Report of the 2024 Coastal States Working Group on the distribution of blue whiting (*Micromesistius poutassou*) in the Northeast Atlantic

October 2024

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1. Introduction

At the Coastal States meeting on 20 – 21 October 2020 between the European Union, the Faroe Islands, Iceland and Norway, the Norwegian delegation was encouraged to start a process to update the "Report from the NEAFC Working Group on Collating Information on the Distribution of All Life Stages of Blue Whiting in the North-East Atlantic and the Distribution of Catches from the Stock", in the same form as decided for the Norwegian spring spawning herring in 2019. Due to the Covid pandemic the work was postponed one year, and it was revisited at the CS meeting on 25 – 26 October 2021 in London. The delegations then agreed to establish a Working Group to update the report from NEAFC in 2013. The report has been annually updated since 2022.

1.1. Terms of Reference

As stated in the agreed record of conclusions of fisheries consultations between the Faroe Islands, the European Union, Iceland, Norway and the United Kingdom on the management of blue whiting in the North-East Atlantic in 2023, the delegations agreed to update the 'Report of the 2023 Coastal States Working Group on the distribution of blue whiting in the Northeast Atlantic' in 2024. The working group in 2024 has been co-chaired by the United Kingdom and Iceland.

1.2. Approach of the present group

The present report relies on standardised information in the form of output from internationally and nationally coordinated surveys. The international surveys are organized within the ICES Working Group of International Pelagic Surveys (WGIPS). This does not include national surveys. Surveys provide snapshots of biomass/abundance distribution of the different life stages at a specific point in time and space, but the integrated nature of their analysis will give distribution maps within the survey period. The present report contains survey information from 2010 - 2024. All surveys provide information on juvenile and mature blue whiting and are conducted annually. The international surveys target blue whiting while most of the national surveys do not (Table 4.1). Further, the national surveys coverage is usually limited to only one (national) zone, therefore, international surveys are considered primary data sources and the national surveys secondary sources (where details can be found in the annex A1 of the 2023 Costal States report: Anon, 2023). Due to the lack of systematic information the working group chose to avoid interpolation between survey periods or combining surveys with different survey designs/strategies. The maps and tables provide some guidance as to the within year rate of change in distribution among zones.

The working group issued a data call for catch data (see Annex A2) where it was kindly requested that Parties provided information on their respective catches of blue whiting for the period 2023 with a deadline of 6th July 2024. The data call on catch data was sent to the Coastal States and Fishing Parties on 13th March 2024, detailing the format needed for the catch submissions (Annex A2). Most of the parties responded on time. As in 2023, there was no submission of data from Russia.

2. Background

2.1. Life cycle and distribution

Blue whiting (*Micromesistius poutas*sou) is a small pelagic gadoid which is widely distributed in the Northeast Atlantic (Monstad, 1990) (Figure 2.1.1). The geographical range of blue whiting extends from the Gulf of Cadiz to Svalbard and into the Barents Sea, between southeast Greenland and the Kola Peninsula (Bailey, 1982; Zilanov, 1984; Monstad, 1990). The highest concentrations of the blue whiting are found along the continental shelf edge in areas west of the British Isles and on the Rockall Bank plateau, where it occurs in large schools in the spawning season. It is also present in most other management areas between the Barents Sea and the Strait of Gibraltar and westward into the Irminger Sea.
The main spawning area for blue whiting is along the shelf edge and the banks west of the British Isles and the spawning period ranges from January to June. Spawning takes place in the water column at depths between 300 – 600 m. Spawning starts in the south of the species range and ending in the north, with the majority of spawning occurring in March and April. Spawning is also found to take place in several other areas, such as along the Norwegian coast, in Faroese and Icelandic waters, in the Bay of Biscay and further south along the Iberian shelf edge.
Following spawning, the eggs and larvae located in more southern areas, such as the Porcupine Bank (west of Ireland), can drift both towards the south and north, depending on the spawning location, oceanographic conditions, and the effects of wind forcing. The eggs and larvae originating from the northern spawning area west of the Hebrides, drift northwards. The northward drift disperses most of the larval blue whiting into the Norwegian Sea and adjacent areas e.g., Icelandic waters, Faroese waters, North Sea, and the Barents Sea. The larvae settle in autumn in deeper shelf areas and stay mostly associated with the bottom during their first winter or longer. Over a period, covering two to three years, they become part of the mature stock. The southwards drifting larvae end up as juveniles in the Bay of Biscay and along the Iberian Peninsula.
Juveniles (age 0 - 2) are widely distributed, from the Iberian Peninsula in the south, to the Barents Sea and west to the Irminger Sea in the north. In times of high abundance, the Norwegian Sea is considered to be an important nursery area and they can also be found in large quantities in adjacent waters, such as the Barents Sea and in Icelandic and Faroes waters, and into the Norwegian Deep in the North Sea.
Mature blue whiting annually undertakes a seasonal migration between feeding and spawning areas. During late autumn/early winter, mature blue whiting aggregate in the continental slope areas north and east of the Faroes. From here they commence their spawning migration southwards to the banks and shelf edge west of the British Isles. After spawning, the feeding migrations start either northwards into Norwegian Sea and adjacent areas or southwards along the continental shelf of mainland Europe.
Stock identity of the blue whiting stock is an ongoing topic of discussion as morphological, physiological, and genetic studies suggests the existence of two stocks that co-occur in the spawning area west of the British Isles (ICES, 2012). However, for the purpose of the stock assessment, the blue whiting population is treated as a single stock as agreed in the last benchmark after reviewing all information available at that time (ICES, 2012). Due to the large population size, its considerable migratory capabilities and wide spatial distribution, the stock identity and population dynamics require more research effort to determine the stock structure.
Blue whiting distribution in the north Atlantic is shown in Figure 2.1.1.

3. Methods

3.1. Internationally coordinated surveys (IBWSS, IESNS, IESSNS)

In this report the software StoX is used to produce estimates of blue whiting biomass by EEZ from survey data. This software is used as the estimation procedure in several ICES coordinated international surveys including the International Ecosystem Surveys in the Nordic Seas (IESNS), the International Blue Whiting Spawning Stock survey (IBWSS), and the International Ecosystem Summer Survey in the Nordic Seas (IESSNS). For full details of StoX please see Anon (2022), section 3.1.

3.2. Catches

The data call issued for the current report included a request that catch per rectangle data also contained information on catch zone (EEZ). This has been consistent since the update in 2022. The data submitted to this data call contained 2023 catch data from all countries involved in the fishery, except Russia and France. In addition, Greenland submitted updated catches for 2022, and Lithuania and Poland for 2021 and 2022. Spain submitted catch data since 2021 as they did not respond to the data call last year.

There were nine incidents where catch data was not submitted with associated EEZ. In these cases, the same approach as used in the 2013 report was applied, where the catches were allocated to zones considering the proportion of the zone in each ICES rectangle (NEAFC, 2013).

It should be also noted that in the catch analyses presented in this report, the UK zone has been considered separately from the EU27 zone, even though the UK was a member of the EU until 2020. The post-hoc separation was carried out to allow for analyses of trends in catches per zone for the new Coastal States arrangement that came into existence at the beginning of 2020. This should be noted when comparing data from the 2013 report to the current report.

The codes used in this report for each of the EEZs or jurisdictional zones are as follows:

Code	Economic Exclusive Zone (EEZ)
EU27	European Union
FRO	Faroe Islands
UK	United Kingdom
GRL	Greenland
INN	International waters in the Norwegian Sea (see figure in Annex A2)
INW	Western International waters (see figure in Annex A2)
ISL	Iceland
NOR	Norway
SJM	Jan Mayen
SVA	Svalbard

4. Results derived from surveys

Twenty-two international and national research surveys conducted during the period 1981–2024 provide information on spatial and temporal variation in distribution and abundance of different life stages of blue whiting (Table 4.1). No singular survey covers the whole stock distribution range of all life history stages. The IBWSS is assumed to cover most of the spawning stock while IESNS and IESSNS cover large parts of the summer feeding distribution range of mature blue whiting and part of the immature stock. National surveys are limited to different parts of the stocks overall range. Total stock biomass and proportion per zone from these three international surveys are displayed in Tables 4.1.1 - 4.3.1.

Below is a short description of the surveys, their main results with regards to inter-annual variation in the spatial distribution of the stock, and conclusions that can be derived from them as well as their limitations.

National surveys which can potentially provide information on blue whiting spatiotemporal distribution are listed in Table 4.1. Further information about some of these surveys can be found in the annex A1 of the 2023 report (Anon, 2023). These additional surveys will be re-added to the report in future updates where required.

Table 4.1. List of surveys analysed in the report and additional ones with information on blue whiting distribution and abundance. Indication is given of whether and how the measured abundance/biomass is representative for the distribution of the life stage. Some surveys may have started earlier, but the first year under consideration in this report is 2010 (the former report includes surveys in the period 1995-2013).

Survey acronym	Survey name/description	Time of year	Life stage	Frequency	Area (ICES Sub-Areas and Divisions)	Year range	Survey type	Complete spatial coverage	Report Section	Comments
Surveys analysed in the report:										
IBWSS	International blue whiting spawning stock survey	March - April	Juveniles /Adults	annual	4, 5, 6, 7, 12	2004-	acoustic	no	4.1	Survey results discarded in 2010. No survey in 2020 due to Covid-19 pandemic. Acoustic surveys have been carried out in March-April on the main spawning grounds west of the British Isles since the early 1980s independently by Norway and Russia. Beginning in 2004 the spawning stock survey effort was internationally coordinated and IBWSS was established.
IESNS	International Ecosystem Survey in Nordic Seas	May - June	Juveniles /Adults	annual	1, 2, 4, 5, 6	1995-	acoustic	no	4.2	Blue whiting is targeted since 2000
IESSNS	International Ecosystem Summer Survey of the Nordic Sea	July - August	Juveniles /Adults	annual	2, 3, 4, 5, , 12, 14	2016-	acoustic	no	4.3	The IESSNS started in 2010, however acoustic recordings of blue whiting were added to IESSNS in 2016.

Table 4.1. (cont.)

Additional surveys:									
FO-GFS-Q1	Faroese demersal spring survey	February-March	Juveniles/ Adults	annual	5b1	1996-	swept-area trawl survey	no	A1.1[1]
FO-GFS-Q3	Faroese demersal autumn survey	August	Juveniles/ Adults	annual	5b1	1983-	swept-area trawl survey	no	A1.1[1]
IS-GFS-Q1	Icelandic bottom trawl survey in spring (SMB)	March	Juveniles/ Adults	annual	5a (shelf areas within the Icelandic EEZ)	1985-	Bottom trawl	no	A1.2[1]
IS-GFS-Q3	Icelandic bottom trawl survey in fall (SMH)	October	Juveniles/ Adults	annual	5a (shelf areas within the Icelandic EEZ)	1996-	Bottom trawl	no	A1.2[1]
PT-PGFS-Q4	Portuguese groundfish bottom trawl survey	Q4 - Autumn	Juveniles/ Adults	annual	9a	1990-	Bottom trawl	no	A1.4[1]
PT-Crust-BTS	Portuguese *Nephrops* bottom trawl survey	Q3 - Summer	Juveniles/ Adults	annual	9a (Portuguese southern and southwestern coast)	1997-	Bottom trawl	no	A1.4[1]
BS-NoRu-Q1 (BTr)/Eco-NoRu-Q1(Aco)	Norwegian bottom trawl survey in the Barents Sea	Q1 - February	Juveniles/ Adults	annual	Barents Sea (1, 2a)	1981-	Bottom trawl/ Acoustic	no	A1.5[1]

[1] Details available in annex of 2023 CS report (Anon, 2023).

Table 4.1. (cont.)

NDSK	Norwegian shrimp survey in Skagerrak – Norwegian Deep	Q1 – January - February	Juveniles/Adults	annual	North Sea and Skagerrak (4a, 3a)	1984-	Bottom trawl	no	A1.6[1]	
SCO_DEEP	Scottish Deepwater Survey	Q3- September	Juveniles/ Adults	biennial	Northwest of Ireland, along the shelf slope, to the north of Scotland (ICES 6a) below the shelf break (>500m)	1998 -	Bottom trawl	no	A1.3[1]	Formerly annual during 2000s. Biennial since 2013.
ARSA-autumn	Bottom trawl survey for the assessment of abundance of demersal stocks in the Gulf of Cadiz	Q4- October	Juveniles/Adults	annual	27.9.a.S	1993, 1997-	Bottom trawl	no	-	In 2021 the survey was not carried out
ARSA-spring	Bottom trawl survey for the assessment of abundance of demersal stocks in the Gulf of Cadiz	Q1- March	Juveniles/Adults	annual	27.9.a.S	1992-	Bottom trawl	no	-	In 2003 and 2021 the survey was not carried out

CAREVA	Ichthyoplankton survey for the assessment of the Atlantic mackerel stock through the Annual/Daily Egg Production Method	Mar-Apr	eggs/larvae	triennial	27.8.abcd-9.a.N	2016-	Icthyoplankton	no	-	There is currently evidence that samples of blue whiting eggs and larvae are collected during this survey, although neither their presence nor their annual abundance have been analysed so far, because the survey targets Atlantic mackerel. Survey started in 1992 but samples of blue whiting are available since 2016
DEMERSALES	Bottom trawl survey for the assessment of abundance of demersal stocks	Q4-September - October	Juveniles/Adults	annual	27.8.c-9.a.N	1983-	Bottom trawl	no	-	
IBERAS	International acoustic survey for the assessment of the strength of the sardine and anchovy recruitment	Q3/4-September-October	Juveniles/Adults	annual	27.9.a	2018-	Acoustic/ Pelagic trawl	no	-	
Spanish pre-IBWSS	Spanish pre-International blue whiting spawning stock survey	Q1 – February-March	Juveniles/Adults	annual	27.7.c,k,h,j	2018, 2029, 2022	Acoustic/ Pelagic trawl	no	-	Preliminary surveys to test the methodology before being part of IBWSS. Data in 2021 and from 2023 onwards is included in IBWSS
JUREVA	Ichthyoplankton survey for the assessment of the horse mackerel stock through the Annual Egg Production Method	March-April	Eggs/Larvae	triennial	27.8.abcd-9.a.N	2016-	Icthyoplankton	no	-	There is currently evidence that samples of blue whiting eggs and larvae are collected during this survey, although neither their presence nor their annual abundance have been analysed so far, because the survey targets Horse mackerel. Survey started in 1992 but samples of blue whiting are available since 2016

PELACUS	Pelagic Acoustic survey in NW and N Spanish Waters	March-April	Juveniles/Adults	annual	27.8.c-9.a.N	1991-	Acoustic/ Pelagic trawl	no	-	
PORCUPINE	Bottom trawl survey for the assessment of abundance of demersal stocks in the Porcupine Bank	Q3-September - October	Juveniles/Adults	annual	27.7.c,k,h,j	2001-	Bottom trawl	no	-	
SAREVA	Ichthyoplankton survey for the assessment of the sardine stock through the Daily Egg Production Method	Q1/2-March-April	eggs/larvae	triennial	27.8.abcd-9.a.N	1997-	Icthyoplankton	no	-	There is currently evidence that samples of blue whiting eggs and larvae are collected during this survey, although neither their presence nor their annual abundance have been analysed so far, because the survey targets Iberian sardine
PELGAS	Acoustic survey, coordinated by Ifremer	May	Adults		27.8abd	2000-	Acoustic/pelagic trawl	no	-	Annual survey coordinated internationally with other similar surveys through ICES WGACEGG. Provides spatial density distribution, biomass estimate and length distributions. Main target of survey are anchovy and sardine.
ROCKALL	Scottish Rockall Survey (old)	Q3	Juveniles/Adults	Irregular	27.6b	1999-2009	Bottom trawl (GOV)	no	-	Survey conducted in 1999, 2001-2003, and 2005-2009. Provides numbers at length.
SCOROC	Scottish Rockall Survey (new)	Q3	Juveniles/Adults	Annual	27.6b	2011-	Bottom trawl (GOV)	no	-	Provides numbers at length, and total catch weight per haul.

IE-IGFS	Irish Groundfish Survey	Q4	Juveniles/Adults	Annual	27.6a-7bgj	2003-	Bottom trawl (GOV)	no	-	Provides numbers at length, age-length sampling, and total catch weight per haul.
SWC-IBTS	Scottish Western Coast Survey (old)	Q1 and Q4	Juveniles/Adults	Annual	27.6a	1985-2010	Bottom trawl (GOV)	no	-	Q1 survey from 1985-2010, Q4 survey from 1990-2009. Provides numbers at length.
SCOWCGFS	Scottish West Coast Groundfish Survey (new)	Q1 and Q4	Juveniles/Adults	Annual	27.6a	2011-	Bottom trawl (GOV)	no	-	Provides numbers at length and total catch weight per haul.
EVHOE	French Southern Atlantic Bottom Trawl Survey	Q4	Juveniles/Adults		27.7fghj-8ab	1997-	Bottom trawl (GOV)	no	-	Provides numbers at length and total catch weight per haul.

4.1. International Blue Whiting Spawning Stock survey (IBWSS)

The IBWSS survey was established in 2004 and is carried out annually, the exception being 2020 when no survey was carried out due to the Covid-19 pandemic. Blue whiting was a target species of the survey since 2000, although the estimates from the survey in 2010 was discarded from the assessment due to bad coverage of the stock. The survey is run in March/April by vessels from Russia (2010 - 2015), Norway, Ireland, Faroes, the Netherlands, and Spain (since 2021), and is coordinated by ICES survey planning groups (PGNAPES and then WGIPS since 2012). The survey aims to acoustically determine the distribution and abundance at age and length of the Northeast Atlantic blue whiting stock during the spawning season at the main spawning grounds located west of the British Isles. During the survey, biological sampling with a pelagic trawl, is used to verify the species and age composition of the acoustic backscatter values. Annual estimates (excluding 2010 and 2020) of abundance for ages 1 - 8 are used in the ICES assessment of the stock.
The resulting spatial biomass distributions in the period 2010 – 2024 are shown in Figures 4.1.1 - 4.1.13. Relative estimated blue whiting biomass and average proportions per EEZ are shown in Table 4.1.1. The blue whiting stock is mainly divided between EU (Irish) and UK waters during this survey and the average relative distribution by EEZ is EU 53.7%, UK 36%, Faroes 6.5%, the Special Area zone between UK and Faroes 2.8%, and in the International west zone 1%. It should be pointed out, however, that these relative proportions are only valid for the area and period covered by the survey.

4.2. International Ecosystem Survey in the Nordic Seas (IESNS)

The International Ecosystem Survey in the Nordic Seas is aimed at observing the pelagic ecosystem, focusing on herring, blue whiting, zooplankton, and hydrography. The survey, carried out in late April and May since 1995, is coordinated by ICES survey planning groups (PGNAPES and currently WGIPS) and is a cooperative effort by Faroes, Iceland, Norway, Russia, and since 1998 the EU (Denmark, Germany, Ireland, The Netherlands, Sweden, and UK) with the UK starting its own contribution from 2022. The survey covered a larger area in the period 2010 - 2016 than in the following years. The main difference was that the Icelandic part of the surveys included the shelf areas off the west and south of Iceland until 2016. This area was not included in the original survey estimate but is taken into account in the current report. The eastern part of the Norwegian Sea is assumed to be an important nursery area for blue whiting and the samples are dominated by immature fish, especially in years when strong recruitment occurs.
The resulting spatial biomass distributions are shown in Figures 4.2.1 - 4.2.15. Percentage of estimated blue whiting biomass and average proportions per EEZ are shown in Table 4.2.1. The table shows that the average relative biomass is distributed inside the EEZ of Norway (52.2%), Faroes (16.9%) and Iceland (12.8%), and less in other EEZs.

4.3. International Ecosystem Summer Survey in the Nordic Seas (IESSNS)

The International Ecosystem Summer Survey in the Nordic Seas was initiated in 2004 by Norway and has since been gradually expanded in geographical coverage, especially from 2010 and onwards with participation of vessels from Iceland and the Faroes in addition to two vessels from Norway and in the most recent years vessels from Greenland and Denmark (EU27). The IESSNS survey is also coordinated by ICES survey planning groups (PGNAPES and currently WGIPS), similar to IESNS. The original main objective of the survey was to study abundance and distribution of Northeast Atlantic mackerel (*Scomber scombrus*) with swept-area methods in relation to oceanographic conditions, and prey communities. From 2016, the main objective was expanded to also include investigations on blue whiting and NSS herring (*Clupea harengus*) with acoustic methods, thus this report contains data from the period 2016 – 2024.

The resulting spatial biomass distributions are shown in Figures 4.3.1 - 4.3.9. The percentage of estimated blue whiting biomass and average proportions per EEZ are shown in Table 4.3.1. The table outlines that the average relative biomass within the area surveyed is distributed inside the EEZ of Norway (32%), Faroes (27.6%), International area (Banana hole, 15.2%) and Iceland (10.6%), and less in other EEZs. This survey covers the main summer feeding area of the mature stock in the northeast Atlantic.

5. Results derived from catches

5.1. Overview of submitted data

To update the distribution maps of the catches for the period 2010 - 2023, a request was formulated on catch data by year, month, ICES statistical square (0.5° latitude, 1° longitude) and by exclusive economic zone (EEZ) and international waters to the nations fishing for blue whiting. The deadline for submission of the 2023 catch data was set to 6th July 2024. All but two countries delivered their catch data in time to be included in the report. The level of detail of the catch data was in line with the request, i.e., catches reported by year, month, zone, and ICES rectangle. In a few observations where the zone was not reported, the catches were allocated to zones considering the proportion of the zone in each ICES rectangle. Russian catches in 2021, 2022 and 2023 have not been reported to this working group and therefore catch tables and figures presented here are missing these data. France did not submit 2023 catch data in time for this report and therefore it is also missing.

The catches reported to this Working Group were compared with the ICES catch estimates (Figure 5.4.1). The temporal pattern of the catch was the same with both data sources although the annual catch submitted to this working group was slightly higher than the ICES data until 2020. Annual catches reported to this working group as a percentage of catches reported to ICES varied from 99% to 104% for the period 2010-2020 and from 86% to 90% for the period 2021-2023. The highest differences found between data sources since 2021 were due to the missing data from Russia in the dataset compiled by this working group.

5.2. Description of the Fishery

During the period from 2010 to 2023 covered in this report, 16 national fleets have been involved in the blue whiting fisheries. The bulk of the catch is caught with large pelagic trawlers, some with capacity to process or freeze on board while others pump the fish into refrigerated seawater (RSW) tanks. The fishery is mainly centred around the 1st and 2nd quarter of the year. During the first 1st quarter the catches are taken in the area west of the British Isles, on the Rockall and Hatton Banks and around the Faroe Islands. In these areas the fishing fleet is generally catching the spawning aggregations of blue whiting, and the largest quantity is taken at these locations. In the following quarters, catches are taken further north in the Norwegian Sea, Icelandic waters, and the North Sea. Catches from the southern area off Spain and Portugal are usually more evenly distributed throughout the year. For details on the spatio-temporal pattern of the fishery see the annual report of ICES Working Group on Widely Distributed Stocks (ICES, 2024).

The spatial distribution of the commercial catch during a full seasonal cycle often do not necessarily reflect the annual changes in distribution of the stock. The location of the fishery can be complex and subject to numerous factors over and above where the stock is located e.g., targeting high concentrations at limited times of the year, market demand, profitability, availability of other pelagic stocks, access limitations to certain zones, etc.

5.3. Zonal patterns

Interannually, relative catches of blue whiting fluctuate by year for all zones (Figure 5.3.1, Figure 5.3.2, Table 5.3.1). The four zones that contribute the most to blue whiting catches since 2010 are the Faroe

Islands, EU27, UK and western international waters. More than 30% of the total catches are annually taken from Faroese waters (with the exception of 2011 with 28.1%) for the studied period (2010 - 2023), with an average proportion of 41% in the last three years. Catches from EU27 fluctuated throughout the period but have increased from 15.5% in 2015 to 25.3% in 2023. The proportions of catches taken in the UK EEZ and the Western international waters have fluctuated with no trend, being the average for the studied period 14.3% and 14.9%, respectively. Nevertheless, there was a significant drop of the relative catches taken from the Western international waters in 2022 (1.4%). Relative catches from the other EEZs have been considerably lower throughout the study period with a combined average of around 7% in the last three years. It must be noted that the relative catches by zone in the last three years are biased because of the missing catch data from Russia. In the past, Russia mainly fished in the Faroese and western and northern international waters (57% 11% and 32% of their catch for the period 2016-2020, respectively). Assuming that catches from Russia have continued being significant (12% of the total catch in 2016-2020. See table 5.4.1), the inclusion of Russian and French data would probably modify the proportions by zone presented here.

5.4. Interannual and seasonal patterns

Over the period 2010 to 2023 blue whiting catches varied interannually. Observed combined catches show an initial drop from 2010 to 2011, where the recorded catches are the lowest for all countries (Table 5.4.1). From this overall low in 2011 (104,000 tonnes) the combined catches show a general increase until 2018 (1.7 million tonnes), with a small dip in 2016 to
1.2 million tonnes. After the highest reported combined catches in 2018, a small decline is followed by a plateau in 2020 followed by a drop in both 2021 and 2022. In 2023 landings have again increased to levels seen in 2019 and 2020 (Figure 5.4.1).
The changes observed in the seasonal pattern since the fishery began in the late 1970s is depicted in Figure 5.4.2 showing the percentage distribution of the fishery by month for each year since 1977 to 2023 and in Annex 1 where maps of the fishery per year and per month are shown. In the start of the period most of the catches were taken in April - May, but the “peak catch” time has gradually moved towards earlier in the year. In recent years the main fishery has been conducted in March - April. Another trend is a gradual decrease in the proportion taken in the latter half of the year; in the earlier years this proportion was much larger.

5.5. Monthly trends

For the period 2010 to 2023, more than 50% of the annual blue whiting catches are caught during the peak of the fishery in March and April (Figures 5.5.1, 5.5.2.). During July to November catches are small but start to pick up again in December/January.
The annual pattern has been stable over the period 2010 to 2023, with a steady build and decay of catches in the first six months of the year with peak catches between April and March, and very few relative catches in the second half of the year (Figure 5.5.1). Looking further back, peak catches have consistently been between March and April (Figure 5.4.2), however historically the second half of the year has been of some importance, e.g., 1977 - 1981 around 10% of catches per month June - October. Historical windows also show greater variation between years than the most recent window e.g., in April between 1997 and 2001 the percentage importance of this month varied ~ 20% compared to being almost identical between 2017 and 2023 (Figure 5.4.2).

6. Discussion and conclusions

The ‘Terms of Reference’ required updating the ‘Report of the 2023 Coastal States Working Group on the distribution of blue whiting in the Northeast Atlantic’ in 2024" to include the most recent data on blue whiting distribution (i.e. 2023 catch data and 2024 survey data).
The international surveys cover much of the stock over the spawning period and the summer feeding period. Unfortunately, as is to be expected of the surveys, they do not, and mostly probably never will,

encompass the whole distributional area of a particular stage in the life history. The working group is of the opinion that each of the surveys provides a representative, overall, view of the stock distribution at the time of the survey. The principal caveat is that there will be an unknown proportion of the stock which is elsewhere, and this must be considered when utilising the results presented in this report. The national surveys provide a view of stock distribution for a part of the stock at particular times of year and should be viewed as such.
In this report catches in the years 2010 - 2023 have been compiled by years, months and EEZs. Spatial distribution maps have been made by using these data. It is clear that these maps cannot be directly used as evidence for blue whiting biomass distribution as catch data depend on a number of factors that influence fleets' behaviour such as agreements for quota allocation, access to national EEZs, market prices, availability of other pelagic stocks, etc. In addition, catches from Russia have not been reported to this working group since 2021 and from France – in 2023, therefore bias is expected in the relative catch by zone or month presented here.
The working group has compiled and systematized the available data from different surveys on the distribution of the blue whiting stock and the catch statistics from the fishery. Although much of the survey data is not designed to cover the total stock, and the catch data often are results of quota and access agreement, the working group is of the opinion that overall, the report gives a relevant general picture of the temporal and spatial (zonal) distribution of the blue whiting stock in the period 2010- 2023, even though it can't be quantified in proportion of biomass per zone.

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8. Tables

Table 4.1.1. Total blue whiting stock biomass and biomass proportion (%) by EEZ during the International blue whiting Spawning Stock survey (IBWSS) west of the British Isles in March/April. No valid survey in 2010 and no survey conducted in 2020.

Year	FRO	UK	UK/FRO	EU27	INW	TSB (1000 t)
2010	No Valid Survey					
2011	4.3	68.6	13.9	13.3	0.0	1 950
2012	6.0	57.3	7.6	29.1	0.1	2 414
2013	8.9	47.1	2.7	40.5	0.8	3 300
2014	6.7	21.2	1.8	68.0	2.3	4 166
2015	15.8	33.0	2.1	46.6	2.4	1 666
2016	10.6	37.3	2.4	45.0	4.7	3 077
2017	4.5	42.2	0.9	52.2	0.3	3 143
2018	4.6	35.9	0.7	58.4	0.4	4 285
2019	3.0	36.3	0.4	60.0	0.4	4 636
2020	No Survey	-	-	-	-	-
2021	3.6	13.6	0.2	82.6	0.0	3 579
2022	9.2	15.1	1.9	73.4	0.4	2 658
2023	4.1	19.6	1.1	74.5	0.7	3 754
2024	3.2	40.8	1.1	54.8	0.2	3 169
Average	**6.5**	**36.0**	**2.8**	**53.7**	**1.0**	

Table 4.2.1. Total blue whiting stock biomass and biomass proportion (%) by EEZ during the International ecosystem survey in the Nordic Seas (IESNS) in May/June.

Year	FRO	ISL	INN	SJM	NOR	SVA	UK	TSB (1000 t)
2010	60.6	8.3	1.5	0.6	21.8	0.8	6.4	120
2011	25.0	33.3	4.5	0.0	29.6	1.1	6.4	431
2012	11.1	22.2	8.7	0.3	51.1	1.6	5.0	967
2013	10.7	24.8	10.3	0.3	52.4	0.8	0.7	1 161
2014	24.1	24.2	6.8	0.3	37.2	0.3	7.0	837
2015	13.0	24.0	8.7	1.0	47.3	0.5	5.5	1 206
2016	17.8	10.5	8.9	1.0	52.4	1.4	8.0	1 523
2017	21.6	8.6	9.2	1.5	53.6	0.9	4.6	916
2018	19.0	2.0	10.8	2.5	57.9	0.0	7.8	496
2019	10.3	8.0	7.6	0.0	65.2	0.7	8.1	497
2020	4.4	3.4	3.6	0.1	78.3	0.3	9.9	369
2021	7.6	2.2	11.0	0.4	64.0	0.1	14.7	872
2022	12.1	3.1	7.8	0.4	62.3	0.1	14.1	1 507
2023	12.2	9.1	13.6	1.0	50.3	0.3	13.5	1 019
2024	3.6	8.0	13.9	2.7	59.4	0.8	11.6	754
Average	**16.9**	**12.8**	**8.5**	**0.8**	**52.2**	**0.6**	**8.2**	

Table 4.3.1. Total blue whiting stock biomass and biomass proportion (%) by EEZ during the International ecosystem summer survey in the Nordic Seas (IESSNS) in July/August.

Year	FRO	GRL	ISL	INN	INW	SJM	NOR	SVA	UK	UK/FRO	TSB (1000 t)
2016	27.7	0.0	17.6	12.4	0.0	2.6	32.9	2.1	4.5	0.0	2 473
2017	40.0	0.7	11.4	14.8	0.1	4.4	22.2	3.0	3.5	0.0	2 995
2018	33.7	0.0	16.3	13.6	0.3	4.7	24.3	3.5	2.9	0.7	2 077
2019	19.2	0.0	14.2	18.6	1.0	4.6	33.0	1.4	6.5	1.5	1 950
2020	23.1	0.0	6.2	16.0	0.0	4.0	30.2	2.1	17.1	1.3	1 791
2021	29.0	0.0	9.3	10.3	0.0	3.1	34.2	2.2	11.9	0.0	2 159
2022	26.0	0.0	7.3	14.9	0.0	3.3	36.1	4.9	7.6	0.0	2 236
2023	24.6	0.0	6.8	16.9	0.0	2.2	39.7	3.6	6.3	0.0	1 990
2024	24.7	0.0	6.7	19.1	0.0	3.2	35.7	2.9	7.6	0.0	1 933
Average	**27.6**	**0.1**	**10.6**	**15.2**	**0.2**	**3.6**	**32.0**	**2.8**	**7.6**	**0.4**	

Table 5.3.1 Proportion (%) of catches of blue whiting by Exclusive Economic Zone (EEZ) from 2010 – 2023. Catch proportions of 0 were present for certain zones (NOR, EU27, RUS) across the full time series and were thus removed from the table. * Note that French catches in 2023 and Russian catches since 2021 are not included.

Year	EU27	FRO	UK	UK_FRO	GRL	INN	INW	ISL	NOR	SJM	SVA
2010	22.8	33.6	21.0	0.1	0.0	2.8	15.2	1.1	3.2	0.1	0.1
2011	13.3	28.1	8.1	0.1	0.0	12.2	26.2	4.1	7.8	0.0	0.0
2012	26.9	39.2	15.4	0.0	0.1	4.3	11.2	1.4	1.4	0.1	0.0
2013	30.3	39.4	9.4	0.0	0.0	3.0	14.9	1.0	1.5	0.2	0.1
2014	20.0	37.9	18.1	0.0	0.0	1.1	20.0	1.0	1.8	0.1	0.1
2015	15.5	38.4	11.6	4.2	0.0	3.7	20.6	1.4	4.7	0.0	0.0
2016	22.0	44.5	16.6	0.0	0.0	1.0	13.0	0.4	2.6	0.0	0.0
2017	25.9	39.4	16.9	0.0	0.0	1.4	13.0	1.4	2.0	0.0	0.0
2018	25.7	37.1	20.7	0.2	0.0	2.9	9.9	2.1	1.3	0.0	0.0
2019	28.2	34.5	14.6	0.2	0.0	1.6	19.2	0.4	1.4	0.0	0.0
2020	30.1	37.1	14.8	0.0	0.0	1.6	13.7	0.8	1.8	0.0	0.0
2021*	29.6	36.5	13.0	0.0	0.0	0.4	14.4	2.5	3.5	0.0	0.0
2022*	37.6	43.8	9.2	0.7	0.0	0.4	1.4	3.4	3.6	0.0	0.0
2023*	25.3	42.7	10.3	0.0	0.0	0.1	15.3	3.5	2.9	0.0	0.0

Table 5.4.1. Summed catch of blue whiting by country and year in tonnes. All information available by month. * Note that French catches in 2023 and Russian catches since 2021 are not included.

Year	DEU	DNK	ESP	FRA	IRL	LTU	NLD	POL	PRT	SWE	FRO	UK	GRL	ISL	NOR	RUS	Total
2010	9060	169	13578	8763	8300	0	33993	0	1482	1	49979	7972	2493	87910	194318	127963	545980
2011	267	165	2406	4880	1193	0	4574	0	603	1	16405	1441	89	5882	20540	45799	104243
2012	6238	340	6571	5860	7521	0	26118	0	1955	59	43290	9945	2321	63056	118176	88301	379753
2013	11418	2170	14594	16637	13205	0	50285	0	2056	202	85768	13499	2135	104918	196246	120812	633945
2014	24487	35335	24471	22889	21468	4717	38460	0	1304	0	224700	27833	6892	182884	399520	152278	1167239
2015	24107	46209	23881	19320	24763	0	56241	0	1430	58	282502	34345	5620	214870	489439	185759	1408544
2016	20025	39775	22558	18063	26528	1075	57965	0	1551	125	282366	39716	12619	186913	310412	173655	1193347
2017	45523	63612	26022	18410	43223	5300	81094	15889	1625	124	356501	72466	20212	228927	399363	188449	1566741
2018	46526	88332	21797	24435	49813	0	121860	12152	1497	34	349838	74675	23452	292952	438428	170892	1716684
2019	37712	69353	21604	21549	38562	0	67355	27184	2660	44	336568	62177	20043	268351	350974	188006	1512143
2020	41467	61175	22694	17445	39174	11463	62284	47615	2026	79	343372	58681	19613	243725	354033	181501	1506346
2021*	34558	37343	23467	17246	38959	20118	61730	25927	1552	74	202416	73681	23362	190147	233943	NA	984521
2022*	21851	43713	24252	14202	28582	13149	62764	21098	2265	33	217401	50142	19218	191813	194017	NA	904501
2023*	37940	80959	33027	NA	53638	32600	85037	28276	2629	455	394197	100151	26031	292853	390850	NA	1558645

9. Figures

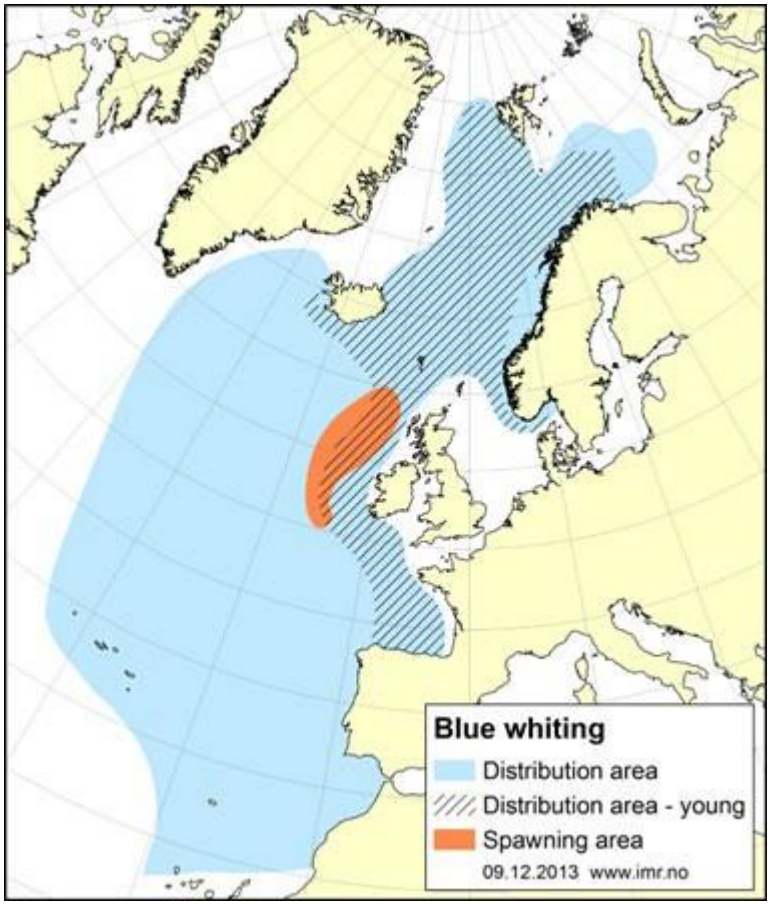


Figure 2.1.1. Distribution of blue whiting in the Northern Atlantic. (Source: www.imr.no)

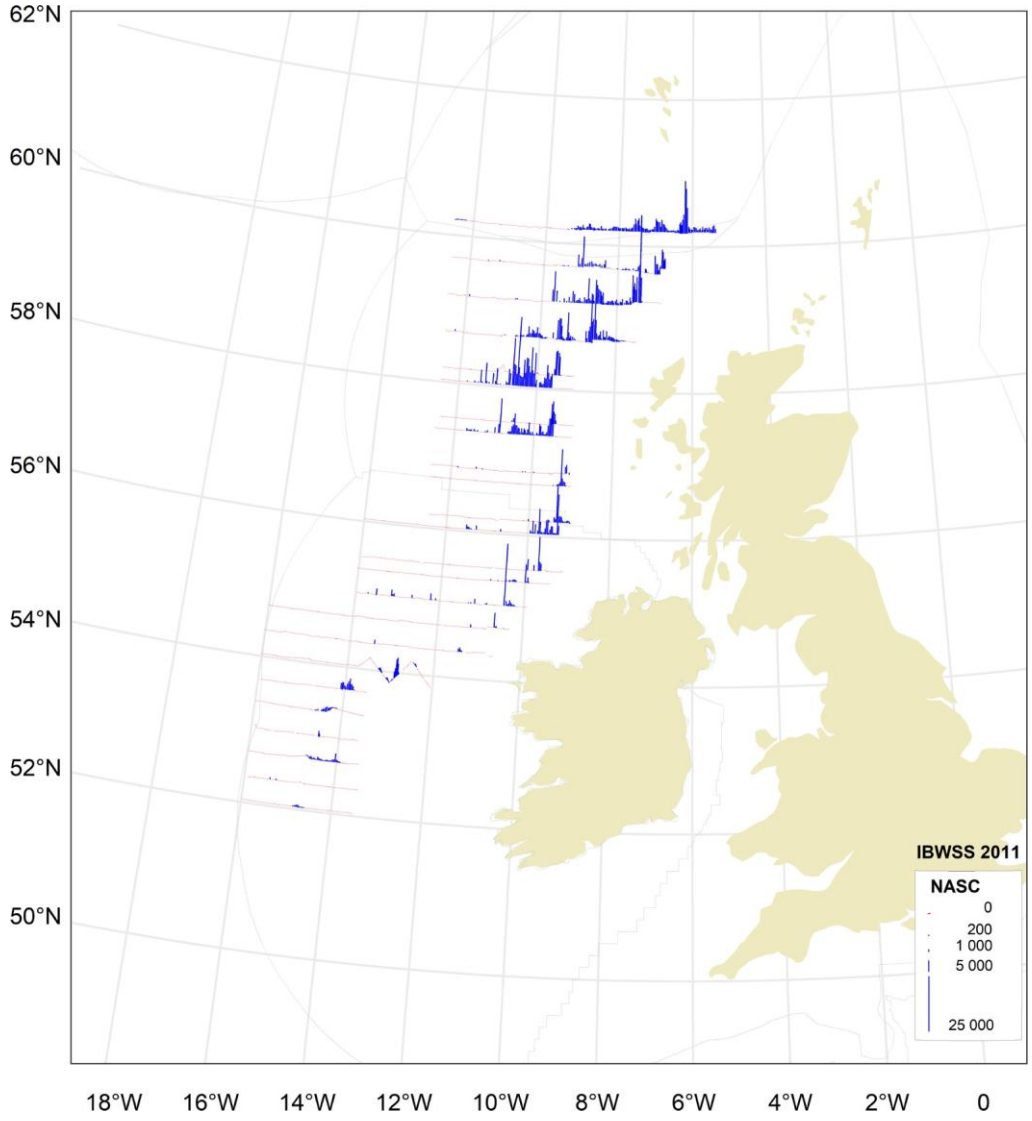


Figure 4.1.1. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2011.

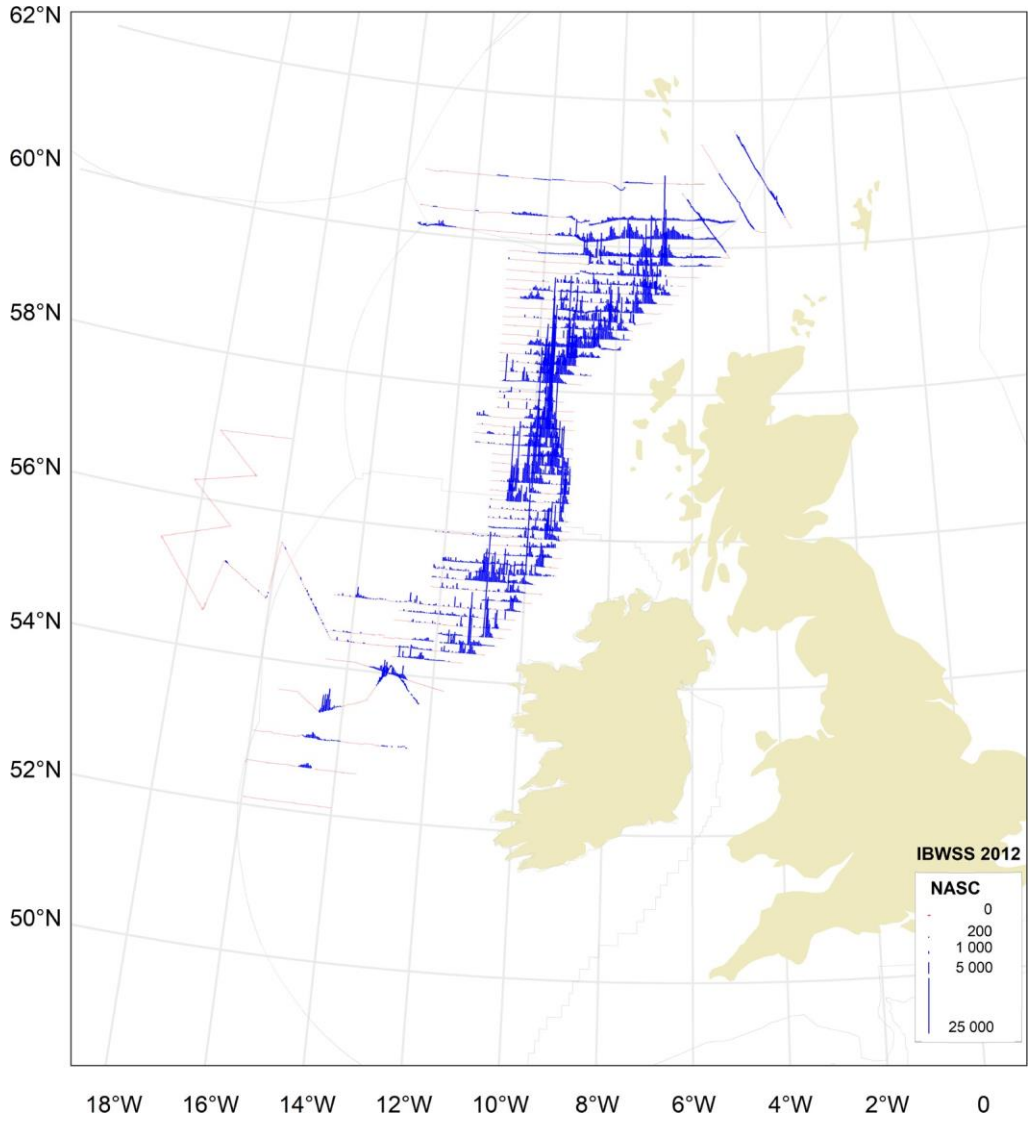


Figure 4.1.2. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2012.

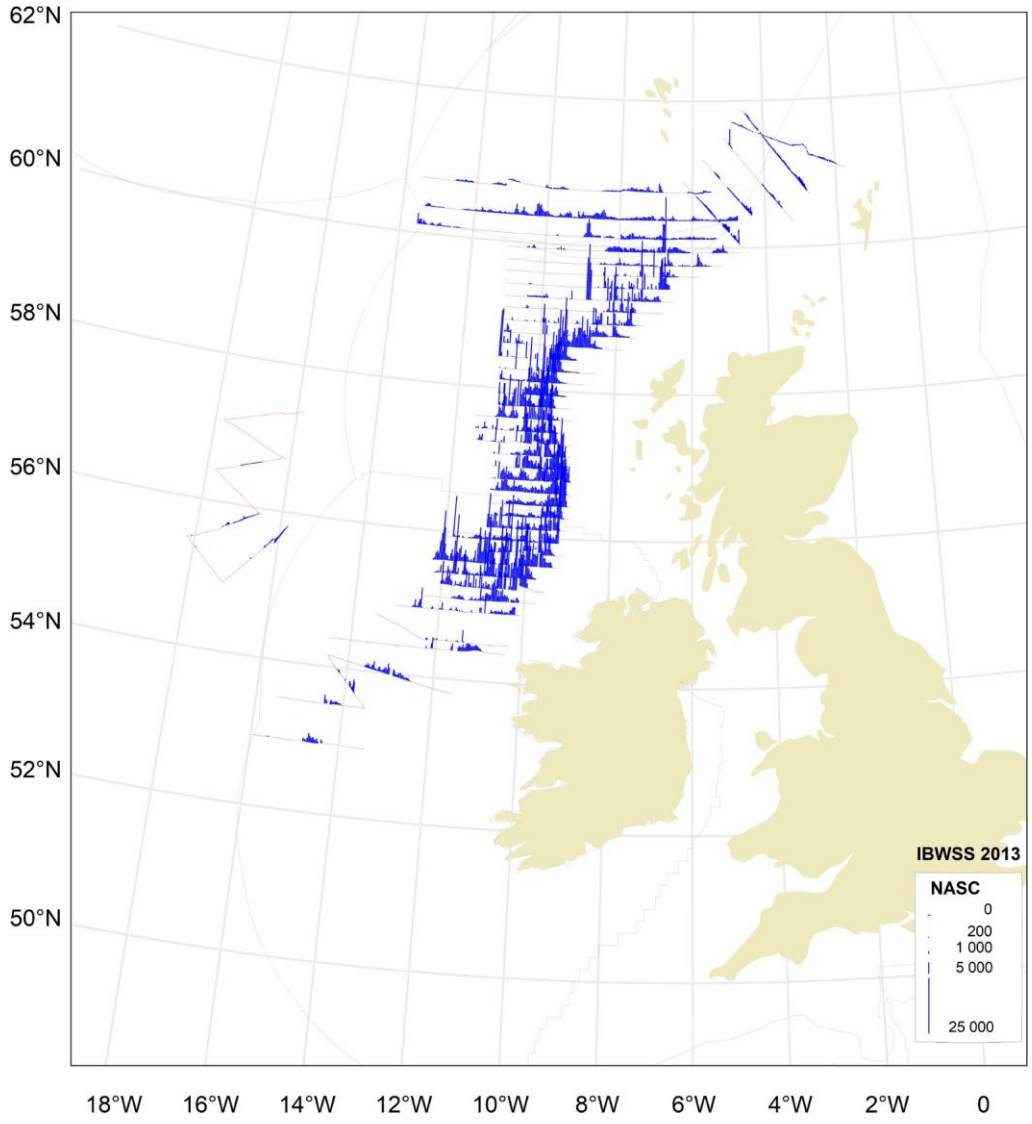


Figure 4.1.3. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2013.

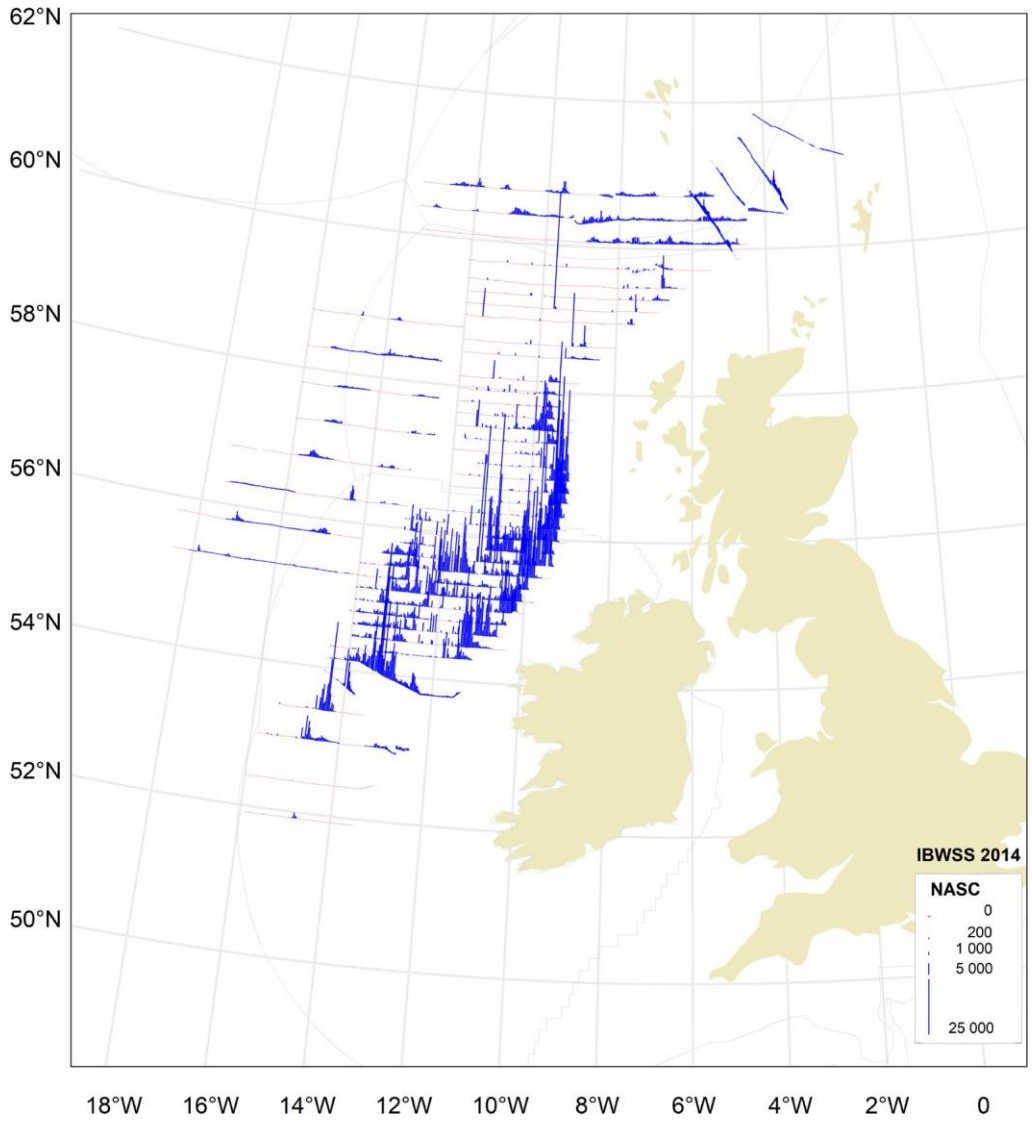


Figure 4.1.4. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2014.

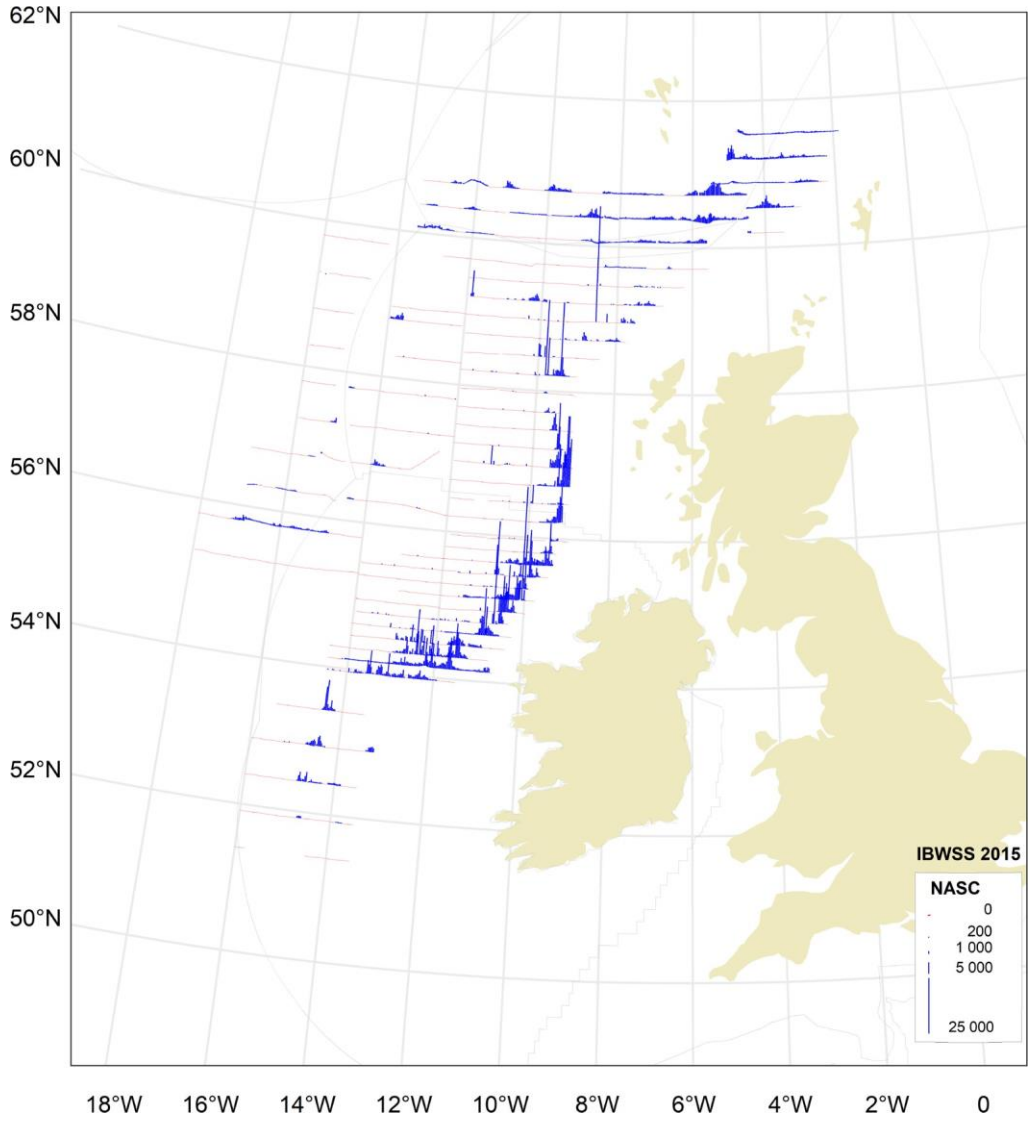


Figure 4.1.5. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2015.

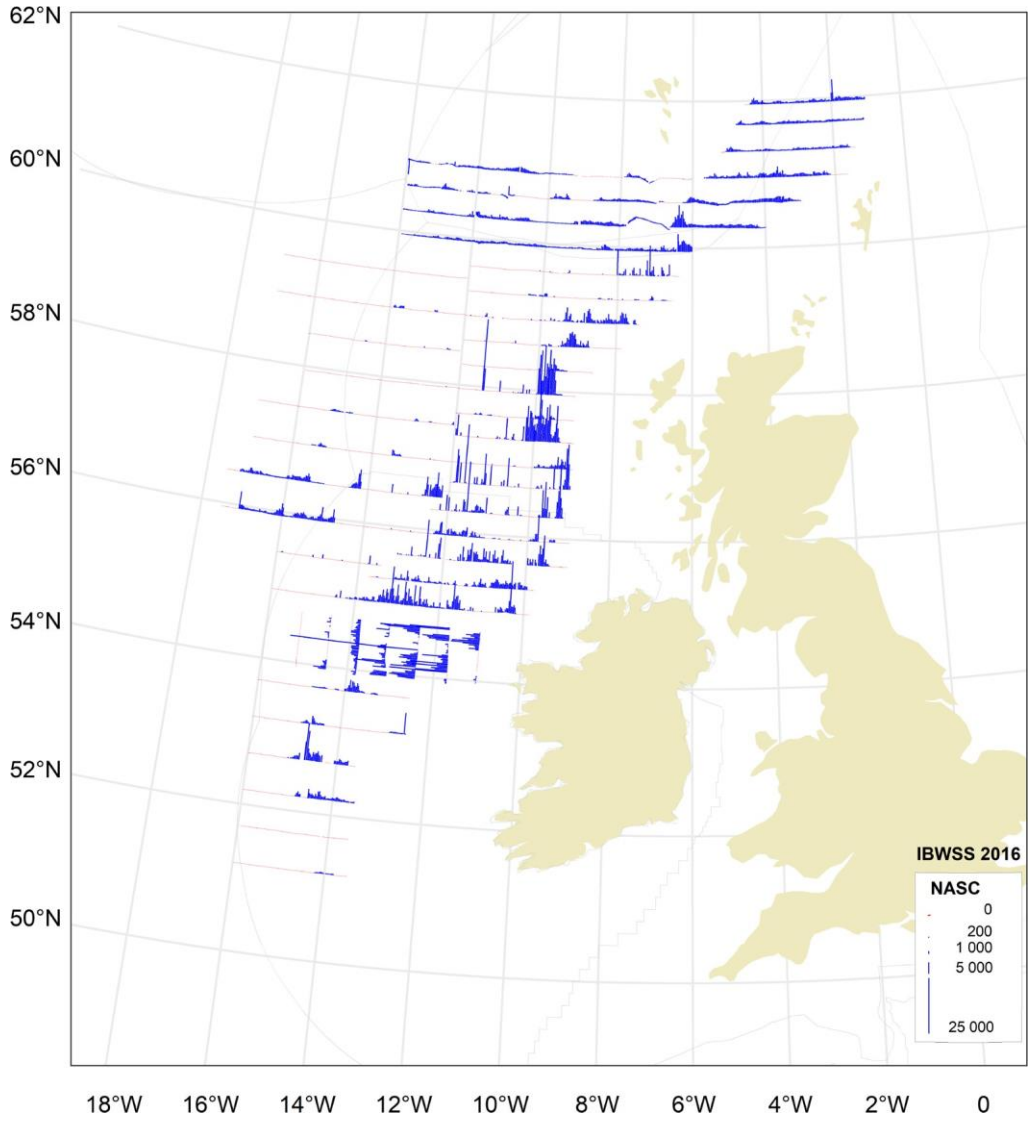


Figure 4.1.6. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2016.

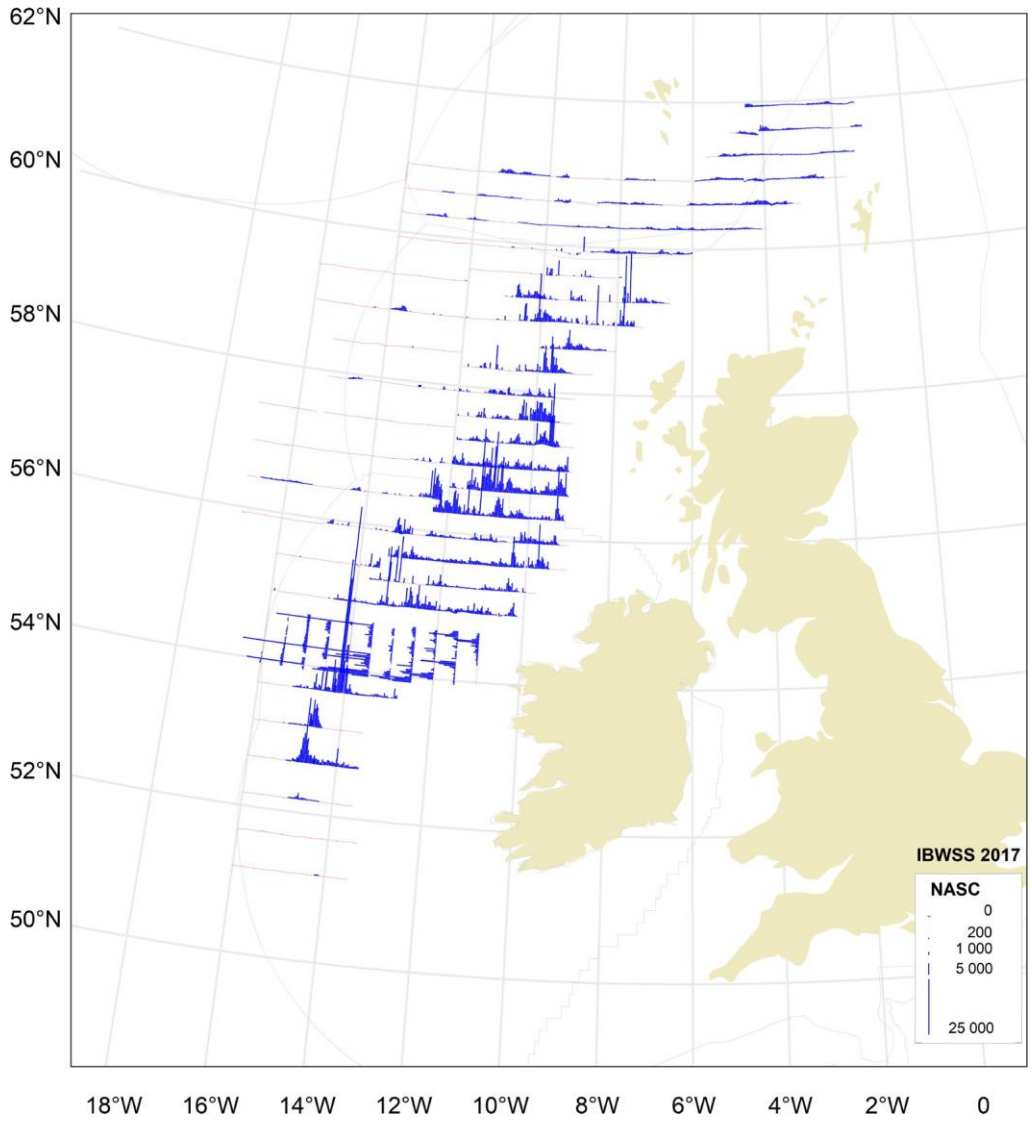


Figure 4.1.7. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2017.

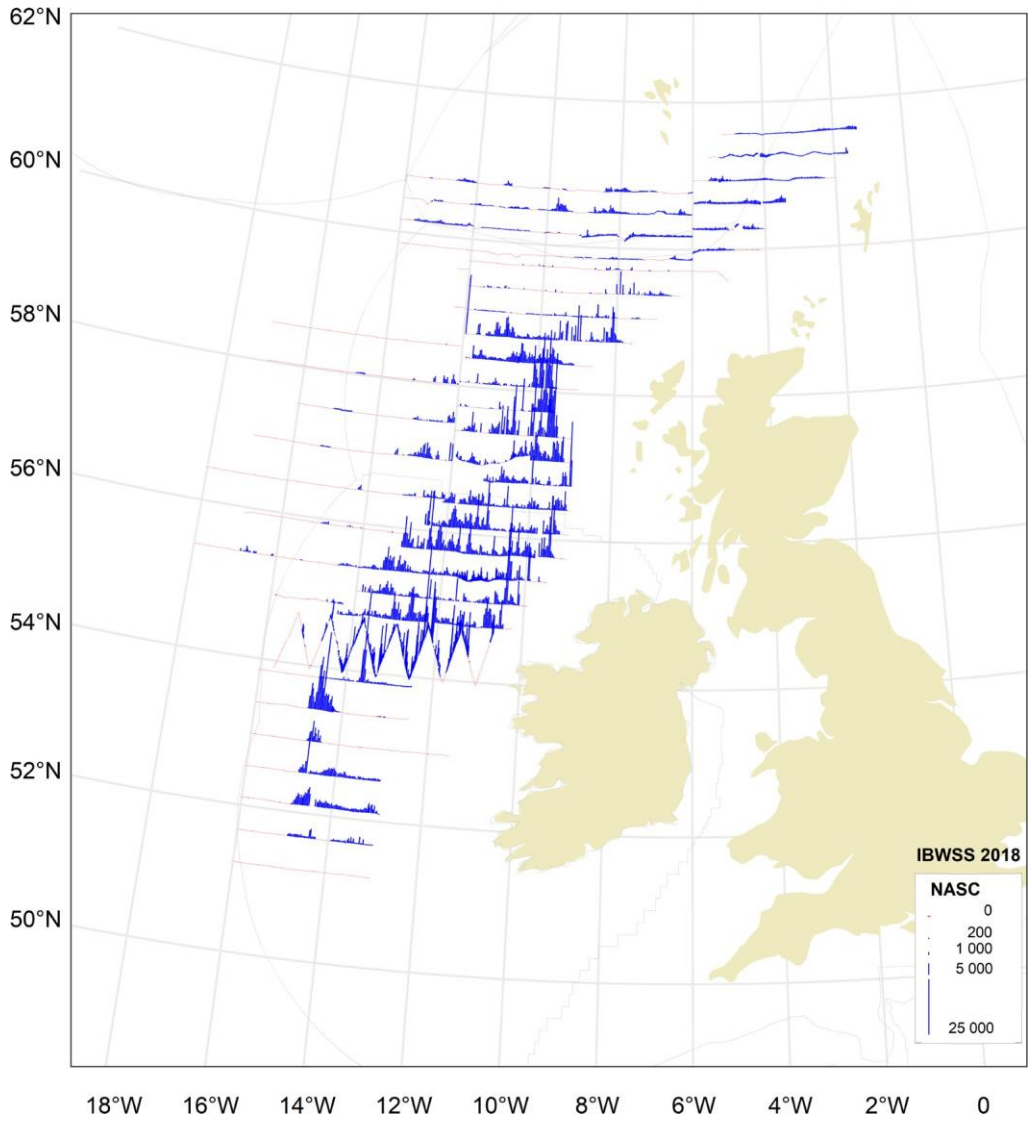


Figure 4.1.8. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2018.

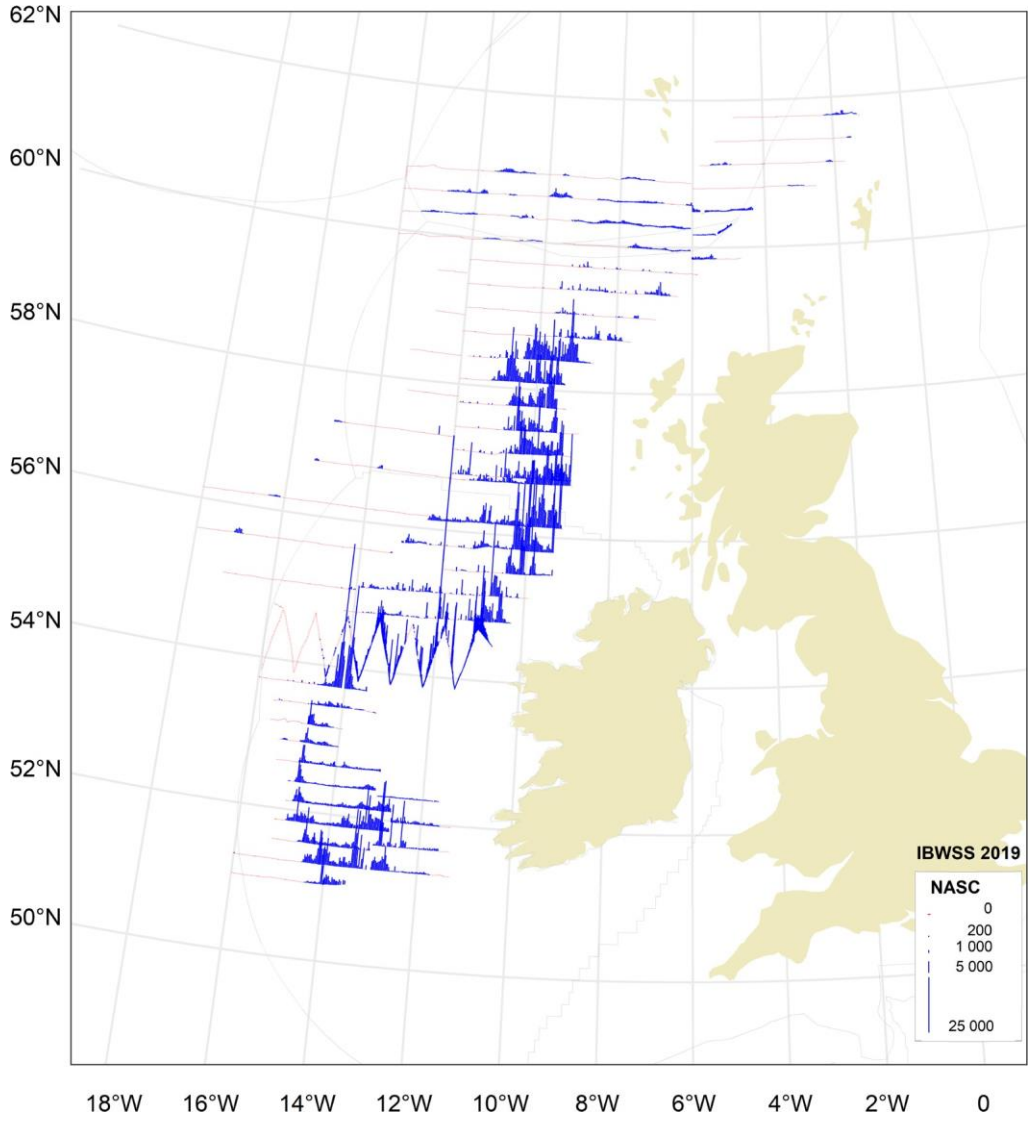


Figure 4.1.9. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2019.

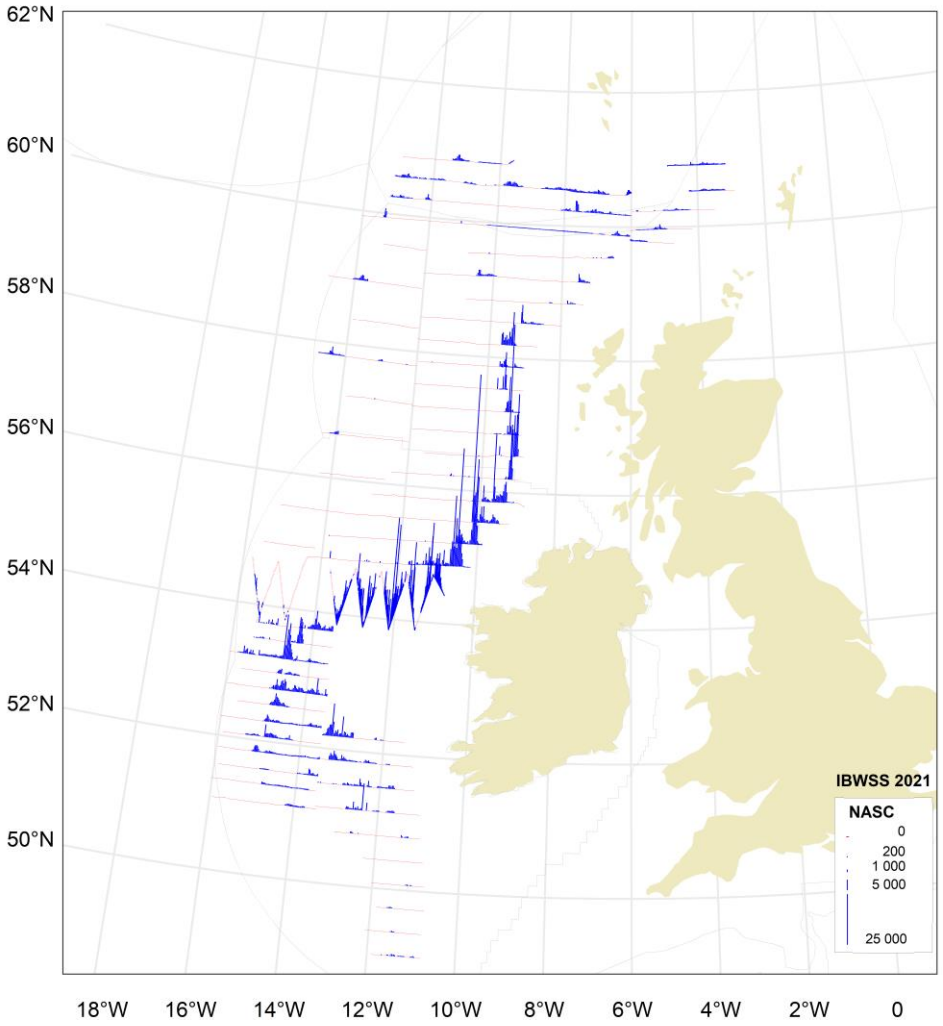


Figure 4.1.10. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2021.

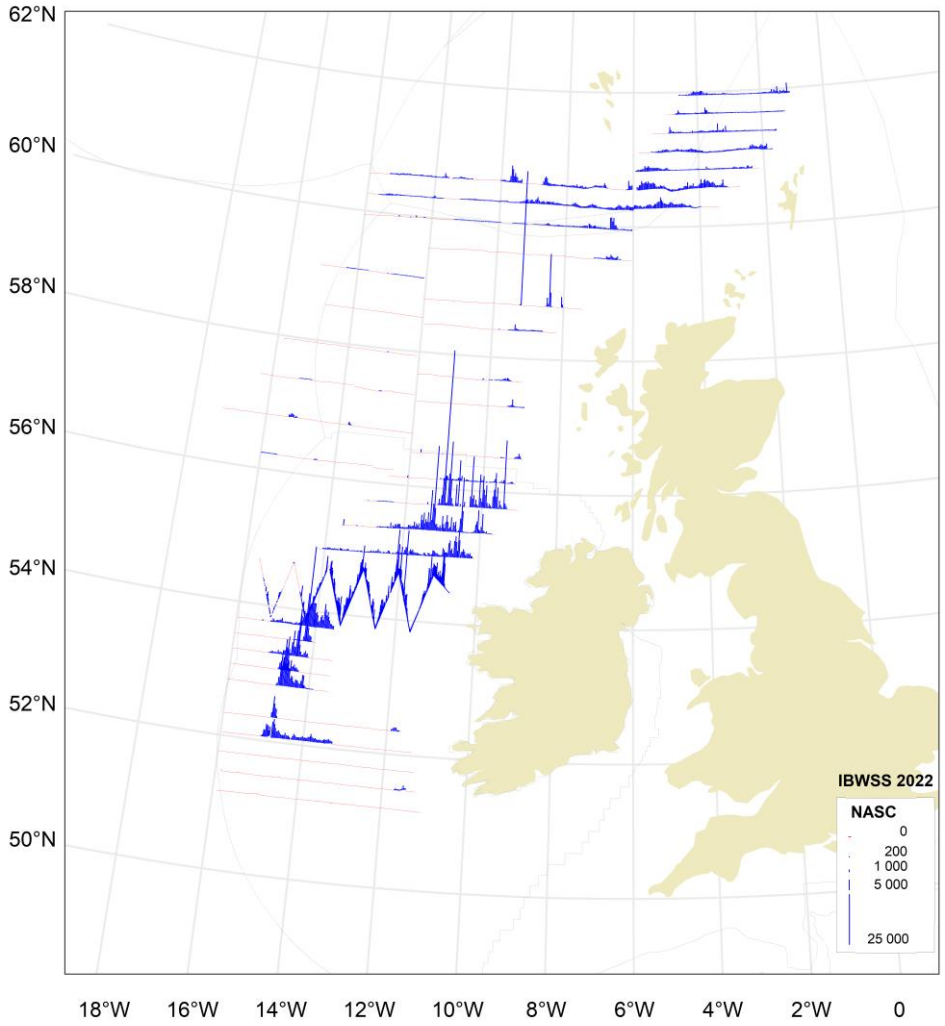


Figure 4.1.11. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2022.

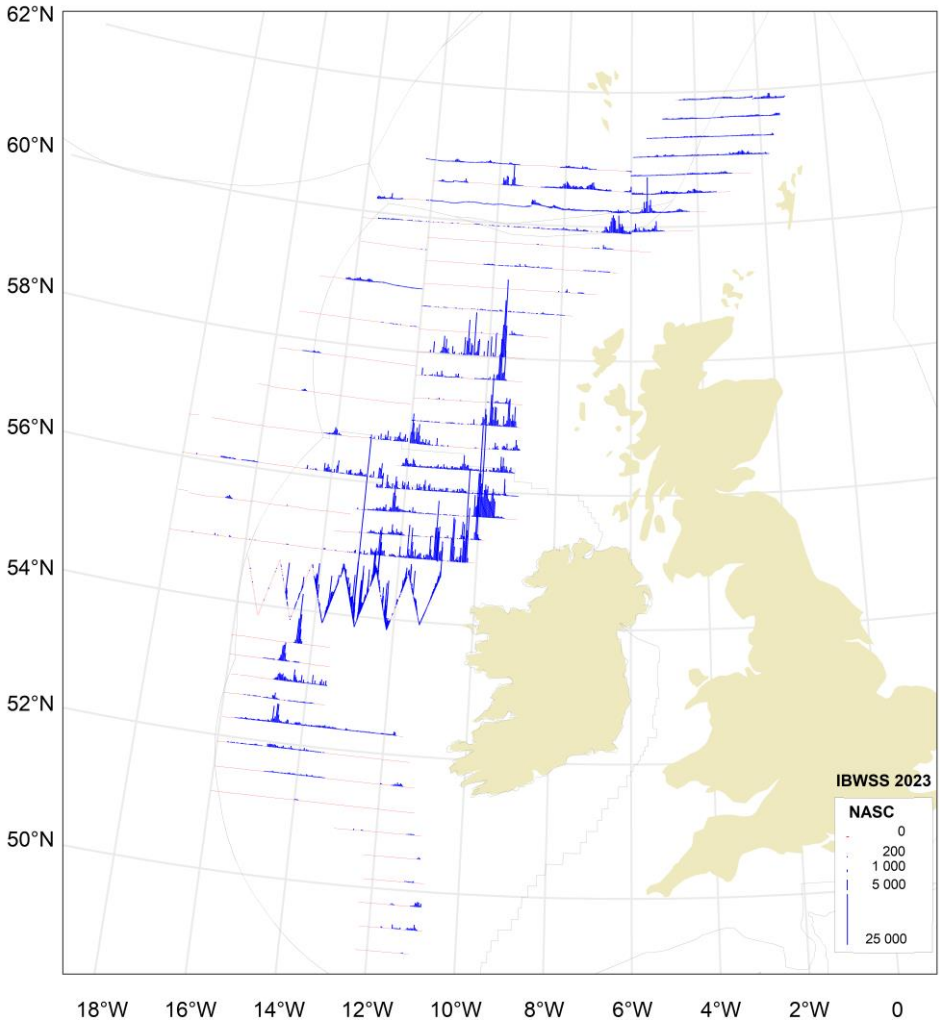


Figure 4.1.12. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2023.

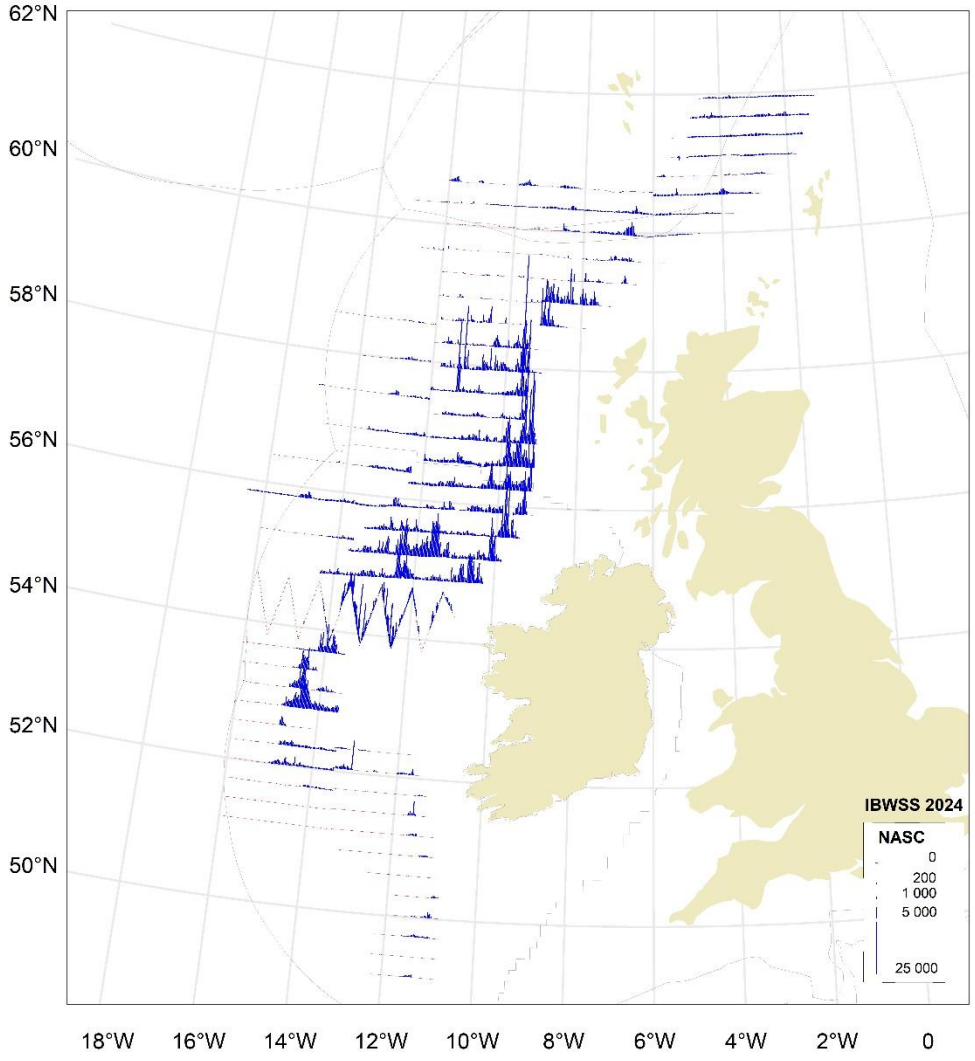


Figure 4.1.13. Distribution of blue whiting on the spawning grounds west of the British Isles from the International spawning stock survey (IBWSS) in March/April 2024.

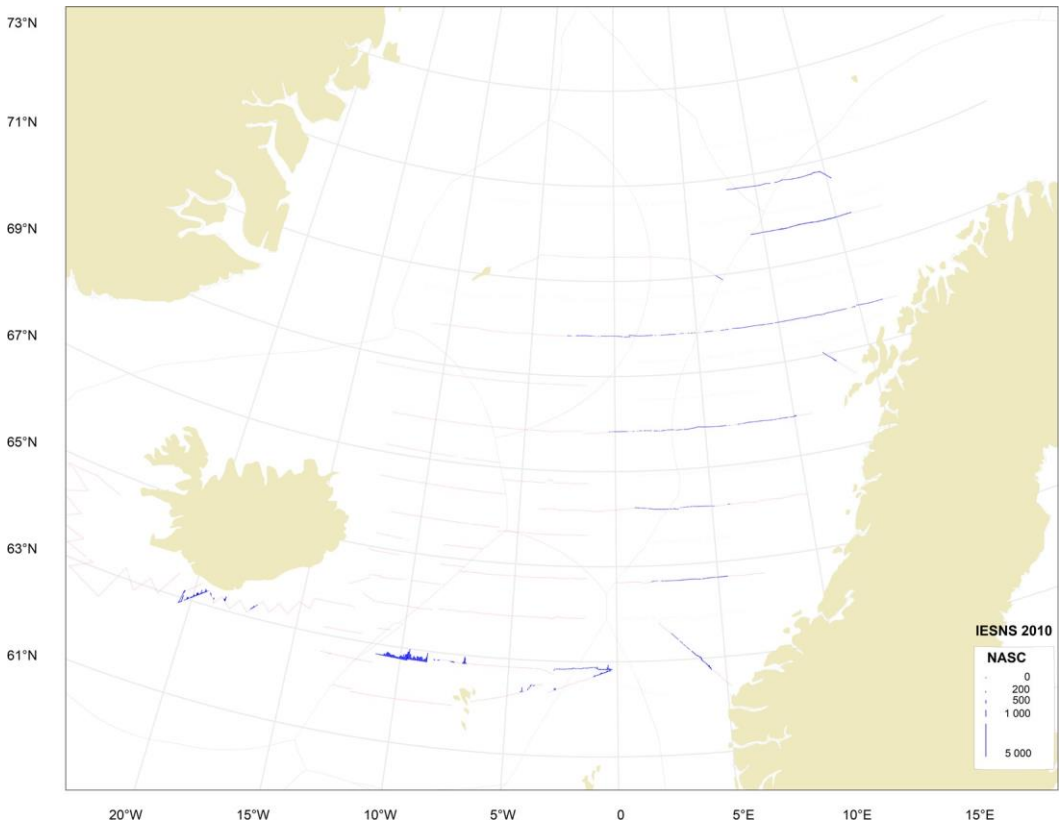


Figure 4.2.1. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2010.

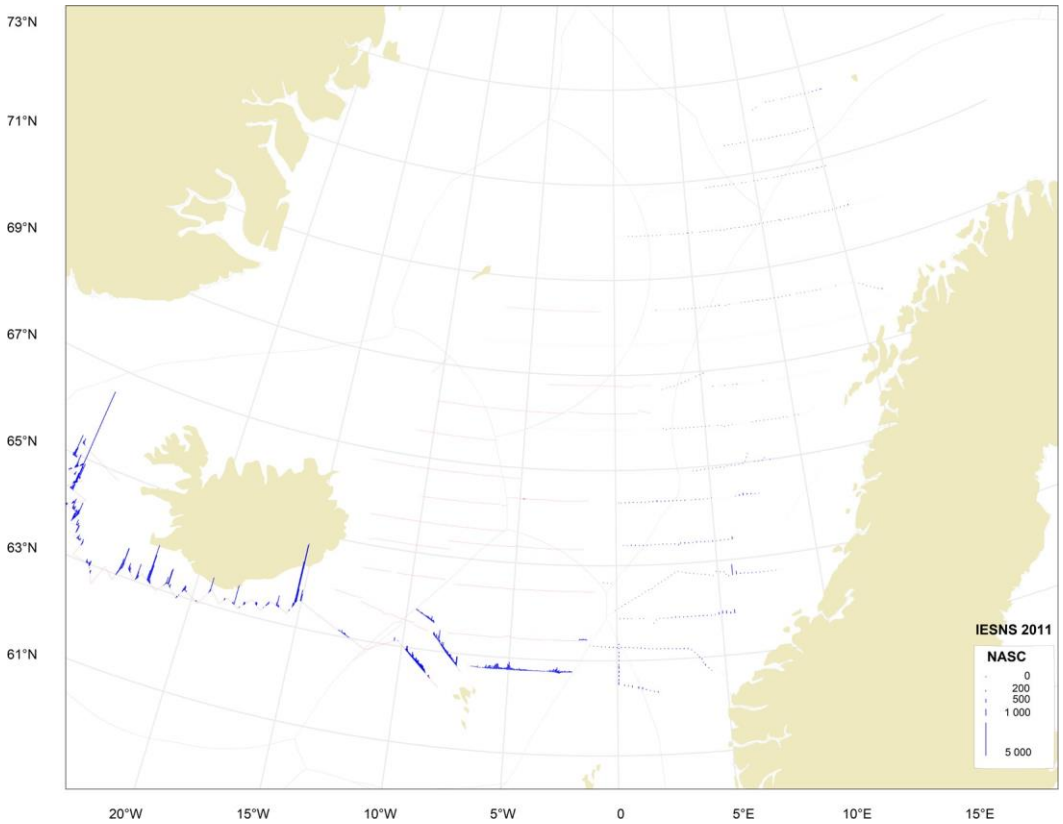


Figure 4.2.2. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2011.

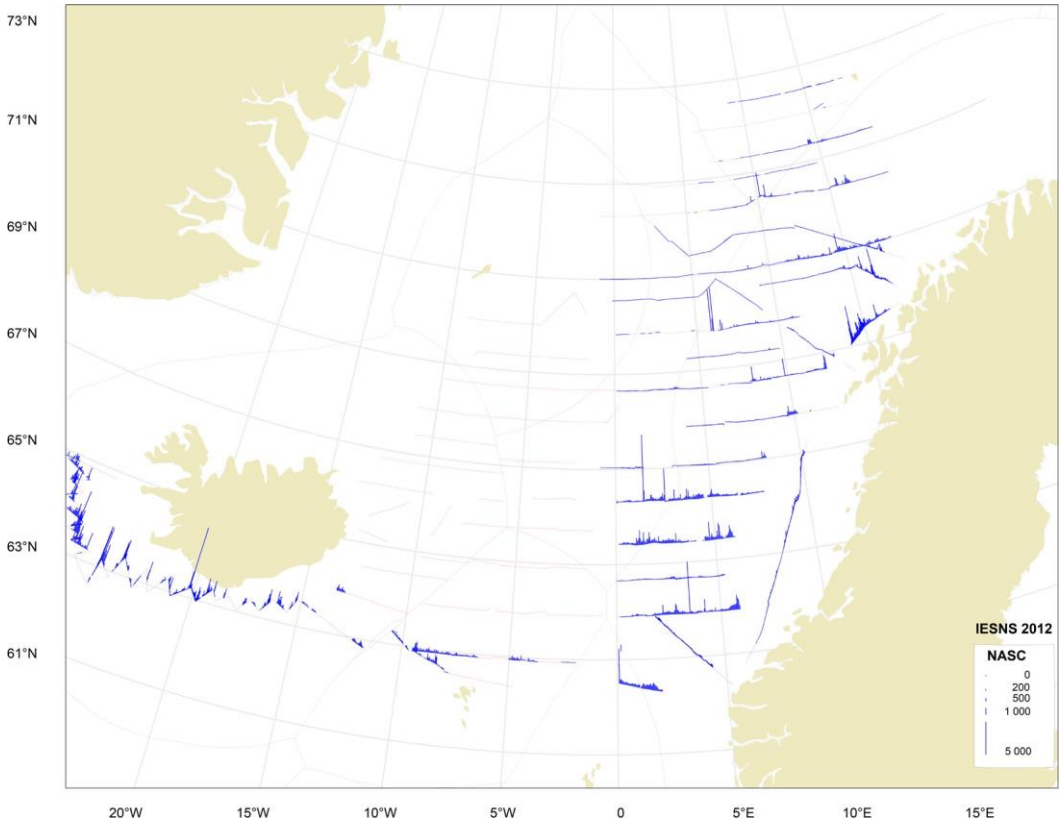


Figure 4.2.3. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2012.

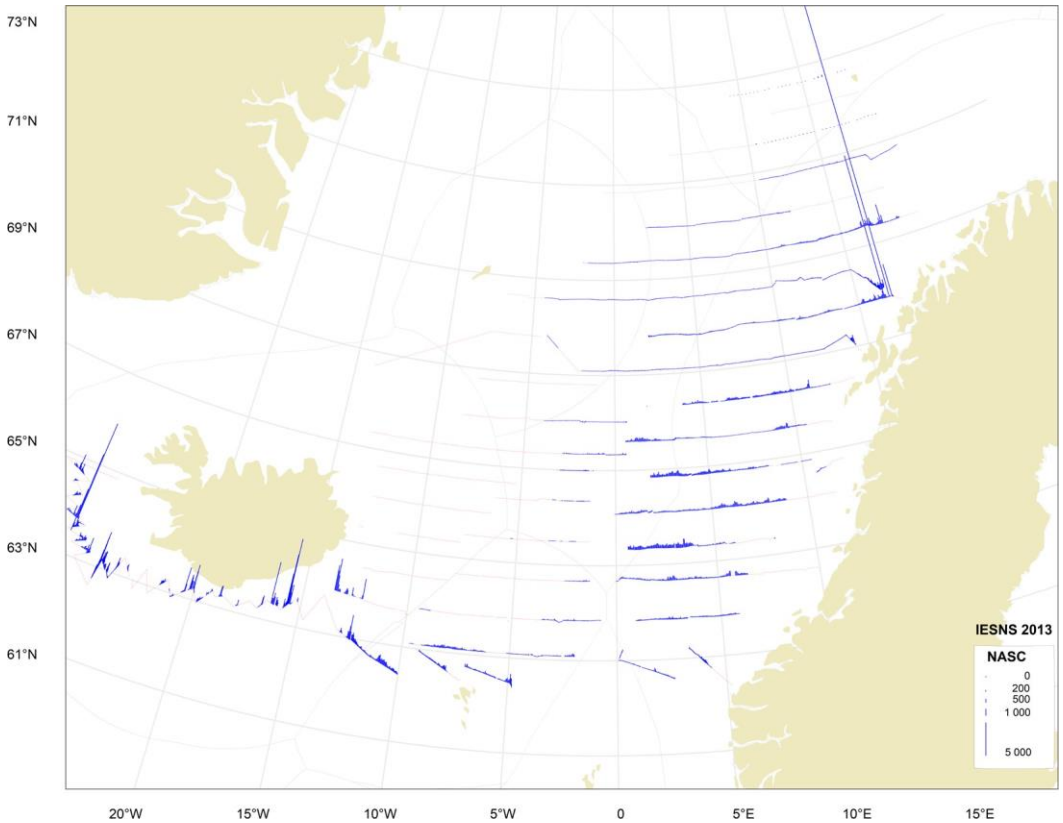


Figure 4.2.4. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2013.

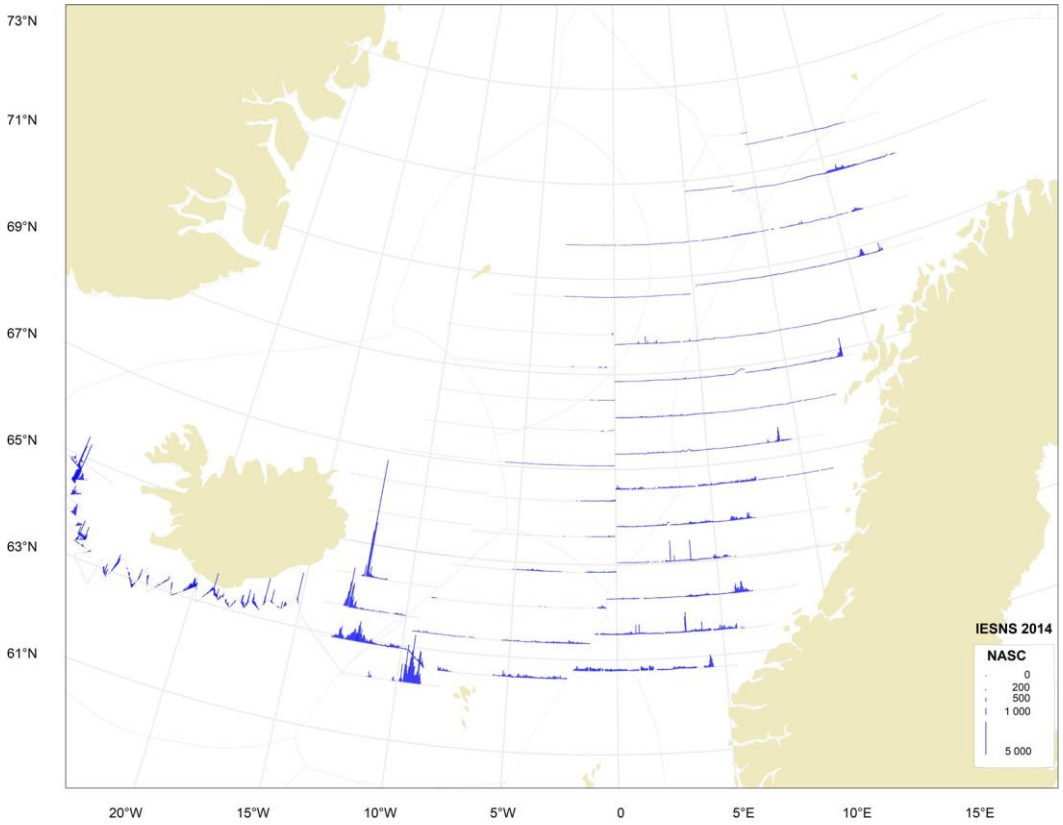


Figure 4.2.5. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2014.

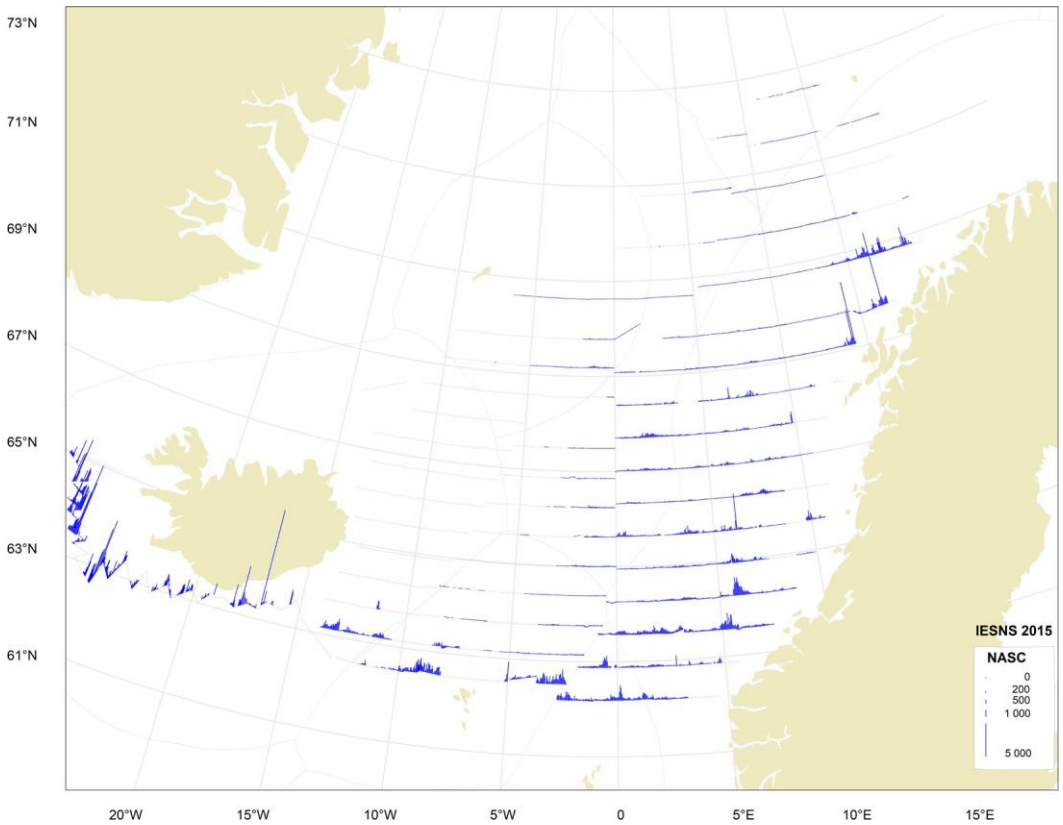


Figure 4.2.6. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2015.

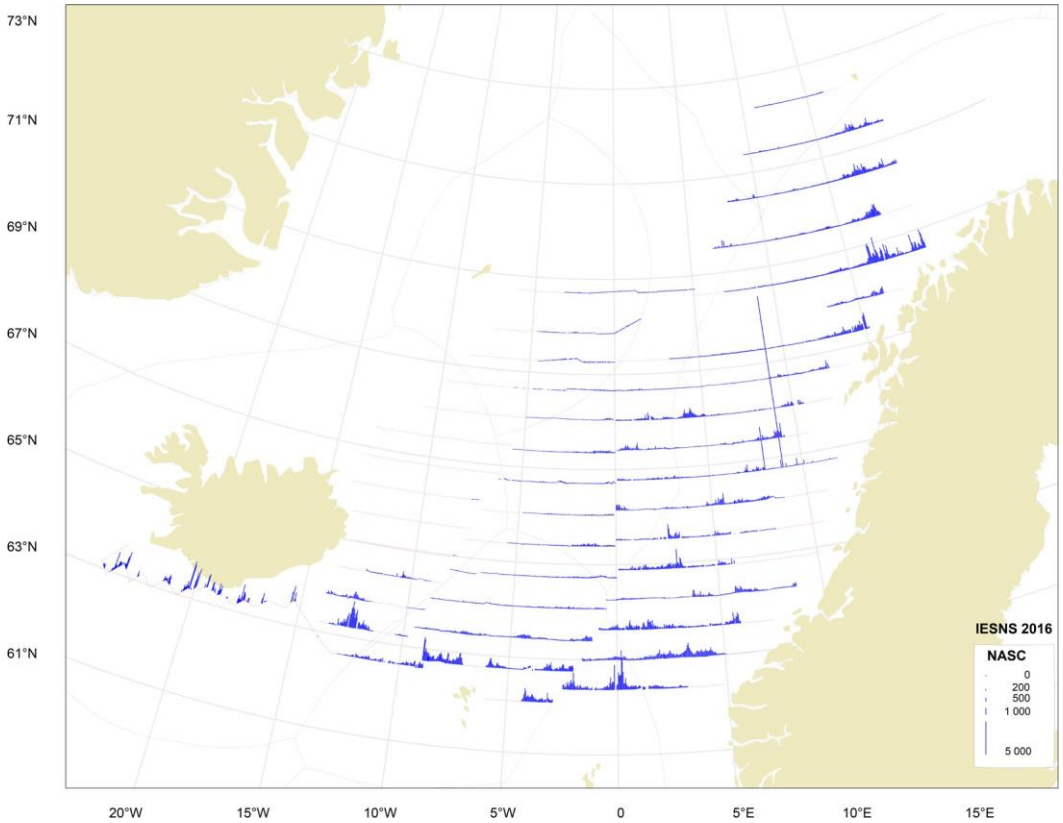


Figure 4.2.7. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2016.

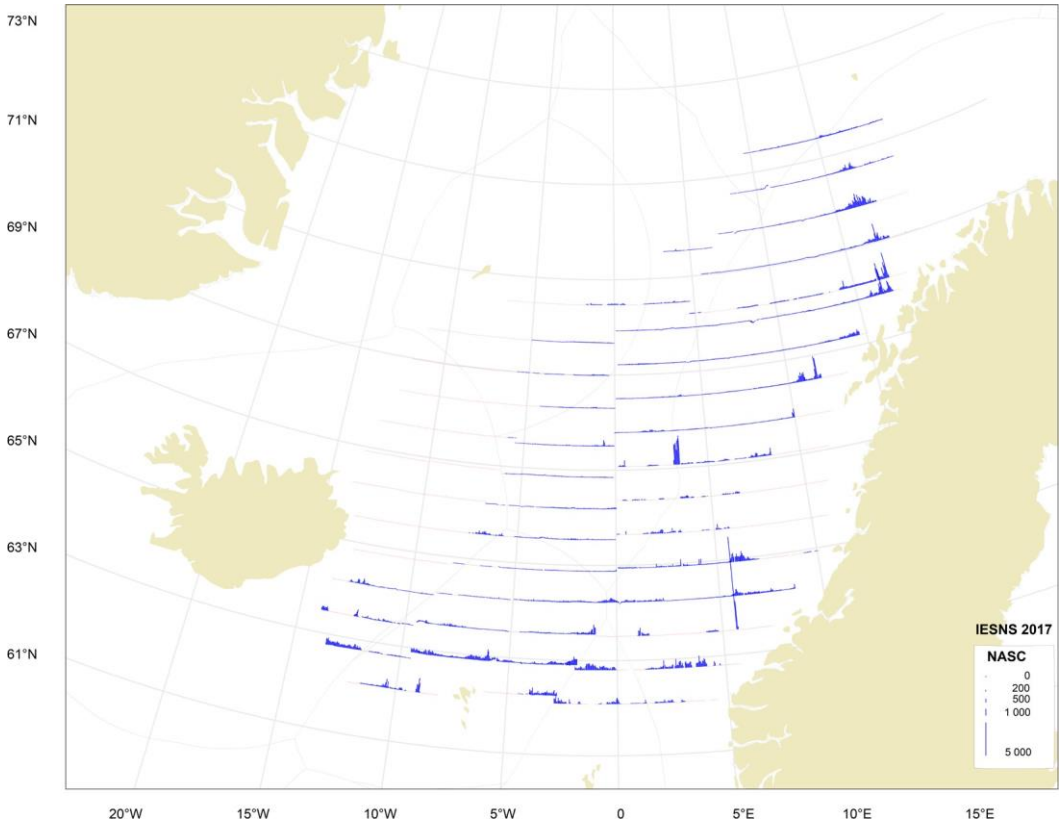


Figure 4.2.8. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2017.

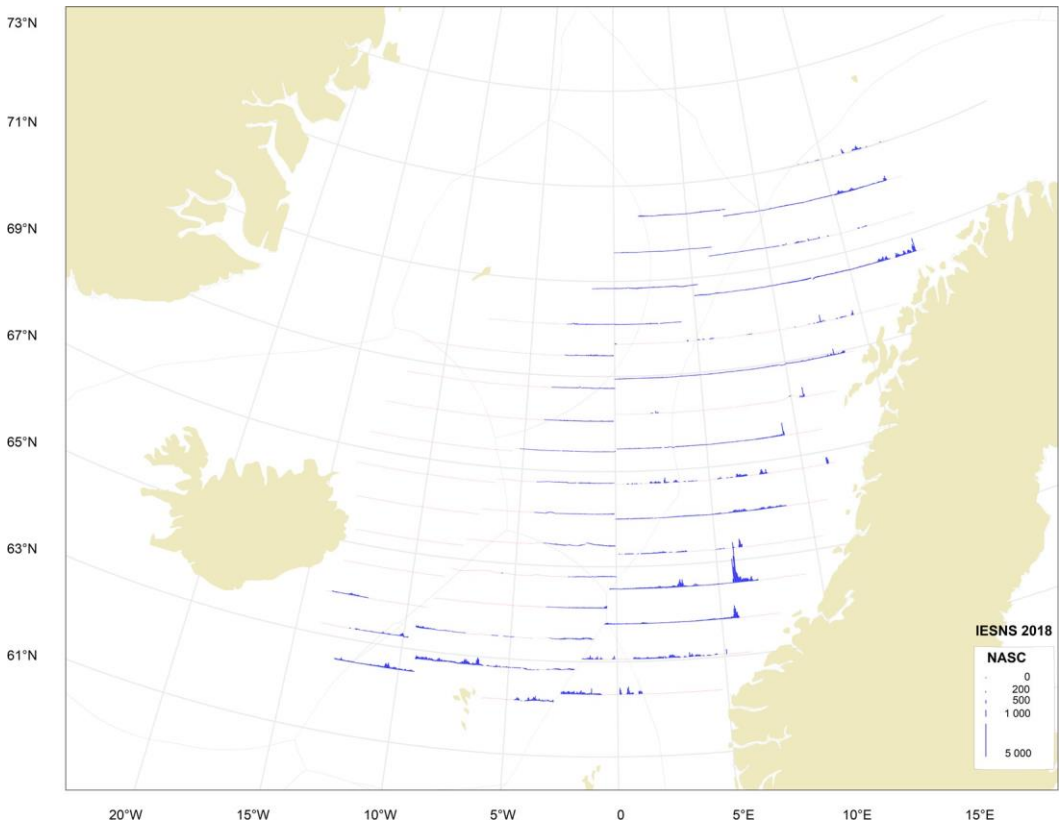


Figure 4.2.9. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2018.

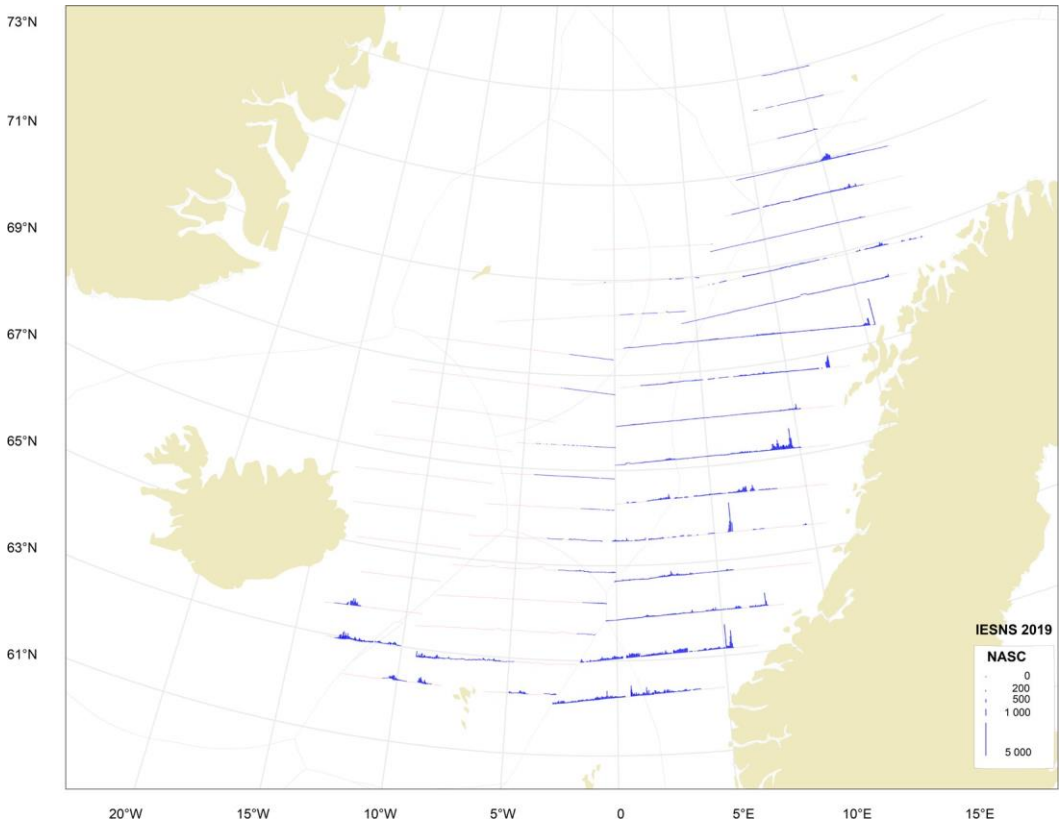


Figure 4.2.10. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2019.

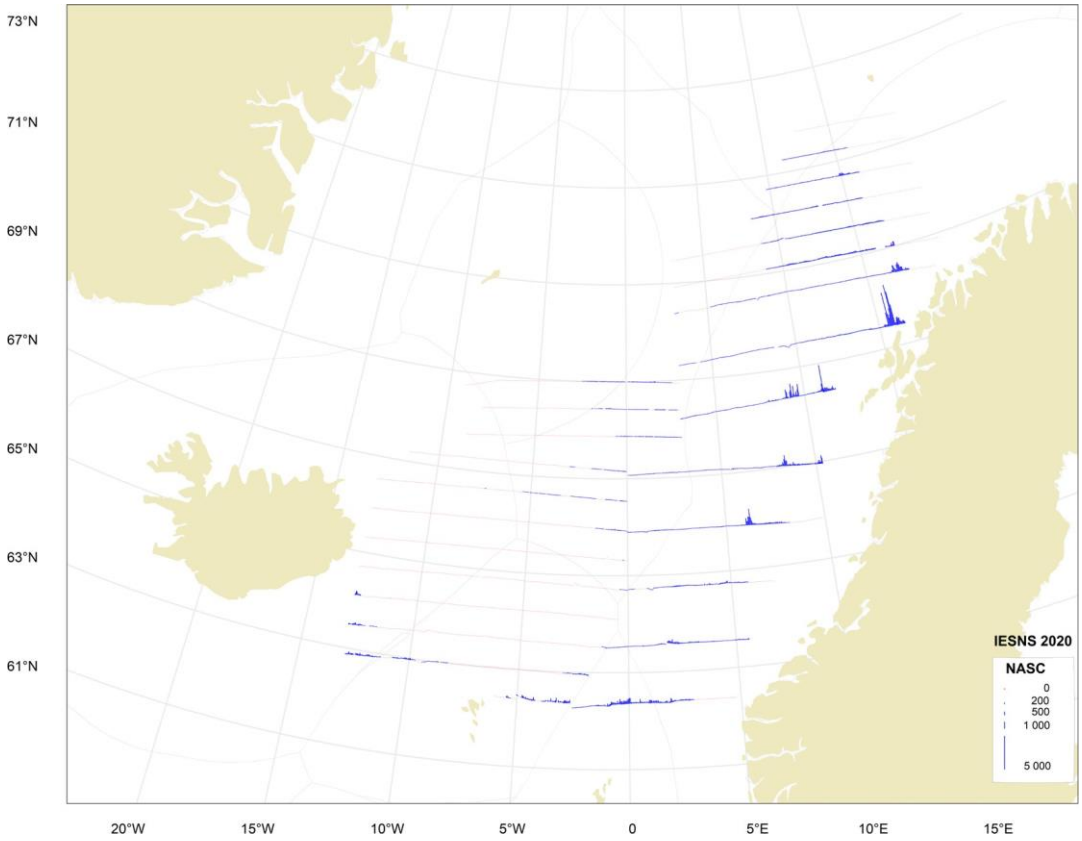


Figure 4.2.11. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2020.

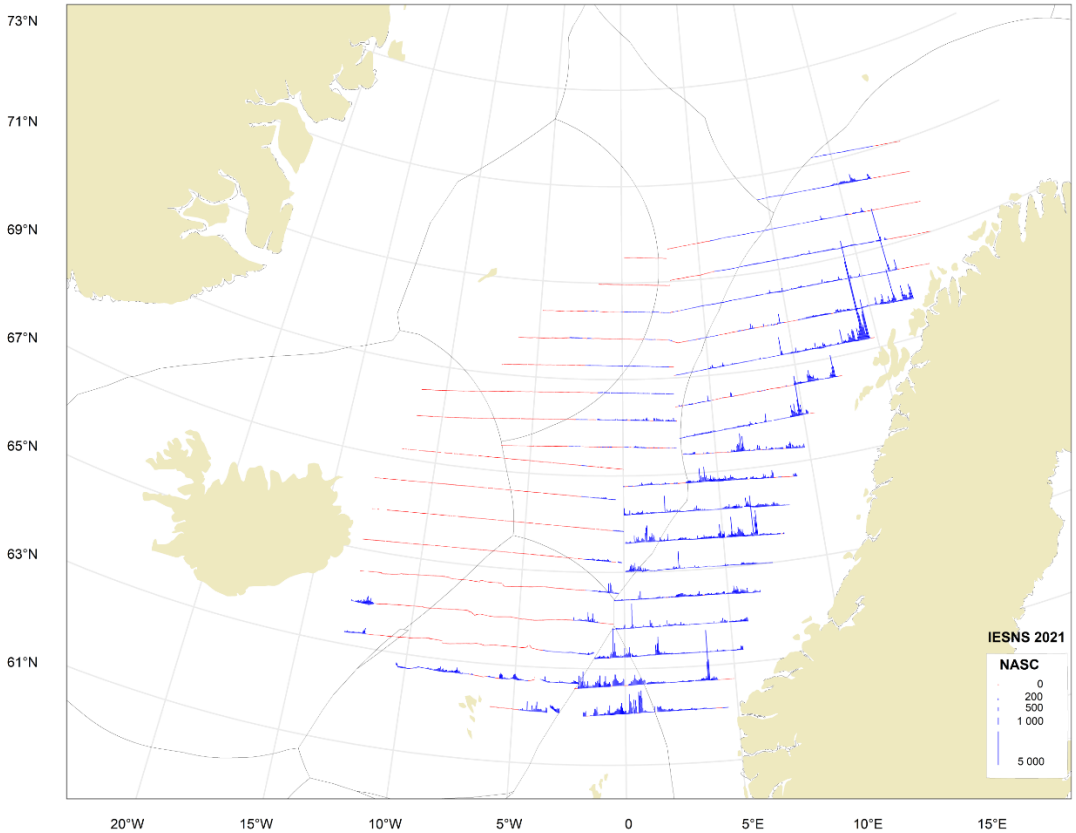


Figure 4.2.12. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2021.

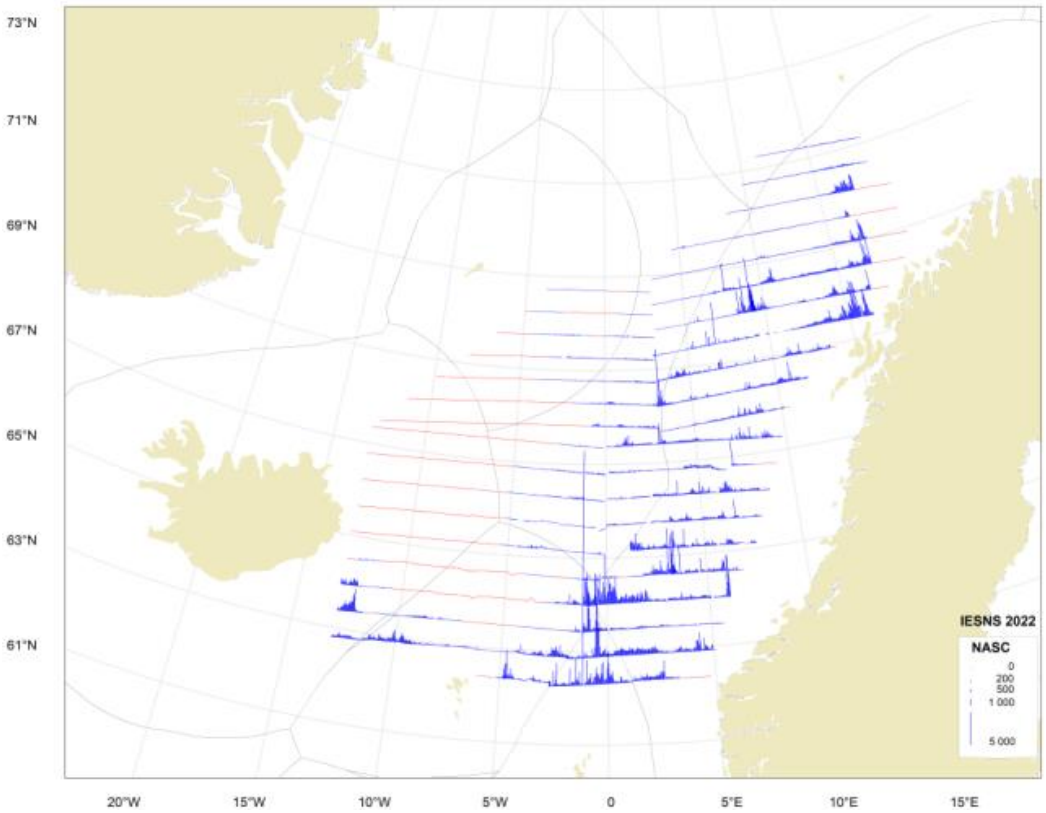


Figure 4.2.13. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2022.

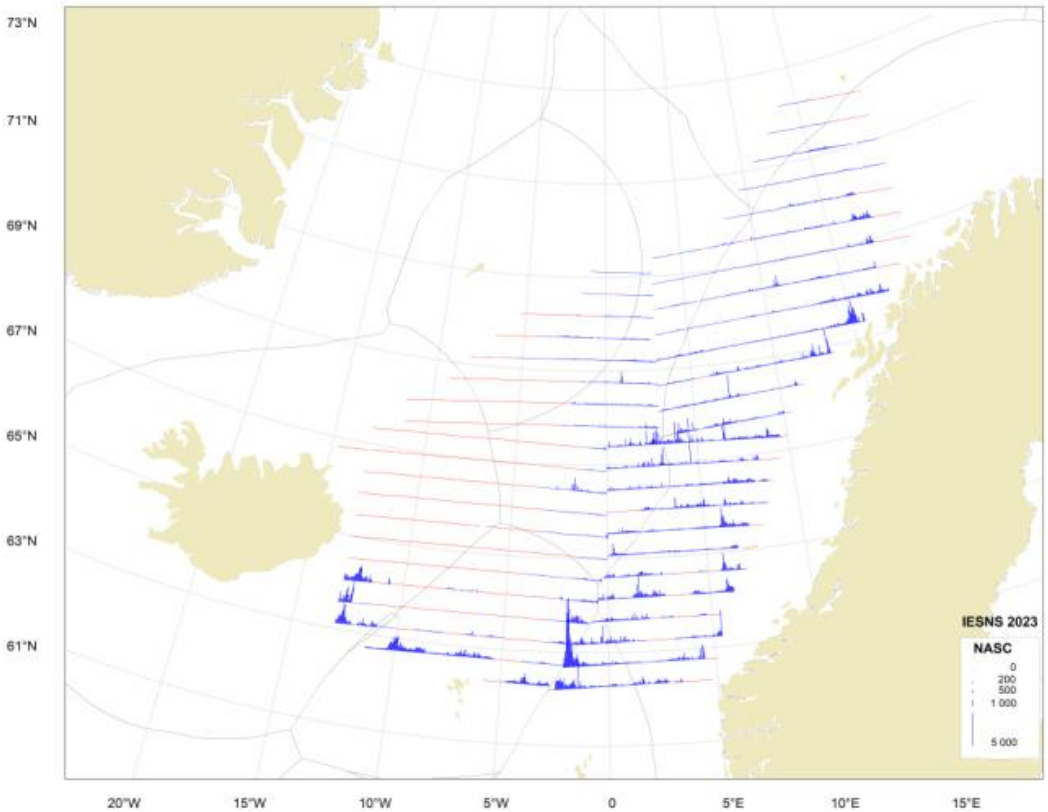


Figure 4.2.14. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2023.

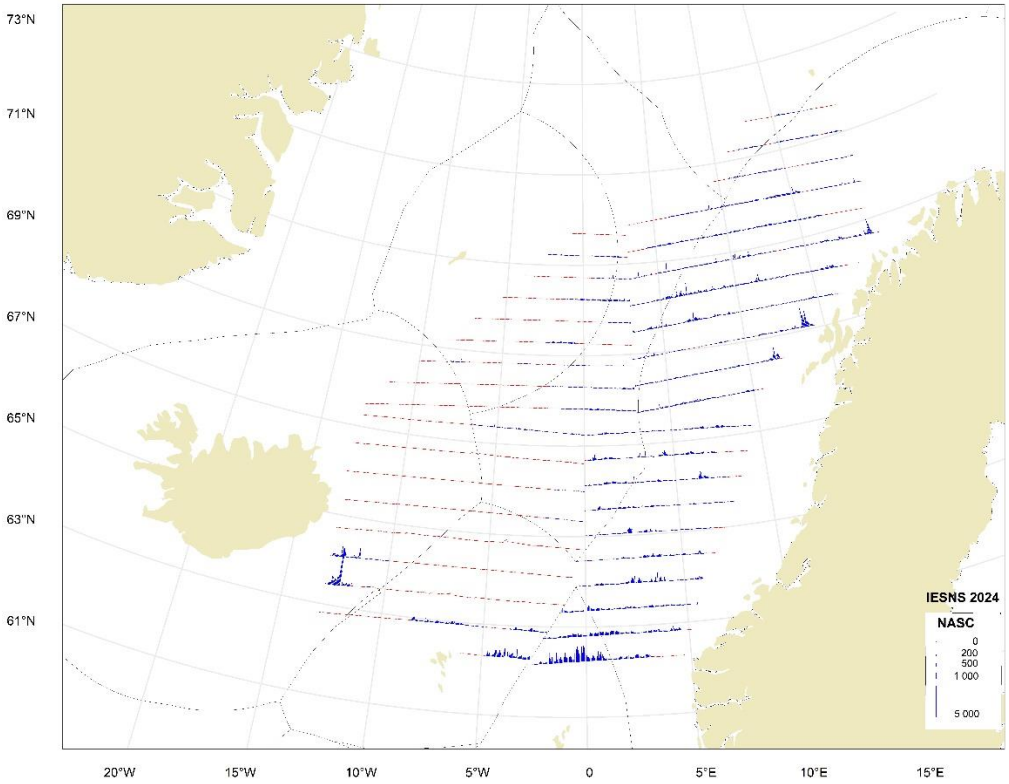


Figure 4.2.15. Distribution of blue whiting in the Nordic Seas from the International ecosystem survey in the Nordic Seas (IESNS) in May/June 2024.

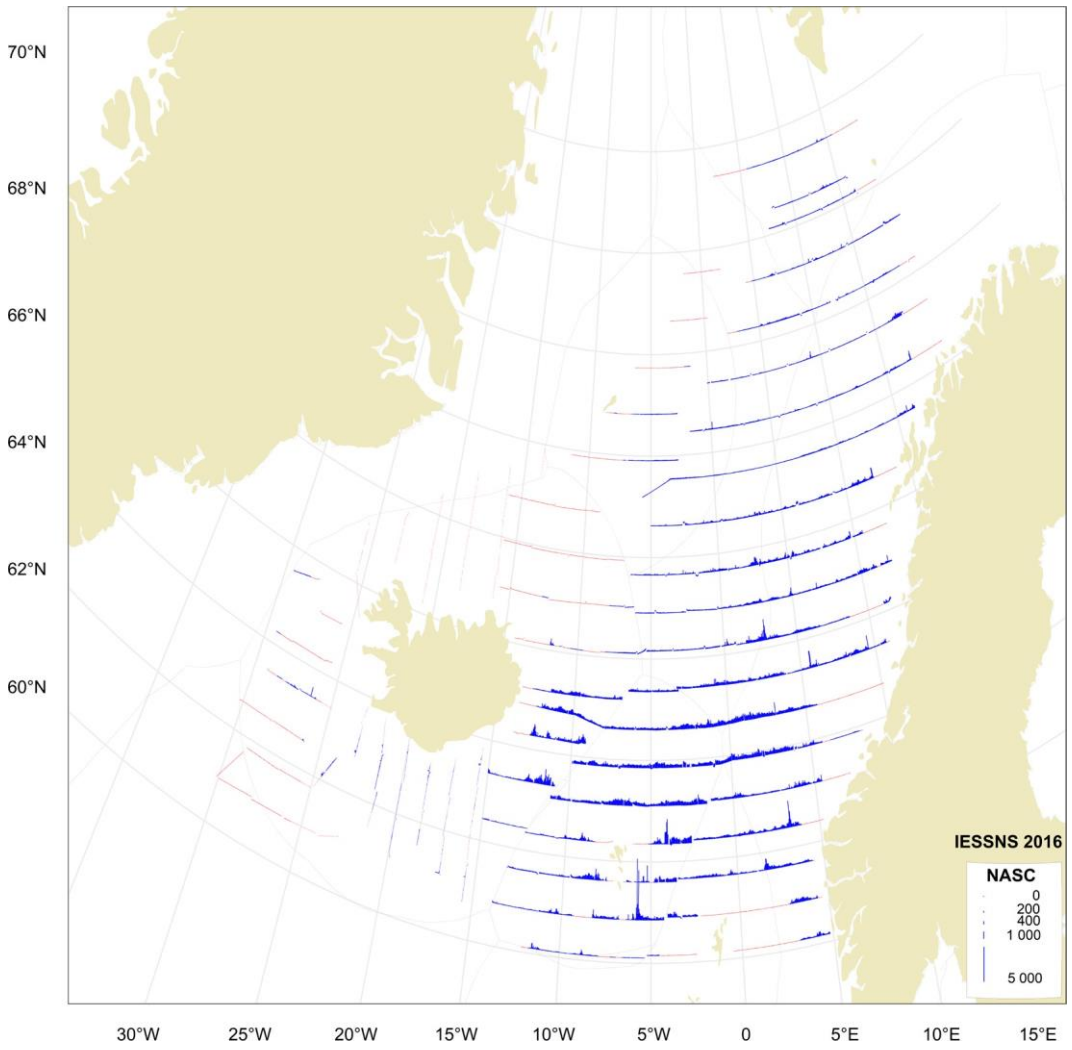


Figure 4.3.1. Distribution of blue whiting in the Nordic Seas from the International ecosystem summer survey in the Nordic Seas (IESSNS) in July 2016.

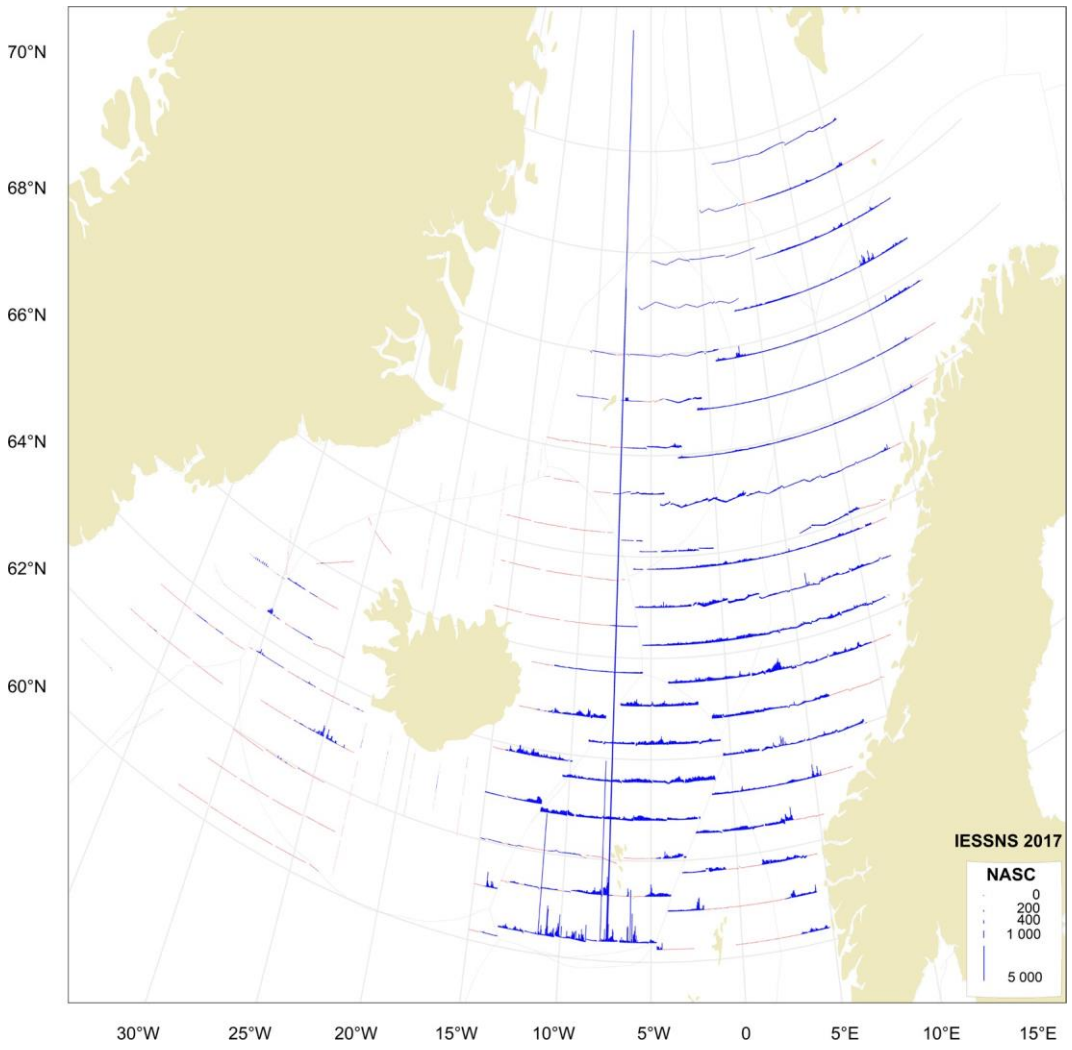


Figure 4.3.2. Distribution of blue whiting in the Nordic Seas from the International ecosystem summer survey in the Nordic Seas (IESSNS) in July 2017.

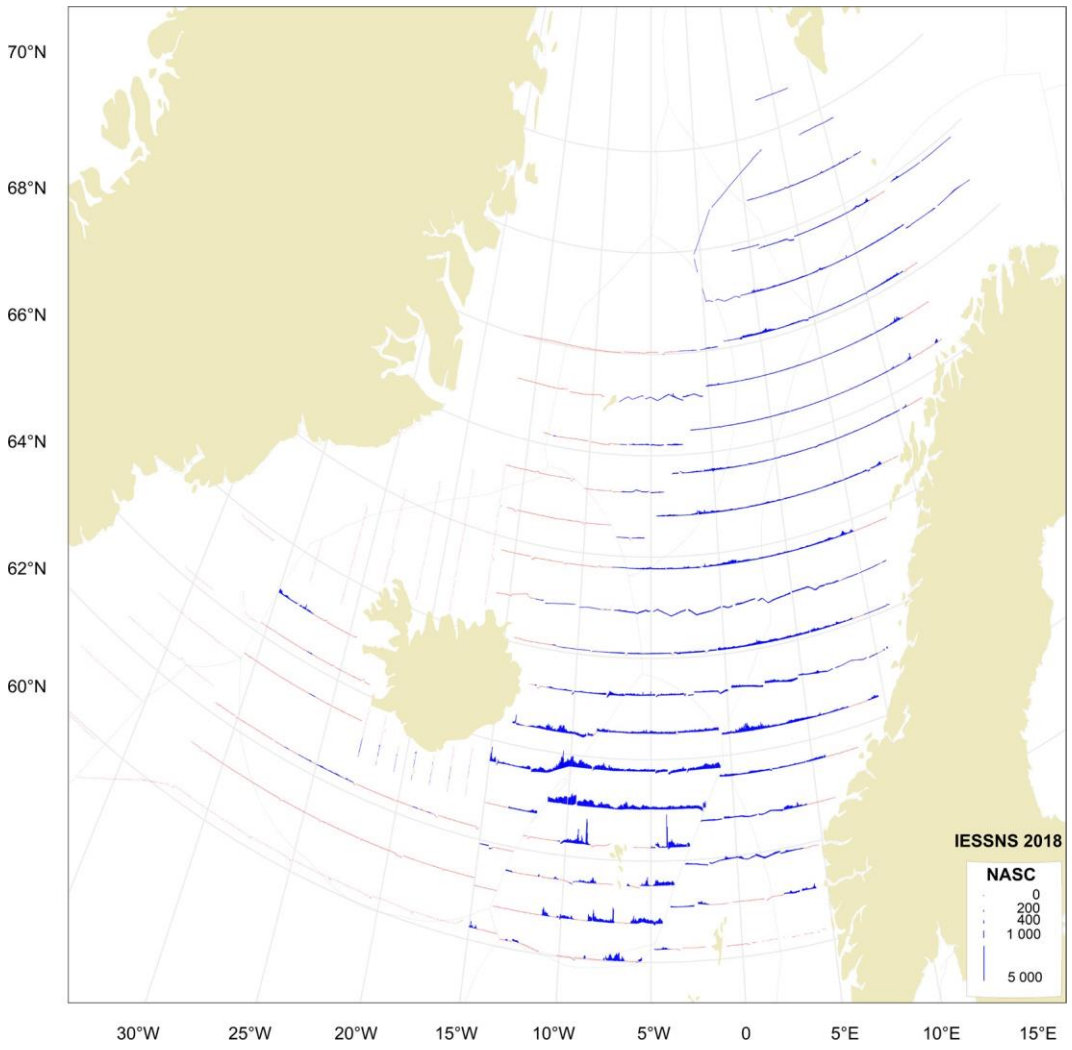


Figure 4.3.3. Distribution of blue whiting in the Nordic Seas from the International ecosystem summer survey in the Nordic Seas (IESSNS) in July 2018.

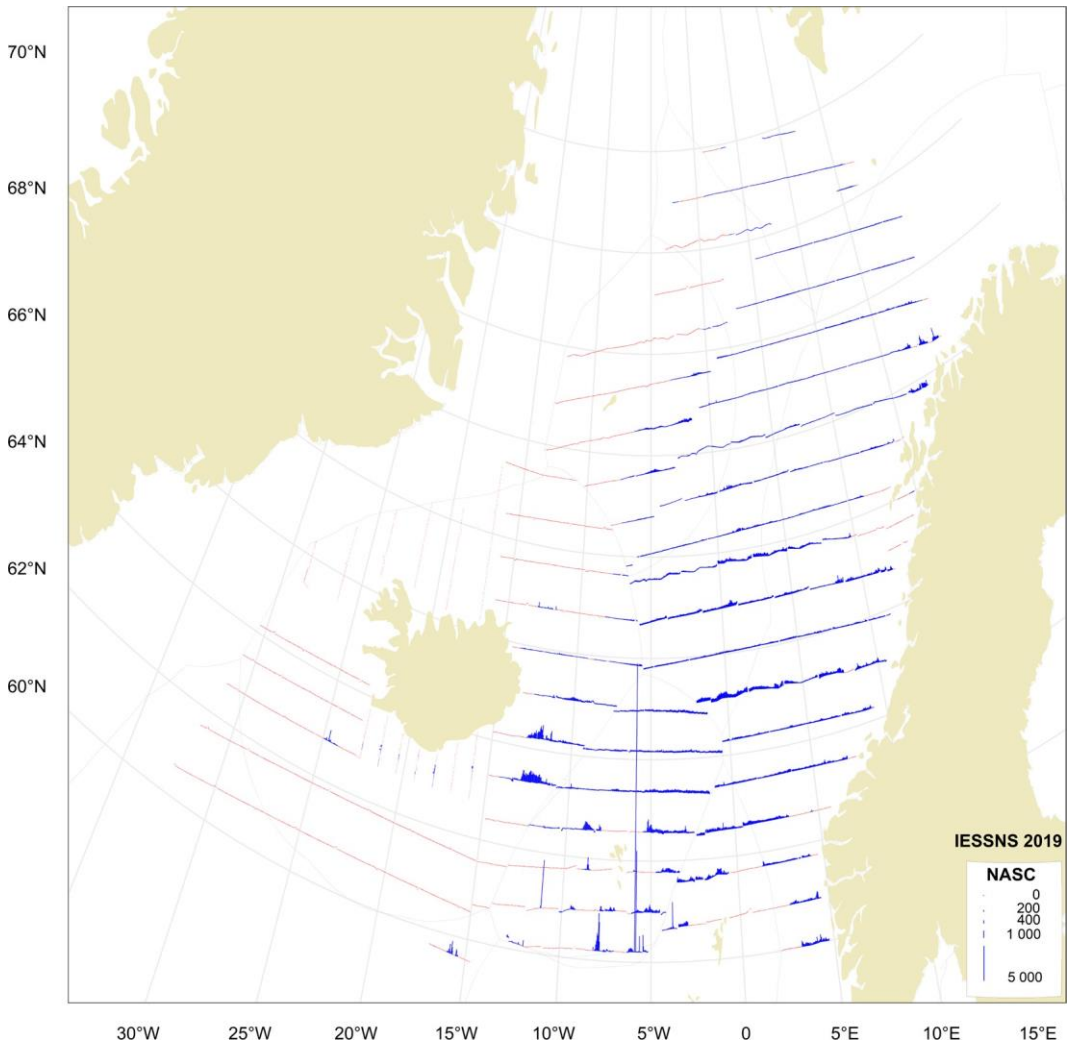


Figure 4.3.4. Distribution of blue whiting in the Nordic Seas from the International ecosystem summer survey in the Nordic Seas (IESSNS) in July 2019.

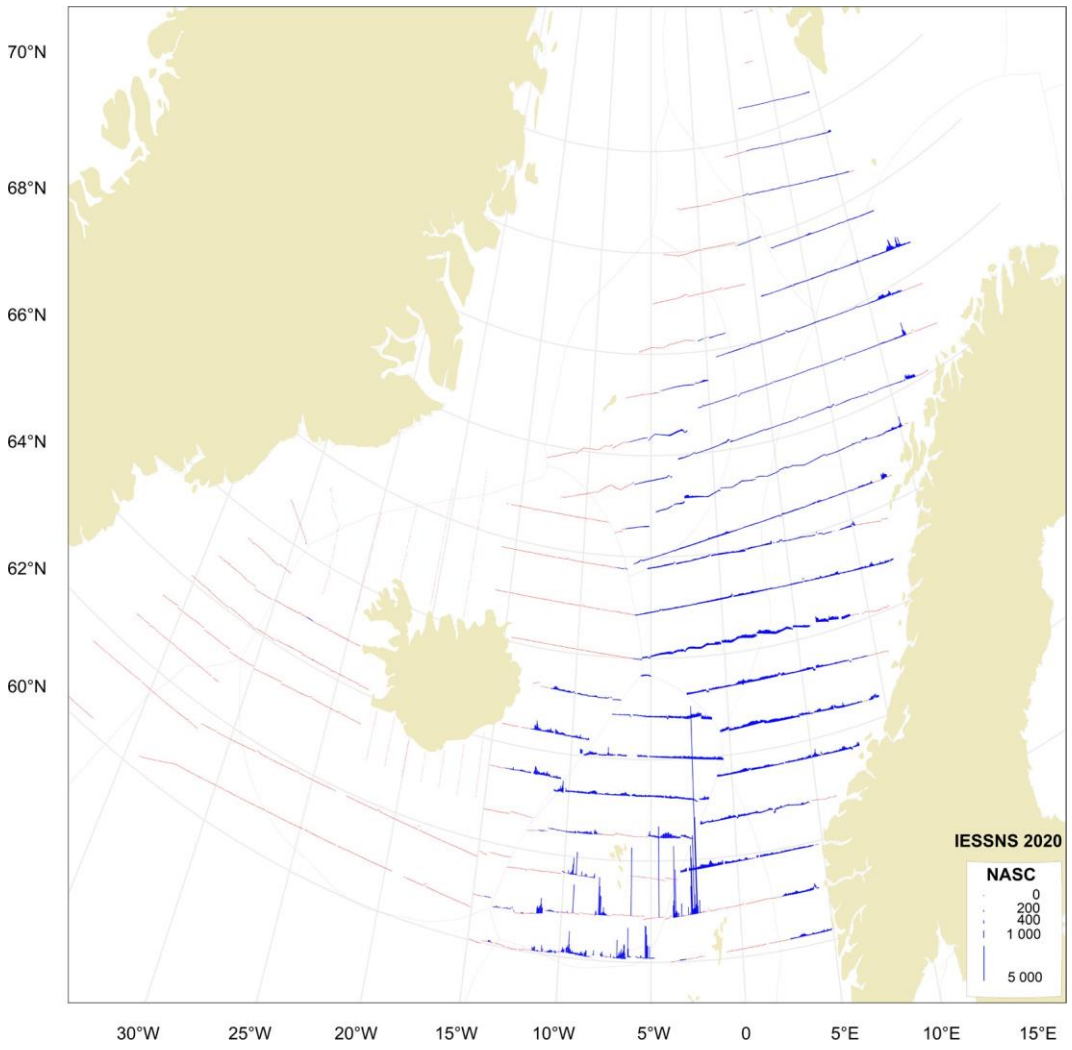


Figure 4.3.5. Distribution of blue whiting in the Nordic Seas from the International ecosystem summer survey in the Nordic Seas (IESSNS) in July 2020.

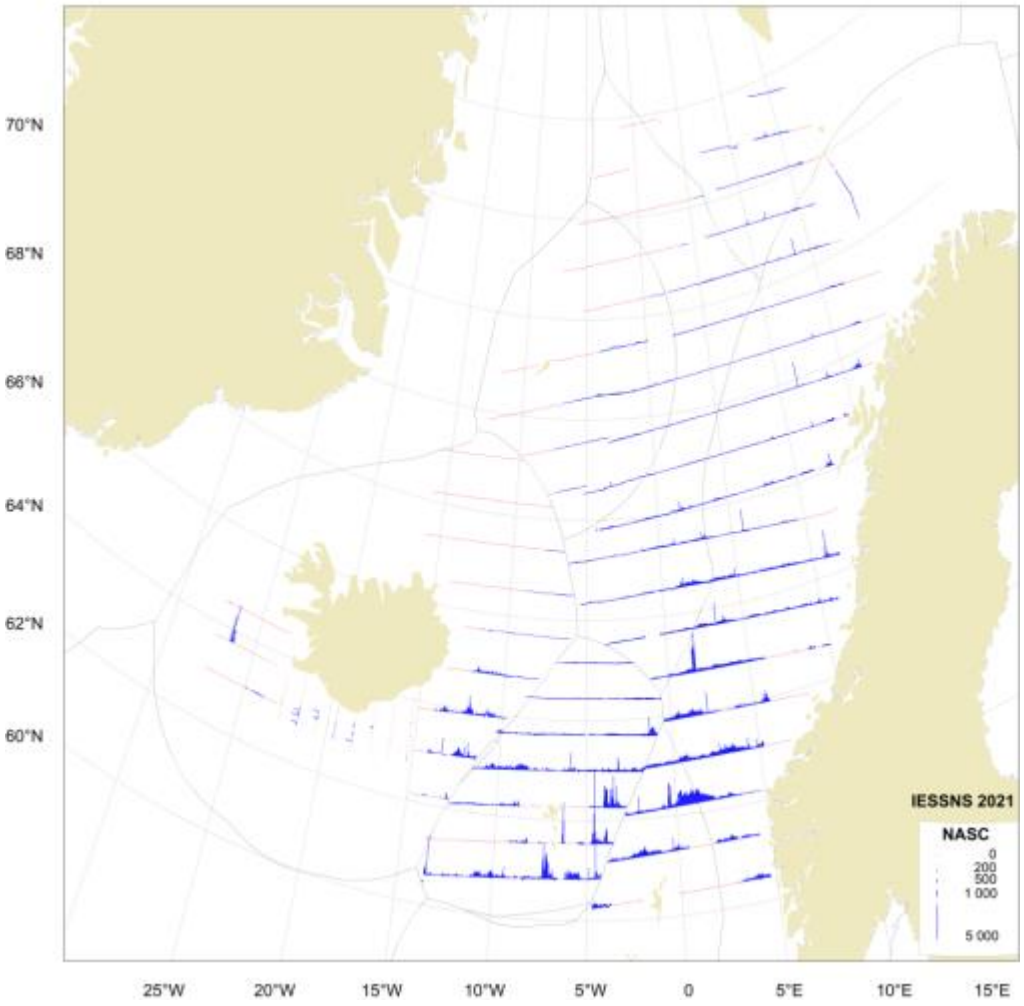


Figure 4.3.6. Distribution of blue whiting in the Nordic Seas from the International ecosystem summer survey in the Nordic Seas (IESSNS) in July 2021.

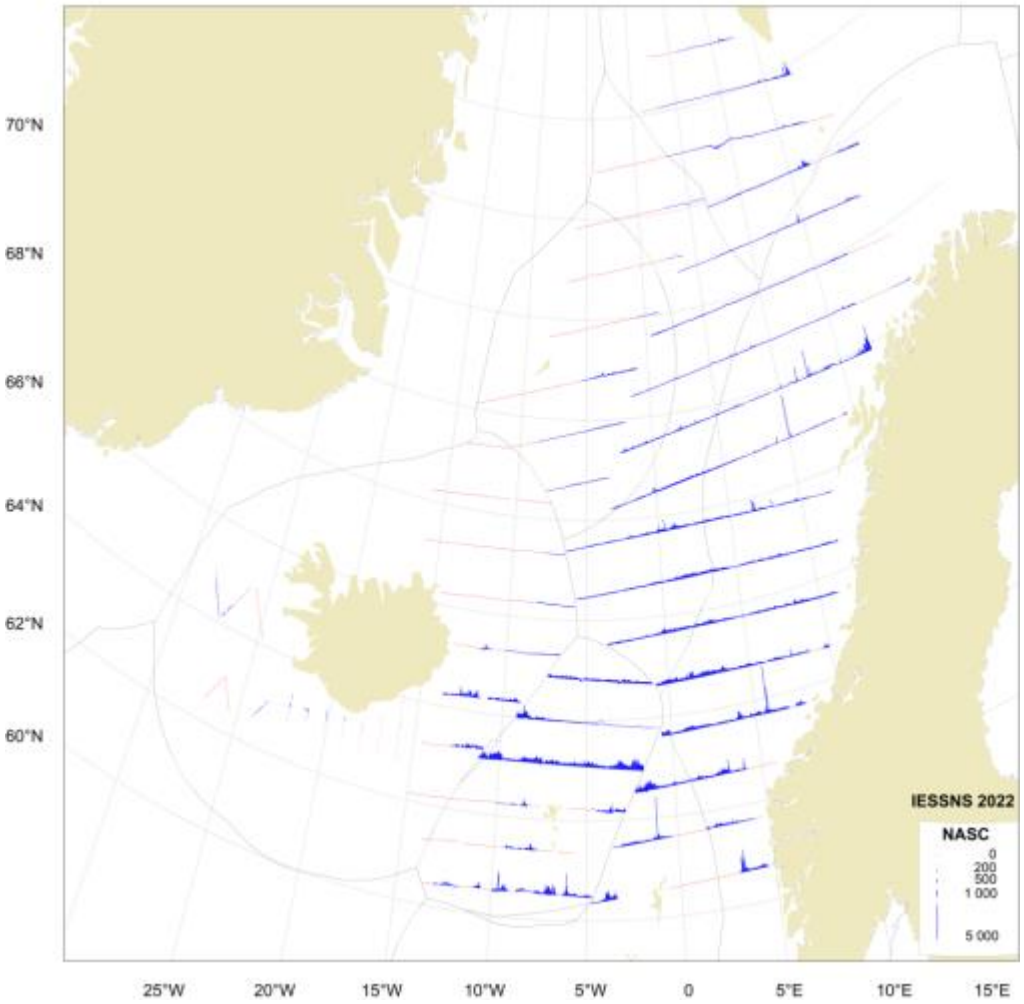


Figure 4.3.7. Distribution of blue whiting in the Nordic Seas from the International ecosystem summer survey in the Nordic Seas (IESSNS) in July 2022.

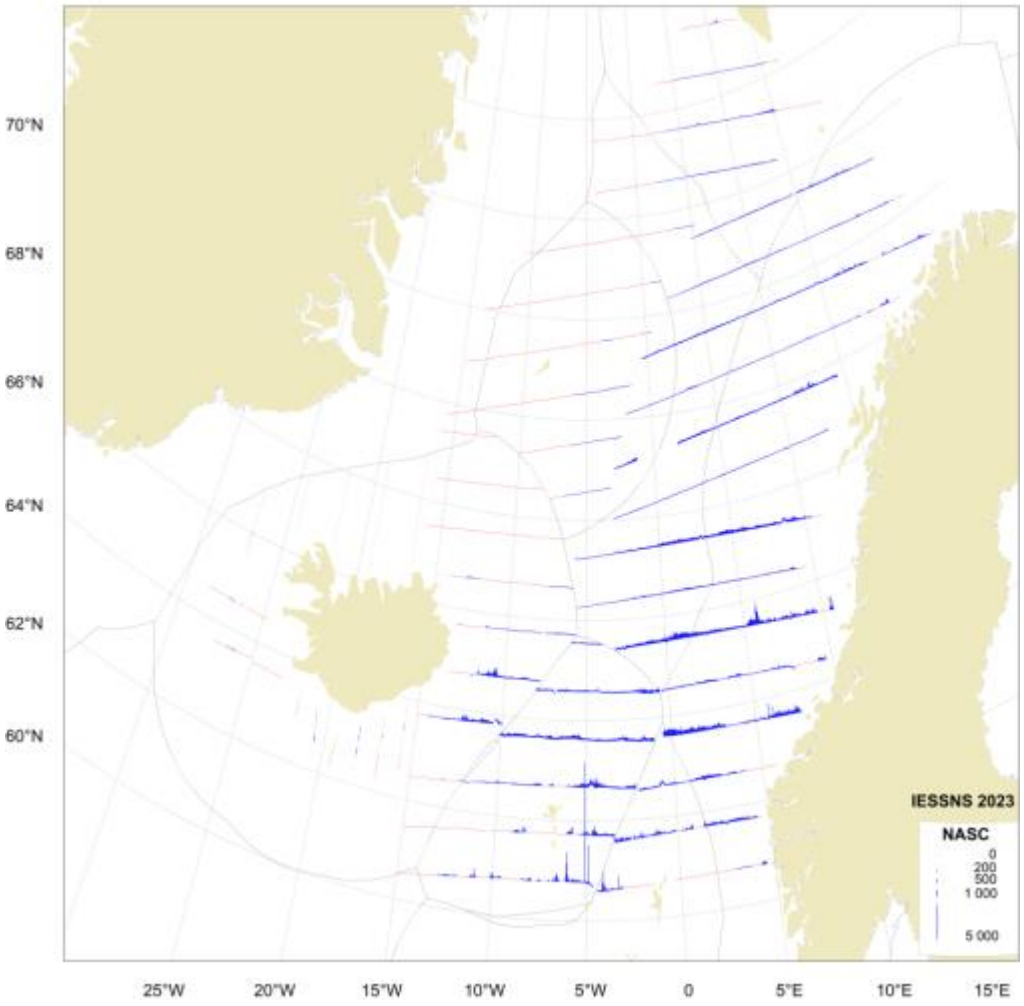


Figure 4.3.8. Distribution of blue whiting in the Nordic Seas from the International ecosystem summer survey in the Nordic Seas (IESSNS) in July 2023.

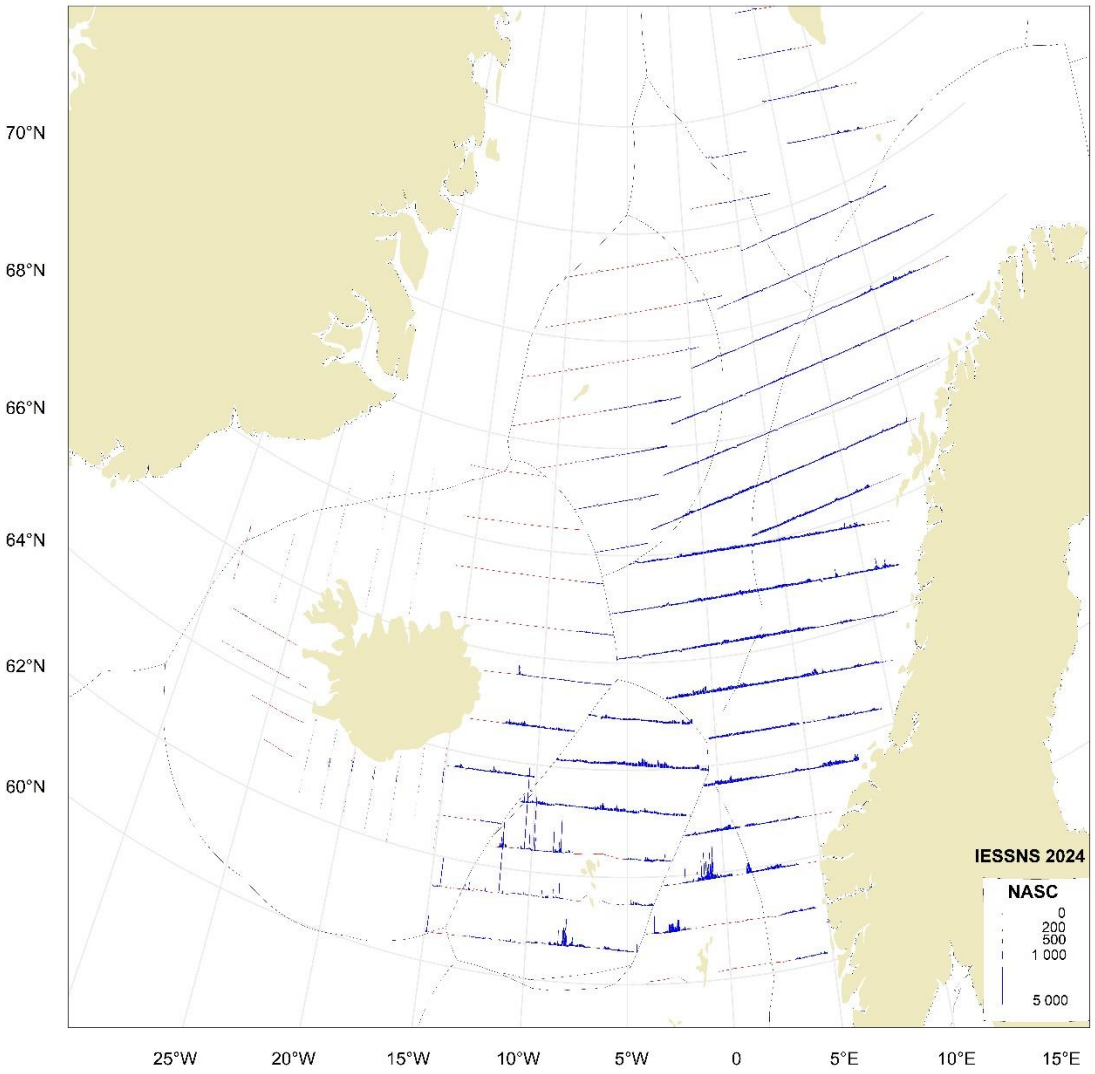


Figure 4.3.9. Distribution of blue whiting in the Nordic Seas from the International ecosystem summer survey in the Nordic Seas (IESSNS) in July 2024.

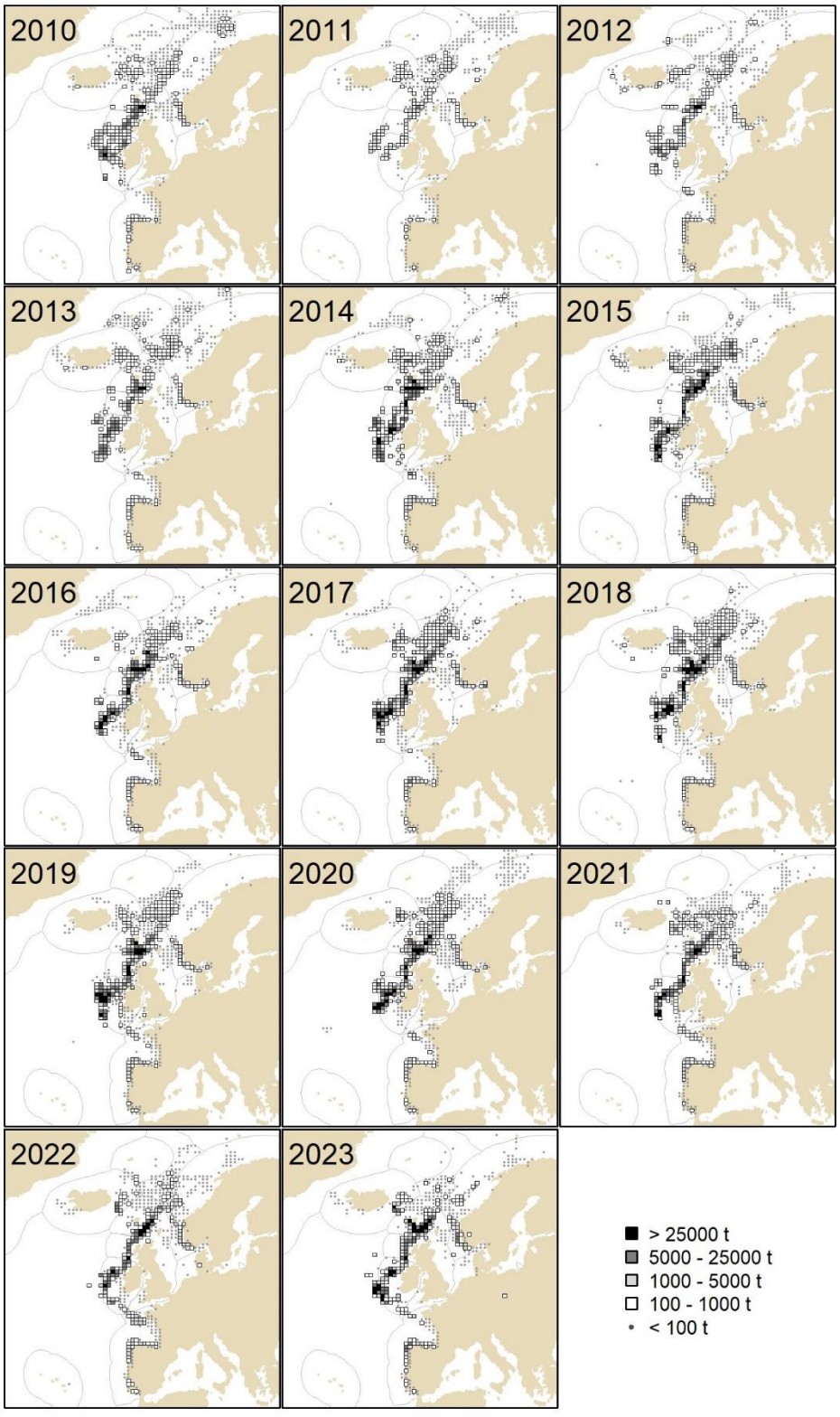


Figure 5.3.1. Annual aggregated catches of blue whiting by ICES-rectangles for individual years between 2010 – 2023. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

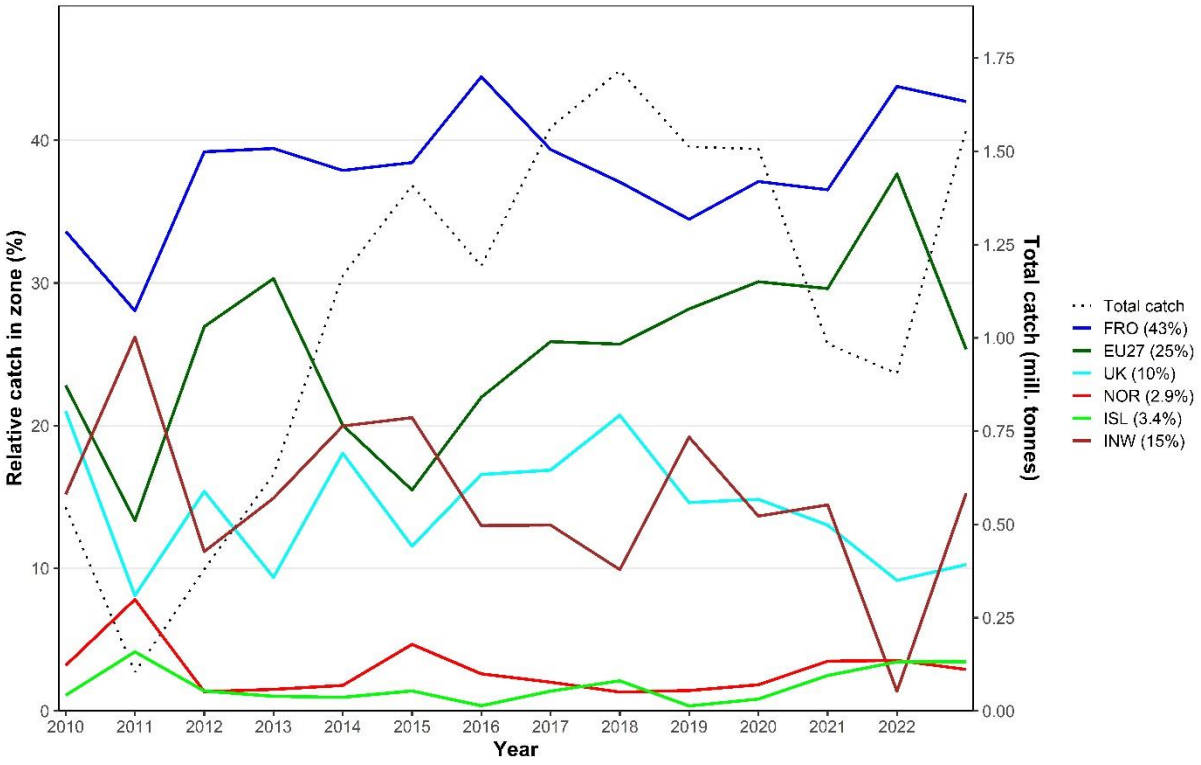


Figure 5.3.2. Total catch (mill. t) of blue whiting and relative catch (%) by Exclusive Economic Zone. INW = International Waters West, INN = International Waters North ("Banana hole"). Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

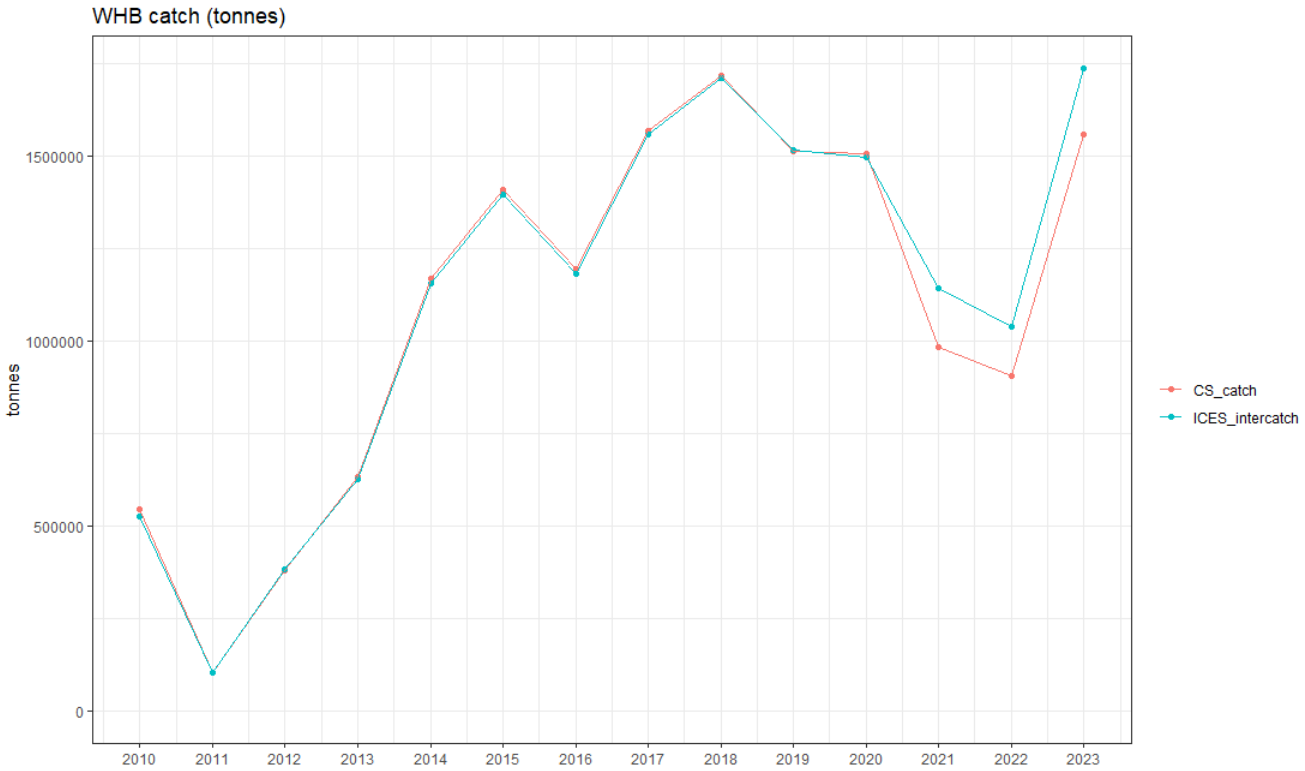


Figure 5.4.1. Comparison of catch data submitted to this working group (red) and ICES catch estimates (blue). Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included in the data submitted to this working group.

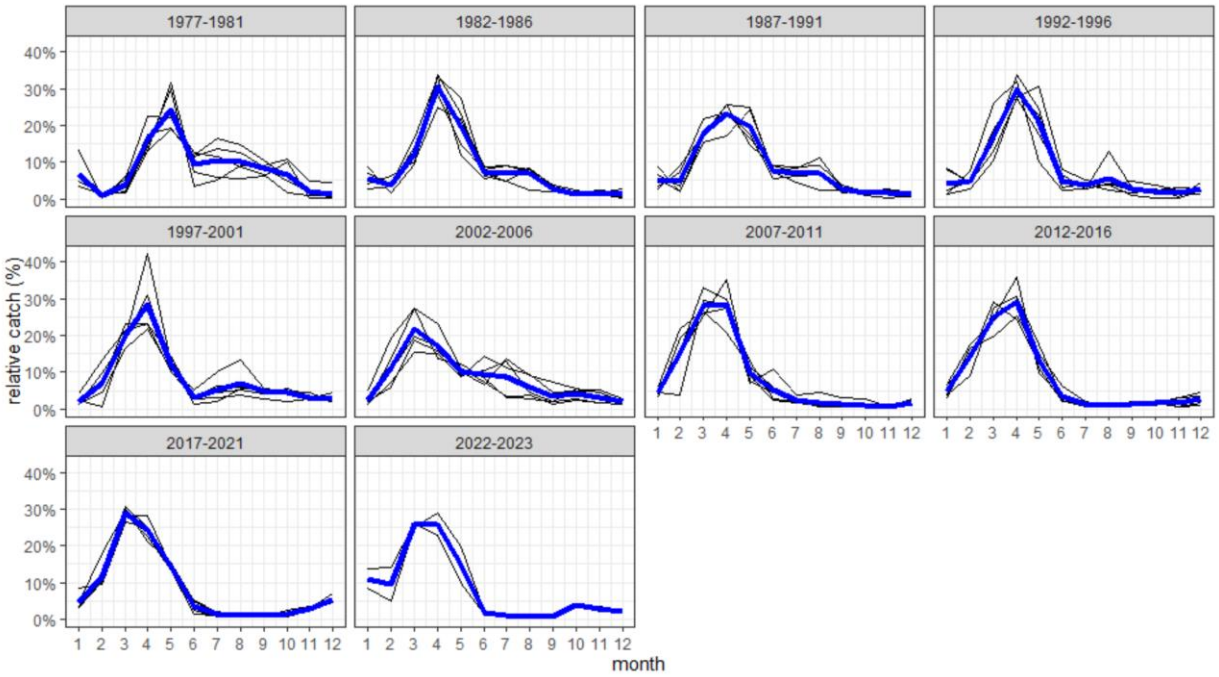


Figure 5.4.2. Relative catches by month, disaggregated in blocks of 5 years (with the latest panel including only two years). Black lines represent individual years, whereas the blue line is the average trend of catches for the block. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

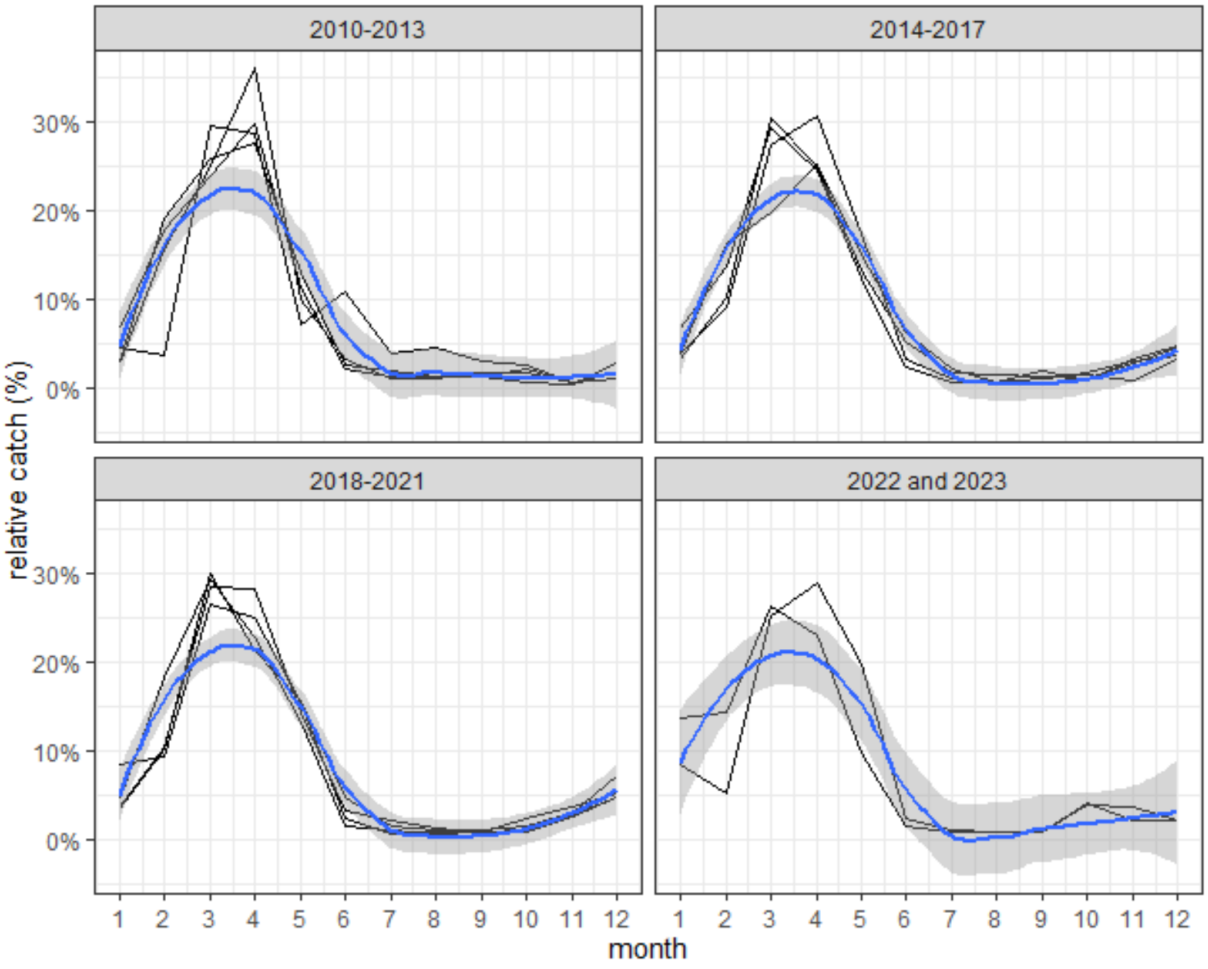


Figure 5.5.1. Relative catch of blue whiting per month disaggregated in blocks of four years for the period 2010-2023. The grey area shows the confidence intervals of the average trend (in blue), and the black lines represent individual years. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

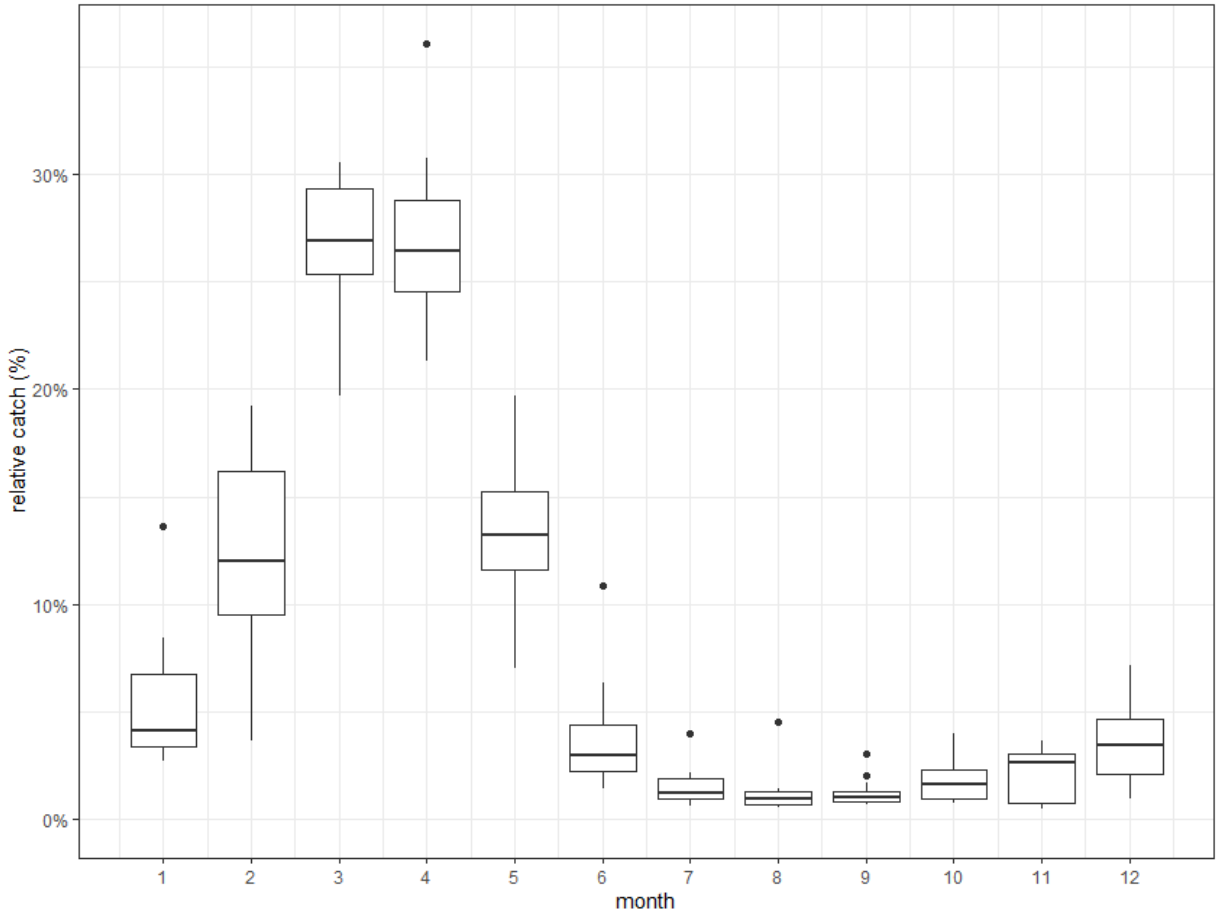


Figure 5.5.2. Boxplot of relative catches of blue whiting by month for the period 2010-2023. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

10. Annexes

Annex A1 – Distribution of blue whiting fishing per month and year

Figure A1.1. Total catches 1977-2023 in January. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

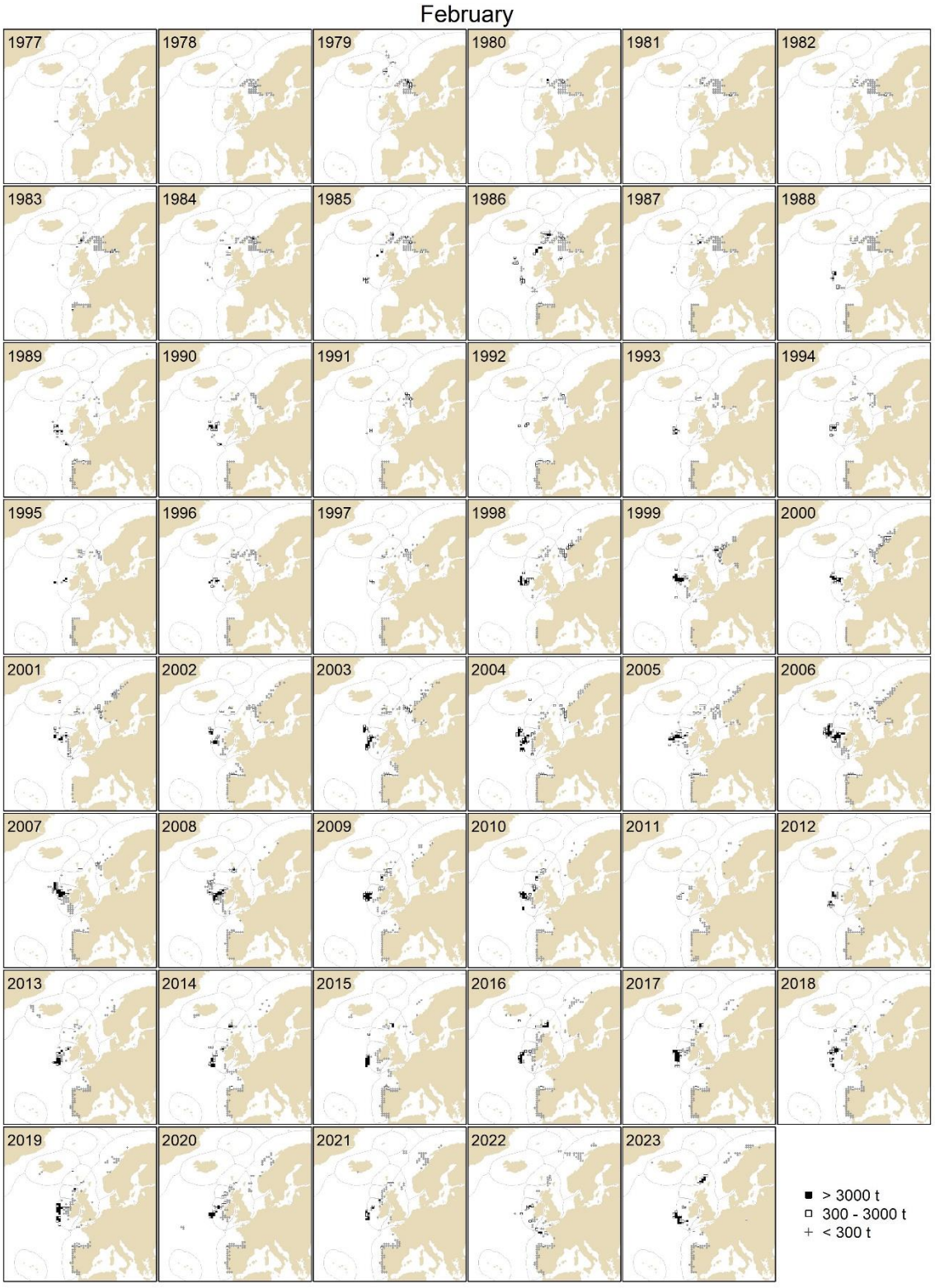


Figure A1.2. Total catches 1977-2023 in February. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

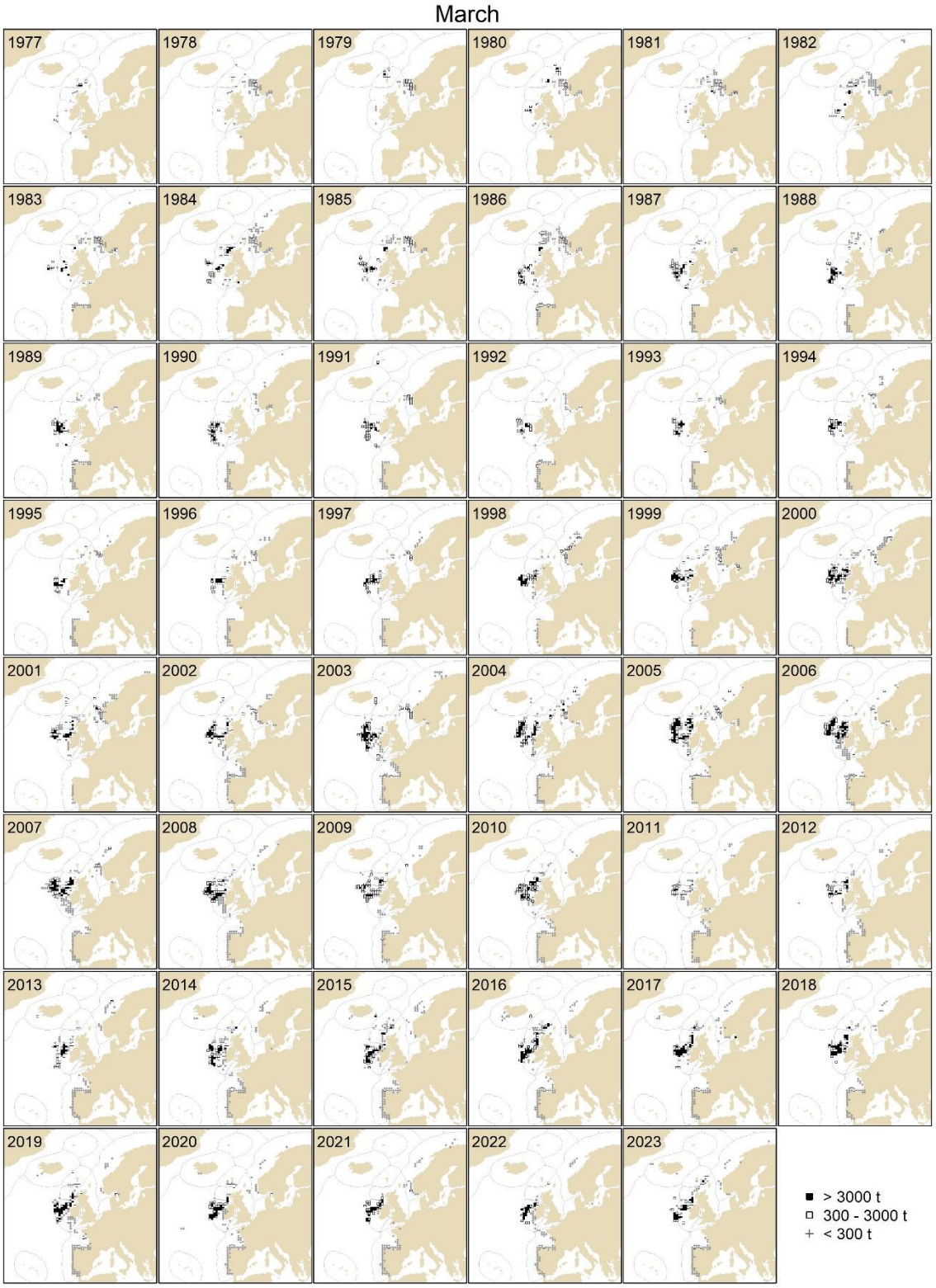


Figure A1.3. Total catches 1977-2023 in March. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

Figure A1.4. Total catches 1977-2023 in April. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

Figure A1.5. Total catches 1977-2023 in May. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

Figure A1.6. Total catches 1977-2023 in June. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

Figure A1.7. Total catches 1977-2023 in July. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

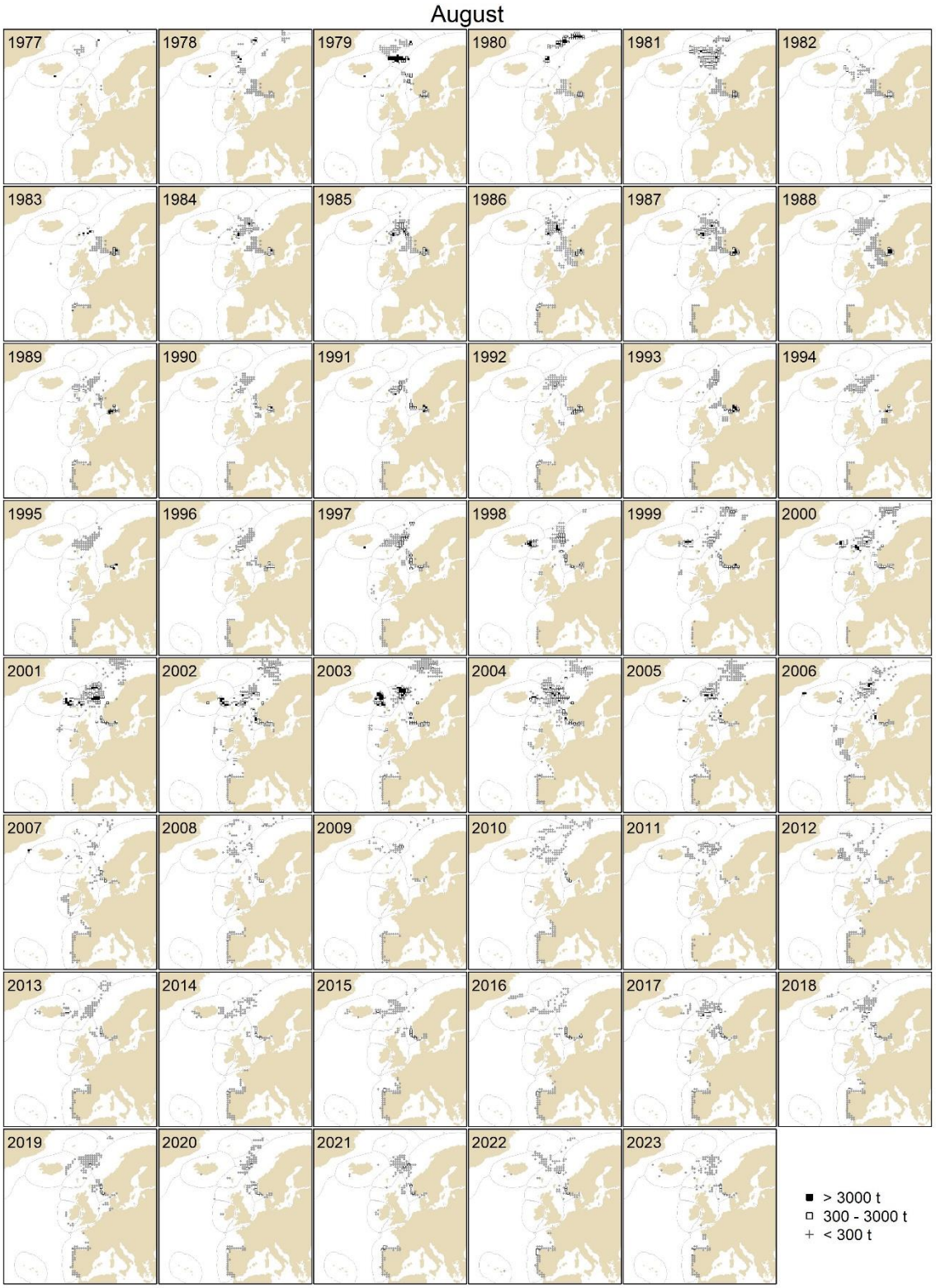


Figure A1.8. Total catches 1977-2023 in August. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

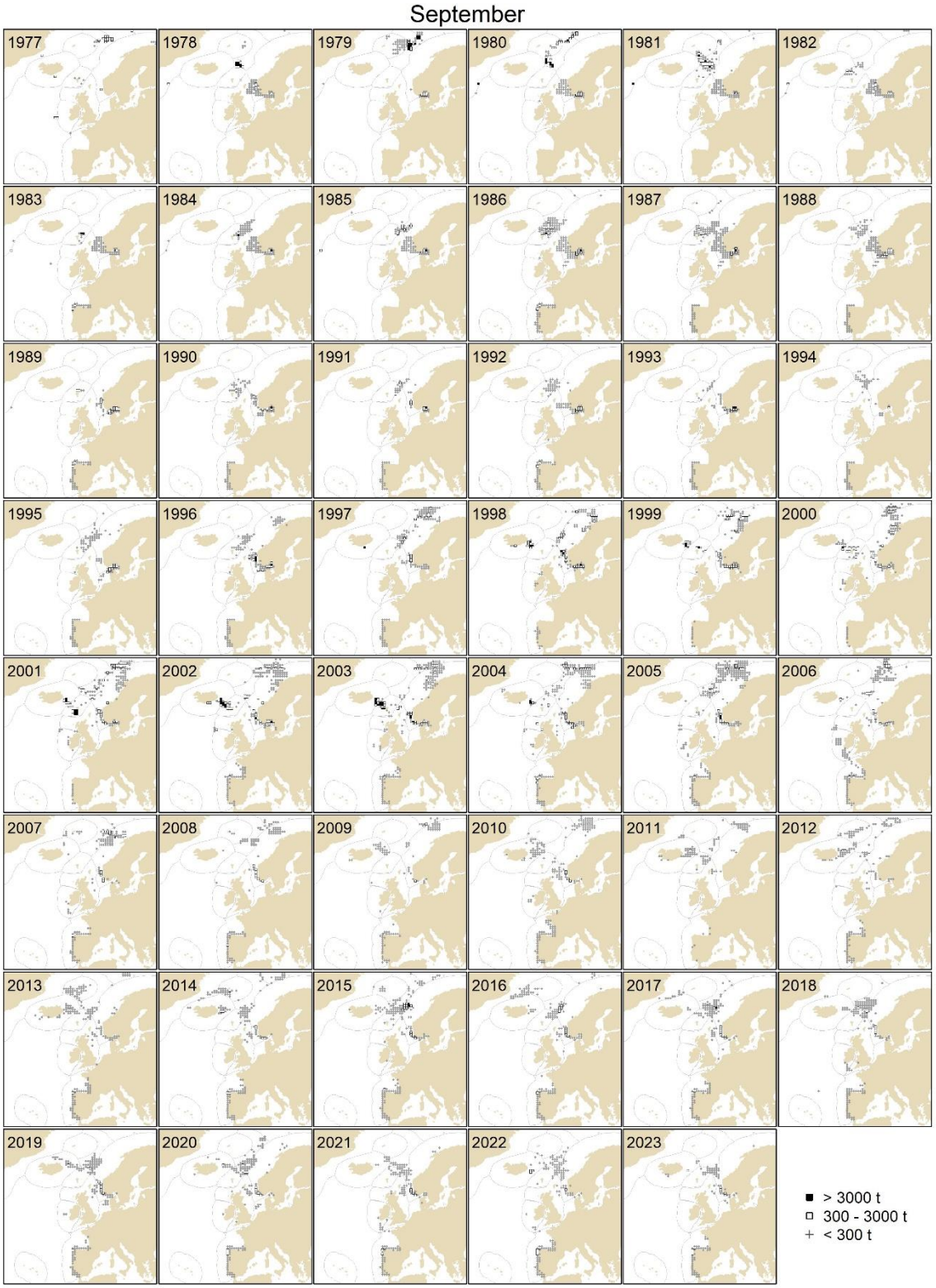


Figure A1.9. Total catches 1977-2023 in September. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

Figure A1.10. Total catches 1977-2023 in October. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

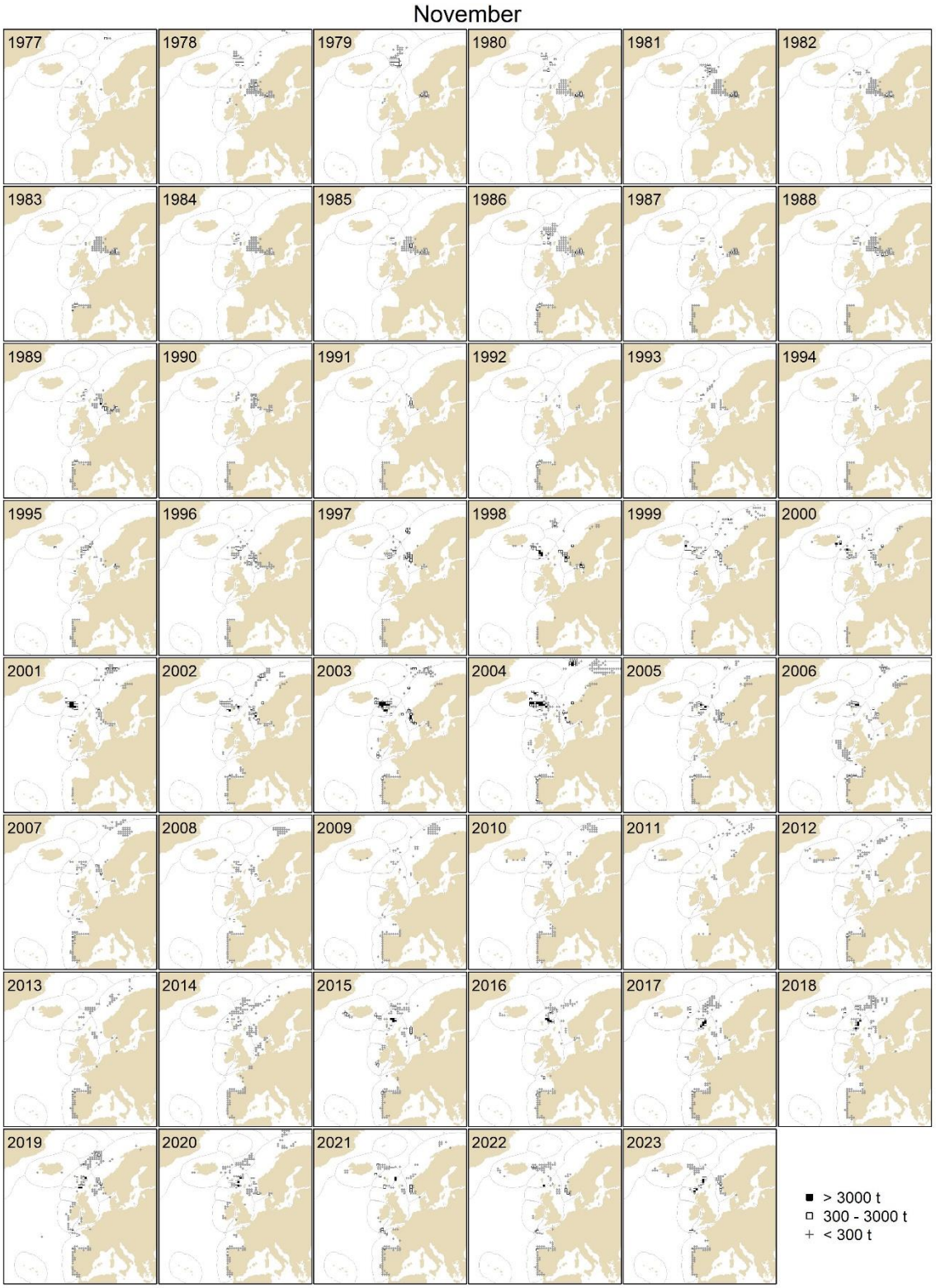


Figure A1.11. Total catches 1977-2023 in November. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

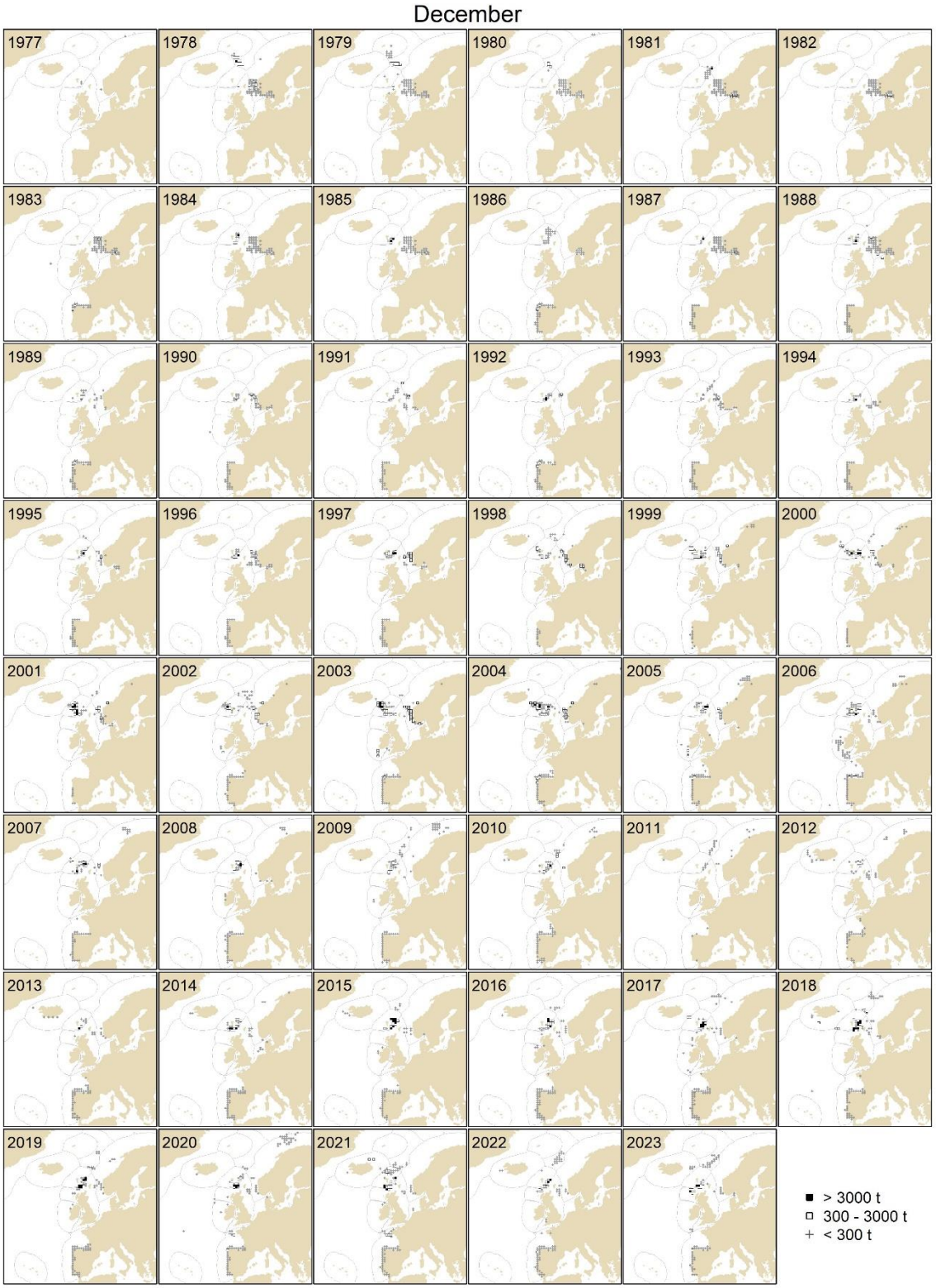


Figure A1.12. Total catches 1977-2023 in December. Note that French catches in 2023 and Russian catches in 2021, 2022 and 2023 are not included.

Annex A2 – Data call and formats

As agreed in the blue whiting agreed record for 2024, the Coastal States agreed to update the 'Report of the 2023 Coastal States Working Group on the distribution of blue whiting in the Northeast Atlantic' in 2024. There is a need to update the catches of blue whiting, and as such the working group kindly requests the Parties to provide information on their respective catches of blue whiting.

This data call requests catch data by month and ICES statistical rectangle for the period 2023, and by exclusive economic zones (EEZs) and international waters. This information should be submitted in the format listed in the document attached to this letter.

The Coastal States and the fishing parties of blue whiting are hereby asked to provide information on their respective catches of blue whiting by **6th July 2024**.
The co-Chairs (Iceland and UK) of the blue whiting distribution Working Group request that the data should be submitted to Rosana Ourens (UK), rosana.ourens@cefas.gov.uk, who will circulate it to all the members of the Working Group.

To underline the importance the UK attaches to international law and the sustainable use of marine resources, this request is sent to all coastal States and Fishing Parties in line with UNCLOS and UNFSA obligations.

Catch data by ICES statistical rectangle submission:

Catch data should be submitted in a text file with 7 columns:
year, species, country, ices_rect, month, catch, zone

It is important that:

- The columns are comma-separated
- The parameters are put in the file without any "
- The file is saved as .txt or .csv
- Only upper case letters are used
  - Countries are indicated with the three letterscode (alpha-3 code, https://www.nationsonline.org/oneworld/country_code_list.htm). ***See separate designations for the United Kingdom at the bottom of the Table below.***
- Rectangle names are without spaces or hyphens
- Month is given in numbers: 1,2, ..., 12
- Landings/catches are given in tonnes (with three decimal places and use *point* as the decimal separator (not *coma*) e.g. 15000.123)
- Economic zones are given as three letter codes (see examples below)

Example of submission file. (The first line is the header line):

```
year,species,country,ices_rect,month,catch, zone
2023,WHB,DEU,55E8,3,99.000,IRL
2023,WHB,DEU,55E8,4,4.210,IRL
2023,WHB,DEU,55E9,4,54.321,IRL
```

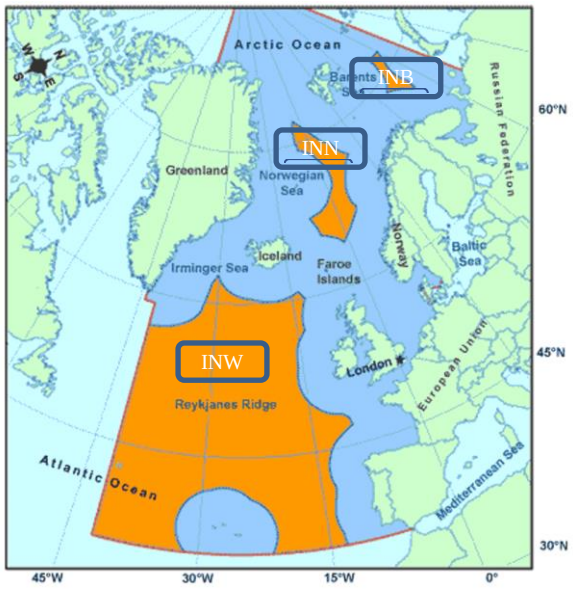
(catch numbers given in the example do not correspond to true values)

From EEZ / MarineRegions:

Territory1	ISO_Ter1
International Barents Sea	INB
International North	INN
International West	INW
Belgium	BEL
Germany	DEU
Denmark	DNK
Spain	ESP
Alhucemas Islands	ESP
Perejil Island	ESP
Ceuta	ESP
Peñón de Vélez de la Gomera	ESP
Chafarinas Islands	ESP
France	FRA
Faeroe	FRO
United Kingdom*	GBR
Guernsey	GGY
Gibraltar	GIB
Greenland	GRL
Ireland	IRL
Iceland	ISL
Jersey	JEY
Netherlands	NLD
Norway	NOR
Poland	POL
Azores	PRT
Madeira	PRT
Portugal	PRT
Russia	RUS
Svalbard	SVA
Jan Mayen	SJM
Sweden	SWE

*Separate regions in the United Kingdom

UK/Scotland	UKS
UK/England	UKE
UK/Wales	UKW
UK/Northern Ireland	UKN


Arctic Ocean
Barents Sea
INB
INN
Greenland
Norwegian Sea
Russian Federation
Norway
Baltic Sea
Irminger Sea
Iceland
Faroe Islands
INW
Reykjanes Ridge
London
European Union
Atlantic Ocean
Mediterranean Sea
60°N
45°N
30°N
45°W
30°W
15°W
0°

Annex A3 – List of participants

Name	Institute	Country of institute	Coastal State
Anna H. Ólafsdóttir (Co-Chair)	MFRI	Iceland	ISL
Rosana Ourens (Co-Chair)	Cefas	United Kingdom	UK
Patrícia Gonçalves	IPMA	Portugal	EU27
Corina Chaves	IPMA	Portugal	EU27
Esther D. Beukhof	DTUAqua	Denmark	EU27
Rosario Domínguez Petit	IEO	Spain	EU27
Alessandro Orio	SLUAqua	Sweden	EU27
Jasper Bleijengberg	WUR	Netherlands	EU27
Claus Reedtz Sparrevohn	DPPO	Denmark	EU27
Jonusas Stanislovas	DG MARE	Belgium	EU27
Niels Hintzen	MPFF	Netherlands	EU27
Jan Arge Jacobsen	FAMRI	Faroe Islands	FRO
Sólvá K. Eliasen	FAMRI	Faroe Islands	FRO
Åge Høines	IMR	Norway	NOR
Richard Nash	Cefas	United Kingdom	UK
Joseph Watson	Cefas	United Kingdom	UK
Campbell Pert	MD	United Kingdom	UK