

Species Specific Fisheries Information Reports

Providing information to support the sustainable management of 25 key species



Introduction

Sussex Inshore Fisheries and Conservation Authority (IFCA) is responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. The IFCA manages a sustainable marine environment and inshore fisheries through balancing social, economic and environmental values. The IFCA developed from the Sea Fisheries Committee (SFC) under the Marine and Coastal Access Act 2009. It is the lead authority on Marine Conservation Zones within its district, following conservation advice from Natural England. As its focus is fisheries management, it works alongside the Marine Management Organisation (MMO), which is responsible for the quota system and for licensing. Following the transition from SFC to IFCA in 2011, the organisation has been committed to an extensive review process, and the creation of the species-specific fisheries information reports in this document form the continuation of this process, at a species level.

Aim of the fisheries information reports: To support sustainable management of Sussex fisheries, enabling ongoing fishery conservation and socio-economic stability for those in the industry.

Previous work

In 2010, Sussex IFCA, along with the Marine Stewardship Council (MSC), published *Navigating the Future: Developing Sustainable Inshore Fisheries*. The document set out three criteria: sustainable fish stocks, minimal environmental impact, and effective management of the fishery. The report includes the pre-assessment of 26 fisheries to the MSC standard, as well as a set of recommendations and an action plan, which specifically sets out the need for species-specific research and management plans.

In 2011, Sussex IFCA published the *Baselines Fishery Information*, including biological information and fishing pressure on 16 key species in Sussex.

Species-specific management plans and fishery information reports created by a range of other organisations were assessed for strengths and weaknesses which helped inform the layout of the Sussex IFCA plans.

Layout of the reports

The Sussex IFCA fisheries information reports for each species are intended to be readily accessible to a wide audience, to be clear and engaging. Following analysis of other management plans and similar reports, the following sections will be included:

Title: Common and scientific name, and photograph of species.

Biological information: Migration, time spent in Sussex IFCA district, size and age at maturity, breeding behaviour, habitat preference, feeding requirements, vulnerable stages, life strategy.

Management body: Sussex IFCA's role and constraints, other authorities responsible for managing the species.

Fishing information: MMO landings data, fishing pressure and market factors.

Catch per unit effort: A graph of the total weight and value landed per vessel over a five year period to assess trends in catches.

Management measures: Existing relevant management measures.

Fisheries sustainability: Statement about the overall status of the stock.

Key issues: The main concerns and aspects to be considered in the sustainable management of the species.

Potential future work: Suggestions for further research and management measures.

References and further information: List of the documents from which the information in the plan is derived and suggestions for sources of further information.

Species selection

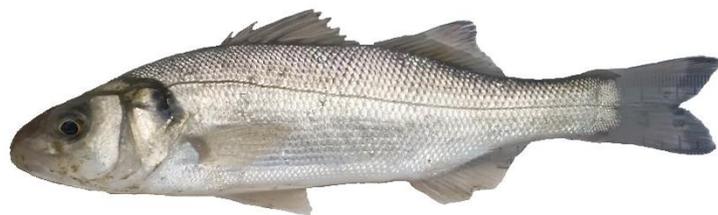
The 21 species considered in Navigating the Future were compared to the list of species included in the MMO landings data 2011-2015. The species with the highest 20 live weight and highest 20 value were considered for inclusion on the priority list. With the addition of expert judgement, twenty five key species were identified as requiring information reports. The order of priority was assessed under the criteria laid out in the appendix.

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Sea bass

Dicentrarchus labrax



Biological Information

Males reach reproductive maturity at 4-7yrs and 31-35cm and females at 5-8yrs and 40-45cm. Their lifespan is over 25 years. Adult seabass are highly mobile and migrate with warmer water moving east from early spring and return westwards as the water cools in autumn. Shoals of seabass start to arrive in Sussex for spawning in the spring. Juveniles use inshore sheltered areas as nursery grounds, particularly for their first few years.



Seabass can be found at all depths from near the surface to below 100m, over a wide range of substrates from rocks and sand to shingle and mud. Research indicates the biomass of adult seabass around the coasts of England and Wales is declining to low levels.

Management Body

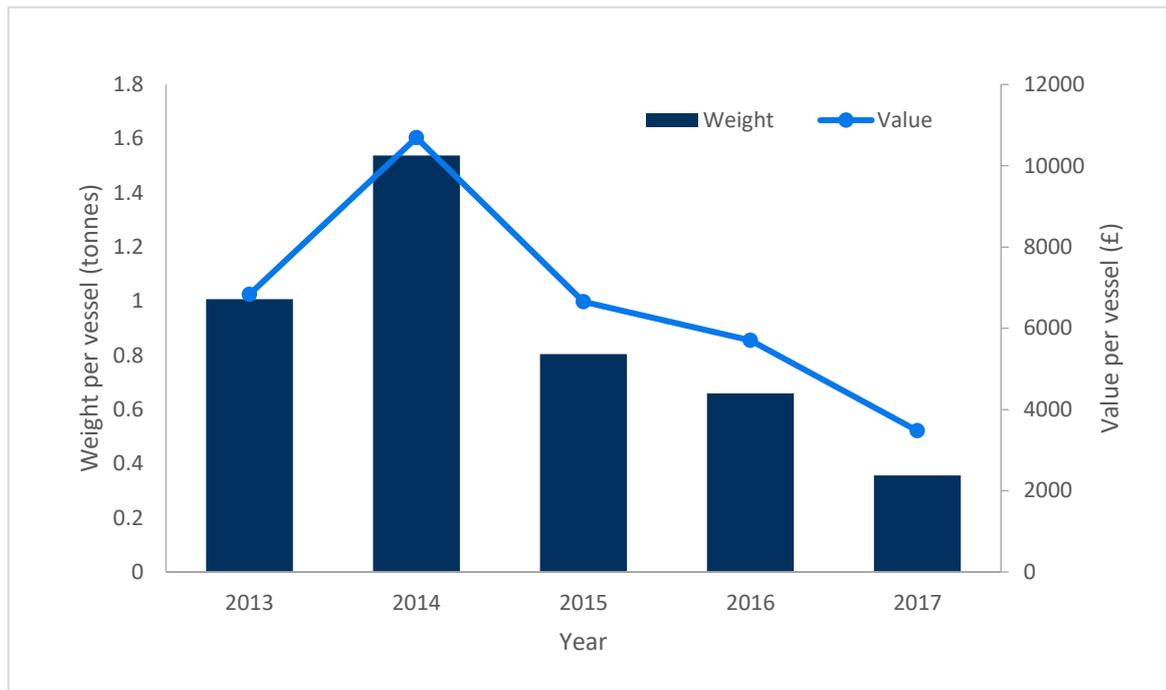
Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Sussex IFCA bylaws are limited to the Sussex IFCA District and as seabass are highly mobile, collaborative work with local fisheries and national and international organisations is required.



Fishing Information (Sussex ports)

Landings value	Average £1,471,919/year 2013-2017, 3 rd highest
Landings volume	Average 194 tonnes/year 2013-2017, 7 th highest
Fishing pressure	In Sussex, commercial fishing for seabass is mainly by rod and line, with some netting and trawling bycatch, as specified in the EU regulations. Recreational angling in Sussex for seabass is mainly charter vessels and on-shore rod and line with an estimated catch amount of 11.76-22.16t in 2012.
Market factors	A 2012 report has valued commercial fishing economic output at £9.25m and 111.28 Full Time Equivalent (FTE) jobs and recreational angling economic output £31.3m and 353 FTE jobs. Seabass are a popular seafood with landings increasing from 2,475t in 2013 to 3,031t in 2015 (a 13.8% increase per year). However, following concerns about depleted stocks, stringent restrictions were put in place in 2015.

Catch per unit effort



The average weight and value of seabass landed in Sussex per vessel per year (from MMO landings data).

Management Measures

<p>Local management</p>	<p>Sussex IFCA supports the new European seabass management measures to protect seabass stock from over exploitation.</p> <p>Chichester Harbour is a Bass Nursery Area, with restrictions on fishing aimed at protecting juvenile bass.</p> <p>Fixed engines (nets) are not allowed in specific areas of the District between 1st May and 30th September.</p>
<p>EU legislation</p>	<p>EU Agriculture and Fisheries Council agreements from 1st January 2017, which cover the Sussex IFCA area, includes prohibiting targeting seabass except using long lines and poles-and-lines to a limit of 10t/year with complete prohibition during February and March (when spawning).</p> <p>Fishing with fixed gillnets and traps nets have limits of 250kg, fishing with demersal trawlers and seine nets have an allowance of 3% of their total catch to a maximum 400kg to cover unavoidable by-catches.</p> <p>Recreational anglers are restricted to catch and release only during the first half of the year and catch limit of 1 fish per day from July.</p> <p>There is a minimum conservation reference size of 42cm.</p>

Fishery Sustainability

Seabass populations are continuing to decline with depleted levels of spawning stock. The mortality levels are increasing with low levels of recruitment which led to recommendations for a closed fishery for 2017.

Blue Marine report that EU measures were in response to reduced levels of breeding age seabass, which had more than halved since 2010, from 16,000t to less than 7,000t.

The Marine Conservation Society have wild seabass caught by all fishing methods – including rod and line – on its 'red' list of fish to avoid.

Key Issues

- Recovery of the stock could be slow due to the late maturity of seabass.
- Being a highly mobile species creates difficulty if management measures are not being consistently applied and relies on greater levels of cooperation.
- Prices and demand remain high despite increase of farmed seabass.



Potential future work

- Cefas and French research organisation Ifremer are carrying out tagging trials, increasing understanding of seabass populations and migration patterns to improve management of this mobile stock.
- Sussex IFCA continues to conduct small fish surveys to monitor the abundance of early stage juveniles.
- Engage members of the fishing community, food industry and the public on the state of bass stocks, and the need for extensive conservation practise.
- MCS have stated that long term management measures should be put in place to protect this environmentally, commercially and recreationally important species. This includes catch limits for seabass to be distributed in a way which preferentially allocates catch to fisheries using gears that have the least impact on the juvenile population and wider environment.
- Sussex IFCA continues to protect juveniles and habitats at a local level through a risk-based enforcement framework.
- Sussex IFCA will work in partnership with local fisheries and organisations such as MMO, CEFAS and Marine Conservation Society to enhance seabass stocks.

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Common whelk

Buccinum undatum



Biological Information

The common whelk is a gastropod mollusc. Their preferred habitat is mixed sediment from the low water mark down to 1200m. They are carnivorous predators and scavengers. They can live for up to 10 years.

Mating occurs in late autumn, after which the female whelks gather to lay their eggs together. Each female will lay up to 2000 capsules and each capsule will contain up to 3000 eggs, although on average only 14 individuals will hatch from each capsule. Spawning takes place from November onwards, and the juveniles hatch fully formed in February-March.



Whelks reach reproductive maturity at different sizes depending on their geographical location and environmental conditions. This is an average shell height of 58mm in Sussex. They do not migrate and have no larval stage. This may make them vulnerable to over-fishing as limited mobility means that in the event of over-fishing, it could take a long time for the population to recover.

Management Body

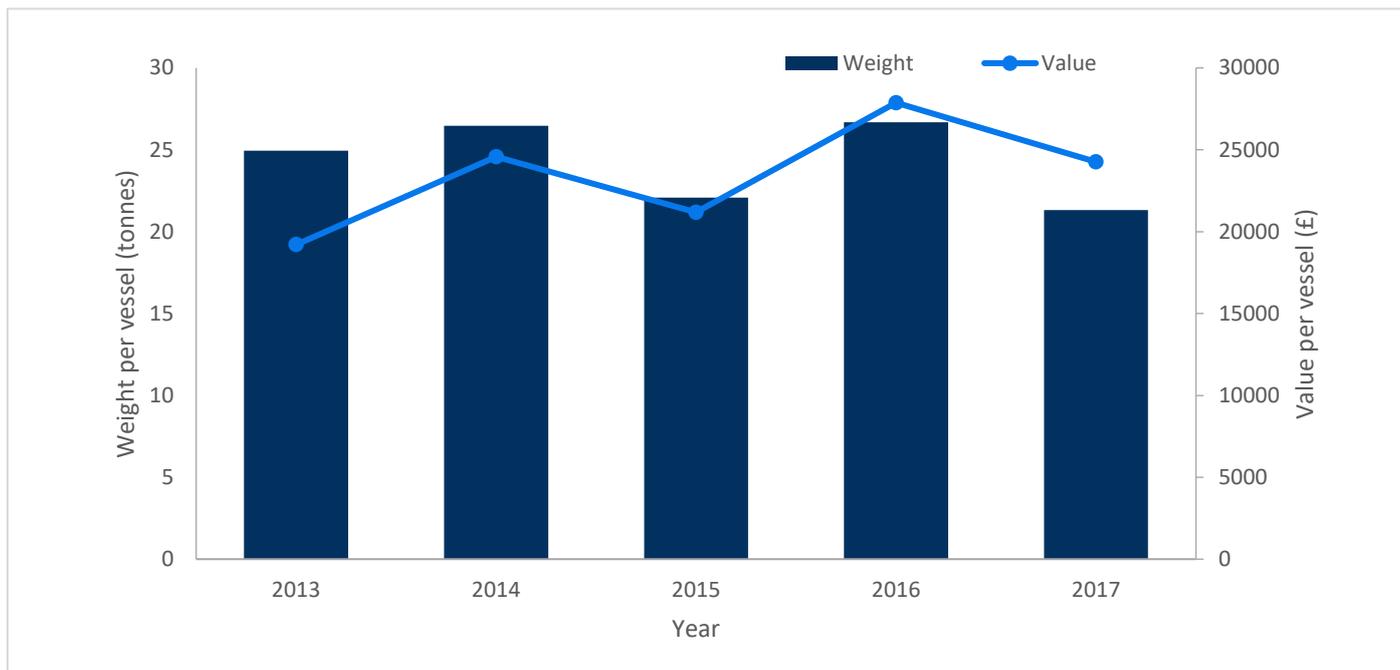
Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Due to their low mobility, local byelaws could have a positive impact on the sustainability of the local whelk population.



Fishing Information (Sussex ports)

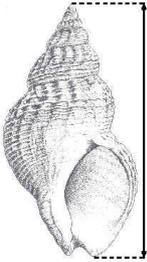
Landings Value	Average £2,807,736/year 2013-2017, 1 st highest
Landings Volume	Average 2936 tonnes/year 2013-2017, 1 st highest
Fishing Pressure	Commercial whelk potting
Market	The majority of Sussex whelks are exported to Asia, mainly South Korea, and also to Europe.

Catch per unit effort



The average weight and value of whelks landed in Sussex per vessel per year (from MMO landings data).

Management Measures

<p>Local management</p>	<p>Sussex IFCA Shellfish Permit Byelaw 2015.</p> <p>Escape holes in whelk pots (minimum 4 holes, 25mm diameter).</p> <p>Whelk must be passed over a riddle with bars at a spacing of 25mm.</p> <p>300 pot limit within 3 nautical miles, 600 pot limit within 6 nautical miles.</p> <p>Use of 25mm riddle.</p> <p>There are also recreational restrictions within Sussex IFCA district.</p>
<p>EU regulations</p>	<p>EU Regulation 850: minimum landing size of 45mm shell height.</p> 

Fishery Sustainability

Information gathered by the Sussex IFCA suggests that whelks are currently under a great deal of fishing pressure. According to the Prioritisation Tool, whelks' long lifespan, absence of planktonic stage and limited mobility, places the species in a category of high risk. High current fishing pressure could be harmful to the future of the fishery. Studies suggest the current minimum landing size is not sufficient to fully protect whelks.



Key Issues

- Whelks are heavily fished all year round, especially when other species are not available due to seasonality or management restrictions.
- Before the shellfish permit byelaw implementation in 2016, the only management measure was minimum size (which is not suitable for Sussex whelks).
- In the Sussex IFCA district, the size of whelk at the point of sexual maturity is 56-60mm, while the current minimum size is only 45mm, therefore they are being caught before having had the opportunity to breed.
- The number of fishing vessels landing whelks increased from 48 vessels in 2005 to 163 in 2015.
- Quantities of whelk being landed by each vessel have decreased since 2013 (see graph above), suggesting reduced stocks.

Potential future work

- Sussex IFCA has worked with the fishing community to create a regulation that works for the community, the economy and the environment.
- Sussex IFCA will enforce the Shellfish Permit byelaw, working with the fishers to collect catch returns data, check the efficacy of escape holes, use of riddle and pot limits and utilise catch returns data to ensure sustainable management.
- Conduct research in addition to catch return data collection, such as measuring samples of catch on landing, assessing discarded proportion of catch, developing stock assessment.
- We continue to work with Cefas and other partner organisations to provide good research and data to support our shellfish management.
- If research indicates a continued decline in whelk population, options to increase the minimum landing size should be considered, to allow whelk to reach sexual maturity and breed before being fished.
- Consider future options to introduce a closed season during breeding season (November-February) to allow undisturbed breeding, should whelk populations continue to decline.

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Black seabream

Spondyliosoma cantharus



Biological Information

Black seabream have an interesting reproductive strategy exhibiting protogynous hermaphroditism. They mature as females around 2-3yrs and 20cm in size and then between 30cm-40cm change to males. They can reach 60cm but are more commonly found at 35cm.

Males seek specific habitat for spawning, requiring a thin layer of mobile gravel over a hard surface. They remove this thin layer using their tails exposing the hard substrate to create a nest 1-2 diameter in which the females lay their eggs. Males protect the eggs and early stage juveniles from predators and siltation.



Adult black seabream overwinter in deep water (50m-100m) in the western English Channel. They arrive in Sussex with the warmer waters around March and inhabit shallow waters to feed prior to spawning April to June. After breeding, some may remain and others continue moving eastwards, feeding inshore until autumn when they return to the western Channel.

Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700 km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Sussex IFCA is carrying out its role locally in providing a well-managed network of Marine Conservation Zones around the coast of England.

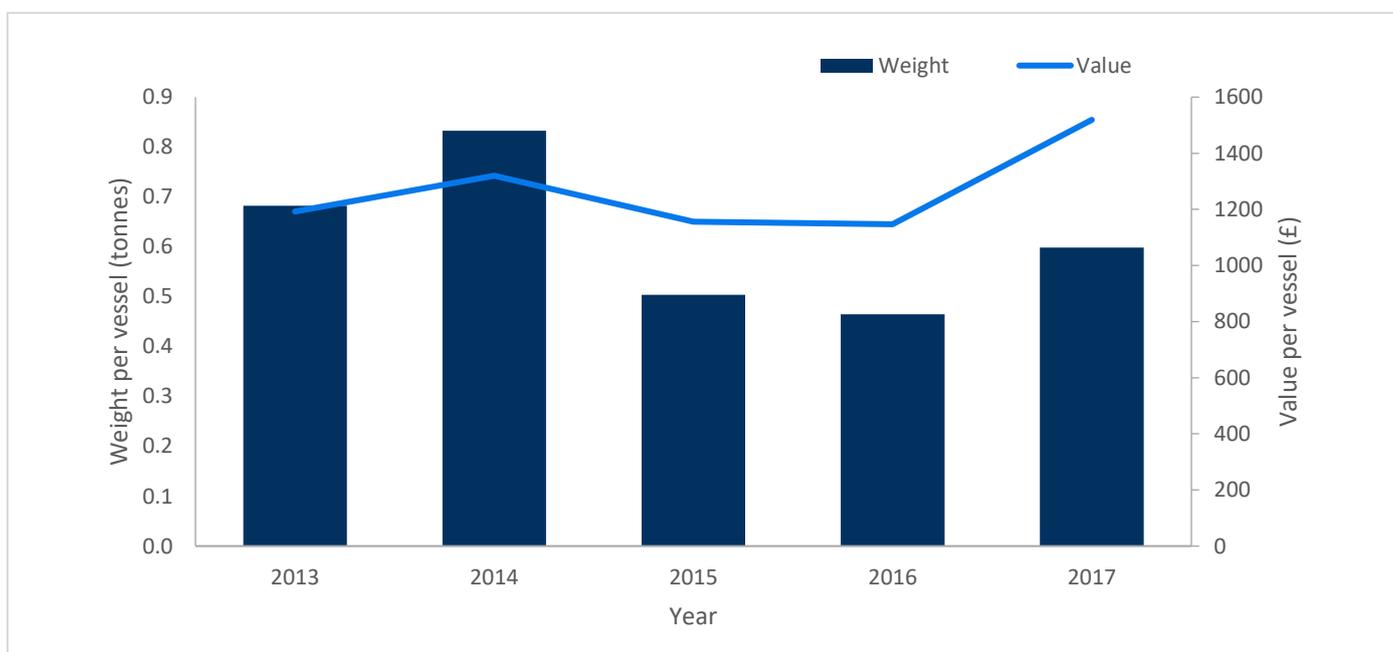
IFCA has created sustainable fishery management for the Kingmere Marine Conservation Zone (MCZ). This is 47km² protected area 5 to 10km south of Worthing and Littlehampton. Sussex IFCA are protecting one of the most important areas for nesting and breeding black seabream in the UK.



Fishing Information (Sussex ports)

Landings Value	Average £159,925/year, 2013-2017 – 11 th highest in Sussex
Landings Volume	Average 80 tonnes/year, 2013-2017 – 13 th highest in Sussex
Fishing Pressure	Commercial - mainly pair, stern trawling and static nets but also rod and line. Recreational - rod and line.
Market Interest	In Sussex, seabream has a significant economic value mainly within the recreational angling community. Black seabream is one of the most important species for recreational sea anglers along the Sussex coast.

Catch per unit effort



The average weight and value of black seabream landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	<p>Sussex IFCA Marine Protected Area byelaw and Kingmere MCZ schedule governs towed, netting and potting gears, lining, angling and dive gathering within the MCZ to protect the designated features. The MCZ has been divided into four zones and there are restrictions on fishing activity for each gear type, more restrictive within the bream breeding season April to June.</p> <p>There is also a voluntary code of conduct for anglers, including catch and release and a minimum size of 23cm and maximum of 40cm.</p>
EU regulation	No EU regulation is currently in place for a minimum size or catch limits for black bream.

Fishery Sustainability

Black seabream stocks currently appear to be in a healthy state, however there is a lack of stock assessment and appropriate management measures in force for the species. Angling Trust have concerns for the unsustainable commercial fishing methods for sea bream which catch breeding and juvenile stock and the Marine Conservation Society only recommend eating if caught by rod and line methods.

Stocks for which there is no sufficient or reliable data in order to provide size estimates, management measures and TAC levels should follow the precautionary approach to fisheries management.

Dredging for aggregate has been licenced by the MMO to occur within Kingmere MCZ with restrictions around the black seabream breeding season and requirements for monitoring the impacts.

Key Issues

- As sequential hermaphrodites, the population requires a balanced age structure for successful reproduction.
- They require specific habitat for breeding.
- Males have important role in guarding eggs.
- There is a lack of sufficient population data.

Potential future work

- Sussex IFCA has been working with local recreational sea anglers to use ID tags to assess the site fidelity and migration of Sussex black seabream. The monitoring of recaptures is ongoing.
- Ongoing monitoring and research will be developed with Natural England (conservation advisors) to assess if the conservation objectives for the site are being met. Management may be adapted in the future if monitoring work or other new evidence and associated Conservation Advice indicate this is necessary.
- Develop the monitoring programme and sharing data with stakeholders to help engage and increase understanding and awareness of the key issues.
- Continued monitoring of fishing activity.



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Dover Sole

Solea solea



Biological Information

Dover sole are found on sandy and muddy substrates

often using the soft seabed to bury in to and camouflage themselves during the day. They are mainly nocturnal and will feed at night on small crustaceans, molluscs, worms and fish. They are frequently predated by blond and thornback rays.

Spawning occurs between April and June. In Sussex, the area west of Beachy Head to the Ise of Wight has been identified as a Dover sole spawning ground.

The larvae remain in shallow inshore nursery areas such as estuaries, tidal inlets and shallow sandy bays, moving to join the spawning adult population at 2-3 years old and 25cm to 35cm long. The juveniles can undertake extensive migrations, although once they reach maturity, will only carry out seasonal migrations from deeper water to shallower spawning habitat.

Management Body

Sussex Inshore Fisheries and Conservation Authority (IFCA) is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles.

Dover sole studies suggests they use the same spawning grounds each year and so management within the Sussex IFCA region can have direct beneficial impact.



Fishing Information (Sussex ports)

Landings Value	Average £2,514,682/year, 2013-2017 – 2 nd highest in Sussex
Landings Volume	Average 390t/year, 2013-2017 – 4 th highest in Sussex
Fishing Pressure	The main pressure is from commercial fishing by gill and entangling nets (58%) along with trawling methods (40%). They are also caught by recreational anglers.
Market Interest	Dover sole is a commercially important species.

Catch per unit effort



The average weight and value of Dover sole landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	Sussex IFCA have a byelaw restricting use the use of fixed engines (nets) for specific times and locations within the Sussex IFCA district. These are in place to help protect spawning and juvenile fish stocks.
EU regulations	Minimum conservation reference size for Dover sole is 24cm. Dover sole is managed under the quota system which restricts the amount that can be caught.

Fishery Sustainability

The MSC have advised sole caught by trawling is unsustainable but by gill or fixed net is sustainable. Between 2005 and 2017, the Marine Stewardship Council (MSC) certified the Dover sole trammel net fishery under 10m Hastings fleet as sustainable.



The EU Commission in June 2016 advised that the sole stocks within the Eastern Channel area remained in 'poor shape' and there has been a management strategy in place since 2015. ICES advice from 2016 suggest spawning stock is declining while mortality is increasing, putting more pressure on current populations.

Key Issues

- Fishing methods using trawling are considered unsustainable.
- Dover sole stocks remain low.
- Individuals breeding in Sussex may have spawned elsewhere out of Sussex IFCA jurisdiction.
- Minimum landing size is below the highest and close to the average maturing size, allowing some to be caught before having the chance to breed.



Potential future work

- Sussex IFCA will continue to work in collaboration with partner organisations to carry out small fish surveys to establish the extent and abundance of juvenile sole.
- Sussex IFCA will continue to monitor fishing activity across the District.
- Sussex IFCA will continue to support the development of more sustainable fishing methods and collaborative research.
- Through the IFCA byelaw review process, consider measures to ensure the sustainability of the sole fishery, including the consideration of a closed season during spawning and an increased minimum conservation reference size.
- Consider sole within MPAs.



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Plaice

Pleuronectes platessa



Biological Information

The orange spots distinguish the plaice from other right-sided flat fish, although it is able to adapt its colour to suit its habitat, and the orange spots are not always clear. They live on sandy, muddy or gravelly substrate, often burying themselves within the seabed, only showing their eyes.

Plaice are slow growing and usually live to 20 years but some may live up to 30 years. Plaice reach maturity at 3 years or 32cm. They spawn in water depths of 20m-40m between December and March with a peak in January-February. Spawning occurs above the seabed. Juveniles are round fish when they first hatch. They drift inshore to shallow nursery areas and when 120 days old, move to the seabed, metamorphosing into flat fish. They stay in their inshore nursery grounds for 2 years before joining the adult stock. There is some movement between the eastern English Channel and the North Sea.

Management Body



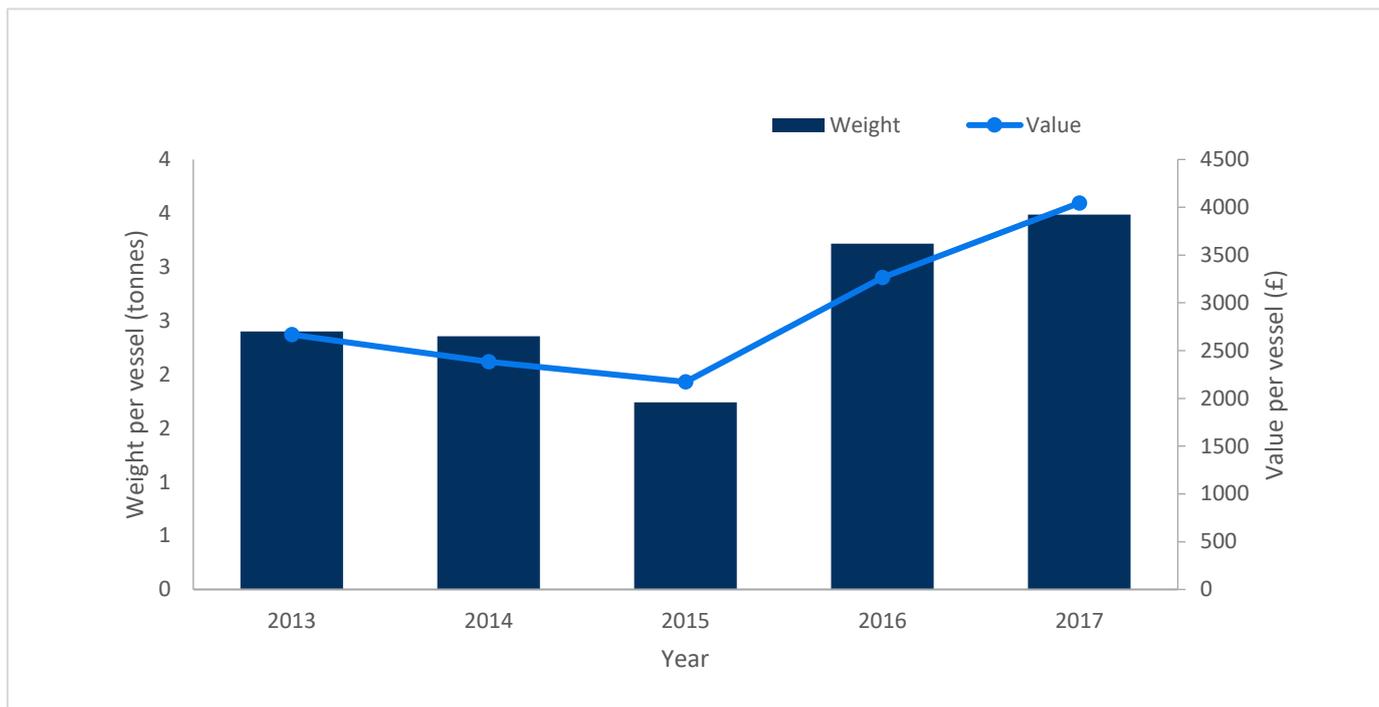
Sussex Inshore Fisheries Conservation Authority (IFCA) is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles.

As inshore waters are particularly important for the juveniles, Sussex IFCA may be able to protect these valuable areas.

Fishing Information (Sussex ports)

Landings Value	Average £614,230 year, 2013-2017 – 6 th highest in Sussex.
Landings Volume	Average 558t/year, 2013-2017 – 3 rd highest in Sussex.
Fishing Pressure	Plaice is a valuable bycatch from sole fisheries and the biggest percentage of plaice (61%) are caught by trawling with 37% from gill and entangling nets.
Market Interest	Plaice are highly prized as a table fish and are one of the top 3 fish used in 'fish and chips'. Export market from the UK in 2015 was nearly £500,000.

Catch per unit effort



The average weight and value of plaice landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	While Sussex IFCA byelaws are not specific to plaice they include restrictions on trawling and netting activity.
EU regulations	Minimum landing size 27cm. Plaice is managed under the quota system which restricts the amount that can be caught.

Fishery Sustainability

Advice from ICES indicates the current population levels are increasing with mortality decreasing and spawning stock biomass with recruitment increasing.



Key Issues

- Plaice are long lived species and so are potentially vulnerable to over-fishing.
- Trawling is considered less sustainable method of fishing compared to other gears as it can damage seabed habitats.
- Plaice are often caught as bycatch when fishing for other target species.



Potential future work

- Carrying out further research with other organisations such as Cefas and MMO to further understand the Sussex plaice population and migratory habits.
- Sussex IFCA will continue to work in collaboration with partner organisations to carry out small fish surveys to establish the abundance of juvenile plaice.
- Supporting fisheries to move into more sustainable methods of fishing for benthic species such as plaice.



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Turbot

Psetta maxima



Biological Information

Turbot is a large flatfish which occurs at moderately low abundance throughout its distributional range. Turbots reach reproductive maturity at 3-5 years with the males measuring 30cm and females 35-45cm long, they have a lifespan of up to 25 years and can reach up to 90cm. Juveniles are commonly found in shallow coastal waters with the adults in deeper offshore waters. This is variable throughout the year with sexually mature turbot migrating into shallower inshore areas between April and August to reproduce. Juvenile turbot remain in larval phase in the pelagic zone for 4-6 months. At approximately 25mm metamorphosis occurs; they change from round to flat fish and a demersal lifestyle is adopted. Turbot mainly inhabit sandy or gravelly habitats from the inshore shelf region to depths of 80m.

Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles.

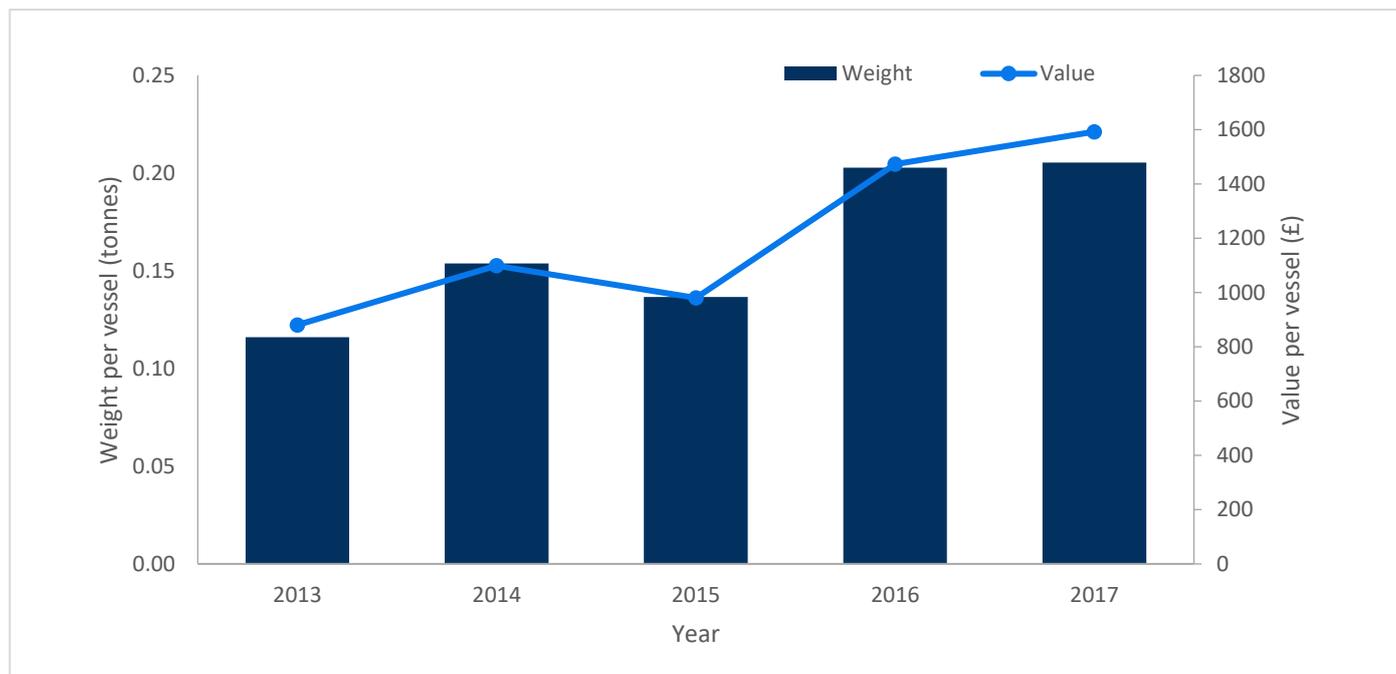
The majority of turbot fisheries use large static gill nets known as 'turbot-ray nets' or 'skate nets' are used in deeper water, often beyond 6nm and so outside the Sussex IFCA district. Within 6nm, most turbot which are caught are bycatch from other fisheries.



Fishing Information (Sussex ports)

Landings value	Average £231,543/year 2013-2017, 9 th highest
Landings volume	Average 31 tonnes/year 2013-2017, 17 th highest
Fishing pressure	In Sussex waters turbot are commercially fished using trawling (37%) and netting (34%). They are part of a joint targeted fishery for large flat, bottom dwelling species alongside brill and rays.

Catch per unit effort



The average weight and value of turbot landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	There is currently no direct management measures in place for turbot within the Sussex IFCA.
EU legislation	There is no European wide legislation for turbot. There is a catch limit for turbot and brill in the North Sea and there is a size limit for region 9 of 45cm. Some producer organisation have adopted voluntary minimum landing sizes between 25 and 30 cm.

Fisheries Sustainability

There is very limited information regarding status of local turbot stock. The Marine Conservation Society have turbot caught by beam trawl on the red list of fish to avoid. The other fishing methods used to commercially fish turbot such as gill netting which is used in local Sussex waters is rated by the MCS as requiring improvement in management as it could have negative impacts on the habitat and other species.



Key Issues

- The limited use of minimum landing size is devalued by the size being smaller than the known size of turbot at reproductive maturity.
- The Total Allowable Catch (TAC) for turbot is combined with brill which may lead to over exploitation for either species.
- Turbot fisheries elsewhere in UK waters such as the North Sea found that most fish caught were immature which had a negative effect on potential future yield of that stock.
- Turbot are commonly caught as bycatch, in particular by beam trawls, however they are also caught in otter trawls, standard static nets and scallop dredges.
- Currently very little research has been conducted into turbot stock levels, fishing mortality, bycatch and spawning stock biomass. This lack of knowledge and management makes turbot potentially very vulnerable and difficult to evaluate long term sustainability.

Potential future work

- Develop research and data sharing with stakeholders to help obtain baseline data for turbot.
- Increase understanding and awareness of the key issues such as bycatch and the possible implications of the joint fishery.
- One of the biggest potential threats to turbot stocks is the catching of immature fish, this could be mitigated if a minimum size was introduced which was in line with size at reproductive maturity.



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Cod

Gadus morhua



Biological Information

Cod have three dorsal fins, two anal fins and a barbel on the lower jaw. Both male and female cod reach reproductive maturity at 4-5 years and 68-78cm in length. Cod can live up to 25 years and reach up to 150cm in length. Cod within the Sussex IFCA district migrate inshore to their spawning grounds during the autumn and spawning takes place throughout the winter and spring, after spawning the fish move offshore to feeding areas. Cod spend much of their adult life close to the sea bed and range from a depth of 600m right up to the shoreline. They have a varied diet feeding on a range of invertebrates and fish with most of their feeding activity taking place at dawn and dusk.

Management Body

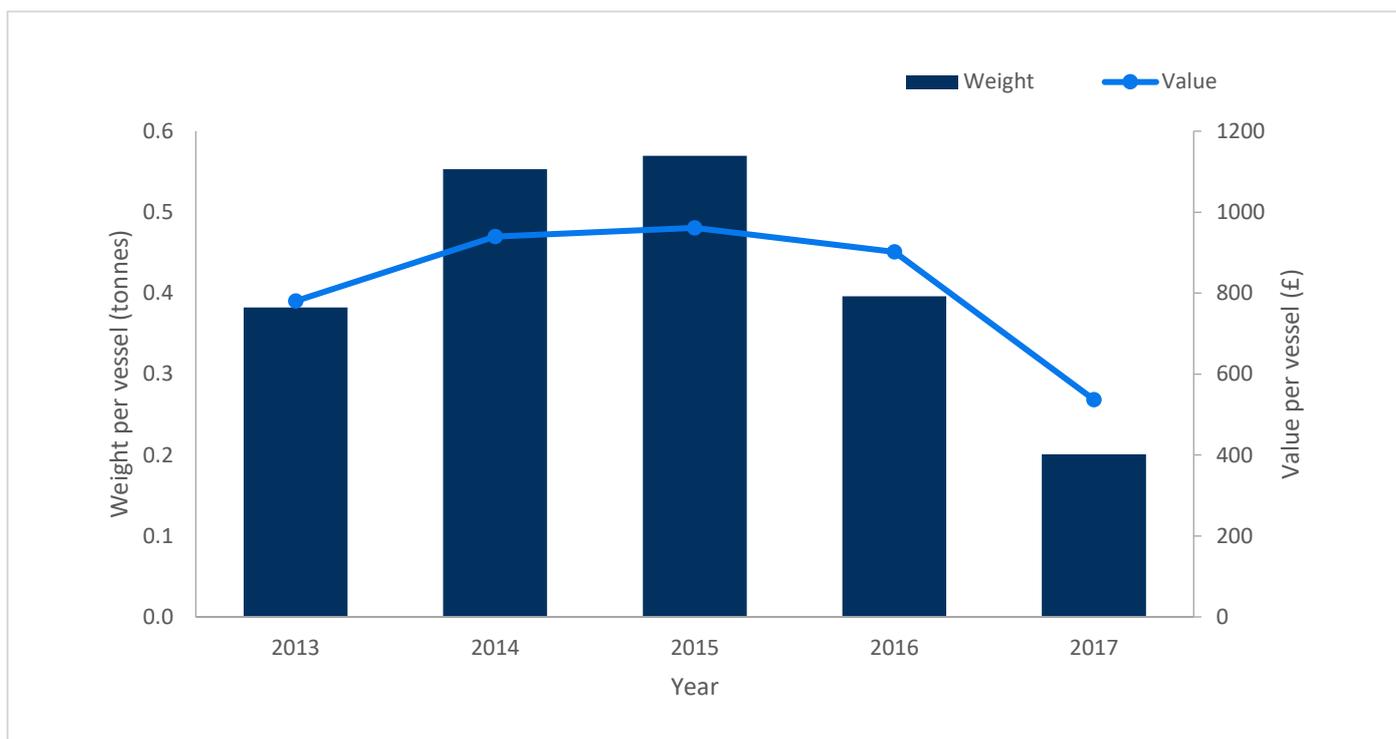
Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Sussex IFCA bylaws are limited to the Sussex IFCA District and cod are highly mobile, so work in collaboration with local fisheries and national and international organisations is required.



Fishing Information (Sussex ports)

Landings value	Average £168,572/year 2013-2017, 10 th highest.
Landings volume	Average 87 tonnes/year 2013-2017, 11 th highest
Fishing pressure	In Sussex, cod is caught commercially mainly using netting methods (69%) and trawling (27%). Due to strict TAC quotas for cod which have been introduced in recent years, they are now often landed as bycatch rather than the target species.
Market factors	Cod is a popular seafood in the UK with a strong local and export market. Due to serious concerns about cod stocks and the introduction of management methods such as TAC quotas, there has been a significant reduction in fishing effort targeting cod and a shift in the market towards other white fish such as haddock and saithe.

Catch per Unit Effort



The average weight and value of cod landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	There are no specific Sussex IFCA byelaws for cod but there are byelaws managing netting and trawling activity.
EU legislation	<p>The Sussex IFCA district is encompassed by the ICES division VIIId; the Eastern English Channel. This stock is managed as part of the North Sea stock which has a strict TAC quota, which managed monthly by the MMO for vessels under 10m. The minimum size for cod caught within the Sussex IFCA region is 35cm.</p> <p>Cod are managed partially under the EUs common fisheries policy and partially under Norwegian legislation. The stocks of cod are annually assessed by ICES and TACs based on maximum sustainable yield are given, if this is not possible, advice based on a precautionary approach is given. Seasonal closures for cod fishing between 1st Jan and 31st May have been introduced into southern areas of the North Sea. As of 2017 the introduction of demersal landing obligation (discards ban) has been introduced for cod in the North Sea, but not for the Sussex IFCA region.</p>

Fisheries Sustainability

The expansion of the European fishing fleet between 1970-2000 led to stocks of cod becoming overexploited. To curb this high fishing pressure and bring cod stock levels up to a sustainable level, Norway and the European Union agreed to implement various management and recovery plans. These cod management plans and the reduction in fishing effort have led to fishing mortality declining since 2000 and it is now estimated to be nearly in line with maximum sustainable yield (MSY). Spawning stock biomass reached a historic low in 2006 but has increased substantially and is now greater than ICES recommended MSY for spawning stock biomass. The Danish North Sea cod gained MSC certification in 2016 as a well-managed fishery using sustainable fishing methods.

Key Issues

- Within the Sussex IFCA district much of the cod caught and landed are codling (1-3 years old) and are sexually immature.
- Due to reduction in TAC quotas cod are most commonly caught as bycatch and not as the target species, especially by beam trawls targeting flatfish. This increase in discards has led to a slight increase in fishing mortality.
- The minimum size limit of 35cm for cod is substantially less than their size at reproductive maturity (68- 78cm).
- Cod migrate inshore to their spawning grounds. Within the Sussex IFCA district, spawning occurs during winter and spring, when they may be disturbed by fishing activity.

Potential future work

There are already several management measures in place within the Sussex IFCA district however the protection of juveniles and spawning grounds could aid the improvement of cod stocks within the VIId region. This could potentially be achieved by changing the minimum size limit to be in line with the size of sexually mature cod, however a discard ban would replace this. Seasonal closures could also be introduced to protect spawning grounds.



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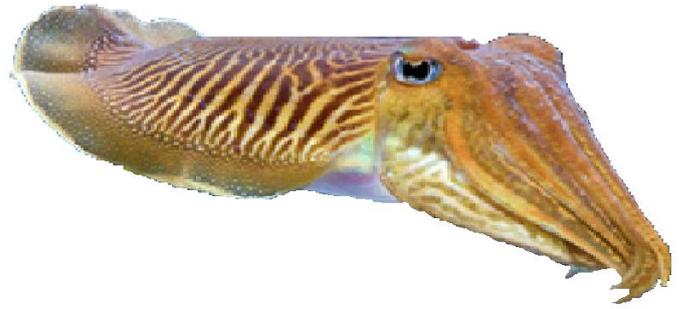
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Cuttlefish

Sepia officinalis



Biological Information

The common cuttlefish is a marine mollusc. They have a relatively short life cycle of between 18 and 24 months. During this time they grow rapidly and can reach a maximum mantle length of 49 cm and weigh up to 4 kg. The cuttlefish has a large head with relatively large eyes. The front of the head is tipped with eight arms and two tentacles. These radiate out from a bird-like beak for a mouth, which produces a venomous saliva. Directly behind the head is an oval shaped body, fringed with a single fin down each side. The skeletal mass of a cuttlefish is formed of a single internal 'cuttlebone'. Cuttlefish have the ability to rapidly change colour, this is used to avoid predation, confuse prey and signal to other cuttlefish. Cuttlefish primarily feed on crustaceans but also consume some benthic fish species. They can exhibit high levels of cannibalism.

The natural range of common cuttlefish stretches throughout the north eastern waters of the Atlantic Ocean on the continental shelves, from southern Norway, south to the coasts of Senegal. They also occur throughout the Mediterranean Sea. Cuttlefish are a benthic species that lives in close association to the seabed. They generally prefer softer substrates such as sand or mud, although they can also be found over rocky substrates.



The English Channel population of cuttlefish performs a seasonal migration every year. During the winter they move into the deeper waters and aggregate in the western approaches of the English Channel. From early spring, cuttlefish begin to move inshore towards their breeding grounds.

During the breeding season females typically stop feeding and undergo no somatic growth. A single female may produce between 130 and 840 mature ovulated eggs. At the end of the breeding season after all eggs have been laid the breeding cuttlefish die.

Management Body

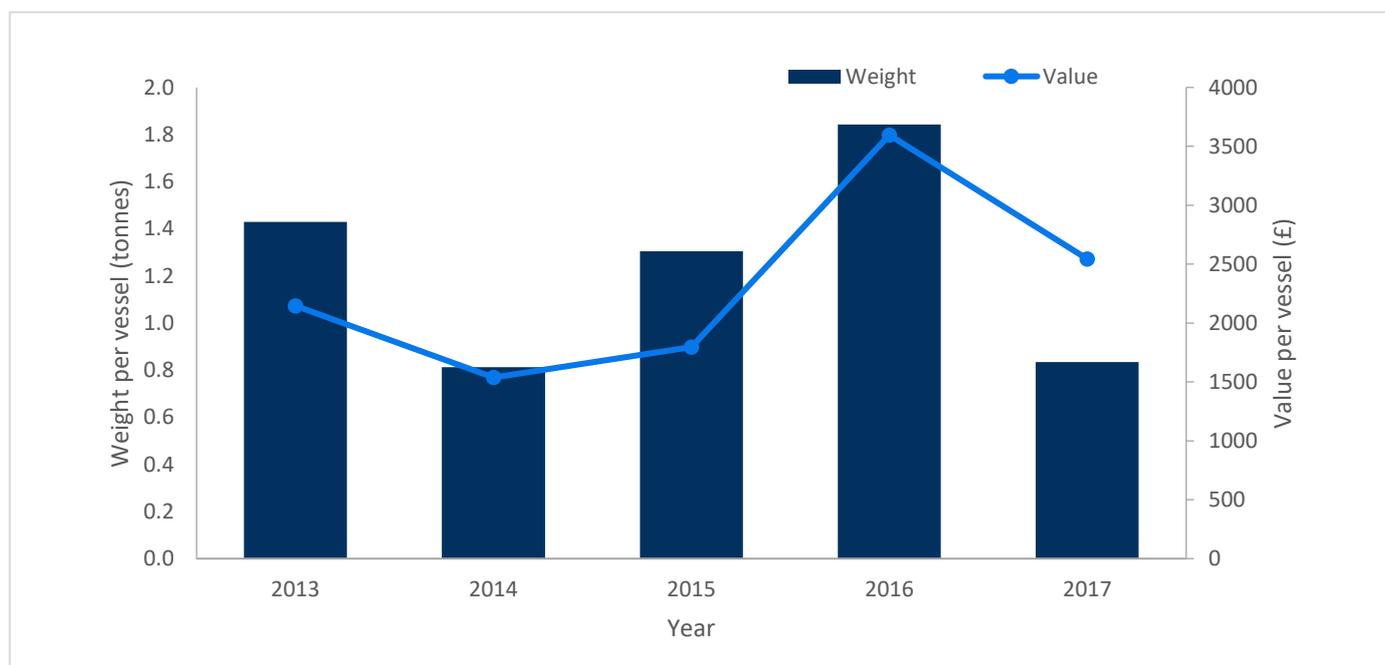
Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Sussex IFCA bylaws are limited to the Sussex IFCA District and as cuttlefish undergo a migration into and out of the district, work in collaboration with other organisations in the English Channel would be required.



Fishing Information (Sussex ports)

Landings value	Average £442,164/year, 2013-2017 (7 th Highest)
Landings volume	Average 239 Tonnes/Year, 2013-2017 (6 th Highest)
Fishing pressure	The fishery for cuttlefish is only on a commercial basis and three fishing methods are used; cuttlefish traps, static nets and otter trawls. Traps are the most common method and a female cuttlefish is used as bait to attract male cuttlefishes into the trap. Fishing is seasonal, typically March to May, depending on water temperature.
Market factors	The majority of British cuttlefish catches are exported to continental Europe, although UK consumers do appear to be eating more cuttlefish, allowing a slight increase in the market.

Catch per unit effort



The average weight and value of cuttlefish landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	The Sussex IFCA Shellfish Permit Byelaw 2015 requires fishers to have a permit to fish for cuttlefish with pots/traps. For cuttlefish pots, there is a maximum limit of 300 pots within 6 nautical miles.
EU legislation	There is no EU regulation currently in place for minimum size or for catch limits for cuttlefish.

Fishery Sustainability

The exploitation rate of cuttlefish within the English Channel is growing rapidly and has nearly doubled in the last ten years. The cuttlefish fisheries in the English Channel can be separated into the inshore and offshore fisheries. The inshore fishery operates during the summer months and predominately uses static gears such as traps and nets. The traps have low levels of bycatch and cause little seabed damage. By targeting breeding adults, the inshore fishery often allows for some egg laying to occur before exploitation. One negative aspect of the inshore fishery, is that the traps used to target cuttlefish often become the last egg laying sites of the captured cuttlefish. Maximising egg survivability is an important aspect to improve the sustainability of this fishery.

The offshore fishery targets cuttlefish during the winter months using towed fishing gear such as otter and beam trawls. This fishery targets cuttlefish of all age groups with landings of sub-adults as well as juveniles. The offshore fishery is responsible for over 90% of all landings of cuttlefish to UK ports. Recruitment



within the English Channel cuttlefish population is highly dependent on the proportion of cohorts that escape offshore exploitation and migrate inshore to their breeding grounds. The short life span of a cuttlefish combined with the single period of reproduction that occurs at the end of their lives means that cuttlefish are vulnerable to population collapse if they experience several years of reduced spawning.

Key Issues

- There are no EU regulations such as TAC quotas or MCRS for cuttlefish.
- The market value of cuttlefish has grown significantly in recent years.
- The exploitation rate of cuttlefish has grown significantly over the last ten years.
- There is no protection on the cuttlefish eggs. Some are lost when the pots are cleaned ashore. Cuttlefish only have a single spawning period. Egg survivability should be maximised.



Potential future work

- Continue to analyse fisheries data to understand the pressure on the stock and assess its sustainability.
- Assess how the cuttlefish in Sussex are genetically related to other cuttlefish in the English Channel.
- Consider the application of either or both, a MCRS or TAC quota to the species.

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Scallop

Pecten Maximus



Biological Information

Scallops are a bivalve mollusc. They have a shell with two valves; the upper left valve is flat and red/brown whereas the lower right valve is convex and off-white. Scallops reach reproductive maturity at a minimum size of 60mm and will be fully mature between 3-5 years. Their lifespan can be up to 20 years. The size of a scallop can be up to a shell width of 210mm, but most will be below 150mm. The movement of a scallop is limited but research shows they are capable of 'swimming' and 'jumping', however these are only really used as an escape reaction. Sperm and eggs are released freely into the water during mating season and fertilized eggs sink to the bottom. After several weeks, the immature scallops hatch. Scallops can be found offshore at a depth of up to 100m, usually on a seabed of sand/gravel. Adult scallops are unlikely to migrate and will only move if disturbed, instead they will rely on larval dispersal for distribution. The larvae can travel 10-40km.

Management Body

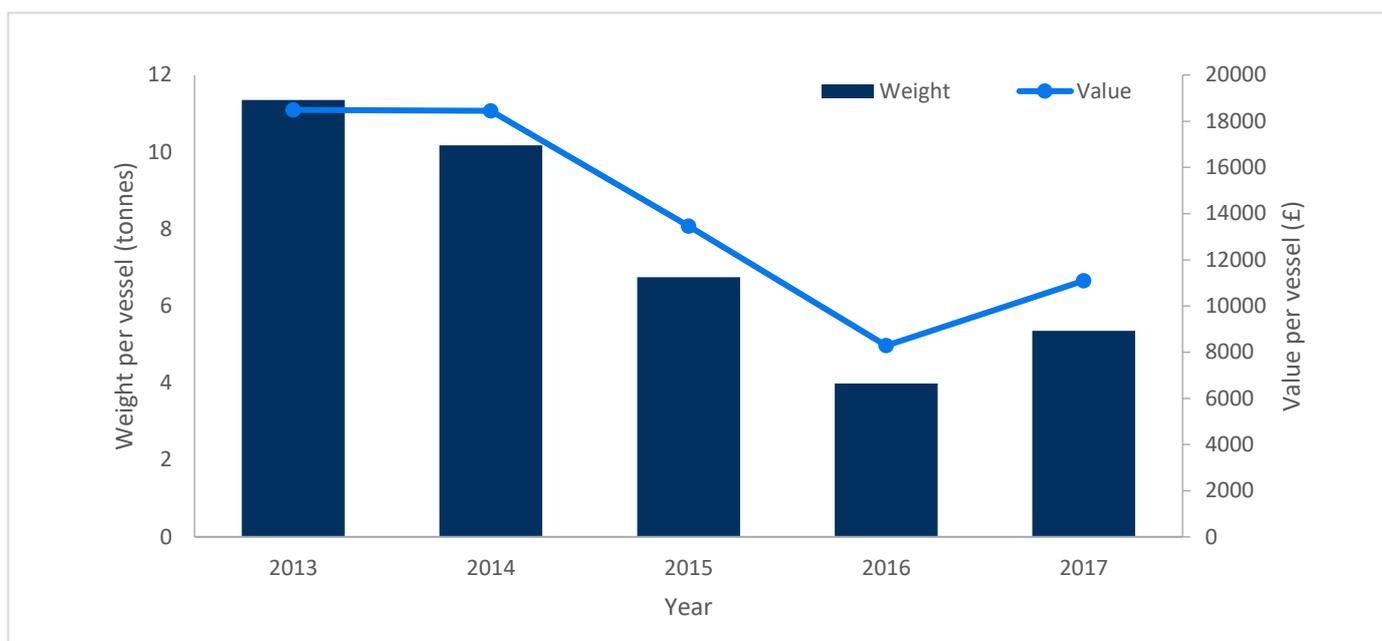
Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Sussex IFCA bylaws are limited to the Sussex IFCA District, so work in collaboration with national and international organisations may be required, as most scallop landed into Sussex ports is caught outside the district.



Fishing Information (Sussex ports)

Landings value	Average £1,129,526 (4 th highest)
Landings volume	Average 613 tonnes/year (2 nd highest)
Fishing pressure	The scallop fishery in Sussex IFCA is solely commercial which uses a specific dredge called the 'spring-loaded Newhaven dredge'; this is the only type of dredge permitted in the district. Most of the fishing pressure is outside the district.
Market factors	Some scallops are sold locally within the UK market, but most are exported to Europe. Rye Bay Scallop Week is scheduled annually for February - March; during this time Rye Bay scallops are served in many restaurants in the area as they are in high demand.

Catch per unit effort



The average weight and value of scallop landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	<p>Sussex IFCA byelaw which prohibits scallop dredging within 3nm.</p> <p>Sussex IFCA Byelaw which prohibits scallop dredging between 1st June to 31st October.</p> <p>The Newhaven type dredge must be used.</p>
EU legislation	<p>The European minimum size for scallop is 100mm shell width.</p>

Fishery Sustainability

The Marine Conservation Society report that the overall trend for scallop fisheries is of an increasing quantity over the last 10 years.

There is little knowledge of current stocks of scallops in England; although the Centre for Environment Fisheries and Aquaculture Science (CEFAS) are developing surveys to improve understanding of the status of scallop stocks. Scientific interpretations of landings data suggest the majority of stocks in English waters are currently relatively healthy.

The Seafish Economic Analysis reported that the number of UK scallop vessels increased from 127 in 2008 to 189 in 2015. This would show that the weight per vessel would be getting smaller as the

number of vessels increases, since there are more vessels in use. It was also reported that the catch rates for scallops increased from 2008 up to 2011 and then declined steeply from 2012 to 2015.

Eastern English Channel scallops are one of the Marine Stewardship Council's Fisheries in Progress, as they work with partners to improve the sustainability of scallop dredging.

Key Issues

- Dredging is the main fishing method for scallops, this involves a heavy metal frame being dragged along the seabed, which can cause seabed damage.
- Dredges can have large amounts of bycatch.
- There is limited information on stock levels.

Potential future work

- To avoid habitat damage from scallop dredges, there could be further restrictions on dredging over sensitive seabed habitats.
- Alternative approaches to scallop dredging such as diving could be considered. Divers land high quality scallops and do not damage the seabed.
- To reduce the impact of bycatch, there could be improved fishing gear designs that reduce the capture and impacts on other species caught.
- Support the MSC FIP, which is conducting a range of research projects.



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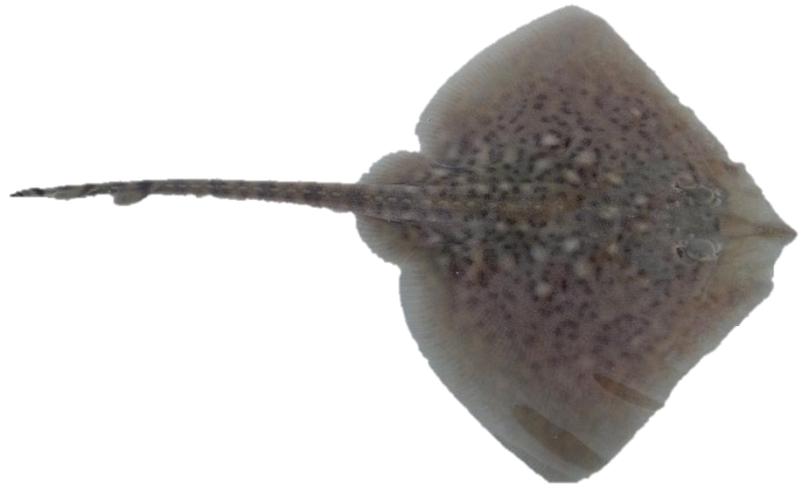
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Thornback Ray

Raja clavata



Biological Information

Thornback rays are named for the row of thorn like spines which run the along their back and the length of the tail. Male thornback rays can reach a size of 105cm and females 135cm. They reach maturity at 5 years old. Thornback rays undergo a seasonal migration, overwintering in deeper waters up to 300m, then migrating to shallower inshore waters between February and September to breed. Peak spawning occurs May to June. Thornbacks lay 50-75 eggs per year, with hatching occurring 4 to 6 months later depending on water temperature. The egg cases (mermaids' purses) can be found washed up on the beach.

Management Body

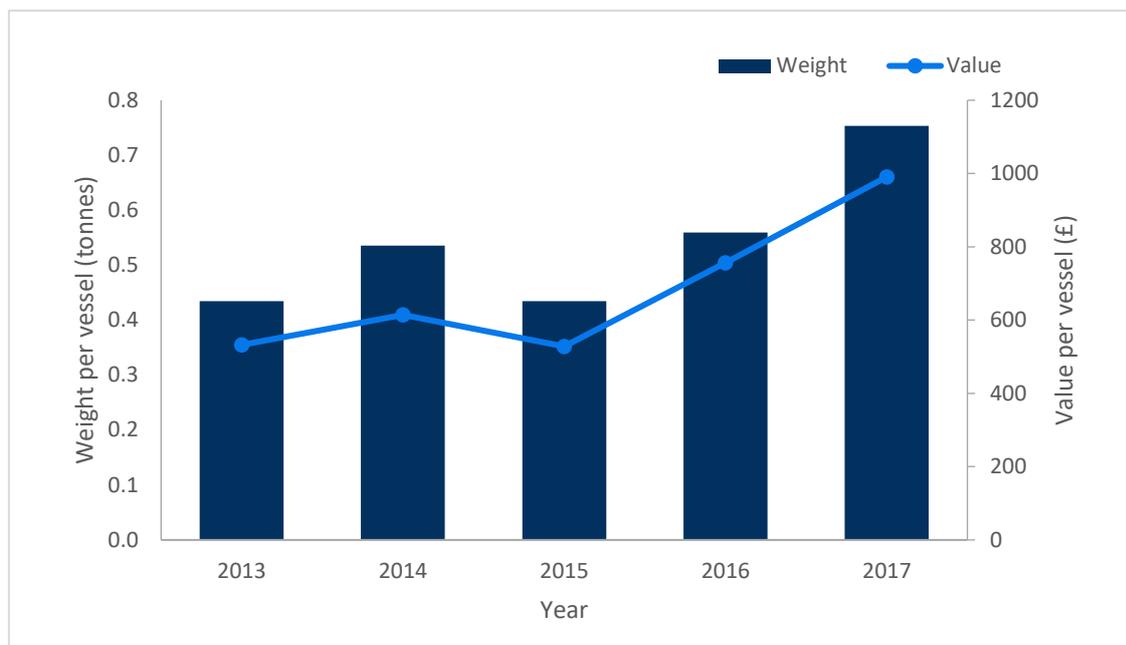


Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Sussex IFCA bylaws are limited to the Sussex IFCA District and as thornback rays are highly mobile, collaborative work with local fisheries and national and international organisations is required.

Fishing Information (Sussex ports)

Landings value	Average £122,190/year 2013-2017, 14 th highest.
Landings volume	Average 97 tonnes/year 2013-2017, 9 th highest.
Fishing pressure	Thornback rays are commercially fished using nets (49%) and trawls (49%). Thornback rays are also a popular target species with recreational anglers.
Market factors	Thornback rays are commonly sold as 'skate', in restaurants and hotels.

Catch per unit effort



The average weight and value of seabass landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	There are no specific Sussex IFCA byelaws for cod but there are byelaws managing netting and trawling activity.
EU legislation	<p>The Sussex IFCA's district is encompassed by the ICES division VIIId; the Eastern English Channel. This stock is managed as part of the greater North Sea area, combined skates and rays.</p> <p>Although there is no minimum landing size the majority of smaller specimens (<40cm) are discarded. Discard survival for inshore fisheries is considered to be high, however it may be lower for offshore fisheries.</p>

Fisheries Sustainability

The abundance and range of the thornback ray has been declining during the past 20 years. Thornback rays are sensitive to depletion when fishing pressure is high. This is because of their slow growth rates, relatively large size and tendency to form aggregations. These factors mean that thornback rays will be slow to recover from depletion. The landings of this species both in the UK and other European nations are growing annually. Attempts have been made but further research is required to accurately ascertain a maximum sustainable yield for this species.

Key Issues

- Thornback rays are listed as Near Threatened on the IUCN list of endangered species.
- Historic data is unavailable, as until 2009 it was not required to record skates and rays to species level.

- Thornback rays are commonly caught as bycatch, in particular by beam trawls, however they are also caught in otter trawls and static nets. Thornback rays have a relatively high survival rate, in particular when caught in static gear. The introduction of the Landings Obligation of the Common Fisheries Policy may result in a number of this species being landed that would otherwise have been returned to sea.



- The longevity and slow maturation of thornback rays, makes them more susceptible to the effects of overfishing with slow population recovery times.
- The formation of aggregations can result in large numbers being caught with a relatively low amount of effort.

Potential future work

- More information on stock structure is required.
- Whereas areas such as the outer Thames are known to be important for thornback ray, including juveniles, an improved delineation of spawning and nursery ground habitats is required to identify important reproductive areas.



- Historically, thornback ray was routinely landed and reported as general skates and rays and a longer term series of species-specific catch information is required.
- Whilst there have been efforts to improve species identification in commercial data, further work to educate fishers is required to improve the quality of species-specific landings data.
- An attempt has been made this year to calculate a suitable maximum sustainable yield proxy reference point for this stock, but further investigation is needed.

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Grey Mullet

Liza aurata Golden grey

Liza ramada Thin lipped

Chelon labrosus Thick lipped



Biological Information

Grey mullets are from the family Mugilidae. They are found in all tropical and temperate seas, usually in coastal and estuarine areas. There are three grey mullet species found within the Sussex IFCA district. All three species have a torpedo shaped body, large scales and two separate dorsal fins. They have a thick-walled gizzard-like stomach and very long intestine because they are grazers, eating algae off the surface of the seabed and other structures, although juveniles also feed on plankton. Adults usually live in shoals near the seabed as well as going into lagoons and lower estuaries.



They have a late maturation age and slow growth rate. Size of maturity is around 35cm. Grey mullet take nine to twelve years to fully mature and they can live for around twenty-five years. Thin lipped and golden grey mullets spawn in winter to spring. Thick lipped mullet spawn in the summer. The small juvenile fish spend the early part of their lives living inshore.

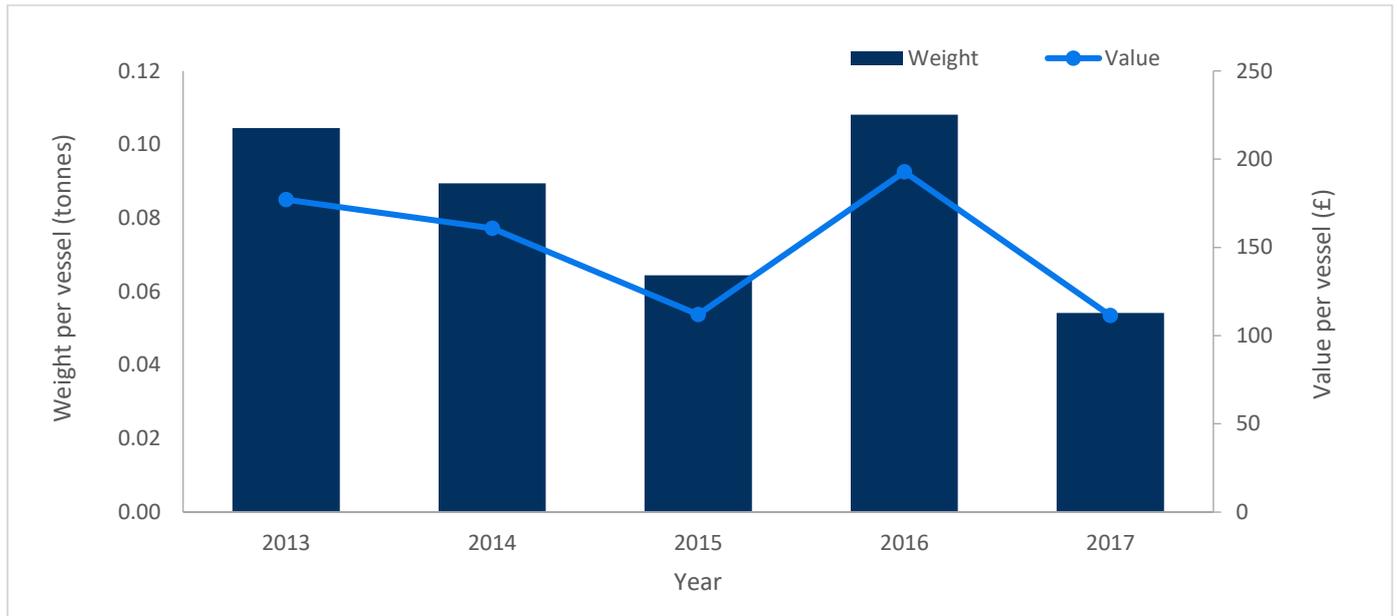
Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. As Sussex IFCA bylaws are limited to the Sussex IFCA District and grey mullet are fairly mobile, collaborative work with local fisheries and national and international organisations is required. However, coastal areas are particularly important for juveniles and these essential fish habitats should be protected.

Fishing Information (Sussex ports)

Landings value	Average £20,257/year, 2013-2017 – 23 rd highest in Sussex
Landings volume	Average 11t/year, 2013-2017 – 23 rd highest in Sussex
Fishing pressure	Commercial fishing vessels do not usually target mullet in UK waters, although they are caught as bycatch in trawls. However, there is some netting and recreational angling targeting mullets. Because grey mullet are long lived and late maturing, they are vulnerable to over fishing.
Market factors	They have a low market value.

Catch per unit effort



The average weight and value of seabass landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	<p>Sussex IFCA has no specific byelaws for mullet but some netting and trawling regulations.</p> <p>Other IFCA'S have a minimum conservation reference size of 33cm (Kent & Essex, Southern IFCAs).</p>
EU legislation	There are no EU legislative measures.

Fisheries Sustainability

There is no stock assessment for mullet. 20t of grey mullet are landed annually in Sussex. The management of grey mullet in the North Sea and English Channel has been recorded as a moderate risk. The fishery has applied some management controls but the lack of monitoring means the intended result is not certain. Nursery areas should be protected.



Key Issues

- A lack of research on the biology and ecology of all three species.
- There is currently no routine stock assessment undertaken for any of the three species and as such information on abundance and distribution is very sparse.
- There is no specific management or control measures regulating the landing of any of the three species found in Sussex IFCA's district.
- When landings are reported, all three species are grouped together. Identification to a species level of the three different species can be difficult.

Potential future work

- Continue to conduct small fish surveys to gather information on the abundance and distribution of juveniles.
- Conduct research to improve understanding of the biology and ecology of the three separate species.
- Conduct maturation studies to determine adult size class within the local population.
- Help fishers identify the three separate species to improve species level landings data. Consider setting a minimum conservation reference size within the district.
- Consider mullet during the netting and trawling management reviews.
- Compliance officers, when on patrol to record mullet catches, distinguishing the three species.
- Collaborate with other organisations to ensure mullet are managed sustainably.



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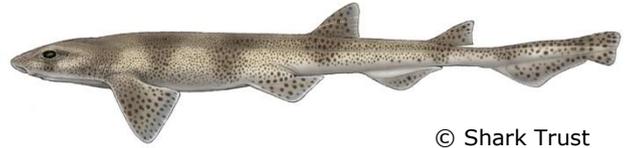
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Lesser Spotted Dogfish

Scyliorhinus canicula



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Biological Information

Lesser spotted dogfish (also known as small spotted catshark) live near the seabed and are found in shallow coastal waters down to 400m, but they are less common after 100m deep. They are often found over sand, mud, algae, gravel and rocky seabeds. They function predominately as nocturnal predators, feeding primarily on crustaceans and molluscs, with majority of feeding occurring during the summer months.

Males reach sexual maturity at 49-62cm (6yrs) and females at 52-69cm (8yrs). Males aggregate in coastal waters during winter. Females come inshore to lay eggs during spring and early summer. Egg cases, measuring 2-6cm, are deposited on seaweed. Embryos develop for 5-11 months, depending on sea temperature and young are 9-10cm when they hatch. They can grow up to 85cm long.

Management Body

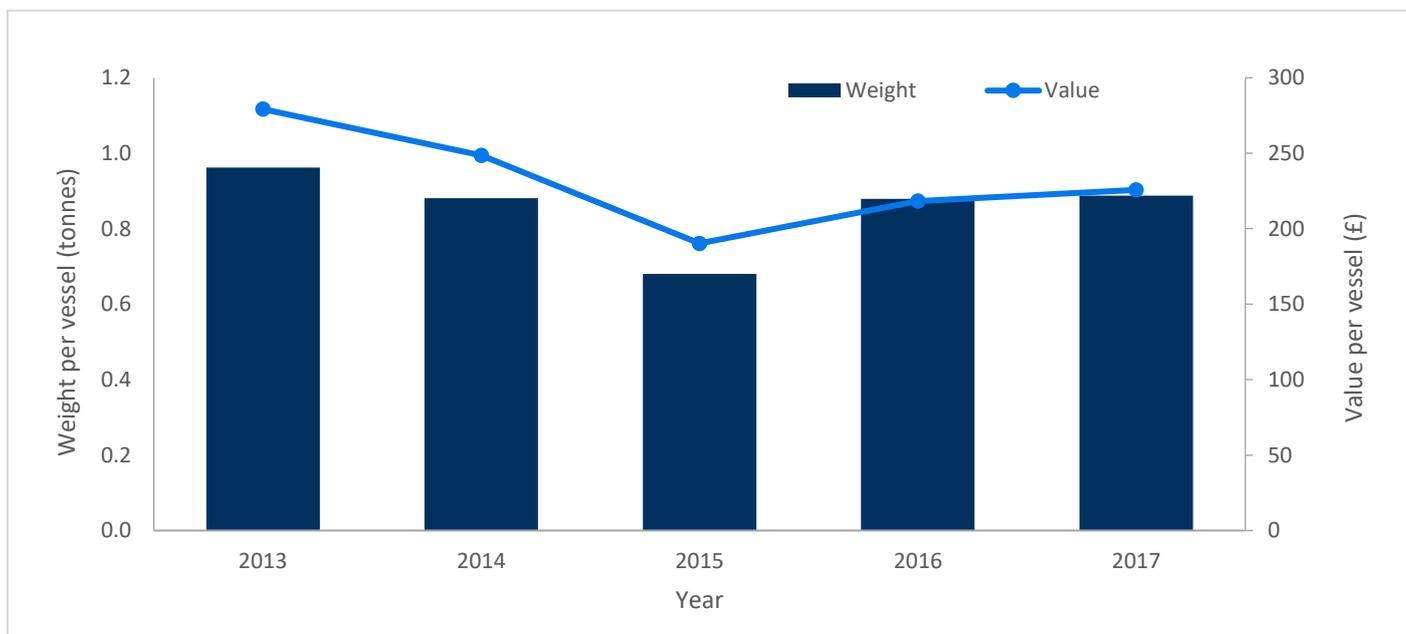
Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and offshore to 6 nautical miles. Sussex IFCA byelaws are limited to the Sussex IFCA District, but lesser spotted dogfish are found throughout the Northeast Atlantic, so collaborative work with national and international organisations will be required.



Fishing Information (Sussex ports)

Landings value	Average £32,758/year 2013-2017, 19 th highest
Landings volume	Average 121 tonnes/year 2013-2017, 8 th highest
Fishing pressure	Commercial fishing is 66% trawls and 32% nets. 146 vessels (19 th highest) are landing this species. Not targeted, caught as bycatch.
Market factors	Not a popular seafood and the majority of catch is discarded or used as bait within pot and trap fisheries.

Catch per unit effort



The average weight and value of lesser spotted dog landed to Sussex ports per vessel per year (from MMO landings data).

Management measures

Local management	No local byelaws specifically for dogfish but there are netting and trawling restrictions.
EU legislation	No EU legislative regulations.

Fishery sustainability

Stocks are currently considered stable, with some even increasing. Dogfish is on the IUCN Red List as Least Concern. However, continued monitoring and management is required to prevent future depletion. In 2008, ICES warned that a cautious management approach should be taken due to lack of information about the population and low reproductive potential. They are a frequently discarded species, but post-discard survival rate is high.

Catch and stock data often not to species level. There may be catch that is not landed and used directly as pot bait, therefore causing an underestimate of fishing mortality.



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Key Issues

- The longevity and slow maturation of lesser spotted dogfish may make them vulnerable to overfishing as recruitment to breeding population is slower than fish species.
- A lower fecundity when compared to other fish species also contributes to increased vulnerability to overfishing.
- Some research indicates that lesser spotted dogfish may form gender based aggregates. if these aggregates occur in traditional fishing grounds, it may cause a gender imbalance within the population. This may decrease their reproductive success.
- Some individuals are caught and retained to use as pot bait, but are not landed and hence not recorded.
- Lack of knowledge about movements throughout different life stages inhibits establishing effective management strategies.
- No current local or EU management or legislation to prevent overexploitation.

Potential future work

- Establish a minimum conservation reference size to ensure younger individuals have a chance to reach sexual maturity.
- Consider a maximum size limit too, to allow larger, more fecund individuals to breed.
- Define the areas, or potential areas, of the seabed used by females for laying eggs in order to prevent damage to the habitat and the eggs by restricting damaging activities.
- Determine if there is a gender bias in landed specimens.
- Continue to conduct small fish surveys to record the abundance and distribution of juveniles. Consider protecting nursery grounds.
- Educate the public in the identification of lesser spotted dogfish eggcases and encourage reporting of found eggcases to the Shark Trust.
- Educate commercial and recreational fishers on the vulnerability of elasmobranchs to fishing pressure
- IFCA officers could collect data on what species are being used as pot bait and whether lesser spotted dogfish is being recorded as landed or not.
- Work in collaboration with recreational anglers to tag and/or record lesser spotted dogfish caught and then track their movements.
- Work with Shark Trust's Great Eggcase Hunt to get a better idea of where eggcases are being found on the beach: <https://www.sharktrust.org/great-eggcase-hunt>

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Lobster

Homarus gammarus



Biological Information

Lobsters lifespan is 15 to 20 years and they can grow up to 1 metre in length. The size at reproductive maturity is 25cm total length at 7 years old. The females can produce up to 30,000 eggs per spawning event. Adult lobsters live in holes in rocks or dig soft material from beneath boulders to create deep tunnels. They are most common in the lower shore to a depth of 60m, with individuals in offshore grounds generally being less abundant but larger. The larvae are planktonic and float at on ocean currents in the surface layers of the water column. The plankton are omnivorous, eating phytoplankton and zooplankton such as copepods. Larval life lasts approximately 5-10 weeks, during which mortality, mostly from predation, is at its highest. The diet of the adults, which hunt mainly nocturnally, includes most of benthic invertebrates such as crabs, molluscs, urchins, starfish and polychaete worms, but may also eat some fish, algae and zooplankton.



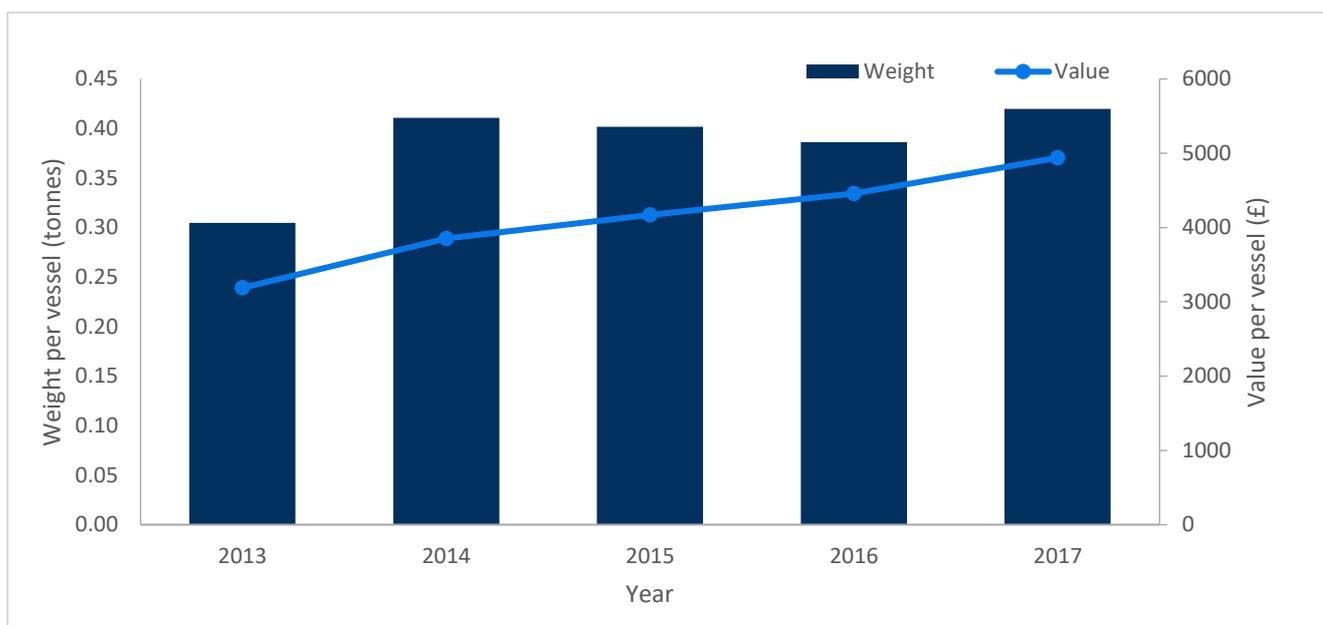
Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Sussex IFCA bylaws are limited to the Sussex IFCA District and as lobsters spend their life in the district with little movement, IFCA can sustainably manage the local population.

Fishing Information (Sussex ports)

Landings value	Average £682,738/year, 2013-2017 – 5 th highest in Sussex
Landings volume	Average 64t/year, 2013-2017 – 14 th highest in Sussex
Fishing pressure	187 vessels catch lobsters, the 10 th highest in Sussex. They mainly use pots 92%, with 7% caught in nets. Recreational fishers also use pots.
Market factors	Lobsters are popular in the UK and mainland Europe and have a high market value.

Catch per unit effort



The average weight and value of lobster landed in Sussex per vessel per year (from MMO landings data).



Management Measures

<p>Local management</p>	<p>Sussex IFCA Shellfish Permit Byelaw:</p> <p>All traps and pots used to target lobsters must be fitted with an escape hatch 80x45 mm.</p> <p>Pot number restriction per commercial vessel: 300 pot limit within 3 nautical miles, 600 pot limit within 6nm. Maximum of 5 pots per recreational permit.</p> <p>V-notched, mutilated or berried lobsters must be returned to sea immediately.</p> <p>Restriction of 2 lobsters per day for recreational fishers.</p>
<p>EU legislation</p>	<p>Minimum size of 87mm carapace length.</p>

Fisheries Sustainability

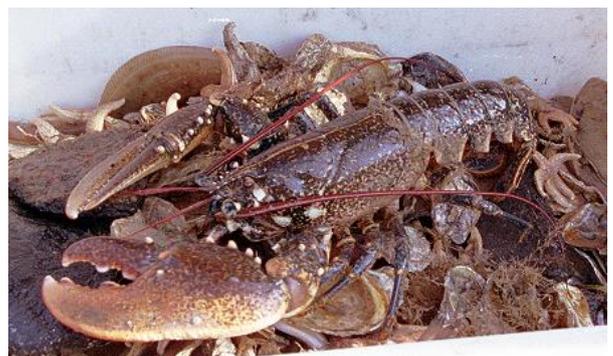
The Centre for the Environment, Fisheries and Aquaculture Science (CEFAS) conduct stock assessments for lobster and edible crab but they have not had sufficient data for the south east of England for several years. Therefore, the status of the stock is unknown. Local anecdotal reports suggest a recent decline in stock (2019), particularly inshore near Brighton and Selsey. Sussex IFCA Shellfish Permit Byelaw catch data also suggests a decline in lobster numbers.

Key Issues

- Growing exploitation rates within the English Channel across many shellfish species including lobsters. Increasing numbers of fishers targeting lobsters.
- Climate change, ocean warming and ocean acidification may have negative impacts on the survival and growth rates of larval and juvenile lobsters.
- Female decapods are often more mobile/active than their male counterparts, which may lead to more females being landed and create a gender bias within a population.
- Recent reports of declines in lobster numbers. Concerns about siltation, disease, non-native species and water quality.

Potential future work

- Investigate stock boundaries and population hotspots.
- Determine if a gender bias exists within local catches.
- Investigate reasons for population decline.
- Review pot limitations to ensure they are within sustainable limits.
- Consider increasing the minimum size.
- Consider setting a maximum size limit. The Sea Fisheries Protection Authority of Ireland has a maximum landing size of 127mm carapace length.



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Brill

Scophthalmus rhombus



Biological Information

Brill are a left-eyed flat fish with their eyes on the left side of their body. They can grow up to about 75 cm in UK waters, although this is rare and a maximum size of 50 cm is more common. Brill live for up to six years and become mature at three years of age and 30-40 cm long. As juveniles they feed primarily on marine worms and small crustaceans. As adults, their diet becomes more dominated by small fish such as sandeels and gobies. During the first two years of life, brill inhabit estuarine and shallow coastal waters. At these locations, there are complex habitats providing protection from predators, shelter and food. Adults are usually solitary, burying into sandy or muddy substrates at depths of less than 50m. Brill migrate seasonally between feeding and spawning grounds, with spawning occurring during spring and early summer in shallow coastal waters.



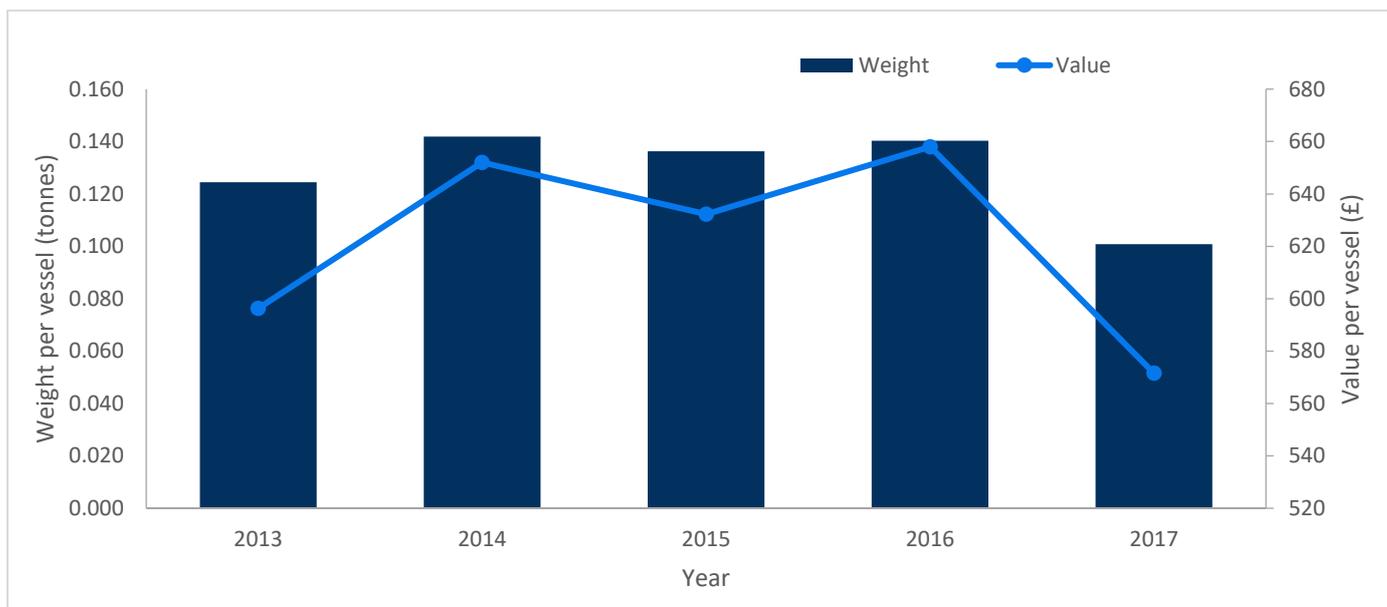
Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Sussex IFCA bylaws are limited to the Sussex IFCA District. Brill fisheries occur both within and beyond the Sussex IFCA district and as such, collaborative work with local fisheries and national and international organisations is required.

Fishing Information (Sussex ports)

Landings value	Average £120,046/year, 2013-2017 – 15 th highest in Sussex
Landings volume	Average 25t/year, 2013-2017 – 19 th highest in Sussex
Fishing pressure	They targeted by commercial vessels – netters and trawlers – and also by recreational anglers.
Market factors	Brill are a highly prized species and have a high market value.

Catch per unit effort



The average weight and value of seabass landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	There is no specific management for brill, but there are management measures for netting and trawling.
EU legislation	There is no minimum conservation reference size for brill. There is a total allowable catch quota for brill. It is a combined quota incorporating landings of both brill and turbot.

Fisheries Sustainability

The brill stock status data is limited. Brill are potentially vulnerable to habitat degradation and loss, in particular their breeding grounds due to trawling methods. 2621 tonnes of brill were caught in the North Sea and English Channel during 2016, of this biomass, 144 tonnes were discarded. Brill are targeted with both towed and static gears, with 83% of catches recorded from trawlers, and 10% from netters. Brill are predominately caught as bycatch in plaice and sole trawl fisheries. When targeted, brill are often part of a mixed species fishery alongside turbot and rays. The International Council for the Exploration of the Seas (ICES) advises that the brill fishery is currently operating below the maximum sustainable yield.



Key Issues

- Brill stock assessments are data deficient with current assessment techniques not designed to catch brill, especially large brill.
- The breeding grounds of brill are exposed to high levels of trawling activity, which may result in habitat degradation and loss, as well as mortality of juveniles.
- The quota for brill is combined with turbot which reduces control of exploitation rates at a species level and may lead to over exploitation of either species.
- Combined total allowable catch quotas may lead to high grading of the lower value species, in this case brill.

Potential future work

- Currently very little research has been conducted into turbot stock levels, fishing mortality, bycatch or spawning stock biomass. This lack of knowledge and management makes the brill stock potentially very vulnerable and difficult to evaluate long term sustainability. Research into these areas should be conducted.
- Develop research and data sharing with stakeholders to help obtain baseline data for brill, increase understanding and awareness of the key issues and the possible implications of the mixed fishery.
- Consider brill breeding and nursery grounds when developing trawling management.
- Continue to conduct small fish surveys to monitor juveniles.



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Edible Crab

Cancer pagurus



Biological Information

Typical lifespan of the edible or brown crab is around 20 years and they can grow up to 25 cm carapace width. Edible crabs reach sexual maturity at 10 years, 110mm for males and 115mm for females (carapace width).

Females move inshore in late spring to moult. Mating occurs shortly afterwards. Females store sperm and move offshore in late summer, where they fertilise their eggs in autumn/winter. Females carrying eggs rarely feed or move and bury themselves in soft sediment, so are unlikely to be caught in pots. Around late spring/early summer, larvae are released into the water column. Larvae remain as plankton for two months and then settle as juveniles in the intertidal zone in late summer/early autumn. They remain in the intertidal zone for around 3 years, until their carapace is 60-70mm in width, and then they move to the subtidal zone.

Edible crabs may travel 1-2 nautical miles per day and migrations, which are usually just one way, can be up to 200 nautical miles. Females in the English Channel tend to move west or southwest, perhaps against the current to ensure that their offspring drift back towards their own nursery grounds. Movements of males are shorter and less directed.

Habitats vary depending on life stage, with juveniles frequently found on rocky shores and adults at depths of up to 200m. Adults are commonly found sheltering under rocks and boulders.

Edible crabs are mainly nocturnal and are scavengers and predators, hunting for various crustaceans and molluscs.

Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and offshore to 6 nautical miles. Local byelaws could have a positive impact on nursery grounds as juveniles remain in the same place for a period of several years. However, as many adults will move outside of the Sussex IFCA District, collaborative work with national and international organisations is required.

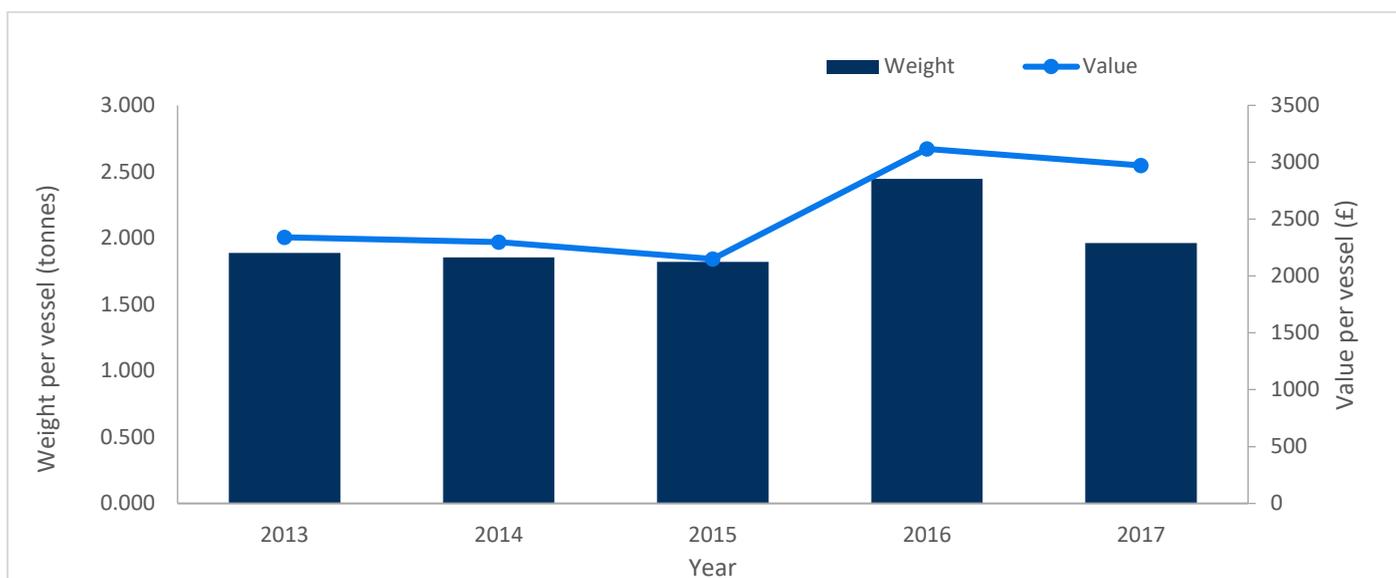


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Fishing Information (Sussex ports)

Landings value	Average £439,820/year 2013-2017, 8 th highest
Landings volume	Average 341 tonnes/year 2013-2017, 5 th highest
Fishing pressure	Mainly caught in pots along with lobsters. 89% of crabs are caught with traps/pots, with 183 vessels involved (12 th highest).
Market factors	Most are sold live either locally or exported to mainland Europe.

Catch per unit effort



The average weight and value of edible crabs landed in Sussex per vessel per year (from MMO landings data)

Management measures

Local management	<p>Sussex IFCA Shellfish Permit Byelaw:</p> <p>Pot number restriction per commercial vessel: 300 pot limit within 3 nautical miles, 600 pot limit within 6nm. Maximum of 5 pots per recreational permit.</p> <p>Restriction of 5 edible crabs per day for recreational fishers.</p> <p>All traps and pots used to target crabs and lobsters must be fitted with an escape hatch 80x45 mm.</p>
EU legislation	Minimum size 140 mm carapace width.

Fishery Sustainability

The Centre for the Environment, Fisheries and Aquaculture Science (CEFAS) conduct stock assessments for edible crab and lobster but they have not had sufficient data for the south east of England for several years. Therefore, the status of the stock is unknown. Previously, stock biomass was below Maximum Sustainable Yield target levels. Local anecdotal reports suggest a recent decline in stock (2019), particularly inshore near Selsey. Sussex IFCA Shellfish Permit Byelaw catch data also suggests a decline in crab numbers.

Key Issues

- Insufficient data to determine stock status.
- Greater movements of females could result in more females being caught and subsequently skewed sex ratios.
- Insufficient data on where berried hens rest in sediment and if they are affected by trawling or dredging.



Potential future work

- Collect more data on abundance and distribution of edible crabs.
- Find out where the berried females and the juveniles are in order to protect these vulnerable life stages.
- Collect more data to determine stock boundaries.
- Collect more data to assess stock status.
- Determine if a gender bias exists within local catches.
- Investigate reasons for population decline.
- Review pot limitations to ensure they are within sustainable limits.
- Consider increasing the minimum size and setting a maximum size limit.



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Squid

Loligo spp.



Loligo vulgaris

Biological Information

Two *Loligo* species are commercially exploited: the common or European squid (*Loligo vulgaris*) and the veined, Atlantic or long-finned squid (*Loligo forbesii*). *L. vulgaris* is smaller than *L. forbesii*, growing to about 30cm mantle length compared to *L. forbesii*'s 90cm. Both species live for 2-3 years, dying after their first reproduction. They are semi-pelagic, meaning they live both in the water column and near the sea floor, and can be found from shallow waters down to 500m. They are most abundant, however, between 20-250m. They show no particular preference for habitat type, although hard surfaces are needed for the attachment of eggs. Squid are carnivorous predators, with juveniles feeding on plankton and adults mainly feeding on fish and crustaceans, although cannibalism is also common.



Loligo forbesii

Both species are found throughout the Northeast Atlantic from the Mediterranean to north of Scotland. They move further north in the summer and south in the winter.

Reproduction takes place via copulation and internal fertilisation. Spawning occurs throughout most of the year. Females produce up to 20,000 eggs, which are arranged in gelatinous tubes with dozens of eggs each. The tubes are attached to hard substrata on the seabed in inshore waters, usually December-May, but also throughout the summer in the English Channel. Eggs hatch as plankton after 25-45 days depending on sea temperature. In males, number and size of spermatophores increases with size of the individual and males mating for a second time usually carry more spermatophores than those mating for the first time.

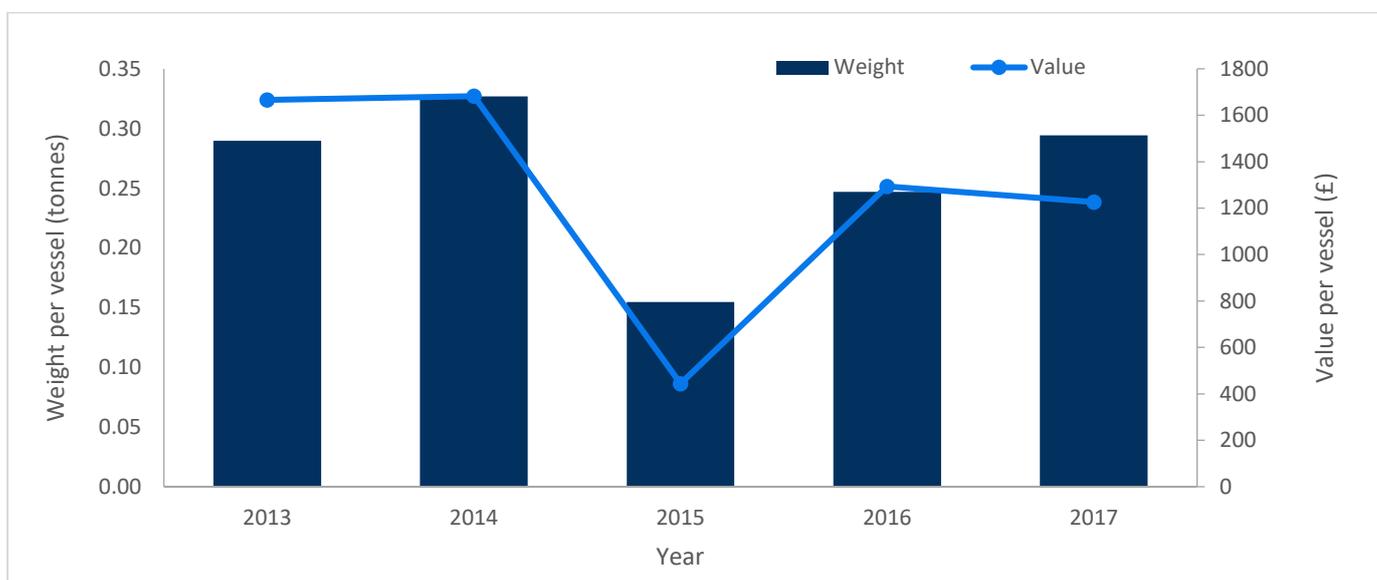
Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and offshore to 6 nautical miles. Local byelaws could help protect eggs laid within the Sussex IFCA jurisdiction. As adult squid perform long migrations, spending much of their life outside the Sussex IFCA district, their management will require work in collaboration with other local, national and international authorities.

Fishing Information (Sussex ports)

Landings value	Average £117,734/year 2013-2017, 16 th highest.
Landings volume	Average 25 tonnes/year 2013-2017, 20 th highest.
Fishing pressure	Fishing pressure high and increasing. Frequently caught as bycatch. Mostly caught in seine nets, but also a significant number by trawling. 114 vessels reported landing squid, 22 nd highest.
Market factors	Current trend suggest an increase in demand as traditional finfish stocks become depleted.

Catch per unit effort



The average weight and value of squid landings to Sussex ports per vessel per year (from MMO landings data).

Management measures

Local management	No local management.
EU legislation	No EU management measures.

Fishery Sustainability

Stock levels show high fluctuation on an annual basis. The population can fluctuate due to environmental conditions. The short life-cycle and semelparous nature of their spawning (only spawn once at the end of their life cycle) means that squid are highly susceptible to fishery impacts. The benthic nature of their egg laying, results in the egg masses being highly susceptible to damage and removal as bycatch by demersal towed gears. There are currently no management strategies at EU or UK level, nor any formal stock assessments, in place to help conserve squid stocks and ascertain whether they are being fished to Maximum Sustainable Yield.

Key Issues

- Trawling activity could be damaging to eggs laid on the seabed.
- Long migration routes that cross many jurisdictional boundaries means that international agreements may be required.
- Single reproductive event at the end of the lifecycle means they are vulnerable to overfishing, also that minimum size restrictions to allow the animal to reach sexual maturity would be ineffective. Protection of spawning sites and restrictions on fishing effort would be more effective.

Potential future work

- Collect data on the occurrence and location of squid eggs.
- Collaborate with other IFCA's and national and international authorities to assess stock levels throughout stock area. Also to assess the pressure on the whole stock.
- Consider squid breeding grounds when reviewing the trawling management.
- Consider a total allowable catch quota or effort restriction to ensure enough brood stock remains to maintain the population.



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Red Mullet

Mullus surmuletus



Biological Information

Red mullet live near the seabed in sandy or muddy habitats down to 100m depth. They feed on other bottom-dwelling organisms, including molluscs, crustaceans and fish. Juveniles are typically found in coastal waters with low salinity, while adults are typically found offshore in soft sediment. The length at maturity is 16cm for males and 17cm for females at 1-2 years old. They can grow up to 40cm long and live for 10 years. Reproduction takes place May-July.



Red mullet migrate through the English Channel into the North Sea. They can be found in the western North Sea during late winter and in the southern North Sea and eastern English Channel during the second half of the year. This coincides with the spawning period, the areas for which are in the southern North Sea and eastern English Channel.

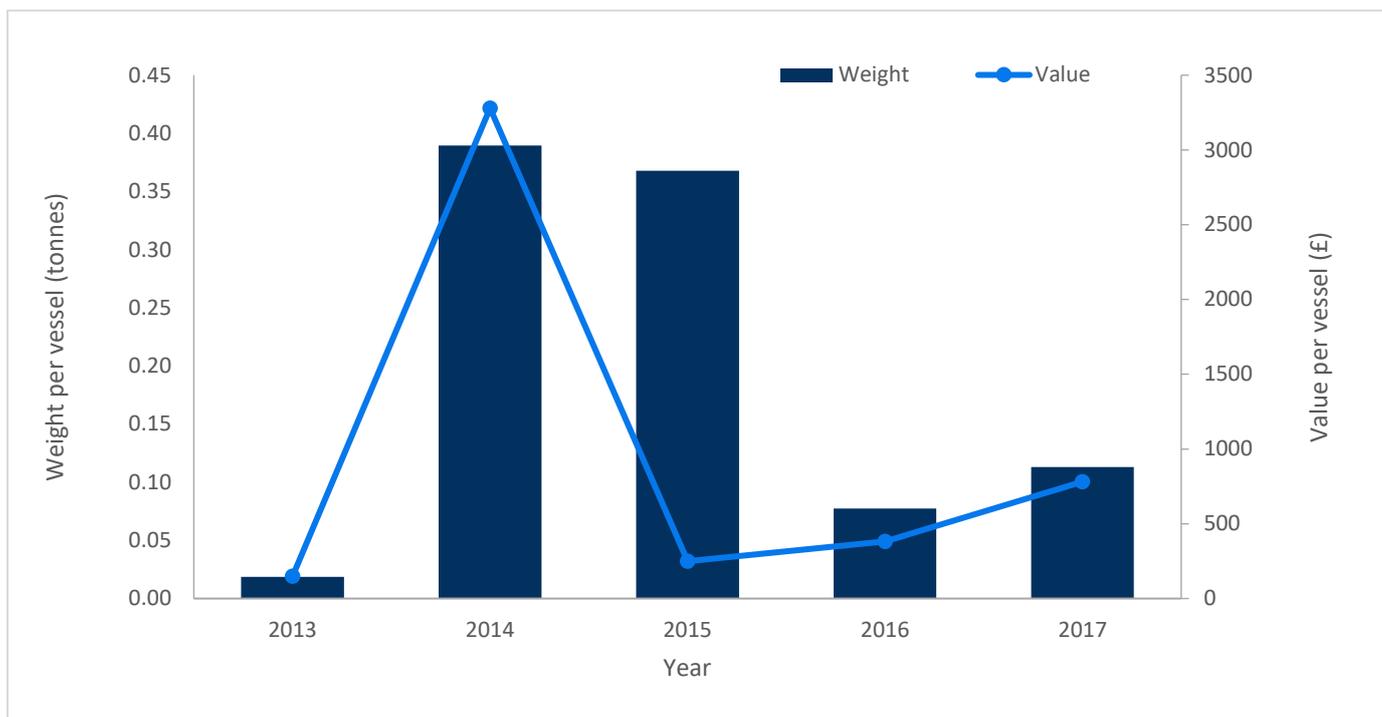
Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and offshore to 6 nautical miles. International migration could make this species difficult for Sussex IFCA to manage alone, however juveniles and spawning adults can be found within the district.

Fishing Information (Sussex ports)

Landings value	Average £135,737/year 2013-2017, 13 th highest
Landings volume	Average 29 tonnes/year 2013-2017, 18 th highest
Fishing pressure	<p>Fishing pressure and exploitation rates are generally increasing, with catches consisting of a high proportion of juveniles.</p> <p>Majority of targeted red mullet are caught in nets.</p> <p>Discards are estimated to be significant and there is a high risk as bycatch from towed demersal gears.</p> <p>163 vessels (15th highest)</p>
Market factors	There is a good market value for red mullet.

Catch per unit effort



The average weight and value of red mullet landed in Sussex per vessel per year (from MMO landings data). There appear to be some errors in the raw landings data.

Management measures

Local management	No specific red mullet management but regulations for netting and trawling.
EU legislation	No minimum conservation reference size. No Total Allowable Catch quota.

Fishery Sustainability

The current stock status is data deficient, although red mullet are considered as a high-risk species as the spawning biomass is low and fishing mortality is high. The Marine Conservation Society rank the red mullet fisheries for all gears in the eastern English Channel with a sustainability level of 3 (range 1-5). There are regular sampling of red mullet catches under the EU Data Collection Framework. With no specific management measures, there is a risk of overfishing.

Key Issues

- Otter trawls pose a risk to the species both with habitat damage and significant amounts of bycatch.
- Insufficient data for stock assessment.
- Thought to be low stock biomass.
- Catch is formed of a high percentage of juveniles. No minimum size limit.
- Caught as bycatch in demersal fisheries in North Sea and eastern English Channel.

Potential future work

- Collect data on quantity of red mullet caught as bycatch in trawls.
- Monitor landings per unit effort to see if decline which might require restrictions on fishing activity.
- Gather data to inform a stock assessment. Determine if restrictions on fishing activity are required.
- Continue to conduct small fish surveys to monitor the abundance of early stage juveniles.
- Establish a minimum conservation reference size. The Marine Conservation Society suggest 16 cm.
- Consider red mullet essential habitat, including nursery grounds, during byelaw development.



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Starry smoothhound

Mustelus asterias

Biological Information

Starry smoothhounds are common around the south and west coastlines of the UK. Common

smoothhounds are found further south. Whether or not they have the starry, white spots, smoothhounds are considered to *Mustelus asterias*. Their diet consists predominantly of crabs, with some other shellfish, crustaceans and molluscs. They prefer sand and shingle habitats, and generally avoid rocky habitats. They can be found swimming near the seabed at depths of between 5 and 50m, commonly occurring in estuary mouths, tidal flats and shallow bays. During the spring and summer, smoothhounds migrate inshore, whilst in the winter they move offshore into deeper water in the western English Channel.

Smoothhounds reach a maximum size of 140 cm, with the males maturing at 78-85 cm and females at 85 cm. They are ovoviviparous which means that they lack a placenta and carry their eggs throughout the gestation period within the female's body. After 12 months, the eggs hatch internally and the maternal sharks then birth the newly hatched young. Litters usually consist of 10-35 pups, depending on the size and condition of the mother and pups are born measuring approximately 30cm.



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Management Body

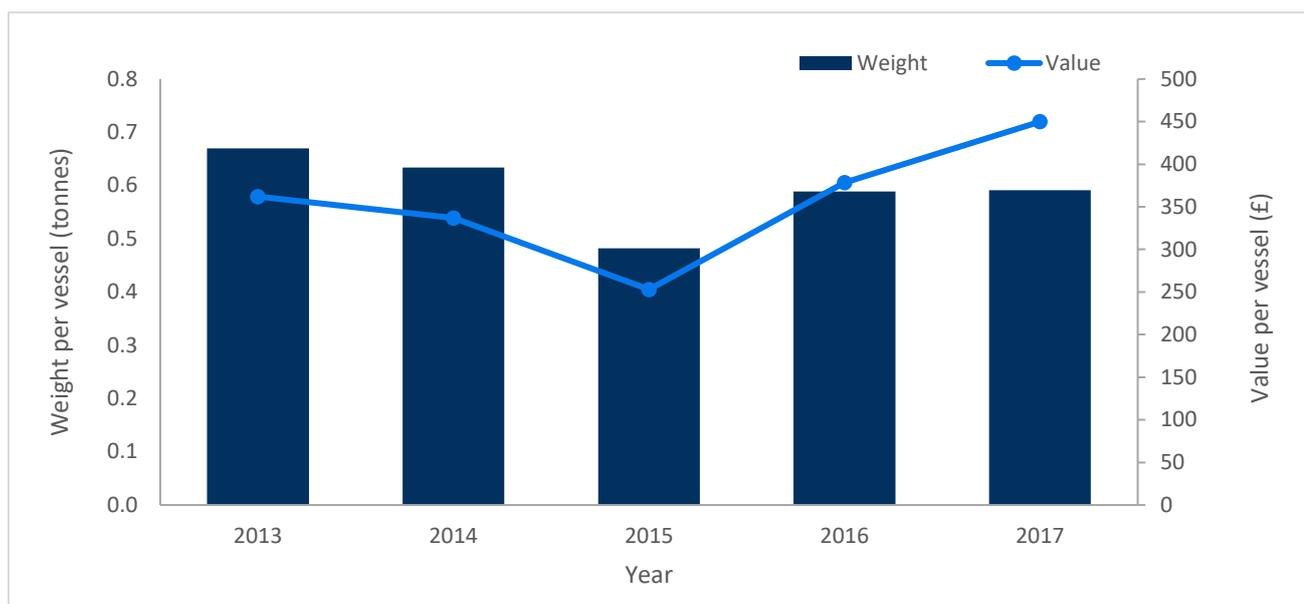
Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Sussex IFCA bylaws are limited to the Sussex IFCA District and as smoothhounds are highly mobile, collaborative work with national and international organisations is required.



Fishing Information (Sussex ports)

Landings value	Average £54,683/year 2013-2017, 18 th highest
Landings volume	Average 91 tonnes/year 2013-2017, 10 th highest
Fishing pressure	Smoothhounds are predominantly caught in nets and trawls. 157 vessels recorded landing smoothhounds in Sussex.
Market factors	Smoothhounds have a low market value.

Catch per unit effort



The average weight and value of smoothhounds landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	No specific smoothhound management, but regulations for netting and trawling.
EU legislation	When specifically targeted, a minimum net size of 220mm must be used.

Fishery Sustainability

Landings in the UK are stable and have been below advised exploitation rate. Numbers appear to be stable, although it is unknown whether the level of fishing is sustainable.

Landings of all *Mustelus* species (*M. mustelus*, *M. asterias* and *M. punctulatus*, of which *M. mustelus* is the most common) in the Mediterranean Sea declined by 85% between 1994 and 2006, showing that the population can decline rapidly from overfishing. As with many elasmobranch species, smoothhounds are considered vulnerable to fishing pressure, due to a relatively large size and old age at sexual maturity combined with a low fecundity.

Starry smoothhound: IUCN least concern.

They are commonly caught as bycatch from trawl and gillnet fisheries. They may be landed for human consumption and also as bait for the inshore pot and trap fisheries in the UK. Survival of discards from nets and trawls is low.

Key Issues

- Insufficient data to establish stock status.
- Insufficient data to set informed management measures.
- May be vulnerable to overfishing due to slow maturation and low fecundity.

Potential future work

- Collect data on abundance and distribution, particularly juveniles.
- Consider what management measures would be appropriate, including minimum/maximum size limits, protection of mating, pupping, nursery and feeding grounds, and restrictions on fishing effort.
- Consider methods to reduce bycatch.

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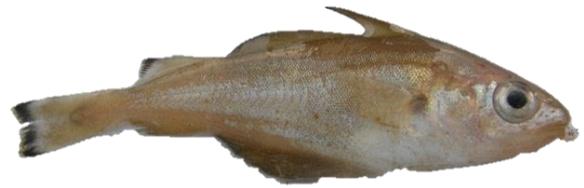
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Pouting

Trisopterus luscus



Biological Information

Also known as pout or bib. They are a member of the cod family, common in inshore waters. Large shoals form around wrecks and over rocky areas. Juveniles are found in coastal waters, whilst adults



move further offshore. Pouting are most commonly found between 30-100m depth. They reach sexual maturity at 1-2 years old, 21-25cm long and usually grow to 20-32 cm, living for up to 4 years. They typically prey on small, benthic animals and are commonly preyed upon by other fish, birds and marine mammals. Females move inshore to <50m depth to spawn during March-April and the resultant offspring frequently utilise estuaries as nursery grounds.

Management Body

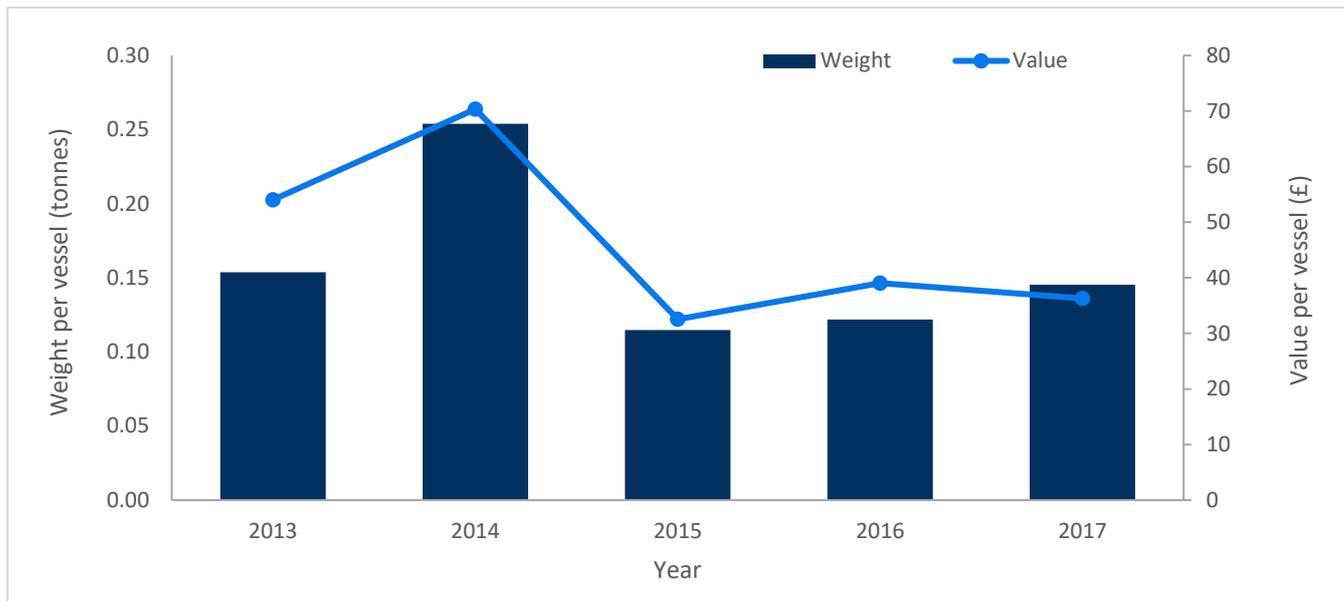
Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Sussex IFCA bylaws are limited to the Sussex IFCA District.



Fishing Information (Sussex ports)

Landings value	Average £5,901/year 2013-2017, 25 th highest
Landings volume	Average 20 tonnes/year 2013-2017, 21 st highest
Fishing pressure	Pouting are not targeted commercially due to low economic value but they are often landed as bycatch. When Pouting are caught it is primarily in trawls and nets. They are also caught by anglers for use as bait. 123 vessels reported landing pouting in Sussex.
Market factors	There is little market for pouting in the UK, although it is eaten more commonly in Mediterranean countries such as France, Spain and Portugal.

Catch per unit effort



The average weight and value of pouting landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	No pouting specific management but there are regulations for trawling and netting.
EU legislation	No pouting specific management

Fishery Sustainability

Pouting is only commercially targeted through a small proportion of its range in Spain, France and Portugal. Throughout the rest of its range, pouting is caught as bycatch alongside more valuable species. Pouting experiences high levels of discard and high discard mortality. There is a lack of data on the stock of pouting because Pouting is not commercially targeted throughout most of its range and there is no formal stock assessment. During the international bottom trawl the survey, the catch per unit effort (CPUE) for this species fell continually between 1983 and 2004. The short maturation period of pouting suggests that the population would be moderately resilient to fishing.



Key Issues

- Pouting are predominantly caught as bycatch and are not targeted, so there is currently no pouting specific management.
- There is currently little data collection as to the stock levels and movements of this species.
- Juveniles and spawning females are the majority found inshore, so inshore fisheries catching this species could be catching either juveniles or spawning females, both of which may potentially reduce recruitment into the adult population.
- Pouting experience high levels of acute discard mortality when discarded from towed gears.

Potential future work

- Collect data on the stock levels of this species.
- Conduct research into the distribution and movements of the adults and juveniles. Consider protecting nursery areas.
- Consider setting a minimum conservation reference size. The Marine Conservation Society recommends 21cm.
- Consider pouting during the development of trawling management.
- Collect data on the use of pouting as bait for anglers. Consider restricting this practice.

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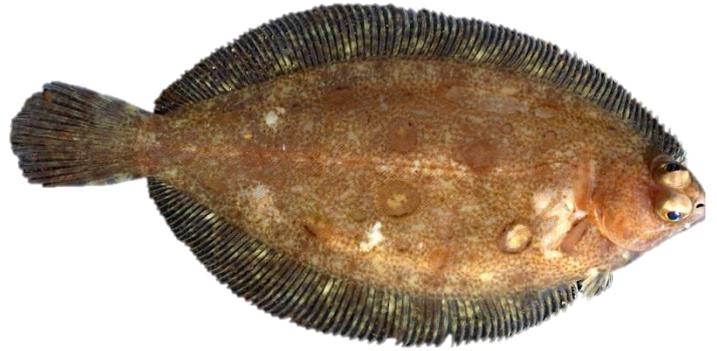
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Lemon Sole

Microstomus kitt



Biological Information

The lemon sole is not actually a sole, as they are from a different family of flatfish. Lemon sole are a right-eyed benthic species living close to the sea floor on sandy or gravelly substrates. They feed on small invertebrates, mainly polychaete worms. They have been found not to feed during the winter months. Lemon sole are more abundant in deeper, colder and more saline waters than either plaice or Dover sole and are more commonly found at depths of between 20 and 200m. Lemon sole spawn in spring and summer in waters down to 100m depth. The eggs are released into the water column and hatch into planktonic larvae after five to eight days. The larvae then settle on the seabed and metamorphose into flat fish, with the eyes migrating round to the right side of the head. Juveniles can be found in rocky areas. Males reach maturity at 3-4 years and females at 4-6 years at between 20-30 cm in length. They may live for up to 23 years and reach up to 65cm long and weigh 3kg.

Management Body

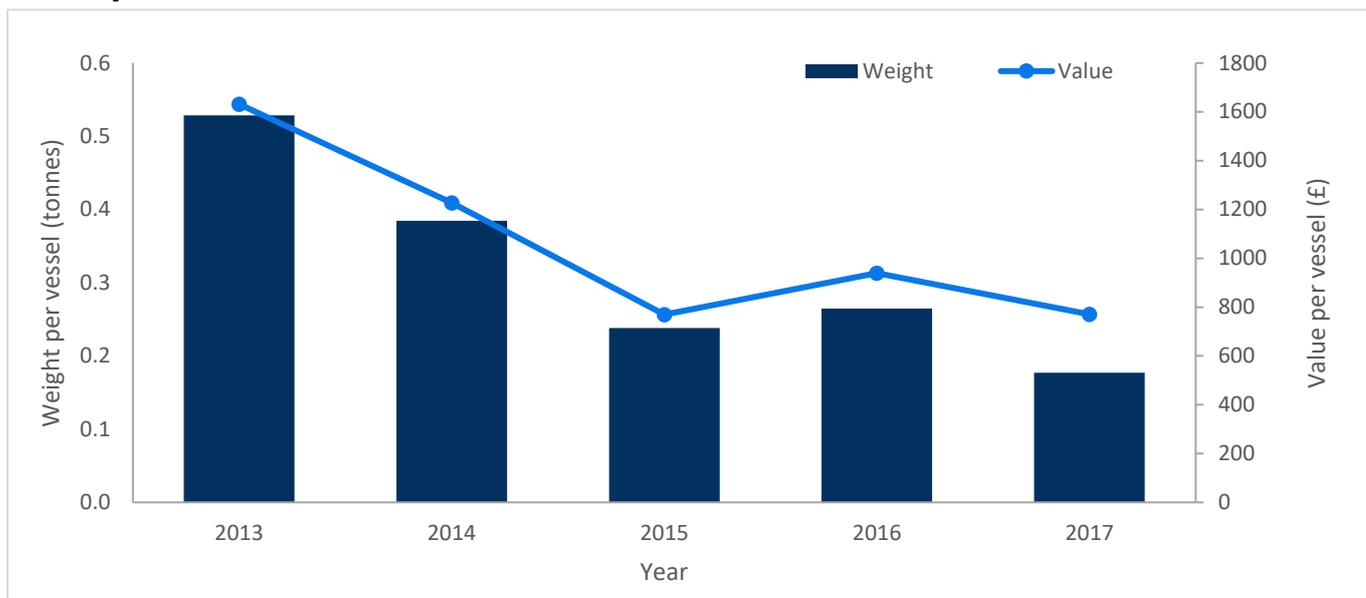


Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Lemon sole are found within the Sussex IFCA district during the summer, although at other times are found largely outside of the 6nm limit and are landed in Sussex.

Fishing Information (Sussex ports)

Landings value	Average £155,234/year 2013-2017, 12 th highest
Landings volume	Average 47 tonnes/year 2013-2017, 15 th highest
Fishing pressure	Caught mainly in trawls as bycatch of plaice fisheries. Targeted fisheries use set nets. 127 vessels recorded landing this species in Sussex during 2017.
Market factors	Most of the European catch is landed in the UK. They have a high market value.

Catch per unit effort



The average weight and value of lemon sole landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	No lemon sole specific management but regulations for netting and trawling.
EU legislation	No EU minimum conservation reference size. A Total Allowable Catch quota has been established as combined species with witch, but it does not cover the whole ICES assessment area and does not cover the Sussex IFCA district.

Fishery Sustainability

Lemon sole are often caught as part of a mixed flatfish fishery and share an EU total allowable catch (TAC) quota with witch (*Glyptocephalus cynoglossus*) in some ICES areas. The stock is considered to be stable with fishing mortality below maximum sustainable yield (MSY). Lemon sole seine netted from the North Sea and Eastern English Channel is considered by the Marine Conservation Society to be a sustainable fishery. However, discards are estimated at around 28% of the total international catch weight and the species is data deficient.

Seafish score the status of the lemon sole stock in the eastern English Channel (ICES VIIId) at low risk with levels of landed biomass consistent with sustainable harvesting. Lemon sole are a fast growing and early maturing species, which makes them relatively resilient to fishing pressure.

Key Issues

- Combined TAC quota prevents effective management for each species individually.
- Mixed fisheries advice from ICES could result in overexploitation of one species, whilst another is still under quota.
- Limited data on key biological stages in order to map essential fish habitats.

Potential future work

- Collect data on lemon sole as a single species fishery in order to be able to carry out targeted management.
- Consider setting a minimum conservation reference size.
- Continue to conduct small fish surveys to monitor abundance of juveniles.
- Monitor catch per unit effort to assess if population in decline.



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Gurnard spp.

Red Gurnard (*Chelidonichthys cuculus*)

Tub Gurnard (*Chelidonichthys lucerna*)

Grey Gurnard (*Eutrigla gurnardus*)



Biological Information

There are three species of gurnard caught commercially in UK waters. Often they are recorded simply as gurnard, with no distinction made between the species.

The red gurnard grows up to 50cm long and reaches sexual maturity at around 28cm. The red gurnard is found in depths of 20 to 250m. Off the coasts of Anglesey, their lifespan is approximately seven years, but individuals of 21 years have been recorded in France. Red gurnards usually prefer sand or gravel substrate but have been found on a variety of seabed types. They normally feed on shrimps and swimming crabs but will also feed on fish and other invertebrates. Spawning for this species occurs in the summer and eggs hatch after 2 weeks.

The tub gurnard can reach a maximum length of 75cm, but more commonly 50-60cm. They are relatively abundant in inshore waters, at depths of 20 to 150m. Juveniles are common in shallow water <20m. Tub gurnards are usually found in small shoals over muddy substrates. Their diet is predominantly formed of a variety of crustaceans and bottom-dwelling fish. Tub gurnards are generally more piscivorous than the other species of gurnard. Spawning of tub gurnard occurs between May and July.



The grey gurnard normally reaches 30cm in length but can reach 45cm. They live for 6-7 years. Sexual maturation occurs after two to three years. The grey gurnard is generally more abundant offshore than other gurnard species, usually over sandy substrates. They prey on crustaceans and small fish species (primarily gobies, flatfish, young herring and sand eels). Adults migrate inshore during the spring and summer months to feed and breed and the juveniles are frequently caught inshore and in estuaries.

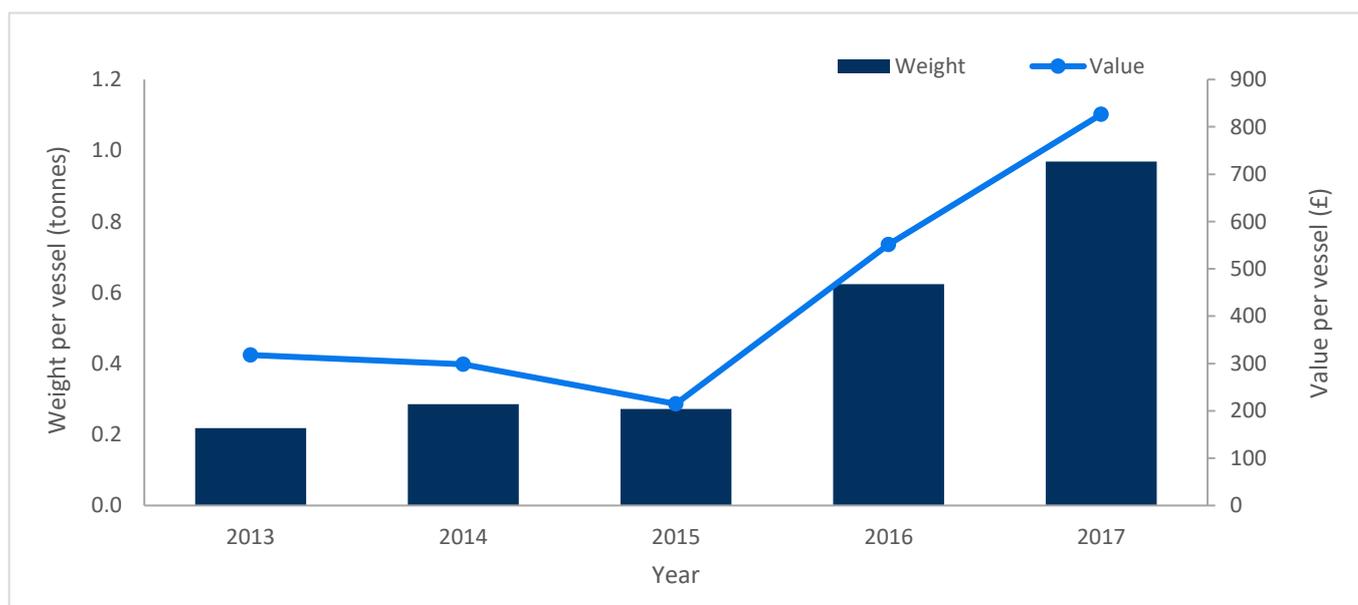
Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Management of gurnards in the district could help to protect juveniles and spawning females found closer inshore. Collaborative work with national and international organisations may be required to manage the whole gurnard stocks.

Fishing Information (Sussex ports)

Landings value	Average £80,458/year 2013-2017, 17 th highest.
Landings volume	Average 86 tonnes/year 2013-2017, 12 th highest.
Fishing pressure	Gurnards are generally targeted with seine nets and towed fishing gears. 174 vessels landed these species in Sussex during 2017.
Market factors	Red gurnards are targeted for human consumption and have a reasonably high market value. Tub gurnards are landed for human consumption but are also used as bait in pots. Grey gurnards are not targeted for food, but often caught as bycatch. Used most frequently as pot bait.

Catch per unit effort



The average weight and value of gurnard landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	No gurnard specific management but netting and trawling regulations.
EU legislation	No EU minimum conservation reference size (MCRS). No EU total allowable catch (TAC) quota.

Fishery Sustainability

Catches of gurnards are often not identified to a species level and catches are reported as a 'mixed generic gurnard catch'. This creates a lack of certainty to actual numbers landed at a species level and makes them difficult to manage as separate species with different biology and ecology. Although no specific management for gurnards is currently in place, their populations have been afforded some protection from the management plans of other fisheries such as the long-term Atlantic cod plan, the long-term western English Channel sole plan and the long-term plaice and sole plan for the North Sea. Across the European range of gurnards, the North Sea (ICES IV) records the most significant landings at 52% of total landings (1575 tonnes), while the eastern English Channel (ICES VIIId) is second at 37% (1113 tonnes). Tub gurnards are often caught as bycatch, and this species is thought to have a relatively low resilience to fishing pressure. However, red gurnard stocks have increased in many places.

Some catches of gurnard are either discarded or used for pot and trap bait. The red and tub gurnards are listed on the IUCN Red List as of Least Concern, while the grey gurnard has not yet been assessed.

Key Issues

- A lack of species specific data could result in the overexploitation of one or more species.
- Difficulty targeting specific species gurnards are caught in mixed fisheries.
- Large amount caught as bycatch and either discarded or kept as bait. These are not always recorded, resulting in inaccurate catch statistics.
- Large growth in the CPUE within the Sussex IFCA district over recent years, as the demand has increased.

Potential future work

- Collect data on stocks of individual species to establish their relative population statuses.
- Continue collecting data during small fish surveys to increase the understanding of the abundance and distribution of these species, particularly the juveniles.
- Consider appropriate, proportionate management measures.
- Help fishers identify and record the separate gurnard species.
- Investigate discard survivability of gurnards.
- Consider protecting nursery areas.



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Anglerfish

Lophius piscatorius



Biological Information

Also known as monkfish. They are found at depths of between 20 and 1000m. They live near the seabed and prefer sandy or muddy substrates but can also be found over rocks. Anglerfish live for over 20 years and can grow up to 2m long. The males mature at 40 cm long at four years old and the females mature at 70 cm long at six years old. Monkfish operate as ambush hunters, often lying half buried in the sand waiting for prey. The prey is attracted by a protrusion of flesh situated above the mouth which operates as a lure. The anglerfish then rapidly opens its mouth and its prey are sucked into the mouth by the sudden inflow of water. Anglerfish feed mainly on other fish and can swallow prey almost the same size as themselves. In the UK, spawning occurs during May and June. Anglerfish have a high fecundity producing up to a million eggs per year. The eggs are held together in a 10m long band of mucus and are carried on ocean currents. It is thought that anglerfish undertake long migrations, the details of which are unknown. The adults mainly live offshore in deep water. The juveniles inhabit more coastal areas.

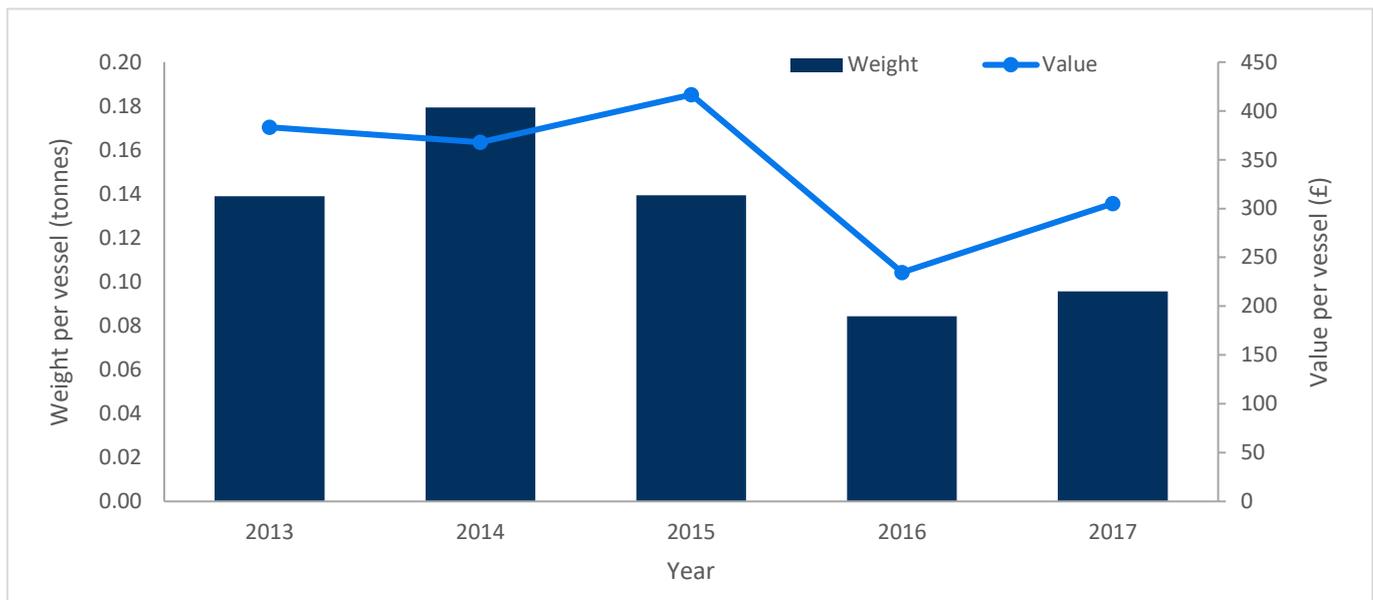
Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Anglerfish have a low abundance within the district as they are primarily a deep-sea species, however some juveniles can be found inshore. Sussex IFCA bylaws are limited to the Sussex IFCA District and as the majority of anglerfish occur outside the district, collaborative work with national and international organisations is required.

Fishing Information (Sussex ports)

Landings value	Average £25,456/year 2013-2017, 21 st highest
Landings volume	Average 9 tonnes/year 2013-2017, 25 th highest
Fishing pressure	Over 50% of landed anglerfish are caught in trawls, with some catches occurring in dredges and gillnets. 83 vessels reported landing anglerfish in Sussex during 2017.
Market factors	Sold in the UK and in Europe with a reasonable market value.

Catch per unit effort



The average weight and value of anglerfish landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	UK recreational anglers have a minimum landing catch weight of 16lbs (7.3kg).
EU legislation	EU Total allowable catch (TAC) quota (was 33,516 tonnes in 2017).

Fishery Sustainability

There is a significant lack of data for this species as it occurs in deep water. Commercial fisheries generally occur offshore and are largely unregulated. When anglerfish are caught as bycatch in towed fishing gears, they have a high discard mortality as they are not able to survive the pressure changes when they are brought up to the surface. Anglerfish operate at a high trophic level and are believed to be important predators. Anglerfish are heavily targeted by bottom trawl fisheries in the North Atlantic where overfishing and habitat destruction have been documented. Since the mid-1990s, the fishery has expanded into deeper waters, areas believed to have previously been a refuge for adult monkfish. An International Council for the Exploration of the Seas (ICES) review of this fishery has recommended a moratorium. Even when they are not targeted, commercial overfishing for other fish species and habitat damage from trawling practices are likely to adversely affect the population. Anglerfish are also slow growing and late maturing, this could further increase their vulnerability to fishing pressure. However, the population is currently considered stable by the IUCN and is classified as Least Concern.

Key Issues

- Anglerfish are targeted by largely unregulated and difficult to police deep-sea fisheries.
- The large size at maturity of anglerfish means high numbers of juveniles are caught.
- Anglerfish that occur as bycatch are unlikely to survive being discarded as they have a very high discard mortality rate.
- Limited direct management that can be undertaken in Sussex IFCA District.

Potential future work

- Collect data on number of anglerfish being caught including location and fishing method, particularly as bycatch.
- Continue to conduct small fish surveys to collect data on juveniles.
- Consider protecting nursery areas within the District.
- Consider implementing a minimum conservation reference size. The Marine Conservation Society recommends 70cm total length.
- Work with other organisations to sustainably manage anglerfish.



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Whiting

Merlangius merlangus



Biological Information

Whiting are members of the cod family. They can live for up to 20 years. They reach sexual maturity at two to four years old at approximately 30 cm long. Whiting can reach a maximum length of 70 cm, although this is uncommon with many only reaching a size of 30-40 cm long. Whiting are a wide ranging species that forms large shoals both in midwater and near the seabed, occurring at depths of between 10 and 200m. Whiting prefer softer substrates such as sand and mud. Whiting spawn between January and July with spikes in their breeding activity during the spring. They are a highly fecund species with large females producing up to a million eggs per spawning event. Juveniles inhabit inshore nursery areas for their first year and then they migrate to deeper waters offshore. Young whiting have also been seen congregating underneath jellyfish, using the stinging tentacles to protect themselves from potential predators. The diet of whiting is predominantly formed of crustaceans, molluscs and small fish. Whiting themselves are often a major component of the diet for other predatory fish and marine mammals.



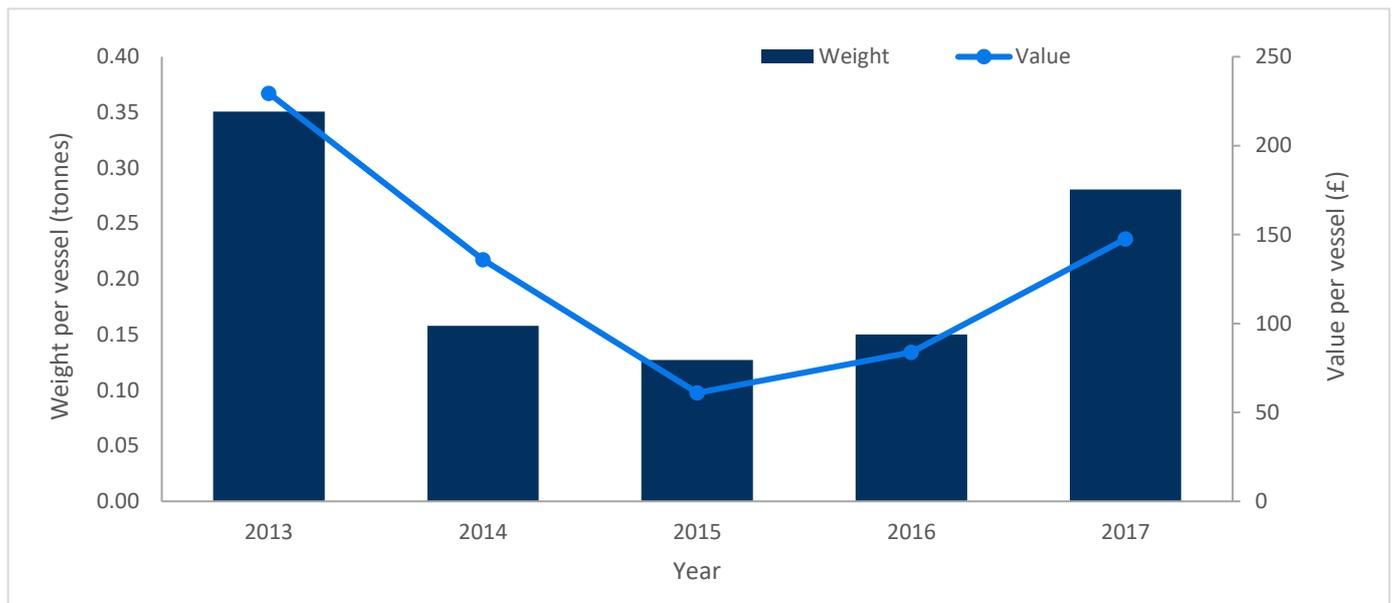
Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Whiting are commonly found within the Sussex IFCA district during the autumn and winter months.

Fishing Information (Sussex ports)

Landings value	Average £21,003/year 2013-2017, 22 nd highest
Landings volume	Average 34 tonnes/year 2013-2017, 16 th highest
Fishing pressure	Whiting are mainly caught in seine nets and trawls and to a lesser extent in other types of net. 158 vessels reported landings in Sussex during 2017.
Market factors	Previously used for fishmeal and pet food, but increasingly being marketed for human consumption.

Catch per unit effort



The average weight and value of whiting landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	No whiting specific management but regulations for netting and trawling
EU legislation	Total allowable catch (TAC) quota restrictions. ICES subareas IV North Sea and VIIId eastern English Channel are managed as one stock area. The EU minimum conservation reference size (MRCs) is 27cm. A minimum mesh size of 80mm is applied to gears specifically targeting whiting.

Fishery Sustainability

According to ICES assessments, management measures have not been fully effective in maintaining spawning stock biomass at historic levels. However, the stock is considered to be stable. Discards are high in some areas.

Stocks of the main species (cod, haddock, plaice, saithe, sole and whiting) are assessed annually by ICES, based on extensive research surveys, both fishery-dependent (catches, landings, fishing effort, age structure of catches) and fishery-independent data (scientific surveys).



Key Issues

- Stock boundaries are uncertain. There are doubts over whether the areas managed by ICES as discrete populations are really separate populations and so managing them in this way would be ineffective.
- Spawning stock biomass is considered to be low.
- Whiting have a high discard mortality rate.
- MCRS size is 27cm long but whiting do not mature until they are 30cm.



Potential future work

- Further research on the migrations of whiting to/from different areas of the North Sea and English Channel to determine which populations are discrete, and hence, manage them accordingly.
- Increase minimum conservation reference size to 30cm to reflect size at sexual maturity.
- Restrict fishing activity during whiting spawning period.
- Protect whiting nurse areas.
- Increase gear selectivity to decrease unwanted whiting bycatch.

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Mackerel

Scomber scombrus



Biological Information

Mackerel are a pelagic species that live near the surface of the sea in large shoals. During the summer months, they are found closer inshore, moving offshore into deeper water in the winter. Juveniles can be found closer to the coast than adults. Mackerel prefer water temperatures of 8°C or warmer.

Mackerel spawning takes place in open water from spring to early summer. A female can produce as many as 450,000 eggs per season. Two key breeding aggregates of mackerel occur; one in the central North Sea and the other to the west of the British Isles. Their eggs, yellow in colour, are spherical and float to the surface of the sea. Mackerel can live for up to 20 years and reach a maximum size of 60 cm. However, this large size is unusual, with most adults being 30-40 cm long. Sexual maturity is reached at the age of two at 25-37 cm long. Mackerel predominately feed on zooplankton and smaller shoaling fish species such as sprats or herring.



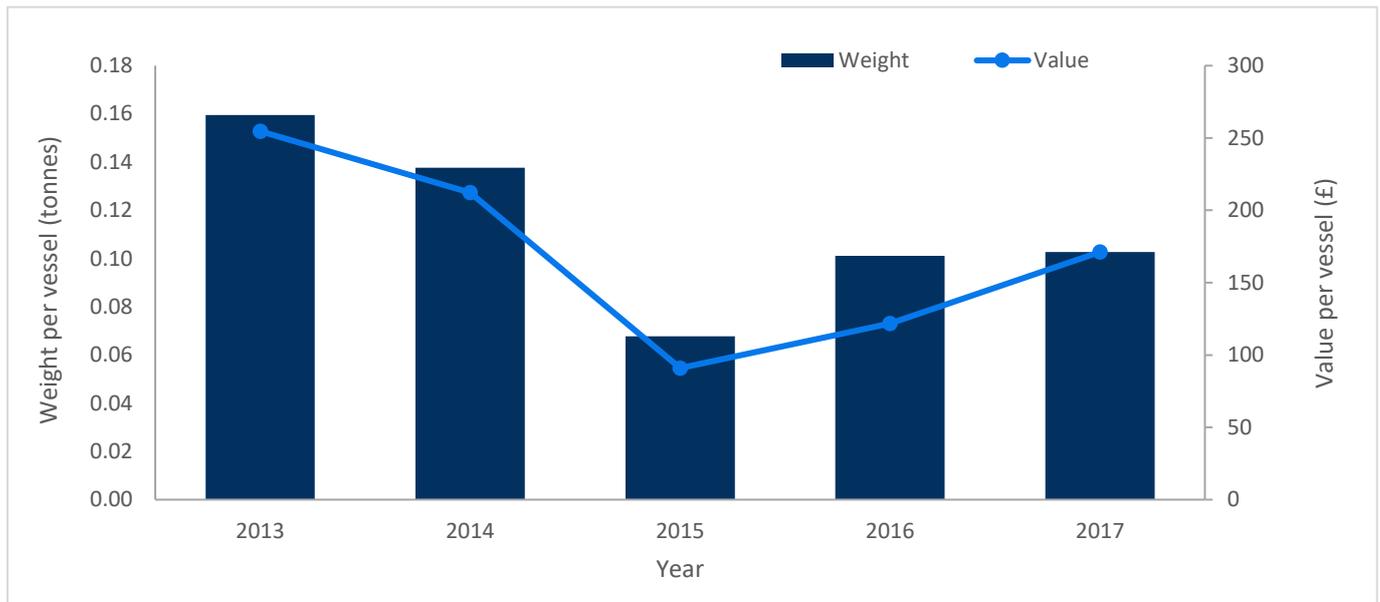
Management Body

Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Adult mackerel can be found in the district, mainly in the summer. As a migratory species, they are difficult to manage within the Sussex IFCA district alone.

Fishing Information (Sussex ports)

Landings value	Average £29,173/year 2013-2017, 20 th highest
Landings volume	Average 19 tonnes/year 2013-2017, 22 nd highest
Fishing pressure	Mackerel are targeted commercially with nets and trawls. Mackerel are also targeted by recreational fishers. The majority of mackerel landings by both commercial and recreational fishers occur between June and September. 158 vessels reported landing Mackerel in Sussex during 2017.
Market factors	High market value. They are sold fresh, frozen, canned or smoked.

Catch per unit effort



The average weight and value of mackerel landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	No mackerel specific management, but netting and trawling regulations.
EU legislation	Minimum conservation reference size (MRCs) of 20cm total length (30cm in the North Sea). Total Allowable Catch (TAC) quota for all Northeast Atlantic Fisheries.

Fishery Sustainability

Mackerel are 25-37cm long before they are sexually mature, meaning that some are likely to be caught before they have reproduced. However, they are highly fecund, producing many eggs each year. They mature at two years old and live for up to 20 years, so there are many potential years for reproduction.

There is relatively little bycatch of non-target species in this fishery, as mackerel are a pelagic, shoaling species.

However, there has been overfishing over the past few decades. Their shoaling nature makes it easy for large numbers to be caught. The North Sea stock has failed to recover from extremely heavy exploitation during the 1970s.

The Cornwall Box is an area off the southwest coast of England that is a known juvenile nursery area. It supported a very large fishery prior to its introduction in the early 1980s, after which the only permitted fishing in this area is by hand-liners.



The east Atlantic Mackerel stock is currently considered to comprise three main unit stocks (southern, western and North Sea), with variable proportions of these three mixing in the northerly feeding grounds. The southern component spawns in Spanish and Portuguese waters, and the western component spawns in the Bay of Biscay and northwards around Ireland and west/northwest of the U.K. Stocks are considered to be recovering.

Key Issues

- Despite being a highly migratory species, there is no international management in place to protect the stock.
- Several populations in the Northeast Atlantic are all managed as one.
- Minimum conservation reference size (20cm) is below size at maturity. At 37cm, 90% of the females are ready to breed.
- High market demand drives fishing pressure.

Potential future work

- Work in collaboration with other organisations to carry out stock assessments and establish an international management plan.
- Conduct research into the migration patterns of discrete mackerel populations and determine the extent to which mackerel occur in the Sussex IFCA District.
- Consider increasing the minimum conservation reference size.
- Consider protecting nursery areas.
- Consider restricting fishing activity during spawning.
- Promote sustainable mackerel fishing methods.



References and Further Information

Maitland, P.S. and Herdson, D. *Key to the Marine and Freshwater Fishes of Britain and Ireland*. Environment Agency

Henderson, P. 2014. *Identification Guide to the Inshore Fish of the British Isles*. Pisces Conservation Ltd.

Seafish: <http://www.seafish.org/rass/index.php/profiles/northeast-atlantic-mackerel-in-southern-western-waters-and-north-sea-purse-seine/>

Seafish (<http://www.seafish.org/rass/index.php/profiles/northeast-atlantic-mackerel-in-southern-western-waters-and-north-sea-pelagic-otter-trawl/?ps=management>)

Herring

Clupea harengus



Biological Information

Herring may grow up to 45cm in length and weigh as much as 1.1kg. They reach sexual maturity at 3-5 years old (20-24cm long) and can live for up to 20 years. Herring form distinct breeding stocks, known as races, categorised by their separate spawning grounds and some distinguishing features. The race found in Sussex is referred to as the Downs group and spawns from November - February. Eggs are shed over the bottom of the sea floor and form a mat over the gravel in estuaries and coastal areas. Each female lays 20,000-40,000 eggs per year. The eggs stick to the seabed and take 1-3 weeks to hatch. Juveniles under one year old form large schools, especially inshore, sometimes with juvenile sprat. Herring feed on small fish, copepods and other zooplankton.

They are a key link in the food chain, eating plankton and being prey for seabirds, larger fish and marine mammals. Herring are one of the most abundant fish in the world and can form large shoals estimated to contain up to 4 billion individuals.



Management Body

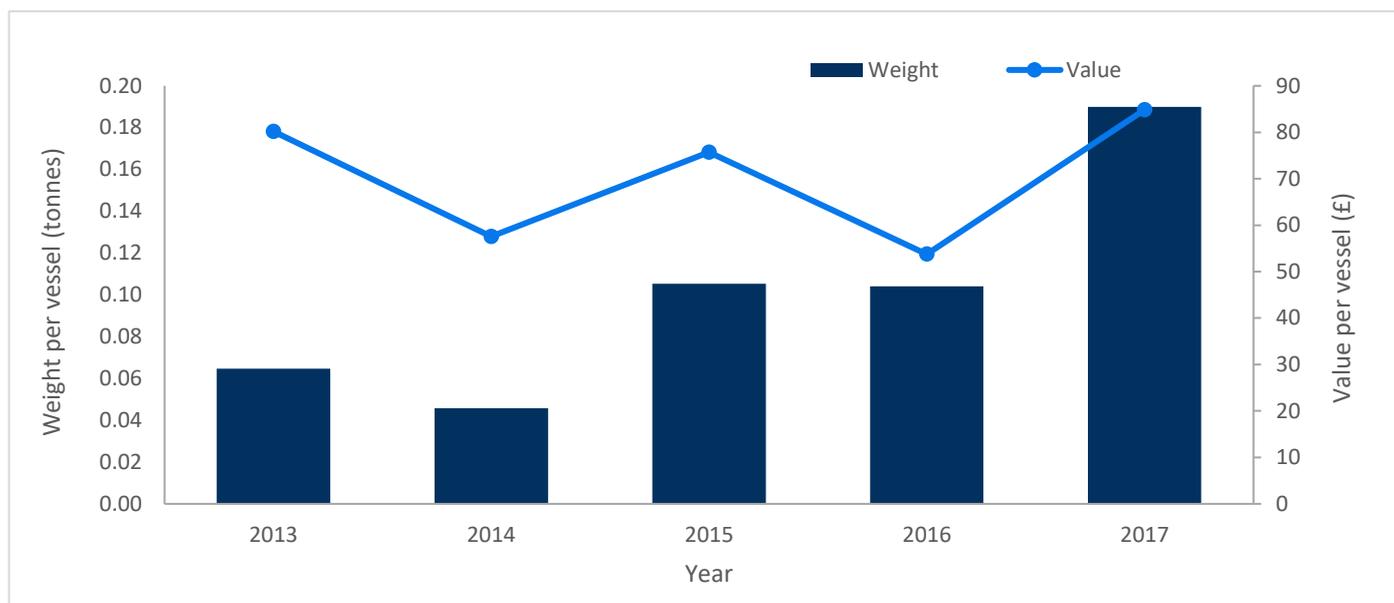
Sussex IFCA is a regulatory body responsible for marine conservation across a 1,700km² area, spanning Chichester Harbour to Rye and out to 6 nautical miles. Herring can be seen in Sussex from November to February to spawn and juveniles are found inshore during the summer.

Fishing Information (Sussex ports)

Landings value	Average £7,119/year 2013-2017, 24 th highest
Landings volume	Average 10 tonnes/year 2013-2017, 24 th highest
Fishing pressure	Caught mainly in nets and by some trawls.
Market factors	High market value. Popular for eating, although not as much as a couple of decades ago. Large catches can quickly swamp the market, reducing the price. Some market as food for zoos and aquariums.



Catch per unit effort



The average weight and value of herring landed in Sussex per vessel per year (from MMO landings data).

Management Measures

Local management	No herring specific management but trawling and netting regulations
EU legislation	Minimum conservation reference size of 20cm total length. Total Allowable Catch (TAC) quota.

Fishery Sustainability

Overfishing over the course of the 20th century has reduced the abundance of herring, although currently stock levels are good. Herring are managed as a number of different stocks. The stock that includes Sussex is the autumn spawning North Sea, Skagerrak and eastern English Channel stock. Although the herring which breed in Sussex coastal waters (mainly between Beachy Head and Hastings) may be a separate race. This stock is considered to be a safe level. Spawning stock biomass fluctuates but is thought to be at a reasonably high level. However, there has been low recruitment in recent year, raising concern for future stock levels. The Total Allowable Catch quota is higher than that suggested by scientific advice. The stock assessments are based on fishery dependant and independent data, and there are low levels of concern about unaccounted catches.

Herring fisheries are generally selective and have low levels of unwanted bycatch. Pelagic trawls (trawls in the water column, not touching the seabed) and nets have low levels of seabed disturbance.

Key Issues

- Herring spawn close inshore and lay their eggs on the seabed. This may lead to spawning aggregations being targeted and their eggs may be disturbed by bottom towed fishing gear, aggregate extraction, maintenance dredging, coastal pollution and other anthropogenic impacts.
- Herring form large shoals. Whilst this means that fishing can be targeted with little bycatch, it could lead to overfishing.
- Juvenile herring form shoals in coastal waters where they may be susceptible to impacts from bottom towed fishing gear, pollution and other anthropogenic disturbances.

Potential future work

- Find out where herring are spawning in the Sussex IFCA district.
- Find out more about the race that spawns in Sussex coastal waters and how distinct they are from other herring races.
- Find out if herring which spawn in Sussex coastal waters return year after year, and if the young spawned here, return when they are adults.
- Protect spawning and nursery areas.
- Support local, sustainable fisheries for herring.



References and Further Information

Maitland, P.S. and Herdson, D. *Key to the Marine and Freshwater Fishes of Britain and Ireland*. Environment Agency

Henderson, P. 2014. *Identification Guide to the Inshore Fish of the British Isles*. Pisces Conservation Ltd.

Seafish. Risk Assessment for Sourcing Seafood (RASS) – Herring. <https://www.seafish.org/risk-assessment-for-sourcing-seafood/full-search?keyword=&species=91>

Appendix 1: Species-Specific Fisheries Information Reports – Prioritisation Tool

Prioritisation Tool Criteria

The following six criteria were decided upon as indicators of the status of each species within the Sussex IFCA district:

1. Landings volume (MMO live weight caught (tonnes) into Sussex ports, annual average 2011-2015 and order)
2. Landings value (MMO landings value into Sussex ports, annual average 2011-2015 and order)
3. Endangered, threatened or protected (ETP) status, general stock status and vulnerability
4. Fishing gear pressure (% gear type, MMO landings data 2011-2015 and local knowledge, also average number of vessels landing the species per year 2011-2015)
5. Management measures in place
6. Time in Sussex IFCA district

Scoring Process

Each criteria for each species was given a score of 1-5 and the total for each species was used to assess the species' relative priority level.

- **Landings volume** → Species with highest landings volume given the highest score.
- **Landings value** → Species with highest landings value given the highest score.
- **ETP and stock status, vulnerability** → Species with endangered, threatened or protected status and with poor stock status and high vulnerability given the highest score.
- **Fishing gear pressure** → Species with the most number of fishing methods and vessels catching them given the highest score.
- **Management measures** → Species with little management in place given the highest score.
- **Time in Sussex IFCA district** → Species that are in Sussex IFCA district for entire live cycle given the highest score.

Species selection

The 21 species considered in *Navigating the Future* were compared to the list of species included in the MMO landings data 2011-2015. The species with the highest 20 live weight and highest 20 value were considered for inclusion on the priority list. These species were assessed for the order in which the management plans will be developed.

The following 25 species were included in the prioritisation tool (alphabetical order):

Species	Navigating the Future	Top 20 weight	Top 20 value
Bass	✓	✓	✓
Black seabream	✓	✓	✓
Brill	✓	✓	✓
Cod	✓	✓	✓
Cuttlefish	✓	✓	✓
Dover sole	✓	✓	✓
Edible crab	✓	✓	✓
Herring	✓		
Grey mullet			✓
Gurnard		✓	✓
Lemon sole	✓	✓	✓
Lesser spotted dog fish		✓	
Lobsters	✓	✓	✓
Mackerel	✓		
Monks or anglers			✓
Plaice	✓	✓	✓
Pouting (bib)		✓	
Red mullet	✓	✓	✓
Scallops	✓	✓	✓
Smoothhound	✓	✓	✓
Squid		✓	✓
Thornback ray		✓	✓
Turbot	✓		✓
Whelks	✓	✓	✓
Whiting	✓	✓	

Each of the 25 species is listed below (in alphabetical order) with summary information for each indicator and the score (1-5) in blue.

Species	Landings volume (tonnes)	Landings value (£)	ETP and stock status, vulnerability	Fishing gear pressure	Management measures	Time in SxIFCA District
Bass <i>Dicentrarchus labrax</i>	240 7 th highest	1,655,190 4 th highest	Stock has been in severe decline over past few years. Late maturity means recovery could be slow.	Commercial: 69% nets, 17% trawls, 11% hooks and lines. Recreational: rod and line. 251 vessels, highest.	Minimum size: 42cm, bag limit for recreational fishing, EU commercial catch limits, Bass Nursery Area protections.	Juveniles stay inshore for first few years. Adults in district late spring until late autumn.
	3.83	4	5	4	5	2
Black Seabream <i>Spondyliosoma cantharus</i>	100 10 th highest	186,005 13 th highest	Breeding black seabream is a conservation feature of Kingmere MCZ. Stock status unknown. Specific breeding habits make it vulnerable.	Commercial: 93% trawls (mainly pair), 5% nets. Recreational: rod and line, private and charter vessels. 153 vessels, 18 th highest.	Byelaw in Kingmere MCZ to protect spawning stock.	Juveniles stay inshore for first 2 years. Adults breed in District April-June, some stay until late autumn.
	3.67	4	3	4	2	5

Species	Landings volume (tonnes)	Landings value (£)	ETP and stock status, vulnerability	Fishing gear pressure	Management measures	Time in SxIFCA District
Brill <i>Scophthalmus rhombus</i>	30 21 st highest	135,560 15 th highest	Stock status data limited. Potentially vulnerable to spawning habitat loss due to trawling methods. Possibly future increased interest from food industry.	45% trawls, 43% nets. Often targeted alongside turbot and rays. 217 vessels, 5 th highest.	Total allowable catch with turbot in some areas but not Sussex.	Remain in Sussex area. Juveniles in the shallows, mature fish in deeper water.
3.00	1	3	2	4	5	3
Cod <i>Gadus morhua</i>	110 9 th highest	201,650 10 th highest	Slight increase in stock level since 2006 but recruitment levels remain low. Vulnerable from overfishing juveniles.	Commercial: 69% nets, 27% trawls. Recreational: rod and line and netting. 224 vessels, 4 th highest.	1. EU quota allocations, 2. Minimum size: 35cm. 3. Closed areas 4. Fishing equipment.	Arrive in Sussex area in autumn, spawn inshore in winter, move further offshore in spring.
3.5	4	4	4	4	1	4
Cuttlefish <i>Sepia officinalis</i>	265 6 th highest	489,090 8 th highest	Good/stable stock levels. (Potentially vulnerable if eggs removed in fishing process.)	62% traps/pots, 19% nets, 15% trawls. 211 vessels, 7 th highest.	Shellfish permit bylaw: pot number restrictions.	Adults breed inshore in SxIFCA district in May-July then die. Juveniles found inshore.
3.50	4	4	1	4	5	4

Species	Landings volume (tonnes)	Landings value (£)	ETP and stock status, vulnerability	Fishing gear pressure	Management measures	Time in SxIFCA District
Dover Sole <i>Solea solea</i>	505 3 rd highest	3,208,495 2 nd highest	Hastings fleet has MSC certification. Stable stock.	Commercial: 58% nets, 40% trawls. Recreational: rod and line. 242 vessels, 2 nd highest.	Minimum size: 24cm. 2017 EU TAC 2769t.	Moves into District to spawn in spring, moves offshore in autumn.
3.67	5	5	1	4	4	3
Edible crab <i>Cancer pagurus</i>	405 5 th highest	491,880 7 th highest	Moderate stock level. Exploitation at MSY levels.	89% traps/pots, 9% nets. 183 vessels, 12 th highest.	Minimum size: 140mm. Shellfish permit bylaw: pot number restrictions, escape hatches. No female berried to be landed.	In June/July, females move inshore to moult and breed. Females migrate west, males migrate less.
3.00	5	4	2	2	1	3
Herring <i>Clupea harengus</i>	5 32 nd highest	7,875 32 nd highest	Hastings fleet has MSC certification. Good stock levels. Specific spawning habitat.	86% nets, 13% trawls. 106 vessels, 24 th highest.	Minimum size: 20cm. 2017 TAC 11,375t (52,977t directed fishery). No activities near spawning area/time.	In Sussex October-December to spawn. Juveniles seen inshore during summer.
2.00	1	1	1	2	3	3
Grey mullet <i>Liza aurata,</i> <i>Liza ramada,</i> <i>Chelon labrosus</i>	20 27 th highest	46,940 20 th highest	Lack of data. Slow growing/ late maturing. Good stock levels.	51% nets, 27% trawls, 20% seine nets. 154 vessels, 17 th highest.	Min landing size 33cm (Kent & Essex, Southern IFCAs).	Spawn at sea, move north with warmer waters. Feed inshore in shoals. Juveniles in District.
3.17	1	2	2	2	5	3

Species	Landings volume (tonnes)	Landings value (£)	ETP and stock status, vulnerability	Fishing gear pressure	Management measures	Time in SxIFCA District
Gurnard <i>Chelidonichthys cuculus,</i> <i>Chelidonichthys lucerna, Eutrigla gurnardus</i> 2.33	90 12 th highest 3	91,640 17 th highest 2	Lack of data. Often discarded species. Early maturing, fast growing. 2	47% seine nets, 42% trawls, 11% nets. 201 vessels, 8 th highest. 4	No EU minimum size. Maximum annual landings 3618t (recommended by ICES). 5	Winter in deeper waters, follow smaller fish inshore to feed and remain to breed from Jan to Aug - species differ. 3
Lemon Sole <i>Microstomus kitt</i> 2.50	65 15 th highest 3	189,115 12 th highest 3	Often bycatch, data limited. Stock considered stable. Fast growing, early maturing. 1	85% trawls, 10% nets. 171 vessels, 14 th highest. 3	No EU minimum landing size. Minimum net mesh size. ICES recommend catch limits of 5655t. TAC as combined species. 4	In the District during the summer, but largely outside of the 6nm, landed into the district. 1
Lesser spotted dog fish <i>Scyliorhinus canicula</i> 3.17	125 8 th highest 4	34,915 23 rd highest 1	Frequently discarded species. Catch and stock data often not to species level. Stock levels considered stable. 2	66% trawls, 32% nets. 146 vessels, 19 th highest. 2	No EU minimum size. No TAC ICES recommendation 5	Females move inshore to spawn and tend to remain within one region, males aggregate in coastal waters in winter. 5

Species	Landings volume (tonnes)	Landings value (£)	ETP and stock status, vulnerability	Fishing gear pressure	Management measures	Time in SxIFCA District
Lobster <i>Homarus gammarus</i>	80 13 th highest	754,390 5 th highest	Fishing is within but close to limits. Stock levels considered stable.	Commercial: 92% traps/pots, 7% nets. Recreational: traps/pots, divers. 187 vessels, 10 th highest.	Minimum size: 87mm. Shellfish permit byelaw, escape hatches in pots, pot number limits. No berried females to be landed.	Spend their life in District, little movement.
3.17	3	5	1	3	2	5
Mackerel <i>Scomber scombrus</i>	25 24 th highest	42,590 21 st highest	Hastings fleet has MSC certification. Stocks recovering.	Commercial: 52% nets, 21% trawls, 21% seine nets. Recreational: rod and line. 192 vessels, 9 th highest.	Minimum size: 20 cm. 2017 EU TAC 407,517t.	Spend time in IFCA area when adult, no spawning or juveniles found in area.
2.17	1	1	2	4	4	1
Monks or anglers <i>Lophius piscatorius</i>	25 25 th highest	53,065 18 th highest	Stock levels currently within limits. Vulnerable as slow growing, late maturing. Risk of bycatch.	65% harvesting machines, 32% trawls. 79 vessels, 25 th highest.	MCS recommend 70cm. EU 2017 TAC all anglerfish 33516t. UK Shore (recreational) caught minimum weight 16lb (7.3kg).	Spawn in deep water at sea. Small numbers will come into inshore as juveniles. Very small numbers in IFCA area.
2.33	1	2	4	2	4	1

Species	Landings volume (tonnes)	Landings value (£)	ETP and stock status, vulnerability	Fishing gear pressure	Management measures	Time in SxIFCA District
Plaice <i>Pleuronectes platessa</i> 3.67	450 4 th highest 5	515,515 6 th highest 4	Stock levels recovering. Mesh size regulation results in high discard rate. 2	Commercial: 61% trawls, 37% nets. Recreational: rod and line. 239 vessels, 3 rd highest. 4	Minimum size: 27cm 2017 EU TAC 100,22t. 4	Juveniles tend to remain inshore coastal areas and move into deeper waters as mature. 3
Pouting (bib) <i>Trisopterus luscus</i> 2.67	40 17 th highest 2	11,965 31 st highest 1	Not commercially fished, other than as bycatch. High discard levels. Lack of stock/ population data. 2	46% trawls, 40% seine nets, 14% nets. 144 vessels, 20 th highest. 3	MCS recommend 21cm. No regulations for MLS. No management measures in place. UK recreational shore minimum 20cm. 5	Spawn Mar-Apr in shallow <50m inshore coastal waters. Smaller fish remain close to coasts, larger fish move further out to sea. 3
Red mullet <i>Mullus surmuletus</i> 2.83	35 19 th highest 2	197,865 11 th highest 3	Catches increasing, mainly juveniles. Stock levels unknown. 2	91% seine net, 6% trawls. 163 vessels, 15 th highest. 2	No minimum landing size. MCS recommend 16cm. ICES catch limit 552t. 5	Spawning occurs 10-55m May-July. Smaller fish remain in shallower waters and larger fish move further out to sea. 3

Species	Landings volume (tonnes)	Landings value (£)	ETP and stock status, vulnerability	Fishing gear pressure	Management measures	Time in SxIFCA District
Scallop <i>Pecten maximus</i>	4785 1 st highest	8,057,675 1 st highest	Stock levels unknown, thought to fluctuate. Catch levels have increased. Vulnerable to loss of habitat resulting from fishing method.	99% dredging. 109 vessels, 23 rd highest.	Minimum size: King 110mm / Queen 40mm, Byelaw preventing scallop dredging within 3nm or during spawning seasons, limits on summer fishing. EU bycatch limit reduced to 5%.	Adults have limited mobility. Spend most of their time in District, mainly in the East of the District.
3.50	5	5	2	1	3	5
Smoothhound <i>Mustelus asterias</i>	90 11 th highest	53,020 19 th highest	IUCN globally Vulnerable, data deficient in UK waters. Bycatch species. Landings increasing.	53% nets, 46% trawls. 156 vessels, 16 th highest.	Recreational minimum size 51cm. No commercial MLS. If targeted, net mesh size of >220mm (EU). ICES recommendation to reduce catch by 4% and landings limit to 3272t.	Shallow water species, move inshore in spring/summer to moult and breed. Also migrate between Dutch Delta and Bay of Biscay.
2.83	3	2	3	2	4	3

Species	Landings volume (tonnes)	Landings value (£)	ETP and stock status, vulnerability	Fishing gear pressure	Management measures	Time in SxIFCA District
Squid <i>Loligo vulgaris</i> , <i>Loligo forbesii</i>	40 18 th highest	184,385 14 th highest	Fishing pressure high and increasing. Frequent bycatch. Stock levels fluctuate on annual basis. Short life-cycle, spawn once. Future increase use as food source.	62% seine nets, 37% trawls. 114 vessels, 22 nd highest.	No EU management measures.	Lay eggs on seabed in inshore waters. Usually between Dec-May but maybe summer breeding in English Channel.
	3.00	2	3	2	5	4
Thornback ray <i>Raja clavata</i>	75 14 th highest	92,485 16 th highest	Long-lived (12 years). Low fecundity. IUCN Near Threatened. Stock decreasing. Catches increasing.	49% trawls, 49% nets. 185 vessels, 11 th highest.	No commercial MLS, recreational 41cm. 2017 EU TAC all skates and rays 1063t. MMO 1t catch limit (= <10m vessel).	Mostly 10-60m deep as adult, moving inshore to breed Feb-Sep, juveniles remain inshore for a year.
	3.50	3	2	5	3	4
Turbot <i>Scophthalmus maximus</i>	30 20 th highest	238,195 9 th highest	IUCN Near Threatened. Decreasing population. Common bycatch with other flatfish.	37% trawls, 34% nets, 28% harvesting machines. 213 vessels, 6 th highest.	MMO catch limit (= <10m) 400kg. No other direct management measures.	Spawn Apr-Aug. Juveniles found in shallow waters in District, remaining for the first year, moving into deeper waters (<80m) as adult.
	3.67	2	4	4	5	3

Species	Landings volume (tonnes)	Landings value (£)	ETP and stock status, vulnerability	Fishing gear pressure	Management measures	Time in SxIFCA District
Whelk <i>Buccinum undatum</i>	2880 2 nd highest	2,365,565 3 rd highest	Size at maturity varies, average of 58mm in Sussex. Unknown stock levels.	98% traps/pots. 136 vessels, 21 st highest.	Minimum size: 45mm. Shellfish permit byelaw: escape holes, pot number limits, riddling.	Spawn in area Nov-Apr. Low dispersion and migration, adults likely to remain in District.
	3.83	5	5	3	1	4
Whiting <i>Merlangius merlangus</i>	55 16 th highest	42,385 22 nd highest	Variable size at maturity; 16-33cm. Catches decreasing, recruitment levels remain low. English channel population unknown.	50% seine nets, 39% trawls, 10% nets. 176 vessels, 13 th highest.	EU 2017 TAC 23527t (areas 4,7d managed as one population). Minimum size: 27cm. Minimum mesh size is 80mm.	More common in area in autumn /winter. Breeds Jan-Jul further out at sea. May come inshore for feeding/ nursery areas. Usually found between 10-200m depth.
	2.33	2	1	2	3	3

Species Specific Fisheries Information Reports

Sussex IFCA

2020

