Cuttlefish Symposium

Proceedings

25 November 2021

BLUE MARINE FOUNDATION

EXECUTIVE SUMMARY

Overview

- **Cuttlefish are a commercially important species** for both inshore and offshore fisheries operating off the south and south-west coasts of the UK.
- **The unique lifestyle** of the cuttlefish makes it vulnerable to overexploitation during its key life stages.
- **There is currently no national-level management in place** for cuttlefish fisheries, although regional measures provide some form of protection.
- **Collaboration** between the fisheries, research, and policy sectors is key to inform and develop a sustainable, long-term cuttlefish fisheries management plan.
- **The Cuttlefish Symposium** outputs and follow up workshop in 2022 will contribute to the development of UK and regional management measures to safeguard cuttlefish populations and support sustainable fisheries.

Photo © Paul Naylor

Background

In November 2021, Blue Marine Foundation (BLUE) held an online symposium dedicated to the sharing of knowledge on UK cuttlefish stocks. The 150 delegates heard first-hand experiences and perspectives pertaining to the biology, fishery status, and management measures in place for cuttlefish, both in Europe and along the length and breadth of the UK coast.

Amidst concerns about the lack of management intervention and vulnerability of the stocks, the event brought together fishers, scientists, regulators, and conservationists to promote collaborative action to support the long-term health of UK cuttlefish populations and sustainable fisheries.

150 delegates

Biology and Research

The common cuttlefish (*Sepia officinalis*) is the predominant species found in UK waters, recorded primarily along the south and west coasts of England and Wales. Adults inhabit offshore waters and migrate inshore to spawn, releasing eggs which attach to marine plants, as well as artificial structures including fishing traps and nets.

Research on UK cuttlefish stocks is in its infancy. Developing a stock assessment for cuttlefish is particularly challenging due to its complex life-cycle and population dynamics, which are intricately linked to environmental conditions, such as water temperature and predator/prey abundance.


Photo © Paul Naylor

Fishery

Cuttlefish is a highly prized fishery in the UK. In 2018, it was the fifth most valuable fishery in England, worth £14.9 million. Cuttlefish is an increasingly important target species for small-scale inshore pot and trap fishers in southern regions of England, but also supports seasonal offshore beam trawl and otter trawl fisheries.

The English Channel is the most important fishing ground for common cuttlefish in the north-east Atlantic. The main countries exploiting the stock are the UK, France, Spain, and Portugal, with the UK port of Brixham being the most important for cuttlefish landings.

The growing rate of exploitation is almost entirely driven by increases in the landings of the offshore fleet, while the inshore fishery has experienced large reductions in catches in recent years.

The inshore fleet operates on the breeding grounds of cuttlefish, targeting them at or near the end of their lives. This practice affords individual cuttlefish some opportunity to reproduce before capture. In comparison, the offshore fleet targets cuttlefish of all sizes, including juveniles, reducing opportunities for subsequent generations to be born into the fishery.

Fishery management

European measures

There are currently no management measures in place for cuttlefish fisheries at the EU level, although some individual European countries, where cuttlefish is an important fishery, have introduced national or regional effort limits and minimum landing sizes – Portugal, Normandie in France, and Galicia in Spain.

National measures

In the UK, there are no national management measures for cuttlefish fisheries, so an unlimited number of cuttlefish of any size can be landed. Added to this is the fact that cuttlefish are exploited on both sides of the English Channel, and by a number of different fleets, encompassing a range of vessel sizes and gear types. This is problematic because the unique lifestyle of the cuttlefish makes it vulnerable to collapse from both inshore and offshore fleets during its key life stages. Given the consistently high market prices and demand for cuttlefish, some form of protection is required to prevent effort and catches becoming unsustainable.

Regional measures

Some IFCA districts have introduced regional byelaws to:

- Protect important cuttlefish spawning habitats from mobile fishing gears.
- Restrict the number of traps or pots that can be deployed by vessels.
- Encourage fishers to leave static gear at sea and allow eggs to hatch naturally, through establishing cuttlefish codes of practice.

Photo © Lauren Parkhouse, Devon & Severn IFCA

Management Recommendations

Management approaches for cuttlefish fisheries need to be supported by data and assessments. To build this, a coordinated and collaborative research plan is needed across regional, national, and international jurisdictions.

Management measures worth exploring to safeguard cuttlefish stocks include:

- **Seasonal and/or spatial restrictions** to protect critical spawning seasons and spawning locations, or 'essential fish habitat', from high-impact, indiscriminate/non-selective fishing gears.
- **Fishing effort restrictions for offshore fleets** deploying non-selective mobile gears.
- **A national minimum conservation reference size** for cuttlefish to avoid capture of juveniles.
- **Pot limits** applied throughout the English Channel.
- **Codes of practice** on cuttlefish trap handling to reduce egg mortality.

Next steps

Progression of these recommendations requires concerted and collaborative action from representatives of management, science, policy, and the fishing industry, to inform and develop a sustainable, long-term cuttlefish fisheries management plan.

Since the Symposium, Department for Environment, Food and Rural Affairs (Defra), has confirmed the inclusion of cuttlefish in the Channel Non-quota Demersal Fisheries Management Plan. The Symposium proceedings and delegates will contribute to the early discussions in developing this plan which is due for completion in 2023.

BLUE will convene a further workshop in 2022, to bring together representatives from fishing, policy, management, and science to identify the most effective national and regional management measures to support the long-term health of cuttlefish populations and sustainable fisheries.

The Symposium is available to view on BLUE's YouTube channel **here**.

Contact **Sam Fanshawe** for further information and to get involved.

Email: **sam@bluemarinefoundation.com**

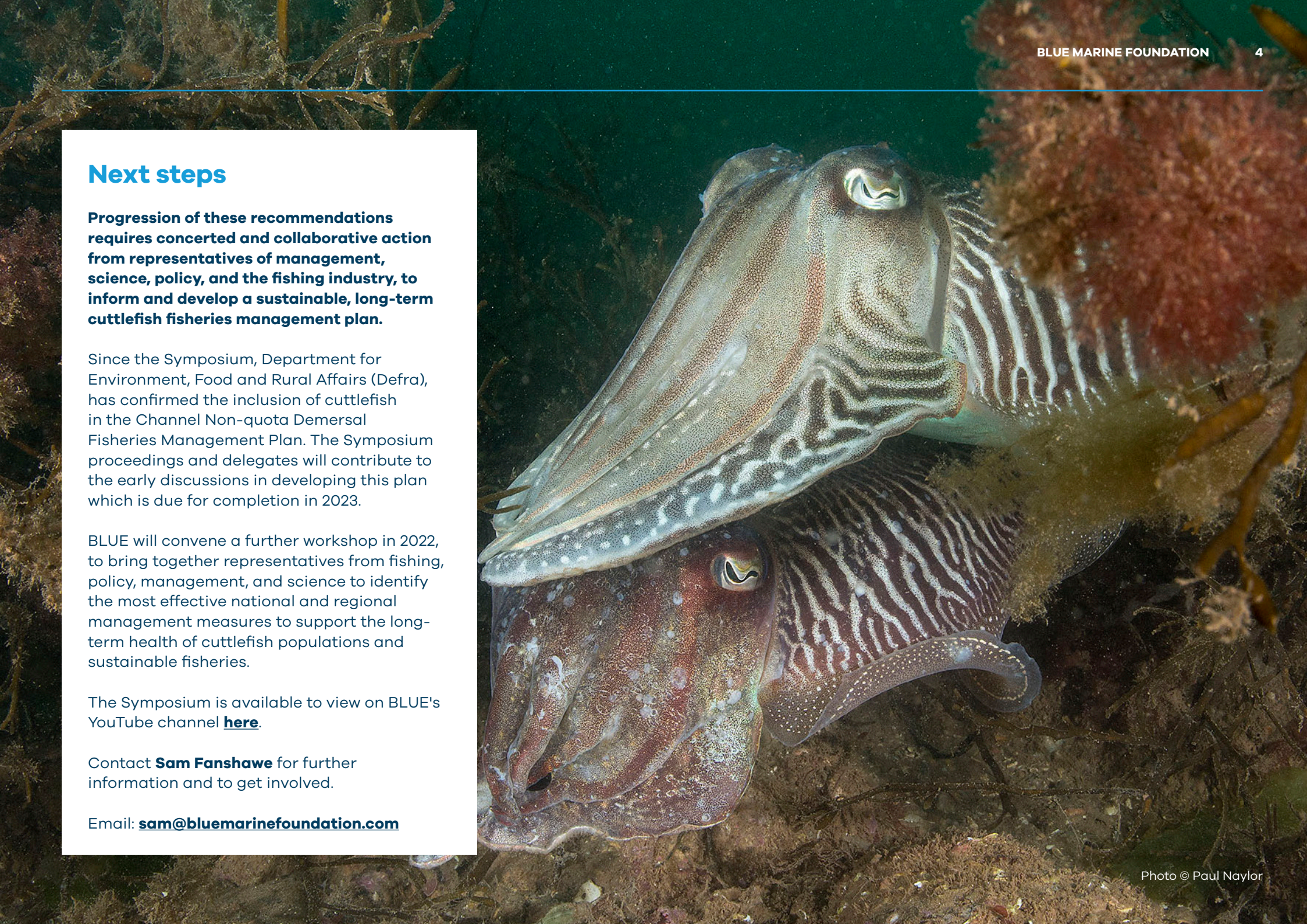


Photo © Paul Naylor

SYMPOSIUM PROCEEDINGS

Chair's opening remarks

Sam Fanshawe, from **Blue Marine Foundation** (BLUE), welcomed participants and highlighted the purpose of the symposium:

"To share what we know about cuttlefish and their fishery and to start a collaborative discussion about what is needed to protect their populations and establish a sustainable and viable fishery for the future."

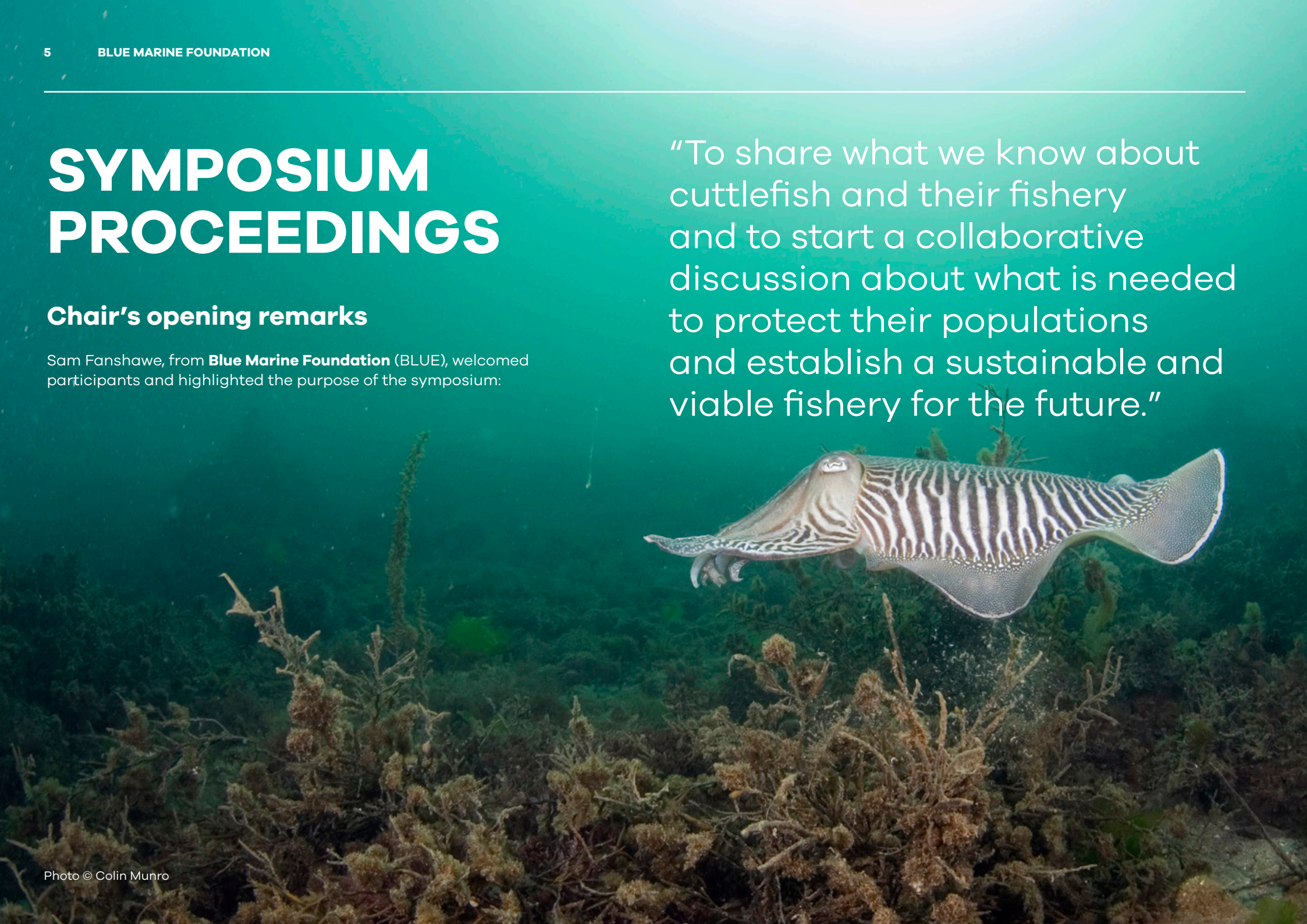


Photo © Colin Munro

She detailed why the cuttlefish had been identified as a focal species, noting that its unique lifestyle makes it vulnerable to overexploitation by both inshore and offshore UK fleets during its key life stages. A particularly important fishery for small-scale inshore fishermen, cuttlefish are a non-quota species with no national management or effort restrictions in place. Fishers, regulators, and conservationists alike have shared concerns that the stocks and fishery are vulnerable to collapse without management intervention. The symposium provided a platform for knowledge sharing, discussion, and collaboration, to help safeguard the sustainability of UK cuttlefish stocks.

Fanshawe outlined the intention to hold a further workshop in Spring 2022, which would build upon the day's discussions to collaboratively identify the most effective national and regional management measures to support the long-term health of cuttlefish populations and sustainable cuttlefish fisheries.

The symposium had five aims, namely to:

1. **Share information** on current stock status, research, and management measures.
2. Identify **new management measures**, or **existing measures** for review or wider application.
3. Identify **gaps in data and research** in support of potential management measures.
4. Identify areas for **collaboration** between fishers, academics, and policy makers.
5. Input to the development of a **fisheries management plan** for cuttlefish.

"We hope we can all ultimately and collectively input to the development of a fisheries management plan for cuttlefish."

A **short new video** from BLUE summarised the characteristics that make cuttlefish so fascinating and also vulnerable to overfishing.

Full agenda on page 21

Biology and Research

The first session of the symposium focused on **cuttlefish biology and research**, providing an insight into the species' life history and current scientific understanding.

Dr Chris Barrett, Senior Fisheries Advisor at Centre for Environment, Fisheries and Aquaculture Science (**Cefas**), gave an overview of cuttlefish biology and recent research. Three species of cuttlefish reside in the English Channel: common cuttlefish (*Sepia officinalis*), elegant cuttlefish (*Sepia elegans*), and pink cuttlefish (*Sepia orbygniana*). The common cuttlefish is most often targeted by UK fishers. It is the largest of the three species, has a generalist diet, and can live for up to two years. They are found anywhere from the sub-tidal shallows to depths of 200 metres, although they are most often encountered at less than 100m depth. Cuttlefish typically spawn once and then die, releasing hundreds or thousands of eggs within shallow inshore areas.[1]

2020 fishery worth

£8.2M

BOX ONE
Why are cuttlefish important?

Cuttlefish is a highly prized fishery in England. In 2017, it was the fourth most valuable fishery in England, worth £25.4 million. Cuttlefish has become an increasingly important target species for small-scale inshore fishers in southern regions of England, but also supports a seasonal offshore beam trawl fishery. Since 2017, year-on-year declines in cuttlefish landings have been observed, raising concerns that the stock and fishery are vulnerable to collapse without management intervention.

Table 1 – Top 10 species by value landed into England by UK vessels 2017-2020.
Source: MRAG/Blue Marine Foundation from MMO fisheries statistics.

Species	Value (£m)			
	2017	2018	2019	2020
Scallops	35.3	36.4	34.5	22.7
Crabs	24.9	34.3	36.7	22.0
Lobster	24.8	22.9	23.9	20.0
Whelks	12.2	13.9	18.5	19.8
Sole	14.0	15.8	18.4	17.1
Cod	6.1	5.2	8.1	15.9
Cuttlefish	**25.4**	**14.9**	**12.6**	**8.2**
Monkfish	8.0	6.5	7.7	7.5
Cockles	4.3	6.3	9.9	7.4
Nephrops	9.8	7.7	13.8	5.2

He went on to outline the research being undertaken by Cefas to better understand the common cuttlefish. A programme collecting data on cuttlefish from commercial catches and Cefas' research vessel has been established. In addition, a study exploring the catch composition of Western English Channel cuttlefish from beam trawlers landed into Plymouth and Brixham, found very little mixing between large and immature cuttlefish.[2]

"Given the spatial resolution in the catches, we can't fully assess whether there is a specific targeting of size classes or whether the catch composition was just purely by chance."

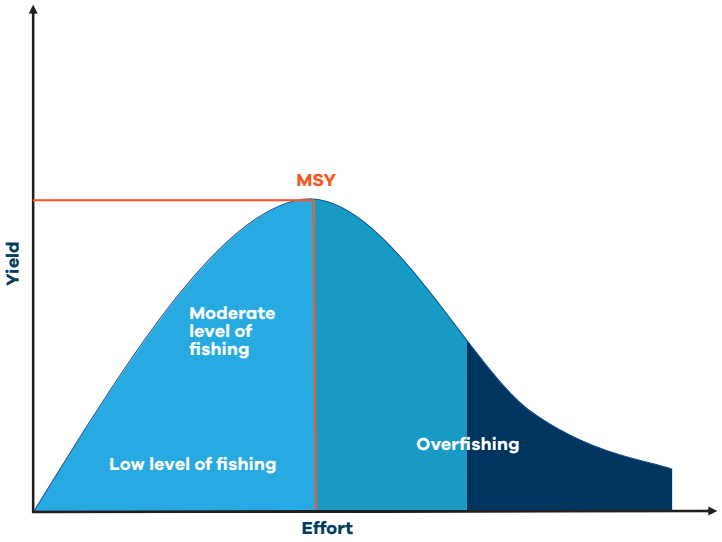
Current research is investigating how best to determine the age of cuttlefish from their cuttlebones, as this could yield critical information on life histories and population dynamics.


Photo © Paul Naylor

Samantha Stott, Fisheries Scientist at **Cefas**, reported on the science of stock assessments.

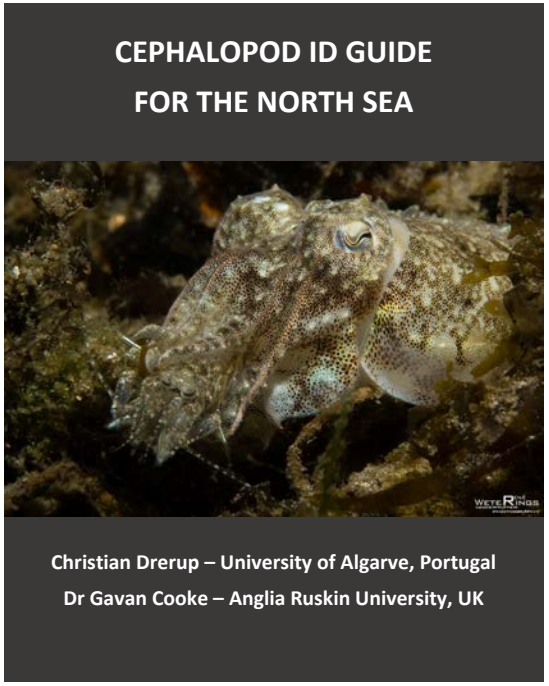
"A stock assessment is a tool to support fisheries management by collecting, analysing, and reporting fish population information."

Maximum Sustainable Yield reference points are generally used to give an understanding of the health of a stock. If catch is below the MSY reference point the stock is not being overfished.



As effort increases, yield increases but then reaches a point – the MSY reference point - where the yield will decrease and the stock is at increased risk of being unable to replenish itself.

She noted that the traditional view of MSY may not be appropriate to cuttlefish due to their life history. There are several important considerations, including their two-year life cycle, inter-annual variability in recruitment linked to environmental factors such as water temperature and predator/prey availability, and their migration pattern by which they overwinter offshore and move inshore to feed and spawn. To account for these life history traits, Cefas is developing a two-stage model, which can capture the dynamics of cuttlefish based on observer and fisheries logbook data.



The symposium heard from **Gemma Cosson** of **The Cephalopod Citizen Science Project**, a global not-for-profit that gathers observations of wild cephalopods and their eggs using social media platforms. The project's key contributors are scuba divers, but fishers and beachcombers also supply observations. The data collected is used to inform scientific research and the project published three peer-reviewed papers in 2021.[3,4,5]

As well as research, the project develops resources to educate members of the public, including guidance on how to save stranded cuttlefish eggs, and a cephalopod identification and welfare guide with information on cephalopod defensive behaviours.

We think it's really important for people to be aware of these behaviours so that they can try and interact responsibly with cephalopods."

She reported what the project has learned, namely that the number of adult cuttlefish during the spawning season appears to be decreasing and that changes to the breeding windows off UK and Dutch coasts have been observed, with potential implications for fisheries and conservation.

"The public are passionate and actively engaging in cuttlefish conservation."

BOX TWO
Cuttle Shore film

Wildlife film-maker, **Rosie Ashley-East**, shared her film 'Cuttle Shore', exploring the long history of inshore cuttlefish trapping from Mudeford Quay in Dorset. The film beautifully captured the life of local fisherman, Richard Stride, and the journey of cuttlefish hatchlings from egg to maturity.

The film showcased a simple tactic employed by the fishers of Mudeford Quay to contribute to the longevity of the local cuttlefish population. Returning pots and traps to the sea with egg cases still attached, and leaving them there until after the eggs have hatched, is a straightforward and effective practice, which ensures the future recruitment of the fishery.

The film touched on the concerns of local fishermen at the lack of management and the impact of large-scale beam and otter trawl fisheries on the sustainability of the stock. The film concluded that while the future of Mudeford's cuttlefish fishery may be uncertain, it is inspiring to see local fishermen doing everything in their power to protect a captivating species.

Fishery

The second session of the day focused on the **UK cuttlefish fishery**, with expert speakers offering a detailed overview of key statistics and trends pertaining to UK cuttlefish and the fishing fleets that target them.

Rachel Irish, Principal Marine Officer at the **Marine Management Organisation (MMO)**, provided an overview of the status of the common cuttlefish fishery by sharing data on landings into UK ports (2015-21). **Dr Robert Wakeford**, Managing Director of **MRAG**, then gave an account of recent trends in the fishery.

Photo © Rosie Ashley-East

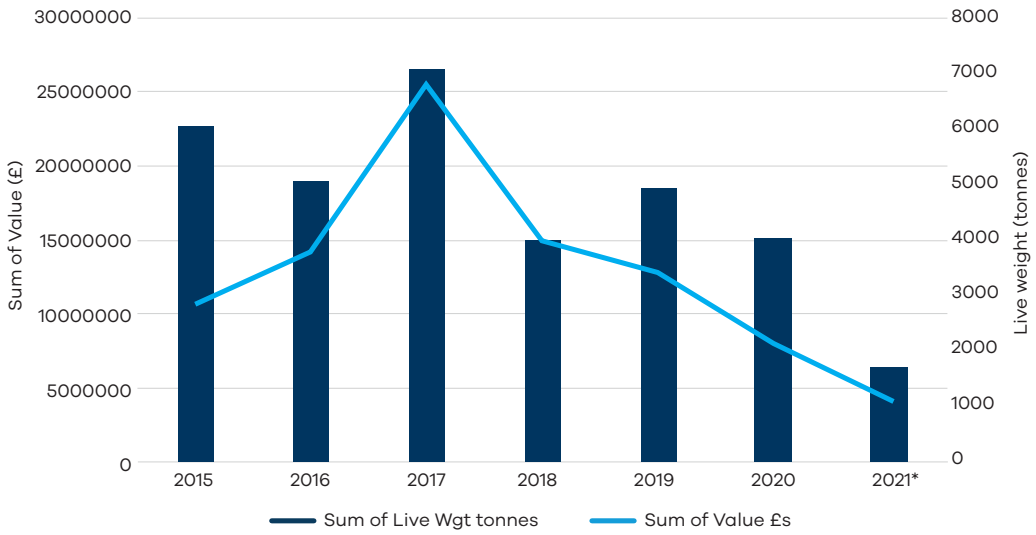
Key points are summarised below.[6,7,8]

- The UK's commercial fishery for common cuttlefish first developed in the year 2000, before expanding significantly in the English Channel from 2010 onwards.
- Today, the Channel remains the most important fishery for common cuttlefish.
- The main countries exploiting the stock are France, the UK, Spain, and Portugal.
- Cuttlefish landed into UK ports are primarily by UK vessels.
- UK cuttlefish landings have fluctuated over the past twenty years and average at just over 4,000 tonnes.

Average annual landings:

4,000 tonnes

- Cuttlefish catches reached their height in 2017 at a value of £25 million for 7,000 tonnes.
- Recent years have seen a decline in the total value of landings to just over £5 million for 1,500 tonnes in 2021 (landings up to October 2021 only) (Figure 1).
- The Marine Management Organisation (MMO) stated that neither the COVID-19 pandemic nor Brexit appeared to have significantly influenced the decline in 2020/2021.



*Landings up to October 2021 only.

Figure 1 – **Total value and quantity of cuttlefish landed by UK vessels 2015-2021.** Source: Marine Management Organisation

- Cuttlefish have become increasingly important in the south and south-west of England, particularly the Devon and Severn IFCA district. In England, three ports have historically dominated landings: Brixham (57-68%), Plymouth (8-14%), and Newlyn (1-10%) (Table 2). Most of the cuttlefish landed in the UK is exported to other parts of Europe, namely Italy, France, Spain, and other Mediterranean countries.

Table 2 – **Top 10 landings by port (2014-2020).**
Source: MRAG/Blue Marine Foundation from MMO fisheries statistics.

Top 10 landings by port (2014-2020)										
Total Landings (Tonnes)										
Rank	**Port**	**District**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**
1	Brixham	Devon & Severn IFCA	1,506.40	3,326.70	2,883.40	4,374.60	2567.3	3391.1	2706.1	**20,755.60**
2	Plymouth	Devon & Severn IFCA	584.3	895.3	658.2	1040	363.4	599.9	324.6	**4,465.70**
3	Newlyn	Cornwall IFCA	448.6	964.7	476.7	717.6	518.2	434.8	401.3	**3,961.90**
4	Looe	Cornwall IFCA	105.2	144.5	96.8	173.5	14.7	87.8	30.7	**653.20**
5	Shoreham	Sussex IFCA	74.5	152.9	137.6	49.7	48	59.1	67.1	**588.90**
6	Portsmouth	Southern IFCA	53.6	84.4	127.7	37.5	32.2	37.2	84.8	**457.40**
7	Torquay	Devon & Severn IFCA	46.2	85	110.9	110.8	18.1	8.3	10.8	**390.10**
8	Exmouth	Devon & Severn IFCA	27.5	64.3	74.8	42.9	23.8	28.1	38.4	**299.80**
9	Eastbourne	Sussex IFCA	26.6	27.3	62.4	30	28.1	31.7	63.9	**270.00**
10	Hastings	Sussex IFCA	16.5	32.6	68.4	26.1	28.8	23.3	35.8	**231.50**
Total			**2,889.40**	**5,777.70**	**4,696.90**	**6,602.70**	**3,642.60**	**4,701.30**	**3,763.50**	

- The fishery is dominated by large, over-10m beam and otter trawlers. Meanwhile, pots and traps deployed by small, under-10m inshore vessels account for only a small proportion of the fishery (Figure 2).

- In 2020, the beam trawling sector was responsible for over 72% of all cuttlefish landings to UK ports and the otter trawl sector was responsible for 18% of cuttlefish landings[8].

- In 2020, fisheries using traps reported landings of 353 tonnes which equates to 8.6% of the total UK landings and net fishermen recorded 56 tonnes of cuttlefish landings representing 1.4% of total UK landings[8].

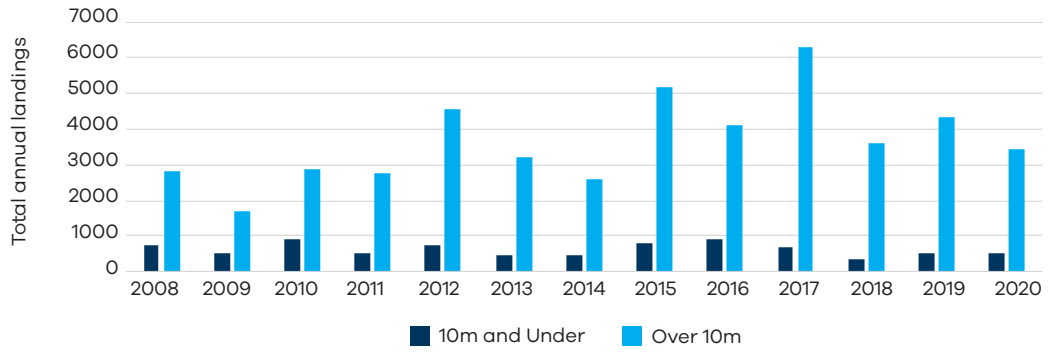


Figure 2 – **Total annual landings by UK vessel size.**
Source: MRAG/Blue Marine Foundation


Photo © Paul Naylor

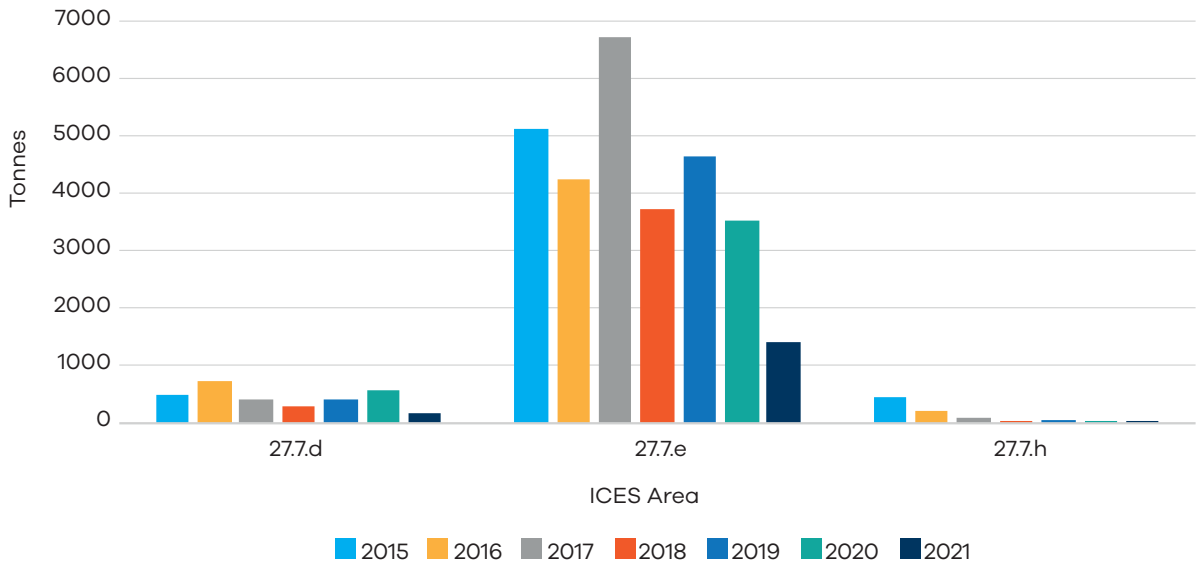
- The beam trawl fishery operates from September to March - throughout autumn and winter - targeting cuttlefish in offshore waters. Catches by beam trawlers are taken throughout the southern British Isles, but primarily from the western English Channel (ICES area VIIe) (Figure 3).

- The demersal otter trawl fleet operates between August and December. This fishery exploits mid-shore areas that are closer inshore and has a smaller fishing window, thus taking lower cuttlefish landings than the beam trawl fleet.

- This offshore fishery primarily exploits a single cohort of cuttlefish in the later stages of maturity, prior to their inshore migration to spawn the following spring. There is growing evidence to suggest that the start of this seasonal fishery is beginning earlier, potentially coinciding with the main period of recruitment.

- The small-scale, inshore pot and trap fishery operates from April to June - throughout spring and into early summer - in coastal, inshore areas. Gillnets and trammel are also used by some vessels, but to a lesser degree. This sector exploits the same cohort of cuttlefish as the offshore fishery, but later in the lifecycle when the adults return inshore to spawn.

- The inshore fleet operates on the breeding grounds of cuttlefish, targeting them near the end of their lives. This practice affords individual cuttlefish some opportunity to reproduce before capture. In comparison, the offshore trawlers target cuttlefish of all sizes including large numbers of juveniles. The exploitation of cuttlefish by the offshore fleet reduces the opportunities for subsequent generations to be born into the fishery.



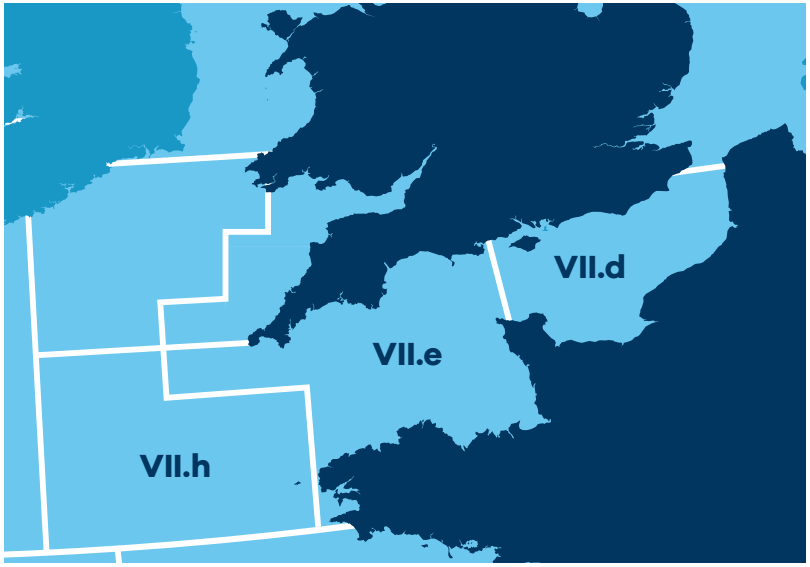


Figure 3 – **Cuttlefish Area of Capture.**
Source: Marine Management Organisation

Fishery perspectives

An open forum dedicated to **fishery perspectives** provided an opportunity for those working in the industry to voice their views on the information shared thus far. **Morven Robertson (BLUE)** invited fishers to contribute their thoughts.

Jerry Percy from the **New Under Ten Fishermen's Association (NUTFA)** commented that there are still significant unknowns in the fishery. He said:

"The burning question is what do we do now to ensure the long term sustainability of the stock, both biologically and socio-economically, particularly in relation to the new Fisheries Act and its requirements for sustainability."

He spoke of a fishermen-led initiative in south-east Spain that developed a hatchery for cuttlefish, with significant success. A myriad of approaches can therefore be used to enhance and protect cuttlefish stocks.


Photo © Rosie Ashley-East

Richard Stride, a cuttlefish fisherman from Mudeford Quay in Dorset, articulated his own practices for safeguarding cuttlefish eggs. He reiterated the approach detailed in the film 'Cuttle Shore' (**Box 2**), in which traps are purposefully left at sea to allow eggs to hatch naturally. In addition, when eggs must be removed to free up trap entrances, Richard carefully detaches the eggs and stores them in trays to hatch, before releasing them back into the sea. He remarked that he had been fishing cuttlefish since 1995 and in that time he'd had many opportunities to observe the changes taking place in the fishery:

"these days, trap fisheries are taking significantly lower landings in comparison to previous years. This is worrying and raises questions about the sustainability of the offshore fishery."

Richard emphasised that 2017 was a notable year for landings in the offshore beam trawl fishery. Inshore fishermen were

"dismayed to hear the reports of a bonanza in the south-west, and even more dismayed to hear that trawlers were coming from as far away as the Shetland Isles to partake in the fishery."

Inshore catches consequently slumped in both 2018 and 2019. He asserted that

"the elephant in the room is the offshore trawl fishery. It seems odd to me that we have an unregulated fishery, which is impacting mostly on immature cuttlefish and even if they are not immature, they have not spawned and are therefore being denied that opportunity."

He added

"when it comes to thinking about management, we are really desperate now to see some action to regulate the catch - and not just on the grounds of who is catching the most and where the fishery is more important, but based on the relative impact the fishery is having."

Fishery management

Following an afternoon of scene-setting, the symposium turned to **cuttlefish fishery management**.

Dr Chris Barrett took the floor to provide a global review of lessons learned from cuttlefish conservation and fisheries management case studies. These are summarised below:

VIETNAM A network of small Marine Protected Areas (MPAs) in Vietnam proved ineffective for cuttlefish due to their limited collective area. This suggests MPAs designated to conserve cuttlefish should be large enough to cover key habitats, with tight enforcement controls in place to ensure their effectiveness.

SPAIN Voluntary trammel net gear modifications by Spanish fishers - including increasing mesh sizes, limiting net lengths, and capping the number of traps per vessel - successfully led to lower catches of young cuttlefish and fewer discards.

AUSTRALIA Gear specificity studies in Australia's prawn trawl fishery indicated that eliminating the delay between the towing and winching of nets, may help to decrease cuttlefish bycatch.

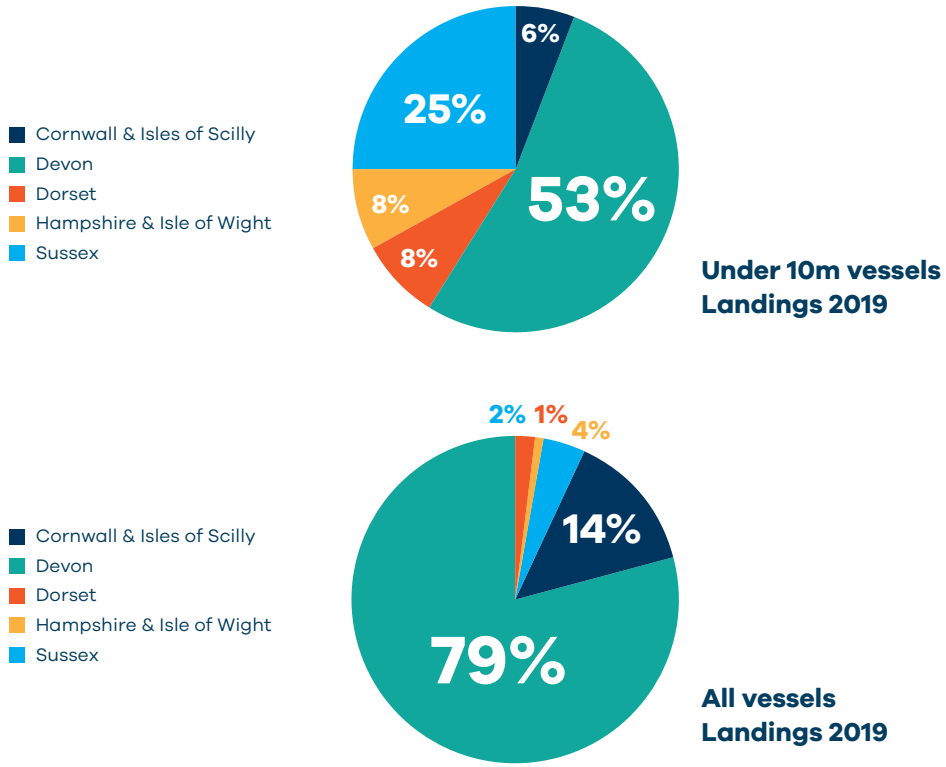
ARABIAN SEA Banning the use of Fish Aggregation Devices (FADs) in Arabian Sea cuttlefish fisheries led to adult cuttlefish no longer laying eggs on artificial FADs, supporting an increase in population size.

JAPAN A cuttlefish restocking programme in Japan between 2001-2003 was not deemed economically viable due to low yields following hatch and release.

Regional research and management

Rob Clark, Chief Officer at the **Association of Inshore Fisheries and Conservation Authorities (AIFCAs)**, which are responsible for regional inshore fisheries management and marine conservation within six nautical miles of the UK coast, introduced three colleagues from their respective IFCA organisations.

Figure 4 – **Cuttlefish landings into England ports grouped by County for all vessels and under 10m vessels in 2019.**



Sarah Clark, Deputy Chief Officer at **Devon and Severn IFCA**, which records the highest cuttlefish landings of any IFCA district (Figure 4), presented the organisation's latest cuttlefish research and approaches to management. Findings from the CRESH (Cephalopods Recruitment from English Channel Spawning Habitat) Project, in which Devon and Severn IFCA was a research partner, found that cuttlefish laid the majority of their eggs on seagrass, closely followed by cuttlefish pots.

"For artificial media, eggs were laid in high density on cuttlefish pots. On three pots 8,000 cuttlefish eggs were counted."

Devon and Severn IFCA assesses seagrass beds annually for changes in extent and density, and has undertaken further surveys to explore potential new beds. Fishing impact studies have discovered minimal disturbance to seagrass from deploying and hauling pots, and a low level of potting for cuttlefish has been recorded within the Torbay Marine Conservation Zone (MCZ), an important area for cuttlefish spawning. This zone has been protected through the prohibition of trawlers and dredgers, as set out in the Mobile Fishing Permit Byelaw Permit Conditions, and the permit conditions of Devon and Severn IFCA's Potting Permit Byelaw also have scope to be adapted, should new conditions be introduced specifically for the local cuttlefish fishery in the future.

Chloe Smith, Inshore Fisheries and Conservation Officer at **Southern IFCA**, spoke of their voluntary cuttlefish code of practice, developed with input from the local fishing industry and introduced in 2014. The code advises fishers to leave their traps at sea once the cuttlefish season is over to allow the attached eggs to hatch – and many fishers do.

"Fishers have actively expressed their support for the Southern IFCA cuttlefish code of practice, whilst raising concerns regarding the impact of the offshore cuttlefish trawl fishery."

These concerns pertain to: the decline of the inshore pot fishery at the hands of the offshore trawl fishery; that the offshore fishery is unselective, with catches including juvenile cuttlefish that have not had a chance to breed; and that the offshore fishery operates at an unsustainable level of effort.

"The huge amount of immature cuttlefish that are taken in the winter trawl fishery needs to be addressed otherwise there's only one way this fishery is heading."

Southern IFCA is working with regulators to manage the fishery at the stock scale in order to address concerns about the offshore fishery.

Jen Lewis, Senior Research Officer at **Sussex IFCA**, detailed their innovative work in collaboration with the University of Brighton, to trial the use of artificial materials such as rope within cuttlefish traps, in order to encourage the laying of eggs. The university is now exploring more natural algae-based materials to minimise plastic pollution. If successful, these could be rolled out by the IFCA as trap modifications to reduce egg mortality and conserve future generations of the stock.

The Sussex IFCA Shellfish Permit Byelaw includes effort and gear restrictions for cuttlefish vessels. Respectively, commercial and recreational fishers are limited to 300 and two pots per permit within the District.

"Initial data shows that cuttlefish landings have increased since these restrictions came into force."

An inshore trawling exclusion area has also been established to protect **essential fish habitat (Box 3)** in the hope that it will support large-scale habitat restoration, leading to the growth of a diverse range of marine plants to support cuttlefish spawning.

Photo © Chloe Smith, Southern IFCA

National management

Professor Jean-Paul Robin from the **Université de Caen-Normandie**, provided the European perspective on the English Channel cuttlefish fishery.

There are currently no management measures in place for cuttlefish fisheries at either EU or UK levels although some individual European countries, where cuttlefish is an important fishery, have introduced national or regional effort limits and minimum landing sizes – Portugal, Normandie in France, and Galicia in Spain. This means that across much of Europe and certainly within the UK, unlimited numbers of cuttlefish of any size can be landed. In the English Channel, cuttlefish is a single population migrating between both UK and French coasts and the centre of the Channel. As both UK and France catch cuttlefish offshore, assessments have always considered it as a shared resource. Similar to the UK, French inshore trap fisheries targeting adult spawners are sensitive to the activities of offshore trawlers operating in the Channel.[9] He reported that in France, in the absence of national-level management, some local measures have been implemented, such as licences to limit the number of inshore trap fishers. However, these measures are weak and management oversights still exist:

- **The offshore cuttlefish fishery is unregulated** and the only regulations that apply to offshore trawlers are related to other fish stocks.
- **The lack of a minimum landing size is problematic**, as it allows juveniles to be caught.
- **Exemptions are still given to trawlers** targeting cuttlefish within three nautical miles.

BOX THREE
Essential Fish Habitat (EFH)

Libby West, Senior Specialist in Marine and Fisheries Evidence at **Natural England**, provided the symposium with an overview of how the protection of **Essential Fish Habitat (EFH)** could contribute to cuttlefish management.

What is EFH?
EFH is a relatively new concept in the UK, having originated in the USA in 1996.[10]

EFH is defined as:
"Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

By understanding the habitat requirements of fish and shellfish and mapping their EFHs, fishery managers and conservationists are in a better position to secure fisheries within an **ecosystem-based approach to management** (a holistic approach that considers the entire ecosystem, including humans).

Why is EFH important?
Fish and shellfish species go through several life history stages, typically including egg, larval, juvenile, and adult phases before becoming available to commercial fisheries or contributing to future generations. Each stage is closely associated with specific marine habitats, or EFH. Loss or modification of these habitats can therefore have a dramatic effect on reproduction, survival, and the sustainability of the species.

How can EFH contribute to cuttlefish management?

Cuttlefish depend on a range of EFHs:

- Eggs attach to seaweeds, seagrass, and bottom-living animals, such as tubeworms.[11]
- Juveniles hatch and develop in coastal habitats with a preference for sandy areas and seagrass beds.[11]
- Adult cuttlefish migrate offshore over the winter before returning inshore to spawn in spring.[11]

By identifying these key EFHs and the role they play in supporting cuttlefish populations, managers and conservationists can make informed decisions to prioritise and protect valuable areas for cuttlefish. This will ultimately ensure that cuttlefish have the habitats they require to carry out their life histories, while safeguarding sustainable and resilient stocks.

Dr Rebecca Korda, Senior Policy Advisor at the **Department for Environment, Food & Rural Affairs (Defra)**, concluded presentations by giving an overview of **Fisheries Management Plans (FMPs; Box 4)** and the English Frontrunner Programme.

BOX FOUR
What is a Fisheries Management Plan (FMP)?

National policies such as the UK Government's 25 Year Environment Plan (2018)[12] and the Fisheries Act (2020)[13] have committed to an ecosystem-based approach to fisheries management (a holistic approach that considers the entire ecosystem, including humans). Fisheries Management Plans (FMPs) will form a core component of this approach and therefore provide the basis of future UK fisheries management.

The Fisheries Act describes an FMP as:

"A document … that sets out policies designed to restore one or more stocks of sea fish to, or maintain them at, sustainable levels."

In essence, FMPs are species-specific plans that draw on scientific evidence to set out management interventions that will help build and maintain sustainable fish and shellfish stocks. FMPs will also contribute to achieving other environmental, social, and economic fisheries objectives.

- Plans will be based on the best available scientific advice.
- Plans can be prepared by the Government, public bodies, or industry groups, collaborating with stakeholders.
- Defra must hold a public consultation and then publish all plans.
- Once published, National Fisheries Authorities must exercise their functions in relation to the relevant FMPs.
- Each FMP must be regularly reviewed and monitored.

"Defra sees FMPs as an opportunity to work in partnership with stakeholders to have sustainable fisheries over the long term. We want our fisheries to support a revitalised and profitable fishing industry, vibrant coastal communities, and a healthy marine environment."

The Fisheries Act has placed a legal obligation on Defra to prepare and publish FMPs. As such, Defra is planning to pilot a small number of FMPs in England in 2022, under the English Frontrunner Programme, and is seeking Ministerial approval for the list of chosen species.

Dr Korda stated Defra's intention to collaborate with the MMO, Seafish, and Cefas to develop measures as part of the FMP process to effectively manage the offshore cuttlefish trawl fishery. She concluded by encouraging stakeholders to contribute to the formal consultation process on FMP priorities.

Sam Fanshawe (BLUE) closed the Symposium, thanking speakers and participants. She concluded,

"We do know quite a bit about this fishery and a lot of effort is going into better inshore management but until we get a handle on the offshore fishery the positive effects of those efforts will undoubtedly be compromised. BLUE feels that we need to move quickly to avoid a collapse in the inshore static gear fishery in the future."

The way ahead recommendations from Blue Marine Foundation

- **Management approaches for cuttlefish** need to be supported by data and assessments. To build this, a coordinated and collaborative research programme is needed across regional, national, and international jurisdictions.
- **Significant efforts are being taken to protect inshore cuttlefish stocks and habitats.**
- **The dominant offshore trawl fishery remains unregulated.** Until appropriate management measures are in place to control cuttlefish exploitation offshore, the positive impacts of inshore management and cuttlefish conservation will continue to be compromised.
- **Management measures worth exploring** to support UK cuttlefish stocks include:
  - **Seasonal and/or spatial restrictions** to protect critical spawning seasons and spawning locations, or 'essential fish habitat', from high-impact fishing gears.
  - **Fishing effort restrictions for offshore fleets** deploying non-selective mobile gears.
  - **National minimum conservation reference size** for cuttlefish to avoid capture of juveniles.
  - **Pot limits** applied throughout the English Channel.
  - **Codes of Practice** on cuttlefish trap handling to reduce egg mortality.
  - **Trap modifications**, such as the inclusion of egg-laying ropes.
- **Collaboration between the fisheries, research, and policy sectors** is key to inform and develop a sustainable, long-term cuttlefish fisheries management plan.

Photo © Paul Naylor

Next steps

Since the Symposium, Defra has confirmed the inclusion of cuttlefish in the Channel Non-quota Demersal Fisheries Management Plan. The Symposium proceedings and delegates will contribute to the early discussions in developing this plan which is due for completion in 2023.

To inform these discussions, a follow-up workshop will take place in 2022 to progress the collaborative development of measures to protect cuttlefish populations and sustainable fisheries.

Contact **Sam Fanshawe** to get involved.
sam@bluemarinefoundation.com

Photo © Colin Munro

Citation

Blue Marine Foundation (2022). Cuttlefish Symposium 2021 Proceedings Report.

The Symposium is available to view on BLUE's YouTube channel here.

Acknowledgements

Blue Marine Foundation would like to thank the following:

For their invaluable experience and input to the Symposium programme:

- Dr Chris Barrett, Senior Fisheries Advisor, Cefas
- Rob Clarke, Chief Officer, Association of IFCA
- Libby West, Senior Specialist Marine and Fisheries Evidence, Natural England

For technical support and facilitation of the Symposium and report production:

- Mindfully Wired Communications
- Rowena Taylor (design)

For funding the Symposium and BLUE's work on safeguarding at risk fisheries:

- Barclays plc

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Symposium Agenda

AGENDA

14:00 Introduction
Blue Marine Foundation

14:10 – 14:50
Session 1: Biology and Research

- **Cuttlefish biology and research** – Dr Chris Barrett, Senior Fisheries Advisor, Cefas
- **Stock assessment** – Samantha Stott, Fisheries Scientist, Cefas
- **The Cephalopod Citizen Science Project and sustainable fisheries** – Gemma Cosson
- **Cuttle Shore Film** – Rosie Ashley-East

14:50 – 15:00 Session 1 Q&A

15:00 – 15:20
Session 2: Fishery

- **Fishery status: UK landings data 2015-21** – Rachel Irish, Principal Marine Officer, Marine Management Organisation
- **Recent trends in a non-quota UK fishery: Common cuttlefish** – Dr Robert Wakeford, Managing Director, MRAG
- **Fishery perspectives** – open forum

15:20 – 15:30 Session 2 Q&A

15:30 – 15:50
Fishery perspectives – open forum

15:50 – 16:00 BREAK

16:00 – 17:00
Session 3: Management

- **Global review of cuttlefish fisheries management** – Dr Chris Barrett, Senior Fisheries Advisor, Cefas
- **IFCA research and management measures** – Rob Clark, Chief Officer, Association of IFCAs
  - Devon & Severn IFCA – Sarah Clark, Deputy Chief Officer
  - Southern IFCA: – Cuttlefish Code of Practice – Chloe Smith, Inshore Fisheries and Conservation Officer
  - Sussex IFCA – Jen Lewis, Senior Research Officer
- **Exploitation of the English Channel cuttlefish population** – Professor Jean-Paul Robin, Universite de Caen
- **Essential Fish Habitat** – What is it, where is it and what do we do about it - Libby West, Senior Specialist Marine and Fisheries Evidence, Natural England
- **Fisheries Management Plans and the English Frontrunner Program** – Dr Rebecca Korda, Senior Policy Advisor, Defra

17:00 – 17:15 Session 3 Q&A

17:15 – 17:30
Discussion and Next steps

BLUE MARINE FOUNDATION

Cefas

Centre for Environment Fisheries & Aquaculture Science

THE CEPHALOPOD Citizen Science Project

Marine Management Organisation

MRAG

Association of IFCA

Southern IFCA Inshore Fisheries and Conservation Authority

Devon & Severn IFCA Inshore Fisheries and Conservation Authority

Sussex IFCA Sussex Inshore Fisheries and Conservation Authority

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