



CONTRIBUTION TO THE 2027 NORWEGIAN RED LIST ASSESSMENT FOR ELASMOBRANCH FISHES

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Summary (English):

This report provides a summary of The Institute of Marine Research's (IMR) data sources on catch distributions and relative abundance trends of elasmobranch species in Norwegian waters based on catches from survey time series as well as from the Reference Fleet. Data are presented as combined catches and biomass for each species from relevant surveys, in addition to estimated catch per unit effort (CPUE) for the years 2010-2025. This report was written in response to a request from the Norwegian Expert Committee for Fish and is intended to provide supporting information for their red-list assessment of elasmobranch fishes in 2027.

Summary (Norwegian):

Rapporten gir et sammendrag av Havforskningsinstituttets datagrunnlag for fangstfordeling og -mengder av bruskfisk i norske farvann basert på fangster fra toktserier i tillegg til tall fra Referanseflåten. Data er presentert som kombinerte fangsttall og biomasse av arter fra alle aktuelle toktserier, samt beregnet fangst per enhet innsats (CPUE) for årene 2010-2025. Rapporten ble laget som svar på en forespørsel fra den norske Ekspertkomiteen for Fisk, som støttemiddel for deres rødlistevurdering av bruskfisk i 2027.

Content

1	Overview	5
2	Data and methods	7
3	Survey trends per species	8
3.1	Rabbit fish (<i>Chimaera monstrosa</i>)	8
3.2	Spurdog (<i>Squalus acanthias</i>)	11
3.3	Velvet belly lanternshark (<i>Etmopterus spinax</i>)	14
3.4	Blackmouth catshark (<i>Galeus melastomus</i>)	17
3.5	Small-spotted catshark (<i>Scyliorhinus canicula</i>)	20
3.6	Thorny skate (<i>Amblyraja radiata</i>)	23
3.7	Arctic skate (<i>Amblyraja hyperborea</i>)	26
3.8	Round ray (<i>Rajella fyllae</i>)	29
3.9	Sailray (<i>Rajella lintea</i>)	32
3.10	Spinytail skate (<i>Bathyraja spinicauda</i>)	35
3.11	Occurrence of skates on surveys	38
4	Reference Fleet trends	39
5	References and further resources	41

1 - Overview

This report provides a brief overview of elasmobranch catch distributions and relative abundance trends from the Institute of Marine Research's (IMR) data sources. The report is intended to provide supporting information for the Norwegian Expert Committee for Fish's 2027 assessment of elasmobranch fishes.

Data are provided from IMR's demersal trawl surveys for species that are sufficiently represented in the surveys. For species with sporadic registrations that are rarely or never caught on surveys, summaries of data collected by the Reference Fleet (consisting of commercial fishing vessels) are shown. Incorrect species identifications may occur in the dataset, particularly in earlier years.

While not presented in this report, IMR has also undertaken research on elasmobranchs that may be considered informative for the Red-List assessment (see References and Further Resources). This includes a dedicated longline survey targeting spurdog (*Squalus acanthias*) from 2021-2025 (Andrade et al. 2024; Delaval et al. *in review*). Preliminary analyses suggest spurdog catch rates that are consistent across the five years. Because the survey mainly targets larger individuals, the increased recruitment of juveniles that is apparent in bottom trawl surveys (see Reketokt and ICES spurdog assessments) cannot be seen in the longline survey data.

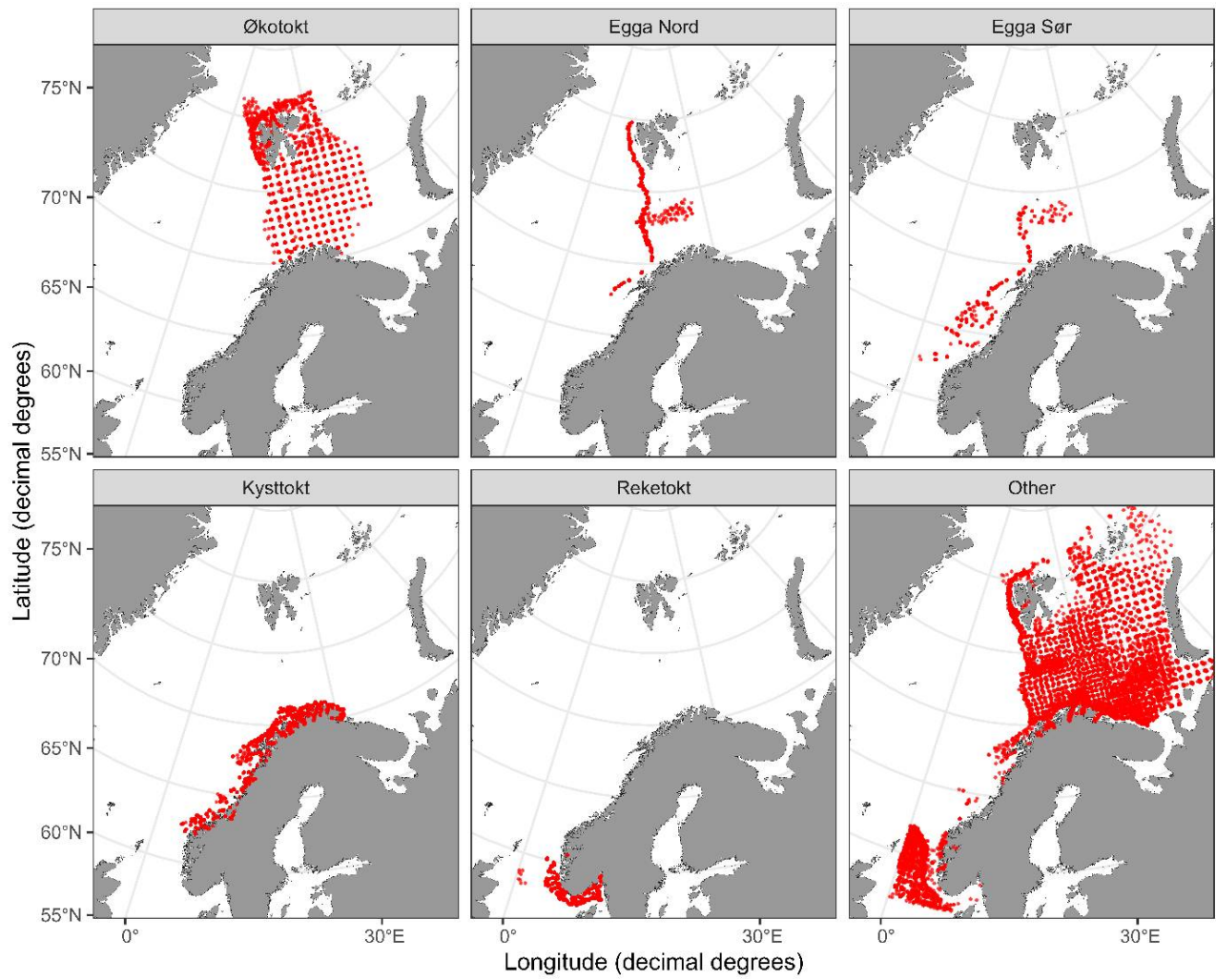


Figure 1: IMR demersal trawl stations from selected surveys between 2010-2025.

2 - Data and methods

The survey series that were considered most informative for assessing the catch distributions and relative abundance of sharks, skates, and rabbit fish are presented in *Table 1* and *Figure 1*. Only stations north of 57°N and east of 0°E were included, encompassing the North Sea, Norwegian Sea, and the Barents Sea and spanning the period 2010-2025. Only data collected using Campelen and Alfredo bottom trawl gears were used in this report. We present the raw data from the surveys in the form of catch numbers and biomass, as well as a summary of catch per unit effort (CPUE in kg km⁻²) for each survey.

Ten elasmobranch species had sufficient catches in IMR demersal trawls over the 2010-2025 period to produce a reasonable overview of catch distributions and relative abundance trends. For each species, the following is provided:

1. Combined catches across the years 2010-2025 for each of the IMR surveys where the species was observed.
2. CPUE in terms of biomass for each of the selected surveys.
3. Total catch count across IMR demersal trawls from 2010-2025.
4. Total catch biomass across IMR demersal trawls from 2010-2025.

Raw data of elasmobranch catches from the Reference Fleet are also presented as a supplementary source of information, which may aid in filling data gaps for species that are seldom encountered on IMR demersal trawl surveys.

Table 1: Overview of survey time series included in the report.

Survey	Area and description	Season	Fishing gear
Økotokt	Barents Sea Norwegian-Russian ecosystem cruise	Autumn	Campelen bottom trawl
Egga Nord	Norwegian Sea continental slope NOR deep-sea fish cruise, northern part (every other year)	Autumn	Alfredo bottom trawl
Egga Sør	Norwegian Sea continental slope NOR deep-sea fish cruise, southern part (every other year)	Spring	Alfredo bottom trawl
Kysttokt	Varanger Stad NOR coastal cruise	Autumn	Campelen bottom trawl
Reketokt	North Sea NOR shrimp NDSK cruise	Winter	Campelen bottom trawl

3 - Survey trends per species

3.1 - Rabbit fish (*Chimaera monstrosa*)

Norwegian: havmus

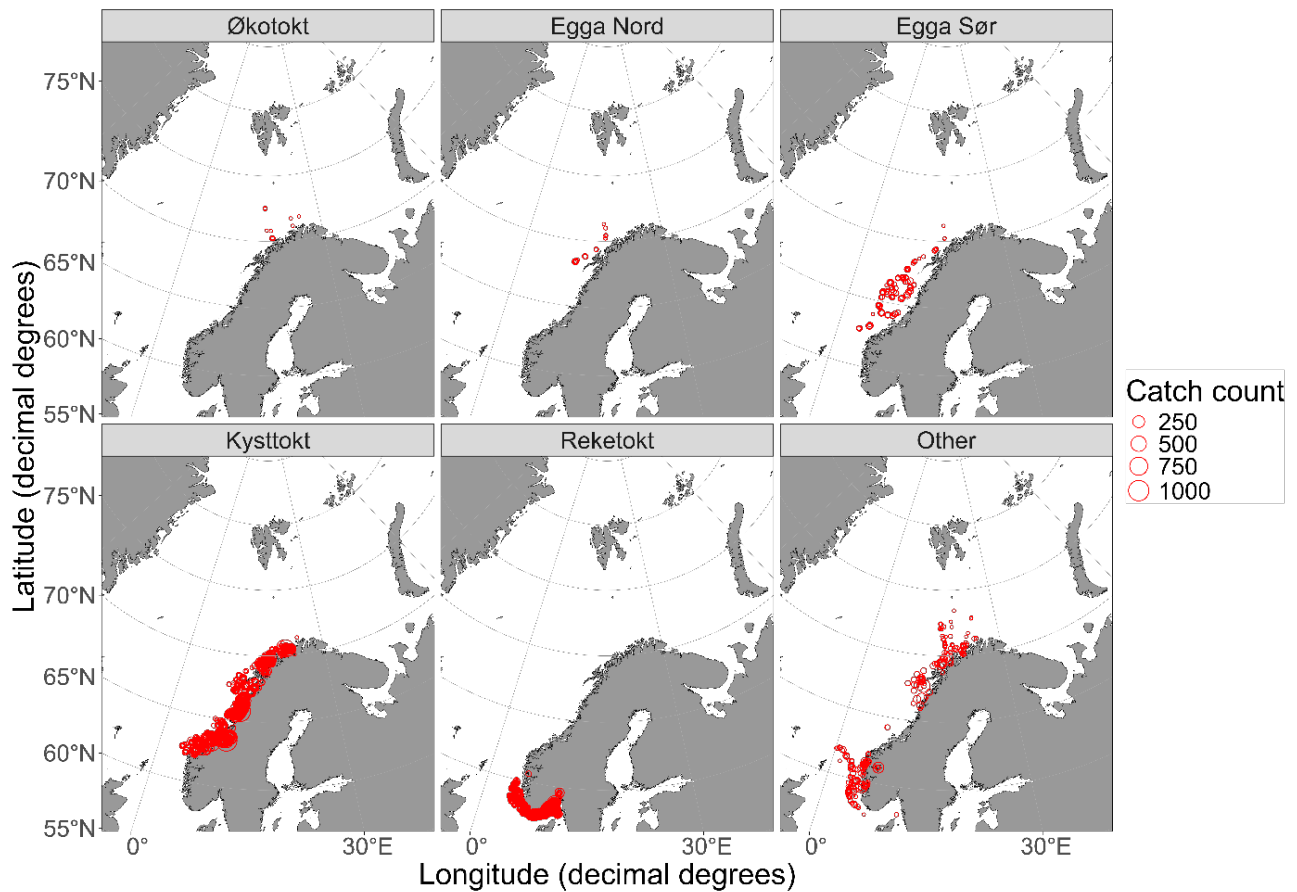


Figure 3.1.1: Catches of rabbit fish (*Chimaera monstrosa*) in IMR demersal trawls between 2010-2025.

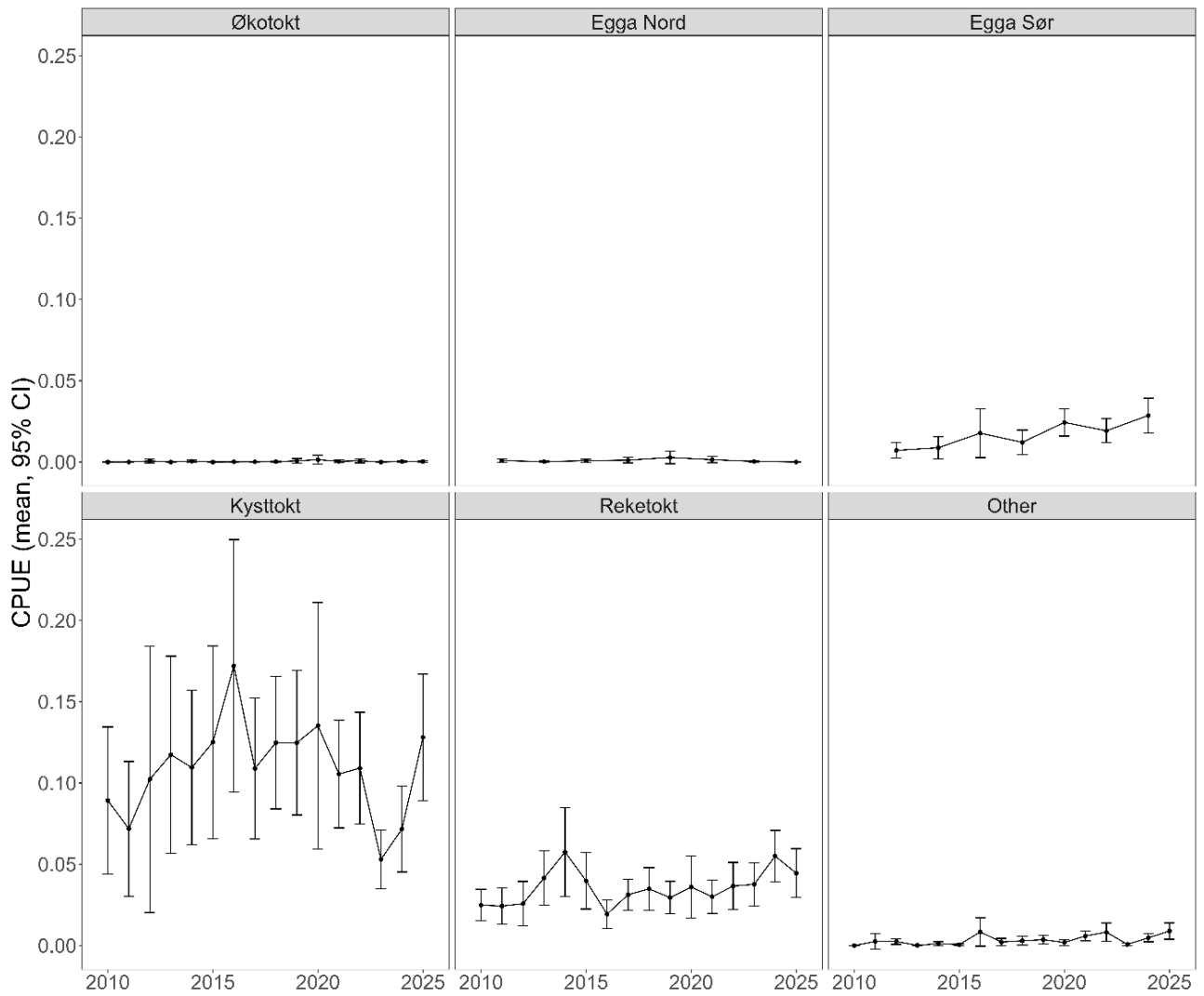


Figure 3.1.2: Rabbit fish (*Chimaera monstrosa*) CPUE (kg km⁻²) on selected surveys between 2010-2025.

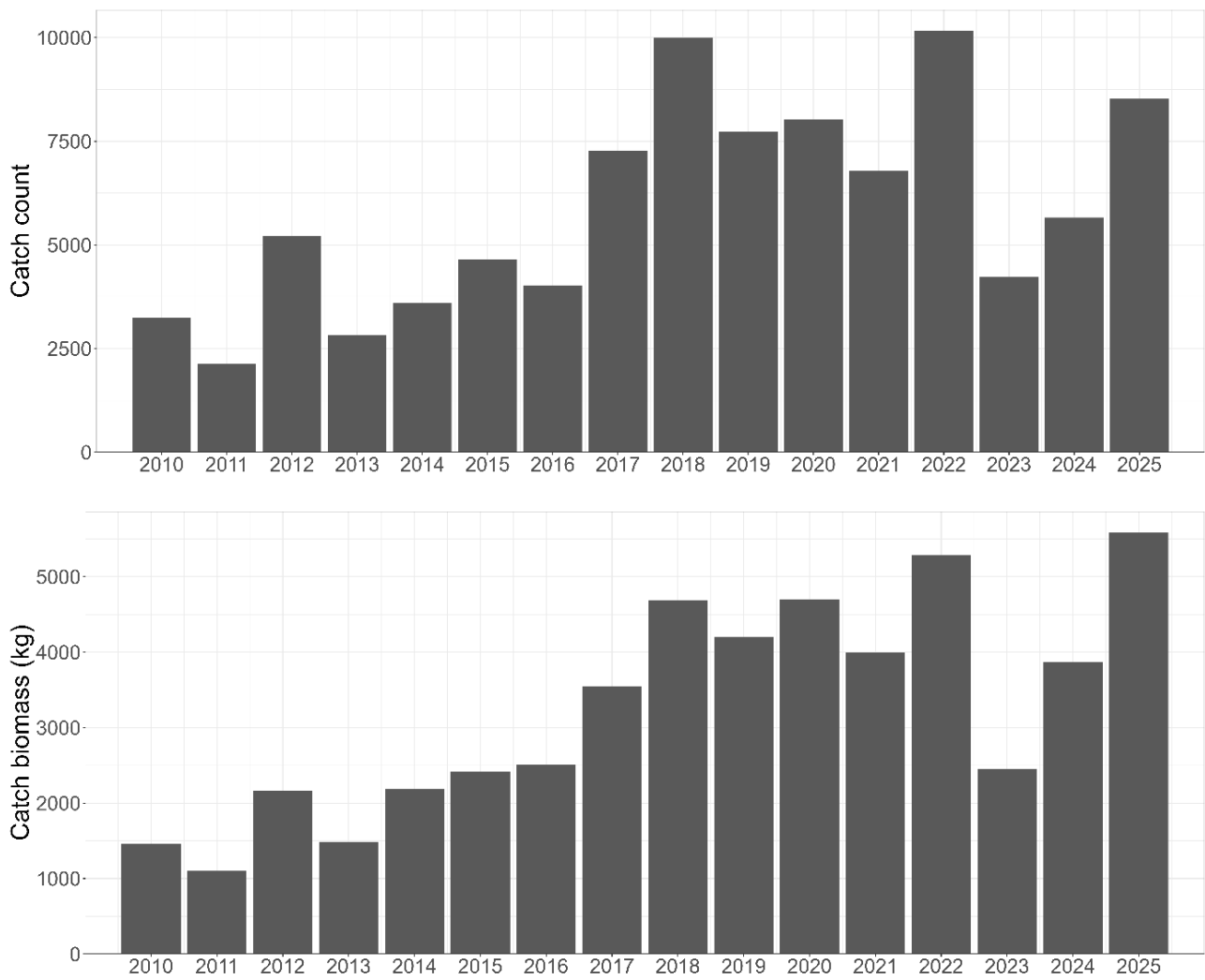


Figure 3.1.3: Rabbit fish (*Chimaera monstrosa*) total catch count and biomass on demersal trawl surveys between 2010-2025.

3.2 - Spurdog (*Squalus acanthias*)

Norwegian: pigghå

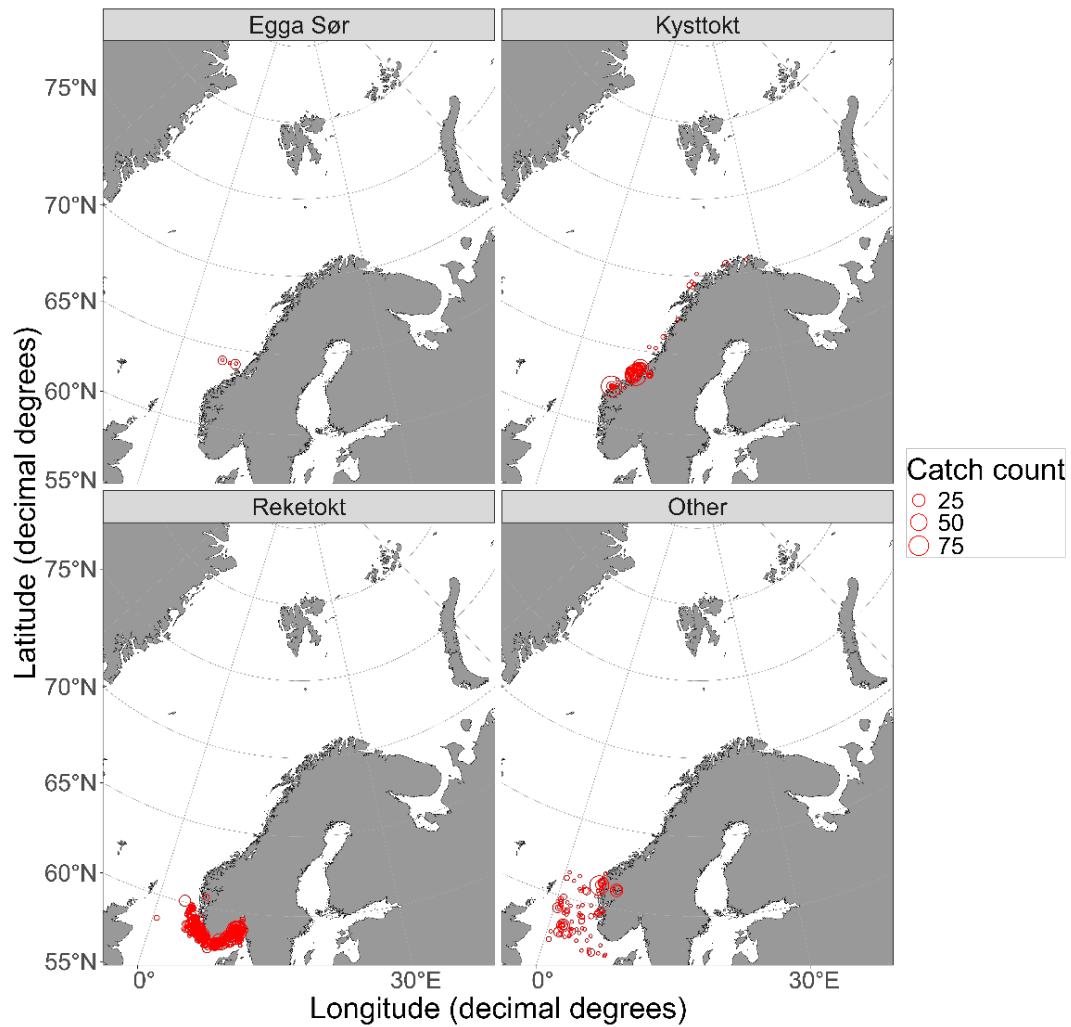


Figure 3.2.1: Catches of spurdog (*Squalus acanthias*) in IMR demersal trawls between 2010-2025.

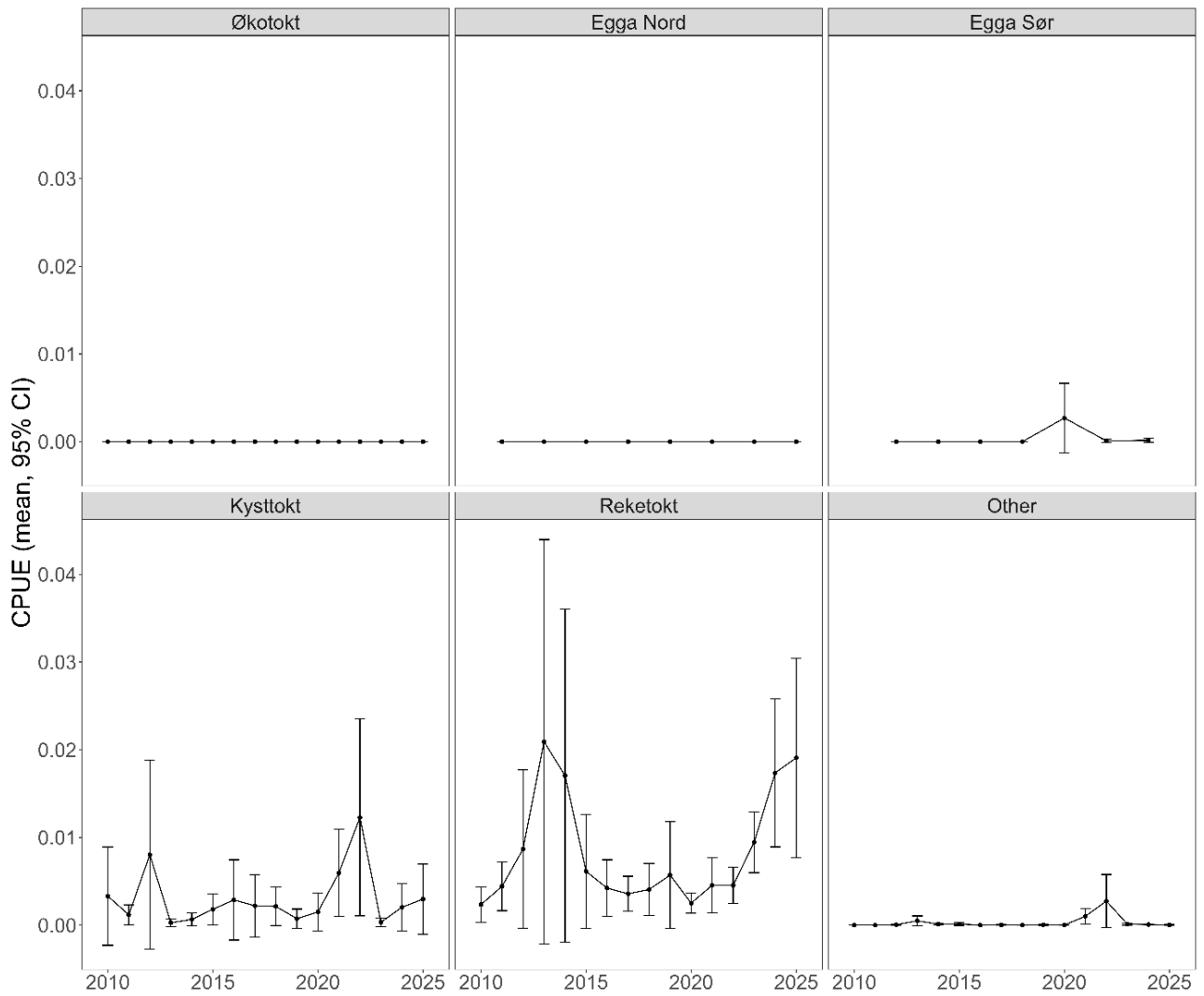


Figure 3.2.2: Spurdog (*Squalus acanthias*) CPUE (kg km^{-2}) on selected surveys between 2010-2025.

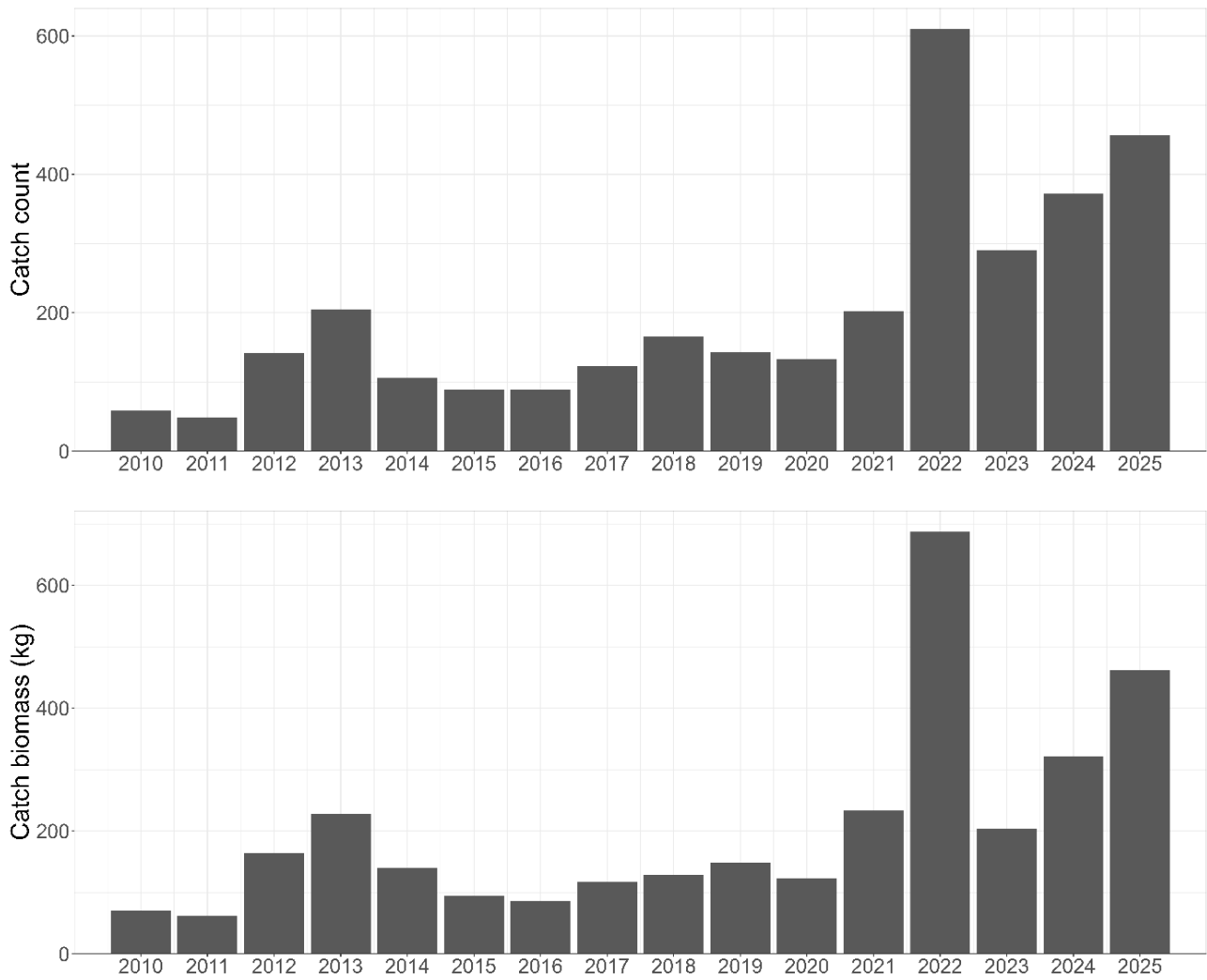


Figure 3.2.3: Spurdog (*Squalus acanthias*) total catch count and biomass on demersal trawl surveys between 2010-2025.

3.3 - Velvet belly lanternshark (*Etmopterus spinax*)

Norwegian: svarthå

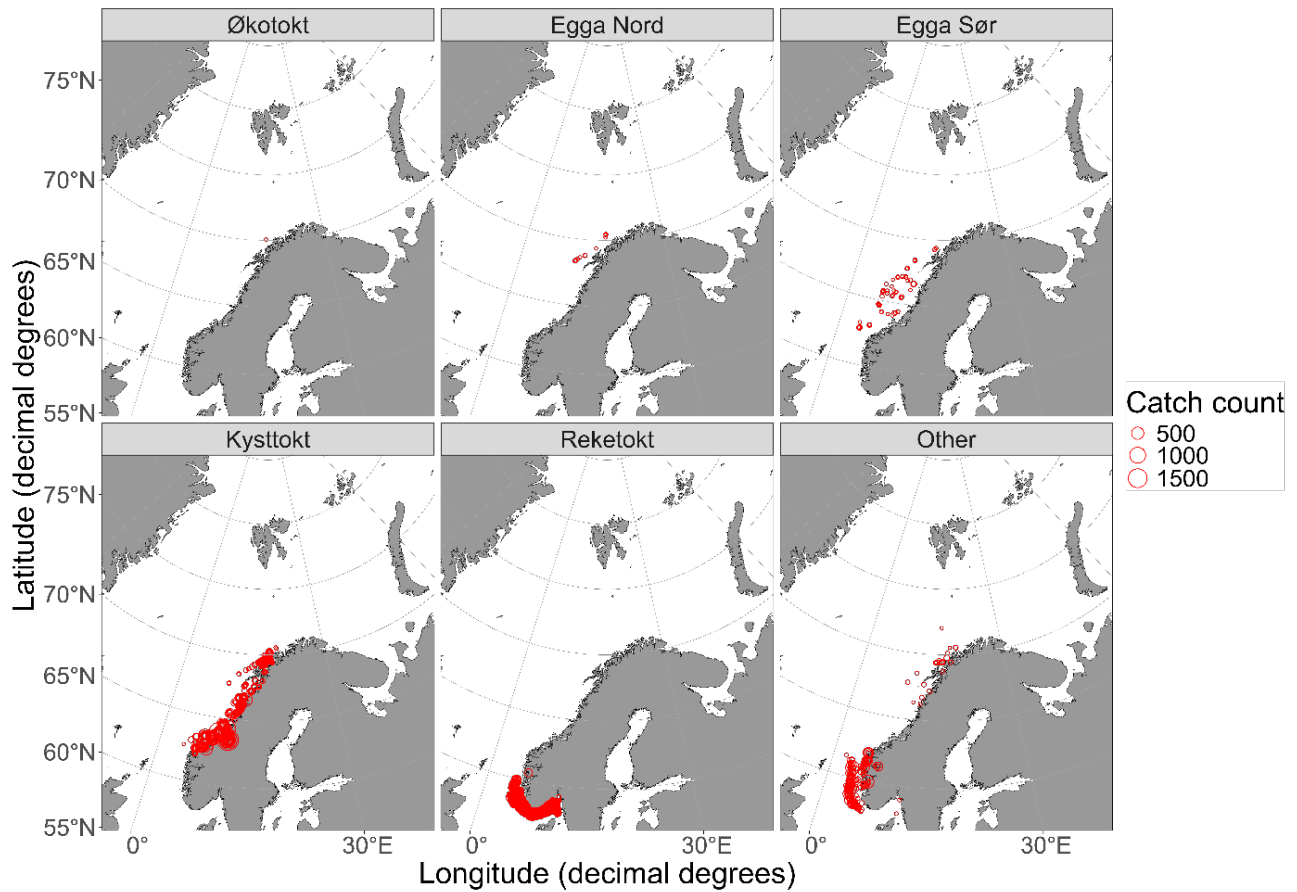


Figure 3.3.1: Catches of velvet belly lanternshark (*Etmopterus spinax*) in IMR demersal trawls between 2010-2025.

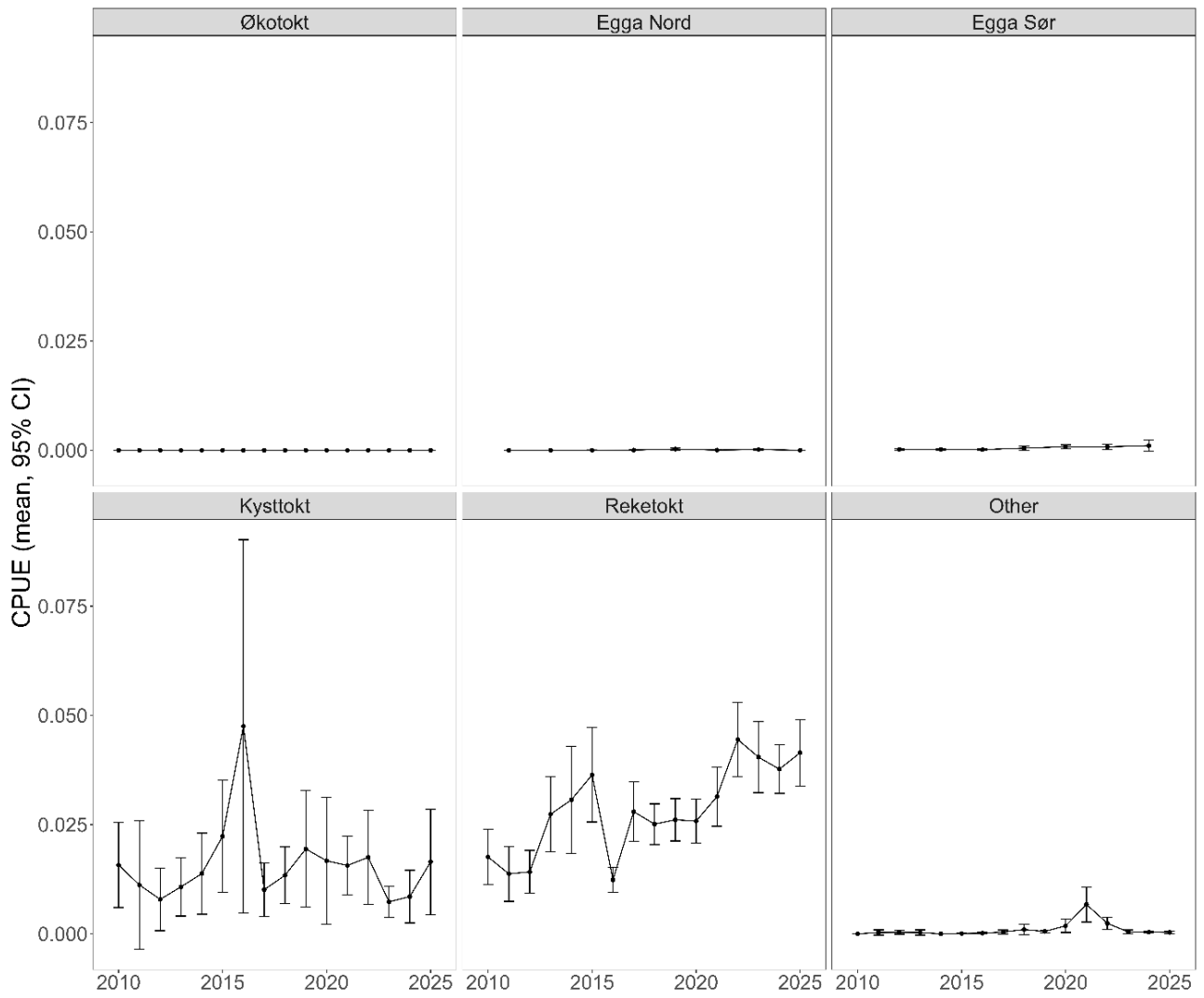


Figure 3.3.2: Velvet belly lanternshark (*Etmopterus spinax*) CPUE (kg km^{-2}) on selected surveys between 2010-2025.

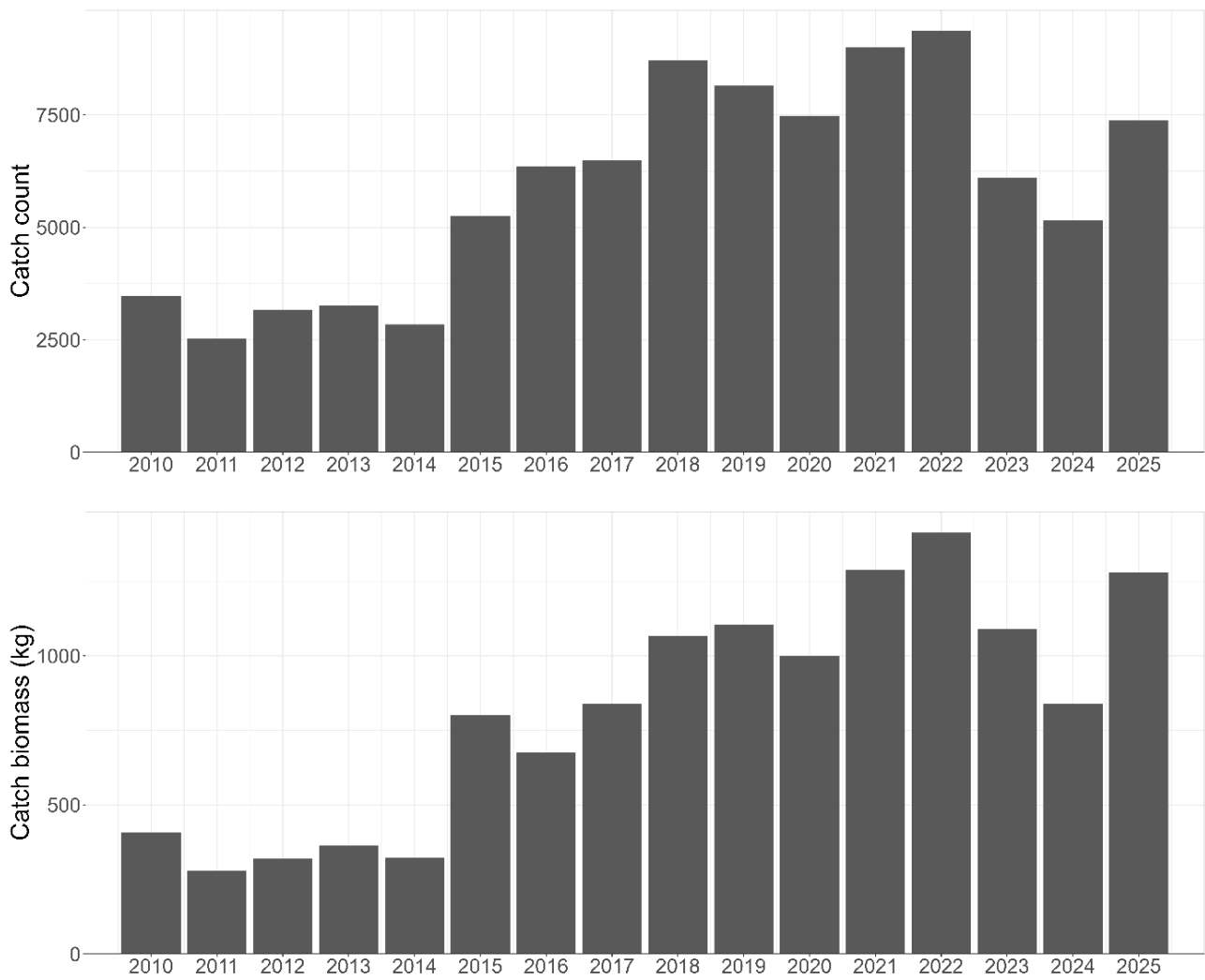


Figure 3.3.3: Velvet belly lanternshark (*Etmopterus spinax*) total catch count and biomass on demersal trawl surveys between 2010-2025.

3.4 - Blackmouth catshark (*Galeus melastomus*)

Norwegian: hågjel

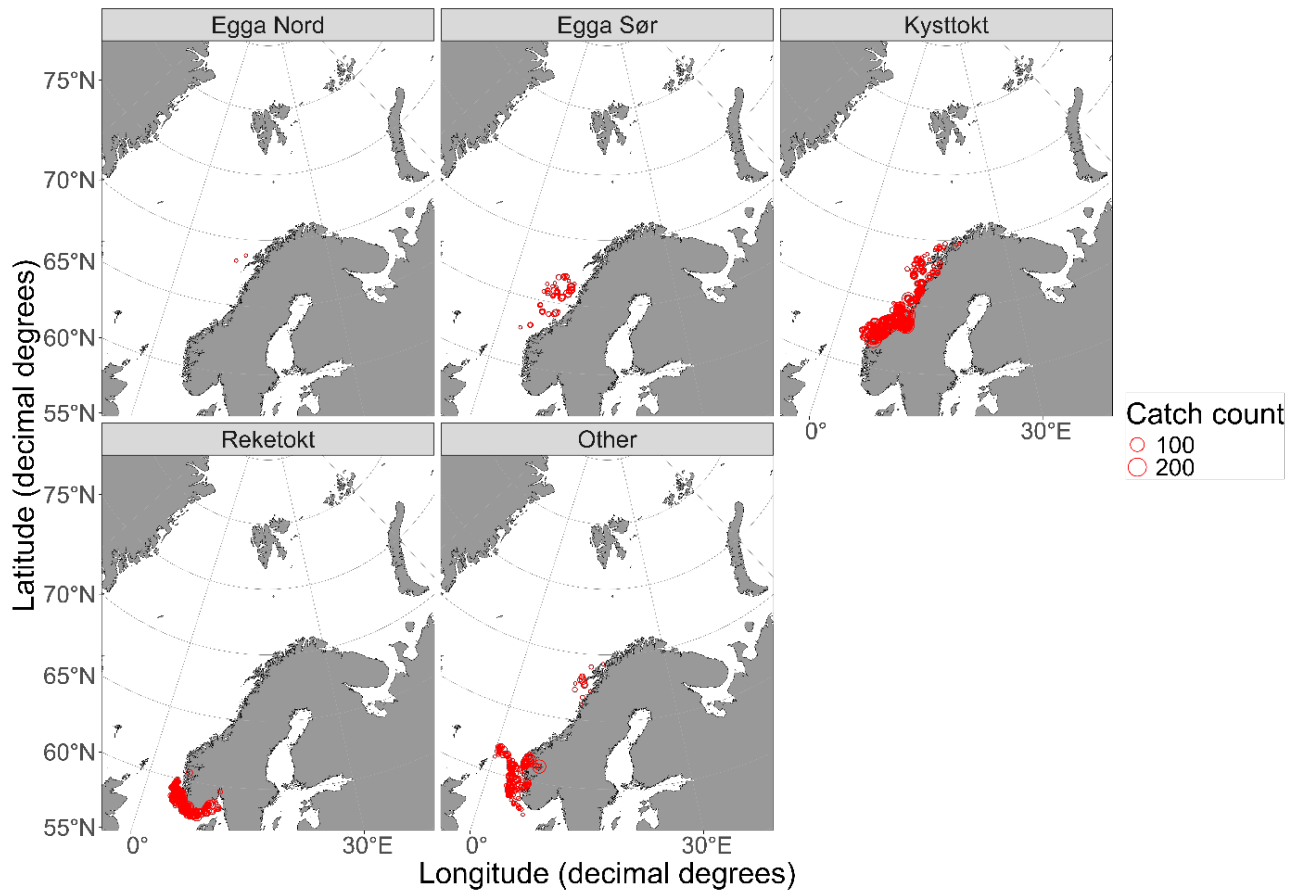


Figure 3.4.1: Catches of blackmouth catshark (*Galeus melastomus*) in IMR demersal trawls between 2010-2025.

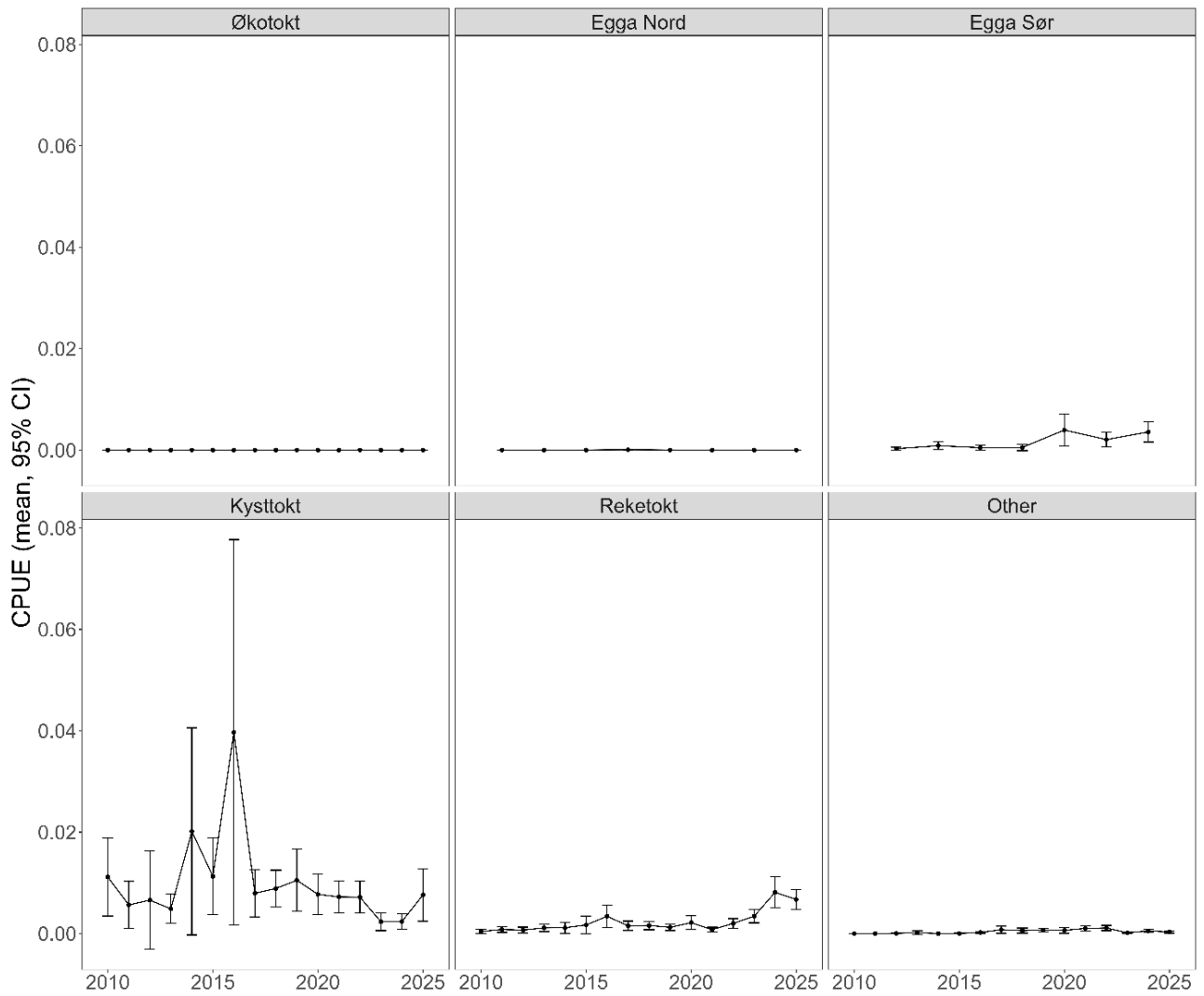


Figure 3.4.2: Blackmouth catshark (*Galeus melastomus*) CPUE (kg km^{-2}) on selected surveys between 2010-2025.

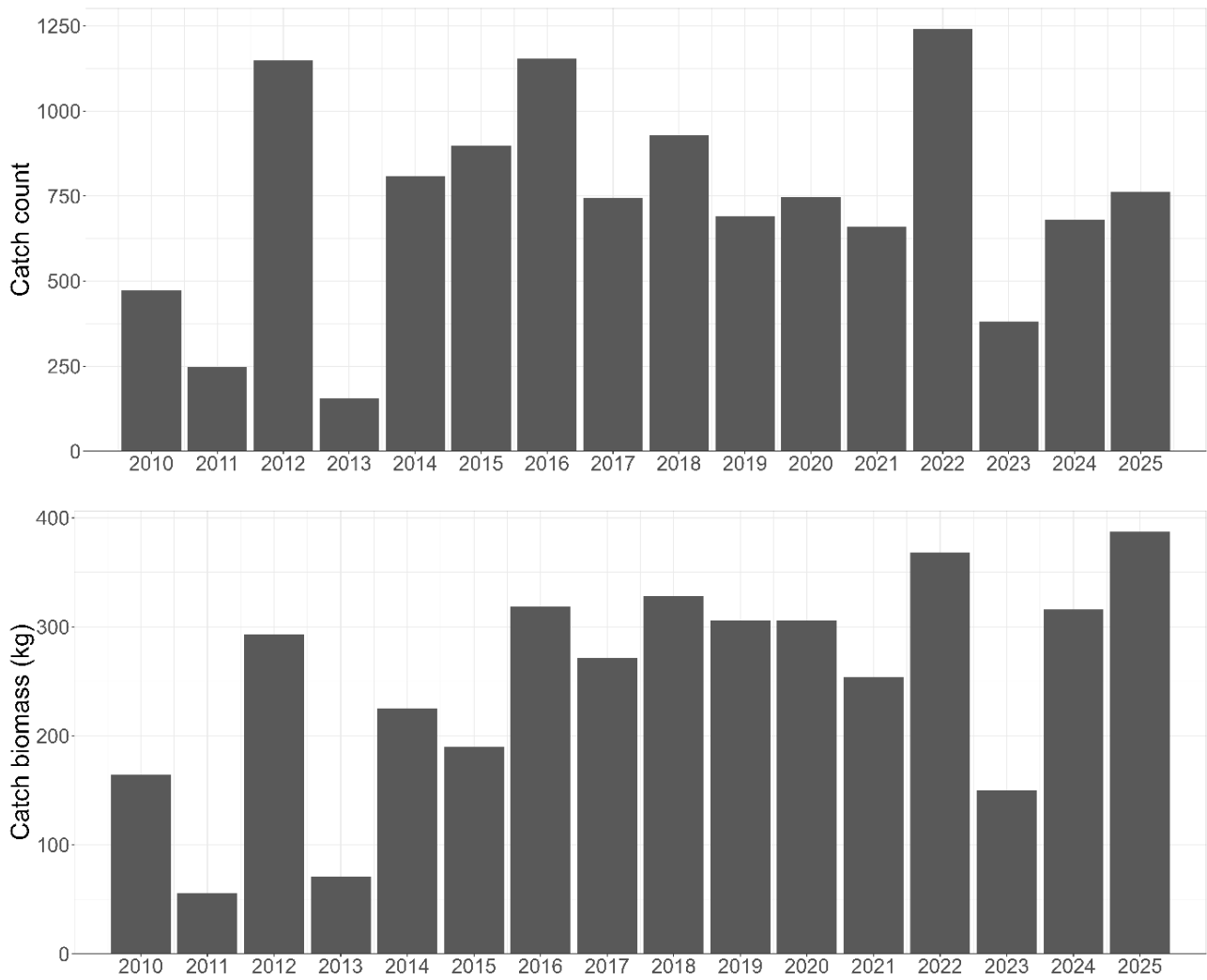


Figure 3.4.3: Blackmouth catshark (*Galeus melastomus*) total catch count and biomass on demersal trawl surveys between 2010-2025.

3.5 - Small-spotted catshark (*Scyliorhinus canicula*)

Norwegian: småflekke rødhai

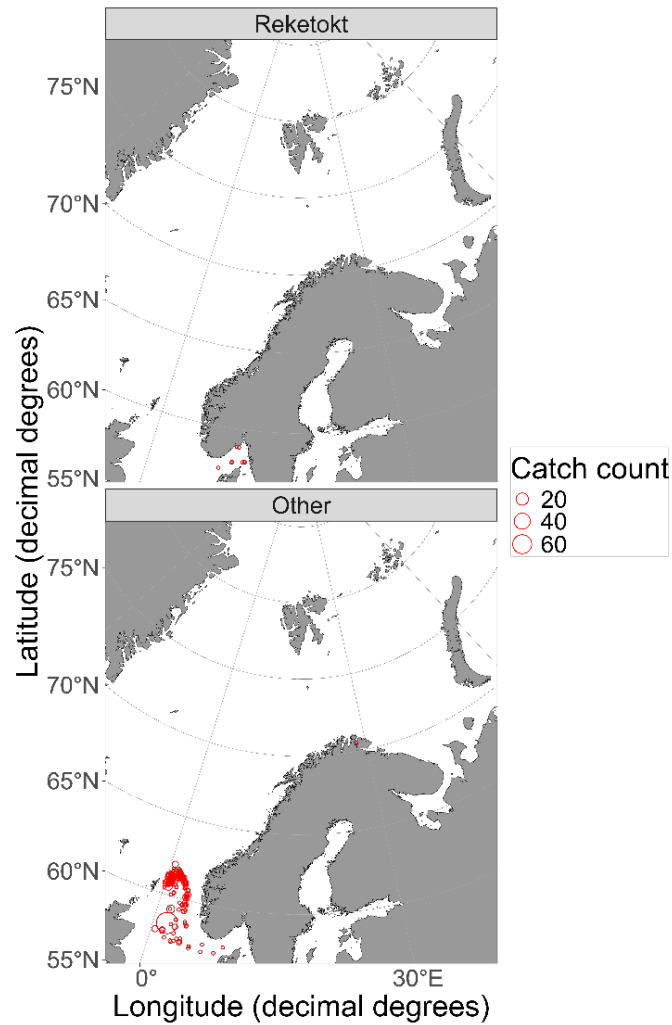


Figure 3.5.1: Catches of small-spotted catshark (*Scyliorhinus canicula*) in IMR demersal trawls between 2010-2025.

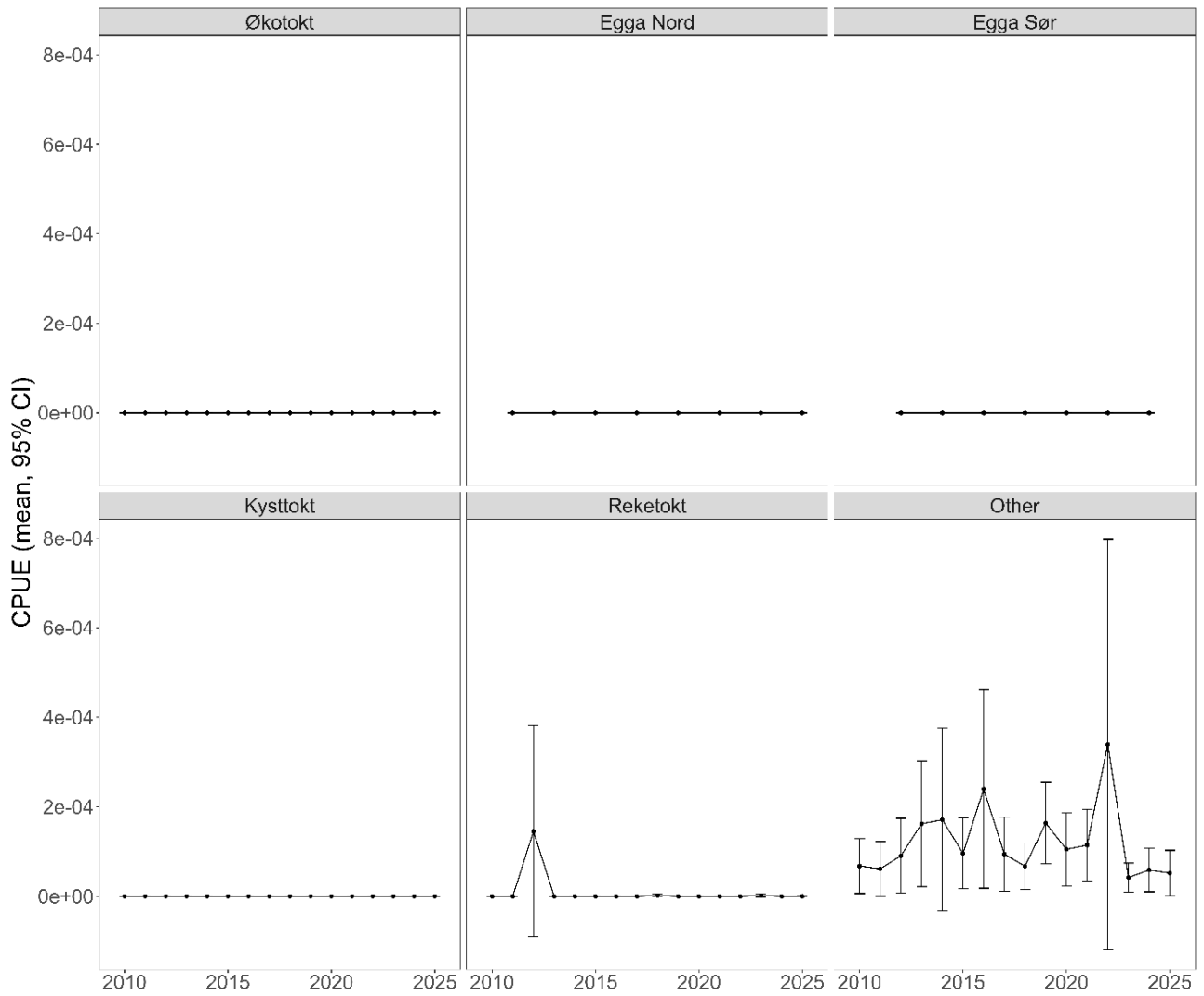


Figure 3.5.2: Small-spotted catshark (*Scyliorhinus canicula*) CPUE (kg km^{-2}) on selected surveys between 2010-2025.

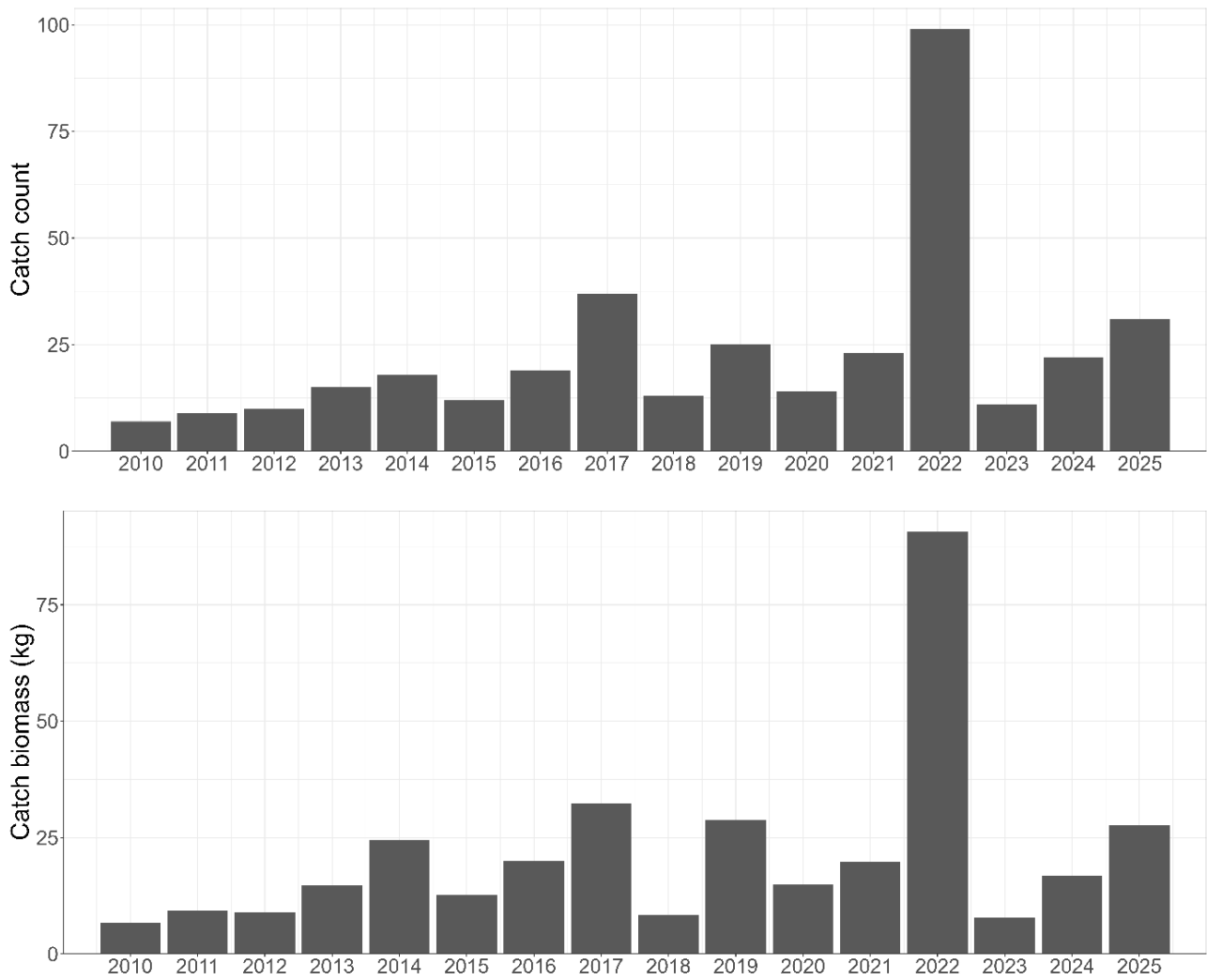


Figure 3.5.3: Small-spotted catshark (*Scyliorhinus canicula*) total catch count and biomass on demersal trawl surveys between 2010-2025.

3.6 - Thorny skate (*Amblyraja radiata*)

Norwegian: kloskate

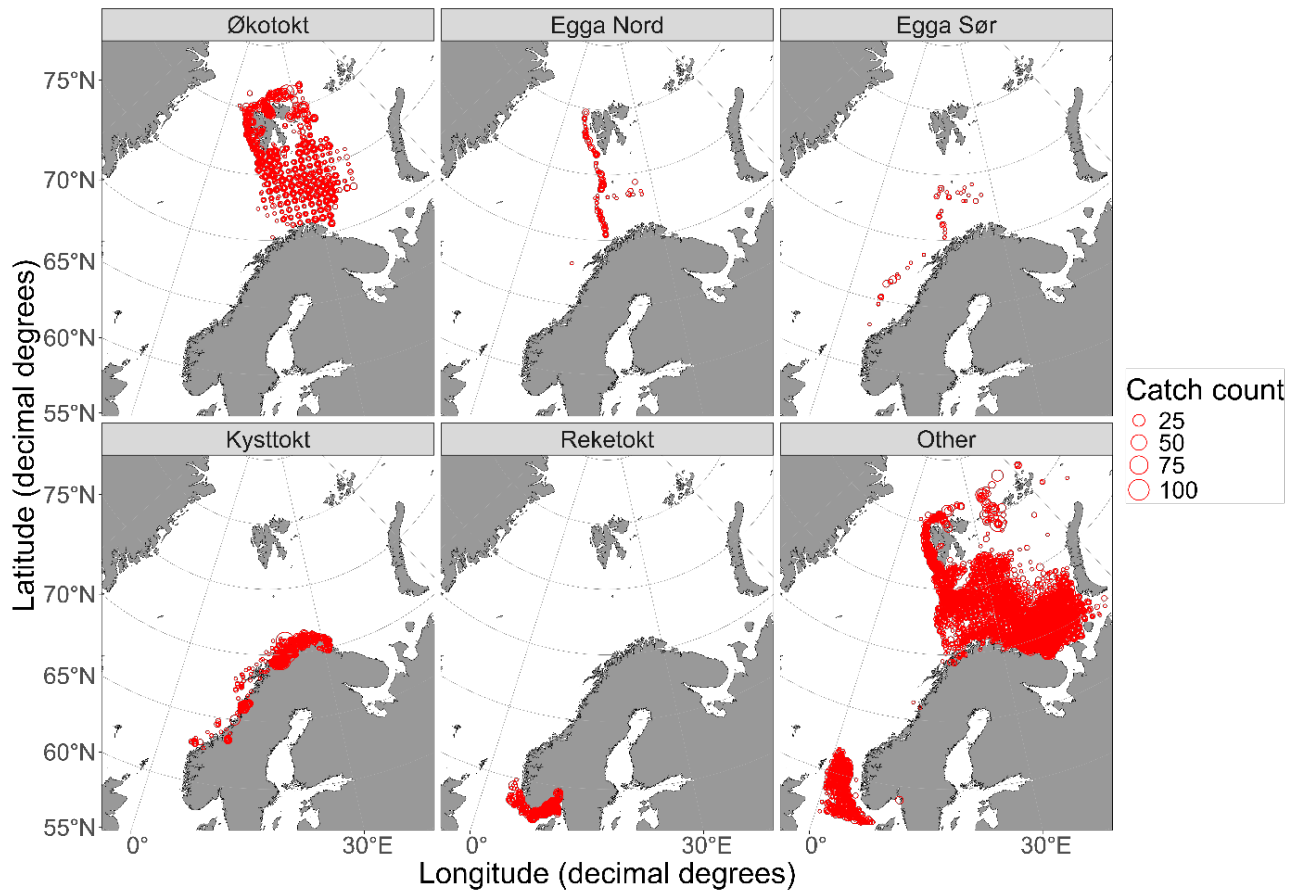


Figure 3.6.1: Catches of thorny skate (*Amblyraja radiata*) in IMR demersal trawls between 2010-2025.

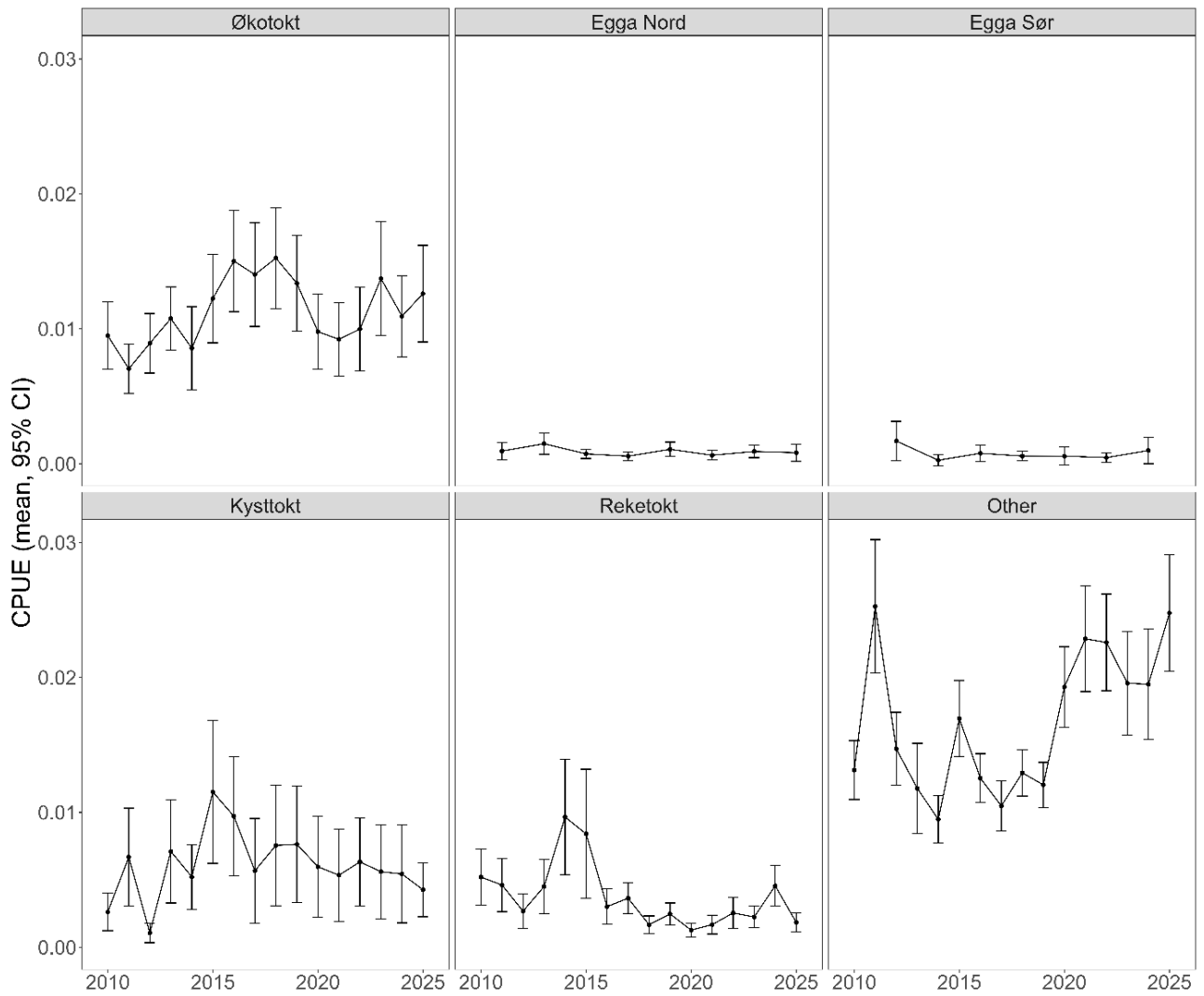


Figure 3.6.2: Thorny skate (*Amblyraja radiata*) CPUE (kg km^{-2}) on selected surveys between 2010-2025.

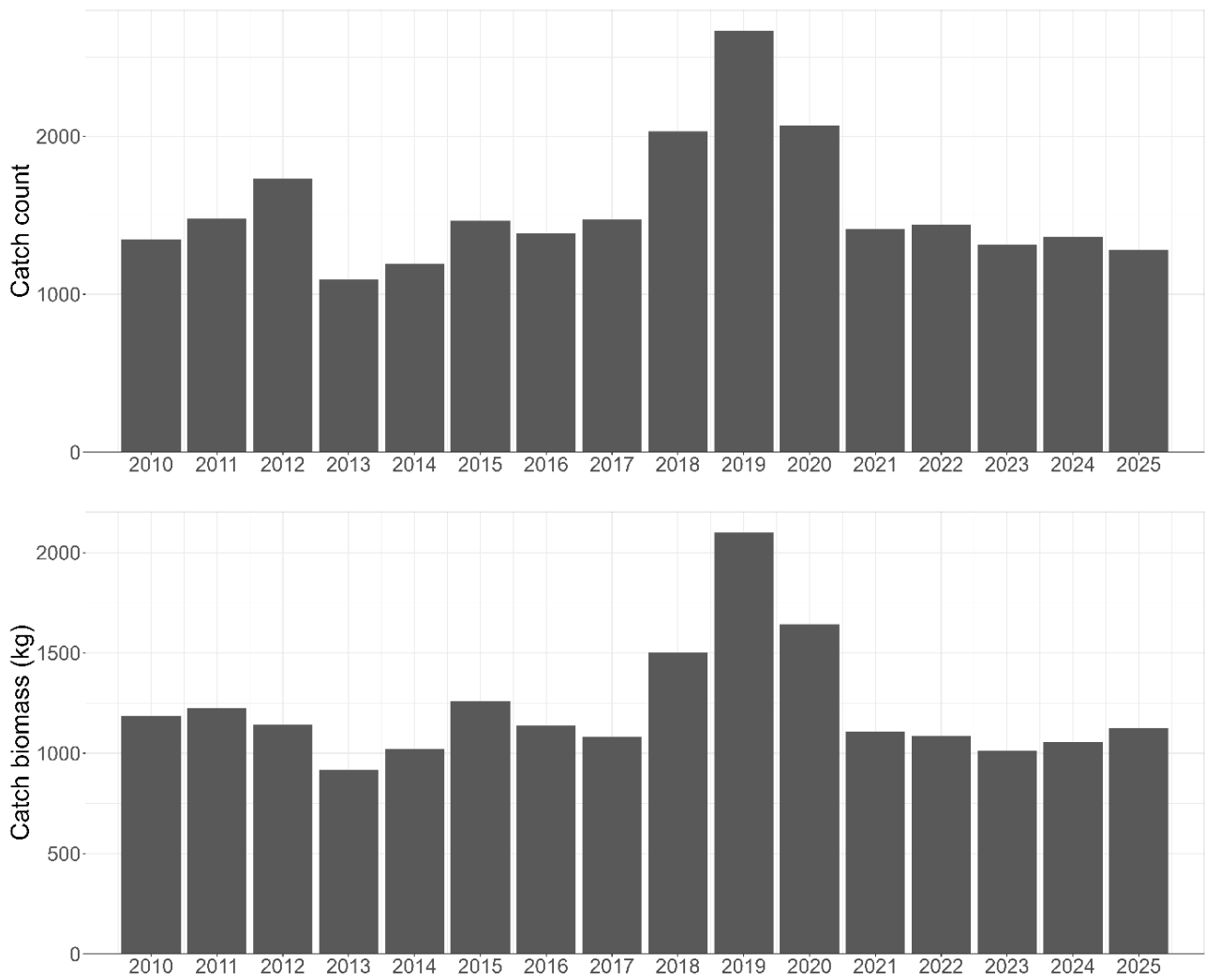


Figure 3.6.3: Thorny skate (*Amblyraja radiata*) total catch count and biomass on demersal trawl surveys between 2010-2025.

3.7 - Arctic skate (*Amblyraja hyperborea*)

Norwegian: isskate

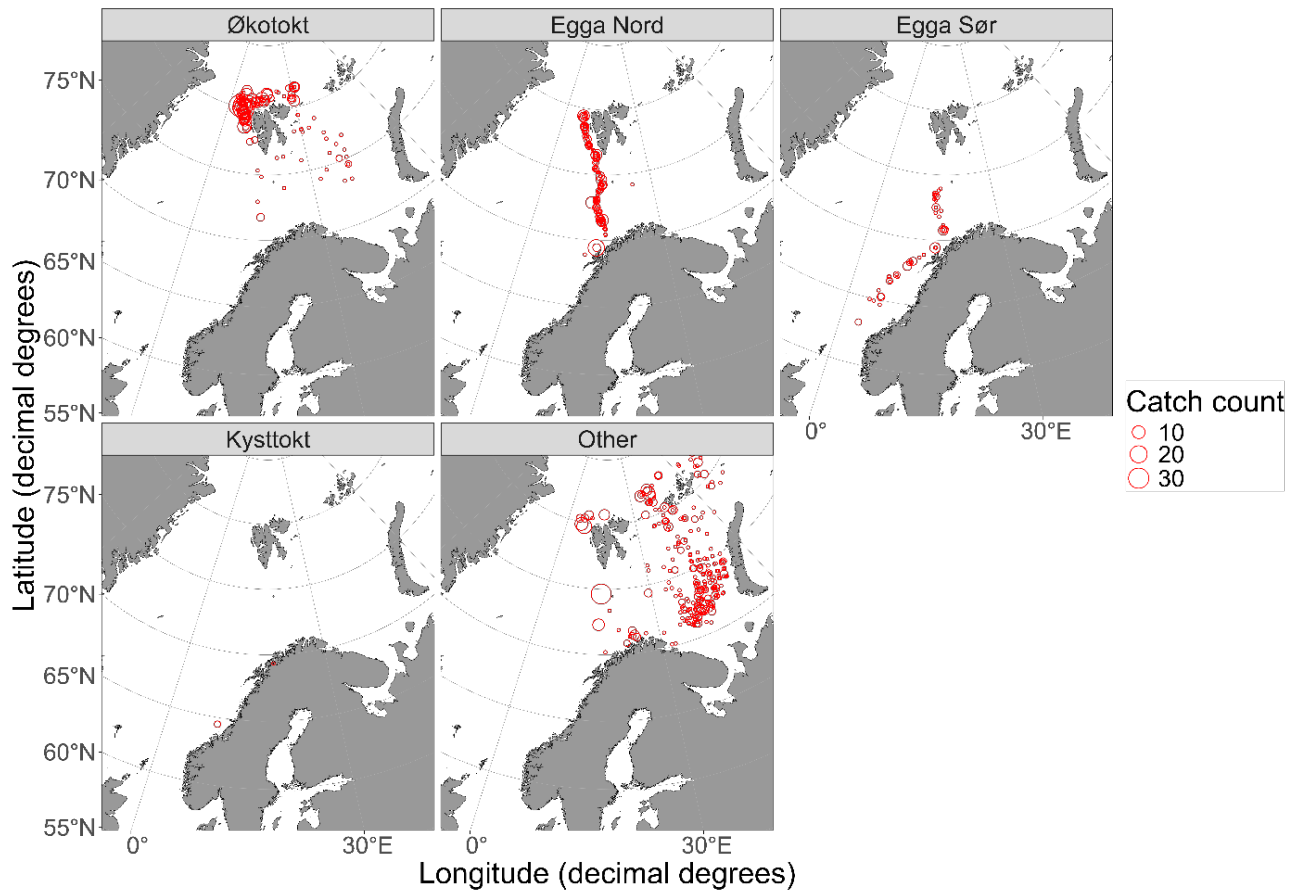


Figure 3.7.1: Catches of arctic skate (*Amblyraja hyperborea*) in IMR demersal trawls between 2010-2025.

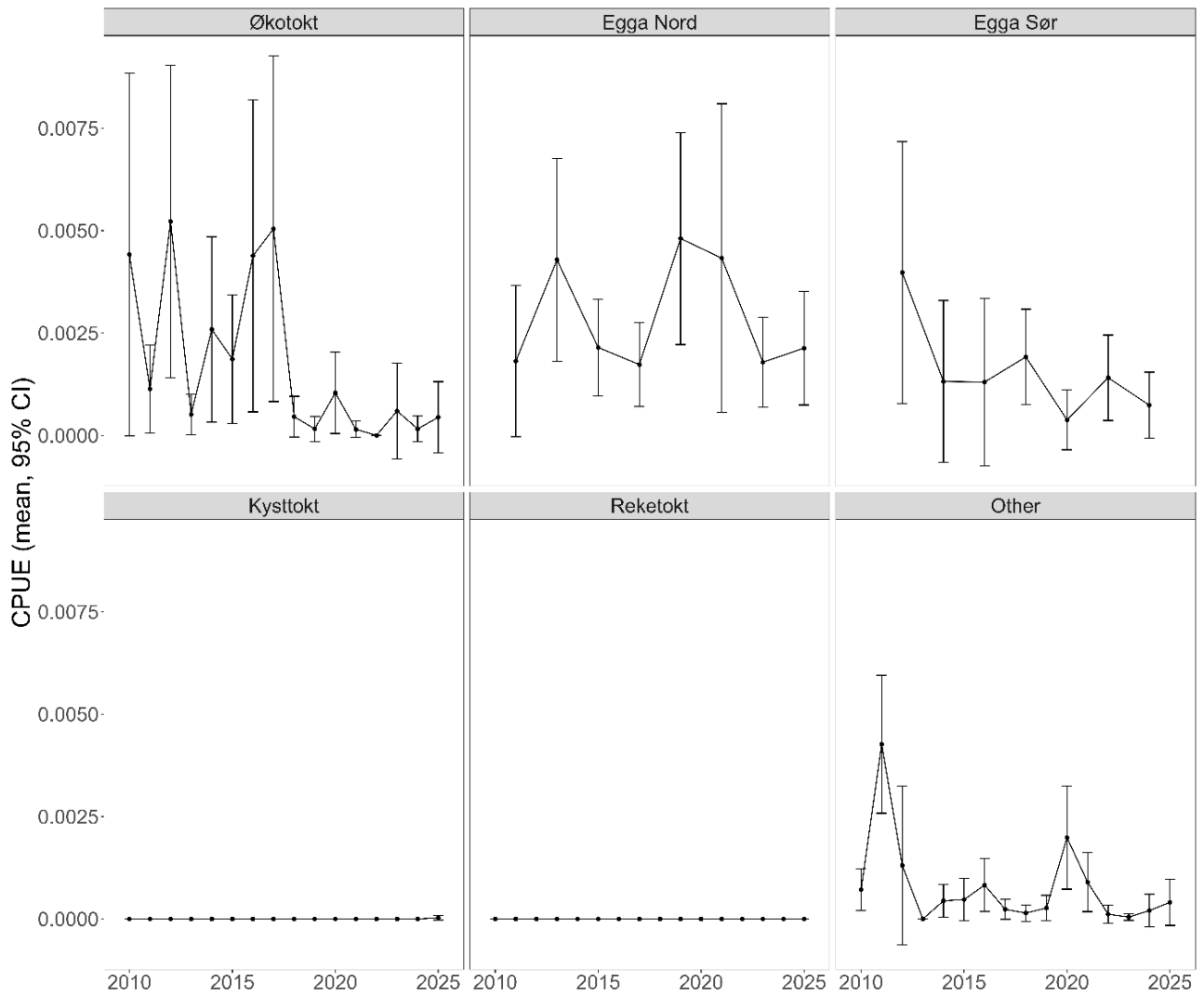


Figure 3.7.2: Arctic skate (*Amblyraja hyperborea*) CPUE (kg km⁻²) on selected surveys between 2010-2025.

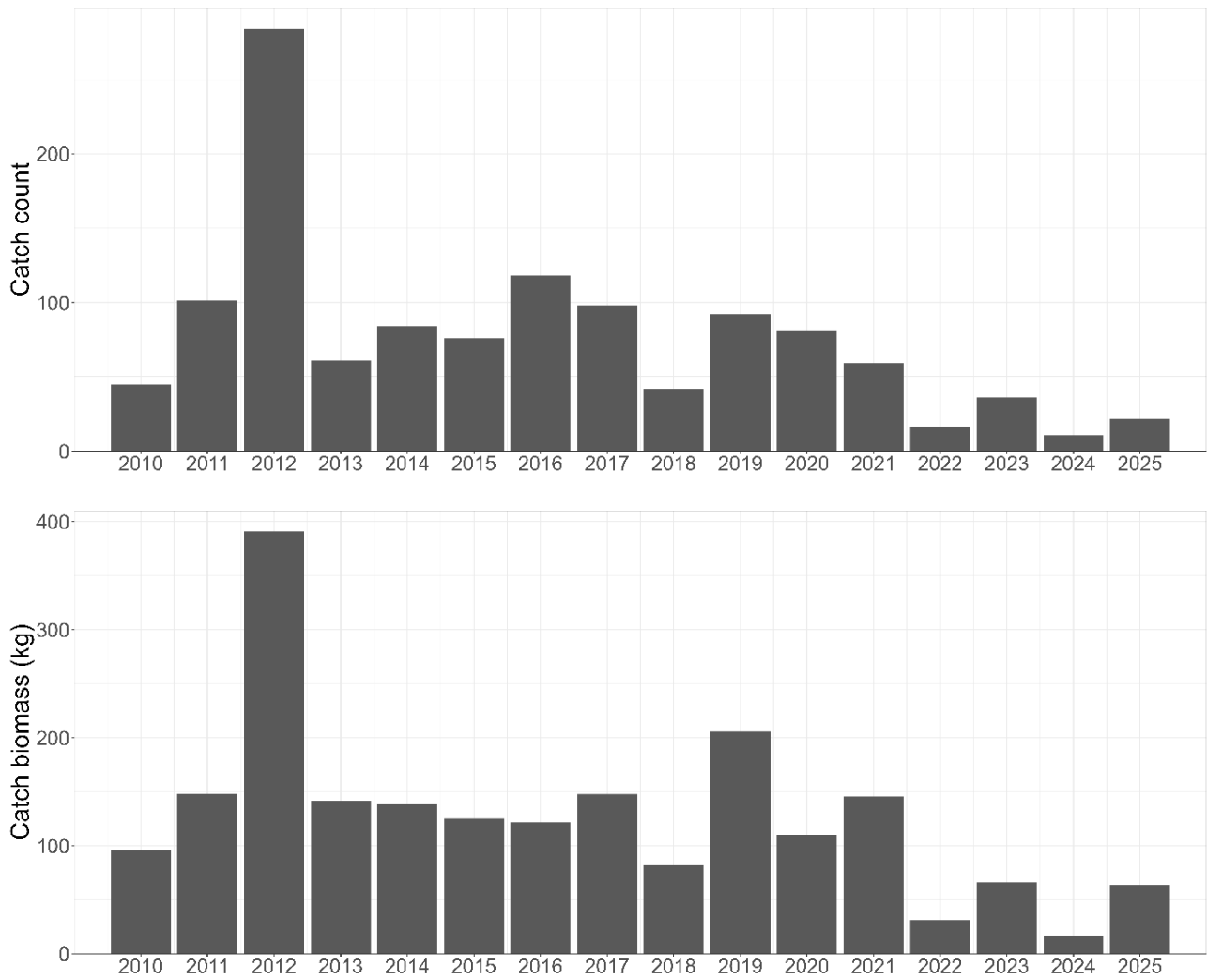


Figure 3.7.3: Arctic skate (*Amblyraja hyperborea*) total catch count and biomass on demersal trawl surveys between 2010-2025.

3.8 - Round ray (*Rajella fyllae*)

Norwegian: rundskate

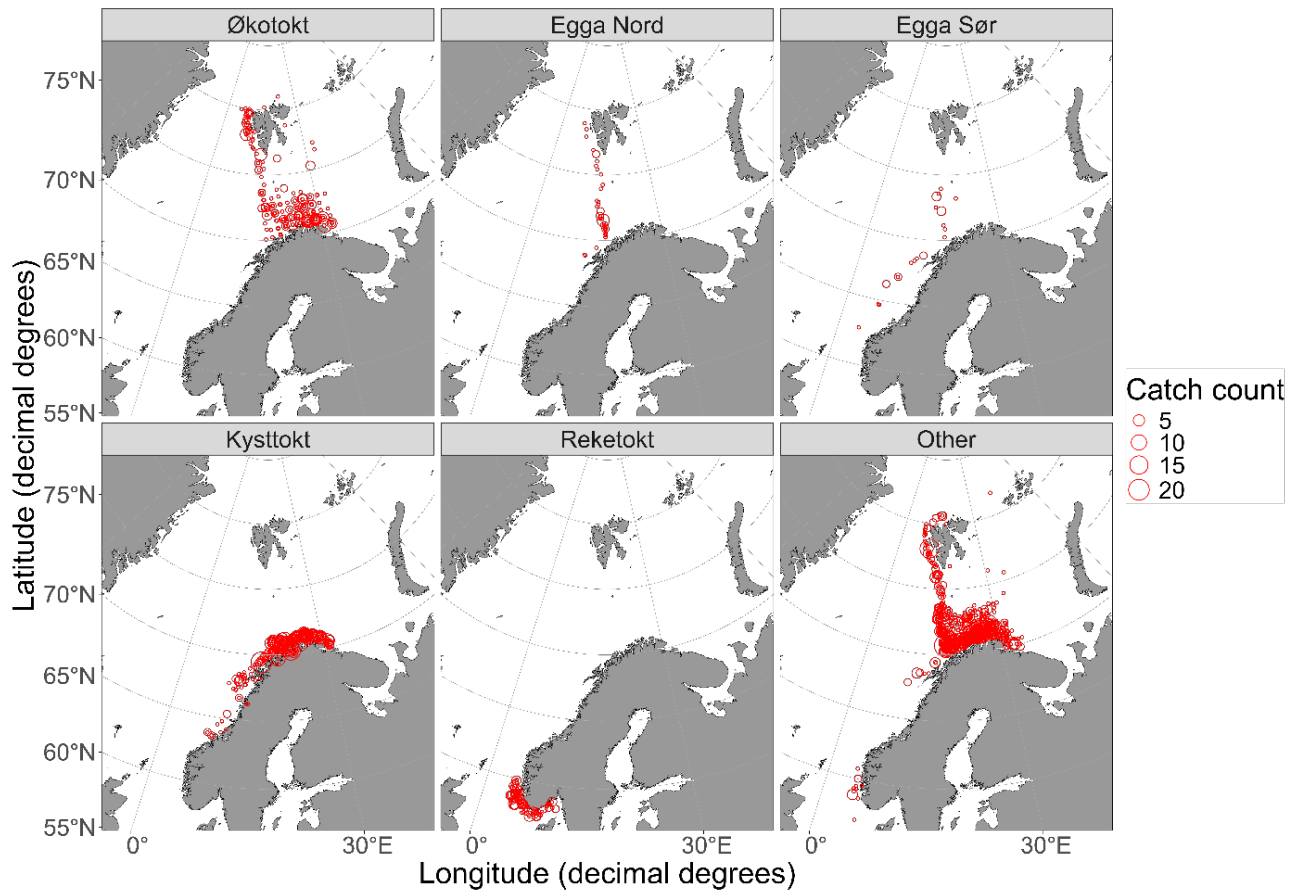


Figure 3.8.1: Catches of round ray (*Rajella fyllae*) in IMR demersal trawls between 2010-2025.

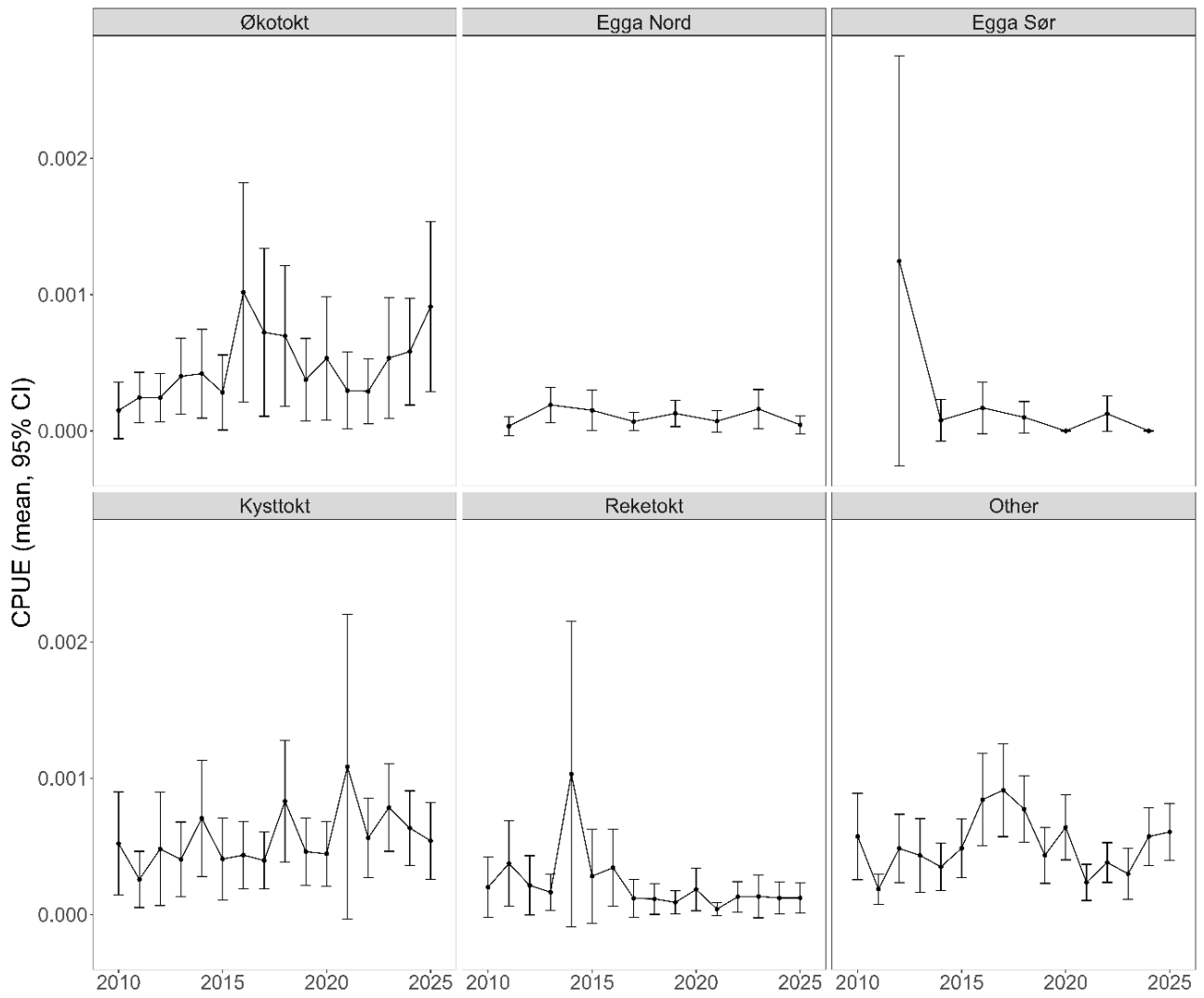


Figure 3.8.2: Round ray (*Rajella fyllae*) CPUE (kg km⁻²) on selected surveys between 2010-2025.

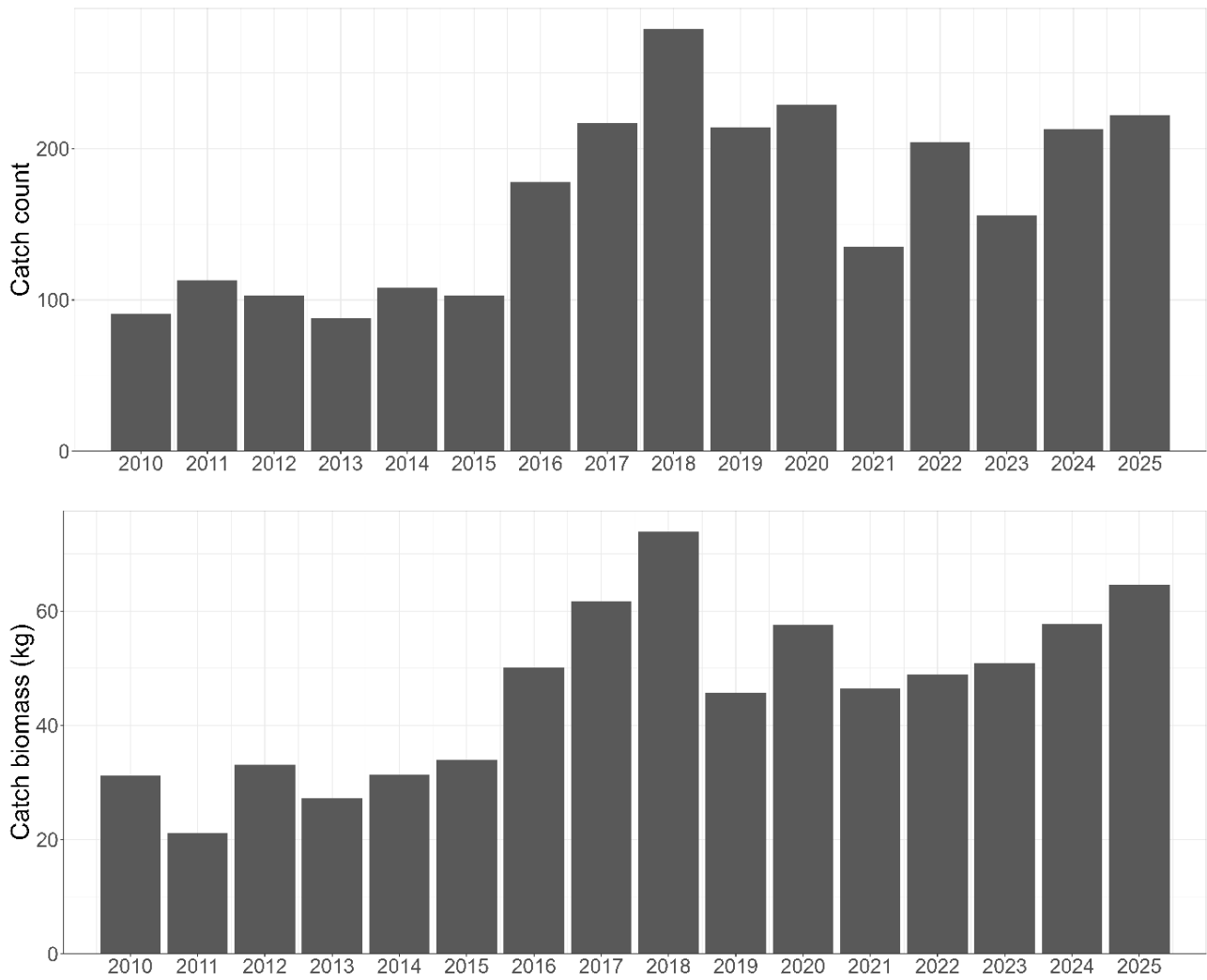


Figure 3.8.3: Round ray (*Rajella fyllae*) total catch count and biomass on demersal trawl surveys between 2010-2025.

3.9 - Sailray (*Rajella lintea*)

Norwegian: hvitskate

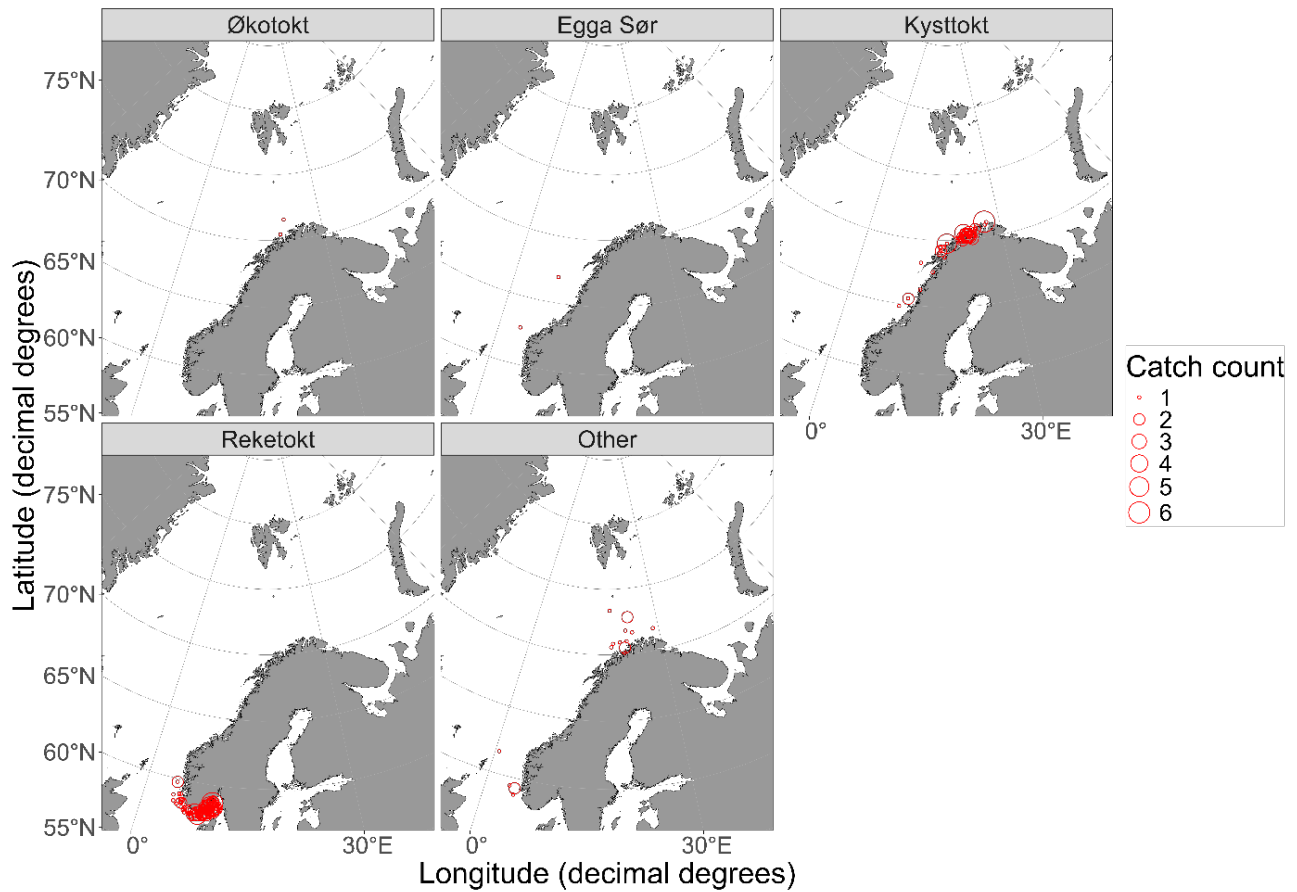


Figure 3.9.1: Catches of sailray (*Rajella lintea*) in IMR demersal trawls between 2010-2025.

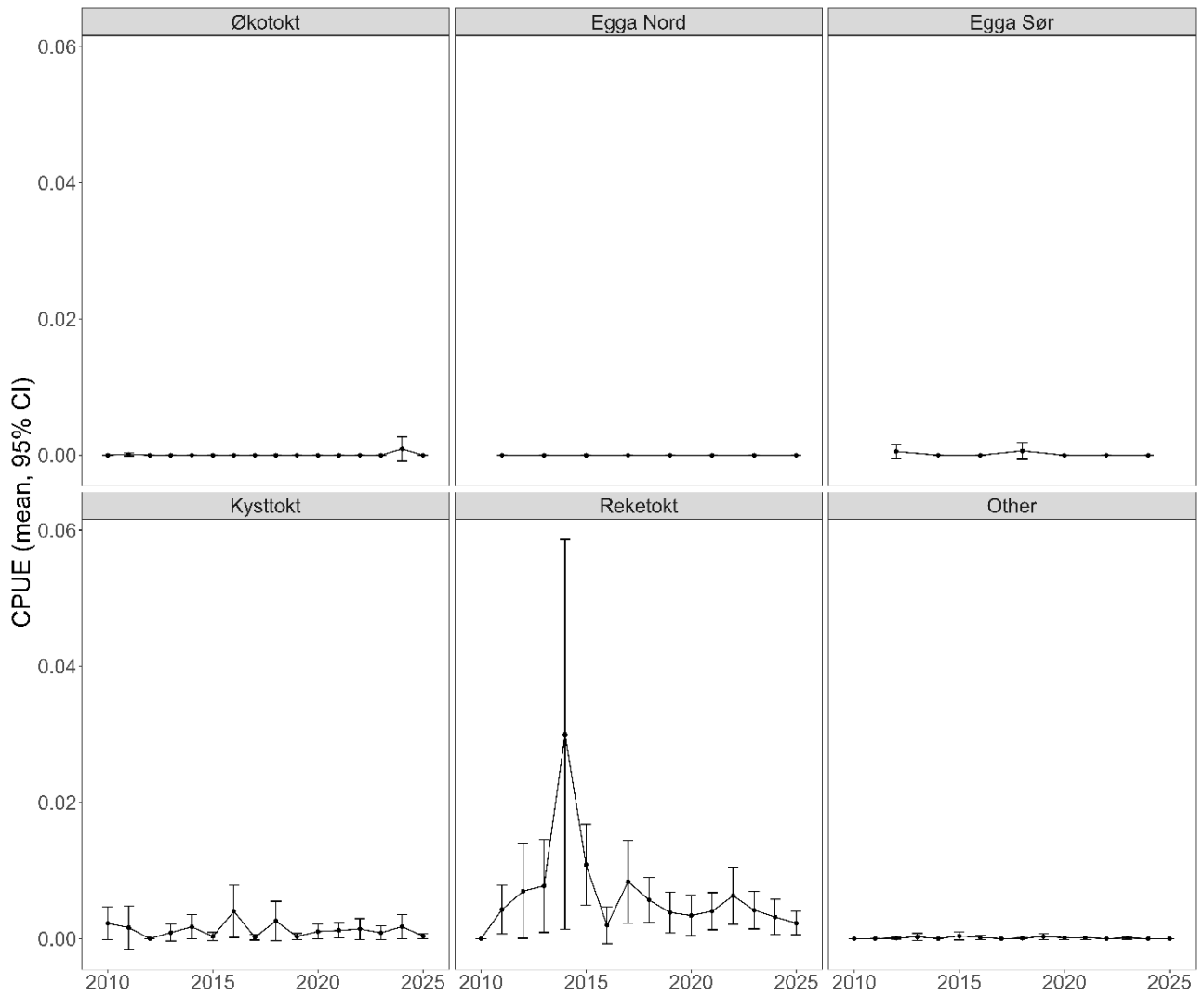


Figure 3.9.2: Sailray (*Rajella lintea*) CPUE (kg km^{-2}) on selected surveys between 2010-2025.

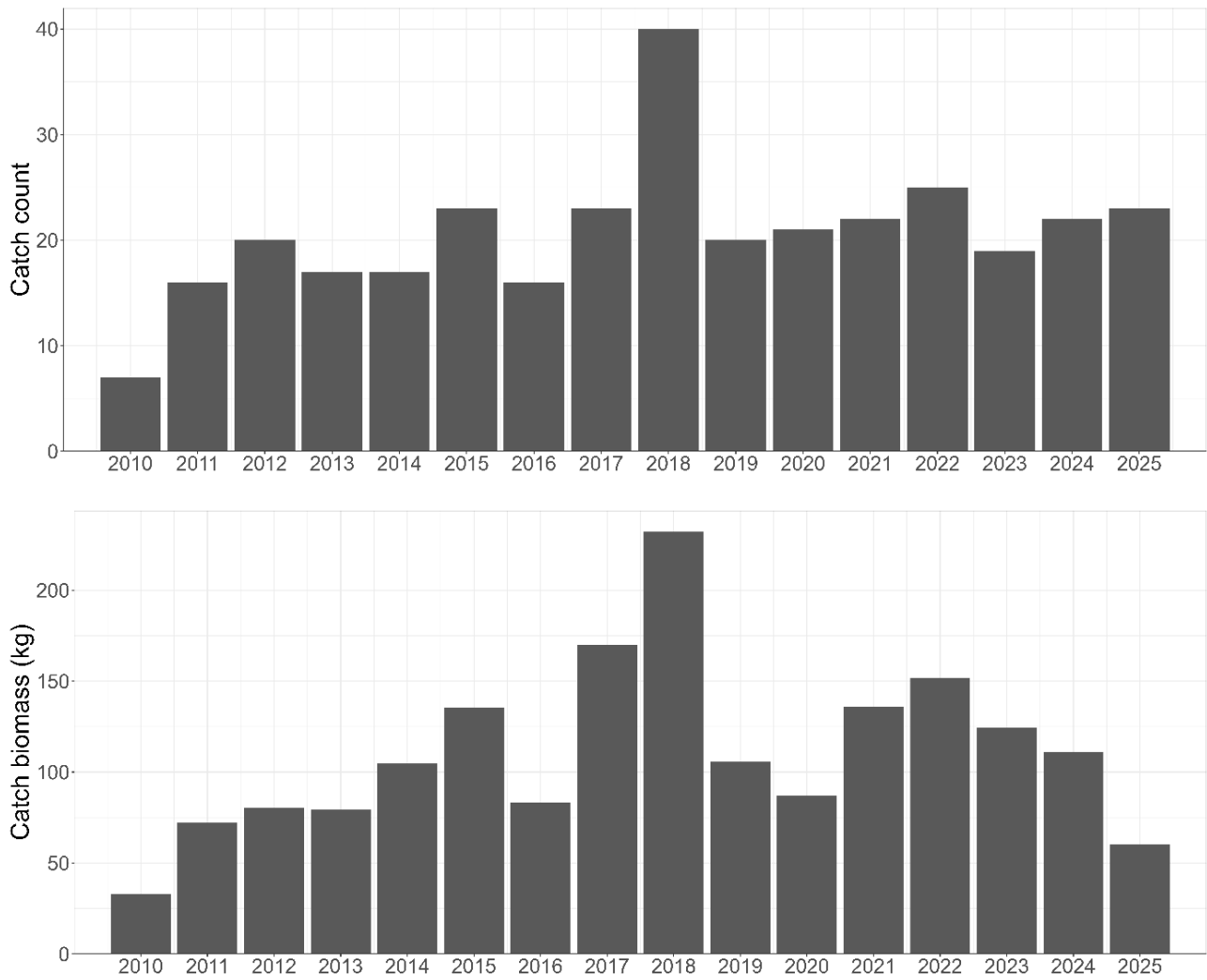


Figure 3.9.3: Sailray (*Rajella lintea*) total catch count and biomass on demersal trawl surveys between 2010-2025.

3.10 - Spinytail skate (*Bathyraja spinicauda*)

Norwegian: gråskate

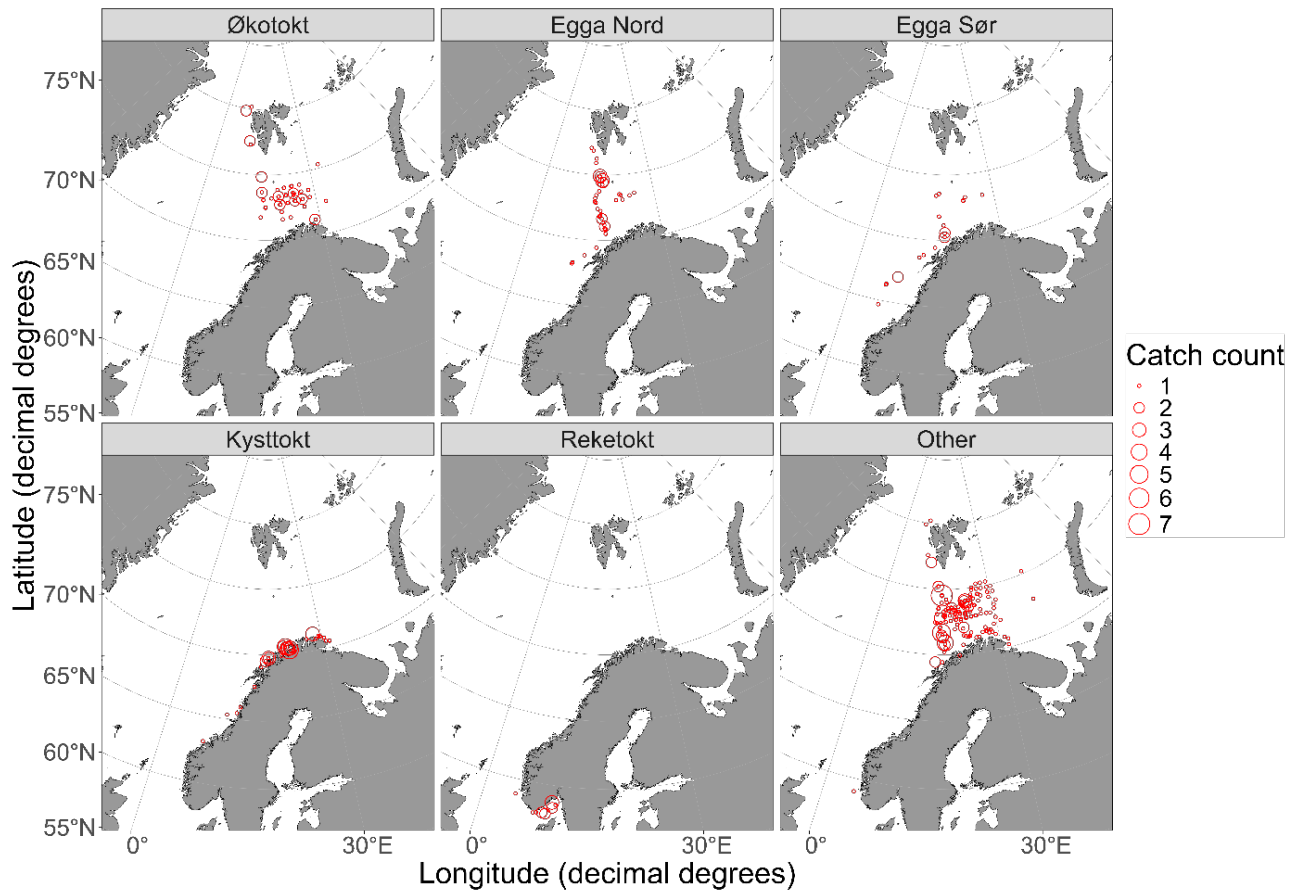


Figure 3.10.1: Catches of spinytail skate (*Bathyraja spinicauda*) in IMR demersal trawls between 2010-2025.

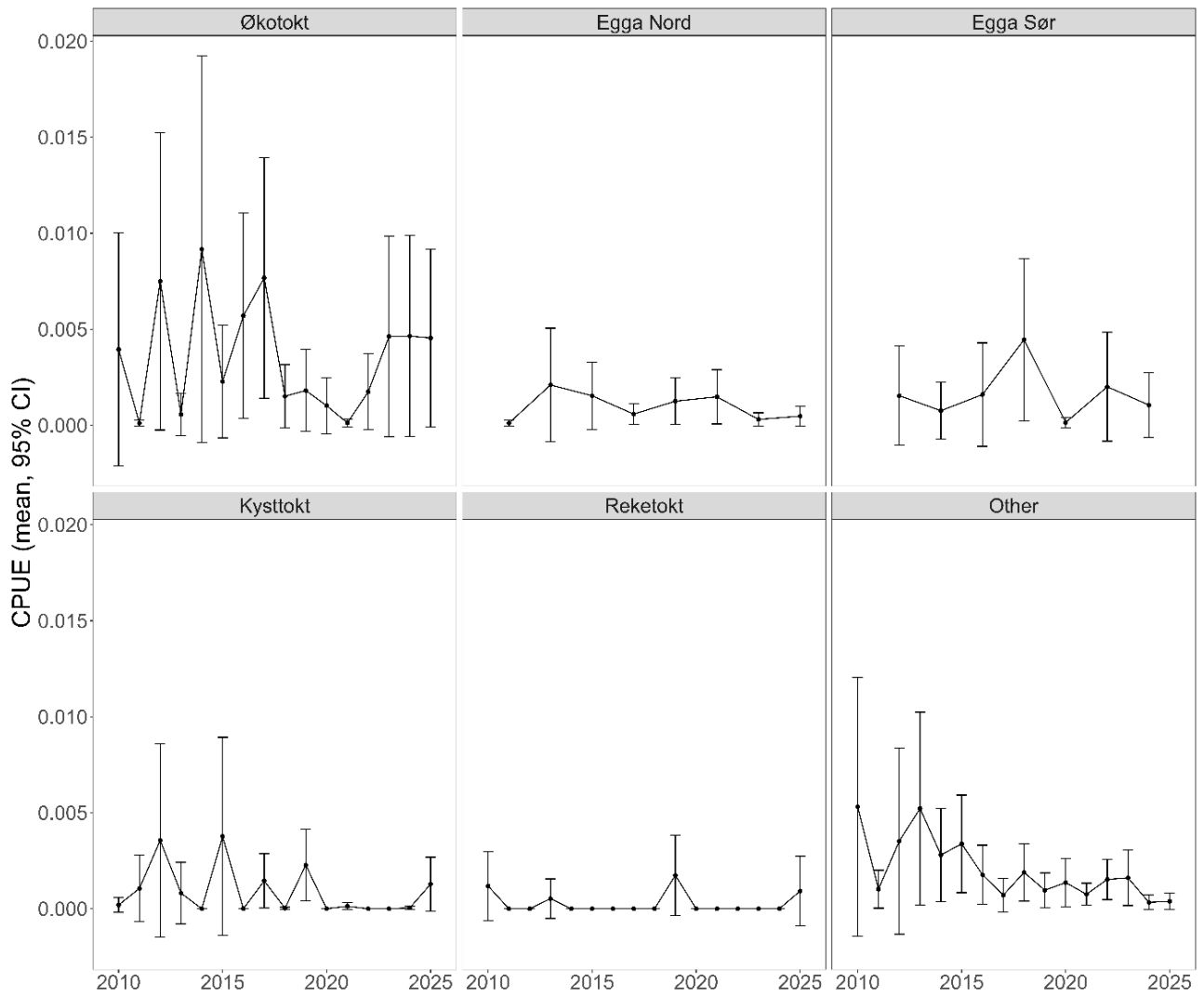


Figure 3.10.2: Spinytail skate (*Bathyraja spinicauda*) CPUE (kg km^{-2}) on selected surveys between 2010-2025.

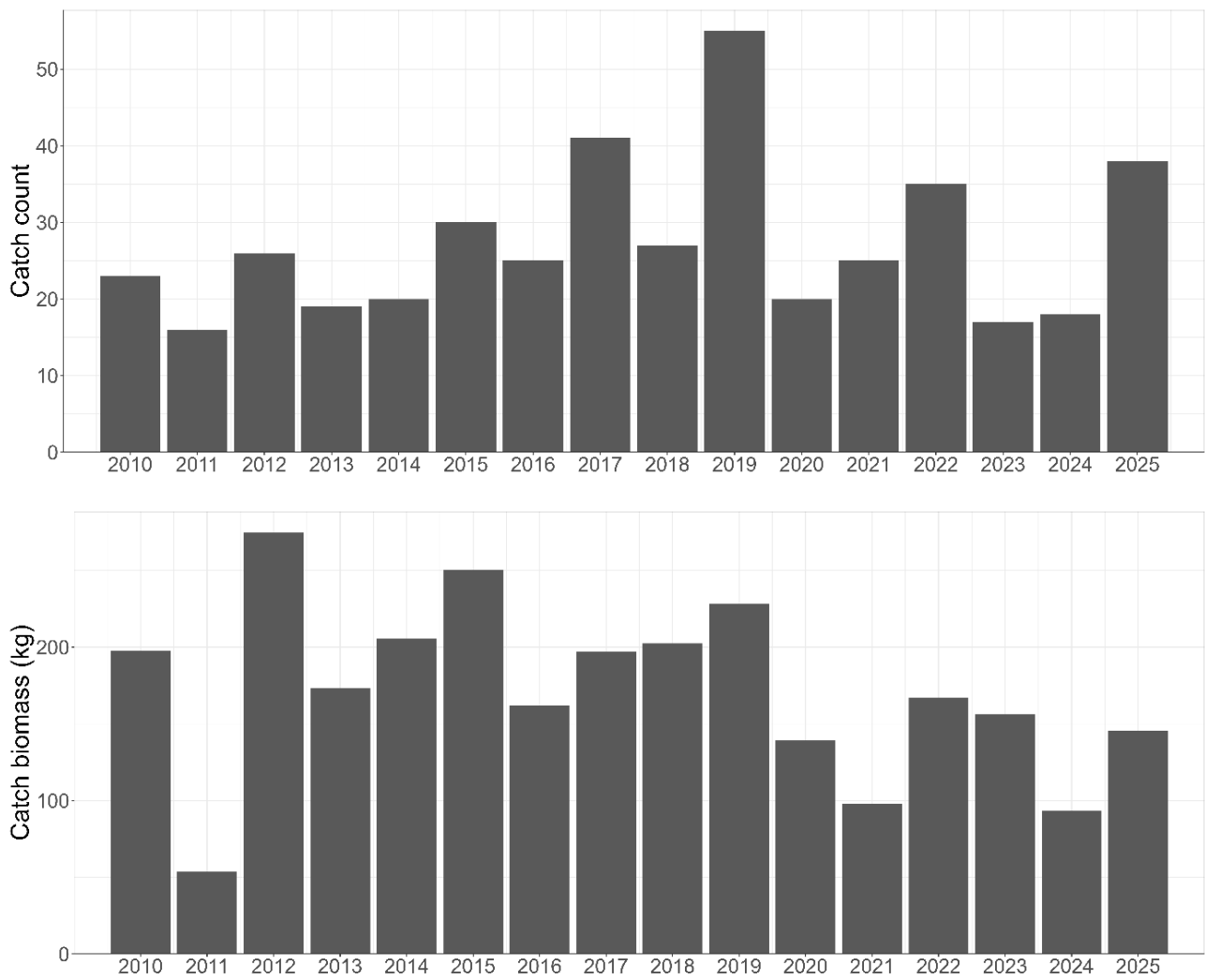


Figure 3.10.3: Spinytail skate (*Bathyraja spinicauda*) total catch count and biomass on demersal trawl surveys between 2010-2025.

3.11 - Occurrence of skates on surveys

An overview of skate species occurrence presented as the number of trawls where a species was reported in IMR demersal trawls is shown in *Table 2*. The list includes rare species for which abundance data was insufficient for the above analyses, as well as unidentified skates.

Table 2: The number of trawls with the presence of skates in IMR's survey database per year (2010-2025).

Species (Latin name, Norwegian name)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Spotted ray (<i>Raja montagui</i> , flekkskate)	1	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0
Cuckoo ray (<i>Leucoraja naevus</i> , gjøkskate)	1	1	5	4	0	3	7	12	11	12	4	14	6	7	5	3
Spinytail skate (<i>Bathyraja spinicauda</i> , gråskate)	20	14	21	18	17	26	22	30	25	39	20	25	27	16	16	25
Sailray (<i>Rajella lintea</i> , hvitskate)	4	12	15	13	13	18	9	12	25	18	16	16	16	15	14	16
Arctic skate (<i>Amblyraja hyperborea</i> , isskate)	30	66	74	45	36	41	34	45	26	61	44	24	13	21	9	15
Thorny skate (<i>Amblyraja radiata</i> , kloskate)	442	514	472	460	450	499	554	534	644	760	640	569	556	492	509	528
Shagreen ray (<i>Leucoraja fullonica</i> , nebbskate)	0	0	1	0	1	0	1	0	1	1	1	1	0	1	0	1
Thornback ray (<i>Raja clavata</i> , piggs skate)	5	0	1	1	1	6	2	1	1	1	3	2	1	1	2	3
Blonde ray (<i>Raja brachyura</i> , prikk skate)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Round ray (<i>Rajella fyllae</i> , rund skate)	60	79	70	70	67	61	99	113	140	125	119	79	117	88	127	121
Sandy ray (<i>Leucoraja circularis</i> , sands skate)	1	1	1	1	2	0	2	1	4	1	2	3	5	3	0	3
Longnosed skate (<i>Dipturus oxyrinchus</i> , spiss skate)	6	6	9	6	8	12	6	10	3	7	9	19	21	4	6	13
Flapper skate (<i>Dipturus intermedius</i> , stors skate)	0	1	1	1	0	0	0	1	0	6	1	5	2	1	1	4
Norwegian skate (<i>Dipturus nidarosiensis</i> , svart skate)	0	0	0	0	1	0	4	3	10	2	1	0	1	1	0	0
Skates and rays, unspecified (Skater, uspesifisert)	17	58	63	56	33	74	125	203	286	262	199	130	121	125	185	150

4 - Reference Fleet trends

We provide a summary of catches of elasmobranchs from the Reference Fleet, which may assist in providing an overview of species that are not well represented in standard IMR surveys (Table 3, *Figure 4.1*). Data are shown for 2016-2025. Before 2016, the identification of elasmobranchs to species aboard Reference Fleet vessels was less established. Species identification errors may still occur.

The table below shows the number of fishing hauls in which the presence of a species was recorded per year for the entire fleet. The map shows registered catches across the entire period. Note that data are inclusive of all fishing gears, and geographic scope and commissioned vessels vary between years. Data only include waters north of 57°N and east of 0°E.

Table 3: The number of trawls with the presence of elasmobranch species recorded in the Reference Fleet data per year (2016-2025).

Species (<i>Latin name</i> , Norwegian name)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Basking shark (<i>Cetorhinus maximus</i> , brugde)	0	2	3	2	1	2	2	4	4	3
Blackmouth catshark (<i>Galeus melastomus</i> , hågjel)	375	304	349	560	501	416	291	322	369	372
Greenland shark (<i>Somniosus microcephalus</i> , håkjerring)	26	4	6	7	14	17	35	24	28	4
Porbeagle (<i>Lamna nasus</i> , håbrann)	14	29	24	22	22	15	18	59	17	32
Small-spotted catshark (<i>Scylliorhinus canicula</i> , småflekktet rødhai)	136	138	137	150	55	62	113	70	26	61
Spurdog (<i>Squalus acanthias</i> , pigghå)	546	481	419	588	434	449	425	479	460	483
Tope shark (<i>Galeorhinus galeus</i> , gråhai)	8	19	15	11	16	4	13	5	7	24
Velvet belly lanternshark (<i>Etmopterus spinax</i> , svarthå)	593	562	501	736	516	458	358	506	662	573
Spotted ray (<i>Raja montagui</i> , flekkskate)	1	2	1	0	1	0	0	1	7	16
Cuckoo ray (<i>Leucoraja naevus</i> , gjøkskate)	4	11	29	17	7	1	21	4	4	21
Spinytail skate (<i>Bathyraja spinicauda</i> , gråskate)	111	82	109	106	104	141	165	113	110	141
Sailray (<i>Rajella lintea</i> , hvitskate)	70	89	75	44	76	43	63	44	49	33
Arctic skate (<i>Amblyraja hyperborea</i> , isskate)	20	36	24	29	31	20	6	8	28	25
Thorny skate (<i>Amblyraja radiata</i> , kloskate)	768	858	964	1005	935	1157	794	774	634	585
Shagreen ray (<i>Leucoraja fullonica</i> , nebbskate)	1	3	12	21	2	3	17	2	5	9
Thornback ray (<i>Raja clavata</i> , piggs skate)	222	158	99	292	269	271	61	61	144	142
Round ray (<i>Rajella fyllae</i> , rundskate)	134	88	181	249	204	184	206	146	120	154
Sandy ray (<i>Leucoraja circularis</i> , sandskate)	32	12	21	48	44	16	12	19	24	14
Longnosed skate (<i>Dipturus oxyrinchus</i> , spisskate)	96	104	115	152	144	152	135	179	158	126
Flapper skate (<i>Dipturus intermedius</i> , storskate)	26	31	26	40	20	22	24	18	15	24
Norwegian skate (<i>Dipturus nidarosiensis</i> , svartskate)	3	0	0	7	3	0	0	0	0	0
Skates and rays, unspecified (Skater, uspesifisert)	134	129	103	246	116	113	163	93	162	182
Rabbit fish (<i>Chimaera monstrosa</i> , havmus)	1039	892	909	1227	969	984	614	688	752	701

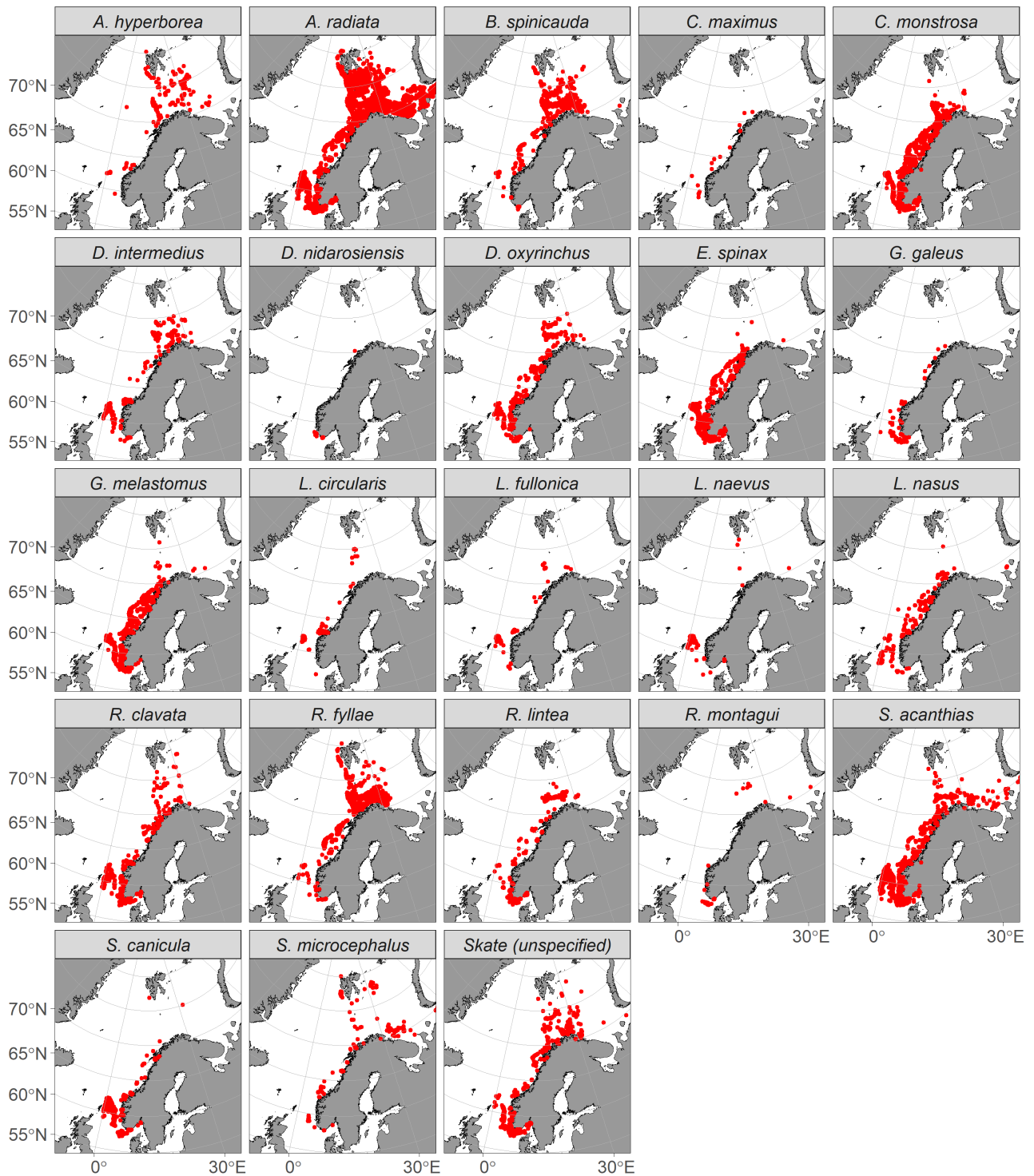


Figure 4.1: Location of elasmobranch catches as reported by the Reference Fleet between 2016-2025

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