

Conservation Authority

Fal Native Oyster Fishery



Season 2020-2021 Permit Statistics Report

Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA)

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1 Introduction

Cornwall Council (Port of Truro), as the grantee under the Truro Port Fishery Order 1936 (as amended), was responsible for the management of the native oyster fishery in the River Fal. In 2013, Cornwall Inshore Fisheries and Conservation Authority (IFCA) began the process of applying to Defra for a new Regulating Order to manage the fishery as the previous Order was due to expire in 2014 and Truro Harbour was not seeking to renew the Order. Cornwall IFCA took over the management of the Fal Oyster Fishery from the start of the 2014 season.

The Fal Oyster Fishery is one of three known remaining wild capture oyster fisheries in England (Fal, Solent and Thames Estuary) (Long *et al.*, 2017). The Fishery is exploited by hand gathering and dredging from non-powered vessels, either haul tow punts or sailing boats. It is thought to be the last commercial sailing fleet in Europe (Long *et al.*, 2017).

As Grantee of the Regulating Order, Cornwall IFCA has a responsibility for monitoring and managing the stocks of oysters within the Fishery. Monitoring is achieved through annual dredge surveys and monthly catch statistics submitted by all licence holders. Dredge surveys are conducted by Cornwall IFCA in January and describe the catch rates and distribution of native oysters (*Ostrea edulis*) within the Fishery at the time of survey. Monthly catch statistics are completed by every licence holder, as stipulated in the Regulations. Analysis of this data is used to quantify the volume of native oysters and other species that have been removed from the Fishery each season and the total fishing effort.

This report summarises the monthly catch statistics of native oysters (*O. edulis*) from the seventh season of the Fal Oyster Fishery as managed by Cornwall IFCA (2020-2021). Previous years monthly catch statistics are presented in Appendix 1. The report also summarises the reported weight of other shellfish species removed from the Fishery over this season.

Since the season of 2016-2017 a market has developed for queen scallops, locally referred to as *queenies*. They have been recorded on the statistical returns forms as 'queens'. Cornwall IFCA officers believe the species identified to primarily be the variegated scallop (*Mimachlamys varia*) as opposed to the more commonly referred to queen scallop (*Aequipecten opercularis*) (Jenkin *et al.*, 2020). For simplicity the term 'queen scallop' has been used to describe this species for the entirety of the report.

2 Aims and Objectives

- To describe the fishing effort and removal of native oysters (*O. edulis*) from the Fal Oyster Fishery during the seventh season managed by Cornwall IFCA.
- To describe the fishing effort and removal of queen scallops (*Mimachlamys varia*) from the Fal Oyster Fishery during the seventh season managed by Cornwall IFCA.
- To describe the removal of mussels (*Mytilus edulis*) from the Fishery during the seventh season managed by Cornwall IFCA.
- To summarise the total landings of non-target species from the Fishery.

3 Methodology

3.1 Data Collection

All licence holders in the Fal Oyster Fishery must complete a monthly statistical returns form to Cornwall IFCA (The Monthly Shellfish Statistics Form is shown in Appendix 2). These returns forms include daily totals of fishing hours, proportion of time spent fishing in each of the Fal Fishery Management Areas (Figure 1) and the weight of each species of shellfish removed from the Fishery per day.

Upon receipt of the returns forms Cornwall IFCA Admin Officers input the data into a Microsoft Excel database for the 2020-2021 season which follows the same format of the Monthly Shellfish Statistics Form (Appendix 2).

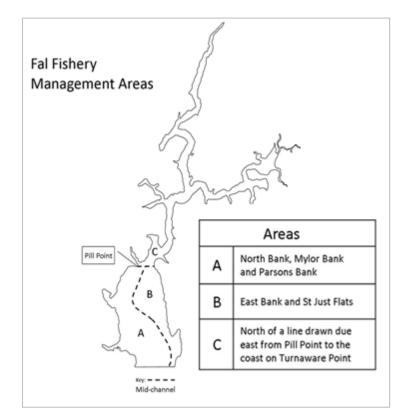


Figure 1: Fal Fishery Management Areas.

3.2 Analysis Methodology

3.2.1 Overall Statistics

The total weight, in kilogrammes (kg), of each shellfish type removed from the Fishery per season was summed. The figure included shellfish taken outside of the main dredging season. Also included are records which have been omitted from further analysis due to lack of attribute data, for example hours fished, or number of dredges used. Fishing hours were summed for all Areas, throughout the entire year with differentiation between fishing methods.

For this study only the native oysters reportedly removed from the *Fishery*, not lay areas, during the fishery season have been analysed. Oysters placed on and removed from lay areas have been reported separately (Section 3.2.4).

3.2.2 Hand Gathering

For a daily record where fishing method was stated as hand gathering, the following formula was used;

HGh_{xds} = Fh_{xd} x P_d

Where HGh_{xd} is hand gathering hours in Area x on day d, Fh_{xd} is the hours fishing in Area x reported on day d by the permit holder, P is the number of people fishing under that licence on that day and s is the weight of shellfish landed of species.

From the data it appears that licence holders targeted either mussels or oysters when hand gathering, therefore, to calculate total hand gathering effort towards mussels, daily hand gathering hours were summed by month where the landed catch was mussels. The same was repeated for oysters. The landed catch for these records was also summed.

Landing per unit effort (LPUE) by species per month was calculated as:

LPUE (kg's shellfish/hours hand gathering)_{ms} = $\sum (SH_{xds})_m / \sum (HGh_{xds})_m$

Where $\sum (SH_{xds})_m$ is the sum for month *m*, of the weight of shellfish landed of species *s*, per day (*d*) (where the number of dredges is reported as '0') in Area x, and $\sum (HGh_{xds})_m$ is the sum for month *m* of daily (*d*) hand gathering hours targeting species *s*, in Area x.

3.2.3 Dredging

For each daily record, dredge hours (Dh) were calculated by Area as:

$Dh_{xd} = Fh_{xd} \times Pr_{xd} \times D_d$

Where Fh_{xd} is fishing hours in Area x on day d, Pr_{xd} is the proportion of time spent fishing in Area x on day d and D_d is the number of dredges used on day d. These values were then summed by month for total dredge hours (Dh) in each Area.

For each daily record, total shellfish landed (SH) per Area was calculated as:

$SH_{xds} = SH_{sd} \times Pr_{xd}$

Where SH_{sd} is shellfish landed of species *s* on day *d*, and Pr_{xd} is the proportion of time spent in Area *x* on day *d*. These values were then summed by month for total shellfish removed from the Fishery by Area by month.

LPUE by month was calculated as:

LPUE (kg's of shellfish landed/ dredge hours) = $\sum (SH_{xds})_m / \sum (Dh_{xd})_m$

Where $\sum (SH_{xds})_m$ is the sum for month *m*, of the daily (*d*) total landed values of the shellfish of species *s* in Area *x*, and $\sum (Dh_{xd})_m$ is the sum for month *m*, of the daily (*d*) dredge hours in Area *x*.

3.2.4 Lay Areas

For each season the total weight of native oysters reported to be placed on any lay area and removed from any lay area was totalled for the entire year (October 2020 to September 2021).

4 Results

4.1 Overall Statistics

The weight of all shellfish removed from the Fishery during the 2020-2021 season is presented in Table 1. A total of 1,391 kg of slipper limpets (*Crepidula fornicata*), a non-native species, were also removed from the fishery during the 2020-2021 season by licence holders (Appendix 1 Table 6).

Table 1: 2020-2021 Season (October 2020 to September 2021) totals (kg) of landed shellfish for the whole Fal Fishery, dredge and hand gathered (including all data submitted, no removals for lack of attribute data). * excludes weight of native oysters removed and placed onto lays.

Season	*Native Oysters (kg)	Mussels (kg)	Queen Scallops (kg)	Scallops (kg)	Pacific Oysters (kg)	Cockles (kg)	Winkles (kg)	Whelks (kg)
2020-2021	12,332	686	87,876	331	492	0	639	0

4.2 Hand Gathering

The totals of shellfish landed by hand gathering from October to March can be seen in Table 2. The totals for previous seasons (October to September) can be seen in Appendix 1 Table 2. The majority of hand gathering time was spent in Area C for all species. Hand gathering hours directed towards oysters and mussels can be seen in Table 3.

Table 2: Totals of landed shellfish (kg) by hand gathering in the Fal Fishery during October 2020 to March 2021. * excludes weight of native oysters removed and placed onto lays.

Management Area	Hand gathering Hours	*Native Oysters (kg)	Mussels (kg)	Queen Scallops (kg)	Scallops (kg)	Pacific Oysters (kg)	Cockles (kg)	Winkles (kg)	Whelks (kg)
Α	15	111	178	0	0	0	0	0	0
В	3	28	0	0	0	0	0	0	0
С	23	244	0	0	0	0	0	0	0
Total	41	382	178	0	0	0	0	0	0

Table 3: Total weight of native oysters (kg's) and mussels (kg's) landed by hand gathering from the Fishery (October 2020 to March 2021), total hand gathering hours and Landings Per Unit Effort (LPUE) (kg oysters or mussels/ hand gathering hours) by Management Area. * excludes weight of native oysters removed and placed onto lays.

		Native Oysters		Mussels				
Management Area	Hand gathering Hours	*Native Oysters landed (kg)	LPUE (kg oysters/ hour fished)	Hand gathering Hours	Mussels landed (kg)	LPUE (kg mussels/ hour fished)		
Α	11	111	10.07	8	178	22.25		
В	3	28	9.17	0	0	0		
С	12	244	20.33	0	0	0		
Total	26	382	14.70	8	178	22.25		

4.3 Dredging

There were 44 dredge licences issued for the 2020-2021 season. The totals of all shellfish species landed by dredging from October to March can be seen in Table 4 and for each season in Appendix 1 Table 4.

Table 4: Totals of landed shellfish (kg) by dredging in the Fal Fishery during October 2020 to March 2021. * excludes weight of native oysters removed and placed onto lays.

Management Area	Fishing Hours	Dredge Hours	*Native Oysters (kg)	Mussels (kg)	Queen Scallops (kg)	Scallops (kg)	Pacific Oysters (kg)	Cockles (kg)	Winkles (kg)	Whelks (kg)
Α	2,802	6,579	5,768	7	50,786	163	7	0	40	0
В	2,230	3,893	5,630	126	34,821	62	27	0	25	0
C	239	373	152	149	114	6	27	0	310	0
Total	5,271	10,845	11,550	282	85,721	231	60	0	375	0

4.3.1 Native oysters

The 2020-2021 season landings of native oysters are presented in Table 5. When split by Management Area, the majority of native oysters landed for sale were from Area A and Area B with LPUE highest in Area B.

Table 5: Total weight of native oysters (kg's) landed by dredging (October 2020 to March 2021), total dredge hours and Landings Per Unit Effort (LPUE) (kg oysters/dredge hours) by Management Area and for the entire Fishery. * excludes weight of native oysters removed and placed onto lays.

Management Area	*Native Oysters (kg)	Dredge Hours	LPUE (kg oysters/ dredge hour)
А	5,768	6,579	0.88
В	5,630	3,893	1.45
С	152	373	0.41
Total	11,550	10,845	1.06

The LPUE of oysters for sale by month (Figure 2) remained fairly stable throughout the season.

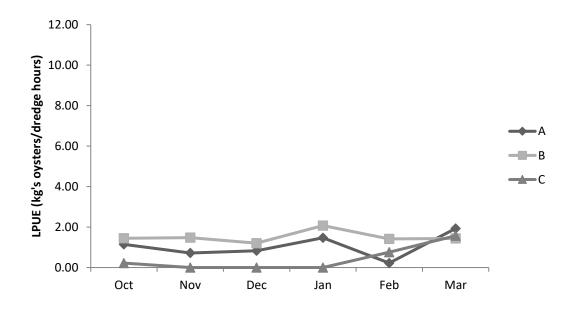


Figure 2: Landings Per Unit Effort (LPUE) (kg of native oysters for sale/dredge hours) by Areas A to C for the 2020-2021 season.

All three Management Areas followed a similar monthly pattern receiving the greatest effort in the early season with a drop during January in Area A (Figure 3). The reduction in effort from December can be seen in previous seasons for Area A (Appendix 1 Table 8). Area B showed a slight increase in effort and oyster removal during March (Figure 3).

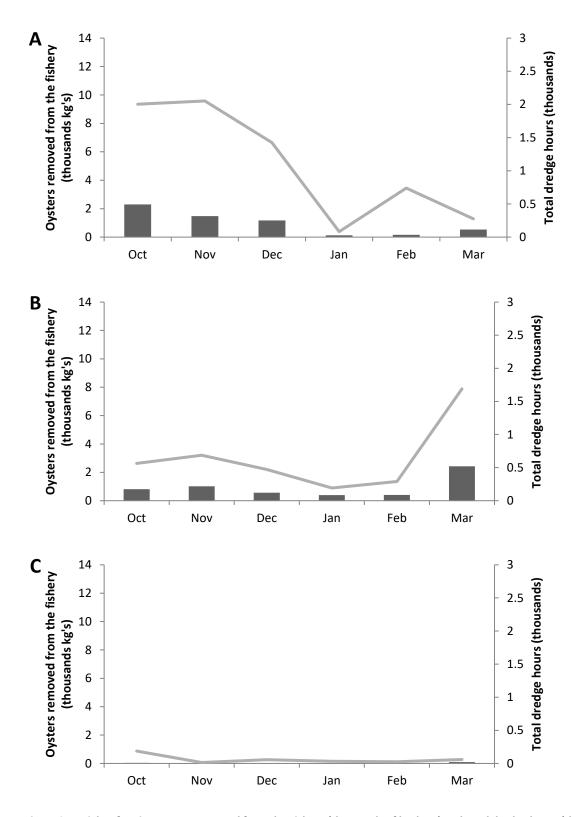


Figure 3: Weight of native oysters removed from the Fishery (thousands of kg, bars) and total dredge hours (thousands of hours, lines) by Areas A to C, for the 2020-2021 season.

CIFCA Fal Oyster Fishery Permit Returns Statistics 2020-2021 4.3.2 Queen scallops

The total weight of queen scallops (kg) landed during the season of 2020-2021 is presented in Table 6. When split by

Management Area, the majority of queen scallops landed were from Area A.

Table 6: Total queen scallops landed (kg) by dredging (October 2020 to March 2021), total dredge hours and Landings Per Unit Effort (LPUE) (kg queen scallops/dredge hours) by Management Area and for the entire Fishery.

Management Area	Queen Scallops (kg's)	Dredge Hours	LPUE (kg queen scallops/ dredge hour)
А	50,786	6,579	7.72
В	34,821	3,893	8.94
C	114	373	0.31
Total	85,721	10,845	7.90

The LPUE of queen scallops decreased over the months in Area A and remained high in Area B except during January (Figure 4).

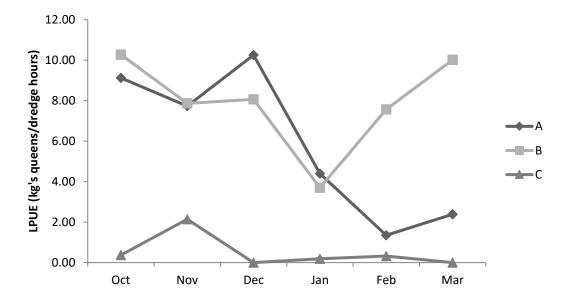


Figure 4: Landings Per Unit Effort (LPUE) (kg of queen scallops/dredge hours) by Area for the 2020-2021 season.

Both the effort and weight of queen scallops removed from the fishery in season 2020-2021 is shown in Figure 5. The season showed a similar trend with the highest effort at the beginning for Area A with a drop from January (Figure 5). Area B showed an increase in effort and queen scallop removal during March.

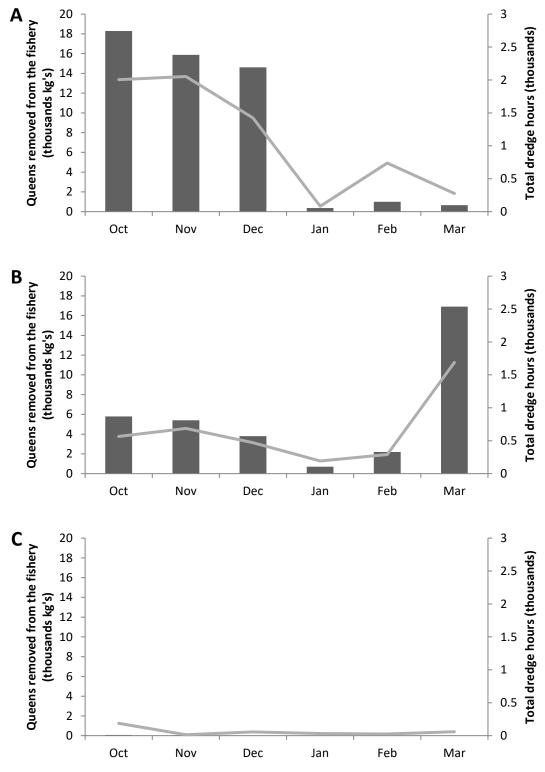


Figure 5: Weight of queen scallops removed from the Fishery (thousands of kg, bars) and total dredge hours (thousands of hours, lines) by Areas A to C, for the 2020-2021 season.

CIFCA Fal Oyster Fishery Permit Returns Statistics 2020-2021 4.4 Lay Areas

The weight of native oysters fished (by both dredging and hand gathering) and placed on lay areas were kept separate as these remained within the Fishery.

The exploitation within the oyster fishery is restricted to the 1st October to 31st March in any year. Additionally, limited amounts of year-round intertidal handpicking by holders of dredge licenses are permitted from 1st April to 30th September. It is, however, an offence under the Shellfish Act 1967 to sell native oysters between 14th of May and the 4th of August in any year.

The total weight of native oysters placed onto lays can be seen in Table 7, a greater weight of oysters was reportedly placed onto the lays than removed from the lays for sale. Totals for previous seasons can be seen in Appendix 1 Table 7.

Table 7: Total weight of native oysters (kg) placed on and removed from lay areas, by dredging and hand gathering, in the Fal Fishery for the 2020-2021 season.

Month	Native oysters placed on lays (kg)	Native oysters removed from lays (kg)
October	1,766	505
November	2,040	441
December	1,469	100
January	1,334	0
February	475	0
March	1,604	250
April	0	1,674
May	0	777
June	0	0
July	0	0
August	0	0
September	0	666
Total	8,687	4,413

5 Discussion

Cornwall IFCA has received monthly catch statistics submitted by all licence holders since taking over the management of the Fal Oyster Fishery from the beginning of the 2014 fishery season. The data has allowed assessments of the fishing effort and removal of shellfish from the fishery to be made.

No differentiation was made between sail and haul tow boats in the calculations in this report. It could be assumed that punts would have a relatively consistent towing speed and catch rate due to the nature of the fishing activity. Conversely, sail boats are affected by multiple factors; the wind speed and direction can have considerable impact on towing speeds and efficiency (Street *et al.*, 2017).

5.1 Overall Statistics

Marketing issues for native oysters in the 2019-2020 season continued into this season. Some native oysters from the Fal Fishery are sold in the UK but markets and restaurants have been affected from further COVID-19 lockdowns and restrictions throughout the 2020-2021 season.

Further issues effecting the Fal Fishery arose from the UK leaving the European Union (EU) at the end of 2020. From the 1st January 2021 there were changes in the legal requirements for exporting live bivalve molluscs (LBM) outside of the UK into the EU. This was because any LBM that have come from wild capture fisheries with a Class B or C shellfish production area were classed as exports of live animals and required an accompanying Live Animal Health Certificate. Although this certification was due to come into force from the 21st April 2021, the EU maintained a stance of not accepting any LBM that required further processing to enter the human food chain. LBM which are suitable for direct human consumption, either purified (depurated) or from a Class A production area, are considered to be food products of animal origin and therefore were still able to be exported to the EU accompanied by an Export Health Certificate.

Oysters (*O. edulis*) and mussels (*Mytilus* spp) in the Fal Fishery were a Class B production area (Cefas, 2021). Therefore depurated oysters and mussels from the Fal Fishery could continue to be exported to the EU with an Export Health Certificate. However, oysters for relaying or purification could not be exported without a Live Animal Health Certificate.

The main product exported from the Fal Fishery is queen scallops which are exported to France for processing. Cornwall Port Health Authority, with support from Cornwall IFCA, undertook fast track sampling process to obtain a Class B production area for queen scallops (*Mimachlamys varia*) from the Fal Fishery (Cefas, 2021). On 10th February the first export of purified queen scallops and oysters was made to the EU after expanded depuration capacity was established by merchants sourcing those products from the Fal Fishery (Trewhela (Cornwall Live), 2021).

5.2 Hand Gathering

Alongside native oysters and mussels, other species are hand gathered from the Fishery which include cockles, winkles and pacific oysters. Hand gathering hours, along with the total weight of oysters and mussels landed has reduced in the past three seasons compared to previous seasons (Appendix 1 Table 1).

CIFCA Fal Oyster Fishery Permit Returns Statistics 2020-2021 5.3 Dredging

5.3.1 Native oysters

The 2020-2021 season saw the lowest quantity of oysters removed from the Fishery, along with effort in terms of dredging hours, since Cornwall IFCA began managing the Fishery in 2014 (Appendix 1 Table 5). The combination of COVID-19 restrictions, difficulties in marketing, and changes in the legal requirements for exporting have affected the Fal Fishery. The general trend for LPUE in all Management Areas was relatively stable. Dredge hours declined in Management Areas A and B from November onwards and the then increased during February to March which follows the same timeline as the changes in the legal requirements for exporting LBM mentioned previously.

5.3.2 Queen scallops

The weight of queen scallops removed from the fishery during the 2020-2021 season was considerably greater than all other shellfish species (Table 1). Since queen scallops were removed from by-catch limitations in 2017, the quantity landed and the LPUE of queen scallops in the fishery has increased with each subsequent season (Appendix 1 Table 5) and LPUE (kg queens/ dredge hour) has nearly doubled from 4 in 2017-2018 season to 7.9 in 2020-2021 season. For the past few seasons some licence holders have stopped targeting oysters and focussed solely on queen scallops. LPUE of queen scallops remained high for October to December and then dropped in January due to limited or no fishing. There was another peak in LPUE during March in Management Area B (Figure 4). This follows the same trend as dredge hours from when export was halted in January when the UK left the EU and restarted in February when purified queen scallops could be exported.

5.4 Lay Areas

It was calculated that a greater weight of native oysters was placed onto the lays than removed from the lays during the 2020-2021 season. Generally, oysters are put onto lays when demand is low or if a licence holder intends to keep them to be removed at a later date. The ratio of oysters laid to those removed from the lays during the 2020-2021 season, as well as from 2019-2020 to 2017-2018 seasons (Appendix 1 Table 7) were likely influenced by recent difficulties in marketing and export. This trend differs from previous seasons; from 2014-2015 to 2016-2017, where the reported weight of oysters removed from the lays for sale was consistently higher than that reported to be placed onto the lays (Appendix 1 Table 7).

5.5 Data Confidence

Dredging and hand gathering data totals from seasons 2016-2017 to 2019-2020 are a slight under representation of the actual returns data due to missing attribute data on some of the submitted forms. This is from where gear type, number of licences or hours fished were not advised on the returns. Therefore, LPUE has been calculated on the remaining data. Table 1 in this report contains all data submitted for total (kg) of shellfish, with no removals for lack of attribute data.

All monthly returns data submitted to Cornwall IFCA were entered into a Microsoft Excel database by Cornwall IFCA Administrative and Scientific Officers. Quality assurance was also carried out a Scientific Officer reviewing a minimum of 10% of all data entered. An example of a blank monthly return form is shown in (Appendix 2). Officers have made considerable efforts to ensure all returns are submitted.

6 References

Cefas, 2021. Classification Zone Maps: Fal. Available from: <u>https://www.cefas.co.uk/data-and-publications/shellfish-</u> classification-and-microbiological-monitoring/england-and-wales/classification-zone-maps/ [Accessed: 19/11/2021]

Jenkin, A., Trundle, C., Sturgeon, S. and Street, K. 2020. Fal Oyster Survey. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA), Hayle.

Long, S., French-Constant, R., Metacalfe, K., and Witt, M.J., 2017. Have Centuries of Inefficient Fishing Sustained a Wild Oyster Fishery: a Case Study. Fisheries and Aquaculture Journal, 8: 2.

Street, K., Davies, S., Trundle, C., Jenkin, A. and Naylor, H. 2017. Fal Oyster Fishery 2016/2017 Season Permit Statistics Report. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA), Hayle.

Trewhela, L. (Cornwall Live). 2021. First oyster exports since Brexit save historic Fal Fishery from Doom. Available from: https://www.cornwalllive.com/news/cornwall-news/first-oyster-exports-brexit-save-5025070 [Accessed: 19/11/2021]

Appendix 1 Table 1: Season totals (October to September) of landed shellfish (kg) for the whole Fal Fishery, dredge and hand gathered (including all data submitted, no removals for lack of attribute data). * excludes weight of native oysters removed and placed onto lays. N.B. '-' denotes where data was not recorded.

Season	*Native Oysters (kg)	Mussels (kg)	Queen Scallops (kg)	Scallops (kg)	Pacific Oysters (kg)	Cockles (kg)	Winkles (kg)	Whelks (kg)
2014-2015	90,641	14,767	1,047	359	-	36	-	-
2015-2016	67,595	10,811	180	33	-	86	-	-
2016-2017	68,341	20,626	7,078	525	50	60	-	-
2017-2018	50,220	22,069	71,488	704	64	725	1,642	0
2018-2019	36,076	4,443	82,335	843	2,101	225	702	20
2019-2020	19,244	1,840	91,731	1,038	10,213	0	594	0
2020-2021	12,332	686	87,876	331	492	0	639	0

Appendix 1 Table 2: Season totals (October to September) of landed shellfish (kg) by hand gathering in the Fal Fishery. * excludes weight of native oysters removed and placed onto lays. N.B. ' – ' denotes where data was not recorded.

Season	Hand gathering Hours	*Native Oysters (kg)	Mussels (kg)	Queen Scallops (kg)	Scallops (kg)	Pacific Oysters (kg)	Cockles (kg)	Winkles (kg)	Whelks (kg)
2016-2017	330	4,256	6,443	13	0	0	1	-	-
2017-2018	842	3,588	20,518	5	241	455	0	225	0
2018-2019	375	1,934	3,674	167	0	1,538	50	126	0
2019-2020	141	881	1,228	50	0	10,199	0	230	0
2020-2021	60	382	349	0	0	232	0	0	0

Appendix 1 Table 3: Total weight of native oysters (kg's) and mussels (kg's) removed from the Fishery by hand gathering each season (October to September), total hand gathering hours and Landings Per Unit Effort (LPUE) (kg oysters or mussels/ hand gathering hours). * excludes weight of native oysters removed and placed onto lays.

		Native Oysters		Mussels					
Season	Hand gathering Hours	*Native Oysters landed (kg)	LPUE (kg oysters/ hour fished)	Hand gathering Hours	Mussels landed (kg)	LPUE (kg mussels/ hour fished)			
2016-2017	100	946	9.43	214	6,243	29.17			
2017-2018	260	3,588	13.79	570	20,518	36.00			
2018-2019	107	1,934	18.12	130	3,674	28.26			
2019-2020	53	881	16.78	40	1,228	30.51			
2020-2021	26	382	14.70	15	349	23.27			

Season	Fishing Hours	Dredge Hours	*Native Oysters (kg)	Mussels (kg)	Queen Scallops (kg)	Scallops (kg)	Pacific Oysters (kg)	Cockles (kg)	Winkles (kg)	Whelks (kg)
2014-2015	7,605	15,728	87,298	1,322	1,047	359	-	36	-	-
2015-2016	7,638	14,068	66,023	1,290	140	33	-	86	-	-
2016-2017	8,239	15,170	56,792	3,604	4,040	117	0	10	-	-
2017-2018	7,785	17,234	44,605	414	69,220	462	151	64	381	0
2018-2019	6,907	16,545	30,896	359	74,472	841	318	175	469	20
2019-2020	5,271	11,897	16,491	419	71,408	1,008	14	0	220	0
2020-2021	5,271	10,845	11,550	282	85,721	231	60	0	375	0

Appendix 1 Table 4: Season totals (October to March) of landed shellfish (kg) by dredging in the Fal Fishery. * excludes weight of native oysters removed and placed onto lays. N.B. '-' denotes where data was not recorded.

Appendix 1 Table 5: Total weight of native oysters and queen scallops (kg's) removed from the Fishery by dredging each season (October to March) total dredge hours and Landings Per Unit Effort (LPUE) (kg oysters or queen scallops/dredge hours). * excludes weight of native oysters removed and placed onto lays.

Season	Dredge Hours	*Native Oysters (kg)	LPUE (kg oysters/ dredge hour)	Queen Scallops (kg)	LPUE (kg queens/ dredge hour)
2014-2015	15,728	87,298	5.55	1,047	0.07
2015-2016	14,068	66,023	4.69	140	0.01
2016-2017	15,170	56,792	3.74	4,040	0.27
2017-2018	17,234	44,605	2.59	69,220	4.02
2018-2019	16,545	30,896	1.87	74,472	4.50
2019-2020	11,897	16,491	1.39	71,408	6.00
2020-2021	10,845	11,550	1.06	85,721	7.90

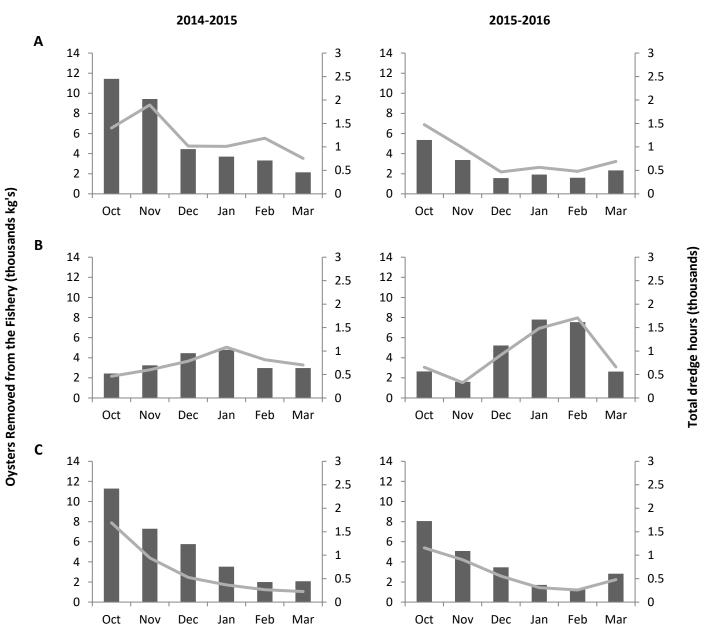
Appendix 1 Table 6: Total weight of slipper limpets (kg) removed by dredging from the Fal Fishery between October to March each season.

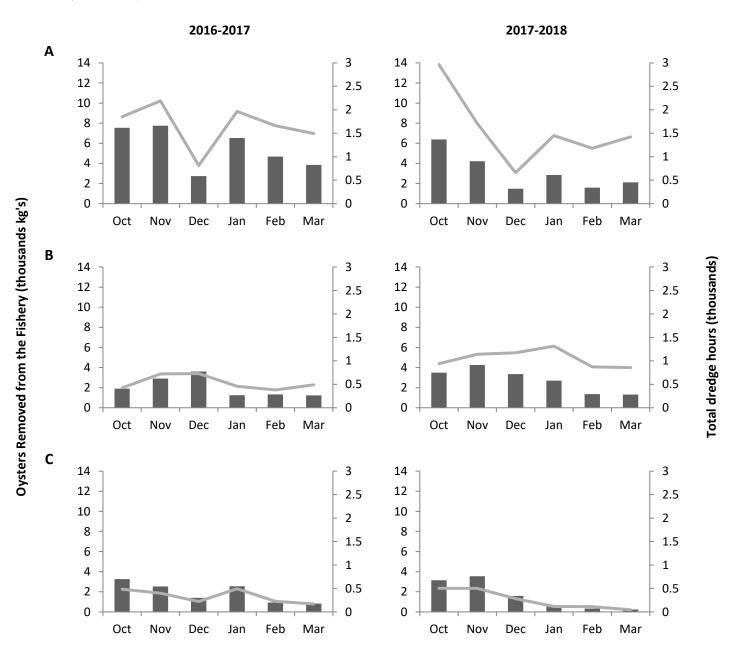
Season	Slipper limpets removed (kg's)
2014-2015	5,111
2015-2016	2,363
2016-2017	1,863
2017-2018	2,429
2018-2019	2,497
2019-2020	1,045
2020-2021	1,391

Appendix 1 Table 7: Total weight of native oysters (kg) placed on and removed from lay areas in the Fal Fishery, dredge and hand gathered, between October to September each season.

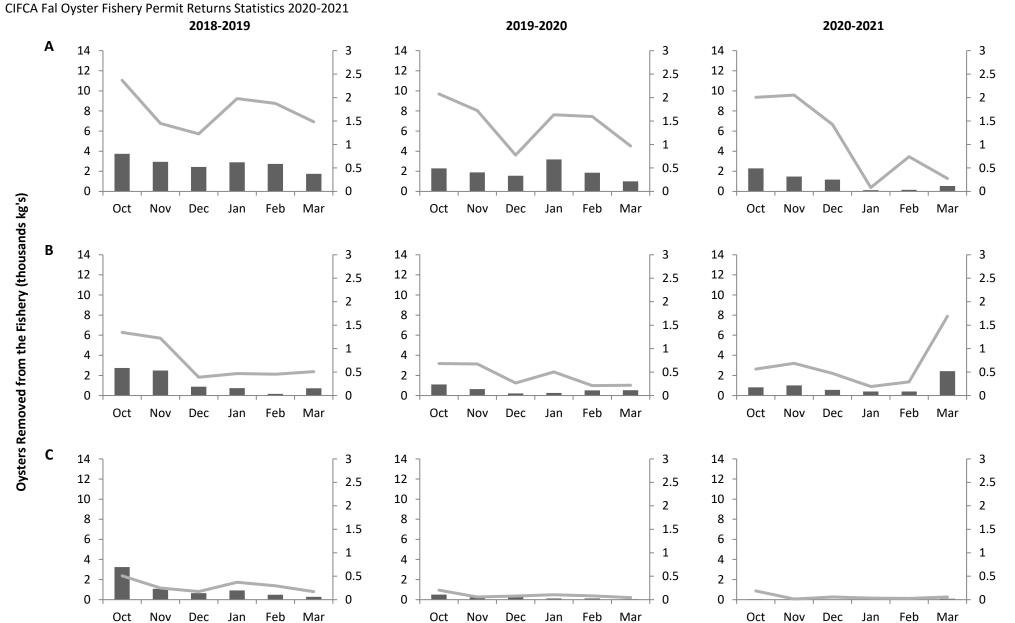
Season	Native oysters placed on lays (kg)	Native oysters removed from lays (kg)
2014-2015	15,377	20,594
2015-2016	2,758	5,590
2016-2017	6,641	7,818
2017-2018	11,268	5,103
2018-2019	11,329	4,074
2019-2020	7,444	5,294
2020-2021	8,687	4,413

Appendix 1 Table 8: Weight of native oysters removed from the Fishery (thousands of kg, bars) and total dredge hours (thousands of hours, lines) by Areas A to C, for each season (October to March).





Total dredge hours (thousands)



18

		Fisheries and vetion Authority			Pleas	e return co			JST BE MA				month end			Year		
		Fishing M (one metho		Time spent fishin (hours)		shing		ative Oys (weight in					ner specie eight in kg			Pest species (kg)		
	-	Dredging/ Hand-	No of licences		areas ove			red from hery for	Removed from lay area	Mussels	Scallops	Queens	Cockles	Pacific Oysters	Other (please state)	Slipper limpets		
Ь	Date Zndv	gathering Hand	in use	A	A	A	В	с 2	sale 4	layarea 1	for sale			0.5			Winkles I	destroyed
	3rd	Dredge	4	11/2	3	-	15	2		1	0.2	2				1		
	5#~	Hand	1			2	2	0.5	5									
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[this I	ishing month tify that th		f no fishi please ticl	ng has b this box	een carri	ed out th	nis month	,	Activities finished		If you oysters	are not or musse	intendin els from t	nk you. ng to take any he Fal Fishery ar ase tick this box.	ea up to		
	Licer	nce No.		Name				DOX CAPITALS	Signatu	re				1	Date			