



Four-Year Conservation and Research Plan 2020-2024



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EXECUTIVE SUMMARY

Sussex IFCA's Four-Year Conservation and Research Plan is one of a suite of plans which have been developed under the Sussex IFCA management framework to complement each other. This management framework, and in turn the plans, are in accordance with the Marine and Coastal Access Act 2009 and associated Defra guidance. They reflect the Authority's purpose and duties, and provide a clear approach to planning both strategically and operationally.

In line with Sussex IFCA's review of its Four-Year Plan for 2020-2024, the Conservation and Research Team reviewed their operational plan for the same planning period. This plan acts as the strategic work plan for the Conservation and Research Team. It is used to identify priorities for the team's activities each year in the Annual Conservation and Research Plans, together with the resources and capabilities required to fulfil these. The framework comprises three themes, relevant to the main duties of the IFCA's: Fisheries, Habitats and Species.

Work conducted by the Conservation and Research Team provides evidence required to inform and monitor management decisions, and is central to Sussex IFCA's activities. It underpins the Authority's work towards sustainable fisheries and a healthy marine environment within the district. The Team's work facilitates achievement of priorities outlined in Sussex IFCA's Four Year Plan, as well as supporting national and international priorities.

Evidence collection can take many forms, from practical fieldwork, to seeking out and collating existing information. The Conservation and Research Team endeavours to fulfil each workstream in the most cost-effective manner, including working with partner organisations to increase efficiency and share resources, and identifying externally funded projects which align with Sussex IFCA's priorities.

High priority	Medium priority	Low priority
<p>Kingmere MCZ management monitoring and review</p> <p>Beachy Head West MCZ management monitoring and review</p> <p>Utopia MCZ management monitoring</p> <p>Pagham Harbour MCZ and SPA management monitoring</p> <p>Beachy Head East MCZ evidence collection, management development and monitoring</p> <p>Selsey Bill and the Hounds MCZ management development and monitoring</p> <p>Solent EMS, Solent and Dorset Coast SPA, Dungeness, Romney Marsh and Rye Bay EMS</p> <p>Kelp restoration</p> <p>Potting activity</p> <p>Trawling activity</p> <p>Intertidal resource gathering</p> <p>Fishing vessel effort</p> <p>Shellfish permit monitoring</p> <p>Lobster</p> <p>Minimum/ maximum size limits</p> <p>Ecosystem approach to fisheries</p> <p>Natural capital and ecosystem services</p> <p>Netting activity</p>	<p>Vessel length byelaw review</p> <p>Fishing instruments byelaw review</p> <p>Scallop closed season byelaw review</p> <p>Centuries of Sussex Seas</p> <p>Elasmobranch evidence</p> <p>Small fish surveys</p> <p>Oysters</p> <p>Whelk</p> <p>Edible crab</p> <p>Seabirds</p> <p>Marine mammals</p> <p>Economic value of local fisheries</p> <p>Stakeholder engagement</p>	<p>Offshore Overfalls MCZ</p> <p>Marine Sites of Nature Conservation Importance</p> <p>Interactive map</p> <p>Wild Coast Sussex</p> <p>Environmental quality and biological limits</p> <p>Loss of critical habitats and associated species</p> <p>Highly protected marine areas (HPMAs)</p> <p>Social and cultural value of local fisheries</p> <p>Inshore Vessel Monitoring System (iVMS)</p> <p>Recreational angling</p> <p>Defining a vision for Sussex seas</p> <p>Sussex sustainable fish guide for consumers</p> <p>Incentivising sustainable practices</p> <p>Gear selectivity</p> <p>Maximising productivity</p> <p>Aquaculture opportunities</p> <p>Impacts of other activities on fishing</p> <p>Endangered threatened protected species</p> <p>Invasive non-native species</p> <p>Environmental DNA</p> <p>Species specific management plans</p> <p>Animal welfare</p> <p>Species and ecosystem interactions</p> <p>Cuttlefish</p> <p>Spider crab</p>

INTRODUCTION

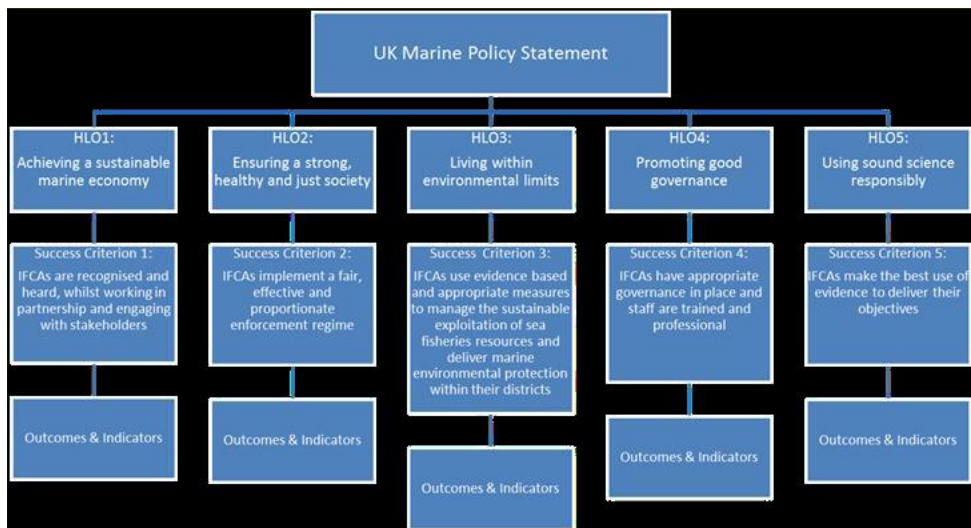
Sussex IFCA collects evidence to support the decision-making processes of the Authority. Work conducted by the Conservation and Research Team provides essential evidence to both inform and monitor management decisions, ensuring the Authority are fulfilling their fisheries management and conservation objectives.

This Four-Year Conservation and Research Plan describes the team’s priority workstreams over the next four years (April 2020 to March 2024), and identifies the resources and capabilities required to fulfil these. It has been created to be in step with the IFCA Four Year Plan, and facilitate the achievement of objectives outlined within this.

As with the Authority’s wider plan for 2020 to 2024, it contains an ambitious body of work, covering a breadth of conservation and research activities. The commitment to working with partners, volunteers and students is clearly illustrated. Such collaboration is central to Sussex IFCA’s way of working, enabling knowledge sharing and the provision of an effective service with limited capacity and resources.

Work conducted by the Conservation and Research Team supports local, national and international priorities. Embedded in work within this Four-Year Conservation and Research Plan is the Authority’s move towards an ecosystem-based approach to fisheries management, which aligns with Government policy. The team’s evidence collection activity supports this approach, providing information to assist the development of management measures that both ensure fisheries are exploited sustainably, and best protect natural capital assets and associated ecosystem services.

The array of work outlined in this plan, enables the Authority to continue to support the Government in achieving the Marine Policy Statement (2011) defined objectives, as outlined below. This is the framework for preparing marine plans and taking decisions affecting the marine environment, contributing to achieving sustainable development in the UK marine area. An ecosystem-based approach is stipulated.



The Conservation and Research Team’s work is also key for the fulfilment of the Authority’s duties with respect to international environmental commitments including Birds, Habitats, Water and Marine Strategy Framework Directives, and the EU Biodiversity Strategy to 2020. Following UK’s departure from the European Union the future policy landscape is uncertain with much European environmental legislation providing the corner stone for existing national marine management.

In addition, achievement of the UN's Sustainable Development Goals (SDGs) are supported through the work outlined in the current Four-Year Conservation and Research Plan, specifically SDG 14: 'Conserve and sustainably use the oceans, seas and marine resources for sustainable development'. Targets 14.2, 14.4 and 14.5 are particularly pertinent:

- 14.2 - By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans;
- 14.4 - By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices, and implement science-based management plans, in order to restore fish stocks in the shortest time feasible;
- 14.5 - By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.

The Authority's national commitments to the delivery of its conservation duties within Marine Protected Areas remains a core priority in the next four-year planning period. This is reflected in the significant workload contained within this plan related to informing, developing and monitoring MPA management, including Marine Conservation Zones and European Marine Sites.

CONSERVATION AND RESEARCH THEMES

The plan framework comprises three themes, relevant to the main duties of the IFCA:

Habitats

Workstreams within this theme aim to understand the distribution and condition of marine habitats across the District. Specific areas of interest are Marine Protected Areas (MPAs) (to support and monitor impacts of management measures) and the Nearshore Trawling Byelaw prohibition area, including where historic kelp beds used to occur. Developing accurate useful maps can be challenging in such a dynamic changeable environment. Partnership working makes the most of local knowledge, expertise, resources and data.

Fisheries

Workstreams within this theme cover a broad range of topics relating to sustainable fisheries. For example, understanding the spatial distribution and effort of different types of commercial and recreational fishing and hand-gathering across the District. Fishing activity data obtained by Sussex IFCA officers is a key priority for all gear types. Understanding the distribution of fishing effort across the District is valuable for identifying any impacts of management, for example recording fixed gear presence in MPAs both pre- and post-management measures. Research under this activity could also include projects looking at landings data – amount caught, location, method, gear, soak time – as well as data that could help inform the condition of the stock. This theme also includes research into the social, cultural and economic value of fisheries. Economic data is often of a sensitive nature but is necessary to assess the impact of management on stakeholder's livelihoods. Society and personal benefits can be more difficult to quantify but should be considered and often align with other objectives.

Species

Workstreams under this theme involve the gathering of information on the biology of species being exploited and information on the type and amount of activity. Biological information could include size/age at maturity, fecundity, reproduction, habitat, feeding, growth rate, spatial/seasonal distribution or sensitivity. Data gathering can help to fill knowledge gaps in the biology of the exploited species as well as building links with commercial and recreational fishermen which will lead to increased shared understanding.

Whilst each workstream fits under one of these three themes, there is some overlap and connectivity between various workstreams and between themes. For example, the 'Intertidal resource gathering' workstream lies under the 'Fisheries' theme, but there are aspects of this workstream under several coastal Marine Protected Area workstreams, all of which sit under the 'Habitats' theme. See the mind map at the end of this document for an overview.

PRIORITISATION TOOL

A prioritisation tool (see table below) was developed to assist in the prioritisation of workstreams to better manage workloads with limited time and resources. All work which involved a DEFRA level regulation, legislation or directive were given a high prioritisation. All work to gather information on a species, habitat or activity that had a high risk of environmental damage or were highly likely to be detrimental to the sustainability of a fishery or the data was of high value (eg: a long-term data series, a dataset which is used across many workstreams) were also given a high prioritisation. Work which involved a Sussex IFCA regulation and had a low or medium environmental risk/data value were given a medium prioritisation. Workstreams not associated with either DEFRA or IFCA regulations and with a low environmental risk or low data value were assigned a low prioritisation. Where appropriate, collaboration with other organisations on workstreams has been considered, and in some cases, tasks may be supported by students or volunteers. This tool will be used in subsequent management discussions to allocate workstreams according to priority and resource.

PRIORITISATION LEVEL	Low environmental risk/ data value	Medium environmental risk/ data value	High environmental risk/ data value
DEFRA regulation/ legislation/ directive	High	High	High
SxIFCA regulation/ legislation	Medium	Medium	High
No (or non-DEFRA/ IFCA) regulation	Low	Medium	High

CONSERVATION AND RESEARCH WORKSTREAMS

There are sixty workstreams described below. See the mind map at the end of this document or the summary at the start of the document for an overview. Some of these are ongoing, which will continue across the four-year period, whereas others are discrete projects which are planned to take place within a specific financial year. This section of the Four-Year Conservation and Research Plan may be updated before the end of the Plan period, if necessary, as new workstreams, unforeseen at this stage, arise.

Further information about specific workstreams can be found in the relevant Annual Conservation and Research Plans. The progress made on each area will be described in the Annual Conservation and Research Reports.

THEME: HABITATS

Priority: High

Kingmere Marine Conservation Zone management monitoring

Kingmere Marine Conservation Zone (MCZ) was designated in the first tranche of MCZs in 2013. After comprehensive evidence gathering and consultation, fisheries management (Marine Protected Areas Byelaw: Schedule 1) came into force in December 2016. Sussex IFCA has been monitoring the fishing activity in the site and working with other organisations to monitor other activities and to raise awareness of the MCZ.

The byelaw has a four-year review period, which means that the first review will take place in 2020. Sussex IFCA will analyse the data we have been collecting and consider a range of evidence and official advice to decide if any part of the byelaw needs adjusting. If adjustments are needed then stakeholders will be consulted as part of this process.

Over the next four years, Sussex IFCA will:

- Continue to monitor fishing activity
- Review the management measures



Beachy Head West MCZ management monitoring

Beachy Head West MCZ was designated in the first tranche of MCZs in 2013. After evidence gathering and consultation, fisheries management (Marine Protected Areas Byelaw: Schedule 2) came into force in December 2016. Sussex IFCA has been monitoring the fishing activity in the site and working with other organisations to monitor other activities and to raise awareness of the MCZ.

The byelaw has a four-year review period, which means that the first review will take place in 2020. Sussex IFCA will analyse the data we have been collecting and consider a range of evidence and official advice to decide if any part of the byelaw needs adjusting. If adjustments are needed then stakeholders will be consulted as part of this process.

Over the next four years, Sussex IFCA will:

- Continue to monitor fishing activity
- Review the management measures

Pagham Harbour MCZ and SPA management monitoring

Pagham Harbour was designated in the first tranche of MCZs in 2013. The site is also a Special Protection Area (SPA) for the protection of seabirds. Fisheries management (Marine Protected Areas Byelaw: Schedule 3) came into force in July 2018. Sussex IFCA has been



monitoring the fishing activity in the site and working with other organisations to monitor other activities and to raise awareness of the MCZ.

The byelaw has a four-year review period, which means that the first review will take place in 2022. Sussex IFCA will analyse the data we have been collecting and consider a range of evidence and official advice to decide if any part of the byelaw needs adjusting. If adjustments are needed then stakeholders will be consulted as part of this process.

Over the next four years, Sussex IFCA will:

- Continue to monitor fishing activity
- Review the management measures

Utopia MCZ management monitoring

Utopia MCZ was designated in the second tranche of MCZs in 2016. Fisheries management (Marine Protected Areas Byelaw: Schedule 4) came into force in July 2018. Sussex IFCA has been monitoring the fishing activity in the site and working with other organisations to monitor other activities and to raise awareness of the MCZ.



The byelaw has a four-year review period, which means that the first review will take place in 2022. Sussex IFCA will analyse the data we have been collecting and consider a range of evidence and official advice to decide if any part of the byelaw needs adjusting. If adjustments are needed then stakeholders will be consulted as part of this process.

Over the next four years, Sussex IFCA will:

- Continue to monitor fishing activity
- Review the management measures

Beachy Head East MCZ management development

Beachy Head East MCZ was designated in the third tranche of MCZs in May 2019. 2020-2022 Sussex IFCA will be gathering evidence and consulting with stakeholders to develop fisheries management measures which protect the designated features.

Beachy Head East MCZ management monitoring

Once the fisheries management measures are in place, Sussex IFCA will monitor fishing activity and will review the byelaw in line with the monitoring of other marine protected areas.

Selsey Bill and the Hounds MCZ management development

Selsey Bill and the Hounds MCZ was designated in the third tranche of MCZs in May 2019. Management of trawling within the site has been incorporated into the proposed Nearshore Trawling Byelaw. Sussex IFCA will undertake an MCZ assessment to ascertain whether further fisheries management measures will be required to protect the designated features. If further measures are required, Sussex IFCA will gather evidence and consult with stakeholders.

Selsey Bill and the Hounds MCZ management monitoring

Once the fisheries management measures are in place, Sussex IFCA will monitor fishing activity and will review the byelaw in line with the monitoring of other marine protected areas.

Solent EMS

Solent European Marine Site incorporates Langstone and Chichester Harbour Special Protection Area (SPA) and Solent Maritime Special Area of Conservation (SAC) within Sussex. Sussex IFCA has a byelaw to protect intertidal seagrass beds in Chichester Harbour (within Sussex) and a byelaw to manage the oyster dredge fishery (in the whole of Chichester Harbour).

Over the next four years, Sussex IFCA will:

- Continue to monitor fishing activity, particularly intertidal resource gathering to enable appropriate management measures to be implemented (see Fisheries section below)
- Review the management measures, particularly in relation to the native oyster fishery and the seagrass beds
- Continue to engage with a range of other organisations and stakeholders regarding the overall environmental status of Chichester Harbour



Dungeness, Romney Marsh and Rye Bay EMS

Dungeness, Romney Marsh and Rye Bay SPA was designated for a range of breeding and overwintering seabirds including terns. Dungeness SAC was designated for strandline vegetation. Sussex IFCA is monitoring fishing activity in the site, particularly in relation to the food availability for birds and intertidal resource gathering.

Solent and Dorset Coast SPA

Solent and Dorset Coast SPA was designated in January 2020. The site stretches from Lulworth Cove to Felpham and was designated for little, common and Sandwich terns. In line with other SPAs, Sussex IFCA will assess how fishing activities may affect the features of the SPA and consider whether fisheries management measures will be required. Any management measures will be developed in consultation with stakeholders.

Kelp restoration

There used to be an extensive, dense kelp forest off the coast of West Sussex which declined in the late 1980's. Following the introduction of the proposed Nearshore Trawling Byelaw which will restrict trawling within 4km of the shore between Selsey and Shoreham, it is hoped that the kelp forest can be restored. This may occur naturally or it may require

intervention. Sussex IFCA is working with a range of organisations to monitor changes to the environment and the presence of kelp.

Natural capital and ecosystem services

Natural capital is the world's natural environmental resources from which processes and services arise. These ecosystem services benefit humans and include food provision, recreational opportunities and climate regulation. Understanding more about these complex systems and how human activities are affecting them is essential for supporting sustainable marine management. Sussex IFCA is interested in furthering understanding of Sussex's natural capital assets, and has supported the Local Nature Partnership's development of a natural capital assets risk register for the area. The Authority is also interested in mapping natural capital assets, particularly those which underpin fisheries, such as rocky reef areas which provide nursery grounds for lobsters, and ensuring that these assets are adequately protected from damaging activities.

Priority: Low

Offshore Overfalls MCZ

Offshore Overfalls MCZ was designated in the first tranche of MCZs in 2013. This is an offshore site located roughly 18km east of the southern part of the Isle of Wight, covering an area of 594 km². A small section of the MCZ falls within the Sussex IFCA District. The rest is outside 6nm and therefore the Marine Management Organisation is leading on its management. Sussex IFCA will provide evidence as requested.

Marine Sites of Nature Conservation Importance (SNCI)

Marine Sites of Nature Conservation Importance (SNCI), now known as Marine Local Nature Reserves (LNR), are a local authority designation for locally important sites. Sussex IFCA is going to work with partner organisations to update the information for the sites within the District and to consider their current condition.

Interactive map

Sussex IFCA has been working with Sussex Biodiversity Records Centre for several years to develop an online interactive map which shows seabed habitats (including video clips), bathymetry, Sussex IFCA spatial byelaws, marine protected areas, fishing activity, wrecks and ecosystem services. It is planned that this partnership will continue with ongoing maintenance and further development of the resource, including the creation of a map layer for marine mammals. Work will also continue to raise awareness of and educate the general public about the local marine ecosystem, including the creation of habitat information sheets, more detailed seabed habitat maps and 3D visualisations.

Wild Coast Sussex

Sussex IFCA is part of a National Lottery Heritage Fund project with Sussex Wildlife Trust, Marine Conservation Society, National Trust and SeaLife Brighton which aims to enhance public engagement with the natural environment along the Sussex coastline. Sussex IFCA is primarily involved in the collection and recycling of lost or discarded fishing gear and ghostfishing elements of the project.

Environmental quality and biological limits

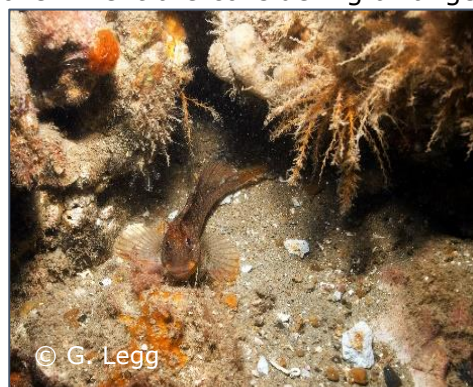
Sussex IFCA is interested in better understanding the environmental quality and biological limits of the marine environment and key species within Sussex coastal waters. This information has already been gathered for Chichester Harbour under the Sea View project which set out the various elements of water quality and the legislation that underpins the current targets for an improved marine environment. It identified areas where environmental targets were being met and areas where further work was required. The project would facilitate discussions between coastal organisations and help focus future efforts.

Loss of critical habitats and associated species

Shifting baselines is the concept that each new generation tries to protect or restore the environment to the status it is currently or was a few decades ago. This baseline environment may already be in a degraded state compared to a point in time much further in the past. In Sussex, many critical habitats and associated species have declined or disappeared compared to the state a few hundred years ago, including native oysters, kelp, seagrass, saltmarsh and many shark species. The abundance and size of many fish species have also declined. Gathering evidence on what the marine environment was like in the past can help inform current day management decisions.

Highly protected marine areas (HPMAs)

Highly protected marine areas (HPMAs) are a new type of marine protected area where all activities are restricted to provide sanctuary areas for designated habitats and species. In early 2020 (at the time of writing this plan), the Government are considering a range of options for these sites. It is unclear at this stage what the work requirement will be for Sussex IFCA.



THEME: FISHERIES

Priority: High

Potting activity

Potting is the second most prevalent fishing activity in the District. Potting is managed under the Shellfish Permit Byelaw. See the Shellfish Permit Monitoring project for further details on the research focussing on potting.

Trawling activity

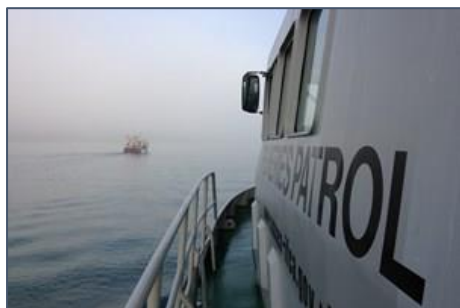
Nearshore trawling was assessed during the development of the Nearshore Trawling Byelaw. Once this byelaw comes into force, Sussex IFCA will monitor fishing activity and changes to the marine environment. Trawling activity in the rest of the District will also be assessed and appropriate management measures will be considered.

Netting activity

Netting is the most prevalent fishing activity in the District. However, in some circumstances there can be negative interactions with seabirds, marine mammals and other unwanted bycatch. If necessary, Sussex IFCA will investigate such instances.

Intertidal resource gathering

The collection of bait for fishing (eg: lug worms) or bivalves and other species for human consumption (eg: clams) in intertidal areas takes place all along the Sussex coastline. In some coastal marine protected areas (Pagham Harbour MCZ and Beachy Head West MCZ) Sussex IFCA has restricted the amount of specific intertidal species which can be collected per person per day. Sussex IFCA will assess the amount of activity that takes place across the whole District to provide evidence to support potential management measures. Any management measures will be developed in consultation with stakeholders.



Fishing vessel effort

Since 2001, Sussex IFCA and its predecessor, the Sussex Sea Fisheries Committee, has collected data on observed fishing activity whilst on sea patrols. The point data is corrected for patrol effort to create fishing activity effort grids. These are useful for a number of other projects, particularly for byelaw development and marine protected area assessments.

Ecosystem approach to fisheries

Embedded in work within this plan is Sussex IFCA's move towards an ecosystem-based approach to fisheries management, which aligns with Government policy. Sussex IFCA will consider of how fisheries management in Sussex coastal waters can take the ecosystem

approach, looking at all fisheries and other marine activities and their interactions with the whole marine environment including social impacts. Evidence is collected in a way that supports this approach, providing information to assist the development of management measures that both ensure fisheries are exploited sustainably, and best protect natural capital assets and associated ecosystem services.

Priority: Medium

Economic value of local fisheries

The assessment of the economic value of local fisheries, key species, the pressure on stocks, trends and risks can all be useful pieces of information for fishery managers. Sussex IFCA will use commercial landings data, permit data and other sources. It will be particularly useful for marine protected area management and byelaw impact assessments.



Vessel length byelaw review

When Sea Fisheries Committees changed into IFCA's in 2011, they carried over all existing byelaws. IFCA's have been reviewing these legacy byelaws. In line with this process, the vessel length byelaw will be reviewed. Any changes will be developed with robust evidence and in consultation with stakeholders.

Fishing instruments byelaw review

When Sea Fisheries Committees changed into IFCA's in 2011, they carried over all existing byelaws. IFCA's have been reviewing these legacy byelaws. In line with this process, the fishing instruments byelaw will be reviewed. Any changes will be developed with robust evidence and in consultation with stakeholders.



Scallop closed season byelaw review

When Sea Fisheries Committees changed into IFCA's in 2011, they carried over all existing byelaws. IFCA's have been reviewing these legacy byelaws. In line with this process, the scallop closed season byelaw will be reviewed. Any changes will be developed with robust evidence and in consultation with stakeholders.

Centuries of Sussex Seas

Research into the history of fishing and the marine environment, illuminating shifting baselines, and increasing understanding of the species and habitats that used to be present in Sussex coastal waters to help inform current day decisions. Some information has already been collated, further work ongoing.

Stakeholder engagement

Sussex IFCA will consider how best it can engage with its broad range of stakeholders, including identifying key contacts and groups, their requirements and the most effective way to communicate. Key work will include continued support of the Wild Beach Project, to facilitate effective engagement with local children on the IFCA's work, sustainable fisheries and marine protected areas: supporting University lectures and involvement in coastal partnerships and forums.

Priority: Low

Social and cultural value of local fisheries

The social and cultural value of local fisheries is more difficult to assess in a quantitative manner than the economic value. Different data gathering techniques are required and the information needs to be considered in a different, though no less important, framework. Sussex IFCA will seek appropriate expertise to support this emerging project.

Inshore Vessel Monitoring System (iVMS)

Marine Management Organisation led project to fit all fishing vessels with VMS (currently only on over 12m long vessels). The project started in 2018 but was paused in 2019. Sussex IFCA will support where required once the project re-starts.

Recreational angling

Recreational rod and line angling – where the fish caught are for personal consumption or given to friends and family, and not sold – is a widespread activity throughout Sussex, from the beach or from private or charter vessels. Sussex IFCA will continue to engage with the Sussex Angling Forum, as well as continuing to work collaboratively with charter skippers for data collection.

Defining a vision for Sussex seas

Sussex IFCA will work with the Committee and a full range of stakeholders in order to describe a shared vision for the future of the marine environment in Sussex coastal waters, including fisheries activities, water quality, species abundance and size, diversity, habitat structure and function, and access to resources.

Sussex sustainable fish guide for consumers

Sussex IFCA will work with appropriate partner organisations to develop a Sussex-specific guide for consumers to help guide choices toward supporting sustainably caught local seafood.



Gear selectivity

Sussex IFCA will support fishers in developing and implementing gears and methods which are more selective to specific species, reducing bycatch and discards. There is already some national and international work on this but this project would be looking at what can be implemented locally and working with local fishers to change their practices.

Incentivising sustainable practices

Sussex IFCA will consider ways to incentivise fishers to take up more sustainable fishing practices and to use methods which reduce their impact on the marine environment.

Maximising productivity

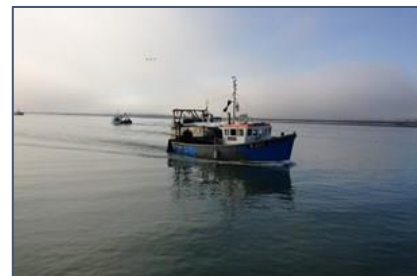
Sussex IFCA will analyse key fisheries to further understanding of the current fishing methods, seasons, areas, how can these be managed in the most effective way to maximise productivity and minimise waste and environmental impact.

Aquaculture opportunities

Aquaculture for finfish, shellfish and algae is a globally increasing industry. There is currently no aquaculture activity in Sussex but there could potentially be and exploring the opportunities, barriers and impacts would be a useful starting point.

Impacts of other activities on fishing

Besides fishing, there are many human activities which impact the marine environment such as wind farms, aggregate extraction, dredging, anchoring/mooring, sewage outfalls, eutrophication and power station cooling water intakes. It would be useful to assess how these other activities might be affecting marine species, particularly commercially important species and their associated fisheries. Where appropriate, Sussex IFCA will respond to consultations, providing specialist fisheries input. Including, but not limited to, Rampion 2 and Brighton Marina maintenance dredging.



THEME: SPECIES**Priority: High****Shellfish permit monitoring**

After extensive evidence gathering and stakeholder consultation, the Shellfish Permit Byelaw came into force in 2016. All permit holders are required to provide shellfish catch and fishing effort information to support inshore shellfish fisheries. This catch returns data is a vital part of shellfisheries' management and analysis of this data will help the IFCA to gather the evidence needed to make future management decisions. Sussex IFCA will periodically review the management measures to ensure they are still fit for purpose. As well as analysis of the monthly catch return data, the review will consider a range of evidence and will include consultation with permit holders.

Lobster

Like edible crab, the lobster fishery is an important one with concerns about declining stock levels. Sussex IFCA will review existing information on stock boundaries, biology and ecology, and consider what management may be required within the District to support a sustainable fishery.

**Minimum/ maximum size limits**

In 2019, the EU Technical Conditions changed to explicitly exclude recreational fishing from needing to abide to minimum conservation reference sizes. Four IFCAs brought in emergency byelaws. The other IFCAs are working on bringing in full byelaws to cover this gap. Some IFCAs are considering transposing the size limits while other IFCAs are considering reviewing them to ensure they provide appropriate protection (ie allowing the species to breed before capture). There is also some consideration of setting maximum size limits to protect large fecund individuals. Sussex IFCA will review the size limits for all key species, with consideration to the byelaws in other IFCA Districts. Any byelaw will be developed with robust evidence and in consultation with stakeholders.

Priority: Medium**Elasmobranch evidence**

Elasmobranchs is a diverse group of animals with cartilaginous skeletons which includes sharks, skates and rays. They grow slowly, mature at a relatively late age and do not produce very many young, which makes them vulnerable to overfishing. Sussex IFCA will identify the existing elasmobranch species in the District, including their key biological and ecological information and identify any data gaps. We will assess the level of risk for each species and whether management measures or further research will be required. We will also identify species which used to be present in the District which are now rare or extirpated. We will continue to engage with other organisations conducting elasmobranch research.

Small fish surveys

Surveys to assess the abundance, length and diversity of small fish (juveniles of larger species or small coastal species) are important to monitor environmental quality, ecosystem health and ecological functioning. Sussex IFCA will continue to support partner organisations to conduct small fish surveys along the Sussex coast, predominantly in Chichester Harbour, Medmerry managed realignment site and Rye Harbour Nature Reserve.

Oysters



There is a small wild population of native oysters in Chichester Harbour. Stock numbers have been very low in recent years, insufficient to open the fishery in 2018 or 2019. Chichester Harbour oysters are part of the wider Solent stock and the Blue Marine Foundation are working in collaboration with a number of organisations to restore the native oyster population. Sussex IFCA will continue to work with a range of organisations and stakeholders to support options which enhance the native oysters, and will also monitor the increasing number of Pacific oysters.

Whelk

Whelk potting is one of the main fisheries in Sussex. Sussex IFCA will consider whether further management is required (in addition to the current Shellfish Permit Byelaw) as well as continuing to support the Whelk Working Group and actively engaging with the research and management development of other organisations.

Edible crab

Edible crab is also an important fishery in Sussex. There has recently been national concern about changing stock levels, declining in some areas but increasing in others. In Sussex, there has been a decreasing trend in catch per unit effort. Sussex IFCA will continue to monitor catch rates through the Shellfish Permit Byelaw catch data and will work with other organisations to investigate potential causes of declines in area of specific concern.

Seabirds

Seabirds are a vital part of coastal ecosystems. Sussex IFCA will consider how fishing activity effects seabirds, particularly in terms of food availability for breeding or overwintering birds, and also in cases of any accidental bycatch.



Marine mammals

There are diverse marine mammals in Sussex including, harbour and grey seals, porpoises and dolphins. When the officers are at sea, they record sightings of porpoises and dolphins. We work with other relevant organisations, including the Brighton Dolphin Project, to raise

awareness and further understanding of these species. Sussex IFCA will also consider how fishing activity affects marine mammals in terms of accidental bycatch.

Priority: Low

Endangered threatened protected species

Sussex IFCA will review the endangered, threatened and/or protected species which are found in the District; their presence, condition, location, abundance, risk, existing management and whether there needs to be specific or additional management to protect them.

Invasive non-native species

Sussex IFCA will review the invasive and/or non-native species known to be present in the District, including a horizon scan of potential new species, the benefits and threats of these species and an assessment of whether any action might be required.

Environmental DNA

Environmental DNA (eDNA) is genetic material (mucus, urine, faeces, etc) shed by species into the water. Collection and analysis of water samples can indicate the presence of local species. Regular sampling can reveal trends in abundance and location of key species.

Species specific management plans

Under the previous Four Year Research Plan (2016-2020), management plans were written for twenty-five species which are commercially important in Sussex. In 2020, these plans will be disseminated. By 2024, the species covered by the plans will be reviewed and the plans will be updated with the latest data.

Animal welfare

There is increasing media attention and general public concern regarding animal welfare in the wild capture and processing of seafood. Sussex IFCA will work with appropriate organisations in consideration of the options to improve animal welfare in the fishing industry.

Species and ecosystem interactions

The marine ecosystem is highly dynamic and complex. Sussex IFCA will endeavour to further understanding of the interactions between species and habitats, including food web dynamics, and the effects of fisheries on these interactions.

Cuttlefish

Cuttlefish live for two years and breed just once before they die. The English Channel stock is targeted by trawlers in the western Channel over the winter and by potters close inshore in the spring. Cuttlefish potting/trapping is an important local fishery but there have been concerns in recent years about the sustainability of the trawling pressure on the stock. Sussex IFCA will continue to work with other organisations to support sustainable cuttlefish fishing.

Spider crab

Spider crabs move inshore in the spring to form breeding aggregations. They form large pyramids as they moult and then mate. They are not of a desirable condition or size for market so they are not targeted but can cause a nuisance when they tangle in nets and cuttlefish traps. Sussex IFCA will consider the biology and ecology of spider crabs, including their interaction with local fishers.

MIND MAP OF WORKSTREAMS

High priority
 Medium priority
 Low priority

