Cornwall IFCA

Inshore Fisheries and Conservation Authority

Lobster, Crawfish and Crab Fishing Permit Byelaw 2016:
Analysis of 2017 Fishing Activity Returns

Document History			
Version	Date	Author	Change
0.1	22/03/2018	S Davies	1st draft
0.2	23/03/2018	H Naylor	Update of graphs & additions to draft
0.3	26/03/2018	H Naylor	Additions to results
0.4	05/04/2018	S Davies	Amendments, additions to results & update of graphs
0.5	06/04/2018	H Naylor	Discussion and addition to results
0.6	25/10/2018	A Jenkin	QA
0.7	03/12/2018	H Naylor	QA amendments
Final	13/12/2018	C Trundle, A Jenkin	Final QA and amendments

Cornwall IFCA Analysis of 2017 Fishing Activity Returns

Cited as:

Naylor, H., Davies, S., Jenkin, A., Owen, K. and Trundle, C. 2018. Cornwall IFCA Analysis of 2017 Fishing Activity Returns. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA), Hayle.

This document has been produced by Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA)

Cornwall IFCA
Chi Gallos
Hayle Marine Renewables Business Park
North Quay
Hayle
Cornwall
TR27 4DD
Tel: 01736 336842
Email: enquiries@cornwall-ifca.gov.uk

Contents

List of Figures

List of Tables

Glossary

Belted statistical area	Refined fishing area including ICES rectangle, sub-rectangle and belt
CEFAS	Centre for Environment, Fisheries and Aquaculture Science (An Executive Agency of DEFRA)
ICES	International Council for the Exploration of the Sea
ICES statistical rectangle	A grid covering the sea area between 36°N and 85°30'N and 4°W and 68°30'E, made up of latitudinal rows of 30' and longitudinal columns of 1°, used for fisheries data analysis.
IFCA	Inshore Fisheries and Conservation Authority
LOA	Length over all
LPUE	Landing Per Unit Effort
MMO	Marine Management Organisation
MSAR	Monthly Shellfish Activity Return
NM	Nautical mile
Soak	Amount of time fishing gear is left submerged and fishing

1 Project Background

Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA), is responsible for managing both the commercial and recreational fishing for crustacean species that takes place within the district. Cornwall IFCA manages the crustacean fishery by a number of byelaws, including the Lobster, Crawfish and Crab Fishing Permit Byelaw 2016. The byelaw states that any person 'who wishes to commercially fish for crustaceans must obtain a shellfish permit'. Without a permit, a person cannot remove more than five crustaceans from the fishery per day, lobsters and crawfish may only make up two of the five individuals. A condition of the permit is that the holder of the permit must, before the fifteenth day of every calendar month, send to the authority a shellfish return form stating the weight of shellfish species in kilograms (kg) taken from the district during the preceding calendar month, together with information of the fishing gear type, quantity of fishing gear used and area fished as specified on the shellfish return form provided by the Authority. The number of permits issued under the byelaw is not limited but permits are only obtainable by the owners of registered and licenced fishing vessels.

Between 2006 and 2015, Cornwall IFCA accepted the Marine Management Organisation's (MMO) monthly shellfish activity return (MSAR) forms as suitable submission of monthly statistics. It was identified that it was difficult to 'chase' missing or late MSAR forms meaning that there was often an incomplete dataset at the end of each year. It was assessed by officers that the statistical returns forms and ensuring compliance with the statistics returns condition could be improved. As a result of this, in 2016, Cornwall IFCA revised the statistical return forms but kept the same statistical reporting areas as used on the MSAR forms. The statistical areas can be seen in Figure 1.

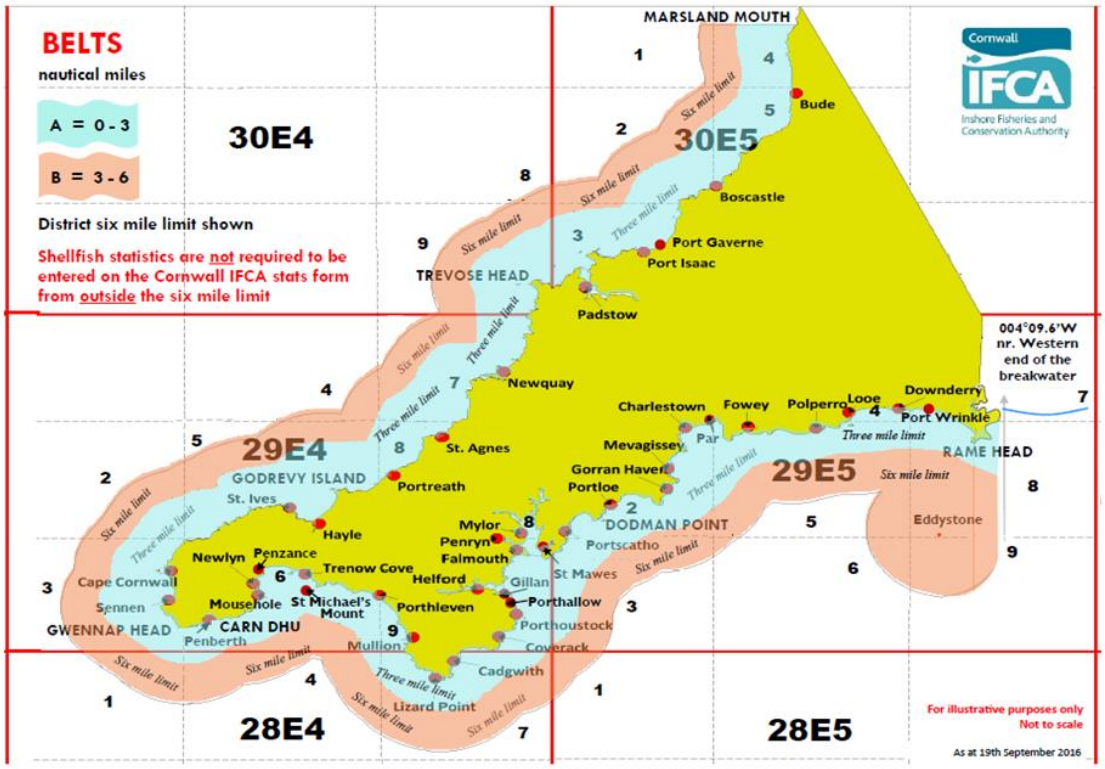

Figure 1: Guidance chart supplied to fishermen showing ICES Statistical rectangles (red grid), and belted statistical areas sub-rectangles (grey grid) with bands A (0-3nm from the shore, blue shading) and B (3-6 nm from shore, red shading) overlaid.

From 2016 a more complete dataset shellfish activity was collected compared to the previous years. Both the enforcement and administration teams at Cornwall IFCA made considerable efforts each month to make sure all shellfish return forms are received on time, and filled in correctly from each permit holder. Failure to submit returns constitutes a contravention of the byelaw, resulting in reminders, final warnings and ultimately in extreme cases, prosecution.

This data set and the previous year's data can be used as a baseline to inform the crustacean fishery management plan. This report provides analysis of the 2017 shellfish return data, concentrating on fishing effort and landing per unit effort (LPUE) within the ICES (International Council for the Exploration of the Sea) statistical areas and further refined belted statistical areas within the Cornwall IFCA district.

2 The Fishery in the Cornwall IFCA District

The fishery in Cornwall is exploited on both coasts by vessels of generally less than 10m length over all (LOA) using both pots and nets. The ex-Cornwall Sea Fisheries Committee byelaw Shellfish Boats Byelaw, restricts the maximum size of shellfish boats to 16.46m LOA to reduce effort within the fishery. Pots are worked in strings of between 10 and 40, usually dependant on the size of the vessel. Pots are attached to a backline by straps which are usually around 1 fathom (1.8m) in length and spaced at around 18 metres apart on the backline. At each end of the backline there is an end weight, to which a surface marker is attached. When setting the pots, the vessel will usually head into the tide then shoot the first end weight; the tension on the backline is created by the sinking weight and the vessels motion pulls the remaining pots from the vessel and keeps them at the maximum distance from each other, allowing the most ground to be covered. The skipper will often try to set their pots around certain features. Electronic navigation aids have improved the accuracy of setting and recovering pots.

Potting activities generally target edible male and female crab (*Cancer pagarus*), European lobster (*Homarus gammarus)* and spider crab (*Maja* spp.). Potting vessels usually fish their strings of pots on a rotational basis, generally hauling between 100-500 pots a day depending on the vessels size/capabilities. Typically these pots are left to 'soak' for 24-48 hours before being hauled, cleared, rebaited and reset. Netting for shellfish usually targets spider crab (*Maja spp*) and crawfish (*Palinurus elephas*). The nets used are large mesh entangling nets, set on the seabed and left to fish for a number of nights before hauling again. Crustaceans are also retained as a by catch in nets targeting fin fish, which is also reported through the permit returns forms. Again, these nets are generally bottom set entangling nets.

3 Aims and objectives

3.1 Aims

- Report on crustacean fishing activity within the Cornwall IFCA district in 2017.
- Provide a baseline of fishing effort to inform the authorities proposed crustacean Fishery Management Plan.

3.2 Objectives

- Analyse data submitted via the Lobster crawfish & crab fishing permit byelaw monthly activity returns.

- Produce statistics displaying the landing per unit effort (LPUE) of crustaceans within the Cornwall IFCA district.
- Provide recommendations for future analysis.

4 Methodology

4.1 Data handling

All permit returns data submitted to Cornwall IFCA was entered into a Microsoft Access Database by Cornwall IFCA Administrative and Scientific Officers. An example of a blank permit return form is shown in Annex 1. Data was entered as it had been submitted, therefore any errors or misreporting were not corrected. Quality assurance was carried out by a second Administrative Officer who reviewed 10% of all the data entered. The data was then exported to Microsoft Excel where records associated with area codes which either did not exist or are outside of the district were removed before the remaining data was analysed.

4.1.1 Geographic area

All analysis has been conducted based on 45 belted statistical areas created by ICES rectangle, sub square and belt A or B. Belt A represents 0-3 nautical miles zone (nm) and belt B represents 3-6 nm zone. Belted statistical areas were also been grouped by 'north coast' and 'south coast'. The boundary between the north and south coast zones was defined by the boundary between 29E4 2 and 29E4 3 which is north of Cape Cornwall (Figure 2).

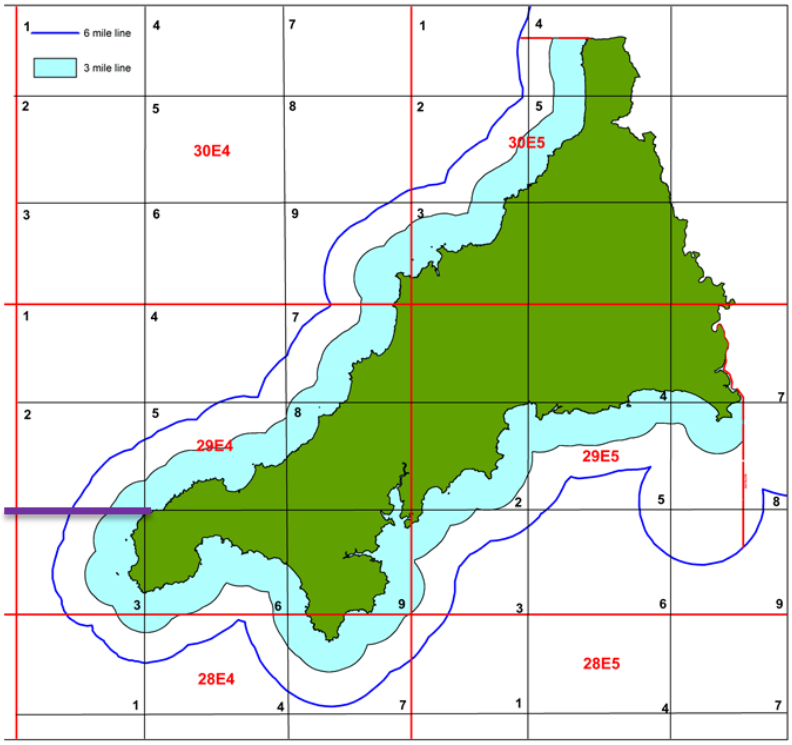

Figure 2: Chart of ICES statistical areas in Cornwall with the divide used for north and south coasts shown by the purple line.

4.1.2 Seasonality

Effort and LPUE were calculated for the entire year by month and also split by four quarters for thematically mapping. The quarters were split as shown in Table 1.

Table 1: Months relating to each year quarter of 2017 used for thematic mapping.

Quarter 1			Quarter 2			Quarter 3			Quarter 4		
January	February	March	April	May	June	July	August	September	October	November	December

4.1.3 Effort

Fishing effort has been described as the number of pot hauls and the length (meters) of net hauled in a time period and geographic area. As shown in Figure 2 above, there is considerable variation in the spatial area of each belted statistical area. To overcome this when reporting the effort in terms of the number of pot hauls and length of net hauled, the effort per km^2 was calculated for each belted statistical area.

4.1.4 Landing per Unit Effort (LPUE)

The shellfish return forms require permit holders to record both the number of pot hauls and length of net hauled per day. Depending on the species targeted different gear is used. Lobsters and crabs are targeted mainly by pots, crawfish by nets and spider crabs can be targeted by both depending on the location and time of year. To estimate LPUE, the unit of effort was taken as 100 pot hauls for lobsters and crabs and for crawfish it was 100m of net hauled. LPUE for spider crabs was calculated for both nets and pots using the same units of effort.

LPUE (kg shellfish/100 pots) was calculated as:

LPUE (kg of shellfish/100 pots) = $(S_x/P_x)*100$

Where S is the weight in kg of shellfish landed in category x, and P is the number of pot hauled.

LPUE (kg shellfish/100 meters of net) was calculated as:

LPUE (kg of shellfish/100 meters of net) = $(S_x/P_x)*100$

Where S is the weight in kg of shellfish landed in category x, and P is the length of net hauled.

4.1.4.1 Thematic mapping of LPUE and effort

LPUE data were transferred to MapInfo V15.2 to thematically map the LPUE by belted statistical area for the whole year divided into year quarters for each species (further separated by sex for edible crab).

Individual ranges were applied consistently for each chart for each species to allow comparisons to be drawn. A scale of ten equal value ranges was created based on the dataset with the largest range, these ranges were then applied to all other data sets for that species.

5 Results

In 2017, 336 permits were issued by Cornwall IFCA. Of those, 93 were only retaining shellfish from pots, 45 only retaining shellfish from nets, and 191 using both pots and nets. Seven vessels used neither pots or nets but retained shellfish from trawls or dredges. The data from these seven vessels was omitted from this analysis.

5.1 Erroneous data

Data presented here has been estimated using the data as it was submitted, there is no mechanism available to verify the data and therefore it was assumed accurate. There are some small concerns regarding reporting, data was received with inaccurate area codes, gear hauled and species landed associated to those area codes were omitted due to human error and not used in the analysis. This erroneous data has been logged, in the hope that in future years the amount of misreporting will be reduced and permit returns will be filled out more accurately.

Erroneous data was omitted from the analysis (Table 2) due to incorrect area codes attributed to gear hauled, shellfish species landed, and having no way to appropriately link the data to the correct areas.

Table 2: Erroneous data received on permit returns in 2017 that were omitted from the analysis.

Species (kg)	**Pots (Pot hauls)**	**Nets (Meters of net)**	**Total**
Lobster	581.55	4.5	586.05
Crab	1856.25	87	1943.25
Crab- Male	605.25	55	660.25
Crab- Female	1251	32	1283
Spider Crab	327.5	307	634.5
Crawfish	0	19	19
Gear Hauled	**6149**	**27600**	-
Number of erroneous areas:	**6**		

5.2 Effort

Of the 336 vessels fishing under authority of a permit, 102 reported fishing activity on the north coast and 121 on the south coast. It was calculated that there were a total of 12,488 vessel fishing days where crustaceans were taken during 2017. During this one year period, it was calculated that there were 2,012,495 pot hauls and 6,684,300 meters of net hauled where crustacean species were taken.

5.2.1 Pots

Overall potting effort per km^2 for the year (Figure 3) increased from February (8.9 pots/ km^2) reached its peak in May (70.3 pots/ km^2), before declining from September (40.8 pots/ km^2) to December (26.7 pots/ km^2).

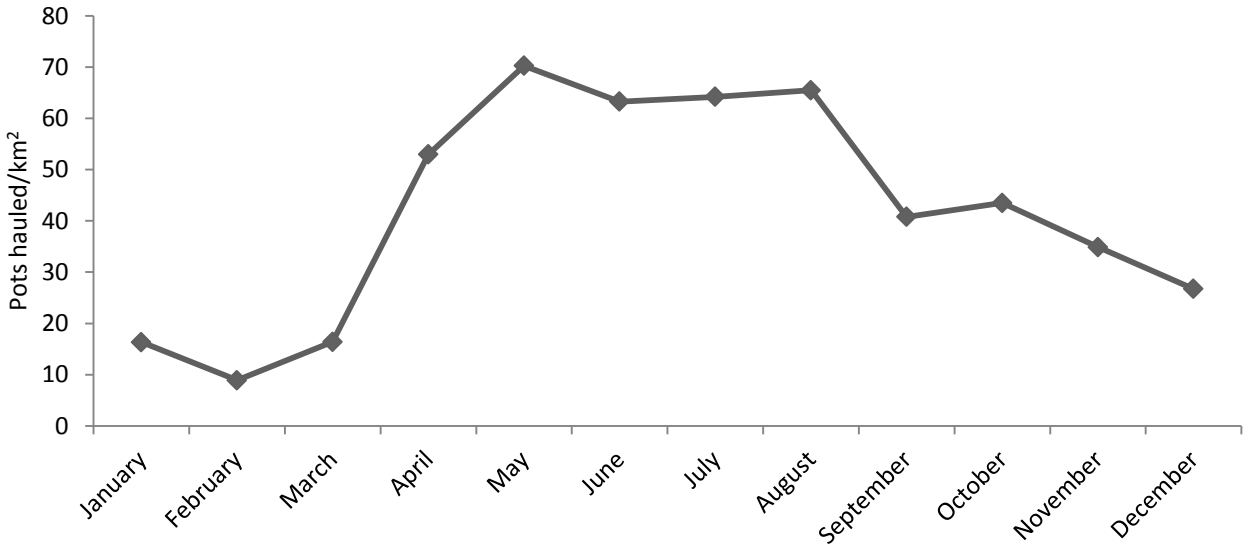

Figure 3: Pot hauls per km^2 by month within the IFCA district for 2017.

The majority of the ICES statistical rectangles (Figure 4) showed increased potting effort from February to April which then decreased from May onwards. The total number of pot hauls in the district for the year (Figure 4) was highest in ICES statistical rectangle 28E4 during May (108 pots/ km^2). ICES rectangle 28E5 had zero pot hauls, with the exemption of February (25.1 pots/ km^2).

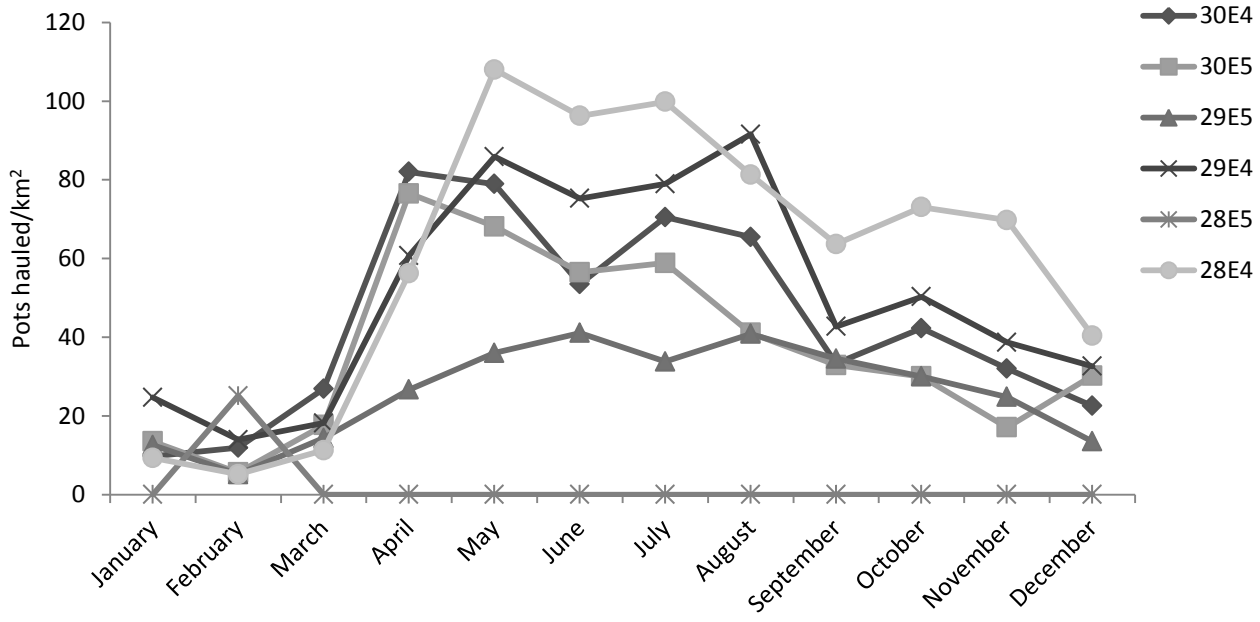

Figure 4: Pot hauls per km^2 by ICES statistical rectangle, by month, within the IFCA district for 2017.

Potting effort per km^2 followed a similar pattern along both the north and south coast from January to March and September to November (Figure 5). Potting effort was greater on the north coast from April through to August, peaking in May (86.5 pots/ km^2). The south coast peaked in June (62.3 pots/ km^2).

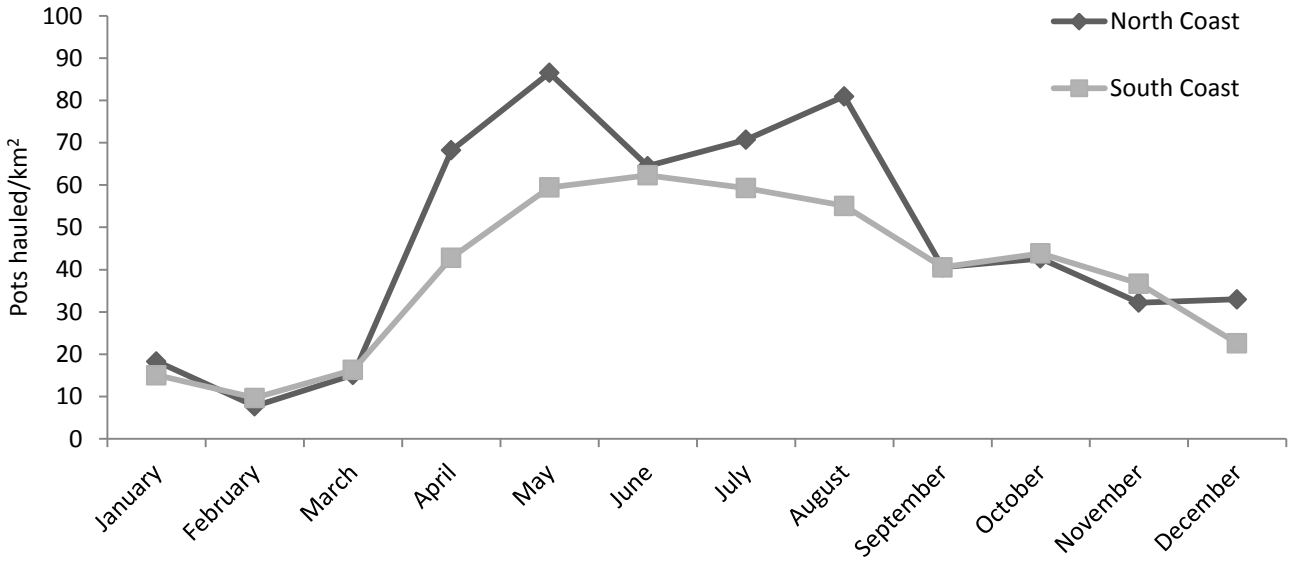

Figure 5: Pot hauls per km^2 by month within the IFCA district for 2017, split by coast, north and south.

Potting effort per km^2 on the north coast split by belted statistical areas A and B (Figure 6) followed a similar pattern to Figure 5. Potting effort was greater in belt B compared to belt A throughout the year (with the exemption of June).

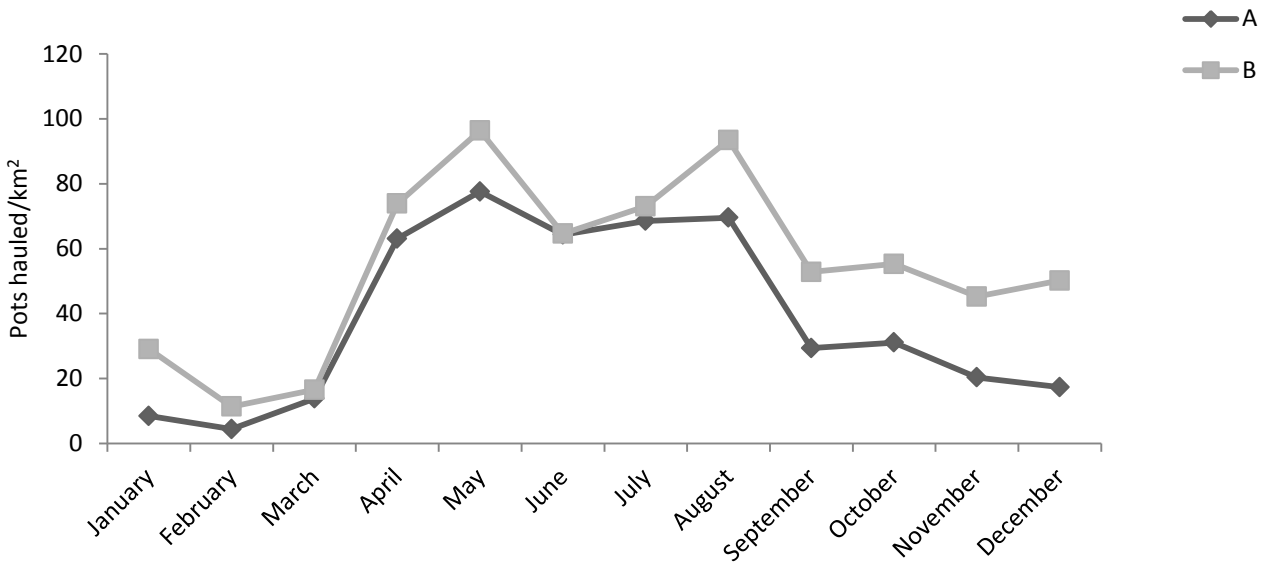

Figure 6: Pot hauls per km^2 by month, for belted statistical areas on the north coast, split by belt, A and B, within the IFCA district for 2017.

Potting effort per km^2 along the south coast split by belted statistical areas A and B (Figure 7) showed belt B effort remained at a similar level throughout the year with potting effort ranging from 13.7 pots/ km^2 (February) to 34.5 pots/ km^2 (August). Potting effort in belt A also increased from February but peaked in June, with a range of 5.2 to 91.4 pots/ km^2 and gradually decreased through to December (24.5 pots/ km^2).

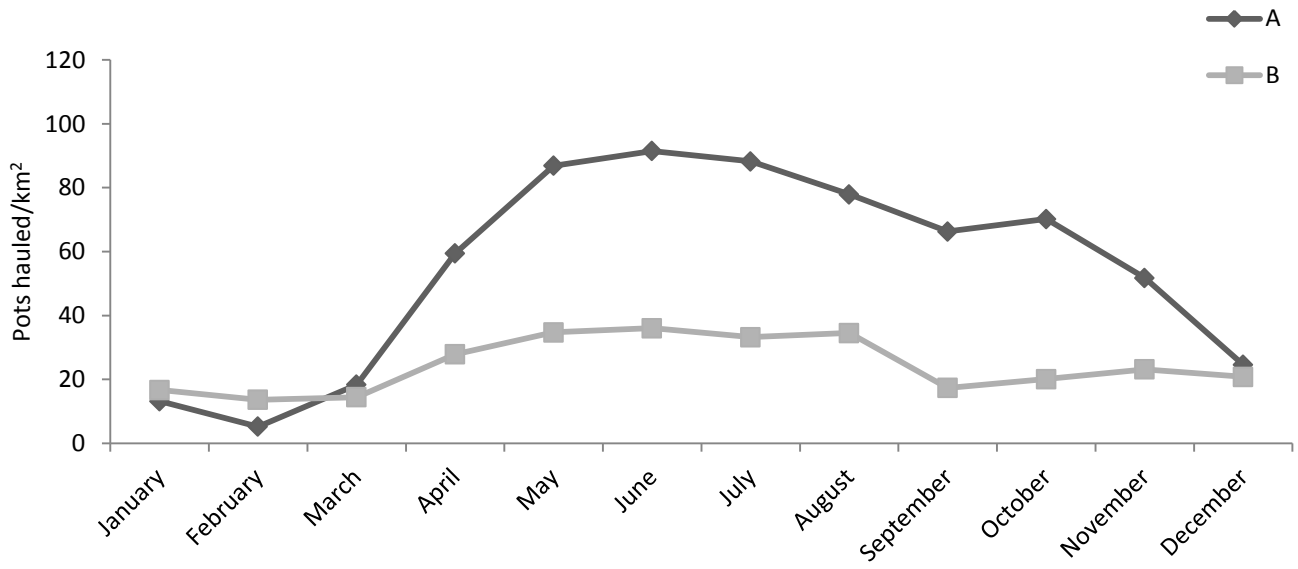

Figure 7: Pot hauls per km^2 by month, for belted statistical areas on the south coast, split by belt, A and B, within the IFCA district for 2017.

Thematically mapped potting effort per km^2 for the entire year (Figure 8) showed that effort was concentrated on the south coast around Lizard Point (28E47A/B), along to Par (29E52A) and in Plymouth to Whitsand Bay (29E57A). Effort was also concentrated in belt B around Land's End (29E42B, 29E43B and 28E41B). Further up the north coast effort was concentrated from Perranporth (29E47A/B) to Tintagel (30E53A/B). Thematically mapped potting effort by quarters (Figure 9) corresponds with Figure 5, showing quarters two and three had a wider distribution and level of effort.

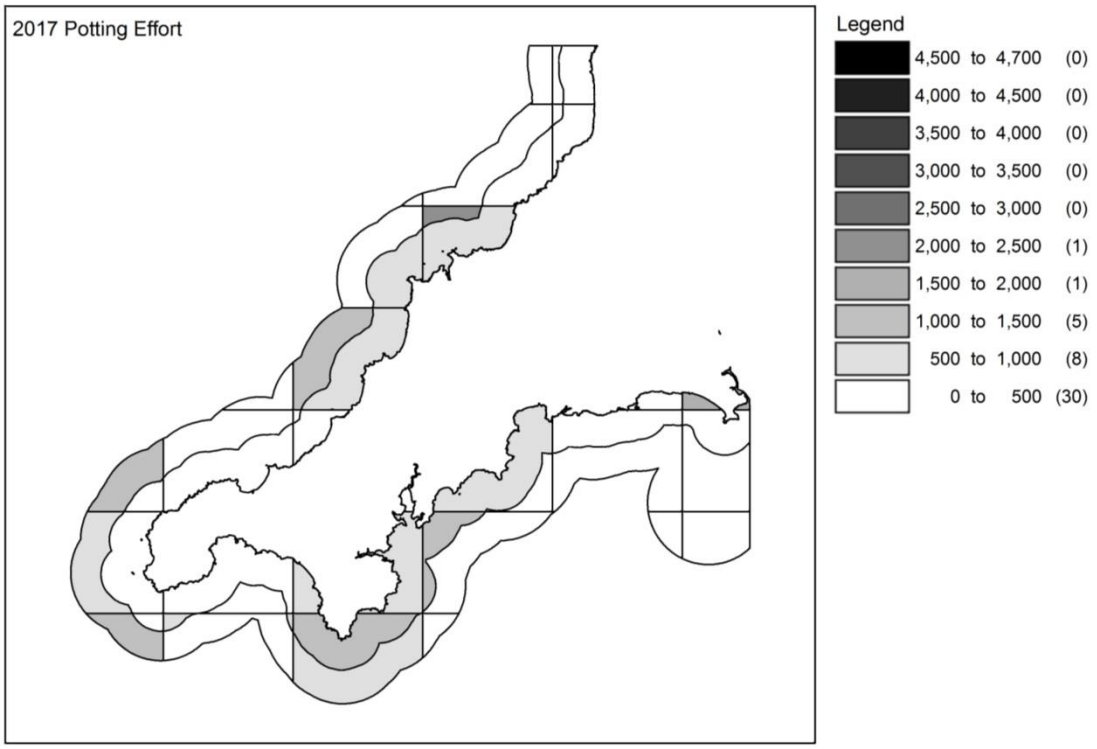

Figure 8: Pot hauls per km^2 in the Cornwall IFCA district for 2017, thematically mapped by belted statistical area, using increments of 500 pots per km^2.

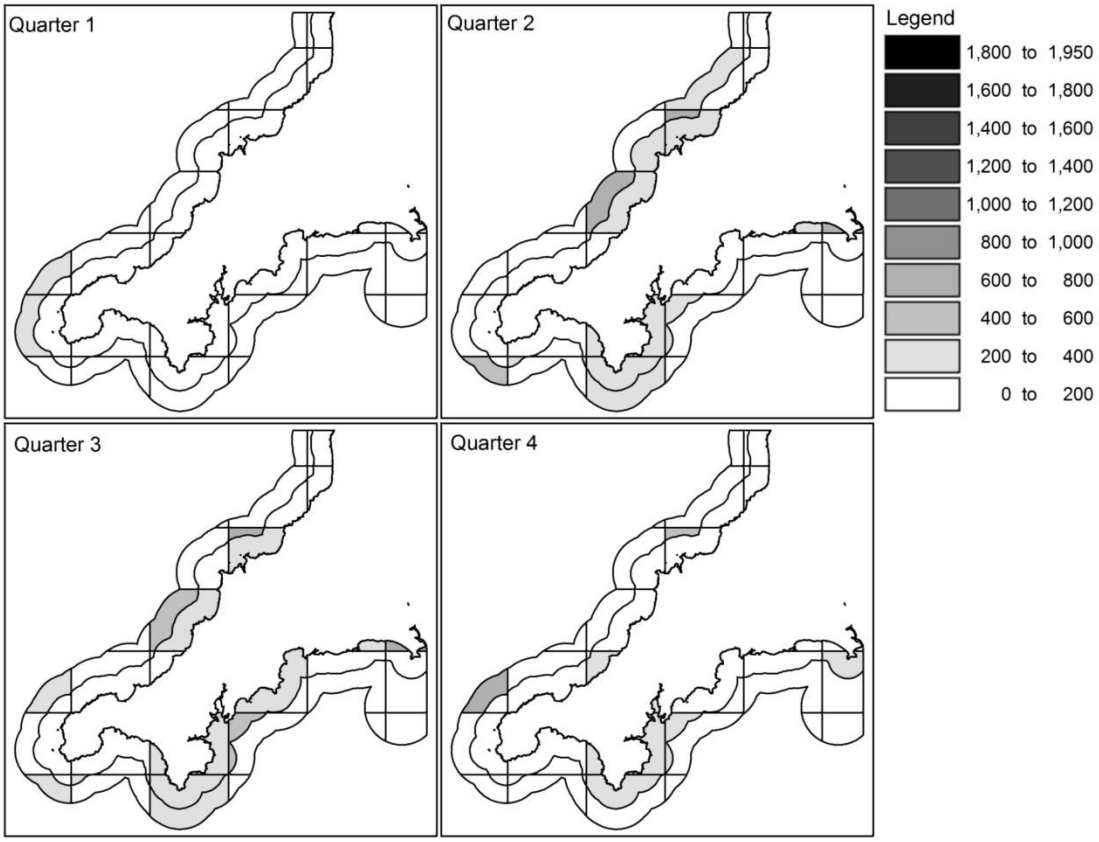

Figure 9: Pot hauls per km^2 in the Cornwall IFCA district, split by quarter, thematically mapped by belted statistical area, using increments of 200 pot hauls per km^2.

5.2.2 Nets

Overall netting effort km^2 targeting shellfish or retaining shellfish as by-catch, (Figure 10), increased from January (73.6 m nets/ km^2) to March with a peak in April (244.9 m nets/ km^2). Netting effort maintained a level of effort from April to July (232.6 m nets/ km^2) from which there was a gradual decline to December (36.3 m nets/ km^2).

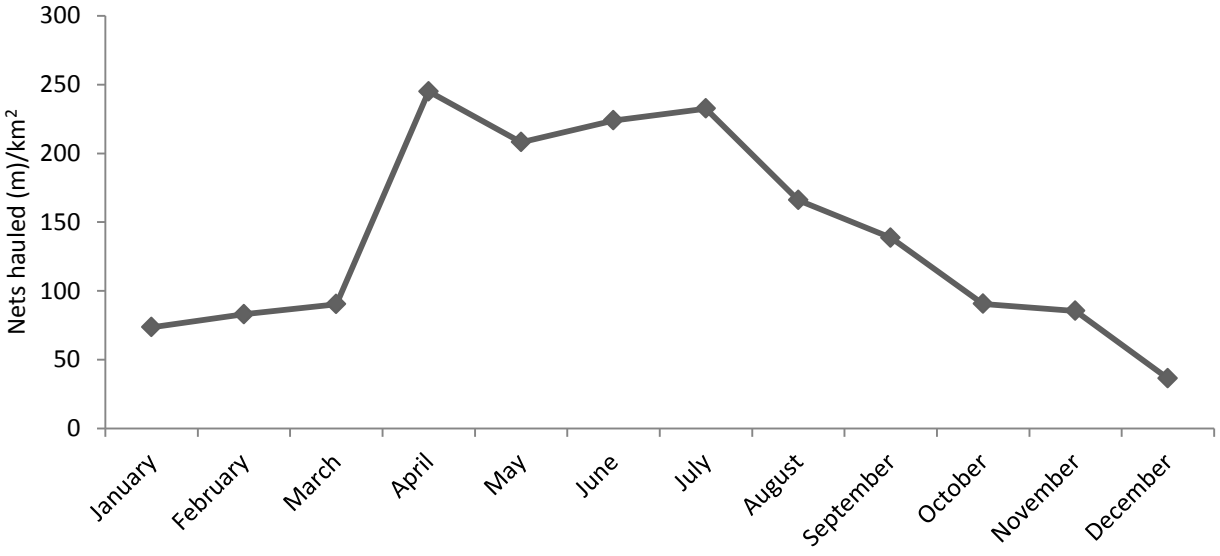

Figure 10: Meters of nets hauled per km^2 by month within the IFCA district for 2017.

Netting effort, across the whole district varied in all ICES rectangles throughout the year (Figure 11). For the majority of ICES rectangles effort started low with an increase from March through to July, before decreasing for the remainder of the year. ICES rectangle 28E5 peaked in January (868 m nets/ km^2) and fluctuated until March remaining at zero from April onwards. ICES rectangle 28E4 peaked in April (392.6 m nets/ km^2) and showed no clear trend throughout the year. Both ICES rectangles 29E4 and 29E5 increased within the first three months and decreased in the last three months of 2017. Effort in ICES rectangles 30E4 and 30E5 remained low (<64 m nets/ km^2) throughout the year.

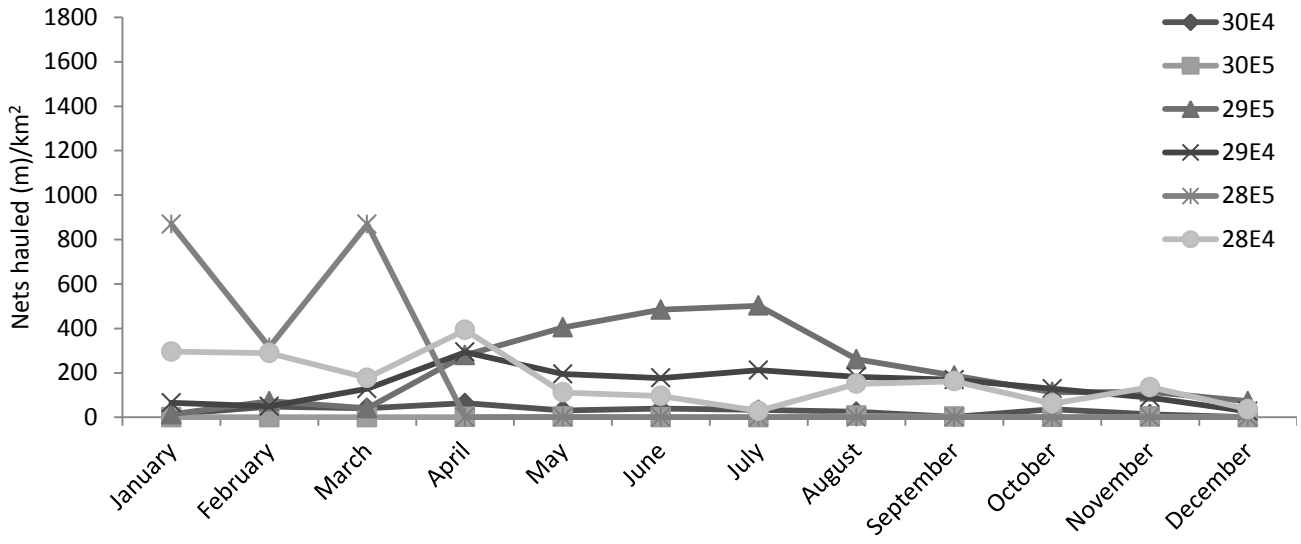

Figure 11: Meters of nets hauled per km2 by ICES statistical rectangle, by month, within the IFCA district for 2017.

Netting effort on the south coast (Figure 12) ranged from 378.3 m nets/ km^2 in April to 54.9 m nets/ km^2 in December compared to 80.6 m nets/ km^2 in July to 8.5 m nets/ km^2 in December on the north coast. Netting effort was greater on the south coast. Effort peaked in April and then it gradually decreased to the end of the year.

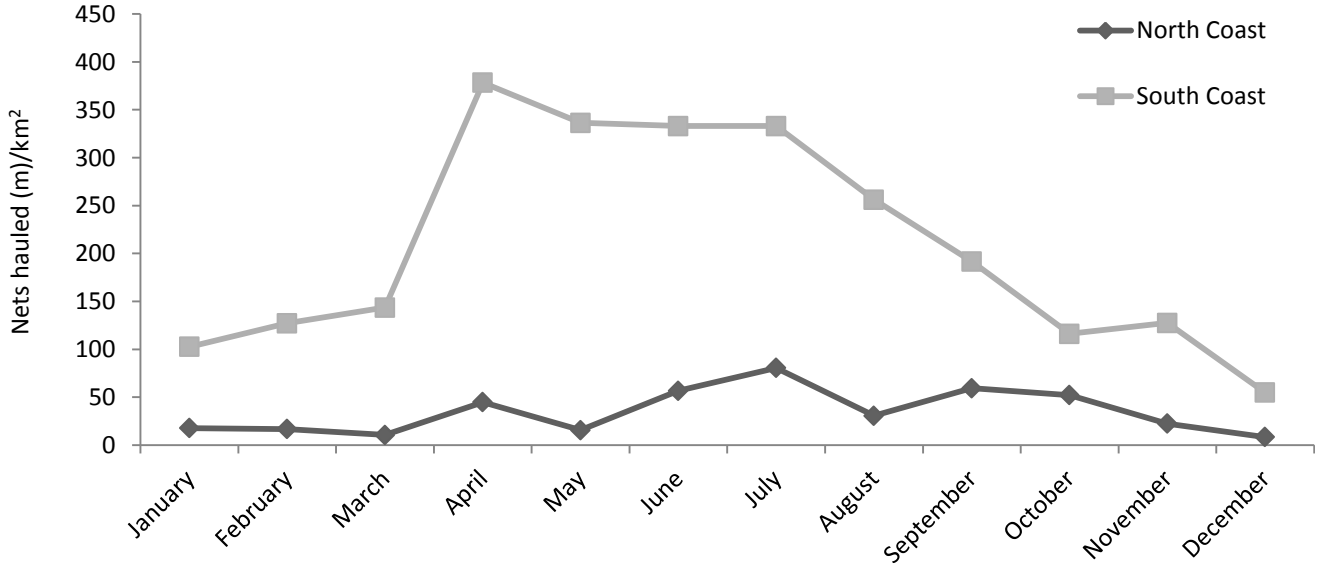

Figure 12: Meters of nets hauled per km^2 by month within the IFCA district for 2017, split by coast, north and south.

Netting effort split by belted statistical areas A and B on the north coast (Figure 13) followed similar trends from January to March and in November and December. Between April and October effort fluctuated in belt B, whereas belt A increased from June (0.8 m nets/ km^2) through to September (34.3 m nets/ km^2).

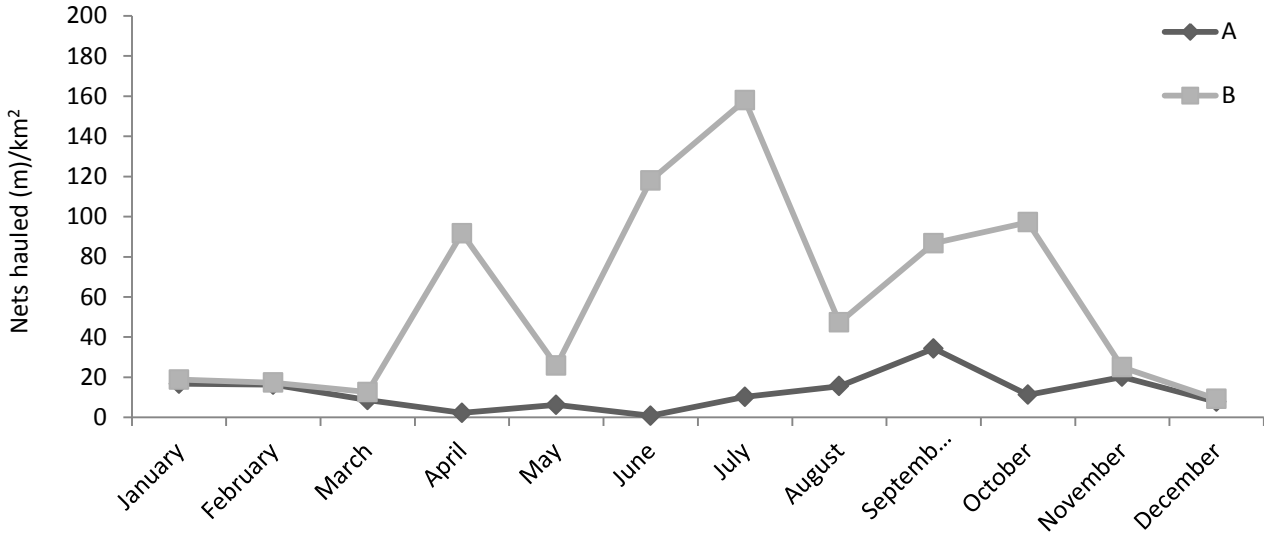

Figure 13: Meters of nets hauled per km^2 by month, for belted statistical areas on the north coast, split by belt, A and B, within the IFCA district for 2017.

Netting effort split by belted statistical areas on the south coast (Figure 14) differed between belts A and B. Belt A displayed a greater level of effort with the exception of January. Netting effort in Belt A increased from January peaking in April at 574 m nets/ km^2 and then gradually decreased for the rest of the year to 88.4 m nets/ km^2 in December. Netting effort in Belt B decreased until March then it varied little between April (202.3 m nets/ km^2) until September (171.1 m nets/ km^2), before decreasing in the last three months. The south coast had a greater amount of nets hauled in comparison to the north coast.

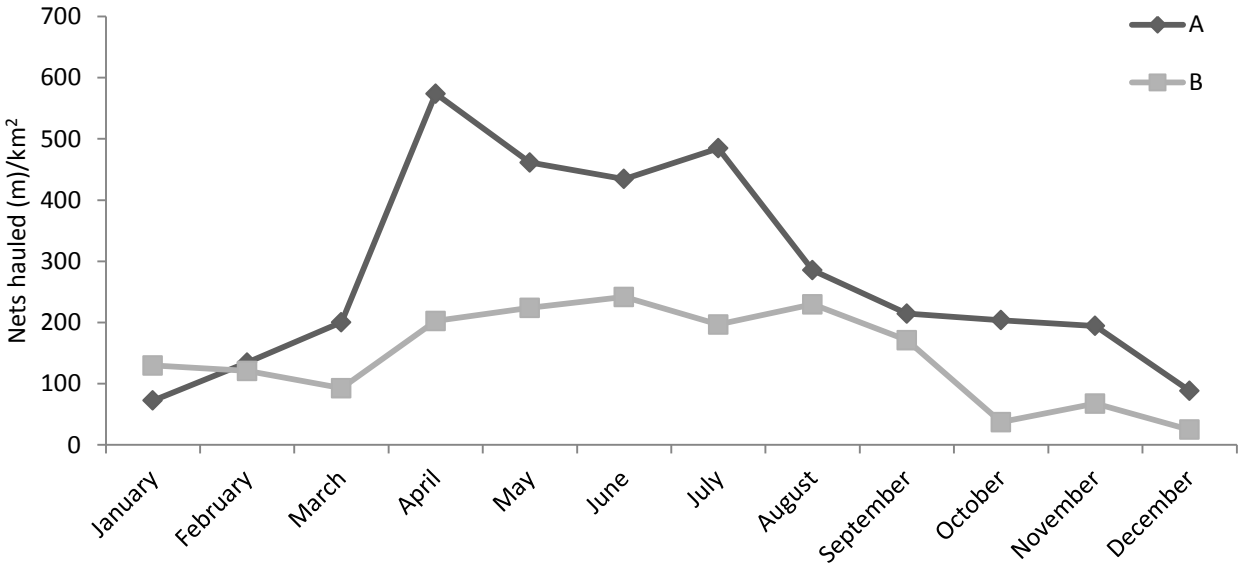

Figure 14: Meters of nets hauled per km^2 by month, for belted statistical areas on the south coast, split by belt, A and B, within the IFCA district for 2017.

Thematically mapped netting effort for the entire year (Figure 15) showed a higher level of effort on the south coast compared to the north coast. Effort on the north coast was concentrated in belt B, whereas the level and

distribution of effort varied considerably on the south coast. Netting effort by quarters (Figure 16) showed quarters two and three had the highest levels of effort and a wider distribution throughout the disrict, similar to that of potting (Figure 9).

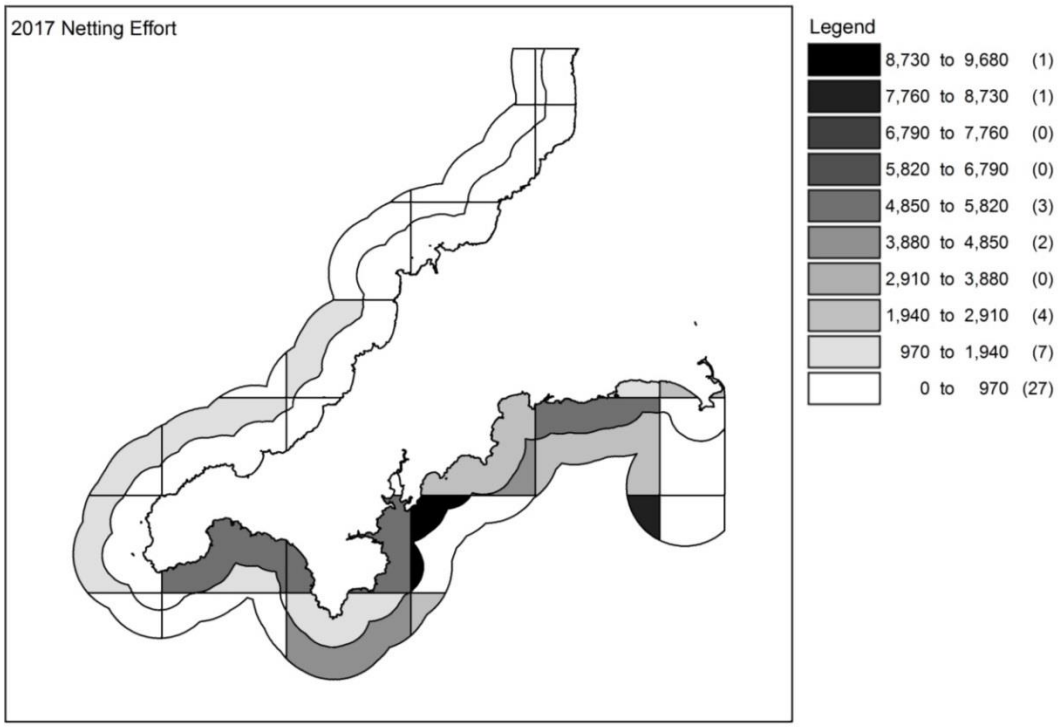

Figure 15: Meters of nets hauled per km^2 in the Cornwall IFCA district for 2017, thematically mapped by belted statistical area, using increments of 970m of net hauled per km^2.

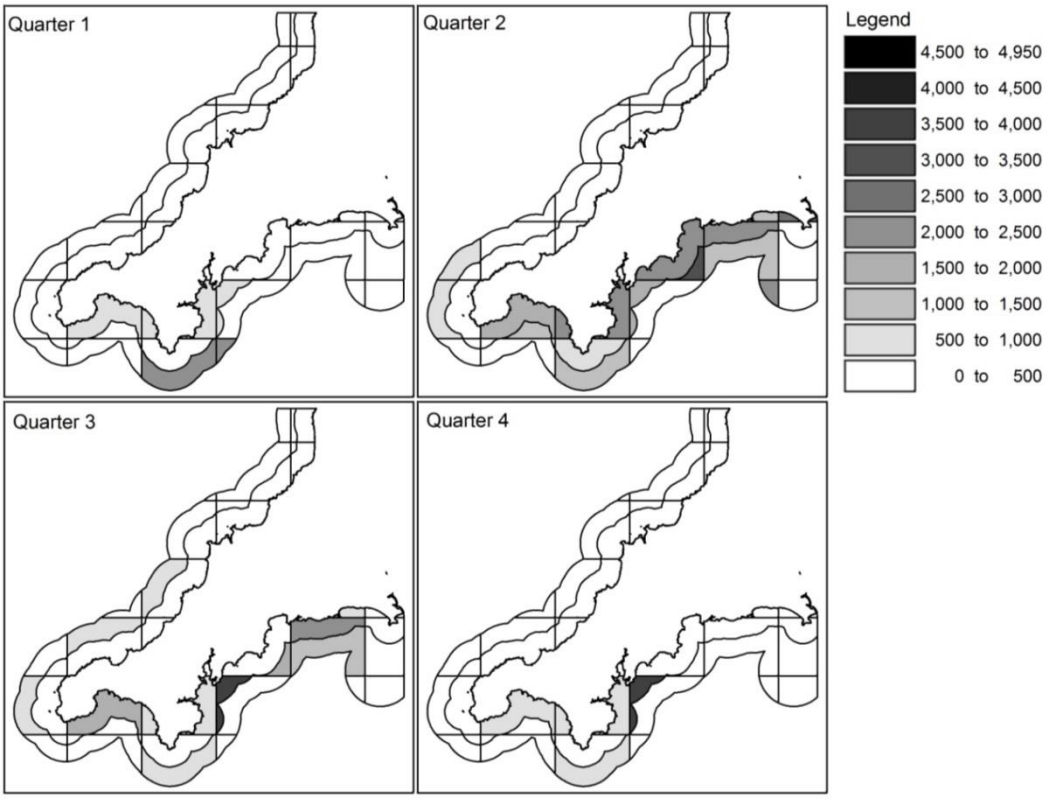

Figure 16: Meters of nets hauled per km^2 in the Cornwall IFCA district, split by quarter, thematically mapped by belted statistical area, using increments of 500m of net hauled per km^2.

5.3 LPUE of Crustacean Species

5.3.1 European Lobster (*Homarus gammarus*)

The overall LPUE (kg lobster/100 pot hauls) for the district (Figure 17) increased from January, maintained a similar LPUE during April (10.25 kg/100 pot hauls) and May (10.17 kg/100 pot hauls) until June where it peaked (11.9 kg/100 pot hauls) before a decline through the rest of the year but showed a small increase in December (3.5 kg/100 pot hauls).

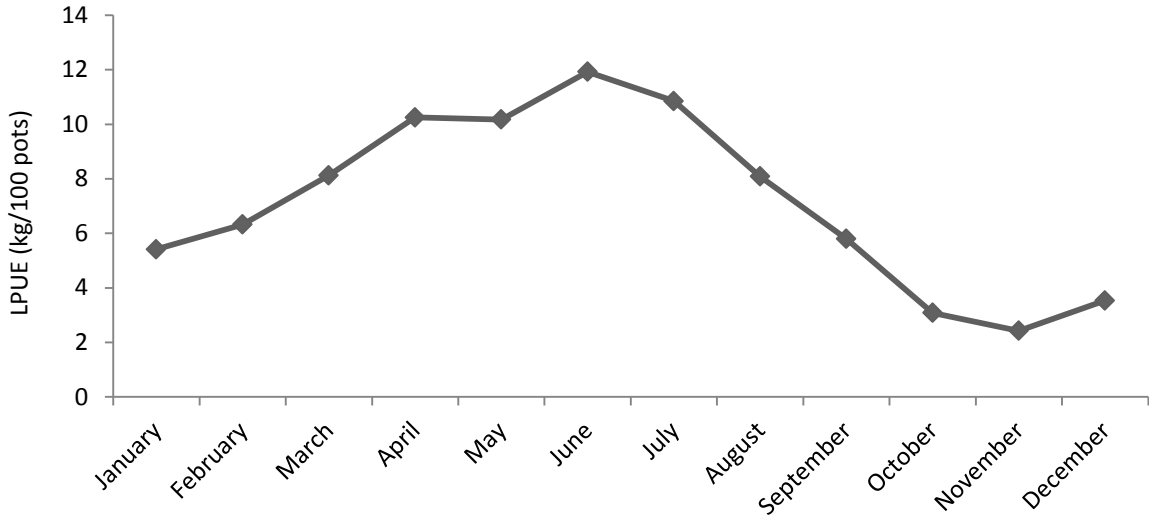

Figure 17: Monthly LPUE (kg landed/100 pot hauls) of the European lobster (*Homarus gammarus*) during 2017, within the Cornwall IFCA district.

The LPUE of lobsters calculated for both coasts (Figure 18) was greater on the north coast throughout the year with the exemption of December. Similarly both coasts peaked in June, ranging from 15.6 kg/100 pot hauls along the north coast to 9.4 kg/100 pot hauls along the south coast. LPUE calculations along both coasts increased from January to June and then declined through the rest of the year. The small increase in overall LPUE in December in Figure 17 was seen in the south coast data (Figure 18), where it gradually increased during December.

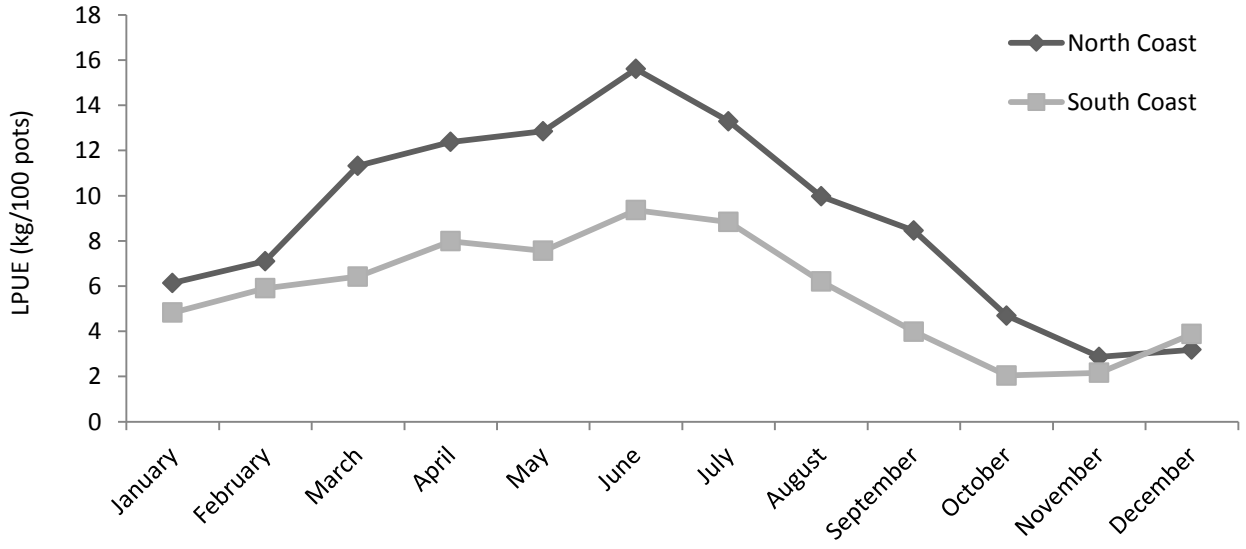

Figure 18: Monthly LPUE (kg landed/100 pot hauls) of the European lobster (*Homarus gammarus*) split by coast, north and south, during 2017 within the Cornwall IFCA district.

The LPUE of lobsters (Figure 19) in all ICES rectangles, with the exemption of 28E5, increased from January to April, fluctuated until September before it declined to November before showing a small increase in December. LPUE in ICES rectangle 28E5 increased from January to February and then dropped to zero in March where it remained at zero for the rest of the year. LPUE in ICES rectangles 30E5 and 29E4 peaked in June with figures of (17.2 kg/100 pot hauls) and (14.3 kg/100 pot hauls) respectively.

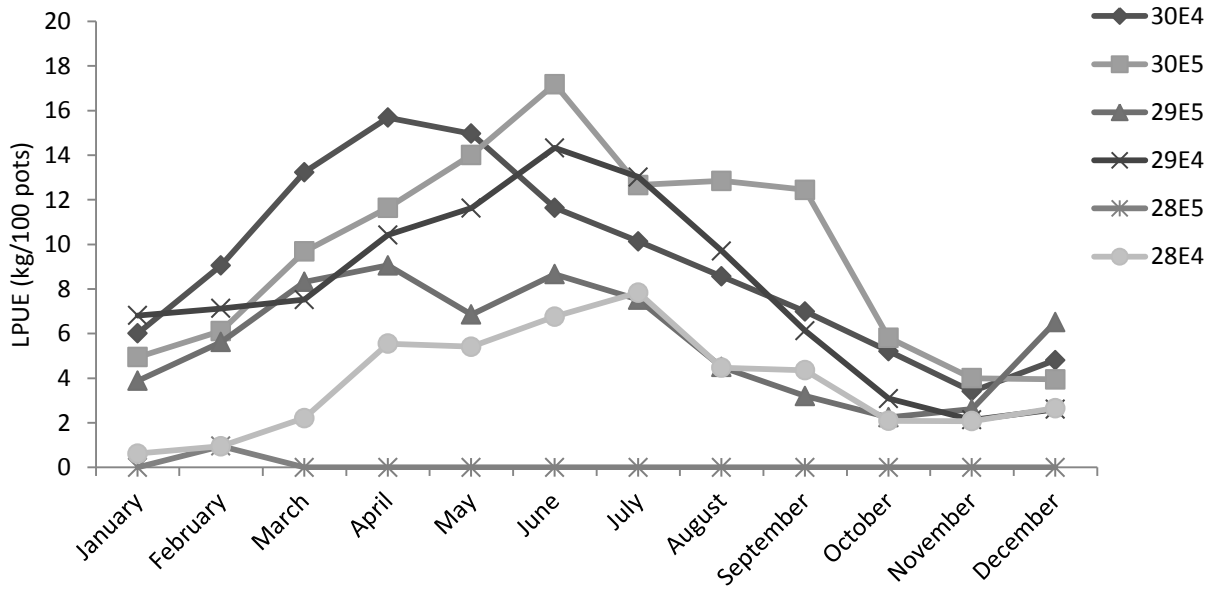

Figure 19: Monthly LPUE (kg landed/100 pot hauls) of European lobster (*Homarus gammarus*) by ICES statistical rectangle for the year, 2017.

The LPUE of lobsters when split by belted statistical areas along the north coast (Figure 20) showed LPUE in both belts increased from January to April, peaking in June. Both belts then followed a similar trend with a gradual decline from August to December.

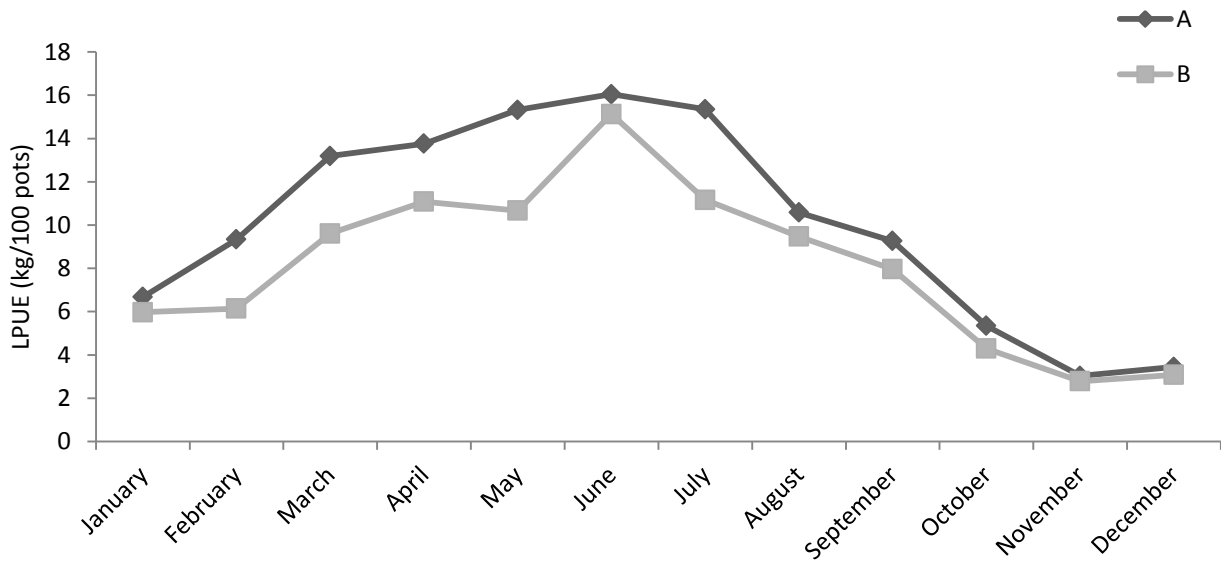

Figure 20: Monthly LPUE (kg landed/100 pot hauls), of European lobster (*Homarus gammarus*) for belted statistical areas on the north coast, split by belt, A and B in 2017.

The LPUE of lobsters split by belted statistical areas on the south coast (Figure 21) differed from Figure 20. LPUE in Belt B maintained a similar level from January (6.9 kg/100 pot hauls) to June (6.9 kg/100 pot hauls), then peaked in July (9.5 kg/pot hauls). Whereas belt A LPUE increased from 1.9 kg/100 pot hauls in January to 10.4 kg/100 pot hauls in June where it peaked. Both belts followed a similar trend from September to December.

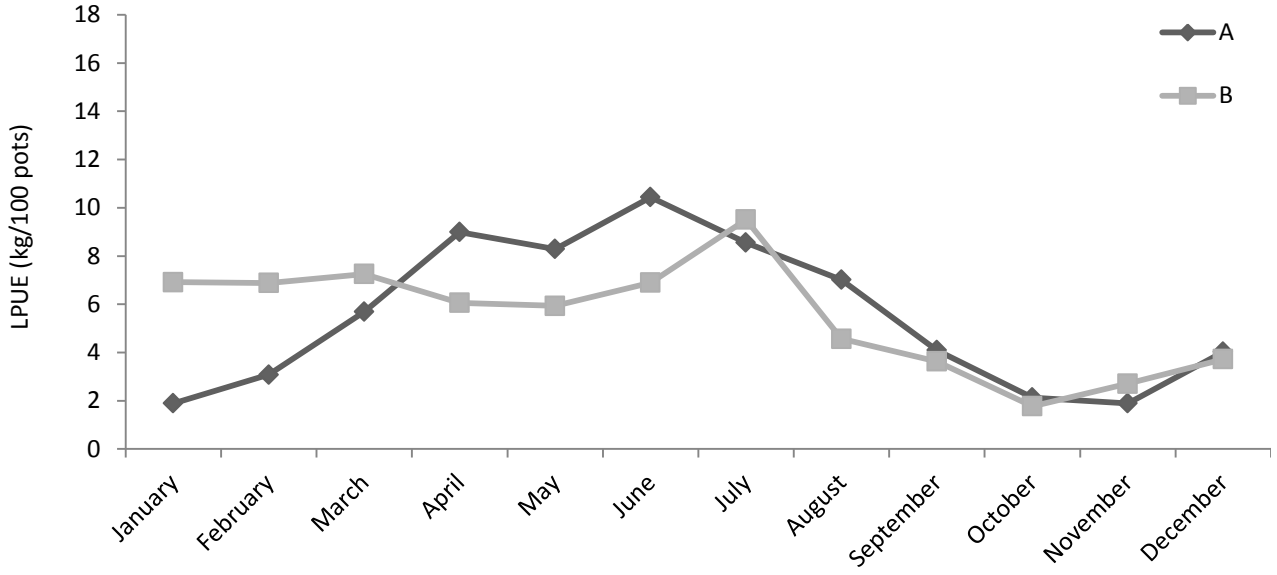

Figure 21: Monthly LPUE (kg landed/100 pot hauls), of European lobster (*Homarus gammarus*) for belted statistical areas on the south coast, split by belt, A and B in 2017.

Thematically mapped LPUE of lobsters for the entire year (Figure 22) showed the highest LPUE was west of Cape Cornwall (29E43A). This was also seen in Figure 23 (quarter two) and corresponds with Figure 17 where LPUE peaked in June. Thematically mapped LPUE of lobsters by quarters (Figure 23) showed that LPUE was highest in the first three quarters, and corresponds with Figure 18 showing quarters one, two and three have a greater distribution and increased LPUE compared to quarter four.

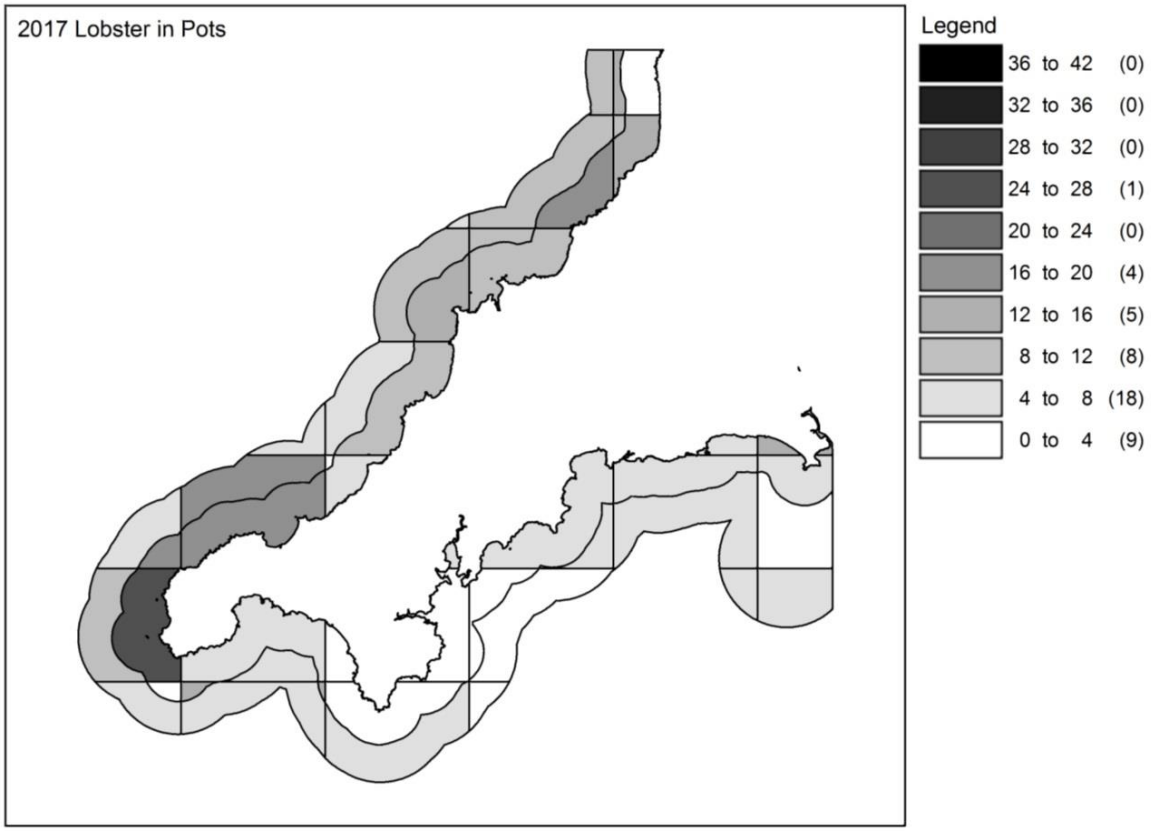

Figure 22: LPUE (kg landed/100 pot hauls) of European lobster (*Homarus gammarus*) for 2017 thematically mapped by belted statistical area, using increments of 4kg increments.

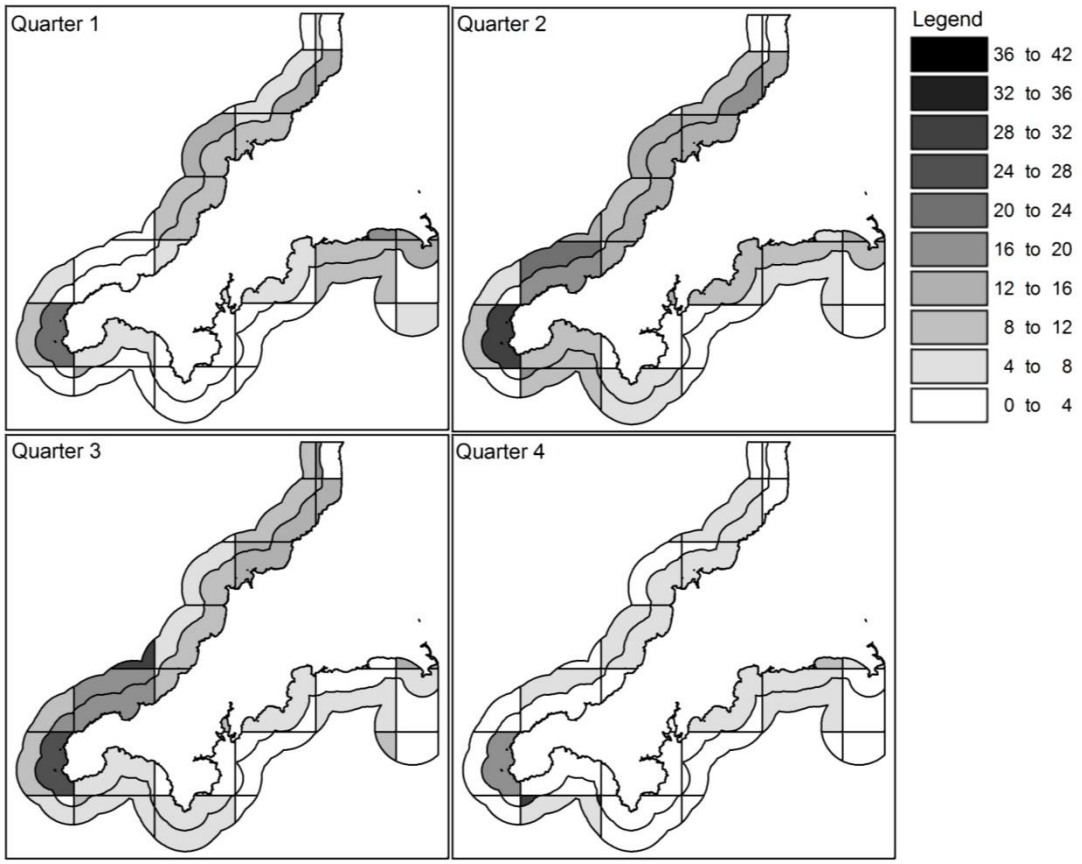

Figure 23: LPUE (kg landed/100 pot hauls) of European lobster (*Homarus gammarus*) for quarters 1 to 4 of 2017, thematically mapped by belted statistical area, using increments of 4kg increments.

5.3.2 Crawfish (*Palinurus elephas*)

5.3.2.1 Crawfish (*Palinurus elephas*) Fished by Nets

The overall LPUE of crawfish for the entire year (Figure 24), remained static from January (0.00 kg/100m nets hauled) to April then sharply increased to its peak in September (0.3 kg/100m nets hauled), followed by a decrease from September to November (0.01 kg/100m nets hauled) which remained low.

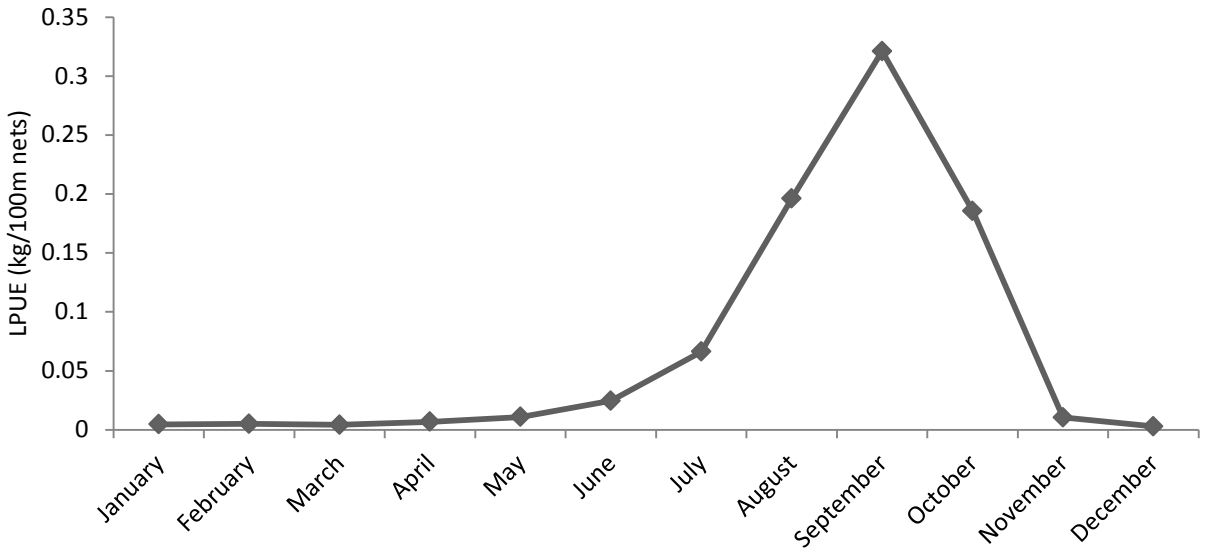

Figure 24: Monthly LPUE (kg landed/100m nets hauled) for crawfish (*Palinurus elephas*), during 2017 within the Cornwall IFCA district.

The LPUE estimations for crawfish for both coasts (Figure 25) followed a similar trends from January to April and November to December. Both coasts also peaked in late summer, the north coast in August (0.72 kg/100m nets hauled) and the south coast in September (0.25 kg/100m nets hauled).

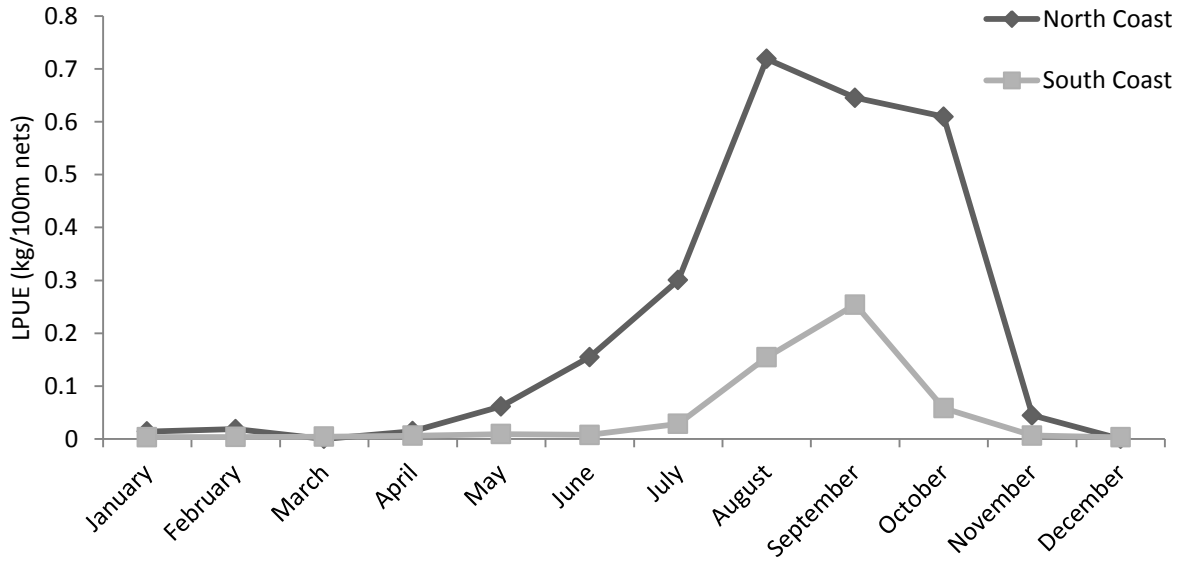

Figure 25: Monthly LPUE (kg landed/100m nets hauled) of crawfish (*Palinurus elephas*) split by coast, north and south, during 2017 within the Cornwall IFCA district.

The LPUE of crawfish across the district by ICES statistical rectangles (Figure 26), followed a similar pattern and remained at 0.00kg/100m net hauled from January to May before an increase from June to August which then

fluctuated for the remainder of the year showing no clear trend. LPUE was highest in ICES statistical rectangle 28E4 during September.

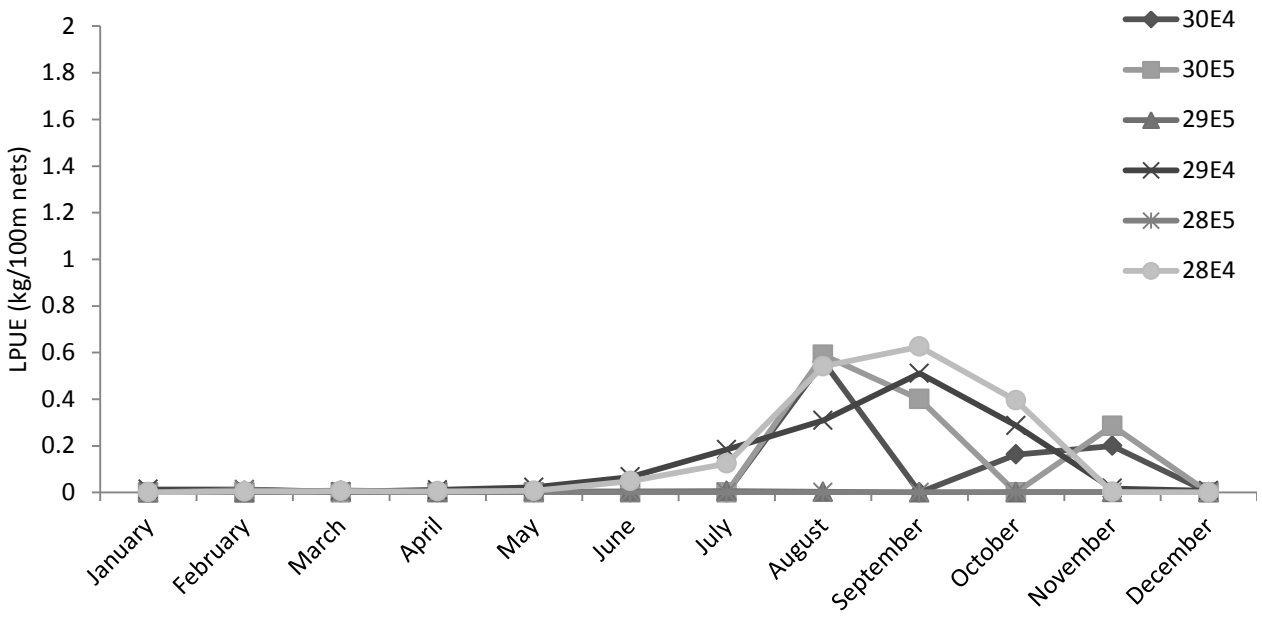

Figure 26: Monthly LPUE (kg landed/100m nets hauled) of crawfish (*Palinurus elephas*) by ICES statistical rectangle for the year, 2017

LPUE of crawfish by belted statistical areas along the north coast (Figure 27) remained below 0.1kg/100m net hauled from January to April. The LPUE in both belts increased from June to August and then gradually declined from September until the end of the year. LPUE in both belts peaked in late summer ranging from (0.8 kg/100m nets hauled) in belt B during August and (0.52 kg/100m nets hauled) in belt A during September.

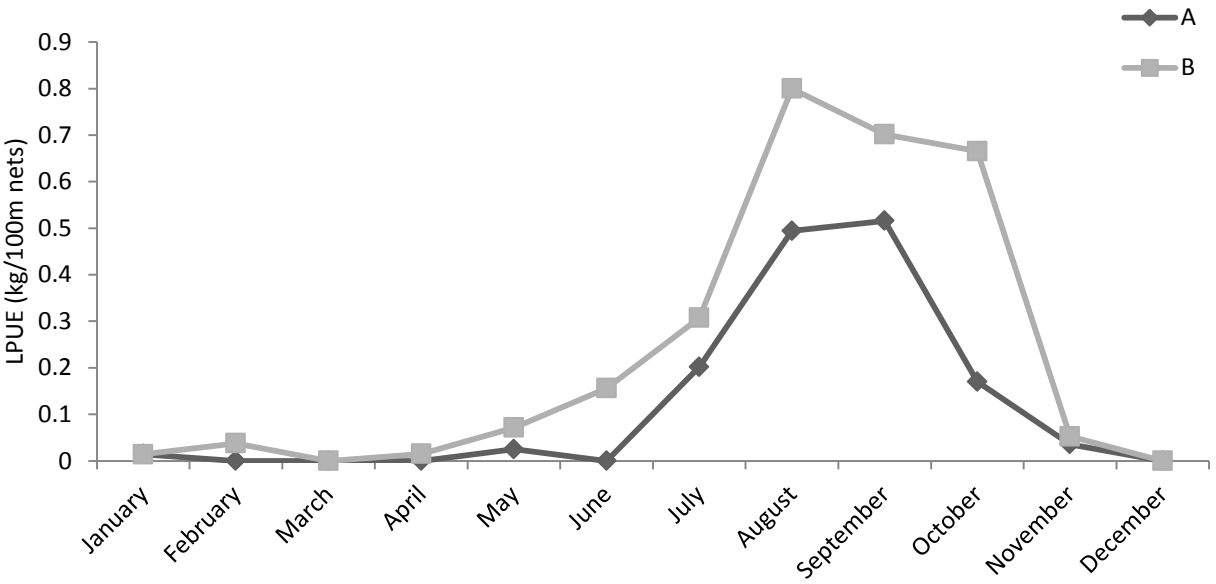

Figure 27: Monthly LPUE (kg landed/100m nets hauled), of crawfish (*Palinurus elephas*) caught on the north coast, split by belt, A and B in 2017.

LPUE of crawfish by belted statistical areas along the south coast (Figure 28) followed a similar trend to Figure 27 and remained low from January to May. The LPUE then increased from June to September and gradually declined

for the rest of the year. Again similar to Figure 27, LPUE in both belts peaked during late summer (September) ranging from (0.37 kg/100m nets) belt B to (0.15 kg/100m nets) belt A.

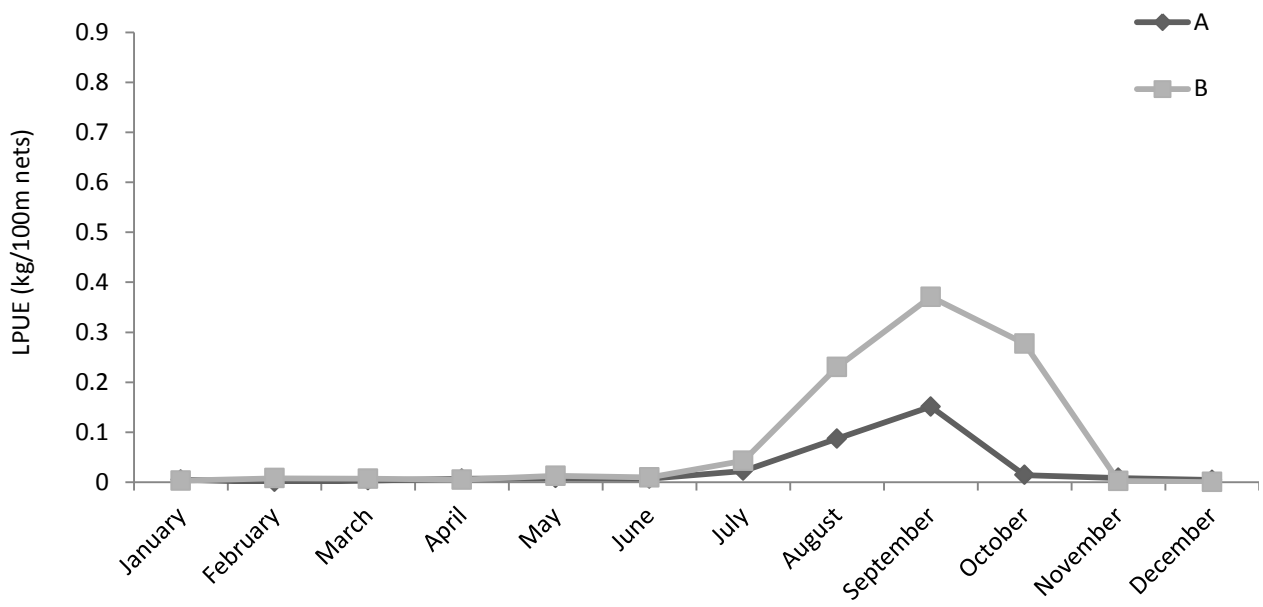

Figure 28: Monthly LPUE (kg landed/100m nets hauled), of crawfish (*Palinurus elephas*) caught on the south coast, split by belt, A and B in 2017.

Thematically mapped LPUE of crawfish for the entire year (Figure 29), similarly to lobsters, showed the highest LPUE to be west of Cape Cornwall (29E43A), this is also seen in Figure 30 (quarter three and four) where a greater LPUE has been recorded compared to quarters one and two. This corresponds with Figure 24 to Figure 28 which all showed an increase in LPUE during July, August, September and October. Thematically mapped crawfish LPUE by quarters (Figure 30) showed that quarter three and four had increased LPUE compared to quarter one and two this corresponds with Figure 24 to Figure 28 which all showed an increase in LPUE during July, August, September and October.

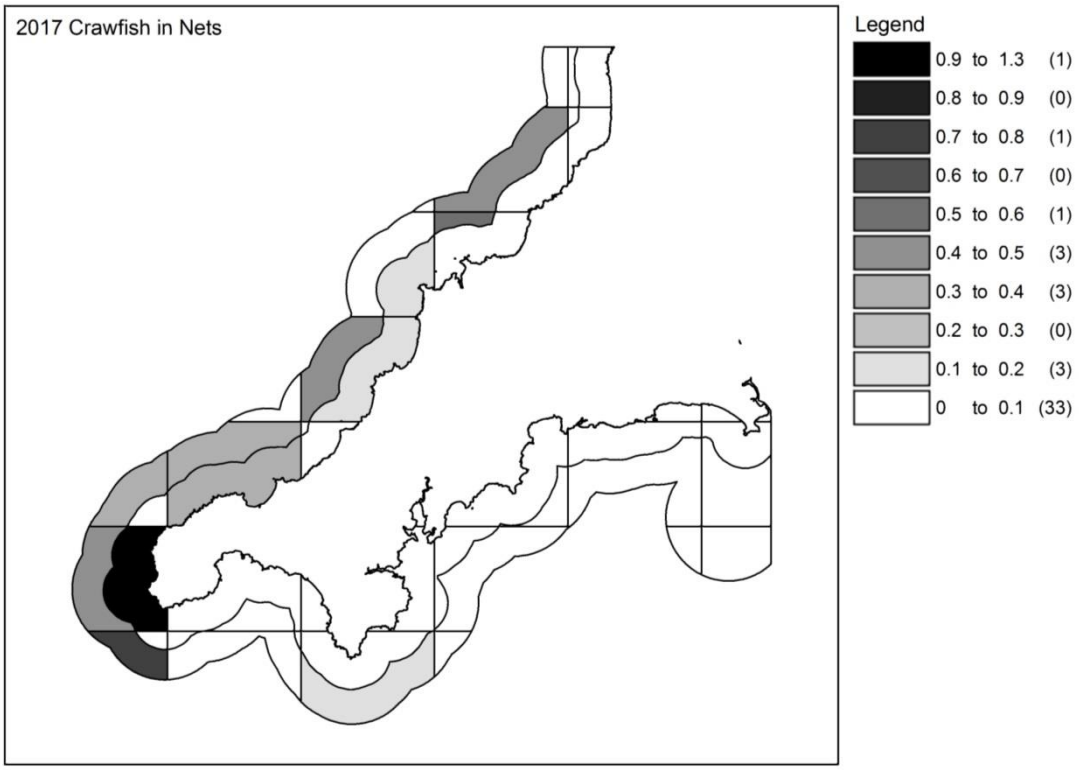

Figure 29: LPUE (kg landed/100m nets hauled) of crawfish (*Palinurus elephas*) for 2017, thematically mapped by belted statistical area, using increments of 0.1kg.

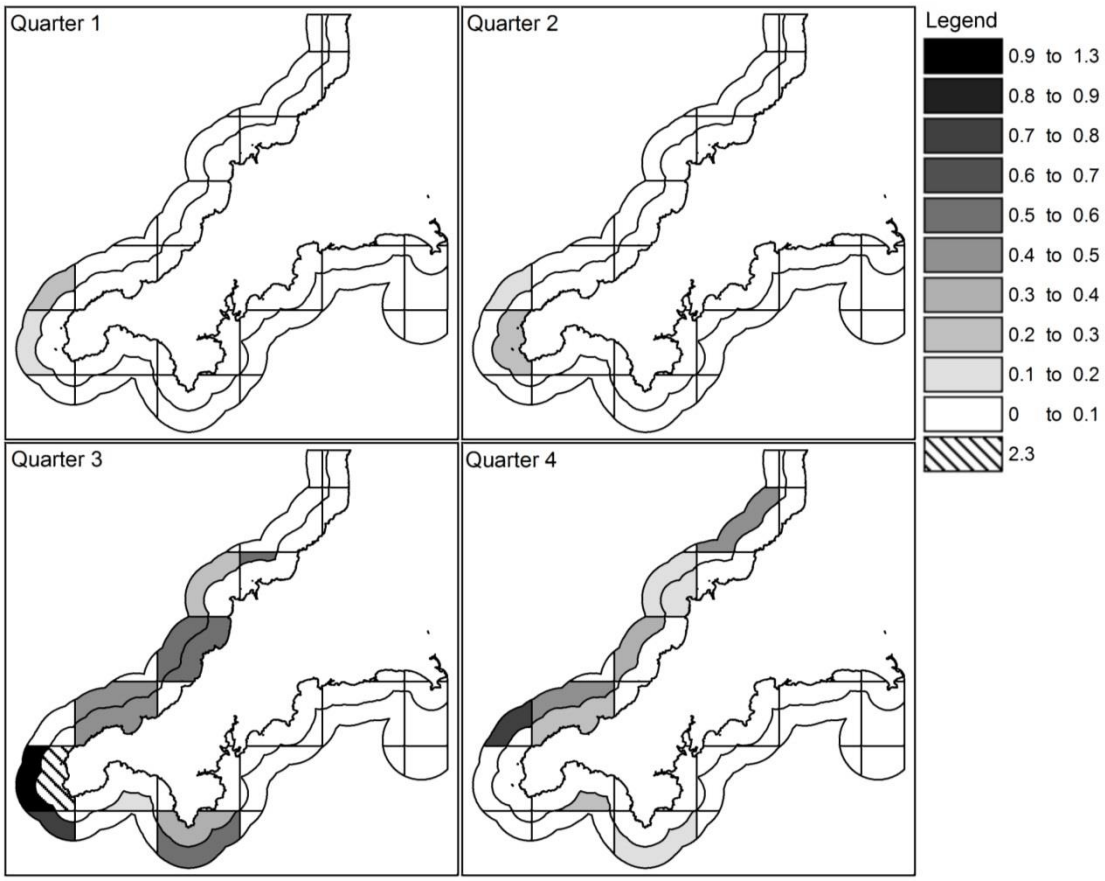

Figure 30: LPUE (kg landed/100m nets hauled) of crawfish (*Palinurus elephas*) for quarters 1 to 4 of 2017, thematically mapped by statistical area, using increments of 0.1kg. Note: in Quarter 3 29E4 3A had a very high LPUE (2.3 kg crawfish/100m nets hauled) and therefore has an extra category assigned in diagonal stripes.

5.3.3 Spider crab (*Maja* spp.)

5.3.3.1 Spider crab (*Maja* spp.) Fished by Pots

The overall LPUE of spider crab (Figure 31) increased from February (1.6 kg/100 pot hauls) reached its peak in May (6.8 kg/100 pot hauls), before a decline to September (1.6 kg/100 pot hauls) and gradual increase to December (5 kg/100 pot hauls).

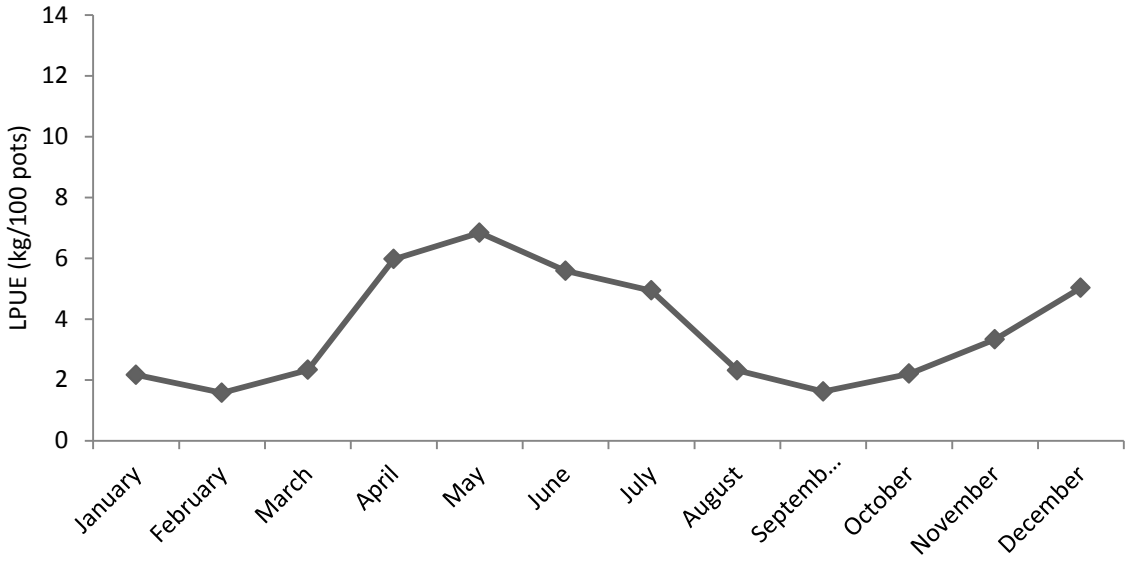

Figure 31: Monthly LPUE (kg landed/100 pot hauls) of common spider crab (*Maja* spp.) during 2017, within the Cornwall IFCA district.

The LPUE of spider crab for both coasts (Figure 32) followed a similar trend from October to December. LPUE on the south coast remained at a similar level until September when it increased until the end of the year. LPUE on the north coast built from March through to July before it declined to September. LPUE on the north coast peaked in May (9.9 kg/100 pot hauls), whereas LPUE on the south coast peaked in December (4.9 kg/100 pot hauls).

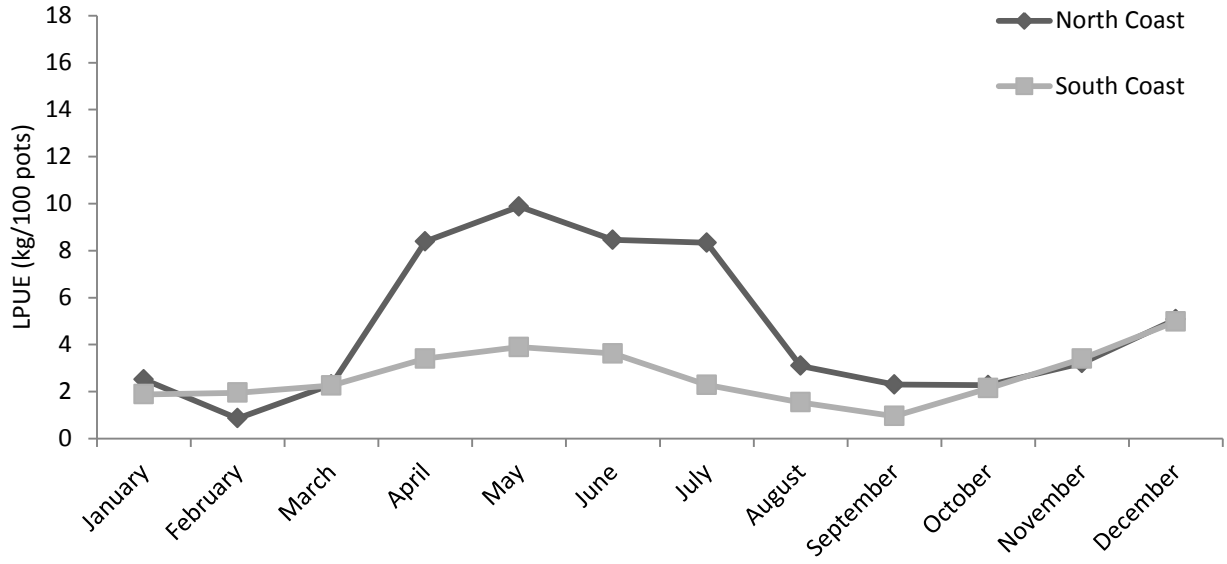

Figure 32: Monthly LPUE (kg landed/100 pot hauls) of common spider crab (*Maja* spp.) split by coast, north and south, during 2017 within the Cornwall IFCA district.

The LPUE of spider crab in all ICES statistical rectangles (Figure 33) remained low throughout the year with the exception of ICES rectangles 28E4, 29E4, 30E4 and 30E5. LPUE in ICES rectangle 28E4 increased during February as well as the last two months of the year. Whereas LPUE in ICES rectangle 29E4 increased from March (2.1 kg/100 pot hauls) to May (11.7 kg/100 pot hauls) before it decreased for the rest of the year. LPUE in ICES rectangle 30E4 increased during April and May before it reached its peak in December (11.7 kg/100 pot hauls) the highest LPUE amongst ICES rectangles for 2017. LPUE in ICES rectangle 30E5 remained low throughout the year before it increased gradually from September until the end of the year.

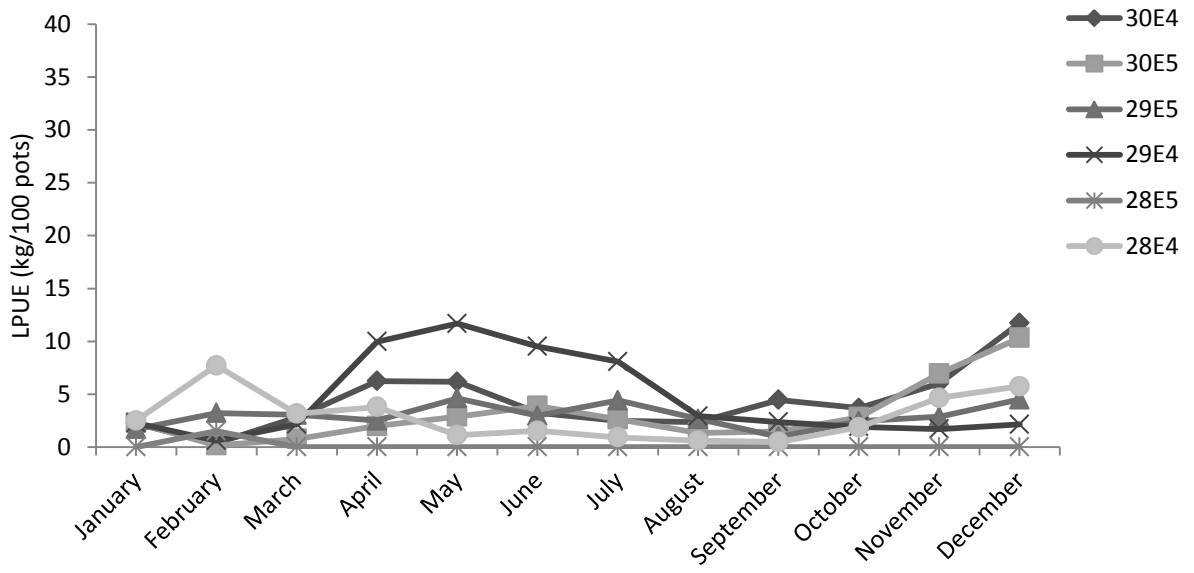

Figure 33: Monthly LPUE (kg landed/100 pot hauls) of common spider crab (*Maja* spp.) by ICES statistical rectangle for the year, 2017.

The LPUE of spider crab by belted statistical areas along the north coast (Figure 34) showed both belts followed a similar trend for the first three months of the year. LPUE in both belts decreased from January to February and increased in March and then followed a similar pattern during August, September, October and November. The LPUE in belt A gradually increased from February and reached its peak in May (13.7 kg/100 pot hauls). Belt B LPUE also increased from March but fluctuated in comparison to belt A before decreasing from August for the remainder of the year.

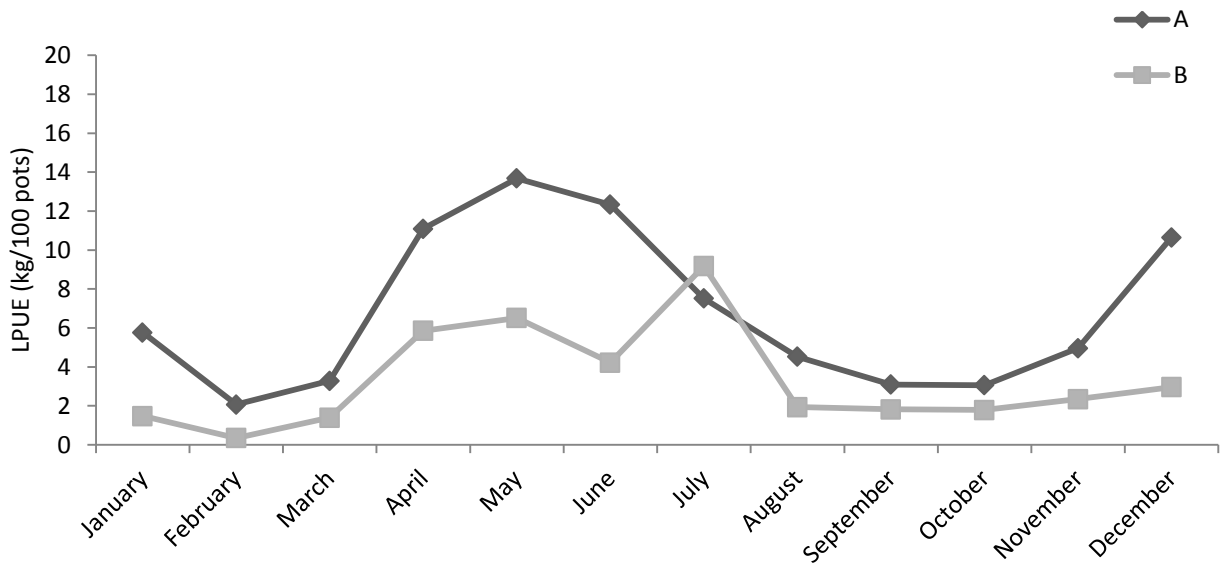

Figure 34: Monthly LPUE (kg landed/100 pot hauls), of common spider crab (*Maja* spp.) caught on the north coast, split by belt, A and B in 2017.

The LPUE of spider crab in belted statistical areas along the south coast (Figure 35) fluctuated in both belts from the beginning of the year until September. LPUE in both belts then followed a similar trend, where it increased from September (belt B: 0.8 kg/100 pot hauls and belt A: 1 kg/100 pot hauls) to December where both belts peaked (belt B: 4.6 kg/100 pot hauls and belt A: 5.4 kg/100 pot hauls).

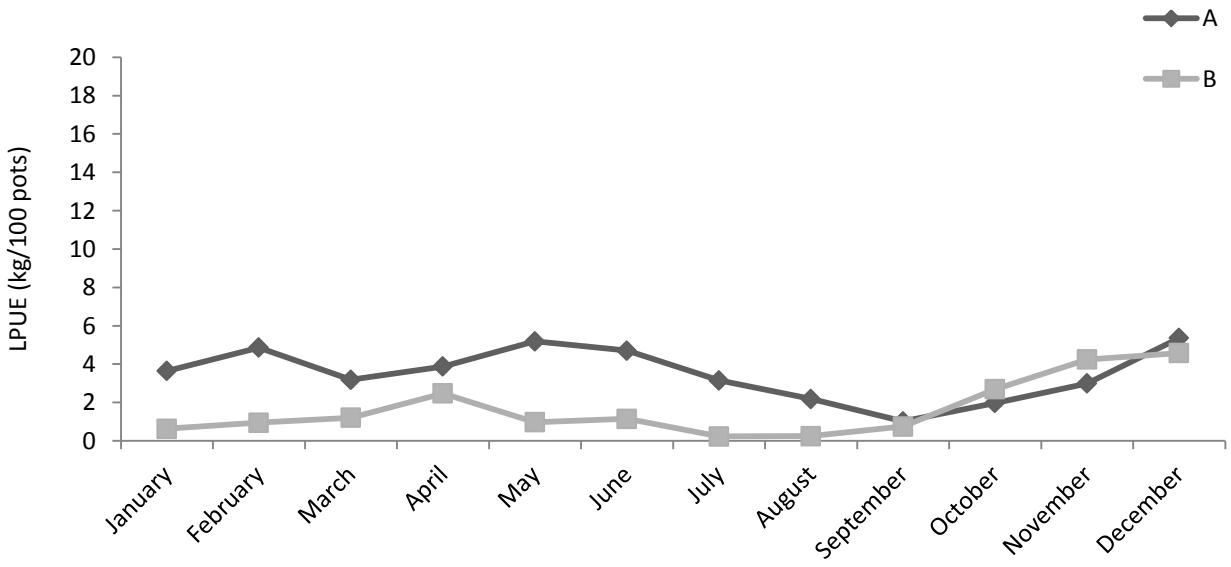

Figure 35: Monthly LPUE (kg landed/100 pot hauls), of common spider crab (*Maja* spp.) caught on the south coast, split by belt, A and B in 2017.

Thematically mapped LPUE of spider crab taken by pots for the entire year (Figure 36) showed the greatest LPUE adjacent to St Ives and Hayle (29E45A), this was also seen in Figure 37 (quarter two). Thematically mapped spider crab LPUE by quarters (Figure 37), showed that quarter two had increased LPUE compared to quarters one, three and four, this corresponds with Figure 31 to Figure 35 which all showed an increase in LPUE during April, May and June.

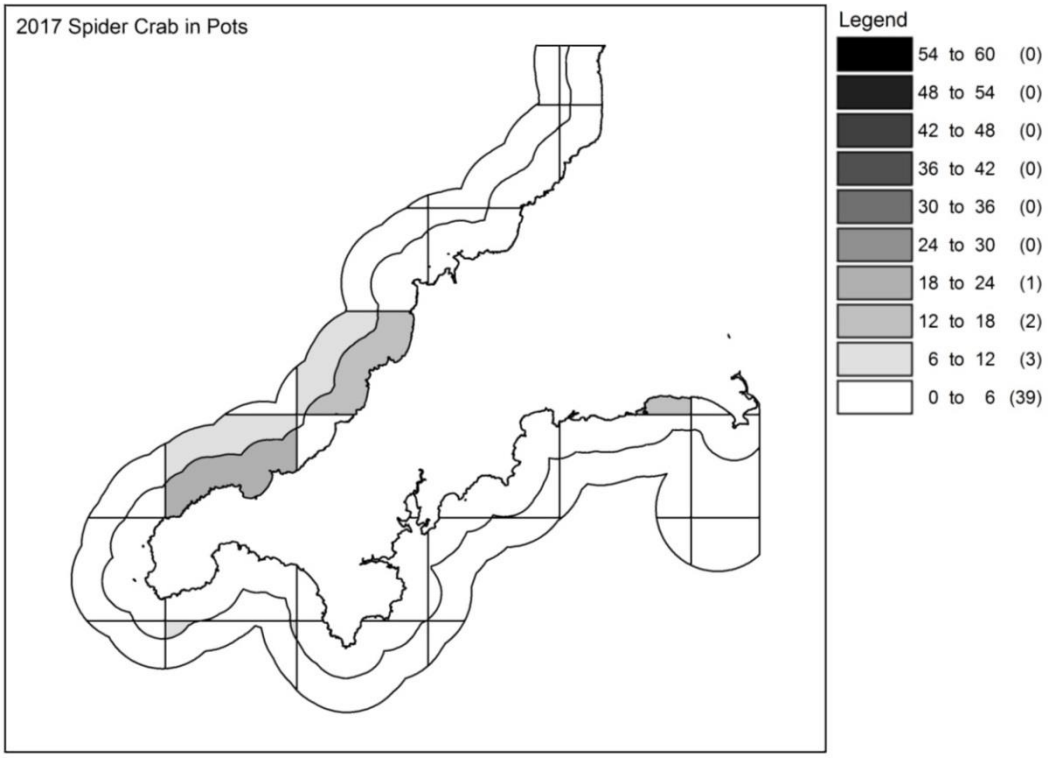

Figure 36: LPUE (kg landed/100 pot hauls) of common spider crab (*Maja* spp.) for 2017 thematically mapped by belted statistical area, using increments of 6kg increments.

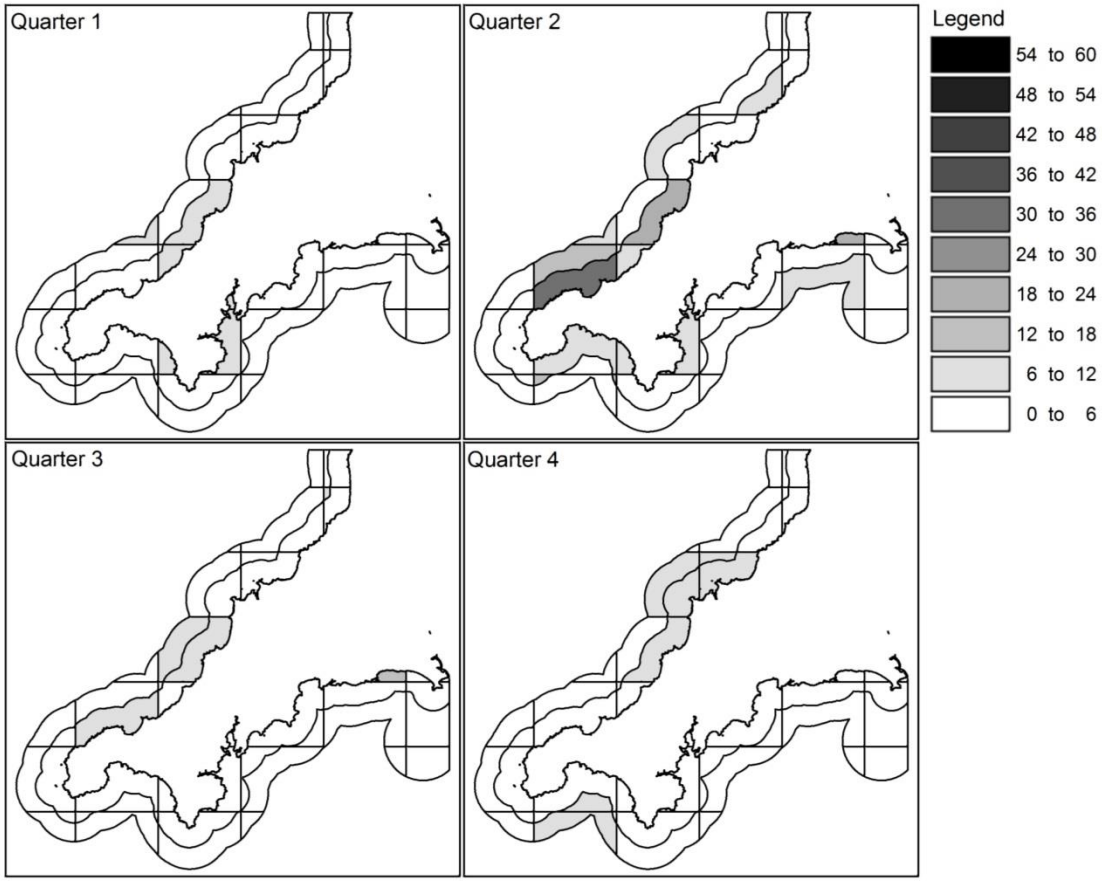

Figure 37: LPUE (kg landed/100 pot hauls) of common spider crab (*Maja* spp.) for quarters 1 to 4 of 2017, thematically mapped by statistical area, using increments of 6kg.

5.3.3.2 Spider crab (*Maja* spp.) Fished by Nets

The overall spider crab LPUE (Figure 38), increased from February to May) followed by a decline to August (0.3 kg/100m nets hauled) and then increased to its peak in November (0.95 kg/100m nets hauled).

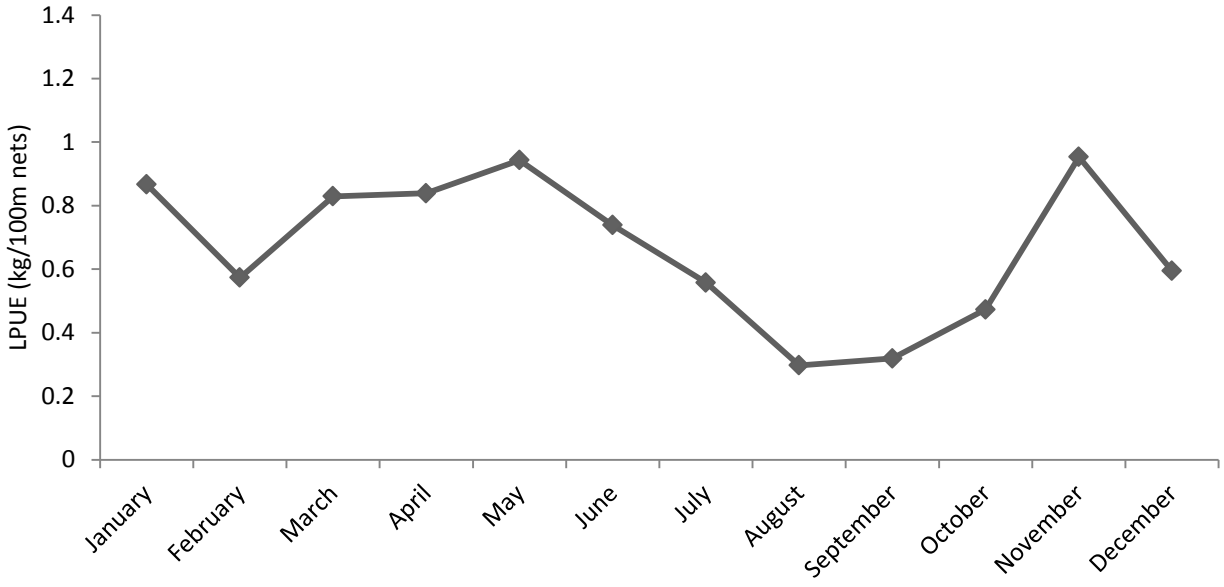

Figure 38: Monthly LPUE (kg landed/100m nets hauled) of common spider crab (*Maja* spp.) during 2017, within the Cornwall IFCA district.

Spider crab LPUE estimations for both coasts (Figure 39) followed similar trends for the much of the year with the exemption of May and August. LPUE differed in that the south coast remained at a similar level throughout the year remaining at <1 kg/100m nets hauled, whereas the north coast showed an increase in May, where it peaked at 6.68 kg/100m nets hauled followed by a smaller peak of 1.63kg/100m net hauled in August.

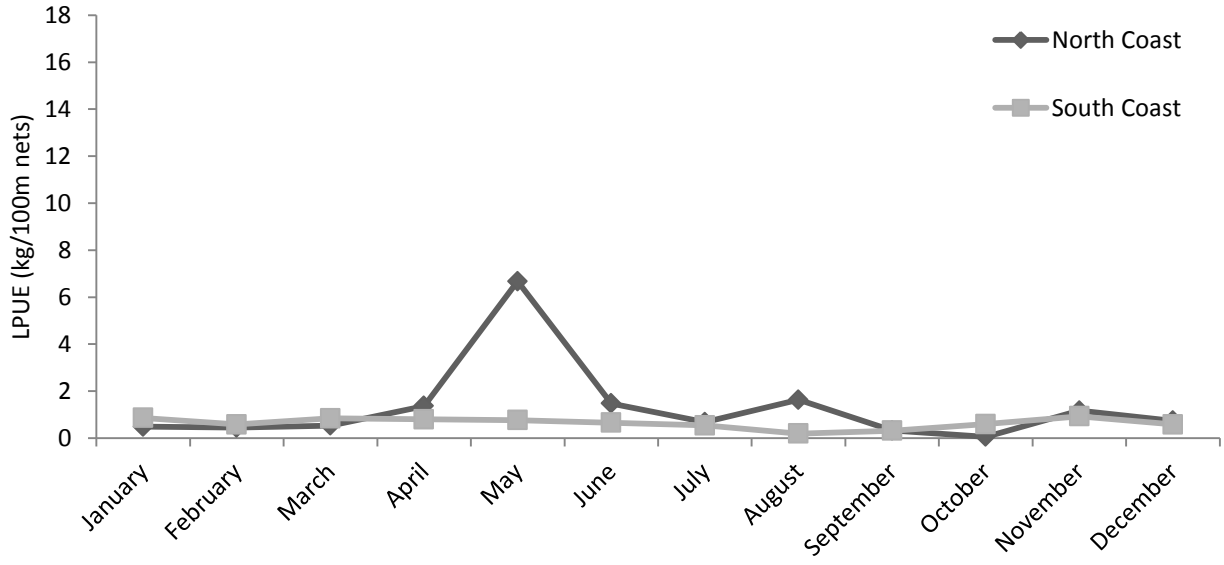

Figure 39: Monthly LPUE (kg landed/100m nets hauled) of common spider crab (*Maja* spp.) split by coast, north and south, during 2017 within the Cornwall IFCA district.

Spider crab LPUE in all ICES statistical rectangles (Figure 40) remained low (<3 kg/100m nets hauled) throughout the year with the exemption of ICES rectangle 30E5, which increased from March (0 kg/100m nets hauled) to its peak in May (23.6 kg/100m nets hauled) followed by a decline in June (0 kg/100m nets hauled).

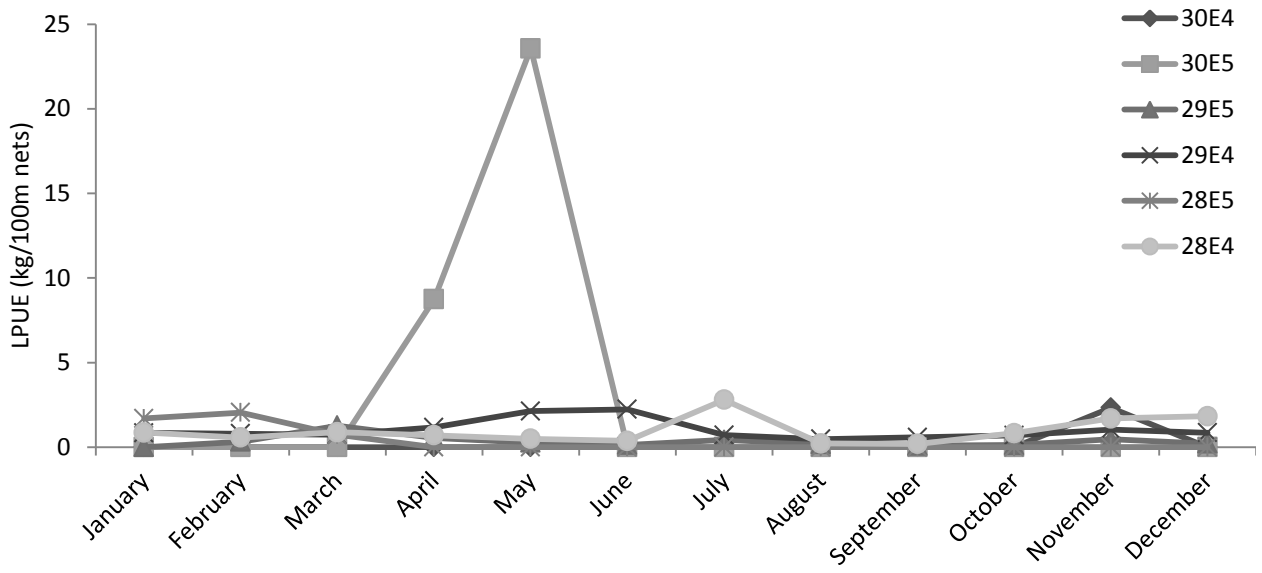

Figure 40: Monthly LPUE (kg landed/100m nets hauled) of common spider crab (*Maja* spp.) by ICES statistical rectangle for the year, 2017.

Spider crab LPUE by belted statistical areas along the north coast (Figure 41) followed a similar trend from January to April and September to December. However LPUE in both belts differed in that belt B maintained a similar level throughout the year (<2 kg/100m nets hauled) with a small increase from March (0 kg/100m nets hauled) through to June (1.3 kg/100m nets hauled). Whereas LPUE in Belt A displayed a large increase from April to its peak in May (26.6 kg/100m nets hauled), before a gradual decrease through to October. The north coast had a greater spider crab LPUE in comparison to the south coast.

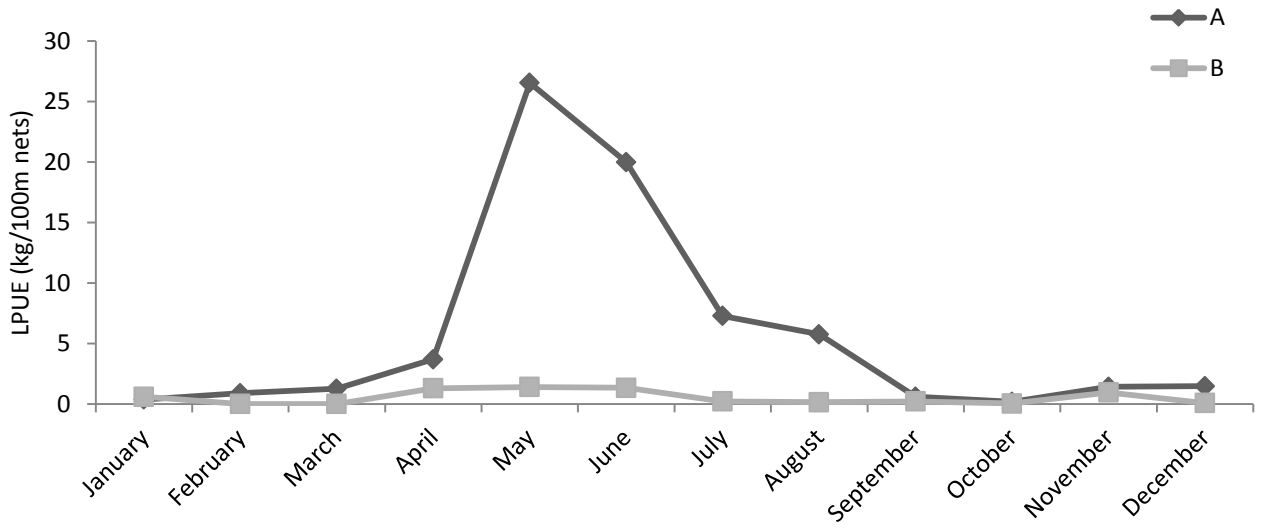

Figure 41: Monthly LPUE (kg landed/100m nets hauled), of common spider crab (*Maja* spp.) caught on the north coast, split by belt, A and B in 2017.

Spider crab LPUE by belted statistical areas along the south coast (Figure 42) followed a similar trend from January to April and July to August. The LPUE was higher in belt A from May to June where it peaked (1.02 kg/100m nets hauled). Belt B increased from September to a peak in November (1.41 kg/100m nets hauled).

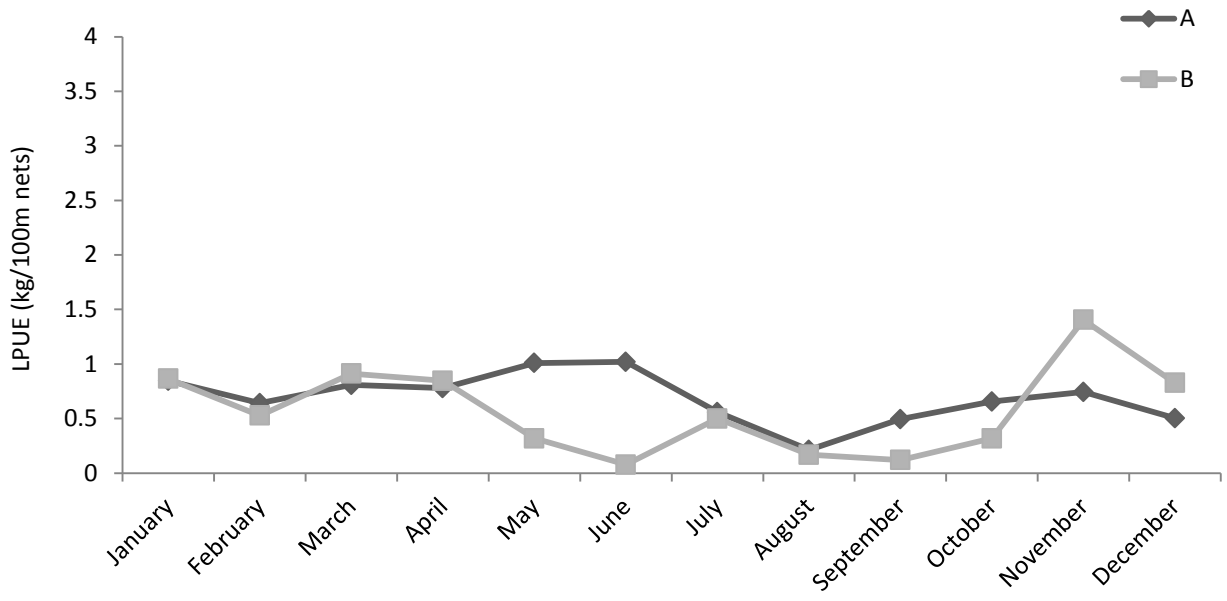

Figure 42: Monthly LPUE (kg landed/100m nets hauled), of common spider crab (*Maja* spp.) caught on the south coast, split by belt, A and B in 2017.

Thematically mapped LPUE of spider crab taken by nets for the entire year (Figure 43), showed the greatest LPUE adjacent to Padstow and Port Isaac (30E53A). Thematically mapped spider crab taken by nets LPUE by quarters (Figure 44), showed that quarter two had a greater LPUE compared to quarters one, three and four this corresponds with Figure 39 to Figure 41 which all showed an increase in LPUE during April, May and June.

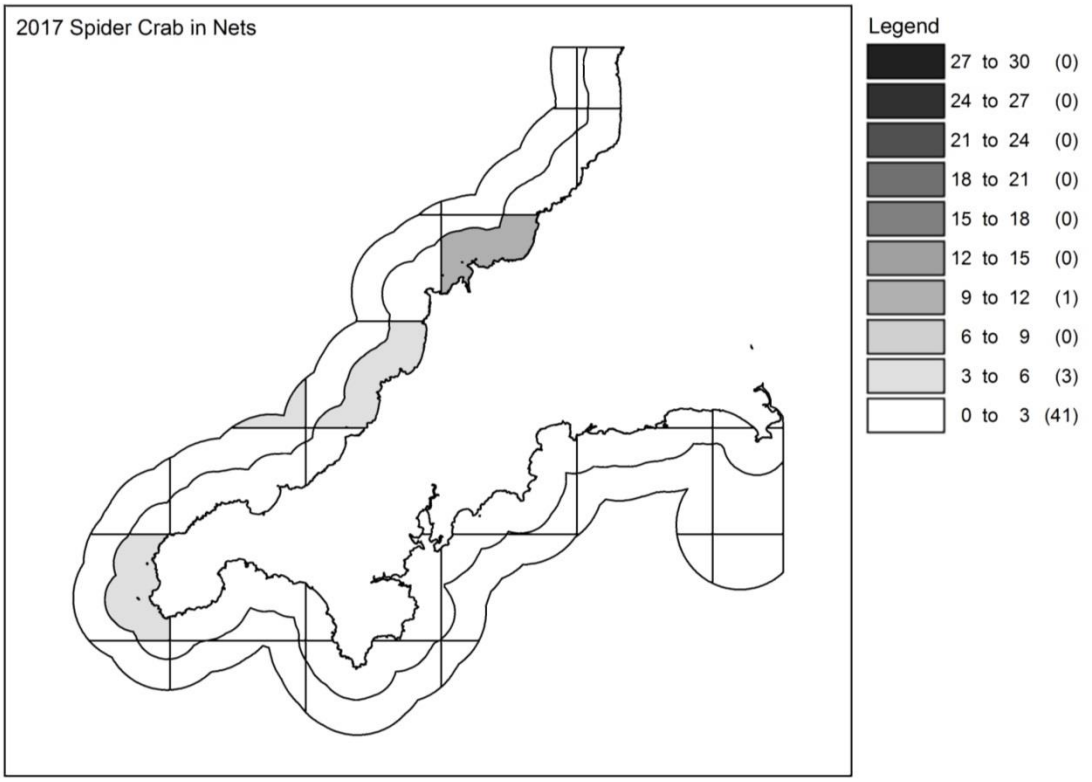

Figure 43: LPUE (kg landed/100m nets hauled) of common spider crab (*Maja* spp.) for 2017 thematically mapped by belted statistical area, using increments of 3kg increments.

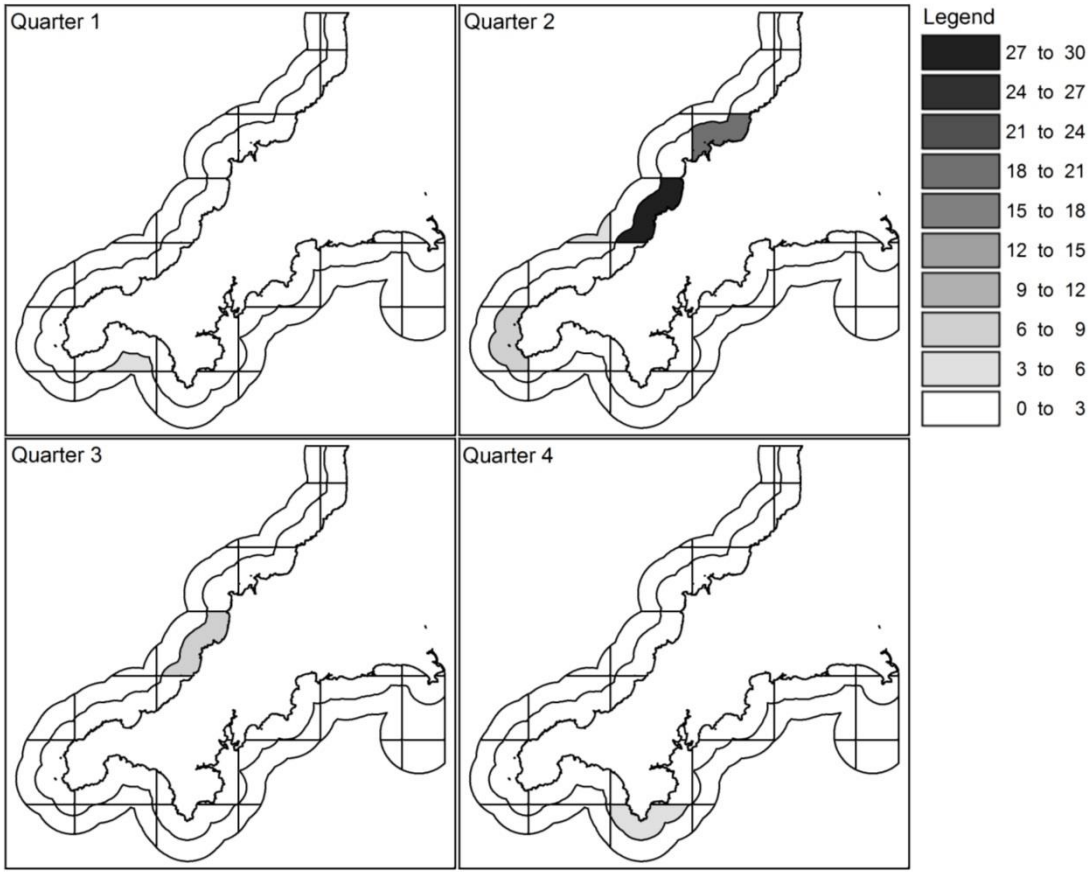

Figure 44: LPUE (kg landed/100m nets hauled) of common spider crab (*Maja* spp.) for quarters 1 to 4 of 2017, thematically mapped by statistical area, using increments of 3kg.

5.3.4 Edible crab (*Cancer pagurus*)

5.3.4.1 Edible crab (*Cancer pagurus*) Fished by Pots

The overall LPUE of combined edible crabs (Figure 45), decreased from January to April before it maintained a gradual increase from May with the exemption of July, until its peak in October (121.1 kg/100 pot hauls). The LPUE then gradually declined from October for the remainder of the year.

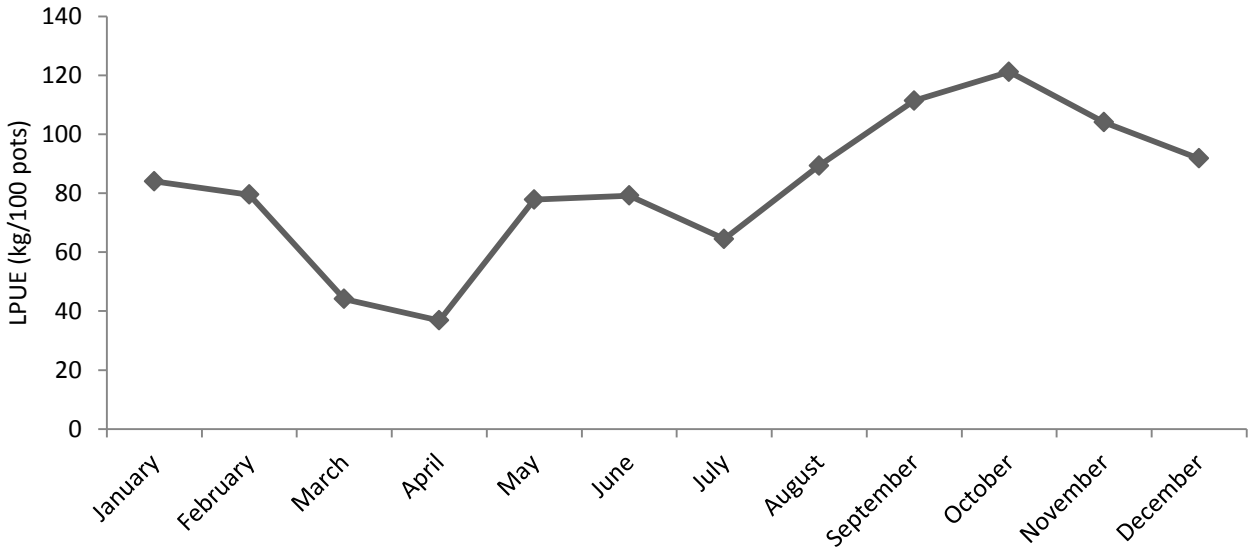

Figure 45: Monthly LPUE (kg landed/100 pot hauls) of edible crab (*Cancer pagurus*) during 2017, within the Cornwall IFCA district.

The LPUE of combined edible crab along both coasts (Figure 46) followed a similar trend in that both decreased from January to March, increased in May, decreased in July and then increased to a peak in October. LPUE values ranged from (118.8 kg/100 pot hauls) on the south coast and (125.7 kg/100 pot hauls) on the north coast.

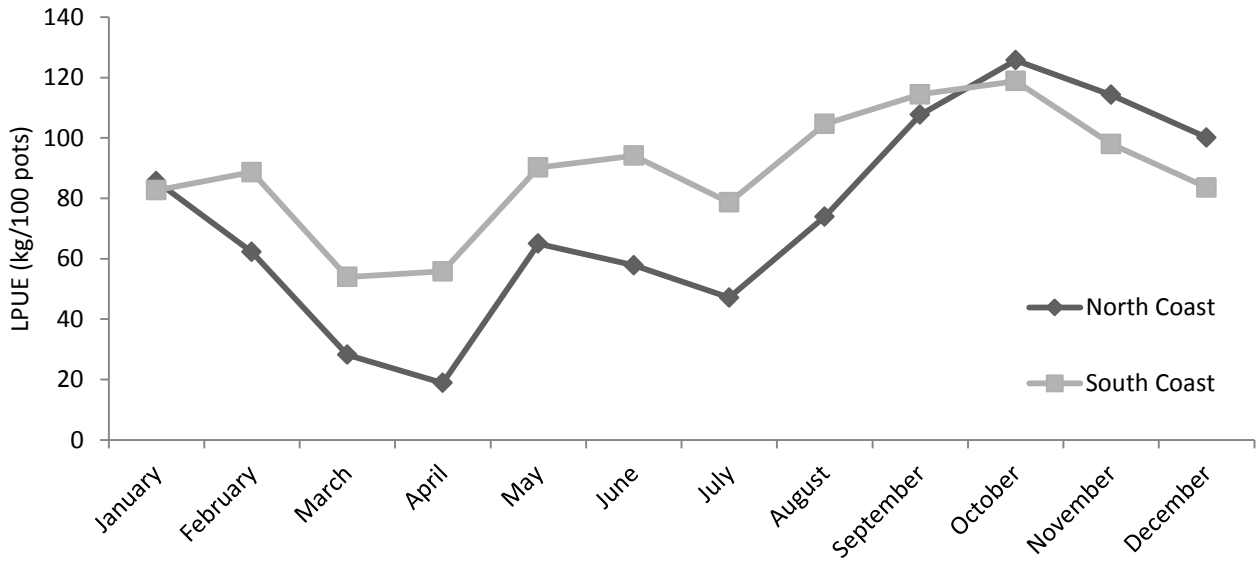

Figure 46: Monthly LPUE (kg landed/100m nets hauled) of edible crab (*Cancer pagurus*) split by coast, north and south, during 2017 within the Cornwall IFCA district.

The district wide LPUE of combined edible crab in ICES statistical rectangles (Figure 47) fluctuated throughout the year in all ICES rectangles other than 28E5 which remained at zero with the exemption of February (41.4 kg/100 pot hauls). LPUE was highest in ICES statistical rectangle 28E4 during September (169.4 kg/100 pot hauls).

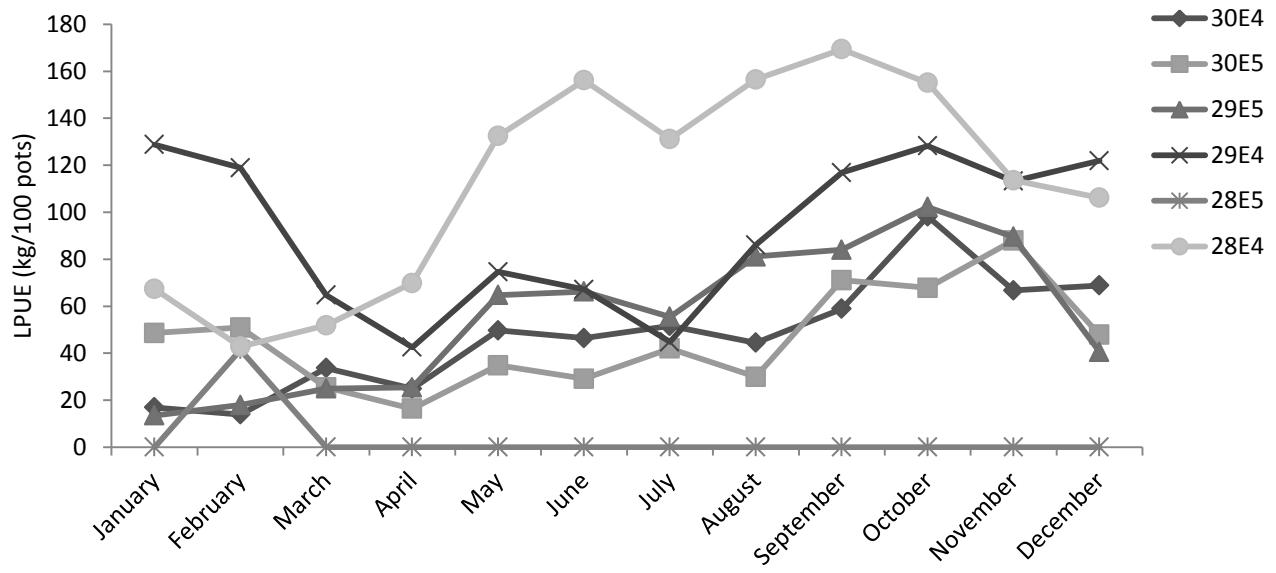

Figure 47: Monthly LPUE (kg landed/100 pot hauls) of edible crab (*Cancer pagurus*) by ICES statistical rectangle for the year, 2017.

The LPUE of edible crab in belted statistical areas along the north coast (Figure 48) remained lower in belt A throughout the year in comparison to belt B, peaking in October (92.5 kg/100 pot hauls) before a decline through to December. In comparison, LPUE in belt B fluctuated through the year also peaking in October (146.2 kg/100 pot hauls).

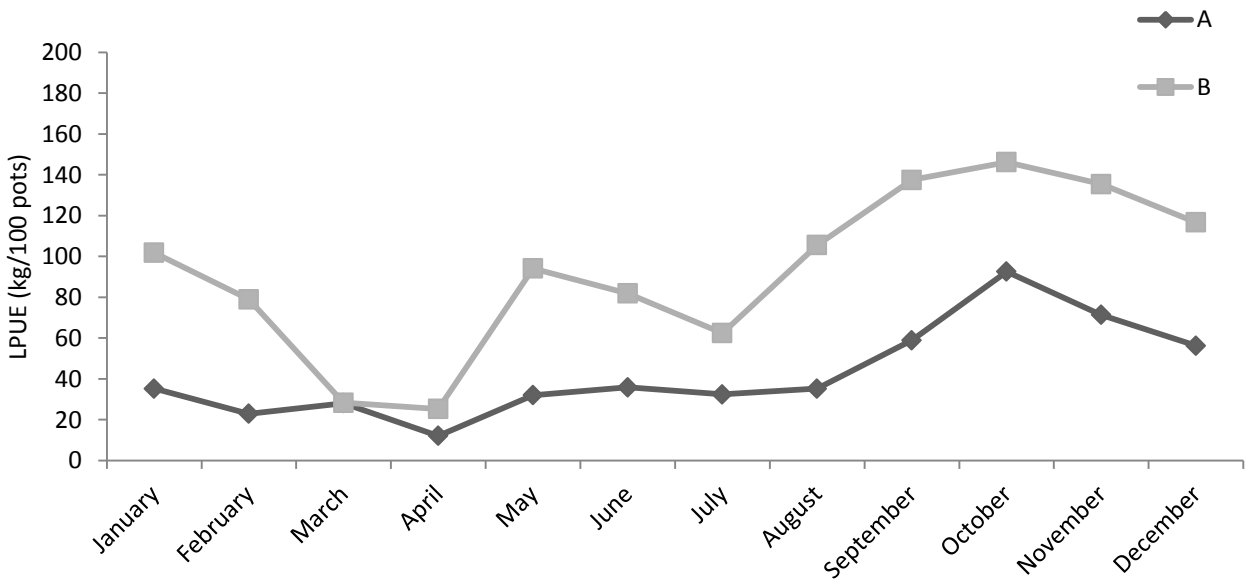

Figure 48: Monthly LPUE (kg landed/100 pot hauls), of edible crab (*Cancer pagurus*) caught on the north coast, split by belt, A and B in 2017.

The LPUE of edible crab in belted statistical areas along the south coast (Figure 49), differed with the LPUE being greater in belt B compared to belt A. Belt B LPUE ranged from 191.7 kg/100 pot hauls in September and 93 kg/100 pot hauls in March compared to 99.6 kg/100 pot hauls in October and 17.1 kg/100 pot hauls in February in Belt A.

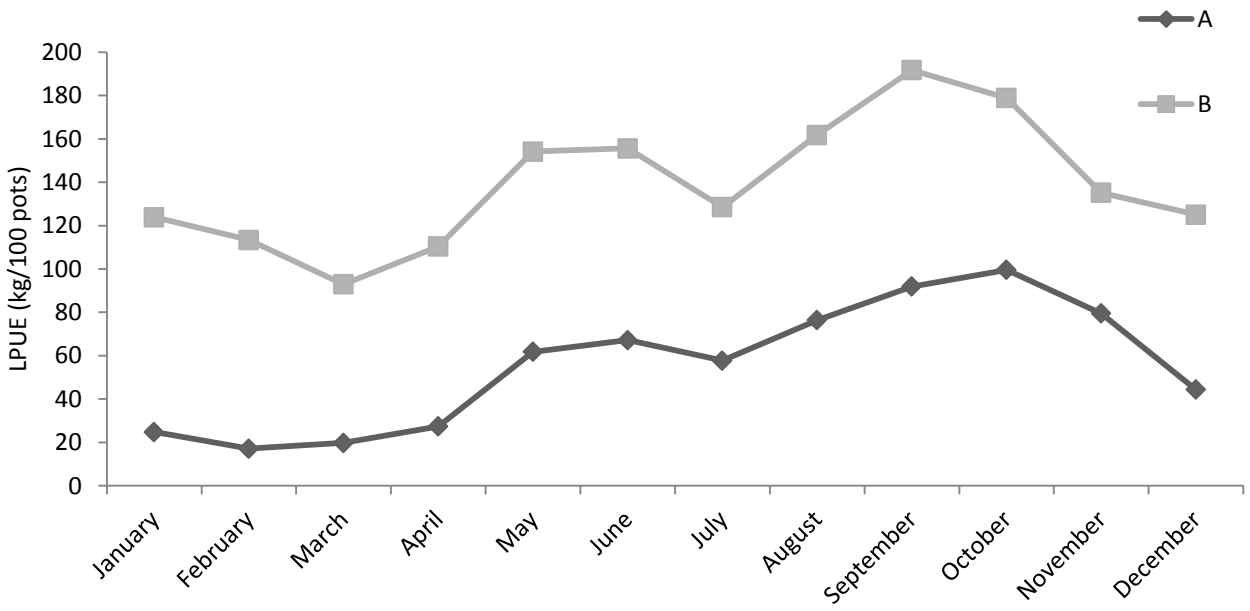

Figure 49: Monthly LPUE (kg landed/100 pot hauls), of edible crab (*Cancer pagurus*) caught on the south coast, split by belt, A and B in 2017.

Thematically mapped combined edible crab LPUE fished by pots for the year (Figure 50) showed the greatest LPUE in the statistical area adjacent to Padstow 3-6nm offshore (30E48B), this can only be seen when LPUE is calculated for the entire year and is not present by quarter as seen in Figure 51. Thematically mapped combined edible crab LPUE in Figure 51 showed higher values in quarters two, three and four with a greater distribution and increased LPUE compared to quarter one and corresponds with Figure 45 to Figure 49 which all show an increase from April that continued to sustain a high level for the remainder of the year.

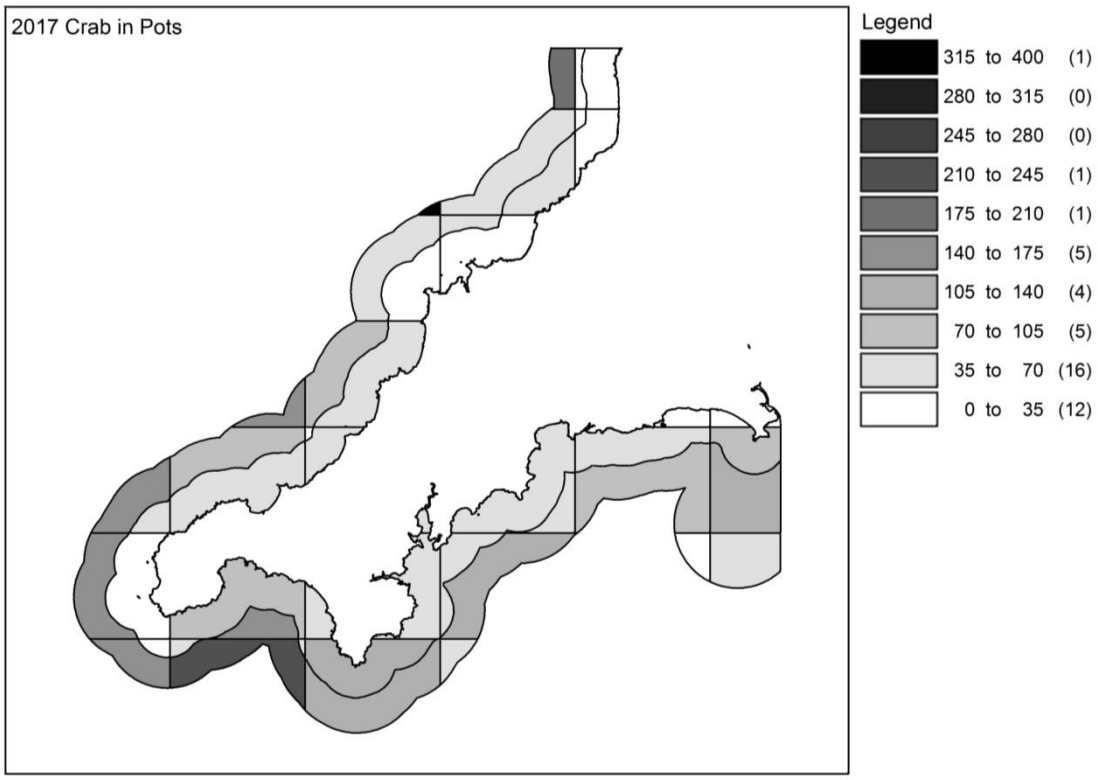

Figure 50: LPUE (kg landed/100 pot hauls) of edible crab (*Cancer pagurus*) for 2017 thematically mapped by belted statistical area, using increments of 35kg.

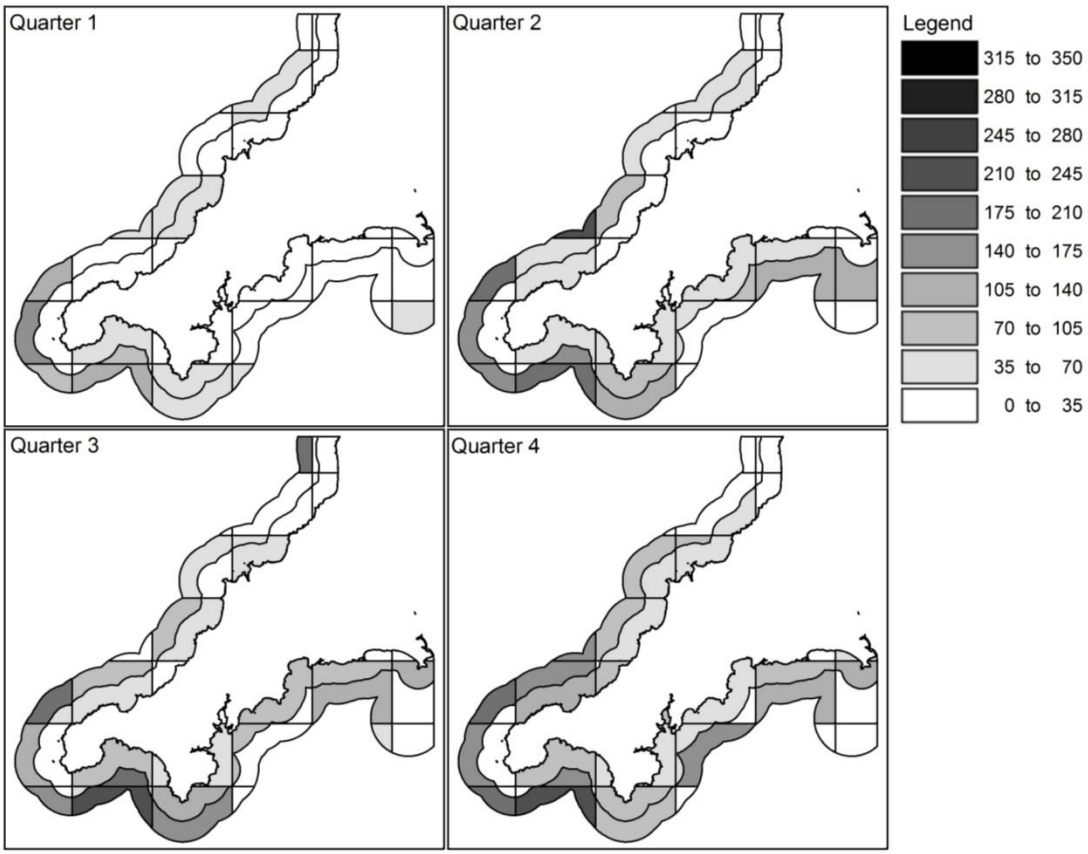

Figure 51: LPUE (kg landed/100 pot hauls) of edible crab (*Cancer pagurus*) for quarters 1 to 4 of 2017, thematically mapped by statistical area, using increments of 35kg.

5.3.4.2 Male Edible crab (*Cancer pagurus*) Fished by Pots

The overall LPUE of male edible crab (Figure 52) showed a low fluctuation in monthly effort from January (7.1 kg/100 pot hauls) to May (7.2 kg/100 pot hauls) and gradually increased from July to its peak in December (10.2 kg/100 pot hauls).

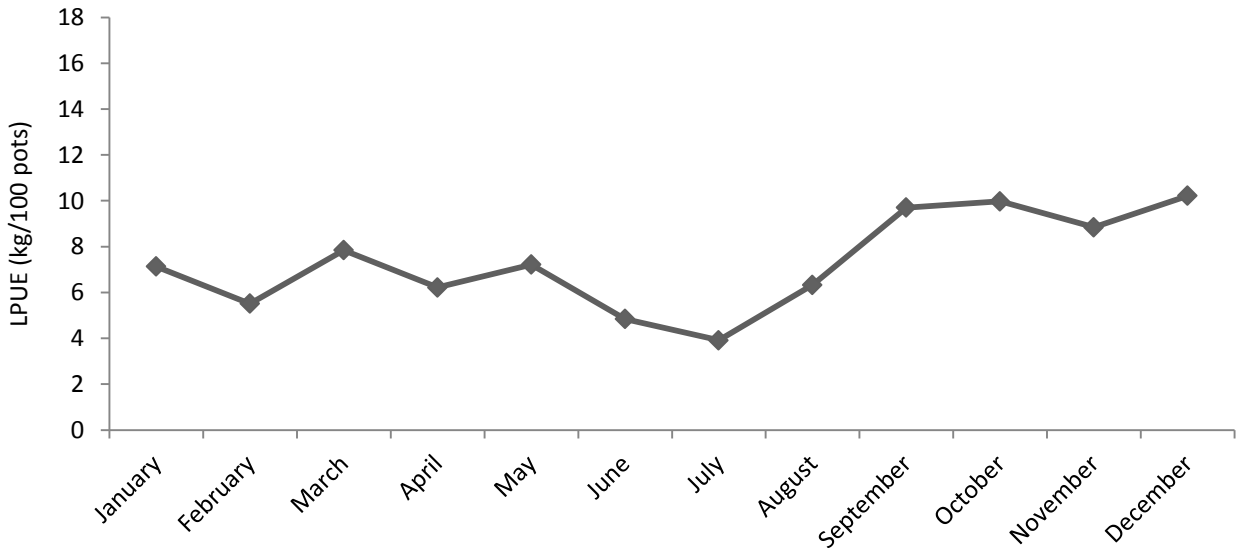

Figure 52: Monthly LPUE (kg landed/100 pot hauls) of male edible crab (*Cancer pagurus*) during 2017, within the Cornwall IFCA district.

The LPUE of male edible crabs along both coasts (Figure 53), followed a similar trend during January, May, June, July and August, with a reduction of the LPUE during June and July. Between January and May along the north coast LPUE fluctuated and from July LPUE increased to its peak in October (14.7 kg/100 pot hauls), followed by a decrease until December. LPUE along the south coast increased gradually from January through to April and then declined to its lowest point in July (3.4 kg/100 pot hauls) followed by a gradual increase to its peak in December (9.9 kg/100 pot hauls).

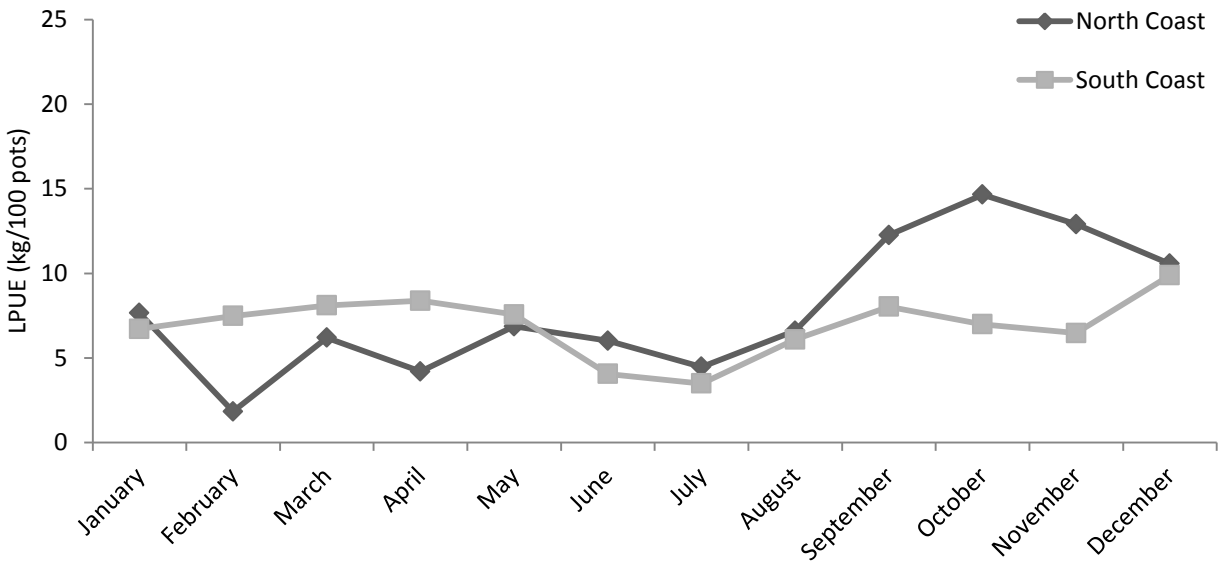

Figure 53: Monthly LPUE (kg landed/100 pot hauls) of male edible crab (*Cancer pagurus*) split by coast, north and south, during 2017 within the Cornwall IFCA district.

The LPUE of male edible crab in all ICES statistical rectangles district wide (Figure 54), fluctuated throughout the year. However, LPUE in all ICES rectangles with the exemption of 28E5, increased between February and March, reduced from May until July and increased from July until September. 28E5 had zero LPUE throughout the year other than February (15.7 kg/100 pot hauls). LPUE was highest in ICES statistical rectangle 28E4 during March (19.8 kg/100 pot hauls).

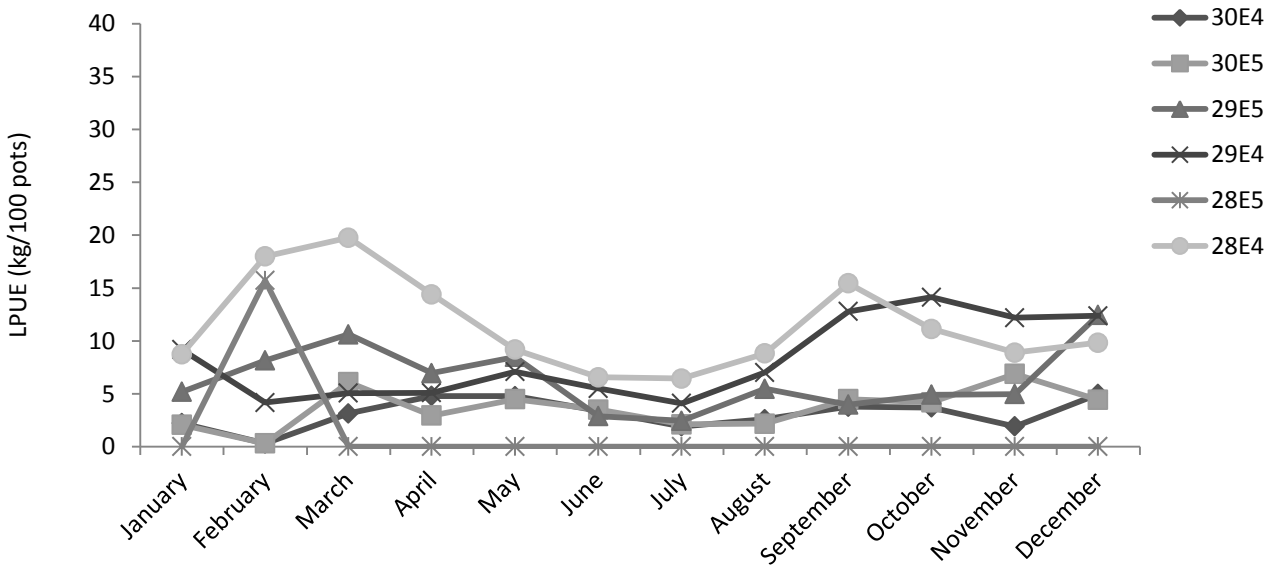

Figure 54: Monthly LPUE (kg landed/100 pot hauls) of male edible crab (*Cancer pagurus*) by ICES statistical rectangle for the year, 2017.

The LPUE of male edible crab by belted statistical areas along the north coast (Figure 55) followed a similar trend in both belts throughout the year. LPUE ranged from 1.7 kg/100 pot hauls in belt B and 2 kg/100 pot hauls in belt A in February to 5.7 kg/100 pot hauls in belt B and 3.3 kg/100 pot hauls in belt A in July and 12.6 kg/100 pot hauls in belt B and 13.5 kg/100 pot hauls in belt A in November. LPUE in both belts peaked in late summer with 17 kg/100 pot hauls in belt B in September and 18.2 kg/100 pot hauls in belt A in October.

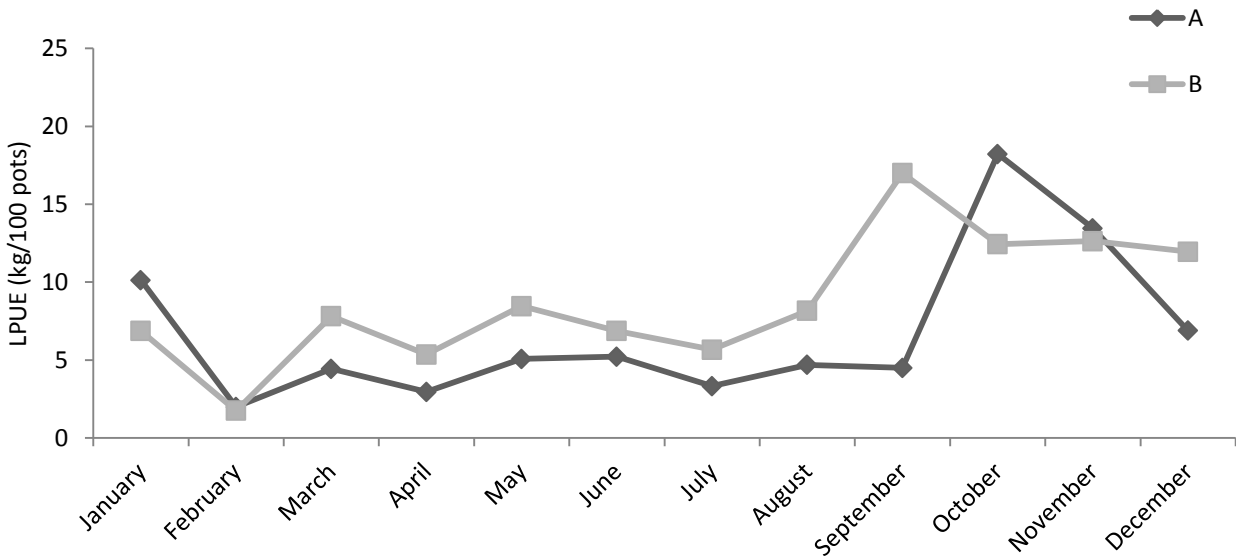

Figure 55: Monthly LPUE (kg landed/100 pot hauls), of male edible crab (*Cancer pagurus*) caught on the north coast, split by belt, A and B in 2017.

The LPUE of male edible crab by belted statistical areas on the south coast (Figure 56), followed a similar trend in both belts from May. LPUE decreased in July, increased in September, decreased from September to November followed by an increase in December. LPUE in belt B displayed a greater decrease during the summer ranging from 13.2 kg/100 pot hauls in April to 5.9 kg/100 pot hauls in July. LPUE in belt A ranged from 5.8 kg/100 pot hauls in April to 2.5 kg/100 pot hauls in July.

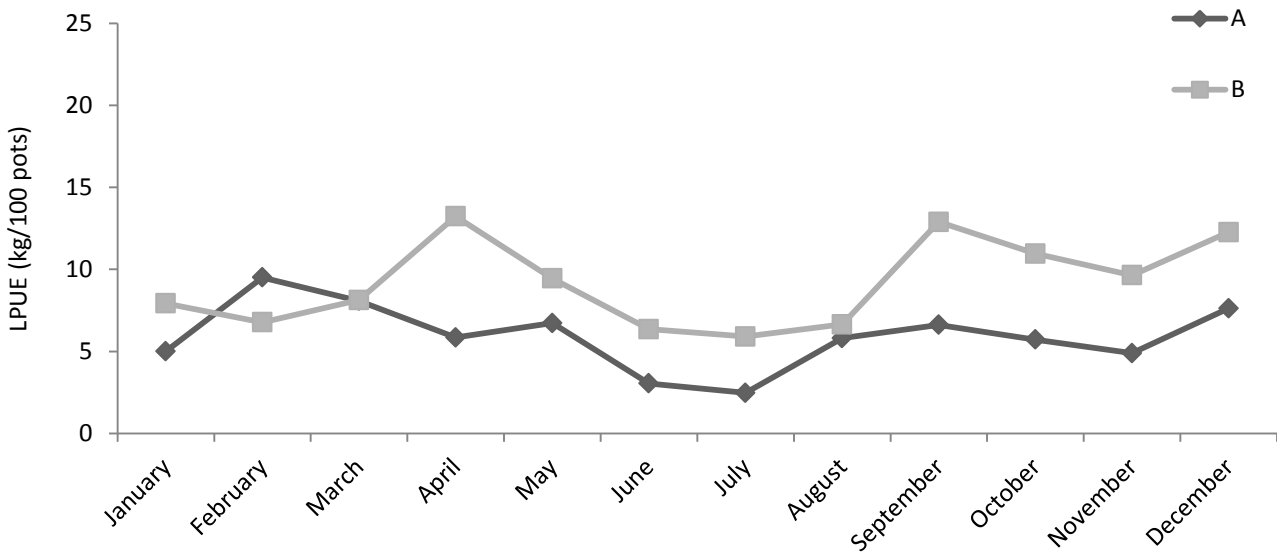

Figure 56: Monthly LPUE (kg landed/100 pot hauls), of male edible crab (*Cancer pagurus*) caught on the south coast, split by belt, A and B in 2017.

Thematic mapping of male edible crab LPUE fished by pots for the entire year (Figure 57), showed the greatest LPUE was south of Rame Head 3-6nm offshore (29E59B). This was also seen in Figure 58 (quarter one), however it is not the highest LPUE of all of the quarters. Thematically mapped male edible crab LPUE by quarters (Figure 58) showed that quarters one and four have a greater distribution and increased LPUE compared to quarters two and three, this corresponds with Figure 52 to Figure 56 which showed an increased LPUE from January to March and from October to December.

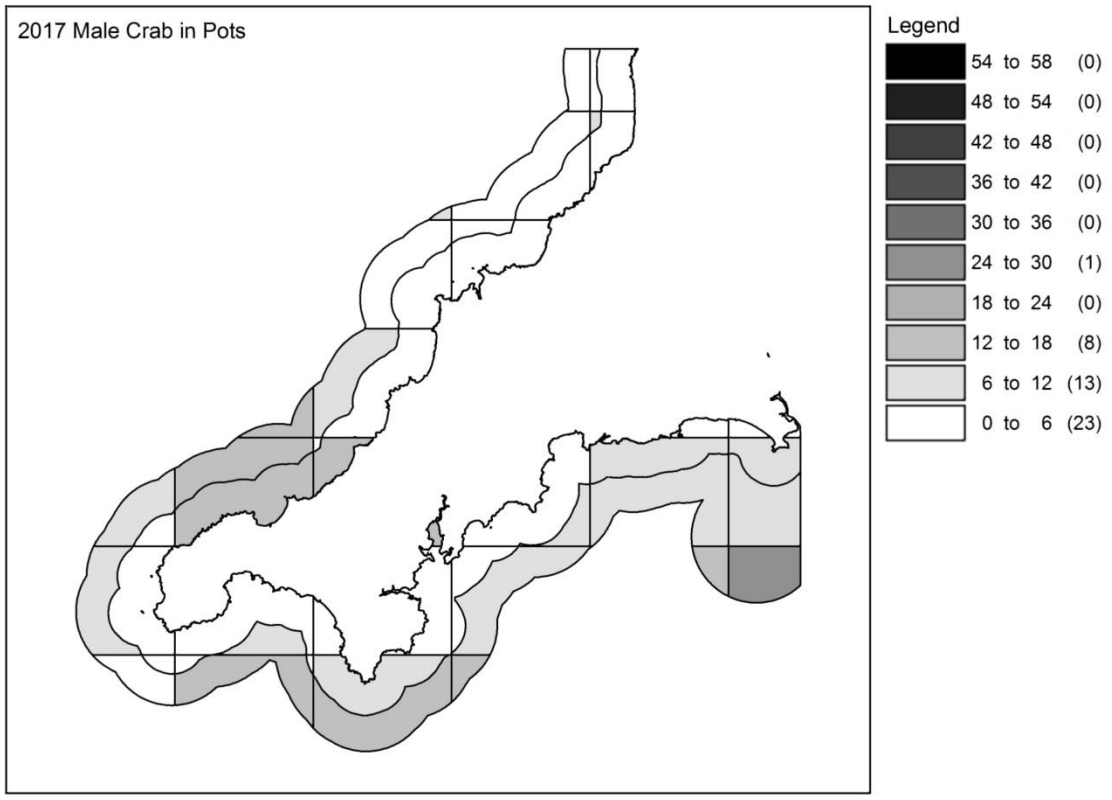

Figure 57: LPUE (kg landed/100 pot hauls) of male edible crab (*Cancer pagurus*) for 2017 thematically mapped by belted statistical area, using increments of 6kg.

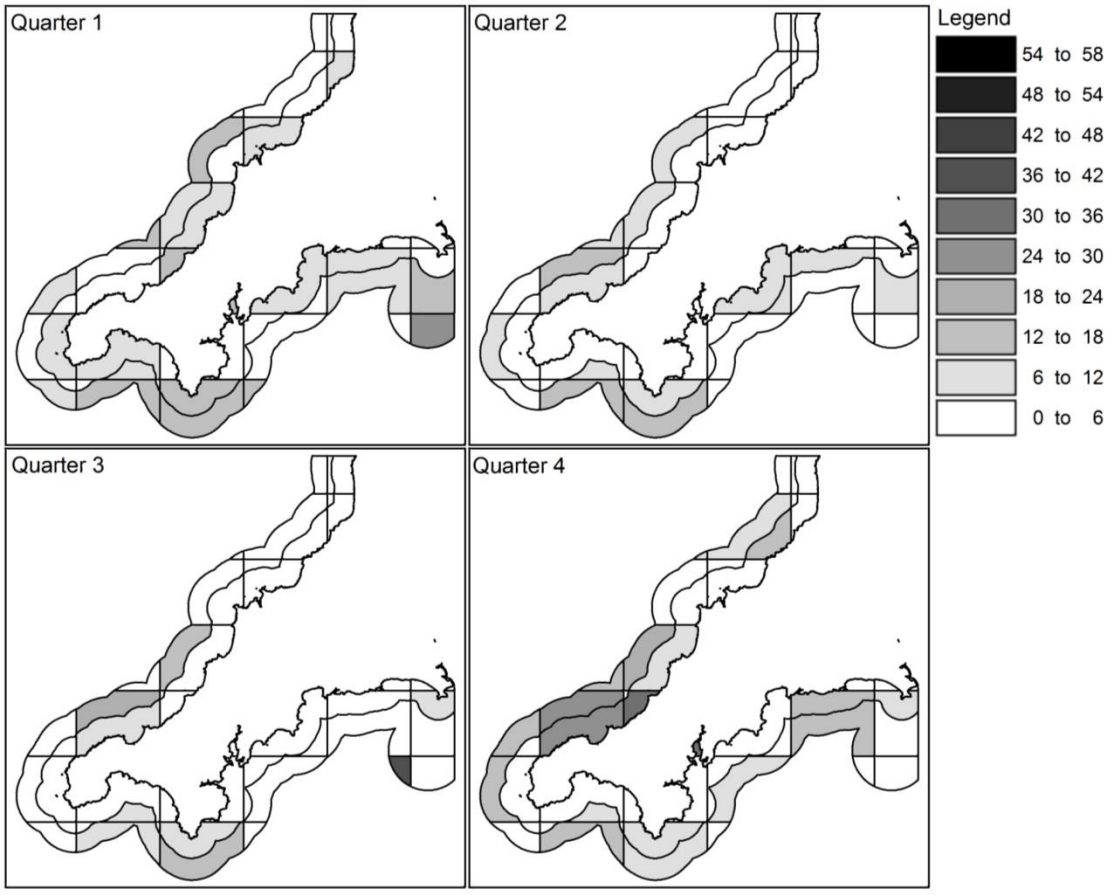

Figure 58: LPUE (kg landed/100 pot hauls) of male edible crab (*Cancer pagurus*) for quarters 1 to 4 of 2017, thematically mapped by statistical area, using increments of 6kg.

5.3.4.3 Female Edible crab (*Cancer pagurus*) Fished by Pots

The overall LPUE of female edible crab (Figure 59), increased from April (30.6 kg/100 pot hauls), reached its peak in October (111.2 kg/100 pot hauls) before a gradual decline from October to December (81.5 kg/100 pot hauls).

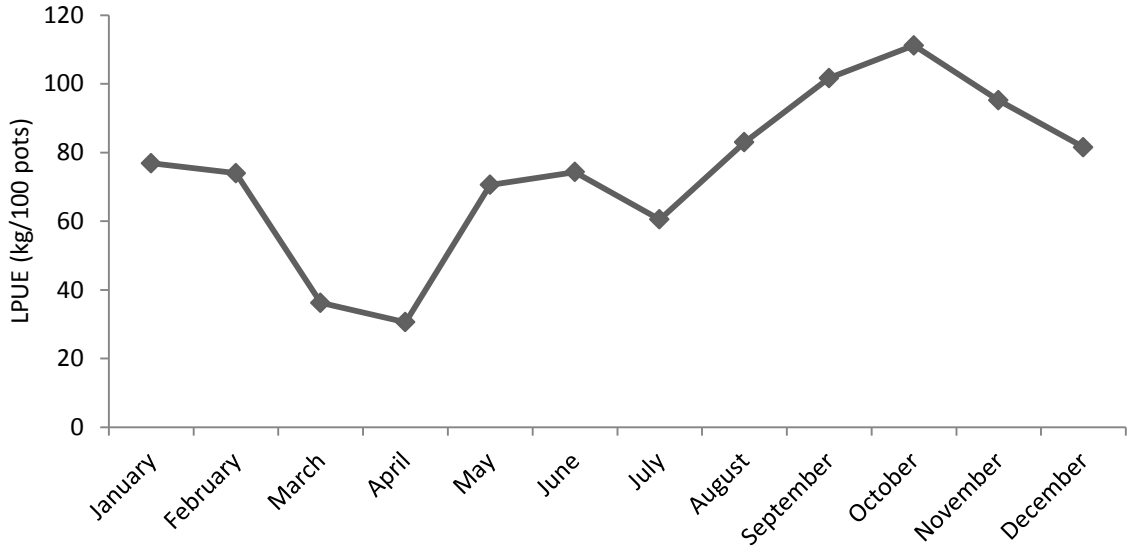

Figure 59: Monthly LPUE (kg landed/100 pot hauls) of female edible crab (*Cancer pagurus*) during 2017, within the Cornwall IFCA district.

The LPUE of female edible crab (Figure 60) LPUE was greater along the south coast with the exemption of January, November and December. LPUE along both coasts followed a similar trend that decreased from February to April, increased in May, and decreased in July. From July onwards LPUE along both coasts increased to their peak in October (111 kg/100 pot hauls on the south coast and 111.7 kg/100 pot hauls on the north coast), before a decrease through to the end of the year.

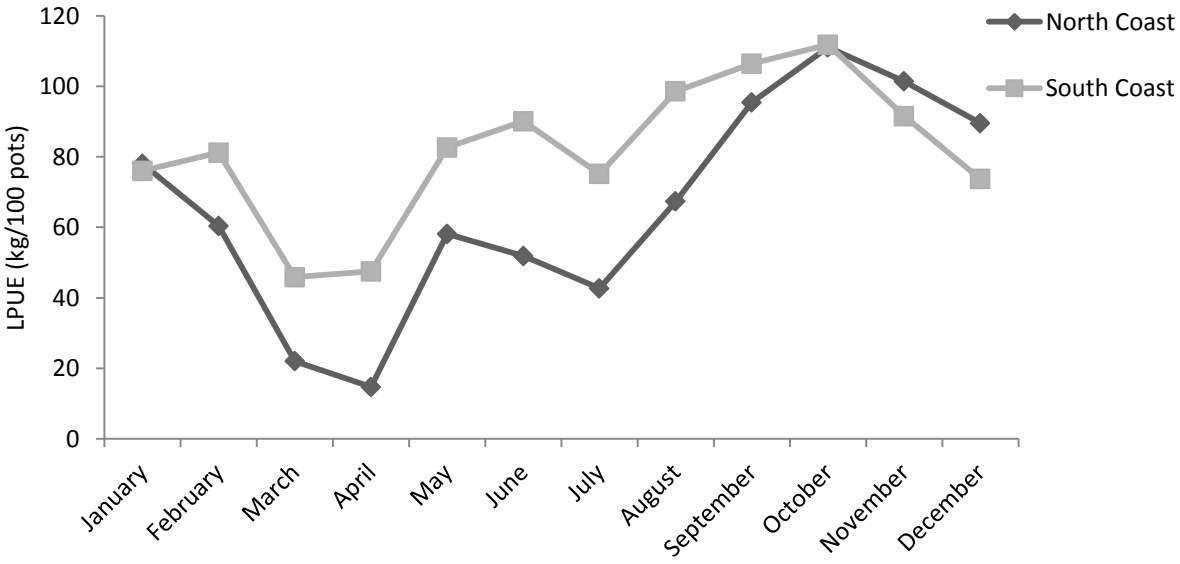

Figure 60: Monthly LPUE (kg landed/100 pot hauls) of female edible crab (*Cancer pagurus*) split by coast, north and south, during 2017 within the Cornwall IFCA district.

The LPUE of female edible crab district wide (Figure 61) gradually increased in all ICES rectangles from April to October with the exemption of 28E5. LPUE in ICES rectangle 28E5 increased during February (25.7 kg/100 pots

hauled) and remained at zero for the remainder of the year. LPUE in ICES rectangle 28E4 increased from February and maintained a high level of LPUE from May to October before gradual decline through to December. LPUE was highest in ICES statistical rectangle 28E4 in September (153.9 kg/100 pot hauls).

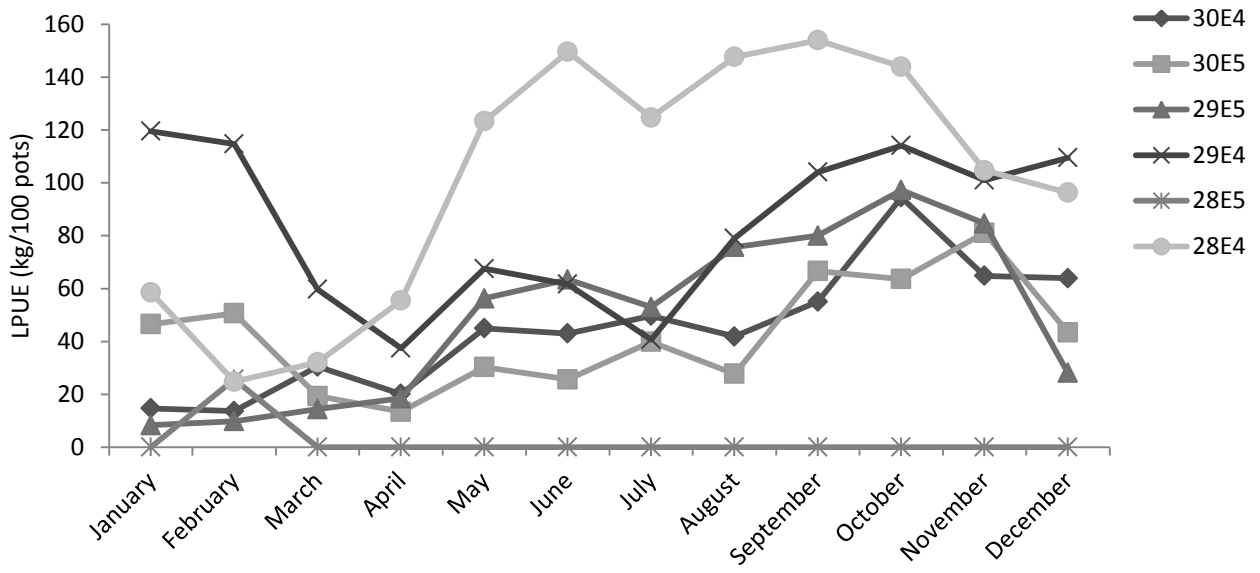

Figure 61: Monthly LPUE (kg landed/100 pot hauls) of female edible crab (*Cancer pagurus*) by ICES statistical rectangle for the year, 2017.

The LPUE of female edible crab by belted statistical areas along the north coast (Figure 62) differed in that belt A increased gradually from April (9.1 kg/100 pot hauls) to its peak in October (74.3 kg/100 pot hauls). Whereas the LPUE in belt B fluctuated from January to July then gradually increased and reached its peak in October (133.7 kg/100 pot hauls).

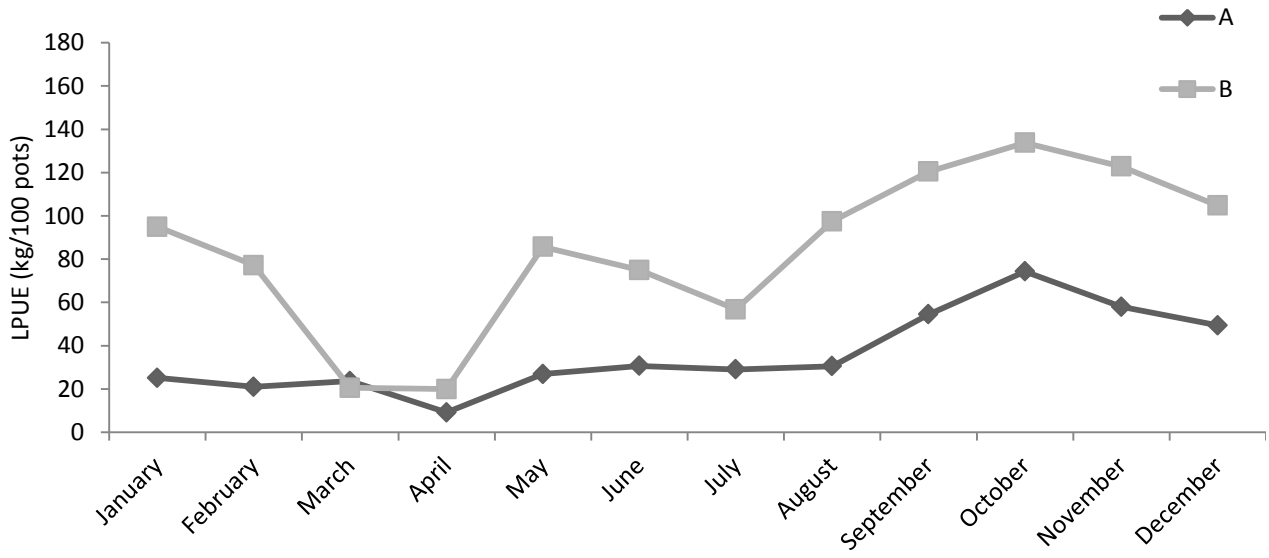

Figure 62: Monthly LPUE (kg landed/100 pot hauls), of female edible crab (*Cancer pagurus*) caught on the north coast, split by belt, A and B in 2017.

The LPUE of female edible crab by belted statistical areas along the south coast (Figure 63), were greater in belt B throughout the year. Similarly to LPUE in belt A of Figure 62, LPUE in belt A increased gradually from January to October whereas LPUE in belt B fluctuated from January to October. LPUE in belt B peaked in September (178.9

kg/100 pot hauls) whereas LPUE in belt A peaked in October (93.9 kg/100 pot hauls) both belts then declined through to December.

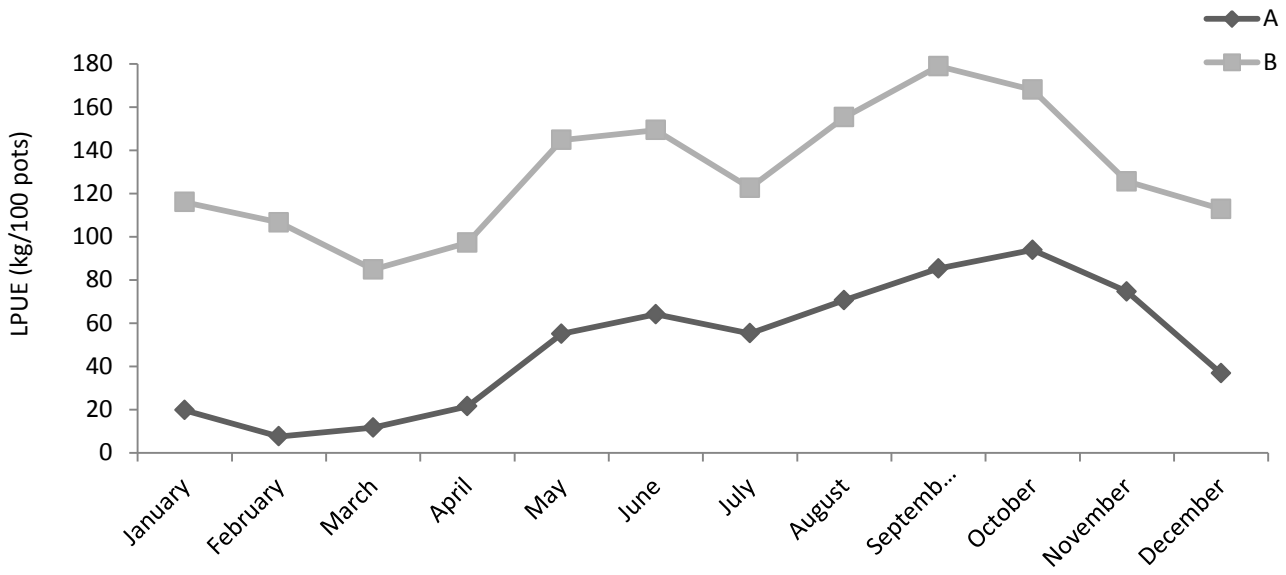

Figure 63: Monthly LPUE (kg landed/100 pot hauls), of female edible crab (*Cancer pagurus*) caught on the south coast, split by belt, A and B in 2017.

Thematically mapped LPUE of female edible crabs fished by pots for the entire year (Figure 64) showed the greatest LPUE was adjacent to the area between Padstow and Port Isaac offshore by (30E48B), however this result is not seen in any quarter in Figure 65. Thematically mapped female edible crab LPUE by quarters (Figure 65) showed that quarter two, three and four had a greater distribution and higher LPUE compared to quarter one. This corresponds with Figure 59 to Figure 63 where LPUE increased from April and maintained a high level until the end of the year.

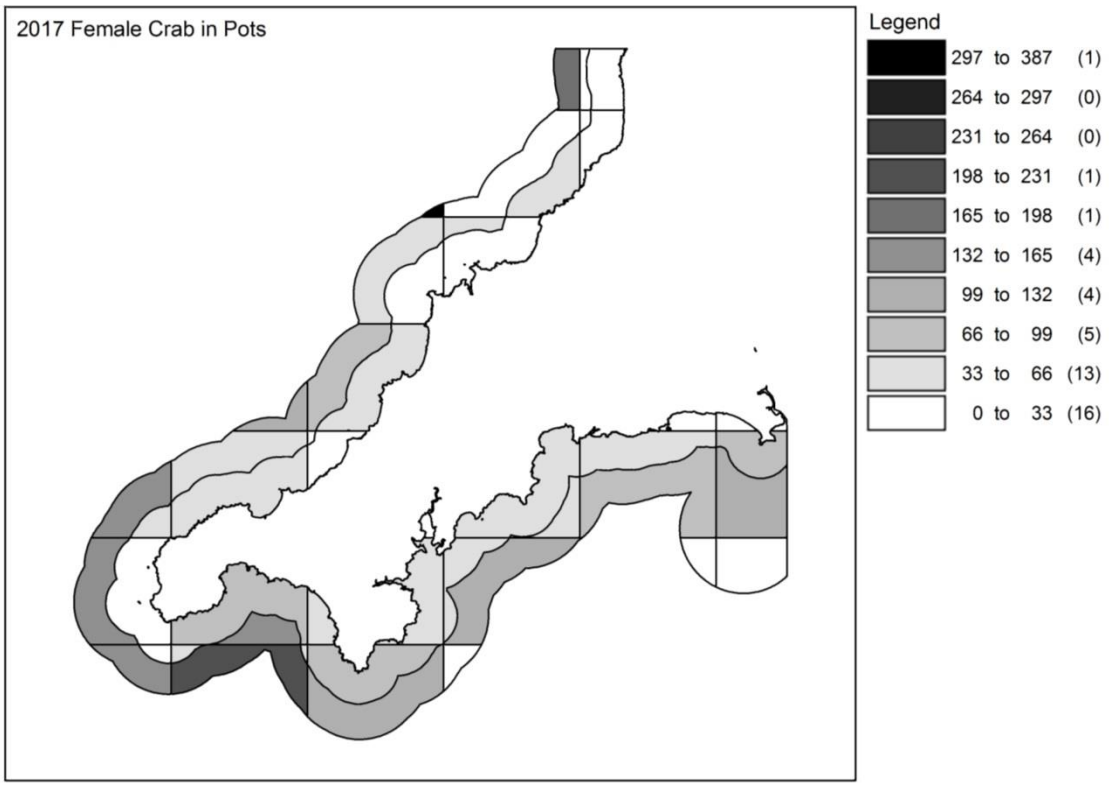

Figure 64: LPUE (kg landed/100 pot hauls) of female edible crab (*Cancer pagurus*) for 2017 thematically mapped by belted statistical area, using increments of 33kg.

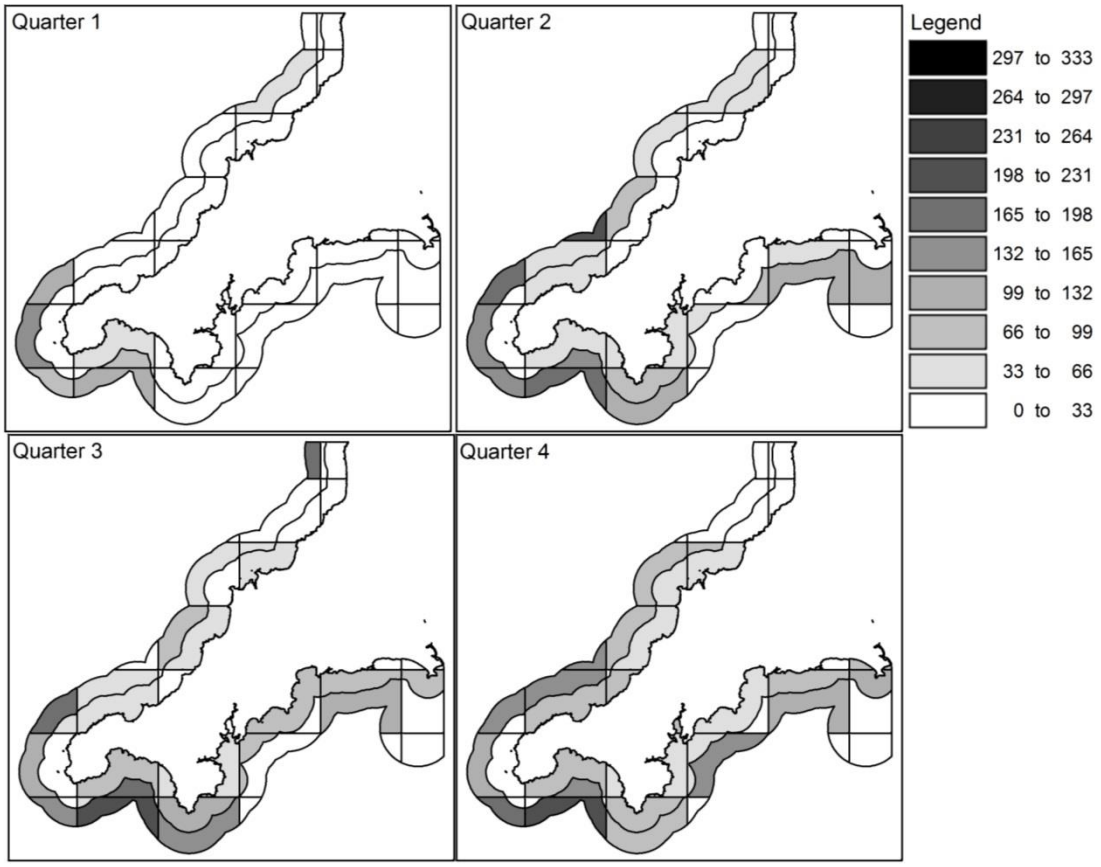

Figure 65: LPUE (kg landed/100 pot hauls) of female edible crab (*Cancer pagurus*) for quarters 1 to 4 of 2017, thematically mapped by statistical area, using increments of 33kg.

5.3.4.4 Edible crab (*Cancer pagurus*) Fished by Nets

The overall LPUE of combined edible crabs taken in nets (Figure 66) gradually increased from March (0.2 kg/100m nets hauled) to its peak in September (1 kg/100m nets hauled), before decreasing through to December (0.3 kg/100m nets hauled).

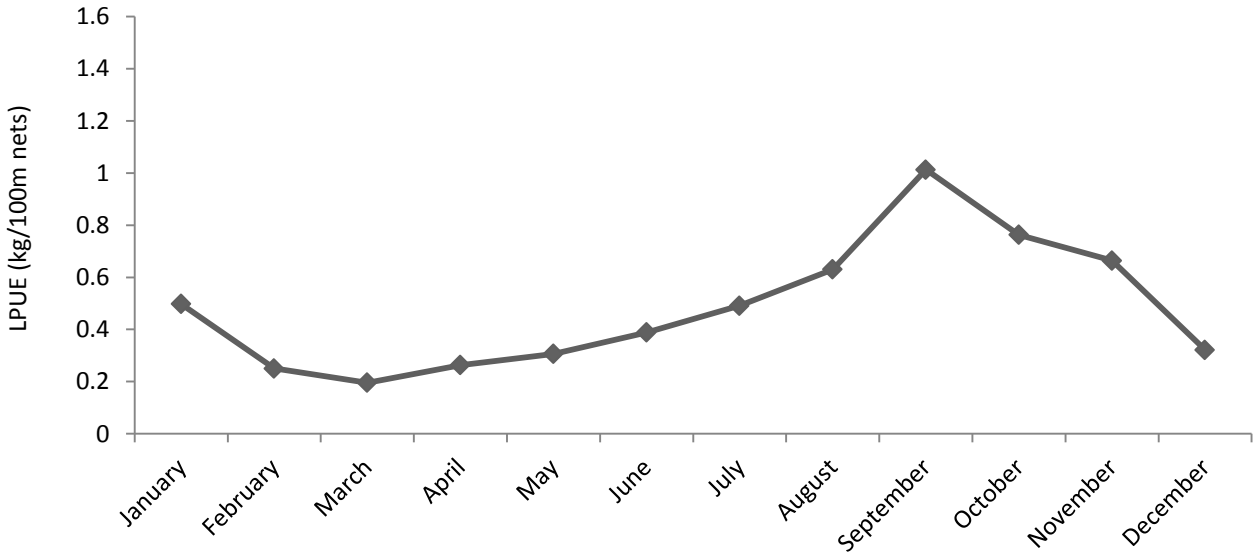

Figure 66: Monthly LPUE (kg landed/100m nets hauled) of combined edible crab (*Cancer pagurus*) during 2017, within the Cornwall IFCA district.

The LPUE of combined edible crab along the south coast (Figure 67) increased gradually from March (0.2 kg/100m nets hauled) until September where it peaked (0.7 kg/100m nets hauled). LPUE along the north coast decreased from January to February and then fluctuated until December with a peak in September (2.3 kg/100m nets hauled).

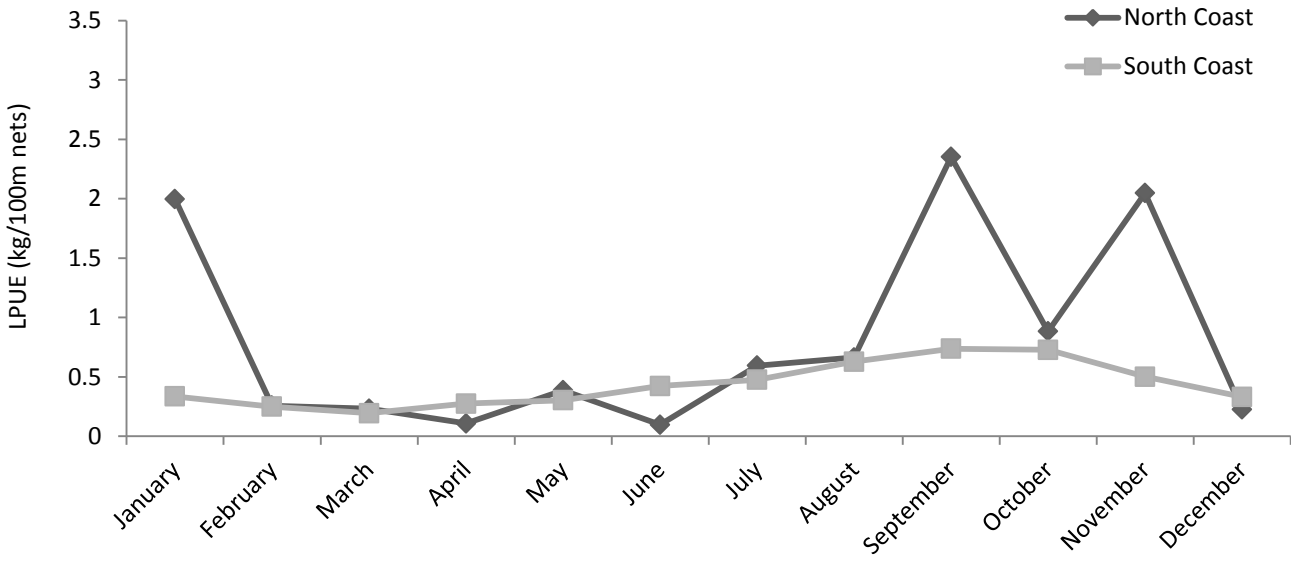

Figure 67: Monthly LPUE (kg landed/100m nets hauled) of combined edible crab (*Cancer pagurus*) split by coast, north and south, during 2017 within the Cornwall IFCA district.

The LPUE of female edible crab in all ICES statistical rectangles (Figure 68) remained low from January until September (<5 kg/100m nets hauled). Two rectangles increased in LPUE during autumn, ICES rectangle 30E5 in

October (19.9 kg/100m nets hauled) and ICES rectangle 30E4 in November (13.7 kg/100m nets hauled). LPUE was highest in ICES statistical rectangle 30E5 during October.

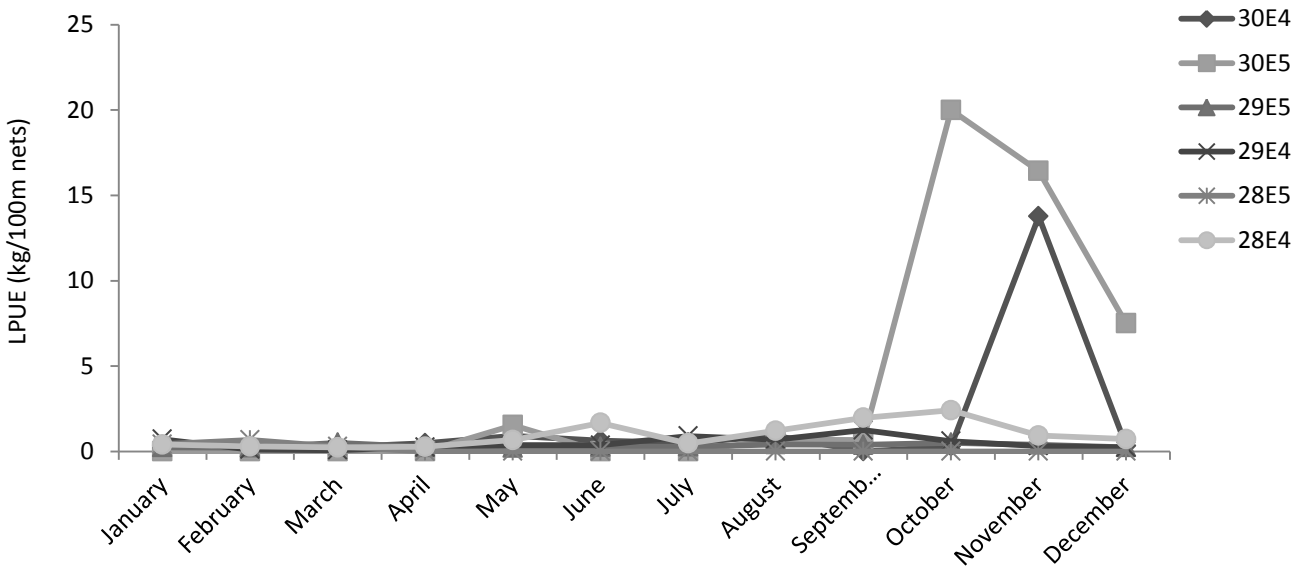

Figure 68: Monthly LPUE (kg landed/100m nets hauled) of combined edible crab (*Cancer pagurus*) by ICES statistical rectangle for the year, 2017.

The LPUE of male edible crab by belted statistical areas along the north coast (Figure 69) in belt A remained low until July, LPUE then increased to September and fluctuated until November where it peaked (4 kg/100m nets hauled) followed by a decrease in December. LPUE in Belt B peaked in January (3.5 kg/100m nets hauled) then decreased through the year with small fluctuations. LPUE in both belts followed a similar trend from February to June, ranging from 0.28 kg/100m nets hauled in belt B and 0.22 kg/100m nets hauled in belt A during February to 0.09 kg/100m nets hauled in belt B to 0 kg/100m nets hauled in belt A during June.

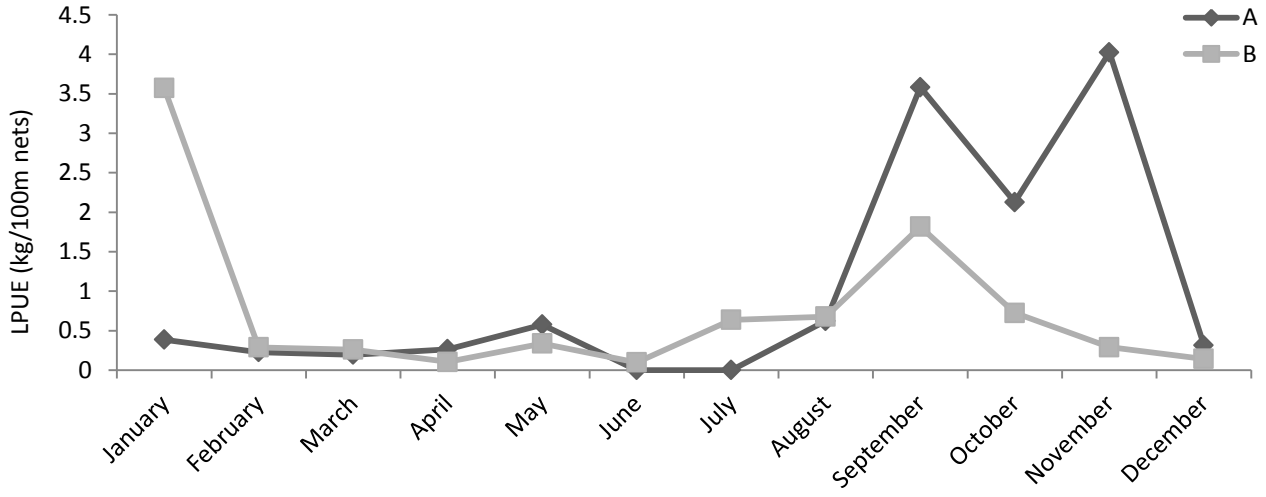

Figure 69: Monthly LPUE (kg landed/100m nets hauled), of combined edible crab (*Cancer pagurus*) caught on the north coast, split by belt, A and B in 2017.

The LPUE of male edible crab by belted statistical areas on the south coast (Figure 70) followed a similar trend in both belts from February to June. LPUE in Belt A increased gradually to its peak in August (0.7 kg/100 m nets hauled) before a decline for the remainder of the year. LPUE in belt B increased from July to October where it peaked (1.6 kg/100m nets hauled) before also decreasing for the rest of the year.

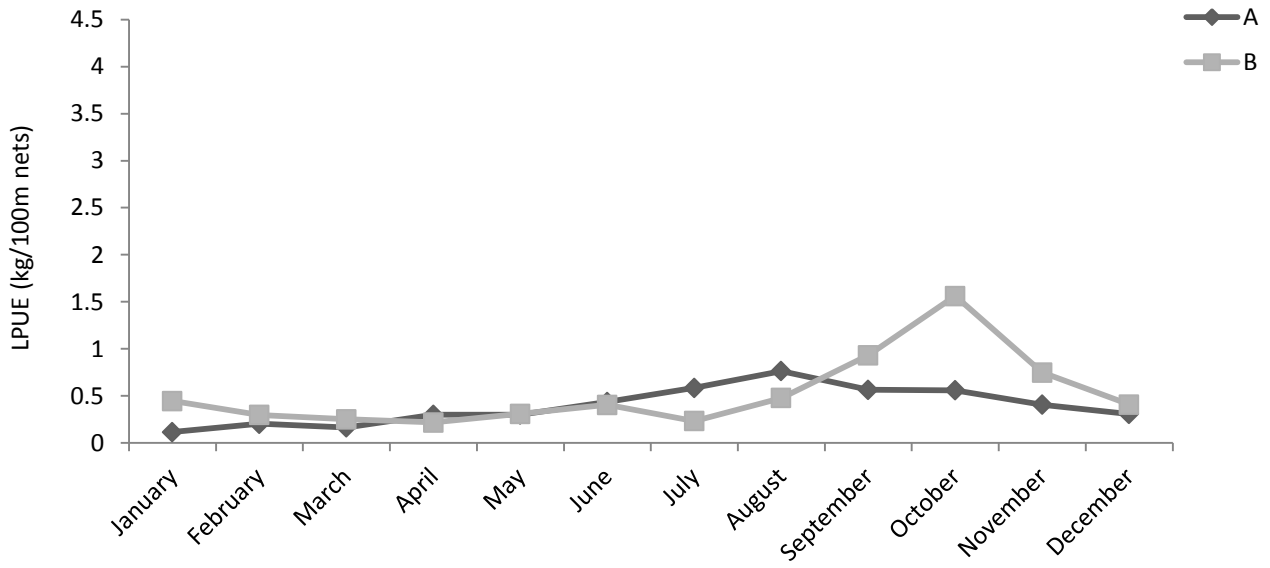

Figure 70: Monthly LPUE (kg landed/100m nets hauled), of combined edible crab (*Cancer pagurus*) caught on the south coast, split by belt, A and B in 2017.

Thematically mapped LPUE of combined edible crabs taken by nets for the entire year (Figure 71) showed the greatest LPUE was adjacent to Padstow, Port Isaac and Port Gaverne inshore 0-3nm (30E53A), this can also be seen in Figure 72 quarter four. Thematically mapped LPUE of combined edible crab taken by nets by quarters (Figure 72) showed that quarters three and four had a greater distribution and increased LPUE compared to quarters one and two. This corresponds with Figure 66 to Figure 70 where there was a peak in LPUE from September which maintained a high level until a gradual decrease at the end of the year.

Figure 71: LPUE (kg landed/100m nets hauled) of combined edible crab (*Cancer pagurus*) for 2017 thematically mapped by belted statistical area, using increments of 3kg

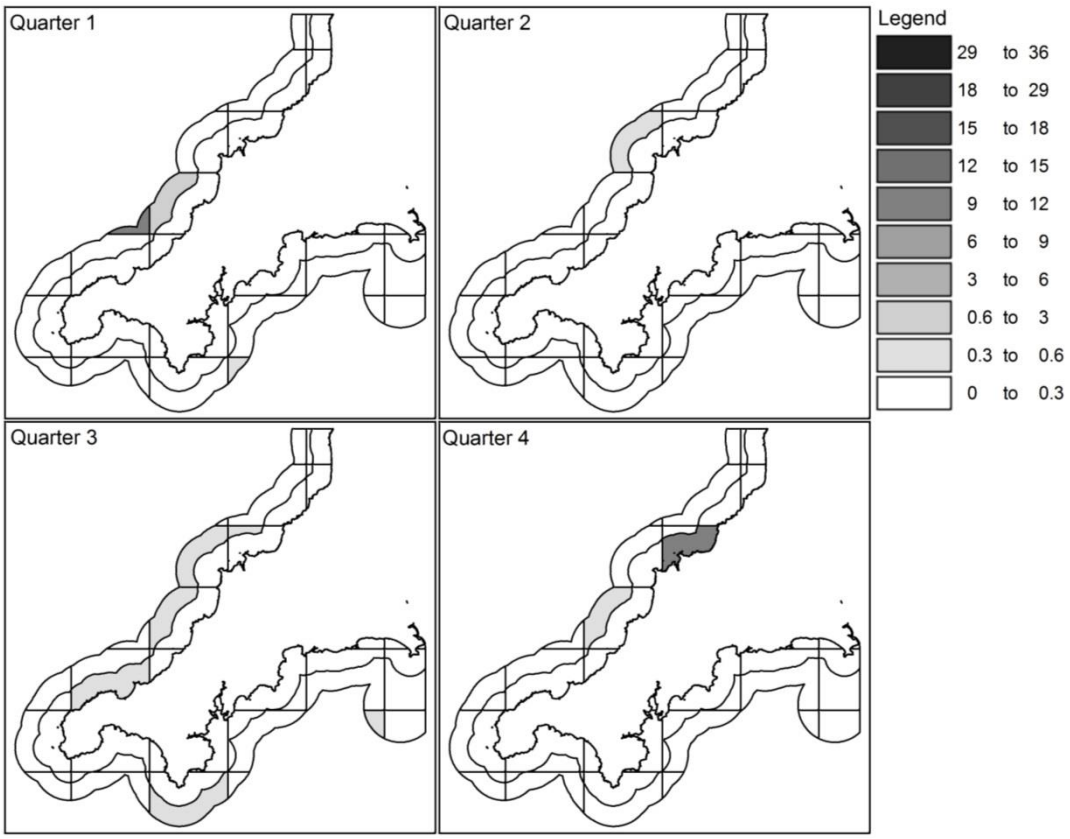

Figure 72: LPUE (kg landed/100m nets hauled) of combined edible crab (*Cancer pagurus*) for quarters 1 to 4 of 2017, thematically mapped by statistical area, using increments of 3kg

5.3.4.5 Male Edible crab (*Cancer pagurus*) Fished by Nets

The overall LPUE of male edible crab (Figure 73) decreased from January (0.20 kg/100m nets hauled) through to June (0.08 kg/100m nets hauled), increased from July and reached its peak in September (0.24 kg/100m nets hauled). LPUE then gradually declined until December (0.09 kg/100m nets hauled).

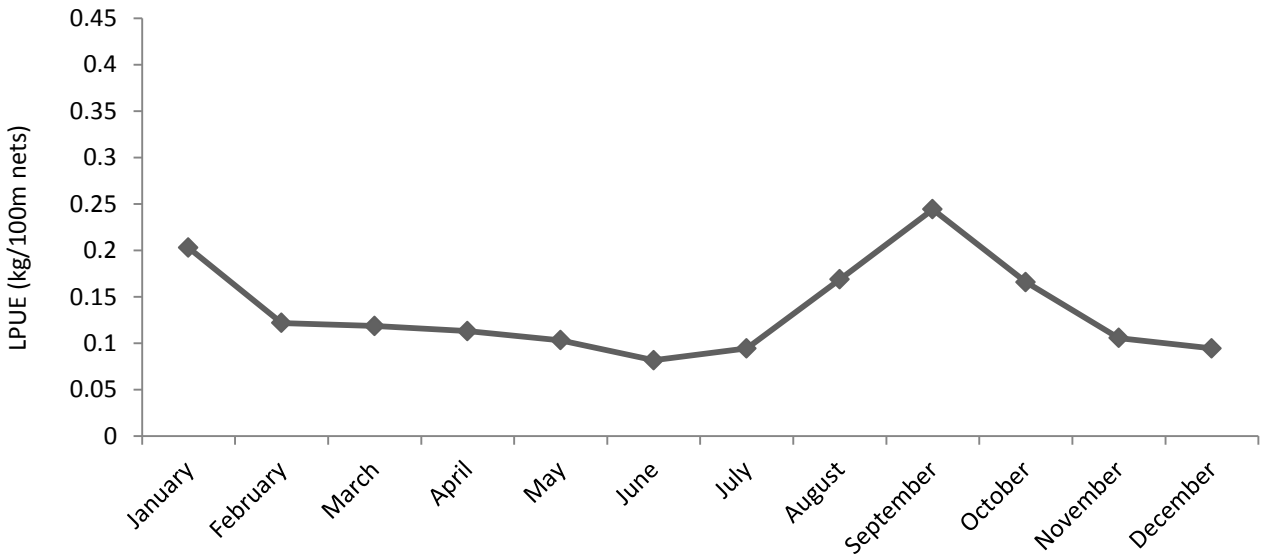

Figure 73: Monthly LPUE (kg landed/100m nets hauled) of male edible crab (*Cancer pagurus*) during 2017, within the Cornwall IFCA district.

The LPUE of male edible crabs along both coasts (Figure 74) differed in that the south coast maintained a similar level throughout the year, whereas the north coast fluctuated throughout the year. LPUE on the north coast ranged from (0.71 kg/100m nets hauled) in January and (0.03 kg/100m nets hauled) in June compared to (0.07 kg/100m nets hauled) in July and (0.17 kg/100m nets hauled) in August on the south coast.

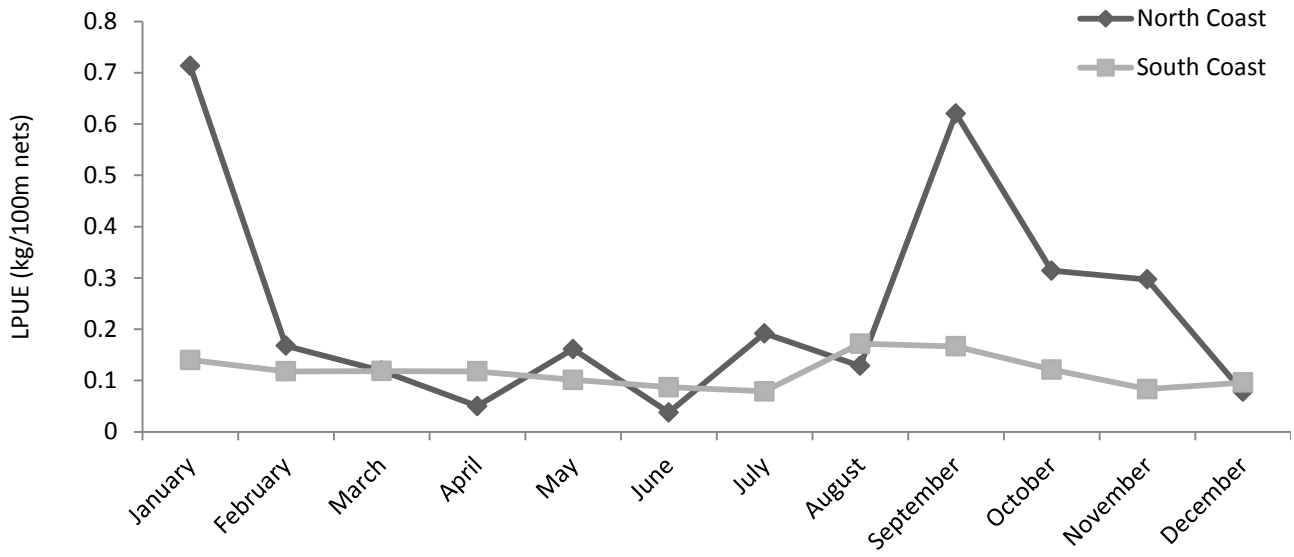

Figure 74: Monthly LPUE (kg landed/100m nets hauled) of male edible crab (Cancer pagurus) split by coast, north and south, during 2017 within the Cornwall IFCA district.

The LPUE of male edible crab in all ICES statistical rectangles (Figure 75) remained low (<1) throughout the year with the exemption of 30E5, which peaked in October (6.6 kg/100m nets hauled) before a decline through to December (2.5 kg/100m nets hauled).

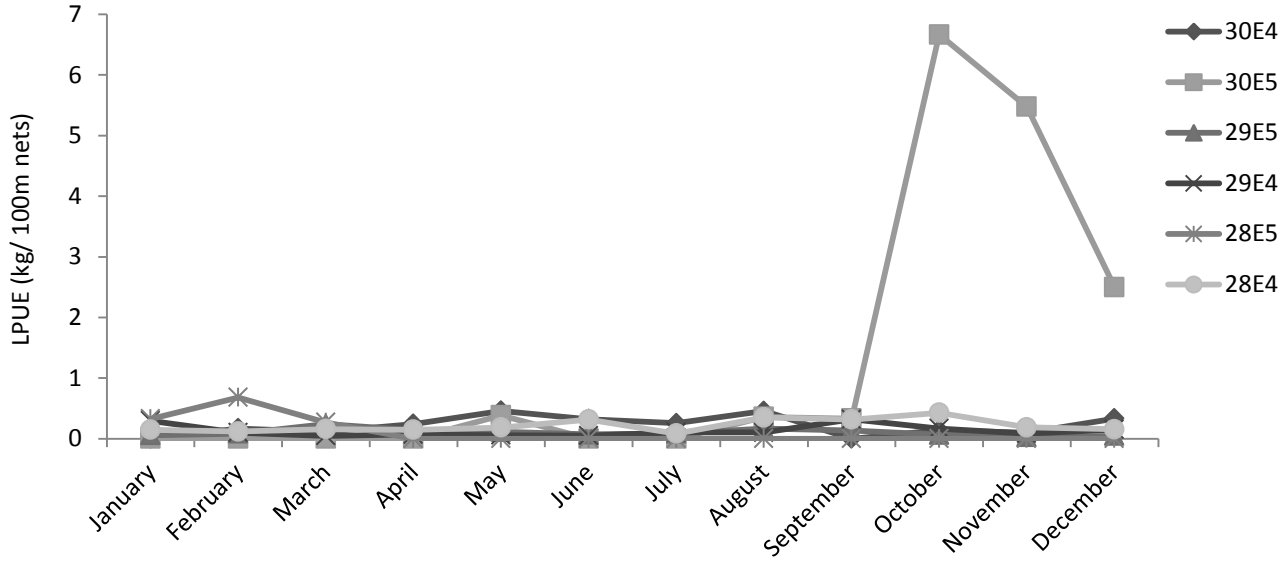

Figure 75: Monthly LPUE (kg landed/100m nets hauled) of male edible crab (*Cancer pagurus*) by ICES statistical rectangle for the year, 2017.

The LPUE of male edible crab by belted statistical areas along the north coast (Figure 76) followed a similar trend from February to June and from August to September. LPUE in belt B peaked in January (1.22 kg/100m nets hauled),

while LPUE in belt A peaked in September (0.69 kg/100m nets hauled). LPUE in both belts gradually declined from September until December.

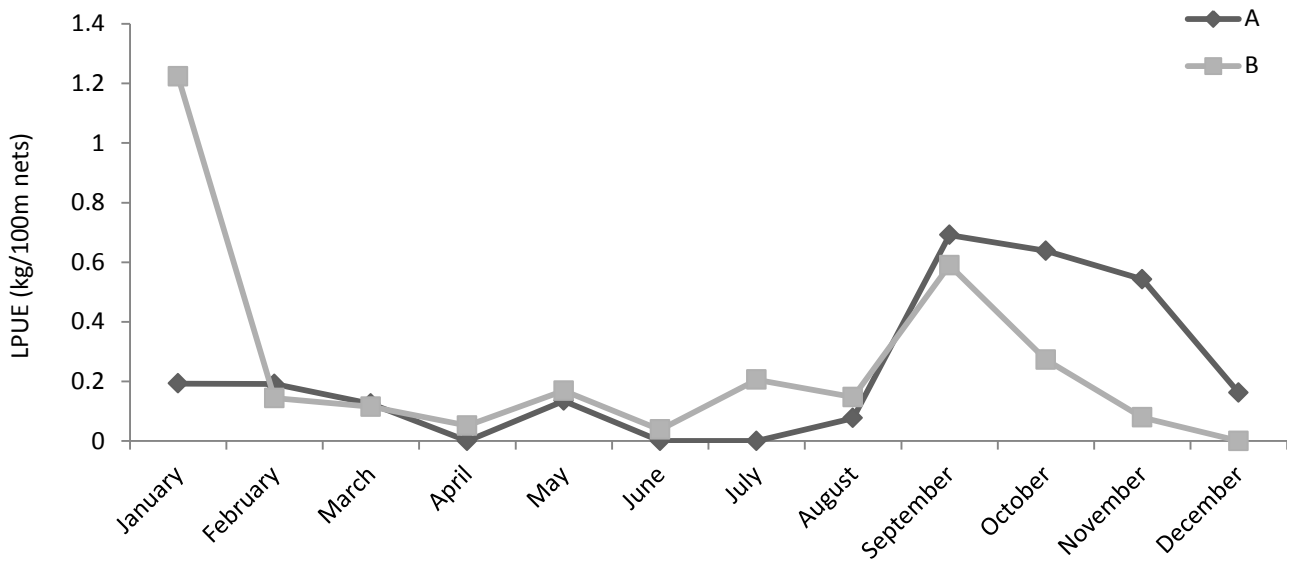

Figure 76: Monthly LPUE (kg landed/100m nets hauled), of male edible crab (*Cancer pagurus*) caught on the north coast, split by belt, A and B in 2017.

The LPUE of male edible crab by belted statistical areas along the south coast (Figure 77) followed a similar trend throughout the year. LPUE was greater in belt B compared to belt A with the exemption of February, April and December. LPUE in belt B increased from June and reached its peak in October (0.31 kg/100m nets hauled), whereas LPUE in belt A increased from July to its peak in August (0.16 kg/100m nets hauled), both belts then decreased for the remainder of the year.

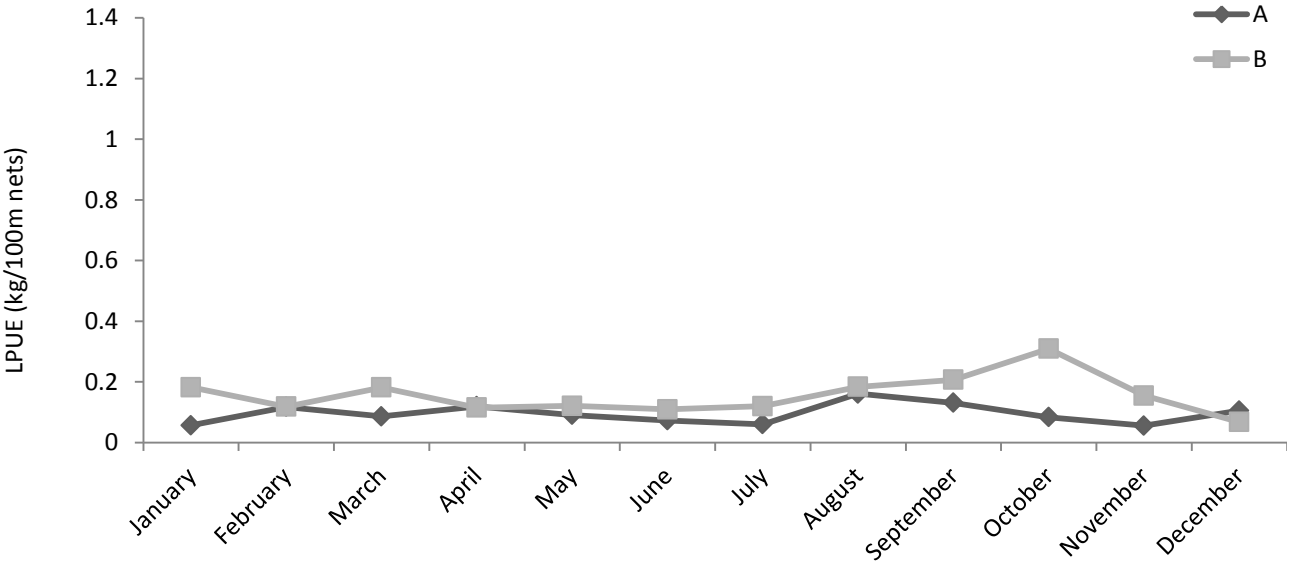

Figure 77: Monthly LPUE (kg landed/100m nets hauled), of male edible crab (Cancer pagurus) caught on the south coast, split by belt, A and B in 2017.

Thematically mapped LPUE of male edible crabs taken in nets for the entire year (Figure 78) showed that, similar to the combined edible crab taken in nets, the greatest LPUE was adjacent to Padstow, Port Isaac and Port Gaverne inshore 0-3nm (30E53A). This can also be seen in Figure 79; quarter four. Thematically mapped LPUE of male edible

crab taken by nets by quarters (Figure 79) showed that quarter three and four had greater distribution and increased LPUE compared to quarter one and two, this corresponds with Figure 73 to Figure 77 where similar to the combined edible crab taken in nets, there was an increased LPUE in September that maintained a high level until a gradual decrease to the end of the year.

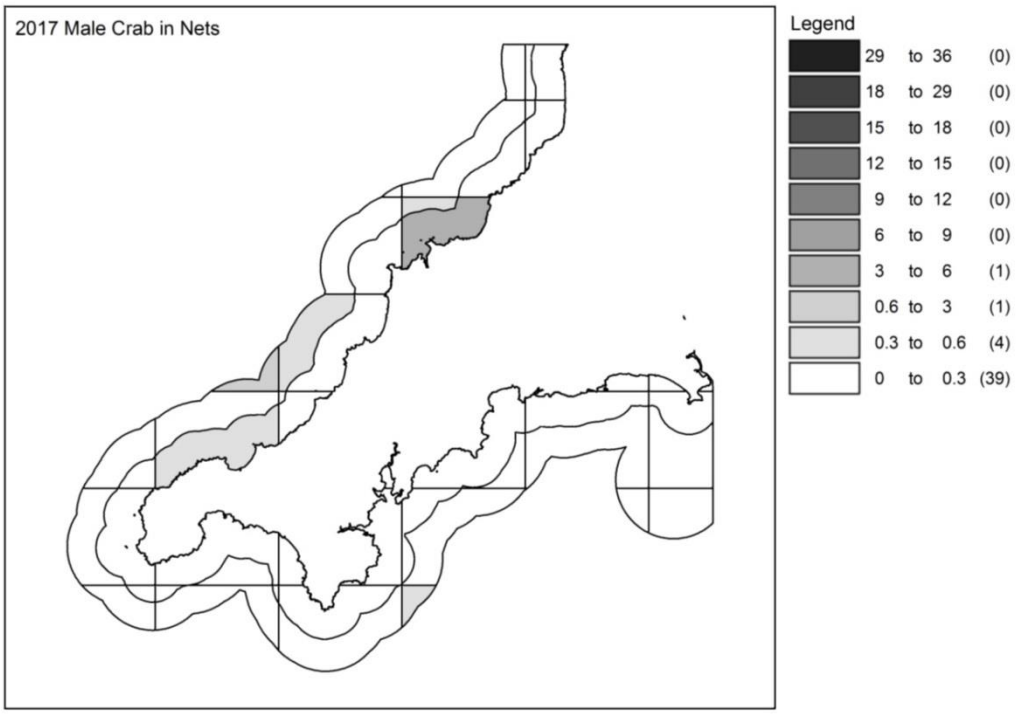

Figure 78: LPUE (kg landed/100m nets hauled) of male edible crab (*Cancer pagurus*) for 2017 thematically mapped by belted statistical area, using increments of 3kg

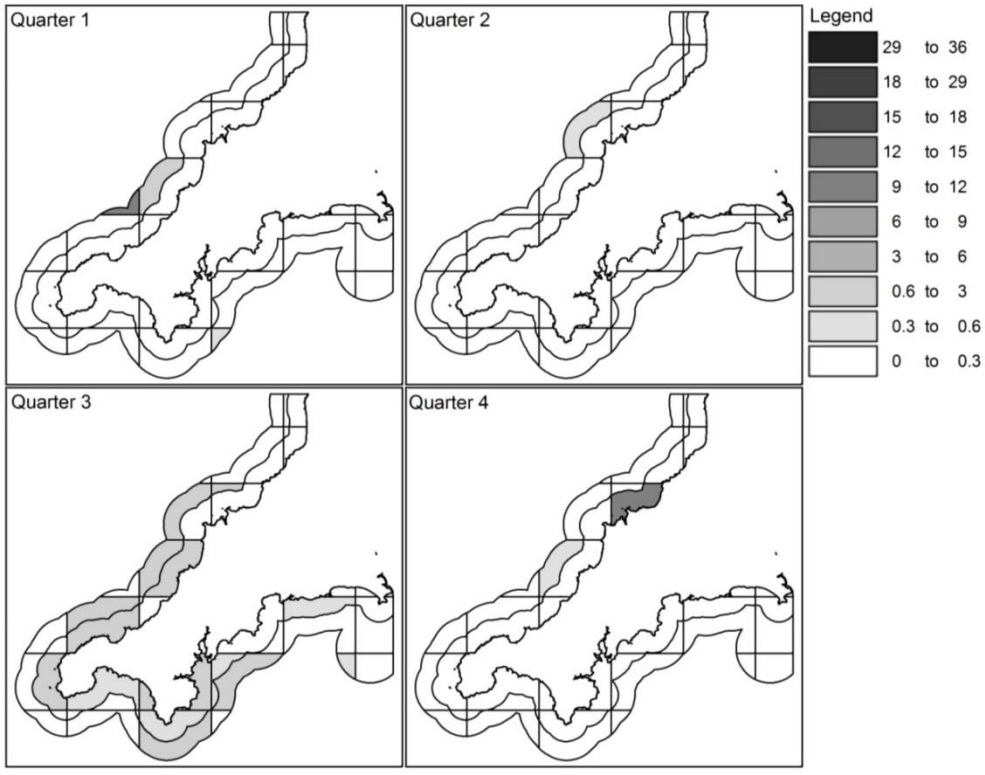

Figure 79: LPUE (kg landed/100m nets hauled) of male edible crab (*Cancer pagurus*) for quarters 1 to 4 of 2017, thematically mapped by statistical area, using increments of 3kg

5.3.4.6 Female Edible crab (*Cancer pagurus*) Fished by Nets

The overall LPUE of female edible crab (Figure 80) increased from March (0.08 kg/100m nets hauled) and reached its peak in September (0.77 kg/100m nets hauled), followed by a decline in October (0.6 kg/100m nets hauled) through to December (0.23 kg/100m nets hauled.

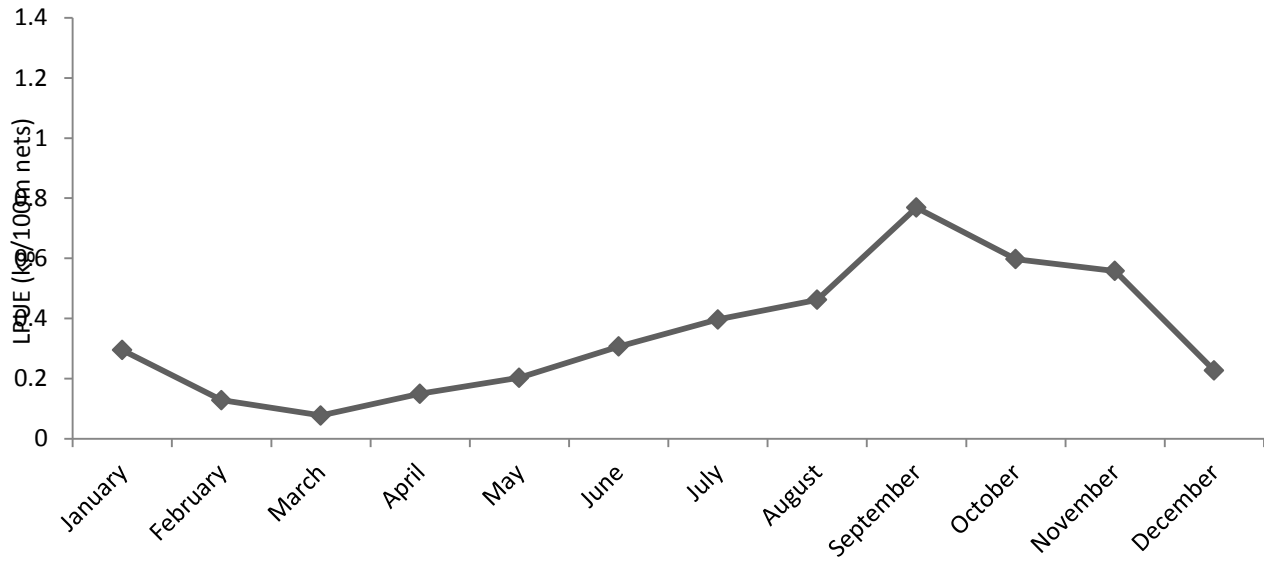

Figure 80: Monthly LPUE (kg landed/100m nets hauled) of female edible crab (*Cancer pagurus*) during 2017, within the Cornwall IFCA district.

The LPUE of female edible crab calculated along both coasts (Figure 81) differed in that the south coast increased gradually from March (0.08 kg/100m nets hauled), to its peak in October (0.61 kg/100m nets hauled). Whereas LPUE along the north coast fluctuated from February (0.09 kg/100m nets hauled) to December with a peak in November (1.75kg/100m nets hauled).

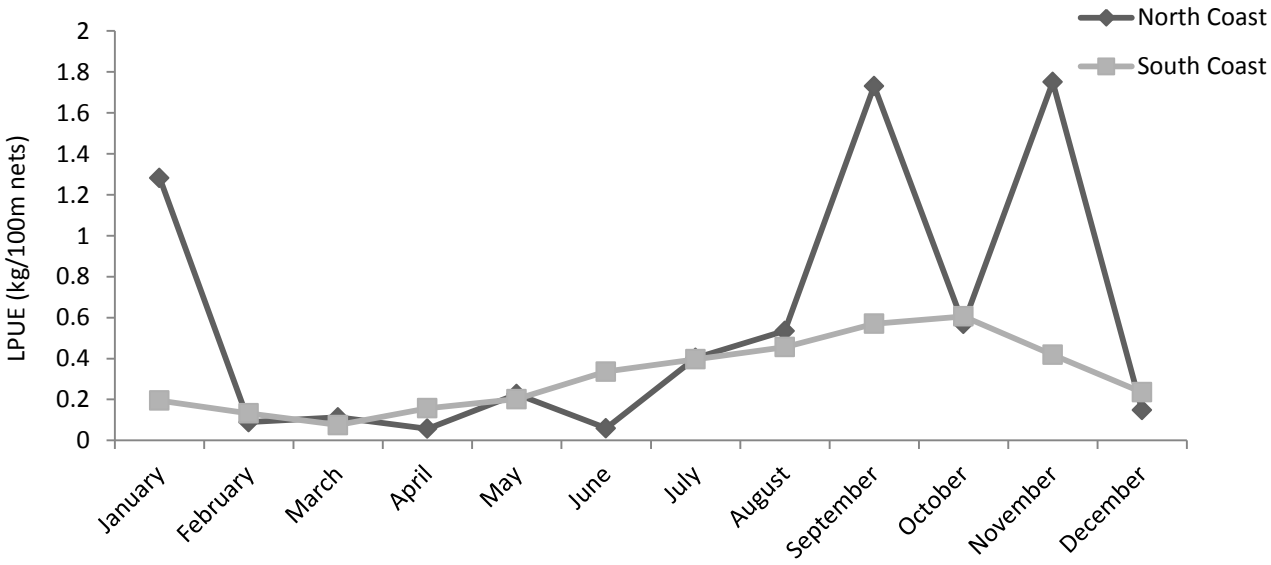

Figure 81: Monthly LPUE (kg landed/100m nets hauled) of female edible crab (*Cancer pagurus*) split by coast, north and south, during 2017 within the Cornwall IFCA district.

The LPUE of female edible crab district wide (Figure 82) followed a similar trend to the male's LPUE (via nets), in that LPUE again remained at a similar level throughout the year (<2 kg/100m nets hauled), with the exception of ICES rectangles 30E5 and 30E4. LPUE in ICES rectangle 30E5 increased from September and reached its peak in October (13.3 kg/100m nets hauled) followed by a gradual decline through to December. Whereas LPUE in ICES rectangle 30E4 increased from October to its peak in November (13.6 kg/100m nets hauled) before a decrease in December (0kg/100m nets hauled).

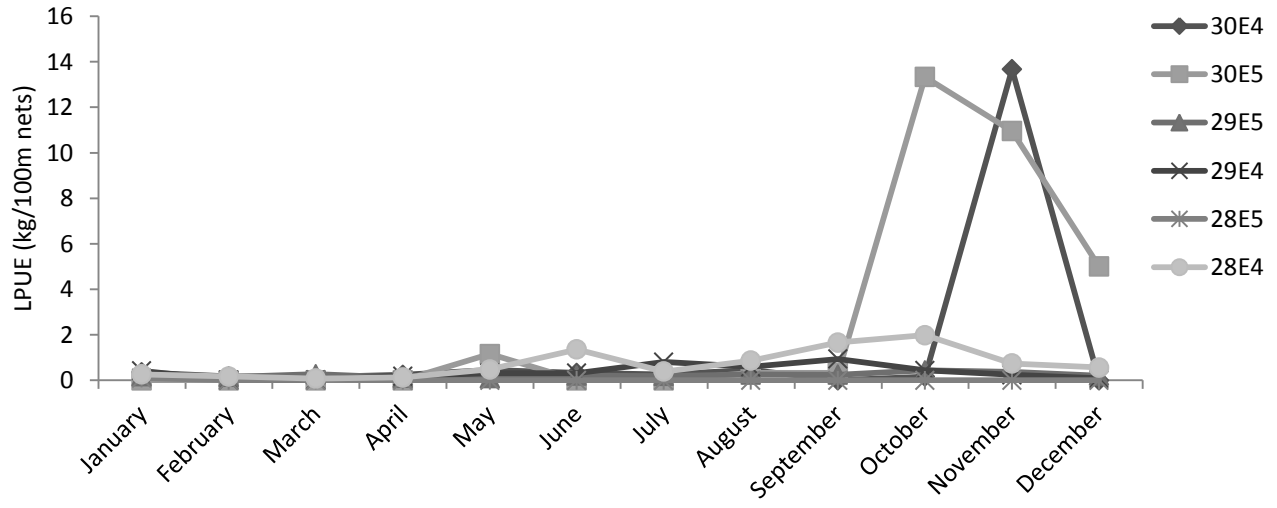

Figure 82: Monthly LPUE (kg landed/100m nets hauled) of female edible crab (*Cancer pagurus*) by ICES statistical rectangle for the year, 2017.

The LPUE of female edible crab by belted statistical areas along the north coast (Figure 83) followed a similar trend from February to August. LPUE in Belt B peaked in January (2.4 kg/100m nets hauled) then increased gradually from June to September, before a gradual decrease through to December. LPUE in belt A increased from July fluctuating until December with a peak in November (3.5 kg/100m nets hauled).

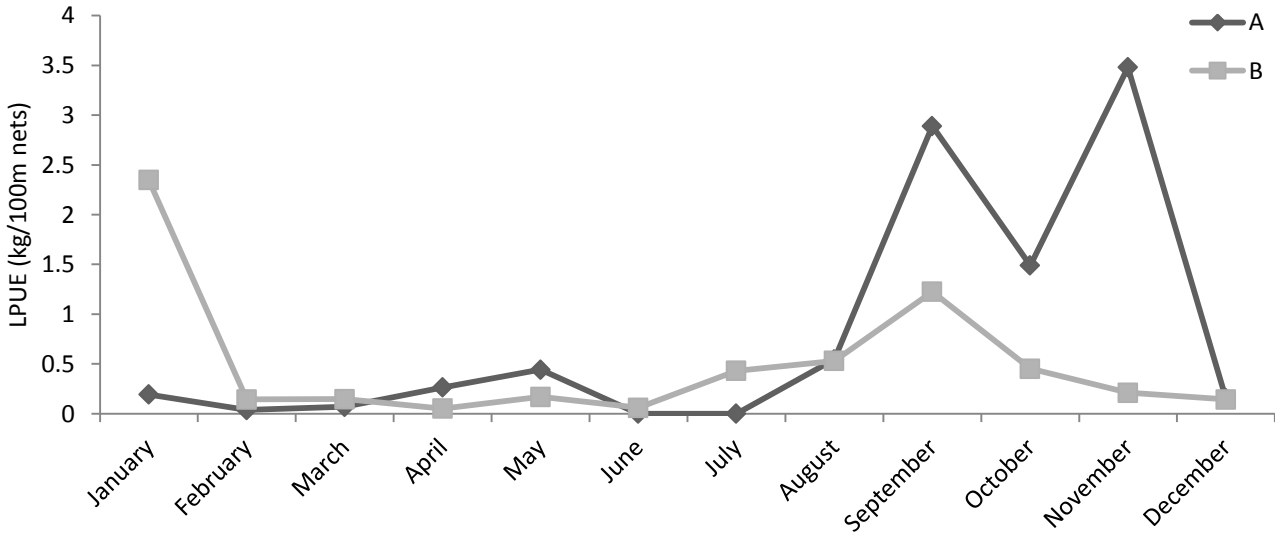

Figure 83: Monthly LPUE (kg landed/100m nets hauled), of female edible crab (*Cancer pagurus*) caught on the north coast, split by belt, A and B in 2017.

The LPUE of female edible crab by belted statistical areas along the south coast (Figure 84) followed a similar trend from January to June and in December. LPUE in belt A gradually increased from January (0.05 kg/100m nets hauled)

and reached its peak in August (0.60 kg/100m nets hauled), followed by a decrease through to December. LPUE in belt B increased gradually from March (0.06 kg/100m nets hauled), declined in July, before an increase to a peak in October (1.25 kg/100m nets hauled) followed by a decline through to December (0.34 kg/100m nets hauled).

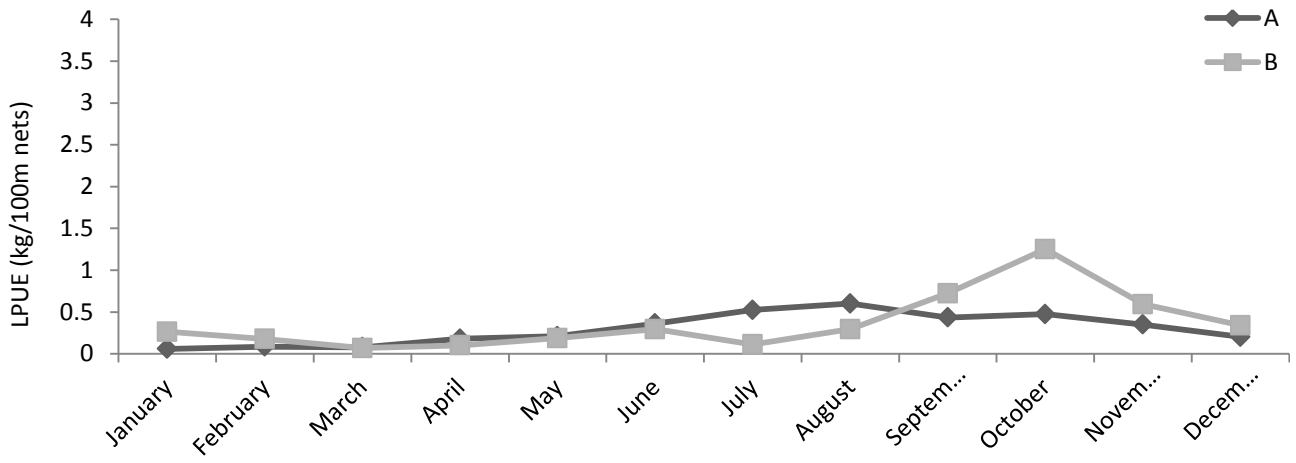

Figure 84: Monthly LPUE (kg landed/100m nets hauled), of female edible crab (*Cancer pagurus*) caught on the south coast, split by belt, A and B in 2017.

Thematically mapped LPUE of female edible crabs taken in nets for the entire year (Figure 85) showed that, similarly to both combined and male edible crab taken in nets, the greatest LPUE was adjacent to Padstow, Port Isaac and Port Gaverne inshore 0-3nm (30E53A) again this can also be seen in Figure 86 quarter four. Thematically mapped female edible crab taken by nets LPUE by quarters (Figure 86), showed quarters three and four had a greater distribution and increased LPUE compared to quarters one and two. This corresponds with Figure 80 to Figure 84 where similarly to both combined and male edible crab taken by nets there was an increase in LPUE from September which maintained a high level until a gradual decrease at the end of the year.

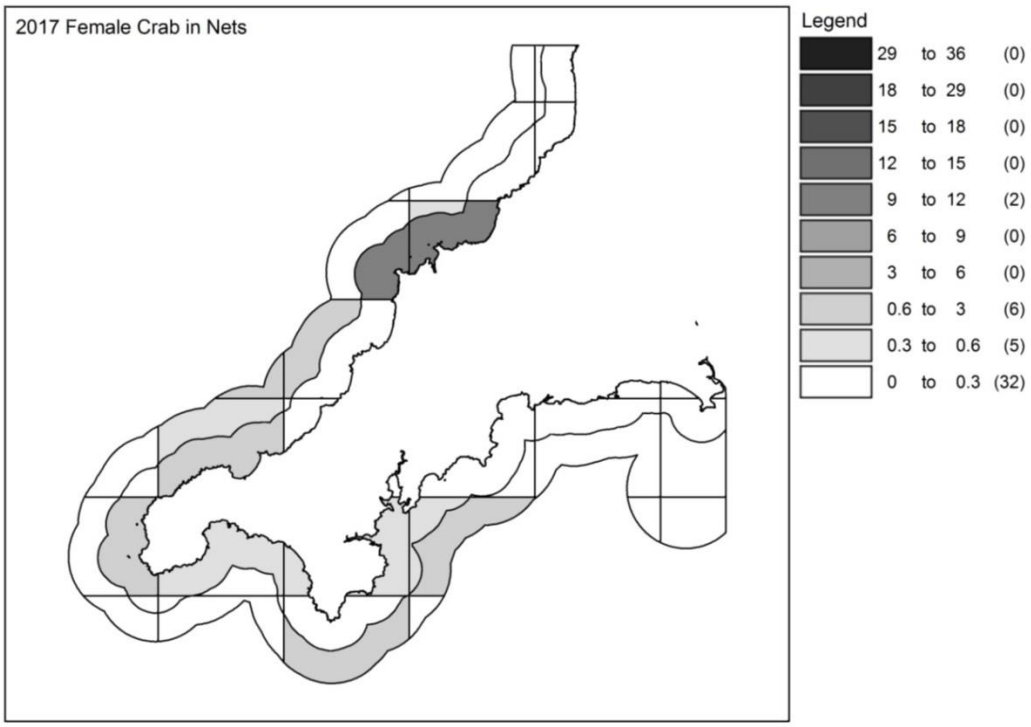

Figure 85: LPUE (kg landed/100m nets hauled) of female edible crab (*Cancer pagurus*) for 2017 thematically mapped by belted statistical area, using increments of 3kg.

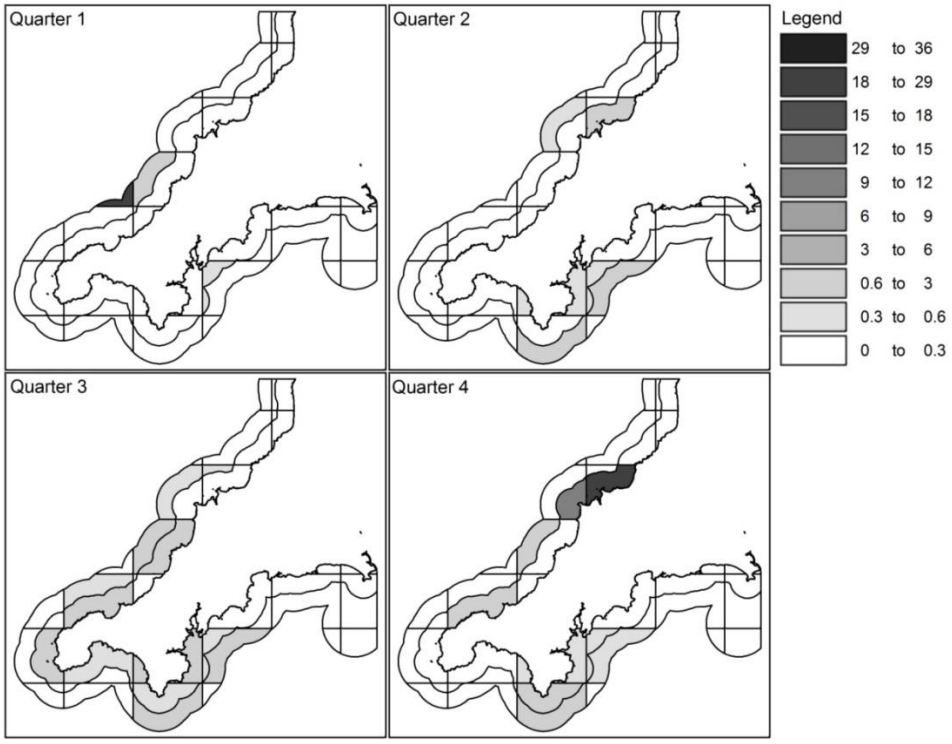

Figure 86: LPUE (kg landed/100m nets hauled) of female edible crab (*Cancer pagurus*) for 2017 thematically mapped by belted statistical area, using increments of 3kg

6 Discussion

6.1 Effort

The winter of 2016 into 2017 brought extended periods or poor weather conditions opportunities which resulted in a lack of fishing effort from January to March (Figure 3 and Figure 10). This is similar to the patterns of fishing effort in the early part of 2016. The weather was more settled during the spring of 2017 and as expected, fishing effort increased as the weather improved (Matthew, 2017c). The effort data reflected this period of settled weather as potting effort more than tripled from March to May (Figure 3) (Matthew, 2017c).

Both the overall potting and netting effort per km^2 displayed corresponding increases and decreases in effort at similar times of the year throughout 2017. Effort in both sectors was low at the start of the year and increased during the spring, levelled off in the summer before a gradual reduction towards the end of the year (Figure 3 and Figure 10). These patterns may relate to weather conditions influencing fishing opportunities.

Overall potting effort per km^2 in 2017 increased from 65 pots hauled/ km^2 in May 2016, to 70.2 pots/ km^2 in May 2017 (Figure 3). It's perceived by the fishery that this increase in effort may be related to grants that were made available for the purchase of some types of fishing equipment which resulted in a large number of shellfish pots being ordered in the south west.

Potting effort per km^2 followed a similar pattern along both the north and south coast during the year. However, overall potting effort was greater on the north coast during April through to August with a peak in May (Figure 5). The increased potting effort on the north coast may relate to the availability of target species, for example the data shows that lobsters are mainly targeted on the north coast and historically fishermen have reported an increase in lobster catches during May.

Both potting and netting effort per km^2 displayed greater effort within 3-6nm (belt B) compared 0-3nm (belt A) along the north coast (Figure 6 and Figure 13). The south coast showed an opposing result with both potting and netting effort per km^2 greater within 0-3nm (belt A) compared to 3-6nm (belt B) (Figure 7 and Figure 14). This may also be influenced by a combination of periods of good weather increasing fishing opportunities further offshore as well as seasonable behaviour of the target species.

Potting effort per km^2 for ICES statistical rectangles located within the Cornwall IFCA district increased during both the spring and summer whereas netting effort per km^2 increased during the winter and spring. The peak in potting effort during May (Figure 4) corresponds with an increased LPUE of lobsters (section 6.2.1). Additionally, potting effort in the west and south west ICES rectangles (29E4 and 28E4) may relate to prime habitat availability for lobsters. These areas are located to the west of Cape Cornwall and are characterised by boulder and bedrock reef. Boulder and bedrock reef is considered a habitat preference for this target species.

The increased netting effort in the east and south east ICES rectangles (28E5 and 29E5) may be the combination of boats netting for fin fish but taking shellfish as a form of by-catch. Nets are set to target crawfish near Lizard Point which is also an area known to be characterised by boulder and bedrock reef, also a habitat preference of crawfish.

Due to the considerable variation in the geographic area of each belted statistical area, effort data was normalised by calculating the effort and LPUE per km^2. Both potting (Figure 4) and netting (Figure 11) per km^2 maintained a high level of effort from March to August in the ICES statistical rectangles considered central to the Cornwall IFCA district, 29E4 and 29E5 (Figure 1). This may be due to both these rectangles containing a greater number of base ports and therefore more commercial fishing vessels. Shellfish fishermen registered at a base port within ICES rectangles 29E4 and 29E5 accounts for 80.96% of the total registered shellfish fishing fleet within the Cornwall IFCA district (29E4; 59.23% and 29E5; 21.73). Therefore it is not unexpected that ICES rectangles 29E4 and 29E5 showed higher effort values than other statistical areas.

In addition, the potting and netting effort mapped by each ICES statistical rectangle identified where effort was concentrated along the south coast from Lizard Point (28E47A/B) to Par (29E52A) and from Plymouth to Whitsand Bay (29E57A). The higher concentrations of effort on the north coast where identified as being from Perranporth (29E47A/B) to Tintagel (30E53A/B) (Figure 8 and Figure 15). Both these stretches of coastline have a number of base ports used by shellfish fishermen such as Coverack, Cadgwith, Mylor, Falmouth, Mevagissey, Newquay, Padstow and Port Isaac. As previously stated, areas close to a number of base ports are likely to be fished more frequently which will therefore influence the amount of reported effort in the surrounding ICES rectangles.

Potting and netting effort per km^2 by yearly quarters for each ICES statistical rectangle (Figure 9 and Figure 16), showed that for both potting and netting sectors quarters two and three had a wider distribution and level of effort. This may relate to both the availability of target species and improved weather conditions during these quarters of the year (Spring/Summer), fine weather allowing for more fishing opportunities therefore increasing effort. The similarity in the seasonal effort pattern demonstrates that both the potting and netting sectors are likely to be heavily influenced by weather which in turn controls the seasonality of their fishing.

6.2 LPUE of Crustacean Species

6.2.1 European Lobster *(Homarus gammarus*)

On the north coast, LPUE for lobsters gradually increased from March to May (Figure 18), corresponding with reports of a fall in first sale price from £16.50/kg to £12/kg by the end of May due to the increased supply (Matthew, 2017c).

Overall lobster LPUE increased during June (Figure 17), matching reports of a second market drop from £12/kg to £10/kg due to an increased supply. It was also reported that the lobster fishery remained strong throughout the rest of the season (Matthew, 2017b).

The LPUE of lobsters calculated along both coasts (Figure 18) was greater on the north coast (with the exemption of December) this is expected due to the lobster being more prevalent on the north coast in comparison to the south coast. Similarly both coasts peaked in LPUE of lobster in June and corresponded with reports of a second market drop in price per kg during June due to increased supply of lobsters.

The LPUE of lobsters split by belted statistical areas along both the north and south coast showed that belt A (0-3nm) had a greater LPUE compared to belt B (3-6nm) (Figure 20 and Figure 21), this may be a result of target species availability as lobsters habitat preference consists of inshore bedrock reef. In addition the LPUE of lobsters split by

belted statistical areas A and B on the north coast followed a similar pattern as both displayed common increases and decreases throughout the year (Figure 20). The south coast lobster LPUE differed and fluctuated between belts A and B (Figure 21). This may suggest both belts A and B are being fished more evenly on the north compared to the south coast.

LPUE of lobsters for the entire year by each ICES statistical rectangle (Figure 22) showed the greatest LPUE was in the area west of Cape Cornwall (29E43A). The area to the west of Cape Cornwall is a known area of rough rocky coastline characterised by bedrock reef and rocky outcrops – a prime habitat preference for lobsters.

6.2.2 Crawfish (*Palinurus elephas*)

The overall LPUE of crawfish for the entire year remained low from January before a gradual increase from April to September where it peaked, (Figure 24). This peak in crawfish LPUE is expected during August and September as a result of the seasonal targeted netting for the species.

Similarly to the data collected in 2016 for crawfish, the LPUE in 2017 was greater on the north coast compared to the south coast. However there was an isolated peak in LPUE in ICES rectangle 28E4, which is on the south coast. This peak within statistical ICES rectangle 28E4 may be due to a commonly netted area, located around Lizard Point (28E47A/B). In addition crawfish LPUE on the north coast increased from 2016 to 2017 (Figure 25).

LPUE of crawfish for the entire year by each ICES statistical rectangle (Figure 29), similarly to lobsters, showed the greatest LPUE to be west of Cape Cornwall (29E43A) this is also seen in Figure 30 quarters three and four. As already stated above in sections 6.1 and 6.2.1 this area west of Cape Cornwall is characterised by boulders and bedrock reef which, similarly to lobsters, is also a prime habitat preference for crawfish.

Crawfish LPUE by quarters by each ICES statistical rectangle (Figure 30) and the LPUE of crawfish by belted statistical areas A and B on both the north and south coast (Figures 27 and 28), all displayed an increased LPUE during the summer with a gradual decline from September onwards. This increased LPUE in summer is consistent with the optimal time to catch crawfish. In addition LPUE of crawfish was greater in belt B compared to A (Figures 27 and 28) this may be due to the addition of larger fishing boats netting further offshore and reporting crawfish as a product of by-catch from nets that were intended to catch fin fish.

6.2.3 Spider Crab (*Maja* spp.)

March to May saw an increased LPUE of spider crab (Figure 31, Figure 32, Figure 34 and Figure 38), this is reflected in the March to May quarterly fishery report for 2017 where it was reported that during this time spider crab catches increased and sometimes matched the little market demand (Matthew, 2017c).

Between June and August the demand for spider crab was variable with only large males required from time to time, fetching £1.30/kg but only when merchants were able to secure an order for the shellfish (Matthew, 2017b). LPUE of spider crab fished by both pots and nets presented here showed a general decrease in LPUE during this time (Figure 31, Figure 32, Figure 33, Figure 35, Figure 38 and Figure 41).

Similarly to the data collected in 2016, the overall LPUE of spider crab fished by pots (Figure 31), LPUE by pots on the north coast (Figure 32), and spider crab LPUE fished by pots in belted statistical area A on the north coast (Figure 34) also peaked in May. This increased LPUE in May corresponds with the spider crab mating aggregations (Davis, 2007).

In addition, the overall spider crab LPUE fished by nets (Figure 38), spider crab LPUE fished by nets on the north coast (Figure 39), spider crab LPUE fished by nets in belted statistical area A on the north coast (Figure 41) as well as spider crab LPUE fished by nets in ICES statistical rectangle 30E5 (Figure 40) all showed an increased LPUE during May. This increased LPUE in May of spider crab via both the potting and netting sector further demonstrates that the numbers of spider crab increased during this time. In the Cornwall IFCA district this appears to occur from April to August, peaking in May and June (Davis, 2007).

LPUE of spider crab fished by pots for the entire year by each ICES statistical rectangle (Figure 36), showed the greatest LPUE adjacent to St Ives and Hayle (29E45A) 0-3nm offshore, this is also seen in Figure 37 (quarter two) and corresponds with the annual migration of spider crabs from deeper water into the warmer, shallower sandy areas to mate (Davis, 2007). Thematically mapped LPUE for spider crab fished by LPUE nets for the entire year (Figure 43) and by quarters (Figure 44), further demstrates this and also showed the greatest LPUE to be concentrated in the 0-3nm belt.

6.2.4 Edible crab (*Cancer pagurus*)

Edible crab LPUE fished by pots had a much greater LPUE compared to this species fished by nets, this is due to pots specifically targeting edible crab, whereas edible crab fished by nets is a product of by-catch from nets that were originally targeting fin fish.

The overall LPUE of combined edible crabs fished by pots followed a very similar trend to 2016's combined edible crab LPUE data in that both years showed an increase from April to July, a decrease during July, before a gradual increase from July to October, followed by a gradual decline for the remainder of the year (Figure 45). The overall LPUE for combined edible crabs fished by pots showed an increase from 110.6 kg/100 pot hauls during October 2016 to 121.1 kg/100 pot hauls during October 2017. The cause of this increase is not known, however it's perceived by the fishery that the increase may be linked to an increase in pots in the south west.

Permit holders reported a slow start to the season with edible crab catches at around 100kg for 250 pot hauls during April (Matthew, 2017c). The data presented here supports this observation by showing a decrease in LPUE of combined edible crab to its lowest point during the month of April (Figure 45).

Edible crab catches were reported to be inconsistent from June to August causing some fishermen to bring their pots ashore early for the winter. Markets were also increasing in price from £1.30/kg to £1.50/kg for good quality whole crab (Matthew, 2017b), the LPUE data for combined, male and female edible crab fished by pots reflects this (sections 5.3.4 to 5.3.4.2) with a decreased LPUE during the summer.

Edible crab LPUE fished by pots followed a similar trend in that LPUE for both the north and south coast decreased from January to March, increased in May, decreased in July and finally increased to peaks in October (Figure 46).

These fluctuations in edible crab LPUE may be attributed to their moulting period. Edible crabs moult in the summer months, shedding their shells as they grow. During the moulting period their shells are full of water and are generally not landed by fishermen due to their low meat yield. A few weeks after moulting their shells harden and the crabs are considered a better quality with a higher meat yield and the number being landed increases – this increase is generally seen in October (Local fishers 2018, pers. comm.).

Combined edible crab LPUE fished by pots for the year by each ICES statistical rectangle (Figure 50) showed the greatest LPUE adjacent to Padstow 3-6nm offshore (30E48B). Opposite to lobster and crawfish, edible crabs prefer mixed coarse grounds as well as offshore muddy sand (Local fishers 2018, pers. comm.), which the location 3-6nm offshore may provide. In addition, Padstow is one of larger base ports and home to many registered shellfish fishermen, which may have increased the amount of reported fishing for shellfish within the surrounding area.

Quarterly combined edible crab LPUE fished by pots by each ICES statistical rectangle (Figure 51), is greatest in quarters two, three and four with a greater distribution and increased LPUE compared to quarter one and corresponds with Figure 45 to Figure 49 which all showed an increased LPUE from April that continues to sustain a high level for the remainder of the year. This corresponds with the optimal time to catch edible crab (spring, summer and autumn), during winter female edible crabs have been observed to be egg bearing (Local fishers 2018, pers. comm.) and do not feed rendering them less likely to be caught in a baited pot.

Quarterly combined edible crab LPUE fished by nets by each ICES statistical rectangle, (Figure 72) showed that quarters three and four had greater distribution and increased LPUE compared to quarters one and two. This also corresponds with Figure 66 to Figure 70 which displayed an increase in edible crab LPUE fished by nets from September which maintained a high level until a gradual decrease at the end of the year. Edible crab fished by nets is not a target species but a form of by-catch, therefore this increased LPUE later in the year is consistent with a general increase in netting for fin fish.

6.2.5 Male Edible crab (*Cancer pagurus*)

In 2017, the overall LPUE of male edible crab when fished by pots showed small fluctuations throughout the year and a decrease during June and July (Figure 52). Whereas in 2016, the overall LPUE of male edible crab decreased throughout the year.

Overall male edible crab LPUE when fished by nets decreased through the year until an increase in late summer (September) (Figure 73). This increased LPUE of male edible crab fished by nets in September is likely due to the seasonality of fishing and the traditional increase in netting for fin fish during this time which can catch edible crabs as by-catch.

The LPUE of male edible crab when fished by both pots nets for belted statistical areas along both the north and south coast was greatest in belt B (Figure 55, Figure 56, Figure 76 and Figure 77). This increased LPUE in belt B compared to belt A may be related to preferred habitat availability, however this unexpected as male edible crabs are said to prefer bedrock reef areas (Local fishers 2018, pers. comm.), which may be more prominent in belt A compared to B.

6.2.6 Female Edible crab (*Cancer pagurus*)

This majority of fishing effort for edible crabs is directed towards females due to their volume around the coast and habitat preference and therefore LPUE of females automatically increases in comparison to males.

The LPUE of female edible crab when fished by pots in 2017 followed a similar trend to 2016. The LPUE for both years decreased from the start of the year and increased from April through to October (Figure 59). However in 2016 the LPUE of female edible crab fished by pots peaked in January at 100.1 kg/100 pot hauls, whereas in 2017 female edible crab fished by pots peaked in October with 111.1 kg/100 pot hauls (Figure 59). In addition, the LPUE for female crab when fished by pots in 2016 ranged from its lowest LPUE of 24.5 kg/100 pot hauls in March to its greatest LPUE of 100.1 kg/100 pot hauls in January, whereas 2017 the LPUE of female edible crab fished by pots ranged from its lowest LPUE of 30.5 kg/100 pot hauls in April to its greatest LPUE of 111.1 kg/100 pot hauls in October (Figure 59), therefore the LPUE of female edible crab fished by pots has shown an increase from one year to another.

The LPUE for female edible crab when fished by pots along both the north and south coast, increased from July to their peak in October with similar levels; 111 kg/100 pot hauls on along the south coast and 111.7 kg/100 pot hauls on the along north coast (Figure 60). This peak is expected during then autumn and corresponds with the optimal time to catch good quality edible crab with high meat yields.

The LPUE for female edible crab when fished by pots district wide showed that all of the ICES statistical rectangles are fished throughout the year with the exception of 28E5 from March to December (Figure 61). The LPUE for female edible crab throughout the district either increased or maintained a similar level during the course of the year. This is expected as the edible crab fishery is directed towards females as a result of them being higher in volume compared to males and therefore females likely to be fished throughout the district.

In contrast the LPUE of female edible crab taken by nets district wide showed very little fishing activity in all ICES rectangles until October (Figure 82). This may be a combination of female edible crab being returned to the sea before this time due to low meat yields as a result of moulting and not worthwhile to retain, as well as little netting for fin fish catching edible crab as by-catch until later in the year.

The LPUE of female edible crabs fished by pots was greatest almost entirely in belt B compared to belt A with the exemption of March on the north coast (Figure 62 and Figure 63). This could be due to a possible habitat preference of females. Female edible crabs are said to prefer mixed coarse grounds and muddy sand which the area of seabed located in belt B (3-6nm) may provide compared to belt A where harder substrates may dominate.

The LPUE for female edible crabs when fished by pots for the entire year by each ICES statistical rectangle (Figure 64) showed that the greatest LPUE was adjacent to the area between Padstow and Port Isaac offshore by 3-6nm (30E48B). This is similar to the combined edible crab. This similarity in the location of the highest LPUE of females and combined edible crab is likely to be due to the LPUE of combined crab being compromised largely by females compared to males, as a result of the fishery being directed towards females.

7 Recommendations

- Cornwall IFCA recognise that the current shellfish permit return form only allows for fishermen to state one ICES area for each fishing day, whereas within a whole day they may have fished in multiple areas. However, it is recognised that to change this would increase both the Cornwall IFCA's and shellfish fishermen's administrative burden.

- It's recognised that there may be some confusion during analysis of the effort data presented on the thematic maps as a result of how the ranges were categorised; potting effort (Figure 8) and netting effort (Figure 15). Ranges were kept at a minimum, the light cells of both potting and netting have cell ranges of 0-500 pots hauled per km^2 and 0-970m of net hauled per km^2. For example, at a glance the lighter cells with potting effort might be interpreted as no potting having taken place within that area, however up to 500 pots may have been hauled per km^2. Care must be taken to read legends.

8 References

Davis, S. 2007. Cornish Inshore Waters Shellfish Stock Survey 2003-2006. Cornwall Sea Fisheries Committee Research Report R200701.

Matthew, D. 2017a. Fishery information report. December 2016 – February 2017. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA).

Matthew, D. 2017b. Fishery information report. June 2017 – August 2017. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA).

Matthew, D. 2017c. Fishery information report. March 2017 – May 2017. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA).

Matthew, D. 2017d. Fishery information report. September 2017 – November 2017. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA).

Naylor, H., Street, K., Jenkin, A. and Trundle, C. 2017. Cornwall IFCA Analysis of 2016 Fishing Activity Returns. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA), Hayle.

9 Appendices

Annex 1: Cornwall IFCA Monthly Shellfish Statistics

Cornwall IFCA Monthly Shellfish Statistics

These return forms are required every month and are to be submitted to the Authority by the 15th day of the following month

Name of Vessel: ---------- **Reg No:** ---------- **Permit No:** ----------

(main berthing port)
Base Port: ---------- **Month:** ---------- **Year:** ----------

	Area Code			Gear		Other methods	Species (estimated weights in kilos)								
Day	Main area fished each day			No.	Metres	(advise)	Edible Crab		Spider Crab	Lobster	Crawfish	Velvet Crab	Green Crab	Crab Claws	
	eg 29 E4 7 A			Pots hauled	Nets hauled	(T) Trawling (S) Scalloping	Cocks	Hens						Edible	Spider
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
26															
27															
28															
29															
30															
31															

Comments: If you wish to provide extra information for byelaw/research purposes, please tick this box and write in the comments box overleaf ☐

A SHELLFISH RETURN MUST BE MADE EVERY MONTH, TO ARRIVE AT THE CORNWALL IFCA OFFICE NO LATER THAN THE 15TH OF THE FOLLOWING MONTH		IF THIS IS YOUR LAST STATS RETURN FOR A WHILE
If there has been 'nil' shellfishing in the Cornwall IFCA District this month, please tick the "no fishing" box and give a reason for this. e.g. outside 6 mile limit, boat re-fit, holiday, illness etc.	**No shellfishing in District this month** ☐	For example, gear brought in. Please advise the month you expect to re-commence fishing. Statistics will be due again from that month.
Reason ----------		**I have stopped fishing** ☐
		I plan to re-start (advise month) ----------

I certify that the information I have provided is correct to the best of my knowledge and belief. **Signature of Owner or Representative:** ---------- **Date:** ----------

For office use only. Please do not write below this line

Sc ☐ S/S ☐ Ent ☐ Sh: Received date

v.2
Jan 2017

Comments

Data Protection

The information you supply is covered by the Data Protection Act 1998. The data is processed by Cornwall IFCA in accordance with the data protection principles contained within the Act. The information you provide will be used by us for fisheries management purposes in order to process your permit and will be shared with the Marine Management Organisation so that your permit can be validated through proof of a valid fishing licence and registration. Only the minimum amount of information is asked for. Cornwall IFCA complies with Schedule 2 of the processing conditions, in that the data subject (the signatory of this document) has consented to the processing of the data and because information is processed in order to fulfil a function imposed by legislation.

REMINDERS BEFORE SUBMITTING

Have you advised the full six-figure area code for the main area fished each day?

- ICES rectangle, sub-rectangle and belt (A or B) is required.
- Cornwall IFCA do not require stats for shellfish caught outside the 6 mile limit.

Have you advised the gear hauled each day?

Have you estimated in kgs your catch for each species each day?

Don't forget to sign the form overleaf before sealing the envelope.

If posting the form, please ensure the correct postage is paid.

Please return the completed form to:

Cornwall IFCA
Chi Gallos
Hayle Marine Renewables Business Park
North Quay
Hayle
Cornwall TR27 4DD

ENQUIRIES
tel: 01736 336842
e-mail: enquiries@cornwall-ifca.gov.uk
website: www.cornwall-ifca.gov.uk

This form has been designed to fit into a window envelope.
Fold at the --- marks