Report of the Coastal States Working Group on the Distribution of Northeast Atlantic Mackerel

October 2025

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1 Introduction

At the Coastal States meeting (19-21st and 27th October 2021) the delegations (the European Union, the Faroe Islands, Greenland, Iceland, Norway, the United Kingdom, and the Fishing Party (the Russian Federation)) agreed to establish a Working Group and its Terms of Reference to collect and collate information on the geographical distribution of the mackerel stock in the North-East Atlantic, based on internationally recognised data collection methods and on the distribution of catches from this stock. The first report was published in 2022. The report has been updated annually since at the request of the Coastal State delegation.

A hybrid meeting was held on 30th August of 2025, at ICES headquarters in Copenhagen, to discuss the approach of the working group and the format of the report. The same terms of reference as presented since 2021 are adopted for this 2025 update of the WG report. The working group issued a data call where it was kindly requested that Parties provided information on their respective catches of mackerel for 2024 (see more details in section 1.2).

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 mackerel in the North-East Atlantic in 2024, the delegations agreed to update the 'Report of the 2024 Coastal States Working Group on the distribution of mackerel in the Northeast Atlantic' in 2025. The working group in 2025 has been co-chaired by the European Union and Iceland. The Working Group should present a report on time for the consultations in October 2025.

1.2 Approach of the present group

The present WG relies on standardised information in the form of output from nationally and internationally coordinated surveys. The primary data sources are considered to be those which are internationally coordinated, with common databases and where data are reported to ICES. Secondary data sources are considered to be data that are collected nationally with well documented and approved data collection protocols but are often limited in spatial or temporal extent. Many of the secondary data sources have a relatively short time-series, are discontinuous and/or not currently undertaken. The group also considered whether surveys were specifically designed for estimating mackerel distributions and abundance or whether the mackerel was incidental in the survey i.e., the principal target was a different species or suite of species.

For temporal distribution among zones the present Working Group followed a direct observation approach. Surveys provide snapshots of distribution of biomass/abundance of the different life stages. Due to the limited number of primary survey data sources, the WG chose to provide a detailed report on the following stages: juveniles age-0, spawning distributions, and adults age 2+ on the summer feeding grounds. The juvenile distribution constitutes surveys which were not specifically targeted on mackerel whereas the spawning and summer distributions were surveys targeted on mackerel. Visualisation of the data are given in the form of maps and when the data allowed, tables showing proportions by zones. The surveys only provide information about biomass or abundance at specific points in time and space, but the integrated nature of their analysis will give distribution maps within the survey period. Due to the lack of systematic information the WG chose to avoid interpolation between survey periods or combining surveys with different survey designs or strategies. The maps and tables provide some guidance as to the within year rate of change in distribution among zones.

Catch distributions for the period 2006 - 2020 were based on the data held by the ICES Working Group on Widely Distributed Stocks (WGWIDE), which emanates from an annual data call. Most of these data are by

ICES statistical rectangle and month with no designated EEZ. This information was gleaned from a process of apportioning catches as a proportion of the statistical rectangle area in each EEZ (see more details in Anon, 2022). ICES also hold catch data for the period 1998 - 2005 by rectangle and quarter, but it was decided by the working group not to update this historical data. For the period 2021 - 2024 the working group sent out a data call where the Parties were requested to provide catch data by month, ICES rectangle, and EEZs for each year (see last data call in Annex A2). Notwithstanding regulation effects, national agreements on zonal access, misreporting etc, the distribution of the mackerel fishery by month may provide some guidance as to the within year rate of change in distribution among zones.

Much of the data reported to date with respect to Zones and/or EEZs refers to the EU and this includes many reports relating to the distribution and catches of Northeast Atlantic Herring (*Clupea harengus*) (Norwegian Spring Spawning (NSSH)/Atlanto-Scandian (ASH)) and Northeast Atlantic Blue whiting (*Micromesistius poutassou*). In this report the data are reported for the UK and the EU separately and to ensure there is no confusion with any previously published reports, the EU without the UK is referred to within this report as EU27.

2 Background

There has been a considerable amount of research undertaken on mackerel in the Northeast Atlantic and the fisheries have been reasonably well described since the early 1900s. Much of the information on mackerel biology, ecology (including migrations), and the fisheries in this area from 1905 to 1984 is documented in the book by Lockwood (1988). Prior to the beginning of the 1960s the fishing and landings were dominated by herring with relatively low catches of mackerel. However, in the early to mid-1960s there were substantial increases of mackerel catches, primarily by the Norwegian fleet (Iversen 2002; Tøsdal 2021).

Comprehensive and more recent summaries of the available data and ecology of the Northeast Atlantic mackerel stock are documented in ICES reports examining its distribution and migration (ICES 2013a, 2023a). An annual assessment of the stock status and abundance is carried out by ICES Working Group on Widely Distributed Stocks (WGWIDE). The current assessment method utilises data from sampling of the commercial catch, two internationally co-ordinated surveys and the Norwegian co-ordinated tagging study (see ICES 2025a). The distribution of spawning and an estimate of the spawning stock size is available from the triennial Mackerel and Horse Mackerel Egg Survey (reporting to the ICES WGMEGS). The summer stock (feeding) distribution is estimated by the International Ecosystem Summer Survey in the Nordic Seas (IESSNS) and co-ordinated by the ICES Working Group for International Pelagic Surveys (WGIPS).

In the ICES Workshop on the Evaluation of NEA Mackerel stock components (WKEVALMAC) meeting held between 12th and 17th June 2023 in London (NEAFC Headquarters, 44 Baker Street, London W1U 7AL, United Kingdom) it was concluded that the NE Atlantic mackerel stock can be considered as one stock and there was no necessity to consider that it constituted a combination of ‘components’ (ICES 2023a).

2.1 Main characteristics of the migration patterns of the stock

In general terms the life history and thus the spatial distribution of the mackerel stock can be considered within the framework of the various life history stages/phases and seasonal distributions. For the purposes of a brief summary of the current information available on the spatial distribution of the stock, four phases in the annual cycle and life history are considered (as documented in ICES 2013a):

- Spawning (adults)
- Summer (adults)
- Overwintering (adults)
- Juveniles

2.1.1 Adults

The overall annual migration patterns of northeast Atlantic mackerel are reasonably well known (Lockwood 1988; Godø *et al.* 2004; Uriarte and Lucio 2001; Uriarte *et al.* 2001). Changes in the migration patterns over the years have been also reported (Iversen 2002), however, the drivers of the timing of migration or the interannual variability in locations are less known. This lack of information and/or understanding results in a large uncertainty with respect to predicting any future shifts in spatial pattern or interpolating past distributions of the stock.

In general terms much of the Northeast Atlantic stock over-winters in the vicinity of the shelf edge around the northern part of the North Sea (ICES Division 4a) and onto the shelf in the North Sea (Uriarte and Lucio 2001; Uriarte *et al.* 2001; Jansen *et al.* 2012). The extent of adult fish overwintering along the eastern portion of the Norwegian Trench (along the Norwegian coastline) and to the west of the British Isles (ICES Sub Areas 6 and 7) has not been thoroughly investigated.

In February/March part of the stock aggregates and then starts to migrate southward toward spawning grounds in the Cantabrian Sea and Bay of Biscay. Spawning generally progresses from the south to the northern grounds, starting in around February/March and culminating in June/July (see Lockwood 1988 and ICES MEGS reports). Spawning does occur in the North Sea, and this tends to be later in the season, around June/July (ICES 2021b). The cues for where a fish may spawn are also unknown and since the centres of spawning are changing over time there must be interannual variability in the location of optimal spawning habitats (Hughes *et al.* 2014).

Adult mackerel migrate northward from the spawning areas to the feeding grounds. The principal feeding migration is north and west into Nordic Seas, Iceland Basin and Irminger Sea, in some years as far west into Greenland waters and also as far north into the vicinity of Svalbard (see Figures 4.1.1 and 4.1.2). Some fish from the furthest south spawning grounds might move into the North Sea for feeding rather than migrating northward into the Nordic Sea (Uriarte *et al.* 2001). The drivers of the interannual variations in the location of the feeding grounds are still not properly understood (Nøttestad *et al.* 2016a; ICES 2020), however, there is research suggesting that this may be partially due to thermal regimes, prey availability and stock size (Nikolioudakis *et al.* 2019; Ólafsdóttir *et al.* 2019).

In the period September/October the majority of the stock departs from the feeding grounds, migrating back to the over-wintering grounds. The timing and details of this migration have not been a focus of any scientific studies and as such any quantitative assessment cannot be undertaken.

2.1.2 Early life stages

The spawning locations of mackerel and the nursery grounds are relatively well known and documented (Jansen et al. 2015; ICES 2021b). However, there does not appear to have been any detailed studies on the dynamics of the eggs and/or larvae nor the connectivity between the spawning locations and the nursery grounds. Likewise, there is little or no available detailed information on the locations (abundances) of age 1 and 2 mackerel prior to them joining the adult feeding migrations. It is known that juveniles occur in the North Sea, Hebridean Shelf, eastern Celtic Sea/Western Channel but what proportion of the juveniles in the stock that these constitute is unknown.

2.2 Mixing and interactions with other stocks

There is spatial and temporal overlap between Northeast Atlantic mackerel and Norwegian spring-spawning herring, especially at the periphery of the mackerel distribution (northern Faroese, Icelandic and Jan Mayen waters) in the summer feeding months. This may result in competition between mackerel and herring for preferred food such as *Calanus finmarchicus* (Debes *et al.* 2012; Huse *et al.* 2012; Langøy *et al.* 2012; Óskarsson *et al.* 2012). Mackerel may outcompete herring during summer because mackerel are generally larger, faster, more enduring when migrating and more effective plankton eaters, including a wider food niche (wider diet

breadth) than herring (Nøttestad *et al.* 2012). In a correlative study undertake on the survey data from the IESSNS, Nikolioudakis *et al.* (2019) indicated that herring abundance was one of the main factors which influenced both the mackerel occurrence and its density in the survey.

There is evidence of mackerel predation on other species such as in the North Sea on 0-group herring as well as 0-group Norway pout and all ages of sandeel (ICES 2008). Mackerel has also been noted to prey on Norwegian spring-spawning herring larvae along the continental shelf coast of Norway (Skaret *et al.* 2015; Allan *et al.* 2021). The full extent of this predation on herring, along with any inter-annual variability, is as yet unknown.

3 Methods

3.1 Zonal database

For the purpose of this report, the definitions of national EEZs were taken from the MarineRegions website (https://www.marineregions.org/). We used the version Intersect_EEZ_IHO_v4_2020 that presents the intersections between the EEZs and International waters (Figure 3.1.1). Note that the MarineRegions database does not contain the special arrangement between Norway and Russia on the Russian access to the southern part of the international waters (Anon. 2010).

The method to allocate the area proportion of a zone within each rectangle was carried out with R software. The results were included in a similar database as was prepared at the Blue whiting meeting in 2013 (Anon. 2013). The database holds estimates of:

- The area of sea in each ICES rectangle in the Northeast Atlantic
- The proportion of the sea area of each ICES rectangle that lies within the EEZ of each of the contracting parties, as well as in international waters outside national jurisdiction.

The database covers the area from 36.25 to 84.75N and 43.5W to 68.5E (Figure 3.1.1). Some examples of how the area of the ICES rectangles was divided between adjacent EEZs are shown in Figures 3.1.2-3.1.4.

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

Economic Exclusive Zone (EEZ)	Code
European Union	EU27
Faroe Islands	FO
Greenland	GR
Iceland	IS
International waters	INT
Norway	NO
Russia	RU
Jan Mayen	SJM
Svalbard	SVA
United Kingdom	UK

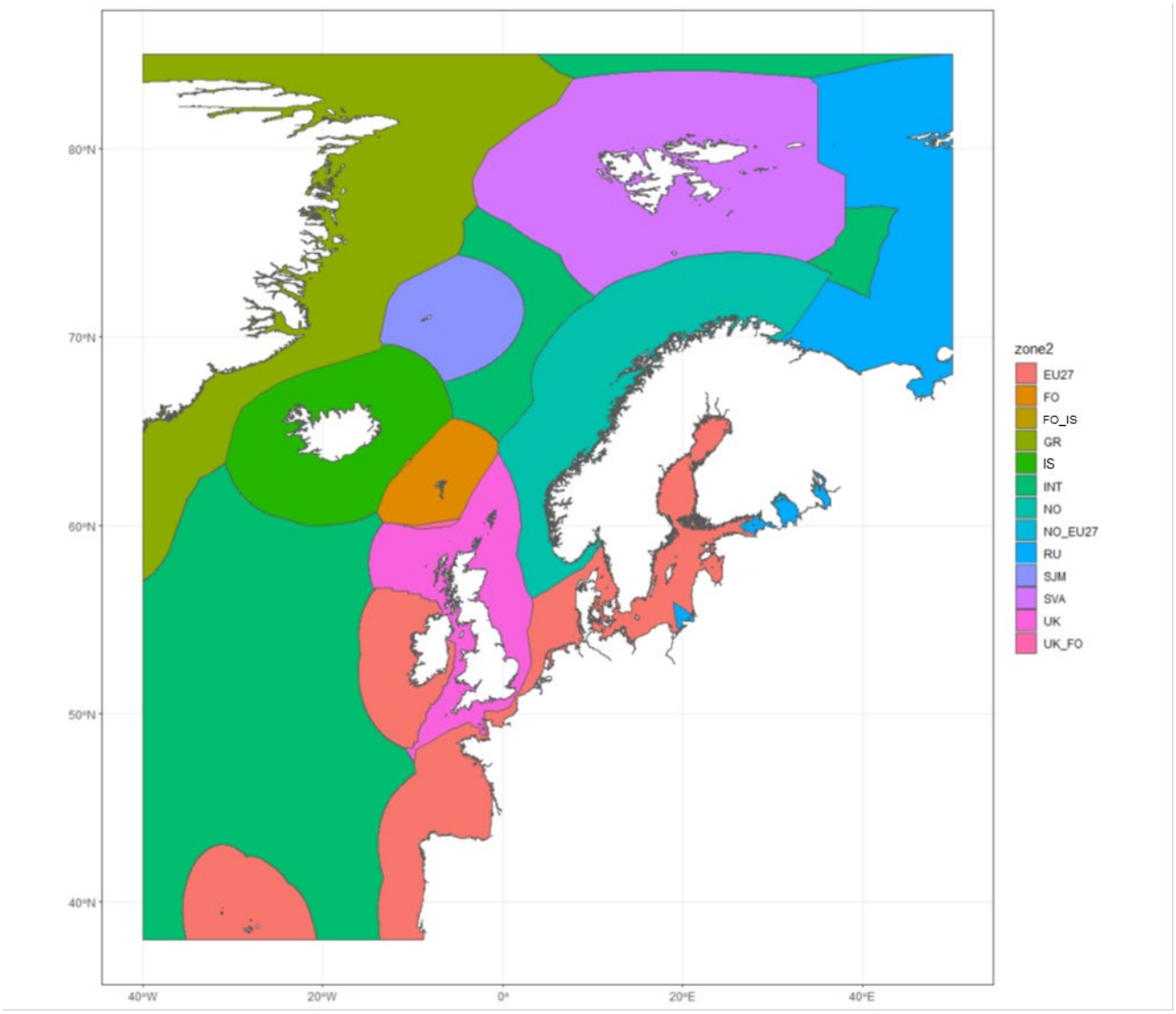

Figure 3.1.1. Overview map of Exclusive Economic Zones (EEZ) in the Northeast Atlantic used in the report.

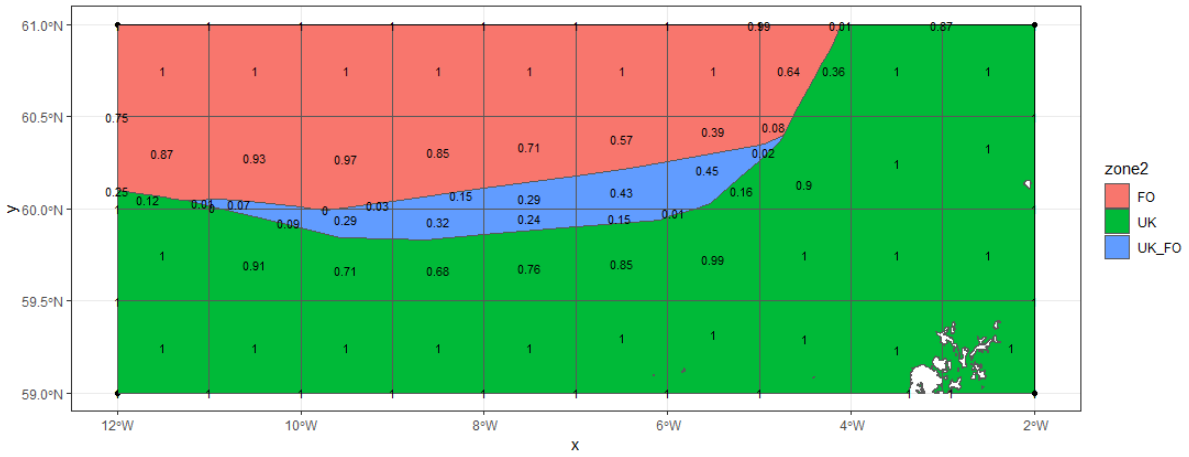

Figure 3.1.2. Proportions of Exclusive Economic Zones (EEZ) within the FO-UK Special Area between the UK and Faroe Islands.

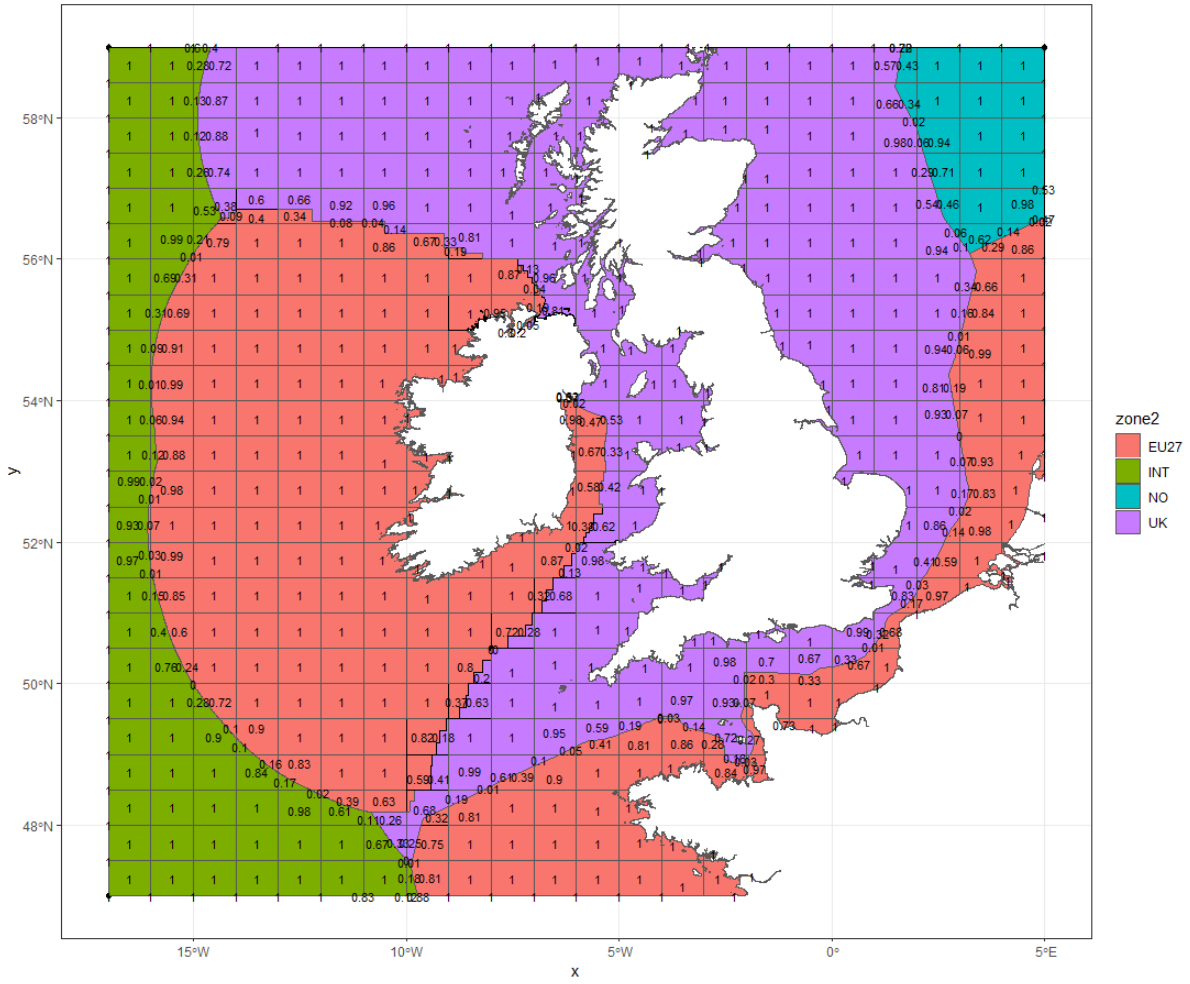

Figure 3.1.3. Proportions of Exclusive Economic Zones (EEZ) between the UK, EU27, Norway and International waters.

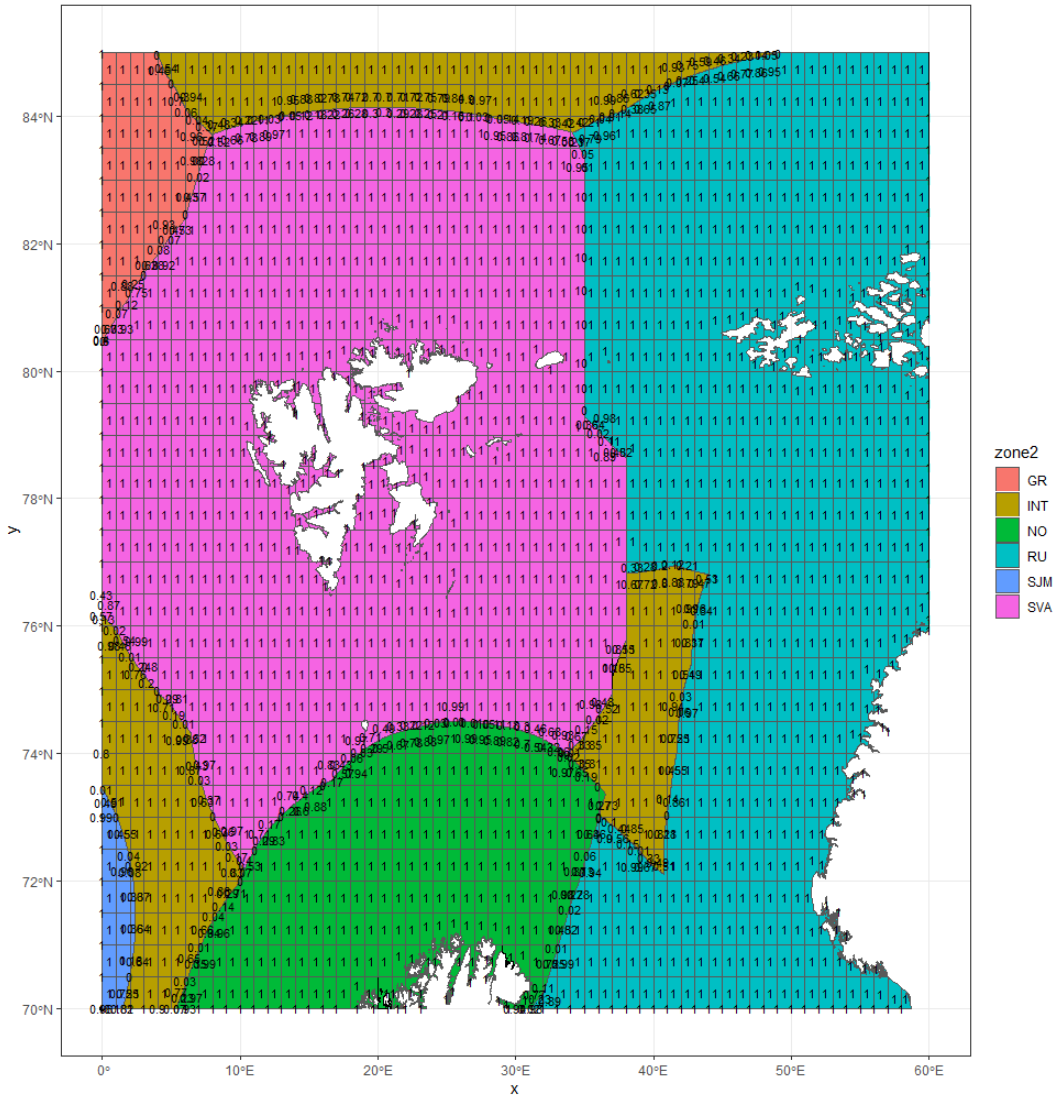

Figure 3.1.4. Proportions of Exclusive Economic Zones (EEZ) in the Barents Sea. Note that the special area between Norway and Russia has not yet been included.

3.2 Surveys

There are a number of surveys and data sources that provide information on the distribution of mackerel in the Northeast Atlantic (Table 3.2.1). However, currently no single methodology or survey strategy is capable of providing data on all life stages (i.e., from eggs to adults), over a complete annual cycle and the entire spatial distribution of the stock.

Table 3.2.1. Overview of surveys (ICES survey code in bracket) in the northeast Atlantic where mackerel occur. The survey listing and summaries include those used to quantitatively estimate the proportion of the mackerel stock in each of the Exclusive Economic Zones (EEZ) and additional surveys which contain information on the distribution of mackerel. While this list is comprehensive, it is not an exhaustive list. Information about secondary data source surveys, labelled additional surveys, can be found in the 2023 Coastal State report.

	Survey acronym	Survey name/description	Time of year	Life stage	Frequency	Area (ICES Sub-Areas and Divisions)	Year range	Survey type	Section report
Surveys analysed in this report	IESSNS (A7806)	International Ecosystem Summer Survey of the Nordic Sea	July–August (Q3)	Adults/juveniles	Annual	2, 4a, 5a–b, 14b	2010–	Swept area pelagic trawl survey	3.2.1.1
	IESSNS (North Sea) (A7806)	International Ecosystem Summer Survey of the Nordic Sea	July (Q3)	Adults/juveniles	Annual	4a–b	2018–	Swept area pelagic trawl survey	3.2.1.1
	MEGS (I4189)	Mackerel and Horse Mackerel Egg Survey	March–July (Q1–Q2)	Adults	Triennial	5–8, 12	1992–	Gulf and bongo sampling	3.2.1.2
	MEGS (North Sea) (I1582)	Mackerel and Horse Mackerel Egg Survey	May–June (Q2)	Adults	Annual	3a, 4	1999–	Gulf sampling	3.2.1.2
	EVHOE (G9527)	French Southern Atlantic Bottom Trawl Survey	Q4	Adults/juveniles	Annual	7e–h, 8a–b	1997–	Bottom trawl	3.2.1.3
	FR-CGFS (3425)	French Channel Ground Fish Survey	Q4	Adults/juveniles	Annual	7d	1988–	Bottom trawl	3.2.1.3
	SWC-IBTS	Scottish West Coast International Bottom Trawl Survey	November–December (Q4)	Adults/juveniles	Annual	6a	1990–2009	Bottom trawl	3.2.1.3
	SCOWCGFS (G4748)	Scottish West Coast Groundfish Survey	Q1	Adults/juveniles	Annual	6a,7b	2011-	Bottom trawl	3.2.1.3
	SCOWCGFS (4815)	Scottish West Coast Ground Fish Survey	Q4	Adults/juveniles	Annual	6a, 7b	2011–	Bottom trawl	3.2.1.3
	NS-IBTS (G1022)	North Sea International Bottom Trawl Survey	Q1	Adults/juveniles	Annual	4	1965–	Bottom trawl	3.2.1.3
	SWC-IBTS	Scottish West Coast International Bottom Trawl Survey	February–March (Q1)	Adults/juveniles	Annual	6a	1986–2010	Bottom trawl	3.2.1.3
	WCGFS	Western Celtic Sea Ground Fish Survey	Q1	Adults/juveniles	Annual	7f–j	1998–2013	Bottom trawl	3.2.1.3

Additional surveys	FO-GFS-Q1 (G1264)	Faroese Bottom Trawl Survey	February-March (Q1)	Adults/juveniles	Annual	5b1	1996–	Swept area trawl survey	A1.10[1]
	IS-GFS-Q1 (G3239)	Icelandic Bottom Trawl Survey (SMB)	March (Q1)	Juveniles	Annual	5a	2001–	Bottom trawl	A1.11[1]
	PELACUS (A2111)	Pelagic Acoustic in North-western Spanish Waters	March–April (Q1-Q2)	Adults/juveniles	Annual	8c, 9aN	1984–	Acoustic	A1.7[1]
	PELAGO (A6723)	Pelagic Acoustic Survey in Portuguese waters	March–April (Q1-Q2)	Adults/juveniles	Annual	9aS,W	1995–	Acoustic	
	IBWSS (A1142)	International Blue Whiting Spawning Stock Survey	March–April (Q1-Q2)	Adults	Annual	6–7, 12	1998–	Acoustic	
	PELGAS (A4150)	Pélagiques Gascogne	Q2	Adults/juveniles	Annual	8a–b,8d	2000–	Acoustic	
	IESNS (A3675)	International Ecosystem Survey in the Nordic Sea	May (Q2)	Adults	Annual	2, 4a, 5a–b	1995–	Acoustic	A1.4[1]
	IMR Tagging (NOR) RFID	Mackerel tagging survey	May–June (Q2)	Adults	Annual	Northeast Atlantic	2011–	Tagging and recapture	A2[1]
	HERAS	Herring Acoustic Survey	June-July (Q2–Q3)	Adults/juveniles	Annual	3–7	1989–	Acoustic	A1.9[1]
	WESPAS (A8737)	Western European Shelf Pelagic Acoustic Survey	June-July (Q2–Q3)	Adults/juveniles	Annual	6–7	2016–	Acoustic	A1.5[1]
	IBTSQ3	North Sea International Bottom Trawl Survey	Q3	Adults/juveniles	Annual	4	2007–	Bottom trawl and acoustic	A1.9[1]
	FO-GFS-Q3	Faroese Bottom Trawl Survey	August (Q3)	Adults/juveniles	Annual	5b1	1983–	Swept area trawl survey	A1.10[1]
	Lidar	PINRO Aerial Lidar survey	July–August (Q3)	Adults	Annual	Norwegian Sea	1997–2005	Aerial	A1.2[1]
	IMR trawling survey (NOR)	Mackerel Survey	July–August (Q3)	Adults	Annual	Norwegian Sea	1995–2007	Swept area pelagic trawl survey	A1.1[1]
	PT-GFS-Q4 WIBTS	Portuguese Groundfish Survey	Q4	Adults/juveniles	Annual	9a	1990–	Bottom trawl	A1.6[1]
	IS-GFS-Q3 (G4493)	Icelandic Bottom Trawl Survey (SMH)	October (Q4)	Adults/juveniles	Annual	5a	2001–	Bottom trawl	A1.11[1]
	CSHAS (A4057)	Celtic Sea Herring Acoustic Survey	October (Q4)	Adults/juveniles	Annual	7	2004–	Acoustic	A1.8[1]

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

PELTIC (A6259)	Pelagic Ecosystem Survey in the Western Channel and the Celtic Sea	October (Q4)	Adults/juveniles	Annual	7	2012–	Acoustic	A1.8[1]
NSAMS	North Sea Acoustic Mackerel Survey	October–November (Q4)	Adults	Annual	4	1999–2007	Acoustic	A1.3[1]

Highlights of many of the survey methodologies that are currently used are given below.

Acoustic Surveys

- Widely used in the assessment of pelagic stocks such as herring and blue whiting but less well developed for mackerel which does not have a swim bladder and weakly reflects acoustic energy.

- The development of a target strength model for the estimation of mackerel biomass from acoustic data, especially in relation to the horizontal orientation of the fish and behaviour in shoals is still ongoing.

- The most appropriate frequency for the acoustic mackerel detection is 200 kHz which may not be available on all vessels.

- Acoustics are a potentially rich source of information, with broad coverage throughout the distribution area although usual issues with synoptic coverage exist given the extremely wide stock distribution.

Bottom trawl Surveys

- Bottom contacting gear primarily samples demersal species but will also capture pelagic fish (e.g., recruits) close to the seabed. Mackerel at age 0 school near the bottom during winter, especially in high density areas (Jansen, *et al.* 2015).

- The North Sea 3rd Quarter IBTS (summer) is not considered informative of age 0 abundance because a significant proportion of the fish are too small to be sampled. Moreover, their vertical distribution is unknown, so bottom trawling might not be a representative sampling method.

Egg and Larval Surveys

- Uses the egg abundance as a proxy for the adult spawning distribution.

- The spawning period is protracted (Feb-Jul) so estimations of spawning distribution by month are not feasible.

- The survey coverage has changed over time to try and reflect the observed perceived changes in the timing and locations of spawning.

LIDAR (Light Detection and Ranging)

- Airborne LIDAR surveys have the advantage of potentially covering large areas in a short time and an absence of vessel avoidance.

- However, there are depth-range limitations (maximum 50m depth) and they are dependent on good weather (no fog or clouds below the flight altitude).

- Present LIDAR indices for mackerel have limited temporal coverage (are underdeveloped).

Swept Area Trawl Surveys

- Primarily useful in summer when shoals disperse during feeding and the majority of the fish are dispersed and in the upper 30m of the water column.

- The swept area estimation (which samples a very large area) is an accepted methodology for the estimation of abundance and distribution of mackerel in the summer north of 60^{o}N in the Nordic Seas and in the North Sea, in areas with bottom depth > 50 m.

Tagging Studies

- A very large potential data source which encompasses scientific survey protocol in the location and timing of the tagging and then is fishery dependent in relation to timing and location for the capture of tagged fish.

- Many of the earlier studies were targeted at identifying the migration routes, stock size estimates etc (Hamre 1978; Iversen 2002; Tenningen *et al.* 2011).

3.2.1 Methods used when calculating abundance/biomass and proxies

This report analyses in detail the biomass or biomass proxies obtained from IESSNS, MEGS, and IBTS surveys. These surveys are used in the assessment of mackerel and are considered to accurately cover in time and space the distribution of at least one of the life stages of mackerel.

There are additional relevant surveys which can potentially provide spatial information on mackerel, and they are listed in Table 3.2.1. Further information can be found in the annex of the 2023 report: Anon, 2023. These additional surveys will be re-added to the report in future updates where required.

3.2.1.1 International Ecosystem Summer Survey of the Nordic Sea (IESSNS)

The International Ecosystem Survey in the Nordic Seas (IESSNS) is a swept area trawl survey, undertaken during the summer feeding season since 2010, covering the Nordic Seas, Iceland Basin and Irminger Sea, which provides age segregated abundance indices for mackerel age 3+ (Figure 3.2.1). The North Sea has been included into the survey area since 2018. An age 2 recruitment index from 2018 to the present is estimated from the whole survey coverage and was accepted for use in the assessment by the benchmark workshop on mackerel assessment in March 2025 (ICES, 2025a).

The precursor to this survey is documented in Annex A 1.1. of the 2023 report (Anon, 2023). IESSNS coverage varies between years as the survey tracks the variable distribution range of the stock. Due to these changes in the survey area, results are presented for the original survey area (ICES divisions 4a, 5a, 5b, 14b and Subarea 2) and the North Sea (ICES Divisions 3a, 4a-b) separately and only for the whole survey area for 2018 to 2025. ICES Working Group of International Pelagic Surveys (WGIPS) coordinates the survey.

IESSNS uses a specially designed pelagic trawl, called Multpelt832, to catch mackerel in the surface, the trawl headline is visible at the surface and the foot rope located at approximately 35 m depth (ICES 2013b; Valdemarsen *et al.* 2014; Nøttestad *et al.* 2016b; ICES 2017, 2020). This trawl is a product of cooperation between participating institutes in designing and constructing a standardized sampling trawl for the IESSNS. Over the years there have been many discussions and refinements of Multpelt832 trawl, standardised trawling operation, survey design (ICES 2013a, 2013b, 2014a, 2017). These were all considered and implemented into the IESSNS survey in July-August 2017 and remain in place (see IESSNS post cruise reports from 2018 to 2025, working documents to WGWIDE reports). The current survey protocol is detailed in ICES (2025b).

Calculations of mackerel age segregated IESSNS index for EEZ´s was done using StoX software package for years 2017 - 2025. EEZ boundaries are implemented within StoX, and index is calculated per EEZ. A description of StoX can be found in Johnsen *et al.* (2019) and here: www.imr.no/forskning/prosjekter/stox. EEZ calculations for IESSNS from 2010 to 2016 were done in R software using degree rectangles calculations allocated to EEZs, see annual IESSNS cruise reports for details.

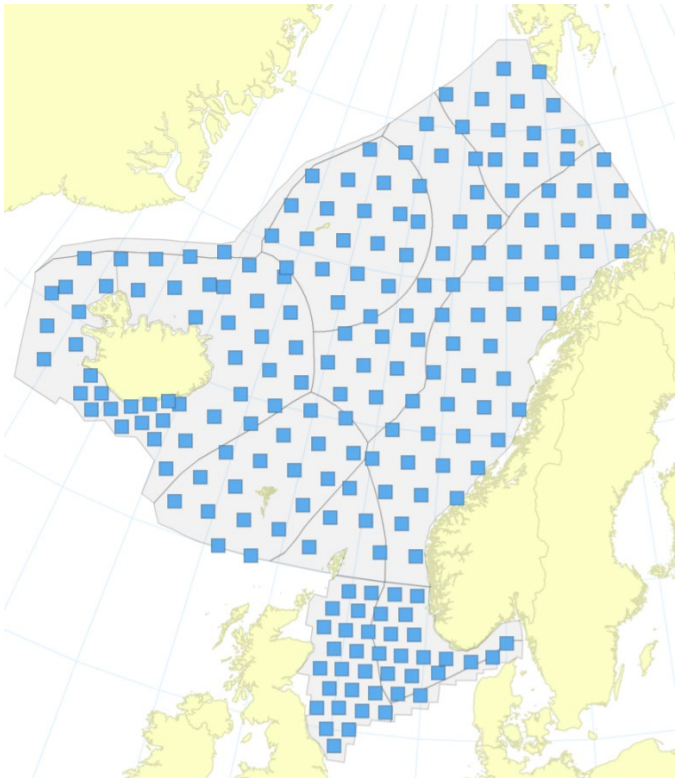

Figure 3.2.1. IESSNS 2025. Boundaries of EEZs (solid grey lines) used to estimate mackerel biomass by EEZ. Blue filled rectangles represent surface trawl stations included in abundance calculations.

Evaluation and caveats

The southern extent of the stock is not covered by the survey due to the available survey resources. In addition, the survey protocol depends on the majority of the mackerel being in the upper 30-35m of the water column. The survey does not capture the southern extent of the stock distribution as there are other surveys e.g., WESPAS (for details see annex of 2023 report: Anon, 2023) that indicate mackerel is deeper in the water column which would not be sampled with an extension of this survey using the current methodology and protocols.

The southern extent of the stock in the North Sea is also not well represented. The southern and eastern limit is imposed by the water depth since the trawls have too large a mouth opening for the southern North Sea, trawling is limited to areas with bottom depth > 50 m.

3.2.1.2 Triennial Mackerel and Horse Mackerel Egg Survey (MEGS)

The working group on mackerel and horse mackerel egg surveys (WGMEGS) coordinates the Mackerel and Horse Mackerel Egg Survey in the Northeast Atlantic and the Mackerel Egg Survey in the North Sea with the purpose of estimating the spawning stock biomass (SSB) of mackerel since 1977 (Lockwood *et al.* 1981). The Annual Egg Production Method (AEPM) has been used for the estimation (Lockwood *et al.* 1981; Lockwood 1988), under the assumption that mackerel has a determinate fecundity. These surveys are carried out triennially, although the survey in the North Sea is usually carried out one year after the surveys in the western and southern areas.

Estimation of NEA mackerel SSB in the Northeast Atlantic is used as an SSB index in the NEA mackerel assessment process. The North Sea component is currently not incorporated in the SSB index. The main reason is that the North Sea egg survey is carried out one year after the egg survey of the Western and Southern components. Given the relatively small size of the North Sea component, the exclusion of the North Sea in the survey is considered not to have a great impact on the assessment.

The spatial and temporal distribution of sampling is designed to ensure an adequate coverage of both mackerel (*Scomber scombrus* L.) and horse mackerel (*Trachurus trachurus* L.) spawning areas. The aim of the triennial egg survey is to determine the annual egg production (AEP). This is calculated using the mean daily egg production rates per pre-defined sampling period for the complete spawning area of the Northeast Atlantic mackerel and horse mackerel stocks. To achieve this, one plankton haul is completed per half ICES rectangle with surveys conducted on transects covering the complete spawning area. Sampling effort aims to produce estimates of stage 1 egg production. The entire mackerel spawning season is divided into different sampling periods. The amount of ship time available and the size of the area to be covered determine the spacing and omission of sampling transects within the sampling periods.

Western and southern survey areas

The NEA mackerel egg survey (MEGS) has been running triennially since 1977 and since 1992 has incorporated both the southern and western areas of the NEA mackerel stock. The core area for the western and southern survey areas are presented in Figure 3.2.2.

The ‘southern’ area is regarded as being from 36º N to 44º N in the east and 45º N in the west. It extends from Cape Trafalgar in the Gulf of Cadiz, around the coast of Portugal to 11º W, the Cantabrian Sea and southern Biscay. Sampling often begins in January in this area and continues until June in the Cantabrian Sea.

The 'western' area for mackerel is from 44º N (45º N in the west) to 63º N. It includes Biscay, the Celtic Sea and the shelf edge to the northwest of Scotland. Sampling is focussed along the shelf edge (200m isobaths) but also occurs from the French and Irish coasts out to Rockall and Hatton Bank. Sampling in this area usually begins in February and continues to the end of July.

In most of the western area plankton samplers are deployed at the centre of half standard ICES rectangles, which are 0.5º latitude, by 0.5º longitude. To the north of Spain (Cantabrian Sea) in general three sampler deployments are undertaken (in an east-west direction) in each 0.25º latitude by 1.0º longitude rectangle because of the proximity of the shelf edge to the coast.

Since the surveys began in 1977, considerable changes have been made to the “standard” sampling area and some of these were described in ICES (1994). Based on the expansion of the “standard area” since 1977, it was agreed (ICES, 2002) that the existing “standard area” should be retained only as a guide to the core survey area for cruise leaders, and that the extent of coverage should be decided based on finding the edges of the egg distribution only (adaptative sampling).

In 1992 and 1995 the standard sampling area was used for the calculation of the survey index. During the 2017 benchmark (WKWIDE) a comprehensive re-analysis of the survey time-series was carried out utilising all the station data available going beyond the boundaries of the old standard area. Due to the expansion of the spawning area which has been observed since 2007 the emphasis was even more focused on full area coverage and delineation of the spawning boundaries.

The standard plankton samplers for use on these surveys are mainly national variants of Bongo or ‘Gulf type high-speed’ samplers (Nash *et al.*, 1998). Portugal (IPMA) continues to use a vertically deployed CalVET-net. A complete list of all the samplers and the sampling protocols are detailed in ICES (2019). The primary data

available from each survey consists of the abundance of Stage 1 mackerel eggs per square metre of sea surface at the sampling location.

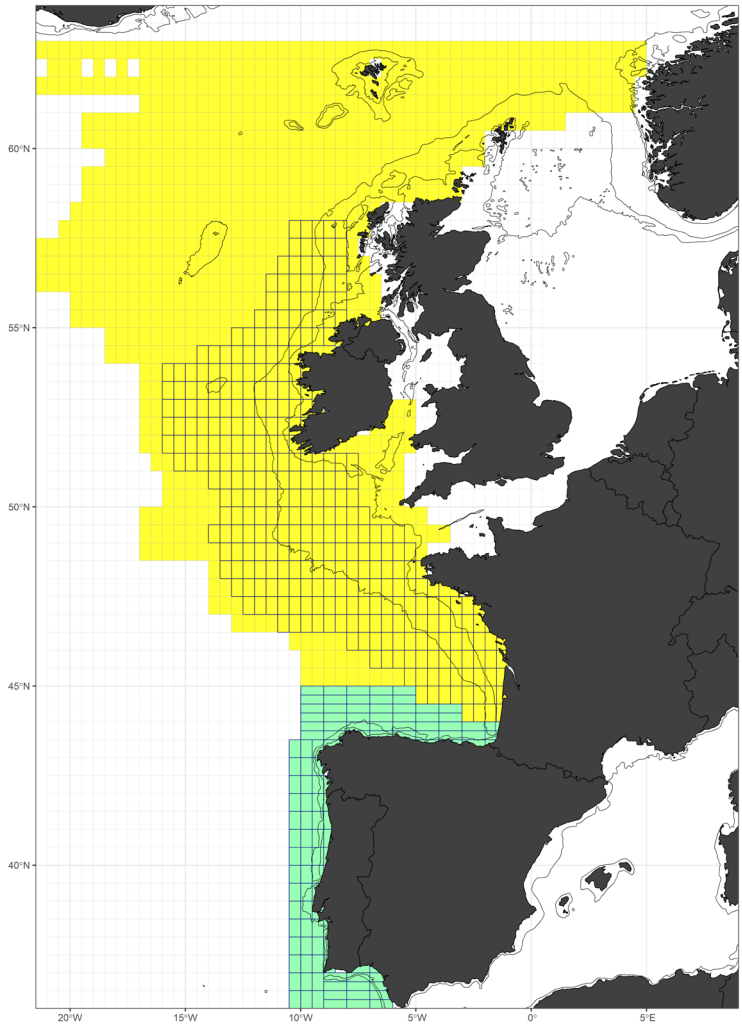

Figure 3.2.2. Survey area for the mackerel egg survey in the Northwest Atlantic for 1992 - 2022. The western area is shown in yellow, and the southern area is shown in green. Bold rectangles show the core survey area.

North Sea survey area

The North Sea Mackerel Egg Survey is designed to estimate the SSB of mackerel of the North Sea spawning component of the NEA mackerel stock on a triennial basis. The core area for the North Sea survey is presented in Figure 3.2.3. Until 2017 this survey was done utilizing the AEPM, but it was agreed to switch to the Daily Egg Production Method (DEPM) for the North Sea mackerel survey in 2021 (ICES 2018). Survey design is similar to northwest Atlantic area: one plankton haul per each half ICES rectangle is conducted on transects covering spawning area 53ºN – 59ºN into different sampling periods. In 2021, 2022 and 2025 a single period (peak spawning time) and bigger area (53ºN - 62ºN) was sampled to adapt the survey to the DEPM.

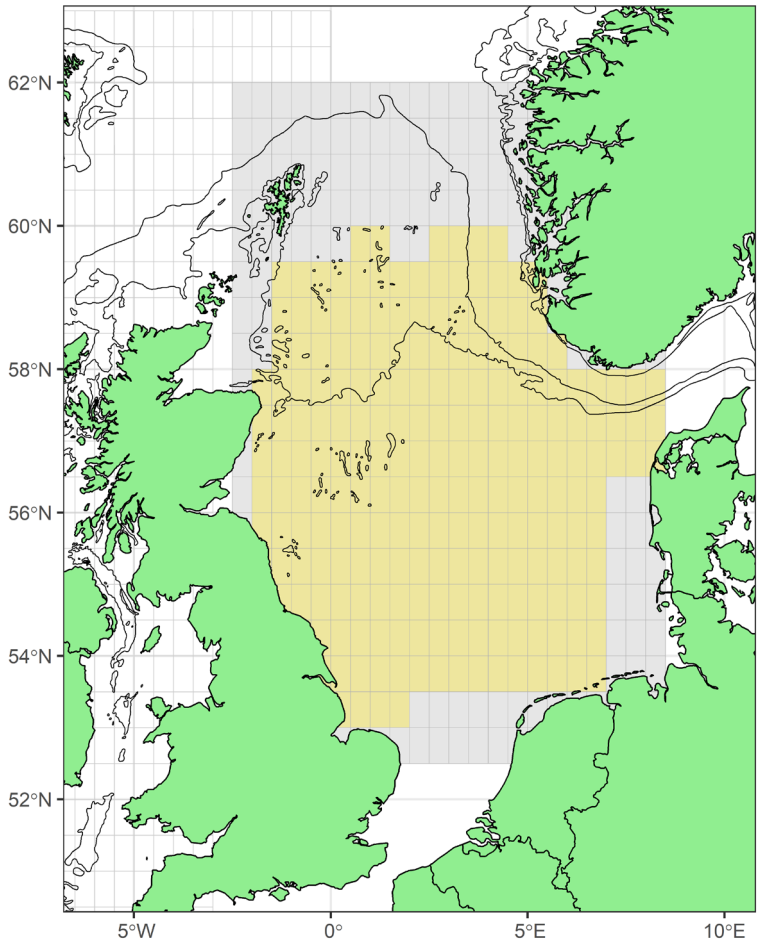

Figure 3.2.3. Survey area for the mackerel egg survey in the North Sea. The core area for the surveys 1999 - 2017 is shown in yellow. The survey area from 2021 (yellow plus grey) is currently used for the North Sea.

The egg production in the western and southern areas has been estimated in this report bi-monthly for each survey year. Maps of mackerel daily egg production (stage I eggs. m^{-2}. Day^{-1}) by half ICES statistical rectangle every two months of a survey year has been estimated as follow:

1. Daily egg production of half ICES rectangle in each survey month: Daily egg production (stage I eggs. m^{-2}. Day^{-1}) of ICES half rectangle in each survey month
2. Mean daily Egg production of half ICES rectangle in for each bi-monthly period during the survey year is then estimated by averaging the egg production of each half rectangle during those two months.

The mean egg production for a bi-monthly period includes both sampled and interpolated rectangles. Details of Daily egg production estimation and survey design can be found in the Manual for mackerel and horse mackerel egg surveys, sampling at sea (ICES 2019).

Similar methodology was applied to the North Sea region to determine the average daily egg production. In this scenario, the daily egg production for each half of an ICES rectangle was computed for each survey period. The average egg production for each half ICES rectangle for each survey year was then calculated by taking the mean of the egg production from each half rectangle across all survey periods.

The egg production by EEZ was estimated using the same methodology as for the maps. Then, the daily egg production of half ICES rectangle was summed at rectangle level, and then at EEZ level. Estimates for statistical rectangles straddling two or more EEZ were split in proportion to the area of each EEZ falling in that rectangle.

Evaluation and caveats

The triennial egg survey is currently the only indicator of the distribution of the stock at spawning time. Firstly, the triennial nature of the survey means that the distributional information is not annual so short-term variability in spawning locations cannot be followed. In regard to the spatial coverage, primarily for logistical reasons, the North Sea spawning area was sampled one year later than the western and southern area. This results in an incomplete coverage of the whole spawning area in one survey period. However, since 2022 the North Sea has been sampled in the same year as the western and southern areas.

The survey protocol for the three areas was similar, using the Annual Egg Production Method (AEPM) up until the 2021 North Sea survey. Currently the North Sea uses the Daily Egg Production Methodology (DEPM) which involves a single survey coverage at peak spawning time (rather than multiple coverages over the spawning period). The consequence of this is that the results inside and outside of the North Sea are not directly comparable with respect to a quantitative comparison of proportions of the spawning in each of the areas. To make a direct comparison of the North Sea DEPM methodology with the AEPM the spawning frequency must be known and assumptions on how to relate a peak spawning estimate (DEPM) to an annual spawning estimate (AEPM) must be taken.

To the west of the British Isles and south into the Cantabrian Sea, the spawning area covers a very large area and spawning occurs over time both at relatively small ranges of latitude and over the full extent of the latitudinal extent. The survey normally takes place over a six-month period with the coverage generally progressing from south to north.

It is apparent from the time series of the survey that there have been inter-annual variations in the locations and centres of spawning over the years. The survey has tried to be adaptive, and the coverage has varied somewhat over the years to try and encapsulate the spawning distribution in the area. The consequence is that the spatial coverage has varied. There has previously been criticism that the zero eggs boundaries are not reached in all the surveys and therefore the spawning is not fully represented in the survey. Cursory studies have indicated that these very low egg abundances/densities do not contribute very much with respect to the overall annual egg production of the stock and would not make any significant contribution to the perception of the stock biomass.

In this report the daily egg production is used as a 'proxy' for the spawning stock biomass. To convert the egg production to a fish biomass requires an understanding of the relationship between the biomass of a female fish and the number of eggs each produces (fecundity dynamics and relationships). Unfortunately, there is a large amount of debate surrounding the fecundity relationship and the spawning dynamics of individual mackerel which has not been resolved and as such the decision was made not to utilise any relationship to convert egg production into fish biomass.

It is assumed that the annual egg production is a proxy for biomass of females that spawn, the sex ratio approximates to 50:50 and the males an equivalent biomass to the females.

3.2.1.3 International Bottom Trawl Surveys (IBTS)

The dataset consists of observations from a number of IBTS (bottom trawl) surveys (see Table 3.2.1) conducted between October and March from 1998 to present (Figure 3.2.4). Trawl operations during the IBTS have largely been standardized through the ICES IBTS Working Group. A single gear design, known as the GOV (Grande Ouverture Verticale) is used with some modifications (e.g., ground gear, overall gear dimensions) to suit the conditions in the respective survey areas. Modifications are either not considered to result in significant changes to catchability or have been accounted for in the analysis. Trawling speed is generally 3.5 - 4 knots

with fishing operations undertaken during the hours of daylight. The majority of trawl stations are in depths of less than 220 m (Figure 3.2.4).

IBTS data are stored in the ICES trawl survey repository[2] and in some cases supplemented by data from national databases.

A geostatistical log Gaussian Cox (LGC) process model which includes spatiotemporal correlations is fit to the survey observations each year and used to describe the catch rates of age 0 mackerel over space and time. The model formulation is fully described in Jansen *et al.* (2015).

The index estimated from the model is reported as an indicator of relative biomass of mackerel at age 0 in the current report. For the purposes of estimating relative proportions by EEZ, model estimates were assigned to ICES rectangles and then summed for each EEZ to calculate the proportion of age-0 biomass resident in the area. Estimates for statistical rectangles straddling two or more EEZ were split in proportion to the area of each EEZ falling in that rectangle.

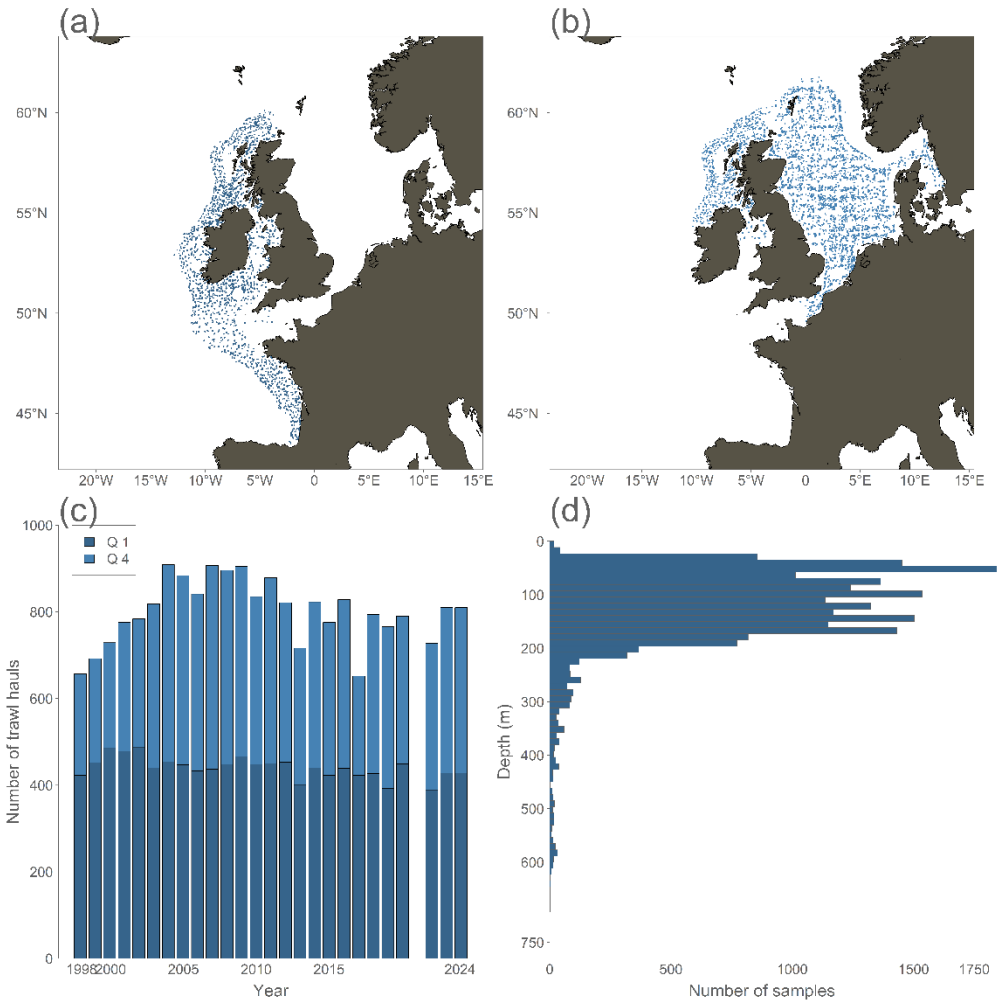

Figure 3.2.4. Demersal trawl survey data used to derive the abundance index of age-0 mackerel. (a) Trawl sample locations in the fourth quarter (Q4, October – November); (b) trawl sample locations in the first quarter (Q1, January – March); (c) number of samples by year and quarter (note that for each year on the X axis, Q4 is from the year stated and Q1 from the subsequent year, this is to represent the fishing season spanning across 2 years); and (d) by depth for the whole period (1998-2024).

[2] https://www.ices.dk/data/data-portals/Pages/DATRAS.aspx

Evaluation and caveats

The available surveys do not provide complete coverage of the stock distribution. The quarter 4 surveys cover the north and west of Scotland, west of Ireland and the Bay of Biscay and quarter 1 the North Sea, north and west of Scotland Figure 3.2.4a-b). However, the Irish Sea and the western part of the Channel and the adjacent Celtic Sea is not covered. In addition, the shelf area southward along the southern Spanish and Portuguese coast (Cantabrian Sea and Iberian Coast) is also not included. There are however, survey data from IBTS Quarter 4 and Quarter 1 in this area (see annex A1.6 of 2023 report for more details: Anon. 2023).

In addition, there are also shelf areas where juvenile mackerel do occur, often periodically and are present in ongoing national surveys. These include the Norwegian Coastal area, the Faroese Plateau, and the Icelandic Shelf (for details see annexes A1.10 and A1.11: Anon. 2023).

4 Results derived from Surveys

4.1 International Ecosystem Summer Survey of the Nordic Sea (IESSNS)

Nordic Seas have been the most important summer feeding ground for adult (> 3 years) mackerel during the last two decades (Figure 4.1.1 and 4.1.2; Utne *et al.* 2012; ICES 2025c).

There have been rapid and large changes in mackerel abundance, distribution, and migration patterns in the Nordic seas in summer from 2007 to 2025 (Figure 4.1.1. and 4.1.2.; Nøttestad *et al.* 2007; ICES 2025c). Quantitative results from IESSNS demonstrate that the mackerel stock experienced a large-scale northward and westward expansion in the Nordic seas, particularly from 2007 to 2014/2015 (Nøttestad *et al.* 2016a; Nøttestad et a. 2016, 2020; Olafsdottir *et al.* 2018). From 2018 onward there has been a substantial and rapid reduction in abundance and distribution of mackerel in the western area (Figure 4.1.2) compared to the years from 2010 to 2017 (ICES 2024). This major shift in distribution of mackerel consisted of a substantial decline of mackerel in Greenlandic waters since 2019 and in Icelandic waters from 2020 (Figure 4.1.2, Table 4.1.1). The central and northern part of the Norwegian Sea, on the other hand, experienced increased distribution and abundance of mackerel from 2018 to 2022 (ICES 2023b). From 2023 to 2025, the distribution and abundance of mackerel in the central and northern parts of the Norwegian Sea were markedly reduced and both the western and northern distribution boarders have been retracting (ICES 2025c). In 2025, mackerel distribution was similar to 2024. However, abundance was considerably lower, especially in the western areas. Higher concentrations were found further east along the Norwegian coast (62◦ to 70◦ N), unlike 2024's elevated presence in the central Norwegian Sea. (Figures 4.1.1 and 4.1.2; ICES 2025c).

The North Sea has been covered during IESSNS from 2018 onwards. The results from IESSNS 2018 to 2025 (Figure 4.1.1 and 4.1.2) quantify mackerel caught in all areas covered, deeper than about 50 m bottom depth, within the North Sea. Predominantly juvenile mackerel, dominated by 1- and 2-year-olds was caught in the North Sea from 2018 to 2025 (ICES, 2025c). Most of the mackerel in the survey area of the North Sea reside in Norwegian and UK waters, with a small proportion in EU waters (Table 4.1.2).

The proportions of mackerel biomass by EEZ estimated from the entire survey area (i.e., ICES Subarea 2, and divisions 5a, 5b, 14b, 3a, 4a and 4b) are shown in Table 4.1.3. Only the proportions for the last six years have been estimated because the North Sea was not surveyed before 2018. In 2025, the proportion of the survey area (approximately 2.6 million km^2) encompassed by the North Sea (0.28 million km^2) is approximately 10.8%. Within the surveyed area in 2025, the highest abundances are found in Norwegian waters and United Kingdom waters with low abundances (<2.5%) in other zones (Table 4.1.3, Figure 4.1.1 and 4.1.2).

Figure 4.1.1. Annual distribution of mackerel proxied by the absolute distribution of mean mackerel catch rates per standardized rectangles (2° lat. x 4° lon.), from Multpelt 832 pelagic trawl hauls at predetermined surface trawl stations in Nordic Seas in June - August from 2010 to 2025. Colour scale goes from white (= 0) to red (= maximum value for the highest year). The distribution of mackerel from 2011 is not included due to incomplete spatial coverage in northern part of the Norwegian Sea, and it is not included in the stock assessment.

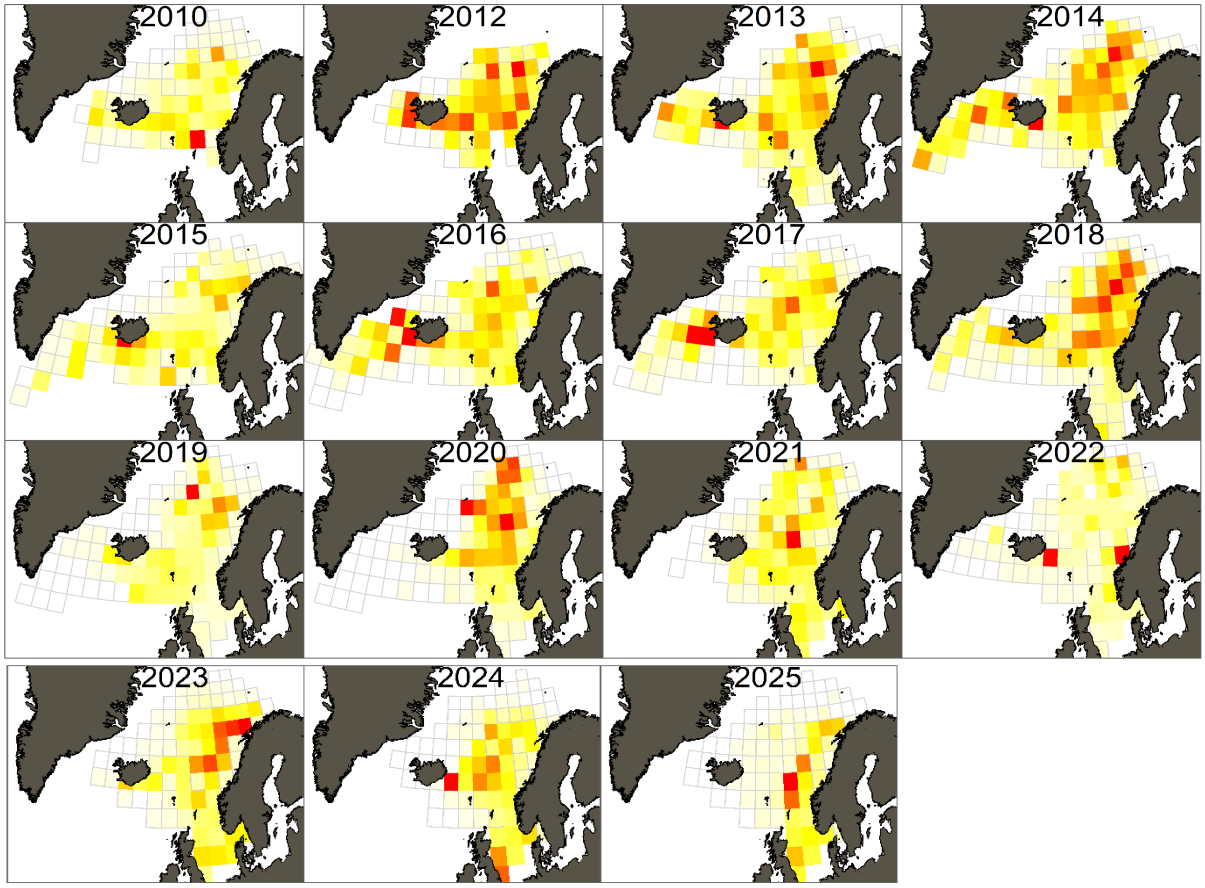

Figure 4.1.2. Annual distribution of mackerel proxied by the relative distribution of mean mackerel catch rates per standardized rectangles (2° lat. x 4° lon.), from Multpelt 832 pelagic trawl hauls at predetermined surface trawl stations in Nordic Seas in June – August from 2010 to 2025. Colour scale goes from white (= 0) to red (= maximum value for the given year). The distribution of mackerel from the 2011 is not included due to incomplete spatial coverage in northern part of the Norwegian Sea, and it is not included in the stock assessment.

Table 4.1.1. Percentages of Northeast Atlantic (NEA) mackerel biomass by Exclusive Economic Zone (EEZ) from the International Ecosystem Summer Survey in the Nordic Sea (IESSNS) in June – August 2010, 2012 – 2025. Only data from the original survey were used in the estimations (ICES Subarea 2, and Divisions 5.a, 5.b, and 14.b [North Sea excluded]). IESSNS 2011 is not included due to incomplete spatial coverage in northern part of the Norwegian Sea, and it is not included in the assessment. * Indicates when a zone was unsampled during a survey. Note that Jan Mayen is included in the Norwegian EEZ.

Survey year	FO	GR	INT	IS	NO	SVA	UK
2010	15.8	*	11.6	22.9	40.8	0.5	8.4
2011	excluded						
2012	14.7	*	13.0	29.5	40.9	*	2.0
2013	17.2	5.7	11.1	17.2	43.5	1.6	3.7
2014	6.1	13.0	20.5	17.7	33.4	6.8	2.5
2015	10.3	4.2	10.4	37.3	30.6	1.3	5.8
2016	9.3	10.0	20.4	30.6	24.5	1.2	3.9
2017	8.8	5.0	20.7	37.4	25.4	1.0	1.8
2018	12.4	4.7	12.0	18.1	47.6	4.0	1.2
2019	13.6	0.1	11.4	16.9	49.4	3.1	5.5
2020	12.5	0	22.2	4.4	47.2	10.5	3.3
2021	13.3	0	31.7	8.5	34.4	8.7	3.4
2022	3.2	0.7	14.7	20.1	47.2	12.8	1.3
2023	4.7	0	13.5	10.3	65.1	0.7	5.7
2024	15.9	0	16.8	19.9	43.8	0.6	3.0
2025	3.1	0	2.3	0.7	79.2	0	14.6

Table 4.1.2. Annual percentages of Northeast Atlantic (NEA) mackerel biomass by Exclusive Economic Zone from the from the International Ecosystem Summer Survey in the Nordic Sea (IESSNS) undertaken in the part of the North Sea (south of 60°N) deeper than 50 meters in July for 2018 – 2025.

Survey year	EU27	NO	UK
2018	9.1	47.9	43.0
2019	8.8	29.2	62.0
2020	6.1	55.6	38.3
2021	5.4	25.8	68.8
2022	5.3	43.7	51.0
2023	15.3	34.1	50.6
2024	12.4	21.3	66.3
2025	8.0	32.4	59.6

Table 4.1.3. Annual percentages of Northeast Atlantic (NEA) mackerel biomass by Exclusive Economic Zone (EEZ) from the International Ecosystem Summer Survey in the Nordic Sea (IESSNS) in July 2018 – 2025. Data from the original survey area and North Sea was used in the estimations. Note that both Jan Mayen and Svalbard are included in the Norwegian EEZ.

Survey year	EU27	FO	GR	INT	IS	NO	UK
2018	0.9	11.7	4.4	11.3	17	51.6	3.2
2019	0.8	13.6	0.1	11.4	16.9	49.4	4.7
2020	0.5	12.5	0	22.2	4.4	57.5	2.8
2021	0.5	12.0	0	28.6	7.7	41.4	9.8
2022	0.3	3.0	0.6	13.8	18.9	58.9	4.3
2023	1.9	4.1	0	11.8	9.0	61.8	11.4
2024	2.3	12.9	0	13.7	16.1	40.1	14.9
2025	2.1	2.3	0	1.7	0.5	67.0	26.3

4.2 Triennial Mackerel and Horse Mackerel Egg Survey (MEGS)

A complete survey coverage (southern, western and North Sea areas) was completed in 2025; however, the results are not yet available for this report.

4.2.1 Western and southern

MEGS results are shown broken down into bi-monthly blocks (January, February-March, April-May, June-July). In the survey years when sampling was conducted in January, a very small amount of egg production was estimated, and the sampled area was confined to the waters of Portugal (see small numbers of eggs in top left panel of figure 4.2.1). Previously MEGS results have been reported as an annual distribution, however it was decided due to the survey taking place across a large area and approximately half the year it is more appropriate to show in this way. In 2022 the most southerly distributed eggs were found during the February - March period of the survey in the south of Portugal (36° N). The most northly around the Faroes in April - May, the most Westerly in April - May (20° W) and most Easterly later in the year off the Norwegian coast (5° E). The highest densities of eggs were distributed along the shelf edge around Northwest and North of Scotland, Ireland, Celtic Sea, and into the Bay of Biscay and the Cantabrian Sea. There are also significant densities of mackerel eggs northward to Hatton Bank in April - May. Unfortunately, there is a lack of data north of 55ºN in June due to problems related to survey vessel availability. The result is that for the period June - July there is probably some bias due to missing data. When comparing the time series of Figure 4.2.1 and Figure A1.1.30 as well as table 4.2.1, the shelf edge has remained the area with highest densities of eggs. However, the distribution of mackerel eggs has expanded north and west since 2007 where eggs have been found up to 65 °N.

The greatest proportion of eggs have been found in the April - May period since 2016 (Figure 4.2.2) where estimates by EEZ shows that eggs are mostly found in the EU waters in Feb - Mar and then split between EU and UK waters in April - May (Table 4.2.1). The full temporal patterns in the distribution of mackerel eggs can be seen by comparing Figure 4.2.1 and annex Figure A1.1.30 alongside Table 4.2.1.

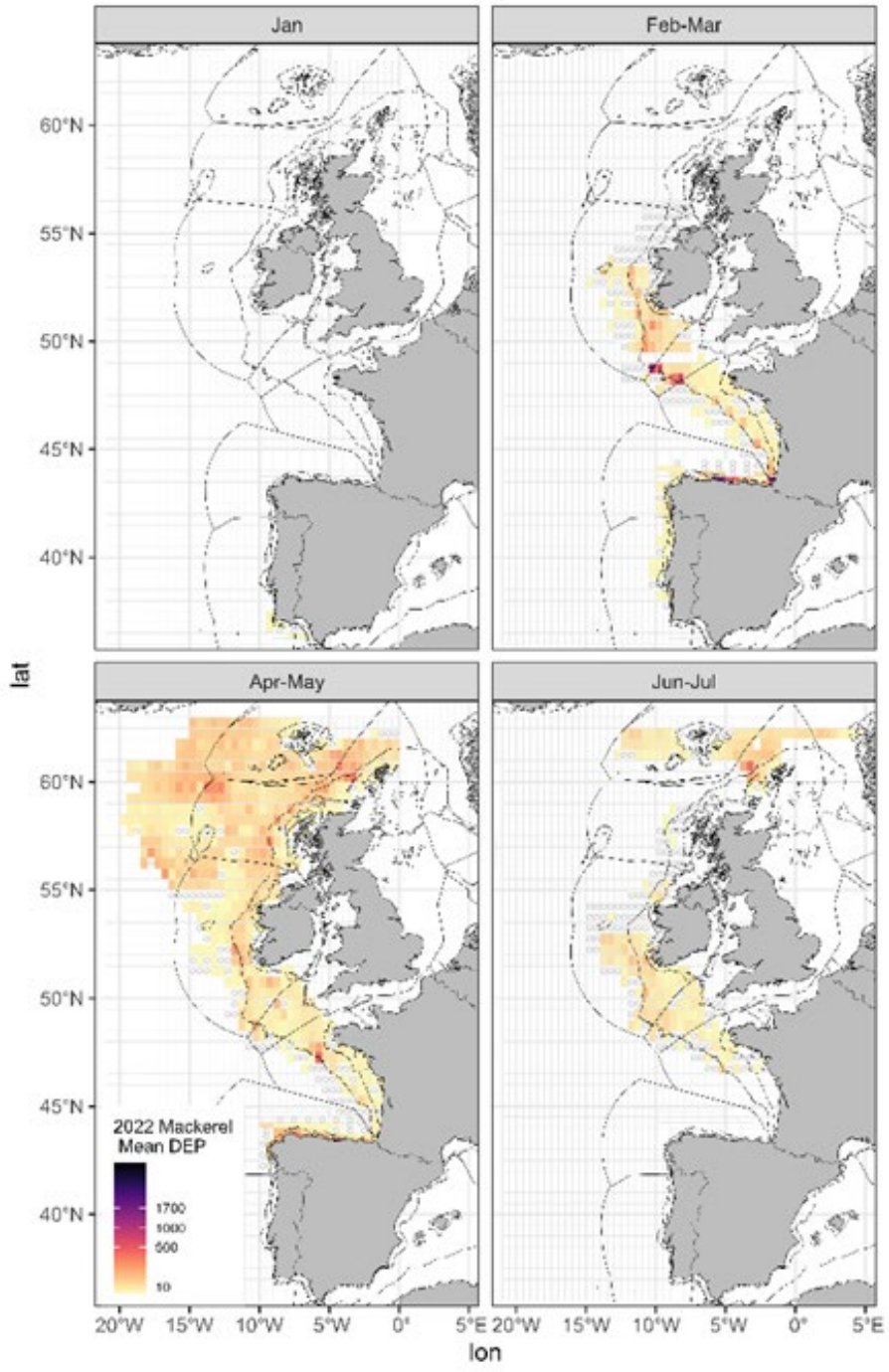

Figure 4.2.1. Distribution of mean daily egg production (stage 1 eggs. m^{-2}. Day^{-1}) by half ICES rectangle and survey year per bimonthly period in 2022. The EEZ boundaries are shown.

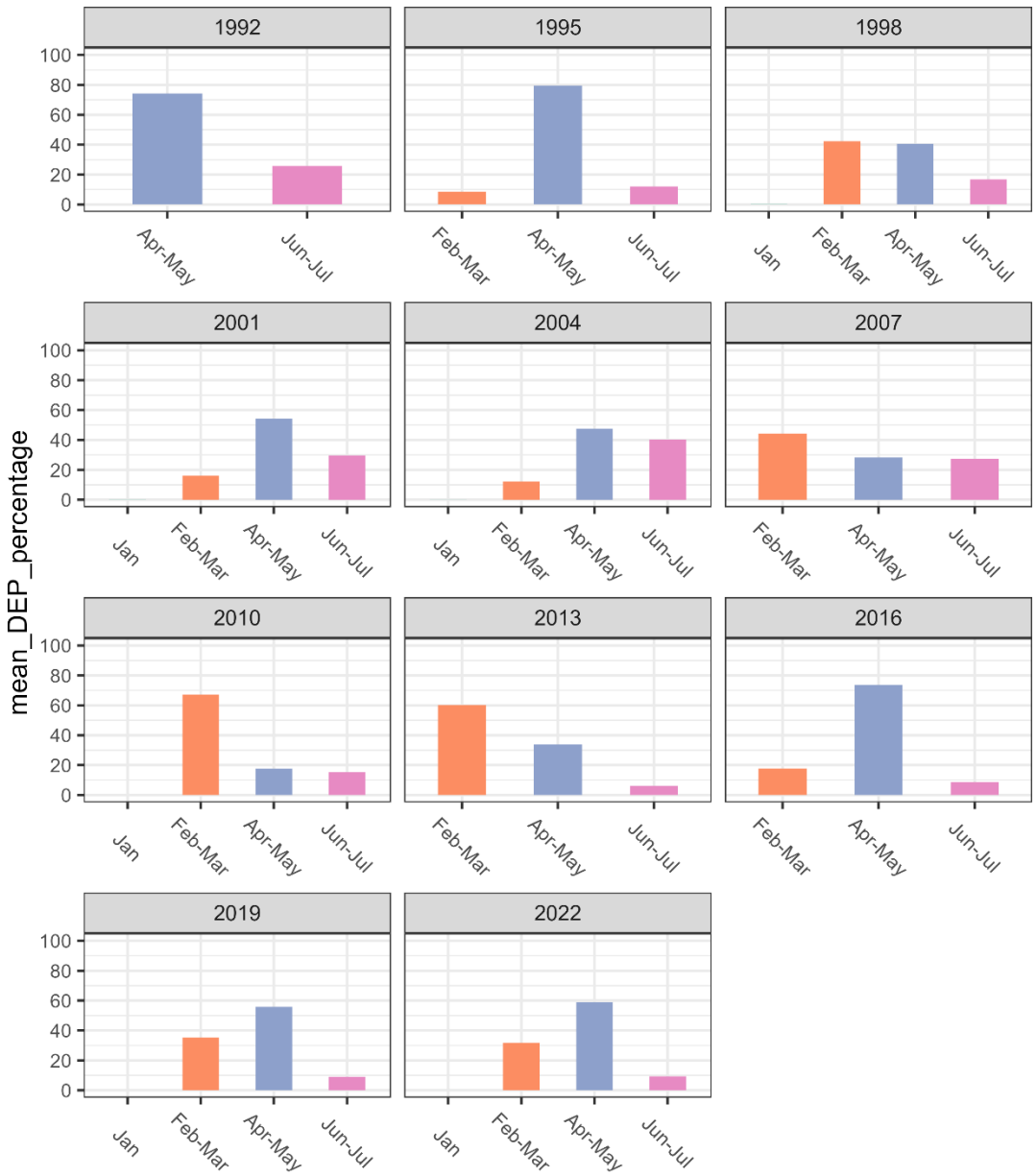

Figure 4.2.2. Proportion of mean daily egg production for January to July, by bimonthly period.

Table 4.2.1. Proportion of Northeast Atlantic (NEA) mackerel eggs by Exclusive Economic Zone (EEZ) from the triennial Mackerel and Horse Mackerel Egg Survey (MEGS) undertaken in the southern and western survey areas. The abundance of mackerel eggs for the whole spawning period (January – early July) is split into January, February - March, April - May and June - July and presented as a proxy for biomass of spawners. * Indicates when a zone was unsampled during a survey.

Survey Year	Survey Period	EU27	UK	INT	UK_FO	FO	IS	FO_IS	NOR
1992	*Apr-May*	67.3	5.7	1.4	*	*	*	*	*
1992	*Jun-Jul*	22.6	3	0.1	*	*	*	*	*
1995	*Feb-Mar*	8.5	0.1	*	*	*	*	*	*
1995	*Apr-May*	74.5	2.6	2.3	*	*	*	*	*
1995	*Jun-Jul*	10.2	1.9	0	*	*	*	*	*
1998	*Jan*	<0.5	*	*	*	*	*	*	*
1998	*Feb-Mar*	36.5	5.7	0.1	*	*	*	*	*
1998	*Apr-May*	38.1	2.5	0	*	*	*	*	*
1998	*Jun-Jul*	12.9	3.9	0	*	*	*	*	*
2001	*Jan*	<0.5	*	*	*	*	*	*	*
2001	*Feb-Mar*	13.9	2	0.1	0	*	*	*	*
2001	*Apr-May*	47.1	6.7	0.4	0	0	*	*	*
2001	*Jun-Jul*	25.7	3.9	0	0	0	*	*	*
2004	*Jan*	<0.5	*	*	*	*	*	*	*
2004	*Feb-Mar*	12	0.2	0	*	*	*	*	*
2004	*Apr-May*	41.5	5.3	0.7	0	0	*	*	*
2004	*Jun-Jul*	25.1	14.9	0.3	0	0.1	*	*	*
2007	*Feb-Mar*	41.9	2.4	0	*	*	*	*	*
2007	*Apr-May*	19.2	8	0.8	0.3	0	*	*	*
2007	*Jun-Jul*	20.7	5.8	0.9	0	0	*	*	*
2010	*Jan*	<0.5	*	*	*	*	*	*	*
2010	*Feb-Mar*	59.7	4.6	2.8	*	*	*	*	*
2010	*Apr-May*	11.2	3.9	2.1	0.1	0.4	0	*	*
2010	*Jun-Jul*	8.7	5	0.5	0.1	0.6	0.3	0	*
2013	*Feb-Mar*	58.9	0.9	0.3	0	*	*	*	*
2013	*Apr-May*	28.2	4.3	0.3	0.1	0.8	0	*	*
2013	*Jun-Jul*	1.9	2	1.2	0.1	0.8	0.2	0	*
2016	*Feb-Mar*	17.7	0.1	0	*	*	*	*	*
2016	*Apr-May*	24.4	30	7.3	1.7	9.7	0.6	*	*
2016	*Jun-Jul*	3.4	4.4	0.7	0	0	*	*	*
2019	*Jan*	<0.5	*	*	*	*	*	*	*
2019	*Feb-Mar*	34.7	0.4	0	0	*	*	*	*
2019	*Apr-May*	27.3	19.9	4.7	0.8	1.6	1.5	*	0
2019	*Jun-Jul*	2.4	3.2	0.9	0.3	1.4	0.2	0	0.6

2022	*Jan*	<0.5	*	*	*	*	*	*	*
2022	*Feb-Mar*	29.8	1.9	0	*	*	*	*	*
2022	*Apr-May*	16.6	19.4	8.4	0.5	9.2	4.9	0	*
2022	*Jun-Jul*	3.2	4.5	0	*	1.2	0	*	0.3

4.2.2 North Sea

In 2021 there was a change in survey design to a single period (peak spawning time) and bigger area (see section 3.2.1.2). In this new survey design, mackerel eggs were found distributed in the North Sea (53.5-62N°) with the highest densities of eggs found off the northeast coast of England, which is consistent with the pattern seen throughout the time series presented (Figure 4.2.2 and table 4.2.2 [1999-2021]). The change since 2021 survey design may have resulted in some differences in the distribution of eggs when compared with the previous years presented. Crucially, the larger survey area in 2021 survey revealed high densities of eggs off the coast of Norway in areas which have previously not been included in the survey. The newly designed 2021 and 2022 surveys found a more sporadic distribution of the highest densities of mackerel eggs across the North Sea that differed from the more concentrated high-density areas seen in previous years surveys (Figure 4.2.2).

The estimates by EEZ shows that eggs are mostly found in Norwegian waters followed by the UK and then the EU (Table 4.2.2). The temporal patterns in the distribution of mackerel eggs (Figure 4.2.2) explain the changes observed across years in the proportions by EEZ.

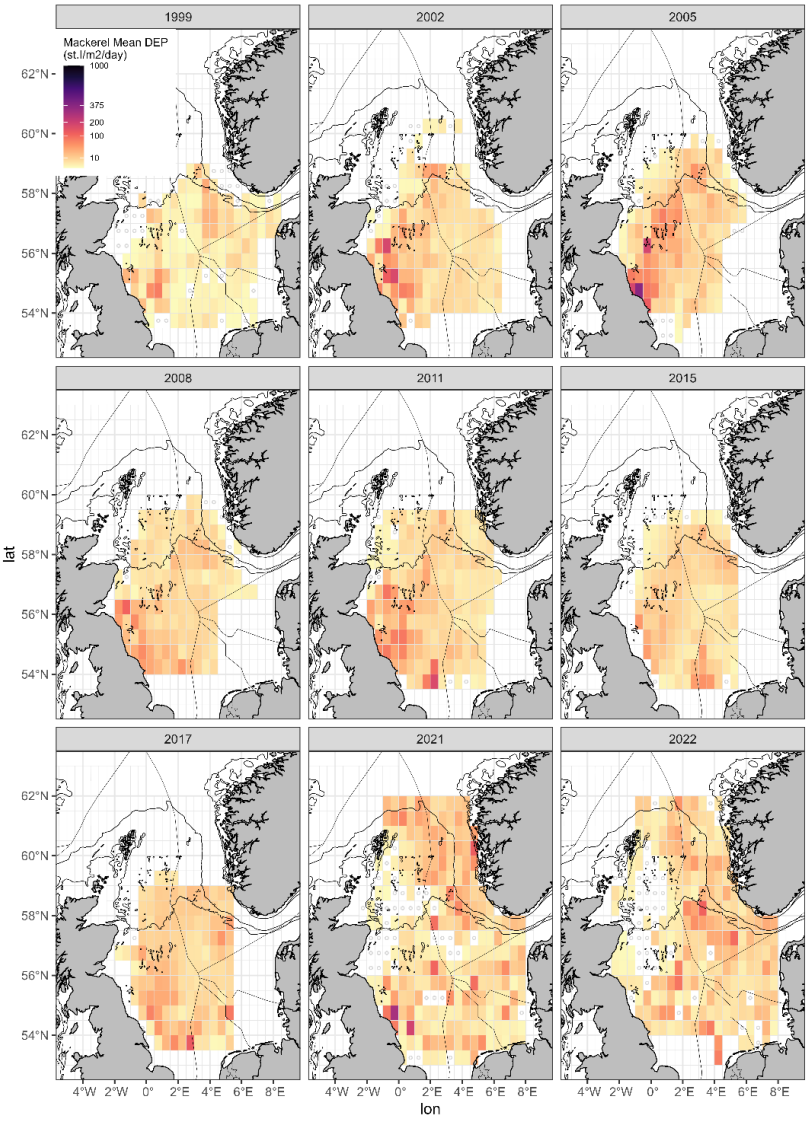

Figure 4.2.2. Distribution of mean daily egg production (stage 1 eggs m^{-2} Day^{-1}) by half ICES rectangle and survey year. The EEZ boundaries are shown. Note that egg production was estimated by means of AEPM between 1999 and 2017, and by means of DEPM in 2021 and 2022.

Table 4.2.2. Proportion of Northeast Atlantic (NEA) mackerel eggs by Exclusive Economic Zone (EEZ) from the triennial Mackerel and Horse Mackerel Egg Survey (MEGS) undertaken in the North Sea. The abundance of mackerel eggs for the whole spawning period (May–July) is a proxy for biomass of spawners in this area. *In 2021 and 2022 the survey utilised the Daily Egg Production Methodology and as such only constitutes one survey period, differing from previous surveys.

Survey year	EU27	NO	UK
1999	14.6	18.8	66.6
2002	10.3	10.9	78.8
2005	5.7	13.9	80.5
2008	7.9	15.9	76.2
2011	11.1	12.5	76.4
2015	29.5	20.1	50.3
2017	17.5	21.2	61.4
2021*	20.2	35.6	44.2
2022*	25.8	45.4	28.8

4.2.3 Western and southern, and North Sea survey in 2025

WGMEGS conducted its latest triennial survey in the Northeast Atlantic, and the North Sea, in 2025. Mackerel egg abundance data are still provisional and will not be finalised until after the WGMEGS meeting in April 2026.

In 2025 MEGS endured the unfortunate withdrawal of both Portugal and Norway from the survey. As a result, sampling in the southern area did not start until the beginning of March. Due to the withdrawal of Portugal, there was no sampling in ICES division 9a, instead sampling ran from the Cantabrian Sea northwards. Likewise, due to the absence of Norway, there was no sampling north of 61°N to the east of Shetland.

The highest densities of mackerel eggs were distributed along the shelf edge around Northwest and North of Scotland in April and May. Fewer eggs were found to the west of Ireland, the Celtic Sea, the Bay of Biscay and the Cantabrian Sea. The area north of the Hebrides and west of Shetland produced some of the highest egg counts in recent surveys and appears to be becoming an area of importance. The major item of note for 2025 is that the expansion of egg distribution in western and northwestern areas in May and June, first noted in 2010, did not take place. Instead, this year, the majority of egg production was found in stations close to the 200m Shelf break in all sampling periods, with numbers reducing quickly east and west of these stations.

Peak spawning in the western areas was found to have taken place during May, similar to 2016 and 2022, while in the southern area it was during March, again comparable to 2019 and 2022, but much less pronounced. In 2025 however egg counts were at much lower levels than previous years and were the lowest in the time series.

In the North Sea, mackerel eggs were well distributed, as in 2022 survey where no clear pattern in the distribution of egg densities was observed. The highest densities of mackerel eggs found off the northeast coast of England. For the first time the survey was extended into the Skagerrak, where eggs were noted during some exploratory survey work in 2024.

Final distribution maps and tables will be produced after the 2026 WGMEGS meeting.

4.3 International Bottom Trawl Surveys (IBTS)

Age 0 mackerel are distributed in a band that runs from the southern Bay of Biscay, west of the British Isles, north of Scotland, into the North Sea and Skagerrak (Figure 4.3.1) and the Norwegian Sea (not covered by the survey). Overall, the shelf around Ireland and Scotland and the northern North Sea are the most important nursery areas, although some changes have been observed over the years. At the beginning of the timeseries, the highest densities of age 0 mackerel were found to the northwest of Ireland and the northern North Sea. However, since 2005 the nursery area has expanded and covered from the northwest of Ireland to the east of Orkney Islands. Between 2011 and 2018 the index for age 0 mackerel in the North Sea decreased while increasing west of Ireland, in the Celtic Sea and the Bay of Biscay (Figure A1.1.31.). The age 0 abundance index in the North Sea increased again in 2019, 2020 and 2022 but were not as high in 2023 (Figure 4.3.1).

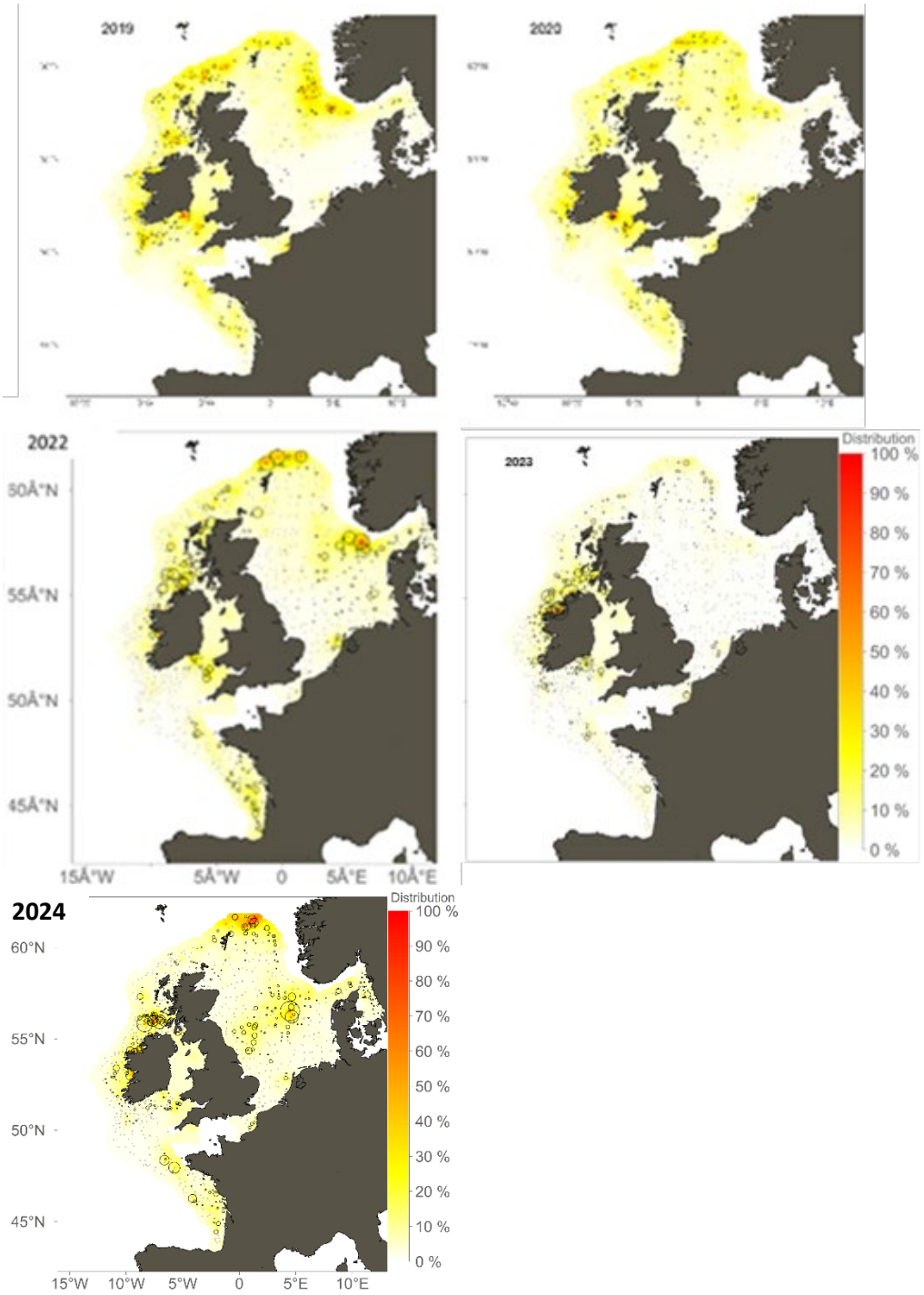

Figure 4.3.1. Spatial distribution of mackerel juveniles at age 0 from October to March for year classes a) 2019-2020 and 2022-2024 (2021 was not included due to incomplete survey). Mackerel squared catch rates by trawl haul (circle areas represent catch rates in kg/km^2) overlaid on modelled squared catch rates per 10 x 10 km rectangle. Each rectangle is coloured according to the expected squared catch rate in percent of the highest value for that year (white=0%, red=100%). See Jansen *et al.* (2015) for details. Years 1998 - 2018 are shown in annex Figure A1.1.31.

The estimates by EEZ indicate that age 0 mackerel reside in both EU and UK waters, and to a lower extent in Norwegian waters (Table 4.3.1). The temporal patterns in the distribution of age 0 mackerel explain the changes observed across years in the proportions by EEZ.

Table 4.3.1. Annual proportion of age-0 Northeast Atlantic (NEA) mackerel abundance by Exclusive Economic Zone (EEZ) from International Bottom Trawl Surveys (IBTS) undertaken on the western European continental shelf. Data are taken from surveys undertaken in Quarter 4 (Q4) and the following Quarter 1 (Q1) and are identified as the year class (the year in which eggs were spawned). * Indicates negligible percentages in all years. (2021 was not included due to incomplete survey, and 2024 data was not readily available to update for this report).

Year class	EU27	FO	INT*	NO	NO_EU27*	UK	UK_FO
1998	42.93	0.10	0	14.37	0	42.46	0.12
1999	47.79	0.10	0	12.06	0	39.93	0.12
2000	44.82	0.08	0	13.07	0	41.93	0.10
2001	46.49	0.08	0	11.90	0	41.43	0.10
2002	53.63	0.07	0	8.15	0	38.05	0.09
2003	52.33	0.09	0	9.47	0	37.99	0.12
2004	40.65	0.18	0	8.38	0	50.54	0.25
2005	28.65	0.21	0	8.75	0	62.07	0.31
2006	33.49	0.22	0	7.26	0	58.7	0.32
2007	38.63	0.13	0	8.97	0	52.08	0.18
2008	38.58	0.12	0	5.84	0	55.27	0.19
2009	39.01	0.09	0	13.48	0	47.29	0.12
2010	38.83	0.10	0	13.48	0	47.46	0.13
2011	46.61	0.09	0	11.39	0	41.81	0.10
2012	61.18	0.05	0	6.69	0	32.01	0.06
2013	56.66	0.09	0	6.74	0	36.39	0.12
2014	47.89	0.11	0	8.58	0	43.25	0.16
2015	62.34	0.06	0	5.75	0	31.77	0.08
2016	45.68	0.12	0	16.16	0	37.89	0.15
2017	51.89	0.06	0	13.82	0	34.16	0.07
2018	55.18	0.10	0	9.87	0	34.71	0.13
2019	37.01	0.16	0	17.43	0	45.18	0.22
2020	37.11	0.13	0	12.88	0	49.71	0.16
2022	38.69	0.10	0	16.14	0	44.95	0.11
2023	46.55	0.08	0	8.32	0	44.95	0.10

5 Results derived from catches

5.1 Overview of submitted data and methodology for partitioning catches to zones

The catch data held by ICES WGWIDE was used to cover the period 2006 - 2020. The data consisted of catch by nation state, ICES statistical rectangle and by month. The catch zone was not identified, so for the purposes of this report, the zonal apportionment outlined in section 3.1 was used, using the proportion of rectangle in each zone (see more details of the procedure in Anon. 2022).

Catch data since 2021 was requested to be disaggregated by ICES statistical rectangle, month and catch zone (EEZ). The deadline for submission of the 2024 catch data was set to 6th July 2025 (Annex A2). Most of the countries delivered their catch data in time and with the requested level of detail, i.e., catches reported by year, month, zone, and ICES rectangle. There were a few incidents where catch data was not submitted with associated EEZ or ICES rectangle or the information did not match. No changes were made to submissions; all were used as submitted. In addition to the 2024 catch data, France submitted catch data also for 2023 as they did not respond in time the data call last year. Greenland provided updated catch data for 2023. Russian catches since 2021 have not been reported to this working group and therefore catch tables and figures presented here are missing these data.

A final csv (comma separated) file was produced for the years 2006 - 2024 containing catches by country by rectangle by month by zone. This file was then used to plot maps and create tables of catches by month and by zone in the report.

The catches reported to this Working Group were compared with the ICES landing 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 lower than the ICES landing data until 2020. Annual catches reported to this working group as a percentage of catches reported to ICES varied from 96% to 101% for the period 2006-2020 and from 87% to 91% for the period 2021-2024. The higher 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 Fishery

As a widely distributed and migratory species, NEA mackerel is exploited over a wide geographic range throughout the year. Significant fisheries extend from the Gulf of Cadiz, along the western and northern Iberian costs, through the Bay of Biscay, S, W and N of the United Kingdom and Ireland, into the northern North Sea and the Norwegian Sea and, in more recent years as far north as 72°N and west into Icelandic and east Greenland waters (Figure 5.3.3).

The fishery is international and, as such, it is exploited by several nations using a variety of techniques determined by both the national fleet structure and the behaviour of the mackerel. At the onset of the spawning migration, large mackerel shoals move out of the northern North Sea initially to the west before moving south down the west coast of Scotland and Ireland. The timing of this migration is variable but generally occurs around the end of quarter 4 and the start of quarter 1. During this time, they are targeted primarily by Scottish and Irish pelagic trawlers with RSW tanks and also by freezer (factory) vessels (primarily Dutch and German). Prior to the onset of this migration the mackerel are overwintering, relatively static and are targeted by a large Norwegian purse-seine fleet. During summer, the mackerel are more widely dispersed as they feed in Northern waters. Russian pelagic freezer trawlers and, in more recent times, Icelandic, Faroese and Greenlandic pelagic vessels are active. The southern fishery takes place at the start of the spawning season

upon completion of the spawning migration. The Spanish fleet is comprised of both bottom and pelagic trawlers and also a large artisanal fleet. There are other smaller scale fisheries such as a Norwegian gillnet fleet and an English handline fleet that operates in the otherwise restricted area known as the Cornwall or Mackerel box.

There are a number of national and international agreements to control the exploitation of the NEA Mackerel stock. A full description of the regulations that were in force for the mackerel fishery in each year by each of the Coastal States, including access rights, are outlined in a separate report. This information can be obtained on request from the Chair of the Coastal States Mackerel Group and will be useful for interpreting both annual and inter-annual spatial patterns in the commercial catch data.

5.3 Seasonal and interannual patterns

Interannually, relative catches of mackerel fluctuate by year for all zones (Figure 5.3.1, Figure 5.3.3, Table 5.3.1). More than 30% of the total catches have annually been taken from UK waters for the studied period (2006-2024), and this proportion increased up to 50% in 2018-2020 and again in 2023, and then to 60% in 2024. Catches from international waters have increased from 2014 to 2022 (tables in 5.3.1) when around 20% of the catches came from this zone, in the last two years catches declined to similar levels as before 2014. Catches from Norwegian EEZ were much higher in 2021 and 2022 than have been seen since 2008, dipped in 2023, and increased in 2024 but remain below peak values. Similarly, catches from Icelandic waters have risen again from their dip in 2021 and 2022. The proportion of catches in the Faroe Islands increased significantly in 2023 compared to previous years but declined to low levels in 2024. Relative catches in the EU27 waters decreased in 2023 to the minimum value of the timeseries and remained low in 2024.

Seasonally, catch patterns show two peaks: in January and from July-October (Figure 5.3.2a-b) which appears the case for all assessed years. However, when pooled, larger portions of catches in the autumn period appear to be taken in years after 2011, whereas in years 2006-10 the relative catch forms a trough between July-October. Yet, the period 2006 - 10 had a greater relative catch during the January peak than the remaining time periods (Figure 5.3.2a). On a spatial scale, when considering the months exhibiting greater relative catch, mackerel are present in more northern waters (Figure 5.3.4) during their feeding migration. It must be noted that the relative catches by zone since 2021 are biased because of the missing catch data from Russia. In the past, Russia mainly fished in international waters, the Faroese, and Norwegian waters (79%, 12% and 7% of their catch for the period 2016 - 2020, respectively). **If catches from Russia have continued being significant (14% of the total catch in 2016 - 2020), the inclusion of Russian data would modify the proportions by zone presented here**.

Additional figures and tables showing the spatial and temporal distribution of mackerel catches can be found in annex A1.

Table 5.3.1 Proportion of catches of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) from 2006 – 2024. 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 Russian catches since 2021 are not included. ˆGreenlandic catches for 2023 have been updated and French catches for 2023 are included. For catches in 2024 0.55% was not allocated to any zone due to lack of zonal information in submitted data.

Year	EU27	FRO	FO_IS	GRL	ISL	INN	NOR	SJM	SVA	UK	UK_FO
2006	24.72	1.86	0	0	0.38	4.54	36.30	0.01	0	32.16	0.03
2007	25.26	2.83	0	0	5.20	4.37	30.53	0.05	0	31.65	0.10
2008	25.88	8.53	0.01	0	10.91	4.72	18.19	0.06	0	31.66	0.04
2009	29.31	2.83	0.18	0	14.60	4.13	9.73	0.08	0	39.03	0.11
2010	27.62	7.82	0	0	14.73	5.20	13.64	0.09	0	30.89	0.01
2011	10.48	13.93	0.19	0.01	17.47	5.15	10.94	0.01	0	41.78	0.05
2012	14.07	11.64	0.13	0.61	18.45	5.65	15.45	0.15	0	33.83	0.02
2013	9.06	15.62	0.15	6.35	16.20	6.66	10.26	0.19	0.03	35.46	0.01
2014	12.75	7.42	0.06	5.91	12.08	9.48	12.21	0.12	0.03	39.63	0.32
2015	13.95	7.42	0.02	1.92	11.71	11.88	18.10	0.08	0	34.84	0.08
2016	7.87	13.70	0	2.87	7.56	10.30	19.40	0.09	0	38.13	0.08
2017	5.68	6.44	0.01	2.16	9.93	18.58	13.92	0.03	0	43.13	0.12
2018	6.91	5.27	0	4.81	8.09	19.58	4.05	0.42	0	50.79	0.09
2019	9.42	4.78	0.01	0.67	7.66	22.54	4.69	0.17	0	50.02	0.03
2020	10.48	4.24	0	0	4.43	20.93	6.54	0.20	0	53.09	0.07
2021*	5.84	3.80	0	0	1.01	21.66	30.95	0	0	36.74	0
2022*	7.19	5.74	0	0	3.12	19.79	31.83	0	0	32.33	0
2023*ˆ	4.93	12.40	0	0	7.05	16.90	8.30	0	0	50.42	0
2024*	4.79	1.86	0	0	7.41	6.26	18.35	0	0	60.77	0

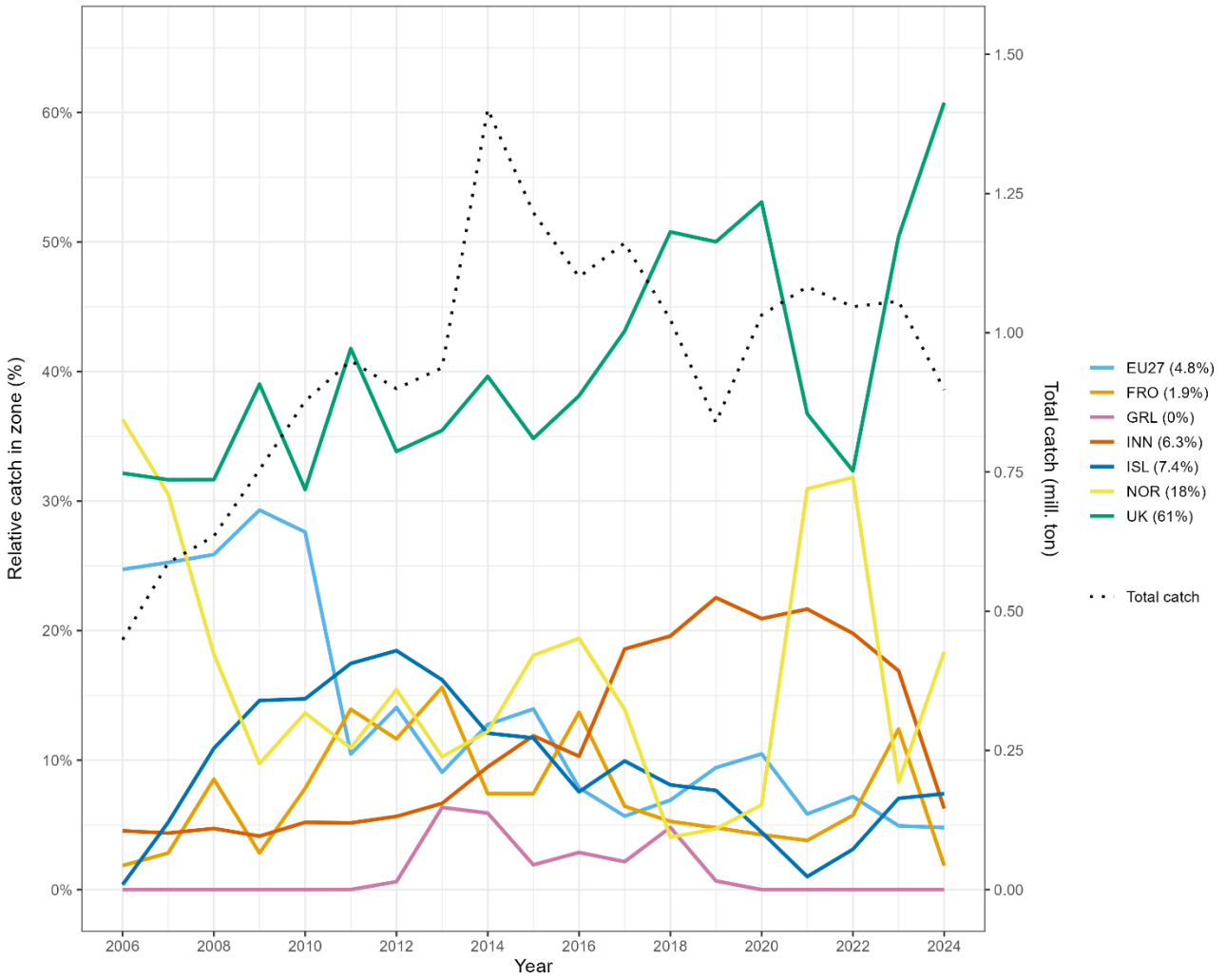

Figure 5.3.1. Relative catch (%) of Northeast Atlantic (NEA) mackerel by exclusive economic zone. Zones with annual catch > 1% since 2006 are displayed. Note that Russian catches since 2021 are not included. Numbers in figure legend display relative catch for 2024.

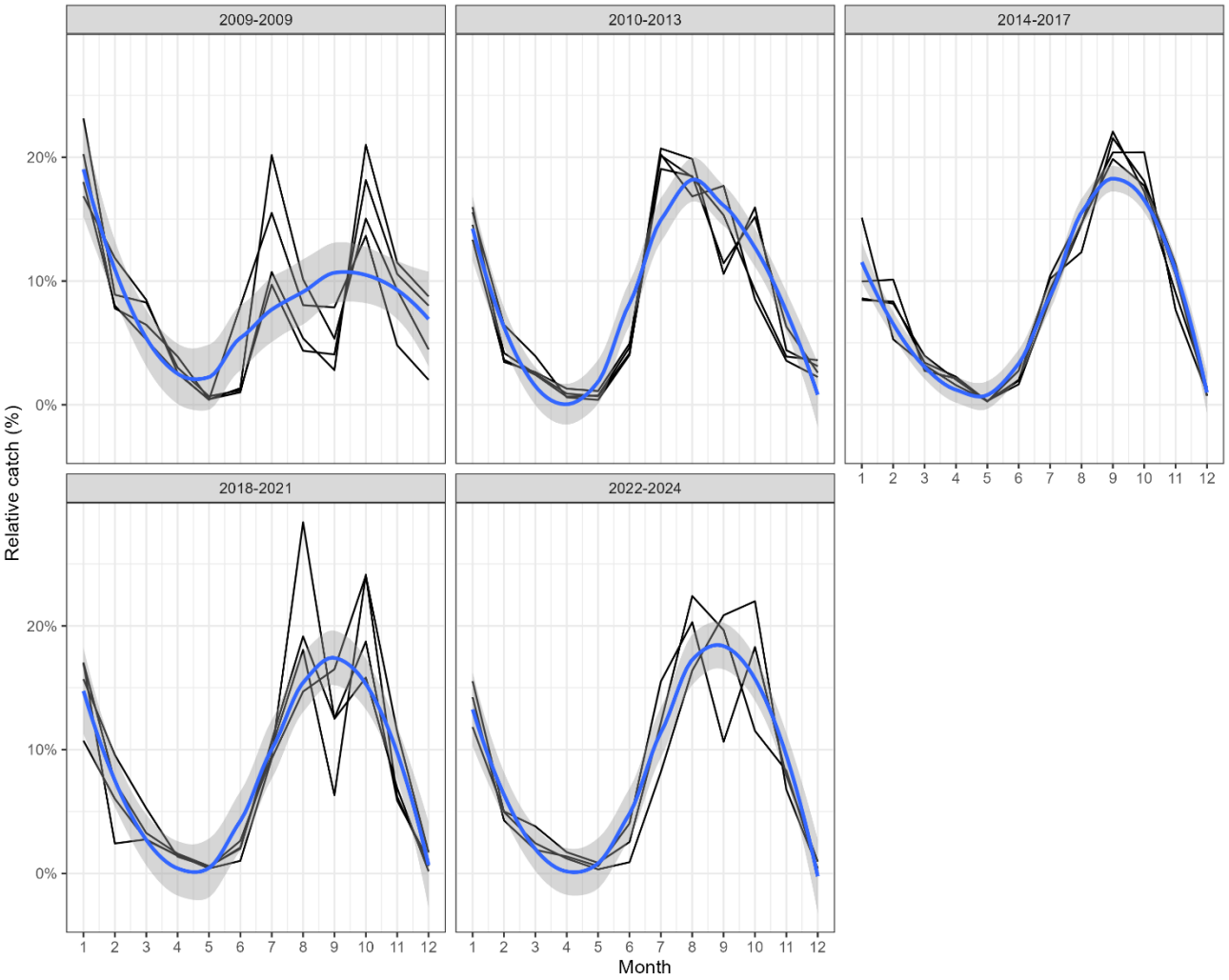

Figure 5.3.2a. Relative catches by month, disaggregated in blocks of four years, except for the first panel representing 2009, and the last panel representing 2022-2024. Black lines represent individual years, whereas the blue line is the average trend of catches for the block. The grey area shows the confidence intervals of the average trend. Note that Russian catches since 2021 are not included.

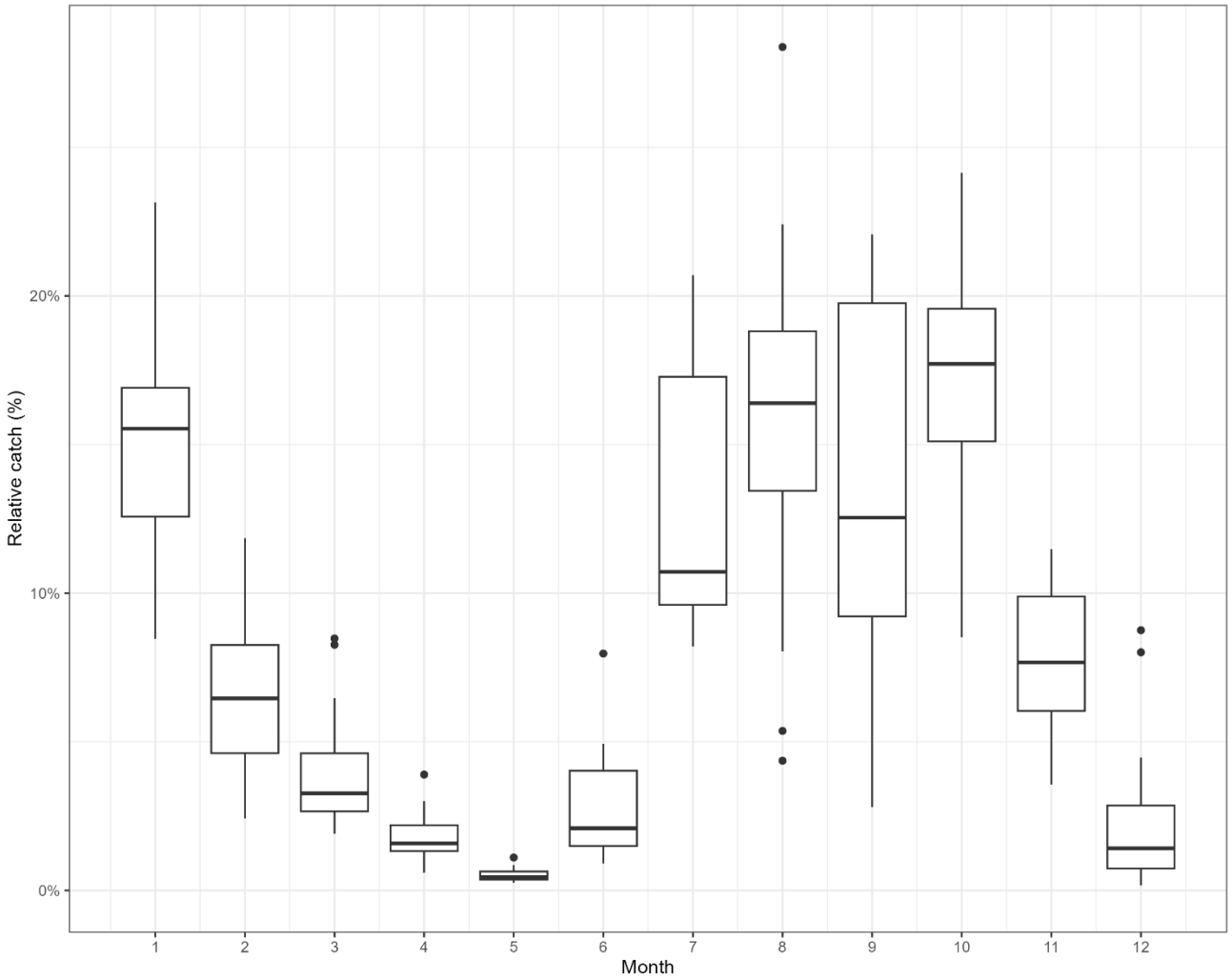

Figure 5.3.2b. Boxplot of relative catches of mackerel by month for the period 2006-2024. Note that Russian catches for the period 2021-2024 are not included.

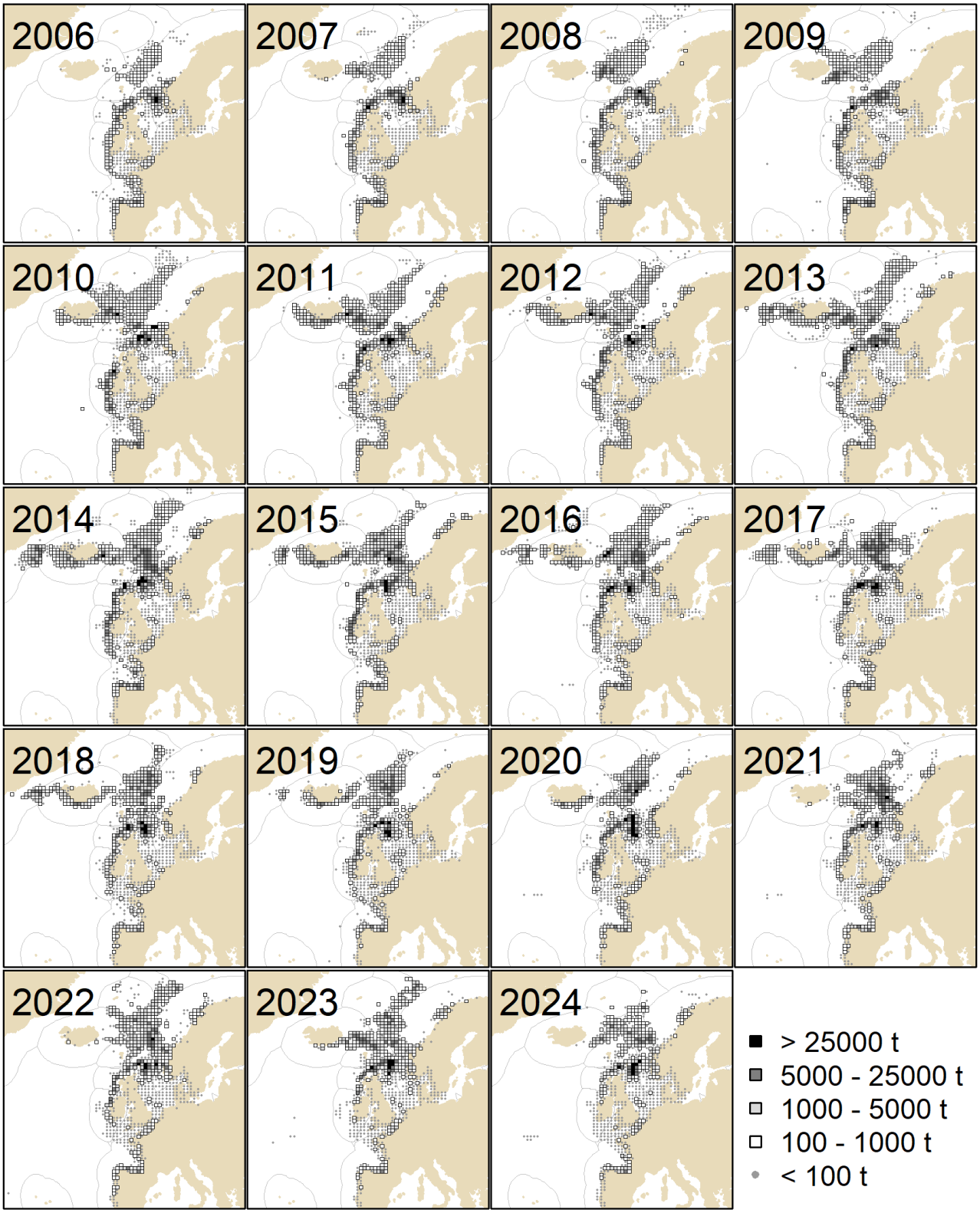

Figure 5.3.3. Annual aggregated catches of Northeast Atlantic (NEA) mackerel for individual years between 2006 – 2024. Note that Russian catches since 2021 are not included.

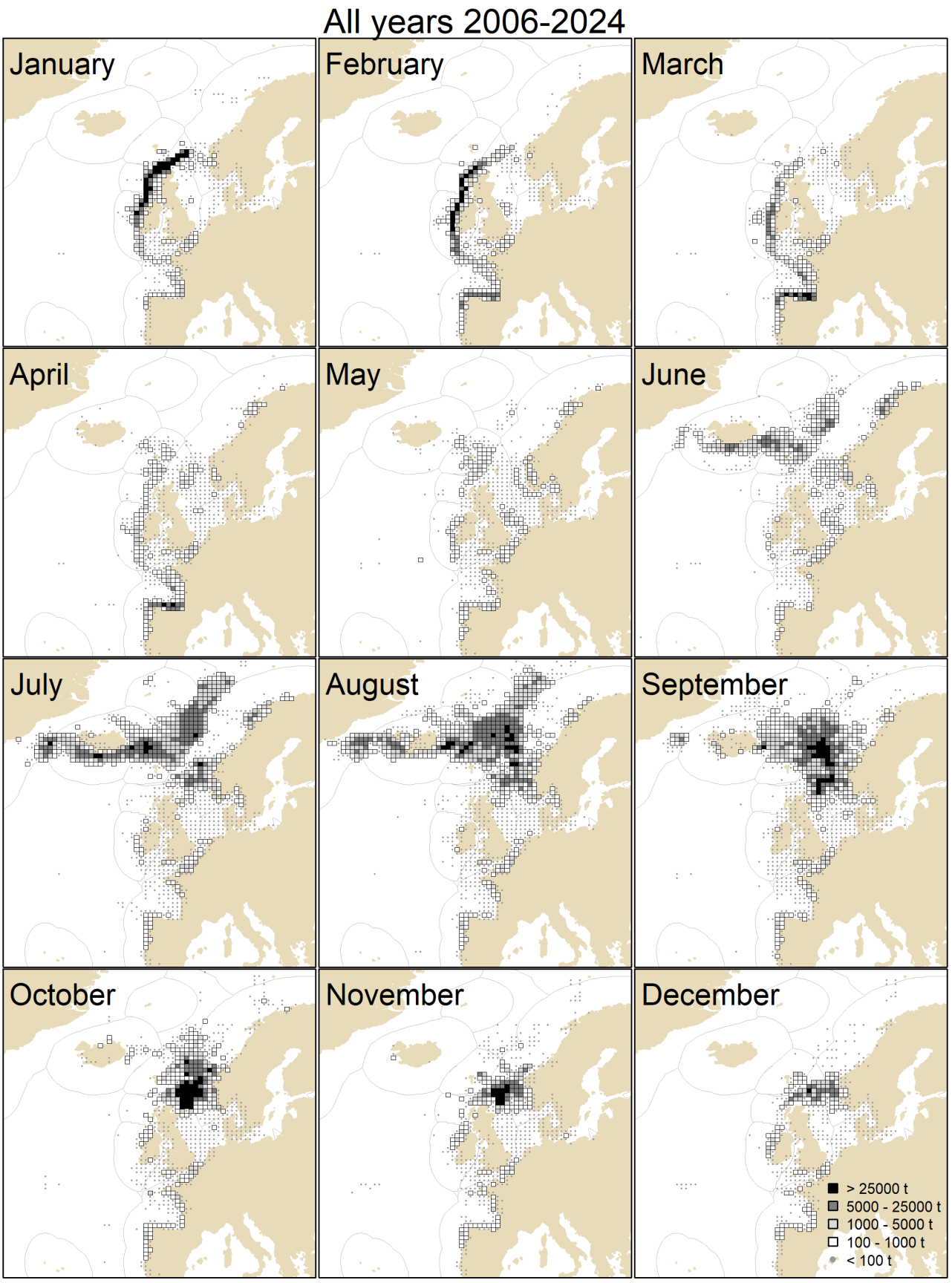

Figure 5.3.4. Cumulative catches of mackerel for individual months for all years between 2006 - 2024. Note that Russian catches since 2021 are not included.

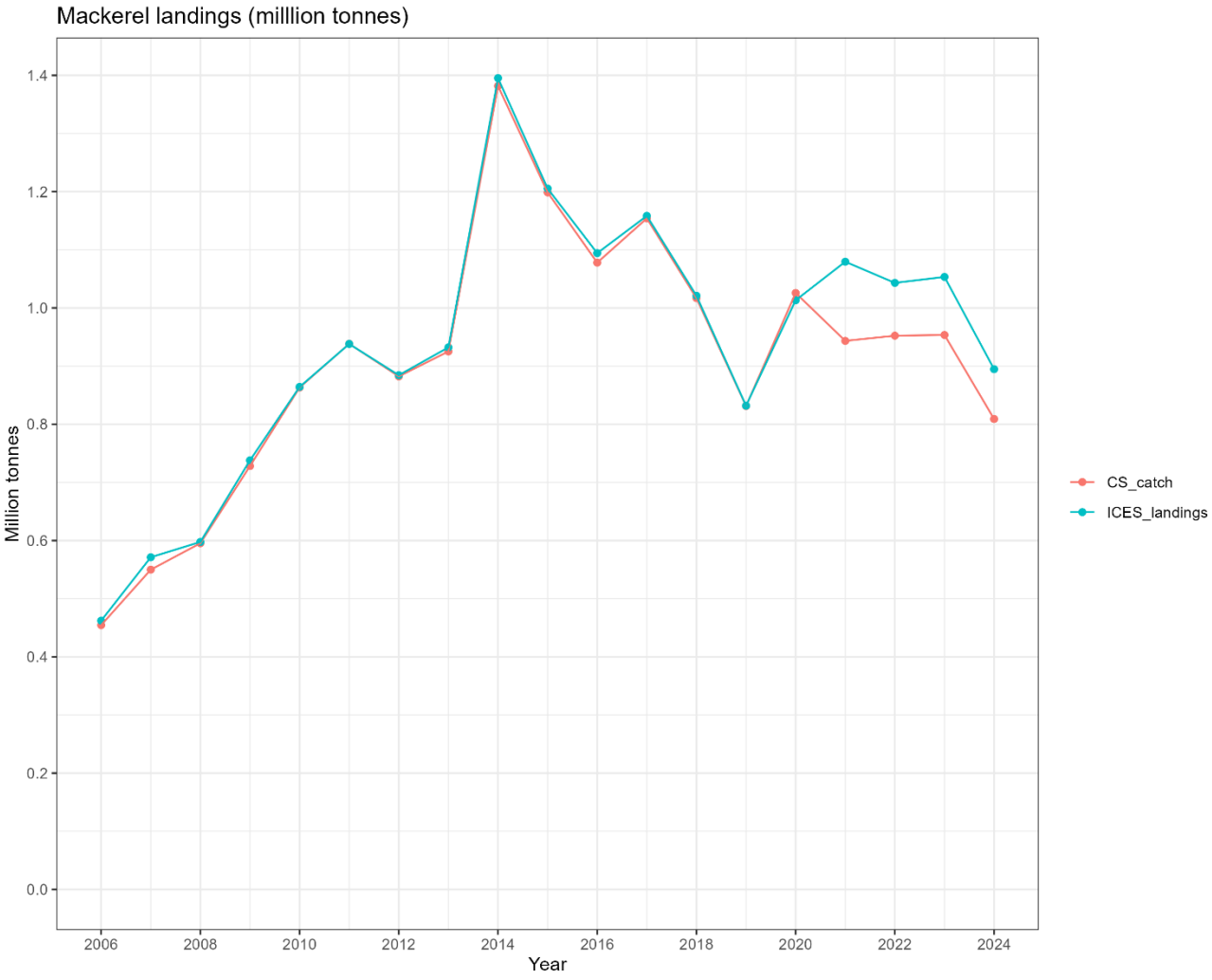

Figure 5.4.1. Comparison of catch data submitted to this working group (red) catch and ICES landing estimates (blue). Note that Russian catches in period 2021-2024 are not included.

6 Discussion and conclusions

The 'Terms of Reference' set the time frame for the fishery independent and fishery dependent data as starting in 1977. The original reason for starting in 1977 was because the first fishery independent survey occurred in that year (the first mackerel and horse mackerel egg survey). A subsequent examination of the quality controlled available data indicated that the readily available time series was shorter (started in 1992). In regard to the other two surveys where quantitative distributional data were available the start of the time series were later, 1998 for the IBTS and 2010 for the summer survey (IESSNS), although large-scale distributional mackerel data are also available from 1995 in the Norwegian Sea. The last set of data readily available were the catch data which were only available from 2006 at the level of catch per ICES statistical rectangle, per month in each year. Whilst this report gives the complete time series for each data set, the core data set currently available, where there are quantitative distributional data on the spawning, summer feeding, juvenile and catch distributions are for 2006 to 2024. An extension of a quantitative time series of the distribution of mackerel to earlier years will entail further analyses of survey and catch data and a consideration of the additional survey data not analysed here (see Table 3.2.1).

The 'Terms of Reference' required data to be presented on an annual, quarterly and/or monthly/survey basis. Unfortunately, the fishery independent data do not fit into just one of these categories for a variety of reasons. The adult summer distribution (IESSNS), from late June to August, could be considered as representative of the distribution in Quarter 3. The juvenile (age 0) distribution can be considered as indicative of the distribution over the periods Quarter 4 and 1. All the distributions from survey data, therefore, are not easily lined up within the framework or either a monthly or a quarterly distribution. On the other hand, the catch data from 2006 to 2024 is compatible with investigations at the monthly, quarterly or annual level of resolution.

The 'Terms of Reference' also made reference to all life stages. It is apparent that the available survey data on the quantitative distribution of the stock currently cannot provide information on at least two ages in the life history (age 1 and 2) nor the spatial distribution of the stock during the winter period (Quarter 4 and period before occurring on the spawning grounds in Quarter 1). The report provides the currently available survey and catch data by zones (EEZ), and thus provides estimates of the proportion of the surveyed or captured stock in each of the Coastal State EEZs.

There are other survey data sources that could be explored. The catch data can also be extended, but possibly not at the same level of resolution presented here (by ICES statistical rectangle and month). During the analyses of the catch data, it came to light that since the catch data held by ICES did not identify the zone but the ICES rectangle, there was potential for bias from the allocation methodology used. The reason is that the licence of the vessel determines in which zone it is allowed to fish. The majority of the catches are not an issue since 80.3% occur in a single rectangle which can be identified to a zone. However, 17.4% of the catches occur in rectangles covering two zones and 2.3% in rectangles covering three zones. As an illustration of the problem, an investigation of the 2015 catches from one party could have been misrepresented by zone using the approach used on the WGWIDE data. The perceived change was probably less than 5%. This was not further investigated for all years so this remains simply an illustration of a potential bias for the catch data by zone for the period 2006 - 2020. On the other hand, some bias is also expected in the relative catch by zone or month for the period 2021 - 2024 due to the missing data from Russia.

The surveys cover much of the stock over the spawning period, the summer feeding period and the age 0 nurseries. 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 data presented here also indicate that the distribution of the mackerel stock is dynamic with change occurring at short (inter-annual) and longer-term (decadal) temporal scales. Unfortunately, the drivers of the change are largely not fully understood.

In summary: The working group has compiled and systematized the available data from different surveys on the distribution of the mackerel 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 mackerel stock in the recent period, even though it cannot be quantified in proportions of biomass per life-stage and per zone.

7 References

Allan, B.J.M., Ray, J.L., Tiedemann, M., Komyakova, V., Vikebø, F., Skaar, K.S., Stiasny, M.H., Folkvord, A., Nash, R.D.M., Stenevik, E.K. and Kjesbu, O.S. 2021. Quantitative molecular detection of Atlantic herring (*Clupea harengus*) in stomach content of Atlantic mackerel (*Scomber scombrus*) marks regions of predation pressure. Science Reports 11:5095 https://doi.org/10.1038/s41598-021-84545-7

Anon. 2010. Treaty between the Kingdom of Norway and the Russian Federation concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean.

Anon. 2013. 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. London, 26 – 28 November 2013.

Anon. 2023. Report of the Coastal States Working Group on the distribution of Northeast Atlantic Mackerel. Available at: https://assets.publishing.service.gov.uk/media/6555fe39046ed400148b99f5/Coastal_States_WG_Report_Mackerel_20231013.pdf

Astthorsson, O.S., Valdimarsson, H., Gudmundsdottir, A. and Óskarsson, G.J. 2012. Climate-related variations in the occurrence and distribution of mackerel (*Scomber scombrus*) in Icelandic waters. ICES Journal of Marine Science, 69(7): 1289–1297.

Debes, H., Homrum, E., Jacobsen, J.A., Hátún, H., Danielsen, J. 2012. The feeding ecology of pelagic fish in the southwestern Norwegian Sea –Inter species food competition between herring (*Clupea harengus*) and mackerel (*Scomber scombrus*). ICES CM 2012/M:07. 19 pp.

Godø O.R., Hjellvik, V., Iversen, S.A., Slotte, A., Tenningen, E., Torkelsen, T. 2004. Behaviour of mackerel schools during summer feeding migration in the Norwegian Sea, as observed from fishing vessel sonars. ICES Journal of Marine Science 61: 1093-1099.

Hamre, J. 1978. The effect of recent changes in the North Sea mackerel fishery on stock and yield. Rapports et Procès-Verbaux des Réunions du Conseil International pour l'Exploration de la Mer, 172: 197–210.

Hughes, K.M., Dransfeld, L., and Johnson, M.P. 2014. Changes in the spatial distribution of spawning activity by north-east Atlantic mackerel in warming seas: 1977–2010. Marine Biology, 161: 2563–2576

Huse, G., Holst, J.C, Utne, K.R., Nøttestad, L., Melle, W., Slotte, A., Ottersen, G., Fenchel, T. and Uiblein, F. 2012. Effects of interactions between fish populations on ecosystem dynamics in the Norwegian Sea – results of the INFERNO project. Marine Biology Research 8(5-6): 415-419.

ICES. 1994. Report of the mackerel and horse mackerel egg production workshop. ICES CM 1994/H4.

ICES. 2002. Report of the working group on mackerel and horse mackerel egg surveys. ICES CM 2002/G:06.

ICES. 2008. Report of the working group on multispecies assessment methods (WGSAM). ICES CM 2008/RMC:06.

ICES. 2013a. Report of the Ad hoc Group on the Distribution and Migration of Northeast Atlantic Mackerel (AGDMM). ICES CM 2013/ACOM:58. 211 pp.

ICES. 2013b. Report of the Workshop on Northeast Atlantic Mackerel monitoring and methodologies including science and industry involvement (WKNAMMM), 25–28 February 2013, ICES Headquarters, Copenhagen and Hirtshals, Denmark. ICES CM 2013/SSGESST:18. 33 pp.

ICES. 2014a. Report of the Benchmark Workshop on Pelagic Stocks (WKPELA), 17–21 February 2014, Copenhagen, Denmark. ICES CM 2014/ACOM: 43. 341 pp

ICES. 2014b. Manual for international pelagic surveys (IPS). Working document of Working Group of International Surveys (WGIPS), Version 1.02 [available at ICES WGIPS sharepoint] 98 pp.

ICES. 2017. Report of the Benchmark Workshop on Widely Distributed Stocks (WKWIDE), 30 January-3 February 2017, Copenhagen, Denmark. ICES CM 2017/ACOM:36. 196 pp.

ICES. 2018. Report of the Working Group on Mackerel and Horse Mackerel Egg Surveys (WGMEGS). ICES CM 2018/EOSG:17. 70 pp. https://doi.org/10.17895/ices.pub.816

ICES. 2019. Manual for mackerel and horse mackerel egg surveys, sampling at sea. Series of ICES Survey Protocols SISP 6. 82 pp. http://doi.org/10.17895/ices.pub.5140

ICES. 2020. Working Group on Widely Distributed Stocks (WGWIDE). ICES Scientific Reports. 2:82. 1019 pp. http://doi.org/10.17895/ices.pub.7475

ICES. 2021a. Working Group on Widely Distributed Stocks (WGWIDE). ICES Scientific Reports. 3:95. 874pp. http://doi.org/10.17895/ices.pub.8298.

ICES. 2021b. Working Group on Mackerel and Horse Mackerel Egg Surveys (WGMEGS). ICES Scientific Reports. 3:82. 40pp. https://doi.org/10.17895/ices.pub.8249

ICES. 2023a. Workshop on the evaluation of NEA mackerel stock components (WKEVALMAC). ICES Scientific Reports. 5:94. https://doi.org/10.17895/ices.pub.24216843. *In prep.*

ICES. 2023b. Preliminary cruise report from the International Ecosystem Summer Survey in the Nordic Seas (IESSNS) 1st July – 3rd August 2023. Working Group Document to ICES Working Group on Widely Distributed Stocks (WGWIDE, No. 1). ICES HQ, Copenhagen, Denmark (hybrid meeting) 23.-29. August 2023. 55 pp.

ICES. 2024. Cruise report from the International Ecosystem Summer Survey in Nordic Seas (IESSNS) 28th June – 2nd August 2024. Working document to ICES Working Group on Widely Distributed Stocks (WGWIDE, No. 3), Marine and Freshwater Research Institute, Hafnarfjörður, Iceland. 68 pp.

ICES. 2025a. Benchmark workshop on Mackerel and Norwegian spring-spawning herring (WKBMACNSSH). ICES Scientific Reports. 7:64. 509 pp. https://doi.org/10.17895/ices.pub.29279615

ICES. 2025b. Manual for International Pelagic Surveys, coordinated by ICES Working Group of International Pelagic Surveys (WGIPS). ICES Techniques in Marine Environmental Sciences Vol. 71. 227 pp. https://doi.org/10.17895/ices.pub.28269671

ICES. 2025c. Cruise report from the International Ecosystem Summer Survey in Nordic Seas (IESSNS) 30th June – 3rd August 2025. Working document to ICES Working Group on Widely Distributed Stocks (WGWIDE, No. 1), ICES HQ, Copenhagen, Denmark. 67 pp.

Iversen, S.A. 2002. Changes in the perception of the migration pattern of North East Atlantic mackerel during the last 100 years. ICES Marine Science Symposia, 215: 382-390.

Jansen, T., Kristensen, K., van der Kooij, J., Post, S., Campbell, A., Utne, K. R., Carrera, P., Jacobsen, J. A., Gudmundssdottir, A., Roel, B. A., and Hatfield, E. M. C. 2015. Nursery areas and recruitment variation of Northeast Atlantic mackerel (*Scomber scombrus*). ICES Journal of Marine Science, 72: 1779–1789.

Jansen, T., Campbell, A., Kelly, C.J., Hátún, H. and Payne, M.R. 2012. Migration and fisheries of North East Atlantic mackerel (*Scomber scombrus*) in autumn and winter. PloS One 7, 1–9. Doi:10.1371/journal.pone.0051541.

Johnsen, E., Totland, A., Skålevik, Å., Holmin, A. J., Dingsør, G. E., Fuglebakk, E., and Handegard, N. O. 2019. StoX: An open source software for marine survey analyses. Methods in Ecology and Evolution 10, 1523 –1528. https://doi.org/10.1111/2041-210X.13250

Langøy, H., Nøttestad, L., Skaret, G., Broms, C. and Fernö, A. 2012. Overlap in distribution and diets of Atlantic mackerel (*Scomber scombrus*), Norwegian spring- spawning herring (*Clupea harengus*) and blue whiting (*Micromesistius poutassou*) in the Norwegian Sea during late summer. Marine Biology Research, 8(5–6): 442–460.

Lockwood, S.J. 1988. The Mackerel. Its biology, assessment and the management of a fishery. Fishing News Books Ltd, Farnham, Surrey, England. 181 pp.

Lockwood, S.J., Nichols, J.H. and Dawson, W.A. 1981. The estimation of a mackerel (*Scomber scombrus* L.) spawning stock size by plankton survey. Journal of Plankton Research, 3: 217-233.

Nash, R.D.M., Dickey-Collas, M. and Milligan, S.P. 1998. Descriptions of the Gulf VII/PRO-NET and MAFF/Guildline unencased high-speed plankton samplers. Journal of Plankton Research, 20: 1915-1926.

Nikolioudakis, N., Skaug, H. J., Olafsdottir, A. H., Jansen, T., Jacobsen, J. A. and Enberg, K. 2019. Drivers of the summer-distribution of Northeast Atlantic mackerel (*Scomber scombrus*) in the Nordic Seas from 2011 to 2017; a Bayesian hierarchical modelling approach. ICES Journal of Marine Science, 76 (2):530-548 doi:10.1093/icesjms/fsy085.

Nøttestad L., *et al.* 2007. Cruise report on coordinated ecosystem survey with M/V "Libas" and M/V "Eros" in the Norwegian Sea, 15. July - 6. August 2007. Institute of Marine Research, Norway 39 p.

Nøttestad, L., Jacobsen, J.A., Sveinbjørnsson S. *et al.* 2010. Cruise report from the coordinated ecosystem survey with M/V ”Libas” and M/V ”Brennholm”, M/V ”Finnur Fridi” and R/V ”Arni Fridriksson” in the Norwegian Sea and surrounding waters, 9 July – 20 August 2010. Working document to Working Group on Widely Distributed Species (WGWIDE), Vigo, Spain 28. August – 3. September 2010. 48 p.

Nøttestad, L. Oskarsson G.J., Jacobsen, J.A. *et al.* 2011. “Cruise report from the coordinated ecosystem survey (IESSNS) with M/V “Libas, M/V “Finnur Fridi” and R/V “Arni Frdriksson” in the Norwegian Sea and surrounding waters 18. July – 31. August 2011”. Working document to working group on Northeast Atlantic Pelagic Ecosystem Surveys (WGNAPES) ICES HQ, Copenhagen 31 p.

Nøttestad, L. K.R. Utne, V. Anthonypillai, Ø. Tangen, J.W. Valdemarsen, G.J. Óskarsson, S. Sveinbjörnsson, S. Jónsson, Ó.A. Ingólfsson. H. Debes, E. Mortensen, L. Smith, J.A. Jacobsen, K. Zachariassen. 2012. Cruise report from the coordinated ecosystem survey (IESSNS) with RV ”G. O. Sars”, M/V “Brennholm”; M/V “Christian í Grótinum” and RV “Arni Fridriksson” in the Norwegian Sea and surrounding waters, 1 July–10 August 2012. 50 p. Working Document to ICES Working Group on International Pelagic Surveys (WGIPS) and to ICES Working Group on Widely distributed Stocks (WGWIDE).

Nøttestad, L., Utne, K. R., Anthonypillai, V., Tangen, Ø., Valdemarsen, J. W., Oskarsson, G., Sveinbjornsson, S., *et al.* 2013. Cruise Report from the Coordinated Ecosystem Survey (IESSNS) with M/V “Libas”, M/V “Eros”, M/V “Finnur Fríði” and R/V “Arni Fridriksson” in the Norwegian Sea and surrounding waters, 2. July–9. August 2013. Working Document to Working Group of Widely Distributed Stocks, ICES, Copenhagen, Denmark, 27 August–2 September 2013. 42 pp.

Nøttestad, L., Salthaug, A., Johansen, G. O., Anthonypillai, V., Tangen, Ø., Utne, K. R., Sveinbjornsson, S., *et al.* 2014. Cruise Report from the Coordinated Ecosystem Survey (IESSNS) with M/V “Brennholm”, M/V “Vendla”, M/V “Finnur Fríði” and R/V ”Arni Fridriksson” in the Norwegian Sea and surrounding waters, 2 July–12 August 2014. Working Document to Working Group of Widely Distributed Stocks, ICES, Copenhagen, Denmark, 26 August – 1 September 2014. 49 pp.

Nøttestad, L., V. Anthonypillai, G. Oskarsson, S. Þ. Jónsson, E. í. Homrum, *et al.*, 2015. Cruise report from the International Ecosystem Summer Survey in the Nordic Seas (IESSNS) with M/V ”Brennholm”, M/V “Eros”, M/V “Christian í Grótinum” and R/V “Árni Friðriksson”, 1 July - 10 August 2015. ICES Working Group on Widely Distributed Stocks (WGWIDE), AZTI-Tecnalia, Pasaia, Spain, 25 – 31 August 2015. 48 p.

Nøttestad, L., Utne, K. R., Óskarsson, G. J., Jónsson, S. Þ., Jacobsen, J. A., Tangen, Ø., Anthonypillai, V., *et al.* 2016a. Quantifying changes in abundance, biomass and spatial distribution of Northeast Atlantic (NEA) mackerel (*Scomber scombrus*) in the Nordic Seas from 2007 to 2014. ICES Journal of Marine Science 73, 359–373.

Nøttestad, L., Anthonypillai, V., Tangen, Ø., Høines, Å., Utne, K. R., Oskarsson, G., Ólafsdóttir, A.H, *et al.* 2016b. Cruise Report from the International Ecosystem Summer Survey in Nordic Seas (IESSNS) with M/V “M.

Ytterstad", M/V "Vendla", M/V "Tróndur í Gøtu", M/V "Finnur Fríði" and R/V "Arni Fridriksson" 1-31 July2016. Working Document to Working Group of Widely Distributed Stocks, ICES, Copenhagen, Denmark, 31 August–6 September 2016. 41 pp.

Nøttestad, L., Anthonypillai, V., Tangen, Ø., Høines Å., Utne K.R. Oskarsson, G., Ólafsdóttir, A.H, *et al.* 2017. Cruise report from the International Ecosystem Summer Survey in the Nordic Seas (IESSNS) with M/V "Kings Bay", M/V "Vendla", M/V "Tróndur í Gøtu", M/V "Finnur Fríði" and R/V "Árni Friðriksson", 3rd of July – 4th of August 2017. ICES Working Group on Widely Distributed Stocks (WGWIDE), ICES HQ, Copenhagen, Denmark, 30. August – 5. September 2017. 45 p.

Nøttestad, L., Ólafsdóttir, A.H., Anthonypillai, V. Homrum, E., Jansen, T.; Wieland K. *et al.* 2019. Cruise report from the International Ecosystem Summer Survey in the Nordic Seas (IESSNS) 28th June – 5th August 2019. Working Group Document to ICES Working group on Widely Distributed Stocks (WGWIDE, No. 5). Spanish Institute of Oceanography (IEO), Santa Cruz, Tenerife, Canary Islands 28. August – 3 September 2019. 51 pp.

Nøttestad, L., Ólafsdóttir, A.H., Anthonypillai, V. Homrum, E., Jansen, T., Wieland K. *et al.* 2020. Cruise report from the International Ecosystem Summer Survey in the Nordic Seas (IESSNS) 28th June – 5th August 2019. Working Group Document to ICES Working Group on Widely Distributed Stocks (WGWIDE, No. 3). ICES HQ, Copenhagen, Denmark (digital meeting) 26. August – 1. September 2020. 55 pp.

Ólafsdóttir, A.H., Utne, K.R., Nøttestad, L., Jacobsen, J.A., Jansen, T., *et al.* 2018. Cruise report from the International Ecosystem Summer Survey in the Nordic Seas (IESSNS) 30th of June – 6th of August 2018. Working Document to ICES Working Group on Widely Distributed Stocks (WGWIDE, No. 05), Havstovan, Tórshavn, Faroe Islands, 28. August – 3. September 2018.

Olafsdottir, A.H., Utne, K.R., Jacobsen, J.A., Jansen, T., Óskarsson, G.J., Nøttestad, L., Elvarsson, B.Þ., Broms, C.,and Slotte, A. (2019). Geographical expansion of Northeast Atlantic mackerel (*Scomber scombrus*) in Nordic Seas from 2007 to 2016 was primarily driven by stock size and constrained by low temperatures. Deep-Sea Research Part II: Topical Studies in Oceanography. DOI: 10.1016/j.dsr2.2018.05.023

Óskarsson, G.J., Sveinbjörnsson, S. Guðmundsdóttir, A. and Sigurðsson, Th. 2012. Ecological impacts of recent extension of feeding migration of NE-Atlantic mackerel into the ecosystem around Iceland. ICES CM 2012/M:03. 25 pp.

Skaret, G., Bachiller, E., Langøy, H. and Stenevik, E. K. 2015. Mackerel predation on herring larvae during summer feeding in the Norwegian Sea. ICES Journal of Marine Science, 72: 2313–2321.

Tenningen, M., Slotte, A., and Skagen, D. 2011. Abundance estimation of Northeast Atlantic mackerel based on tag recapture data – A useful tool for stock assessment? Fisheries Research, 107:68-74.

Tøsdal, T.G-H. 2021. An investigation of spatial and temporal patterns in the Norwegian mackerel fishery during the period 1900-2020. Master thesis in Fisheries Biology and Management. University of Bergen, Norway. June 2021. 90 pp.

Uriarte, A., Lucio, P. 2001. Migration of adult mackerel along the Atlantic European shelf edge from a tagging experiment in the south of the Bay of Biscay in 1994. Fisheries Research, 50: 129 – 139.

Uriarte, A., Alvarez, P., Iversen, S., Molloy, J., Villamor, B., *et al.* 2001. Spatial pattern of migration and recruitment of North East Atlantic Mackerel. ICES CM 2001/O:17.

Utne, K.R., Huse, G., Ottersen, G., Holst, J.C., Zabavnikov, V., Jacobsen, J.A., Óskarsson, G.J., et al., 2012. Horizontal distribution and overlap of planktivorous fish stocks in the Norwegian Sea during summers 1995–2006. Mar. Biol. Res. 8, 420–441.

Valdemarsen, J.W., J.A. Jacobsen, G.J. Óskarsson, K.R. Utne, H.A. Einarsson, S. Sveinbjörnsson, L. Smith, K. Zachariassen and L. Nøttestad 2014. Swept area estimation of the North East Atlantic mackerel stock using a standardized surface trawling technique. Working Document (WD) to ICES WKPELA. 14 pp.

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Annexes

A1. Additional figures and tables

A1.1 Figures

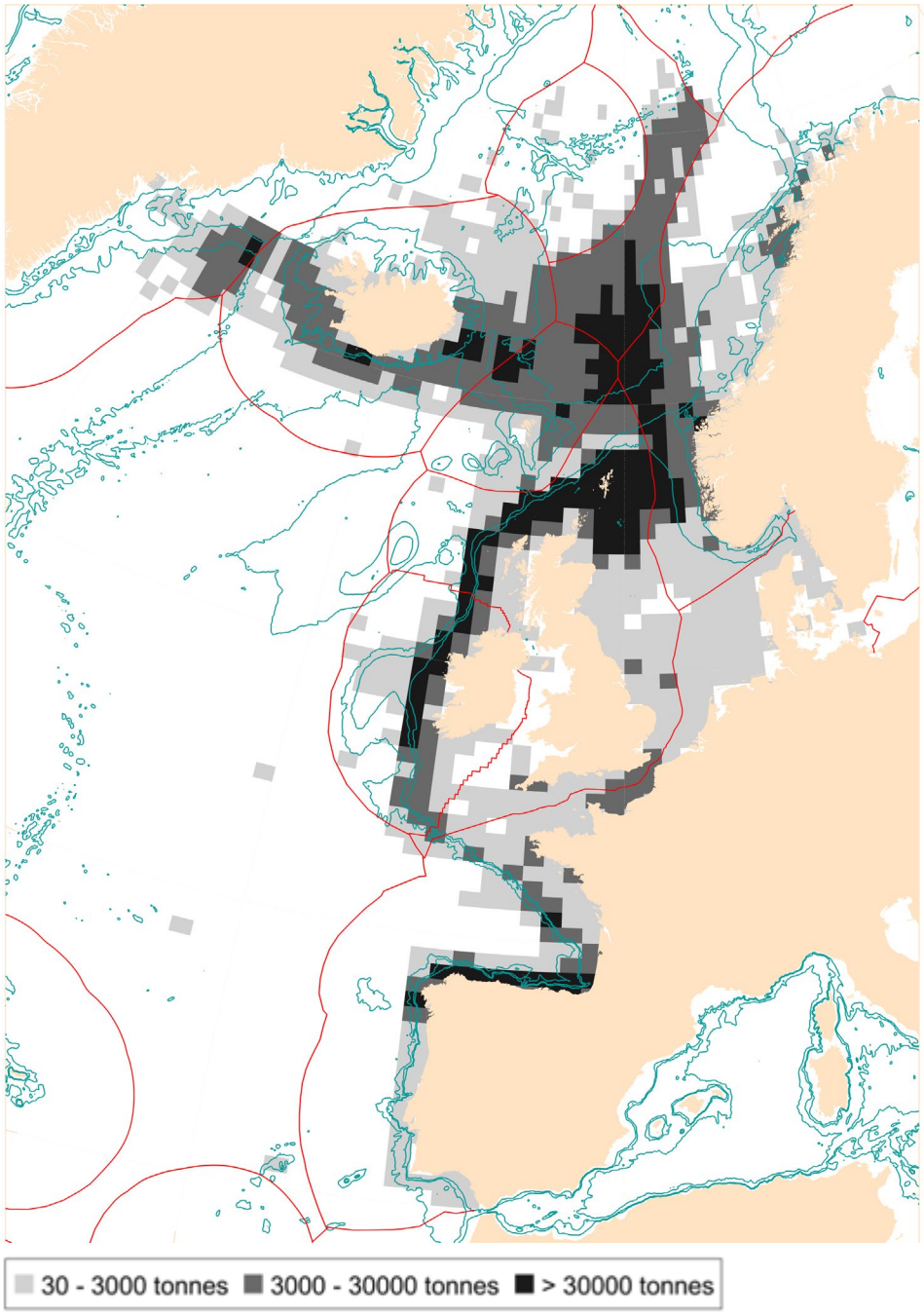


Figure A1.1.1. Sum of catches of Northeast Atlantic (NEA) mackerel for all years between 2006–2024.

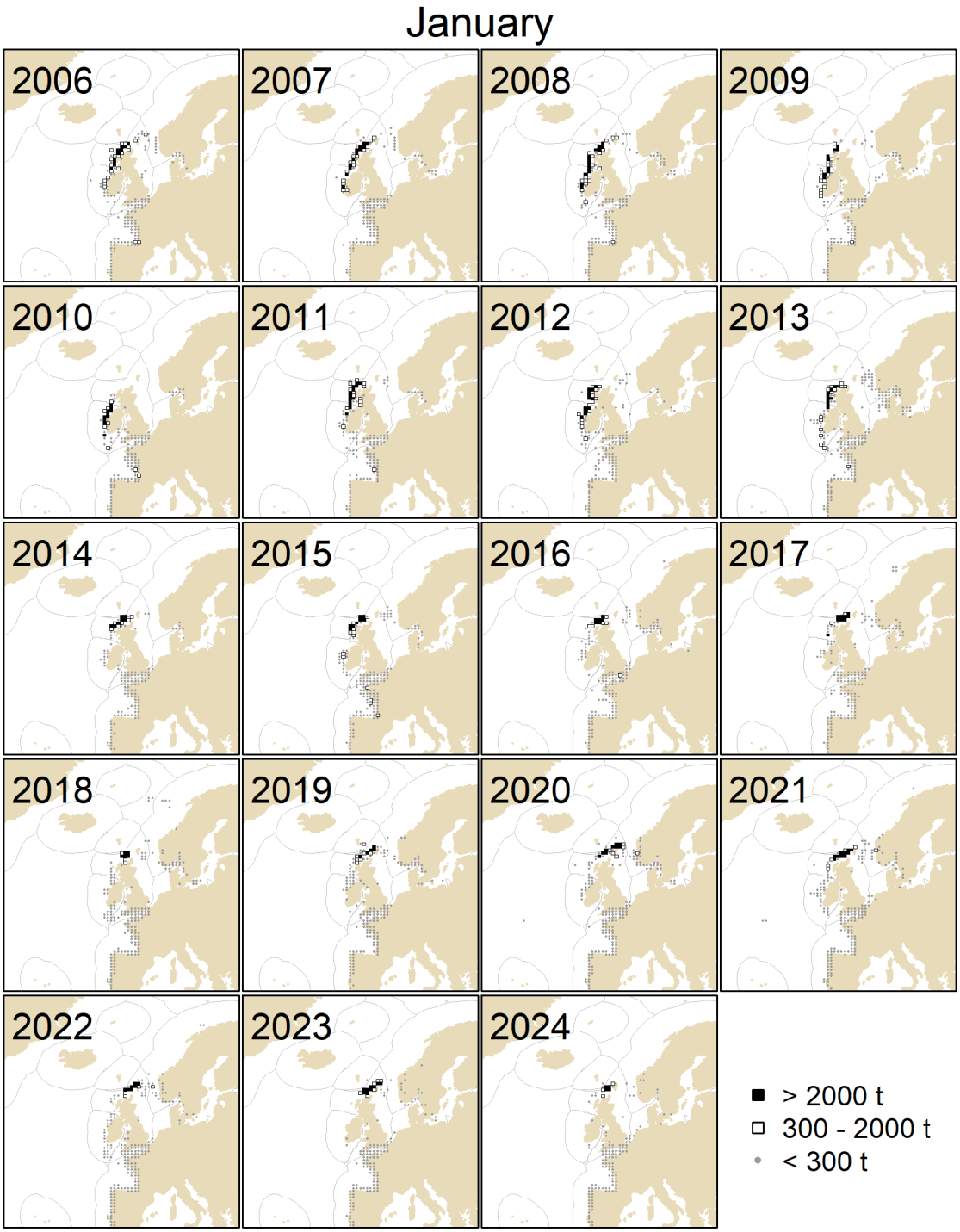


Figure A1.1.2. Annual catches of Northeast Atlantic (NEA) mackerel for January between 2006 – 2024. Note that Russian catches since 2021 are not included.

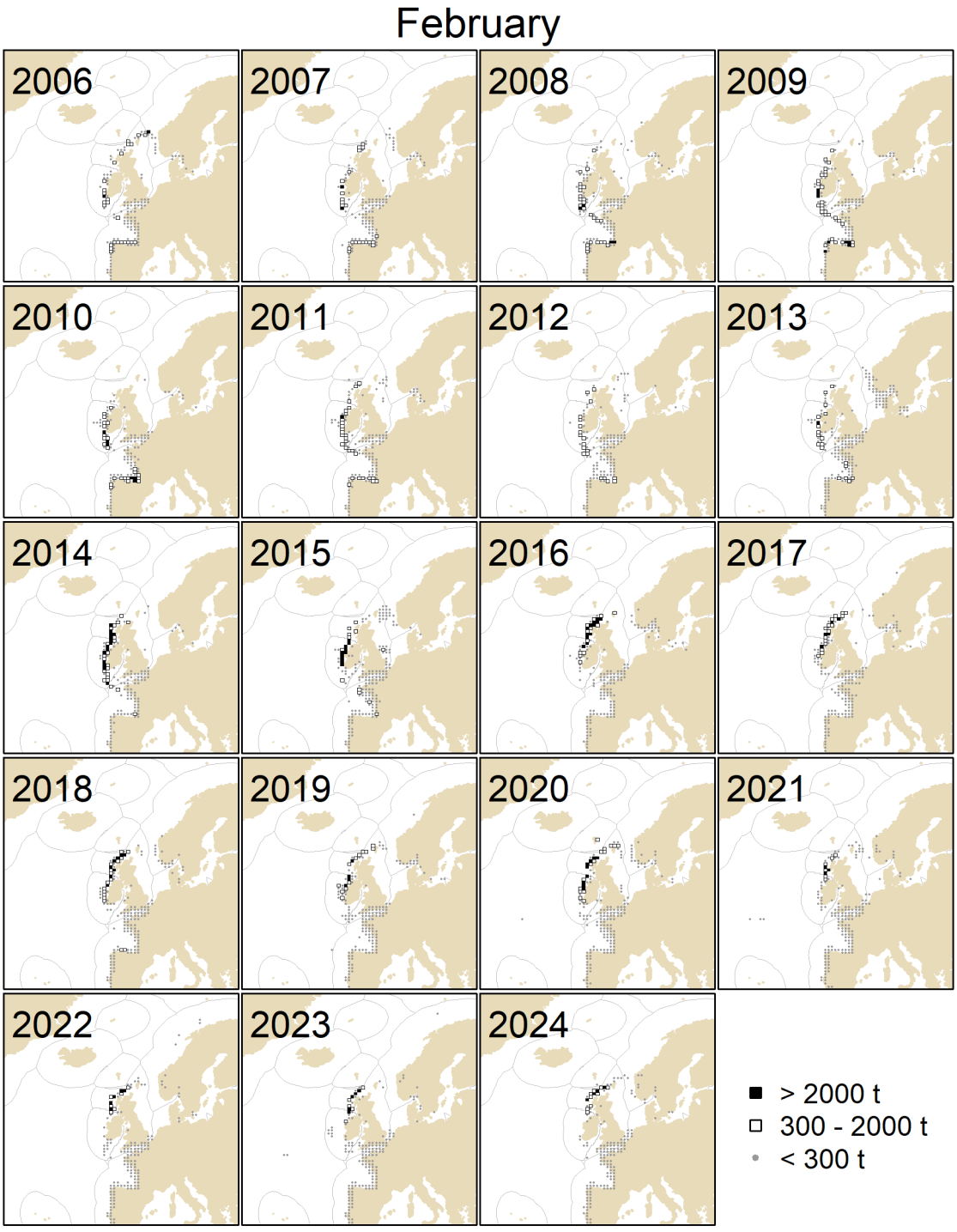


Figure A1.1.3. Annual catches of Northeast Atlantic (NEA) mackerel for February between 2006 – 2024. Note that Russian catches since 2021 are not included.

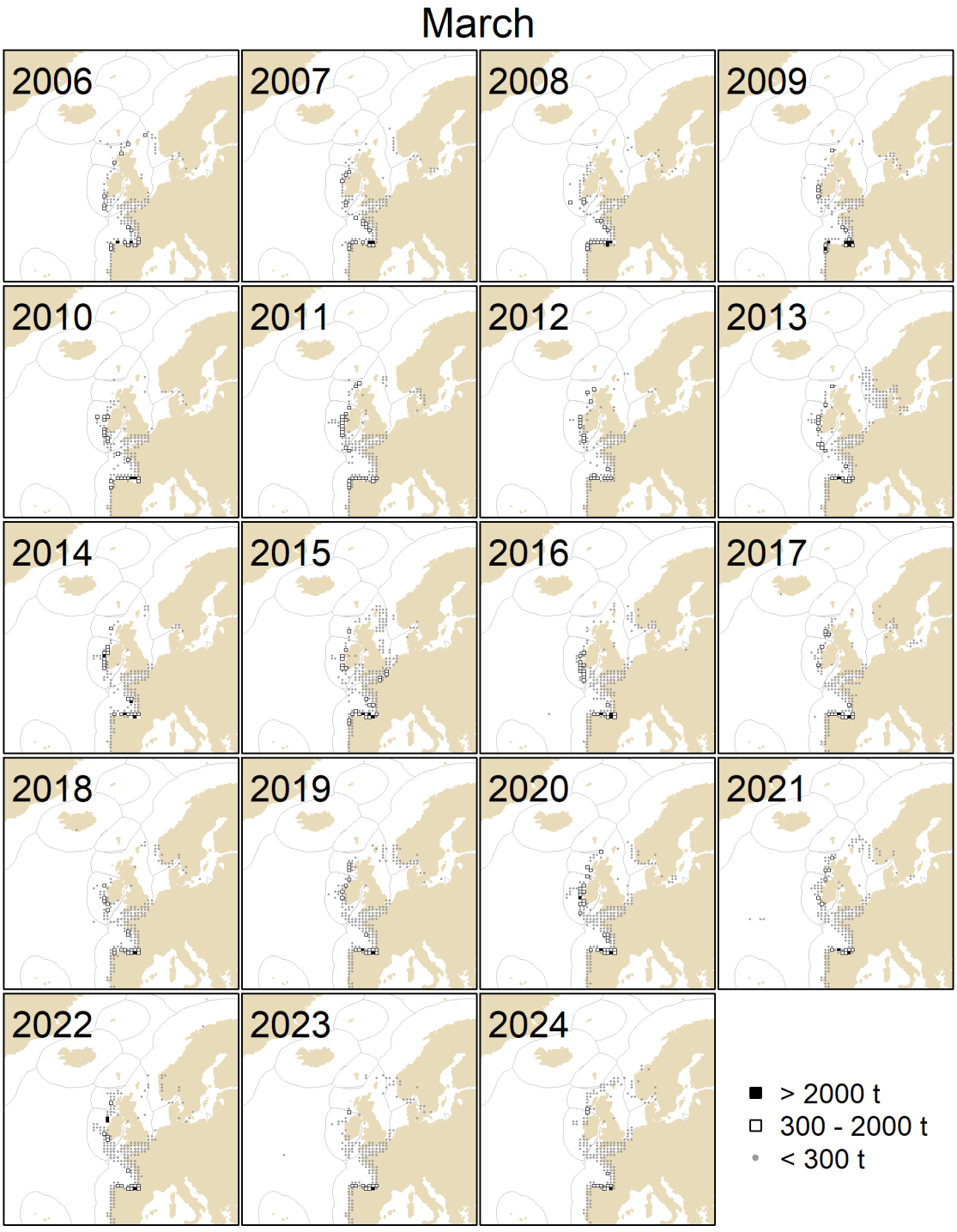


Figure A1.1.4. Annual catches of Northeast Atlantic (NEA) mackerel for March between 2006 – 2024. Note that Russian catches since 2021 are not included.

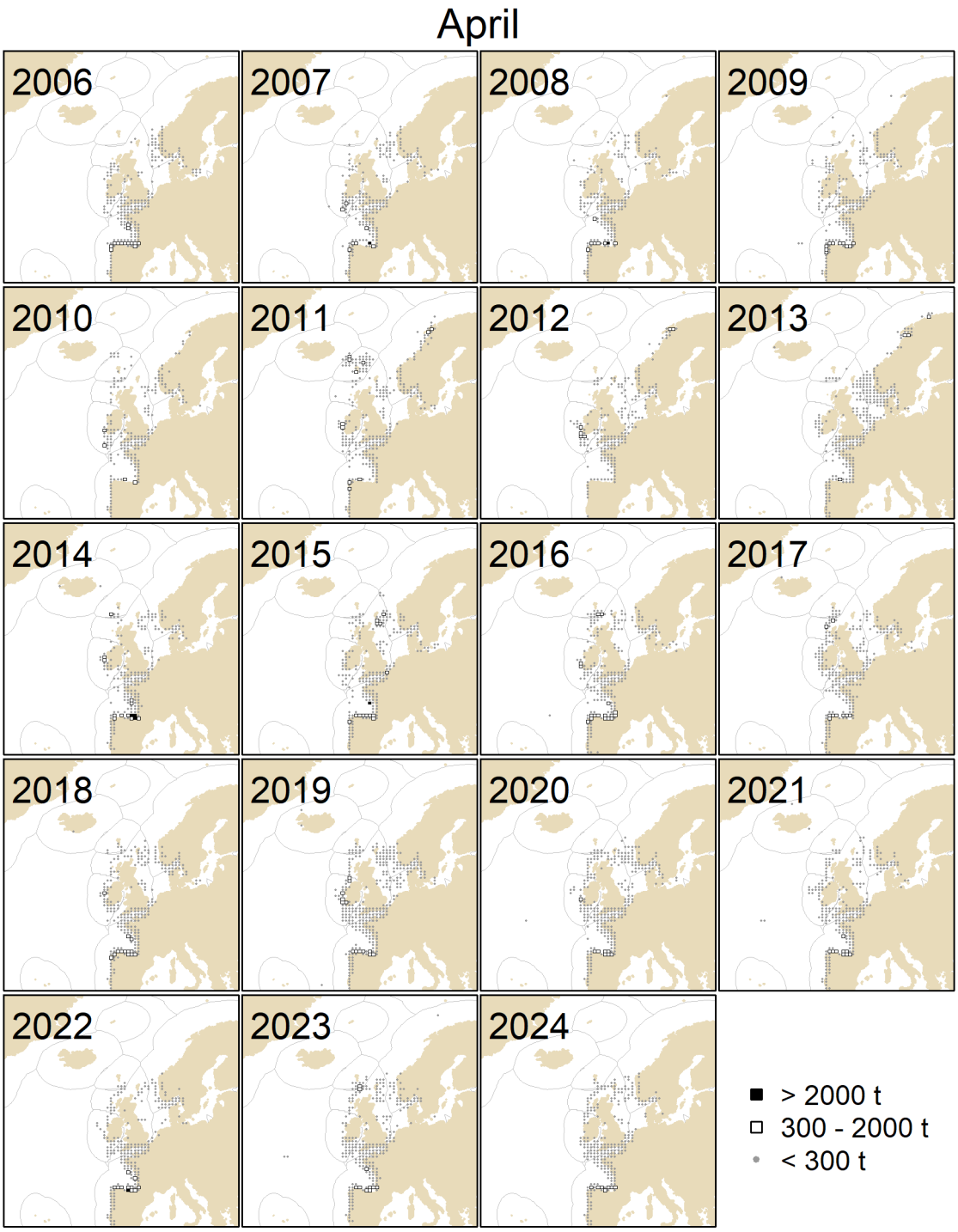


Figure A1.1.5. Annual catches of Northeast Atlantic (NEA) mackerel for April between 2006 – 2024. Note that Russian catches since 2021 are not included.

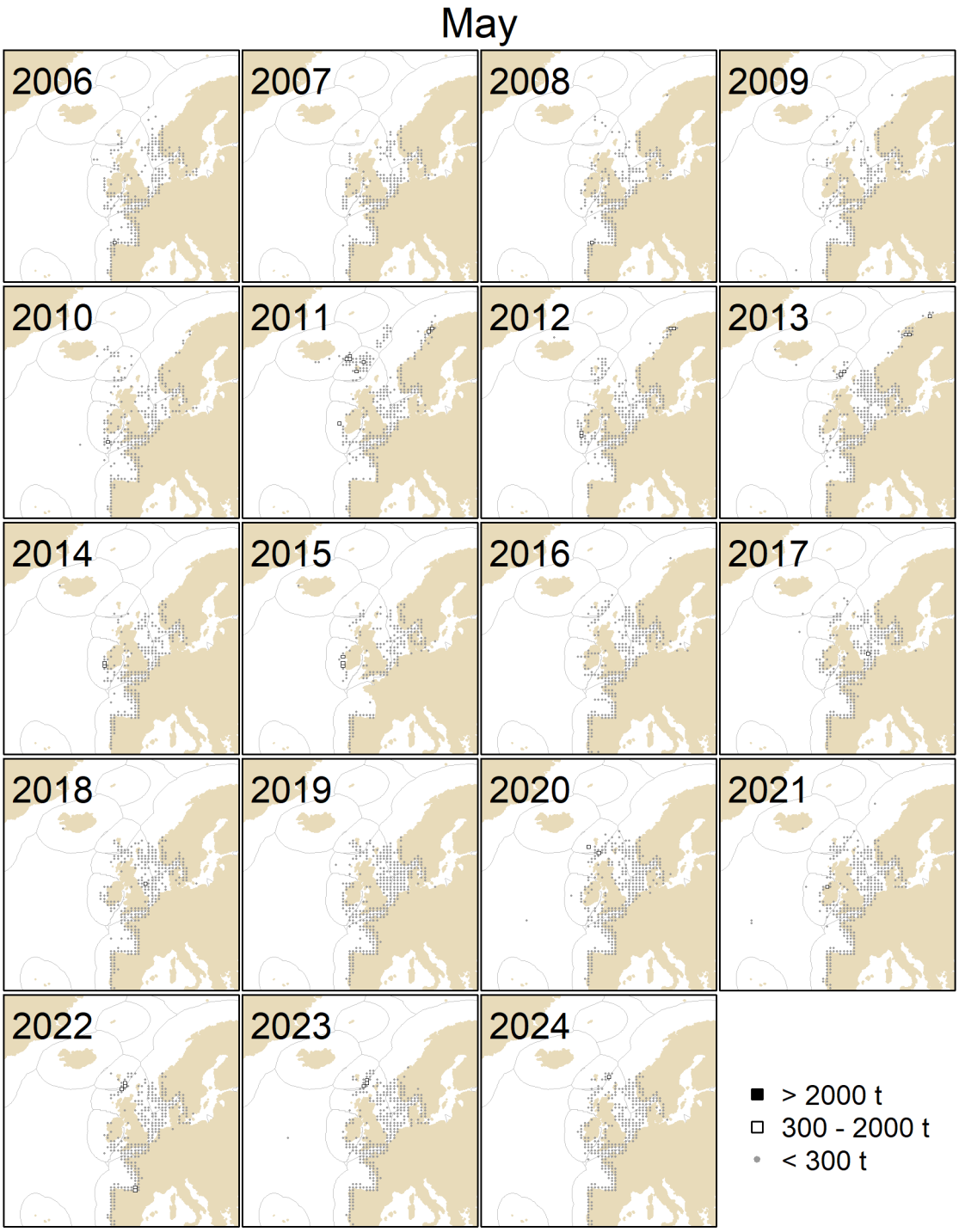


Figure A1.1.6. Annual catches of Northeast Atlantic (NEA) mackerel for May between 2006 – 2024. Note that Russian catches since 2021 are not included.

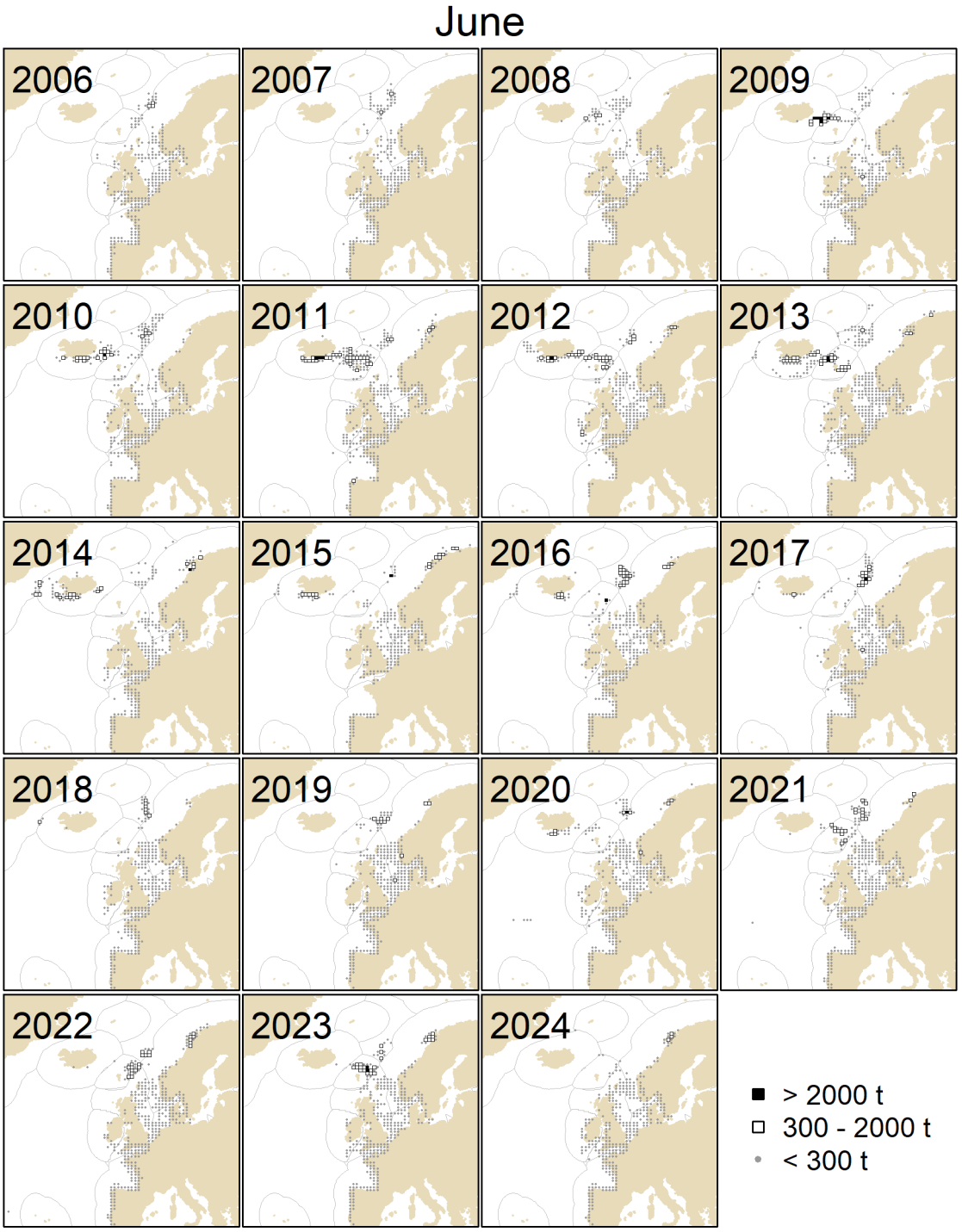


Figure A1.1.7. Annual catches of Northeast Atlantic (NEA) mackerel for June between 2006 – 2024. Note that Russian catches since 2021 are not included.

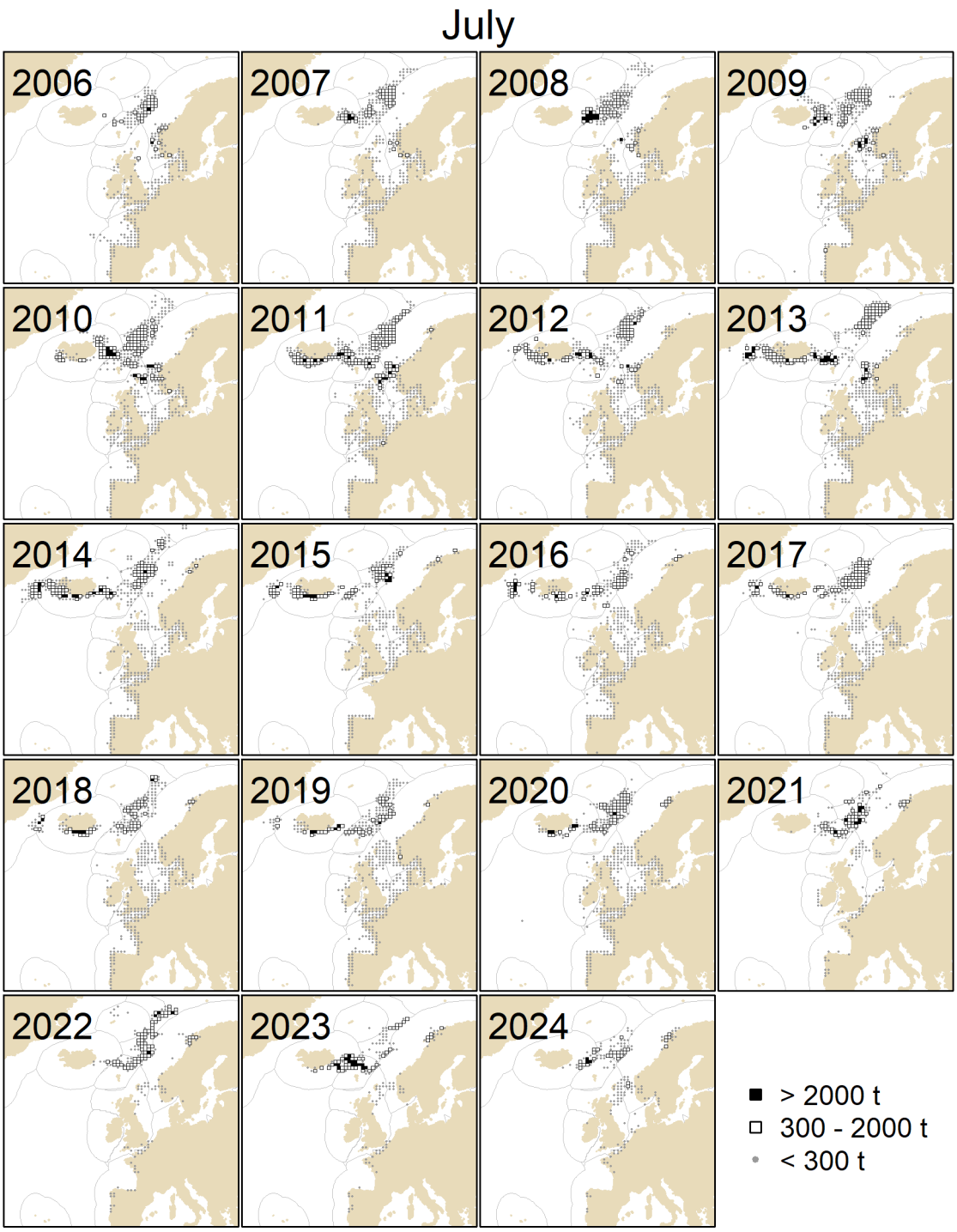


Figure A1.1.8. Annual catches of Northeast Atlantic (NEA) mackerel for July between 2006 – 2024. Note that Russian catches since 2021 are not included.

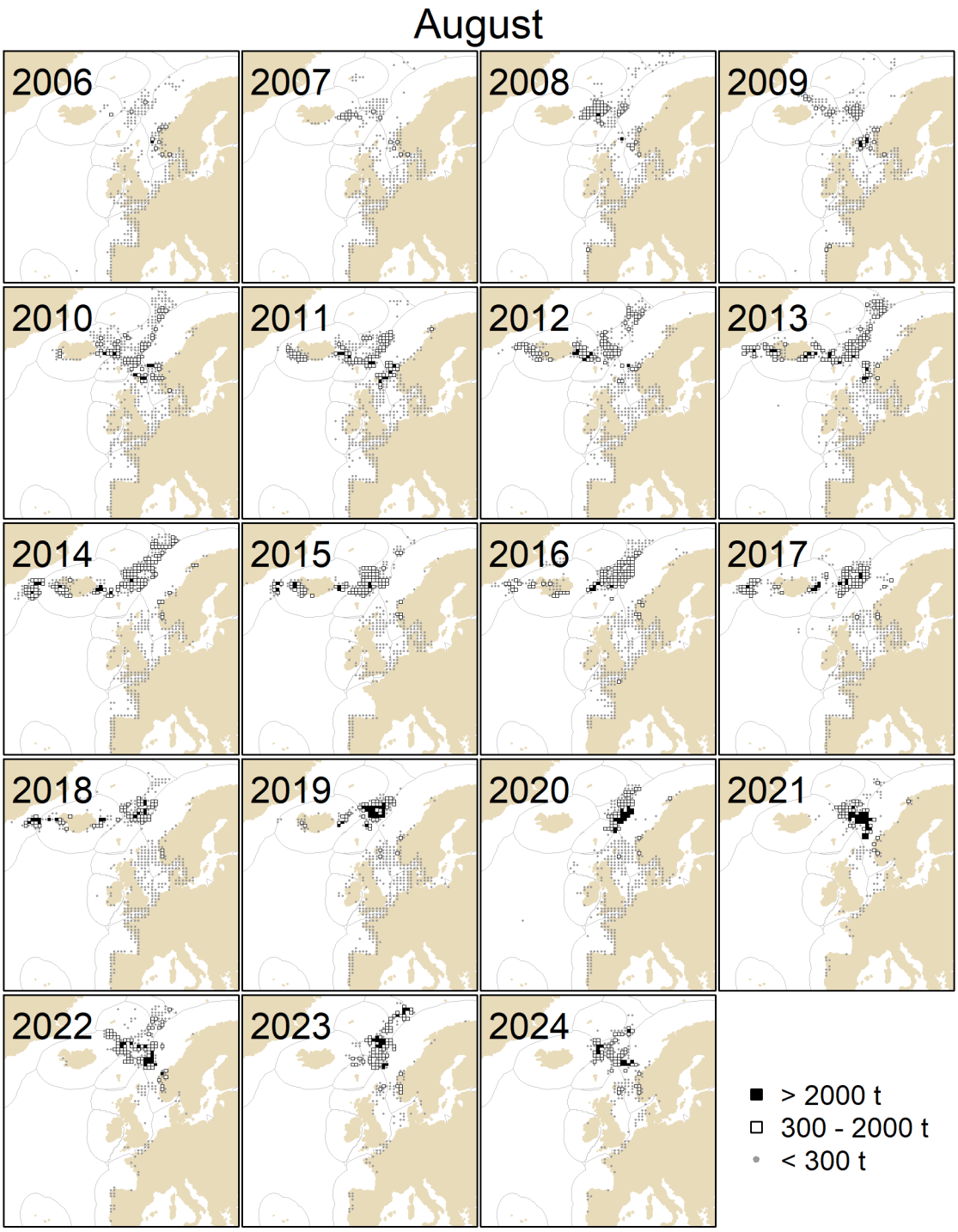


Figure A1.1.9. Annual catches of Northeast Atlantic (NEA) mackerel for August between 2006 – 2024. Note that Russian catches since 2021 are not included.

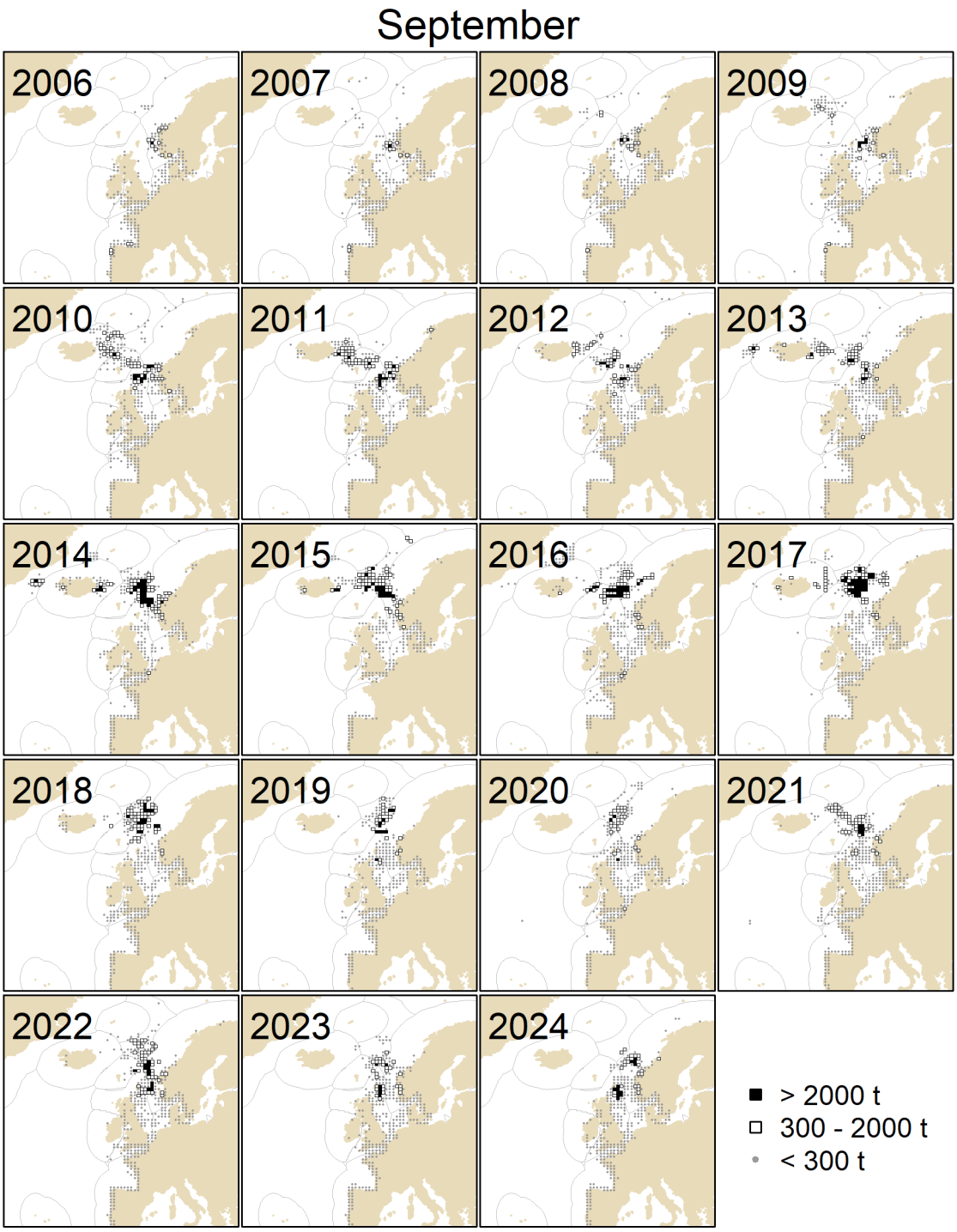


Figure A1.1.10. Annual catches of Northeast Atlantic (NEA) mackerel for September between 2006 – 2024. Note that Russian catches since 2021 are not included.

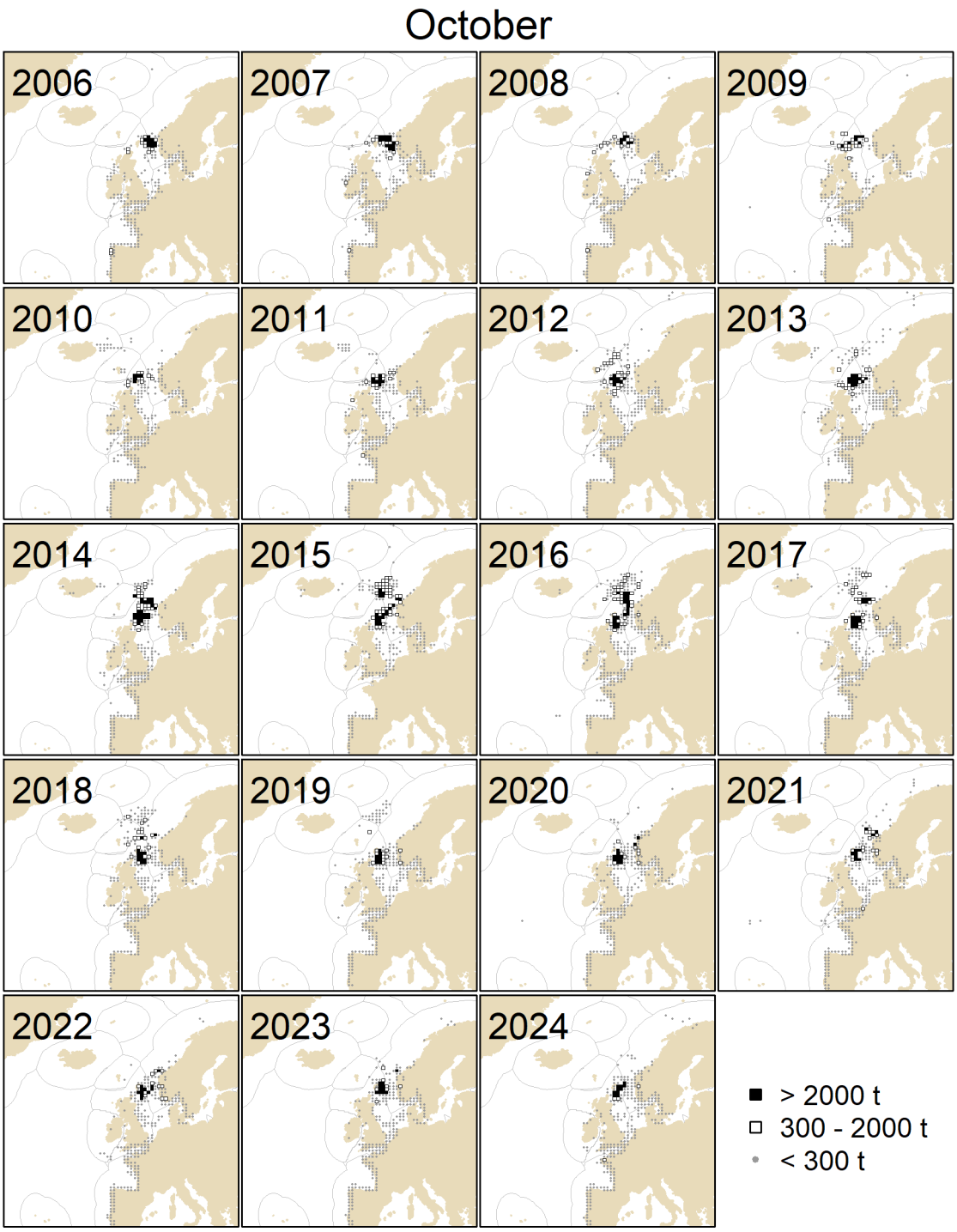


Figure A1.1.11. Annual catches of Northeast Atlantic (NEA) mackerel for October between 2006 – 2024. Note that Russian catches since 2021 are not included.

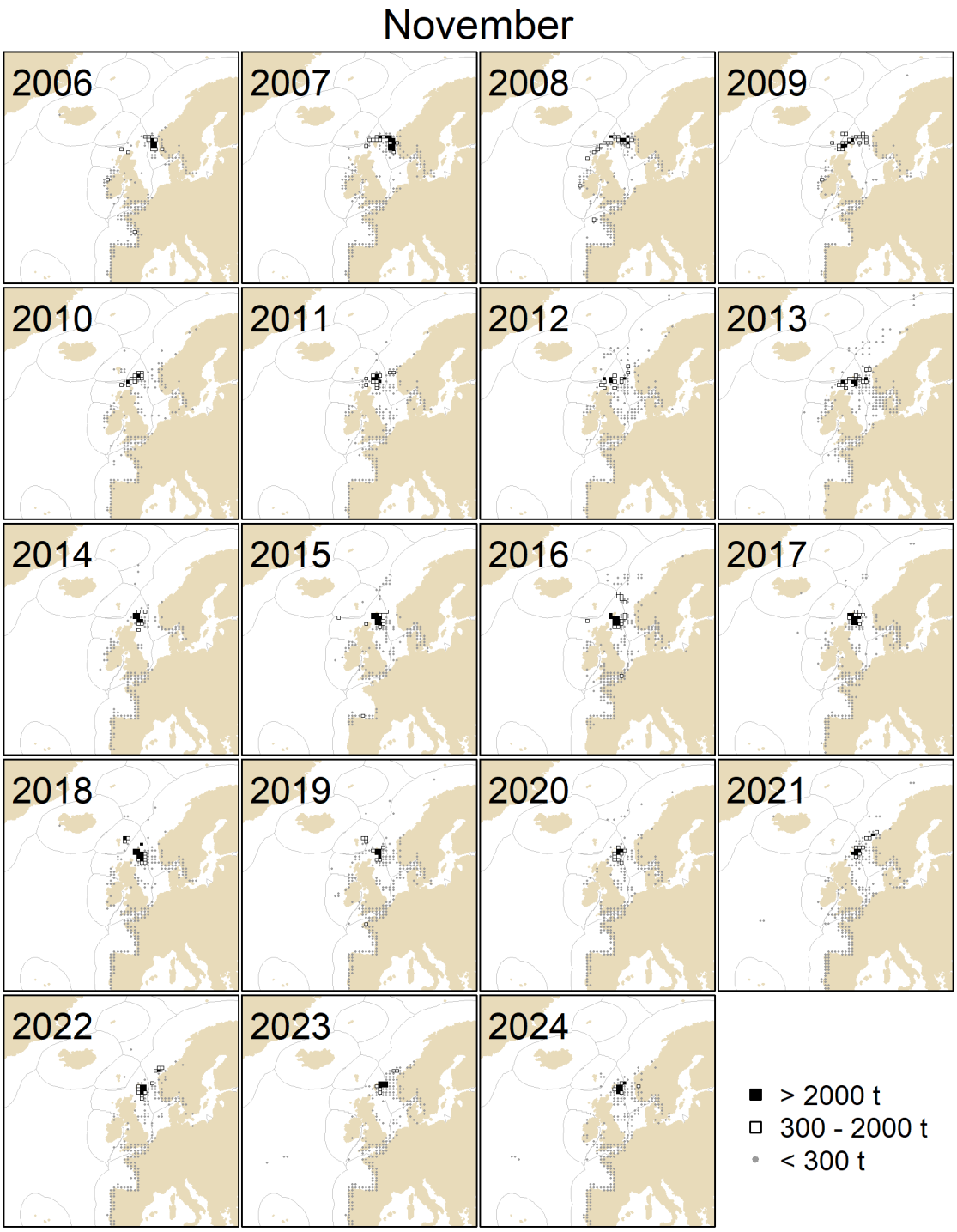


Figure A1.1.12. Annual catches of Northeast Atlantic (NEA) mackerel for November between 2006 – 2024. Note that Russian catches since 2021 are not included.

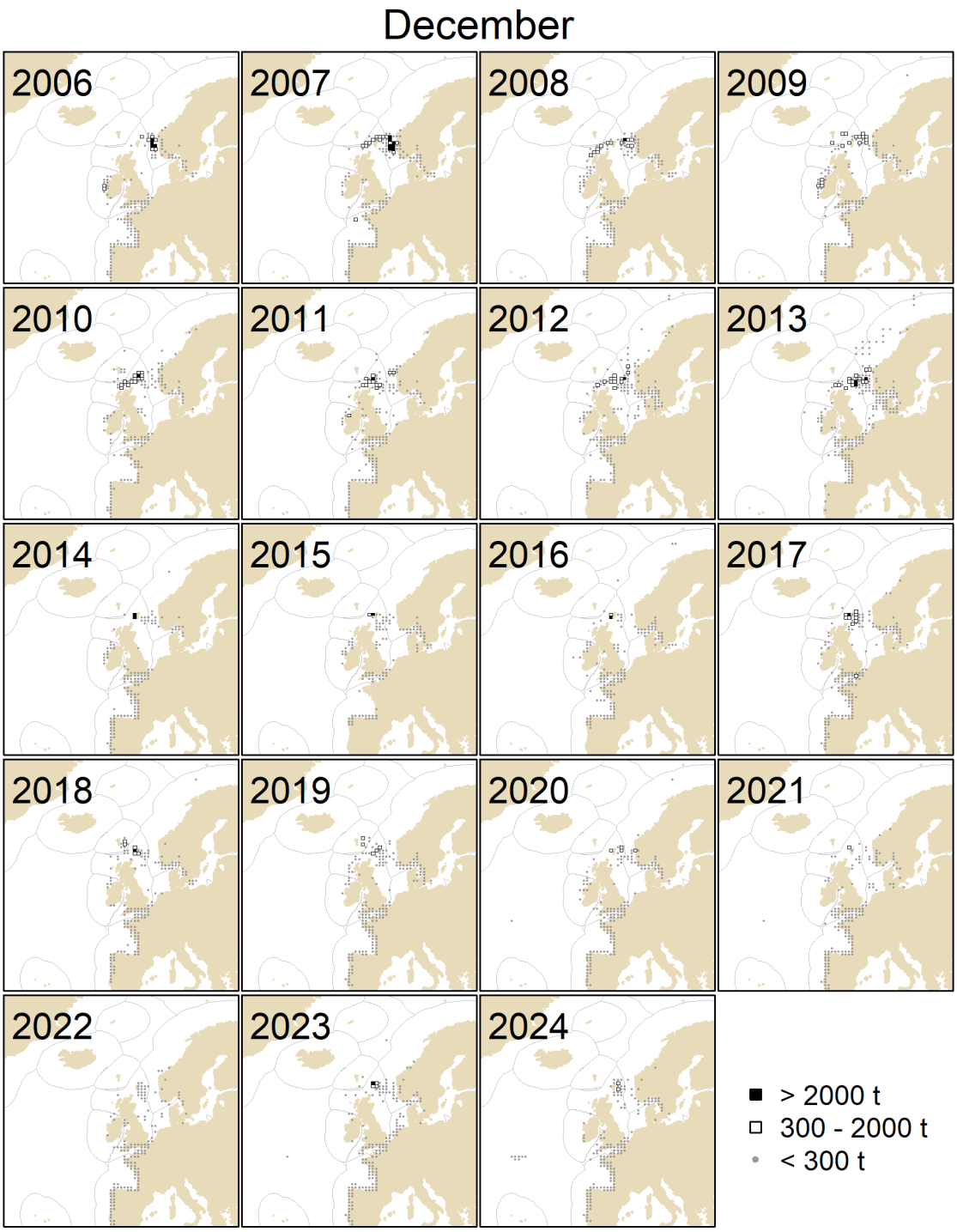


Figure A1.1.13. Annual catches of Northeast Atlantic (NEA) mackerel for December between 2006 – 2024. Note that Russian catches since 2021 are not included.

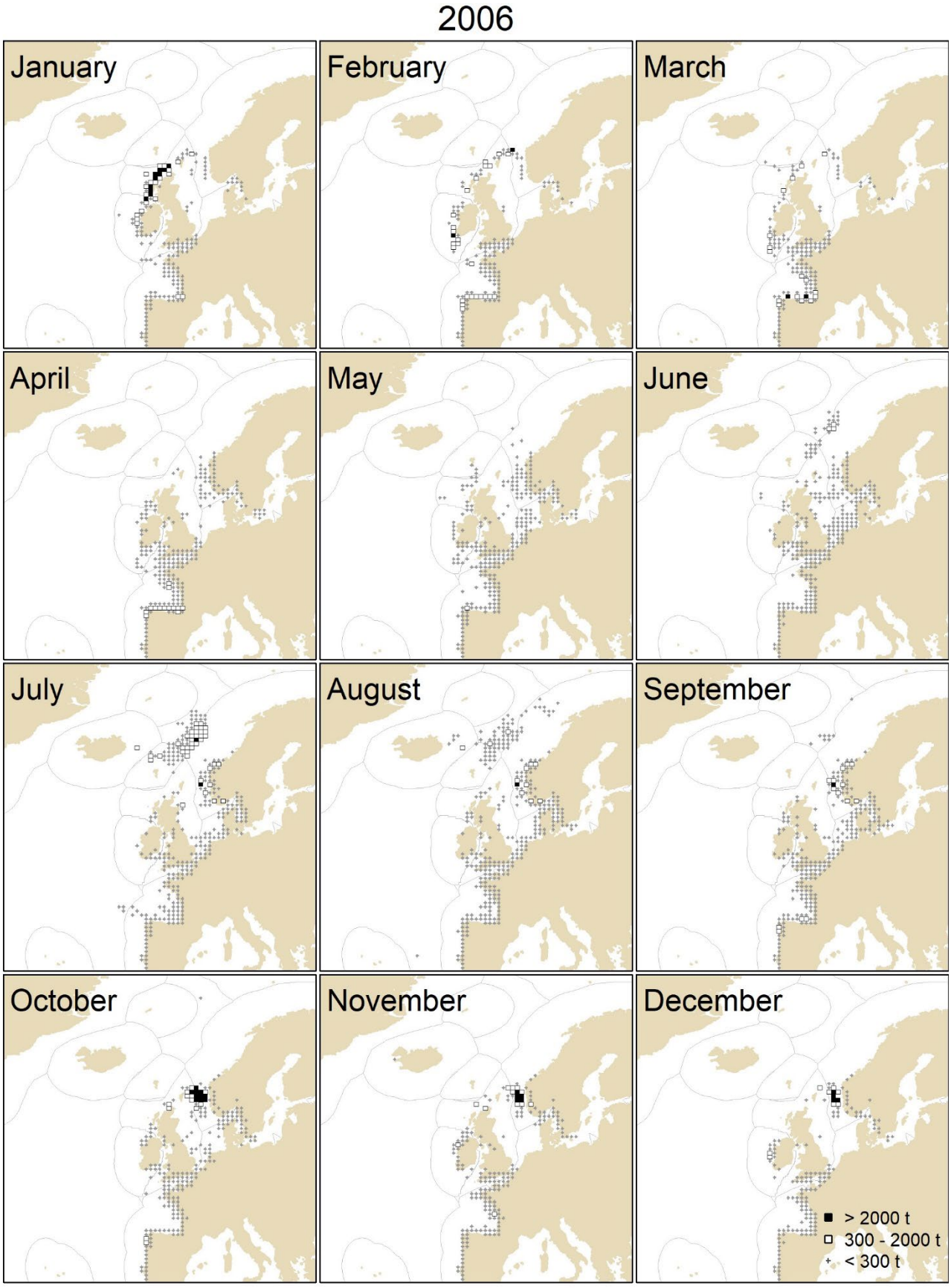


Figure A1.1.14. Monthly catches of Northeast Atlantic (NEA) mackerel in 2006.

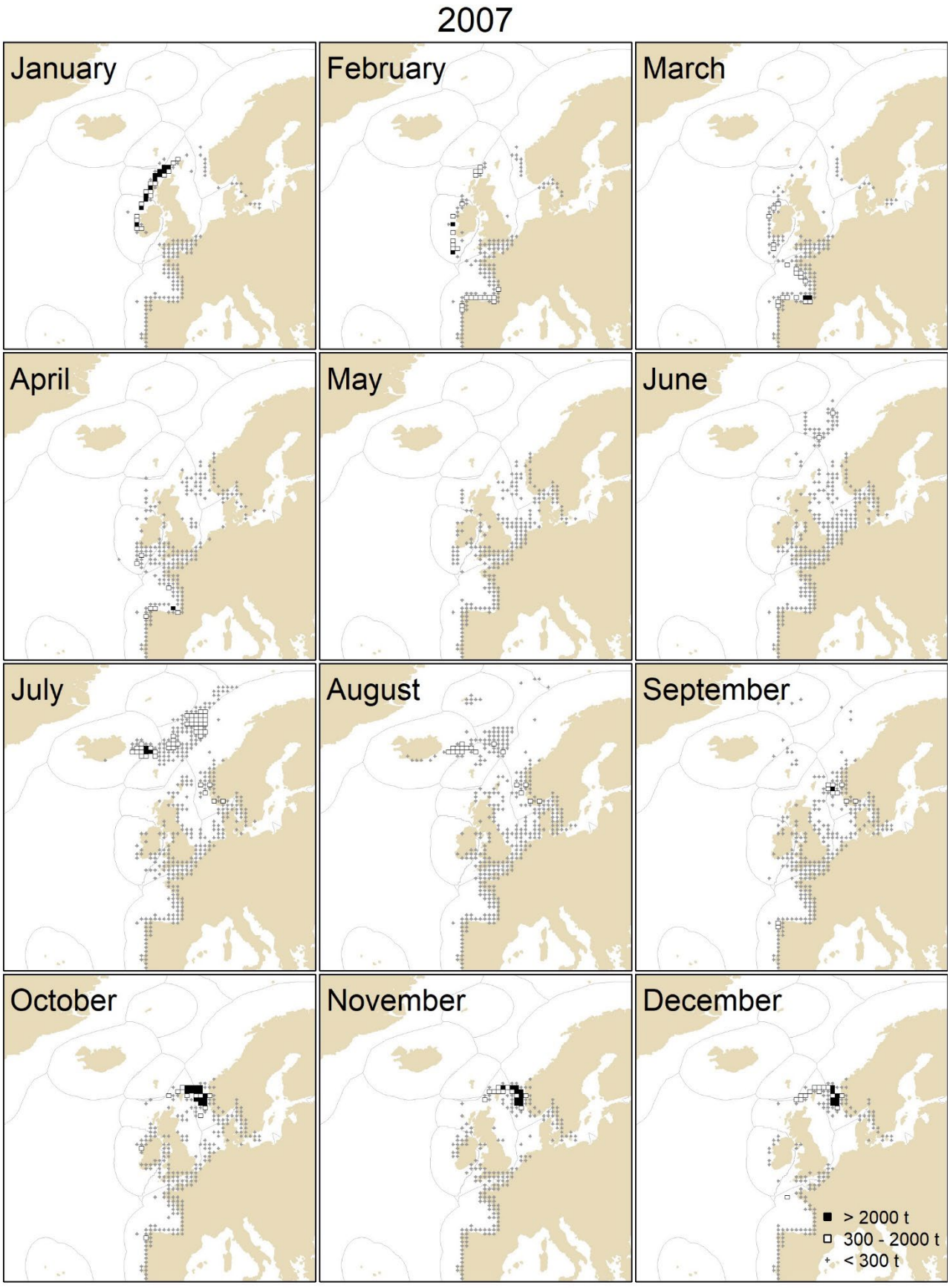


Figure A1.1.15. Monthly catches of Northeast Atlantic (NEA) mackerel in 2007.

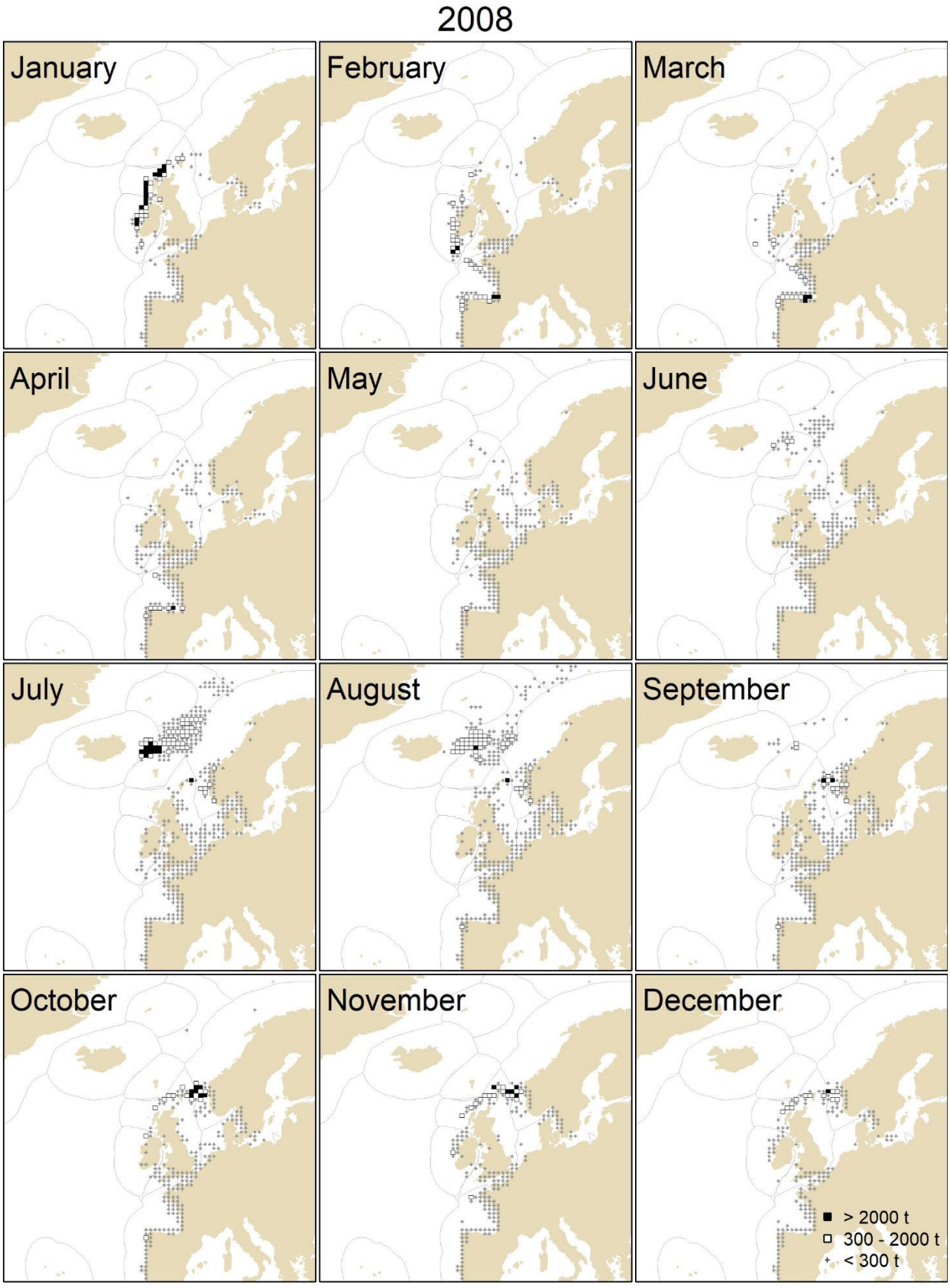


Figure A1.1.16. Monthly catches of Northeast Atlantic (NEA) mackerel in 2008.

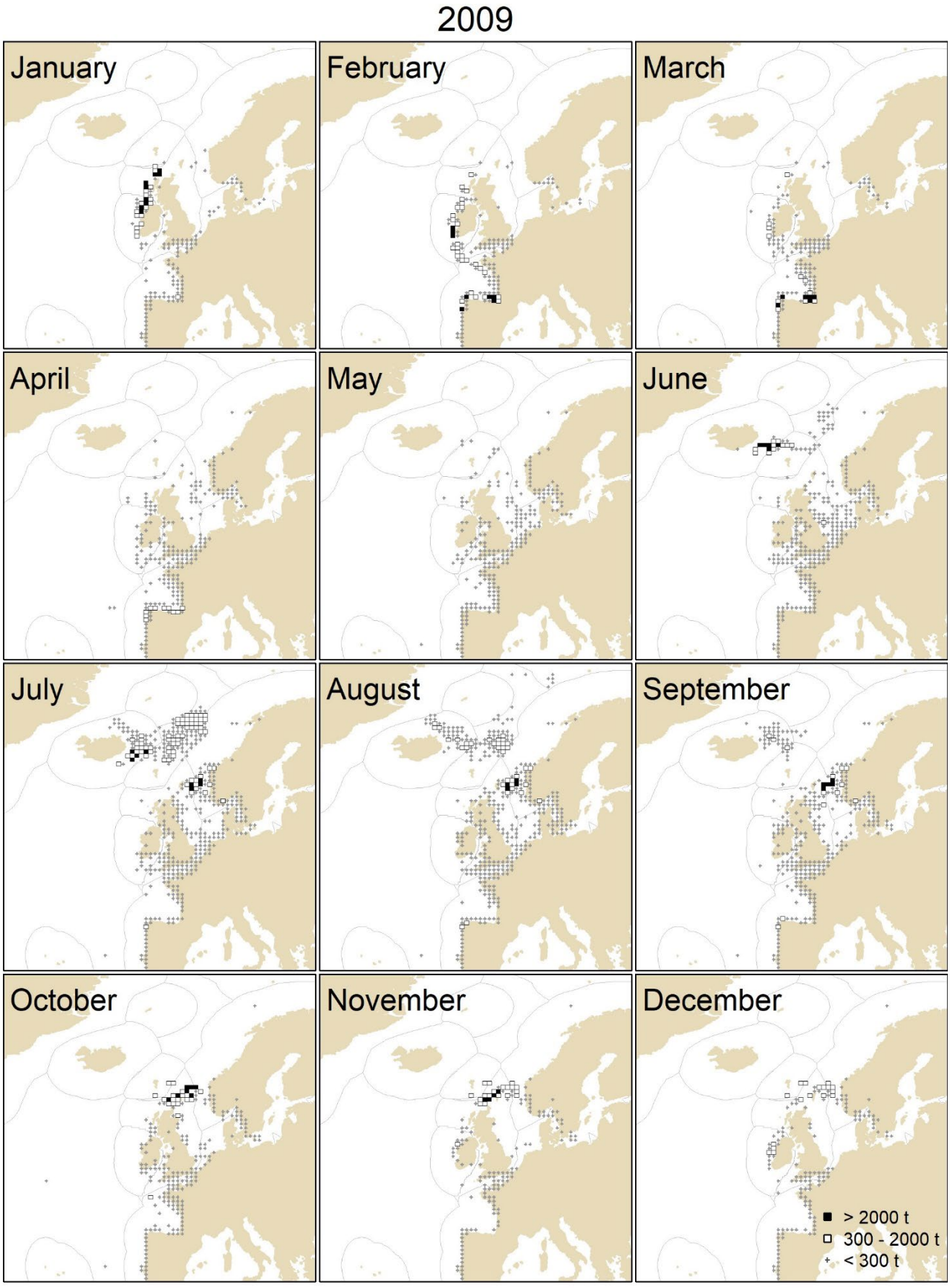


Figure A1.1.17. Monthly catches of Northeast Atlantic (NEA) mackerel in 2009.

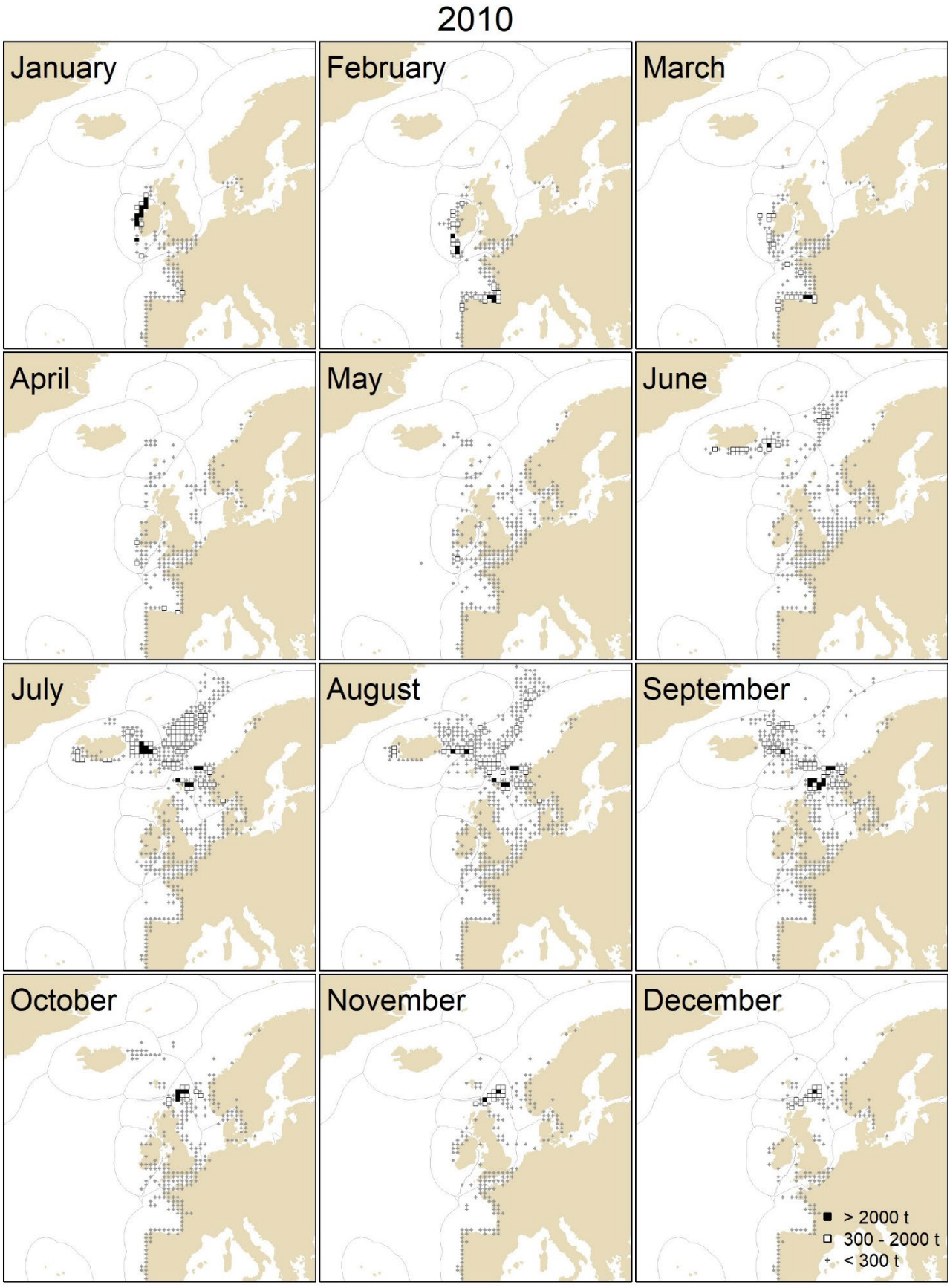


Figure A1.1.18. Monthly catches of Northeast Atlantic (NEA) mackerel in 2010.

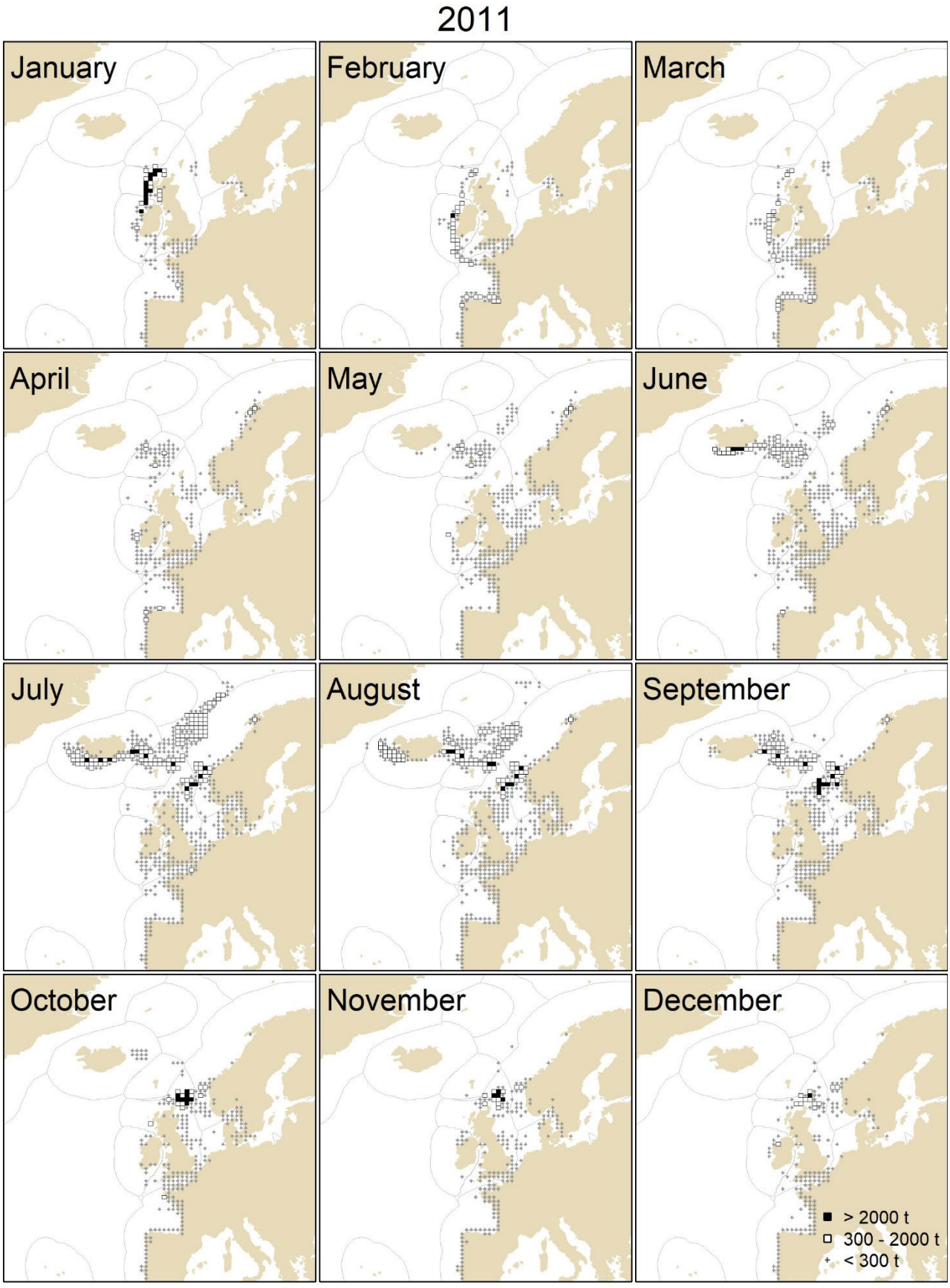


Figure A1.1.19. Monthly catches of Northeast Atlantic (NEA) mackerel in 2011.

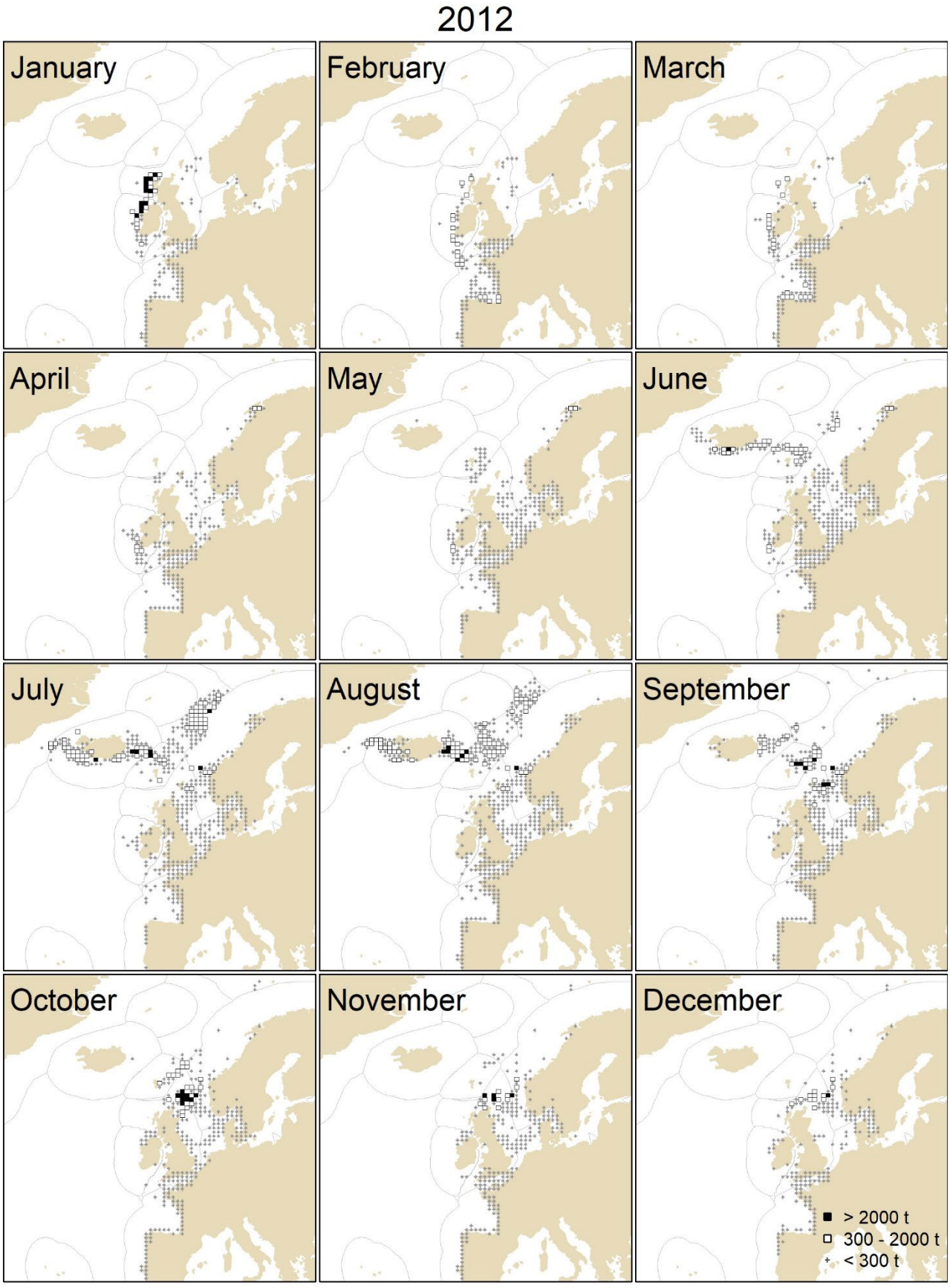


Figure A1.1.20. Monthly catches of Northeast Atlantic (NEA) mackerel in 2012.

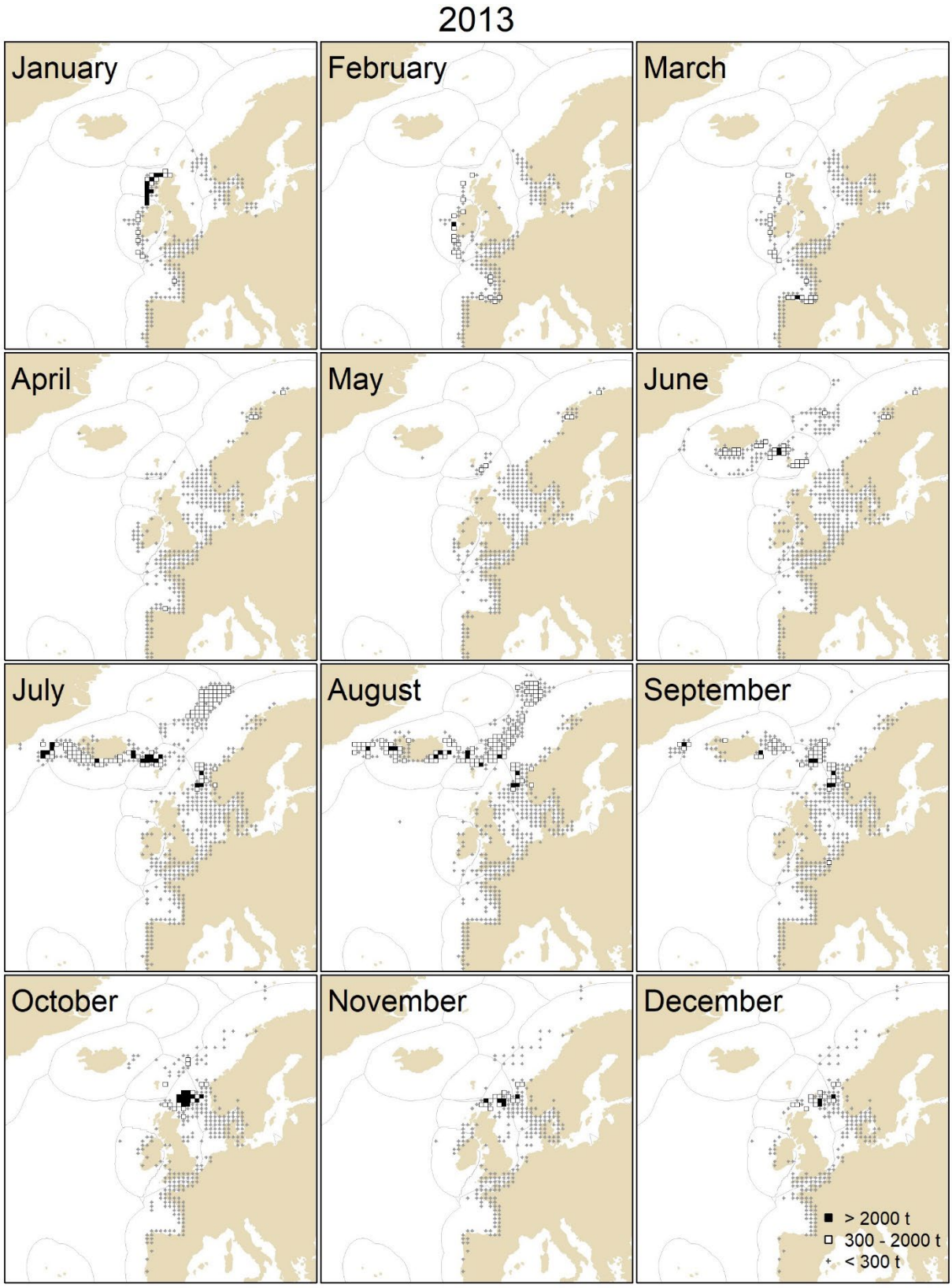


Figure A1.1.21. Monthly catches of Northeast Atlantic (NEA) mackerel in 2013.

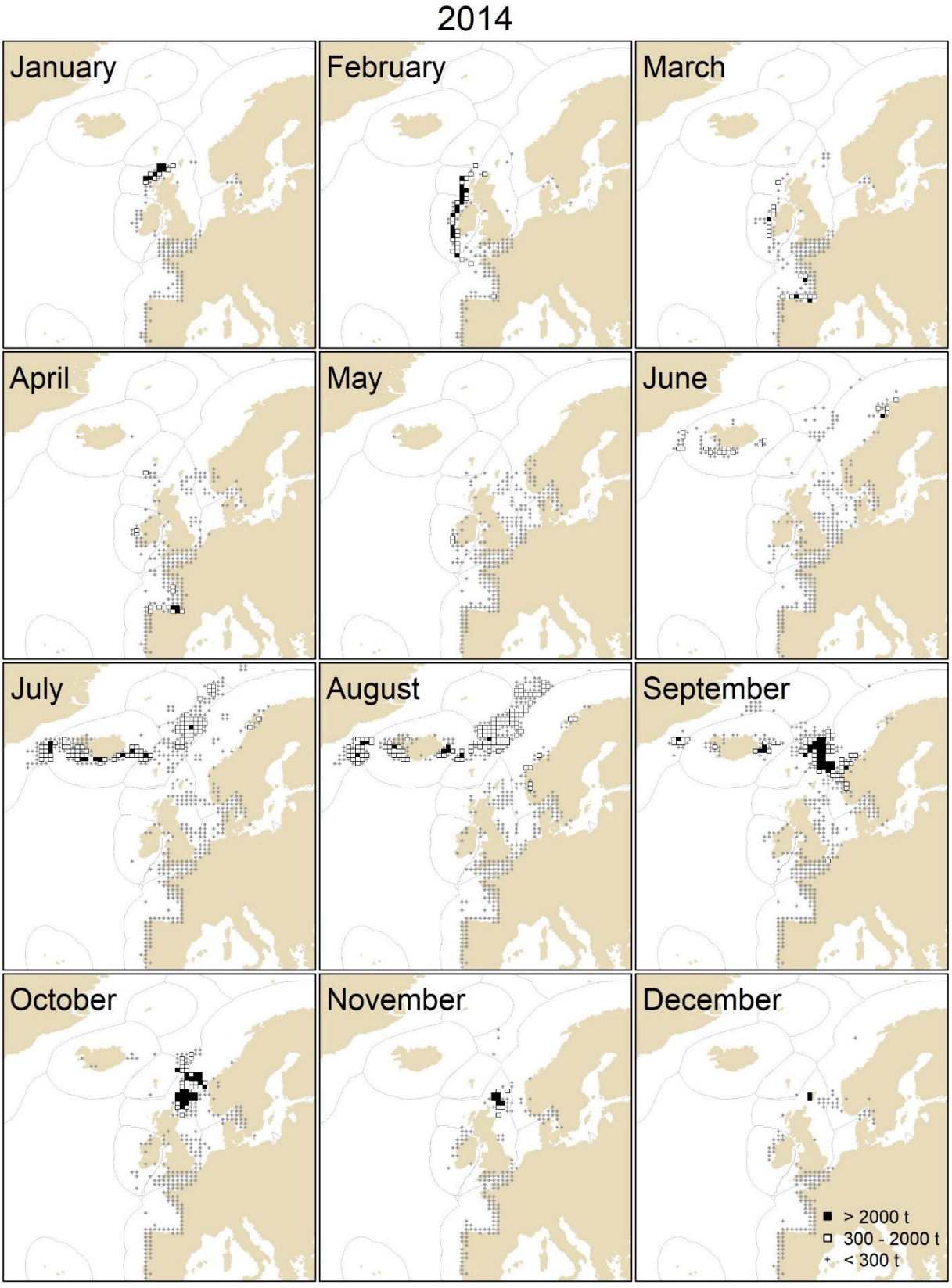


Figure A1.1.22. Monthly catches of Northeast Atlantic (NEA) mackerel in 2014.

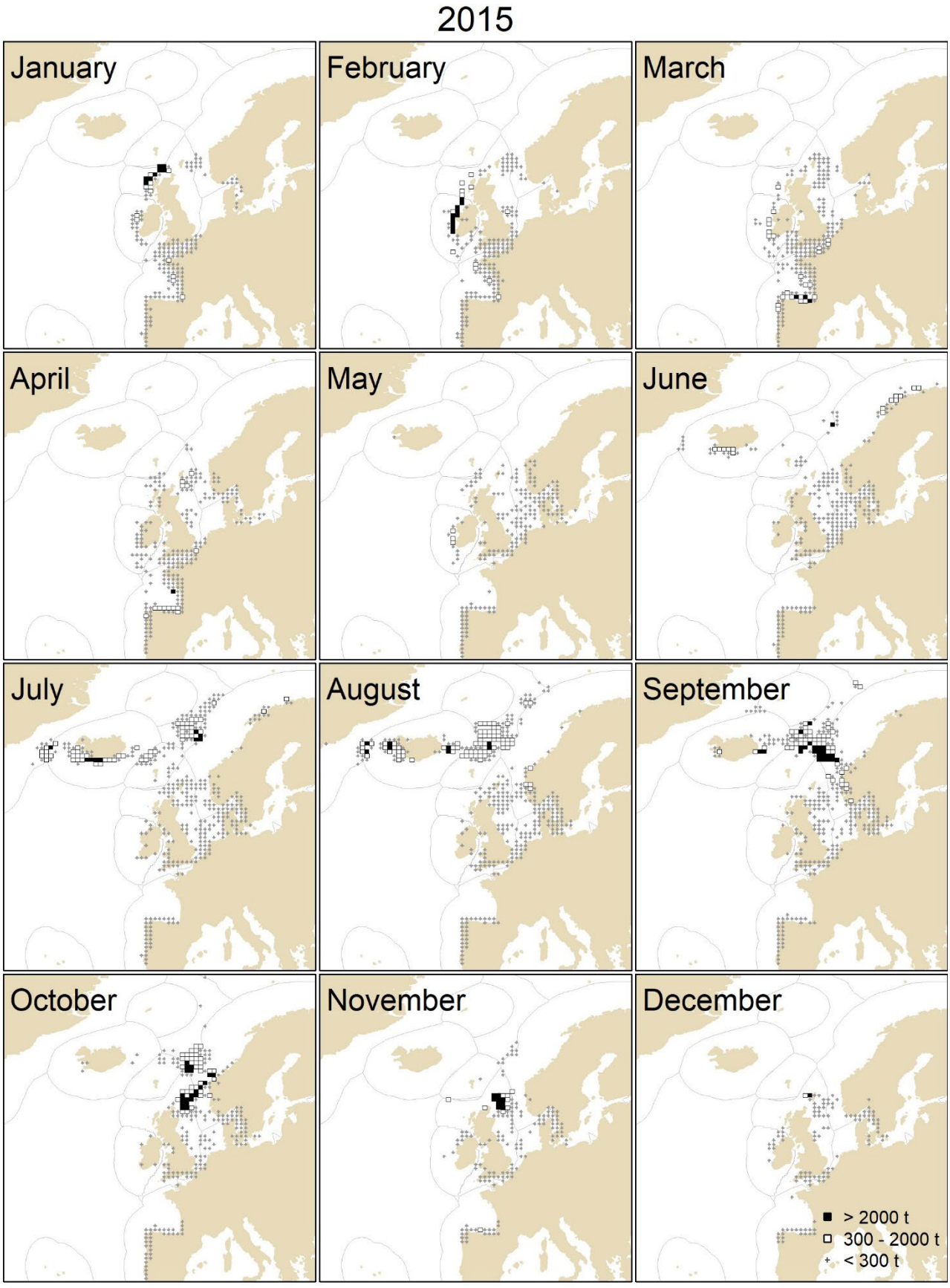


Figure A1.1.23. Monthly catches of Northeast Atlantic (NEA) mackerel in 2015.

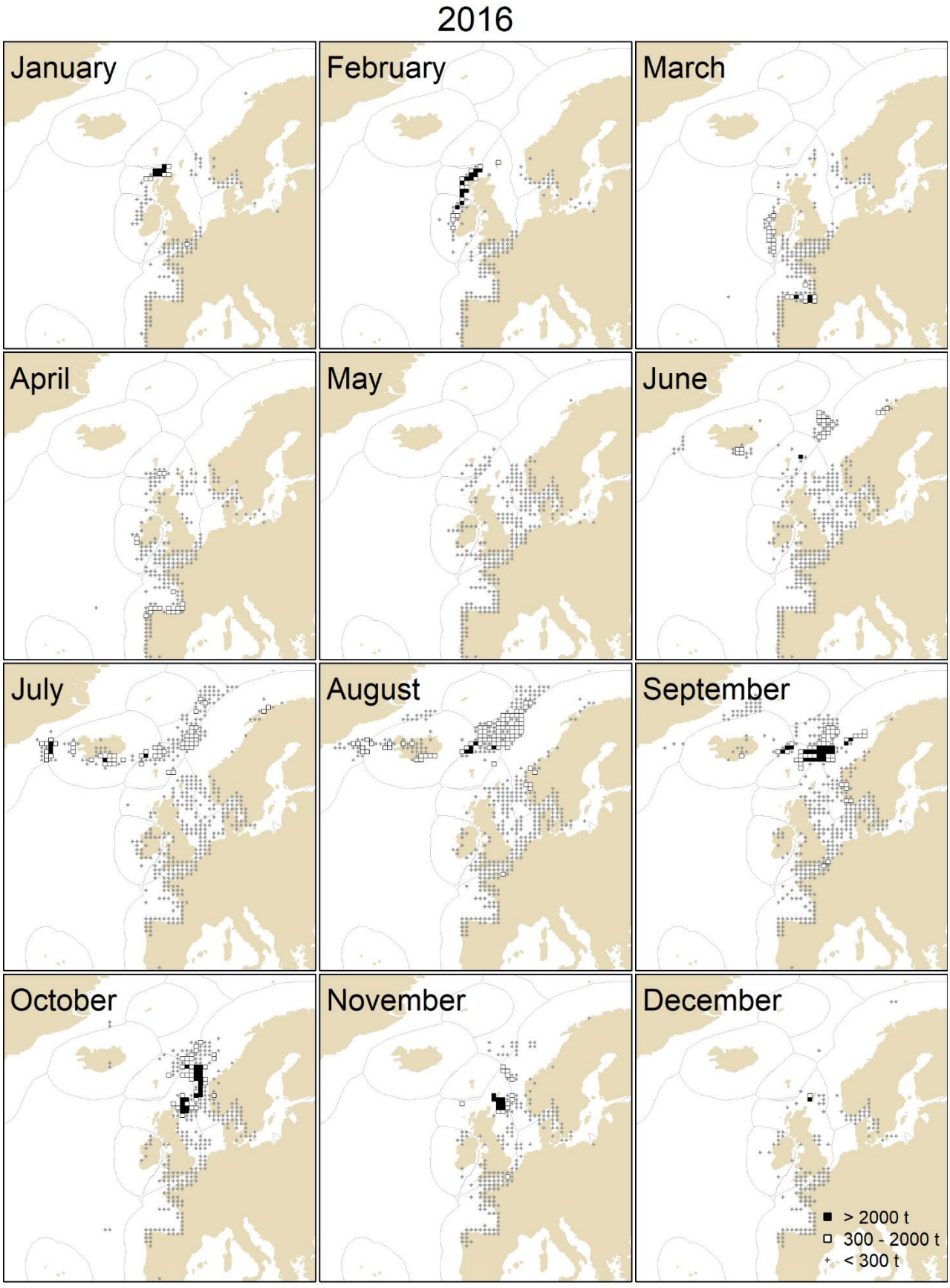


Figure A1.1.24. Monthly catches of Northeast Atlantic (NEA) mackerel in 2016.

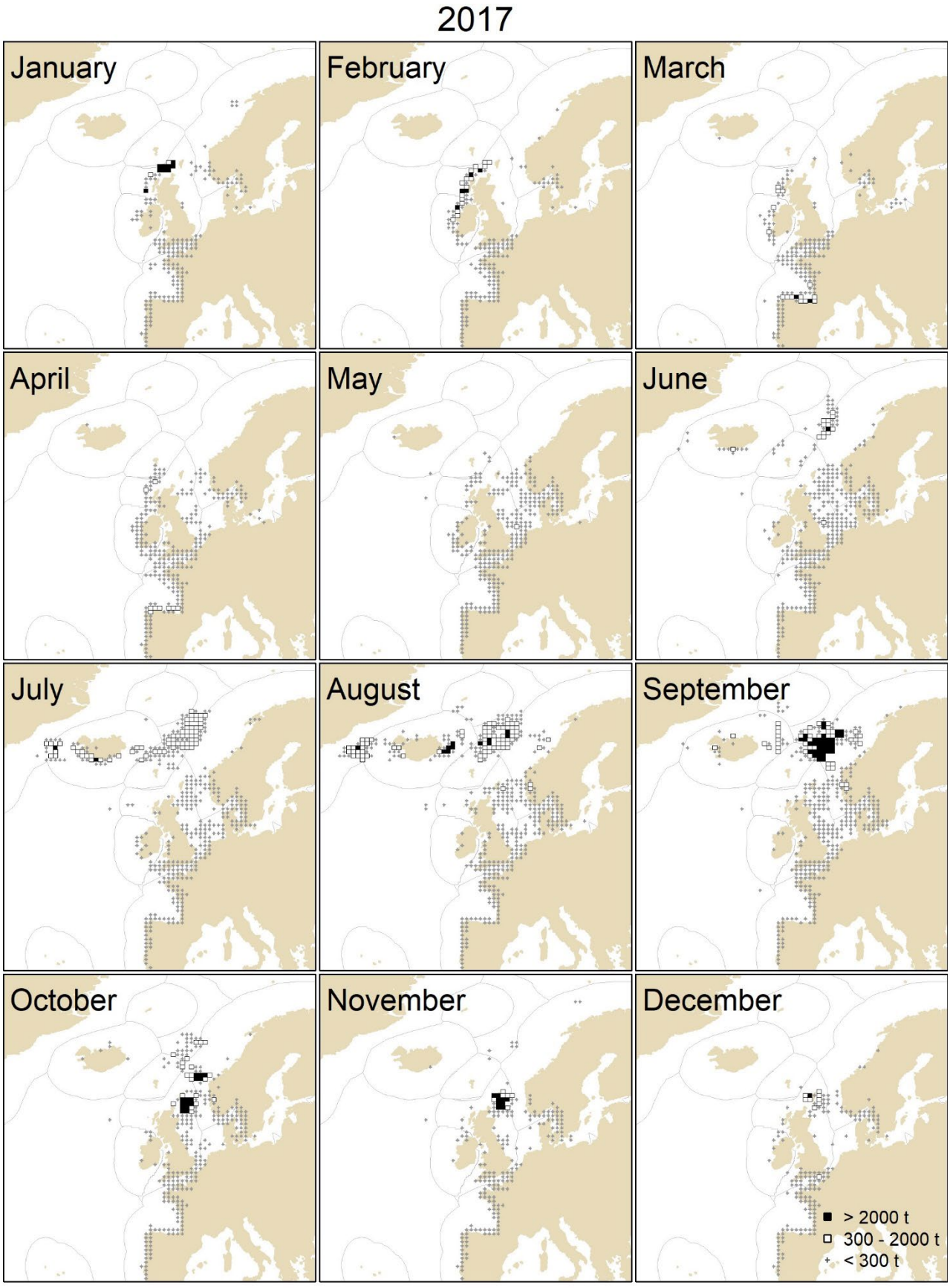


Figure A1.1.25. Monthly catches of Northeast Atlantic (NEA) mackerel in 2017.

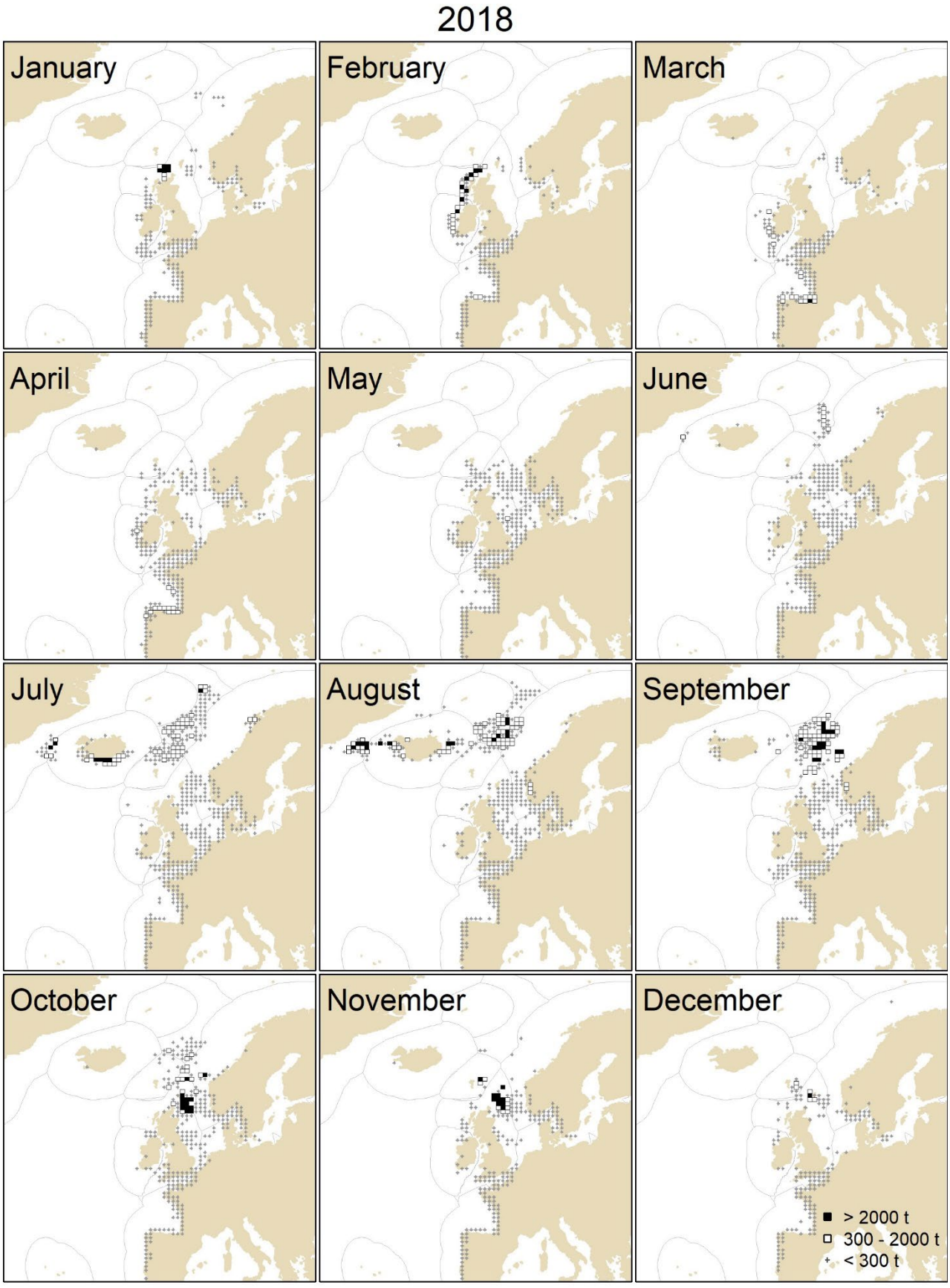


Figure A1.1.26. Monthly catches of Northeast Atlantic (NEA) mackerel in 2018.

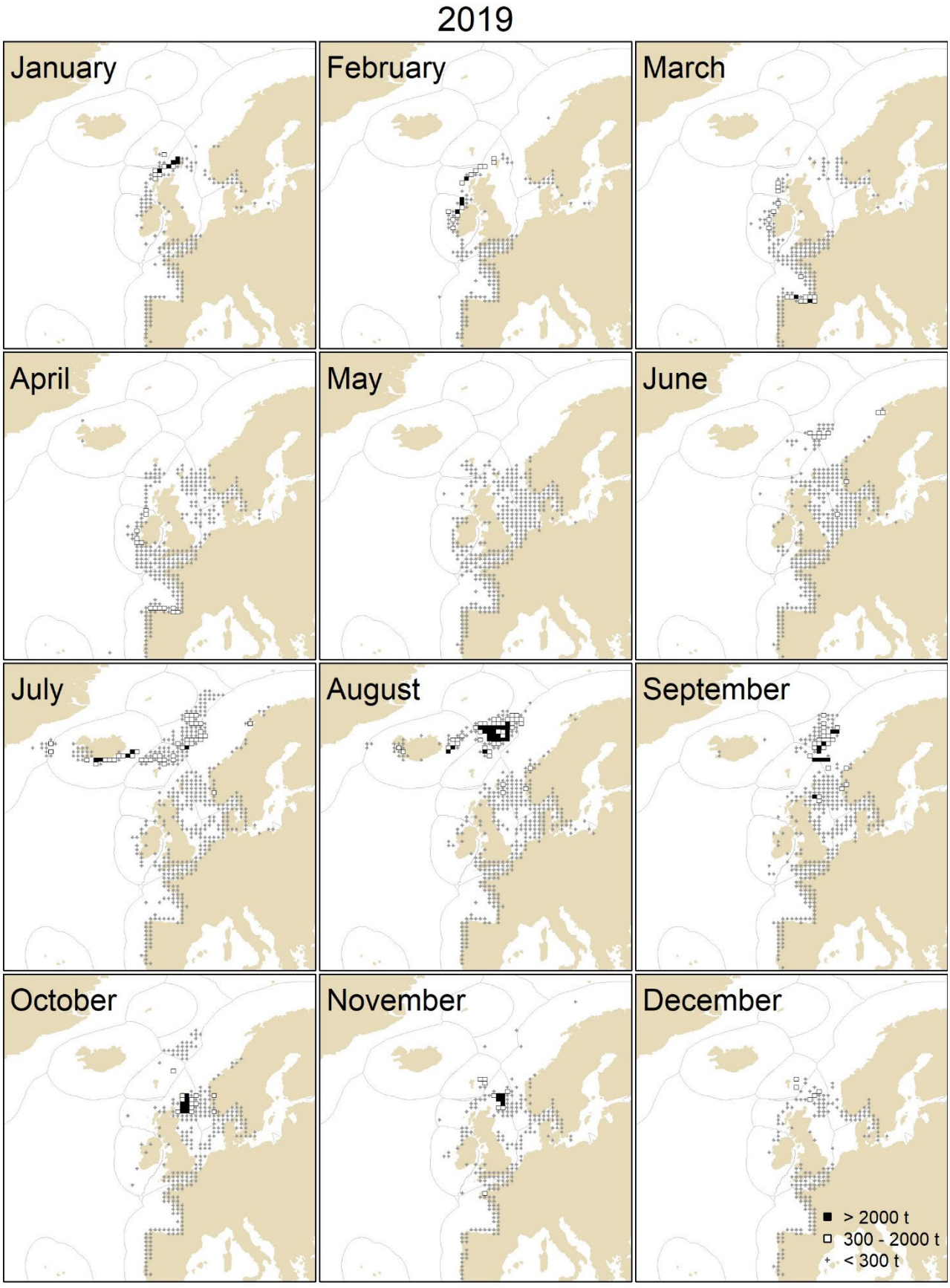


Figure A1.1.27. Monthly catches of Northeast Atlantic (NEA) mackerel in 2019.

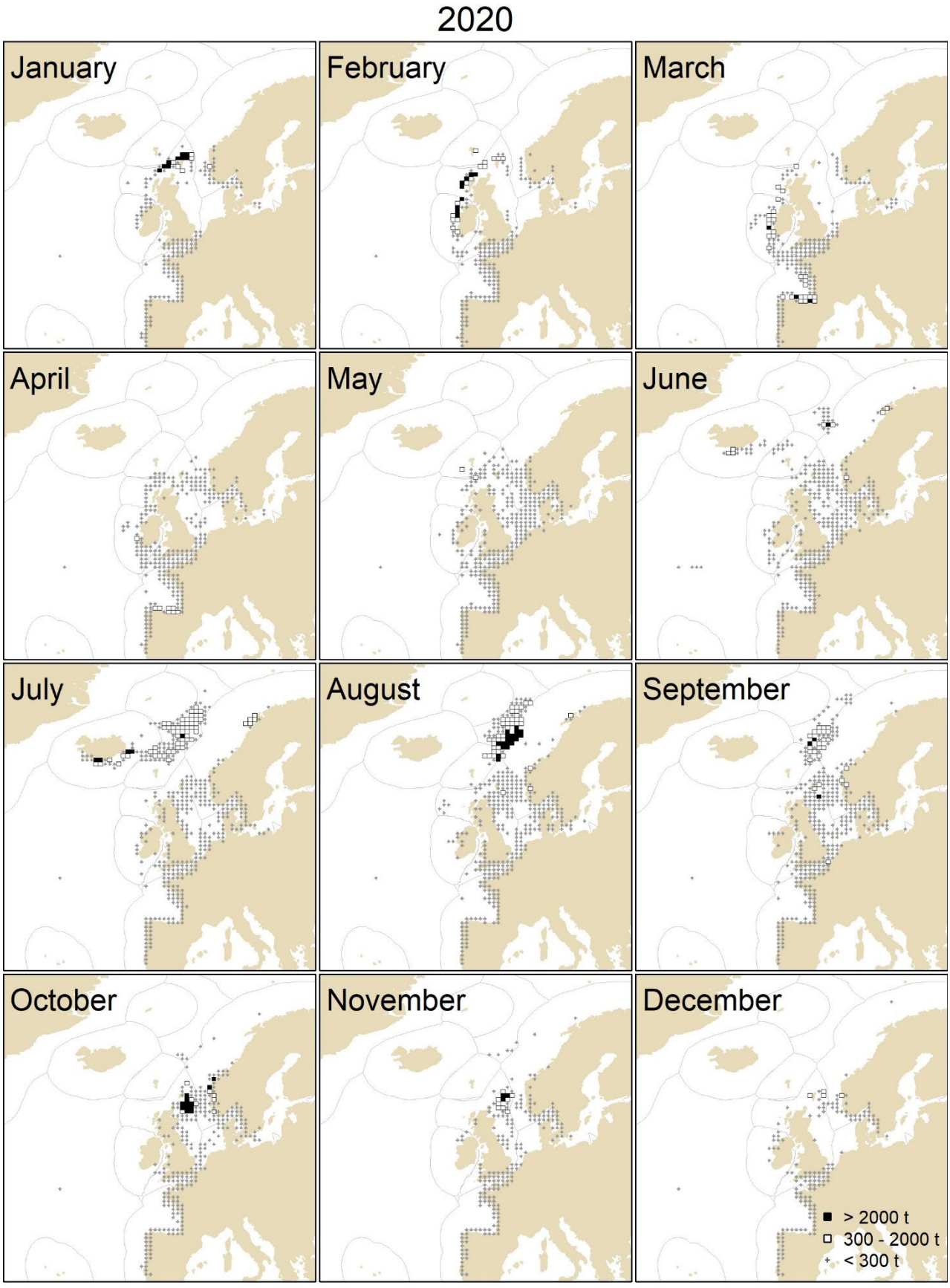


Figure A1.1.28. Monthly catches of Northeast Atlantic (NEA) mackerel in 2020.

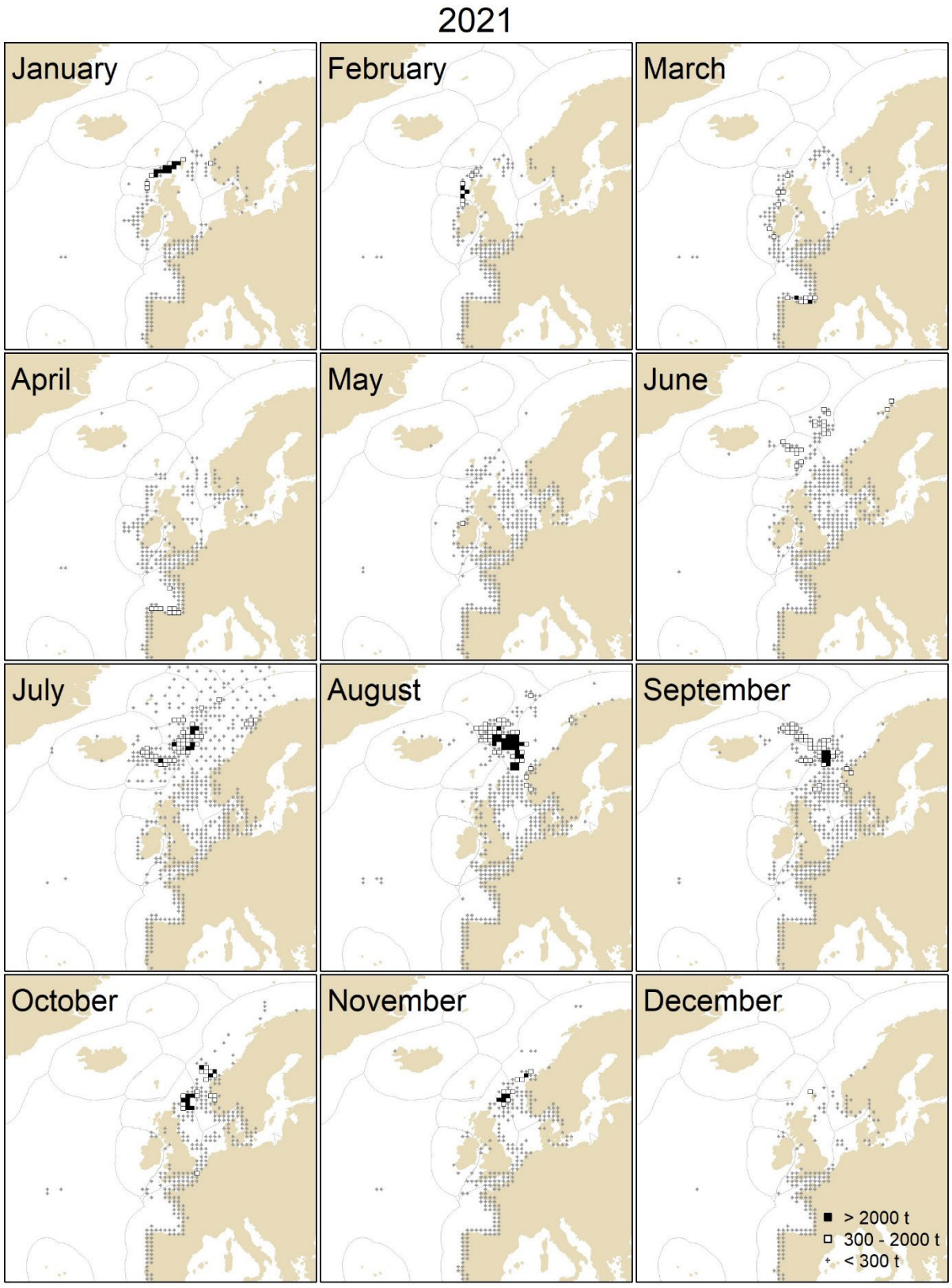


Figure A1.1.28. Monthly catches of Northeast Atlantic (NEA) mackerel in 2021. Note that Russian catches are not included.

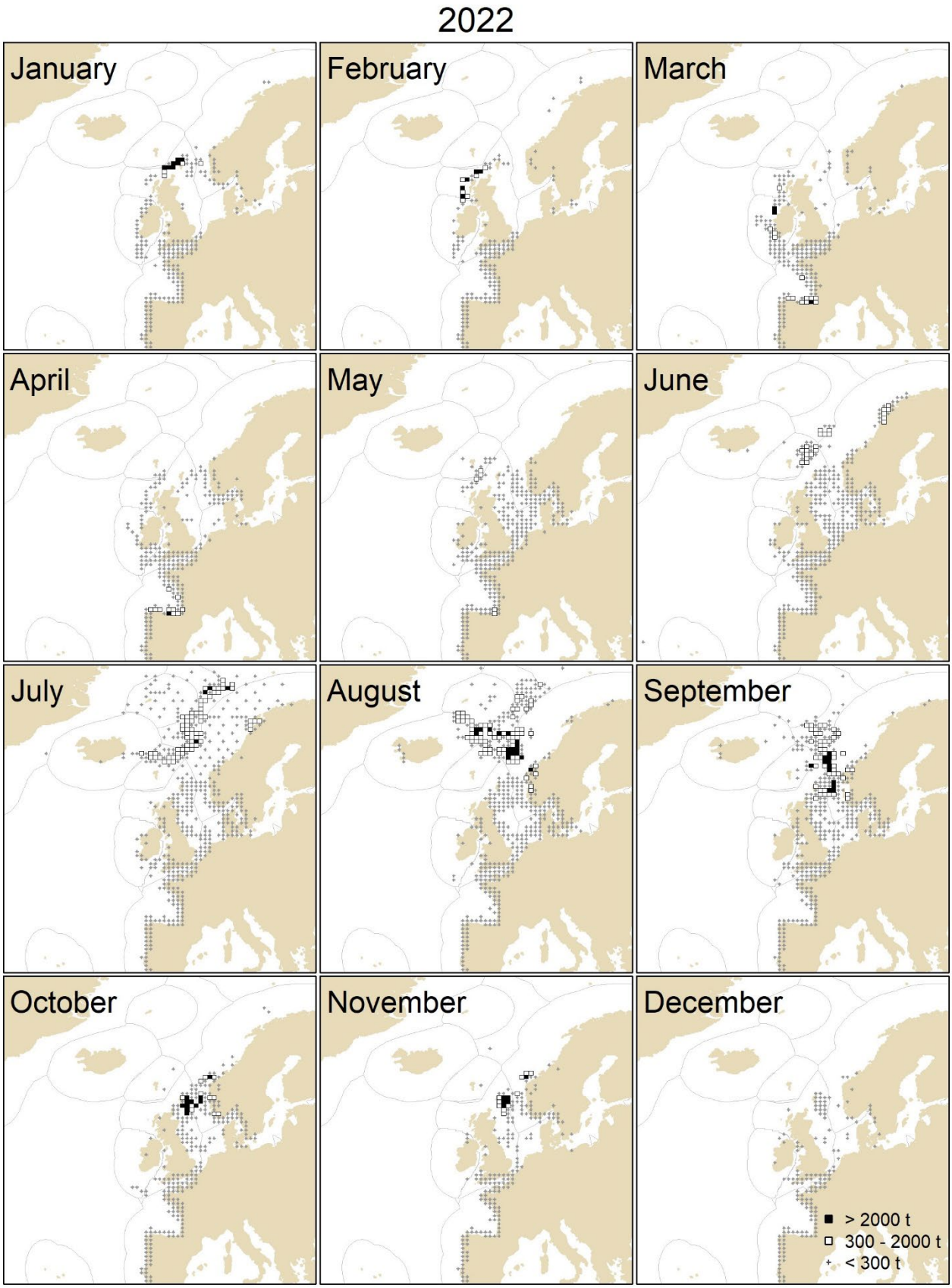


Figure A1.1.28. Monthly catches of Northeast Atlantic (NEA) mackerel in 2022. Note that Russian catches are not included.

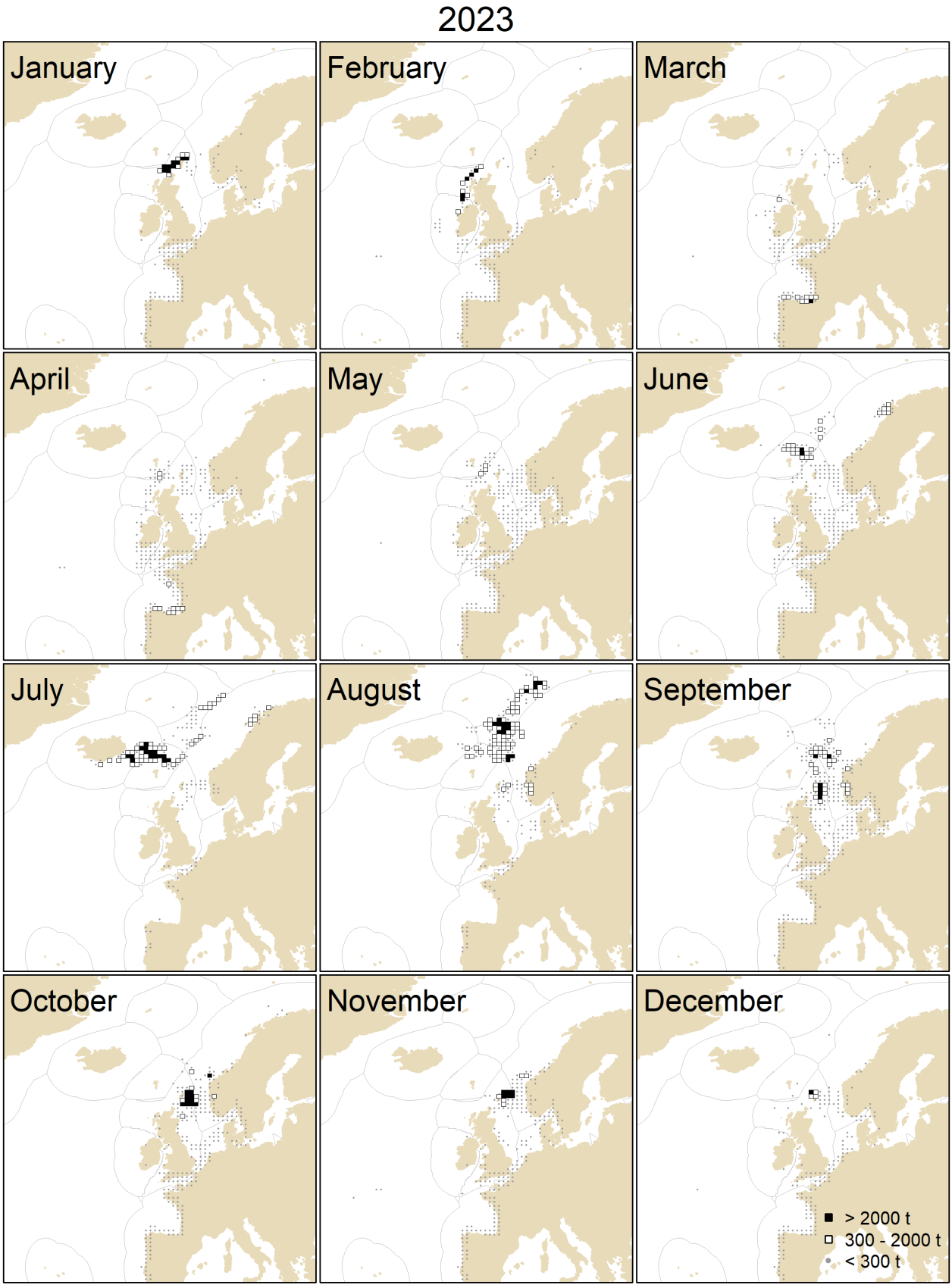


Figure A1.1.28. Monthly catches of Northeast Atlantic (NEA) mackerel in 2023. Note that Russian catches are not included.

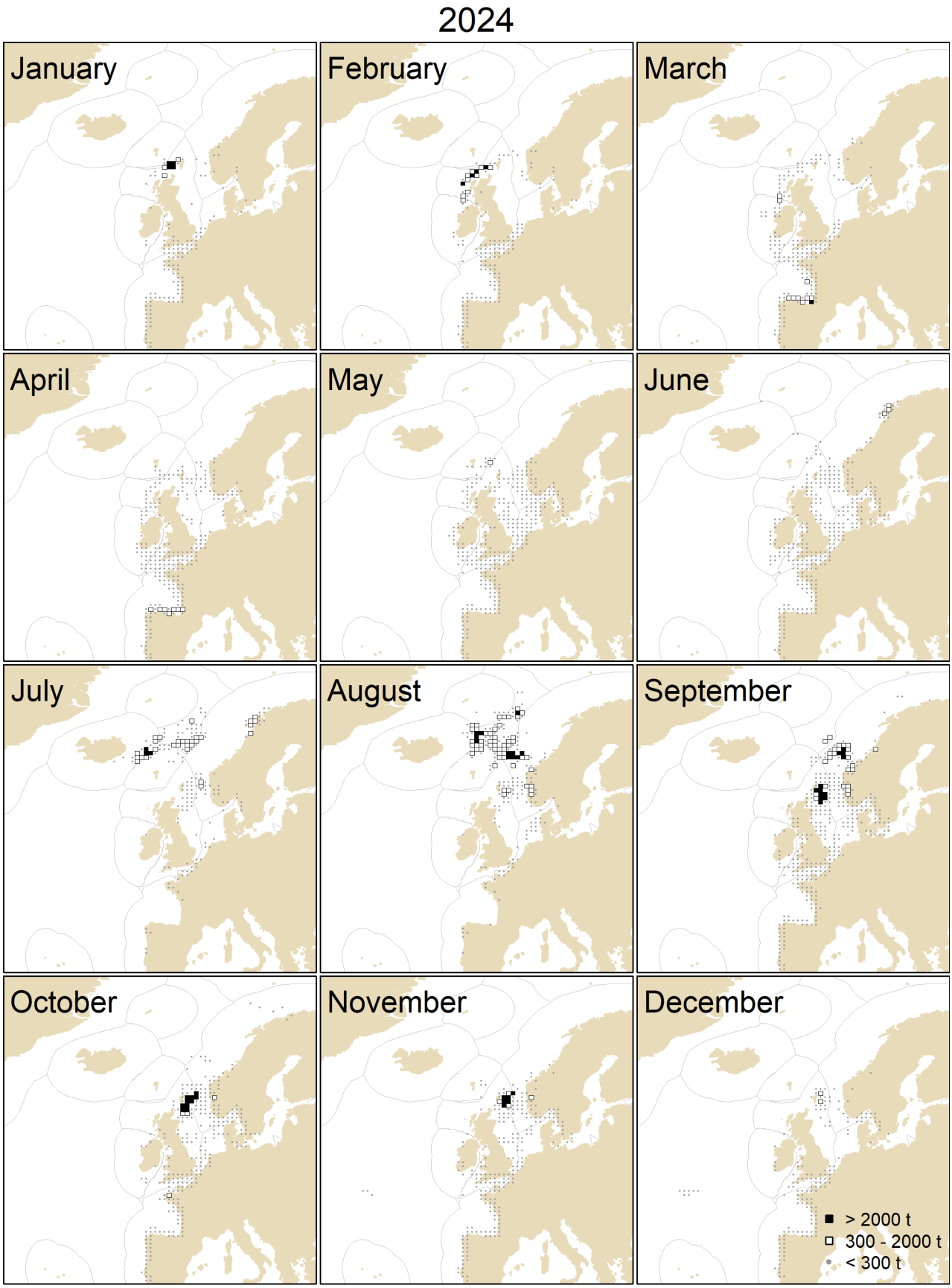


Figure A1.1.29. Monthly catches of Northeast Atlantic (NEA) mackerel in 2024. Note that Russian catches are not included.

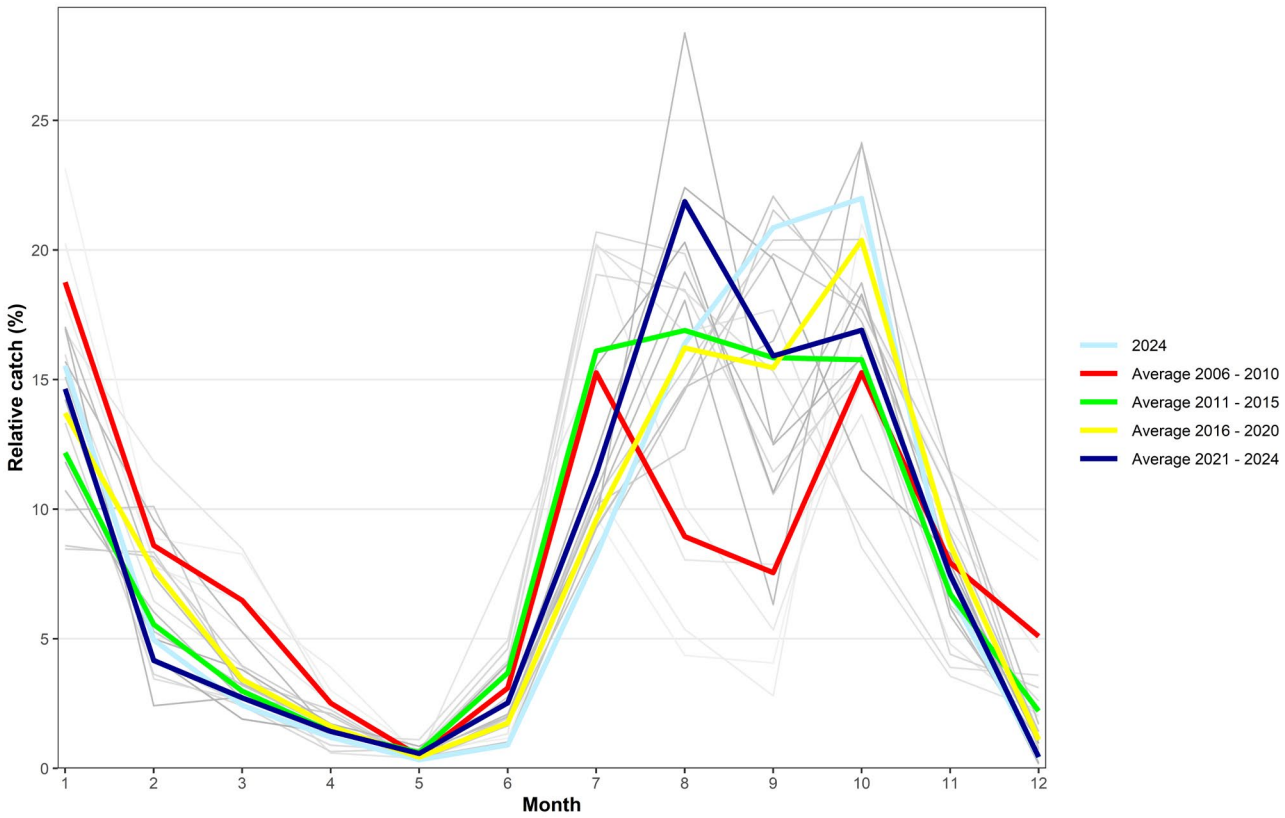


Figure A1.1.30. Relative catch of Northeast Atlantic (NEA) mackerel in 5-year averages between 2006 – 2024. Individual years are represented by the grey lines with the final year (2024) in light blue. Note that Russian catches since 2021 are not included.

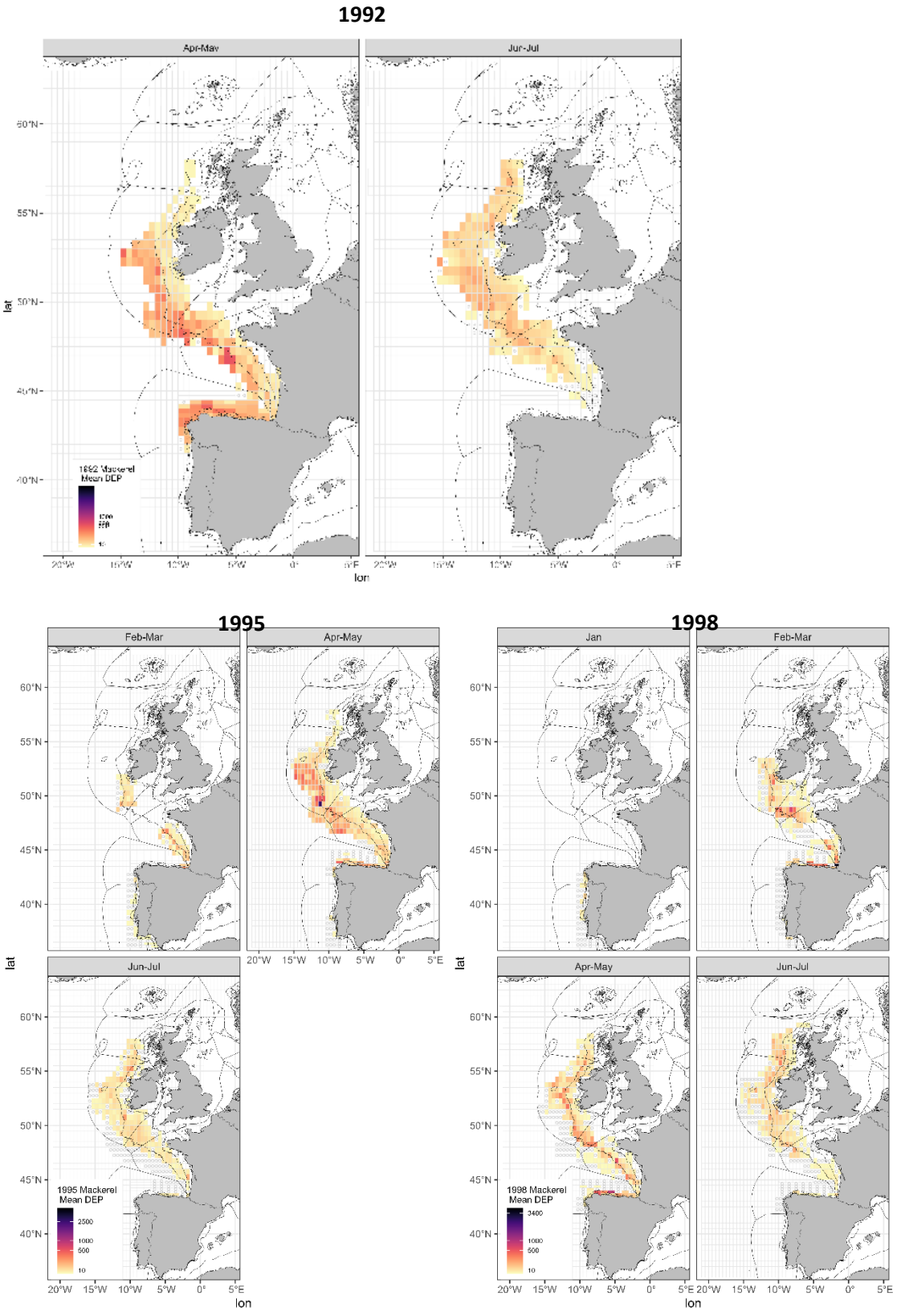


Figure A1.1.30. Distribution of mean daily egg production (stage 1 eggs. m^{-2}. Day^{-1}) by bimonthly period, half ICES rectangle and survey year. The EEZ boundaries are shown. O means zero egg production (1992-2019) [continued].

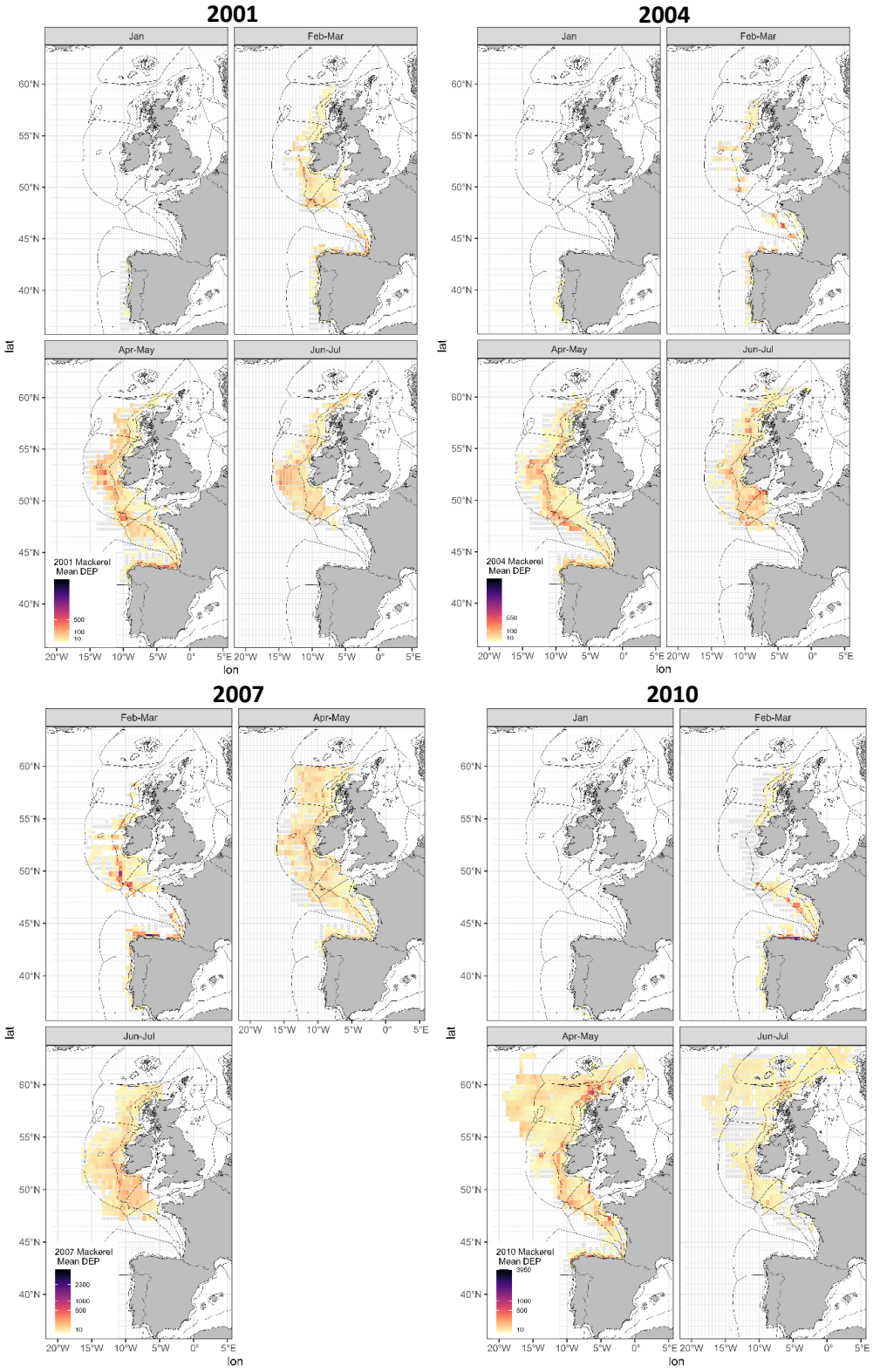


Figure A1.1.30 Distribution of mean daily egg production (stage 1 eggs. m^{-2} Day^{-1}) by bimonthly period, half ICES rectangle and survey year. The EEZ boundaries are shown. O means zero egg production (1992-2019) [continued].

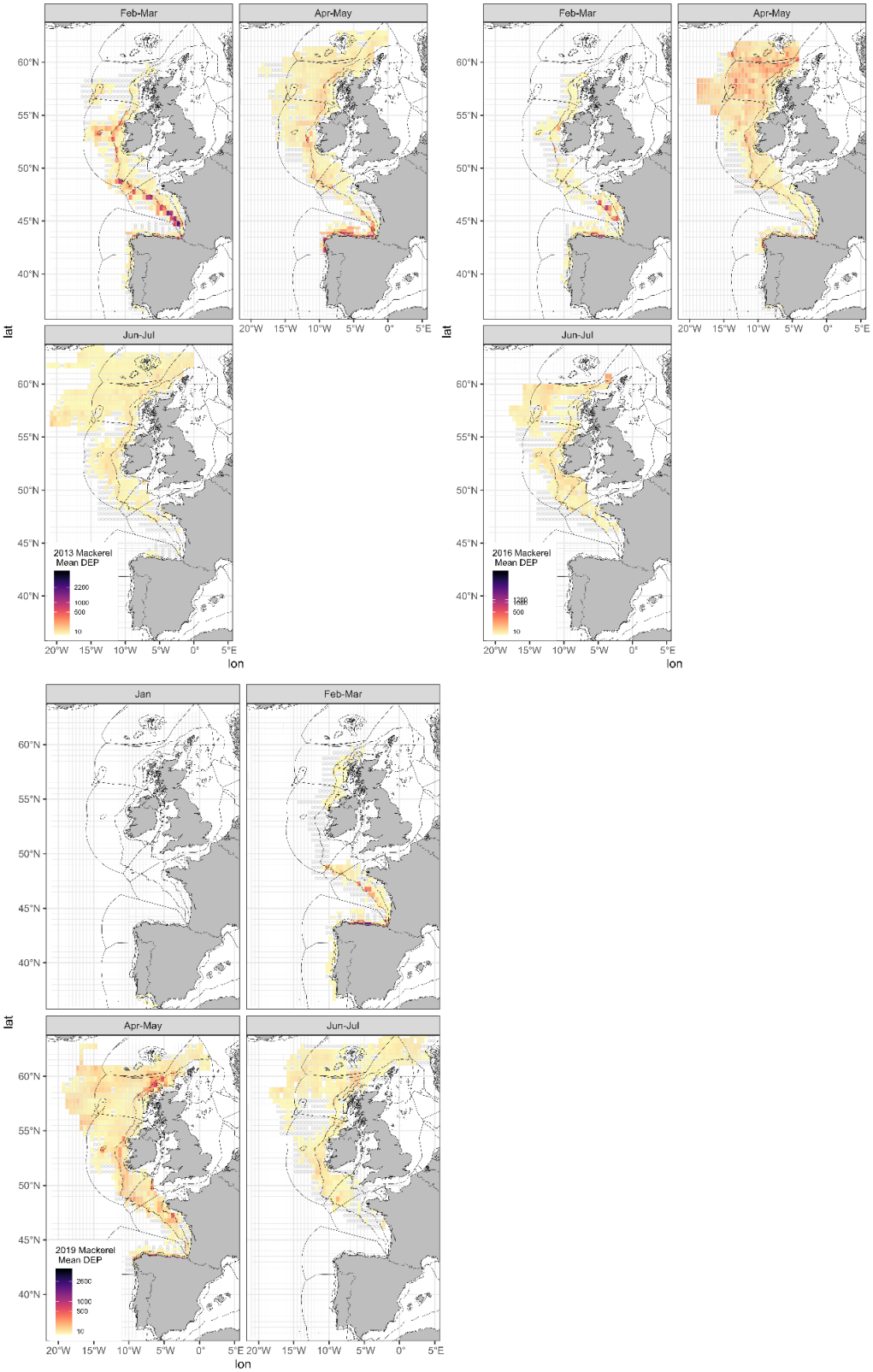


Figure A1.1.30 Distribution of mean daily egg production (stage 1 eggs. m^{-2} Day^{-1}) by bimonthly period, half ICES rectangle and survey year. The EEZ boundaries are shown. O means zero egg production (1992-2019) [continued].

Figure A1.1.31. Spatial distribution of mackerel juveniles at age 0 from October to March and from 1998 to 2018. Mackerel squared catch rates by trawl haul (circle areas represent catch rates in kg/km^2) overlaid on modelled squared catch rates per 10 x 10 km rectangle. Each rectangle is coloured according to the expected squared catch rate in percent of the highest value for that year (white=0%, red=100%). See Jansen *et al.* (2015) for details.

A1.2 Tables

Table A1.2.1. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2006.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	15685	223	0	0	3	0	53	0	0	0	0	89103	121	105188
2	27973	65	0	0	0	0	2167	0	0	0	0	10152	20	40377
3	34832	21	0	0	0	0	53	0	0	0	0	2655	6	37567
4	12729	0	0	0	0	0	229	0	0	0	0	703	0	13661
5	2305	0	0	0	8	0	252	0	0	0	0	540	0	3105
6	1501	551	0	0	1295	0	1081	0	0	0	0	852	0	5280
7	1627	6375	0	0	16462	703	17988	0	0	24	0	899	0	44078
8	2008	1201	0	0	2848	933	12387	0	0	0	0	454	0	19831
9	3305	2	0	0	29	0	14050	0	0	0	0	1077	0	18463
10	2379	0	0	0	1	0	48746	0	0	0	0	31387	0	82513
11	5169	12	0	0	0	85	36072	0	0	0	0	6679	3	48020
12	2856	0	0	0	0	0	31907	0	0	0	0	1646	0	36409
Total	112369	8450	0	0	20646	1721	164985	0	0	24	0	146147	150	454492

Table A1.2.2. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2007.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	28454	0	0	0	0	0	53	0	0	0	0	82522	389	111418
2	38109	17	0	0	0	0	53	0	0	0	0	4608	13	42800
3	34940	0	0	0	0	0	53	0	0	0	0	566	0	35559
4	20850	0	0	0	0	0	214	0	0	0	0	366	7	21437
5	1537	0	0	0	0	0	215	0	0	0	0	709	0	2461
6	1256	177	0	0	2397	0	1254	0	0	0	0	445	0	5529
7	1916	10333	0	0	18860	17262	9791	0	0	259	3	573	0	58997
8	2147	4678	0	0	2773	11295	7950	0	0	28	1	634	0	29506
9	2634	66	0	0	0	25	10315	0	0	14	0	2354	0	15408
10	3335	142	0	0	0	0	55711	0	0	0	0	56202	121	115511
11	2489	48	0	0	0	0	43865	0	0	0	0	16724	6	63132
12	1263	80	0	0	0	0	38421	0	0	0	0	8349	25	48138
Total	138930	15541	0	0	24030	28582	167895	0	0	301	4	174052	561	549896

Table A1.2.3. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2008.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	45567	79	0	0	0	0	9	0	0	0	0	61418	114	107187
2	46602	0	0	0	37	0	13	0	0	0	0	1069	0	47721
3	30986	0	0	0	0	0	8	0	0	0	0	365	0	31359
4	14167	0	0	0	0	0	367	0	0	0	0	434	0	14968
5	1695	50	0	0	0	0	371	0	0	0	0	450	0	2566
6	1175	2935	34	0	1216	1481	476	0	0	0	0	652	0	7969
7	2298	35739	36	0	18286	43967	15296	0	0	265	1	4203	0	120091
8	2177	10833	0	0	8538	18989	15420	0	0	90	20	4237	0	60304
9	2514	894	0	0	25	507	19852	0	0	0	0	8030	0	31822
10	2406	111	0	0	0	0	26495	0	0	0	0	60469	52	89533
11	2502	117	0	0	0	0	16885	0	0	0	0	35596	64	55164
12	1973	6	0	0	0	0	13074	0	0	0	0	11539	24	26616
Total	154062	50764	70	0	28102	64944	108266	0	0	355	21	188462	254	595300

Table A1.2.4. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2009.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	35198	0	0	0	0	0	0	0	0	0	0	87183	281	122662
2	82984	0	0	0	2	0	0	0	0	0	0	3323	0	86309
3	60884	0	0	0	0	0	0	0	0	0	0	842	0	61726
4	17780	3	0	0	5	0	357	0	0	0	0	620	2	18767
5	1759	144	0	0	0	221	355	0	0	0	0	414	3	2896
6	1867	6240	1094	0	1254	45938	396	0	0	0	0	1235	2	58026
7	1915	7670	189	0	21203	46315	17148	0	0	554	0	17905	0	112899
8	2316	2855	0	6	7576	10778	17198	0	0	41	11	17815	0	58596
9	1772	721	0	0	22	3074	18291	0	0	0	0	33403	0	57283
10	2493	1075	0	0	0	0	8373	0	0	0	0	87201	210	99352
11	1201	1012	0	0	0	0	4357	0	0	0	0	28232	177	34979
12	3226	882	0	0	0	0	4356	0	0	0	0	6028	131	14623
Total	213395	20602	1283	6	30062	106326	70831	0	0	595	11	284201	806	728118

Table A1.2.5. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2010.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	133388	0	0	0	0	0	0	0	0	0	0	810	0	134198
2	55426	0	0	0	0	0	0	0	0	0	0	333	0	55759
3	33521	0	0	0	0	0	0	0	0	0	0	372	0	33893
4	4164	258	0	0	0	43	266	0	0	0	0	356	36	5123
5	2038	260	0	0	109	98	271	0	0	0	0	580	31	3387
6	1310	699	27	0	3594	27740	415	0	0	10	0	859	31	34685
7	1590	22128	0	0	27455	53439	37250	0	0	507	1	32189	0	174559
8	2059	27113	0	0	13339	29831	38818	0	0	153	6	33978	0	145297
9	2146	16726	0	0	299	15585	38459	0	0	97	3	79347	0	152662
10	882	102	0	0	63	440	1362	0	0	0	0	70658	3	73510
11	1065	89	0	0	0	0	307	0	0	0	0	29219	3	30683
12	767	89	0	0	0	0	560	0	0	0	0	17932	8	19356
Total	238356	67464	27	0	44859	127176	117708	0	0	767	10	266633	112	863112

Table A1.2.6. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2011.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	27919	0	0	0	0	0	1	0	0	0	0	121758	255	149933
2	29062	0	0	0	0	0	0	0	0	0	0	3328	43	32433
3	21908	0	0	0	0	0	0	0	0	0	0	2789	43	24740
4	4454	4420	73	0	3	248	2341	0	0	0	0	647	2	12188
5	1806	4544	113	0	279	724	2344	0	0	0	0	573	2	10385
6	1426	13584	193	0	1501	26131	2504	0	0	0	0	990	2	46331
7	3114	34735	468	0	32132	59829	32275	0	0	132	0	26334	0	189019
8	2561	41074	455	59	14418	58381	28916	0	0	0	0	26732	0	172596
9	1216	32029	455	0	8	18343	29750	0	0	0	0	61928	0	143729
10	2061	64	0	0	0	248	2299	0	0	0	0	82007	1	86680
11	1183	161	0	0	6	0	1123	0	0	0	0	34041	26	36540
12	1594	75	0	0	0	0	1111	0	0	0	0	30924	59	33763
Total	98304	130686	1757	59	48347	163904	102664	0	0	132	0	392051	433	938337

Table A1.2.7. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2012.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	54684	0	0	0	0	0	8	0	0	0	0	73640	0	128332
2	33530	0	0	0	479	0	8	0	0	0	0	2841	0	36858
3	20127	0	0	0	0	0	8	0	0	0	0	1915	0	22050
4	5503	24	0	0	0	0	2178	0	0	0	0	166	22	7893
5	2320	891	0	0	0	2	2184	0	0	0	0	665	12	6074
6	1894	11238	154	0	2137	15993	4564	0	0	0	0	632	0	36612
7	1051	15359	3	3561	28981	71916	43928	0	0	532	0	2800	0	168131
8	1653	35210	962	1815	16616	65141	38008	0	0	767	0	2807	0	162979
9	1302	30395	0	31	1357	9724	37137	0	0	20	10	20916	0	100892
10	813	9224	0	0	210	35	3583	0	0	0	1	120028	8	133902
11	811	366	0	0	97	0	2350	0	0	0	0	51909	97	55630
12	407	0	0	0	0	0	2350	0	0	0	0	20182	1	22940
Total	124095	102707	1119	5407	49877	162811	136306	0	0	1319	11	298501	140	882293

Table A1.2.8. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2013.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	21230	0	0	0	0	0	1	0	0	0	0	102128	0	123359
2	31967	0	0	0	0	0	2	0	0	0	0	1652	0	33621
3	21060	0	0	0	0	0	2	0	0	0	0	1304	0	22366
4	2312	37	0	0	0	2	3289	0	0	0	0	349	18	6007
5	1128	1846	0	0	0	41	3297	0	0	0	0	576	8	6896
6	929	24280	404	97	1747	10846	3588	0	0	5	0	873	0	42769
7	989	37890	802	32635	31145	59025	19139	1	0	1657	58	8194	0	191535
8	1174	52276	208	15889	24582	60589	19179	0	0	136	219	9469	0	183721
9	1242	24622	0	10140	3098	18671	20908	0	0	0	0	19156	0	97837
10	760	3501	0	0	958	715	9748	0	0	0	0	131781	68	147531
11	576	74	0	0	50	0	7912	0	0	0	0	32139	0	40751
12	435	4	0	0	29	0	7907	0	0	0	0	20439	0	28814
Total	83802	144530	1414	58761	61609	149889	94972	1	0	1798	277	328060	94	925207

Table A1.2.9. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2014.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	1326	0	0	0	0	0	0	0	0	0	0	111481	4157	116964
2	87949	0	0	0	0	0	0	0	0	0	0	27222	103	115274
3	45905	0	0	0	0	0	0	0	0	0	0	1117	0	47022
4	30453	490	0	0	0	8	26	0	0	0	0	246	49	31272
5	2655	1	0	0	0	30	480	0	0	0	0	831	0	3997
6	918	282	0	2028	664	9200	12804	0	0	0	0	894	36	26826
7	963	10274	388	26097	37054	65258	2894	1	0	565	15	475	0	143984
8	1215	30975	412	43658	57213	69225	8515	0	0	1011	384	643	0	213251
9	1448	54237	0	9889	34917	22972	108538	0	0	42	0	49558	0	281601
10	1187	6217	0	0	1123	246	35322	0	0	0	0	237864	1	281960
11	895	0	0	0	26	0	75	0	0	0	0	105005	0	106001
12	1260	28	0	0	0	0	18	0	0	0	0	12269	31	13606
Total	176174	102504	800	81672	130997	166939	168672	1	0	1618	399	547605	4377	1381758

Table A1.2.10. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2015.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	1210	0	0	0	0	0	219	0	0	0	0	91431	847	93707
2	86934	0	0	0	0	0	244	0	0	0	0	6204	0	93382
3	42139	0	0	0	0	0	68	0	0	0	0	2023	0	44230
4	15428	7	0	0	0	0	66	0	0	0	0	111	20	15632
5	2217	41	0	0	0	31	535	0	0	0	0	223	37	3084
6	996	450	0	29	5979	5144	19970	0	0	0	0	469	0	33037
7	475	4207	288	10444	34859	56658	13784	1	0	64	0	1182	0	121962
8	560	27452	0	12485	47164	53185	5036	1	0	915	38	891	0	147727
9	498	44104	0	12	49531	25277	113228	0	0	14	0	25589	0	258253
10	1112	12625	0	0	4896	115	63537	0	0	3	0	134297	0	216585
11	1489	7	0	0	4	0	159	0	0	0	0	134583	0	136242
12	670	0	0	0	0	0	38	0	0	0	0	8503	0	9211
Total	153728	88893	288	22970	142433	140410	216884	2	0	996	38	405506	904	1173052

Table A1.2.11. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2016.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	1540	0	0	0	0	0	53	0	0	0	0	105768	59	107420
2	23135	0	0	0	0	0	11	0	0	0	0	85737	52	108935
3	28877	0	0	0	16	0	88	0	0	0	0	579	0	29560
4	20065	1308	0	0	77	0	40	0	0	0	0	625	748	22863
5	1928	259	0	0	0	0	472	0	0	0	0	624	13	3296
6	1100	3936	0	121	7606	3270	4928	0	0	0	0	694	2	21657
7	1536	19893	39	17948	15368	39826	4367	0	0	338	14	1060	0	100389
8	1821	49587	0	12541	50121	32022	10382	0	0	557	16	881	0	157928
9	1529	66990	0	357	33496	6316	96691	0	0	105	0	8497	0	213981
10	813	5514	0	0	4168	4	90667	0	0	0	0	89782	0	190948
11	1431	172	0	0	146	0	1401	0	0	0	0	110144	0	113294
12	1004	0	0	0	0	0	2	0	0	0	0	6651	0	7657
Total	84779	147659	39	30967	110998	81438	209102	0	0	1000	30	411042	874	1077928

Table A1.2.12. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2017.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	979	144	0	0	0	0	11	0	0	0	0	172291	953	174378
2	10321	95	0	0	0	0	6	0	0	0	0	50445	155	61022
3	31324	0	0	0	0	1	3	0	0	0	0	5718	0	37046
4	15573	362	0	0	0	0	36	0	0	0	0	2113	167	18251
5	1460	152	0	0	2	2	656	0	0	0	0	1301	60	3633
6	607	551	11	5	10439	1147	5357	0	0	1	0	930	0	19048
7	750	8920	81	6155	35045	43097	3209	1	0	182	0	819	0	98259
8	919	22483	0	18738	56572	62527	4866	0	0	81	0	1903	0	168089
9	1037	38136	0	38	109209	7494	89852	0	0	131	0	8848	0	254745
10	1045	3353	0	0	3129	378	56509	0	0	0	0	134393	0	198807
11	869	10	0	0	0	1	94	0	0	0	0	103472	0	104446
12	650	126	0	0	0	0	15	0	0	0	0	15561	0	16352
Total	65534	74332	92	24936	214396	114647	160614	1	0	395	0	497794	1335	1154076

Table A1.2.13. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2018.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	892	0	0	0	0	0	6	0	0	0	0	107594	585	109077
2	21273	0	0	0	0	0	5	0	0	0	0	39922	169	61369
3	27022	0	0	0	0	0	0	0	0	0	0	286	0	27308
4	14174	252	0	0	0	1	27	0	0	0	0	425	68	14947
5	1380	145	0	0	0	0	884	0	0	0	0	1604	59	4072
6	843	41	0	874	5566	151	1812	0	0	11	0	1030	0	10328
7	926	10442	0	12314	23434	41024	2556	0	0	2584	0	899	0	94179
8	1039	2231	0	35675	64905	39089	3618	0	0	1621	0	1263	0	149441
9	902	28610	0	0	98660	1869	24701	0	0	9	0	12968	0	167719
10	901	2495	0	0	6549	4	7433	0	0	0	0	227298	0	244680
11	492	8185	0	0	2	122	177	0	0	0	0	107480	0	116458
12	398	1186	0	0	0	0	2	0	0	0	0	15682	1	17269
Total	70242	53587	0	48863	199116	82260	41221	0	0	4225	0	516451	882	1016847

Table A1.2.14. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2019.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	765	1482	0	0	0	0	0	0	0	0	0	139343	80	141670
2	33564	0	0	0	0	0	0	0	0	0	0	27942	13	61519
3	23718	0	0	0	0	0	1	0	0	0	0	3432	0	27151
4	11537	250	0	0	0	0	85	0	0	0	0	1275	140	13287
5	2038	556	0	0	0	0	371	0	0	0	0	1903	51	4919
6	1220	1569	0	0	8777	0	3581	0	0	0	0	1432	0	16579
7	1640	10104	91	5567	19410	43874	7615	0	0	227	0	576	0	89104
8	963	6784	0	2	125491	19749	2964	0	0	1145	0	2116	0	159214
9	739	10625	0	0	33639	46	21795	0	0	27	0	37408	0	104279
10	666	420	0	0	88	4	2374	0	0	0	0	152183	0	155735
11	1007	4078	0	0	5	0	185	0	0	0	0	43661	0	48936
12	462	3874	0	0	0	0	4	0	0	0	0	4584	0	8924
Total	78319	39742	91	5569	187410	63673	38975	0	0	1399	0	415855	284	831317

Table A1.2.15. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2020.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	918	516	0	0	0	0	849	0	0	0	0	158525	237	161045
2	33305	393	0	0	0	0	0	0	0	0	0	64481	41	98220
3	51526	0	0	0	0	0	1	0	0	0	0	2478	21	54026
4	12904	247	0	0	0	0	56	0	0	0	0	454	188	13849
5	2064	725	0	0	0	0	444	0	0	0	0	1970	262	5465
6	1075	884	7	0	6583	7130	4293	0	0	0	0	1483	0	21455
7	1399	8851	12	0	49342	38362	3522	0	0	1777	0	1054	0	104319
8	926	19646	0	0	128201	0	32624	0	0	262	0	3585	0	185244
9	1134	12281	0	0	30514	0	4742	0	0	41	0	16142	0	64854
10	884	1	0	0	4	0	19945	0	0	0	0	226818	0	247652
11	865	0	0	0	1	0	274	0	0	0	0	62357	0	63497
12	531	0	0	0	4	0	353	0	0	0	0	5258	0	6146
Total	107531	43544	19	0	214649	45492	67103	0	0	2080	0	544605	749	1025772

Table A1.2.16. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2021. Note that Russian catches are not included.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	998	0	0	0	0	0	601	0	0	0	0	158565	0	160164
2	6980	0	0	0	0	0	6	0	0	0	0	15845	0	22831
3	22893	0	0	0	0	0	21	0	0	0	0	3049	0	25963
4	12932	48	0	0	0	0	104	0	0	0	0	304	0	13389
5	3104	202	0	0	0	0	592	0	0	0	0	976	0	4875
6	1291	8857	0	0	8114	153	5639	0	0	0	0	782	0	24836
7	1622	17950	0	0	59319	3667	6384	0	0	12	10	893	0	89857
8	1370	2569	0	0	120277	593	141323	0	0	0	0	1568	0	267700
9	1549	6191	0	0	16659	5070	84504	0	0	0	0	3865	0	117838
10	1078	0	0	0	0	0	42957	0	0	0	0	105251	0	149287
11	794	0	0	0	8	13	9677	0	0	0	0	54583	0	65076
12	495	0	0	0	0	0	193	0	0	0	0	888	0	1576
Total	55107	35817	0	0	204378	9496	292002	0	0	12	10	346571	0	943393

Table A1.2.17. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2022. Note that Russian catches are not included.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	884	9	0	0	0	0	58	0	0	0	0	111674	3	112627
2	6507	NA	0	0	0	0	117	0	0	0	0	41049	0	47673
3	34440	NA	0	0	0	0	229	0	0	0	0	1551	0	36220
4	15872	122	0	0	0	0	62	0	0	0	0	275	0	16331
5	3938	2673	0	0	0	0	736	0	0	0	0	797	0	8144
6	1256	10377	0	0	5833	20	5535	0	0	0	0	1153	0	24174
7	952	14620	0	1	94825	851	3595	0	0	11	9	1070	0	115933
8	1236	10998	0	0	64906	28219	105826	0	0	0	7	2227	0	213420
9	1112	15870	0	0	22862	616	141856	0	0	0	0	4927	0	187243
10	782	5	0	0	0	0	36404	0	0	0	0	72469	0	109660
11	906	0	0	0	0	0	8632	0	0	0	0	69447	0	78985
12	582	NA	0	0	0	0	34	0	0	0	0	1309	0	1925
Total	68469	54673	0	2	188425	29705	303084	0	0	11	16	307948	3	952335

Table A1.2.18. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2023. Note that Russian catches are not included.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	697	0	0	0	0	0	200	0	0	0	0	134879	0	135776
2	9222	0	0	0	0	0	150	0	0	0	0	31416	0	40788
3	17843	0	0	0	0	0	92	0	0	0	0	213	0	18148
4	11134	854	0	0	0	0	205	0	0	0	0	855	0	13048
5	1844	2316	0	0	0	0	688	0	0	0	0	772	0	5621
6	810	27042	0	0	2391	84	6830	0	0	0	0	1329	0	38486
7	777	64039	0	0	12246	65118	4865	0	0	5	1	858	0	147908
8	998	14227	0	0	143811	1635	30891	0	0	0	0	2007	0	193569
9	1369	9714	0	0	2684	364	25262	0	0	0	0	62066	0	101460
10	1089	35	0	0	0	0	6927	0	0	0	0	166441	0	174493
11	800	0	0	0	0	0	2704	0	0	0	0	71648	0	75152
12	450	6	0	0	1	0	321	0	0	0	0	8339	0	9117
Total	47033	118235	0	0	161132	67201	79132	0	0	5	1	480823	0	953563

Table A1.2.19. Monthly catches (tonnes) of Northeast Atlantic (NEA) mackerel by Exclusive Economic Zone (EEZ) for 2024. Note that Russian catches are not included. Total catch reported to Coastal State WG for 2024 was 809 076 tonnes with 4467 tonnes not allocated to zone, hence excluded from table.

Month	EU27	FO	FO_IS	GR	INN	IS	NO	NO_EU27	RU	SJM	SVA	UK	UK_FO	Total
1	598	0	0	0	0	0	29	0	0	0	0	122675	0	125687
2	2639	0	0	0	0	0	20	0	0	0	0	36835	0	40094
3	18549	0	0	0	0	0	2	0	0	0	0	253	0	19705
4	9105	285	0	0	0	0	88	0	0	0	0	222	0	9703
5	1065	704	0	0	0	0	267	0	0	0	0	638	0	2674
6	965	324	0	0	0	0	4760	0	0	0	0	1279	0	7329
7	902	2148	0	0	15328	39371	7036	0	0	6	0	1578	0	66369
8	1158	11256	0	0	33746	20569	60952	0	0	0	0	4957	0	132642
9	1244	54	0	0	1594	0	72099	0	0	0	0	93802	0	168792
10	1443	12	0	0	0	0	2109	0	0	0	0	173929	0	177962
11	661	267	0	0	0	0	1137	0	0	0	0	52606	0	54777
12	441	0	0	0	0	0	5	0	0	0	0	2896	0	3342
Total	38770	15050	0	0	50668	59939	148505	0	0	6	0	491670	0	804609

A2. Data call 2025

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

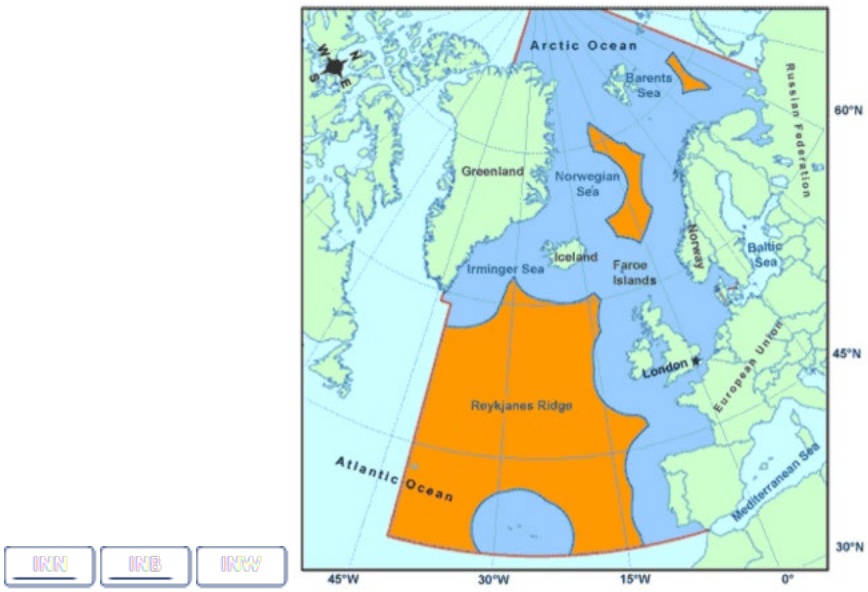
It is important that:

- 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 letters code (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,MAC,DEU,55E8,3,99.000,IRL
2023,MAC,DEU,55E8,4,4.210,IRL
2023,MAC,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