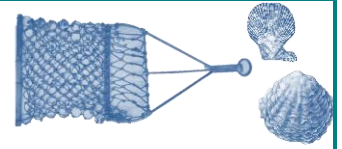


## Monthly Fal Fishery Catch Statistics

### **Summary Statistics**

### **Season 2022-2023**



## Introduction and Methodology

### Background

In July 2014, when the Port of Truro Fishery Order 1936 expired, Cornwall IFCA assumed the responsibility of managing the oyster fishery in the River Fal and began developing a new Regulating Order. Cornwall IFCA is now the Grantee of the Fal Fishery Order 2016 and manages the licenced Fishery using the Regulations that were made under the 2016 Order.

The Fal Oyster Fishery is thought to be the only currently active wild capture native oyster (*Ostrea edulis*) fishery in England. The Fishery is exploited by hand gathering and dredging from non-powered vessels, either by haul tow punts or sailing boats. It is thought to be the last commercial sailing fleet in Europe (Long *et al.*, 2017).

Since the season of 2016-2017 a market developed for queen scallops, locally referred to as *queenies*. 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.*, 2022). For simplicity the term 'queen scallop' has been used to describe this species, *Mimachlamys varia*, for the entirety of the report.

### Data Collection

Under the Fal Fishery Order 2016 Regulations, licence holders must submit a monthly return form to Cornwall IFCA detailing their daily fishing activity including; daily totals of number of dredge or hand gathering licences used and fishing hours split by the proportion of time spent fishing in each of the three Fal Fishery Management Areas (Figure 1). Along with the weight of each species of shellfish (including native oysters, queen scallops, mussels (*Mytilus edulis*), king scallops (*Pecten maximus*) and pacific oysters (*Magallana gigas*)) removed from the Fishery per day.

### Analysis Methodology

#### Data Classification

**Spatial:** Data is reported to Cornwall IFCA attributed to one of three Management Areas (A, B and C) (Figure 1).

#### Data Descriptors

**Effort:** Fishing hours, which have been split by the fishing methods of dredging or hand gathering, have been calculated by the proportion of time spent fishing in each Management Area by the number of licences used.

**Landings per Unit Effort (LPUE):** to estimate LPUE of kilogrammes (kg) shellfish, the unit of effort was taken as an hour fished (by single dredge or hand gatherer).

#### Overall Statistics

The total weight, in kilogrammes (kg), of each shellfish species removed from the Fishery per season (1st October to 30th September) was summed. This figure included shellfish taken by hand gathering outside of the main dredging season which is from 1st October to 31st March. Also included are records which have been excluded from other analysis due to lack of attribute data, for example hours fished, or number of dredge licences used.

#### Hand Gathering

Hand gathering hours were calculated by fishing hours multiplied by the number of people hand gathering (licences used). From the data it appears that licence holders target certain species when hand gathering, therefore, hand gathering hours directed towards mussels and native oysters were also calculated separately.

#### Dredging

Dredge hours were calculated by fishing hours multiplied by the number of dredges (licences) used.

#### 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 for sale was totalled each month for the entire year (1st October to 30th September).

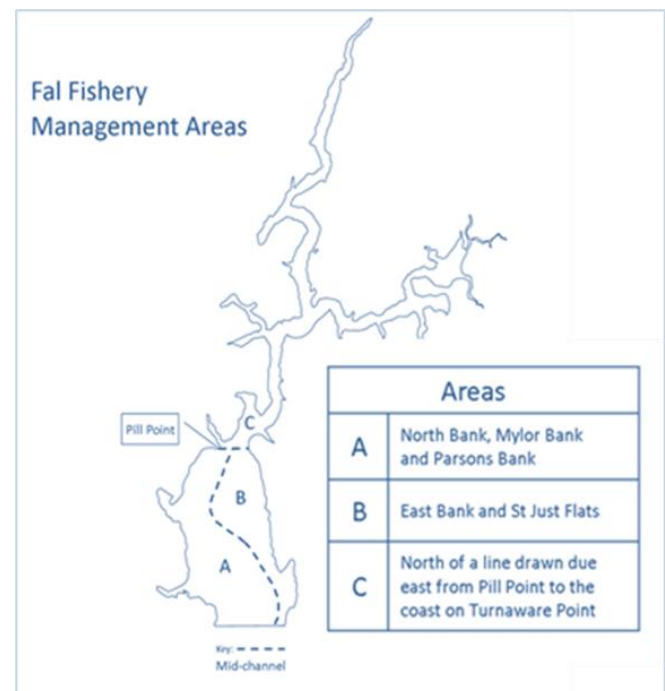
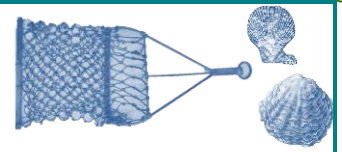


Figure 1: Fal Fishery Management Areas.



## Licensing

For the 2022-2023 Season, Cornwall IFCA issued 38 dredge and hand gathering licences, representing 25 licence holders (Table 1). Of these, 31 dredge licences were determined to be active by their statistics returns during the 2022-2023 season (Figure 2). There has been a declining number of licence holders and licences since 2017-2018 season.

Table 1: Fal Fishery licence holders and totals of combined dredge and hand gathering licences issued and active per season.

Season	Licence holders (persons)	Total licences issued	Total licences active
2022-2023	25	38	31
2021-2022	28	44	40
2020-2021	30	45	42
2019-2020	33	51	47
2018-2019	37	60	55
2017-2018	41	66	58
2016-2017	35	62	53
2015-2016	32	54	47
2014-2015	34	58	50

■ Dredge licences Active ■ Hand gathering only Active

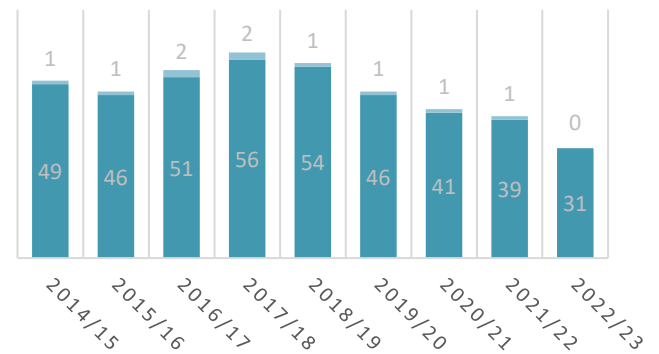


Figure 2: Fal Fishery dredge and hand gathering licences active per season.

## Overall Statistics

The weight of all shellfish removed from the Fishery each season is presented in Table 2.

For this summary only the native oysters reportedly removed from the Fishery for sale, not lay areas, during the fishery season have been analysed. Oysters placed on and removed from lay areas have been reported separately (page 8).

As with the past five seasons, the weight of queen scallops removed from the Fishery during the 2022-2023 season was considerably greater than all other shellfish species (Table 2; Figure 3). The weight of native oysters and mussels removed from the Fishery was greater than removed during the 2020-2021 season.

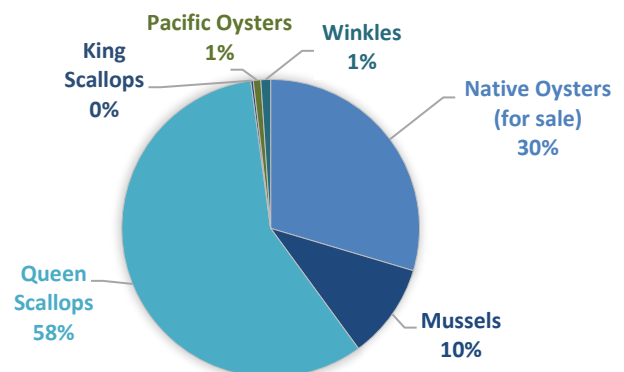
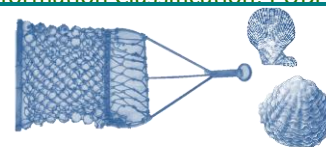


Figure 3: Proportion of season totals for 2022-2023 of landed shellfish for the whole fishery, dredge and hand gathered.

Table 2: Season totals (1<sup>st</sup> October to 30<sup>th</sup> 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)	King Scallops (kg)	Pacific Oysters (kg)	Cockles (kg)	Winkles (kg)	Whelks (kg)
2022-2023	20,071	7,030	39,270	185	548	0	719	0
2021-2022	13,197	4,879	65,458	206	280	0	485	0
2020-2021	12,332	686	87,876	331	492	0	639	0
2019-2020	19,244	1,840	91,731	1,038	10,213	0	594	0
2018-2019	36,076	4,443	82,335	843	2,101	225	702	20
2017-2018	50,220	22,069	71,488	704	725	64	1,642	0
2016-2017	68,341	20,626	7,078	525	50	60	-	-
2015-2016	67,595	10,811	180	33	-	86	-	-
2014-2015	90,641	14,767	1,047	359	-	36	-	-

## Results – Hand Gathering



### Hand Gathering – All Species

Alongside native oysters and mussels, other species are hand gathered from the Fal Fishery including winkles and pacific oysters. The totals of shellfish landed by hand gathering from 1<sup>st</sup> October 2022 to 30<sup>th</sup> September 2023 in each Management Area can be seen in Table 3 and for previous seasons (total for all Management Areas) in Table 4. The majority of hand gathering time was spent in Area C. Hand gathering hours directed towards native oysters and mussels can be seen in Table 5 and for previous seasons in Table 6. LPUE for hand gathering of native oysters has decreased from 2018-2019 to present Table 6.

Table 3: Totals of landed shellfish (kg) by hand gathering in the Fal Fishery during 1<sup>st</sup> October 2022 to 30<sup>th</sup> September 2023 by Management Area. \* excludes weight of native oysters removed and placed onto lays.

Management Area	Hand gathering Hours	*Native Oysters (kg)	Mussels (kg)	Queen Scallops (kg)	King Scallops (kg)	Pacific Oysters (kg)	Cockles (kg)	Winkles (kg)	Whelks (kg)
A	9	49	0	0	0	0	0	60	0
B	6	60	58	0	0	52	0	0	0
C	97	429	561	0	0	311	0	47	0

Table 4: Season totals (1<sup>st</sup> October to 30<sup>th</sup> 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)	King Scallops (kg)	Pacific Oysters (kg)	Cockles (kg)	Winkles (kg)	Whelks (kg)
2022-2023	112	538	619	0	0	363	0	107	0
2021-2022	293	569	2,310	90	0	182	0	330	0
2020-2021	60	382	349	0	0	232	0	0	0
2019-2020	141	881	1,228	50	0	10,199	0	230	0
2018-2019	375	1,934	3,674	167	0	1,538	50	126	0
2017-2018	842	3,588	20,518	5	241	455	0	225	0
2016-2017	330	4,256	6,443	13	0	0	1	-	-

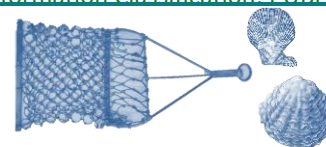
### Hand Gathering – Native Oysters and Mussels

Table 5: Total weight (kg) of native oysters and mussels landed by hand gathering from the Fal Fishery (1<sup>st</sup> October 2022 to 30<sup>th</sup> September 2023), 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.

Management Area	Native Oysters			Mussels		
	Hand gathering Hours	*Native Oysters landed (kg)	LPUE (kg oysters/ hour fished)	Hand gathering Hours	Mussels landed (kg)	LPUE (kg mussels/ hour fished)
A	3	49	17.82	0	0	0
B	4	60	16.00	2	58	29.00
C	55	429	7.79	12	561	46.75

Table 6: Total weight (kg) of native oysters and mussels removed from the Fal Fishery by hand gathering each season (1<sup>st</sup> October to 30<sup>th</sup> 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.

Season	Native Oysters			Mussels		
	Hand gathering Hours	*Native Oysters landed (kg)	LPUE (kg oysters/ hour fished)	Hand gathering Hours	Mussels landed (kg)	LPUE (kg mussels/ hour fished)
2022-2023	62	538	8.74	14	619	44.21
2021-2022	51	569	11.16	183	2,310	12.62
2020-2021	26	382	14.70	15	349	23.27
2019-2020	53	881	16.78	40	1,228	30.51
2018-2019	107	1,934	18.12	130	3,674	28.26
2017-2018	260	3,588	13.79	570	20,518	36.00
2016-2017	100	946	9.43	214	6,243	29.17

**Dredging – All Species**

The totals of all shellfish species landed by dredging from 1<sup>st</sup> October 2022 to 31<sup>st</sup> March 2023 in each Management Area can be seen in Table 7 and for previous seasons (total for all Management Areas) in Table 8. Effort in terms of dredge hours has reduced slightly over the past five seasons (Table 8) in line with the drop in active dredge licenses (Figure 2). LPUE for native oysters and queen scallops is displayed in Figure 5 to Figure 11.

Table 7: Totals of landed shellfish (kg) by dredging in the Fal Fishery during 1<sup>st</sup> October 2022 to 31<sup>st</sup> March 2023 by Management Area. \* excludes weight of native oysters removed and placed onto lays.

Management Area	Fishing Hours	Dredge Hours	*Native Oysters (kg)	Mussels (kg)	Queen Scallops (kg)	King Scallops (kg)	Pacific Oysters (kg)	Cockles (kg)	Winkles (kg)	Whelks (kg)
A	1,608	4,697	6,218	0	12,161	31	0	0	0	0
B	1,344	2,557	5,839	33	12,874	12	15	0	0	0
C	1,160	1,376	5,653	5,161	2,628	19	62	0	16	0

Table 8: Season totals (1<sup>st</sup> October to 31<sup>st</sup> 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.

Season	Fishing Hours	Dredge Hours	*Native Oysters (kg)	Mussels (kg)	Queen Scallops (kg)	King Scallops (kg)	Pacific Oysters (kg)	Cockles (kg)	Winkles (kg)	Whelks (kg)
2022-2023	4,112	8,630	17,710	5,194	27,663	61	77	0	16	0
2021-2022	4,898	9,676	12,549	417	63,948	170	98	0	35	0
2020-2021	5,271	10,845	11,550	282	85,721	231	60	0	375	0
2019-2020	5,271	11,897	16,491	419	71,408	1,008	14	0	220	0
2018-2019	6,907	16,545	30,896	359	74,472	841	318	175	469	20
2017-2018	7,785	17,234	44,605	414	69,220	462	151	64	381	0
2016-2017	8,239	15,170	56,792	3,604	4,040	117	0	10	-	-
2015-2016	7,638	14,068	66,023	1,290	140	33	-	86	-	-
2014-2015	7,605	15,728	87,298	1,322	1,047	359	-	36	-	-

**Dredging – Native oysters and Queen Scallops**

Since queen scallops were removed from by-catch limitations in 2017, the quantity of queen scallops landed increased with each subsequent season (Figure 4). However, since 2021-2022 season there has been a downwards trend in the total weight of queen scallops removed and appears to be in line with dredge hours.

The 2022-2023 season saw the lowest quantity of queen scallops landed since the change of regulation. This is believed to be due to the main wholesale buyer of queen scallops from the Fal Fishery ceasing trading prior to the start of the 2022-2023 season which resulted in the landings of queen scallops reducing by more than 50% compared to 2021-2022 season (Figure 4).

Landings data alone is a poor indicator of the abundance of a species and within the Fal Fishery landings are greatly dictated by markets, this is demonstrated in Figure 4 with the reduction in queen scallops since the loss of wholesale buyer. Additionally, in Figure 5 a sharp decrease in LPUE for queen scallops was also seen as the LPUE for oysters has increased, conversely to the curves from 2017-2018 to 2020-2021 when queen scallops became the target species.



# Cornwall IFCA Monthly Fal Fishery Catch Statistics

## Summary Statistics - Season 2022-2023

### Results – Dredging

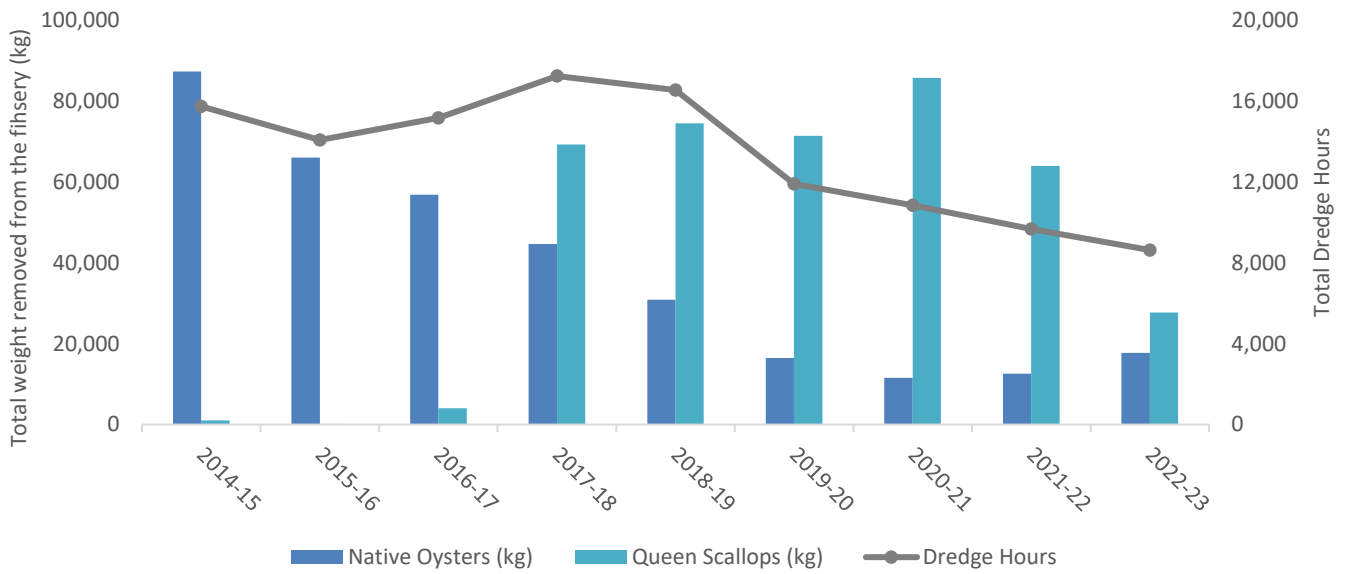
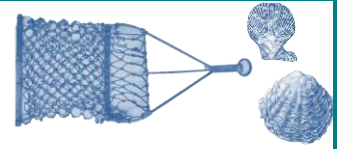


Figure 4: Weight of native oysters and queen scallops removed from the Fal Fishery (kg, bars) and total dredge hours (line) for each season (1<sup>st</sup> October to 31<sup>st</sup> March).

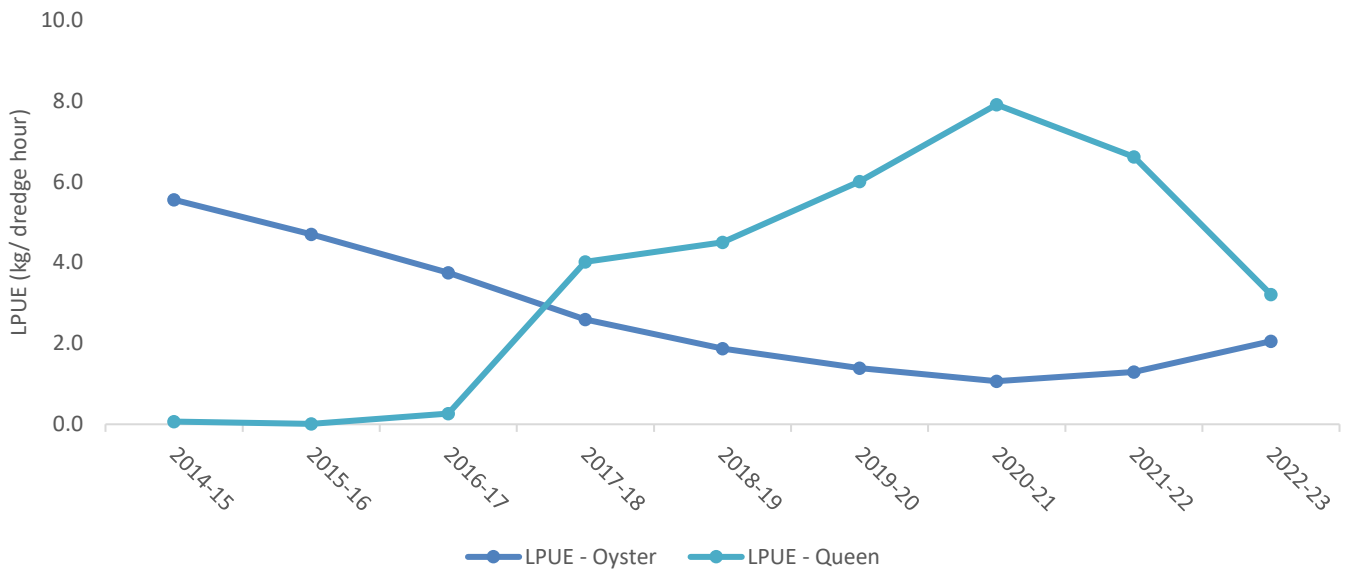


Figure 5: Annual LPUE (kg/ dredge hours) of native oysters and queen scallops in the Fal Fishery from 2014-15 to 2022-23 season (1<sup>st</sup> October to 31<sup>st</sup> March).

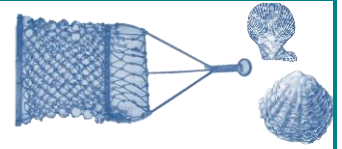
Although there have been marketing issues for native oysters since the 2019-2020 season the LPUE of oysters in the Fal Fishery has increased slightly for the past two seasons (Figure 5). Native oyster and queen scallop annual and monthly LPUE for each Management Area (A, B and C) can be seen in Figure 6 to Figure 11. When split by Management Area, LPUE is highest for native oysters in Area C (Figure 10) and for queen scallops in Area B (Figure 8). The LPUE of oysters has remained fairly similar to the 5-year average with the exception of early season in Area C (Figure 7; Figure 9; Figure 11)



# Cornwall IFCA Monthly Fal Fishery Catch Statistics

## Summary Statistics - Season 2022-2023

### Results – Dredging



#### Area A

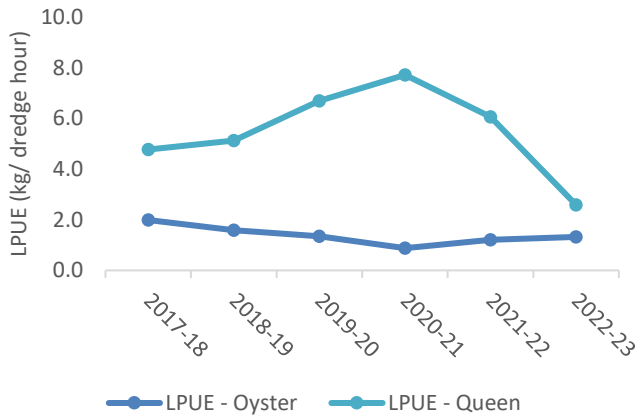


Figure 6: Annual LPUE (kg/ dredge hours) of native oysters and queen scallops in Management Area A of the Fal Fishery from 2017-18 season to 2022-23 season (1<sup>st</sup> October to 31<sup>st</sup> March).

#### Area B

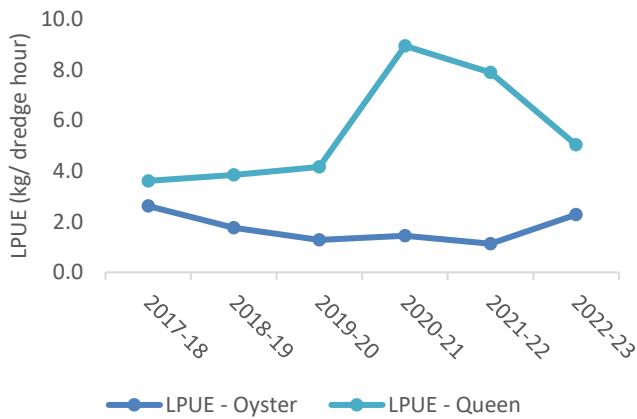


Figure 8: Annual LPUE (kg/ dredge hours) of native oysters and queen scallops in Management Area B of the Fal Fishery from 2017-18 season to 2022-23 season (1<sup>st</sup> October to 31<sup>st</sup> March).

#### Area C

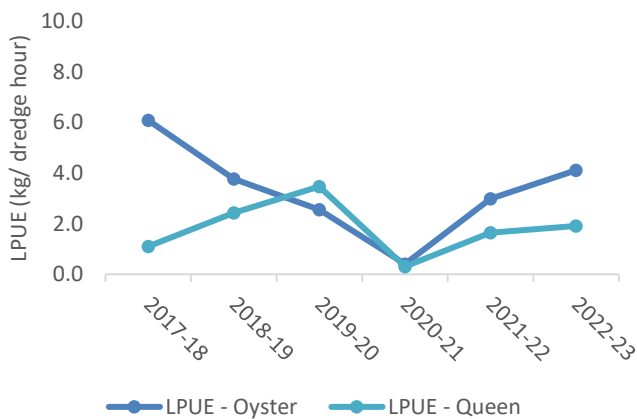


Figure 10: Annual LPUE (kg/ dredge hours) of native oysters and queen scallops in Management Area C of the Fal Fishery from 2017-18 season to 2022-23 season (1<sup>st</sup> October to 31<sup>st</sup> March).

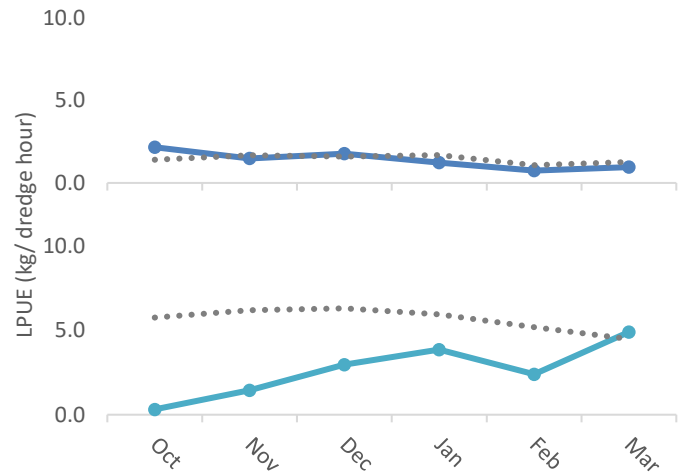


Figure 7: Monthly LPUE (kg/ dredge hours) of native oysters (top) and queen scallops (bottom) in Management Area A of the Fal Fishery in 2022-23 season (1<sup>st</sup> October to 31<sup>st</sup> March) and 5-year average from 2017-18 to 2021-22 season (dotted line).

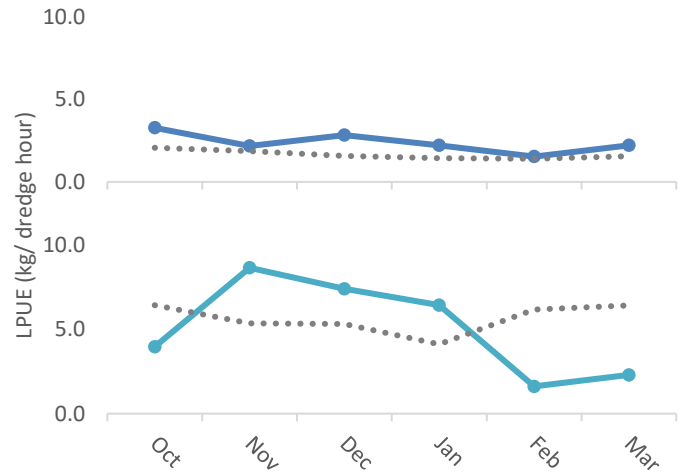


Figure 9: Monthly LPUE (kg/ dredge hours) of native oysters (top) and queen scallops (bottom) in Management Area B of the Fal Fishery in 2022-23 season (1<sup>st</sup> October to 31<sup>st</sup> March) and 5-year average from 2017-18 to 2021-22 season (dotted line).

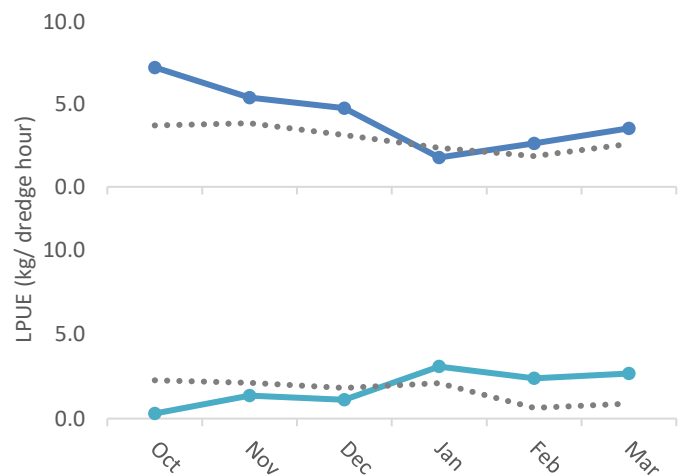
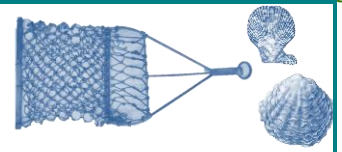


Figure 11: Monthly LPUE (kg/ dredge hours) of native oysters (top) and queen scallops (bottom) in Management Area C of the Fal Fishery in 2022-23 season (1<sup>st</sup> October to 31<sup>st</sup> March) and 5-year average from 2017-18 to 2021-22 season (dotted line).

**Lay Areas**

The weight of native oysters fished (by both dredging and hand gathering) and placed on lay areas were separated from previous presented data, as they remained within the Fal Fishery.

Dredging for native oysters within the Fishery is restricted to the 1<sup>st</sup> October to 31<sup>st</sup> March in any year. Additionally, limited amounts of year-round intertidal handpicking by holders of dredge licenses can occur while the dredge is not in use and are also permitted to hand gather from 1<sup>st</sup> April to 30<sup>th</sup> September. It is, however, an offence under the Shellfish Act 1967 to sell native oysters between 14<sup>th</sup> of May and the 4<sup>th</sup> of August in any year.

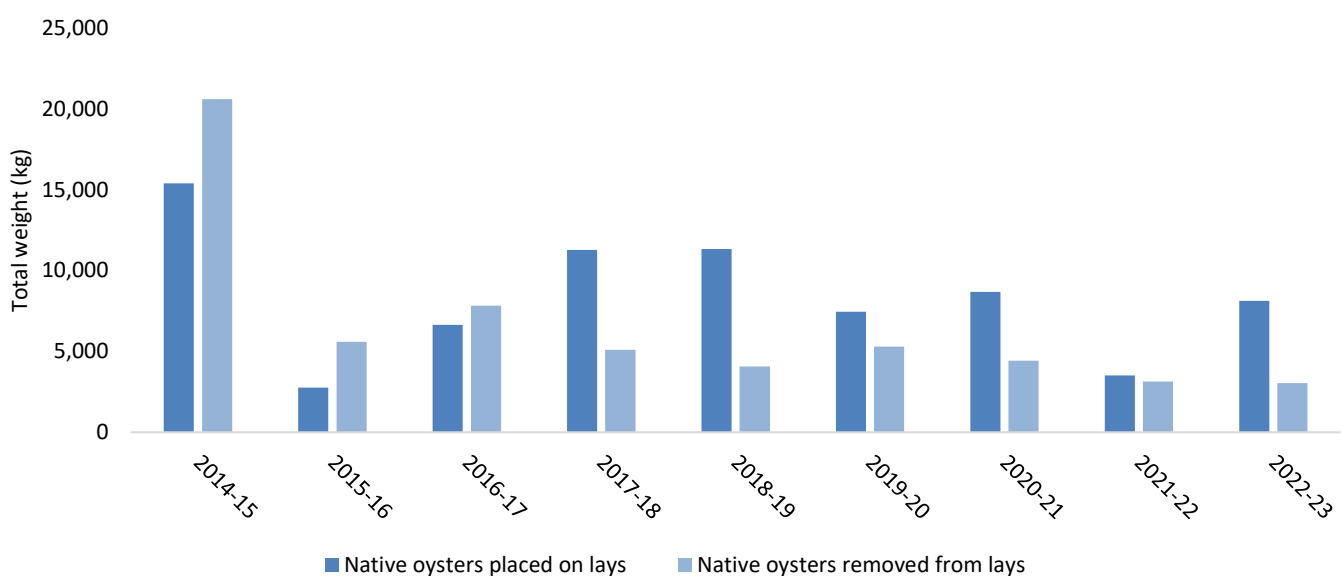
The weight of native oysters placed onto lays during 2022-2023 season can be seen in Table 9.

Totals for previous seasons can be seen in Figure 12. For 2022-2023 season the total weight of oysters reportedly placed onto the lays was significantly more than that which was removed from the lays for sale.

Since the 2017-2018 season a greater weight of native oysters has been placed onto the lays than removed from the lays (Figure 12). 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. In the 2021-2022 season, a reduced weight of native oysters were placed on lays compared to previous seasons (Figure 12).

**Table 9: Total weight of native oysters (kg) placed on and removed from lay areas for sale, by dredging and hand gathering, in the Fal Fishery for the 2022-2023 season.**

Month	Native Oysters placed on lays (kg)	Native Oysters removed from lays (kg)
October	2,077	130
November	1,641	245
December	1,051	0
January	1,266	250
February	1,197	0
March	885	395
April	0	75
May	0	310
June	0	0
July	0	0
August	0	684
September	0	939
<b>Total</b>	<b>8,118</b>	<b>3,028</b>



**Figure 12: Total weight of native oysters (kg) placed on and removed from lay areas in the Fal Fishery, dredge and hand gathered, between 1<sup>st</sup> October to 30<sup>th</sup> September each season.**



## Results – Dredging

### Dredging – Slipper Limpets

Slipper limpets (*Crepidula fornicata*), a non-native, invasive species, are also removed from the Fishery by licence holders although not for sale which is why they are reported on separately. The totals of slipper limpets removed can be seen in Table 10 with the percentage per Management Area in Figure 13.

Table 10: Total weight of slipper limpets (kg) removed by dredging from the Fal Fishery between 1<sup>st</sup> October to 31<sup>st</sup> March for each season and split by Management Area. N.B. ‘-’ denotes where data was not recorded.

Season	Slipper limpets removed (kg's)			
	Total	Area A	Area B	Area C
2022-2023	1,018	575	360	82
2021-2022	903	601	208	94
2020-2021	1,391	770	528	92
2019-2020	1,045	772	225	48
2018-2019	2,497	1,528	780	179
2017-2018	2,429	1,448	376	189
2016-2017	1,863	-	-	-
2015-2016	2,363	-	-	-
2014-2015	5,111	-	-	-

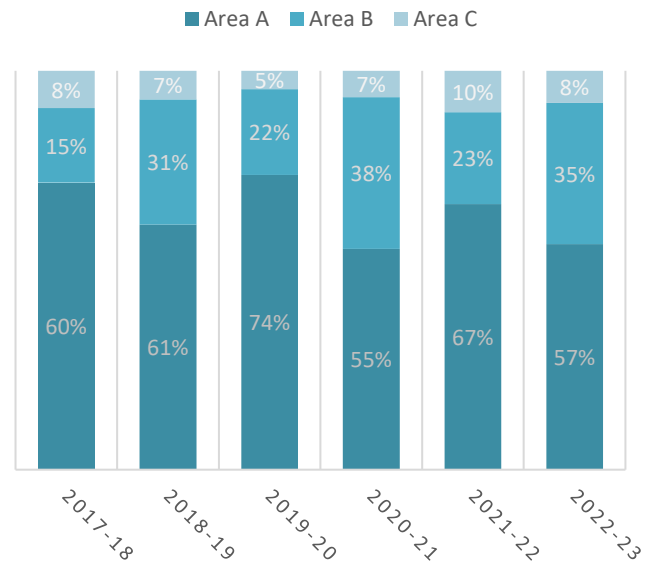
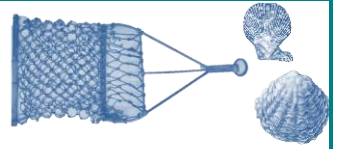


Figure 13: Proportion of slipper limpets removed by dredging from the Fal Fishery between 1<sup>st</sup> October to 31<sup>st</sup> March for each season and split by Management Area.



# Cornwall IFCA Monthly Fal Fishery Catch Statistics

## Summary Statistics - Season 2022-2023



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- 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.

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### Cited as:

Sturgeon, S., Street, K., Trundle, C., Jenkin, A., and Daniels, C. 2023. Fal Fishery Summary Statistics Season 2022-2023. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA), Hayle.