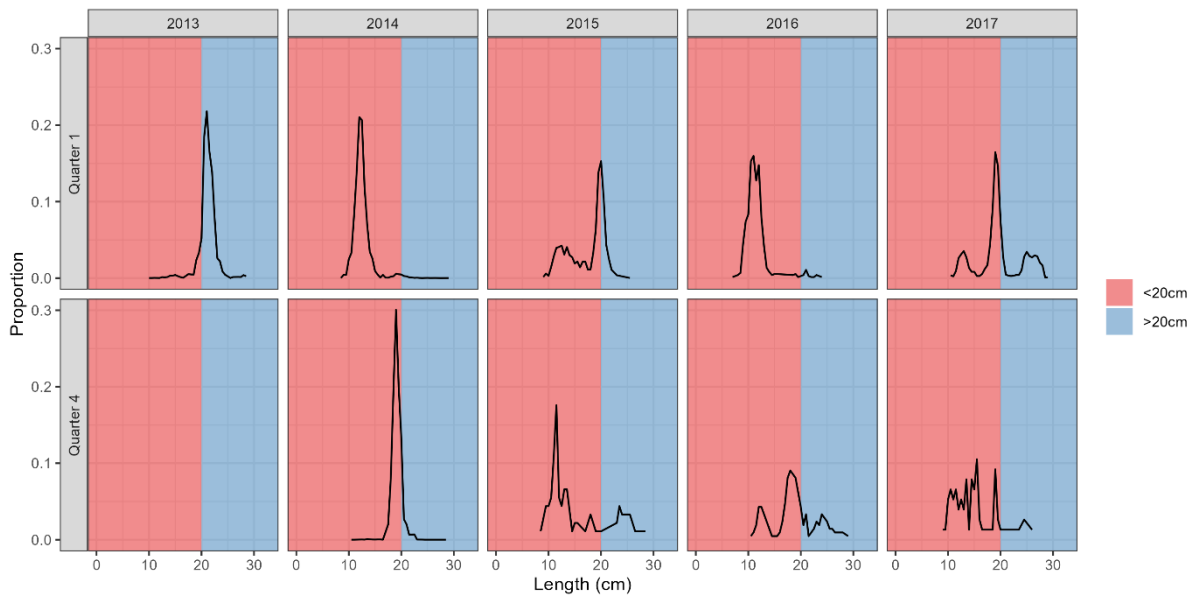


Figure 16. Proportion of herring at length from IBTS catches in quarter 1 and quarter 4, 2013 - 2017. Note there was no survey in quarter 4 during 2013.

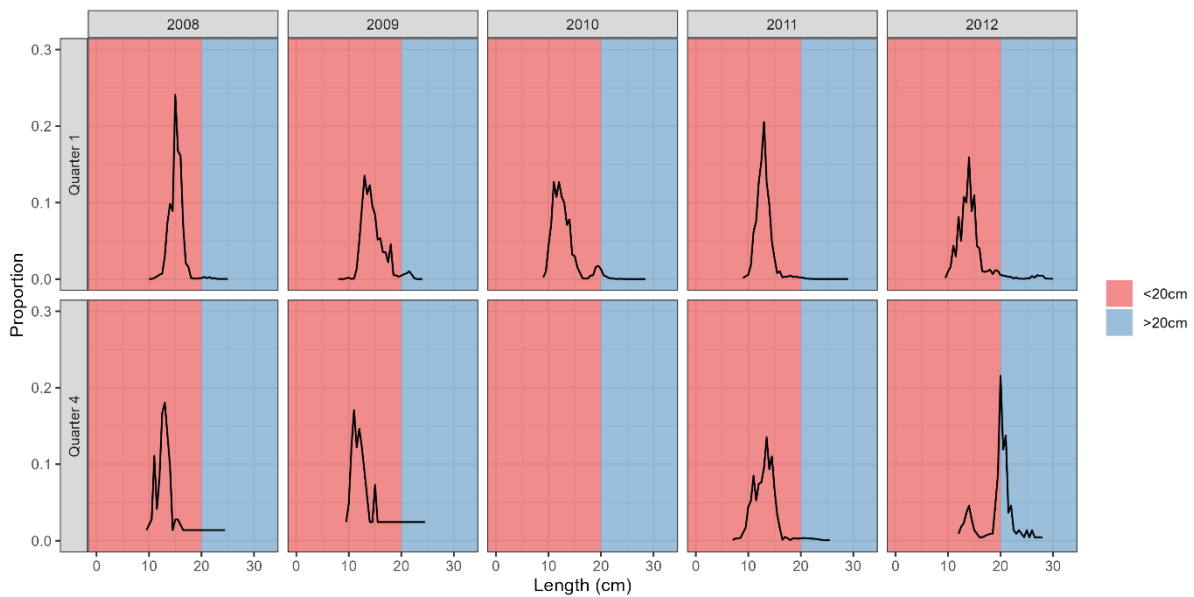


Figure 17. Proportion of herring at length from IBTS catches in quarter 1 and quarter 4, 2008 - 2012. Note there was no survey in quarter 4 during 2010.

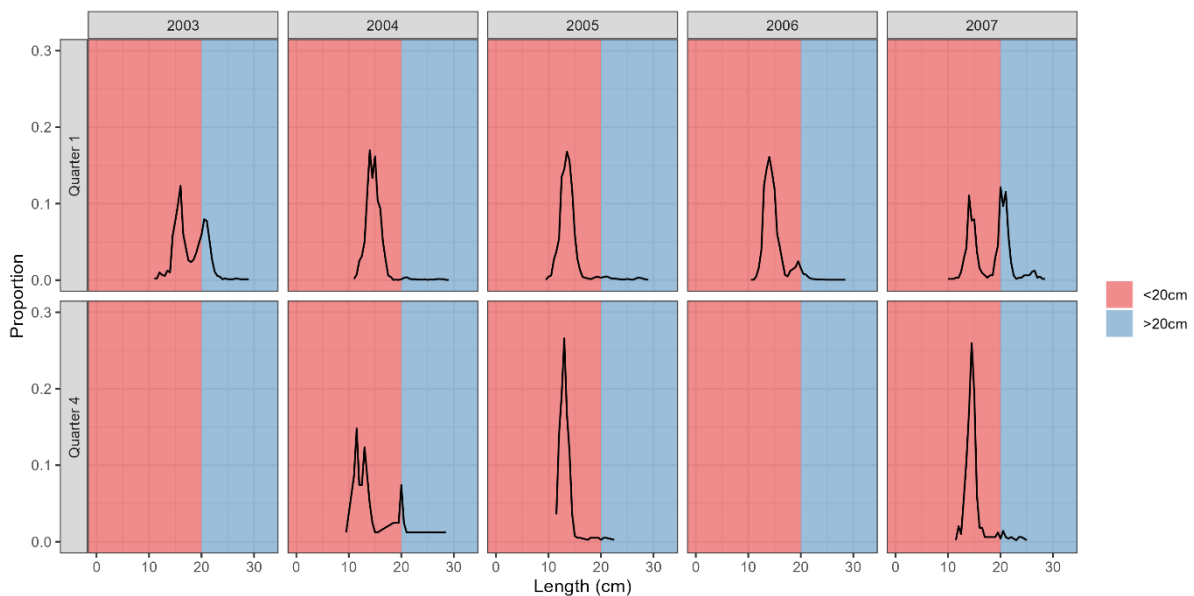


Figure 18. Proportion of herring at length from IBTS catches in quarter 1 and quarter 4, 2003 - 2007. Note there was no survey in quarter 4 during 2006. No herring were caught during the quarter 4 2003 survey.

6.6 Assessments

The last analytical assessment for Clyde herring was performed in 1990.

6.7 Industry Perception

The commercial samples taken from 2011 – 2013 indicate that a significant portion of the landed fish were age 4 or older. The failure of the 2012 – 2018 surveys to capture these adult fish that form the basis of 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 MS survey vessel to practically survey or deploy fishing gear due to its size. There were additional concerns that the acoustic surveys were carried out during the day while adult herring are perceived by fishers to rise off the bottom at night time, becoming easier to detect and catch. The difference in the timing of the fishery and acoustic surveys (particularly the summer surveys of 2008 and 2009) was discussed as a potential cause of differences in perception due to a possible migration of adult herring into the Clyde after completion of the survey. The timing of the fishery does not appear to be guided by the availability of large herring, but rather the 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.

6.8 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 – 1990; Table 3) in the Firth of Clyde were carried out in similar fashion to the more recent surveys but did not have problems locating and sampling schools of larger adult herring.

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

It is possible to some extent that this is due to differences in the fishing practices employed between commercial and research vessels. The commercial catches are mainly taken in very shallow water inaccessible 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 acoustic survey (confirmed in the bottom trawl survey that year) 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 predominately 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). With the improvements in genetic testing for stock management a longer term aspiration could be to try and address this knowledge gap via genetic analysis.

It is not possible to estimate Maximum Sustainable Yield (MSY) from the 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 surveys in 2021 and the loss of the quarter 1 bottom trawl survey in 2022 warranted continued conservative management of this resource. Given the poor state of several of the herring stocks to the west of the British Isles and the high likelihood that juvenile herring in the Clyde are from one or more of these stocks, consideration should be given to continue to offer protection for those herring in the Clyde so as to not adversely impact neighbouring stocks.

In light of the available data, there is no evidence to indicate that stocks have significantly decreased since 2021, the last year for which Q1 survey data was available. There is also no evidence to support an increase in the TAC above the 2021 level. Similarly, there is no strong case for further reducing the TAC as long as the strict control measures (section 5) already in place remain enforced. Efforts should be taken to ensure catches by vessels in the Clyde are properly sampled, and fishers should ensure compliance with the measures specific to this fishery.

7. Consultation period and responses to the consultation

Responding to this Consultation

We are inviting responses to this consultation by 09 June.

Please respond to this consultation using the Scottish Government's consultation hub, Citizen Space (<http://consult.gov.scot>). Access and respond to this consultation online at <https://consult.gov.scot/marine-scotland/clyde-herring-tac-2023>. You can save and return to your responses while the consultation is still open. Please ensure that consultation responses are submitted before the closing date of 09 June.

If you are unable to respond using our consultation hub, please complete the Respondent Information Form (section 8) and return by email to clydeherring@gov.scot.

Handling your response

If you respond using the consultation hub, you will be directed to the About You page before submitting your response. Please indicate how you wish your response to be handled and, in particular, whether you are content for your response to be published. If you ask for your response not to be published, we will regard it as confidential, and we will treat it accordingly.

All respondents should be aware that the Scottish Government is subject to the provisions of the Freedom of Information (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.

If you are unable to respond via Citizen Space, please complete and return the Respondent Information Form included in this document.

To find out how we handle your personal data, please see the privacy information below, and the Scottish Government privacy policy: <https://www.gov.scot/privacy/>.

Next steps in the process

Where respondents have given permission for their response to be made public, and after we have checked that they contain no potentially defamatory material, responses will be made available to the public at <http://consult.gov.scot>. If you use the consultation hub to respond, you will receive a copy of your response via email.

Following the closing date, all responses will be analysed and considered along with any other available evidence to help us. Responses will be published where we have been given permission to do so. An analysis report will also be made available.

Comments and complaints

If you have any comments about how this consultation exercise has been conducted, please send them to the contact address above.

Scottish Government consultation process

Consultation is an essential part of the policymaking process. It gives us the opportunity to consider your opinion and expertise on a proposed area of work.

You can find all our consultations online: <http://consult.gov.scot>. Each consultation details the issues under consideration, as well as a way for you to give us your views, either online, by email or by post.

Responses will be analysed and used as part of the decision making process, along with a range of other available information and evidence. We will publish a report of this analysis for every consultation. 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 decisions to be made between alternative policy proposals
- be used to finalise legislation before it is implemented

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 policy

Our contact details

The Scottish Government is the data controller for the personal information we process. Personal data in relation to this consultation will be processed by the Marine Directorate.

Scottish Government
St. Andrew's House
Regent Road
Edinburgh
EH1 3DG

Email: clydeherring@gov.scot

The type of personal information we collect, and how and why we collect this information

Through this consultation, we will collect and process the following information provided in responses submitted both through Citizen Space and Respondent Information Forms:

- Personal identifiers, contacts and characteristics (name and email address).
- Any additional personal data included in the free text response.

An email address is a required field as part of any response submitted through Citizen Space or a Respondent Information Form. The collection of an email address within the response allows a confirmation of the consultation response to be sent, and will allow you access your response and change your answers whilst the consultation period is underway.

Following the close of the consultation, an outcome report will be published online. Responses will be published alongside this, in accordance with respondents' expressed publication preferences. Before publication of responses, they will be checked for any

personal data included in the free-text response to the consultation question, and any personally identifiable information will be removed.

Where respondents have given permission for their response to be published, with or without their name, and after the Scottish Government has redacted any defamatory content, consultation responses will be published at <http://consult.gov.scot>.

Under the UK General Data Protection Regulation (UK GDPR), the lawful bases we rely on for processing this information is that we need it to perform a public task.

How we store your personal information

Your information will be securely stored, and retained in line with the Scottish Government retention policy. A review will be carried out after 1 year to decide whether data is still required to be retained, in order to evidence and/or inform policy decisions relating to the consultation. If there is no rationale to justify continuing to hold the data it will be destroyed. If data continues to be held, reviews will be held annually.

Your data protection rights

Under data protection law, you have rights including:

Your right of access - You have the right to ask us for copies of your personal information.

Your right to rectification - You have the right to ask us to rectify personal information you think is inaccurate. You also have the right to ask us to complete information you think is incomplete.

Your right to restriction of processing - You have the right to ask us to restrict the processing of your personal information in certain circumstances.

Your right to object to processing - You have the right to object to the processing of your personal information in certain circumstances.

Your right to data portability - You have the right to ask that we transfer the personal information you gave us to another organisation, or to you, in certain circumstances.

You are not required to pay any charge for exercising your rights. If you make a request, we have one month to respond to you.

Please contact us at dpa@gov.scot if you wish to make a request.

How to complain

If you have any concerns about our use of your personal information, you can make a complaint to us at The Scottish Government DPO.

The DPO's address:

Data Protection Officer
Victoria Quay
Commercial Street

Edinburgh
EH6 6QQ

Email: DataProtectionOfficer@gov.scot

You can also complain to the ICO if you are unhappy with how we have used your data.

The ICO's address:

Information Commissioner's Office
Wycliffe House
Water Lane
Wilmslow
Cheshire
SK9 5AF

Helpline number: 0303 123 1113

ICO website: <https://www.ico.org.uk>

8. Respondent Information Form

Please Note this form **must** be completed and returned with your response.

To find out how we handle your personal data, please see our privacy policy:

<https://www.gov.scot/privacy/>

Are you responding as an individual or an organisation?

- Individual
 Organisation

Full name or organisation's name

Phone number

Address

Postcode

Email Address

The Scottish Government would like your permission to publish your consultation response. Please indicate your publishing preference:

- Publish response with name
 Publish response only (without name)
 Do not publish response

Information for organisations:

The option 'Publish response only (without name)' is available for individual respondents only. If this option is selected, the organisation name will still be published.

If you choose the option 'Do not publish response', your organisation name may still be listed as having responded to the consultation in, for example, the analysis report.

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?

- Yes
 No

What is your view on the proposed TAC level for Clyde herring in 2023?



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Any enquiries regarding this publication should be sent to us at

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