



Inshore Fisheries and
Conservation Authority

Fal Native Oyster Fishery



Season 2018-2019

Permit Statistics Report

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CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

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CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

Contents

List of Figures	v
List of Tables	v
1 Introduction	6
2 Aims and Objectives	6
2.1 Aims	6
2.2 Objectives	7
2.2.1 Native Oysters	7
2.2.2 Mussels	7
2.2.3 Non- target species.....	7
2.2.4 Queen scallops.....	7
3 Methodology	7
3.1 Data Collection and data management	7
3.2 Analysis Methodology.....	8
3.2.1 Overall Statistics	8
3.2.2 Hand Gathering.....	8
3.2.3 Dredging	9
3.2.4 Lay Areas.....	9
4 Results	9
4.1 Overall Statistics	9
4.2 Hand Gathering.....	10
4.3 Dredging.....	10
4.3.1 Oysters.....	10
4.3.2 Queen scallops.....	13
4.4 Lay Areas.....	16
5 Discussion	16
5.1 Overall Statistics	16
5.2 Hand gathering	16
5.2.1 Hand gathering oysters.....	17
5.2.2 Hand gathering mussels	17
5.3 Dredging.....	17
5.3.1 Oysters.....	17
5.3.2 Queen scallops.....	17
5.4 Lay Areas.....	17
5.5 Data Confidence	18
6 References	19
7 Appendix	20

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

List of Figures

Figure 1: Fal Fishery Management Areas.	8
Figure 2: Landings Per Unit Effort (LPUE) (kg of oysters/dredge hours) by Areas A to C for the 2018-2019 season.....	11
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 2018-2019 season.....	12
Figure 4: Landings Per Unit Effort (LPUE) (kg of queen scallops/dredge hours) by Area for the 2018-2019 season.....	13
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 2018-2019 season.....	15

List of Tables

Table 1: Season 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).	9
Table 2: 2018-2019 Season Hand gathering totals for the whole season (October to March) by Management Area and LPUE (kg oysters/dredge hours).	10
Table 3: Total weight of native oysters (kg's) removed from the Fishery each season (October to March) total dredge hours and Landings Per Unit Effort (LPUE) (kg oysters/dredge hours).	10
Table 4: Native oysters landed (kg) per season (October to March) and Landings Per Unit Effort (LPUE) (kg oysters/dredge hours) by Management Area.....	10
Table 5: Season 2018-2019 monthly native oyster landings (kg) by Management Area.	11
Table 6: Total queen scallops removed from the Fishery for the 2018-2019 season (October to March) total dredge hours and Landings Per Unit Effort (LPUE) (kg oysters/dredge hours).	13
Table 7: Landings Per Unit Effort (LPUE) and queen scallops landed (kg) per season (October to March) and LPUE (kg oysters/dredge hours) by Management Area	13
Table 8: Season 2018-2019 monthly queen scallop landings (kg) by Management Area.....	14
Table 9: Total weight of oysters (kg) placed on and removed from lay areas in the Fal Fishery for the 2018-2019 season..	16

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

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 fifth season of the Fal Oyster Fishery as managed by Cornwall IFCA (2018-2019). Previous years monthly catch statistics are presented in the appendix. 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.*, 2017). For simplicity the term 'queen scallop' has been used to describe this species for the entirety of the report.

2 Aims and Objectives

2.1 Aims

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

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

2.2 Objectives

2.2.1 Native Oysters

- Analyse the 2018-2019 season permit returns data, calculated by Fishery Areas A to C:
 - Calculate the total weight of native oysters removed from the Fishery.
 - Calculate the total fishing hours and hand gathering hours.
 - Make an estimation of Landings per Unit Effort (LPUE) for dredged native oysters.
- Summarise the recorded weights of oysters placed on, and removed from lay areas in the Fal Fishery.

2.2.2 Mussels

- Analyse the 2018-2019 season permit returns data, calculated by Fishery Areas A to C:
 - Total mussel weight removed from the Fishery.
 - Make an estimation of LPUE.

2.2.3 Non- target species

- Calculate total landed weights of all other species landed for the season 2018-2019.

2.2.4 Queen scallops

- Analyse the 2018-2019 season permit returns data, calculated by Fishery Areas A to C for queen scallops:
 - Calculate the total weight of queen scallops removed from the Fishery.
- Make an estimation of LPUE for dredged queen scallops.

3 Methodology

3.1 Data Collection and data management

All licence holders in the Fal Oyster Fishery must complete a monthly statistical returns form to Cornwall IFCA as previously described in Section 1 (The 2018-2019 Season Monthly Shellfish Statistics Form is shown in Annex 1). 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 2010 spreadsheet for the 2018-2019 season which follows the same format of the 2018-2019 Season Monthly Shellfish Statistics Form (Annex 1).

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

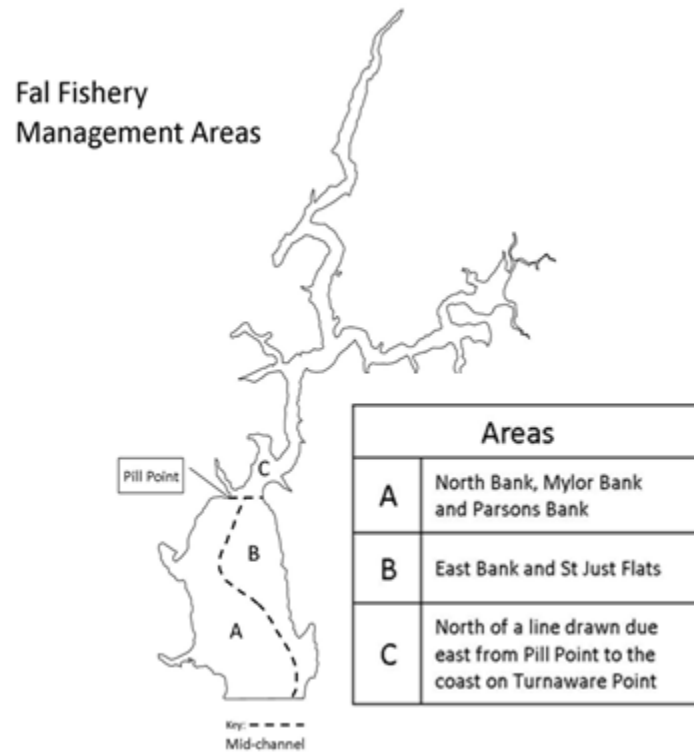


Figure 1: Fal Fishery Management Areas.

3.2 Analysis Methodology

3.2.1 Overall Statistics

The total weight, in kilogrammes, 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 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;

$$\mathbf{HGh_{xds} = Fh_{xd} \times P_d}$$

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

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

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

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

Where $\sum(\text{SH}_{xds})_m$ 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 $\sum(\text{HGh}_{xds})_m$ 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:

$$\text{Dh}_{xd} = \text{Fh}_{xd} \times \text{Pr}_{xd} \times \text{D}_d$$

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:

$$\text{SH}_{xds} = \text{SH}_{sd} \times \text{Pr}_{xd}$$

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:

$$\text{LPUE (kg's of shellfish landed/ dredge hours)} = \sum(\text{SH}_{xds})_m / \sum(\text{Dh}_{xd})_m$$

Where $\sum(\text{SH}_{xds})_m$ is the sum for month m , of the daily (d) total landed values of the shellfish of species s in Area x , and $\sum(\text{Dh}_{xd})_m$ 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 oysters reported to be placed on any lay area and removed from any lay area was totalled for the entire year (October to September).

4 Results

4.1 Overall Statistics

The weight of all shellfish removed from the Fishery during the 2018-2019 season is presented in Table 1.

Table 1: Season 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).

Season	Native Oysters (kg)	Mussels (kg)	Scallops (kg)	Queen Scallops (kg)	Cockles (kg)	Pacific Oysters (kg)	Winkles (kg)
2018-2019	35,109	3,366	843	82,860	225	1,147	126

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

4.2 Hand Gathering

In the 2018-2019 season the majority of hand gathering time was spent in Area C for oysters and A for mussels (Table 2).

Table 2: 2018-2019 Season Hand gathering totals for the whole season (October to March) by Management Area and LPUE (kg oysters/dredge hours).

Management Area	Oysters			Mussels		
	Hours Fishing	Oysters landed (kg)	LPUE	Hours Fishing	Mussels landed (kg)	LPUE
Hand Gathering A	8	62	7.75	35	1,137	32.49
Hand Gathering B	17	220	12.94	0	0	0
Hand Gathering C	72	1,152	16.06	3	10	3.33

4.3 Dredging

4.3.1 Oysters

The 2018-2019 season showed low landings of oysters (Table 3). When split by Management Area (Table 4), it is clear that LPUE was highest in Area C. The total weight (kg's) of oysters removed, total dredge hours and LPUE for previous seasons is shown in Annex 2.

Table 3: Total weight of native oysters (kg's) removed from the Fishery each season (October to March) total dredge hours and Landings Per Unit Effort (LPUE) (kg oysters/dredge hours).

Season	Entire Fishery			
	Native Oysters (kg)	Fishing Hours	Dredge Hours	LPUE (kg oysters/ dredge hour)
2018-2019	30,306	6,770	16,339	1.85

Table 4: Native oysters landed (kg) per season (October to March) and Landings Per Unit Effort (LPUE) (kg oysters/dredge hours) by Management Area.

Season	A		B		C	
	Native Oysters (kg)	LPUE (kg oysters/ dredge hour)	Native Oysters (kg)	LPUE (kg oysters/ dredge hour)	Native Oysters (kg)	LPUE (kg oysters/ dredge hour)
2018-2019	16,357	1.58	7,650	1.76	6,299	3.85

When the LPUE of oysters was calculated and plotted by month (Figure 2) the general trend for all three Management Areas was a decline overall from October 2018 to March 2019. This is common trend as catch rates fall through the season with the declining abundance of individuals above the minimum size.

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

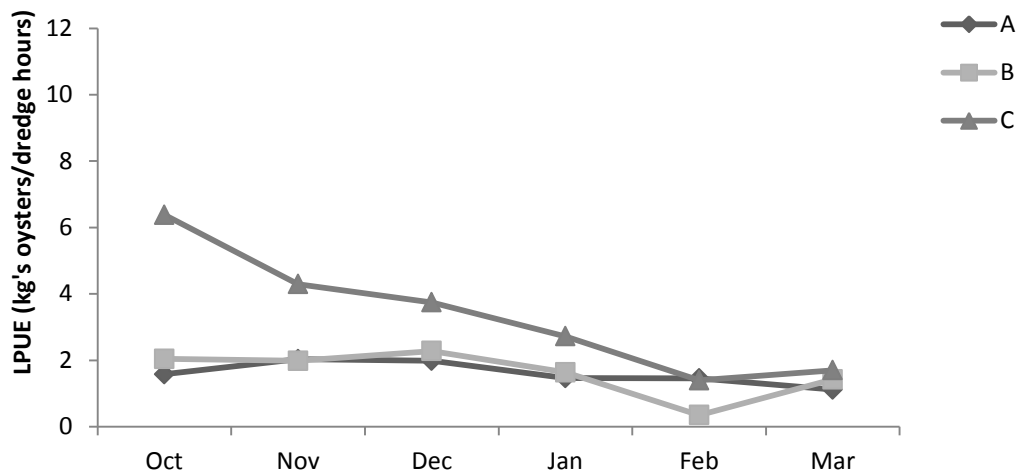


Figure 2: Landings Per Unit Effort (LPUE) (kg of oysters/dredge hours) by Areas A to C for the 2018-2019 season.

The weight of oysters removed and dredge hours reported in each Management Area by month is presented in Table 5. Both the greatest weight of oysters removed (kg) and the most dredge hours were reported in October 2018.

Table 5: Season 2018-2019 monthly native oyster landings (kg) by Management Area.

Area		A		B		C	
Year	Month	Oysters (kg)	Dredge Hours	Oysters (kg)	Dredge Hours	Oysters (kg)	Dredge Hours
2018	Oct	3,737	2,369	2,748	1,345	3,245	509
2018	Nov	2,925	1,438	2,397	1,207	855	199
2018	Dec	2,433	1,227	889	390	644	172
2019	Jan	2,897	1,979	733	447	915	336
2019	Feb	2,731	1,877	158	454	349	250
2019	Mar	1,634	1,461	726	509	291	171

All three Management Areas followed a similar monthly pattern receiving the greatest effort in the early season, with a subsequent decrease in oysters removed later in the season (Figure 3). Effort decreased later in the season in Management Areas B and C, however effort in Area A showed an increase. The weight of oysters removed from the fishery, total dredge hours by Areas and by season for previous years is shown in Annex 5.

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

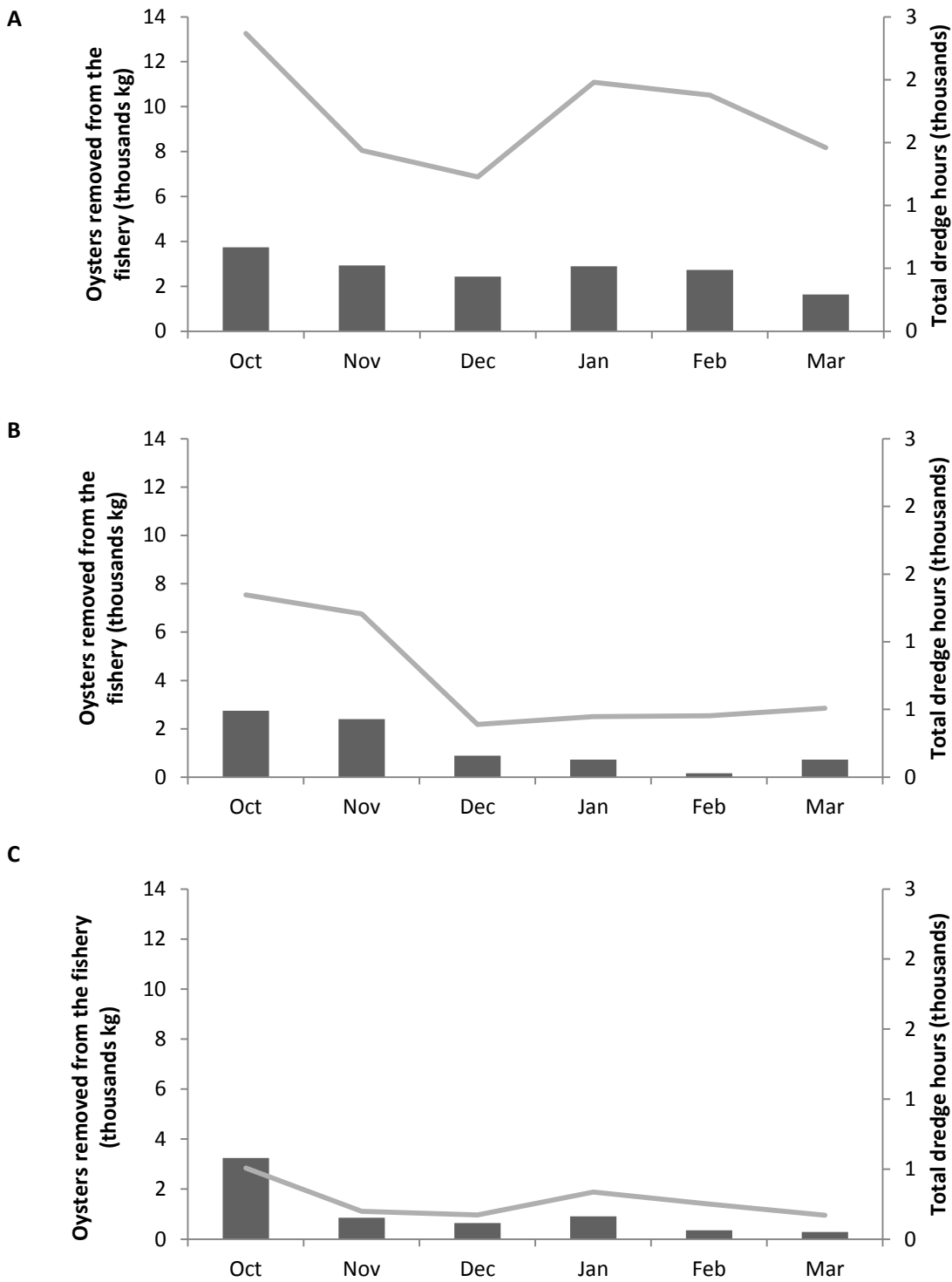


Figure 3: Weight of native oysters removed from the Fishery (thousands of kg, bars) and total dredge hours (thousands of hours, lines) by Areas A to C, for the 2018-2019 season.

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

4.3.2 Queen scallops

The total weight of queen scallops (kg) removed during the season of 2018-2019 is presented in Table 6. When split by Management Area (Table 7), LPUE was greater in Area A. The total weight of queen scallops (kg's) removed, the fishing hours, dredge hours and the LPUE for previous seasons is shown in Annex 3.

Table 6: Total queen scallops removed from the Fishery for the 2018-2019 season (October to March) total dredge hours and Landings Per Unit Effort (LPUE) (kg oysters/dredge hours).

Season	Entire Fishery			
	Queen Scallops (kg's)	Fishing hours	Dredge hours	LPUE (kg's queens/dredge hour)
2018-2019	73,997	6,770	16,339	4.53

Table 7: Landings Per Unit Effort (LPUE) and queen scallops landed (kg) per season (October to March) and LPUE (kg oysters/dredge hours) by Management Area

Season	A		B		C	
	Queen scallops (kg's)	LPUE (kg's queen scallops/dredge hour)	Queen scallops (kg's)	LPUE (kg's queen scallops/dredge hour)	Queen scallops (kg's)	LPUE (kg's queen scallops/dredge hour)
2018-2019	52,960	5.12	16,757	3.85	4,280	2.62

The LPUE of queen scallops was calculated and plotted by month in (Figure 4) it showed that LPUE was highest in Management Area A for the majority of the season with the exceptions of January and March, and lowest in Management Area C, except in January when there was an increase in LPUE.

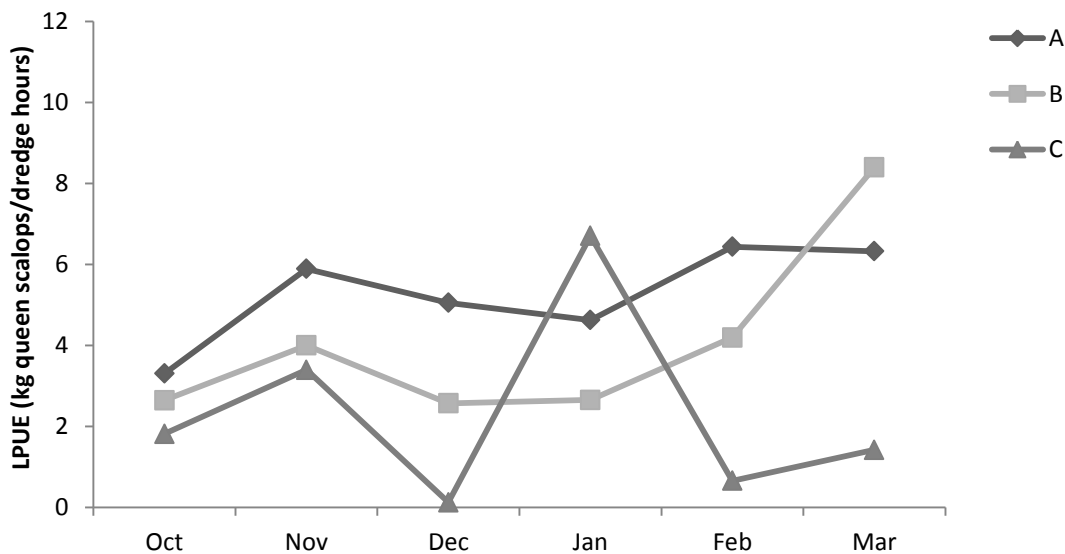


Figure 4: Landings Per Unit Effort (LPUE) (kg of queen scallops/dredge hours) by Area for the 2018-2019 season.

The weight of queen scallops removed and dredge hours in each Management Area by month, is presented in Table 8. Both the greatest removal of queen scallops and the most dredge hours were reported in Management Area A. October saw the most dredge hours whereas February saw the greatest removal of queen scallops.

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

Table 8: Season 2018-2019 monthly queen scallop landings (kg) by Management Area.

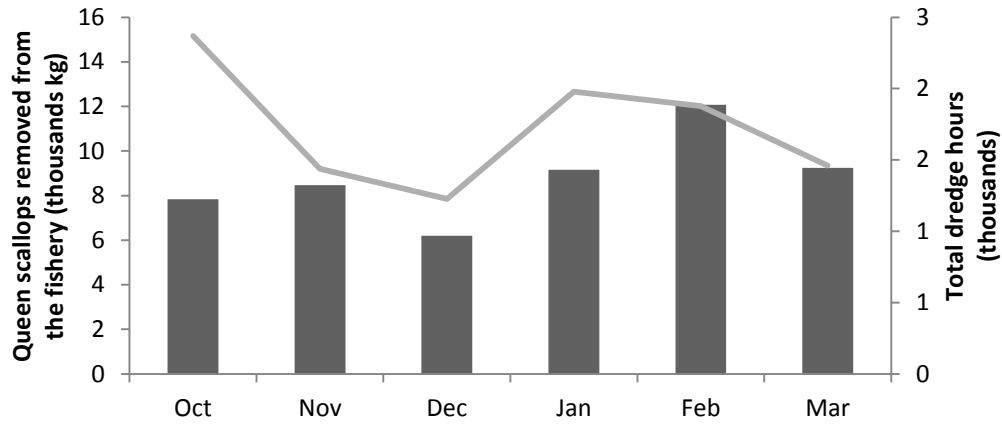
Area		A		B		C	
Year	Month	Queen Scallops (kg)	Dredge Hours	Queen Scallops (kg)	Dredge Hours	Queen Scallops(kg)	Dredge Hours
2018	Oct	7,831	2,369	3,561	1,345	924	509
2018	Nov	8,468	1,438	4,827	1,207	676	199
2018	Dec	6,195	1,227	1,003	390	21	172
2019	Jan	9,153	1,979	1,187	447	2,252	336
2019	Feb	12,076	1,877	1,905	454	164	250
2019	Mar	9,237	1,461	4,275	509	243	171

Both the effort and weight of queen scallops removed from the fishery in season 2018-2019 is shown in Figure 5. The season showed a similar trend in all three Management Areas with the highest effort at the beginning (Figure 5).

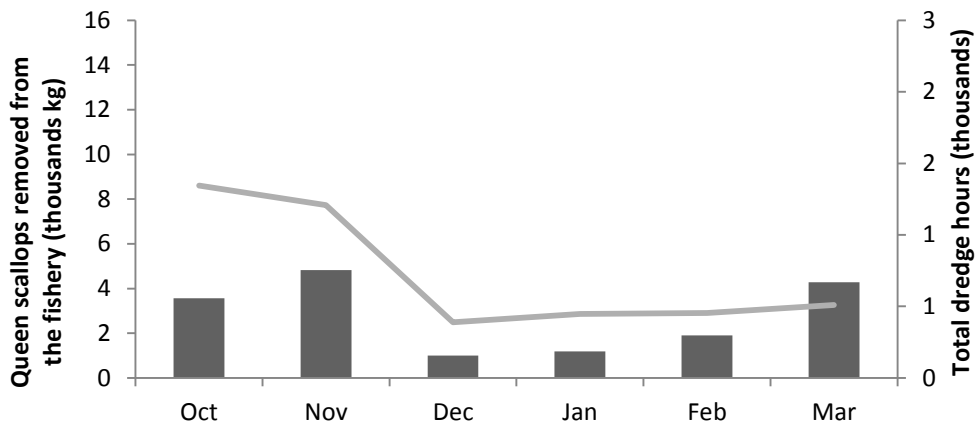
Management Area A showed a decrease in effort and queen scallop removal during December. Effort and queen scallop removal remained lower in Management Area C in comparison to Areas A and B (Figure 5).

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

A



B



C

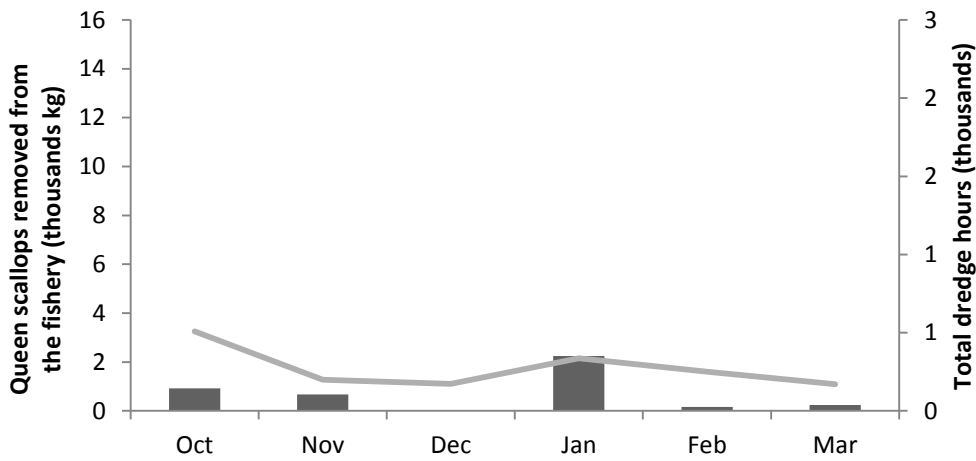


Figure 5: Weight of queen scallops removed from the Fishery (thousands of kg, bars) and total dredge hours (thousands of hours, lines) by Areas A to C, for the 2018-2019 season.

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

4.4 Lay Areas

The weight of 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. Any additional hand gathering data between April and September has not been submitted to the authority yet.

The total weight of oysters placed onto lays can be seen in Table 9, a greater weight of oysters was reportedly placed onto the lays than removed from the lays for sale.

Table 9: Total weight of oysters (kg) placed on and removed from lay areas in the Fal Fishery for the 2018-2019 season.

Month	Oysters placed on lays (kg)	Oysters removed from lays (kg)
Oct	2,561.0	133.0
Nov	1,813.5	37.0
Dec	1,395.5	25.0
Jan	2,041.5	0.0
Feb	1,997.0	0.0
Mar	1,249.0	1,919.0
Total	11,057.5	2,114.0

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

Most notably the weight of queen scallops removed from the fishery during the 2018 – 2019 season was considerably greater than all other shellfish species (Table 1).

5.2 Hand gathering

Data presented in Table 2 is an under representation of the actual return data due to missing attribute data. This is from where gear, number of licences or hours fished were not advised on the returns. Therefore the hand-gathering totals are lower than reported due to data being excluded from analysis. Therefore, LPUE was calculated using the remaining data.

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

5.2.1 Hand gathering oysters

The majority of oyster hand gathering was carried out in Management Area C. LPUE was similar in Areas B and C, the highest weight of oysters being landed in Area C (Table 2).

5.2.2 Hand gathering mussels

The majority of mussel hand gathering was carried out in Management Area A. Area A also yielded the greatest weight in mussels. No mussels were reported to be hand-gathered from Area B (Table 2).

5.3 Dredging

5.3.1 Oysters

The 2018 – 2019 season saw the lowest amount of oysters removed from the Fishery since Cornwall IFCA began managing the Fishery in 2014. Although it was reported that there were fewer oysters at or above the minimum size, marketing difficulties were thought to have had more influence on the volumes removed. As a result of the reported difficulties in marketing oysters, it seemed that fishing effort was directed more towards queen scallops. Changes to the Regulations in 2017 removed queen scallops from any by-catch restriction there has been under the original Regulations, causing the queen scallop fishery to develop.

When LPUE was calculated and plotted by month (Figure 2) the general trend for most Management Areas across the fishing season was a decline in LPUE. Additionally LPUE was consistently highest in Management Area C compared to A and B (Figure 2) this was to be expected as Area C is exploited almost exclusively by haul tow punts.

All three Management Areas followed a similar monthly pattern showing the greatest effort early in the season with a subsequent decrease in effort and oyster removal later in the season as the fishable stock depleted (Figure 3). It was also apparent that Management Area A received greater effort from January to March than was expected for the quantities of oysters that were removed (Figure 3). The increase was considered to be the result of effort being directed towards queen scallops as observed in Table 8.

5.3.2 Queen scallops

Since queen scallops were removed from by-catch limitations in 2017, the landing of and the LPUE of queen scallops in the fishery has increased dramatically with each subsequent season (Annex 3). It was reported that some licence holders stopped targeting oysters and focussed solely on queen scallops. Although more queen scallops could have been removed, demand was reported to be restricted as there was a good supply of queen scallops available in mainland Europe (Jenkin *et al.*, 2019). LPUE of queen scallops was highest in Management Area A for the majority of the season (Figure 4).

During December 2018 there was a reduction in dredge hours in all three Management Areas which was associated with a reduction in the weight of queen scallops removed (Table 8 and Figure 5). This lull was attributed to prolonged bad weather conditions.

5.4 Lay Areas

It was calculated that a greater weight of oysters was placed onto the lays than removed from the lays during the 2018-2019 season. Generally, oysters are put onto lays when demand is low or if a licence holder intends to keep them to be

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

removed at a later date. The ratio of oysters laid to those removed from the lays during the 2018 – 2019 season could have been influenced by the previously reported difficulties in marketing. This trend differs from previous seasons; from 2014-2015 to 2016-2017 the reported weight of oysters removed from the lays for sale was consistently higher than that reported to be placed onto the lays (Annex 4).

5.5 Data Confidence

Shellfish data totals from seasons 2016 – 2017 and 2018 – 2019 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. An example of a blank monthly return form is shown in (Annex 1). Officers have made considerable efforts to ensure all returns are submitted and as a result the data from the 2017-18 season has been assessed as being the most accurate to date. Quality assurance was also carried out by a second administrative/scientific Officer reviewing a minimum of 10% of all data entered.

Prior to 2017 there was confusion in reporting the removal of oysters for sale or to a lay area, with some licence holders reporting the same weight of oysters removed from the Fishery and their lay on the same day, implying that they are recording the same oysters twice. Others appear to record as the form has been intended; with the weight of oysters removed from the Fishery recorded, and then the weight of oysters removed from their lay separately. Due to this confusion the two data sets, oysters removed from the Fishery and oysters removed from lay areas, have been treated separately, and all seasons have been treated the same (Street *et al.*, 2017). This problem was addressed with a simplified recording sheet which has been in circulation since the 2017-2018 season (Annex 1).

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

6 References

Jenkin, A., Trundle, C., Street, K. and Naylor, H. 2017. Fal Oyster Survey. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA), Hayle.

Jenkin, A., Trundle, C., Street, K., and Naylor, H. 2019. Fal Oyster Survey. Cornwall Inshore Fisheries and Conservation Authority (CIFCA), 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 (CIFCA), Hayle.

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

Annex 2 Total native oysters removed from the Fishery, total dredge hours and estimated LPUE.

Season	Entire Fishery			
	Native Oysters (kg)	Fishing Hours	Dredge Hours	LPUE (kg oysters/ dredge hour)
2014-2015	87,298	7,605	15,728	5.55
2015-2016	66,023	7,638	14,068	4.69
2016-2017	56,792	8,239	15,170	3.74
2017-2018	44,605	7,785	17,285	2.59

Annex 3 Total queen scallops removed from the Fishery and the estimated LPUE.

Season	Entire Fishery			
	Queen Scallops (kg)	Fishing hours	Dredge hours	LPUE (kg queens/ dredge hour)
2014-2015	1047	7,605	15,728	0.07
2015-2016	180	7,638	14,068	0.01
2016-2017	4,040	8,239	15,170	0.27
2017-2018	69,220	7,785	17,285	4.00

Annex 4 Total weight of native oysters (kg) placed on and removed from lay areas in the Fal Fishery.

Season	Total native oysters placed on lays (kg)	Total 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	10,998	2,160

CIFCA Fal Oyster Fishery Permit Returns Statistics 2018-2019

Annex 5 Native oysters removed from the Fishery (thousands of kg's, bars), total dredge hours (thousands of hours, lines) by Areas, and by season. The first three seasons taken from Street *et al.* (2018)

