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Kattegat- fisheries report

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Objective:

The objective of this report is to provide baseline conditions on fishery activity in the Kattegat offshore wind farm area and export cable routes in the Kattegat Sea.

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1 INTRODUCTION

In order to accelerate the expansion of Danish offshore wind production, it was decided with the agreement on the Finance Act for 2022 to offer an additional 2 GW of offshore wind for establishment before the end of 2030. In addition, the parties behind the Climate Agreement on Green Power and Heat 2022 of 25 June 2022 (hereinafter Climate Agreement 2022) decided, that areas that can accommodate an additional 4 GW of offshore wind must be offered for establishment before the end of 2030. Most recently, a political agreement was concluded on 30 May 2023, which establishes the framework for the Climate Agreement 2022 with the development of 9 GW of offshore wind, which potentially can be increased to 14 GW or more if the concession winners – i.e. the tenderers who will set up the offshore wind turbines – use the freedom included in the agreement to establish capacity in addition to the tendered minimum capacity of 1 GW per tendered area. In order to enable the realization of the political agreements on significantly more energy production from offshore wind before the end of 2030, the Danish Energy Agency has drawn up a plan for the establishment of offshore wind farms in three areas in the North Sea, the Kattegat and the Baltic Sea respectively.

The Kattegat offshore wind farm (OWF) will consist of an area covering 123 km² off the east coast of Jutland. The OWF will connect to land via a subsea cable to the east coast of Jutland. The objective of this baseline report is to present an overview of fishery activities in the OWF area Kattegat (Figure 1-1). This baseline study will contribute to a future project-specific environmental impact assessment (EIA) for the Kattegat area, enabling offshore wind farm (OWF) developers to evaluate the project's potential impact on fisheries and plan for appropriate mitigation measures.

A scope study report on fish and fisheries activities in and around the planned OWF area Kattegat was previously conducted (DNV, 2023). This report concluded that there are no significant knowledge gaps in the area and that a combination of existing baseline data, interviews with local fisher, and data analysis would provide a comprehensive overview of the fishery activities in the area. These conclusions were presented to and agreed upon with the Danish Energy Agency in a meeting held in January 2024.

Fishery activities are generally conducted in regulated areas where catch rates are optimal in relation to sailing distance. Additionally, the distance to shore and landing ports partly determines the size of vessels fishing in relevant areas. Fisheries must also adapt to the distribution of target species, reduced stocks, and/or low availability of a given target species. The fishing industry is also subject to extensive regulations concerning gear type, access to fishing areas, fishing periods, quotas, etc. Conditions that reduce the profitability of fisheries in each area, such as access restrictions and tool restrictions, could potentially increase fishing pressure to an unfavourable level in other waters.

This report presents data compiled from publicly available sources and previous studies in the relevant area, commercial fishery statistics from the Kattegat Sea, and relevant harbours. Interviews with local fishers have provided supplemental information about the distribution and characteristics of different fisheries in the Kattegat project area and its region.



1.1 Abbreviations

Abbreviation	Explanation
AIS	Automatic Identification Systems
CFP	European Union's Common Fisheries Policy
DMA	Danish Maritime Authority (Søfartsstyrelsen, SFS)
DPFO	Danmarks Fiskeriforening
EIA	Environmental Impact Assessment
GPS	Global Positioning System
GW	Giga watt
ICES	International Council for the Exploration of the Sea
Landfall	Is where the cable transfers from sea to land
MSP	Marine Spatial Plan
OWF	Offshore Wind Farm
VMS	Vessel Monitoring System

2 KATTEGAT OWF AREA

The planned area for Kattegat OWF is located in the Kattegat Sea (Figure 2-1). Figure 2-1- also indicates the ICES rectangles included in Kattegat. Details on the OWF area size, water depths, and cable corridors are given in Table 2-1.



Figure 2-1. Kattegat OWF area and export cable route. Source: Energinet, 2023.

Table 2-1. Kattegat OWF area and export cable route. Source: Energinet, 2022.

Offshore wind farm	Area (km ²)	Water depths (m)	Export cable corridor	Shortest distance to shore (km)
Kattegat	123	10-35	East coast of Jutland	15

2.1 Hydrography

In Kattegat, there is a mixing of the brackish water of the Baltic Sea and salt water of the North Sea. Depending on outflow and inflow events and their extent, the salinity can vary considerably and there is typically a stratification with more salty bottom water, which is most prevalent during summer, see Figure 2-2. The biological diversity is strongly regulated by the salinity, but also light (depth), water flow, and oxygen are conditions that may affect both the diversity and the density of the individual organisms.

The depths in the planned Kattegat OWF area range from 10-35 m (Table 2-1). The hydrography of the water column in the southern part of Kattegat is permanently stratified with a halocline situated at about 15 meters depth separating a bottom water mass of high saline water originating from the Skagerrak/North Sea from the brackish less saline surface

water layer that represents a mix of Baltic water and more saline bottom water (NIRAS, 2022a). Bottom salinity is approximately 30 ppt or above while the surface salinity is approximately 20 ppt; however, with considerably more temporal variation than the bottom water. Oxygen conditions are generally good and oxygen depletion events occurred only rarely in the original Hesselø OWF area, close to the Kattegat OWF area. Figure 3-1 and 3-2 shows the currents and average current velocity in the Kattegat and specifically for the Kattegat OWF area.

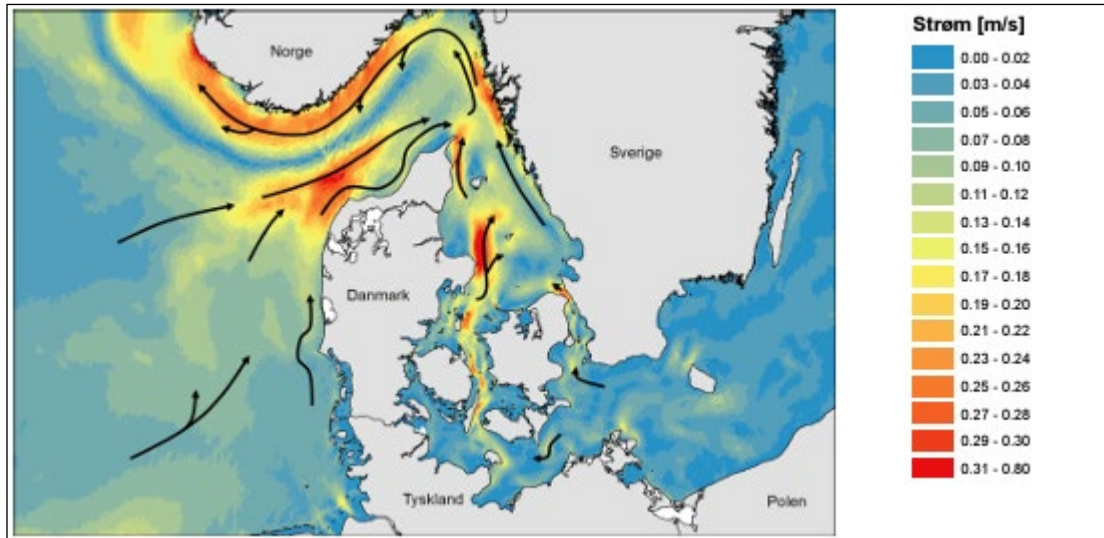


Figure 2-2. Average current speed, 2013 -2016. Source: DHI, 2017 in Miljø- og Fødevarerministeriet, 2019.

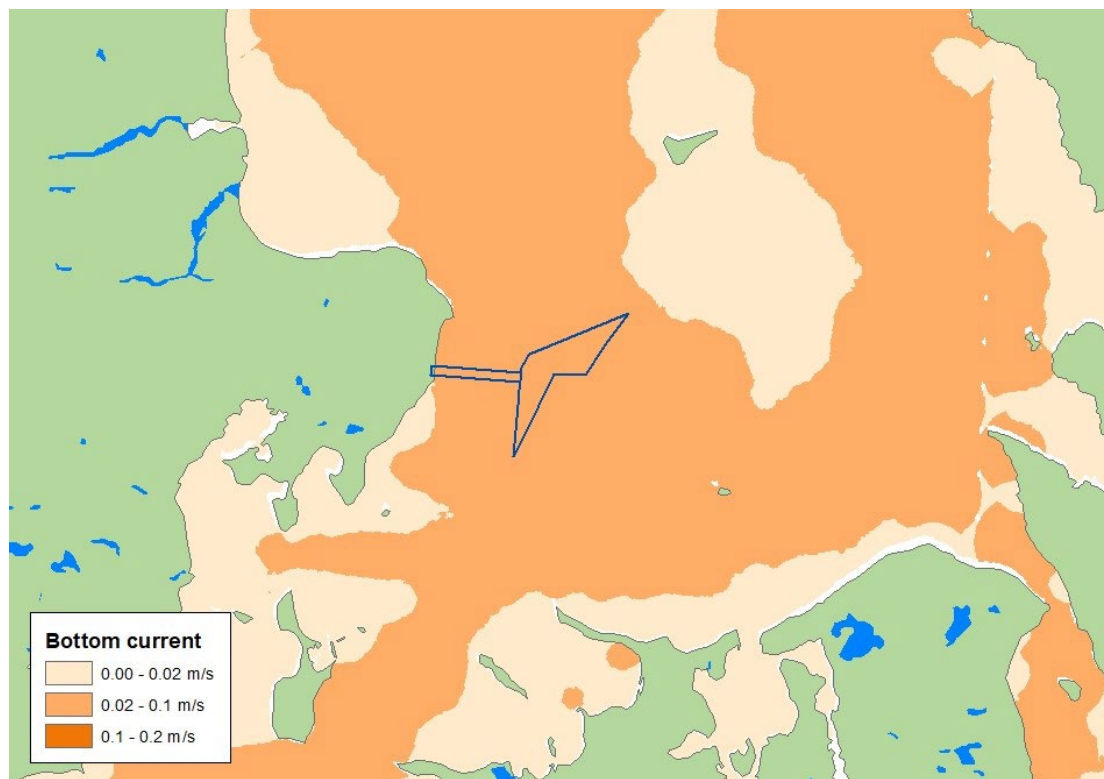


Figure 3-2. Annual mean bottom current velocity in the Kattegat OWF area. Source: The Danish Spatial and Environmental Planning Agency, 2007.

2.2 Marine substrate

In the planned Kattegat OWF area, and nearby areas, muddy sand is found in the central and southern part (Figure 2-4). A smaller part of the western area consists of sand, and in the northern part there is gravel and coarse sand with till/diamicton (contains particles ranging in size from clay to boulders) and stones (COWI, 2022). The deposits of moraine and stones in the area may indicate that there are stone reefs in these areas. The variation in marine habitats is very important for maintaining the biodiversity in the area, because these reefs create shelter for fish, invertebrates and algae, which helps to increase local biodiversity.

Flatfish are typically found on sandy bottoms, which are crucial for their ability to hide by covering themselves or burrowing into the sand. This is also important for sandeel, which burrow at night and during long periods in winter. Usually, a more varied seabed closer to the coast, like what is found in the Kattegat OWF area, create a variety of habitats, often leading to high fish species diversity. For instance, common gobies (*Gobiidae* spp.), juvenile plaice and flounder are likely abundant in these mixed habitats (Muus & Nielsen, 1999 in NIRAS, 2022b).

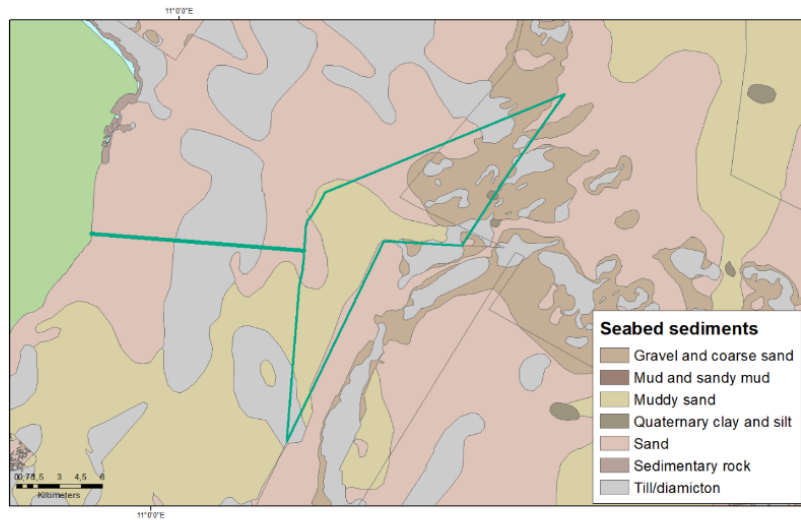


Figure 2-4. Seabed sediments in the Kattegat OWF area and export cable corridors. Source: GEUS, 2023.

3 DATA SOURCES

The characteristics of the fisheries are described using official fishery statistics obtained from Statistics Denmark and from interviews with several fishers who conduct their fisheries in and near the OWF area of Kattegat. Detailed catch, landings, and vessel information have been obtained from Statistics Denmark. AIS and VMS data have been used to illustrate the fishing intensity in these areas.

The Vessel Monitoring System (VMS) is a satellite-based global positioning system (GPS) used in commercial fishing to monitor the location of fishing vessels at sea. Since 2012, VMS monitoring has been applied to all vessels ≥ 12 m. By estimating the period of fishery activity according to vessel speed, this data can be used to indicate specific distributions of the fisheries according to gear. Because the VMS data only includes vessels ≥ 12 m, it is not possible to fully determine the distribution of smaller vessels and how often these may be fishing in the Kattegat area. However, because the OWF area is a considerable distance offshore and the predominant fisheries are by trawlers, which are generally large, the VMS data are considered to represent the fisheries in the OWF area. Furthermore, the landings by vessels < 10 m can be assumed to be considerably less than those from larger vessels and are considered of less relevance than those obtained from logbooks (all vessels ≥ 10 m).

3.1 Official fisheries statistics

In addition to VMS data, data on commercial fisheries, fleet statistics, along with data from the harbours in the regional area of the Kattegat OWF project area, were obtained from Statistics Denmark.

Only catches from larger vessels (≥ 12 m) are registered by VMS in the Kattegat (ICES subdivision 21). Given that the overall fishery statistical area (Kattegat Sea) is relatively large compared to the area for Kattegat OWF (approximately 123 km²), and the official statistics from Kattegat does not provide subdivision according to ICES, the official fishing statistics can only provide a general insight into the extent and characteristics of the fisheries.

For a better resolution of specific fishing areas, Danish vessel monitoring system (VMS) data linked to logbook data by time - correlating the time and dates from fishing trips noted in logbook data with corresponding time and dates of VMS plots of the same vessel - was obtained from Statistics Denmark. This allowed for the association of VMS position points with the distribution of fisheries using specific gear and targeting specific species.

To further provide information on active fishing areas, a combination of AIS (Automatic Identification System) and VMS data has been utilized. AIS, developed as a collision avoidance system, complements the VMS data to give a more detailed view of fishing activities.

The landing data of smaller vessels from the local harbour of Grenå is presented to estimate the contribution to the fisheries potentially locally affected by the establishment of an OWF.

All values of landings and economic calculations are based on the average price per kilo for each commercial species over the past decade, 2013-2023. The data was obtained from Statistics Denmark.

3.2 Information from fishers and their organisations

Fishers naturally possess extensive knowledge and experience regarding the occurrence of commercial fish species and the practice of fishing in specific areas. This knowledge is typically not documented and can only be obtained through interviews. Therefore, it was performed interviews with 9 fishers located in Bønnerup, Grenå and Gilleleje who have interests in the relevant waters should be conducted. Krog Consult, represented by fishery consultant Carsten Krog, carried out these interviews in spring 2024.

Initially, the main organization for fishers, Danmarks Fiskeriforening (DFPO), was contacted to inform them about the ongoing project and to get suggestions for fishers who might be relevant to contact (Krog Consult, 2024). Subsequently,

contact was made with the local fishing association chairmen in the ports of Grenå, and Gilleleje to arrange meetings with the fishers in the primary landing ports. Information from these interviews was noted and used as a source of confirmation.

During the meetings, fishers were asked about their interests in the Kattegat OWF area - where and when they fish (possibly documented with GPS data), which gear they use (possibly documented with photos), fish species and quantities, knowledge of spawning areas, etc. Furthermore, each fisherman was asked about their knowledge of other fishers, possibly from other ports (including foreign ones), who are also active in the area. Appendix 3 shows a comparison of landings from foreign and Danish vessels in the Kattegat area.

A meeting was held in Grenå on 1 May 2024 with the participation of the chairman of the Grenå Fishers Association, a trawl fisherman from Grenå, and a long-serving former chairman of the Bønnerup Fishers Association. Subsequently, phone contact was made with four other fishers with interests in the Kattegat OWF area. Electronic maps were obtained from several fishers. The records show a high similarity, and it is considered sufficient to present maps from a single trawler, which, combined with the interviews conducted, provide a detailed insight into the fishing activities in the waters in and around Kattegat OWF area. The names of the interviewed fishers and others are not publicly available, and the fishers are therefore indicated by a number which refers to a number on the list of participants (Krog Consult, 2024).

3.3 Fisheries control and regulations

The fishing effort in a given area is not only dependent on the available resources and the technical abilities of the fishers but has increasingly been subject to more comprehensive and detailed regulations. These regulations are predominantly based on the biological advice from the National Institute of Aquatic Resources (DTU Aqua) and the International Council for the Exploration of the Sea (ICES), but they also consider political and economic factors. This framework is crucial for the composition and amount of the catches; therefore, a brief description of these regulations is given in the following.

The National Institute of Aquatic Resources (DTU Aqua) and the International Council for the Exploration of the Sea (ICES) provide scientific advice to support sustainable fisheries management in Denmark. Their biological advice is based on comprehensive assessments of fish stocks, ecosystems, and environmental conditions. DTU Aqua conducts regular monitoring of fish stocks such as cod, herring, and sprat, providing data on population size, age structure, and reproductive status. They also conduct ecosystem considerations based on research on the impacts of fishing on the broader marine ecosystem, including bycatch, habitat destruction, and interactions with other species. ICES provides scientific advice to inform fisheries management decisions within the framework of the European Union's Common Fisheries Policy (CFP). ICES recommends total allowable catches based on stock assessments, ensuring that fishing pressure is kept within sustainable limits, and reports on the status of key fish stocks, highlighting trends, stock health, and potential risks.

As an example, ICES have expressed concerns about the status of cod in the Kattegat Sea. ICES advises that there should be zero catch for cod in 2025 and 2026 (subdivision 21) (ICES, 2024a). There is no targeted cod fishery in the Kattegat at present and as a result catches of the stock are low and mostly discarded. Catches are mainly taken as bycatch in the Norway lobster fishery, which implies that the fishing mortality of the stock is linked to effort directed to the Norway lobster fishery (ICES, 2023).

Another example is herring in the Kattegat, where ICES recommends zero catch in 2025 (ICES, 2024b). This advice also reflects a precautionary approach to ensure that the herring population can sustain itself and recover from previous declines.

By integrating these scientific recommendations into fisheries management policies, Denmark, and the EU aim to ensure the long-term sustainability and health of fish stocks and marine ecosystems in the Kattegat. These regulations can significantly influence the number of landings from year to year, and these mechanisms can create fluctuations in the total annual landings and value of the fisheries in the Kattegat Sea.



3.4 Commercial species

Information about the fish species in and near the Kattegat OWF area, including commercial fish species of interest, as well as an assessment of the sensitivities of these fish species to the construction, operation, and decommissioning of the Kattegat OWF, is presented in a separate report (DNV, 2024).

To provide a comprehensive picture of the potential impacts on the fisheries, including their resources (fish and shellfish), the potential impacts of the Kattegat OWF on relevant commercial fish species will be assessed in a future project-specific EIA.

4 THE EXTENT OF FISHERIES IN THE KATTEGAT SEA

The commercial fishery in the Kattegat is similar to the North Sea and is dominated by a number of commercially valuable flatfish species (primarily plaice, dab, sole, flounder, turbot, brill), and codfish (haddock, whiting and pollack) and in recent years a large abundance of the greater weever. Because large parts of the deeper parts of the southern Kattegat seabed are soft bottoms, a preferred habitat by the Norway lobster, this valuable commercial species is also very abundant and supports a lucrative fishery. Kattegat also has traditionally had a large abundance of the pelagic species sprat and herring and visited by seasonal migrants of commercial species that include lumpsucker, mackerel, garfish and eel among others, however over the last 10 years the landings have declined (NIRAS, 2022a).

This section gives an overview of different types of fishing gear and how they are used. Development of OWF could potentially have impact on fishing activities in the OWF area and the immediate surroundings. Furthermore, this section gives an overview of the landed catch in the OWF area in order to provide information of potential income loss for fishers in the OWF area.

There is not registered important areas for trawling in the immediate vicinity of Kattegat OWF area, there is low fishing activities registered within the OWF area (Figure 4-1) (COWI, 2022). According to the Marine Spatial Plan (MSP) in Denmark, areas for aquaculture have been reserved both within the Kattegat OWF area, and in the immediate vicinity of the area. There are currently (summer 2024) no known plans for establishing aquaculture in these areas.

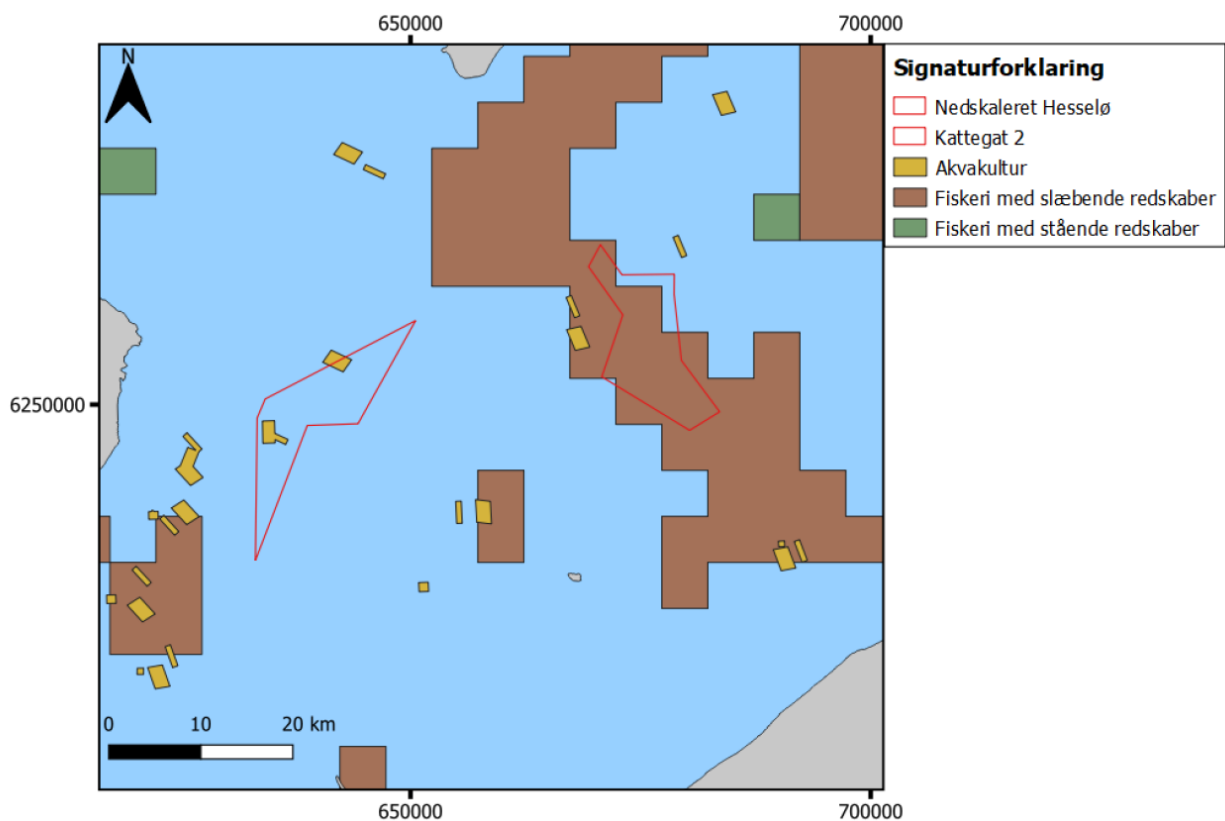


Figure 4-1. The most important fishing areas for trawling vessels (brown) and net fishing (green) in and around the Kattegat OWF area (left), in the period 2007-2015. A part of the original planned area for Hesselø OWF area is shown (to the right). This has since been amended and the polygon on the map is no longer correct. Areas reserved for aquaculture in the Danish MSP are shown in orange. Source: Egekvist et al., 2017 in COWI, 2022.

In the Kattegat there are a number of different types of commercial fisheries that are being undertaken. Fishery activities include using gear that are considered “active gear” (for example, bottom and pelagic trawls and occasionally seine nets)

that are actively pulled along the bottom or through the water, and “passive gear” (gillnets, pots and fyke nets etc.) which are stationary and dependent on movement of the target species to be captured. The following sections describe the most common types of fishing gear used in Kattegat. However, inside the area for the planned Kattegat OWF there is generally a low fishing activity (also see Section 5 for recent AIS and VMS data).

Trawl fishing is the predominant method in the northern and southern vicinity of the Kattegat OWF area. In trawl fishing, the trawl net is spread out using so-called trawl doors. When employing a multi-trawl, two or more trawls are tied to weights at the connection points, in addition to weights at the wing tips of the trawl (Figure 4-2). The trawls can be either bottom or floating (pelagic) trawls. On very uneven or rocky seabeds, some type of trawl protection is used on the lower part of the trawl (Figure 4-3).

When fishing for species like sand eel and sprat, floating trawls might occasionally touch the seabed, and the vessels must be cautious of larger structures to avoid hooking. This gear is characterized by relatively long towing times of 3.5 to 7 hours at a speed of approximately 3 knots (NIRAS, 2015).

Regardless of whether floating or bottom trawls are used, trawl doors are employed to spread the trawl. Trawl doors are steel plates of various shapes and weights, depending on the size of the vessel. Vessels aim to minimize drag, so it is crucial that the trawl blades do not hook on the seabed. Under normal conditions, the top few centimetres of the seabed can be affected. In shallower waters the trawl blades in floating trawling can also touch the seabed.

In double trawl fishing, trawl doors are not used. The fishing depth and the vertical opening of the trawl are regulated using chain blocks on the lower tip of the trawl. Depending on the water depth, these weights can drag along the seabed, but it is optimal to reduce drag as much as possible while maintaining the necessary fishing depth and vertical opening of the trawl (NIRAS, 2015). The distance between two vessels in double trawling depends on water depth and the size of the trawl, typically around 200 meters. In single trawl fishing, the distance between the trawl doors is usually around 100 meters. The distance between the vessel(s) and the trawl is typically around 500 meters (NIRAS, 2015).

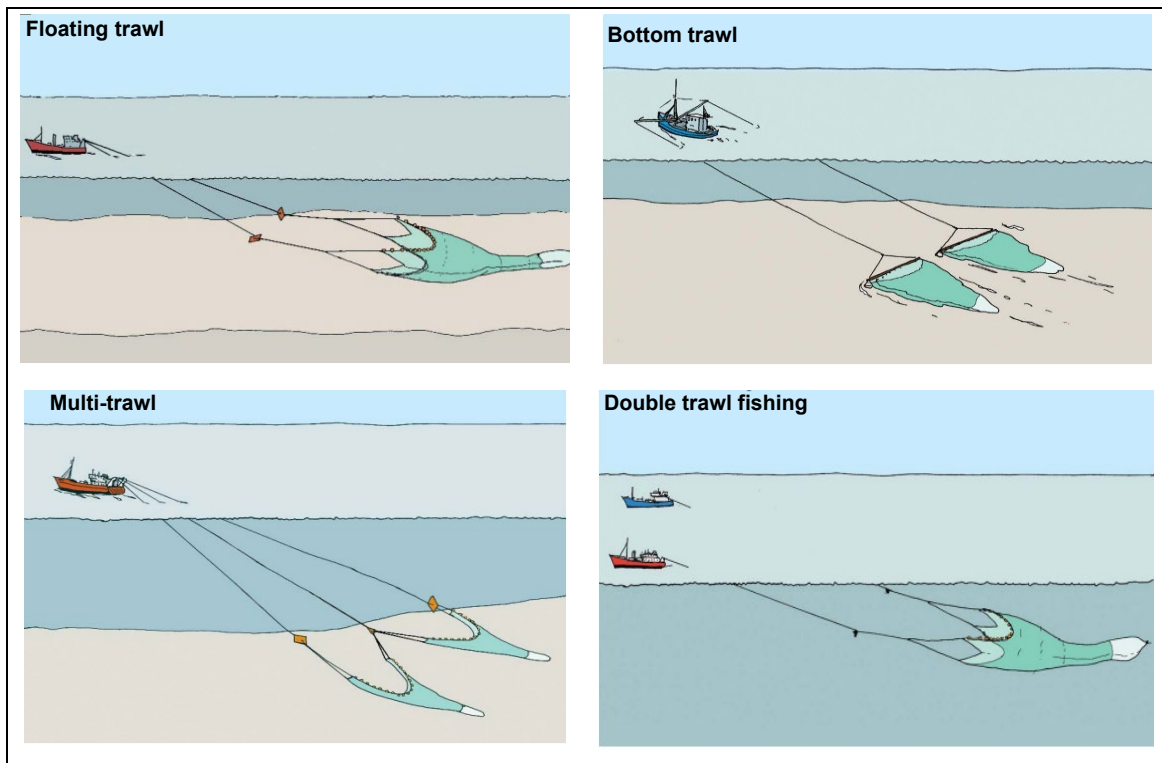


Figure 4-2. Illustration of different trawl gear and trawl fishing. Source: Korsgaard et. al., 2007.

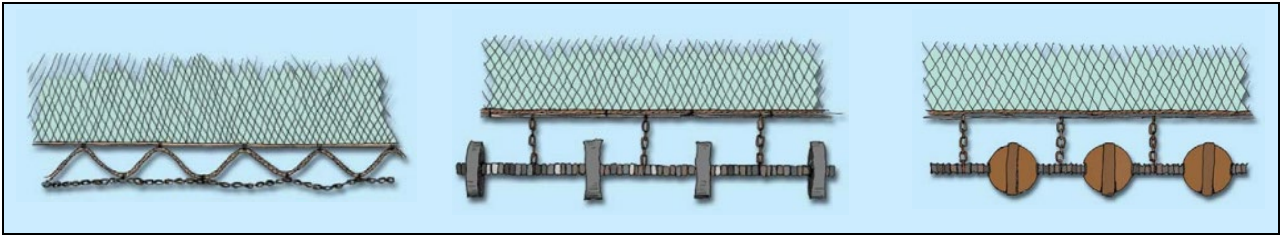


Figure 4-3. Different types of seabed protection on bottom trawls. Source: Korsgaard et.al., 2007.

Gillnet fishing is limited to a very few vessels in the North Zealand ports, and their fishing takes place outside the trawl areas and are predominantly more coastal (Krog Consult, 2024). Several nets, typically 10-20, are set together to form a chain. This chain of nets is anchored (Figure 4-4). Each net has a typical length of around 50-60 meters. From each end of the chain, a line is led up to a buoy. The nets are fitted at the bottom with a high-density line, which holds the net to the seabed, while a buoyant line at the top keeps the net in an upright position. The target species are primarily benthic species, such as flatfish, cod, and catfish.

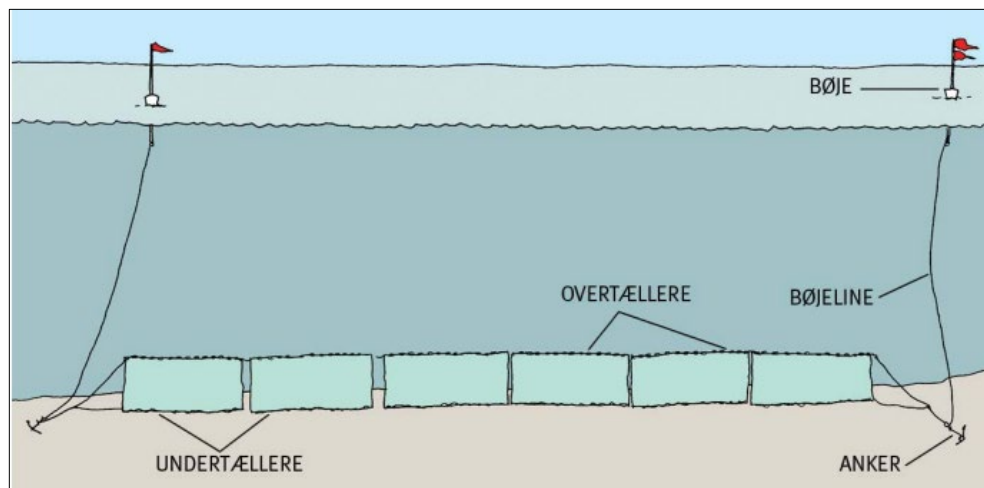


Figure 4-4. Net fishing. Source: Korsgaard et.al., 2007.

Bottom nets are deployed in coastal waters at depths of less than 10-15 meters. The gear consists of a long net leading into a main net (Figure 4-5). The long net, which can be up to 500 meters long, is mounted either on poles or on brackets at the bottom, extending from the shore out to the main net. The main net is a round net from which the fish cannot escape. Bottom nets are often set in extension of each other and can thus, depending on the water depth, extend several kilometres from the coast. In recent times, it has become very common to replace the poles with anchors (concrete blocks or anchors). The most important target species for bottom net fishing is the eel.

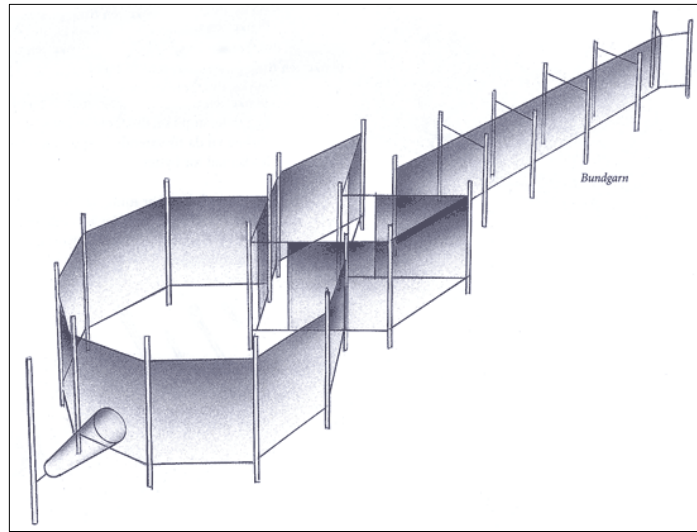


Figure 4-5. Bottom net. Source: NIRAS, 2015.

4.1 Vessels and gear use

In general, there has been a significant decline in the number of vessels (>10 m) reporting landings in Denmark (Figure 4-6). The statistics is shown for Denmark in total as fishing is not only carried out by vessels native to North Zealand and Grenå, but periodically also by vessels from more distant ports. Between 2013 and 2023, the total number of trawling vessels decreased from 288 in 2013 to 190 in 2023. Additionally, vessels using net and longline gear declined from approximately 829 in 2013 to 647 in 2023. The combination of seine gear with other gear also saw a decrease, from 285 vessels in 2013 to 183 in 2023. Seine vessels specifically declined from 27 in 2013 to 12 in 2023.

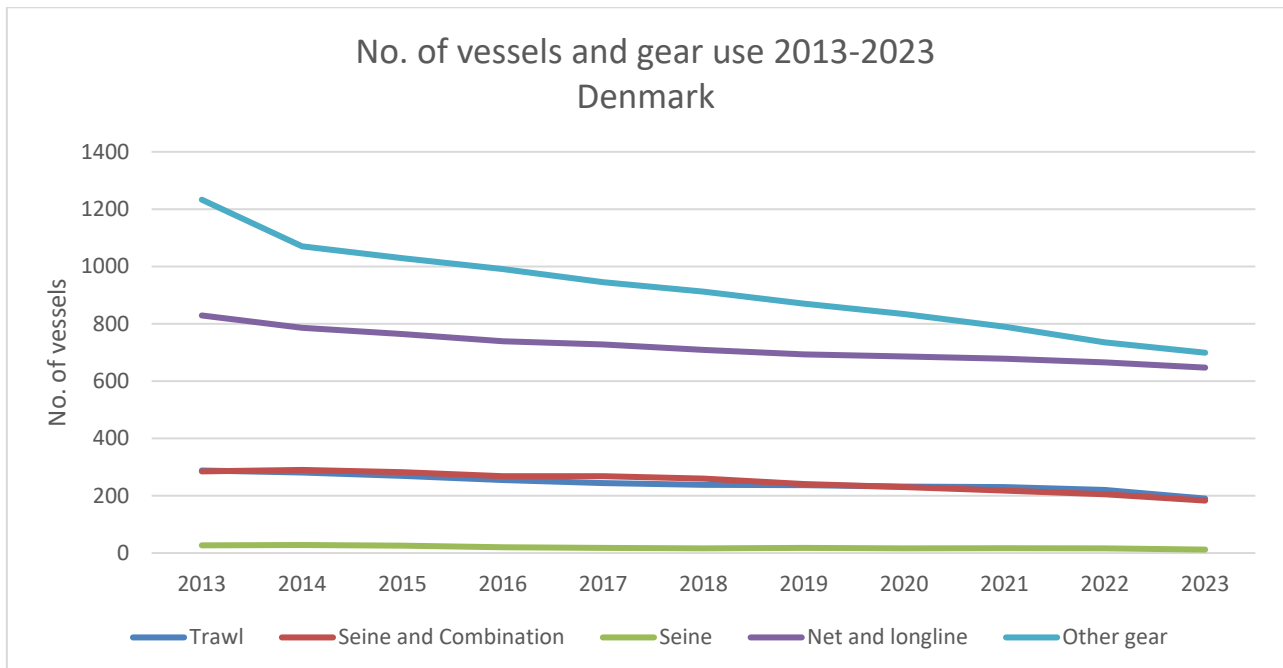


Figure 4-6. The number of vessels and primary gear types in Denmark in the period 2013-2023. Source: Statistics Denmark, 2024.

In general, fishing in the Kattegat has significantly declined over the past 20 years. A key reason for this decline is that the rights to land industrial fish species (especially sprat) have been sold to vessels from other, distant ports, leading to these species being caught and landed in the Skagerrak/North Sea instead. Fishers in Grenå, and any outside vessels here, land their consumption fish at Grenå Fish Auction, while fish landed in Bønnerup are predominantly sent to Strandby Fish Auction (Krog Consult, 2024).

In Bønnerup and Grenå, there are now only a handful of gillnet vessels left that can be considered as full-time commercial operations - some of these vessels also periodically fish in more distant waters (Skagerrak, North Sea) to maintain necessary income. There is still a considerable number of one-man boats equipped for gillnet fishing in both Grenå and Bønnerup - these fishers have modest activity levels and are mostly registered as part-time fishers or professional fishers with alternative employment, earning a large part of their income from work on land or from pensions.

In the past 3 years, an experimental fishery for greater weever using bottom trawls, which can be caught with a smaller mesh size (60 mm) than otherwise permitted for consumption fishing, has also been conducted. The experimental fishery has been limited to 3 vessels. This and previous experiments have documented that the stock of greater weever is very large, and in early spring, they can be caught with minimal bycatch of other species. Furthermore, the market for greater weever has been good, though heavily dependent on fish size (preferably > 25 cm). None of these areas are within the boundaries of the planned Kattegat OWF area.

Fishing for Norway lobster in the Kattegat is carried out not only by vessels based in Djursland (Bønnerup and Grenå) or North Zealand but also periodically by vessels from more distant ports (Strandby, Hvide Sande, and others). For approximately 5 and 10 trawlers in Bønnerup and Grenå, respectively, Norway lobster catch is crucial for their economy for a large part of the year, see Figure 4-7. The total also includes some vessels registered in other local ports (Anholt (1) and Ebeltoft (2)).

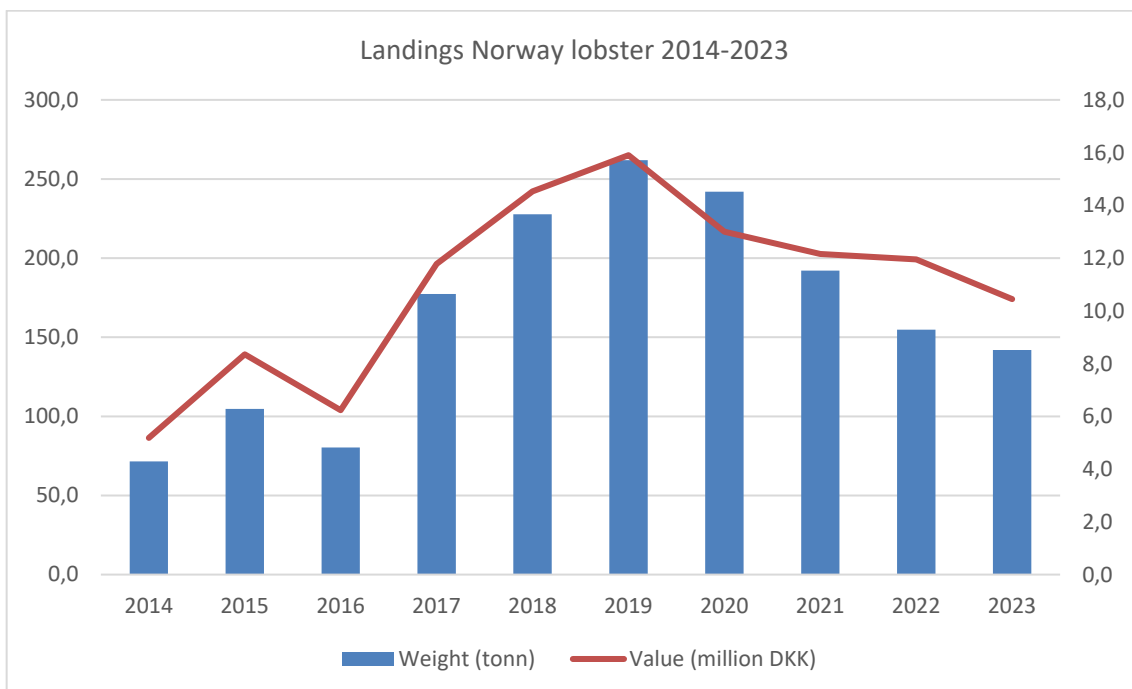


Figure 4-7. Landings of Norway lobster to Bønnerup and Grenå in the period 2014-2023. Source: Statistics Denmark, 2024.

Norway lobster is predominantly caught using bottom trawls rigged as twin trawls with a so-called "clump" or occasionally a roller in the center, where the two trawls are connected. The trawls are spread using two otter boards of varying sizes

(depending on the vessel's size/engine power) - (Figure 4-8). To catch Norway lobster, the trawl must closely follow the seabed, which is why it is equipped with either a chain mat/so-called "hanging lead" or a mat with rubber discs (often 6 inches in diameter). The former type of mat is used where the seabed is even and without stones, while the latter is used where stones may be present in the seabed, which could damage the trawl if they get caught in it.

A few smaller trawlers fish with single trawls primarily targeting fish but with Norway lobster as bycatch. These trawls are equipped with "bobbins" (trawl balls) or discs, allowing them to be used on more uneven seabeds, possibly with stones. Their fishing takes place throughout the wind farm area, except for certain areas with large stones/stone piles. The primary target species are flatfish species such as plaice, turbot, brill, and sole. Until 15-20 years ago, cod also made up a significant portion of the catch value.

Fishing for Norway lobster takes place at night or at dusk when the lobsters emerge from their burrows in the seabed to forage. Each trawl haul typically lasts about 5 hours, corresponding to a trawling distance of 25-30 km.

There is now very little gillnet fishing in the planned Kattegat OWF area, though a few gillnet vessels still fish for flatfish and, in the summer-autumn period, also conduct fishing for edible crabs using so-called crab nets (discarded, large-mesh lumpsucker or turbot nets). Previously, when the cod stock/quota was much higher, the area was an attractive fishing ground for smaller gillnet vessels, including from other ports and even distant ports like Hvide Sande.



Figure 4-8. A lobster trawl in Grenå harbour. Note two trawl drums, trawl bucket, and chain block to which the two trawls are connected. Source: Krog Consult, 2024.

4.2 Landings and value of the fisheries

In general, fishing in the Kattegat has significantly declined over the past 20 years, particularly regarding fish catches, which have decreased from around 40,000 tons in the early 2000s to about 1,500 tons in 2024 (Krog Consult, 2024). The most important fish species for fishing in the Kattegat Sea in 2023 were: sole (around 24 % of total landing value), plaice (18 %), brill (15 %), greater weever (12 %), turbot (10 %) and mackerel (9 %) (Figure 4-9).

The most important fish species for human consumption in recent years are flatfish species such as sole, turbot, brill, and plaice, while landings of cod in recent years have been less than 1,000 kg. In contrast, catches of Norway lobster in the Kattegat have increased significantly from around 1300 tons in the early 2000s to about 1800 tons now. Since Norway lobster is a high-value species, the total value of all landings from the Kattegat has only shown a relatively modest decline from around 220 million DKK in the early 2000s to about 150 million DKK now (Krog Consult, 2024).

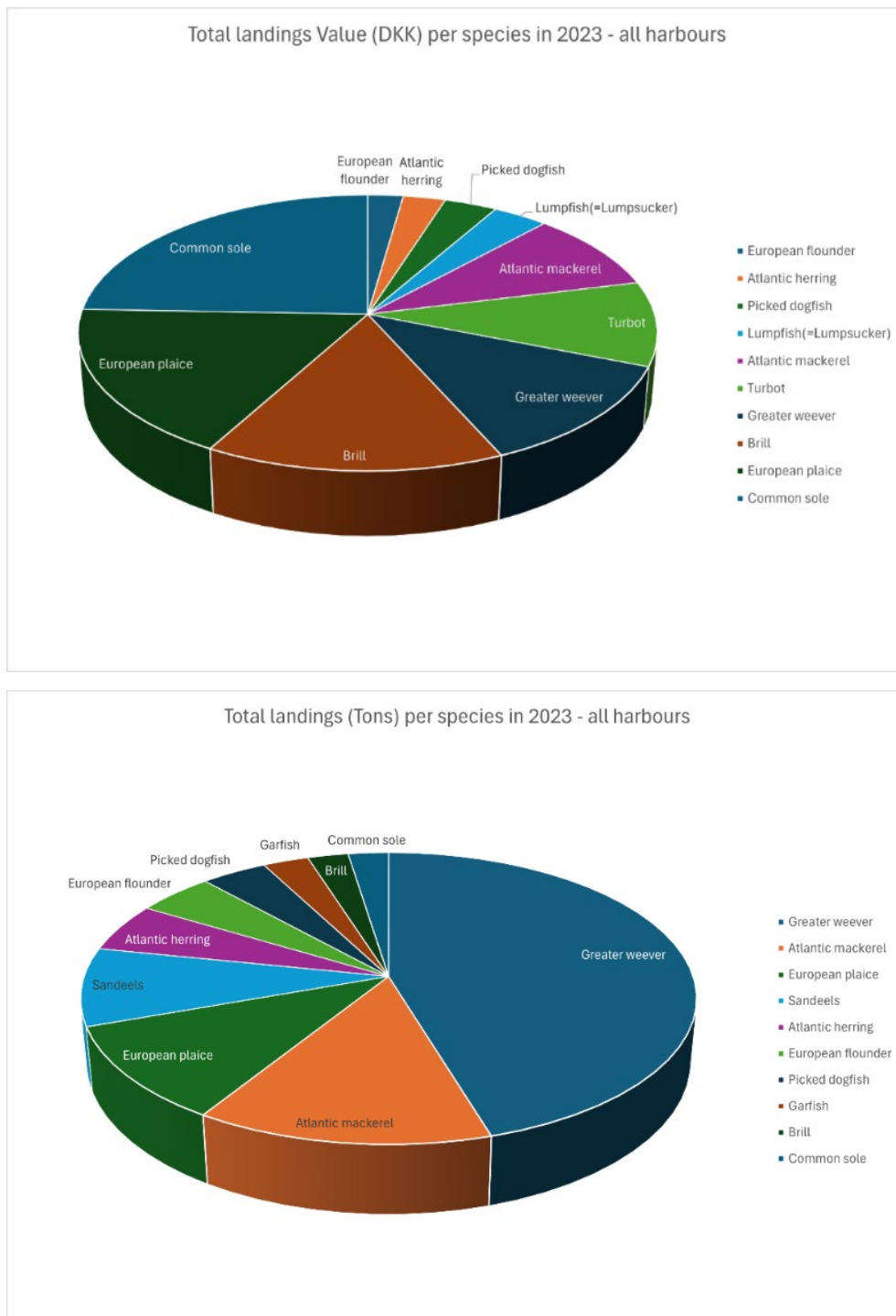


Figure 4-9. Total value (DKK) and total landings (tons) for the top 10 fish species landed in the Kattegat Sea in 2023. Source: Statistics Denmark, 2024.

Fishery in the Kattegat Sea, including the planned Kattegat OWF area, has experienced a drastic decline over the last decade (Figure 4-10). The total landings of Danish fisheries from Kattegat Sea have varied between 17 600 and 1 600 tons in 2015 and 2023, respectively. The value of these landings has fluctuated between 61.5 and 16.3 million DKK in 2016 and 2023.

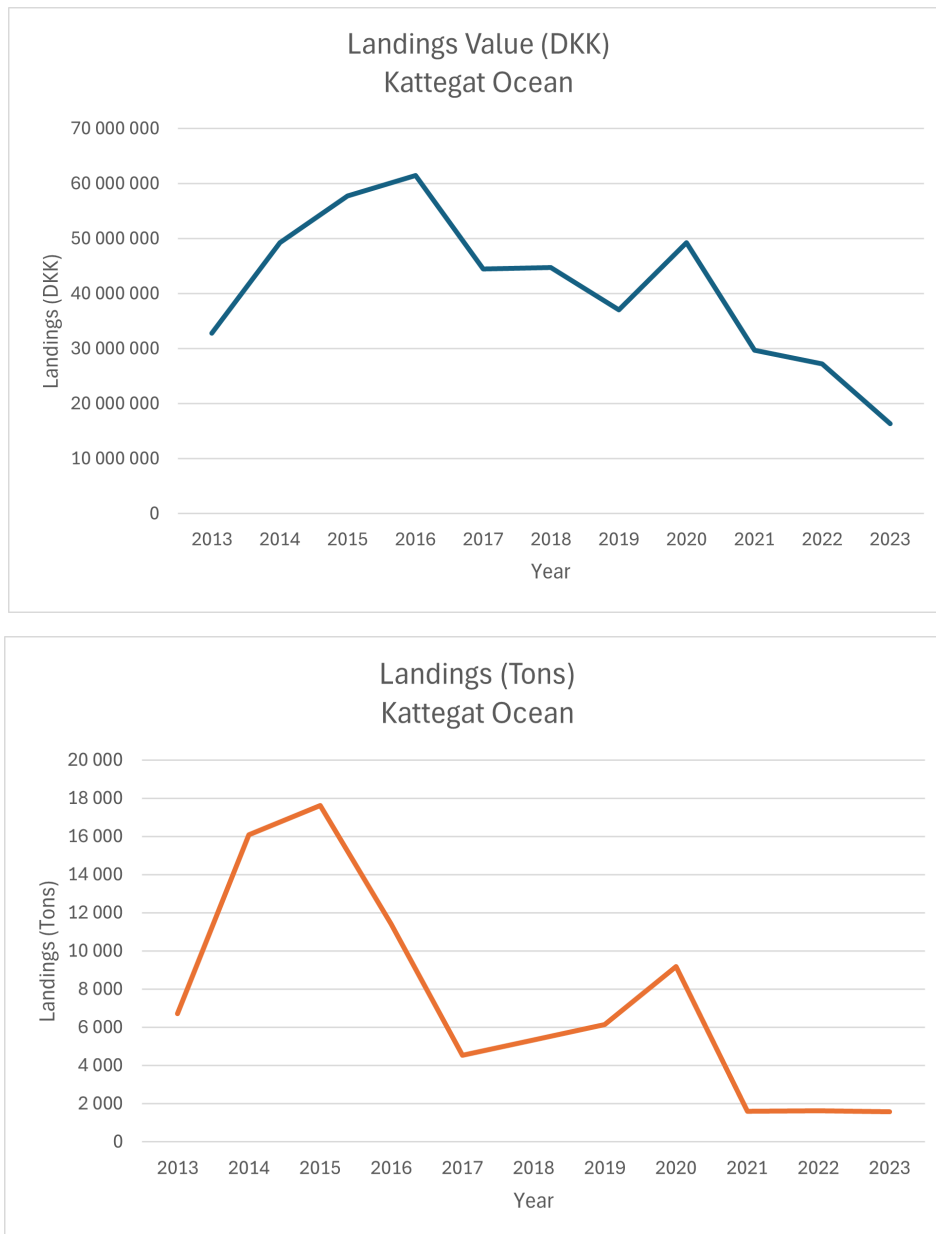


Figure 4-10. The development of the landings in value (DKK) and tons in the Kattegat Sea in the period 2013-2023. Data from logbooks, which include vessels ≥ 10 m. Source: Statistics Denmark, 2024.

The main trends for commercial fish species in the Kattegat are shown in Figure 4-11 a - c. Notably, mackerel and codfish show minimal landings volumes compared to the other species, with only small variations over the years. Similar trend is seen for flatfish; however, flatfish exhibit a small rise until 2016 at 1408 tons and reducing to 351 tons by 2023. Herring experienced a substantial peak in 2019 with landings of 15730 tons, nearly reaching the landings volume of industrial fish. After this peak, the landings volumes decreased significantly and remained lower in the following years. Industrial fish dominate the landings volumes, peaking twice: in 2015 and again in 2019, with landing volumes of 17 182 tons and 16 352 tons, respectively. After the second peak, there was a significant decline until 2023 with landing volumes of 2 843

tons. Crustaceans and molluscs had a notable peak around 2018 landing 5 321 tons, followed by a decline. Although there was a slight increase the following years, the landings volumes of crustaceans and molluscs generally trend downwards.

A combination of ecological, anthropogenic, and environmental factors shapes the landing value of the different fish species in the Kattegat. The landing value for codfish and flatfish show an overall decrease in landing value after 2017, with some fluctuations. Herring's values fluctuate year by year but show an overall downward trend, and the mackerel values are inconsistent. The landing value for industrial fish (such as sprat and other small pelagic species) the last decade experienced significant fluctuations; the initial period (2013-2015) saw a strong upward trend, while the period from 2016-2018 had a steep decline followed by partial recovery. The landing value for crustaceans and molluscs (such as shrimp, crab, and mussels) has remained relatively stable during the past decade, with an overall increase in landing values.

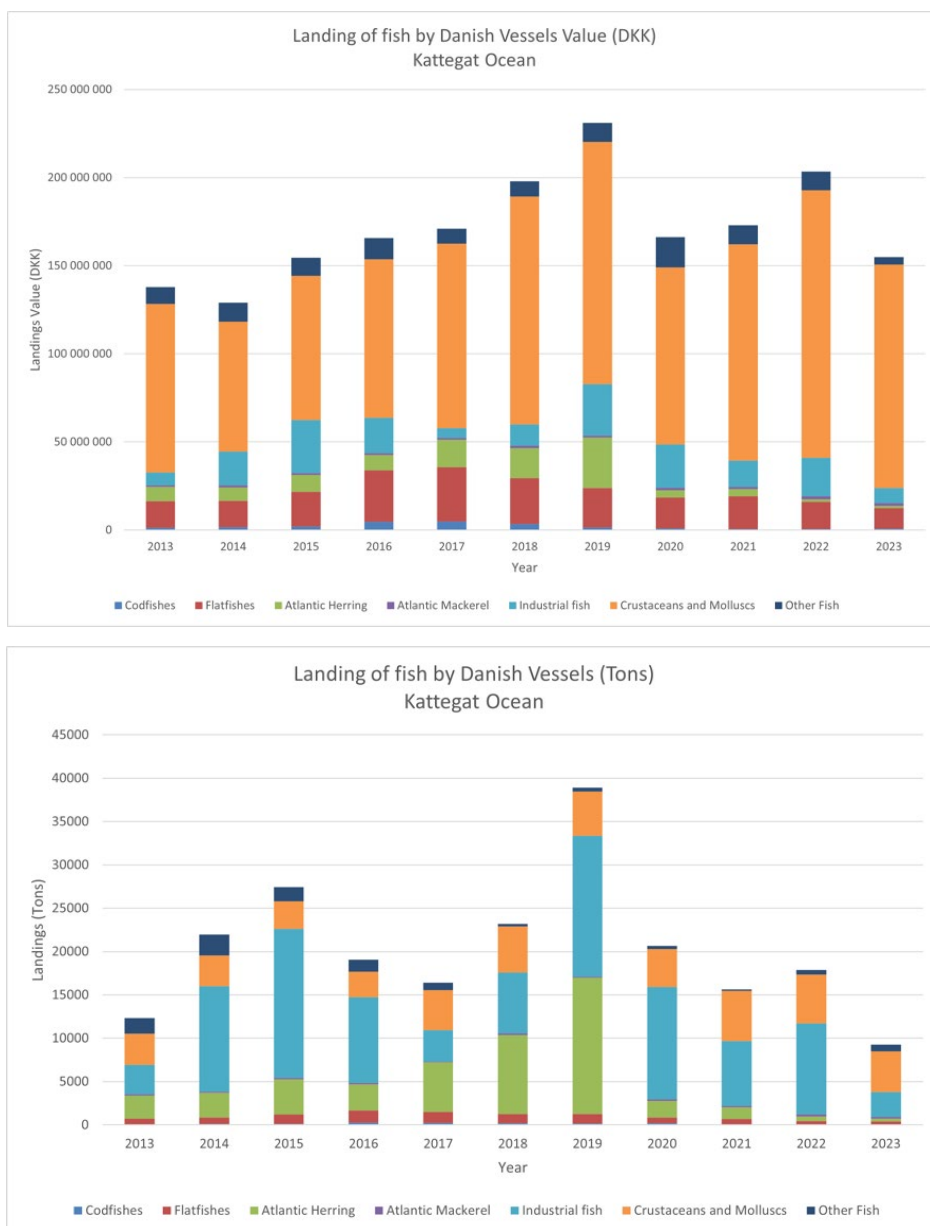


Figure 4-11a. Landings (tons) and value (DKK) of commercial species from the Kattegat Sea from 2013-2023 by Danish vessels > 10 m. Source: Statistics Denmark, 2024.

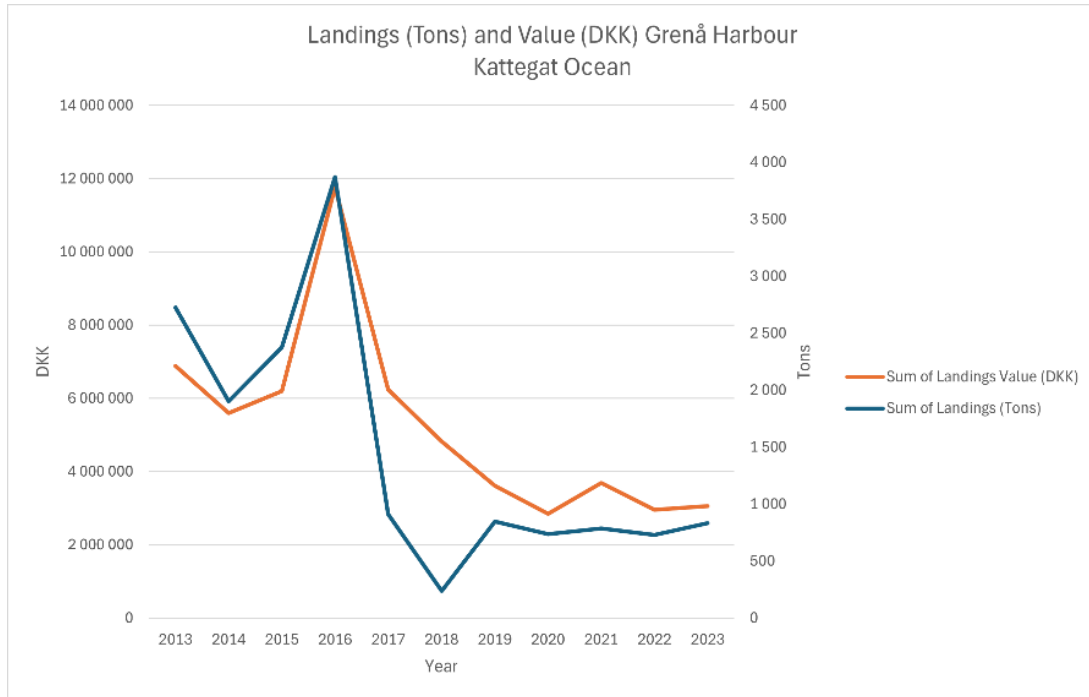


Figure 4-11b. Landings (tons) and value (DKK) in Grenå harbour. Source: Statistics Denmark, 2024.

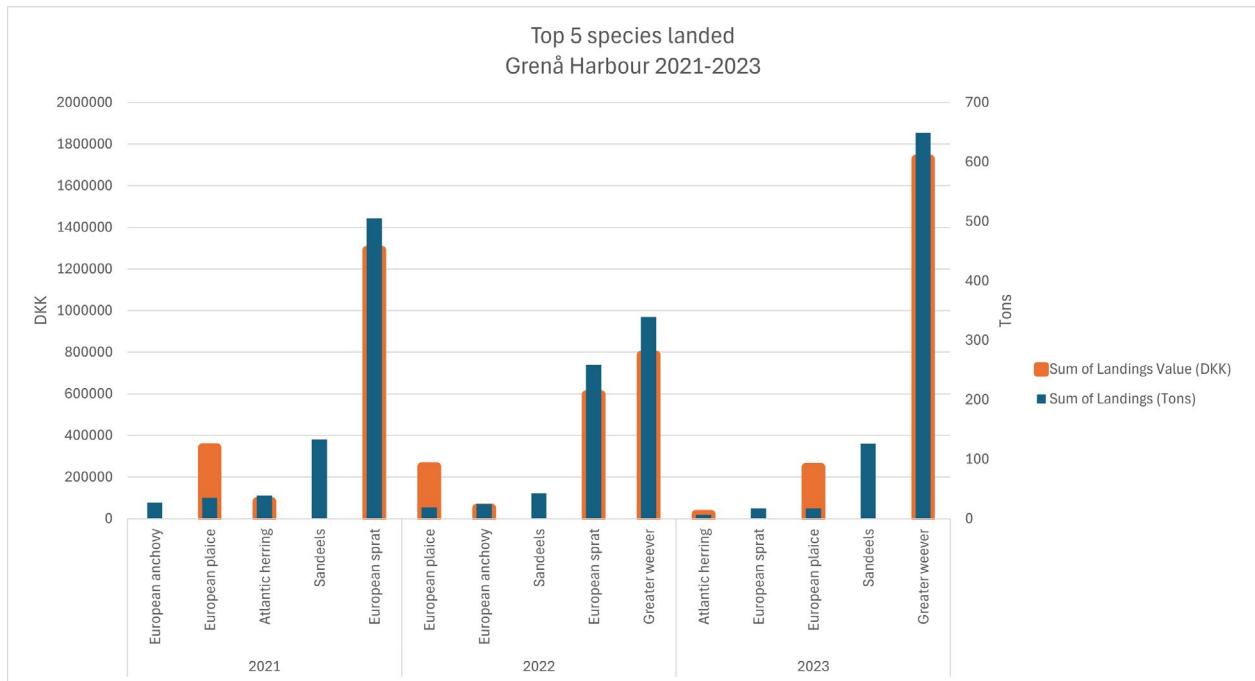


Figure 4-11c. Top five fish species landed at Grenå harbour, 2021-2023. Source: Statistics Denmark, 2024.

The seasonal distribution of catches for the main species in Grenå over the last 10 years is shown in Figure 4-12. The results indicate that greater weever catches predominantly occurs from December to April. Sprat landings, on the other hand, primarily take place between July and March. Sandeel fishing occurs from April to June, and herring mainly in April.

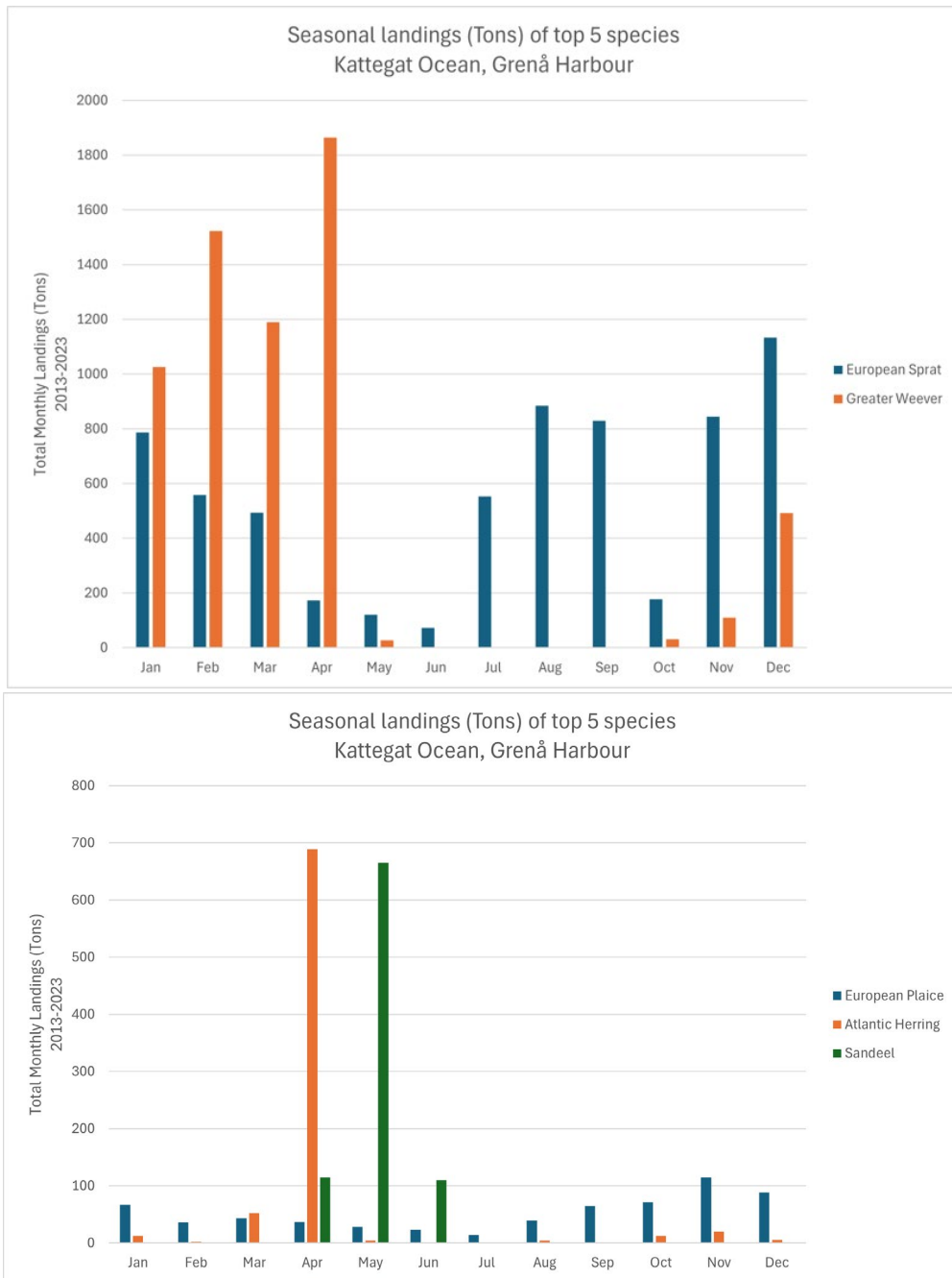


Figure 4-12. Monthly landings (tons) of the top five species in Grenå. Based on trends in total monthly landings from 2013-2023. Source: Statistics Denmark, 2024.

The harbours with the highest landings in tons in Denmark the past decade is Strandby (Nordjylland), Grenå, and Skagen (Figure 4-13). The harbours with the highest landings in value (DKK) are Strandby (Nordjylland), Gilleleje, and Grenå.

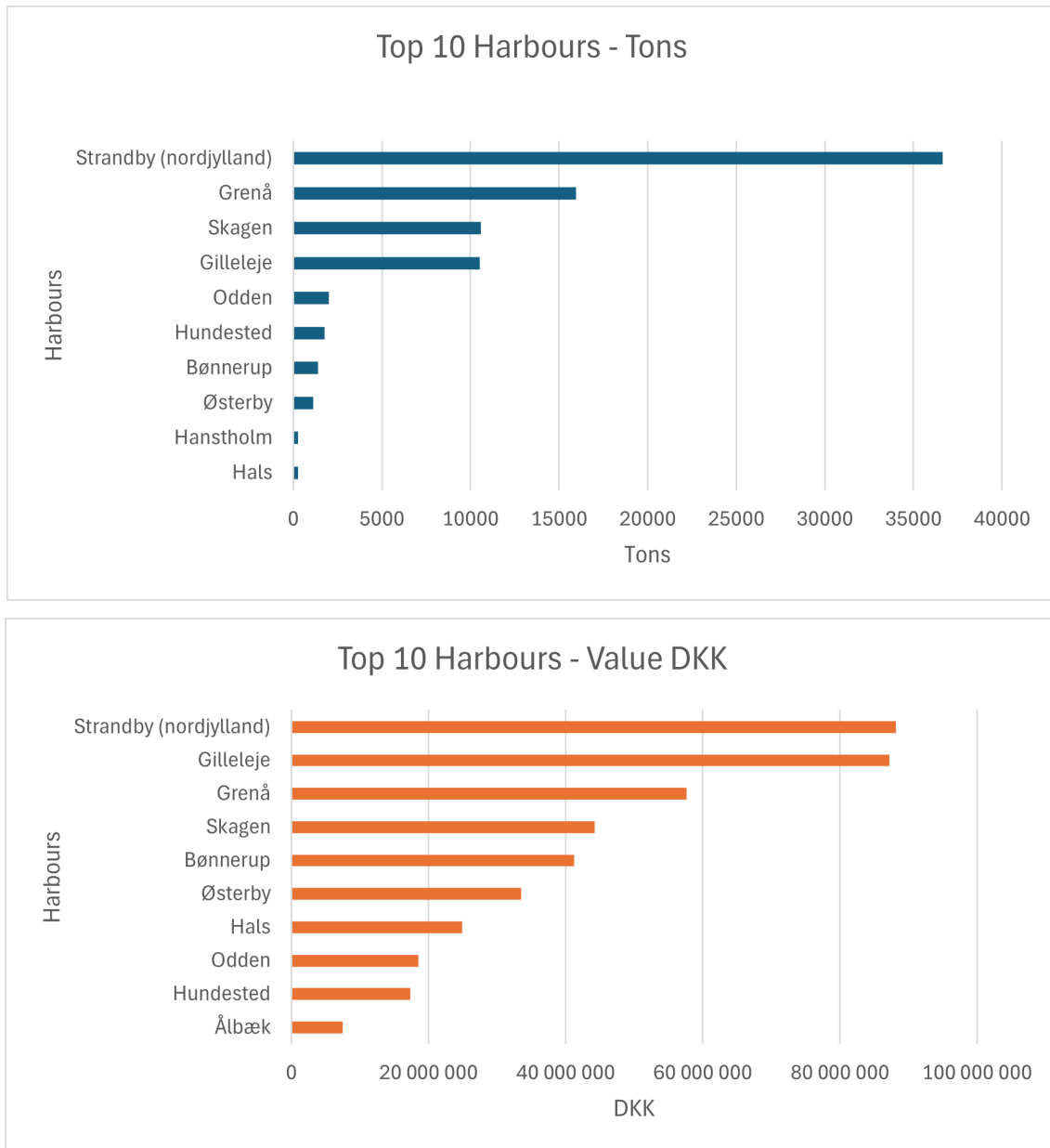


Figure 4-13. Top 10 harbours in tons and value (DKK) in the period 2013-2023. Source: Statistics Denmark, 2024.

4.3 Landings by gear type

Fishing with seine have fluctuated in the period 2012-2022 with peaks in 2017 and 2018 and had a noticeable decline in use after 2018 with a slight increase in 2022 (Figure 4-14). Trawl fishing have consistently the highest landings, peaking in 2015 and showing a general decline thereafter, especially significant in 2020 and onwards. Fishing with Danish seine have been relatively stable, with slight increases in the early years and a noticeable decline after 2018. There was a general decline in total landings from 2019 onwards, with noticeable variability among different gear types.

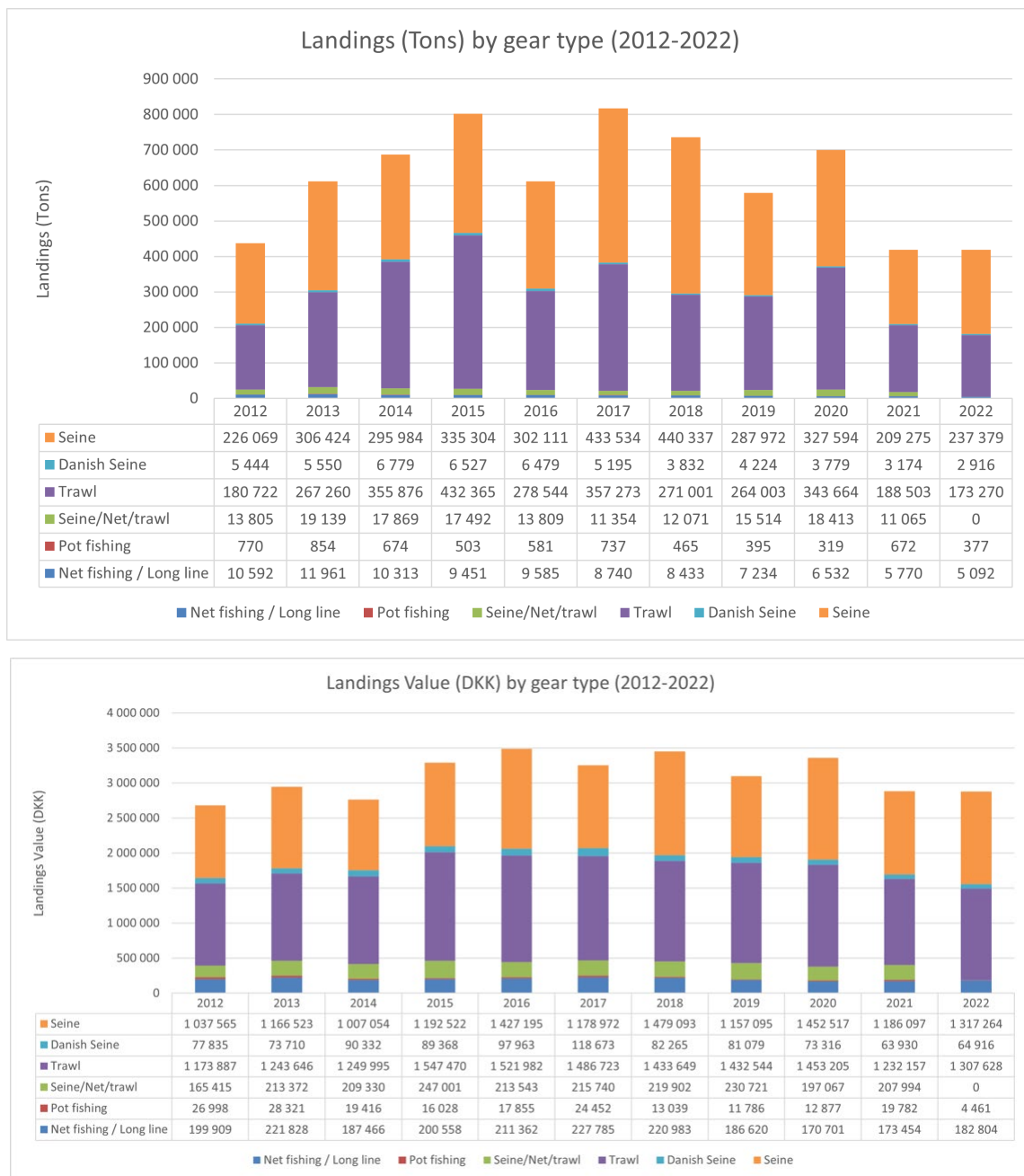


Figure 4-14. Annual landings (tons) and value of landings (DKK) per gear type in Denmark. Source: Statistics Denmark, 2024.

5 THE DISTRIBUTION OF FISHING VESSELS IN THE KATTEGAT OWF AREA

The planned Kattegat OWF area (approx. 122 km²) will cover only a small part of Kattegat Sea (approx. 22 000 km²). To get more accurate data concerning the fishing activities in the OWF area (than can be obtained from official catch statistic), information from the mapping of the distribution of the large vessels (>12 m) according to gear types in the entire ICES areas (see Figure 2-1) by using VMS data. The most relevant ICES rectangles for the Kattegat OWF area are 41G1, 41G2, 42G1 and 42G2. However, the statistics do not provide details for the specific rectangles in Kattegat. These VMS data are supplemented by information collected from fishers in the area, including some electronic map plotter data showing their fish tracks and fishing grounds.

5.1 VMS data

Vessels with a length ≥ 12 m are required to carry an electronic vessel monitoring system (VMS). VMS data can be used both to locate the vessel, and to determine the speed with which vessels travel. Estimated vessel speeds, are used to indicate when vessels using different gear are assumed to be undertaking fishing activities. Based on the assumptions about the speed with which vessels normally undertake certain fisheries it is possible to plot where fishing vessels are actively fishing in the four quarters of a year (2020-2022) (Figure 5-1). Furthermore, by combining VMS data with logbook data it is possible to get an indication of which commercial species are being fished in specific areas. Fishing vessels are generally considered to be fishing when their speed is between 1- 5 knots (Kontopoulos, et al. 2020; Souza, et al., 2016; Gerritsen & Lordan, 2011). The speed range is commonly used to identify fishing activity through the analysis of AIS-data and other monitoring systems. All fishing vessels were therefore assumed to be fishing when their speed was < 6 knots speed.

The primary fishing areas are shown in Figure 5-1, which displays VMS registrations in the period 2020-2022 for all fishing vessels (>12 m) in the southern part of Kattegat, in and around the Kattegat OWF area. It should be noted that the fishing activity of smaller vessels (< 12 m) in the area is not captured in this mapping. The area is far from the coastline and hence it is less likely for smaller vessels to use the area as fishing grounds, also the value of landings from all Danish fishing vessels under 12 meters accounts for only 5-10 % of the total value of all landings (Krog Consult, 2024).

The lobster trawlers from Djursland (Grenå and Bønnerup) do not only fish in the very local waters but also in other parts of the Kattegat. There is an important and clearly defined trawl track running across the planned Kattegat OWF (Figure 5-1). The same trawl track is also shown in the Environmental Protection Agency's mapping related to the establishment of the Natura 2000 area immediately south and east of the mentioned trawl track (please see Appendix 1). The fishers have willingly provided their GPS data on the geographical extent of their fishing activities. In Figure 5-6, photos of these have been combined into a complete overview, covering the entire course through the planned Kattegat OWF area (Krog Consult, 2024) (please see Chapter 5.4).

There is generally a low fishing activity in the planned Kattegat OWF area and export cable corridor, however, in October-December there is a slight increase in fishing activity in the area, where some small specific areas within the OWF area have a higher fishing activity (Figure 5-1).

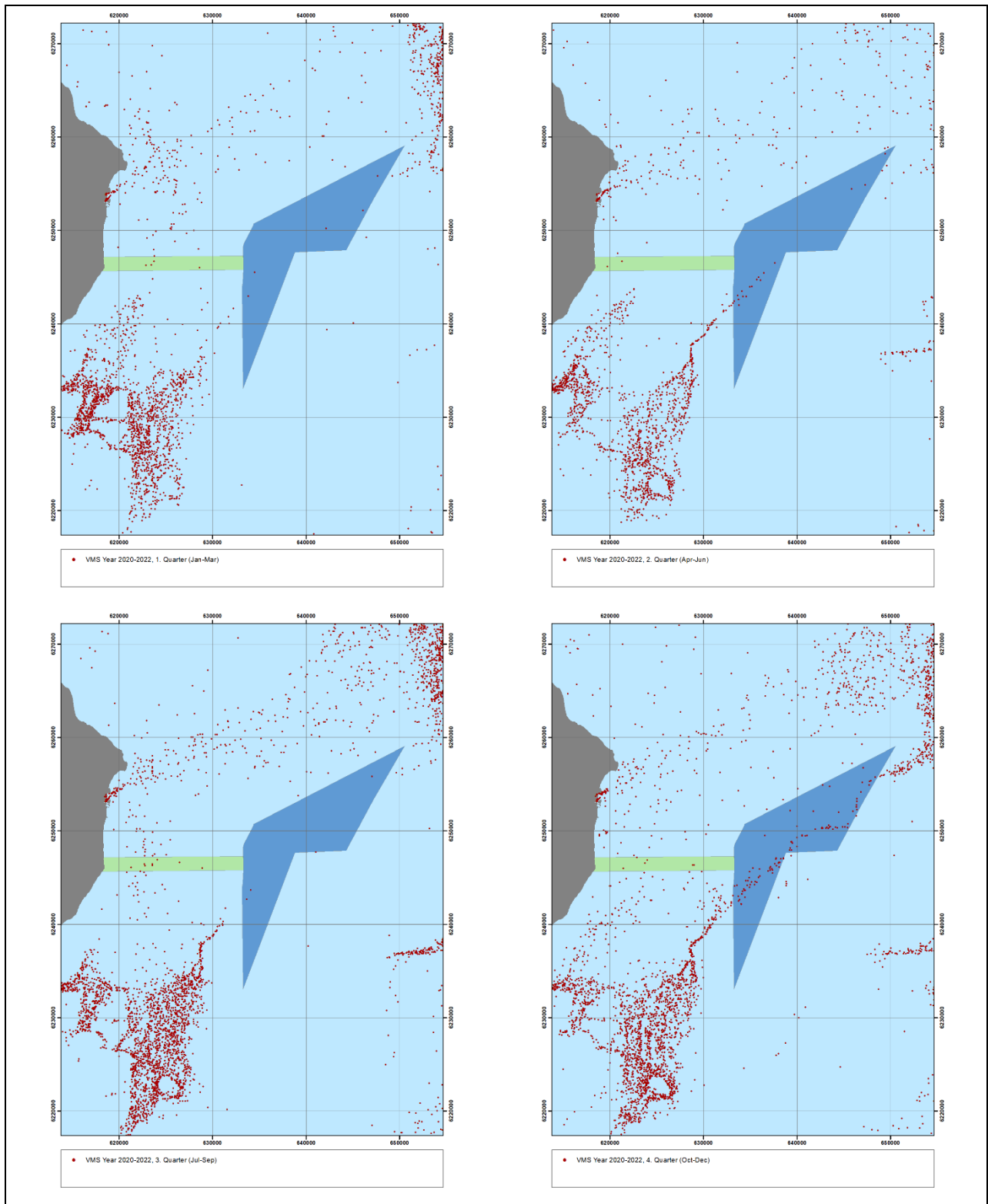


Figure 5-1. VMS registrations 1st Quarter (Jan – Mar), 2nd Quarter (Apr – Jun), 3rd Quarter (Jul – Sep) and 4th Quarter (Oct – Dec) in the period 2020 to 2022. Source: Danish Fisheries Agency, 2023.

5.2 AIS data

AIS (Automatic Identification System), developed as a collision avoidance system, complements the VMS data to give a more detailed view of fishing activities. Figure 5-2 show AIS tracking data in 2021 and 2022 for fishing vessels with less than 6 knots speed. There is a low fishing activity in the planned Kattegat OWF area in both 2021 and 2022. However, in 2022 there is a slight increase in fishing activity further south and north of the Kattegat area, where some specific areas have a relatively higher fishing activity.

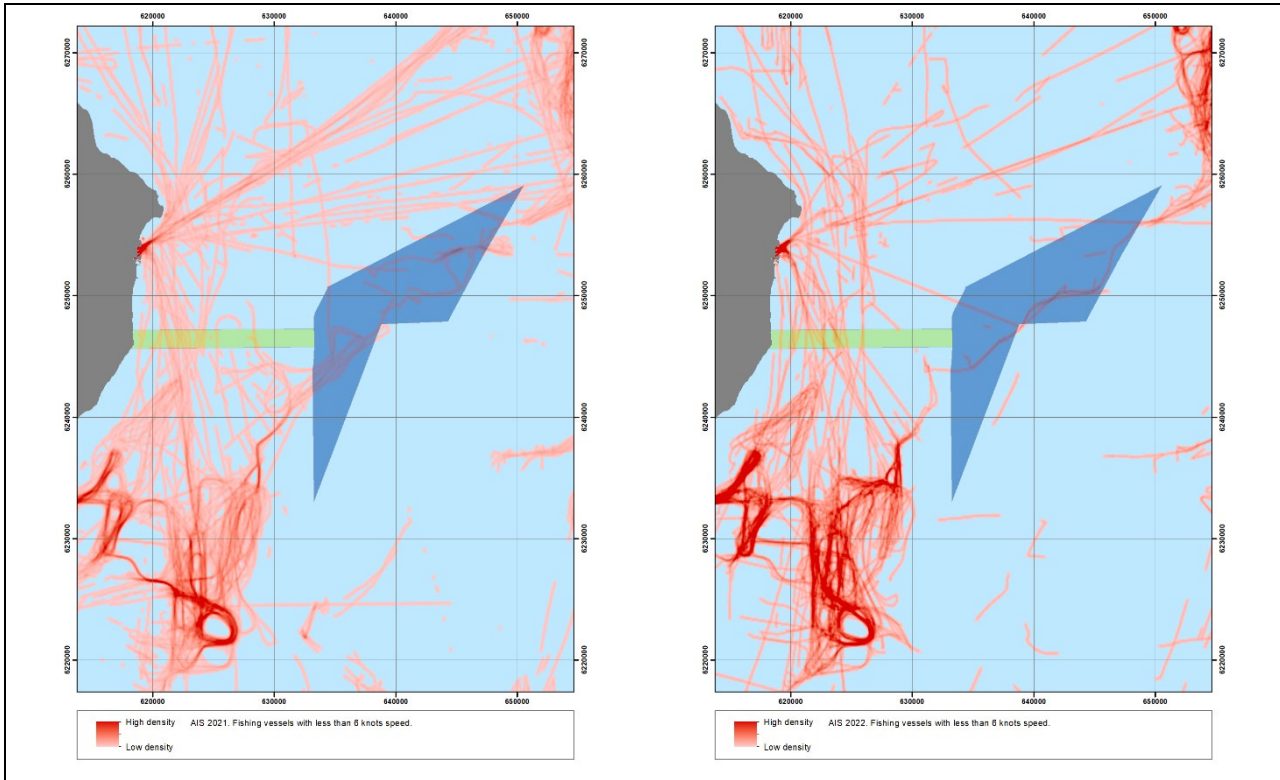


Figure 5-2. AIS tracking data for fishing vessels with less than 6 knots speed in the planned Kattegat OWF area in 2021 and 2022. Source: Danish Maritime Authority, 2024.

5.3 AIS & VMS data

To further provide information on active fishing areas, a combination of AIS and VMS data has been utilized. Figure 5-3 show the combination of AIS tracking data and VMS data in 2021 and 2022.

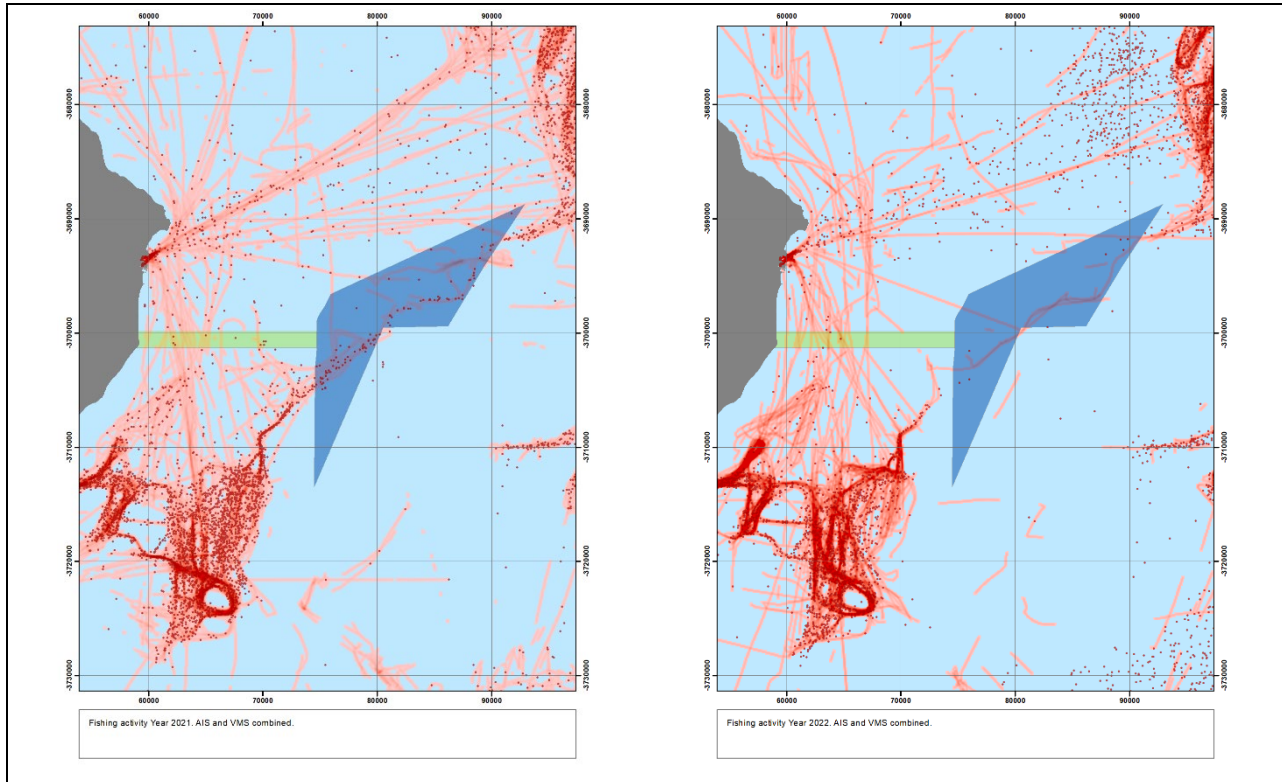


Figure 5-3. Fishing vessels in the planned Kattegat OWF area in 2021 and 2022 by combining AIS and VMS data. Source: Danish Maritime Authority, 2024 & Danish Fisheries Agency, 2023.

5.4 Map plotter data

Fishing for Norway lobster is primarily limited to a very narrow and winding channel that extends from northeast to southwest through the planned Kattegat OWF area (Figure 5-4 and 5-5). The trawl track is surrounded by areas with stones and uneven seabed, where Norway lobster trawls cannot be used, as their close bottom contact would inevitably cause them to get stuck (Krog Consult, 2024). The channel is 30-50 meters deep, and the seabed here is relatively soft (mud, sand). The distance through the area roughly corresponds to a single trawl haul (20-25 km). Outside the mentioned relatively deep channel across the OWF area, there is also limited trawling (with bobbins/discs) for fish, primarily flatfish: plaice, turbot, brill, sole, and previously also cod. This type of fishing is conducted by a few smaller trawlers, partly due to stock and quota situations, partly because many have stopped fishing, and partly because fishing for Norway lobster provides an attractive alternative. The positions/fishing activities of these smaller trawlers do not appear in the VMS registration, as the vessels are less than 12 meters in length.

The gillnet fishing is primarily in the central area, west of «Torskerenden» (Figure 5-4). The area between the OWF and landfall is important for coastal gillnet fishing (Krog Consult, 2024). The traditional fishing with bottom-set nets along the east coast of Djursland ceased many years ago,

In general, the fishers interviewed questioned the choice of the OWF location, given that there are areas both north and south where fishing would be significantly less impacted. Keeping the intensively used trawl track across the wind farm

area clear and placing the turbines either north or south of it, possibly within the boundaries, could significantly reduce the impact on fishing (Krog Consult, 2024).

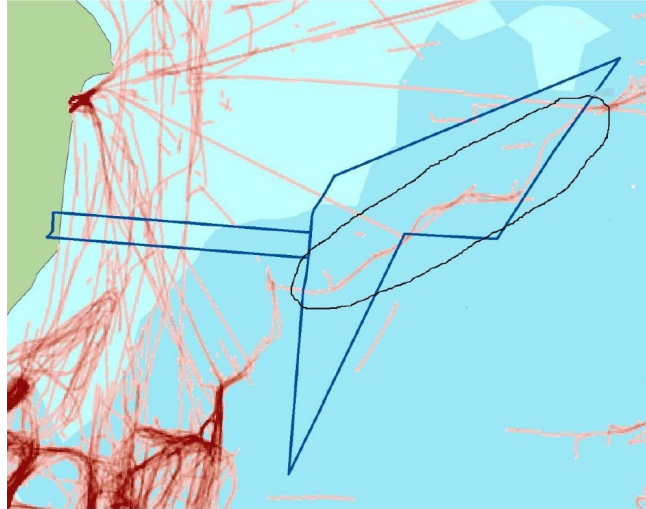


Figure 5-4. AIS-data of fishing vessels with activity in the waters east of Djursland (2022, speed < 6 knots). The planned Kattegat OWF area and export the cable route to land are marked with a blue line. The area marked by the black ellipse (“Torskerenden”), is the area from which trawl lines have been obtained from the fishers (see Figure 5-6). Source: Krog Consult, 2024.

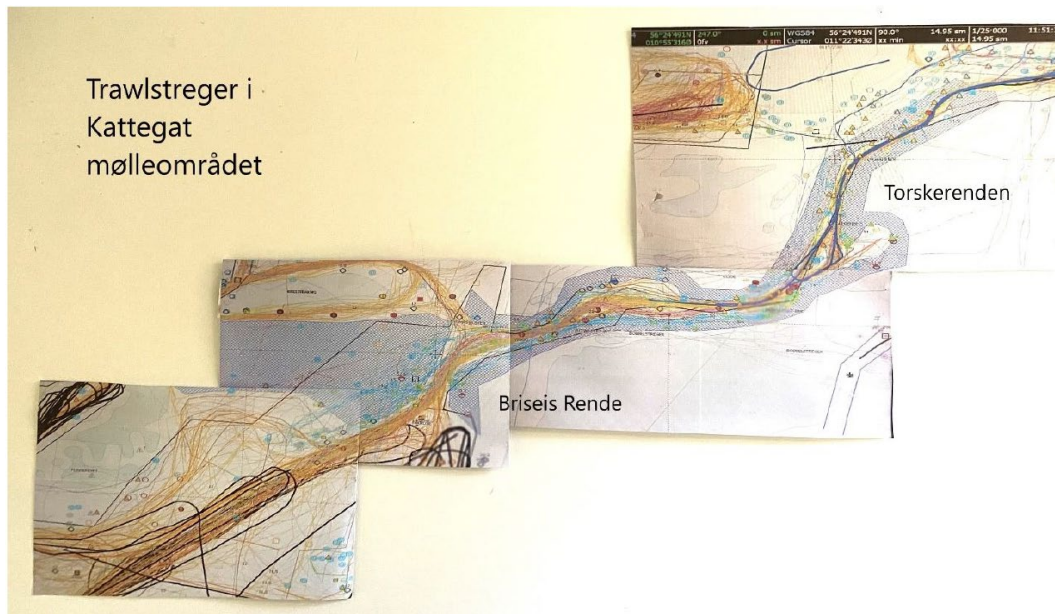


Figure 5-5. Trawl tracks from lobster fishing through the northern part of the planned Kattegat OWF area from northeast to southwest (see location in Figure 5-5). The blue shading indicates areas with stones. Source: Fisherman no. 1. Krog Consult, 2024.

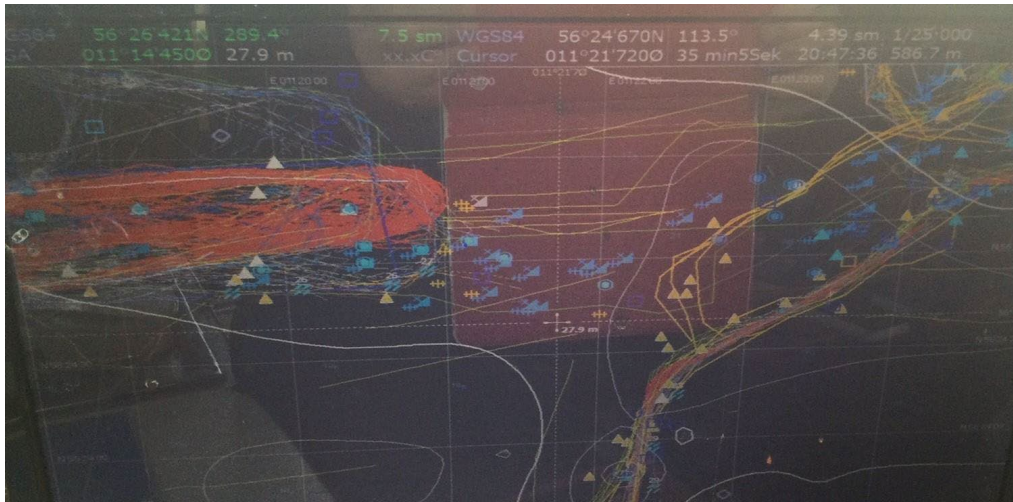


Figure 5-6. Trawling and gillnet fishing (yellow) from a small gillnet/trawl vessel. Source: Fisherman no. 14. Krog Consult, 2024.



6 CONCLUSION

The commercial fishery in the Kattegat, including the planned Kattegat OWF area, is dominated by flatfish and codfish species, as well as Norway lobster. Fishing methods include both active gear (trawls) and passive gear (gillnets, pots).

The fishery in Kattegat has significantly declined over the past 20 years, with a substantial reduction in the number of fishing vessels and a drop in total fish landings. The decline is partly due to the sale of fishing rights for industrial species like sprat, and the catch are now landed elsewhere. Norway lobster fishing has increased. For 5 to 10 trawlers in Bønnerup and Grenå respectively, catching Norway lobster for a large part of the year is important to their economy although the total value of landings has remained relatively stable over the last 5 years with an average of 12 million DKK. Fishing for Norway lobster in the Kattegat is not only carried out by vessels based on Djursland or in North Zealand, but periodically also by vessels from further ports (Strandby, Hvide Sande etc.) (Krog Consult, 2024).

Flatfish species such as sole, turbot, and plaice are now the most important fish species for consumption, while cod landings have sharply decreased.

The area between the OWF and landfall is important for coastal gillnet fishing. There is little fishing activity within the planned Kattegat OWF area itself, however, fishers have expressed concerns about the choice of the OWF location given that a location further north or south could, possibly within the OWF boundaries, significantly reduce the impact on fishing.

REFERENCES

- COWI, 2022. Opdatering af dele af finscreeningen fra 2020 samt finscreening af nyt havareal til etablering af havvindmølleparker.
- DNV, 2024. Kattegat– Fish. Energinet Eltransmission A/S. Report no. 2023-4113.
- DNV, 2023. Fish and fisheries- Scope study report Inner Danish waters Rev 02.15.12.23
- Egekvist, J., Mortensen, L., & Larsen, F., 2017. Ghost nets-A pilot project on derelict fishing gear. DTU Aqua Report No. 323-2017. National Institute for Aquatic Resources. Technical University of Denmark
- Energinet, 2022. Scope of services. Document no. 22/03837-6.
- Energinet, 2023. Data downloaded from GIS-portal.
- Gerritsen, H. & Lordan, C., 2011. Integrating vessel monitoring systems (VMS) data with daily catch data from logbooks to explore the spatial distribution of catch and effort at high resolution, ICES Journal of Marine Science, Volume 68, Issue 1, January 2011, Pages 245–252,
- GEUS, 2023. Shapefiles downloaded from: <https://frisbee.geus.dk/geuswebshop/>
- ICES, 2024a. Cod (*Gadus morhua*) in Subdivision 21 (Kattegat). In Report of the ICES Advisory Committee, 2024. ICES Advice 2024, cod.27.21 . <https://doi.org/10.17895/ices.advice.25019213>
- ICES, 2024b. Herring (*Clupea harengus*) in subdivisions 20–24, spring spawners (Skagerrak, Kattegat, and western Baltic). In Report of the ICES Advisory Committee, 2024. ICES Advice 2024, her.27.20-24. <https://doi.org/10.17895/ices.advice.25019273>
- ICES, 2023. EU standing request on catch scenarios for zero-TAC stocks: cod (*Gadus morhua*) in Subdivision 21. Replacing technical service provided in November 2023. In Report of the ICES Advisory Committee, 2023. ICES Advice 2023, sr.2023.09e, <https://doi.org/10.17895/ices.advice.24720483>
- Kontopoulos, I., Chatzikokolakis, K., Tserpes, T., & Zissis, D., 2020. Industry Paper: Classification of vessel activity in streaming data. In The 14th ACM International Conference on Distributed and Event-based Systems (DEBS '20), July 13–17, 2020, Virtual Event, QC, Canada. ACM, New York, NY, USA, 12 pages.
- Korsgaard, K., Olrik, M. & Mandrup, P., 2007. Fiskerilære. 2. udgave 2007 ISBN 87-90749-10-3 [Fiskerilære11 NY \(fiskeriforening.dk\)](https://www.fiskeriforening.dk)
- Krog Consult, 2024. NOTAT. Indhentning af oplysninger fra fiskere i forbindelse med forundersøgelserne til havvindmølleprojekter i Kattegat og Østersøen. Juni, 2024.
- Naturstyrelsen, 2014. Marin habitatkortlægning i de indre danske farvande 2014. Naturstyrelsen.
- NIRAS, 2015. Kriegers Flak Havmøllepark. Fisk og fiskeri VVM-redegørelse Teknisk baggrundsrapport. Juni 2015
- NIRAS, 2022a. Hesselø Offshore Wind Farm. Fisheries. Technical report. Energinet Eltransmission A/S. Date: 07. January 2022.
- NIRAS, 2022b. Hesselø Offshore Wind Farm, Fish. Technical report. Energinet Eltransmission A/S. Date 8th March 2022
- Souza, E., Boerder K, Matwin, S, Worm, B., 2016. Correction: Improving Fishing Pattern Detection from Satellite AIS Using Data Mining and Machine Learning. PLOS ONE 11(9): e0163760. <https://doi.org/10.1371/journal.pone.0163760> View correction. Statistics Denmark, 2024. [Statistics Denmark \(dst.dk\)](https://www.dst.dk)
- Statistics Denmark, 2023. <https://www.dst.dk/en/Statistik/emner/erhvervsliv/fiskeri-og-akvakultur/fiskeri>



**APPENDIX 1 NOTAT - INDHENTNING AF OPLYSNINGER FRA FISKERE I
FORBINDELSE MED FORUNDERSØGELSERNE TIL
HAVVINDMØLLEPROJEKTER I KATTEGAT OG ØSTERSØEN**

Carsten Krog:

UDKAST

NOTAT

Indhentning af oplysninger fra fiskere i forbindelse med forundersøgelserne til havvindmølleprojekter i Kattegat og Østersøen



Juni 2024

DNV Denmark A/S har af Energinet Eltransmission A/S fået til opgave at gennemføre marine miljøundersøgelser i Indre danske Farvande i forbindelse med udbygningen af havvindområderne i Kattegat og Østersøen (*DNV Denmark A/S. Energinet - marine Environmental Studies (Fisheries), project no. 10443476*).

Arbejdet inkluderer baseline beskrivelse/undersøgelse af fisk og fiskeri i de omhandlede områder. Det er af DNV/Energinet besluttet ikke at gennemføre fiskeundersøgelser men alene at beskrive fisk og fiskeri baseret på eksisterende informationer. Det er dog samtidig besluttet, at der skal gennemføres interviews af fiskere med interesser i de relevante farvandsområder. Dette arbejde har DNV Denmark overdraget Krog Consult v./fiskerikonsulent Carsten Krog at gennemføre.

Metode

Indledningsvis er fiskernes hovedorganisation, Danmarks Fiskeriforening DFPO /4/ blevet kontaktet med henblik på dels at informere om det igangværende projekt, og dels at få forslag til fiskere, som det kunne være relevant at kontakte. Herefter er der taget kontakt med de lokale fiskeriforeningsformænd i havnene i Klintholm /5/, Grenå /1/ og Gilleleje /6/ for at aftale møder med fiskerne i de primære landingshavne for fiskeriet i Kattegat - Grenå og Gilleleje. Fiskeriet i Østersøen er gået overordentligt meget tilbage i de senere år, og fiskeriets omfang, karakter og udvikling her er hovedsageligt beskrevet ud fra telefoniske interviews.

Formændene i de nævnte primære havne er anmodet om at indkalde andre relevante fiskere til at de aftalte møder. – Praksis viser, at det sjældent går helt som forventet/aftalt, bl.a. fordi fiskerne er på fiskeri eller andet på dagen. Det er ofte muligt, når man først er på stedet, at finde frem til fiskere og andre, som kan være relevante at interviewe. De der ikke har været hjemme på besøgstidspunktet, og fiskere fra andre havne, er herefter kontaktet telefonisk. Fleksibel planlægning og opfølgning er derfor en forudsætning for at kunne gennemføre processen.

På møderne er fiskerne blevet spurgt ind til deres interesser i de pågældende mølleområder – hvor og hvornår de fisker (evt. dokumenteret med GPS-data), hvilke redskaber de anvender (evt. fotos), fiskearter og mængder, kendskab til gyde- og opvækstområder m.v. Endvidere er den enkelte fisker blevet spurgt ind til deres kendskab til andre fiskere, eventuelt fra andre havne (også udenlandske), som også er aktive i det pågældende område.

Navnene på de interviewede fiskere og andre fremgår ikke af nærværende notat men er angivet ved et nummer, som refererer til en deltagerliste, som ikke er offentligt tilgængelig.

Udkast til notat har været sendt til centrale fiskere til kommentering.

Kattegat mølleområdet

Der er blevet afholdt et møde/besigtelse i Grenå den 1. maj 2024 med deltagelse af formanden for Grenå Fiskeriforening /1/ og en trawlfisker fra Grenå /2/ samt en mangeårig, tidligere formand for Bønnerup Fiskeriforening /3/. Efterfølgende er der taget telefonisk kontakt med 4 andre fiskere (/12/, /14/, /15/, /16/).

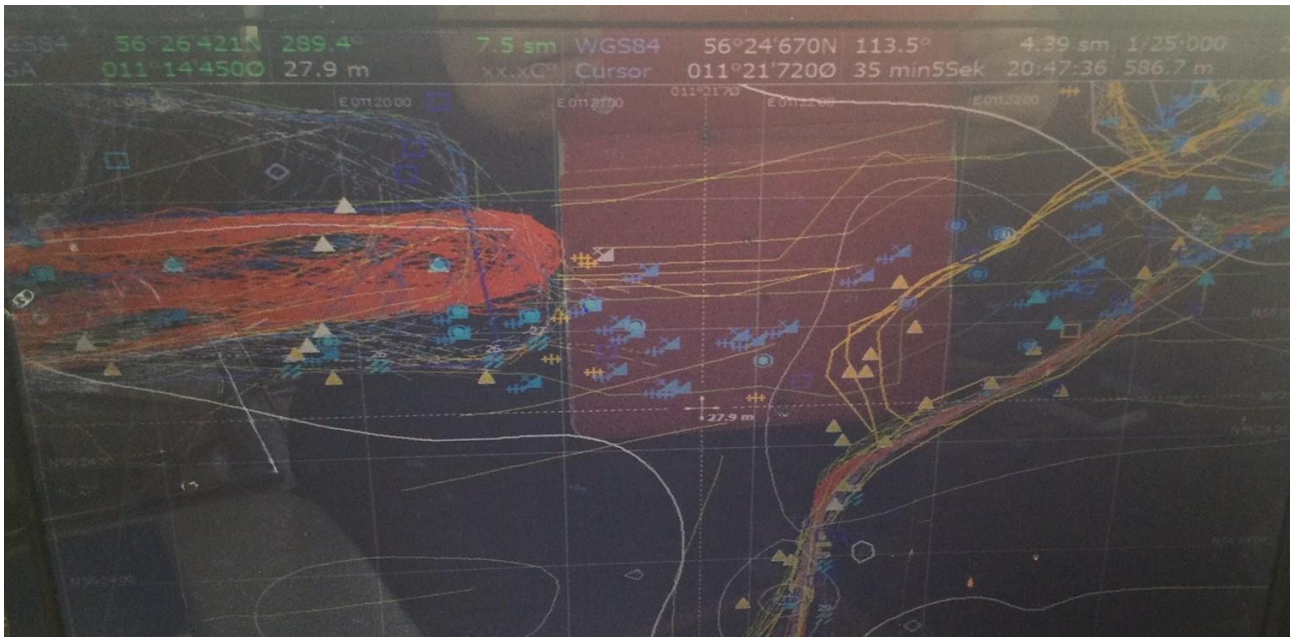
Generelt er fiskeriet i Kattegat gået overordentligt meget tilbage igennem de sidste 20 år, det gælder især for fangsterne af fisk som er reduceret fra omkring 40.000 tons i begyndelsen af 2000-tallet til nu kun ca. 1500 tons. En væsentlig del af forklaringen herpå er, at rettigheden til at lande industrifiskearterne (især brisling) er solgt til fartøjer fra andre, fjerntliggende havne, og at disse arter derfor fanges/landes i Skagerrak/Nordsøen i stedet. Fiskerne i Grenå, og eventuelle udefrakommende fartøjer her, lander deres konsumfisk til Grenå Fiskeauktion mens fisk der landes i Bønnerup overvejende sendes til Strandby Fiskeauktion.

De vigtigste konsum-fiskearter er nu fladfiskearterne tunge, slethvarre, pighvarre og rødspætte, mens landingerne af torsk de seneste år har været på mindre end 1000 kg (Grenå Fiskeauktion, Fiskeristyrelsen). Fangsterne af jomfruhummer i Kattegat er derimod, modsat situationen for fangsten af fisk, gået markant frem fra omkring 1300 tons i begyndelsen af 2000-tallet til nu omkring 1800 tons. Eftersom jomfruhummer er en højværdi-art, har den samlede værdi af alle landinger fra Kattegat kun udvist en relativt begrænset nedgang fra omkring 220 mio. kr i begyndelsen af 2000-tallet til nu omkring 150 mio. kr (alle landingsoplysninger fremgår af BILAG 2A).

Denne udvikling i fiskeriet blev diskuteret med fiskerne. Konsekvensen har naturligvis været, at især fiskeriformer, specielt garnfiskeriet, som ikke har jomfruhummer som målart er gået markant tilbage. I Bønnerup og Grenå er der således nu kun en håndfuld garnfartøjer tilbage, som kan betegnes som fuldtids kommercielle – nogle af disse fisker endvidere periodisk i fjernere farvande (Skagerrak, Nordsøen) for at kunne opretholde den nødvendige indtjening. Der er fortsat et betydeligt antal enmands joller med fiskerinumner udrustet til garnfiskeri i både Grenå og Bønnerup – de pågældende fiskere har en beskedent aktivitet og er overvejende registreret som bierhvervsfiskere, eller er erhvervsfiskere med alternativ beskæftigelse, og oppebærer en stor del af deres samlede indtægt fra arbejde i land eller fra pension.

De vigtigste fiskearter for garnfiskeriet har i de senere år været arter af fladfisk (pighvarre, slethvarre, tunge, rødspætte) – i visse år har også fangster af stenbider ("kulso") været af væsentlig betydning.

Der foregår nu kun meget lidt fiskeri med garn i mølleområdet /1/, 3/, /14/, der er dog enkelte garnfartøjer som fisker fladfisk, og som i sommer- efterårsperioden desuden driver et fiskeri med såkaldte krabbegarn (aflagte, stormaskede stenbider- eller pighvarregarn) efter taskekrabber (Se fig. 1). Tidligere da torskebestanden/-kvoten var meget højere udgjorde mølleområdet en attraktiv, kystnær fiskeplads for mindre garnfartøjer – også fra andre havne og selv fra fjerne havne som eksempelvis Hvide Sande.



Figur 1. Slæbestreger samt garnsætninger fra et mindre garn/traul fartøj. Garnsætningerne er vist med rette, gule streger især centralt i området (vest for Torskerenden, se nedenfor) /14/.

Trawlfiskeriet er ikke gået lige så meget tilbage som garnfiskeriet, eftersom det har været muligt at oppebærer den nødvendige indtjening ved at fokusere på jomfruummer som den primære målart - i værdi repræsenterende ca. 90% af den samlede værdi af landingerne. Den resterende værdi af landingerne hidrører fra bifangst af diverse konsumarter (fladfish, taskekrabber). Endelig skal bemærkes, at der i de seneste 3 år har været gennemført et forsøgmæssigt fiskeri efter fjæsing med bundtrawl, som kan fanges med mindre maskestørrelse (60 mm), end den der ellers er tilladt til konsumfiskeri. Forsøgsfiskeriet har været begrænset til 3 fartøjer. Dette og tidligere forsøg (Krog, 2005) har dokumenteret, at bestanden af fjæsing er meget stor, og at den i det tidlige forår kan fanges med minimal bifangst af andre arter. Endvidere har afsætningen været god, dog meget afhængigt af fiskenes størrelse (helst > 25 cm). De primære fiskeområder for forsøgsfiskeriet efter fjæsing fremgår af kortet (fig. 7) i det følgende afsnit om Hesselø mølleparken. Ingen af disse områder ligger inden for afgrænsningen af Kattegat mølleparken.

Fiskeriet efter jomfruummer i Kattegat gennemføres ikke alene af fartøjer hjemmehørende på Djursland eller i Nordsjælland men periodisk også af fartøjer fra fjernere havne (Strandby, Hvide Sande m.fl). For ca. 5 og 10 trawlere i henholdsvis Bønnerup og Grenå har fangst af jomfruummer i en stor del af året en afgørende betydning for deres økonomi. I opgørelsen indgår også enkelte fartøjer, som er indregistreret i andre lokale havne (Anholt (1) og Ebeltoft (2)).

Jomfruummer fanges overvejende i bundtrawl som er rigget som 2-trawl med en såkaldt klump, eller evt en rulle i midten, hvor de 2 trawl er koblet sammen, trawlene spiles ved brug af 2 skovle af varierende størrelse (afhængigt af fartøjets størrelse/maskinkraft) – se figur 2. For at kunne fange jomfruummerne er det nødvendigt, at trawlet følger bunden meget nøje, hvorfor det er monteret med enten en kæderub/såkaldt "hængebly" eller med en rub med gummiskiver (ofte 6 tommer i diameter). Førstnævnte type af rub anvendes, hvor havbunden er jævn, og uden sten, mens den anden type anvendes, hvor der i havbunden kan forekomme sten, som kan ødelægge trawlet hvis de "fanges" heri.

Enkelte mindre trawlere /12/, /14/,15/, fisker med enkelttrawl efter primært fisk, men med jomfruummer som bifangst. Disse trawl er forsynet med "bobbins" (trawlkugler) eller skiver, således at de kan anvendes på

mere ujævn havbund, eventuelt med sten, deres fiskeri foregår derfor overalt i mølleområdet, dog undtaget visse områder med store sten/stenbunker. De primære målarter er fladfiskearter som rødspætter, pighvarre, slethvarre og tunger. Indtil for 15-20 år siden udgjorde torsken også en væsentlig del af fangstværdien.

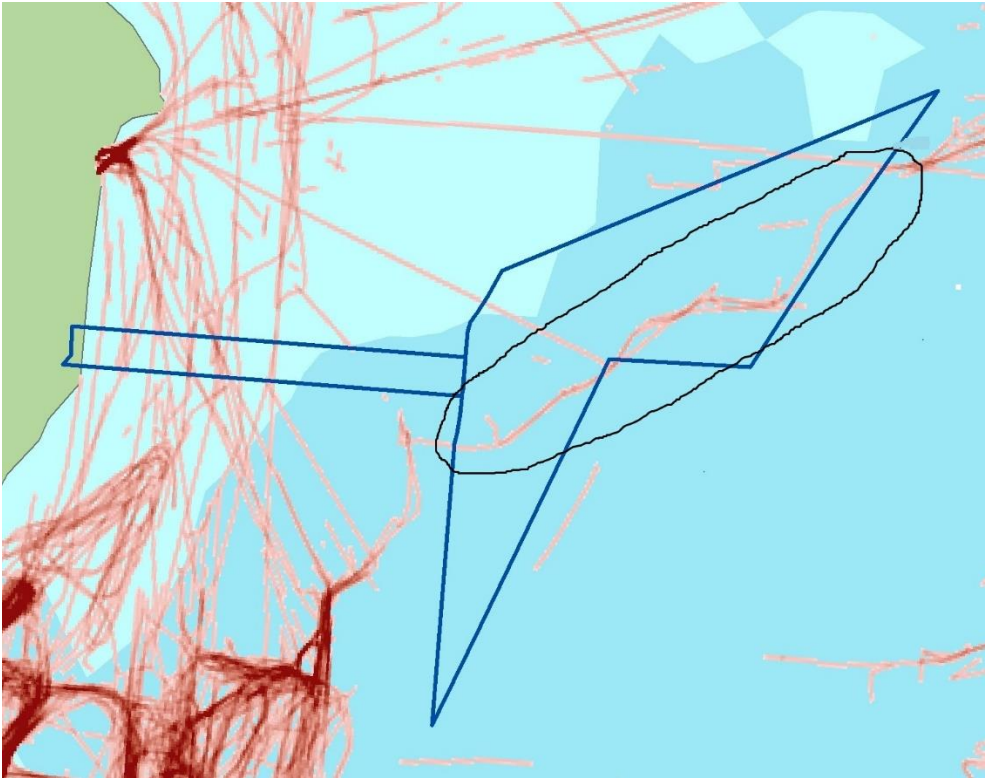
Fiskeriet efter jomfruhummer foregår om natten eller i skumringen, hvor jomfruhummeren er oppe af deres huler i havbunden for at søge føde. Hvert trawltræk har typisk en varighed på omkring 5 timer svarende til en trawlet strækning på 25-30 km.



Figur 2. Hummertrawler i Grenå Havn. Bemærk 2 trawltromler, trawlskovle og kædeklump, hvortil de to trawl er forbundet.

Hummertrawlerne fra Djursland fisker naturligvis ikke kun i de helt lokale farvandsområder men fisker også i andre dele af Kattegat, herunder også i det andet mølleområde (nord for Hesselø). Der er et vigtigt, og tydeligt afgrænset trawlspor tværs igennem Kattegat-mølleområdet, som tydeligt fremgår af figur 3. Det skal bemærkes, at denne figur alene bygger på en begrænset mængde VMS-data og på en mangelfuld sortering af data. Samme trawlspor fremgår af Miljøstyrelsens kortlægning i forbindelse med etableringen af Natura 2000 området umiddelbart syd og øst for det nævnte trawlspor - se BILAG 1 (Naturstyrelsen, 2014). Fiskerne /1/ har beredvilligt stillet deres GPS-data over deres fiskeris geografiske udstrækning til rådighed. I figur 4 er fotos heraf sat sammen til en helhed, som dækker hele forløbet igennem Kattegat-mølleområdet. Som det tydeligt fremgår, er fiskeriet efter primært jomfruhummer begrænset til en meget snæver og bugtende rende som strækker sig fra NØ mod SV igennem mølleområdet. Trawlsporet omgives af områder med sten og ujævn bund, hvor der ikke kan anvendes jomfruhummertrawl, der på grund af deres tætte bundkontakt uvægerligt ville hænge fast i bunden her. Den befiskede rende er 30-50 meter dyb og bunden her er relativt blød (mudder, sand). Afstanden igennem området svarer nogenlunde til et trawltræk (20-25 km).

Udenfor den nævnte relativt dybe rende på tværs af mølleområdet fiskes der i begrænset omfang også med trawl (med kugler/skiver) efter fisk - primært fladfisk: rødspætter, pighvarre, slethvarre, tunge) tidligere også efter torsk. Denne type fiskeri drives nu kun af ganske få mindre trawlere, dels pga bestands- og kvotesituationen, dels fordi mange er ophørt med fiskeri, og dels fordi fiskeri efter jomfruhummer udgør et attraktivt alternativ. Disse mindre trawleres positioner/fiskeri fremgår ikke af VMS-registreringen, eftersom fartøjerne er mindre end 12 meter.



Figur 3. VMS-positioner for fiskefartøjer med aktivitet i farvandet øst for Djursland (2022, hastighed < 6 knob). Kattegat-mølleområdet og kabeltraceet til land er markeret med blå streg. (DNV, 2024). Området med sort streg markerer det område, hvorfra der er fremskaffet trawlstreger fra fiskerne (se figur 4). (DNV, 2024).



Figur 4. Trawlspor fra jomfruhummerfiskeri igennem den nordlige del af Kattegat-mølleområdet fra NØ mod SV (se placeringen i fig. 9) /1/. Den blå skravering angiver områder med sten.

Området mellem mølleparken og land, hvor ilandføringskablet skal placeres, er vigtigt for det kystnære fiskeri med garn /14/. Der forventes en effekt på fiskeriet i anlægsperioden, hvor forstyrrelser og uklart vand vil kunne have en midlertidig effekt på fiskenes forekomst/vandring. Tidligere tiders fiskeri med bundgarn på Djurslands østkyst er ophørt for mange år siden, bundgarnsfiskeriet på Djurslands nordkyst forventes ikke at blive berørt af mølleprojektet /16/.

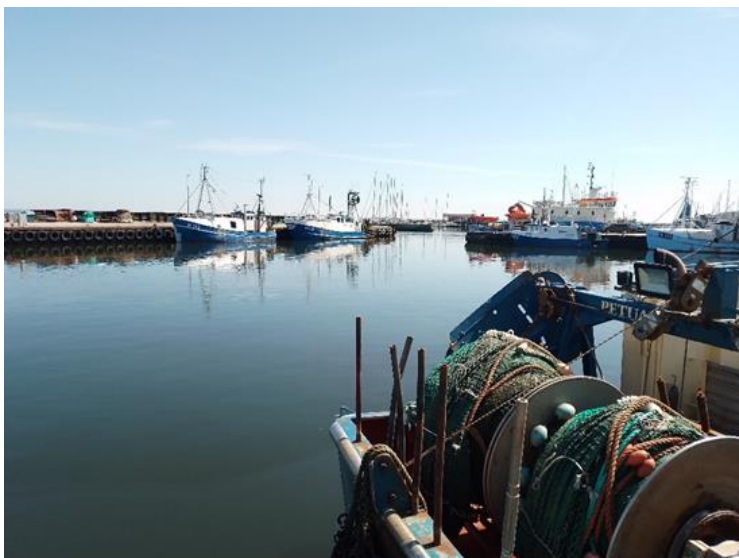
Flere fiskere (/1/, /3/, /14/), udtrykte frygt for, at elektromagnetisk stråling fra kablerne vil kunne have en vedvarende effekt på fisk. Samme bekymring gælder for kabler/stråling fra kablerne internt i mølleparken – eventuelt kombineret med vibrationer fra møllefundamenter/driften af møllerne. Den dokumenterede viden om en sådan mulig effekt er meget begrænset, men flere af fiskerne henviste til erfaringer fra Anholt-mølleparken, hvor /12/ eksempelvis gentagne gange uden held, og modsat situationen før parken blev etableret, havde forsøgt at lodde fisk (kun fisk oppe i vandet som sild, brisling, fjæsing) ved gennemsejling af mølleparken på vej mod Anholt. En garnfisker /14/ omtalte fiskeriforsøg inde i mølleparken, hvor der kun blev fanget krabber men ingen fisk. Vedkommendes vurdering er dog, at uanset om der er fisk eller ej, vil det ikke være sikkerhedsmæssigt forsvarligt at fiske med enmands fartøjer inde i mølleparken pga risikoen for at drive ind mod møllefundamenterne.

Generelt var fiskerne uforstående overfor, at man havde valgt den pågældende placering af mølleparken, når der både nord og syd herfor var områder hvor fiskeriet ville blive generet i væsentlig mindre grad. En friholdelse af det intensivt anvendte trawlspor på tværs af mølleområdet og en placering af møllerne henholdsvis nord og syd herfor, eventuelt indenfor afgrænsningen, ville kunne reducere generne for fiskeriet betragteligt.

Hesselø mølleområdet

Der er blevet afholdt et møde/besigtigelse i Gilleje den 7. maj 2024 med deltagelse af auktionsmesteren /7/, Formanden for Gilleleje Fiskeriforening /6/ og 2 trawlfiskere (/8, /9/). Efterfølgende er der taget kontakt med 3 andre fiskere med interesser i Hesselø mølleområdet (/1/, /13/, /17/).

Som beskrevet i afsnittet om Kattegat mølleområdet er fiskeriet generelt gået overordentligt meget tilbage i Kattegat igennem de sidste 20 år, det gælder især for fangsterne af fisk, mens landingerne af jomfruhummer er gået markant frem. Eftersom jomfruhummer er en højværdiart har den samlede værdi af alle landinger af både fisk og skaldyr fra Kattegat kun udvist en relativt begrænset nedgang fra omkring 220 mio. kr i begyndelsen af 2000-tallet til nu omkring 150 mio. kr (alle landingsoplysninger fremgår af BILAG 2A).



Figur 5. Hummertrawlere i Gilleleje Havn, maj 2024.

Fiskerne i Gilleleje, og mange udefrakommende fartøjer, lander deres fangster til Gilleleje Fiskeauktion. Værdien af landingerne i Gilleleje har udvist mindre dramatiske og negative udsving end i Kattegat generelt, men også her dominerer landingerne af jomfruhummer i stadig stigende grad. I løbet af de sidste 10 år er værdien af jomfruhummerlandingerne næsten fordoblet fra godt 26 mio kr (gennemsnit 2012-2014) til ca. 47 mio kr (gennemsnit 2021-2023). Værdien af landingerne af jomfruhummer udgør nu ca. 85% af den samlede værdi af alle landinger sammenlignet med ca. 75% for 10 år siden (Gilleleje Fiskeauktion AS/Fiskeristyrelsen).

De vigtigste konsum-fiskearter er nu fladfiskearterne tunge, slethvarre, pighvarre og rødspætte. Værdien af landingerne i Gilleleje af disse arter har holdt sig relativt konstant eller endog stigende for pighvarre og slethvarre. Landingerne af torsk til Gilleleje auktionen er derimod gået dramatisk tilbage fra at have haft en værdi på mere end 5 mio kr i 2017 til nu (2022-2023) kun godt 100.000 kr.

Denne udvikling i fiskeriet blev diskuteret med fiskerne. Konsekvensen har naturligvis været, at især fiskeriformer, specielt garnfiskeriet, som ikke har jomfruhummer som målart er gået markant tilbage. I Gilleleje – og i de andre havne på Sjællands nordkyst (Hundested og Sj. Odde) - er der således nu kun en håndfuld garnfartøjer tilbage, som kan betegnes som fuldtids kommercielle. Der er fortsat et betydeligt antal enmands joller med fiskerinumner udrustet til garnfiskeri i de nævnte havne – ejerne af disse fartøjer er registreret som bierhvervsfiskere eller erhvervsfiskere med en beskeden aktivitet, og som oppebærer en stor del af deres indtægt fra arbejde i land eller fra pension.

I Gilleleje er der nu 7 hjemmehørende trawlere, men i hummersæsonen er der ofte op til 15 trawlere fra andre dele af landet, som har deres udgangspunkt i Gilleleje havn. I hver af havnene i Hundested og Odden er der 2 hjemmehørende hummertrawlere. Den dominerende fiskeriform er fiskeri med særlige hummertrawl (fig. 5), enkelte af trawlerne driver periodisk også et målrettet fiskeri efter konsumfisk med bobbins-trawl (rub med bobbins/kugler eller skiver), som gør det muligt at fiske på mere ujævn/stenet grund.

De primære fiskeområder fremgår af figur 6, der viser VMS registreringer i 2022 fra alle fiskefartøjer i den sydlige del af Kattegat i og omkring Hesselø-mølleområdet (DNV, 2024). Det skal dog bemærkes, at kun fartøjer >12 meter er omfattet af VMS-registreringen, og at mindre fartøjers fiskeri i området således ikke er omfattet af denne kortlægning (se også BILAG 3). Værdien af de mindre fartøjers fiskeri er imidlertid, set i den store sammenhæng, af minimal betydning (værdien af landingerne fra alle danske fiskefartøjer <12 meter udgør kun 5-10% af den samlede værdi af alle landinger).



Figur 6. VMS-positioner fra fiskefartøjer i Hesselø-området (2022, hastighed <6 knob). Mølleområdet og placeringen af kabeltraceet til land er markeret med blå streg (DNV, 2024). Fiskernes forslag til omtrentlig placering af den midterste del af kabeltraceet er markeret med sort streg /8/, /9/. Den omtrentlige placering af Natura-2000 områderne N207 og N128 er markeret med firkanter. VMS-registreringer af garnfiskeriet er indeholdt i elipsen markeret med sort streg nederst i billedet.

Mølleområdet er, som det fremgår af figur 6, placeret nord for Hesselø, og umiddelbart nord for Lysegrund (Natura-2000 område N207) og som det tydeligt fremgår foregår der inden for afgrænsningen af mølleområdet og af kabelforløbet mod land et intensivt fiskeri med trawl. Flere fiskere har givet adgang til deres GPS-loggere, som understøtter VMS-kortlægningen. I figur 7 ses fiskernes kortlægning/trawlstreger, hvor især skal bemærkes de 2 vigtige trawlområder: "Kabelrenden" igennem den centrale del af mølleområdet og "Lysegrundskrogen" i den østlige del af mølleområdet /9/. I figur 8 er vist trawlstreger fra en mindre trawler /17/, som fisker intensivt i "Kabelrenden". Den markante indsnævring af fiskeområdet skyldes dårlige bundforhold (sten) på begge sider heraf, som umuliggør fiskeri med bundtrawl. Fiskeriet med

trawl følger som regel dybdekurverne, og som det fremgår, fiskes der overvejende nord-syd igennem området. Den primære målart her er jomfruhummer, med en mindre bifangst af fladfiskearter. Som noget specielt i år er der desuden en relativ stor forekomst af kuller i fangsterne – dog overvejende under mindstemålet. Udover hummer-trawlfiskeriet foregår der desuden et mindre trawlfiskeri med ”fisketrawl” (rub med kugler/skiver), som gør det muligt at fiske på mere stenet/ujævn grund) uden for de omtalte intensivt befiskede trawlspor.

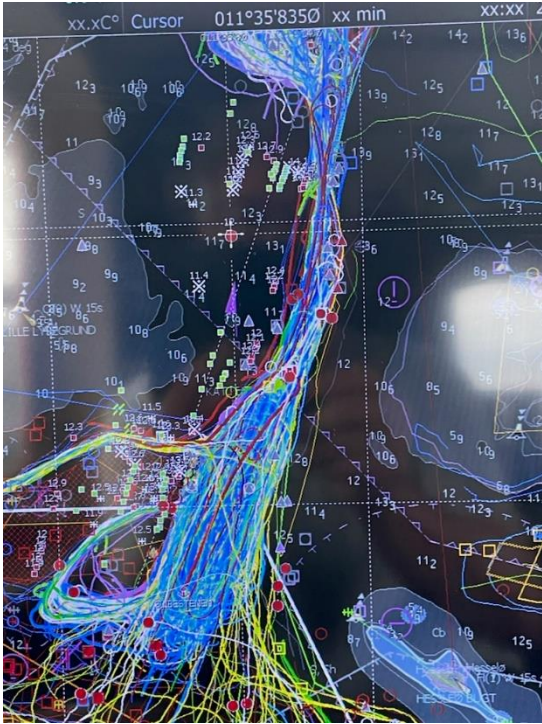
Der er igennem de seneste 4 år gennemført et forsøgsmæssigt fiskeri efter fjæsing med særlige trawl med reduceret maskestørrelse. Fjæsingen forekommer visse steder, især om foråret, i enorme mængder. Som det fremgår af figur 7 vil et par af disse områder blive berørt af mølleprojektet.

Som tidligere nævnt er der kun ganske få aktive garnfartøjer i de nordsjællandske havne, deres fiskeri foregår naturligvis uden for trawlområderne og overvejende mere kystnært /13/. Vigtige arter for dette fiskeri er fladfisk (især tunger om foråret), og stenbider(”kulso”) i årets første måneder (dette fiskeri er nu på det seneste blevet stærkt reguleret/begrænset). Garnfiskerne ser temmelig mange småtorsk i deres redskaber men kun sjældent torsk over mindstemålet. Garnkutterne i området anvender sjældent mere end 100 garn, som fastholdes med mindre ankere (typisk 3 kg) for hver 10-15. garn /13/.

Den valgte placering af eksportkablerne fra mølleparken og til ilandføringen vest for Gilleleje vil i den nordlige halvdel af forløbet (fra ca. 10 sømil fra kysten) komme til at gå igennem vigtige trawlområder. Eftersom fiskeri med bundslæbende redskaber i udgangspunktet vil være forbudt indenfor 200 meter fra kablerne vil det valgte kabelforløb være ødelæggende for bundtrawlfiskeriet i området. Fiskerne foreslår derfor en andet forløb af kabelkorridoren længere mod vest (se figur 6).

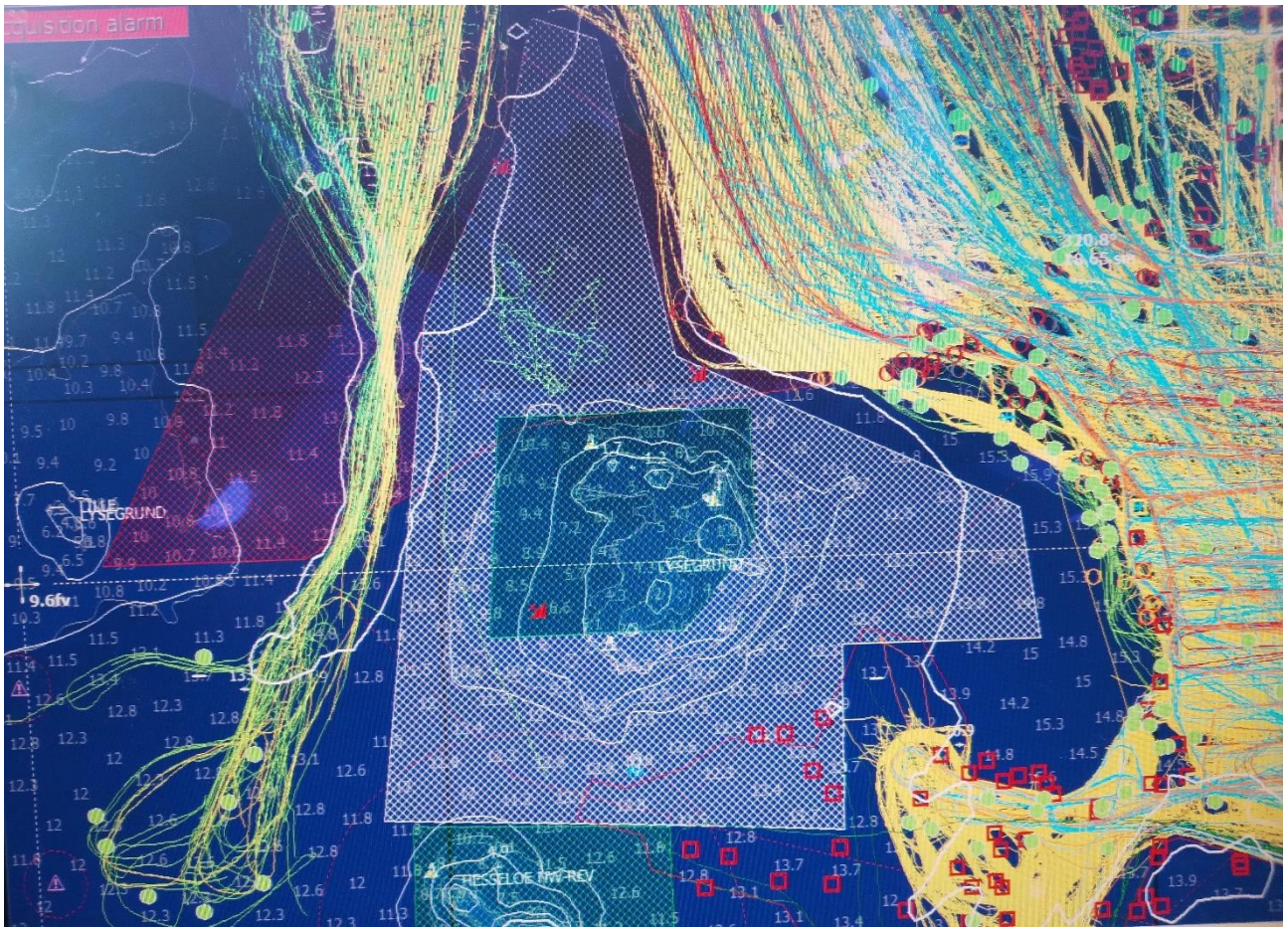


Figur 7. Trawlstregeri og omkring Kattegat-mølleområdet /9/. I områderne angivet med rød streg er der i de seneste år gennemført et forsøgsfiskeri efter fjæsning - det østlige af disse områder ligger inden for afgrænsningen af mølleparken. Med sort streg er angivet vigtige trawlområder (Kabelrenden og Lysegrundskrogen), som begge ligger inden for afgrænsningen af mølleparken.



Figur 8. Nord-syd gående trawlstreger fra mindre trawler (fisker med enkelt trawl) igennem Kabelrenden i den vestlige del af Hesselø mølleområdet /17/.

Fra fiskerne og deres organisations side (/4/, /7/, /8/) er der udarbejdet et alternativt forslag til placering af mølleparken som vil genere fiskeriet væsentligt mindre end det nuværende forslag til placering (Figur 9). Som det fremgår, foreslås møllerne placeret i et område imellem hhv "Kabelrenden" og "Lysegrundskrogen", nord for Hesselø (Natura 2000 område N128) men omkransende Natura 2000 omr. N207 (Lysegrund).



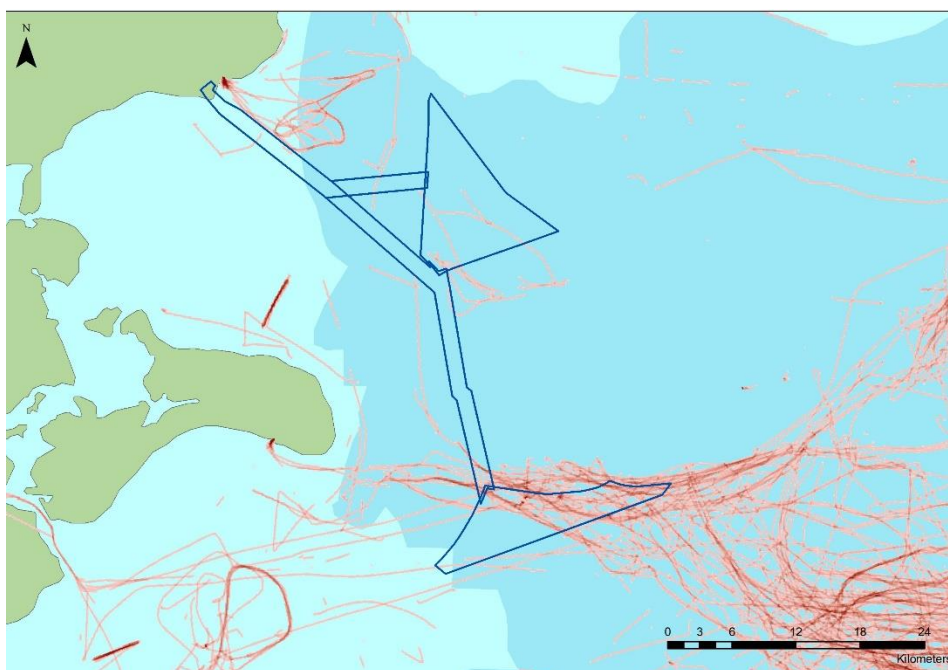
Figur 9. Fiskernes forslag til alternativ placering af Hesselø mølleparken (hvid skravering) /8/.

Kriegers Flak mølleområderne (nord og syd)

De vigtigste fiskere i Kriegers Flak mølleområderne er blevet kontaktet enten telefonisk /10/, /11/ eller ved opmøde /9/. For at overleve økonomisk fisker de alle også i andre farvande end vestlige Østersø/Kriegers Flak.

Fiskeriet i Østersøen, herunder i de nævnte mølleområder, er gået voldsomt tilbage i løbet af det sidste tiår, dette gælder især for så vidt angår landingerne af torsk, som er gået tilbage fra en årlig landingsværdi på 200-380 mio. kr til nu (2022-2023) så lidt som ca. 1-2 mio. kr årligt (se BILAG 2B). Denne udvikling ses også markant i de 2 havne (Rødvig og Klintholm), som tidligere var de vigtigste for fiskeriet i den vestlige Østersø/Kriegers Flak – til og med 2017 blev der i disse havne årligt landet fisk til en værdi af 20-30 mio kr, værdien af de samlede landinger var i 2023 på mindre end 1. mio kr. Nedgangen i de samlede landinger af torsk i de 2 havne har været endnu mere dramatisk - til og med 2017 blev der årligt landet torsk til en værdi af 5-10 mio kr for så i 2023 at falde til en værdi på mindre end 10.000 kr. De vigtigste fiskearter for fiskeriet i Østersøen er nu, i nævnte rækkefølge: Brisling (omkring 50% af samlede landingsværdi), sild, tunge, rødspætte, ål og pighvarre.

Det er hensigten at etablere 2 nye vindmølleparker hhv nord og syd for den nuværende Kriegers Flak Vindmøllepark (se figur 10).



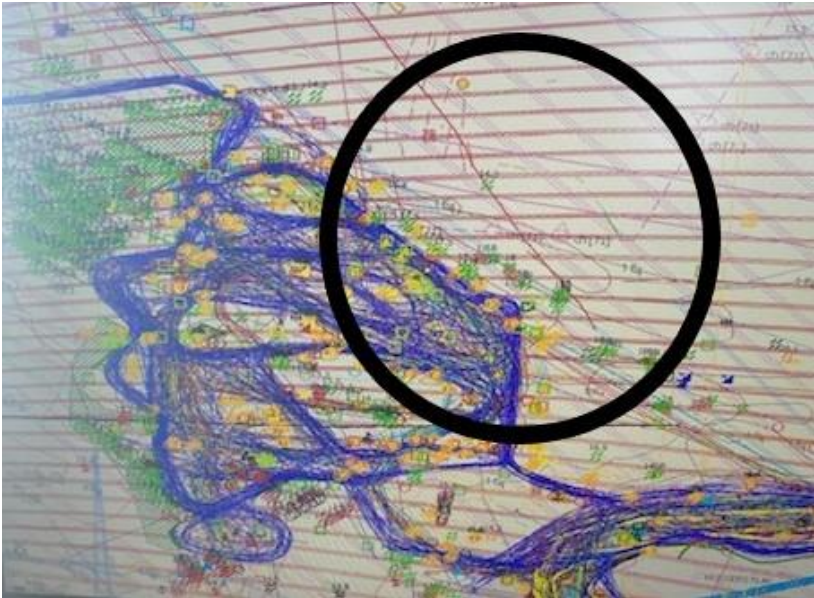
Figur 10. VMS-registreringer i 2022 fra fiskefartøjer der bevæger sig med en hastighed over 6 knob. Endvidere er vist placeringen af de 2 nye vindmølleparker henholdsvis nord og syd for den nuværende Kriegers Flak Vindmøllepark (DNV, 2024).

Fiskeriets omfang og karakter på og omkring Kriegers Flak er tidligere, i forbindelse med Kriegers Flak Vindmølle-projektet, blevet beskrevet temmelig detaljeret (Klastrup & Krog, 2015 og 2021). Eftersom fiskeriet i de senere år, efter 2018, er gået dramatisk tilbage, er oplysningerne i disse redegørelser dog mindre relevante.

I henhold til de nye oplysninger fra fiskerne (/9/, /10/, /11/) er der kun 3 trawlere tilbage, som kan siges at have en væsentlig interesse i farvandet, hvor de nye mølleparker skal etableres. Kriegers Flak-området har set i relation til torskebestandens dårlige tilstand, den gældende restriktive fiskeriregulering, og den relativt

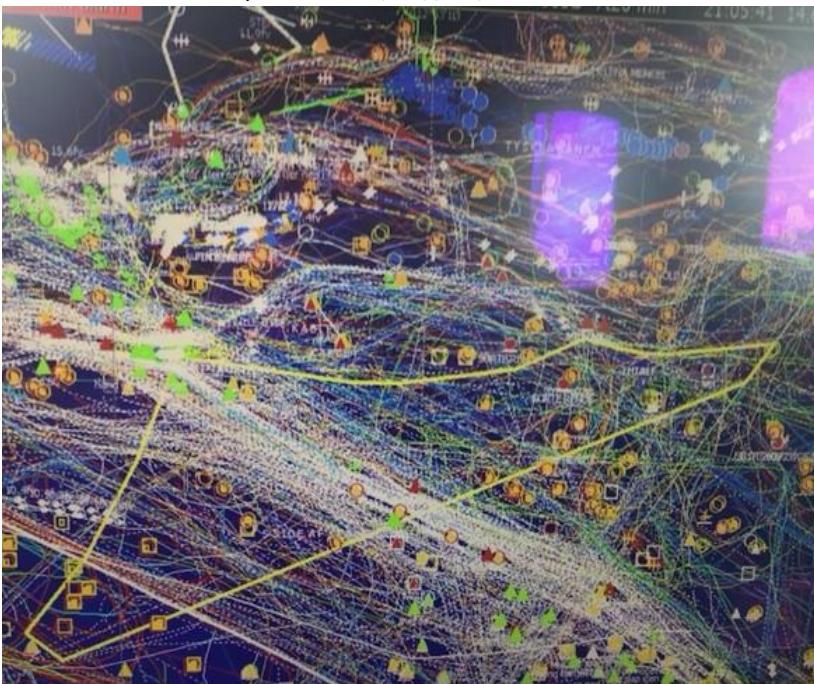
store afstand fra hjemhavnene, kun en meget begrænset eller ingen interesse for de få tilbageblevne garnfiskere i nærområdet.

I Kriegers Flak Nord-området er der som det fremgår af figur - og af Bilag 4 A og B - kun en meget begrænset fiskeriaktivitet, idet det skal bemærkes, at de angivne trawlstrøger overvejende er fra før den nævnte dramatiske nedgang i fiskeriet begyndte (før 2018).

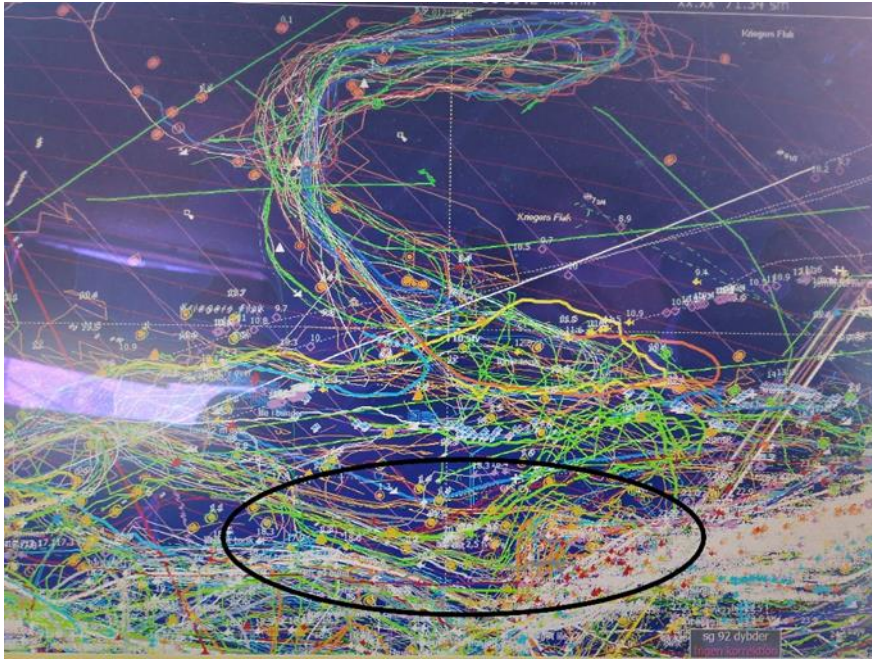


Figur 11. Trawlstrøger i farvandet nord for den eksisterende møllepark på Kriegers Flak, hvor den nye møllepark, Kriegers Flak Nord tænkes placeret (omtrentlig placering markeret med sort streg) og hvorigennem kablet til land vil komme til at gå igennem/10/.

Fiskeriet i Kriegers Flak Syd-området er mere betydningsfuldt end i den nordlige møllepark, se figur 12 og 13, men også her skal det understreges, at en overvejende del af trawlstrøgerne er fra før den store nedgang i fiskeriet begyndte. Tidligere udgjorde torsk den primære målart, men i de seneste år har fangsten af fladfisk - primært rødspætte, tunge, pighvarre, slethvarre og skrubbe været de vigtigste arter for trawlfiskeriet i området. I de seneste år er der observeret en stor forekomst af små rødspætter (yngel, fisk under mindstemålet) i området /10/, 11/.



Figur 12. Trawlstrøger syd for den eksisterende møllepark på Kriegers Flak med markering (gul streg) af afgrænsningen af den planlagt, nye møllepark (Kriegers Flak Syd) /10/

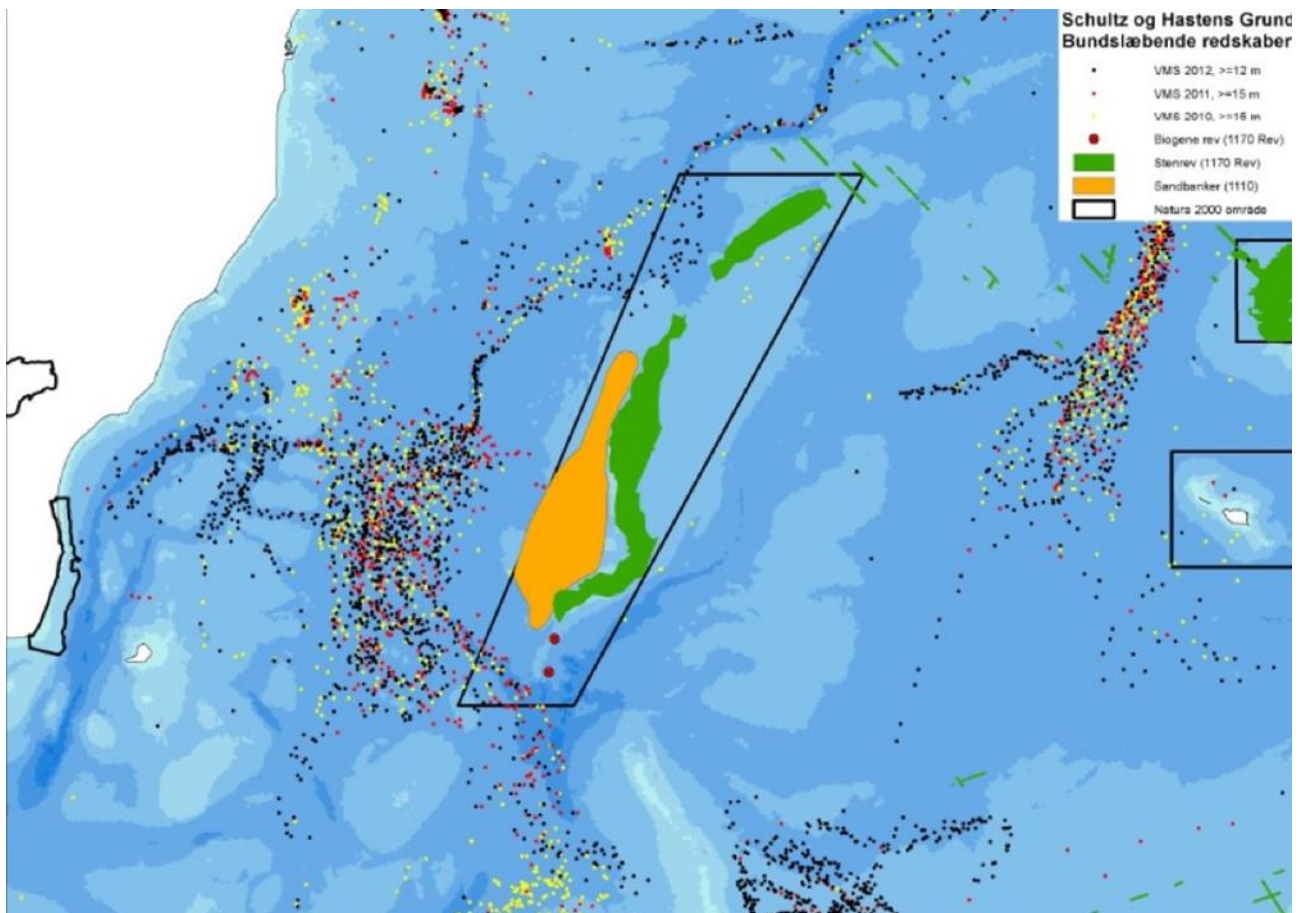


Figur 13. Trawlstreger fra demersal trawler /9/, der viser fiskerimønsteret i Kriegers Flak området. Med sort streg er markeret den omtrentlige placering af Kriegers Flak Nord mølleparken.

Eksportkablerne fra de 2 nye mølleparker forventes til dels, at blive placeret i de samme kabeltraceer som kablerne fra Kriegers Flak Vindmølleparken. I henhold til gældende lovgivning ("Kabelbekendtgørelsen") vil der, medmindre kabelejerne søger om dispensation fra bekendtgørelsens regler, automatisk blive etableret et forbud mod brug af ankere og bundslæbende redskaber indenfor 200 meters afstand fra kablerne. Eftersom kablerne vil komme til at krydse trawlspor hele vejen ind til ilandføringen ved Rødvig (se BILAG 4 A og B), kan dette have store konsekvenser for trawlfiskeriet, idet det dog skal bemærkes, at denne konsekvens allerede er mærkbar i forbindelse med den nuværende møllepark

BILAG 1

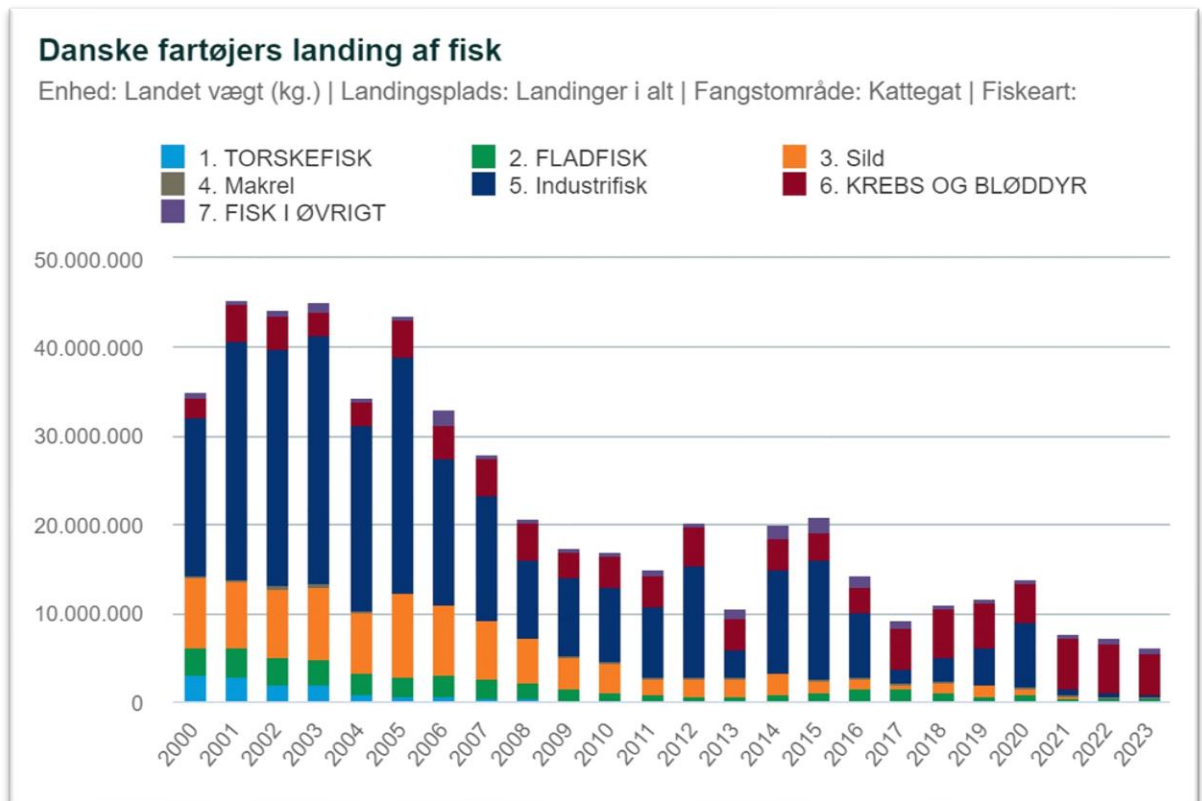
VMS-positioner for fiskefartøjer over 12 meter som fiskede med bundslæbende redskaber og med en hastighed på under 6 knop i perioden 2010-2012. Udarbejdet af DTU Aqua. Natura 2000 omr. Det med sort markerede rektangel angiver afgrænsningen af Natura 2000 område H224 (Naturstyrelsen, 2014). Kattegat-mølleområdet er placeret helt op til afgrænsningen af den nordlige og nordvestlige del af Natura 2000 området.



BILAG 2

Landingsstatistik (Danmarks Statistik/Fiskeristyrelsen)

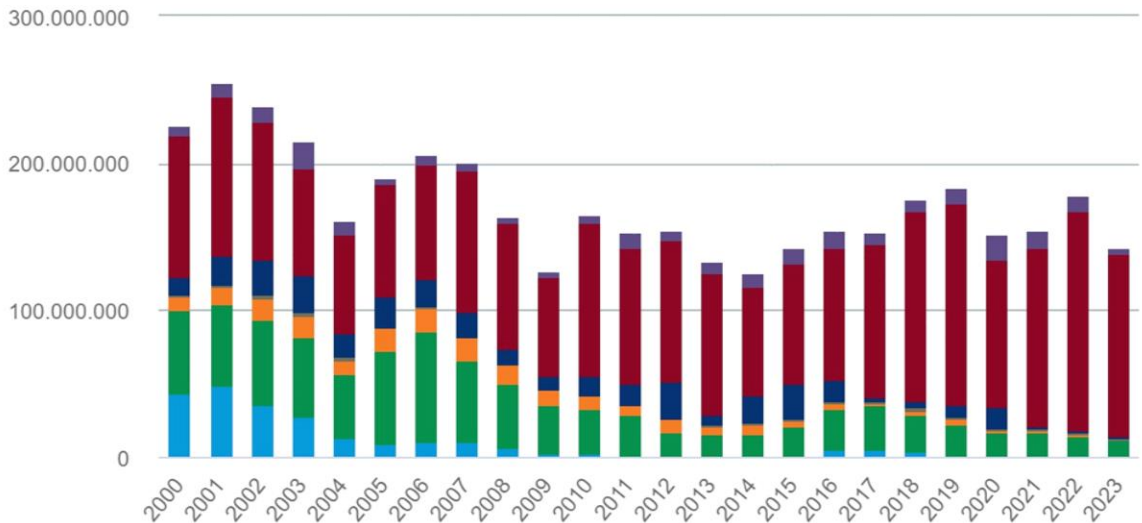
A. Kattegat



Danske fartøjers landing af fisk

Enhed: Landet værdi (kr.) | Landingsplads: Landinger i alt | Fangstområde: Kattegat | Fiskeart:

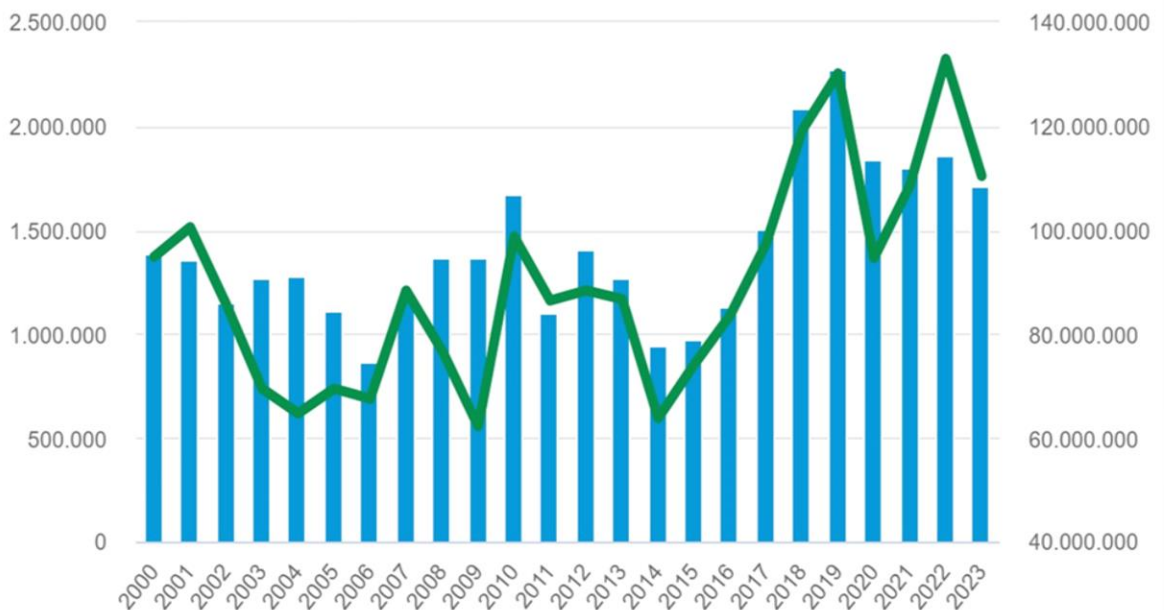
- 1. TORSKEFISK
- 2. FLADFISK
- 3. Sild
- 4. Makrel
- 5. Industrifisk
- 6. KREBS OG BLØDDYR
- 7. FISK I ØVRIGT



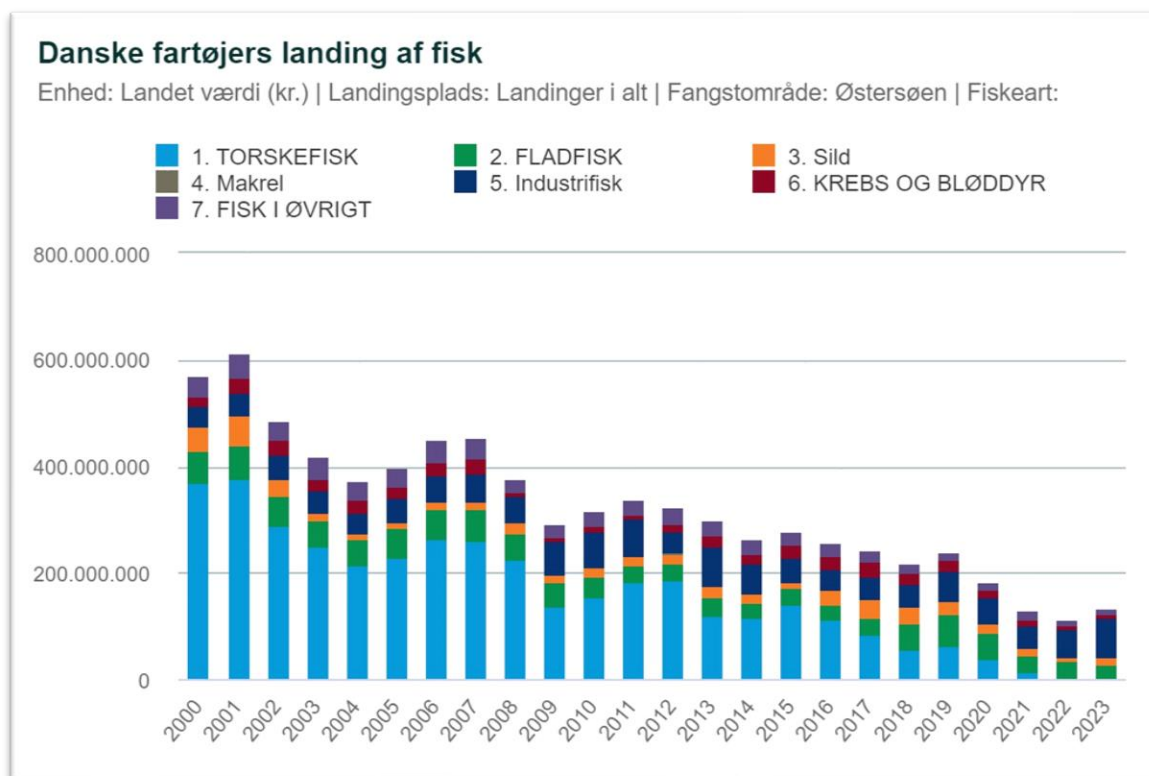
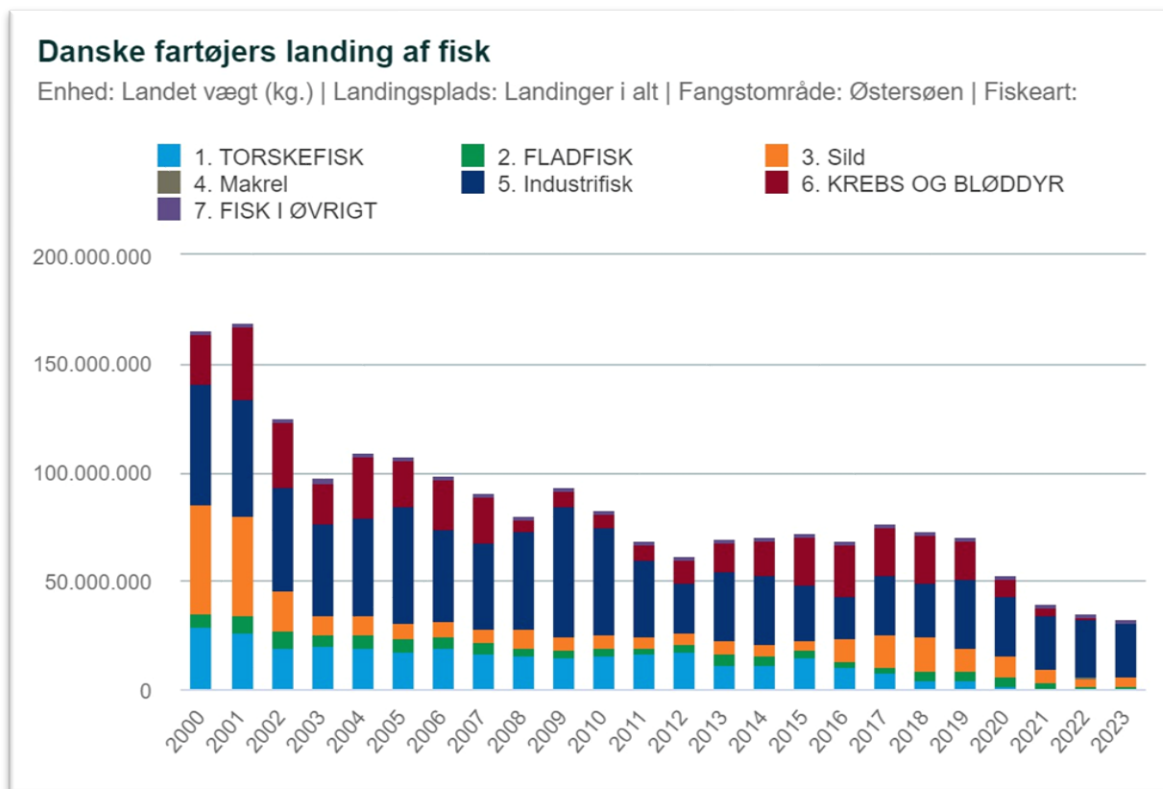
Danske fartøjers landing af fisk

Fiskeart: 6.2. Jomfruhummer | Landingsplads: Landinger i alt | Fangstområde: Kattegat | Enhed:

- Landet vægt (kg.) (venstre akse)
- Landet værdi (kr.) (højre akse)



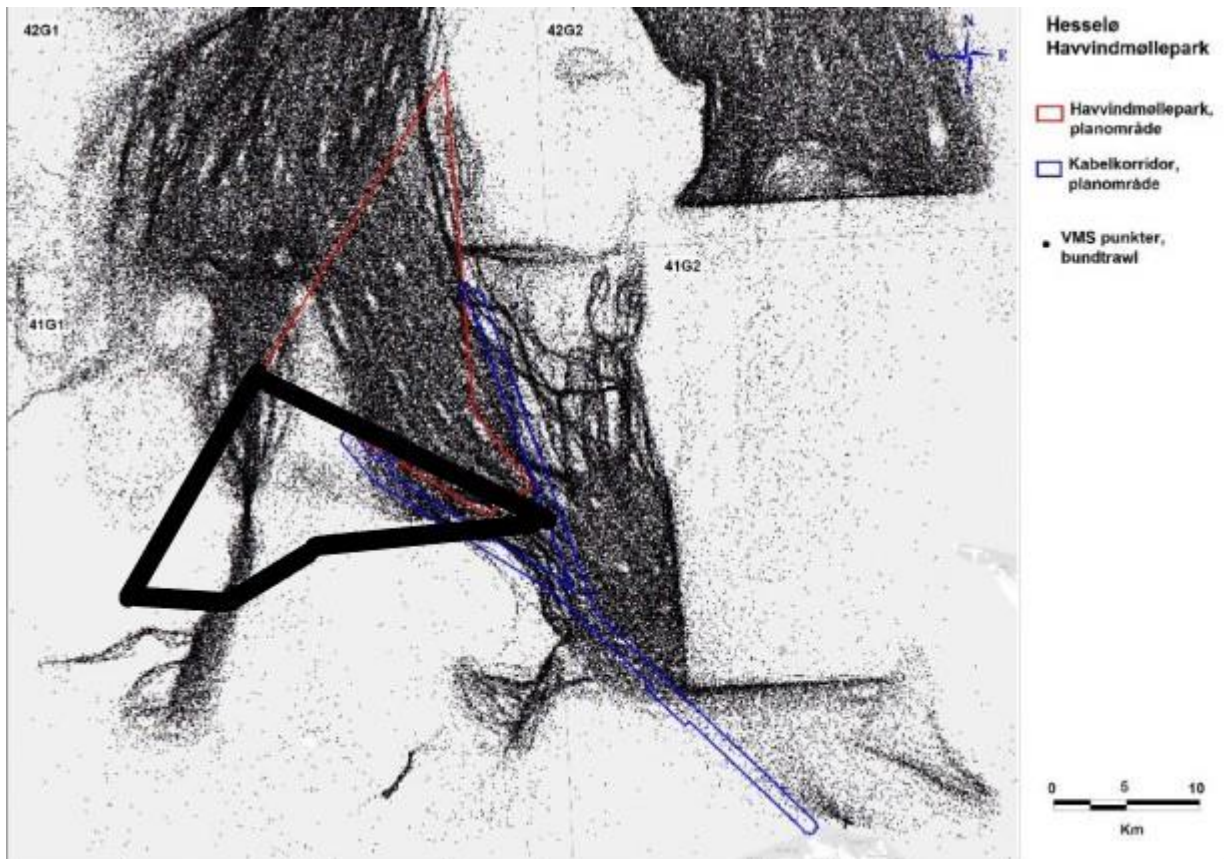
B. Østersøen



BILAG 3

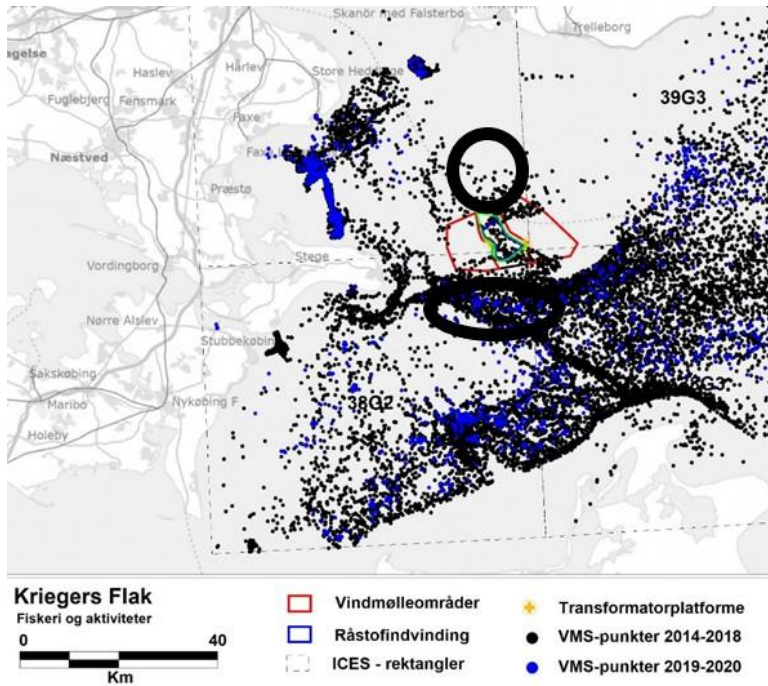
Fiskeri med bundtrawl i og nær planområdet for Hesselø Havvindmøllepark og kabelkorridor (Fra: Niras/Energistyrelsen, 2022. Miljøvurdering af planen for Hesselø Havvindmøllepark – Delrapport 2: Miljø på havet)

Den nye, omtrentlige placering af mølleparken er markeret med sort streg

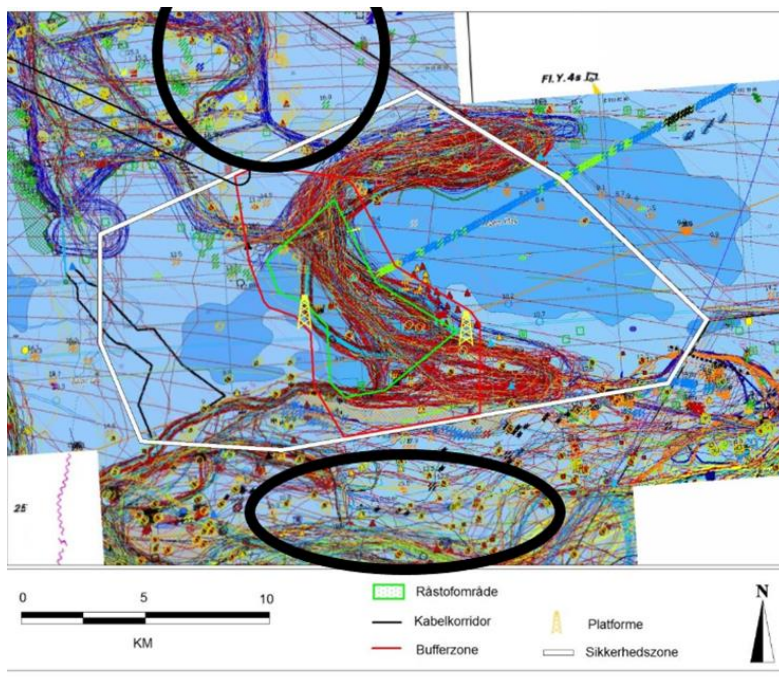


BILAG 4

A. De 8 mest aktive fartøjers fiskeriindsats i 4 ICES-rektangler fordelt på hhv perioden 2014-2018 og perioden 2019-2020 (Fra Klausstrup & Krog, 2021. Fiskeriinteresser ved Kriegers Flak – Overblik over fiskeriets udvikling i perioden 2014-2020). De kommende mølleparkers omtrentlige placering hhv nord og syd for Kriegers Flak Havmøllepark er markeret med sorte cirkler.



B. Trawl-slæbestreger i Kriegers Flak-området /10/. Afgrænsningen af den nuværende møllepark er markeret med den hvide sikkerhedszone. Det med grøn streg markerede område er udlagt til råstofindvinding (sand). Den røde streg markerer afgrænsningen af de 2 del-mølleområde som den eksisterende møllepark består af (Klausstrup og Krog, 2015). Den omtrentlige placering af de 2 nye mølleparker er markeret med sort streg.



REFERENCER

Danmarks Statistik. Statistikbanken – Fiskeri og Akvakultur

DNV Denmark A/S (2024). Energinet – Marine Environmental Studies. Fish and Fisheries – study scope report for Kattegat, Hesselø and Kriegers Flak (North and south) offshore wind farms. Udarbejdet for Energinet Eltransmission A/S.

Erhvervsministeriet (1992). Bekendtgørelse om beskyttelse af søkabler og undersøiske rørledninger ("Kabelbekendtgørelsen"). BEK nr 939 af 27/11/1992.

Fiskeristyrelsen. Dynamiske tabeller - landinger

Gilleleje Fiskeauktion (Fiskeauktion Danmark). Fiskeristyrelsens dynamiske tabeller - Danske Fiskeauktioner

Grenå Fiskeauktion. Fiskeristyrelsens dynamiske tabeller - Danske Fiskeauktioner.

Klaustrup, M. og Krog, C. 2021. Notat til Energinet: Fiskeriinteresser ved Kriegers Flak – Overblik over fiskeriets udvikling i perioden 2014-2020.

Klaustrup, M. og Krog, C. (2015). Fisk og fiskeri - VVM-redegørelse for Kriegers Flak Havmøllepark. Teknisk baggrundsrapport.

Krog, C. (2007). Udvikling af målrettet fiskeri fjæsing i Kattegat. Forsøgsfiskeriprojekt DFFE j. nr. 3305-05-00010

Naturstyrelsen (2014). Natura basisanalyse 2016-2021 Revideret udgave. Schultz og Hastens Grund samt Briseis Flak. Natura 2000 område nr. H204

Niras, 2022. Miljøvurdering af planen for Hesselø Havvindmøllepark – Delrapport 2: Miljø på havet. Udarbejdet for Energistyrelsen

APPENDIX 2 FISHERIES STATISTICS

Table 2a. Landings in tons of commercial species from the Kattegat Sea from 2013-2023 by Danish fishers and vessels > 10 m. Source: Statistics Denmark, 2024.

Sum of landings (tons)											
Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Amer. plaice	0,00773	0,02435	0,03172	0,0113	0,00304	0,00508	0,002	0,0893	0,01038	0,0013	0,00578
Angler	0,51341	0,66309	0,89717	1,09683	0,78155	1,53015	2,22086	1,75945	3,0942	2,2862	1,89887
Atlantic bonito	0	0	0,582	1,2875	1,4495	0,0175	0,0355	0,092	0,006	0	0,291
Atlantic cod	48,08357	62,26653	51,03215	157,86801	175,61069	148,91936	54,77008	19,85839	15,88627	12,56153	15,81916
Atlantic halibut	0,22887	0,7689	0,71882	0,53628	0,31983	0,23302	0,21903	0,27991	0,15087	0,08252	0,23225
Atlantic herring	1738,73376	2079,0604	1176,69379	1104,28271	584,08382	1007,79426	1165,42093	519,79525	80,9475	108,15096	78,53694
Atlantic horse mackerel	1,39029	0,61641	2,52806	2,64192	10,46054	1,02752	1,16076	3,82093	1,43756	3,29769	0,19878
Atlantic mackerel	170,42776	104,65603	158,77672	150,9564	120,47045	183,00665	115,22771	184,35383	132,38099	206,18455	196,68176
Atlantic pomfret	0	0	0,0004	0,00391	0,00418	0,10996	0,04601	0,1055	0,13761	0,02637	0,01004
Atlantic salmon	0,004	0,0048	0,0045	0,004	0,0125	0,027	0,008	0,0045	0,003	0	0,0185
Ballan wrasse	0,0014	0,001	0,0063	0,0029	0,0035	0,0042	0,0098	0,0595	0,0089	0,0047	0,0002
Blonde ray	0,002	0	0	0,462	0	0	0	0	0	0,01	1,14681
Blue ling	0,0026	0,001	0	0,00082	0	0,006	0,002	0,001	0,0025	0,00018	0,00021
Blue skate	0	0	0,0003	0,06836	0,0715	0,3495	0,028	0,007	0,297	0	0,002
Brill	44,00336	40,09345	66,57313	88,03004	95,33151	63,7519	57,52887	72,59329	61,9878	34,677	35,75896
Common dab	48,0999	34,87259	51,03948	51,77453	49,00316	49,60378	36,76204	30,44689	22,79228	29,03049	17,50422
Common sole	142,16408	134,32039	93,39014	159,19097	210,69596	154,31274	132,01216	124,16765	111,96227	66,94471	35,4082
Cuckoo ray	1,145	0,2645	0,313	0,37	0,138	0,21952	0,15092	0,52253	0,43239	0,57211	0,39823
Eelpout	0	0	0	0,024	0	0	0	0	0,004	0	0
Eelpouts nei	0,071	0,121	0,048	0,016	0,047	0	0	0	0,002	0	0
European anchovy	0	0	0	0	0	0	0	0,6429	30,453	24,321	0,06
European conger	0	0	0	0	0	0,001	0	0,0003	0,0172	0,00053	0,0003
European eel	31,217	22,63134	18,20129	22,253	21,02431	25,8001	21,8855	14,4295	15,1859	16,6735	10,87658
European flounder	149,06891	171,33874	62,81485	87,1638	131,10436	147,03109	98,83322	89,33268	64,61291	76,88693	67,9383
European hake	8,85244	8,93687	13,47075	12,82512	8,19172	6,52347	4,91759	5,10476	9,33105	11,65449	12,27476
European perch	1,033	0,099	0,001	0	0	0,0025	0,01	0	0	0,002	0
European pilchard(=Sardine)	0	0	0	0	0	0,109	0	0	1,03	0,328	0,3365
European plaice	215,26014	318,0734	749,90558	925,8015	666,24627	456,55758	310,76781	248,11761	186,61597	133,01624	154,02724
European seabass	0	0	0,0005	0,0075	0,01123	0,01584	0,0064	0	0,0146	0,0564	0,002
European sprat	2970,8	11481,49775	13244,75823	7019,33392	1545,74	2827,84825	3783,6572	7145,17979	570,764	346,13	17,494
European whitefish	0,327	0,039	0	0	0	0	0,004	0	0	0	0
Freshwater bream	0	0,0015	0	0	0	0	0	0,0024	0,0014	0	0
Garfish	13,5638	12,8078	7,05263	8,31457	17,3304	8,4045	54,0787	20,8323	48,2563	77,6234	40,096
Golden redfish	0,01927	0,0074	0,00714	0,00684	0,00636	0,00765	0,00463	0,00542	0,01302	0,00261	0,00389
Greater forkbeard	0	0	0,01	0	0	0,02743	0,00331	0,002	0,00447	0,00437	0,00311
Greater weever	906,25049	1223,38854	1236,69944	1234,70376	698,21017	13,47108	78,08888	136,737	13,73258	349,12333	656,9233
Greenland halibut	0,0073	0,0233	0,0005	0,02107	0	0	0	0	0	0,001	0,0007

Grey gurnard	1,71145	1,5598	2,37296	3,84039	3,4097	3,22617	2,37487	0,77864	0,73587	2,296	0,12341
Haddock	7,56633	15,41348	34,74742	59,81904	28,94282	17,80321	3,97433	4,33774	2,53446	1,14423	9,45989
John dory	0	0,0004	0,0022	0,0026	0,0005	0,0028	0,0016	0,0057	0,01521	0,00293	0,00224
Lemon sole	15,39934	8,75073	13,28863	20,21012	23,85501	18,88526	13,61313	13,67831	10,00311	5,40835	6,51385
Ling	1,49735	1,13611	2,16044	3,05144	1,3599	1,19488	1,63308	2,20025	2,62683	2,26198	1,58981
Lumpfish	51,94214	245,19164	321,77126	101,81869	46,32734	114,4265	63,3674	159,63925	39,35774	23,72698	2,88075
Mediterranean scaldfish	0	0,009	0	0,0003	0,007	0	0,001	0,001	0	0	0,015
Megrim	0	0	0,00097	0,0018	0,001	0	0,00008	0	0	0	0
Mulletts	2,06496	1,569	1,255	0,1711	0,34	0,036	0,0168	0,0145	0,052	0	0
Northern pike	0,0474	0,012	0,062	0,189	0	0	0	0,042	0	0	0,075
Picked dogfish	0	0	0,002	0	0	0,011	0,0085	0,012	0,005	0,0065	58,01437
Pike-perch	0,032	0,002	0	0,011	0	0,007	0,028	0	0	0	0
Pollack	2,59474	5,75378	5,74155	3,8619	5,08909	1,43816	0,46986	0,22016	0,24401	0,35705	0,2605
Rainbow trout	0,246	0,01	0	0,034	0	0,005	0,001	0,005	0	0,01	0
Roundnose grenadier	0,002	0,00033	0,01562	0,00197	0,0015	0,002	0	0	0,00048	0	0
Sailray	0	0	0	0	0	0	0	0	0,25469	0,0665	0,00184
Saithe(=Pollack)	1,24411	0,83084	1,93633	4,06383	2,13955	3,42446	1,41185	0,58896	0,22616	0,24138	0,24815
Sandeels(=Sandlances)	106,385	76,7	231,73	118,03686	0	25	103,91	176,663	132,687	42,14	125,558
Sea trout	0,0611	0,1008	0,1671	0,08157	0,0944	0,0363	0,2165	0,0311	0,02466	0,01423	0,0094
Shorthorn sculpin	0	0	0,0048	0,0032	0,001	0	0	0,01	0	0	0
Small-spotted catshark	0,0048	0,0173	0,0113	0,01595	0,0354	0,0324	0,0194	0,0258	0,0149	0,0119	0,0174
Surmullet	0	0,0002	0,00284	0,00321	0,0026	0,016	0,0316	0,07455	0,10551	0,03015	0,02656
Thornback ray	0,0384	0,0982	0,23316	0,48185	0,2443	0,2205	0	0	0	0,1801	3,1447
Tope shark	0,00831	0	0,011	0,0115	0,011	0	0	0	0,009	0,01106	0,0309
Tub gurnard	0,56204	0,28324	1,20246	1,19288	0,58565	0,50068	0,17044	1,98277	3,94836	2,5111	2,60713
Turbot	19,48372	21,16131	25,51253	30,99559	37,19011	33,3091	19,65661	22,00578	26,65508	20,26805	16,49194
Tusk(=Cusk)	0,006	0	0	0,00047	0,00164	0,00146	0,00027	0,004	0,0013	0	0,00151
Twaite shad	0	0	0,001	0,0005	0,001	0,00121	0,001	0	0,0012	0	0,0148
Whiting	3,82183	5,607	9,16329	15,07316	12,49271	3,86733	1,67812	159,97524	11,94749	4,8999	3,33808
Witch flounder	13,64835	11,49578	16,46215	23,05374	29,70847	23,66075	16,49225	11,86236	9,07581	6,94671	6,07025
Wolffishes(=Catfishes)	2,44114	1,30286	1,84507	1,59755	1,57026	1,06012	0,72035	0,59251	0,63465	0,47243	0,37157

Table 2b. Landings in value (DKK) of commercial species from the Kattegat Sea from 2013-2023 by Danish vessels > 10 m. Source: Statistics Denmark, 2024.

Sum of Landings Value (DKK)											
Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Amer. plaice	8	9,15	17,37	26,38					2,16		3,14
Angler	17275,88	22893,73	32294,73	31022,62	23447,37	48880,82	75869,6	52543,53	113813,64	90690,35	68910,9
Atlantic cod	948726,35	1250809,26	1192241,39	3523019,61	3950338,62	2994678,97	1188643,71	474869,53	321790,02	287807,96	304196,95
Atlantic halibut	12665,01	34537,25	42749,27	34737,22	14367,56	17537,65	13062,68	14706,09	9378,6	3928,08	14488,64
Atlantic herring	3391725,22	5657522,8	2778572,26	4158859,64	1930681,08	3032045,04	3675790,83	1236665,06	176550,02	502274,01	400407,83

Atlantic horse mackerel	6309,7	2686,38	8048,13	7118,17	26600,67	3896,72	3991,79	7345,99	4377,99	9831,62	287,93
Atlantic mackerel	993567,33	1170657,38	1125272,92	1133048,18	1033334,86	1458182,94	1148944,33	1347893,55	1203747,53	1695540,6	1386472,17
Atlantic pomfret				33,99	29,63	4377,87	1666,78	374,2	8257,1	991,15	449,01
Ballan wrasse	7,16			3,4	6,25	32,75	62,11	846,69	31,84	29,54	
Blue skate				114,61	578,5	4475,5					
Brill	1498962,69	1370681,51	2076077,79	2975021	3774695,53	3050455,75	2302635,44	2492450,26	3141944,39	2353149,37	2194994,36
Common dab	176441,02	125243,47	289301,51	295527,74	356092,17	371651,37	274828,42	170952,09	162097,67	282576,29	177940,27
Common sole	9449320,89	8862853,32	7355178,57	11674895,06	14413537,7	11561079,44	11053350,15	8099377,99	8747617,46	6866434,28	3637626,52
Cuckoo ray	21486	4260	4950	5317	2217	3074	77,75	2813,62	445,79	1496,64	627,38
European eel	1402130,12	731453	437438,79	603943,2	709703	675497	476112	293204	455133	632943	227081
European flounder	372835,68	417404,59	171910	322440,42	353939,32	470214,3	339693,21	287484,7	191407,18	302329,07	334499,25
European hake	92397,04	96912,31	164745,54	164440,76	120301,56	94330,45	95864,41	57190,29	132147,42	215804,24	275370,85
European plaice	1516174,09	2323036,26	7304360,8	10036823,93	7909982,11	6757658,56	4551015,36	3044102,33	2301999,1	2291083,88	2610272,59
European seabass				155,5	156,95	648,11	270,57		577,75		
European sprat	6426335,5	17928783,87	23298943,13	13363629,55		4837528,65	2274339,2	13847813,76	1290226,84	802501,5	
Garfish	24078	1221,5	33617,23	8090,03	16920,47	13849,42	8576,72	48442,61	13980,04	19397,1	4495,15
Golden redfish	158,84	71,7	49,78	76,61	69,6	130,23	75,32	80,51	184,18	36,35	41,4
Greater forkbeard						42,62	7,01		13,03	7,29	
Greater weever	2165839,04	2221042,46	2255565,12	2619297,02	1283823,66	168593,54	279848,96	465687,15	146219,5	931927,13	1830047,18
Greenland halibut	109,7	606		1035							
Grey gurnard	8705,14	8435,7	13346,76	32479,77	30512,83	48653,38	23197,17	7606,61	7617,85	7834,45	1085,75
Haddock	49422,71	148887,22	351140,94	622896,07	355551,85	198702,87	45755,32	12326,58	8358,08	9201,88	24573,11
John dory			56,35	45,36		50,55	17,01	217,5	430,28	18	13,88
Lemon sole	279668,11	171021,97	330949,86	466231,97	641221,68	471004,79	276837,09	244933,78	225917,74	131036,32	154708,72
Ling	18485,45	14269,25	29413,07	33447,32	16252,88	15771,58	24672,89	27287,43	34517,36	36440,55	26329,1
Lumpfish(=Lumpsucker)	2615945,54	5099391,55	6500005,59	7111996,6	4759904,71	5809518,44	7162967,83	15128232,88	8810297,17	7732124,87	525076,16
Mullets	64892,03	61169,25	50972,15	4573,5	15706,64	1520					
Pollack	68160,8	146074,04	158041,1	114569,07	141412,11	27973,39	12328,81	3980,02	5110,52	10542,31	7193,3
Saithe(=Pollack)	18310,76	8246,23	23033,09	59338,67	24914,59	41563,91	15602,35	4909,93	2664,26	3575,94	3302,86
Sea trout	190,5		1666,5	398,5		828,96			1346,03		
Small-spotted catshark	34,97	42,67	45,36	44,93	219,09	257,05	188,87	140,7	28,64	42,37	30,66
Surmullet			37,11	47,79	34,85	294,55	463,27	1384,76	2798,74	1086,98	524,84
Thornback ray	199,01	880,03	1272,08	2428,13	1791,79	2417,46				865,62	17103,82
Tub gurnard	3150,28	1591,33	5298,37	6589,83	2898,68	1767,53	807,71	14623,95	32018,77	23260,32	25712,02
Turbot	955867,1	1172198,62	1423947,87	1669264,84	2099829,71	2175966,85	1385964,48	1375278,8	1970139,63	1817387,73	1473170
Whiting	17802,33	23320,45	35563,95	70492,45	78023,51	22771,33	11069,41	319011,68	27641,01	14061,61	17510,32
Witch flounder	95213,53	107033,2	192603,31	266762,66	345889,13	326172,07	257997,58	167848,4	140328,59	133330,74	97081,08
Wolffishes(=Catfishes)	65423,57	31099,98	44114,13	39402,68	36796,44	24508,9	17314,83	14360,41	16612,69	12233,48	9481,68

Table 2c. Sum of landings (tons) for the different species in Grenå harbour, 2013-2023. Source: Statistics Denmark, 2024.

Sum of Landings (tons)											
Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Amer. Plaice	0	0	0	0	0	0,003	0	0	0,009	0,001	0,003
Angler	0,0038	0,0065	0,002	0,0075	0,0105	0,03349	0,0965	0,0698	0,0785	0,043	0,0355
Atlantic cod	3,0025	4,7158	6,102	13,4827	12,7643	9,3915	3,5732	1,4918	1,5577	0,8712	0,8219
Atlantic halibut	0,0204	0,1651	0,1	0,0735	0,0312	0,0148	0,028	0,037	0,0095	0,004	0,0123
Atlantic herring	672,338	0	0	0	0	47,42	0	22,081	38,426	15,7	5,976
Atlantic mackerel	0,106	0,0215	0,1065	0,081	0,0778	0,0405	0,7179	0,1093	0,406	0,9094	0,4712
Blue skate	0	0	0	0	0,0365	0,0395	0,006	0,002	0,019	0	0,002
Brill	9,431	7,9355	11,34028	15,78715	18,2405	11,97518	10,6712	9,9475	9,4789	4,732	4,6809
Common dab	7,5909	3,886	4,1447	5,79407	8,0491	8,13502	3,6748	2,3734	1,7978	3,9583	0,9666
Common sole	27,9519	24,4353	11,39586	26,80154	37,5535	31,51761	21,0501	12,9323	16,2665	7,6485	5,3983
Cuckoo ray	0,126	0,0145	0,011	0,005	0,001	0,003	0	0	0	0,0615	0
European anchovy	0	0	0	0	0	0	0	0,033	27,171	24,023	0
European eel	0,1335	0,102	0,211	0,115	0	0	0,001	0	0	0	0
European flounder	9,8298	11,3779	9,5158	6,7815	11,447	14,408	8,2453	4,3375	3,8169	5,1743	2,759
European hake	0,1651	0,5378	0,33	0,28803	0,1518	0,0585	0,0879	0,1736	0,2689	0,1762	0,1769
European perch	0	0	0	0	0	0,0025	0,01	0	0	0	0
European plaice	42,5227	43,2153	54,8792	115,79601	108,1607	80,65477	65,9869	44,85521	34,3769	18,1566	17,3528
European seabass	0	0	0	0	0,0005	0	0,001	0	0,004	0	0
European sprat	1030,91	655,71788	853,22754	2313,63133	6,36	16,44	550,53	414,252	504,723	258,242	16,908
Garfish	0	0	0	0	0,0005	0	0	0,066	0,229	0	0
Greater weever	891,0213	1135,194	1203,567	1222,3935	687,966	1,9075	68,9073	60,0315	2,7892	339,1977	648,69
Grey gurnard	0,0564	0,0851	0,1392	0,4191	0,2879	0,1697	0,165	0,1015	0,387	2,1411	0,0674
Haddock	0,7155	1,7316	4,525	20,17527	2,3405	0,8889	0,676	0,0806	1,407	0,0185	0,2916
Lemon sole	2,711	1,4591	2,50906	3,25065	3,9756	2,50393	2,5068	2,2137	1,216	0,5592	0,5153
Ling	0,17	0,01	0,23	0,497	0,12	0,13496	0,105	0,2385	0,2545	0,281	0,114
Lumpfish(=Lumpsucker)	0,984	6,3315	6,4459	1,8503	0,4764	4,19197	0,4115	0,4339	0,1685	0,0155	0,0406
Mullets	0,028	0,0075	0,0015	0	0,003	0	0	0	0,002	0	0
Picked dogfish	0	0	0	0	0	0,004	0,007	0,009	0	0	0,223
Pollack	0,018	0,015	0,039	0,062	0,065	0,11281	0,0335	0,013	0,017	0,012	0,002
Saithe(=Pollock)	0,002	0,0555	0,2928	0,1195	0,0835	0,363	0,026	0,008	0,001	0	0,0035
Sandeels(=Sandlances)	20	0	196,2	113,11704	0	0	103,91	155,921	132,687	42,14	125,558
Sea trout	0,0005	0	0	0	0,002	0,001	0,001	0,002	0,003	0	0
Tub gurnard	0	0	0	0	0	0,012	0,0258	0,0033	0,0449	0,1285	0,0883
Turbot	4,5985	4,7175	7,6147	5,93349	8,2258	6,19117	4,2268	3,333	4,151	2,2402	2,497
Whiting	0,001	0,0286	0,0558	0,04628	0,333	0,034	0,01	1,757	4,331	1,682	0,1755
Witch flounder	2,2047	1,5406	2,18877	2,57561	2,9527	1,73993	1,6878	1,1468	0,6795	0,4967	0,2482
Wolffishes(=Catfishes)	0,171	0,047	0,0975	0,044	0,093	0,07529	0,0933	0,0775	0,046	0,019	0,004

Figure 2d. Sum of values (DKK) for the different fish species in Grenå harbour, 2013-2023. Source: Statistics Denmark, 2024.

Sum of Landings Value (DKK)											
Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Angler	110	215		230	277,5	746,81	2818,5	1694,1	2787,5	1470	922,5
Atlantic cod	54402,4	73013,53	110604,11	242431,72	258192,73	168632,3	79798,25	31687,16	35294,8	18697,9	12548,42
Atlantic halibut	608,7	7124,75	5539	4417	1504,15	502,5	1441	2580	760	215	826,5
Atlantic herring								39576,94	81690,59	33437,39	20625,85
Atlantic mackerel	1530	241	1193	884	1073,81	570	10111,72	1760,51	1360,95	2472,29	2315,11
Brill	311619,13	282080,07	394849,54	526314,28	683340,47	561275,32	379592,37	310891,77	441076,01	278831,05	253420,27
Common dab	27423,43	12904,1	16167,75	27059,72	49180,39	53922,54	20731,37	10437,97	7504,79	15133,99	5030,17
Common sole	1746341,66	1524098,61	886732,6	1747504,61	2280236,38	2276600,21	1667167,02	847962,91	1099757,19	673496,94	528674,11
European flounder	24267,82	29850,87	24403,4	19075,15	30967,79	45665,96	26262,24	15794,75	13518,62	14597,04	11957,05
European hake	1392,94	3873,6	3117,75	2663,05	2008,3	725	1367,22	2813,07	3929,5	3069,15	2750,95
European plaice	266604,51	276939,02	379685,5	1124804,79	1089017,02	948971,8	864206,67	463388,37	341736,16	250552,93	246976,49
European sprat	2077011	982025,11	1572087,15	4705389,53				732259,59	1290226,84	595181,5	
Greater weever	1943205,99	1910104,85	2021045,08	2452656,69	1146056,15	23069,49	139979,9	129718,45	31056,62	785931,15	1728783,99
Grey gurnard	647,76	865,6	1322,55	4427,3	2893,1	1693,66	1877,83	1255,57	4414,64	6159,92	798,9
Haddock	5756	13641,88	35475,1	207399,47	25768,76	8918,05	8577,65	1117,6	3743,7	222,5	1141,3
Lemon sole	43851,12	28120,09	53456,7	71381,62	95473,73	56719,56	49257,46	36440,5	28164,29	13683,14	10701,2
Ling	1756,5	92	2568	4913	1315,5	1634,57	1438,17	3452,5	4127	4673	1819
Lumpfish	124040,88	176686	220159,1	267969,35	79067	245419,77	72504,65	6522,76	10143	607	7232,5
Pollack	295	154	527	1092	1020	2317,53	611		390	275	
Saithe(=Pollack)		389	2624,15	1133	1053	3596	254	100			
Tub gurnard						242	292,45		477,05	1345,1	943
Turbot	229972,86	260274,09	443228,96	324930,49	461936,36	399603,86	267103,46	189559,05	263276,5	194261,08	210464,86
Whiting		161,6	369,15	344	1110,47	191	80	3214,49	9346,6	3780,93	538,49
Witch flounder	11548,69	11113,95	18508,74	21513,09	24052,97	17135,12	18664,21	13150,39	7600,43	4794,27	2485,83
Wolffishes(=Catfishes)	3523,5	975	2096,5	956	2351	1769,14	1965,1	1908	1186		

APPENDIX 3 LANDINGS MADE BY FOREIGN VESSELS

In addition to Danish fisheries activity, foreign vessels also conduct fishery in the Kattegat Sea. Landings of foreign and Danish vessels are presented in Figure 3. Landings information from these vessels have been obtained from Statistics Denmark, 2024.

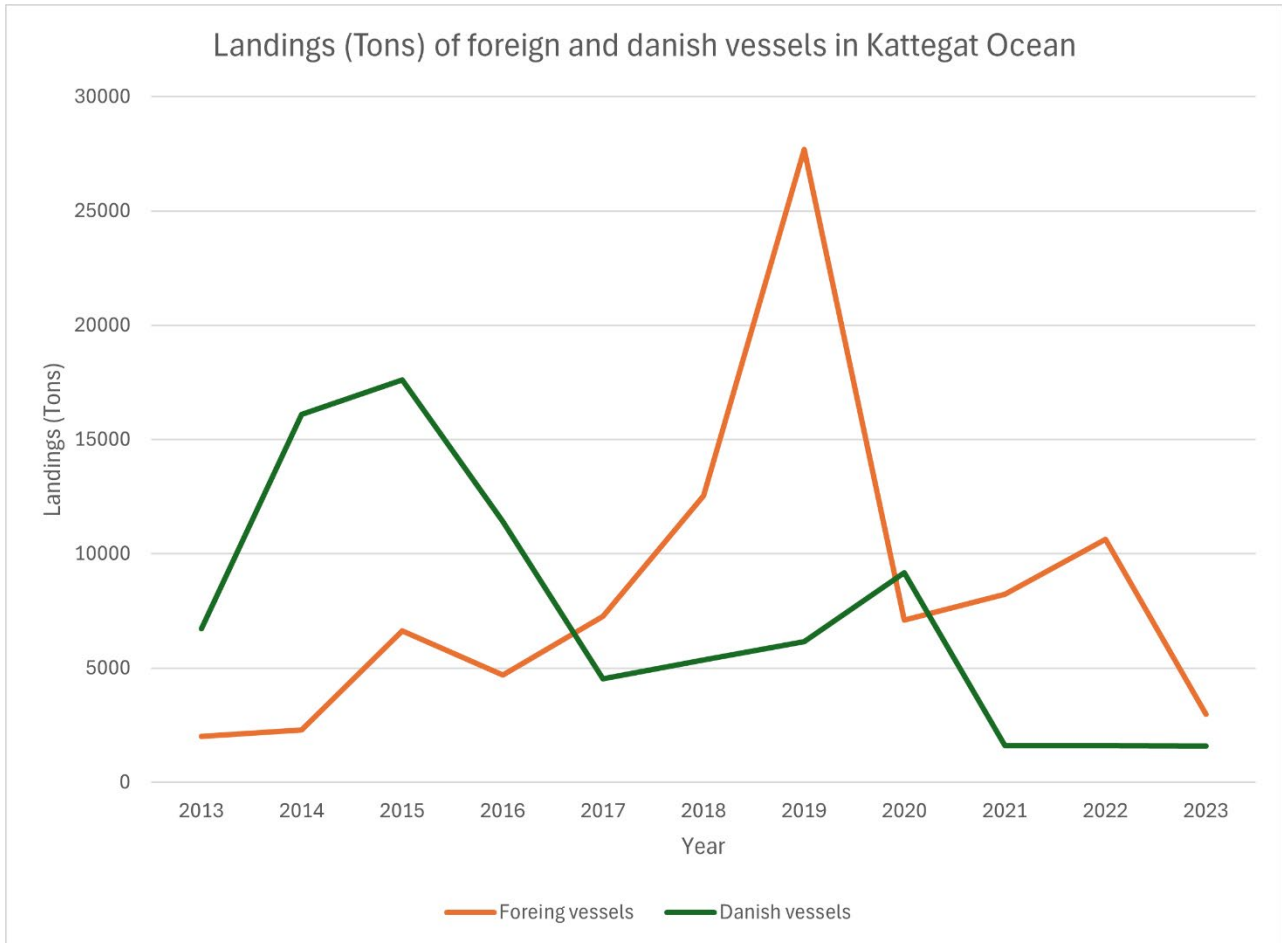


Figure 3. Landings in weight (tons) of Danish and foreign vessels in the Kattegat Sea in the period 2013-2023. Source: Statistics Denmark, 2024.



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