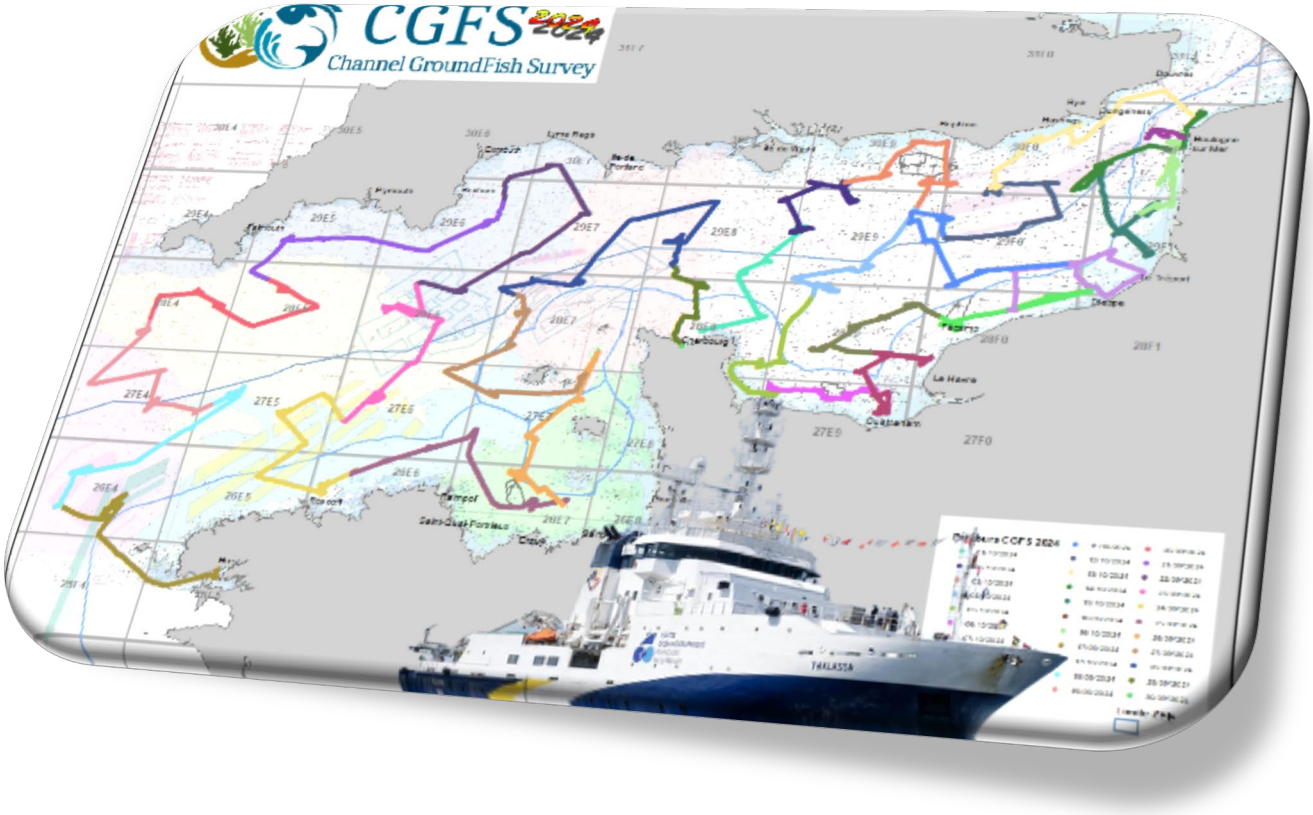
Ifremer
Système d'Informations Halieutiques

Compte-rendu de campagne

Preliminary Cruise Report

CGFS 2024

N/O Thalassa



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Introduction

The English Channel has a significant fishing industry, primarily benefiting bordering countries and, more broadly, Northern Europe. To ensure the sustainability of this industry, it is essential to assess the ecological and economic impact of fishing, taking into account resource limits and environmental effects. To meet this requirement, EU Member States conduct scientific sea surveys to evaluate fish stock abundance and distribution independently of commercial fishing data. The Channel Ground Fish Survey (CGFS) is part of the European fish stock monitoring program, providing crucial data on exploited stocks, including maturity, size/age structure, and recruitment indices.

A time series, initiated in 1988 on the N/O Gwen-Drez, is used annually by European stock assessment groups to evaluate the status of key commercial species. Initially focused on the Eastern English Channel, since 2018, the CGFS has expanded to cover the entire Channel, providing fisheries-independent data for the Western region as well. Now conducted aboard the N/W Thalassa, the CGFS survey enables broader sampling and a more comprehensive understanding of the ecosystem. It addresses the need for marine ecosystem monitoring and supports the implementation of an ecosystem-based approach to fisheries at the EU level.

During the survey, various environmental parameters are measured and analyzed, including:

- Physicochemical characteristics of the water
- Phytoplankton and zooplankton communities
- Fish egg abundance
- Specific composition of nektonic communities

Additionally, dedicated projects allow for in-depth studies on topics such as:

- The structure and spatial variability of the food web
- The influence of parasites on certain fish species
- Identification of sardine spawning grounds

Survey Methodology

Due to the heterogeneity of the English Channel, a new sampling plan was developed, requiring different trawling equipment in the Western Channel. Consequently, the mission is divided into two campaigns:

1. **Western Channel Survey (FR-WCGFS) :** 48 trawling stations conducted with the GOV 36/49 trawl, equipped with 400 mm diameter bobbins in the middle of the square and a fork rig. Stations are selected through a stratified random process from a pool of 79 available trawl sites.
2. **Eastern English Channel Survey (FR-CGFS**) : 74 stations retained from the historical 115 CGFS survey stations to ensure consistency in the time series. Stations are conducted with the GOV 36/47 trawl used in IBTS surveys, modified with a groundgear (250 mm diameter bobbins in the middle) to operate across the entire Eastern English Channel. The sampling plan is fixed.

By continuously refining survey methodologies and expanding the scope of data collection, the CGFS contributes to sustainable fisheries management and a deeper understanding of marine ecosystems in the English Channel.

Survey timeline

The CGFS 2024 survey was conducted aboard the N/W Thalassa from September 16 to 29 in the Western Channel and from October 1 to 17 in the Eastern Channel. Authorizations for work in English waters were obtained well in advance, allowing full coverage of the study area without restrictions (Figure 1, Appendix 1). During CGFS 2024, 48 trawling stations were conducted in the Western Channel, with two invalid hauls. In the Eastern Channel, all 74 trawling stations were completed successfully (Figure 1). For each trawl, the catch is sorted and weighed by species, and a representative sample is measured. Biological samples are also collected for further analysis on land. Adverse weather conditions in the Western Channel led to the cancellation of some MIK and WP2 net samples. However, overall, weather conditions were favorable for completing the survey.

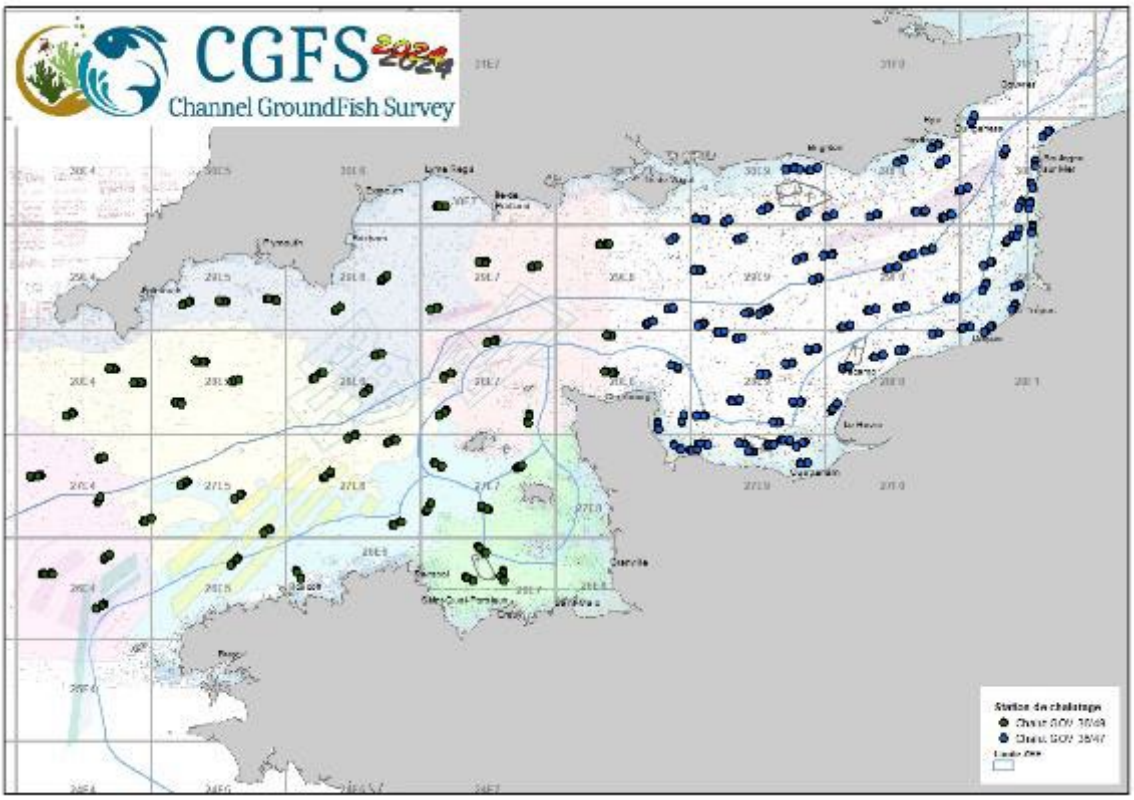


Figure 1: Distribution of trawling stations

Additional work

Partnership with the Oceanology and Geoscience Laboratory in Wimereux (Pas-de-Calais)

The objective of this collaboration in the CGFS 2024 survey in the Eastern English Channel is to study the fine-scale variability of the spatial distribution of phytoplankton communities. This involves continuously pumped surface water, profiling, and collection of surface water samples, which are analyzed using automated characterization and analysis devices. These analyses include cell counting, size class estimation, pigment classification, biomass measurement of phytoplanktonic cells/colonies, photosynthetic parameter evaluation, and primary production estimates. This research builds upon previous marine environment observation efforts initiated through the INTERREG DYMAPHY project (2010-2014), the "Hauts de France" CPER (2015-2020), MARCO (2016-2020), and contributions to the MSFD monitoring program. It also extends efforts from the European research consortium JERICO-NEXT (2015-2019), now continued through the JERICO-S3 project (2020-2024). Additionally, this work supports the CPER IDEAL project (2021-2027) and prepares for the newly accepted PPR Ocean projects starting in 2023. To conduct this study, a CytoSense-type automated flow cytometer and a Fast Repetition Rate fluorometer (FRRf-Fast Act-2) were installed on the bypass of the water intake supplying the FerryBox, collecting subsurface water. The measurements were combined with Thalassa FerryBox data, including temperature (°C), salinity, pigment-based biomass estimates, and raw LED data acquired by the Algae Online Analyser (AOA) multispectral bench fluorometer. Surface water was also sampled during CTD profiles for chlorophyll pigment filtration and automated image analysis.

PEPR ATLASea project

The PEPR ATLASea project, in which Ifremer is a partner, aims to produce reference genomes for 4,500 marine eukaryotic species within the French EEZ, including 4,000 from metropolitan waters. This sampling effort will be replicated in other surveys (IBTS, EVHOE), and CGFS 2024 facilitated the establishment and refinement of collection protocols. The goal was to collect tissue samples from 2 to 10 individuals per fish species. In total, 103 individuals from 57 species were sampled, resulting in 1,627 sample tubes.

Sampling of phyllosoma larvae (Roscoff Marine Station)

The RECCRU program aims to improve knowledge on the recruitment of commercially important crustaceans, including lobster (*Homarus gammarus*), edible crab (*Cancer pagurus*), spider crab (*Maja brachydactylus*), and crawfish (*Palinurus elephas*). The project seeks to provide fishing fleets with recruitment indices for these species to support proactive fisheries management. The study focuses on larval and juvenile stages of these crustaceans to enhance recruitment assessments and forecast future fisheries trends. The objective was to collect Scyllaridae and Palinuridae larvae through 25-minute MIK net tows. A total of 37 stations were surveyed at night in the Western Channel area in 2024 (Figure 2).

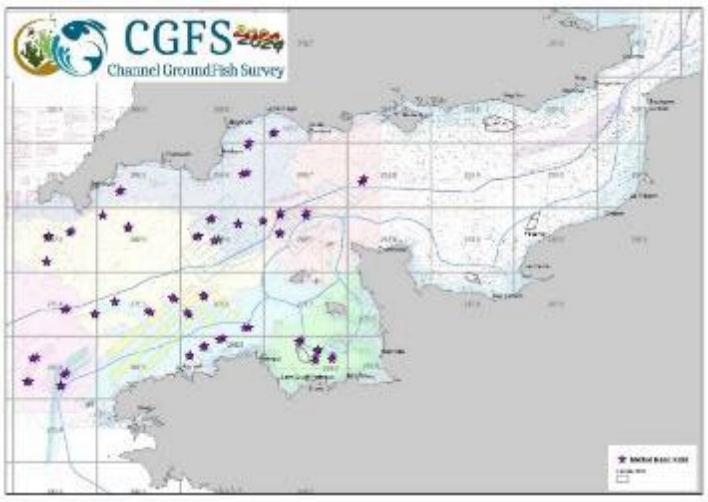


Figure 2: répartition des filets MIK en Manche Ouest

IHOPP and AniMode project (IFREMER / ANSES)

This work is part of the AniMode and IHOPP research programs (the thesis is co-directed by ANSES/LSAl and Ifremer/HMMN). The goal is to gain knowledge and expertise on the risks associated with parasites found in fishery products. Specifically, one objective is to gather data on the geographical distribution of Anisakidae nematodes in zooplankton. The aim of this request was to base the research on existing studies, including WP2 and MIK nets. The samples were collected during the first phase of the campaign in the western English Channel, using 37 MIK nets and 18 WP2 nets.

DENOMAR programme

The objective of the DEMOMAR project, of which Ifremer is a partner, was to collect 400 sea bass (*Dicentrachus labrax*) fins for the study of recent demographics (around ten generations) of fish populations through genomics. This year's catches have provided 209 samples for this programme.

Genetic sampling on sea bass - IFREMER (PI : Mathieu Woillez)

As part of the work to improve knowledge of the distribution of sea bass stocks and to supplement the data obtained from tagging, we took 48 genetic samples. These samples contribute to the genomic study of sea bass populations and help to better differentiate the stocks

Genetic sampling on the pollack – ACOST project

The objective is to study the genetic structure of pollack populations along the European coasts. We collected only 6 Pollack (*Pollachius pollachius*) from the western part of the countryside

COREPH (Trophic Network Contaminants)

Analyses of chemical contaminants (metallic and organic) and/or isotopic ratios of carbon and nitrogen in the muscle of several species of fish/cephalopods (contaminants + isotopy), of a bivalve and of plankton 200-500 µm (isotopy for baselines) belonging to different trophic levels, within the demersal to benthic and pelagic food web. These analyses will be carried out as part of the 'Food Web Contaminants' programme (COREPH 2024) set up to provide information on descriptors D8 (contaminants) and D9 (health issues) of the MSFD, cycle 3. This work is being carried out in collaboration with ANSES (DER, Methodology and Studies unit), Ifremer (CCEM unit in particular) and the PELAGIS observatory. As part of this work, the CGFS survey team took a number of samples, summarised in the table in appendix 5 (page 34).

APECS (Association for the study and conservation of sharks and rays)

Every year, one or two members of this association set out to collect biological and biometric information on certain species of elasmobranch (13 species covered) and carry out conventional tagging by rototag or button tag, to improve knowledge on the movements of 3 species: starry smoothhound (*Mustelus asterias* and *mustelus sp*), tope shark (*Galeorhinus galeus*) and thornback ray (*Raja clavata*). The APECS team has tagged a total of 669 individuals, broken down as follows: 353 starry smoothhounds, 32 tope sharks (*Galeorhinus galeus*) and 293 thornback rays (*Raja clavata*). The APECS also collects the capsules of the rays and sharks caught in order to estimate the spawning areas over the whole zone.

DNA sampling of stingrays - Wageningen Marine Research

The project aims to improve understanding of the size and structure of the ray population in the North Sea and the English Channel. To do this, it will use newly developed DNA techniques (Close-kin Mark Recapture). In this context, the institute needs DNA samples (fins) from *Dasyatis* species in their area of distribution. 30 individuals have been sampled in the Channel.

Monitoring MEGASCOPE (PELAGIS)

The MEGASCOPE monitoring programme is carried out annually on certain vessels of the French Oceanographic Fleet in partnership with IFREMER. It consists of the implementation of a common protocol

called Megascope, applicable to different surveys and making it possible to obtain distribution data and relative abundance for marine megafauna. (Summary of observations in appendix 6)

Bathymetric acquisitions (IFREMER / NSE)

The acoustic data from the English Channel are highly valuable for methodological developments in seabed characterization for two key reasons:

1. The availability of field data (seabed videos and grab samples) collected during campaigns by the Marine Geosciences unit is extensive in the area. This allows for the recalibration of physical models that describe the seabed based on the angular reflectivity curve.
2. At these shallow depths, it is possible to use both the Thalassa ME70 and EM2040 multibeam echosounders at different frequencies, as was done in 2018, to gain a more detailed description of the sediment structure.

As a result, we continued the acoustic coverage of trawling areas to:

- Study the direct correlation between trawled species and their acoustic response (early results in the Bay of Biscay and the Celtic Sea appear promising).
- Link the acoustic response with sediment descriptions from video footage and/or sampling.

Sample for the IUEM (European University Institute of the Sea)

Freezing of whole fish (*Trisopterus minutus*) for the purposes of diet analysis. Provision of fish for practical dissection work for 80 third-year UBO students (Biological Functions and Life Cycles in Marine Organisms).

OBSMER programme

We have kept various species of fish and cephalopods to train the scientific observers participating in this programme in species identification.

Overall analysis

The preliminary report presented here shows the raw data collected during the CGFS survey. The data have not yet been standardised by surface area, which limits a more detailed comparison of the observations.

The Eastern Channel (FR-CGFS)

Fish

In 2024, the average abundance of fish and cephalopods, excluding benthos and commercial benthos (due to the high presence of mussels at one station), was 6,386 individuals, with an average biomass of 417 kg. Pelagic species such as horse mackerel (*Trachurus trachurus*), sardine (*Sardina pilchardus*), mackerel (*Scomber scombrus*), and *sprat* (*Sprattus sprattus*) were highly dominant in terms of abundance (Fig. 3a), representing approximately 72% of the total number of individuals caught. The common pout (*Trisopterus minutus*) and the common squid (*Loligo vulgaris*) together accounted for only 21% of the abundance of fish and cephalopods. Horse mackerel alone represented 47% of the abundance and dominated in biomass, making up 46% of the total biomass (Fig. 3b).

In terms of relative abundance, demersal species include the *little squid* (*Alloteuthis spp.*; 1.37%), black seabream (*Spondyliosoma cantharus*; 0.98%), common pout (*Trisopterus luscus*; 0.95%), needlefish (*Gymnammodytes semisquamatus*; 0.69%), and spotted dogfish (*Scyliorhinus canicula*; 0.61%).

As for relative biomass, it is dominated by horse mackerel, mackerel, and sardines, which together account for 70%. This is followed by demersal species such as the spotted dogfish (*Scyliorhinus canicula*; 5.22%), common squid (*Loligo vulgaris*; 5.20%), common pout (*Trisopterus minutus*; 4.89%), and thornback ray (*Raja clavata*; 6.22%).

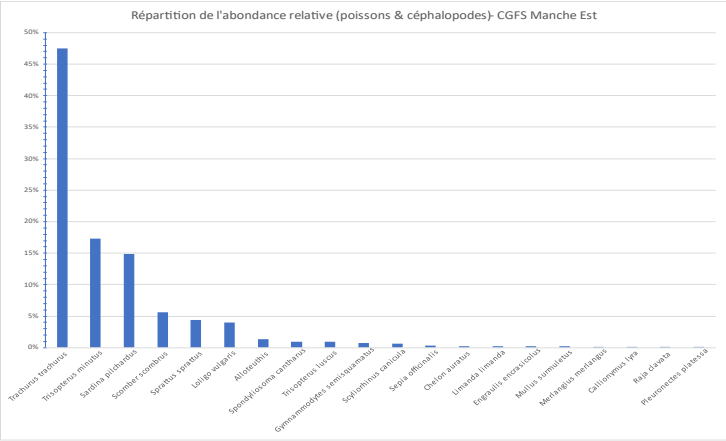


Figure 3a: Relative abundance of the main species

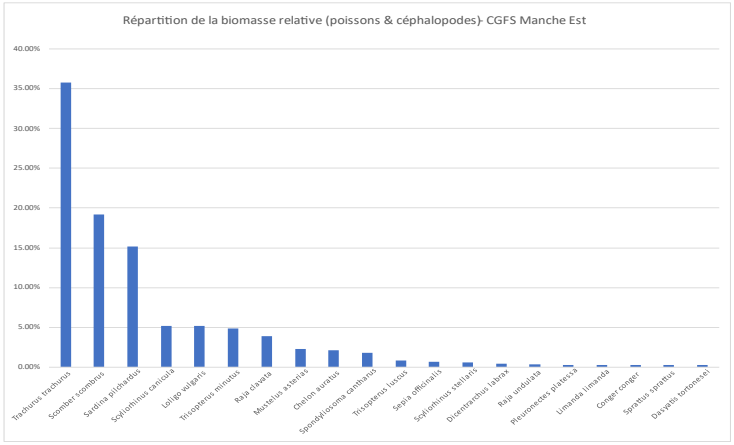


Figure 3b: Relative biomass of the main species

In general, the geographical distribution of abundance closely correlates with that of biomass (Fig. 4a and 4b). The most significant areas are primarily located along the coasts from Boulogne-sur-Mer to Dieppe, in the Bay of Seine, and from the open sea to the east of the traffic separation scheme (TSS) as far as Brighton Bay. In the Baie des Veys, Baie de Seine, and off Dieppe, however, there is a discrepancy between abundance and biomass, which can be attributed to the capture of small individuals.

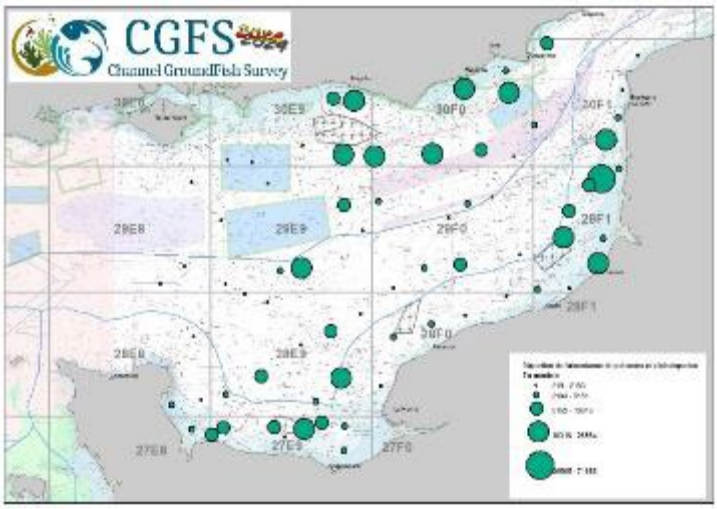


Figure 4a: Overall abundance of fish (in number of individuals)

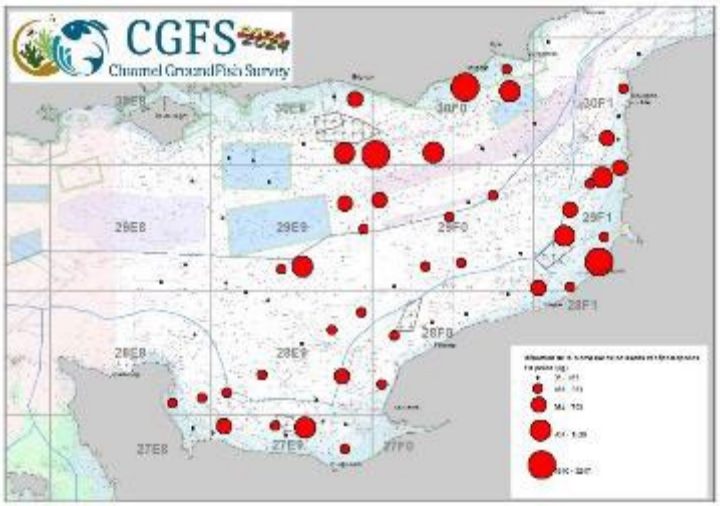


Figure 4b: Overall fish biomass (in kilos)

A total of 203 species were identified during the CGFS 2024 in the Eastern English Channel. The highest species richness was observed in the Bay of Seine, along the English coast from Dungeness to Brighton, and along the Côte d'Opale (Fig. 5). In terms of occurrence, common squid and horse mackerel are found at all trawling stations, while common crangon and cuttlefish are present at 93% and 91% of stations, respectively. Other widely distributed species include mackerel, small spotted dogfish, black seabream, and John Dory (Appendix 3).

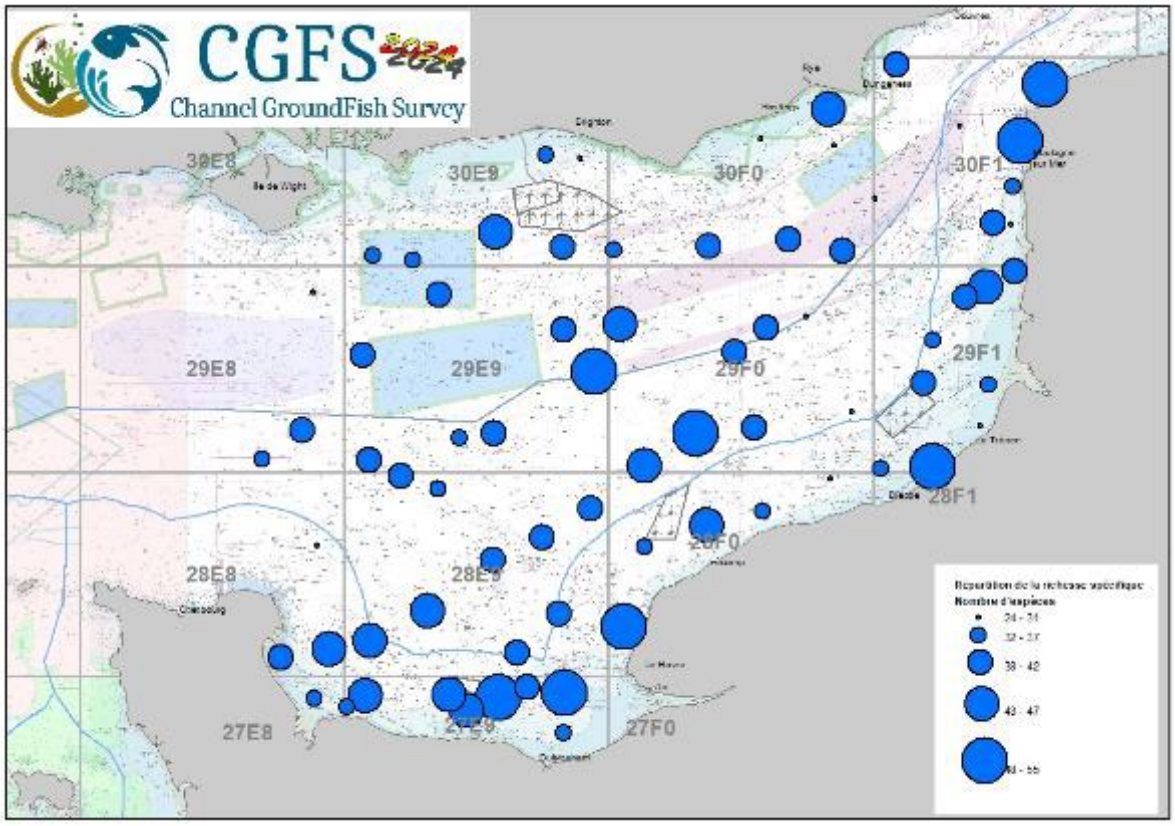


Figure 5: Distribution of the specific richness in number of species per trawl.

The benthos

A total of 107 species were identified during the CGFS 2024 in the eastern English Channel. The highest benthic abundances and biomasses were observed in the Bay of Seine, along the Opal Coast, and to a lesser extent, along the Normandy coast (Fig. 6a and 6b). Due to the capture of 3.5 tonnes of mussels at a station

off Boulogne-sur-Mer, mussels (*Mytilus edulis*) alone represent 59% of the total biomass of benthic invertebrates caught in the eastern English Channel. In comparison, crepidula (*Crepidula fornicata*), brittle stars (*Ophiothrix fragilis*), and starfish (*Asterias rubens*) represent 8%, 5%, and 4%, respectively. In 2024, the most widely distributed species in the sampled area were starfish (*Asterias rubens*), green sea urchin (*Psammechinus miliaris*), a species of sea spider (*Inachus dorsettensis*), and a species of hermit crab (*Pagurus prideaux*), with respective occurrences of 80%, 74%, 68%, and 66% (Appendix 4).

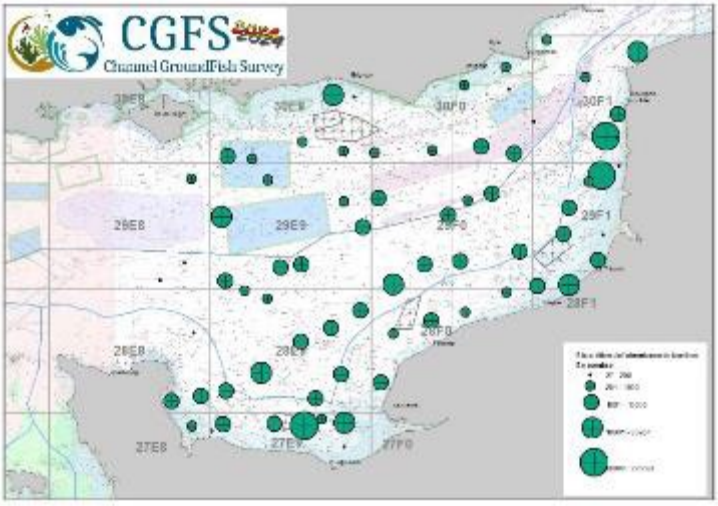


Figure 6a : Overall abundance of benthos (in number of individuals)

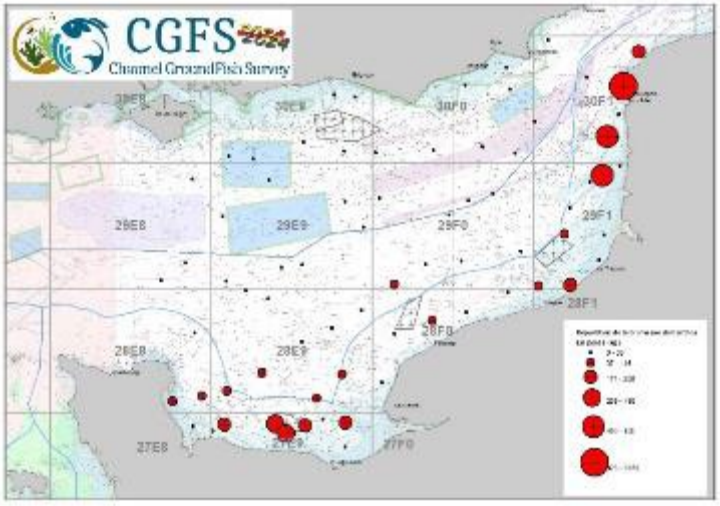


Figure 6b : Overall benthos biomass (in kg)

Western Channel (FR-WCGFS)

Fish

In 2024, the average abundance of commercial fish, cephalopods, and benthos per haul was 5,273 individuals, with an average biomass of 220 kg. This high average abundance is primarily driven by the catch of pelagic fish. Horse mackerel, sardines, sprats, and mackerel account for 78% of the abundance and 51% of the biomass, with a significant dominance of small horse mackerel (52% and 27%, respectively) (Fig. 7a and 7b). The most abundant demersal species is the common pout (*Trisopterus minutus*), representing 4% of relative abundance and 2.5% of biomass. Other larger species, such as the *spotted dogfish* (*Scyliorhinus canicula*) and the starry smoothhound (*Mustelus asterias*), appear significantly in terms of biomass, representing 7% and 4%, respectively. It is also worth noting that this year, the common squid (*Loligo vulgaris*) is quite dominant, accounting for 3.8% of abundance and 4.8% of biomass.

The distribution of abundance in the western English Channel generally mirrors that of biomass. The largest catches occur in the central part of the western English Channel, along Plymouth Bay, and to a lesser extent, in the Normano-Breton Gulf (Fig. 8a and 8b).

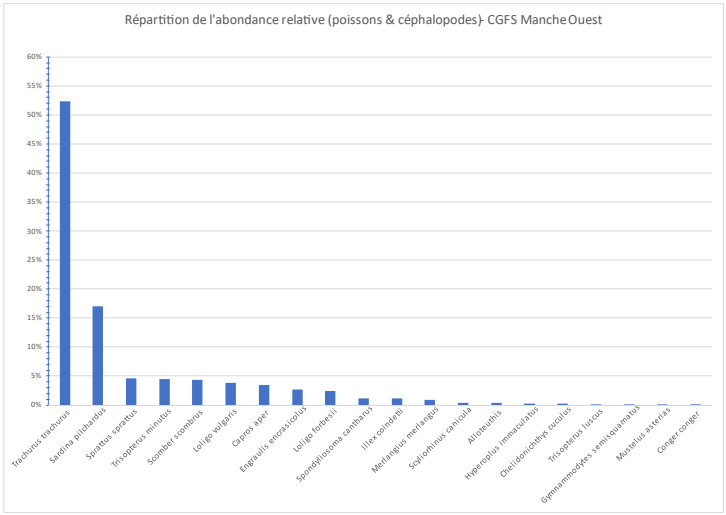


Figure 7a: Relative abundance of the main species

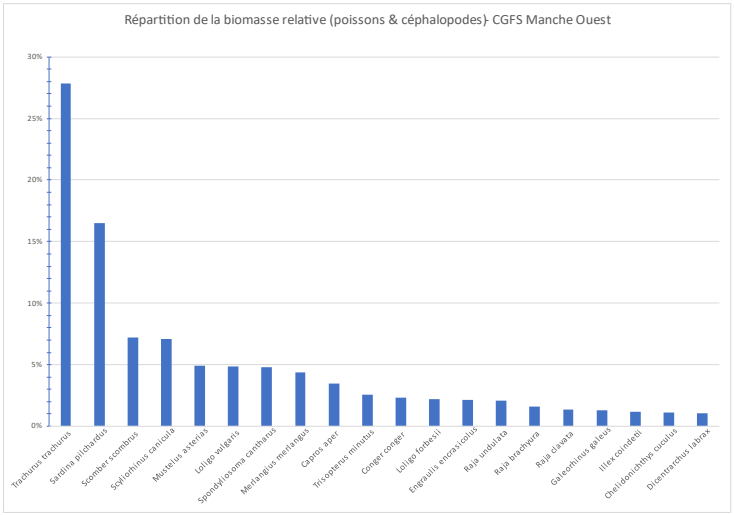


Figure 7b: Relative biomass of the main species

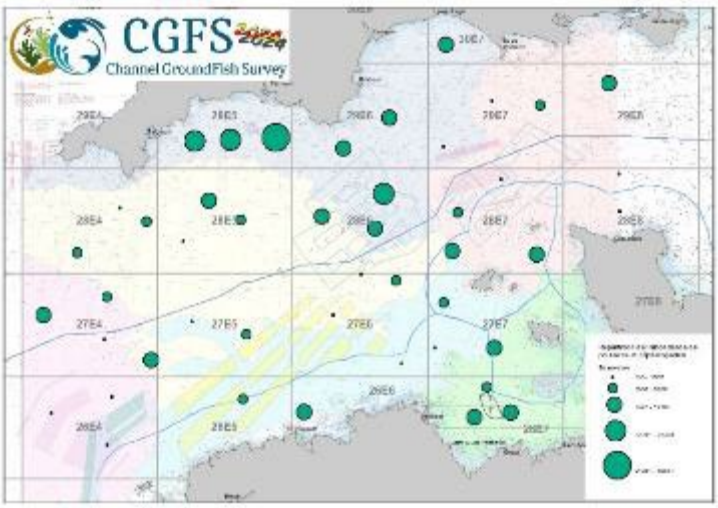


Figure 8a: Overall abundance of fish (in number of individuals)

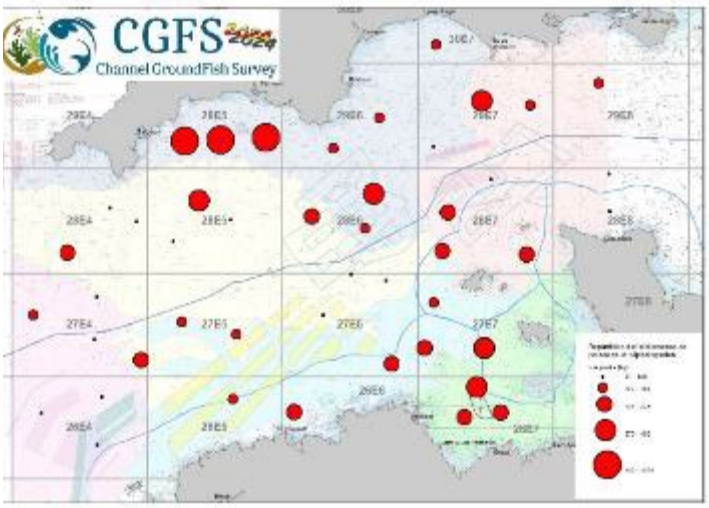


Figure 8b: Overall fish biomass (in kilos)

A total of 91 species of fish, cephalopods, crustaceans, and gelatinous animals were identified during the CGFS 2024 campaign in the western English Channel. The most diverse catches were concentrated in the north-western part of Finistère, east of the western tip of Lyme Bay, and in the Norman-Breton Gulf (Fig. 9).

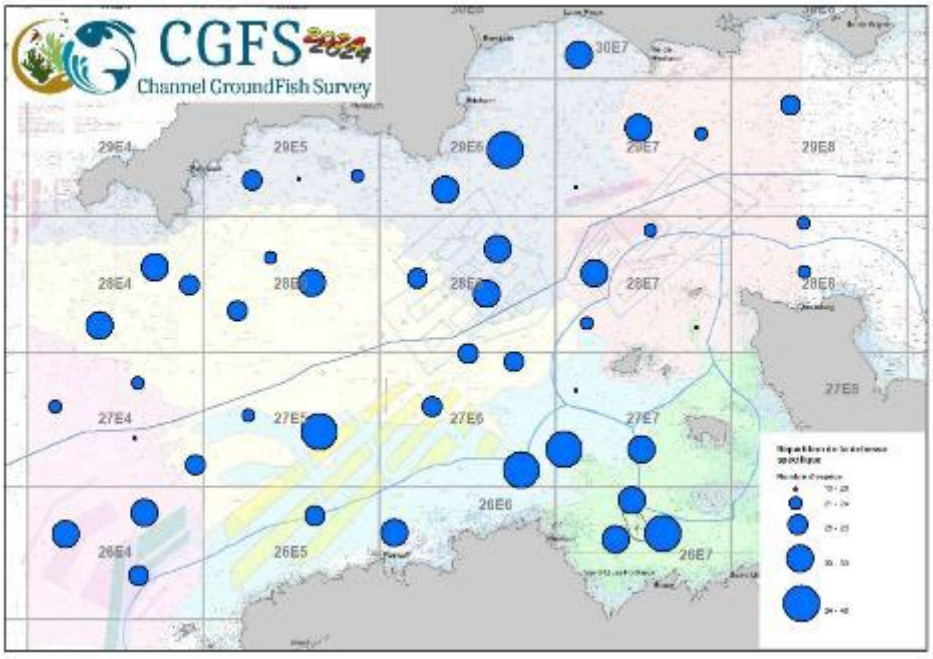


Figure 9: Distribution of the specific richness in number of species per trawl.

The benthos

A total of 81 species were observed in the Western Channel. The highest benthic abundance and biomass were found in the areas between northern Finistère and the English Channel border, as well as in the Bay of Saint Brieuc (Fig. 10a and 10b). The globe sea urchin (*Echinus esculentus*) is the most widely distributed species, present at 45% of the trawling stations surveyed. Other frequently encountered species include alcyonids (*Alcyonium digitatum*, 29%), hydrozoans (*Hydrallmania falcata*, 29% and *Abietinaria abietina*, 25%), and the starfish *Marthasterias glacialis* (25%) (Appendix 4).

It should be noted that, due to the gear used in the Western Channel during the survey, these results are for informational purposes only and do not accurately represent the benthic communities in the area.

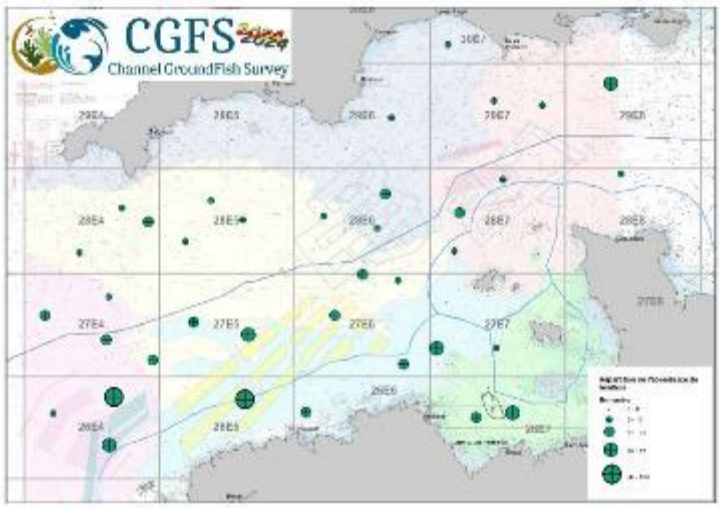


Figure 10a : Abondance globale de benthos (en nombre d'individus)

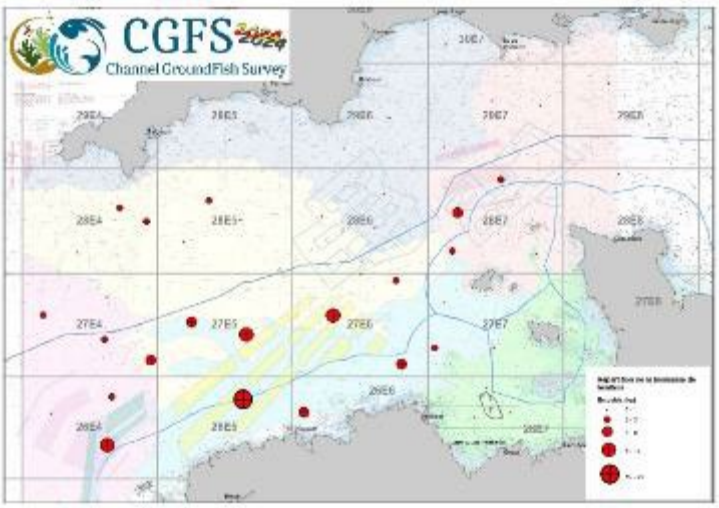


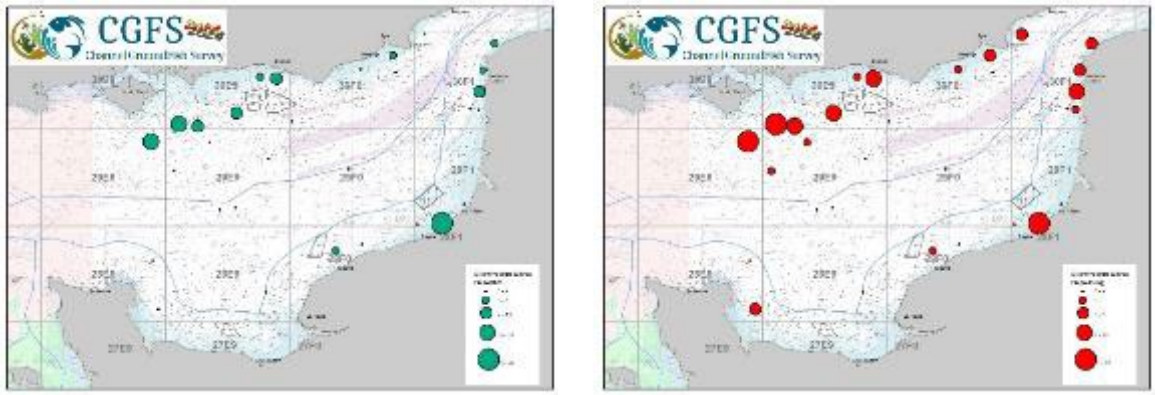
Figure 10b : Biomasse globale de benthos (en kg)

Analysis by species

The Eastern Channel (FR-CGFS)

Sea bass (*Dicentrachus labrax*)

During the CGFS 2024, this species can be found along the English coast and off the Isle of Wight, from Cap Gris Nez to Canche Bay, between Dieppe and Fécamp and, to a lesser extent, in the western part of the Bay of Seine (Fig. 11). The size spectrum ranges from 28 to 72 cm. There are two modes, one from 28 to 36 cm and one from 37 to 49 cm, i.e. around the size of maturity of sea bass in the English Channel (42 cm).



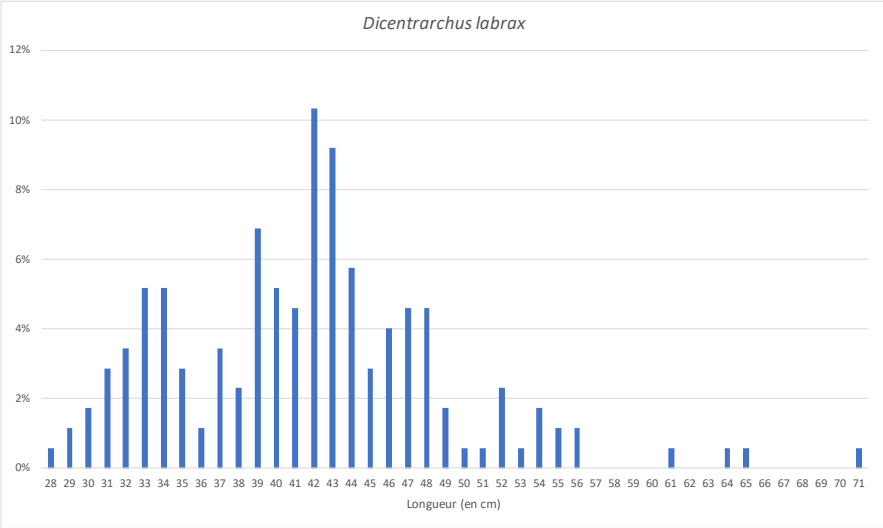


Figure 11: Distribution of abundance (in green), biomass (in red) and size distribution (below) of sea bass caught during the CGFS 2024.

Whiting (*Merlangius merlangus*)

This year, whiting is mainly found in the Opal Coast and the western part of the Seine Bay, and to a lesser extent in the eastern part of the Seine Bay and along the English coast from Dungeness to Portsmouth. The size spectrum ranges from 9 to 33 cm and shows two modes of 9 to 22 cm and 23 to 33 cm. The size of maturity of whiting in the English Channel is 27 cm, so the majority of individuals caught are juveniles (Fig. 12).

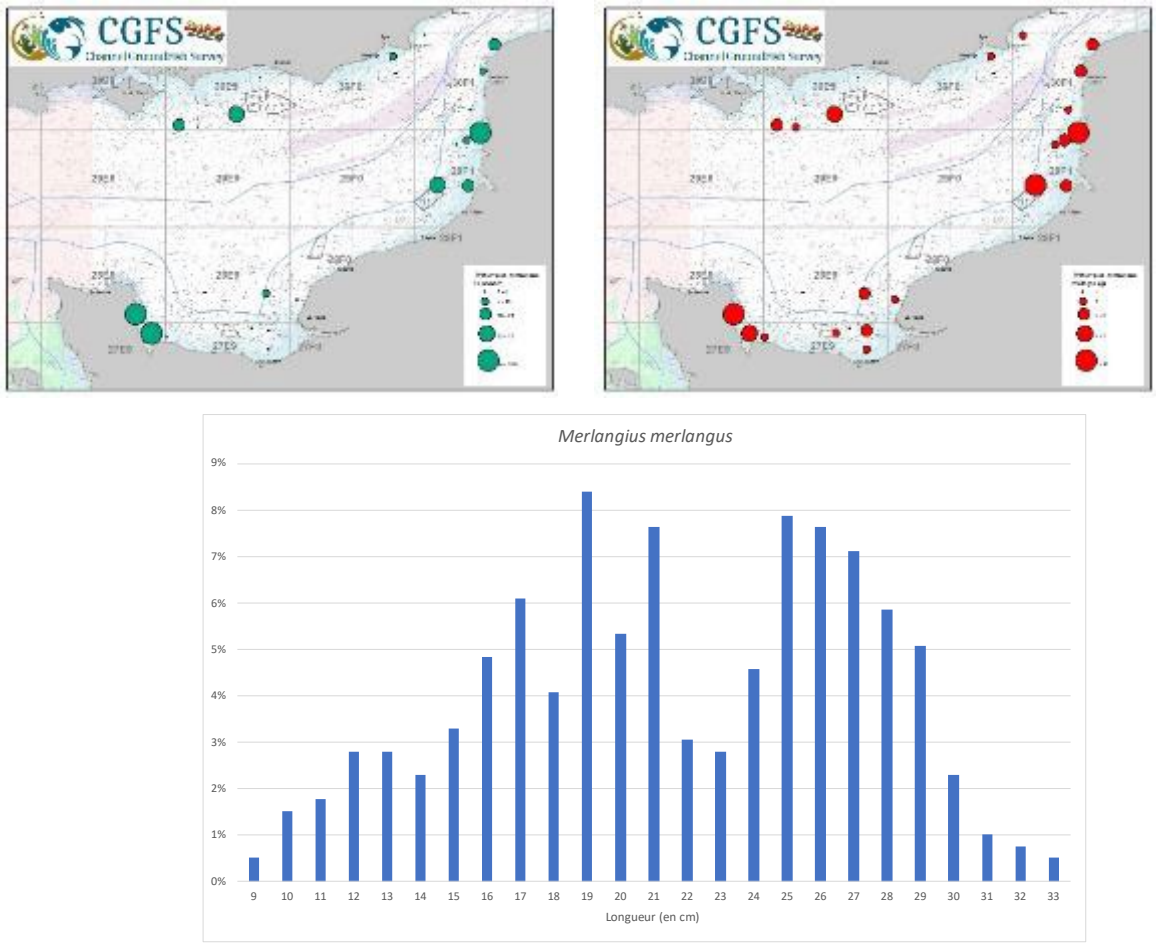
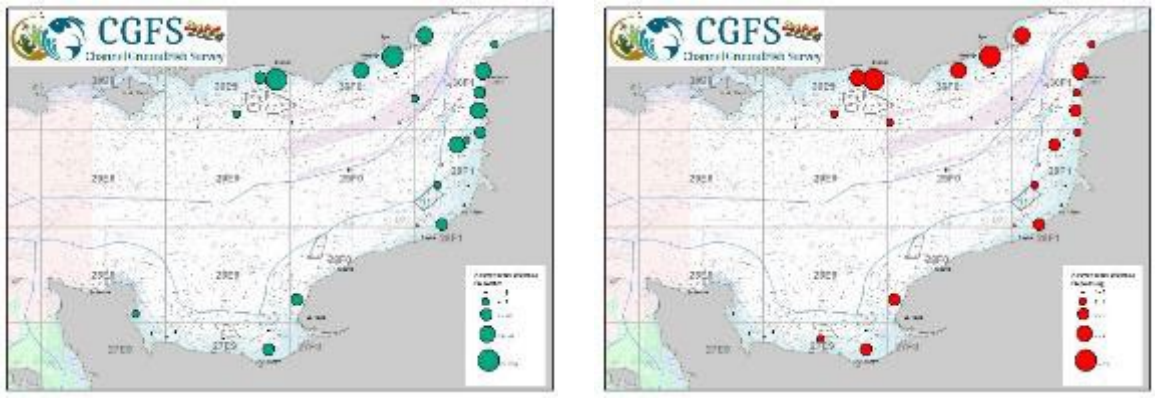


Figure 12: Distribution of abundance (in green), biomass (in red) and size distribution (below) of whiting caught during the CGFS 2024.

Plaice (*Pleuronectes platessa*)

The geographical distribution of plaice is very coastal. It is mainly caught along the English coast from Dungeness to Brighton, in the coastal strip from Boulogne-sur-Mer to Dieppe and, to a lesser extent, in the Bay of the Seine (Fig. 13). The size spectrum ranges from 15 to 35 cm, with the majority of individuals measuring between 19 and 28 cm.



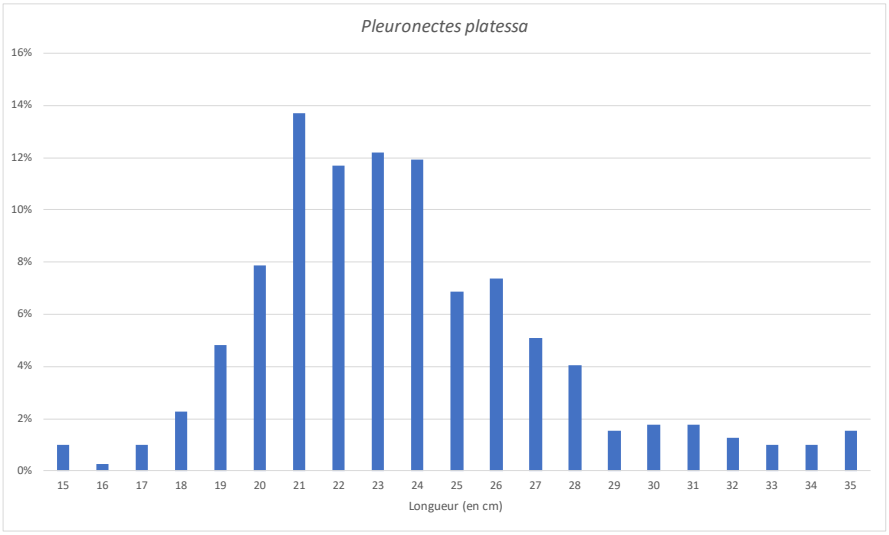


Figure 13: Distribution of abundance (in green), biomass (in red) and size distribution (below) of plaice caught during the CGFS 2024.

Red mullet (*Mullus surmuletus*)

Red mullet is present in the eastern part of the English Channel, and more particularly in the area from Gris Nez to Dieppe, off the coast and in the Bay of the Seine (Fig. 14). The size spectrum ranges from 10 to 28 cm. There are two modes, one larger around 12-13 cm and another around 22 cm.

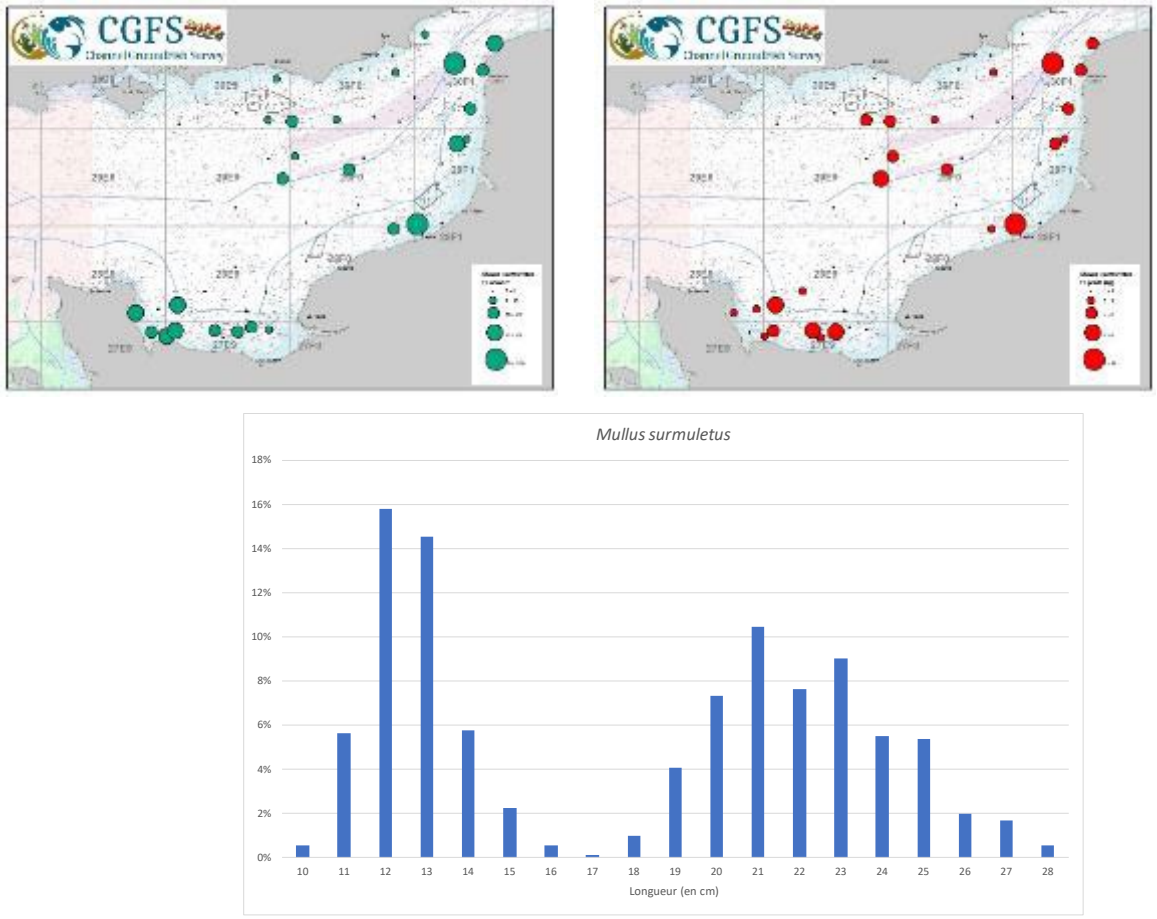


Figure 14: Distribution of abundance (in green), biomass (in red) and size distribution (below) of red mullet caught during the CGFS 2024.

The cuttlefish (*Sepia officinalis*)

Cuttlefish are very present in the eastern English Channel in October, with an occurrence of 90.54% this year. They are mainly found in the eastern part of the eastern English Channel and in the Bay of the Seine. The size spectrum ranges from 2 to 19 cm, with two modes, one concerning a majority of individuals around 5 cm and another around 14 cm (Fig 15).

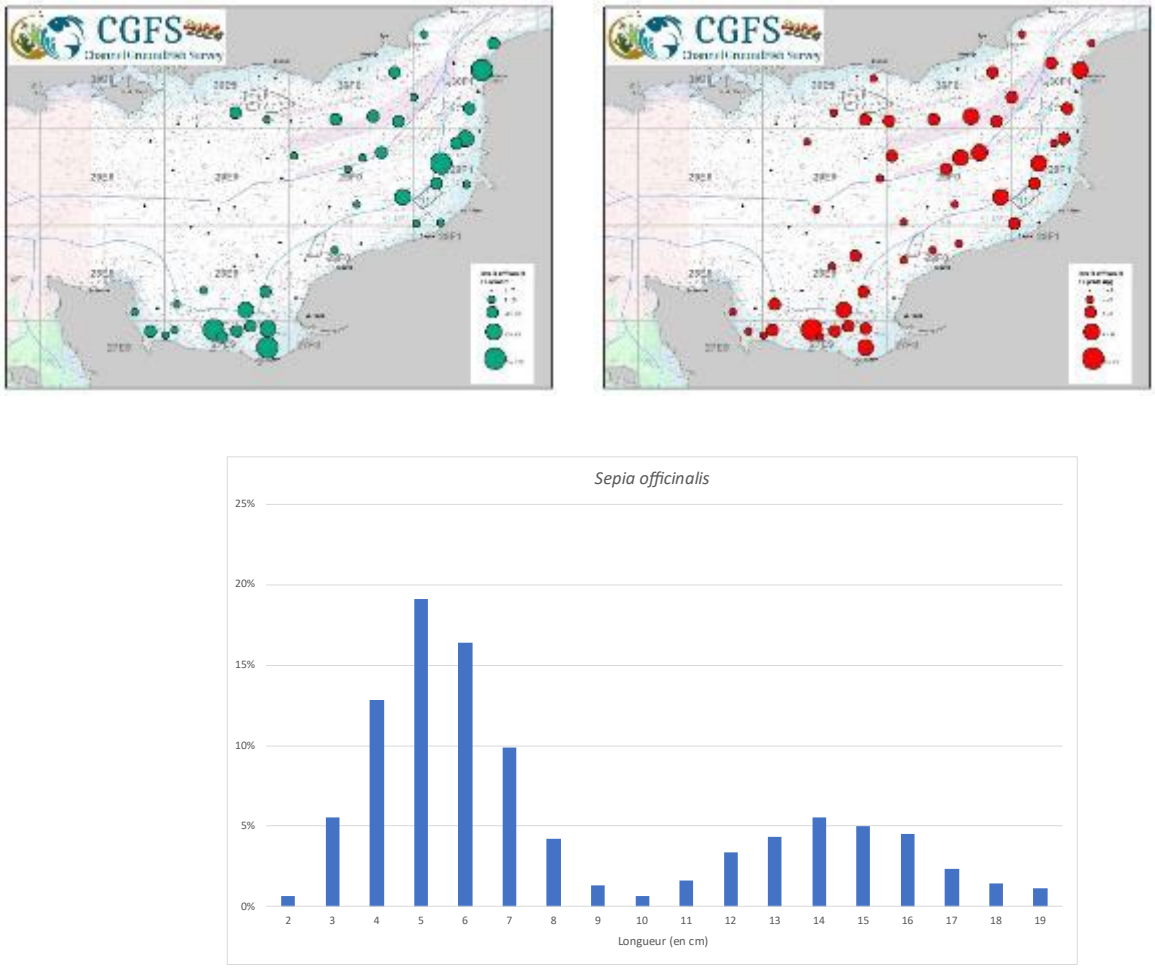
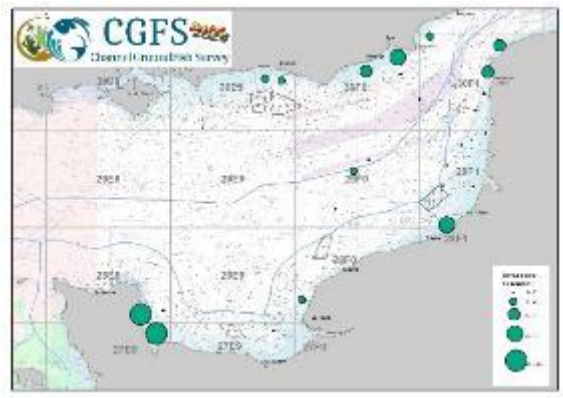
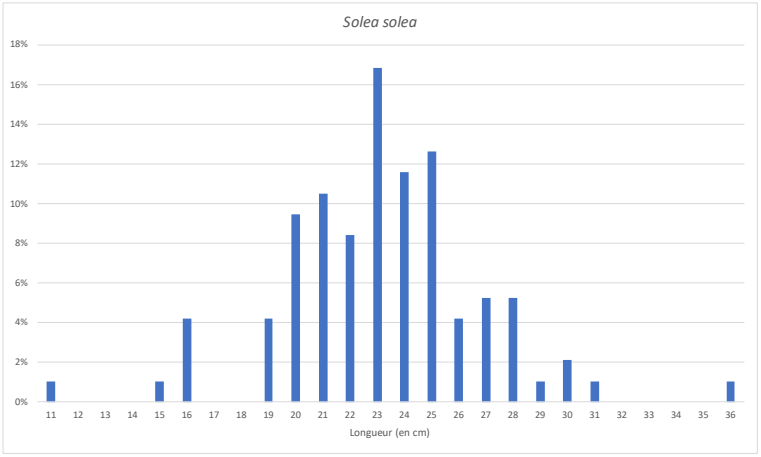


Figure 15: Distribution of abundance (in green), biomass (in red) and size distribution (below) of cuttlfish caught during the CGFS 2024.

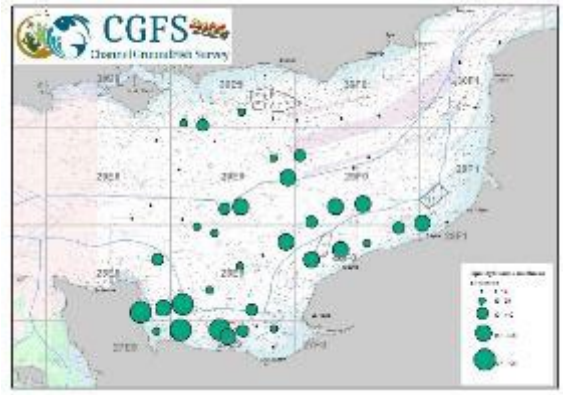
Other important species in the area (size distribution and geographical distribution of abundance)

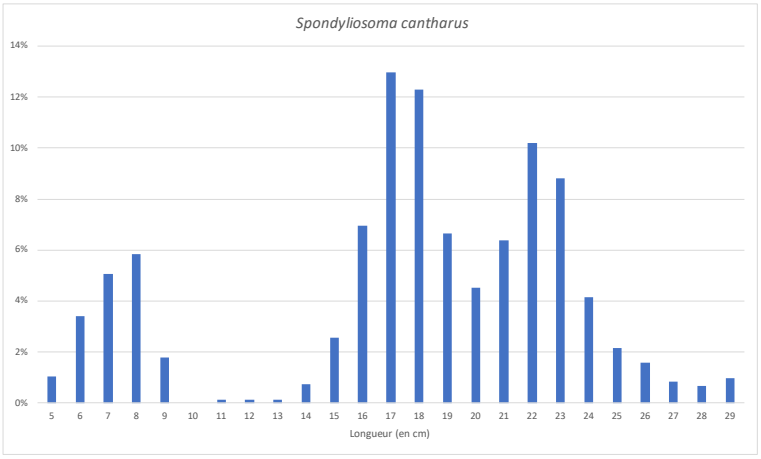
Sole (*Solea solea*)



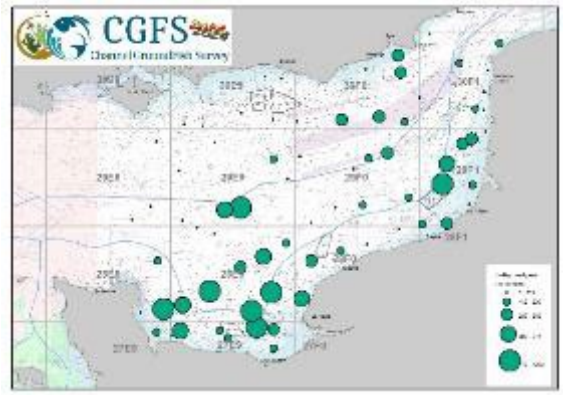


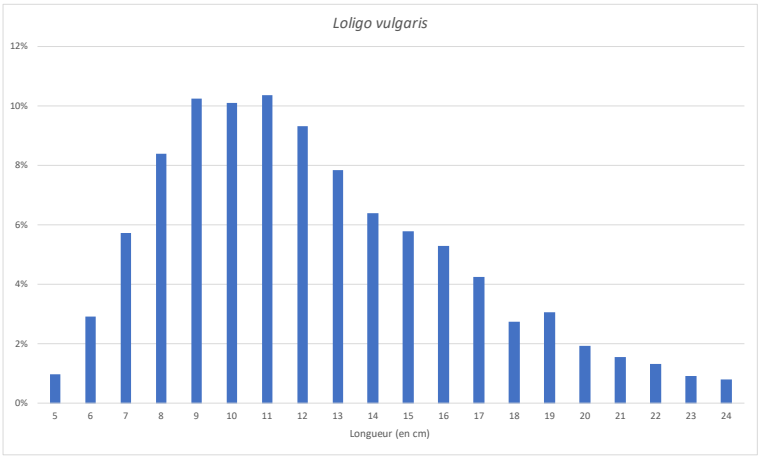
Black seabream (*Spondyliosoma cantharus*)



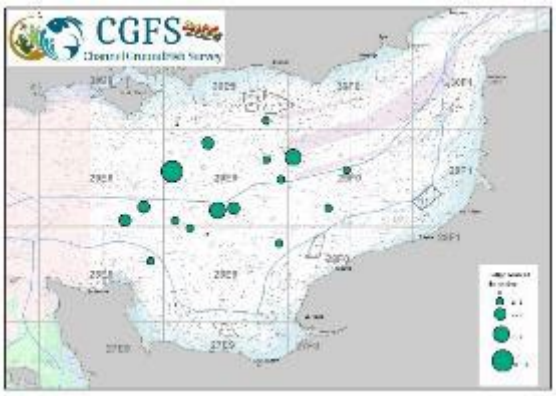


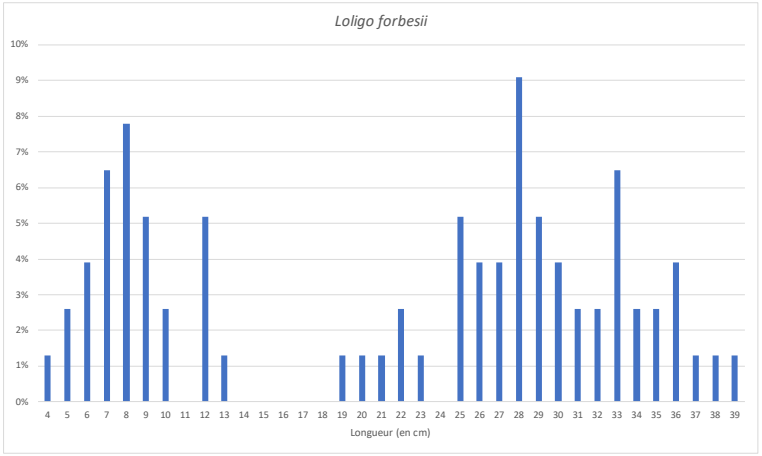
Common squid (*Loligo vulgaris*)



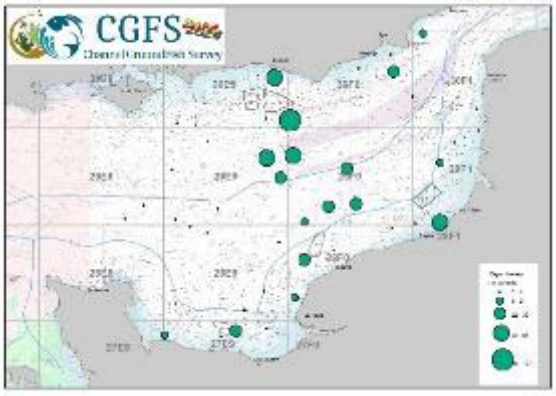


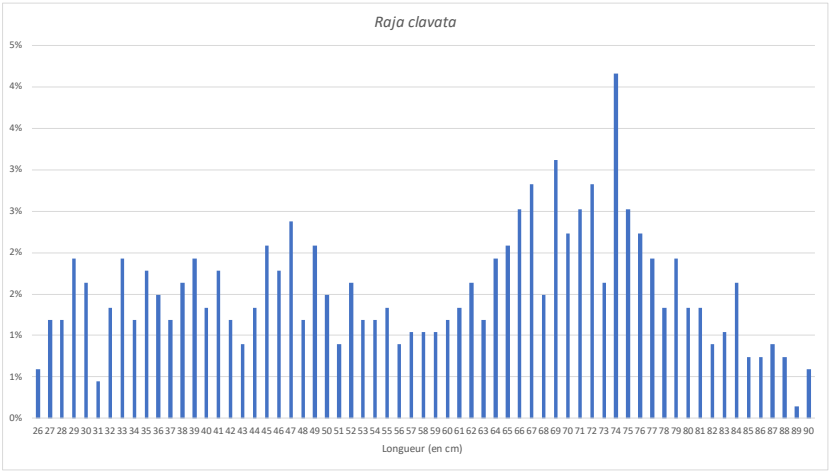
Veined squid (*Loligo forbesii*)



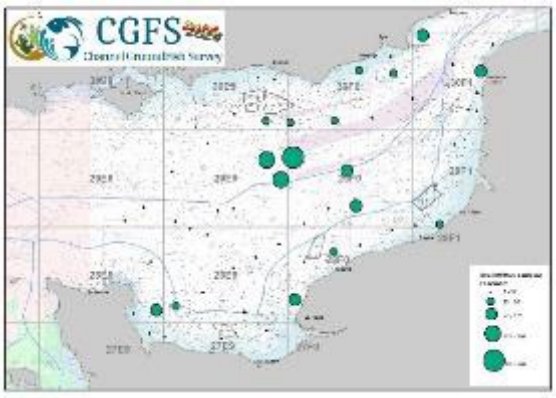


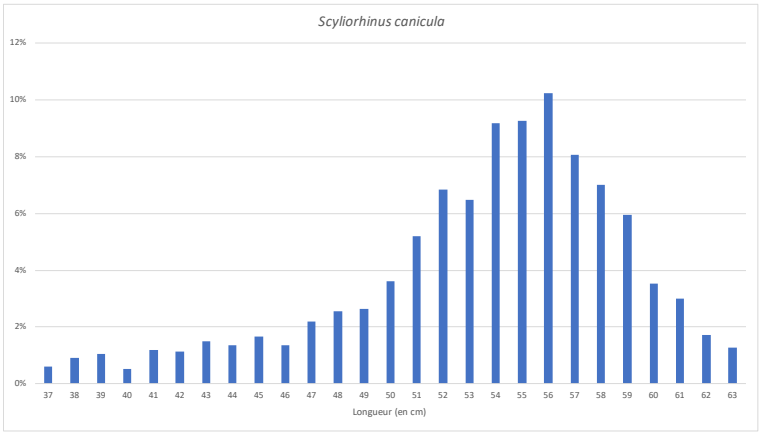
Thornback ray (*Raja clavata*)





Spotted dogfish (*Scyliorhinus canicula*)





Western English Channel (FR-WCGFS)

Haddock (*Melanogrammus aeglefinus*)

The species was distributed this year over 3 trawling stations in the western part of the zone. Its occurrence is lower than in previous years. The species represents less than 1% of the abundance and overall biomass.

The size distribution is rather difficult to interpret because of the low number of individuals (Fig. 16)

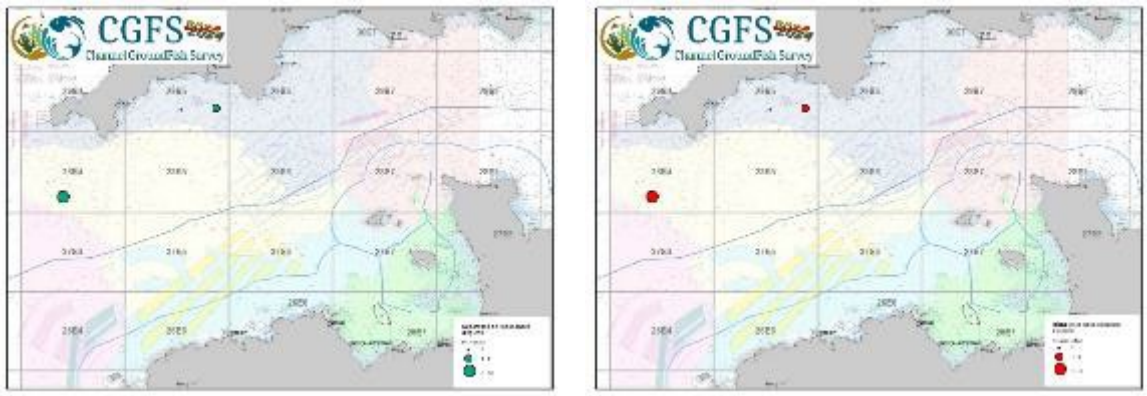


Figure 16: Distribution of abundance (in green), biomass (in red) and size distribution (below) of haddock caught during the CGFS 2024..

Whiting (*Merlangius merlangus*)

Whiting is generally distributed along the English coast, including Plymouth Bay and the western part of Lyme Bay, as observed this year. It was present in 33% of the trawls conducted. Its relative abundance is less than 1%, while its relative biomass accounts for 4.4%, indicating a relatively higher proportion of larger individuals.

The size distribution of the species shows distinct modes. The first two correspond to small individuals measuring between 9 and 14 cm and 15 and 19 cm, respectively. Two additional modes represent medium-sized whiting, ranging from 22 to 29 cm and 29 to 31 cm. The largest individuals fall within the 35 to 41 cm range (Fig. 17).

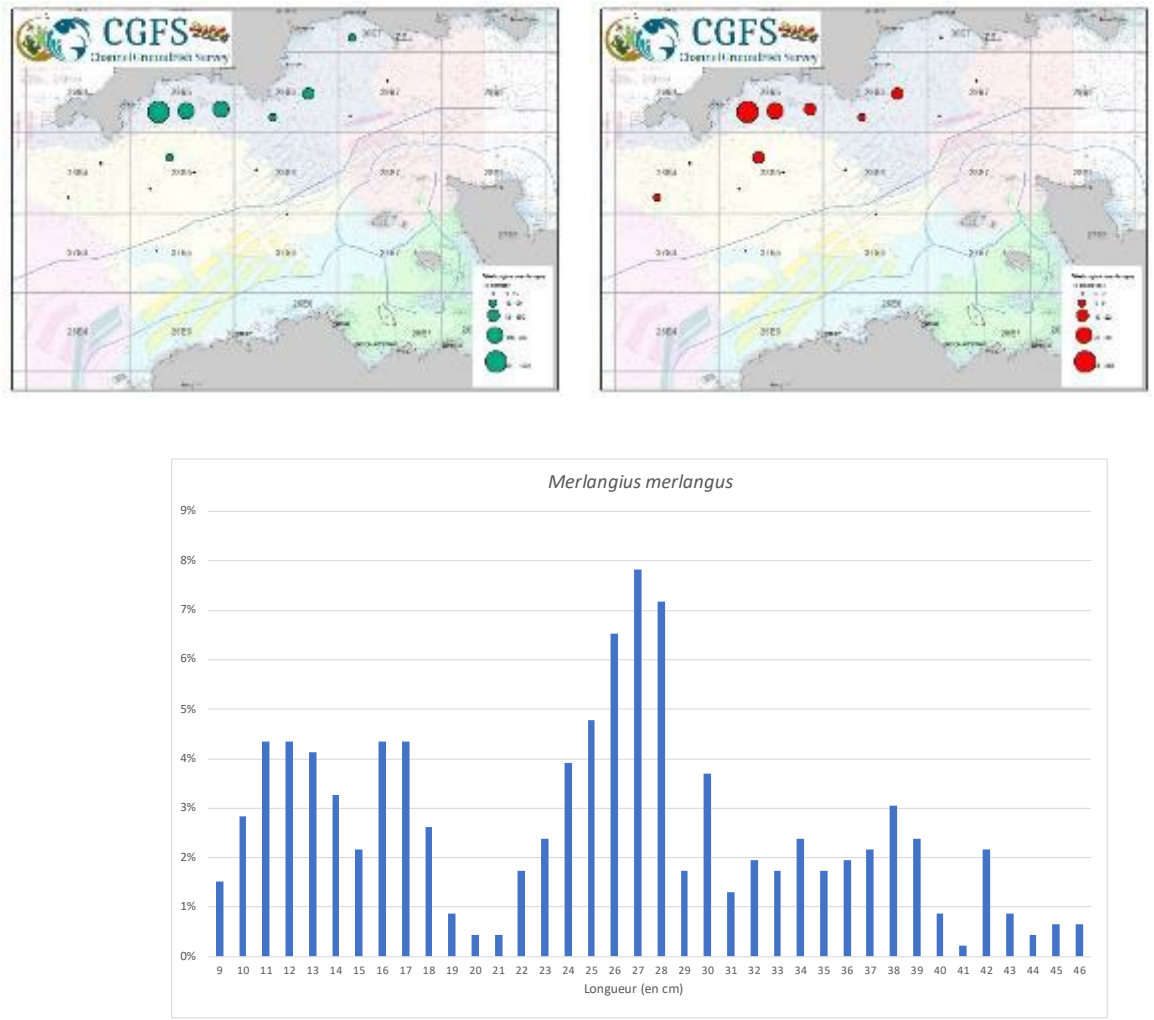
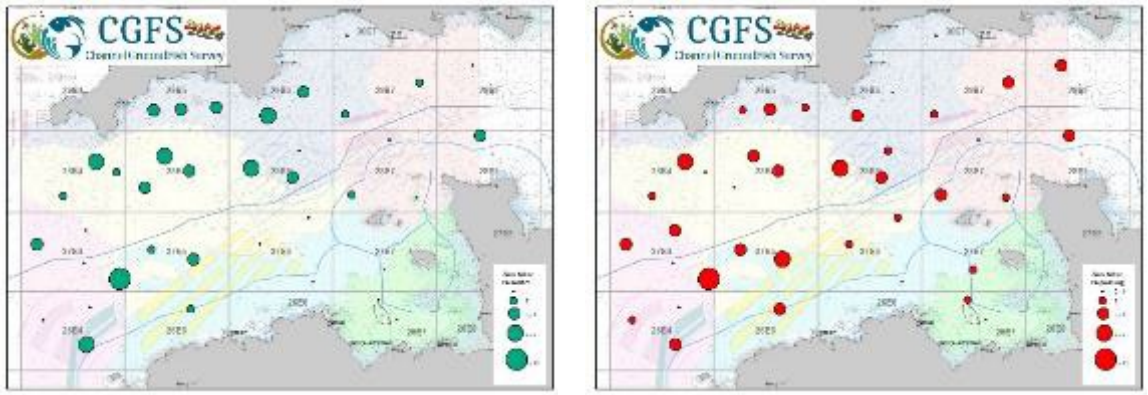


Figure 17 : Distribution of abundance (in green), biomass (in red) and size distribution (below) of whiting caught during the CGFS 2024.

John dory (*Zeus faber*)

In 2024, John Dory is fairly widely distributed across the western English Channel, with areas of greater abundance, particularly in northern Finistère and the central region northwest of the Channel Islands. The species was recorded in 79% of the trawls. Despite its relatively low abundance (0.04%), it accounts for a relative biomass of 0.91%.

This disparity between biomass and abundance is reflected in the size distribution, which indicates a predominance of large individuals. Across the CGFS 2024 survey, the species is distributed in three size modes: the first includes individuals averaging between 22 and 30 cm, the second is more diffuse, ranging from 35 to 40 cm, and the third, more pronounced mode, consists of individuals between 41 and 46 cm (Fig. 18).



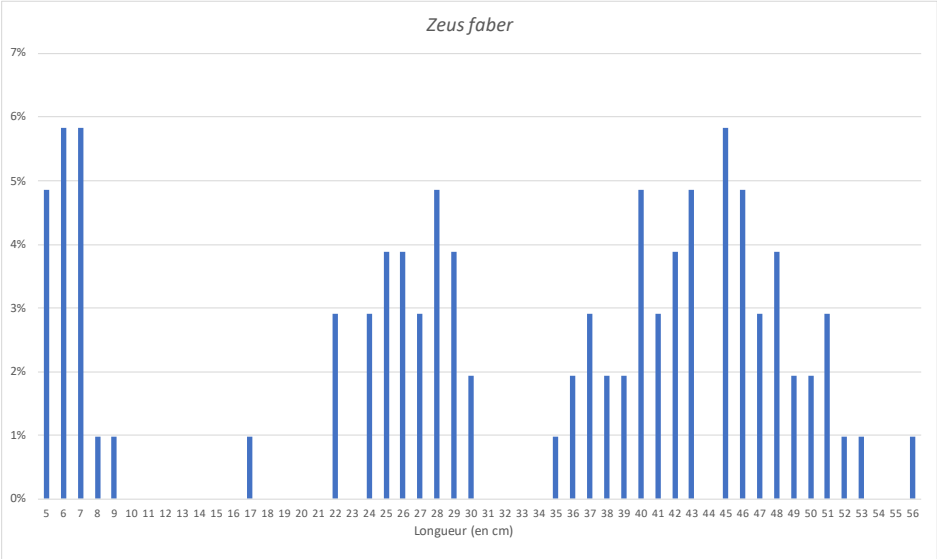


Figure 18: Distribution of abundance (in green), biomass (in red) and size distribution (below) of john dory caught during the CGFS 2024.

Veined squid (*Loligo forbesii*)

The veined squid was recorded in 81% of the surveyed stations. A difference in abundance and biomass distribution is observed, likely due to the presence of smaller individuals in the western part of the area and larger individuals further east. The species accounts for 2.38% of the total abundance and 2.07% of the total biomass within fish, cephalopod, and selachian catches.

Most individuals of this species have a mantle length of less than 9 cm. The size distribution is divided into three modes: the smallest individuals range from 2 to 9 cm. Medium-sized individuals fall within the 12 to 18 cm range, while the largest measure between 19 and 25 cm (Fig. 19).

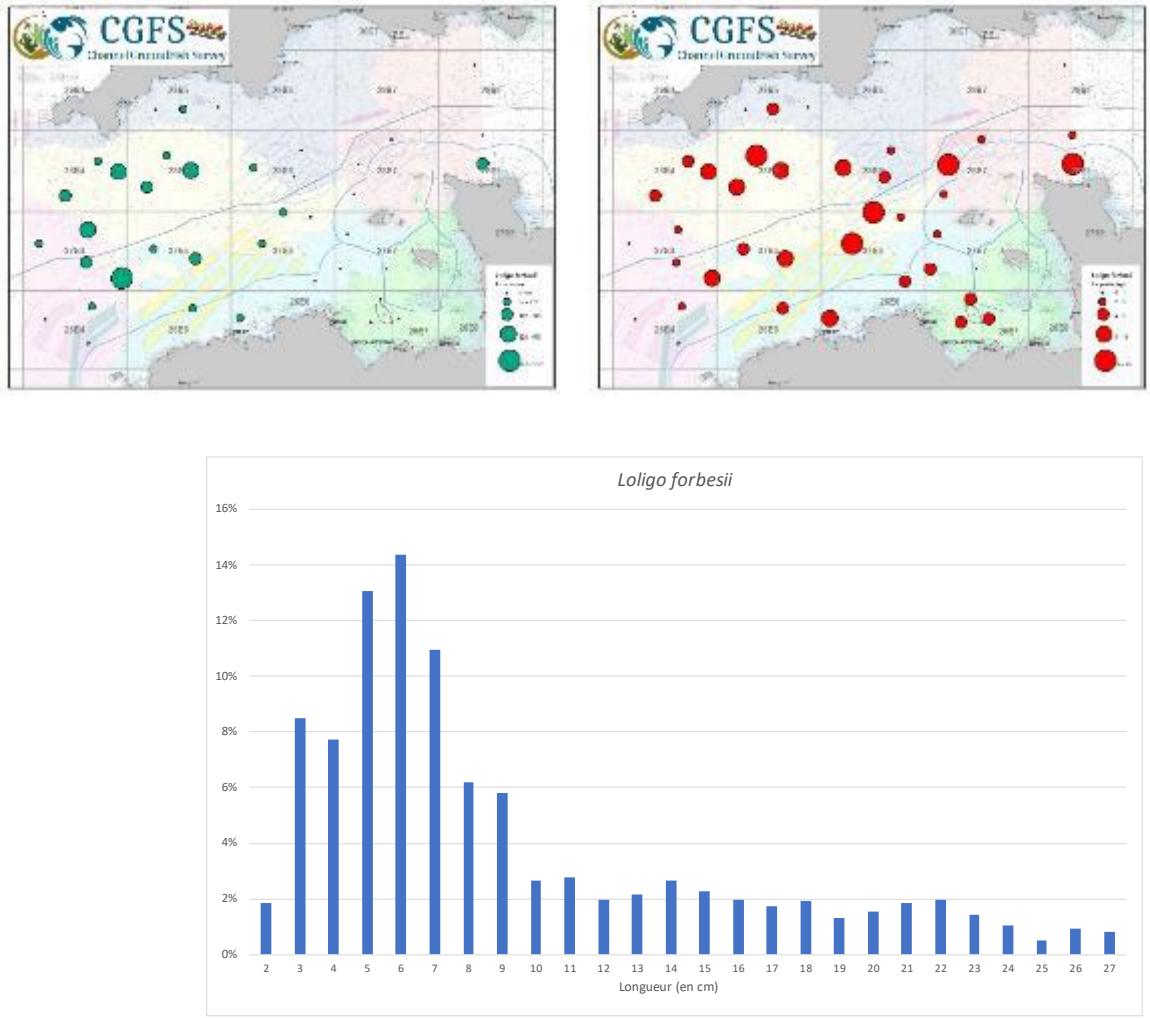
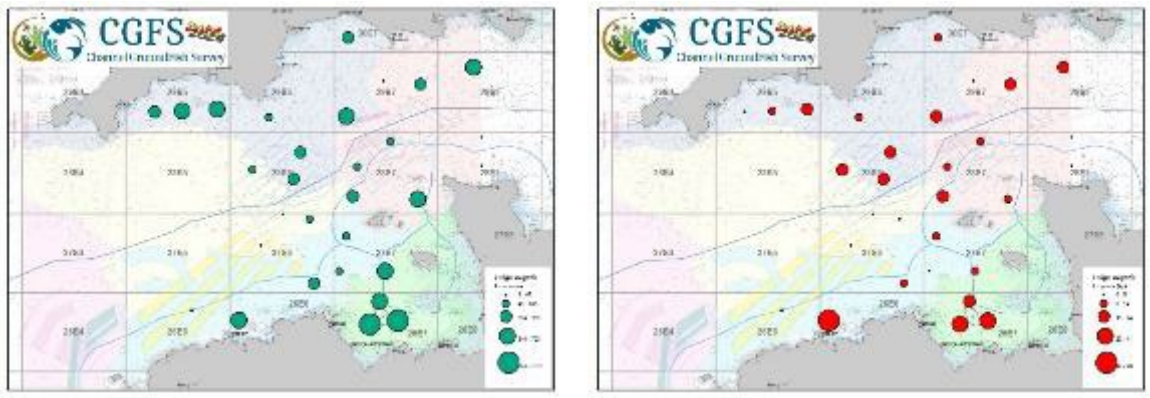


Figure 19: Distribution of abundance (in green), biomass (in red) and size distribution (below) of veined squid caught during the CGFS 2024.

Common squid (*Loligo vulgaris*)

The common squid was recorded in 62% of the hauls conducted during the survey in the western English Channel, with a higher presence in the eastern part of the area. The highest abundances were observed in the coastal waters of Plymouth Bay and north of Roscoff, as well as in the Bay of Saint-Brieuc and north of the Channel Islands in the central English Channel. The species accounts for 3.7% of the total abundance and 4.4% of the total biomass in the catches.

The size distribution of the species is primarily divided into two groups: small individuals with a mantle length of 3 to 9 cm and larger individuals measuring 10 to 17 cm (Fig. 20).



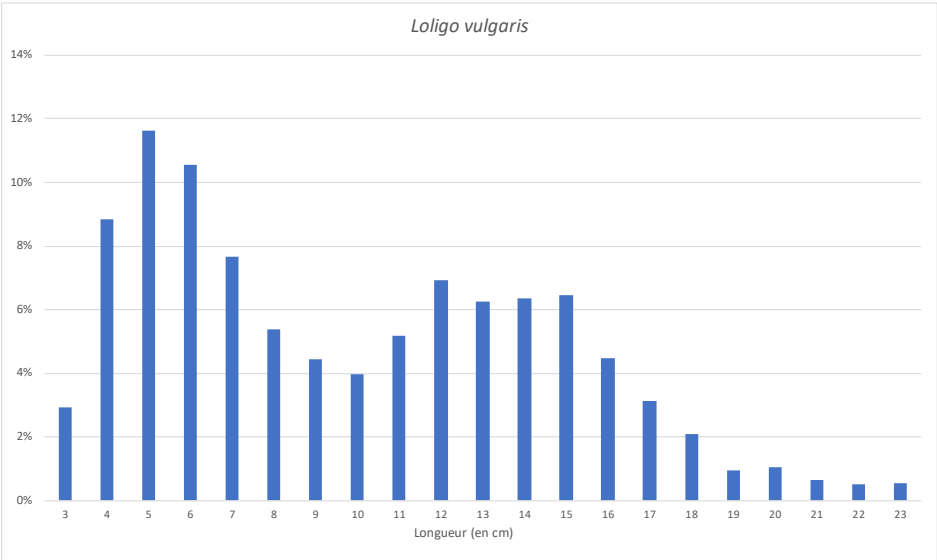
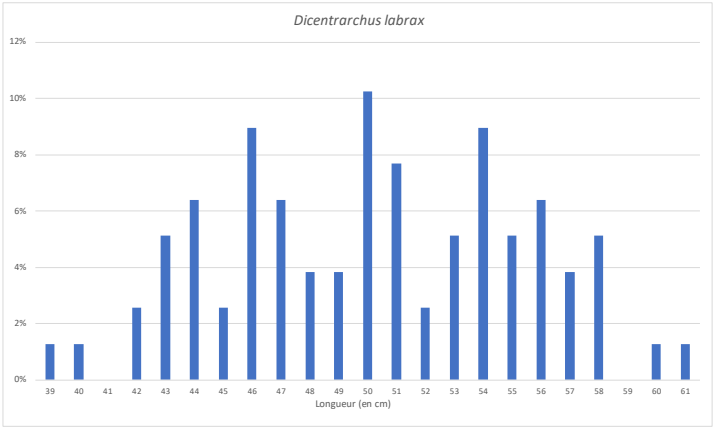


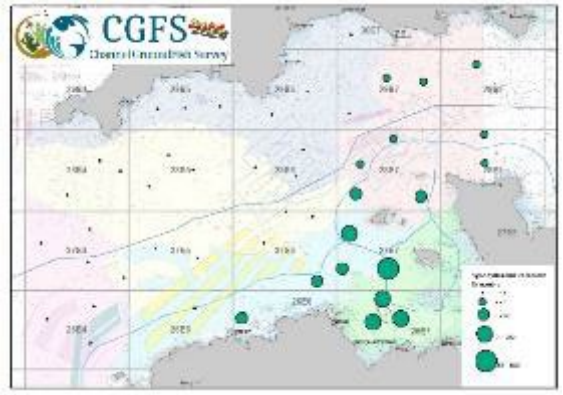
Figure 20: Distribution of abundance (in green), biomass (in red) and size distribution (below) of common squid caught during the CGFS 2024.

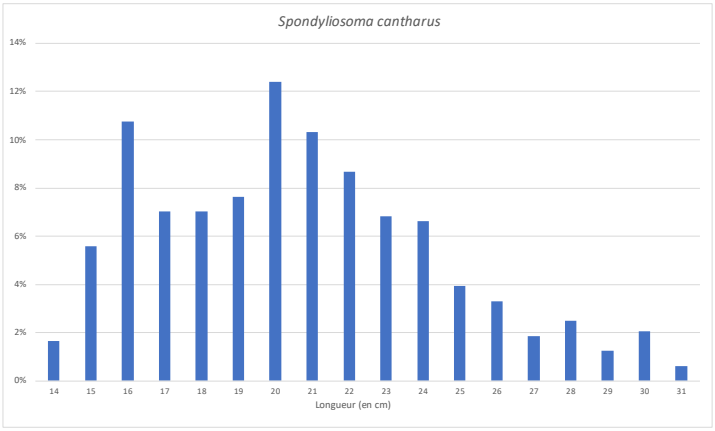
Other important species in the area (size distribution and geographical distribution of abundance)

Sea bass (*Dicentrachus labrax*)

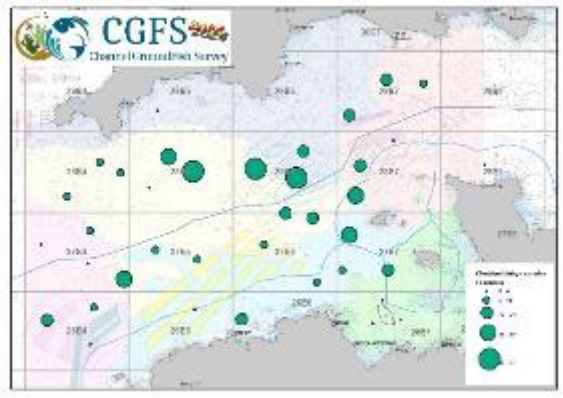


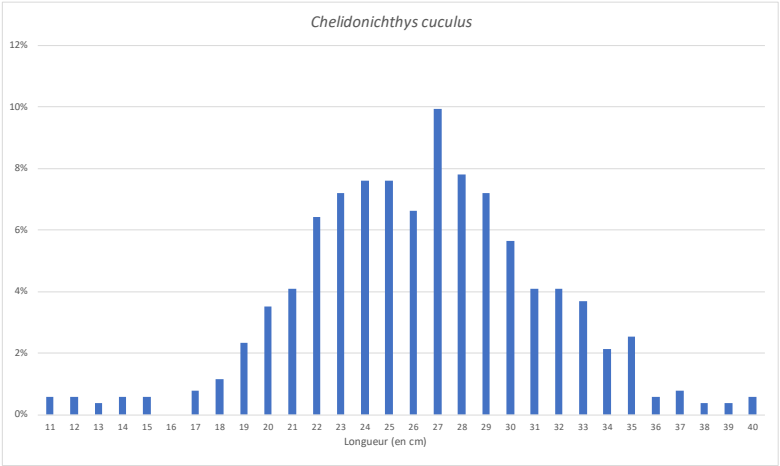
Black seabrem (*Spondyliosoma cantharus*)



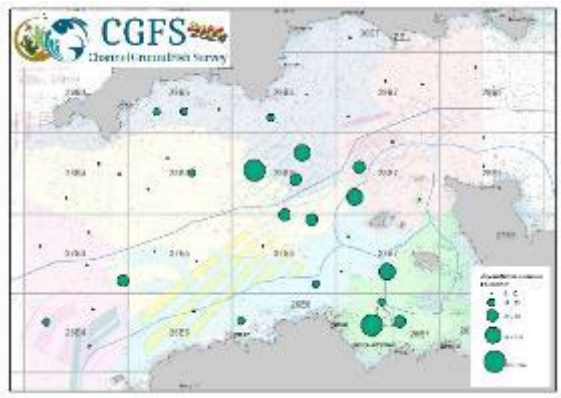


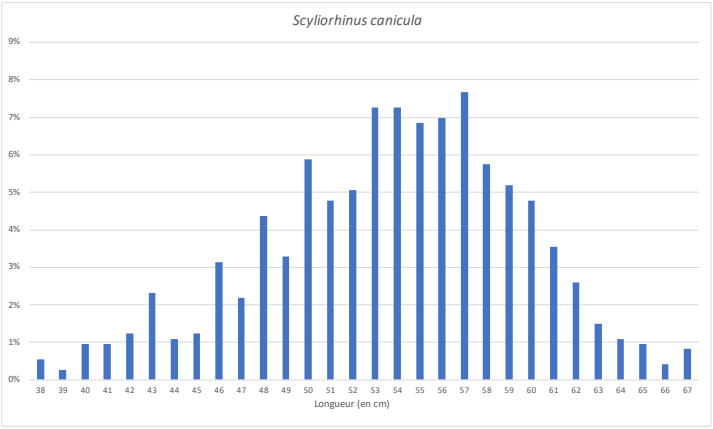
Red gurnard (*Chelidonichthys cuculus*)



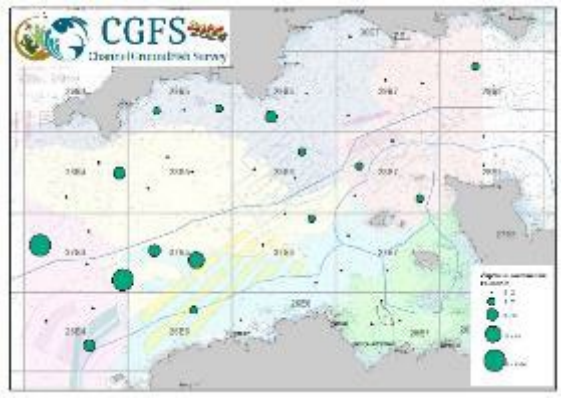


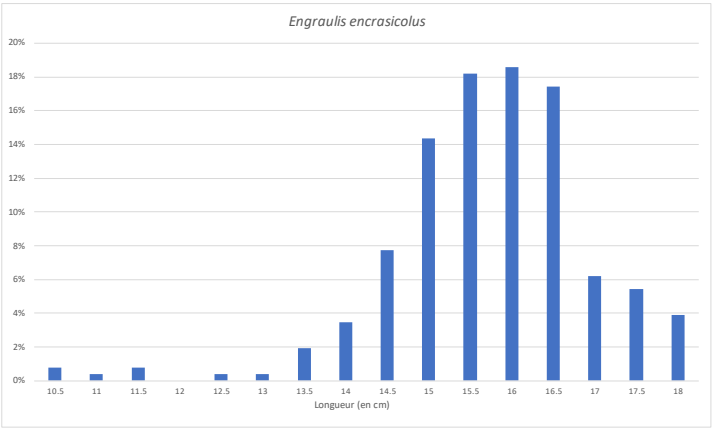
Spotted dogfish (*Scyliorhinus canicula*)



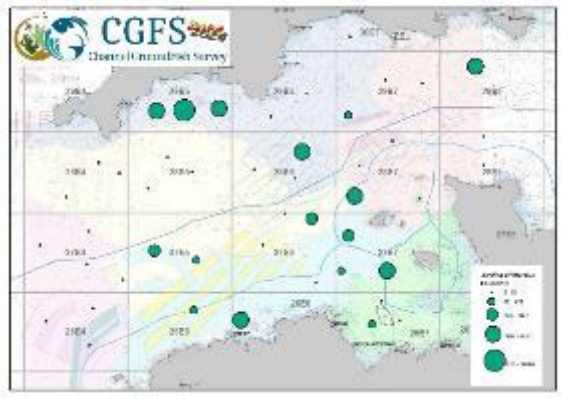


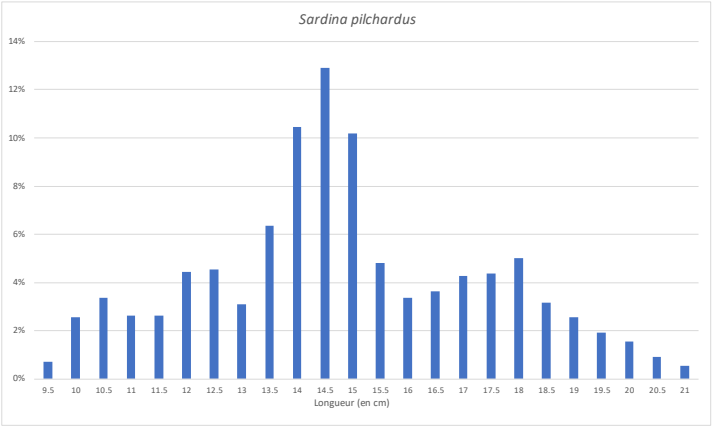
Anchovy (*Engraulis encrasicolus*)





Sardine (*Sardina pilchardus*)





ANNEXE 1 : hauls characteristics

Eastern channel

Station code	Trawl number	Device	Date	CIEM square	Strate	Depth	Duration	Shoot Lat	Shoot Long	Haul Lat	Haul Long	Distance	Trawl Validity	Net Opening	Door Spread	Wing Spread	Surface T°C	Surface salinity	Total catch (kg)
C2373	1	36x47	1/10/2024	28E8	3D1	60.00	30	49.8197291	-1.1028295	49.8284321	-1.1326165	2349	V	4.8	50.2	15.42	17.40	34.61	105.9
C2374	2	36x47	1/10/2024	29E8	4C1	67.00	30	50.0308644	-1.310042	50.0384583	-1.277696	2456	V	4.8	62.2	17.43	17.28	34.88	42.781
C2375	3	36x47	1/10/2024	29E8	4D1	53.00	30	50.1002476	-1.1595865	50.1003145	-1.1292333	2166	V	5.2	56	16.7	17.30	34.87	45.426
C2376	4	36x47	2/10/2024	29E9	5E2	67.00	30	50.2851919	-0.9313852	50.2864922	-0.9684655	2640	V	5	59.8	17.03	17.10	34.89	142.11
C2377	5	36x47	2/10/2024	29E8	5D1	36.00	31	50.4359847	-1.1188007	50.4261179	-1.1441098	2100	V	5.4	48.4	15.4	17.10	34.66	88.567
C2378	6	36x47	2/10/2024	30E9	6E1	29.00	30	50.5249402	-0.8931421	50.5282543	-0.9454577	3712	V	5.1	53.2	15.93	17.05	34.51	105.63
C2379	7	36x47	2/10/2024	30E9	6F1	27.00	30	50.5133628	-0.7407941	50.5222311	-0.7142827	2116	V	5.1	48.4	15.12	16.77	34.57	59.588
C2380	8	36x47	2/10/2024	29E9	5F1	62.00	30	50.4304599	-0.6411453	50.4389383	-0.6107282	2349	V	4.8	57.6	16.66	17.33	34.72	77.129
C2381	9	36x47	3/10/2024	30E9	6G1	62.00	30	50.5803872	-0.429292	50.5670474	-0.4689815	3167	V	4.8	59.2	17.8	17.26	34.71	75.469
C2382	10	36x47	3/10/2024	30E9	7G1	17.00	30	50.7659387	-0.236575	50.7600906	-0.2798513	3108	V	5.3	42	14.1	16.29	34.70	62.409
C2383	11	36x47	3/10/2024	30E9	7H1	21.00	30	50.7566216	-0.1070352	50.7650863	-0.0594418	3474	V	5.6	45.2	14.8	16.34	34.64	572.89
C2384	12	36x47	3/10/2024	30F0	6I1	65.00	30	50.5372351	0.0197711	50.5472032	0.0583249	2943	V	4.6	61.2	17.27	17.26	34.79	2009.4
C2385	13	36x47	3/10/2024	30E9	6H1	61.00	30	50.5460914	-0.1738968	50.5569775	-0.1397609	2706	V	4.7	58.4	16.8	17.31	34.77	1338.4
C2386	14	36x47	4/10/2024	29E9	4G1	46.00	20	50.0935405	-0.4340536	50.0856452	-0.4625112	2208	V	4.8	55.6	16.33	17.16	34.74	1097.3
C2387	15	36x47	4/10/2024	29E9	4F1	52.00	30	50.0818189	-0.5664931	50.0787951	-0.5922559	1867	V	4.9	53.2	15.8	17.12	34.79	292.11
C2388	16	36x47	4/10/2024	29E9	4E1	65.00	27	50.0292753	-0.9047166	50.0227907	-0.9366925	2398	V	4.7	57.45	16.64	17.29	34.80	106.5
C2389	17	36x47	4/10/2024	28E9	3E1	60.00	30	49.9908233	-0.7855096	49.9906554	-0.7492526	2588	V	4.8	59.5	17.7	17.30	34.76	134.67
C2390	18	36x47	4/10/2024	28E9	3F1	48.00	30	49.9592981	-0.6472348	49.9618886	-0.6155073	2286	V	4.7	54.9	17.2	17.30	34.74	118.37
C2391	19	36x47	5/10/2024	28E9	2E1	32.00	30	49.5864726	-0.902321	49.5882351	-0.9454698	3113	V	5	49.9	16.1	17.20	34.43	335.82
C2392	20	36x47	5/10/2024	28E8	2D2	33.00	30	49.5667708	-1.0575073	49.5891255	-1.0492263	2553	V	4.9	49.8	16.1	17.09	34.31	230.35
C2393	21	36x47	5/10/2024	28E8	2D1	17.00	20	49.5449541	-1.2402702	49.525275	-1.2349009	2250	V	5.4	40.3	14.1	16.66	33.22	338.84
C2394	22	36x47	5/10/2024	27E8	1D1	21.00	30	49.4452525	-1.1144184	49.4293045	-1.0739555	3420	V	5.3	42.4	14.6	16.81	33.34	99.219
C2395	23	36x47	5/10/2024	27E9	1E1	22.00	30	49.4243023	-0.9897422	49.4226887	-0.9503058	2856	V	5.1	41.55	14.7	16.98	33.30	121.45
C2396	24	36x47	6/10/2024	27E9	1E2	22.00	30	49.4521461	-0.92138	49.448313	-0.8743185	3423	V	5.3	40.7	14	16.87	33.60	568.8
C2397	25	36x47	6/10/2024	27E9	1F1	26.00	30	49.4541951	-0.602232	49.4573198	-0.636305	2488	V	5.1	41.95	14.1	16.85	33.71	688.54
C2398	26	36x47	6/10/2024	27E9	1F2	26.00	16	49.4148991	-0.5374314	49.4154992	-0.5615878	1746	V	4.8	44.8	15	16.59	33.03	115.09
C2399	27	36x47	6/10/2024	27E9	1G1	30.00	22	49.4475615	-0.4159542	49.44746	-0.3857415	2181	V	4.6	46.4	15.6	16.99	33.73	**1482.2**
C2400	28	36x47	6/10/2024	27E9	1G2	34.00	30	49.4713352	-0.3096892	49.4660923	-0.2681604	3071	V	4.6	57.1	17.6	17.01	33.10	**146.65**
C2401	29	36x47	7/10/2024	27E9	1H2	14.00	23	49.358977	-0.1715218	49.3599072	-0.1358193	2583	V	5.8	39.3	13.6	16.76	33.00	**213.4**
C2402	30	36x47	7/10/2024	27E9	1H1	27.00	30	49.4572686	-0.1658428	49.4425947	-0.2053163	3283	V	4.9	45.7	15.1	16.77	32.47	**214.1**
C2403	31	36x47	7/10/2024	28E9	2G1	29.00	30	49.5568876	-0.3451518	49.5573782	-0.3823507	2679	V	5.1	45.8	15.2	16.80	33.33	**219.23**
C2404	32	36x47	7/10/2024	28E9	2H1	37.00	30	49.6531601	-0.189007	49.6534406	-0.2325389	3130	V	4.8	51.2	16.4	17.03	33.86	**439.5**
C2405	33	36x47	7/10/2024	28F0	2I1	28.00	30	49.6204654	0.0569762	49.642948	0.0855174	3232	V	4.9	50.2	16.1	16.62	32.80	**186.48**
C2406	34	36x47	8/10/2024	28E9	2F1	37.00	30	49.6588989	-0.6844913	49.6603063	-0.6413873	3130	V	4.7	50.6	16.3	17.07	34.08	**296.59**
C2407	35	36x47	8/10/2024	28E9	3G2	40.00	30	49.7850742	-0.4376254	49.78481	-0.4794465	2999	V	4.8	52.15	16.6	17.10	34.53	**111.29**
C2408	36	36x47	8/10/2024	28E9	3G1	43.00	30	49.8396323	-0.2515878	49.8358097	-0.2885714	2682	V	4.8	52	16.45	17.02	34.51	**177.58**
C2409	37	36x47	8/10/2024	28E9	3H1	44.00	30	49.9096669	-0.0690834	49.9042008	-0.1155345	3378	V	4.7	55.4	17.1	17.05	34.57	**242.7**
C2410	38	36x47	9/10/2024	28F0	3I1	30.00	30	49.8172507	0.134278	49.8244583	0.1716004	2796	V	4.9	48.3	15.6	16.71	33.85	**234.66**
C2411	39	36x47	9/10/2024	28F0	3J1	27.00	30	49.8695139	0.3725115	49.8761255	0.4200197	3480	V	4.9	49.4	15.8	16.74	33.36	**160.37**
C2412	40	36x47	9/10/2024	28F0	3K1	28.00	30	49.9047296	0.5810642	49.8995225	0.5454393	2614	V	5.1	47.4	15.5	16.70	33.04	**50.921**
C2413	41	36x47	9/10/2024	28F0	3L1	31.00	28	49.9842389	0.8381269	49.9813128	0.80139	2644	V	5.2	46.8	15.55	16.81	33.57	**41.63**
C2414	42	36x47	9/10/2024	29F1	4M2	26.00	30	50.0085401	1.0279077	50.01362	1.0699378	3052	V	4.8	49.9	16.1	16.79	33.47	**474.72**
C2415	43	36x47	10/10/2024	29F0	4K1	35.00	30	50.1068102	0.550269333	50.1114952	0.589952167	2876	V	4.9	51.3	16.2	16.72	34.63	**332.5**
C2416	44	36x47	10/10/2024	29F0	4L1	30.00	30	50.1472642	0.9210321	50.1543679	0.9623988	3048	V	5.2	48.3	15.6	16.70	34.38	56.48
C2417	45	36x47	10/10/2024	29F1	4M1	24.00	24	50.216022	1.190681	50.1931424	1.1718133	2873	V	5.1	45.3	15.15	16.40	34.16	1024.34749
C2418	46	36x47	10/10/2024	29F1	4N2	14.00	16	50.113406	1.4052438	50.1005224	1.3927037	1696	V	5.5	39.9	13.85	15.95	33.39	2128.39545
C2419	47	36x47	10/10/2024	29F1	3M1	19.00	30	50.0131566	1.2266566	49.993537	1.1896733	3427	V	5.3	40.5	14	16.18	33.34	218.298
C2420	48	36x47	11/10/2024	29F0	4J1	38.00	30	50.0936794	0.3299252	50.0997947	0.3727641	3126	V	5.1	52.9	16.4	16.72	34.53	266.505

Station code	Trawl number	Device	Date	CIEM square	Strate	Depth	Duration	Shoot Lat	Shoot Long	Haul Lat	Haul Long	Distance	Trawl Validity	Net Opening	Door Spread	Wing Spread	Surface T°C	Surface salinity	Total catch (kg)
C2421	49	36x47	11/10/2024	29F0	4I1	38.00	30	50.01423	0.1353974	50.0198908	0.1779839	3106	V	4.9	53.7	16.8	16.80	34.50	128.27
C2422	50	36x47	11/10/2024	29E9	4H1	51.00	19	50.244446	-0.0542932	50.2394298	-0.0823377	2068	V	4.6	58	17.7	16.78	34.73	367.38
C2423	51	36x47	11/10/2024	29E9	5H1	51.00	30	50.3439843	-0.1696977	50.334301	-0.2086015	2959	V	4.6	55.9	17.2	16.71	34.77	619.02
C2424	52	36x47	11/10/2024	29F0	5I1	56.00	30	50.3583014	0.043229	50.3558826	-0.0029444	3284	V	4.3	59	17.7	16.70	34.77	705.31
C2425	53	36x47	12/10/2024	29F0	5J1	57.00	30	50.2914627	0.4758297	50.298404	0.5223175	3386	V	4.7	54.7	16.9	16.60	34.70	207.65
C2426	54	36x47	12/10/2024	29F0	5K1	39.00	30	50.3497288	0.597927	50.3576234	0.6425441	3281	V	4.7	52.3	16.7	16.51	34.71	132.24
C2427	55	36x47	12/10/2024	29F0	5L1	38.00	30	50.3760624	0.7467684	50.3847059	0.791874	3334	V	4.8	50.7	16.3	16.50	34.72	183.78
C2428	56	36x47	12/10/2024	30F0	6K1	42.00	30	50.5629433	0.6810975	50.5617919	0.7317063	3572	V	4.9	51	16.3	16.56	34.78	160.28
C2429	57	36x47	12/10/2024	30F0	6J1	48.00	30	50.5466047	0.3779618	50.5369066	0.3408132	2834	V	4.7	54.5	17.1	16.72	34.77	1265.5
C2430	58	36x47	13/10/2024	30F0	7K1	18.00	25	50.8033552	0.5770188	50.7939858	0.539688	2821	V	5.7	39.9	13.7	15.40	34.41	3258.5
C2431	59	36x47	13/10/2024	30F0	7L1	17.00	25	50.8758195	0.8337683	50.8629597	0.797022	2945	V	5.4	42.4	14.4	15.60	34.61	224.43
C2432	60	36x47	13/10/2024	30F0	7L2	36.00	30	50.7883235	0.8553009	50.8052801	0.8945833	3342	V	4.7	51.4	16.3	16.59	34.72	1360.7
C2433	61	36x47	13/10/2024	30F1	7M1	25.00	30	50.9826391	1.0890763	51.008107	1.1034782	3028	V	4.8	47.5	15.7	15.70	34.54	155.56
C2434	62	36x47	14/10/2024	30F1	7O1	27.00	30	50.9367046	1.6527549	50.9170709	1.6185928	3236	V	5.2	46.1	15.3	15.45	33.79	70.703
C2435	63	36x47	14/10/2024	30F1	7O2	24.00	30	50.7990416	1.5588607	50.7763403	1.5604645	2533	V	4.75	42.75	14.7	15.56	33.95	343.05
C2437	64	36x47	14/10/2024	30F1	6M1	45.00	30	50.6613269	1.0073379	50.6710513	1.0510936	3264	V	4.8	54.65	17.3	16.21	34.72	71.314
C2438	65	36x47	14/10/2024	30F0	6L1	34.00	30	50.5353467	0.883975	50.5463109	0.9270769	3295	V	5.1	48.4	15.7	16.30	34.68	35.272
C2440	66	36x47	15/10/2024	29F1	4N1	17.00	20	50.2124894	1.4383877	50.2042021	1.4123387	2071	V	5.2	40.05	13.9	14.91	33.28	349.8
C2439	67	36x47	15/10/2024	29F1	5M1	35.00	30	50.3212179	1.2272673	50.3072792	1.1853056	3355	V	4.7	47.4	15.4	16.20	34.28	132.06
C2441	68	36x47	15/10/2024	29F1	5N2	30.00	30	50.4245843	1.3510473	50.4464804	1.3854889	3444	V	5.2	47.9	15.5	15.90	34.14	252.33
C2442	69	36x47	15/10/2024	29F1	5N1	26.00	30	50.4482921	1.4271303	50.4749795	1.4417636	3140	V	4.8	45.85	15.1	15.58	33.95	1853.3
C2443	70	36x47	16/10/2024	29F1	5O1	13.00	20	50.4855719	1.5378033	50.4667411	1.5354305	2098	V	6.1	35.9	13.2	14.70	33.06	638.03
C2444	71	36x47	16/10/2024	30F1	6O2	28.00	30	50.5984733	1.5222859	50.57524	1.5139848	2645	V	5.2	50.3	16.4	15.22	33.65	56.055
C2445	72	36x47	16/10/2024	30F1	6O1	28.00	30	50.6908069	1.5294531	50.6723411	1.5381898	2141	V	4.8	49	15.9	15.24	33.54	76.625
C2446	73	36x47	16/10/2024	30F1	6N1	29.00	21	50.6026109	1.4541165	50.5843255	1.4382799	2317	V	4.8	47.6	15.35	15.90	34.11	652.68
C2449	74	36x47	17/10/2024	30F1	7N1	27.00	30	50.8347034	1.3273624	50.8509268	1.3388731	1975	V	4.7	50.8	15.7	16.20	34.66	1309.6

Western channel

Station code	Trawl number	Device	Date	CIEM square	Strate	Depth	Duration	Shoot Lat	Shoot Long	Haul Lat	Haul Long	Distance	Trawl Validity	Net Opening	Door Spread	Wing Spread	Surface T°C	Surface salinity	Total catch (kg)
C2308	1	36x49	17/9/2024	26E4	OFF06	112.00	30	48.6642223	-5.367201	48.6630272	-5.36956283	5093	V	4.9	54.7	19.59412	15.12	35.35	95.461
C2311	2	36x49	18/9/2024	26E4	OFF01	117.00	30	48.8193765	-5.7802545	48.8220993	-5.7374965	3142	V	5.4	58	19.87647	17.00	35.24	96.775
C2312	3	36x49	18/9/2024	26E4	OFF02	107.00	30	48.9014607	-5.332255333	48.9131262	-5.309066	2132	V	5.25918	57	19.31176	16.17	35.35	70.139
C2313	4	36x49	18/9/2024	27E4	WEC22	102.00	30	49.0800921	-5.0416535	49.0909108	-5.0025408	3087	V	5.76364	57	19.42941	14.66	35.35	193.2
C2314	5	36x49	18/9/2024	27E5	NOB07	101.00	30	49.2646436	-4.7437396	49.2546348	-4.7696875	2189	V	5.7	56	19.1	15.63	35.34	124.59
C2316	6	36x49	19/9/2024	27E4	OFF03	105.00	30	49.1776554	-5.3873485	49.1931236	-5.3712193	2086	V	5.91951	56.8294	18.71111	15.90	35.35	48.979
C2317	7	36x49	19/9/2024	27E4	OFF05	100.00	30	49.3830669	-5.3725274	49.3883455	-5.3475392	1901	V	6.02439	55.5	18.9	16.20	35.34	78.563
C2318	8	36x49	19/9/2024	27E4	OFF04	111.00	30	49.2978752	-5.8414552	49.2908696	-5.8770883	2699	V	6	58.9	19.4	16.14	35.33	180.63
C2319	9	36x49	19/9/2024	28E4	WEC18	100.00	31	49.5982469	-5.5882681	49.5894589	-5.6227708	2669	V	5.66531	56.3294	18.9	16.00	35.34	177.04
C2321	10	36x49	20/9/2024	28E4	WEC21	87.00	30	49.8120233	-5.2727465	49.8106158	-5.3052049	2331	V	5.6102	55	19	16.35	35.23	83.926
C2322	11	36x49	20/9/2024	28E4	WEC23	89.00	30	49.7464521	-5.0752755	49.7460628	-5.1161755	2935	V	5.6	57.272	19.4	16.30	35.22	102.99
C2323	12	36x49	20/9/2024	28E5	WEC06	84.00	30	49.6521947	-4.8067707	49.6507084	-4.7745565	2324	V	5.52222	57.5882	18.9	15.45	35.27	137.46
C2324	13	36x49	20/9/2024	28E5	WEC08	78.00	30	49.7542332	-4.3833038	49.7618781	-4.3487643	2619	V	5.82857	56.3	18.9	15.06	35.25	58.076
C2325	14	36x49	20/9/2024	28E5	WEC14	84.00	30	49.8458155	-4.6159478	49.8484608	-4.6535567	2709	V	5.69592	55.1529	18.94706	16.30	35.22	366.34
C2327	15	36x49	21/9/2024	29E5	SOE01	69.00	30	50.1310843	-4.7203439	50.1204469	-4.7566472	2841	V	5.57347	55	18.5	16.30	35.17	1067.2
C2328	16	36x49	21/9/2024	29E5	SOE11	71.00	19	50.1346283	-4.4588985	50.1362523	-4.48592083	1931	V	5.91765	52.0778	17.7	16.02	35.22	1047.8
C2329	17	36x49	21/9/2024	29E5	SOE12	65.00	30	50.1474703	-4.121799	50.1427652	-4.07953067	3383	V	5.9	51.8412	17.6	16.40	35.15	733.74
C2330	18	36x49	21/9/2024	29E6	SOE04	64.00	30	50.0951929	-3.6236445	50.107151	-3.5942148	2481	V	5.9551	54.5	18.2	16.95	35.09	133.4
C2331	19	36x49	21/9/2024	29E6	SOE05	60.00	30	50.2403083	-3.2823329	50.2524558	-3.2524256	2517	V	6.43469	51.7	17.5	17.43	35.07	114.08
C2333	20	36x49	22/9/2024	30E7	SOE08	32.00	30	50.58611	-2.8640289	50.5859913	-2.85376683	5735	V	5.69592	48.3118	16.67059	17.60	34.99	121.13
C2334	21	36x49	22/9/2024	29E7	CEC03	58.00	30	50.3205677	-2.5255933	50.3215331	-2.5625544	2622	V	5.6	51.9	16.9	17.71	35.07	317.26
C2335	22	36x49	22/9/2024	29E7	SOE06	65.00	30	50.1029916	-2.8805357	50.0967188	-2.9200275	2897	V	5.86327	53.1	17.95294	17.09	35.09	77.628
C2336	23	36x49	22/9/2024	28E6	SOE03	68.00	30	49.879179	-3.3245389	49.8842354	-3.2930005	2326	V	5.5	52.78	18.3	16.85	35.12	405.11
C2339	24	36x49	23/9/2024	28E6	WEC27	76.00	30	49.7712034	-3.7823929	49.789916	-3.7452332	3381	V	5.92195	54.5294	18.82353	16.10	35.21	215.15
C2340	25	36x49	23/9/2024	28E6	SOE10	75.00	30	49.7146561	-3.3895855	49.6988182	-3.4158828	2581	V	6.01837	52.5	17.9	16.60	35.19	152.97
C2341	26	36x49	23/9/2024	27E6	WEC29	116.00	30	49.4933925	-3.4954751	49.4818234	-3.5321488	2941	V	5.70408	56.5529	18.5	16.52	35.25	85.874
C2342	27	36x49	23/9/2024	27E6	WEC11	80.00	30	49.2952342	-3.6984783	49.3093913	-3.6686981	2668	V	5.67347	56.1	18.5	15.87	35.27	87.034
C2345	28	36x49	24/9/2024	27E5	WEC03	93.00	31	49.2038708	-4.3394011	49.1898033	-4.375454	3046	V	5.68776	56.4471	18.6	15.10	35.33	193.07
C2346	29	36x49	24/9/2024	27E5	NOB09-B	95.00	30	49.0361196	-4.1249385	49.025062	-4.1580405	2706	I	6.00204	56.4	18.61176	15.25	35.32	0
C2347	30	36x49	24/9/2024	26E5	NOB01-B	97.00	28	48.8888694	-4.3648062	48.869784	-4.39532217	3075	V	5.50244	55.5	19.51765	14.49	35.34	168.7
C2348	31	36x49	24/9/2024	26E6	NOB11 VELOINE	69.00	28	48.8266645	-3.9105805	48.803389	-3.8895235	3008	V	5.71463	53.8941	18.09412	16.26	35.23	264.12
C2351	32	36x49	25/9/2024	27E6	NOB10	69.00	30	49.0615452	-3.1937978	49.0727915	-3.1527843	3235	V	5.69184	54	18.33529	17.97	35.03	205.11
C2352	33	36x49	25/9/2024	27E7	NOB04	69.00	30	49.1364088	-2.9491757	49.1619357	-2.9285795	3206	V	5.61224	55.7	18.4	17.90	35.03	184.16
C2353	34	36x49	25/9/2024	26E7	NBG01	40.00	30	48.8010741	-2.6544024	48.7870476	-2.6141622	3330	V	5.94286	47.6647	16.15294	17.95	35.02	319.77
C2354	35	36x49	25/9/2024	26E7	NBG02	40.00	30	48.8242597	-2.388333333	48.8107963	-2.405354	5502	V	5.65918	49.5471	16.8	17.82	35.00	243.41
C2357	36	36x49	26/9/2024	26E7	NBG06	43.00	30	48.9467138	-2.561895833	48.9266667	-2.52547133	3467	V	5.97561	49	17	17.80	35.02	355.27
C2358	37	36x49	26/9/2024	27E7	NBG03	54.00	30	49.1382741	-2.5091334	49.145758	-2.547799	2935	V	6.36061	52.5529	17	17.77	35.03	424.25
C2359	38	36x49	26/9/2024	27E7	NBG05	52.00	3	49.3401995	-2.270857667	49.3391945	-2.27719083	1033	I	6	52	17.5	17.40	35.02	0
C2360	39	36x49	26/9/2024	28E7	NBG04	42.00	30	49.5877929	-2.1961779	49.5613716	-2.2066861	3037	V	6.39592	50.0588	17.4	17.61	35.03	270.3
C2361	40	36x49	27/9/2024	27E7	NOB05	66.00	30	49.3578466	-2.883915	49.3426641	-2.8476881	3117	V	5.8122	56.096	18.35882	17.66	35.02	169.2
C2362	41	36x49	27/9/2024	27E6	WEC28	74.00	30	49.4626901	-3.2356021	49.4755745	-3.1974728	3112	V	6.2303	57.6	18.9	17.07	35.14	97.136
C2363	42	36x49	27/9/2024	28E7	CEC02	73.00	30	49.6057397	-2.8201846	49.5923879	-2.8561714	2987	V	5.62222	56.3235	19	17.06	35.09	214.55
C2364	43	36x49	27/9/2024	28E7	CEC01	74.00	30	49.7903218	-2.7782	49.7786403	-2.820898	3331	V	5.83673	54.1765	18	16.80	35.13	175.98
C2367	44	36x49	28/9/2024	28E7	CEC04	65.00	30	49.9472355	-2.4597697	49.9414549	-2.4998669	2938	V	5.6	54.2941	18	16.96	35.08	77.745
C2368	45	36x49	28/9/2024	29E7	CEC09	55.00	30	50.2996495	-2.1685244	50.3043656	-2.1311523	2702	V	5.52653	54.32	18	17.21	35.08	126.71
C2369	46	36x49	28/9/2024	29E8	CEC12	38.00	30	50.4036261	-1.6622238	50.4094929	-1.6184432	3165	V	5.4122	51.5235	17.13529	17.51	34.95	151.51
C2371	47	36x49	29/9/2024	28E8	CEC06	77.00	30	49.9734697	-1.5880601	49.9732025	-1.615589	1967	V	5.7	57	18.4	17.40	35.01	30.326
C2372	48	36x49	29/9/2024	28E8	CEC07	59.00	24	49.795174	-1.5813131	49.7982108	-1.6189125	2715	V	6.0439	52.6882	17.6	17.38	34.96	104.44

ANNEXE 2 : Dominance of the first 20 fish species

Eastern channel

Scientific name	Dominance in number (%)
Trachurus trachurus	47.18%
Trisopterus minutus	17.14%
Sardina pilchardus	14.77%
Scomber scombrus	5.57%
Sprattus sprattus	4.40%
Loligo vulgaris	3.97%
Alloteuthis	1.36%
Spondyliosoma cantharus	0.97%
Trisopterus luscus	0.95%
Gymnammodytes semisquamatus	0.69%
Scyliorhinus canicula	0.61%
Sepia officinalis	0.35%
Chelon auratus	0.23%
Limanda limanda	0.19%
Engraulis encrasicolus	0.18%
Mullus surmuletus	0.17%
Merlangius merlangus	0.15%
Callionymus lyra	0.15%
Raja clavata	0.15%
Pleuronectes platessa	0.14%

Scientific name	Dominance by weight(%)
Trachurus trachurus	34.99%
Scomber scombrus	18.74%
Sardina pilchardus	14.85%
Scyliorhinus canicula	5.11%
Loligo vulgaris	5.09%
Trisopterus minutus	4.79%
Raja clavata	3.84%
Mustelus asterias	2.28%
Chelon auratus	2.07%
Spondyliosoma cantharus	1.75%
Trisopterus luscus	0.80%
Sepia officinalis	0.67%
Scyliorhinus stellaris	0.62%
Dicentrarchus labrax	0.45%
Raja undulata	0.38%
Pleuronectes platessa	0.31%
Limanda limanda	0.29%
Conger conger	0.29%
Sprattus sprattus	0.28%
Dasyatis tortonesei	0.28%

Western channel

Scientific name	Dominance in number (%)
Trachurus trachurus	52.15%
Sardina pilchardus	16.91%
Sprattus sprattus	4.53%
Trisopterus minutus	4.41%
Scomber scombrus	4.34%
Loligo vulgaris	3.79%
Capros aper	3.50%
Engraulis encrasicolus	2.71%
Loligo forbesii	2.38%
Spondyliosoma cantharus	1.18%
Illex coindetii	1.17%
Merlangius merlangus	0.85%
Scyliorhinus canicula	0.44%
Alloteuthis	0.40%
Hyperoplus immaculatus	0.26%
Chelidonichthys cuculus	0.20%
Trisopterus luscus	0.10%
Gymnammodytes semisquamatus	0.09%
Mustelus asterias	0.06%
Conger conger	0.05%

Scientific name	Dominance by weight(%)
Trachurus trachurus	25.81%
Sardina pilchardus	15.28%
Scomber scombrus	6.69%
Scyliorhinus canicula	6.54%
Mustelus asterias	4.54%
Loligo vulgaris	4.48%
Spondyliosoma cantharus	4.45%
Merlangius merlangus	4.08%
Capros aper	3.24%
Trisopterus minutus	2.36%
Conger conger	2.15%
Loligo forbesii	2.07%
Engraulis encrasicolus	1.99%
Raja undulata	1.91%
Raja brachyura	1.45%
Raja clavata	1.24%
Galeorhinus galeus	1.22%
Illex coindetii	1.09%
Chelidonichthys cuculus	1.04%
Dicentrarchus labrax	1.00%

ANNEXE 3 : Percentage occurrence (>10%)

Eastern channel	
Scientific name	Occurence
Loligo vulgaris	100.00
Trachurus trachurus	100.00
Alloteuthis	93.24
Sepia officinalis	90.54
Scomber scombrus	85.14
Scyliorhinus canicula	79.73
Spondyliosoma cantharus	71.62
Zeus faber	70.27
Sardina pilchardus	68.92
Mustelus asterias	66.22
Mullus surmuletus	64.86
Raja clavata	60.81
Chelidonichthys cuculus	59.46
Callionymus lyra	51.35
Pleuronectes platessa	45.95
Conger conger	43.24
Trisopterus minutus	43.24
Hippocampus hippocampus	41.89
Dicentrarchus labrax	40.54
Solea solea	36.49
Raja undulata	35.14
Merlangius merlangus	33.78
Chelidonichthys lucerna	32.43
Sprattus sprattus	29.73
Chelidonichthys lastoviza	28.38
Limanda limanda	27.03
Blennius ocellaris	25.68
Loligo forbesii	25.68
Scyliorhinus stellaris	25.68
Engraulis encrasicolus	22.97
Sepiola	18.92
Trisopterus luscus	18.92
Hyperoplus lanceolatus	17.57
Pomatoschistus	17.57
Raja brachyura	17.57
Echiichthys vipera	14.86
Eutrigla gurnardus	14.86
Dasyatis tortonesei	13.51
Galeorhinus galeus	13.51
Gobius niger	12.16
Platichthys flesus	12.16
Raja montagui	10.81
Scophthalmus maximus	10.81
Trachinus draco	10.81

Western channel	
Scientific name	Occurence
Trachurus trachurus	95.83
Scyliorhinus canicula	89.58
Trisopterus minutus	85.42
Loligo forbesii	81.25
Chelidonichthys cuculus	79.17
Zeus faber	79.17
Illex coindetii	72.92
Scomber scombrus	72.92
Alloteuthis	70.83
Conger conger	66.67
Sardina pilchardus	64.58
Loligo vulgaris	62.50
Trisopterus luscus	50.00
Capros aper	43.75
Engraulis encrasicolus	41.67
Todaropsis eblanae	39.58
Spondyliosoma cantharus	37.50
Merlangius merlangus	33.33
Microstomus kitt	31.25
Raja undulata	29.17
Callionymus lyra	27.08
Lophius piscatorius	27.08
Merluccius merluccius	25.00
Mustelus asterias	25.00
Scyliorhinus stellaris	25.00
Sepia officinalis	25.00
Dicentrarchus labrax	22.92
Micromesistius poutassou	20.83
Mullus surmuletus	20.83
Echiichthys vipera	18.75
Galeorhinus galeus	18.75
Hyperoplus immaculatus	18.75
Raja brachyura	18.75
Sprattus sprattus	18.75
Lepidorhombus whiffiagonis	16.67
Eutrigla gurnardus	14.58
Raja clavata	14.58
Squalus acanthias	14.58
Chelidonichthys lucerna	12.50
Ctenolabrus rupestris	12.50
Hyperoplus lanceolatus	10.42
Pagellus bogaraveo	10.42
Pleuronectes platessa	10.42

ANNEXE 4 : Occurrence of benthos in percentage (>10%)

Eastern channel	
Scientific name	Occurence
Asterias rubens	79.73
Psammechinus miliaris	74.32
Inachus dorsettensis	67.57
Pagurus prideaux	66.22
Pyuridae	54.05
Ciona intestinalis	48.65
Alcyonium digitatum	47.30
Macropodia tenuirostris	44.59
Ophiothrix fragilis	41.89
Anseropoda placenta	41.89
Alcyonidium diaphanum	41.89
Crepidula fornicata	39.19
Pagurus bernhardus	37.84
Macropodia rostrata	37.84
Liocarcinus depurator	31.08
Aphrodita aculeata	31.08
Ascidiella aspersa	29.73
Pagurus cuanensis	28.38
Ophiura ophiura	27.03
Urticina felina	27.03
Crossaster papposus	27.03
Ascidia mentula	27.03
Styela clava	25.68
Calliactis palliata	24.32
Hyas coarctatus	24.32
Dromia personata	22.97
Tethya aurantium	22.97
Pilumnus hirtellus	22.97
Pisa armata	21.62
Molgulidae	21.62
Mimachlamys varia	20.27
Henricia	20.27
Glycymeris glycymeris	18.92
Pisidia longicornis	16.22
Liocarcinus vernalis	16.22
Metridium dianthus	16.22
Alcyonidium gelatinosum	14.86
Laevicardium crassum	13.51
Suberites	13.51
Liocarcinus holsatus	13.51
Raspailia (Clathriodendron) hispida	10.81

Western channel	
Scientific name	Occurence
Echinus esculentus	45.83
Alcyonium digitatum	29.17
Hydrallmania falcata	29.17
Abietinaria abietina	25.00
Marthasterias glacialis	25.00
Inachus dorsettensis	22.92
Inachus leptochirus	22.92
Pagurus prideaux	22.92
Asterias rubens	16.67
Alcyonidium diaphanum	14.58
Pyura	14.58
Aphrodita aculeata	12.50
Chaetopterus variopedatus	12.50
Flustra foliacea	12.50
Henricia	12.50
Psammechinus miliaris	12.50
Halecium halecinum	10.42
Liocarcinus holsatus	10.42
Macropodia tenuirostris	10.42
Monodaeus couchii	10.42
Nemertesia antennina	10.42
Pentapora fascialis	10.42

ANNEXE 5 : Summary table of the work

Hydrological sampling

Device	Western Channel	Eastern Channel	Use
WP2	31	31	Food web, Zooplankton abundance, Isotopic analysis, Euphausiid sampling (ANSES), Isotopic analysis for baseline (COREPH)
Niskin à la surface	0	78	Total chlorophyll, SS, nutrient salts, phytoplanktonic flora, food web (isotopic)
SBE	65	78	Temperature, salinity, pH, fluorescence, PAR (irradiance), oxygen, turbidity, depth
MIK	37	0	Phyllosome sampling (slipper lobster and crawfish)

Trawl station and samplings in support of research programmes

Requested by		Western Channel	Eastern Channel	Use
CIEM	Trawling station	48	74	
CIEM	Otoliths	874	1311	Providing indices of abundance by age
CIEM	Measurement	23344	42501	Providing abundance indices in size
APECS	*Galeorhinus galeus*	15	16	Tagging of selachians
	Mustelus	98	255	
	Raja clavata	29	256	
	Total	**142**	**527**	
COREPH (ANSES)	Scylirhinus canicula	9		Analyses of chemical contaminants (metallic and organic) and/or isotopic ratios of carbon and nitrogen in the muscle of some fish/cephalopod species (contaminants + isotopy)
	Merlangius merlangus	11		
	Pleuronectes platessa	10		
	Scomber scombrus	24		
	Trisopterus minutus	18		
	Engraulis encrasicolus	6		
	Sardina pilchardus	17		
	Illex coinditii	4		
	Aequipecten opercularis	17		
Projet ACOST (IUEM –G. Charrier)	Lieu jaune	6		Genomic studies on the pollack (Pollachius pollachius)
Génétique Bar (IFREMER –M. Woillez)	Bar commun	48	0	Genomic studies on populations of sea bass (Dicentrachus labrax)
ANR DEMOMAR	Bar commun	209		Study of recent demographics (10 generations) of sea bass by genomics
PEPR ATLASea		103 individus ont été prélevés appartenant à 57 espèces. Cela représente 1627 tubes de prélèvement.		Production of reference genome for all species of the ichthyofauna of French metropolitan waters and study of their morpho-anatomy by CT scan
Prélèvement Wageningen Marine Research		14 Dasyatis tortonesi	16 Dasyatis tortonesi	Study of the population of stingray (Dasyatis pastinaca and Dasiatis tortenensii
IUEM		Prélèvement de 1000 *Trisopterus minutus*		For dissections and stomach content analysis practical work

Acquisitions bathymétriques :

ME70/204 multibeam echosounder	Western Channel	Eastern Channel	Use
IFREMER / NSE-ASTI	10	15	Développement des modèles physiques de description du fond

ANNEXE 6 : MEGASCOPE monitoring

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La Rochelle Université

Distribution monitoring of marine megafauna in the Channel

MEGASCOPE

Campaign report

CGFS 2024

Written by :
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Observers:
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November 2024

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Ifremer

OFB

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We would like to express our sincere thanks to IFREMER and more specifically the managers toCGFS campaignDidier LE ROY and Victor MARTIN BAILLET for allowing us to take part in these missions on board the *N/O Thalassa,* .so that we can monitor the marine megafauna Thanks also to the scientific teams on board the ship for their support during the campaign.

For the smooth running of operations on board the *M/O Thalassa*, we would also like the captain and the entire Génavir crew.to thank

BACKGROUND

The Ifremer CGFS (campaigns *Channel Ground Fish Survey)* are linked to the European project contractualisation for the collection of fisheries data. Their aim is to estimate the abundance indices of the main commercial fish species in the Channel and North Sea. More specifically, they aim to assess the part of the population is thatinaccessible to professional , fishingi.e. recruitment, which represents the potential of young individuals entering the population. The implementation of an ecosystemic approach including the marine megafauna was carried out with passage of this campaign on a larger vessel, the *N/O Thalassa*. The Megascope protocol was applied to the CAMANOC campaign the CGFS in the counterpart Western . Since then, it has been Channelimplemented annually, with sampling initially centred on the eastern part of the Channel and now more evenly distributed throughout the Channel.

Observations of marine have been collected on CGFS since 2014 via megafauna MEGASCOPE monitoring coordinated by the ObservatoryPelagis . The data, which will initially , will be available to characterise the distribution and abundance of species in the Channel. This campaign will add to the historical series already in place, with the aim of carrying out long-term monitoring of the marine megafauna and detecting any trends. It is thus at the heart of the monitoring strategy for marine mammals and birds put in place at Community level (Marine Environment Framework and Strategy Directive) and meets the challenges relating to biological diversity.be banked

Document citation : Vansteenberghe C., 2024. MEGASCOPE: Monitoring the distribution of marine in the Channel. Campaign report - CGFS 2024megafauna

Cover page photo credits: S. Ernst

EFFORT AND OBSERVATION CONDITIONS

The campaign took place throughout the English Channel **from 17 September to 19 October 2024** in 2 sampling . Between legs17 and 29 September, the first leg covered the radials in the western part between Brest and Cherbourg. After a one-day stopover, the second leg covered the eastern part from 1 to 17 October between Cherbourg and Boulogne-sur-Mer. October 19 was the ship's return transit to Brest.

Work on board was carried out for 251 hours over 29 days at sea. The observation effort corresponded 116 hours carried out following the standard protocol. To this must be added 135 hours of tracking surveys carried out 184 times during trawling, fish discards or in the middle of long transits. To achieve this, 4 observers took it in turns to board these bequests.

The conditions encountered during the survey with observation appeared to be fairly favourable for detection, and enabled more than 76% of the effort to be made with a sea state of less than or equal to 4 Beaufort (Figure 1). The maximum sea state encountered during observation was 5-6 Beaufort. It was recorded on 26 and 27 September and on 3 and 8 October.

Taking into account all the parameters that could affect detection, in particular rain and visibility, the general conditions were considered to by observers be excellent to good 47% of the time, average 36% of the time and poor 17% of the time (Figure 1).

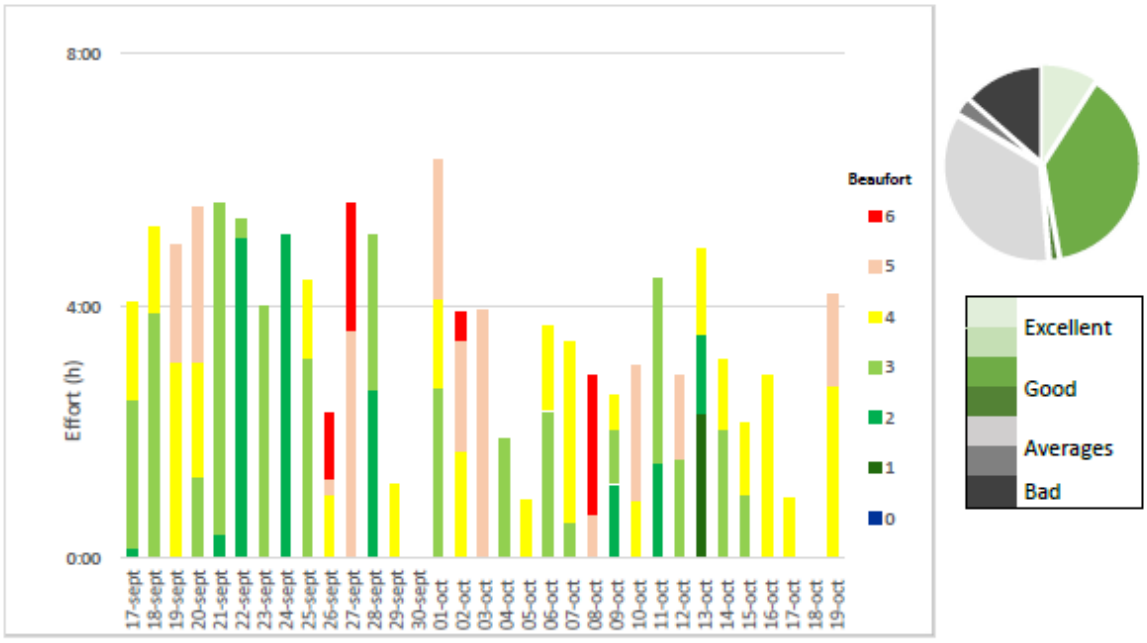

Figure 1: Observation effort time with sea states encountered (Beaufort) and conditions estimated by observers

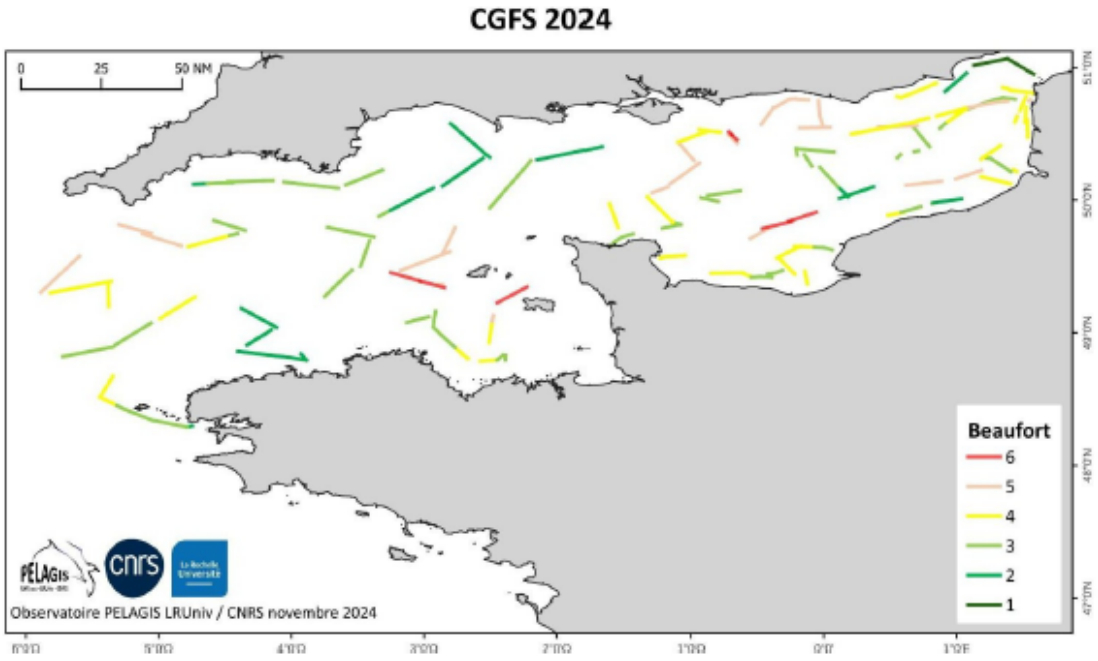

Figure 2: Survey observation and sea states encountered

Figure 2 shows that the areas surveyed with the best observation conditions are located in the western part of the Channel, particularly close to the English coast, but also along the Brittany coast.

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OVERALL RESULTS OF OBSERVATIONS

The total number of observations collected was 3,063, or 12,591 individuals/objects, both during and outside periods survey (Table 1). The follow-up surveys represent 415 observations, or 15,172 individuals, but with potentially the same individuals from one operation to the next.

Birds account for the vast majority of sightings (). Marine mammals make up , and the main representatives of other marine , i.e. sharks and other large fish (swordfish, sunfish and tuna) 2%.megafauna species

Human activity accounts for 14% of total . observationsThis is manifested by ships, which account for 8% of total observations, followed by buoys and macro-waste, which account for 4% and 2% of observations . respectivelyIt should be noted that the detection of floating macro-waste is highly dependent on weather conditions.

Category	Comments	Individuals/objects
Human activity	427	554
> Fishing buoy	118	129
> Boat	250	366
> Waste	59	59
Marine mammal	108	534
Seabird	2276	10651
Coastal bird	9	34
Land bird	190	692
Other marine fauna	53	126
Grand total	**3 063**	**12 591**

Table 1: Number sightings and individuals (with/without effort)

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MARINE MAMMAL WATCHING

A total of 108 marine mammal sightings were recorded throughout the campaign. Almost all of them (86%) related to the common dolphin and were mainly distributed in the western part of the Channel (Figure 3). The observation located furthest to the east of the zone appears very oriental for the known distribution of the species. The bottlenose dolphin has also been seen in this area, mainly on the outskirts of the Cotentin peninsula.

The only balenoptera observed during this campaign was a minke whale, seen off the Bay of Seine. Harbour porpoises were observed two occasions from onthe Thalassa off the English coast towards Dungeness. Their number is estimated at 7 individuals.

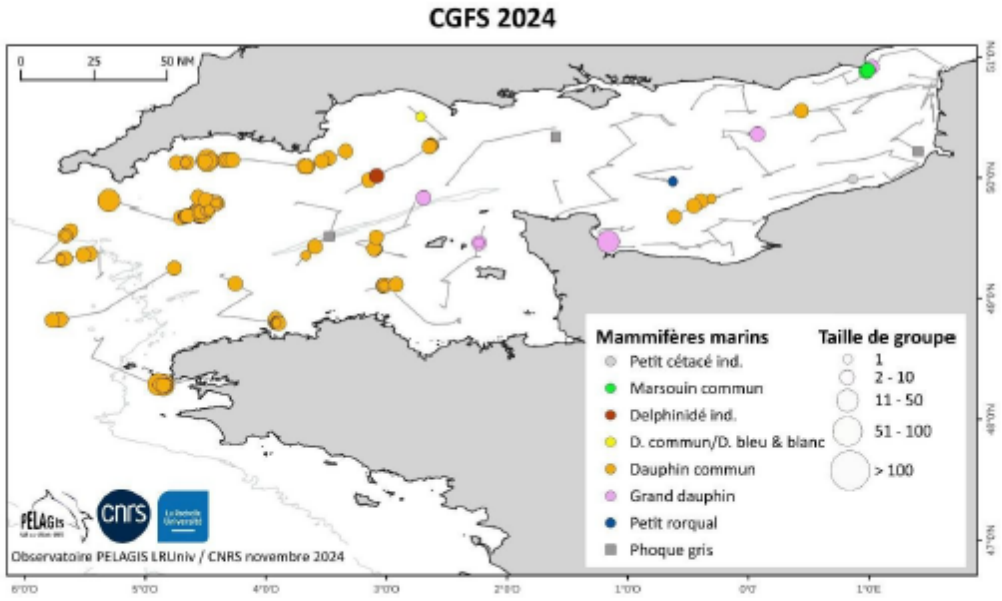

Figure 3: Distribution of marine mammal sightings (on/off effort)

Figure 4: Bottlenose dolphin - photo by S. Ernst

SEABIRD WATCHING

Birds made up the majority of observations and were present throughout the area sampled. Of these, 81% were seabirds, 6% were land birds (migrating) and less than 1% were coastal birds (anatidae and cormorants). Over the entire area covered with effort, the 2,276 observations of seabirds represent 10,651 individuals and are divided into 8 families. The dominant family is the Sulidae, accounting for 43% of sightingsseabird . It is mainly represented by the Northern Gannet, with large numbers observed along the coasts of the western Channel (Figure 5). A rare sighting a of brown gannet was off the tip of Barfleur. With range centred on the Atlantic , tropical islandsthis species described as occasional - rare on the Channel coast.

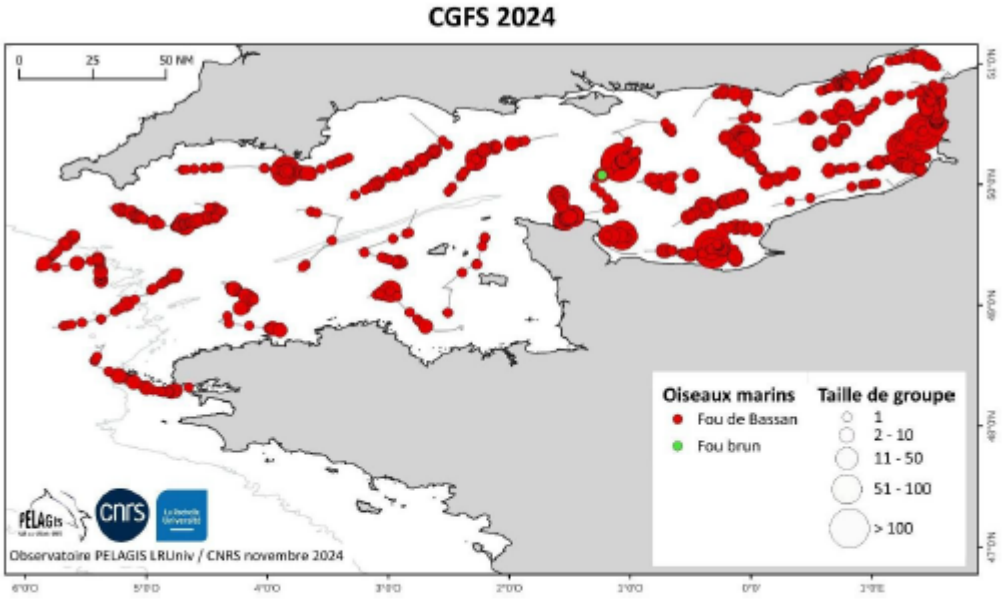

Figure 5: Distribution of gannet sightings (in/out of effort)

Figure 6: gannet - S. Ernst

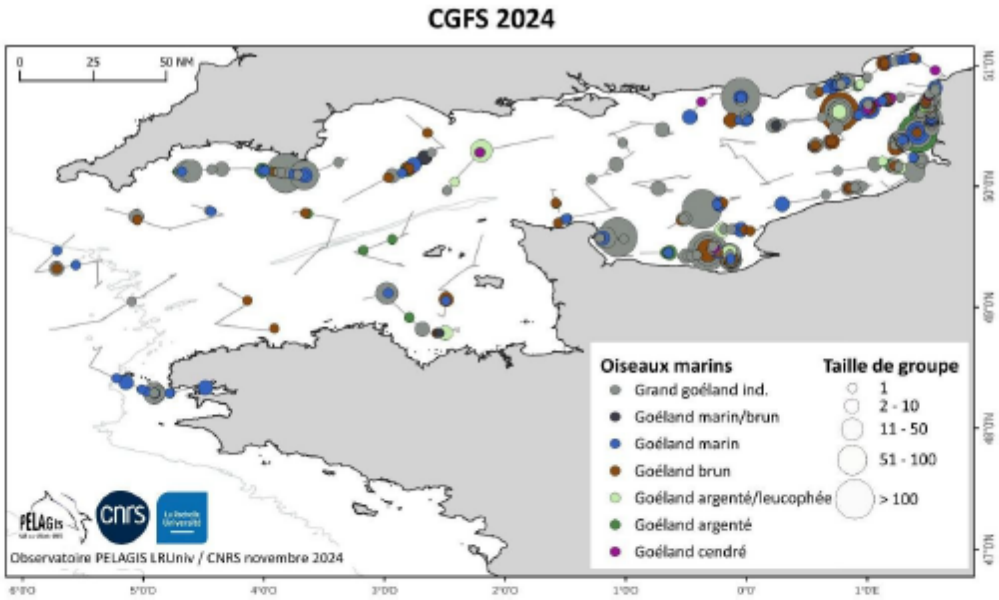

Figure 7: Distribution of observations of large larids (in/out of effort)

This is followed by the laridae family, which is more present in the eastern Channel (28%) and is mainly represented by herring gulls and great black-backed gulls, and by black-legged kittiwakes and pygmy gulls in the case of small larids. Terns accounted for less than 2% of observations (Figures 7 and 8).

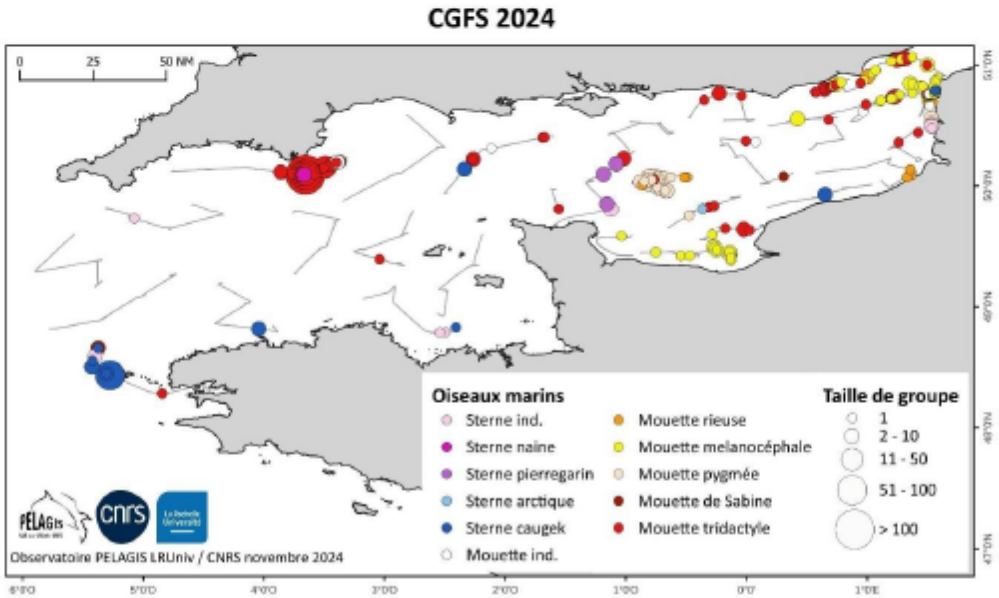

Figure 8: Distribution of sightings of small larids (gulls and terns) (in/out of effort)

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Procellariidae came third in the observations () with a majority of shearwaters, Balearic shearwaters and greater shearwaters (Figure 9). They are mainly found in the western Channel, although large groups of Balearic shearwaters were stationed to the east of the Cotentin peninsula.

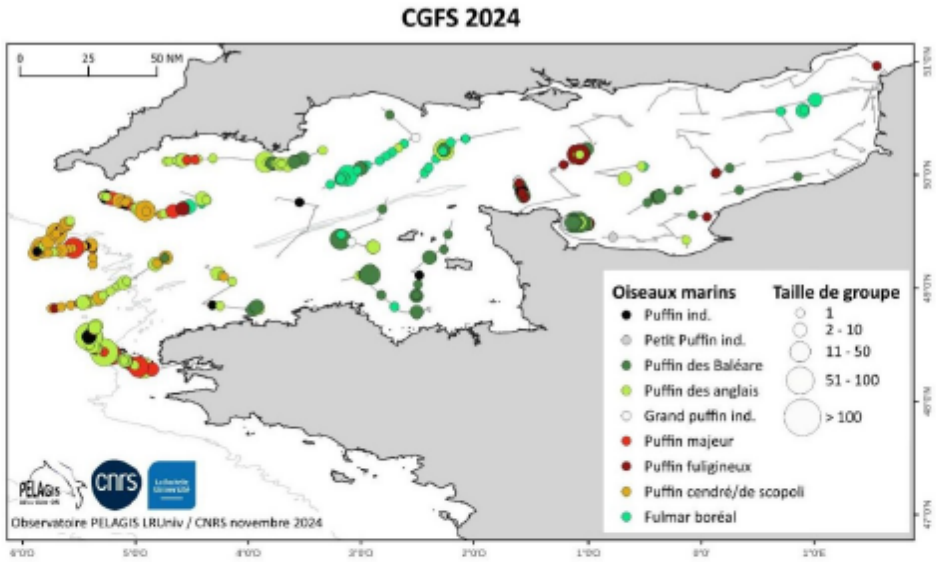


Figure 9: Distribution of procellariid observations (in/out of effort)

The alcid family accounted for 9% of observations, with a majority of common guillemots and razorbills identified (Figure 10). They are mainly found in the eastern the Channel.part of

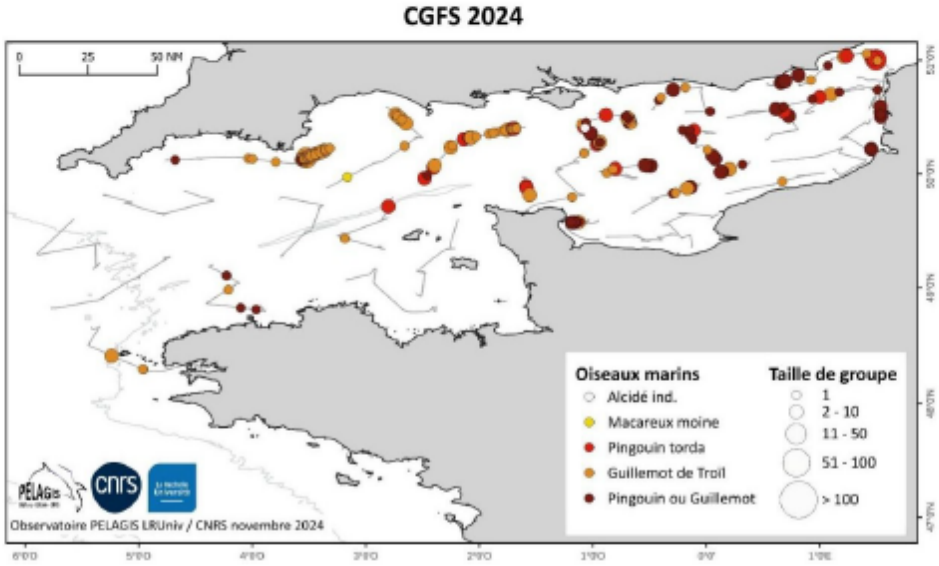


Figure 10: Distribution of Alcidae (sightings on/off effort)

The other families, including the hydrobatidae and stercorariidae, are very poorly represented (less than 2% of seabird observations) (Figure 11).

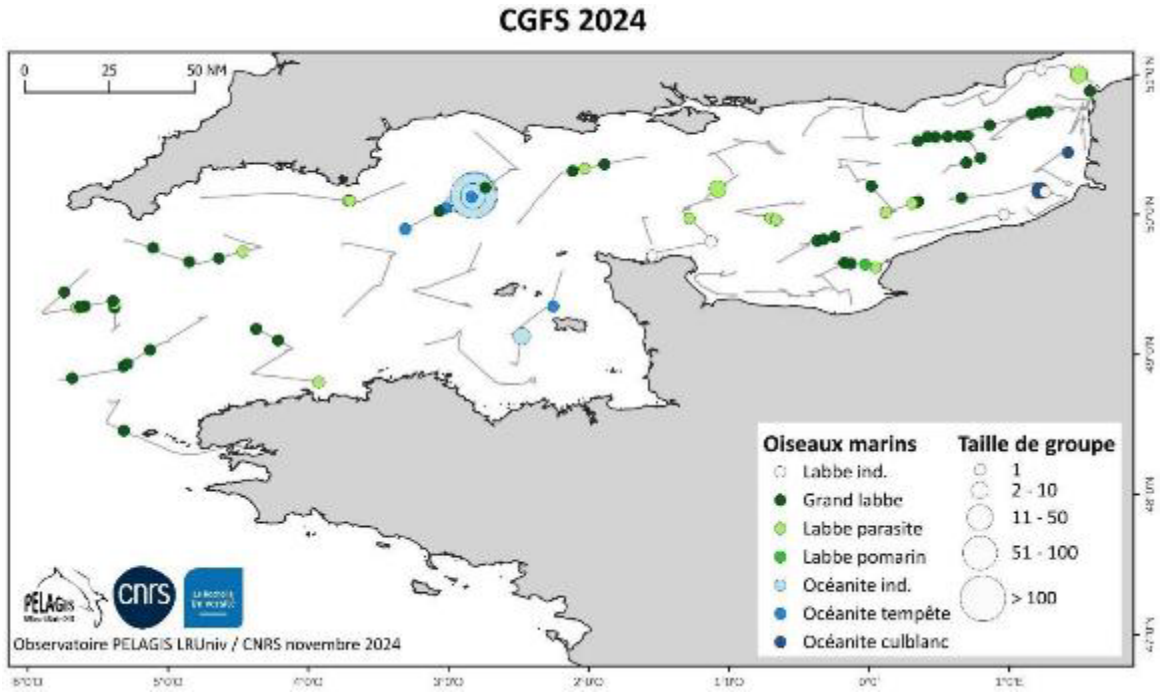


Figure 11: Distribution of observations of jaegers and storm-petrels (in/out of effort)

11

OBSERVATIONS OF OTHER MARINE MEGAFAUNA SPECIES

Other species of marine megafauna include pelagic fish (tuna, sunfish, etc.), sea turtles and jellyfish. A total of 52 sightings were collected. The vast majority concerned tuna (64%) and large unidentified fish (Figure 12).

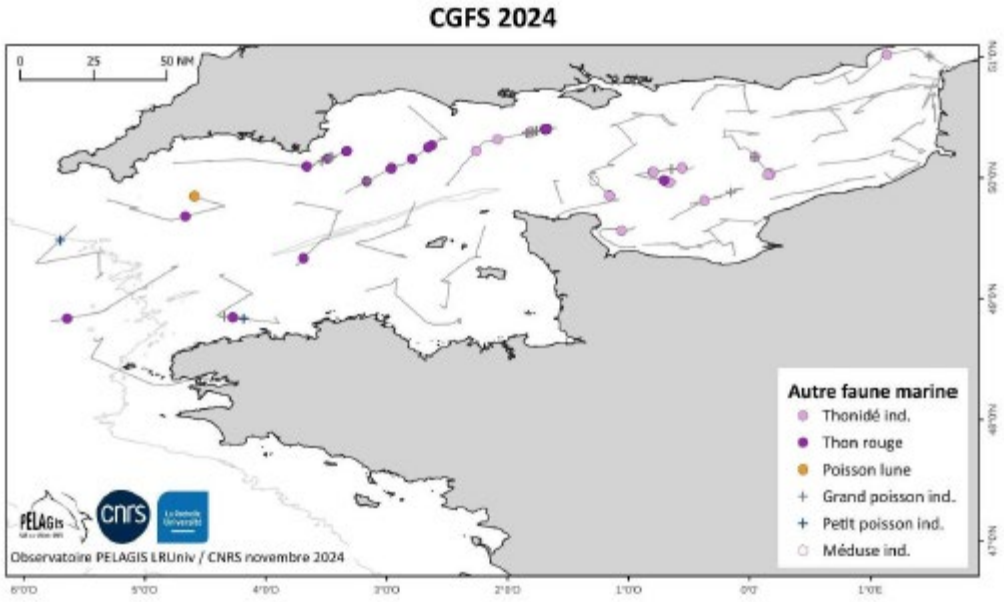


Figure 12: Distribution of sightings of other megafauna species (with/without effort)

Figure 13: Bluefin tuna - S. Ernst

OBSERVATIONS OF SIGNS HUMAN ACTIVITY

Linked more or less directly to the activities taking place in the study area, 172 observations, representing 184 objects, were recorded. The vast majority of boats observed were commercial vessels, used to transport goods, petroleum products or containers.

As far as fishing activities are concerned, trawlers make up the majority of the boats observed. They are particularly present in the east, close to the French . coastFishing buoys are generally concentrated along the coast (Figure 14). Floating macro-waste, most of which is of plastic origin, was not much in evidence this year and was distributed throughout the area sampled (Figure 15).

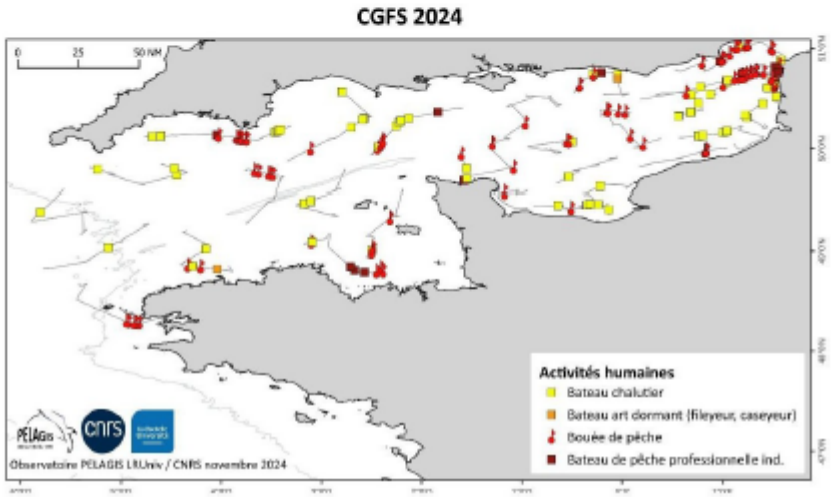


Figure 14: Distribution of observations human activity linked to fishing (in/out of effort)

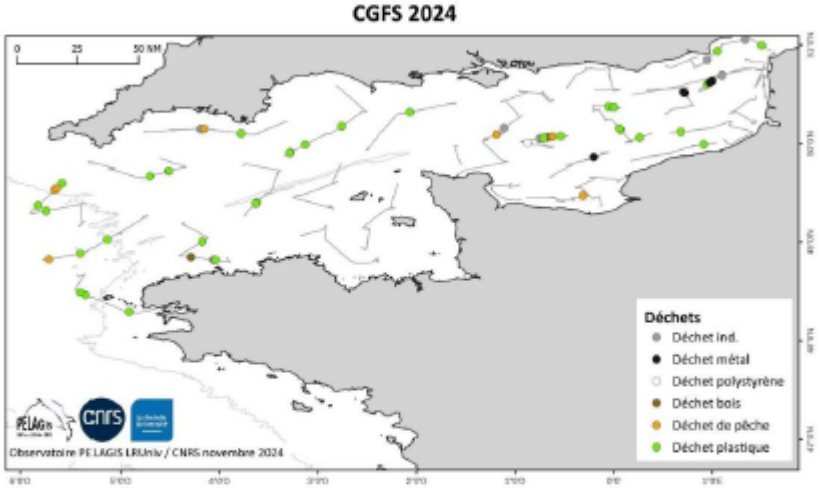


Figure 15: Distribution of macro-waste (in effort)

CONCLUSION

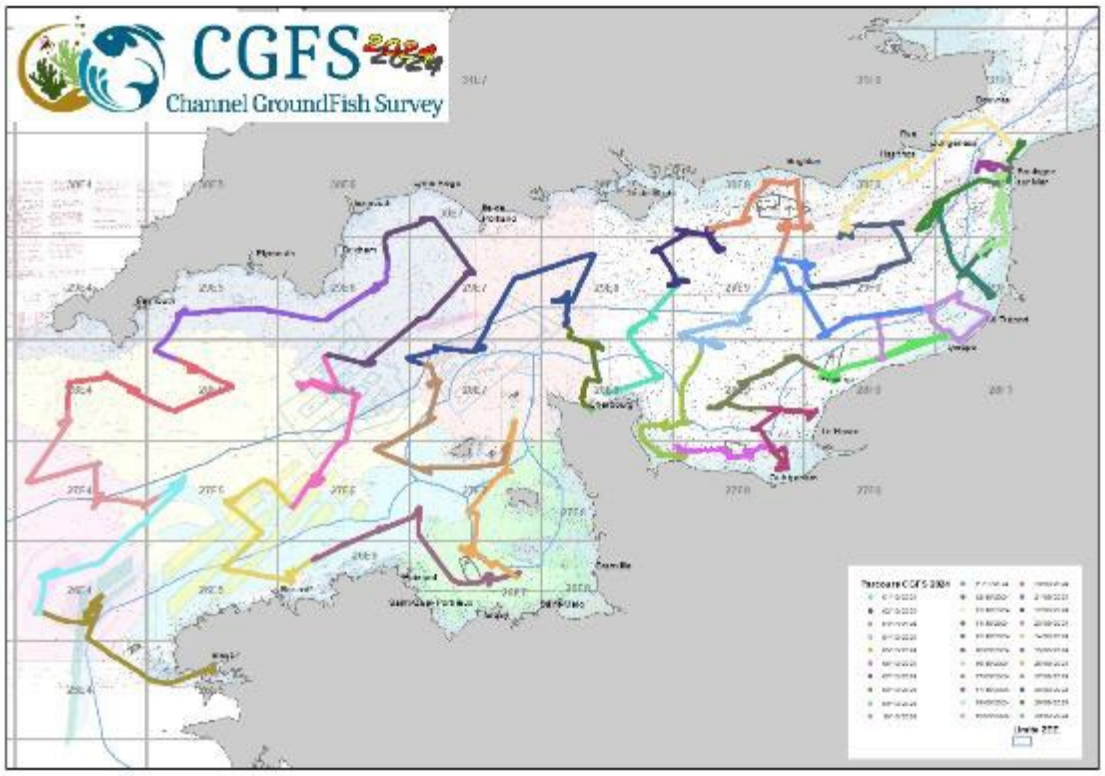
The Mégascope , programmeaimed at counting top predators during Ifremer's annual campaigns, was set up in 2024 for the tenth consecutive year.

The field conditions encountered during this campaign in the Channel appeared to be rather favourable for detection. Observations were made for 116 hours using a standardised methodology, and 3,063 observations were recorded across the board, 80% of which related to marine megafauna.

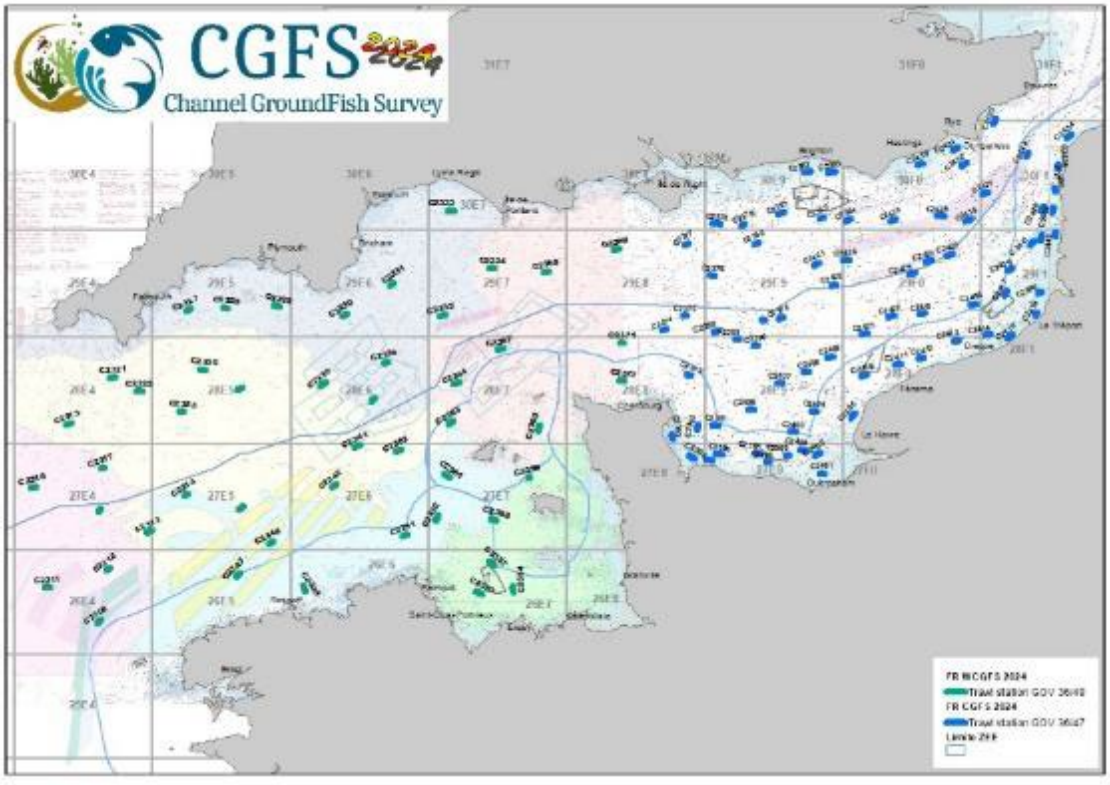
The main taxa observed were , larids (gulls) and common . dolphinsThe 184 tracking survey points also provided information on the diversity of fauna present during fishing operations.

ANNEXE 7 : Maps of the sampling carried out

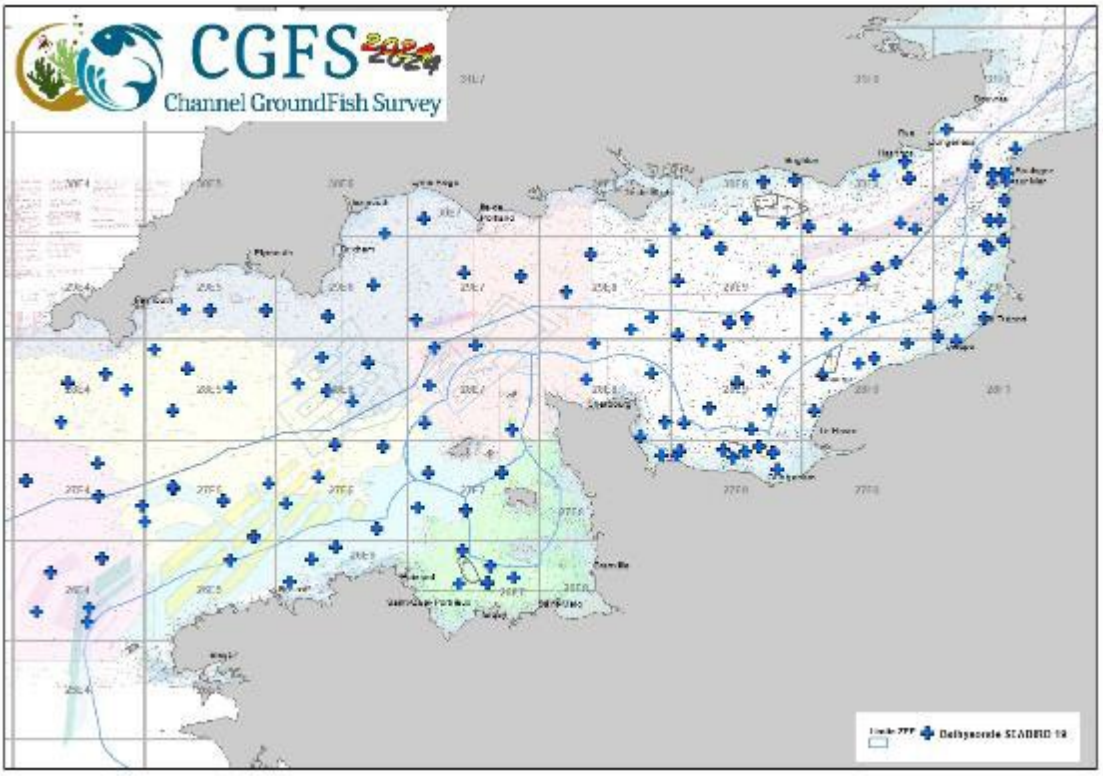
Roadmap of the CGFS 2024 survey



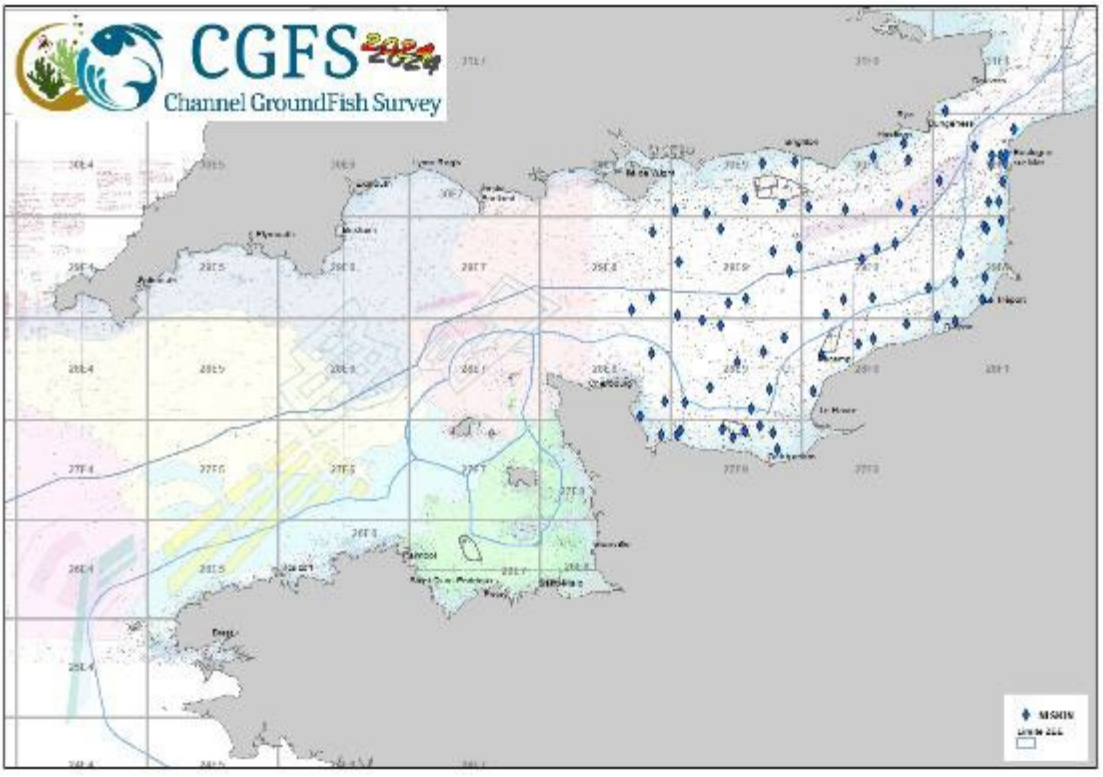
Distribution of trawl stations



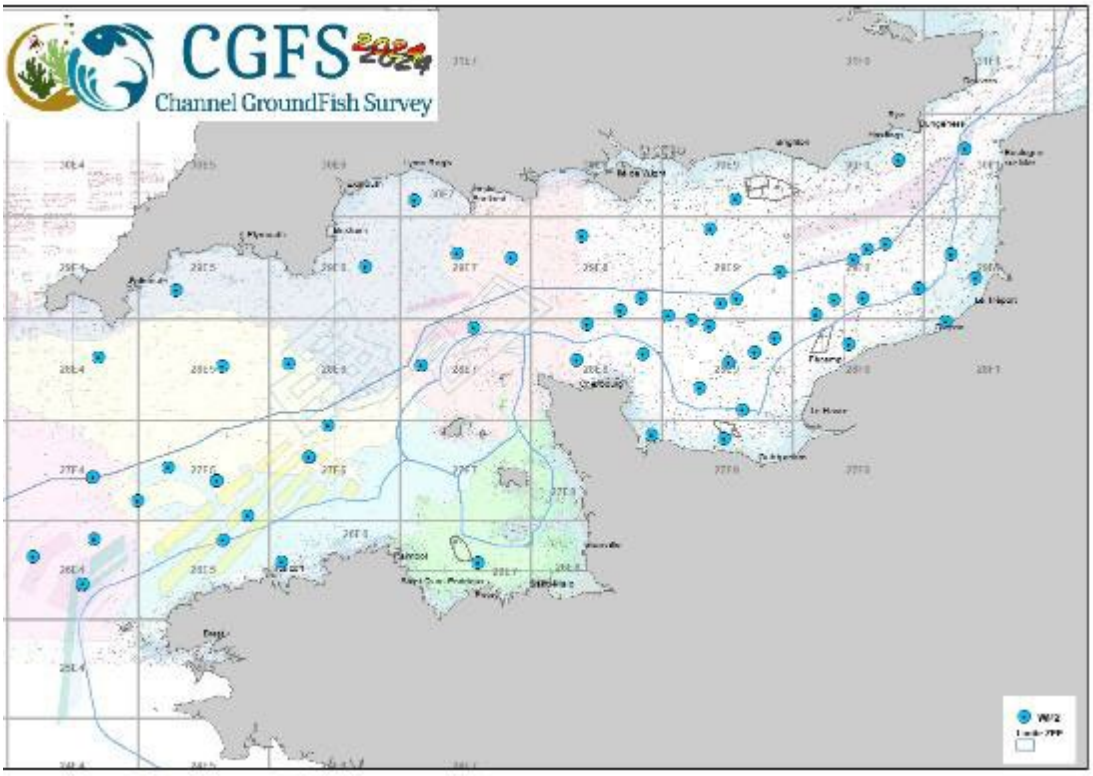
Distribution of CTD profiles



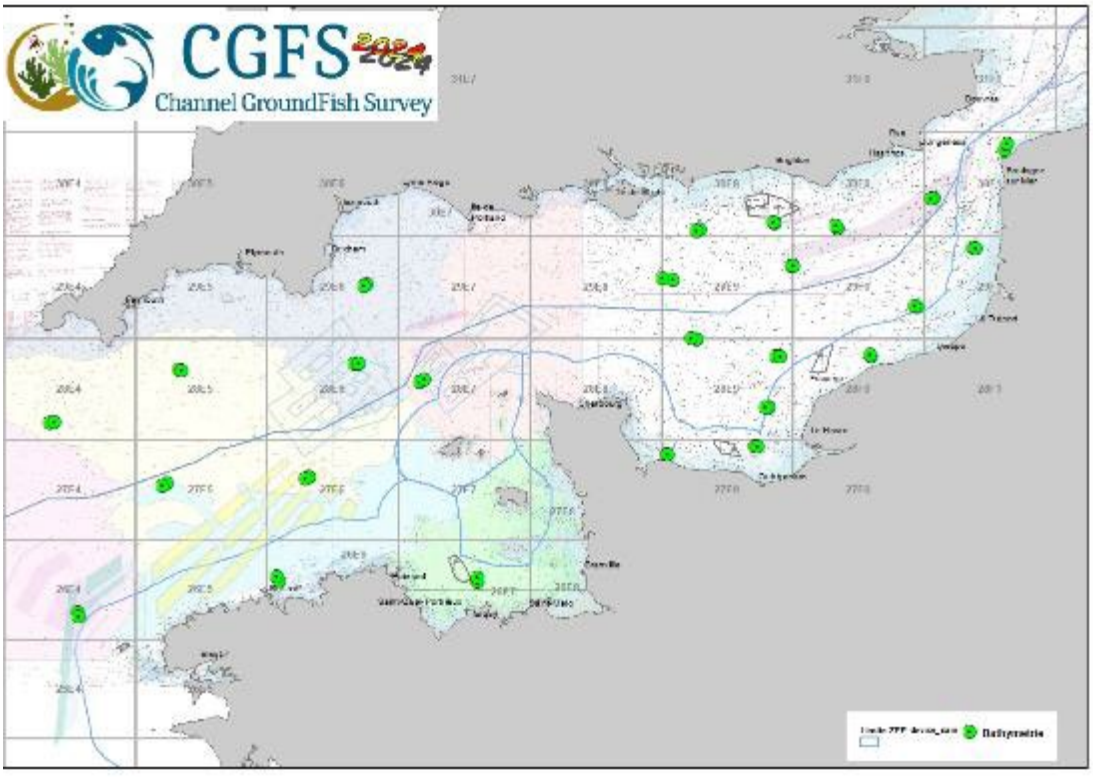
NISKIN bottle sampling at the surface



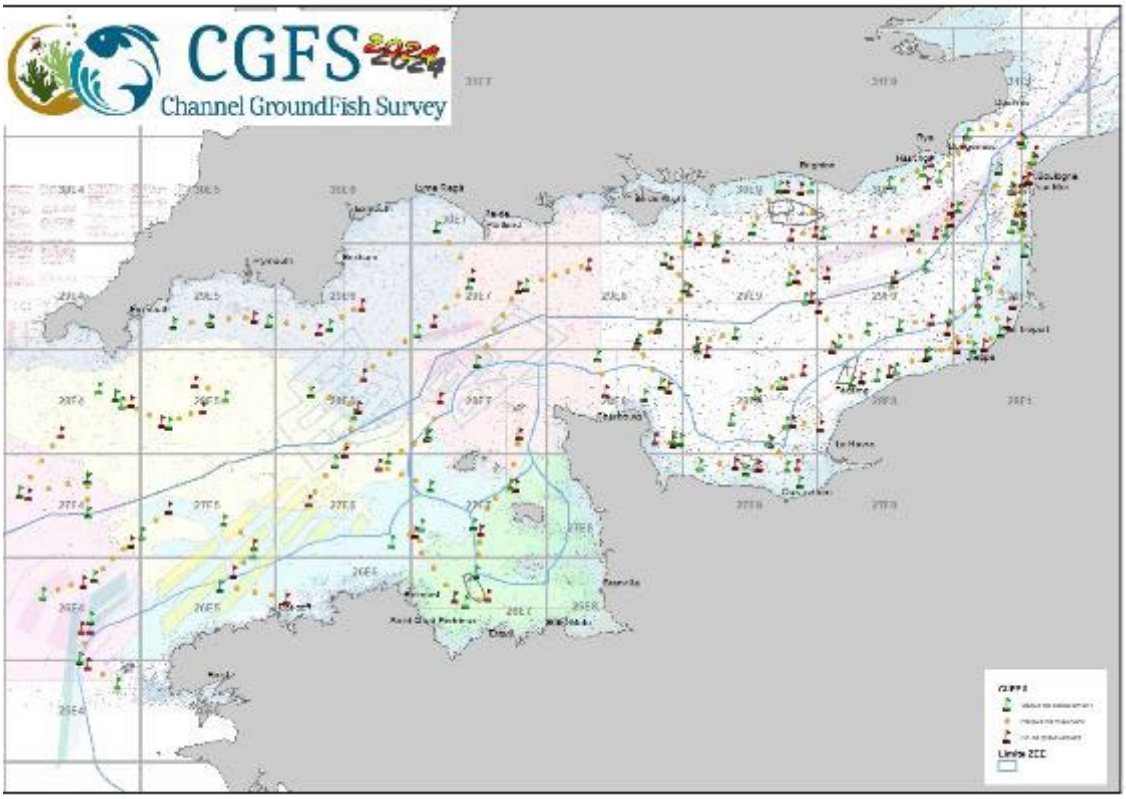
Net sampling WP2



Bathymetric acquisitions with the multibeam echosounder



Surface egg sampling (CUFES)



ANNEXE 8 : IBTS Group Data Sheets

France – East English Channel Quarter 4 FR-CGFS

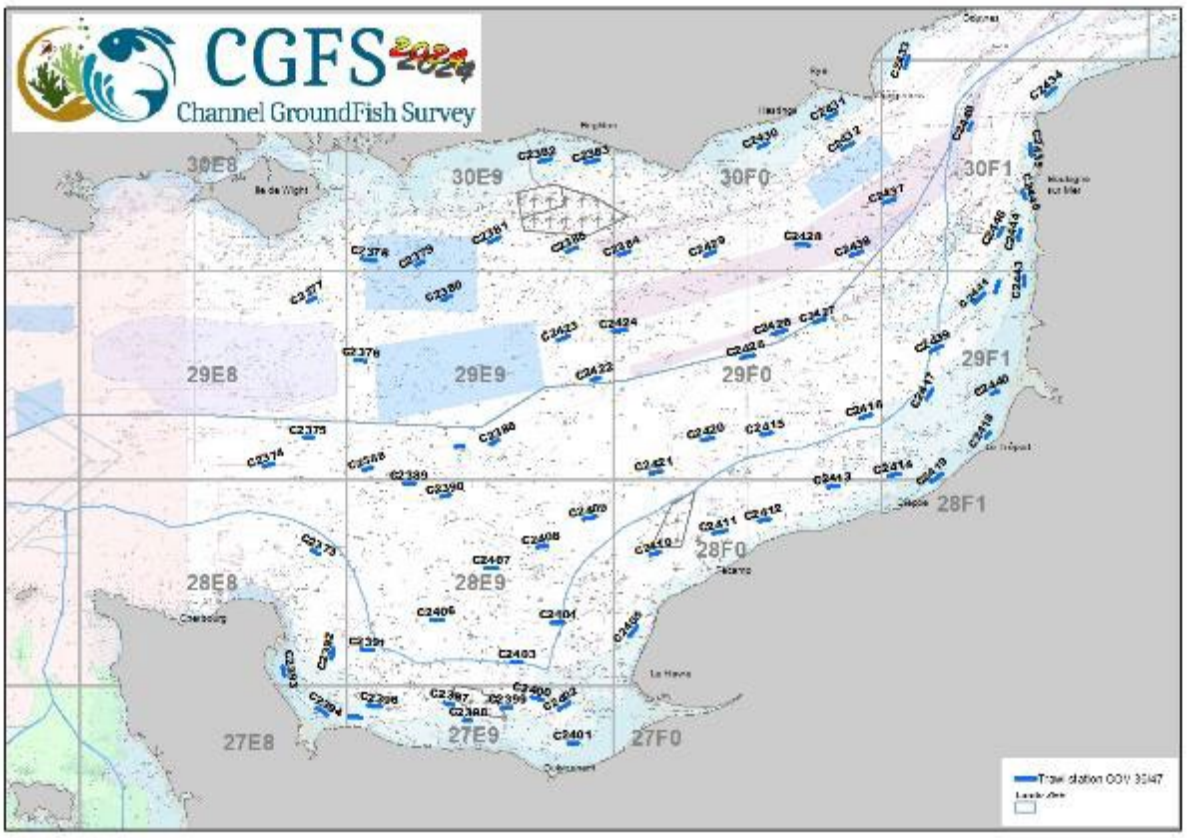
Nation:	France	Vessel:	THALASSA II
Survey :	FR-CGFS2024	Dates:	THALASSA II: FRCGFS 01/10/2024 to 17/10/2024

Cruise	As from 2018 France sampled both the Eastern (7d) and Western (7e) English Channel. Data from both surveys is submitted to DATRAS. Trawling was carried out during the day. CTD was deployed at each trawl station to collect temperature and salinity profiles. Age data were collected for 14 species.
Gear details:	FR-CGFS: The gear used for the Eastern English Channel is the standard GOV 36/47 with ground gear modified for CGFS (bobbins Ø 250 mm) Marport sensors to record doors, wings and vertical openning parameters.
Notes from survey (e.g. problems, additional work etc.):	The FR-CGFS 2024 Survey took place aboard the N/O *Thalassa* from 1 to 17 October in the eastern English Channel. Authorizations to operate in English waters were issued well in advance of the survey, allowing full coverage of the study area without restrictions. • **Survey Operations:** o A total of 74 trawl stations were completed, all of which were valid. • **Adjustments Due to Wind Farms:** o Since 2023, two tows (1G1, 3I1) have been relocated. o Tow 4M1 will need to be moved next year. • **Additional Work Conducted:** o **CUFES (Continuous Underwater Fish Egg Sampler):** Used throughout the survey, with samples scanned on board. o **Plankton Sampling:** Collected with WP2 nets (13 samples) for analysis of the planktonic food web. o **Hydrological Analysis:** Conducted using Niskin bottle samples (n= 78) o **Marine Mammal & Bird Observations:** Data collected throughout the survey. o **Bathymetric Data Acquisition:** Conducted for the development of physical seabed models (at 15 stations). o **Ray & Shark Tagging:** A total of 382 individuals were tagged: ▪ *Galeorhinus galeus* (9) ▪ *Mustelus asterias* (173) ▪ *Raja clavata* (200)
Number of fish species recorded and notes on any rare species or unusual catches:	90 different fish's and commercial crustacean species were recorded (sharks and rays included). Cephalopods and shellfish were also measured and benthic fauna identified within each haul.

Stations fished

ICES Divisions	Strata	Gear	Tows planned	Valid	Invalid	% stations fished	comments
VIId	ICES squares	GOV 36/47	74	74	0	100%	

Thalassa: GOV hauls FR-CGFS-Q4



Number of biological samples (weight, maturity and age material (otoliths):

Species	Age	Sexe	Weigth	Maturity scale SMSF	Maturity Elasmobranches Ovipares	Maturity Elasmobranches Vivipares
Merlangius merlangus	215	215	285	201		
Pleuronectes platessa	201	208	332	207		
Dicentrarchus labrax	151	151	174	151		
Mullus surmuletus	147	149	399	144		
Scomber scombrus	147	149	706	148		
Chelidonichthys cuculus	115	116	209	110		
Solea solea	94	94	95	94		
Trisopterus luscus	78	79	152	74		
Scophthalmus maximus	8	8	9	8		
Lophius piscatorius	3	3	3	3		
Microstomus kitt	3	3	3	3		
Gadus morhua	2	2	2	2		
Scophthalmus rhombus	2	2	3	2		
Raja clavata		686	686		274	
Mustelus asterias		516	516			265
Scyliorhinus canicula		360	311			
Maja brachydactyla		147	104			
Scyliorhinus stellaris		65	65		37	
Raja undulata		53	53		32	
Raja brachyura		36	36		18	
Galeorhinus galeus		20	20			8
Raja montagui		20	20		8	
Dasyatis tortonesei		17	17		6	
Cancer pagurus		7	7			
Raja microocellata		4	4			
Homarus gammarus		1	2			
Labrus mixtus		1	1			
Torpedo marmorata		1	1			
Arnoglossus laterna			1			
Blennius ocellaris			31			
Buglossidium luteum			8			
Callionymus lyra			1			
Chelidonichthys lastoviza			10			
Chelidonichthys lucerna			22			
Chelidonichthys obscurus			1			
Chelon auratus			103			
Chelon ramada			4			
Clupea harengus			1			
Conger conger			12			
Echiichthys vipera			4			
Engraulis encrasicolus			2			
Eutrigla gurnardus			31			
mnammodytes semisquama			1			
Hyperoplus lanceolatus			4			
Limanda limanda			23			
Loligo forbesii			26			
Loligo vulgaris			193			
Microchirus variegatus			4			
Myoxocephalus scorpius			1			
Pagrus pagrus			1			
Pecten maximus			4			
Platichthys flesus			19			
Pomatoschistus			1			
Rhizostoma octopus			9			
Sardina pilchardus			278			
Sepia officinalis			88			
Spondyliosoma cantharus			43			
Sprattus sprattus			51			
Symphodus bailloni			8			
Trachinus draco			7			
Trachurus trachurus			159			
Trisopterus minutus			50			
Zeus faber			46			

France – West English Channel Quarter 3 FR-WCGFS

Nation:	France	Vessel:	THALASSA II
Survey:	FR-WCGFS2024	Dates:	THALASSA II: FRCGFS 16/10/2024 to 29/09/2024

Cruise	Starting in 2018, all data from the WCGFS are now available in DATRAS and submitted every year. Trawling was carried out during the day. CTD was deployed at each trawl station to collect temperature and salinity profiles. Age data were collected for 14 species.
Gear details:	FR- WCGFS: The gear used for the Eastern English Channel is a GOV 36/49 with ground gear fitted with bobbins Ø 400 mm in the center and we use a fork rig. Marport sensors to record doors, wings and vertical openning parameters.

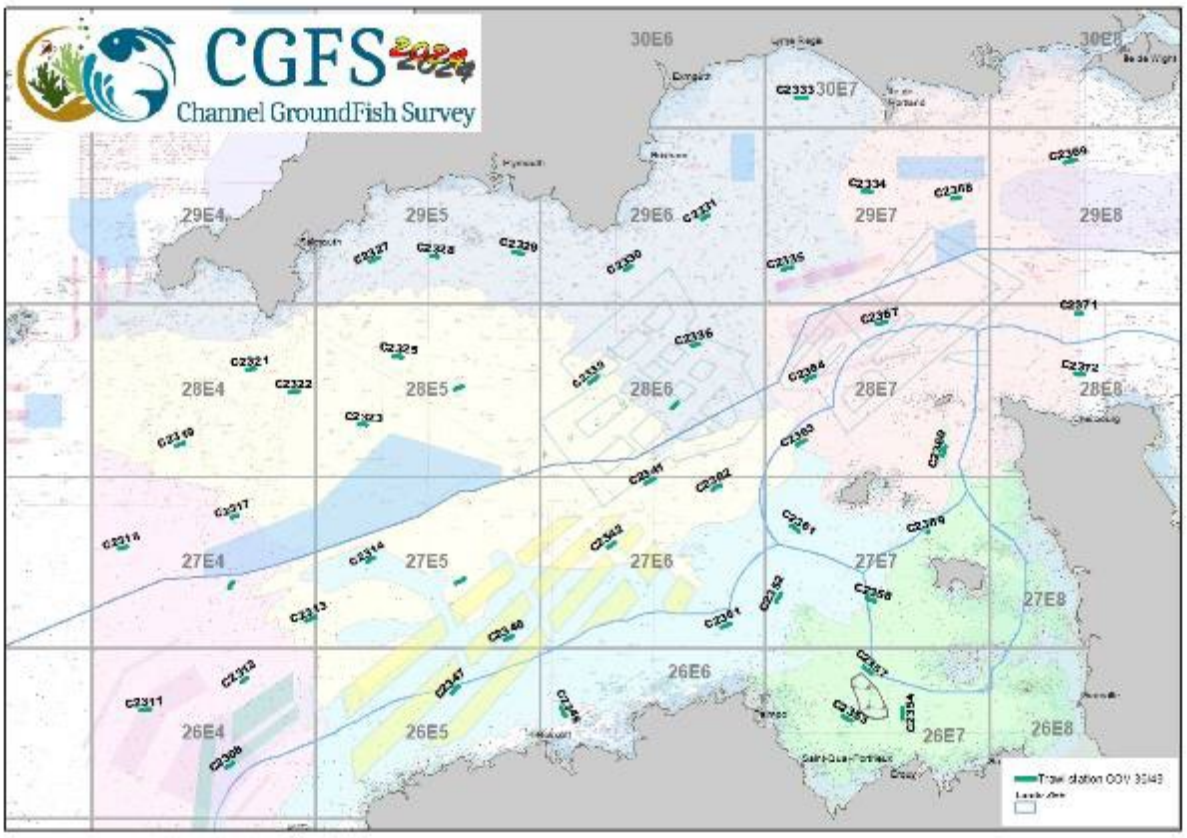
Notes from survey (e.g. problems, additional work etc.):	The FR-WCGFS 2024 Survey took place aboard the N/O *Thalassa* from 16 to 29 September in the western English Channel. Authorizations to operate in English waters were issued well in advance of the survey, allowing full coverage of the study area without restrictions.
	• Survey Operations:
	  ○ A total of 48 trawl stations were completed, with two trawls deemed invalid.
	• Additional Work Conducted:
	  ○ CUFES (Continuous Underwater Fish Egg Sampler): Used throughout the survey with samples scanned on board.
	  ○ Plankton Sampling: Collected with WP2 nets (17 samples) for analysis of the planktonic food web.
	  ○ Marine Mammal & Bird Observations: Data collected throughout the survey.
	  ○ Bathymetric Data Acquisition: Conducted for the development of physical seabed models (at 10 sites).
	  ○ Ray & Shark Tagging: A total of 142 individuals were tagged:
	  ▪ *Galeorhinus galeus* (15)
	  ▪ *Mustelus asterias* (98)
	  ▪ *Raja clavata* (29)

Number of fish species recorded and notes on any rare species or unusual catches:	82 different fish's and commercial crustacean species were recorded (sharks and rays included). Cephalopods and shellfish were also measured and benthic fauna identified within each haul.

Stations fished

ICES Divisions	Strata	Gear	Tows planned	Valid	Invalid	% stations fished	comments
VIIe	ICES squares	GOV 36/49	48	46	2	96%	

Thalassa: GOV hauls FR-WCGFS-Q3



Number of biological samples (weight, maturity and age material (otoliths):

Species	Age	Sexe	Weigth	Maturity scale SMSF	Maturity Elasmobranches Ovipares	Maturity Elasmobranches Vivipares
Merlangius merlangus	281	282	324	282		
Chelidonichthys cuculus	131	133	251	130		
Scomber scombrus	117	115	281	107		
Trisopterus luscus	91	91	157	92		
Dicentrarchus labrax	74	76	78	76		
Microstomus kitt	64	65	86	64		
Lophius piscatorius	24	25	27	24		
Mullus surmuletus	17	20	27	18		
Pleuronectes platessa	16	16	23	16		
Melanogrammus aeglefinus	15	15	15	15		
Lepidorhombus whiffiagonis	10	10	14	10		
Pollachius pollachius	7	7	7	7		
Lophius budegassa	2	2	2	2		
Solea solea	2	2	2	2		
Gadus morhua	1	1	1	1		
Molva molva	1	1	1	1		
Scophthalmus maximus	1	1	1	1		
Aequorea			1			
Argentina sphyraena			1			
Arnoglossus imperialis			2			
Aurelia			1			
Aurelia aurita			1			
Buglossidium luteum			4			
Callionymus lyra			23			
Cancer pagurus		7	7			
Capros aper			4			
Chelidonichthys lucerna			3			
Clupea harengus			1			
Conger conger			108			
Ctenolabrus rupestris		1	2			
Dasyatis tortonesei		10	10		4	
Echiichthys vipera			2			
Engraulis encrasicolus			150			
Eutrigla gurnardus			16			
Galeorhinus galeus		16	16			7
Homarus gammarus		3	3			
Hyperoplus immaculatus			3			
Hyperoplus lanceolatus			4			
Labrus bergylta			1			
Leucoraja naevus		3	3			
Limanda limanda			4			
Loligo forbesii			160			
Loligo vulgaris			289			
Maja brachydactyla		14	14			
Merluccius merluccius			12			
Micromesistius poutassou			6			
Mustelus		1	1			
Mustelus asterias		155	155			23
Pagellus bogaraveo			1			
Pagellus erythrinus			1			
Palinurus elephas		30	30			
Pecten maximus			5			
Raja brachyura		33	33		21	
Raja clavata		52	53		37	
Raja microocellata		1	1		1	
Raja montagui		2	2		2	
Raja undulata		78	78		40	
Sardina pilchardus			160			
Scophthalmus rhombus			1			
Scyliorhinus canicula		394	157			
Scyliorhinus stellaris		32	32		12	
Sepia officinalis			7			
Serranus cabrilla			1			
Spondyliosoma cantharus			76			
Sprattus sprattus			24			
Squalus acanthias		38	38			10
Todaropsis eblanae			9			

Species	Age	Sexe	Weigth	Maturity scale SMSF	Maturity Elasmobranches Ovipares	Maturity Elasmobranches Vivipares
Trachinus draco			1			
Trachurus trachurus			14			
Trisopterus minutus			252			
Zeus faber			76			

CGFS 2024 Channel GroundFish Survey

The CGFS team would like to thank the Thalassa crew for their professionalism, as well as all those who took part in this campaign.

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TELLIEZ	Solène	IFREMER
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