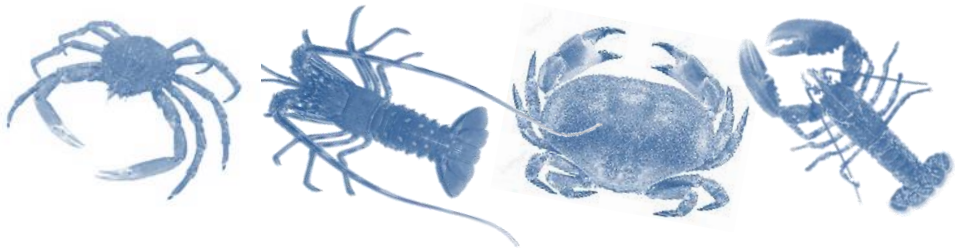
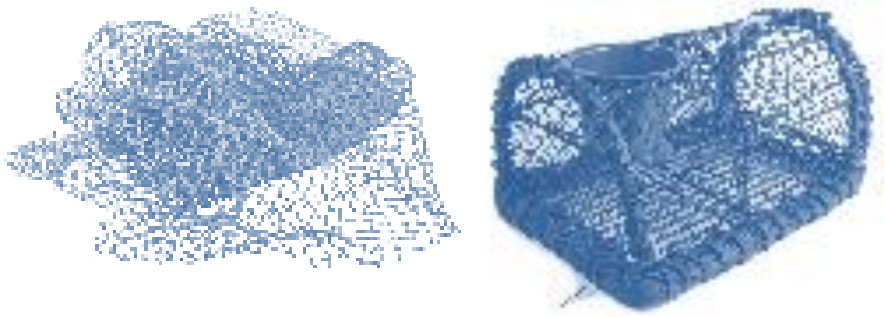
Cornwall IFCA

Inshore Fisheries and Conservation Authority





Monthly Shellfish Permit Statistics Analysis

Summary Statistics 2022

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Introduction

Summary Statistics 2022

Cornwall IFCA have presented crustacean fishery data from 2016* to 2022 in three parts:

Part 1- Fishery Effort
Part 2- Species Summary
Part 3- Area Summary

The aim is that by presenting and grouping the data based on these three different focused areas it is possible to quickly and easily visualise the data based on the readers area of interest.
For example, comparison of one species in different analysis areas (Part 2), or comparison of different species within one analysis area (Part 3).

**Thematically mapped data and tabulated data have been presented from 2018.*

Cited as:
Street, K., Sturgeon, S., Jenkin, A., Daniels, C., and Trundle, C. 2023. Cornwall IFCA Monthly Shellfish Permit Statistics Analysis, Summary Statistics 2022. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA), Hayle.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis
Data Handling Method
Summary Statistics 2022

All Cornwall IFCA shellfish permit holders must submit a monthly shellfish permit return form to Cornwall IFCA detailing their daily fishing activity including; area fished, the type and quantity of gear used (pots or nets) and the weight and species (lobster, edible crab, spider crab or crawfish) of shellfish retained (kg).
This data has been analysed and presented in the '*Cornwall IFCA Monthly Shellfish Permit Statistics Analysis, Summary Statistics 2016-2022*' series as effort (number of pot hauls and meters of nets hauled) per km^2 and landings per unit effort (LPUE).
The method is outlined below and a full method can be found in '*Cornwall IFCA Analysis of 2018 Fishing Activity Returns*' available on the Cornwall IFCA website.

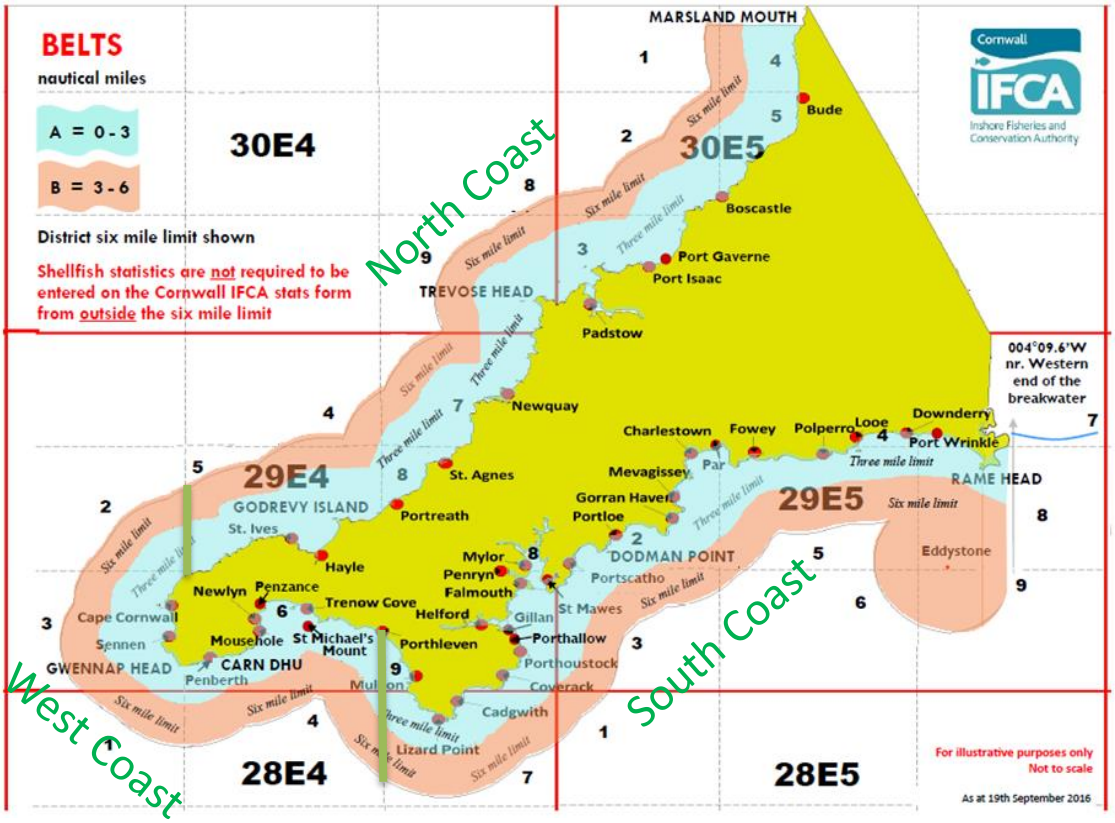


Figure 1: Belted statistical areas within the Cornwall IFCA District and boundaries of the three geographic analysis areas (green lines); *North coast, West coast and South coast*.

Data *Classification*

Spatial

Data is reported to Cornwall IFCA attributed to belted statistical areas. For thematic mapping data was maintained at this resolution. For further analysis belted statistical areas have been grouped into three analysis areas; North, South and West coast, which are further split by band A inshore 0-3nm and band B offshore 3-6nm (Fig. 1)

Data *Descriptors*

Effort

Effort, in terms of the number of pot hauls and length of net hauled, has been normalised based on the area in km^2 of the geographic area (either Cornwall IFCA District, analysis area or belted statistical area), resulting in the effort (the number of pot hauls or length of net hauled) per km^2.

Landings per Unit Effort (LPUE)

To estimate landings per unit effort (LPUE), the unit of effort was taken as 100 pot hauls (100Ph) or 100m of net hauled (100m_Nh).

For shellfish retained in pots LPUE was calculated as:

LPUE (kg of shellfish/100Ph) = $(S_x/E_x)*100$

For shellfish retained in nets LPUE was calculated as:

LPUE (kg of shellfish/100m_Nh) = $(S_x/E_x)*100$

Where S is the weight in kg of shellfish landed in category x, and E is the number of pot hauled or length of nets hauled in category x.

Monthly Shellfish Permit
Statistics Analysis

Summary Statistics 2022

Part 1

Fishery Effort

Cornwall IFCA
Inshore Fisheries and Conservation Authority

Monthly Shellfish Permit Statistics Analysis

Pot Fishery Effort

Summary Statistics 2022

Summary

Potting effort declined from 2021 to 2022 in the District as a whole across all three analysis areas, most markedly in the West (Figures 3 and 4). Edible crab continued to be the most prominent species in pots, with LPUE five times higher than lobster (Fig. 2), though over the reporting period LPUE of crab declined it appeared to stabilise from 2020 to 2022, and lobster LPUE increased overall (Fig. 2).

North Coast; in 2022 effort increased offshore (Fig.7), where effort was higher than the 5-year average from January to March (Fig.8). Inshore in 2022 effort decreased from 2021 values (Fig. 7).

West Coast; effort offshore continued to decline in 2022 from a peak in 2020 (Fig. 9), with monthly effort lower than the five year average for most of the year (Fig. 10) Conversely, inshore effort continued to increase in 2022 (Fig. 9).

South Coast; offshore, annual effort remained stable from 2017 to 2022 (Fig.11), and inshore 2022 effort remained

. 11).

Difference in Annual Potting Effort 2018 to 2022

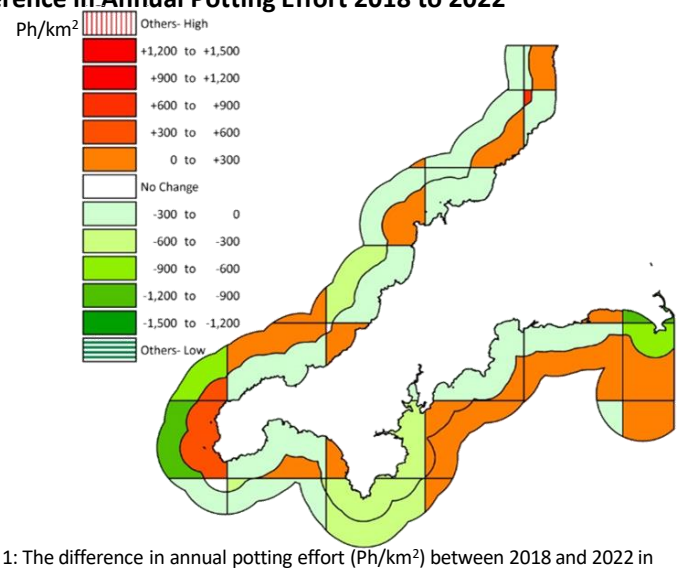


Figure 1: The difference in annual potting effort (Ph/km²) between 2018 and 2022 in belted statistical areas thematically mapped in 300Ph/km² ranges where positive values i.e. increased effort are red and negative values i.e. decreases in effort, are green.

LPUE of retained shellfish

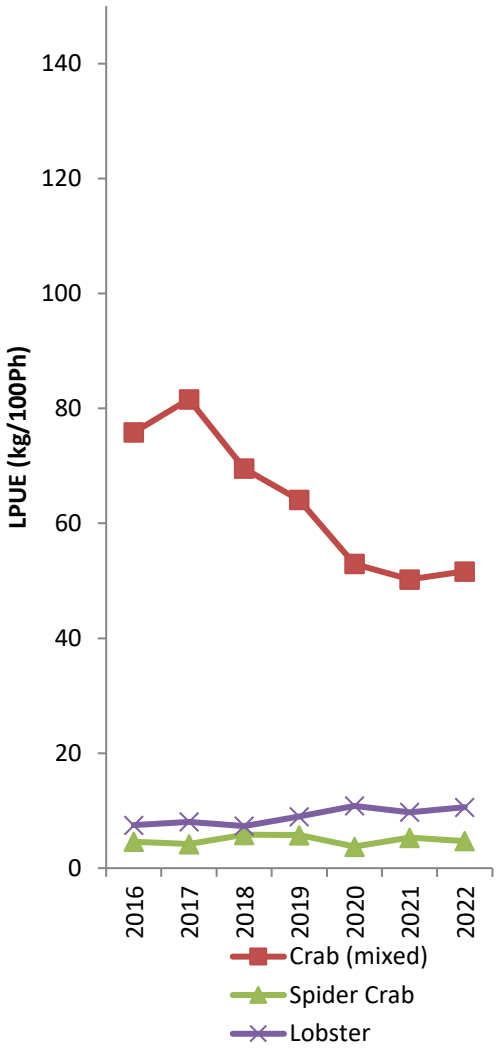


Figure 2: LPUE (kg/100Ph) of the three main commercial species (Crab, Spider Crab and Lobster) retained in pots in the Cornwall IFCA District in from 2016 to 2022.

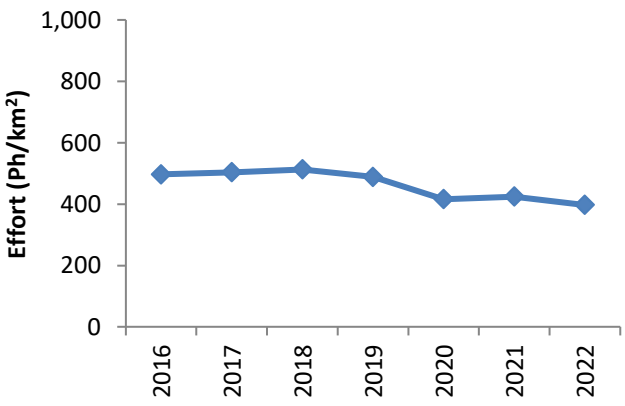


Figure 3: Annual potting effort (Ph/km²) by year in the Cornwall IFCA District from 2016 to 2022 (blue line).

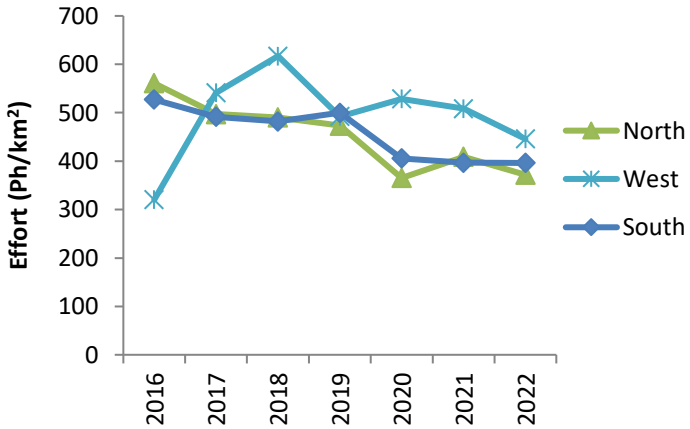


Figure 4: Annual potting effort (Ph/km²) split by analysis area (north, west and south) from 2016 to 2022.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Pot Fishery Effort

Summary Statistics 2022

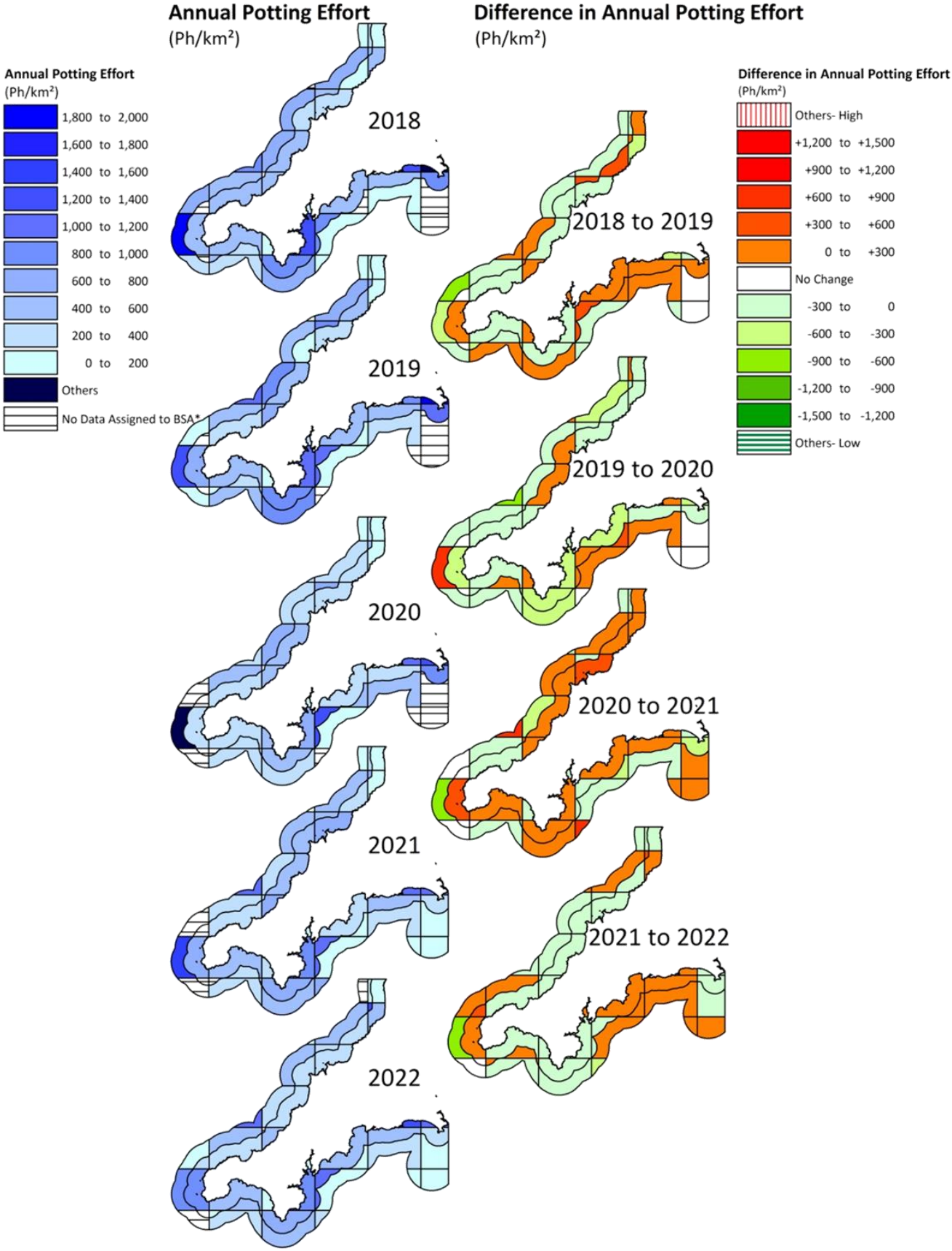


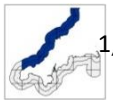
Figure 5: Thematic mapping of annual potting effort (Ph/km²) in belted statistical areas in 200Ph/km² increments (Left). 'Others' refers to 2,029 Ph/km² in 2018 in 29E57A and 2,245Ph/km² in 2020 in 29E43B . And, thematic mapping of difference in potting effort (Ph/km²) in belted statistical areas in ranges of 300Ph/km² (right) where a positive value i.e. increased effort is red and a negative value i.e. a reduction in effort is green. *In some cases this may be an artefact of the data collection method; fishing effort and catch can only be allocated to one BSA per day, therefore where a vessel works in more than one area only one can be reported.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Pot Fishery Effort

Summary Statistics 2022

North Coast



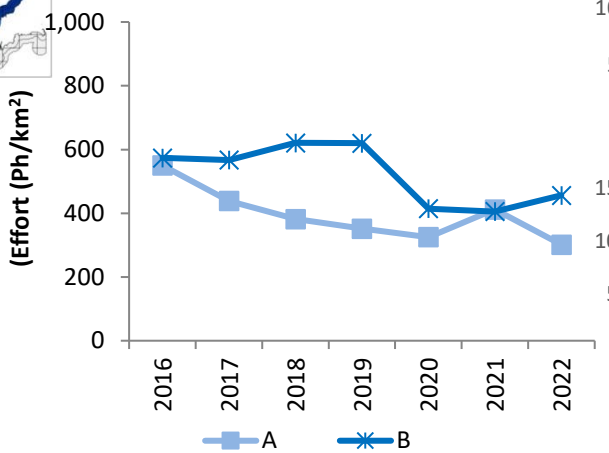


Figure 7: Annual effort (Ph/km²) on the 'North Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

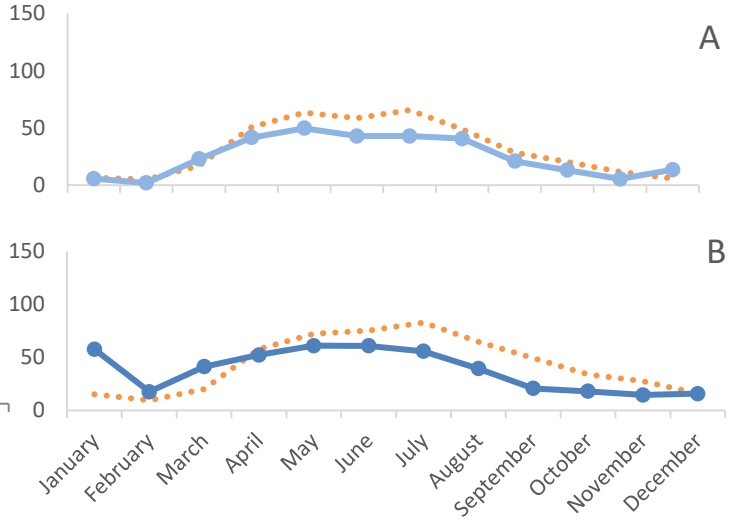


Figure 8: Monthly effort (Ph/km²) on the 'North Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

West Coast

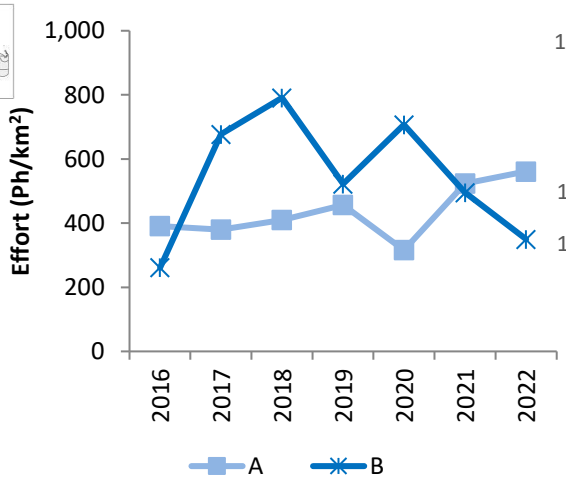


Figure 9: Annual effort (Ph/km²) on the 'West Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

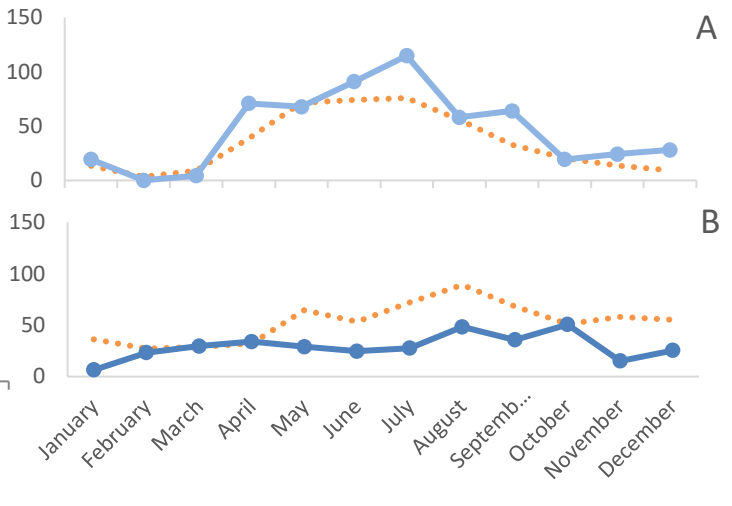
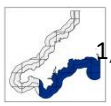


Figure 10: Monthly effort (Ph/km²) on the 'West Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

South Coast



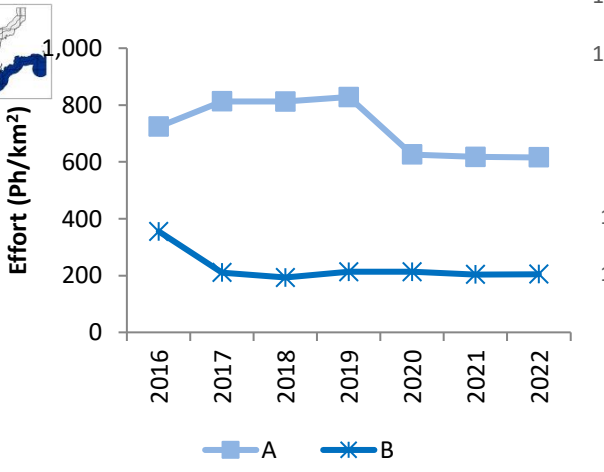


Figure 11: Annual effort (Ph/km²) on the 'South Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

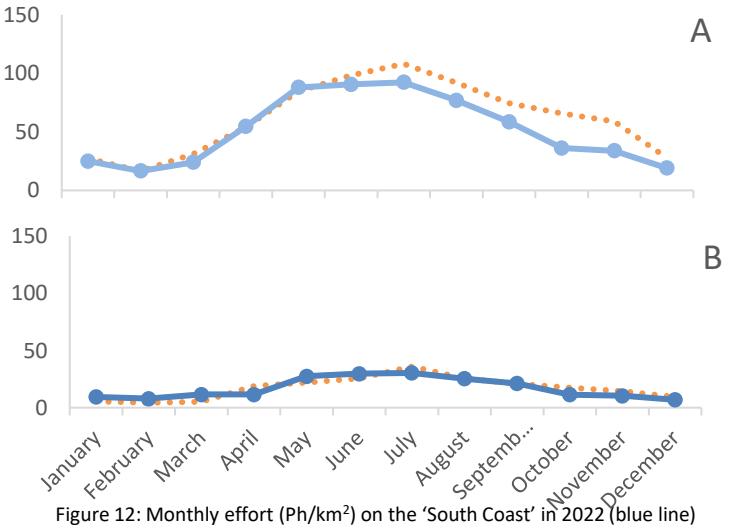


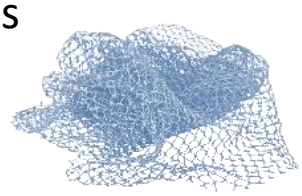
Figure 12: Monthly effort (Ph/km²) on the 'South Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

Cornwall IFCA
Inshore Fisheries and Conservation Authority

Monthly Shellfish Permit Statistics Analysis

Demersal Net Fishery Effort

Summary Statistics 2022



Summary

Netting effort in the Cornwall IFCA District peaked in 2018 (Fig. 3). In 2022 effort has remained similar to 2021 values (Fig. 3), at around a third of the peak value in 2018 (Fig. 3). LPUE of crawfish continued to increased in 2022, where edible and spider crab decreased (Fig. 2).

North Coast; Inshore effort increased in 2022 and offshore decreased (Fig. 6). Monthly effort was higher than the 5-year average in September and October inshore and for much of the summer offshore (Fig. 7).

West Coast; effort fell in 2022 (Fig. 4 and Fig. 8). From 2018 to 2022 the only BSA the effort increased in was Months Bay (Fig. 1). Inshore in 2022, monthly effort followed a similar pattern to the 5 year average, offshore was below average (Fig. 9).

South Coast; annual effort peaked in 2018 before decreasing to a low 2020, in 2022 effort remained around a third of the peak (Fig. 4). The majority of BSA's show a decline in effort from 2018 (Fig. 1). Effort inshore (0-3nm) was consistently higher than offshore across the reporting period (Fig. 10).

Difference in Annual Netting Effort 2018 to 2022

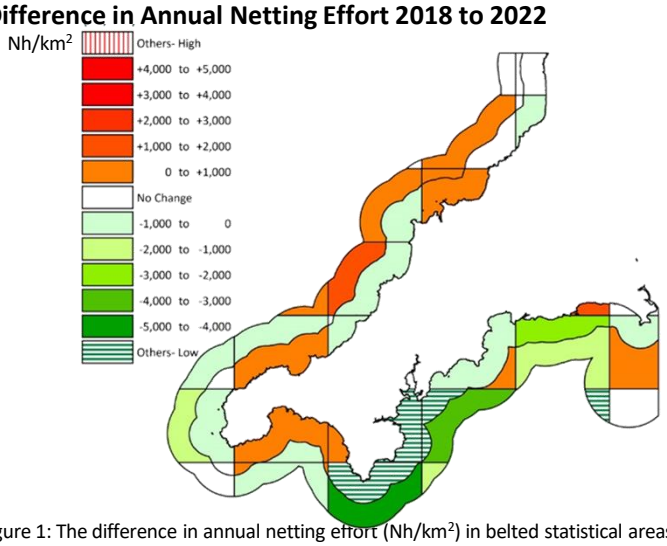


Figure 1: The difference in annual netting effort (Nh/km²) in belted statistical areas between 2018 and 2022 thematically mapped in 1,000 Nh/km² ranges, where positive values i.e. increased effort are red and negative values i.e. decreases in effort, are green. 'Others' refers to -7,254Nh/km2 in 28E47A, -13,7574Nh/km² in 29E49A(east), -5,996Nh/km² in 29E56B and -11,700Nh/km2 in 29E53A.

LPUE of retained shellfish

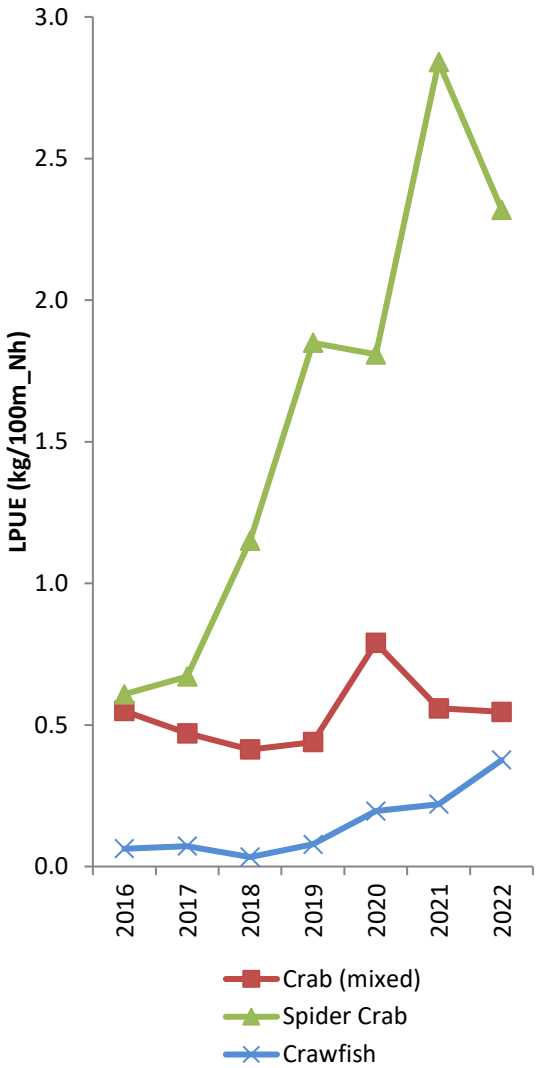


Figure 2: LPUE (kg/100m_Nh) of the three main species (Crab, Spider Crab and Crawfish) retained in nets in the Cornwall IFCA District from 2016 to 2022.

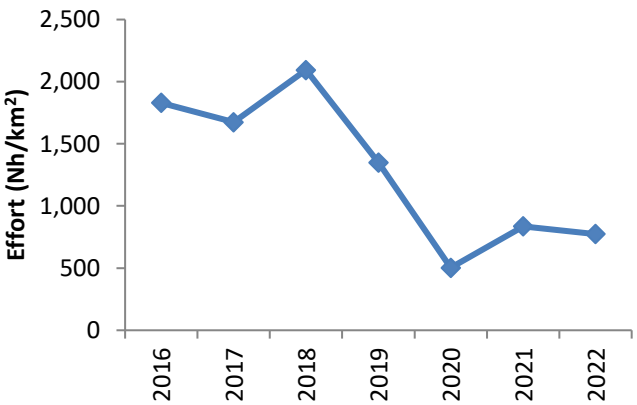


Figure 3: Annual netting effort (Nh/km²) in the Cornwall IFCA District from 2016 to 2022 (blue line).

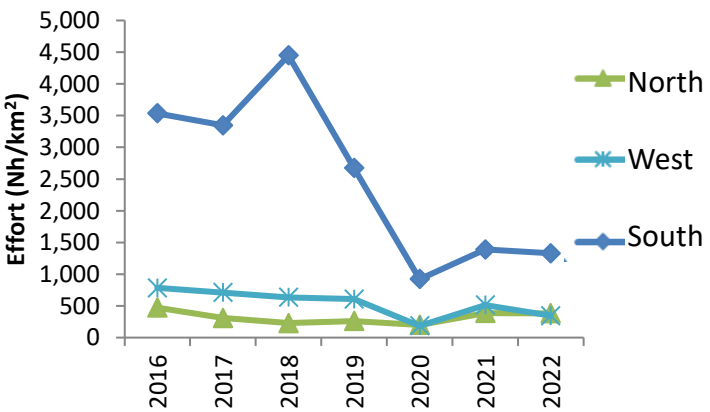
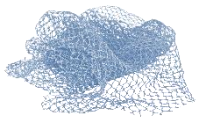


Figure 4: Annual netting effort (Nh/km²) split by analysis area (North, West and South) from 2016 to 2022.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Demersal Net Fishery Effort

Summary Statistics 2022



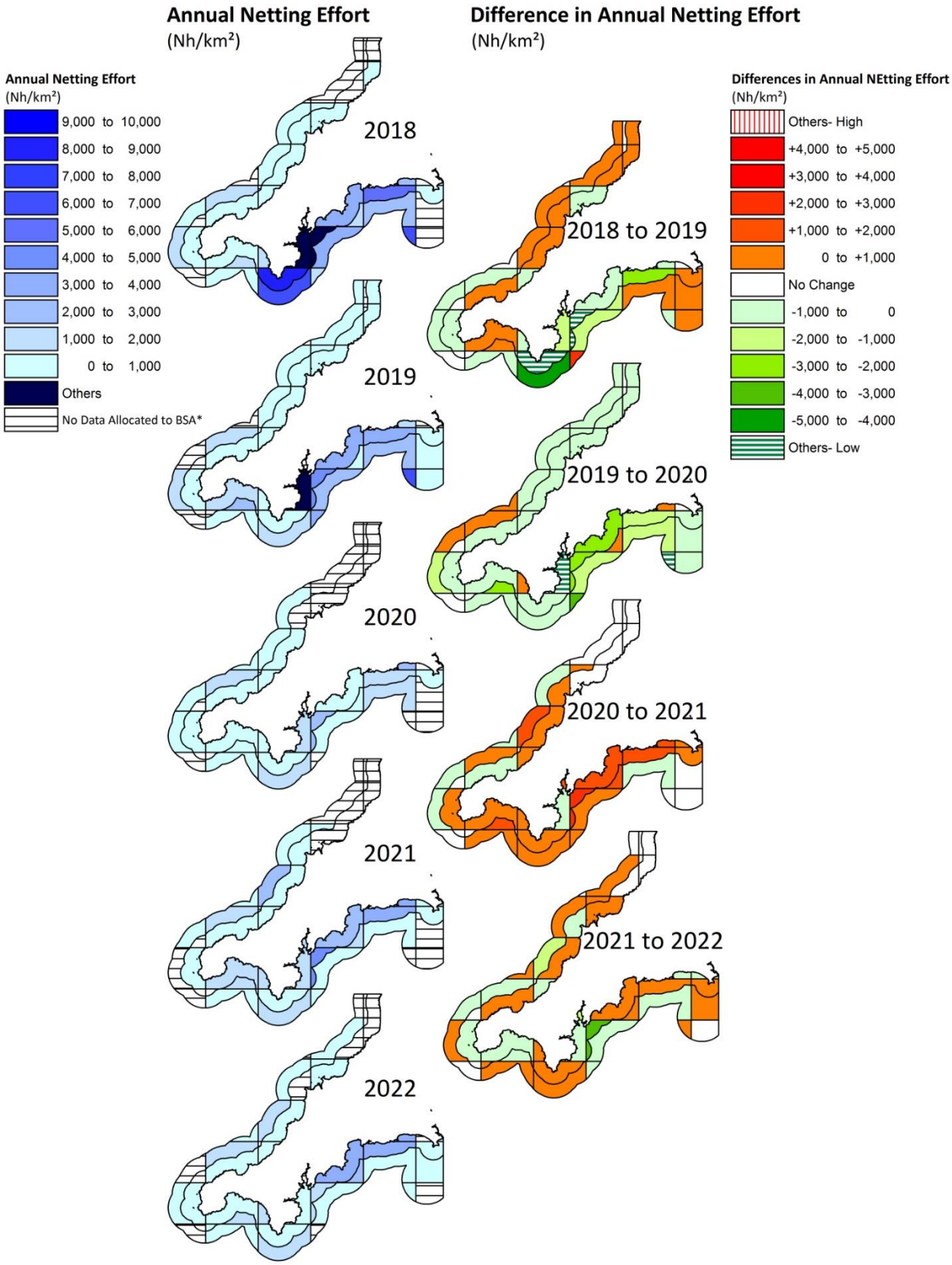


Figure 5: Thematic mapping of annual netting effort (Nh/km²) in belted statistical areas in 1,000Nh/km² increments (left), 'Others' refers to a value of 13,136 in 2017, 13,948 in 2018 and 12,802 in 2019 in 29E49A-East (Falmouth Bay), and 13,232 in 29E53A in 2018 . And, thematic mapping of differences in netting effort (Nh/km²) in belted statistical areas in ranges of 1,000Nh/km² (right) where a positive value i.e. increased effort is red and a negative value i.e. a reduction in effort is green. 'Others' refers to a value of -7,071Nh/km2 in 28E47A, and -9,035Nh/km2 in 29E53A from 2018 to 2019, and -10,833NH/km² in 29E49A (E) and -6,290Nh/km² in 29E56B from 2019 to 2020.

*In some cases this may be an artefact of the data collection method; fishing effort and catch can only be allocated to one BSA per day, therefore where a vessel works in more than one area only one can be reported.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Demersal Net Fishery Effort

Summary Statistics 2022

North Coast

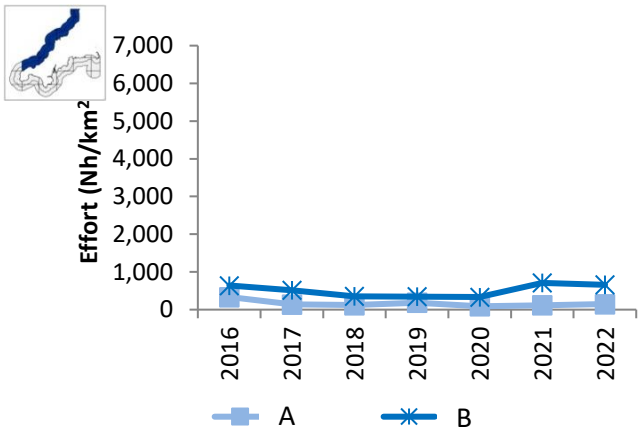


Figure 6: Annual Effort (Nh/km²) on the 'North Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

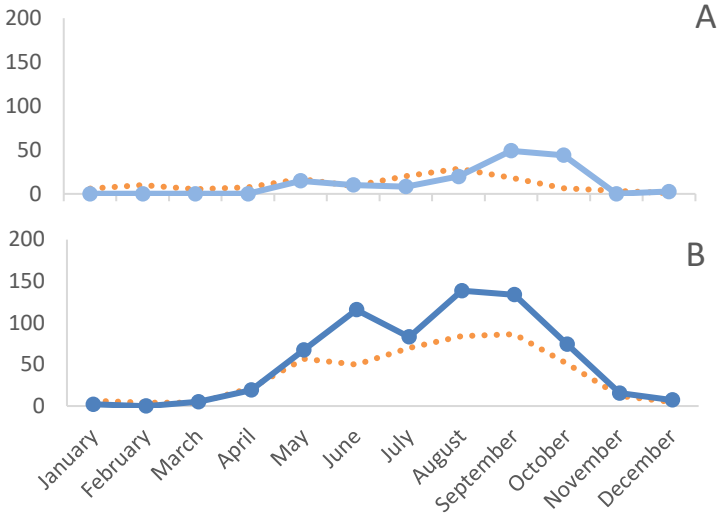


Figure 7: Monthly effort (Nh/km²) on the 'North Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

West Coast

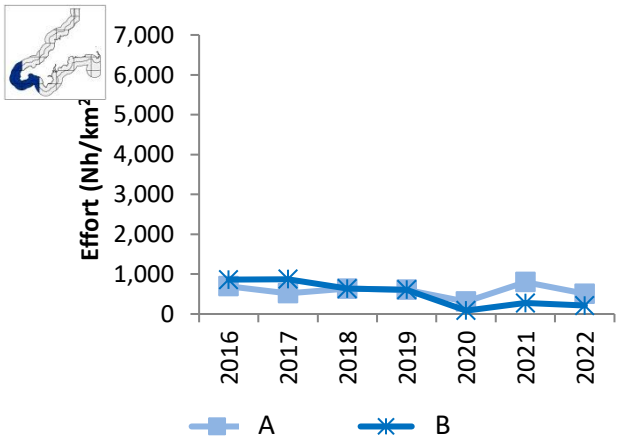


Figure 8: Annual effort (Nh/km²) on the 'West Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

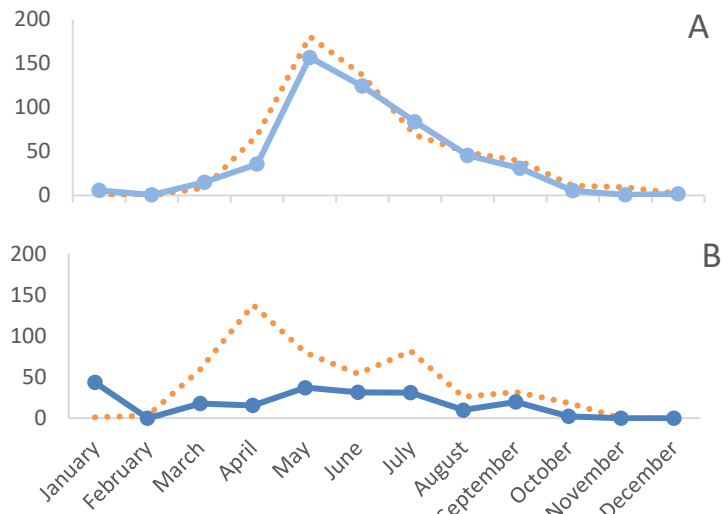


Figure 9: Monthly effort (Nh/km²) on the 'West Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

South Coast

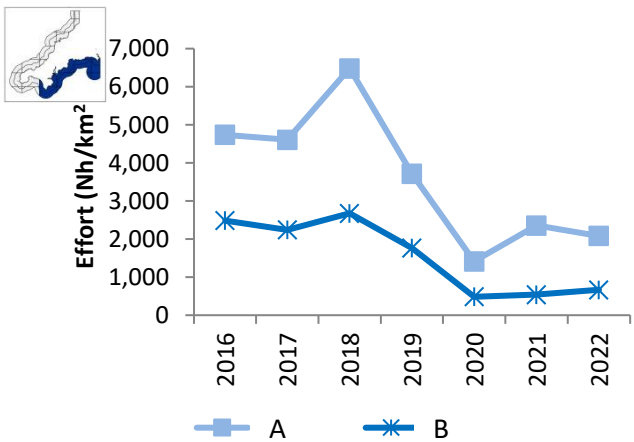


Figure 10: Annual effort (Nh/km²) on the 'South Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

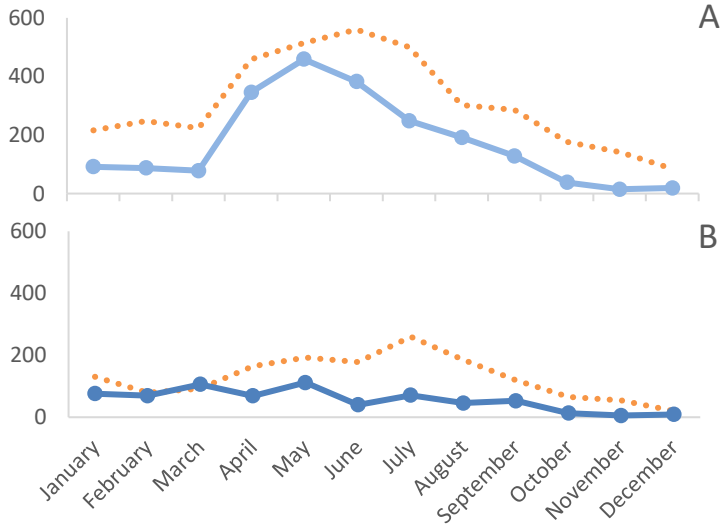


Figure 11: Monthly effort (Nh/km²) on the 'South Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

Monthly Shellfish Permit
Statistics Analysis

Summary Statistics 2022

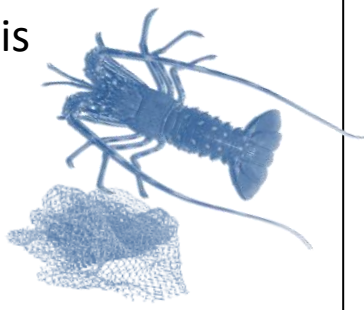
Part 2

Species Summary

Monthly Shellfish Permit Statistics Analysis

Crawfish (*Palinurus elephas*) Net Fishery

Summary Statistics 2022



Summary

In 2022 the landed weight of crawfish increased by 50% from 2021 (Table 1). The associated effort decreased, resulting in an increase in calculated LPUE in all three analysis areas , most markedly in the north (Table 1, & Fig. 3). The BSA's which showed the greatest increase in LPUE were off Lands End and offshore around St Ives Bay (Fig. 1). In 2022 the fishery started offshore on the north and south coasts around June/July, followed by inshore and the west coast in August (Figs.6, 8 & 10).

North Coast; LPUE on the north coast was higher than the remaining analysis areas from 2020 onwards (Fig. 3). Annual LPUE was very similar inshore and offshore in both 2021 and 2022 (Fig. 5), both showing an increase from previous years (Fig. 5). The fishery offshore in 2022 appeared to start earlier in the year, with LPUE over 1kg/100m_Nh from July to December (Fig. 6). Inshore the fishery did not start until August (Fig. 6).

West Coast; both inshore and offshore annual LPUE peaked in 2020 (Fig. 7). In 2022 LPUE offshore fell from the 2021 value (Fig. 7), however monthly LPUE throughout the fishing season was higher then the 5-year average, peaking in October, one month later than the average peak in September (Fig. 8).

South Coast; in 2022 LPUE on the south coast increased from 2021 (Fig. 3). This was most prevalent offshore (Fig. 9), where the monthly peak in LPUE occurred in July, with a value 12 times higher than the 5-year average for that month (Fig. 10).

Annual Data

Table 1: Total kg of crawfish (*Palinurus elephas*) reportedly removed from the Cornwall IFCA District from 2018 to 2022, total gear hauled, and resultant calculated LPUE (kg/100m_Nh)

	2018	2019	2020	2021	2022
Total Gear Hauled	8,359,890	5,390,595	2,004,355	3,338,130	3,089,969
Total Landed (kg)	2,807	4,240	3,927	7,359	11,619
LPUE (kg/100m_Nh)	0.03	0.08	0.20	0.22	0.38

Difference in LPUE 2018 to 2022

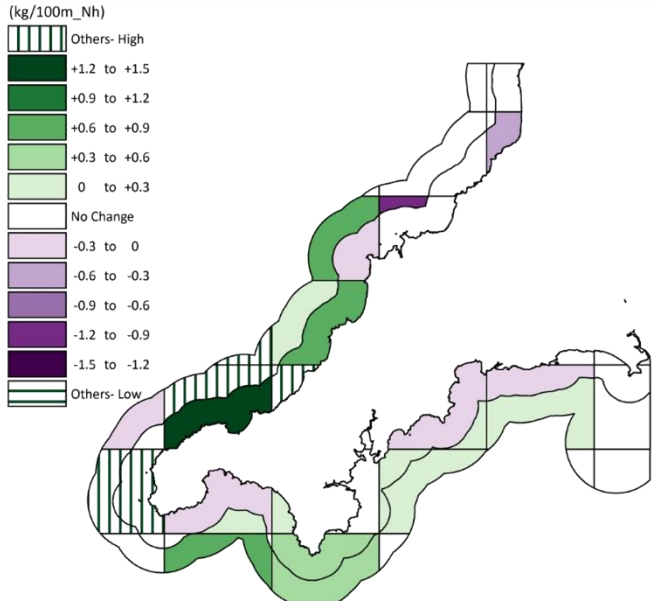


Figure 1: The difference in crawfish (*Palinurus elephas)* LPUE (kg/100m_Nh) in belted statistical areas between 2018 and 2022 thematically mapped in 0.3kg/100m_Nh ranges where positive values i.e. increases in LPUE, are green and negative values i.e. decreases in LPUE are purple. 'Others' refers to 1.91kg/100m_Nh in 29E48A, 2.89kg/100m_Nh in 29E43A, 5.24kg/100m_Nh in 29E43B, 1.54kg/100m_Nh in 29E45B and 4.02kg/100m_Nh in 29E44B.

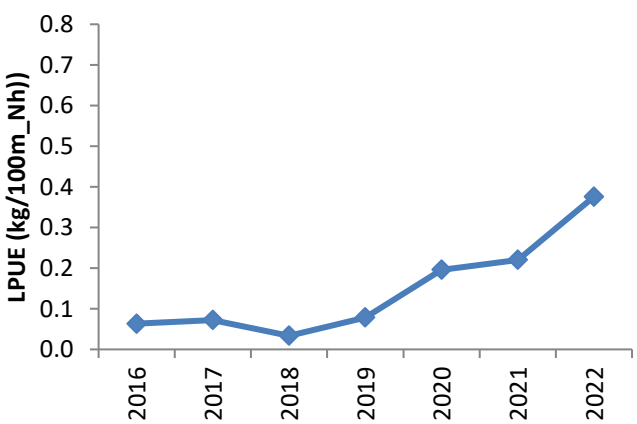


Figure 2: Annual LPUE (kg/100m_Nh) of crawfish (*Palinurus elephas*) in the Cornwall IFCA District from 2016 to 2022.

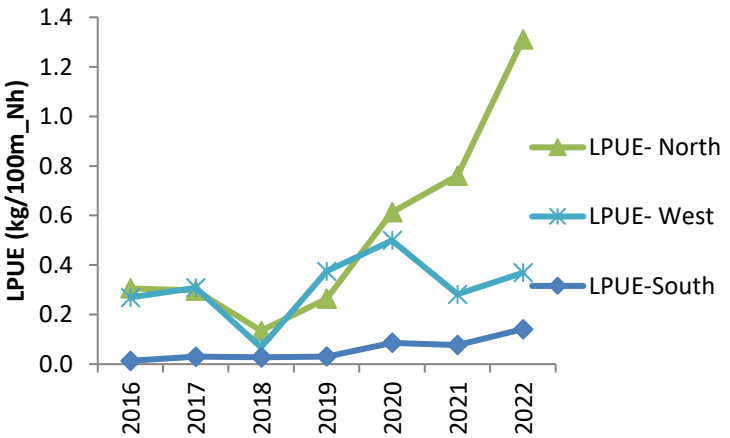
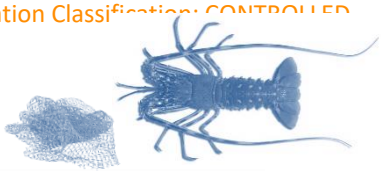


Figure 3: Annual LPUE (kg/100m_Nh) of crawfish (*Palinurus elephas*) in the Cornwall IFCA District split by analysis area (north, west and south) from 2016 to 2022.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Crawfish (*Palinurus elephas*) Net Fishery

Summary Statistics 2022



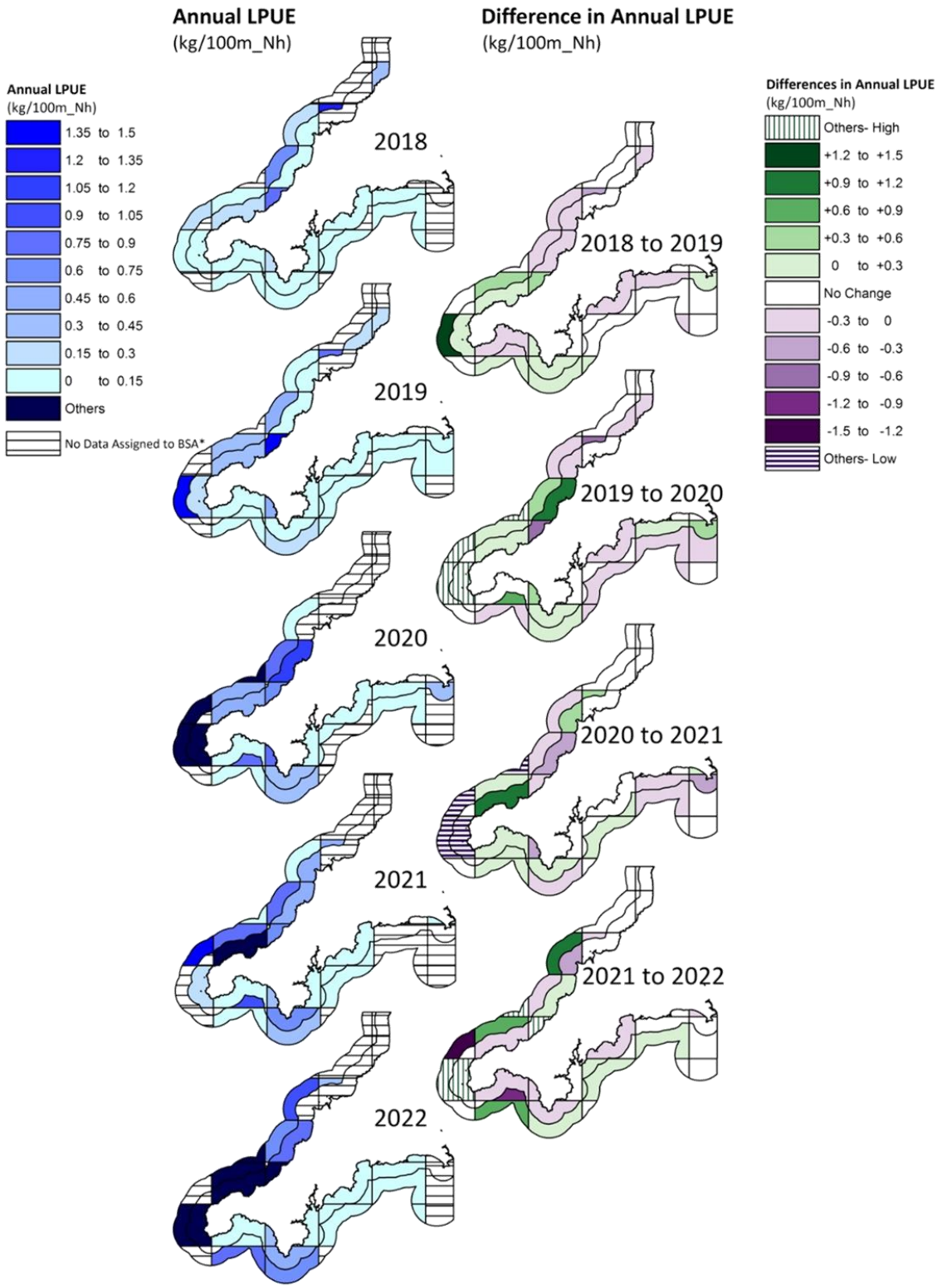


Figure 4: Thematic mapping of annual netting LPUE (kg/100m_Nh) of crawfish (*Palinurus elephas*) in belted statistical areas in 0.15kg/100m_Nh increments (left). 'Others' refers to the following values in 2020; 3.2kg/100m_Nh in 29E44B, 3.5kg/100m_Nh in 29E42B, 4.4kg/100m_Nh in 29E43A and 3.9kg/100m_Nh in 29E43B, 1.53kg/100m_Nh in 29E45A in 2021, and in 2022; 4.0kg/100m_Nh in 29E44B, 5.3kg/100m_Nh in 29E43B, 3.0kg/100m_Nh in 29E43A, and 2.8kg/100m_Nh in 29E48A. In 2022; 4.02kg/100m_Nh in 29E44B, 1.57kg/100m_Nh in 29E43B, 1.52kg/100m_Nh in 29E45A, 5.27kg/100m_Nh in 29E43B, 2.98 kg/100m_Nh in 29E43A, and 2.81kg/100m_Nh in 29E48A.

And, thematic mapping of the difference in annual netting LPUE (kg/100m_Nh) of crawfish (*Palinurus elephas*) in belted statistical areas in ranges of 0.3kg/100m_Nh where a positive value i.e. increased LPUE is blue and a negative value i.e. a reduction in LPUE is red (Right). 'Others' refers to the following values between 2019 and 2020; +3.2kg/100m_Nh in 29E44B, +3.5kg/100m_Nh in 29E42B, +4.2kg/100m_Nh in 29E43A and +2.4kg/100m_Nh in 29E43B, and between 2020 to 2021; -3.05kg/100m_Nh in 29E44B, -2.14kg/100m_Nh in 29E42B, -4.16kg/100m_Nh in 29E43A and -3.86kg/100m_Nh in 29E43B. From 2021 to 2022; +3.90kg/100m_Nh in 29E44B, +5.27 in29E43B, +2.75 in 29E43A, and +2.20kg/100m_Nh in 29E48A

*In some cases this may be an artefact of the data collection method; fishing effort and catch can only be allocated to one BSA per day, therefore where a vessel works in more than one area only one can be reported.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis
Crawfish (*Palinurus elephas*) Net Fishery
Summary Statistics 2022

North Coast

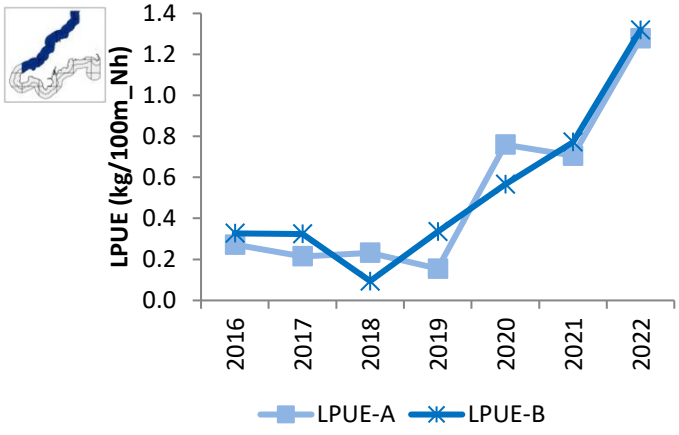


Figure 5: Annual LPUE (kg/100m_Nh) of crawfish (*Palinurus elephas)* on the 'North Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

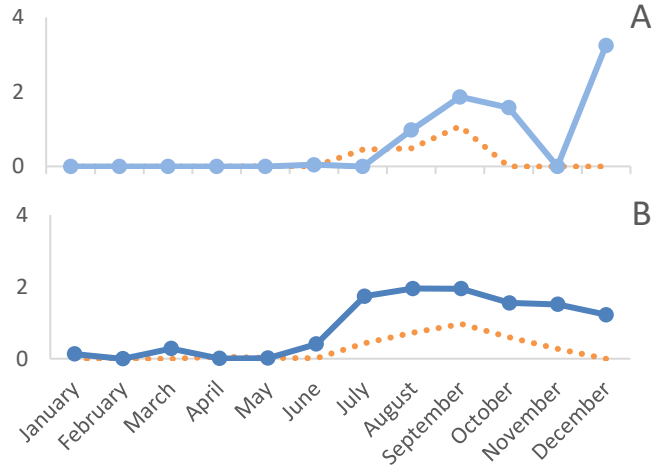


Figure 6: Monthly LPUE (kg/100m_Nh) of crawfish (*Palinurus elephas)* on the 'North Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

West Coast

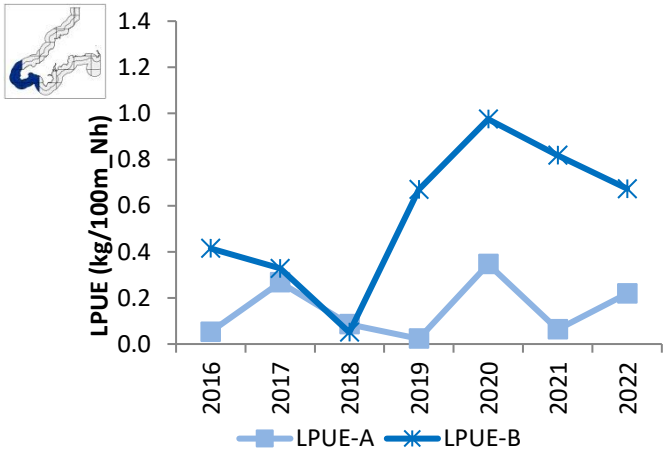


Figure 7: Annual LPUE (kg/100m_Nh) of crawfish (*Palinurus elephas)* on the 'West Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

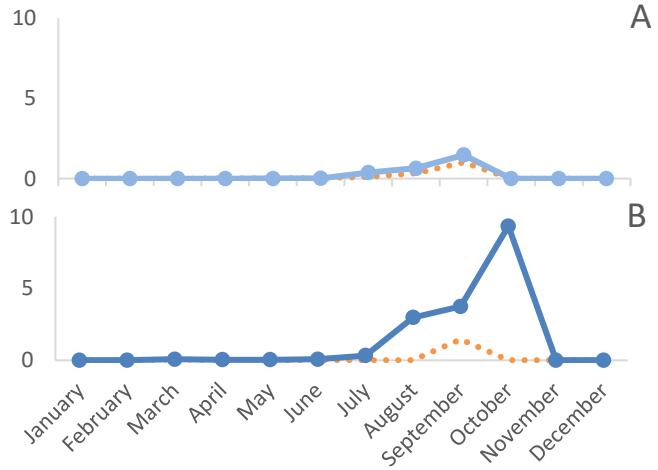


Figure 8: Monthly LPUE (kg/100m_Nh) of crawfish (*Palinurus elephas)* on the 'West Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

South Coast

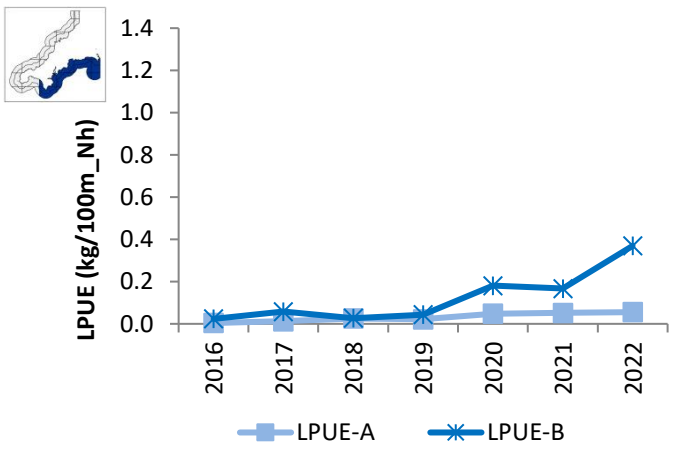


Figure 9: Annual LPUE (kg/100m_Nh) of crawfish (*Palinurus elephas)* on the 'South Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

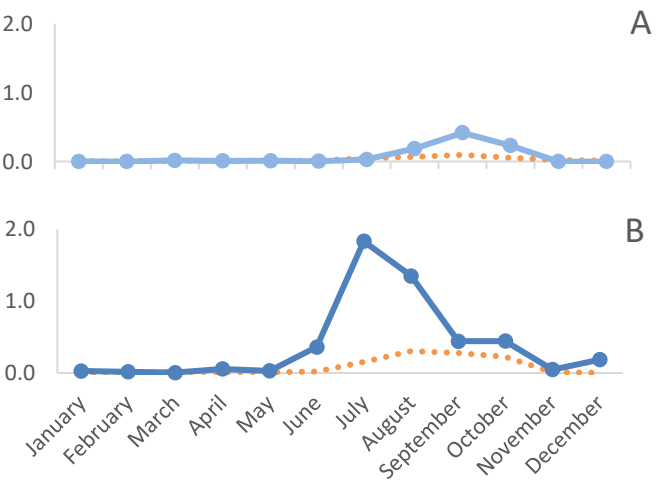
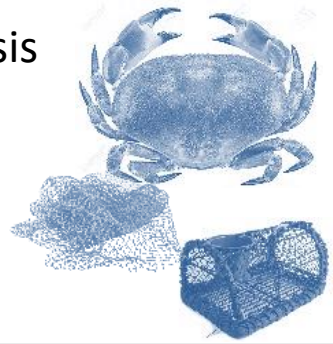


Figure 10: Monthly LPUE (kg/100m_Nh) of crawfish (*Palinurus elephas)* on the 'South Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

Monthly Shellfish Permit Statistics Analysis

Edible crab (*Cancer pagurus*) Pot and Net Fisheries

Summary Statistics 2022



Summary

In the District as whole LPUE in the pot fishery increased in 2022 from 2021, and decreased in the net fishery (Fig. 2, Table 1). In the pot fishery the landed weight of crab declined annually from 2018 to 2022. LPUE in the pot fishery in the west coast continued to be the highest of the three areas (Fig. 3).

North Coast; Inshore, annual LPUE in the pot fishery increased from 2021(Fig.5) and declined in the net fishery (Fig. 12). In the pot fishery LPUE was roughly homogenous across the BSA's (Fig. 4), though in the net fishery there were areas of increased LPUE, the highest of which was off Padstow (Fig. 11)

West Coast; in 2022 LPUE in both the net and pot fisheries in the west coast was higher than the remaining reporting areas (Fig. 3). Offshore in the pot fishery LPUE decreased across the reporting period (Fig. 7), however in the net fishery LPUE increased (Fig. 14). Inshore LPUE in both fisheries increased from 2021 to 2022 (Fig. 7 & 14).

South Coast; in the pot and net fisheries LPUE declined from 2021 to 2022 (Fig. 2). In the pot fishery there were several notable BSA's in which LPUE increased overall from 2018 to 2022 around the Eddystone Reef (Fig. 1). Also in the pot fishery monthly LPUE was lower than the 5-year average for much of the year (Fig. 10), conversely offshore in the net fishery monthly LPUE was higher than the 5-year average for several months despite an overall decrease in LPUE from 2021 to 2022 (Fig 16 & 17).

Annual Data

Table 1: Total kg of edible crabs (*Cancer pagurus*) reportedly removed from the Cornwall IFCA District from 2018 to 2022 from both the pot and net fisheries, total gear hauled, and resultant calculated LPUE (kg/100Ph, or kg/100m_Nh).

		2018	2019	2020	2021	2022
Pots	Gear Hauled	2,048,953	1,951,737	1,662,397	1,695,535	1,588,139
	Landed (kg)	1,424,739	1,250,556	879,849	851,639	820,062
	LPUE(kg/100Ph)	69.53	64.07	52.93	50.23	51.64
Nets	Gear Hauled (m)	8,359,890	5,390,595	2,004,355	3,338,130	3,089,969
	Landed (kg)	34,564	23,689	15,829	18,642	16,887
	LPUE(kg/100m_Nh)	0.41	0.44	0.79	0.56	0.55

Difference in LPUE 2018 to 2022

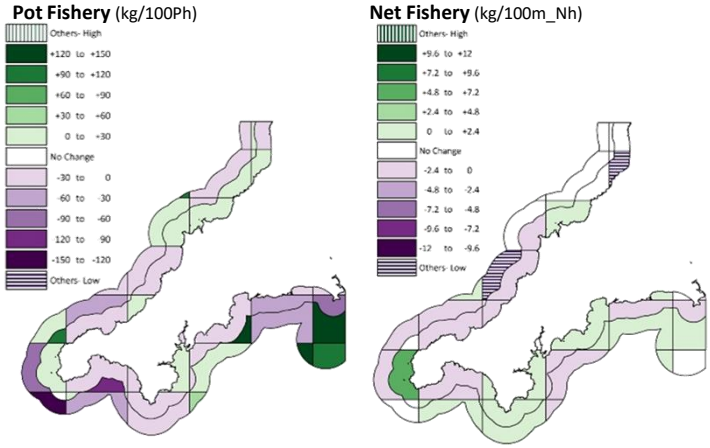


Figure 1: The difference in edible crab (*Cancer pagurus*) annual LPUE (kg/100Ph and kg/100m_Nh) in the pot and net fisheries, in belted statistical areas between 2018 and 2022. Thematically mapped in 30kg/100Ph ranges (pot fishery), and 2.4kg/100m_Nh ranges (net fishery) where positive values indicate an increase in LPUE and negative values a decrease. 'Others' in the net fishery refers to -13.5kg/100m_Nh in 30E55A and -18.00kg/100m_Nh in 29E47B.

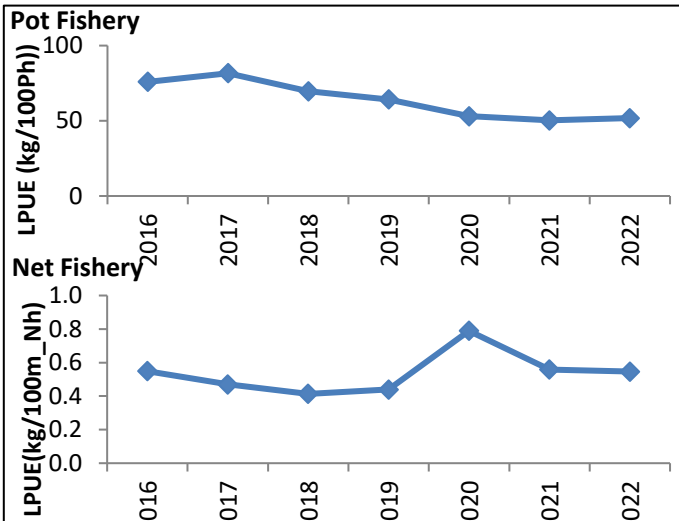


Figure 2: Annual LPUE in the pot fishery (kg/100Ph, top) and annual LPUE in the net fishery (kg/100m_Nh, bottom) of edible crab (*Cancer pagurus*) in the Cornwall IFCA District from 2016 to 2022.

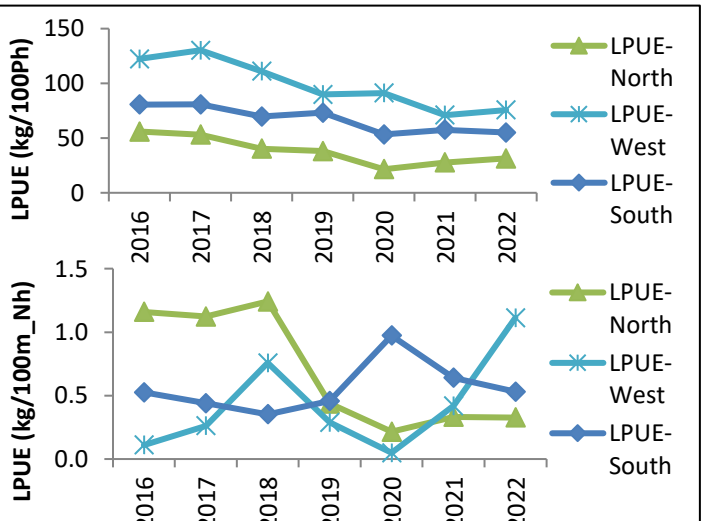
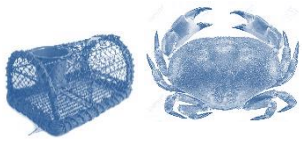


Figure 3: Annual LPUE in the pot fishery (kg/100Ph, top) and annual LPUE in the net fishery (kg/100m_Nh, bottom) of edible crab (*Cancer pagurus*) in the Cornwall IFCA District split by analysis area from 2016 to 2022.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Edible crab (*Cancer pagurus*) Pot Fishery

Summary Statistics 2022



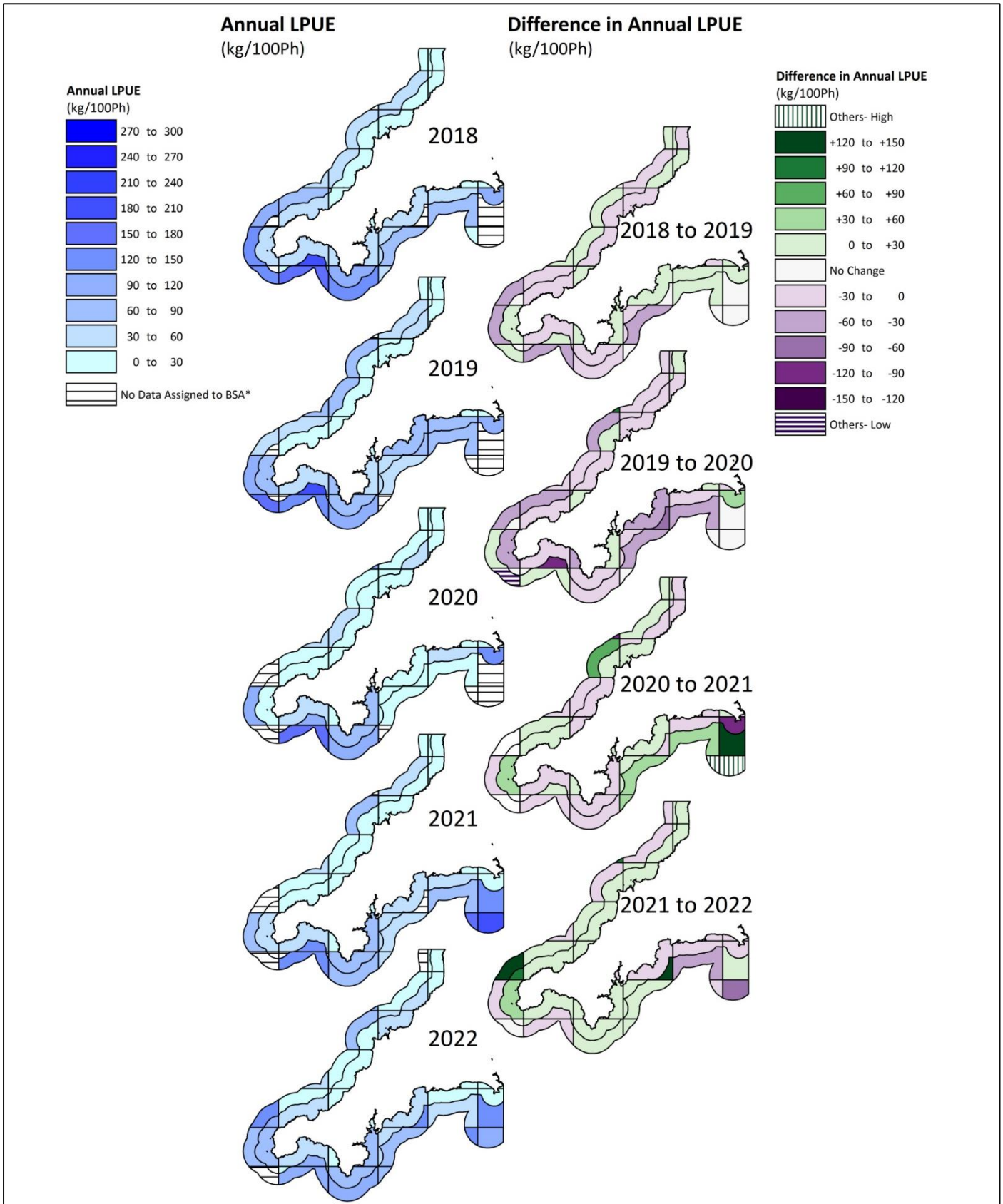


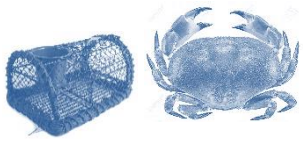
Figure 4: Thematic mapping of annual potting LPUE (kg/100Ph) of edible crab (*Cancer pagurus*) in belted statistical areas in 30kg /100Ph increments (left). And, thematic mapping of the difference in annual potting LPUE (kg/100Ph) of edible crab (*Cancer pagurus*) in belted statistical areas in ranges of 30kg/100Ph (right) where a positive value i.e. increased LPUE is green and a negative value i.e. a reduction in LPUE is purple. 'Others' refers to -177kg/100Ph in 30E51B between 2017 and 2018, -150kg/100Ph from 2019 to 2020, +159kg/100Ph in 29E56B and +181kg/100Ph in 29E59B from 2020 to 2021.

*In some cases this may be an artefact of the data collection method; fishing effort and catch can only be allocated to one BSA per day, therefore where a vessel works in more than one area only one can be reported.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Edible crab (*Cancer pagurus*) Pot Fishery

Summary Statistics 2022



North Coast

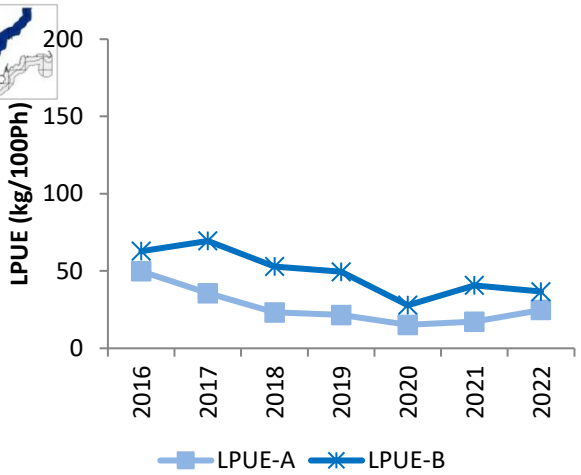


Figure 5: Annual LPUE (kg/100Ph) of edible crab (*Cancer pagurus)* on the 'North Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

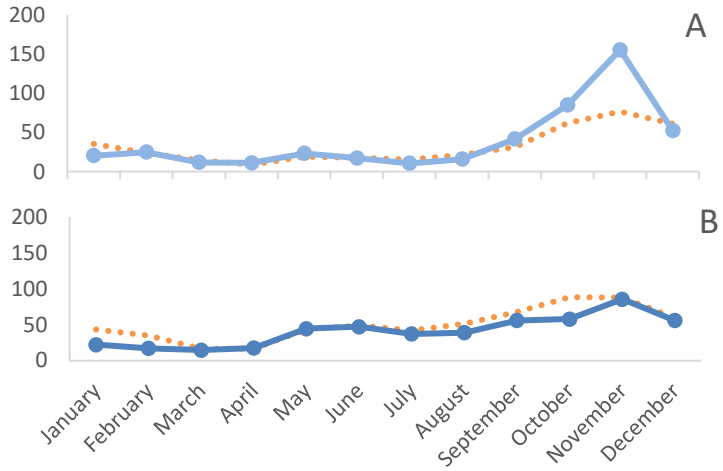
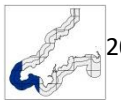


Figure 6: Monthly LPUE (kg/100Ph) of edible crab (*Cancer pagurus)* on the 'North Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

West Coast



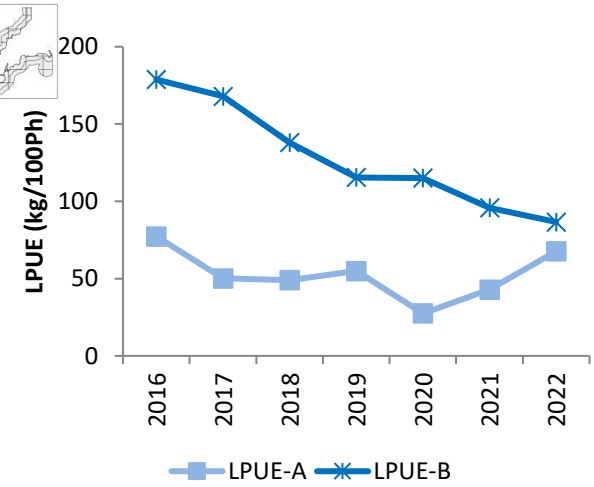


Figure 7: Annual LPUE (kg/100Ph) of edible crab (*Cancer pagurus)* on the 'West Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

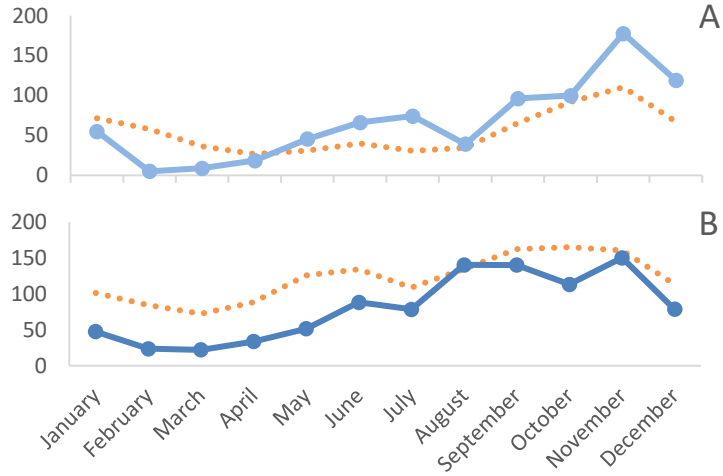


Figure 8: Monthly LPUE (kg/100Ph) of edible crab (*Cancer pagurus)* on the 'West Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

South Coast

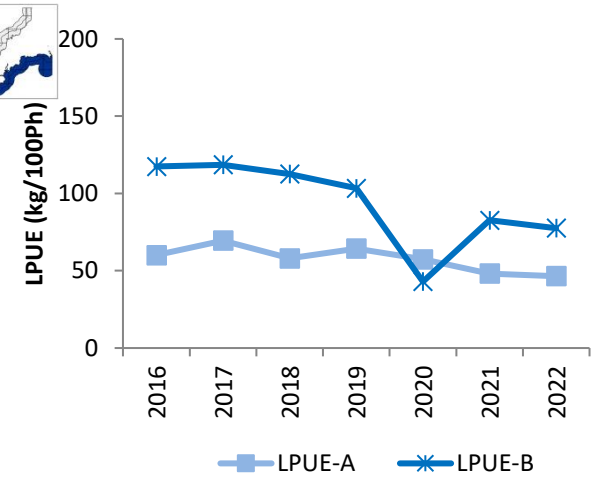


Figure 9: Annual LPUE (kg/100Ph) of edible crab (*Cancer pagurus)* on the 'South Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

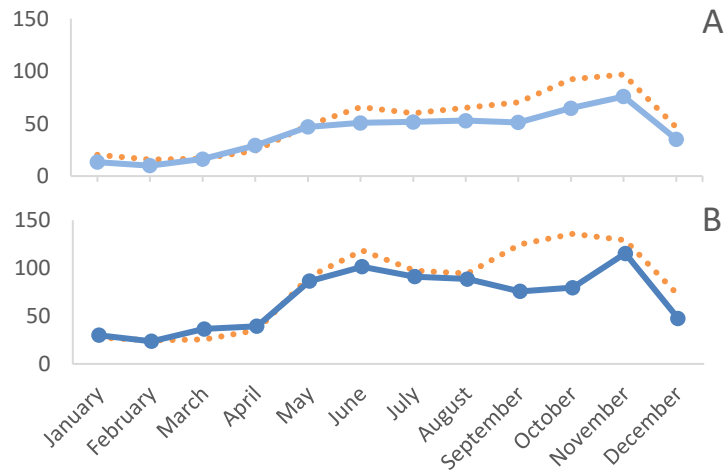


Figure 10: Monthly LPUE (kg/100Ph) of edible crab (*Cancer pagurus)* on the 'South Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Edible crab (*Cancer pagurus*) Net Fishery

Summary Statistics 2022

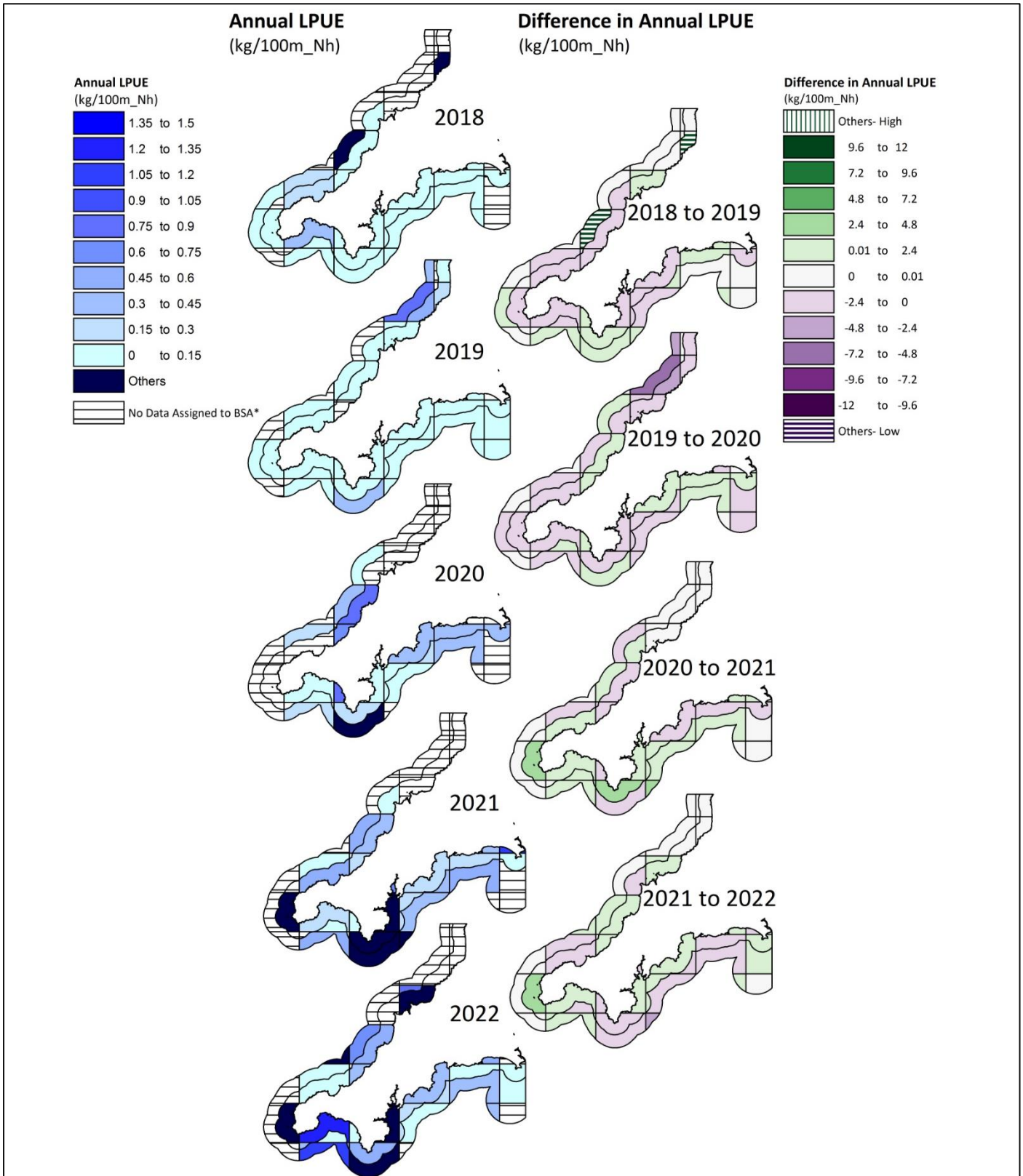


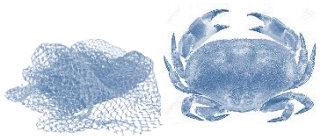
Figure 11: Thematic mapping of annual netting LPUE (kg/100m_Nh) of edible crab (*Cancer pagurus*) in belted statistical areas in 1kg /100m_Nh increments (left), 'Others' refers to a value of 13.5kg/100m_Nh and 33.3kg/100m_Nh in 30E53A and 29E44B respectively in 2017, 13.6kg/100m_Nh and 18.7kg/100m_Nh in 30E55A and 29E47B respectively in 2018, 4.5kg/100m_Nh and 2.7kg/100m_Nh in 28E47B in 2020 and 2021 respectively, and also in 2021; 2.7kg/100m_Nh in 28E47A, 4.1kg/100m_Nh in 28E51B, 2.7kg/100m_Nh in 29E43A and 1.8kg/100m_Nh in 29E4A(E), and in 2022; 1.54kg/100m_Nh in 29E44B, 5.24kg/100m_Nh in 29E43A, 2.04kg/100m_Nh in 28E47B, 2.65kg/100m_Nh in 29E49A, 1.56kg/100m_Nh in 30E53A.
And, thematic mapping of the difference in annual netting LPUE (kg/100m_Nh) of edible crab (*Cancer pagurus*) in belted statistical areas in ranges of 2.4kg/100m_Nh (right) where a positive value i.e. increased LPUE is blue and a negative value i.e. a reduction in LPUE is red. 'Others' High/Low refers to a value of -12.3kg/100m_Nh and -18.0kg/100m_Nh in 30E55A and 29E47B respectively from 2018 to 2019.

*In some cases this may be an artefact of the data collection method; fishing effort and catch can only be allocated to one BSA per day, therefore where a vessel works in more than one area only one can be reported.

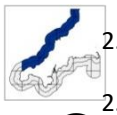
Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Edible crab (*Cancer pagurus*) Net Fishery

Summary Statistics 2022



North Coast



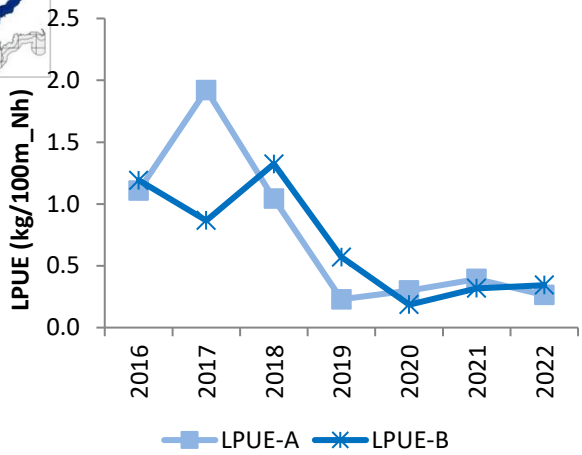


Figure 12: Annual LPUE (kg/100m_Nh) of edible crab (*Cancer pagurus)* on the 'North Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

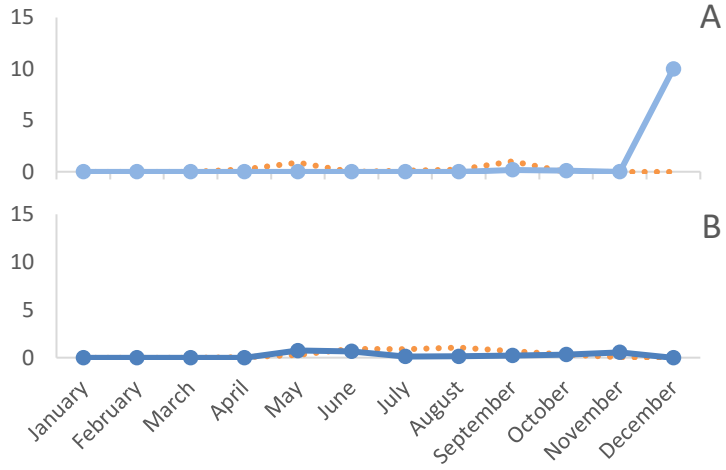
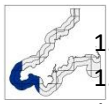


Figure 13: Monthly LPUE (kg/100m_Nh) of edible crab (*Cancer pagurus)* on the 'North Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

West Coast



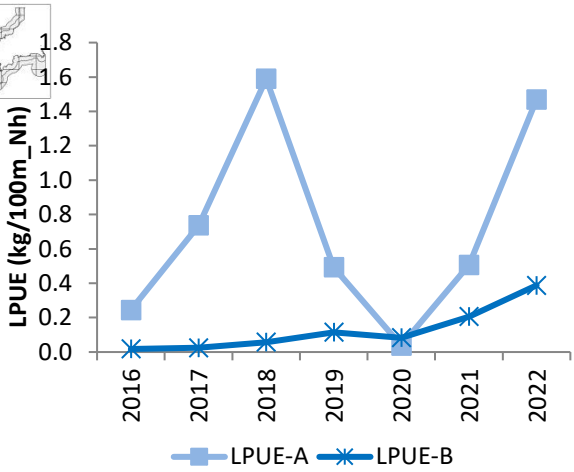


Figure 14: Annual LPUE (kg/100m_Nh) of edible crab (*Cancer pagurus)* on the 'West Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

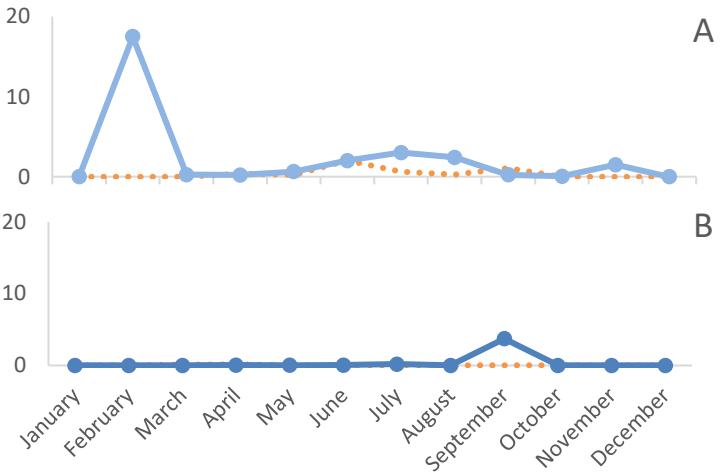


Figure 15: Monthly LPUE (kg/100m_Nh) of edible crab (*Cancer pagurus)* on the 'West Coast in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

South Coast

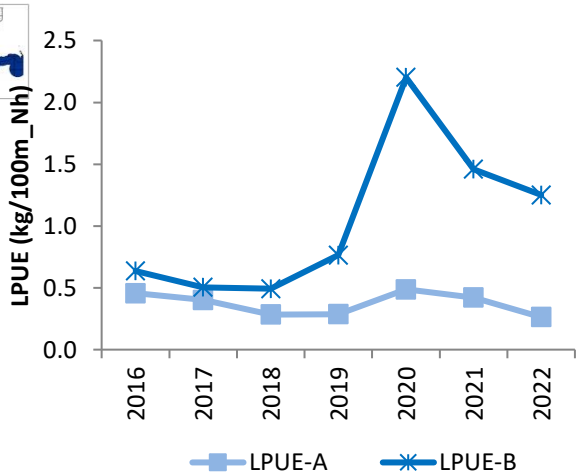


Figure 16: Annual LPUE (kg/100m_Nh) of edible crab (*Cancer pagurus)* on the 'South Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

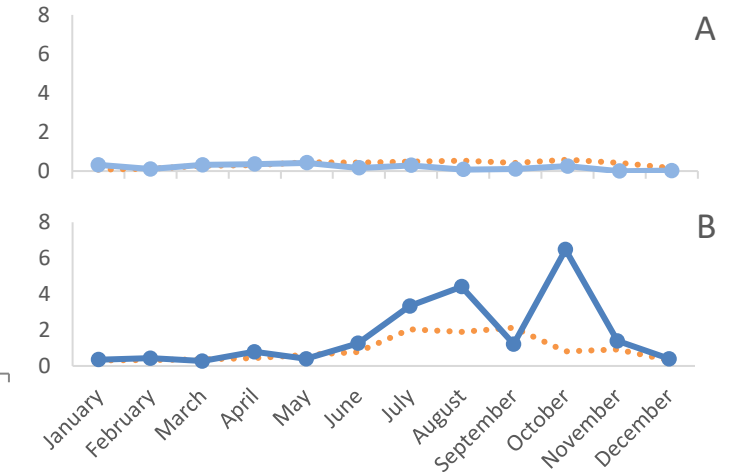


Figure 17: Monthly LPUE (kg/100m_Nh) of edible crab (*Cancer pagurus)* on the 'South Coast in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

Monthly Shellfish Permit Statistics Analysis

Lobster (*Homarus gammarus*) Pot Fishery

Summary Statistics 2022

Summary

The total landed weight of lobster from the Cornwall IFCA District in 2022 was 168,385kg (Table 1). LPUE in the District increased from 2021 to 2022 (Table 1) to a value slightly lower than the peak in 2020 (Fig, 2). Overall LPUE has increased across the reporting period from the value reported in 2018 (Fig.2), though thematic mapping shows areas of decline overall in several inshore BSA's on the north coast, west coast and offshore on the south (Fig. 1).

North Coast; inshore monthly LPUE was lower than the 5-year average from June to November (Fig. 6). Offshore however, monthly LPUE was consistently higher than the 5-year average (Fig. 6). Both showed little change in LPUE from 2021 to 2022 following a fall from the peak in 2020 (Fig. 5). In 2022 effort in the north coast BSA's continued to be highest in St Ives Bay (29E45A), though at a lower value than in previous years (Fig, 4).

West Coast; LPUE increased from 2021 to 2022, (Fig. 3). Both inshore and offshore increased in 2022 (Fig. 7 . Monthly LPUE inshore fluctuated for the first half of the year, before following a more traditional pattern similar to the 5-year average monthly LPUE values (Fig.8).

South Coast; LPUE in the south coast consistently increased annually from 2017 to 2022 (Fig. 3) though still remains the lowest of the three analysis areas (Fig. 3). Both inshore and offshore LPUE increased in 2022, from 2021, with monthly LPUE values consistently higher than the 5-year average (Figs. 9 and 10).

Annual Data

Table 1: Total kg of lobsters (*Homarus gammarus*) reportedly removed from the Cornwall IFCA District from 2018 to 2022, total gear hauled, and resultant calculated LPUE (kg/100Ph)

	2018	2019	2020	2021	2022
Total Gear Hauled	2,048,953	1,951,737	1,662,397	1,695,535	1,588,139
Total Landed (kg)	150,231	175,141	180,418	166,257	168,385
LPUE (kg/100Ph)	7.33	8.97	10.85	9.81	10.60

Difference in LPUE 2018 to 2022

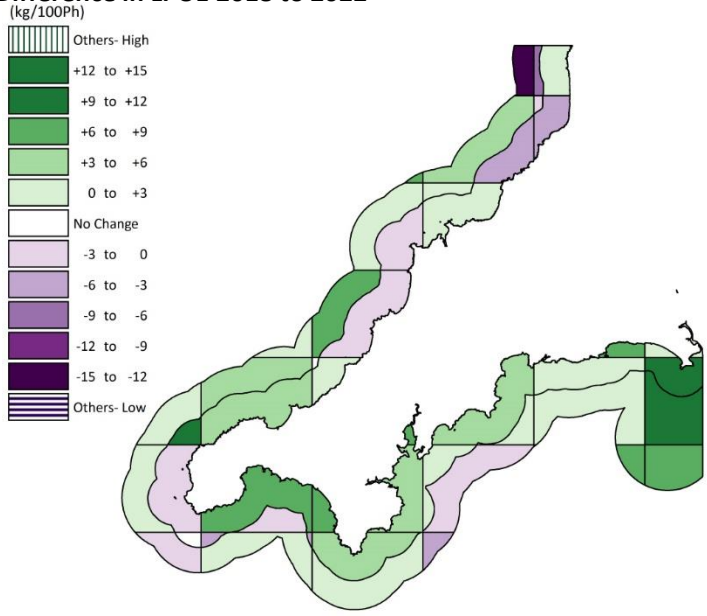


Figure 1: The difference in lobster (*Homarus gammarus)* LPUE (kg/100Ph) in belted statistical areas between 2018 and 2022 thematically mapped in 3kg/100Ph ranges where positive values i.e. increases in LPUE are green and negative values i.e. decreases in LPUE are purple.

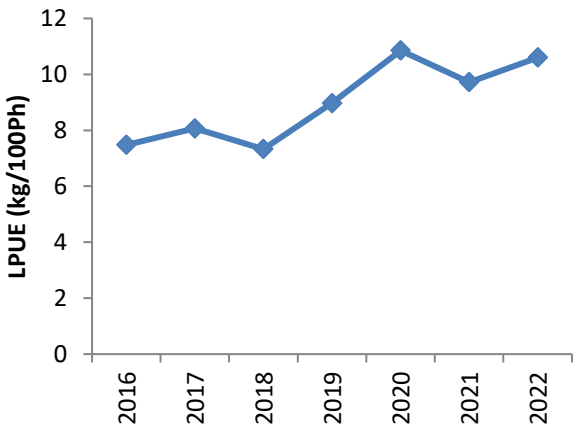


Figure 2: Annual LPUE (kg/100Ph) of lobster (*Homarus gammarus)* in the Cornwall IFCA District from 2016 to 2022.

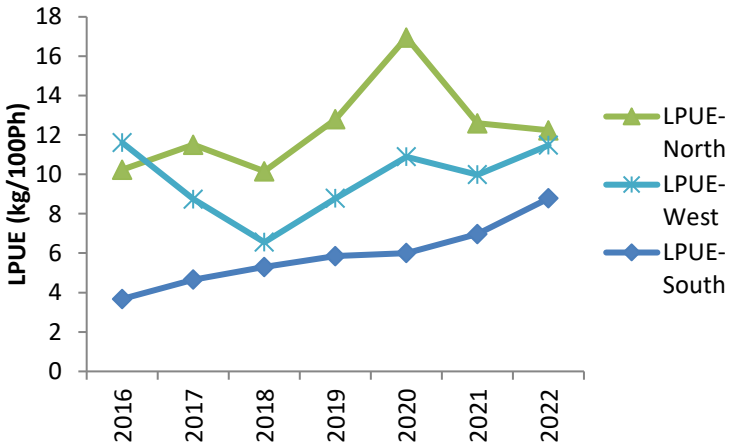
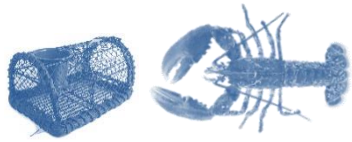


Figure 3: Annual LPUE (kg/100Ph) of lobster (*Homarus gammarus)* in the Cornwall IFCA District split by analysis area rom 2016 to 2022.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Lobster (*Homarus gammarus*) Pot Fishery

Summary Statistics 2022



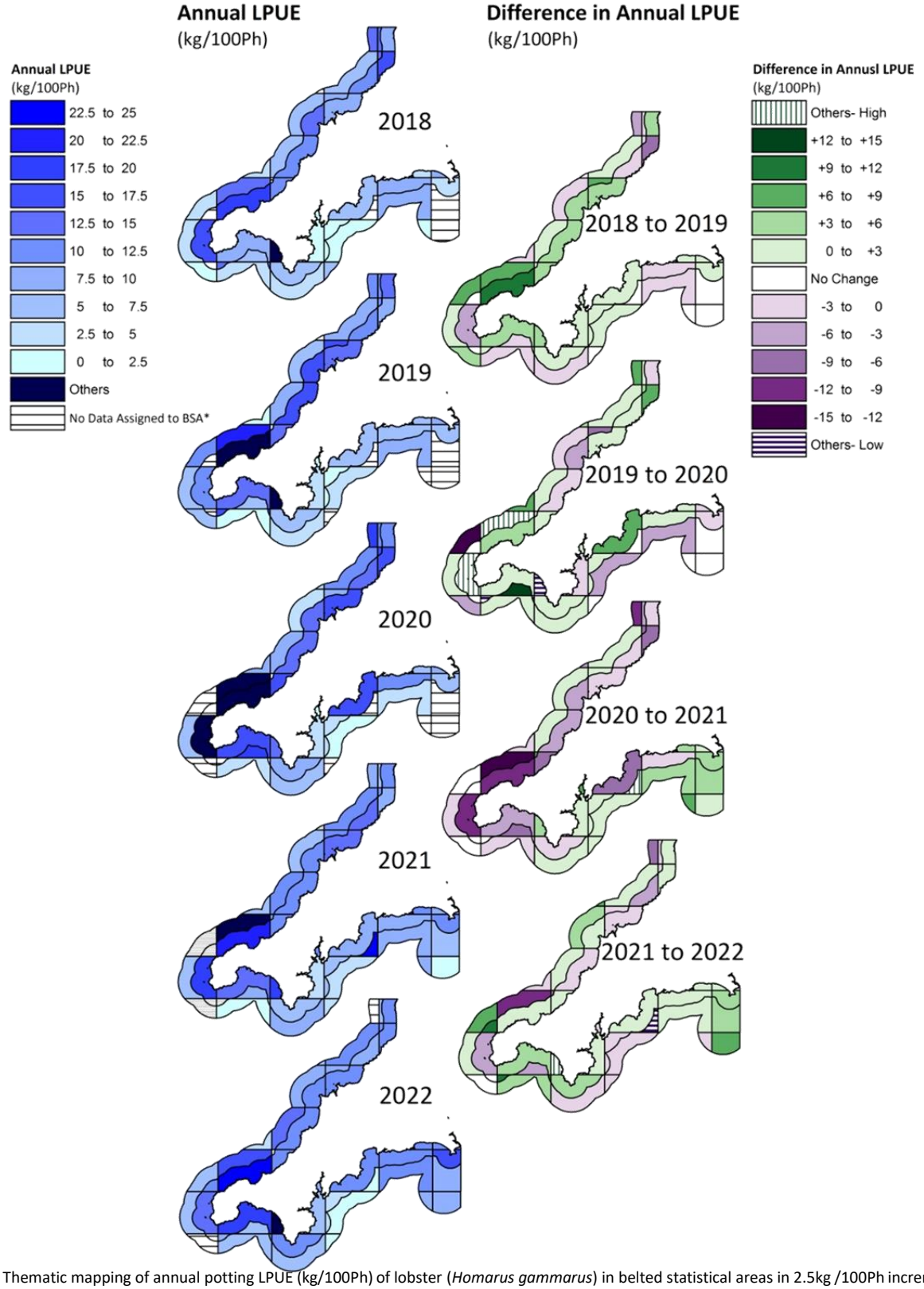


Figure 4: Thematic mapping of annual potting LPUE (kg/100Ph) of lobster (*Homarus gammarus*) in belted statistical areas in 2.5kg /100Ph increments (left) 'Others' in 2017 refers to a value of 28.0kg/100Ph in 29E43A and 30.8kg/100Ph in 29E48B, in 2018 34.0kg/100Ph in 29E49A(W) and in 2019 37.6kg/100Ph in 29E49A(W) and 29.4kg/100Ph in 29E45A, in 2020 34.2kg/100Ph in 29E45A, 41.3kg/100Ph in 29E45B, and 26.96kg/100Ph 29E43A, in 2021 28.3kg/100Ph in 29E45B, and in 2022 41.1kg/100Ph in 29E49A(W)

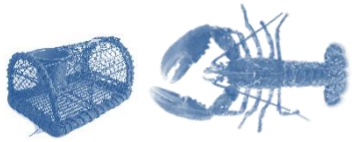
And, thematic mapping of the difference in annual potting LPUE (kg/100Ph) of lobster (*Homarus gammarus*) in belted statistical areas in ranges of 3kg/100Ph (right) where a positive value i.e. increased LPUE is green and a negative value i.e. a reduction in LPUE is purple. . 'Others' refers to +19.4kg/100Ph in 29E45B, -16.4kg/100Ph in 28E44A, +15.2kg/100Ph in 29E43A and -24.1kg/100Ph in 29E49A(W) from 2019 to 2020, and 22.6kg/100Ph in 29E52B from 2020 to 2021. From 2021 to 2022; -20.89kg/100Ph in 29E52B, and +23.35kg/100Ph in 29E49A(W).

*In some cases this may be an artefact of the data collection method; fishing effort and catch can only be allocated to one BSA per day, therefore where a vessel works in more than one area only one can be reported.

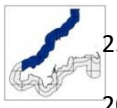
Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Lobster (*Homarus gammarus*) Pot Fishery

Summary Statistics 2022



North Coast



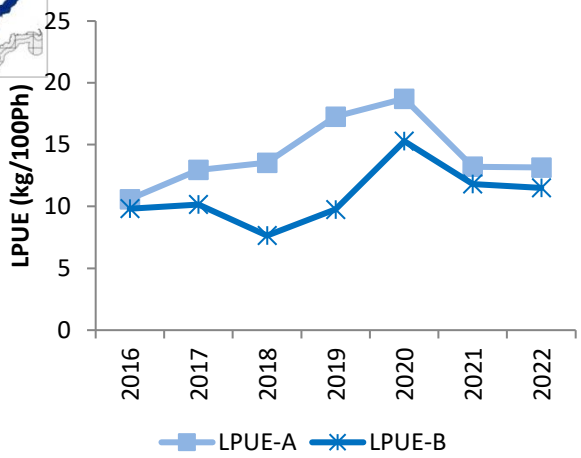


Figure 5: Annual LPUE (kg/100Ph) of lobster (*Homarus gammarus)* on the 'North Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

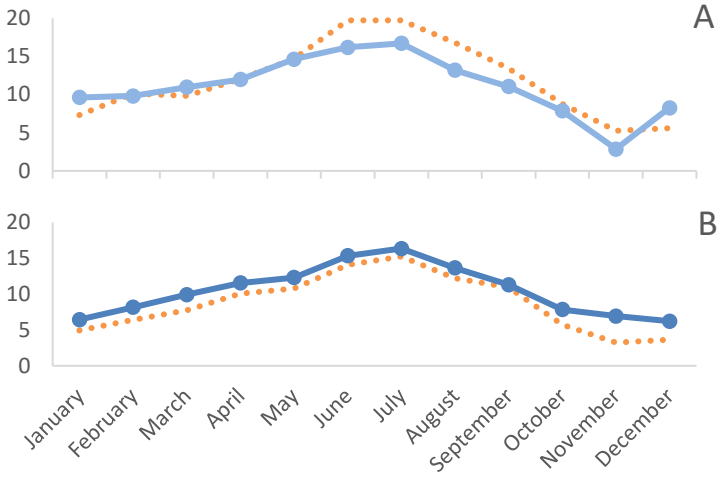


Figure 6: Monthly LPUE (kg/100Ph) of lobster (*Homarus gammarus)* on the 'North Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

West Coast

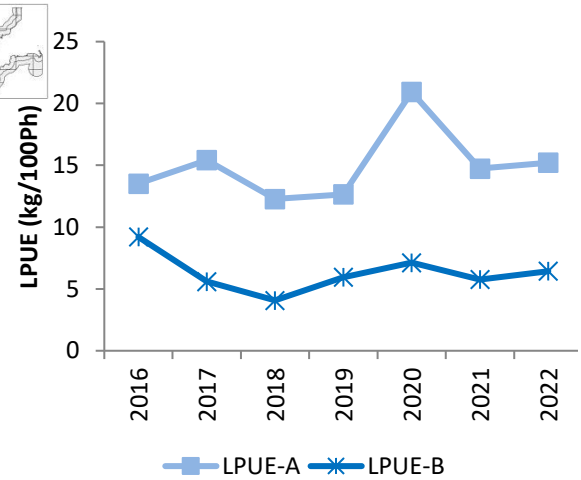


Figure 7: Annual LPUE (kg/100Ph) of lobster (*Homarus gammarus)* on the 'West Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

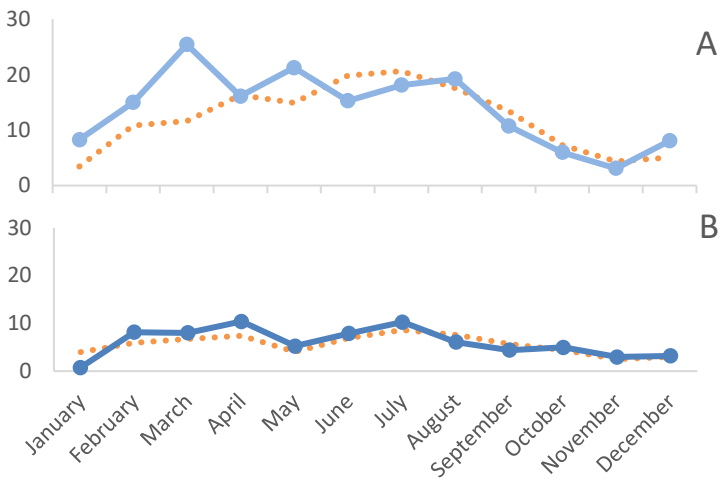
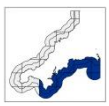


Figure 8: Monthly LPUE (kg/100Phot lobster (*Homarus gammarus)* on the 'West Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

South Coast



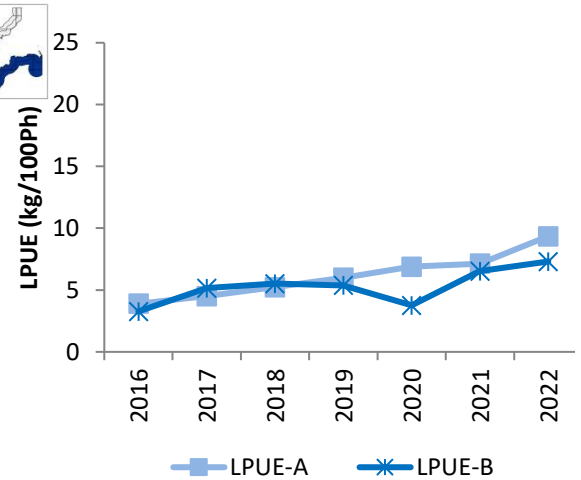


Figure 9: Annual LPUE (kg/100Ph) of lobster (*Homarus gammarus)* on the 'South Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

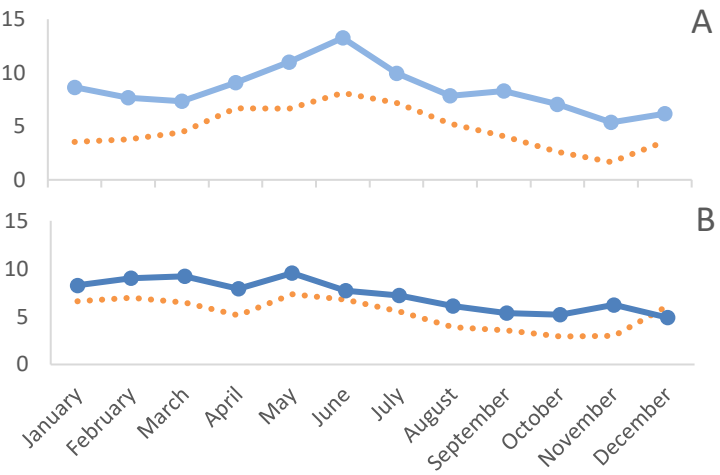
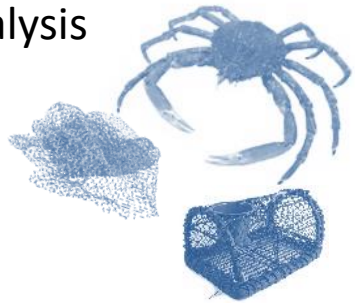


Figure 10: Monthly LPUE (kg/100Ph) of lobster (*Homarus gammarus)* on the 'South Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

Monthly Shellfish Permit Statistics Analysis

Spider crab (*Maja* spp.) Pot and Net Fisheries

Summary Statistics 2022



Summary

The spider crab fishery in the Cornwall IFCA District is mainly dictated by market demand, therefore LPUE is unreliable as a proxy or indicator of species abundance or population density.

In 2022 landed weight (kg) and LPUE values in both the pot and net fisheries fell in 2022 from 2021 values (Table 1, Fig 2). In the pot fishery in 2022, 29E47A (around Newquay) remained the BSA with the highest LPUE, though at a lower level than 2018 to 2020(Fig. 4). In the net fishery the same area also had higher than average LPUE, however 29E46A (Mounts Bay) had the highest LPUE in 2022 (Fig.11).

North Coast; in the pot fishery**,** inshore LPUE remained higher than offshore (Fig.5). Both inshore and offshore monthly LPUE in the pot fishery in 2022 was lower than the 5-year average in April and May, this continued to June inshore (Fig. 6). In both fisheries, both inshore and offshore, LPUE in 2022 was lower than 2021 (Fig.5 and 12).

West Coast; inshore in the pot fishery LPUE fell in 2022 (Fig. 7), however in the net fishery LPUE increased both inshore and offshore (Fig. 14). From March to July monthly LPUE in the net fishery was higher than the 5-year average (Fig. 15).

South Coast; in the net fishery LPUE inshore decreased and inshore increased (Fig. 16). Inshore in the pot fishery monthly LPUE was consistently higher than the 5-year average (Fig.10). In the net fishery inshore monthly LPUE was higher than the 5-year average from January to March, then lower for much of the remainder of the year (Fig.16).

Annual Data

Table 1: Total kg of spider crab s (*Maja* spp.) reportedly removed from the Cornwall IFCA District from 2018 to 2022 from both the pot and net fisheries, total gear hauled, and resultant calculated LPUE (kg/100Ph, or kg/100m_Nh).

		2018	2019	2020	2021	2022
Pots	Gear Hauled	2,048,953	1,951,737	1,662,397	1,695,535	1,588,139
	Landed (kg)	118,801	112,277	62,416	89,969	75,043
	LPUE(kg/100Ph)	5.80	5.75	3.75	5.31	4.73
Nets	Gear Hauled (m)	8,359,890	5,390,595	2,004,255	3,338,130	3,089,969
	Landed (kg)	96,190	99,723	36,247	94,827	71,662
	LPUE(kg/100m_Nh)	1.15	1.85	1.81	2.84	2.32

Difference in LPUE 2018 to 2022

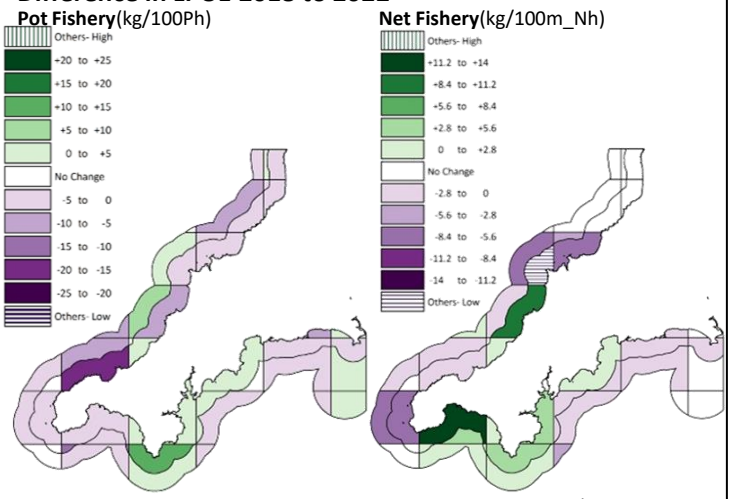


Figure 1: The difference in spider crab (*Maja* spp.) annual LPUE (kg/100Ph and kg/100m_Nh) in the pot and net fisheries, in belted statistical areas between 2018 and 2022. Thematically mapped in 5kg/100Ph (pot fishery), and 2.8kg/100m_Nh (net fishery) ranges, positive values indicate and increase in LPUE and negative values a decrease. 'Others' in the net fishery -16.16kg/100m_Nh in 30E49A.

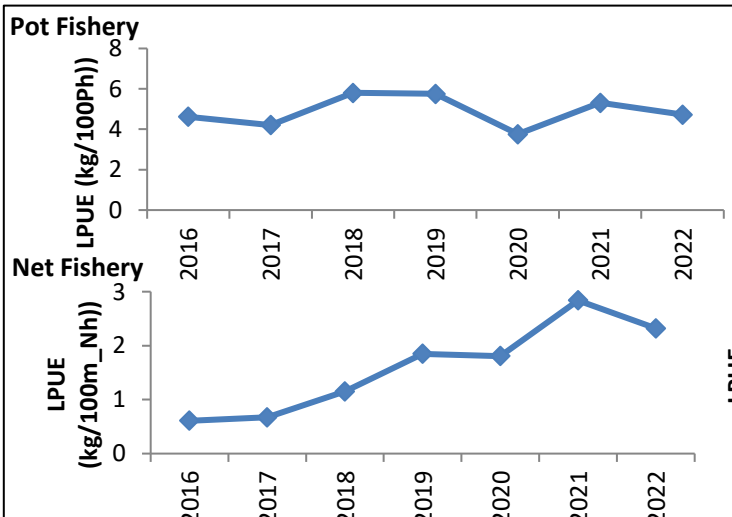


Figure 2: Annual LPUE in the pot fishery (kg/100Ph, top) and annual LPUE in the net fishery (kg/100m_Nh, bottom) of spider crab (*Maja* spp.) in the Cornwall IFCA District from 2016 to 2022.

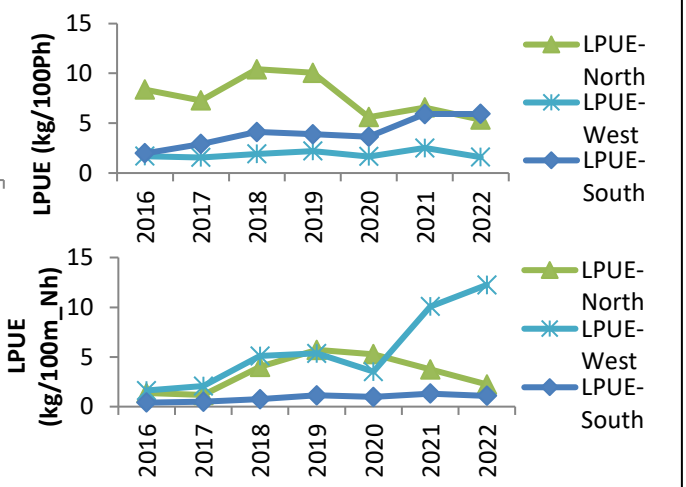


Figure 3: Annual LPUE in the pot fishery (kg/100Ph, top) and annual LPUE in the net fishery (kg/100m_Nh, bottom) of spider crab (*Maja* spp.) in the Cornwall IFCA District split by analysis area from 2016 to 2022.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Spider crab (*Maja* spp.*)* Pot Fishery

Summary Statistics 2022

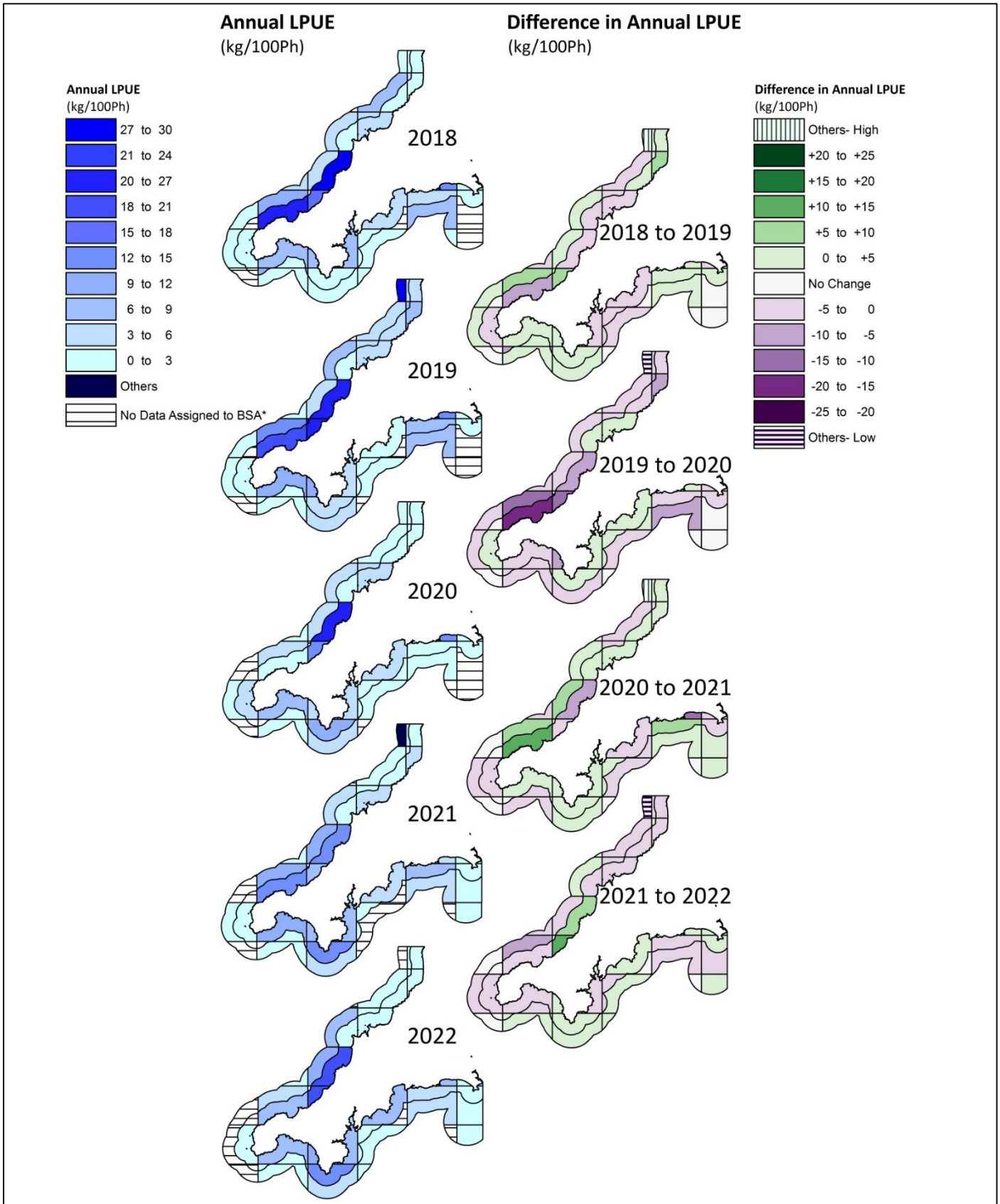


Figure 4: Thematic mapping of annual potting LPUE (kg/100Ph) of spider crab (*Maja* spp.*)* in belted statistical areas in 3kg /100Ph increments (left). 'Others' refers to 52.1kg/100Ph in 2021 in 30E51B. And, thematic mapping of the difference in annual potting LPUE (kg/100Ph) of spider crab (*Maja* spp.*)* in belted statistical areas in ranges of 5kg/100Ph (right) where a positive value i.e. increased LPUE is green and a negative value i.e. a reduction in LPUE is purple. 'Others' refers to +27.5kg/100Ph, -28.0kg/100Ph and +50.7kg/100Ph in 30E51B from 2018 to 2019, 2019 to 2020 and 2020 to 2021 respectively.], and -5212kg/100Ph in 30E51B.

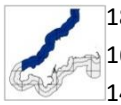
*In some cases this may be an artefact of the data collection method; fishing effort and catch can only be allocated to one BSA per day, therefore where a vessel works in more than one area only one can be reported.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Spider crab (*Maja* spp.) Pot Fishery

Summary Statistics 2022

North Coast



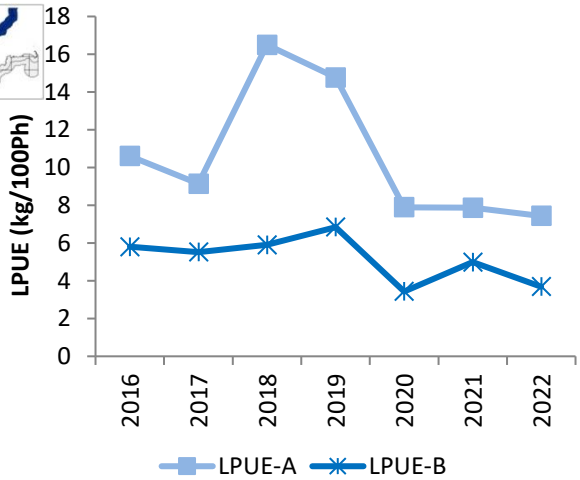


Figure 5: Annual LPUE (kg/100Ph) of spider crab (*Maja* spp.) on the 'North Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

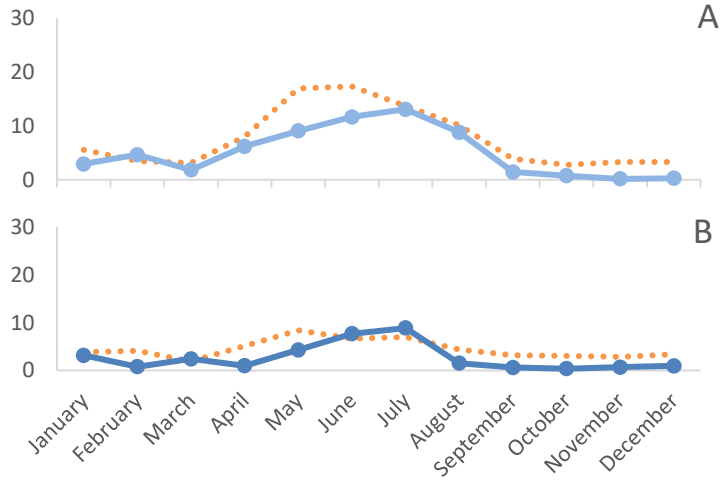
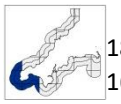


Figure 6: Monthly LPUE (kg/100Ph) of spider crab (*Maja* spp.) on the 'North Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

West Coast



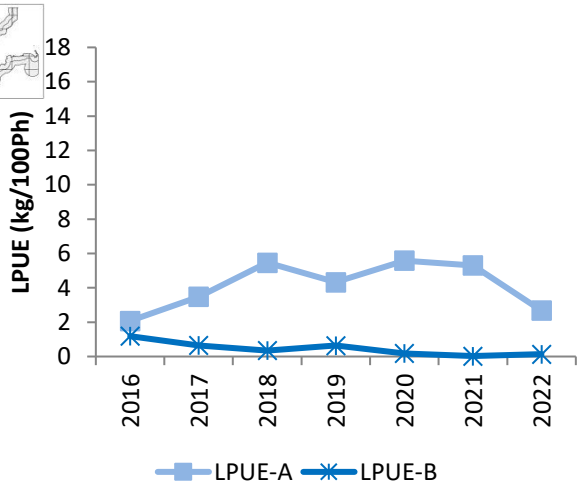


Figure 7: Annual LPUE (kg/100Ph) of spider crab (*Maja* spp.) on the 'West Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

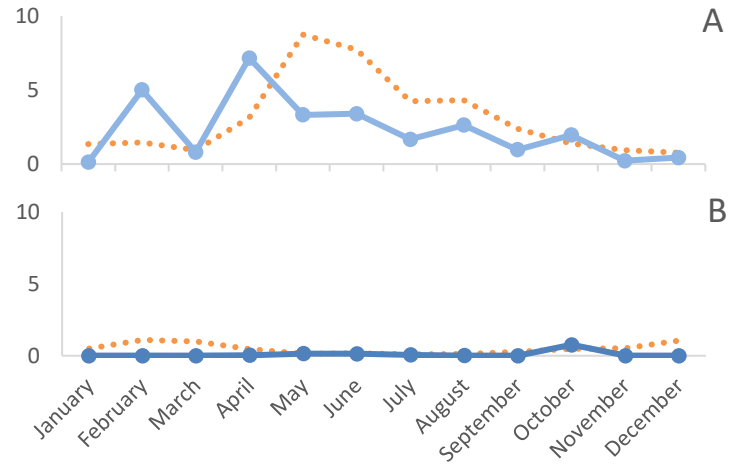
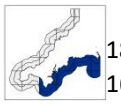


Figure 8: Monthly LPUE (kg/100Ph) of spider crab (*Maja* spp.) on the 'West Coast in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

South Coast



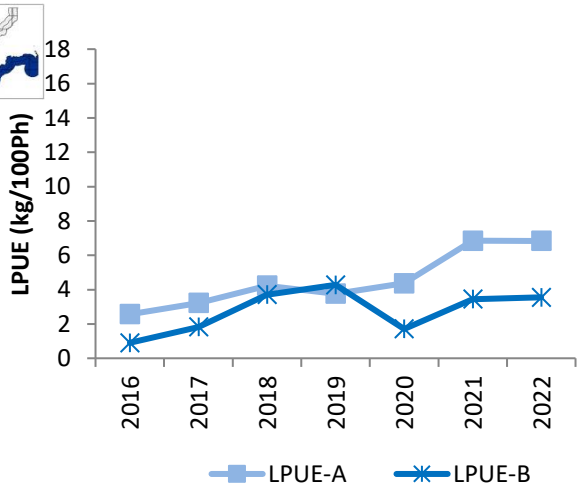


Figure 9: Annual LPUE (kg/100Ph) of spider crab (*Maja* spp.) on the 'South Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

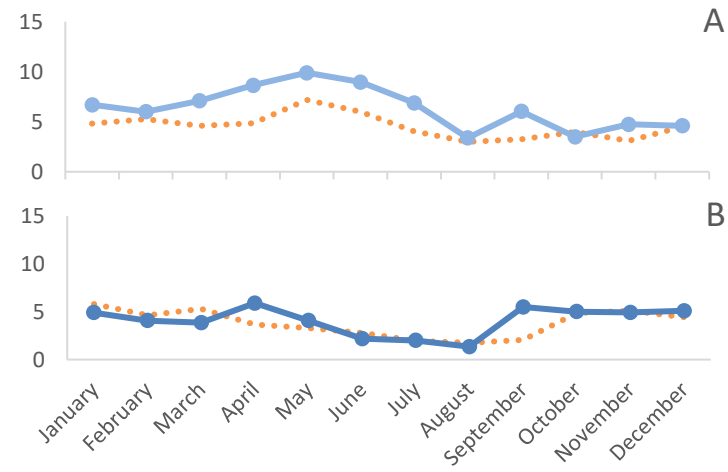
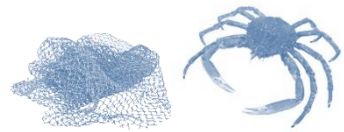


Figure 10: Monthly LPUE (kg/100Ph) of spider crab (*Maja* spp.) on the 'South Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Spider crab (*Maja* spp.) Net Fishery

Summary Statistics 2022



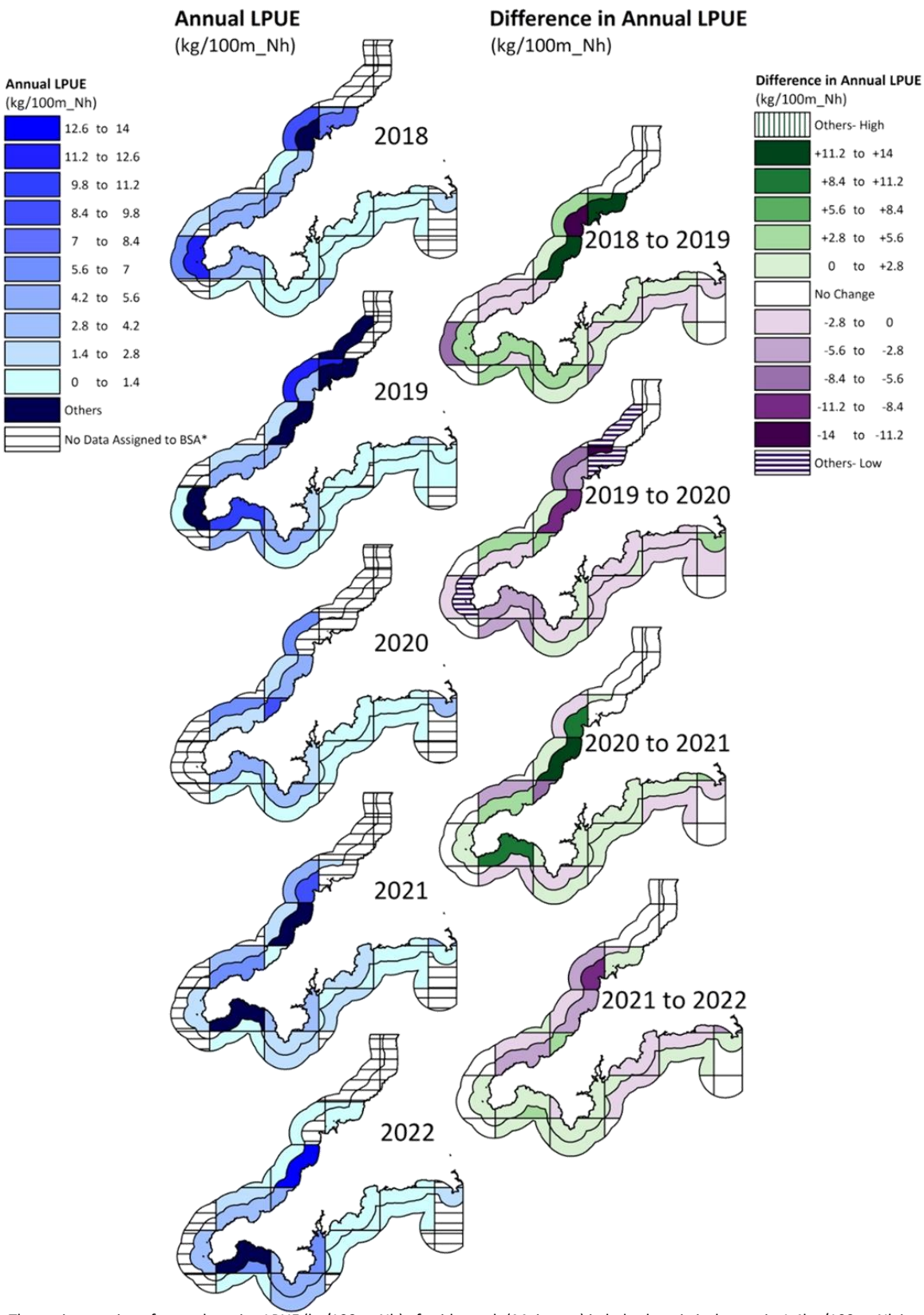


Figure 11: Thematic mapping of annual netting LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) in belted statistical areas in 1.4kg /100m_Nh increments (left). 'Others' refers to 16.2kg/100m_Nh in 30E49A in 2018, in 2019; 45.0kg/100m_Nh in 30E52B, 20.0kg/100m_Nh in 30E53A, 15.0kg/100m_Nh in 29E47A and 15.3kg/100m_Nh in 29E43A , in 2021 17.64kg/100m_Nh in 29E47A and 15.5kg/100m_Nh in 29E46A and in 2022 17.64kg/100m_Nh in 29E46A.. And, thematic mapping of the difference in annual netting LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) in belted statistical areas in ranges of 2.8kg/100m_Nh (right) where a positive value i.e. increased LPUE is blue and a negative value i.e. a reduction in LPUE is red. 'Others' refers to 44.2kg/100m_Nh in 30E52B between 2017 and 2018, and between 2019 and 2020; -15.3kg/100m_Nh in 29E43A, -45.0kg/100m_Nh in 30E52B and -20.0kg/100m_Nh in 30E53A.

*In some cases this may be an artefact of the data collection method; fishing effort and catch can only be allocated to one BSA per day, therefore where a vessel works in more than one area only one can be reported.

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

Spider crab (*Maja* spp.) Net Fishery

Summary of Statistics 2022

North Coast

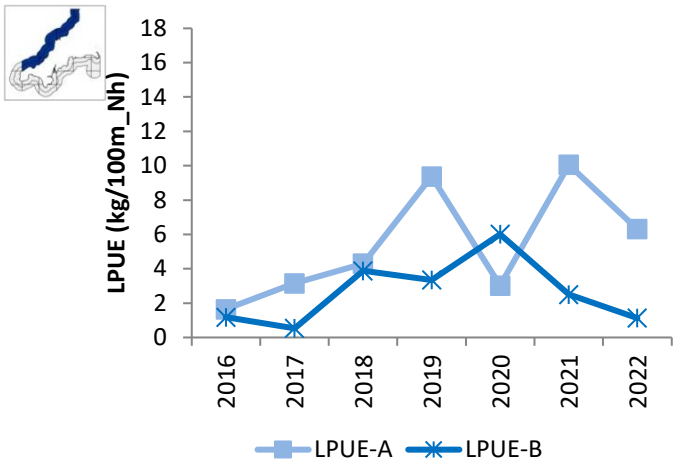


Figure 12: Annual LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) on the 'North Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

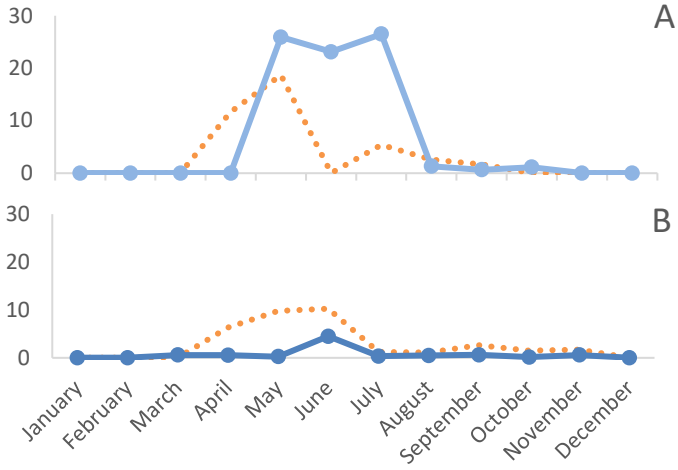


Figure 13: Monthly LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) on the 'North Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

West Coast

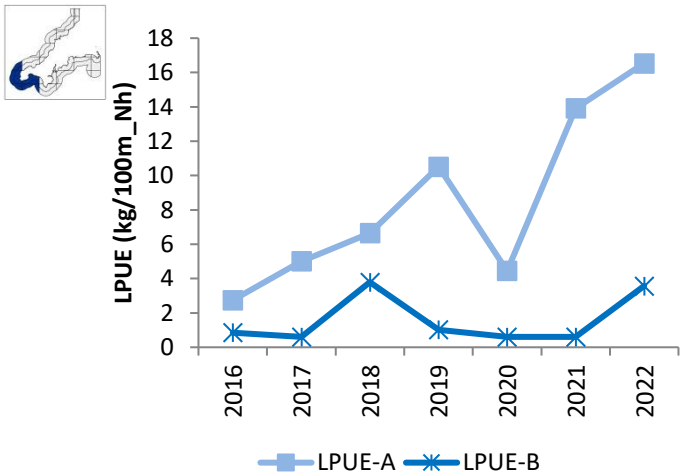


Figure 14: Annual LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) on the 'West Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

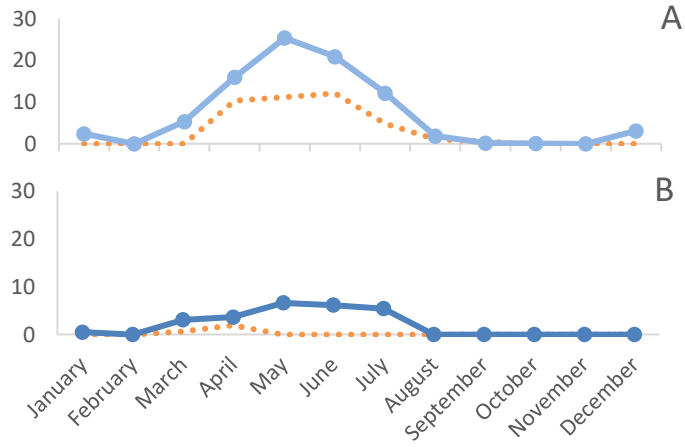


Figure 15: Monthly LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) on the 'West Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line)., split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

South Coast

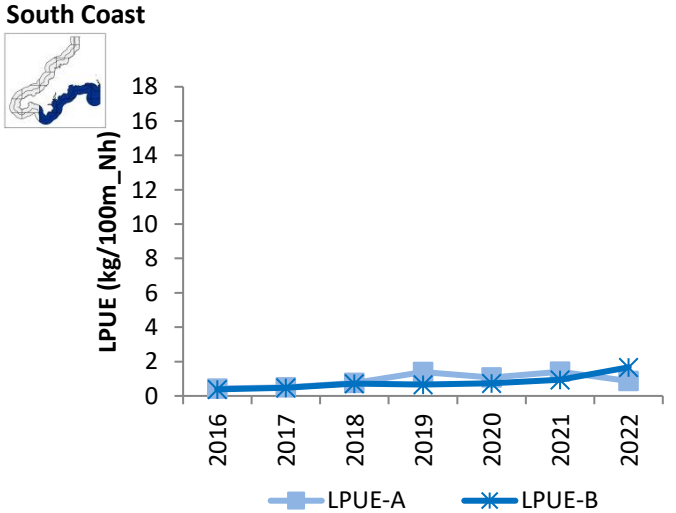


Figure 16: Annual LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) on the 'South Coast' from 2016 to 2022 split by band A (inshore 0-3nm, light blue squares) and B (offshore 3-6nm, blue stars).

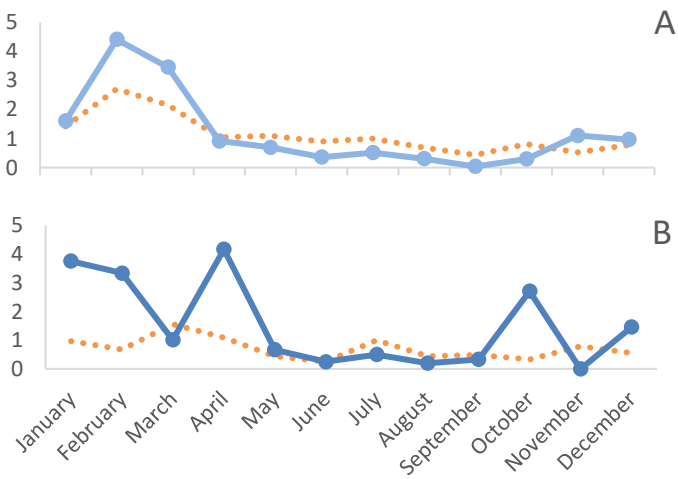
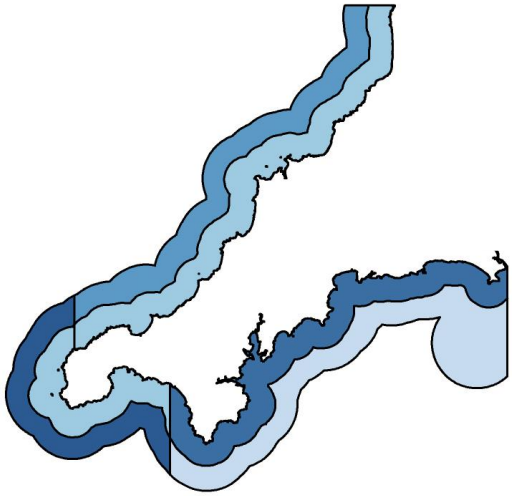


Figure 17: Monthly LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) on the 'South Coast' in 2022 (blue line) and 5 year average from 2017 to 2021 (Orange dotted line), split by band A (inshore 0-3nm, top) and B (offshore 3-6nm, bottom).

Monthly Shellfish Permit
Statistics Analysis

Summary Statistics 2022



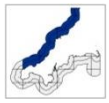
Part 3

Area Summary

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

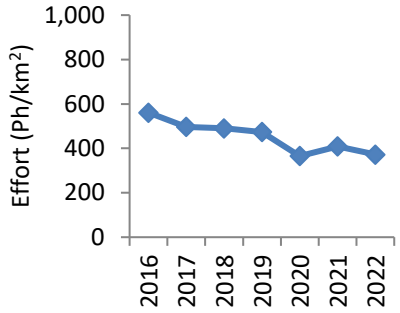
North Coast Pot Fisheries

Summary Statistics 2022



- Overall, effort declined in 2022 (Fig NP1), monthly effort was lower than the 5-year average from April to November (Fig. NP1)
- Monthly LPUE for spider crab and lobster peaked in July, in spider crab this was two months later than the 5-year average (Fig. NP3). Edible crab LPUE peaked in November, as with the 5-year average (Fig. NP3).
- Annual LPUE of edible crab increased again in 2022 from a low in 2020 (Fig NP2). When split by belt inshore LPUE of edible crab increased in 2022, and decreased offshore (Fig. NP2).
- Annual LPUE in lobster and spider crab declined slightly in 2022 (Fig. NP2)

Effort



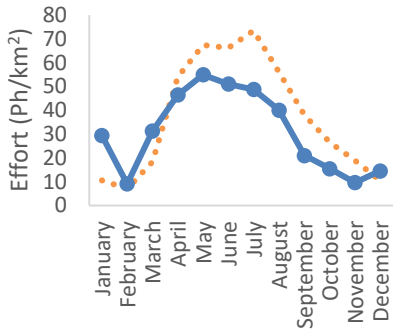


Figure NP1: (left) Annual potting effort (Ph/km²) in the north coast analysis area from 2016 to 2022 and (*right*) monthly potting effort (Ph/km²) in the north coast analysis area in 2022 (blue line) and 5 year average monthly potting effort from 2017 to 2021 (orange dotted line).

Annual LPUE

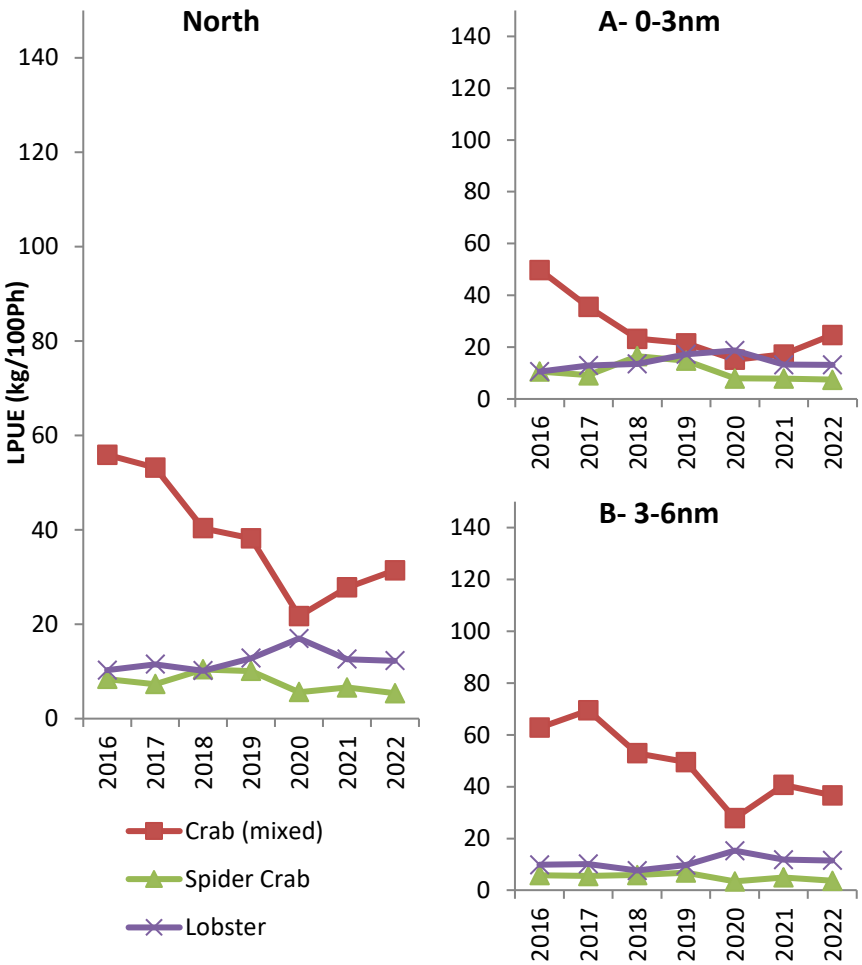
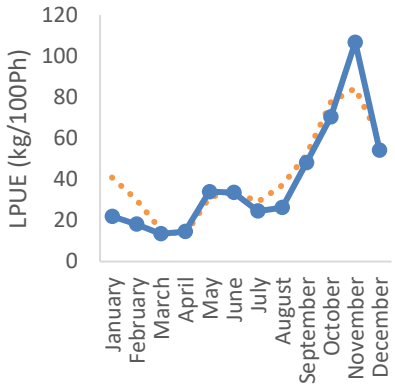


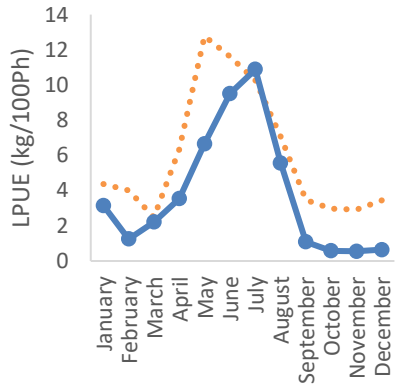
Figure NP2 : (left) annual LPUE (kg/100Ph) of edible crab, spider crab and lobster from 2016 to 2022 in the north coast analysis area, further split by band; inshore A (*top right*) and offshore B (*bottom right*).

Seasonality

Edible Crab



Spider Crab



Lobster

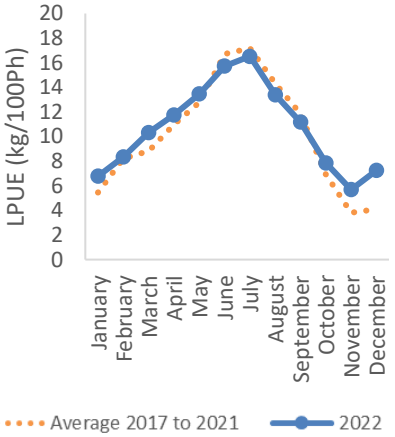
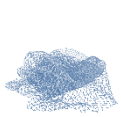


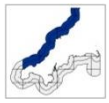
Figure NP3: monthly LPUE (kg/100Ph) in the north coast analysis area in 2022 (blue line) and the five year monthly average from 2017 to 2021 (orange dotted line) of edible crab *(top)*, spider crab *(middle)* and lobster *(bottom).*

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

North Coast Demersal Net Fisheries

Summary Statistics 2022





- In 2022 effort slightly decreased from the high in 2021 (Fig NN1). Generally, the 5-year average monthly effort peaks in May, and then again in September, however in 2022 both peaks were one month later in June and October (Fig. NN1).
- Crawfish annual LPUE increased from 2019 to 2022, both inshore and offshore (Fig. NN2).
- Spider crab annual LPUE decreased from 2021 to 2022, this was observed both inshore and offshore (Fig. NN2). Inshore, annual LPUE declined to a low in 2020, and in the same year LPUE peaked offshore (Fig. NN2).
- Edible crab LPUE peaked in 2017 inshore and 2018 offshore, both fell in 2020 then remained stable to 2022 (Fig.NN2).

Effort

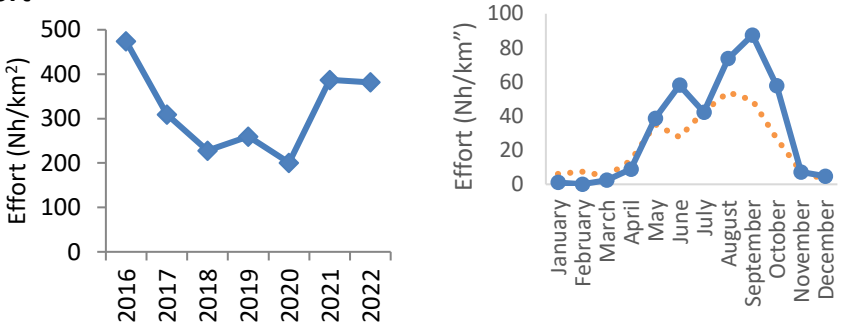


Figure NN1: (left) Annual netting effort (Nh/km^2) in the north coast analysis area from 2016 to 2022, and *(right)* monthly netting effort (Nh/km^2) in the north coast analysis area in 2022 (blue line) and 5 year average monthly potting effort from 2017 to 2021 (orange dotted line).

Annual LPUE

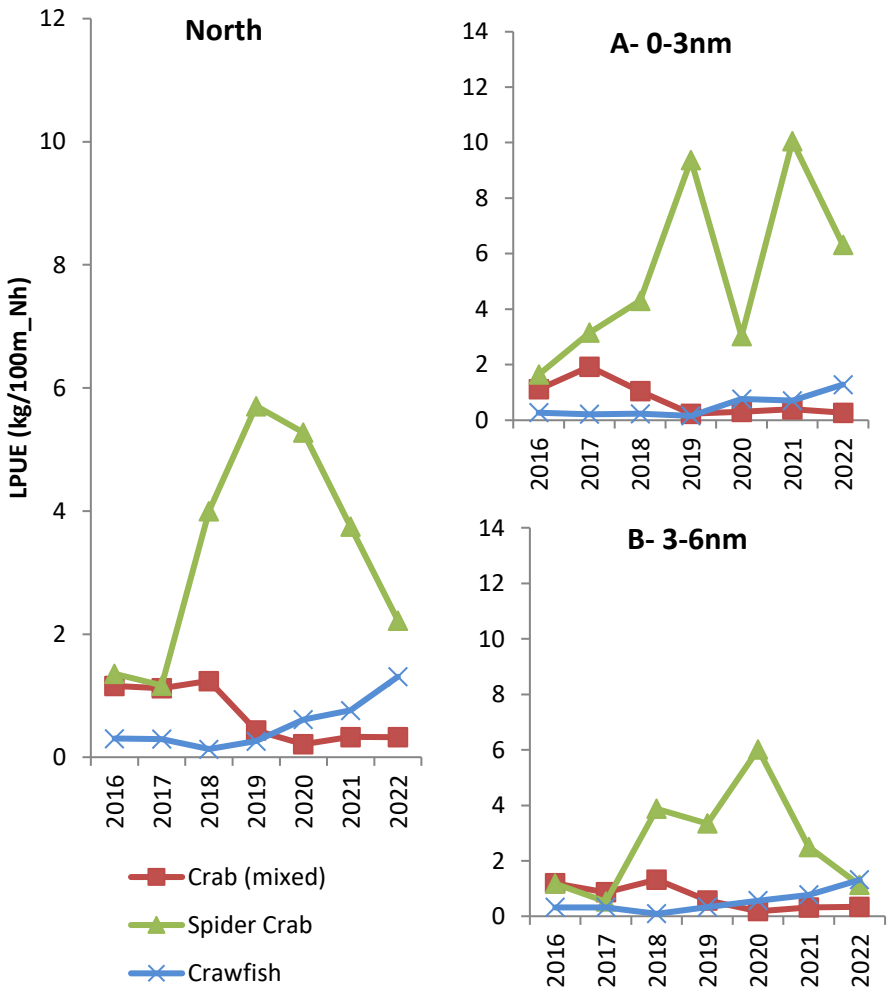
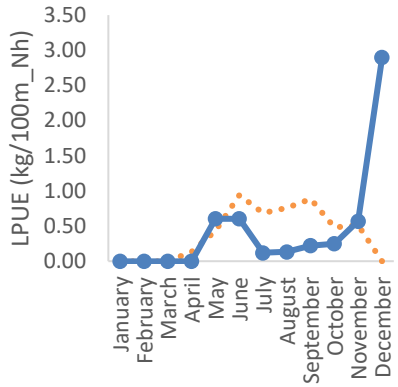


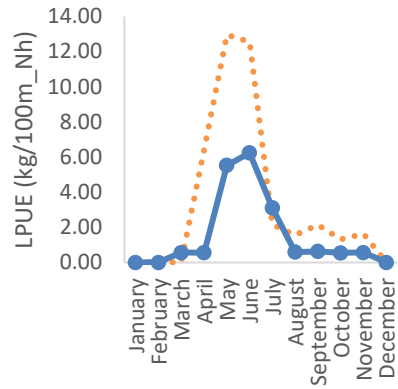
Figure NN2: (left) annual LPUE (kg/100m_Nh) of edible crab, spider crab and crawfish from 2016 to 2022 in the north coast analysis area, further split by band; inshore A (*top right*) and offshore B (*bottom right*).

Seasonality

Edible Crab



Spider Crab



Crawfish

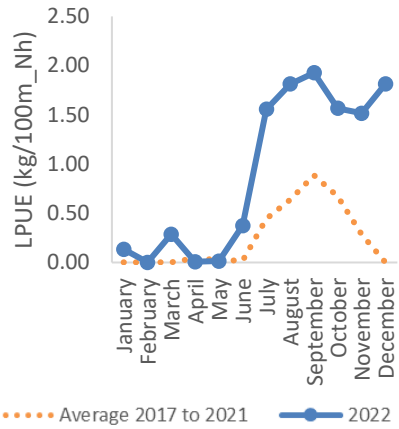


Figure NN3: monthly LPUE (kg/100Ph) in the north coast analysis area in 2022 (blue line) and the five year monthly average from 2017 to 2021 (orange dotted line) of edible crab *(top)*, spider crab *(middle)* and crawfish *(bottom).*

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

West Coast Pot Fisheries

Summary Statistics 2022

- Effort in 2022 declined from 2021, though remained higher than 2016 (Fig. WP1).
- Inshore edible crab LPUE increased in 2022 (Fig. WP2), though offshore continued to decline. Overall monthly LPUE remained lower than the 5-year average for much of the year (Fig.WP3).
- At the beginning of the year, monthly LPUE in the crab and spider crab fisheries were lower than the 5-year average, however the monthly lobster LPUE was higher than the 5-year average (Fig WP 3). In this same period monthly effort was lower than the 5 year average (Fig. WP1).

Effort

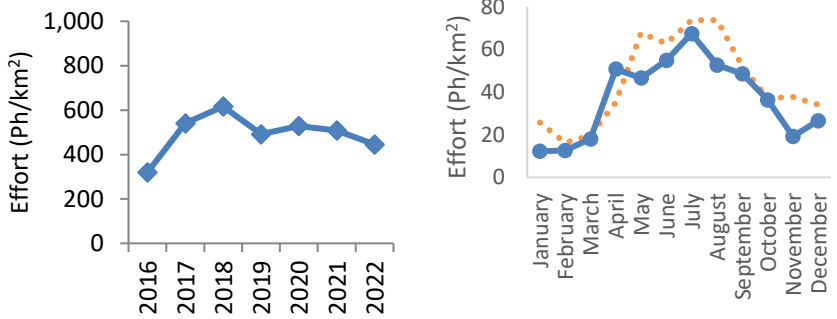


Figure WP1: (left) Annual potting effort (Ph/km²) in the west coast analysis area from 2016 to 2022 and (*right*) monthly potting effort (Ph/km²) in the west coast analysis area in 2022 (blue line) and 5 year average monthly potting effort from 2017 to 2021 (orange dotted line).

Annual LPUE

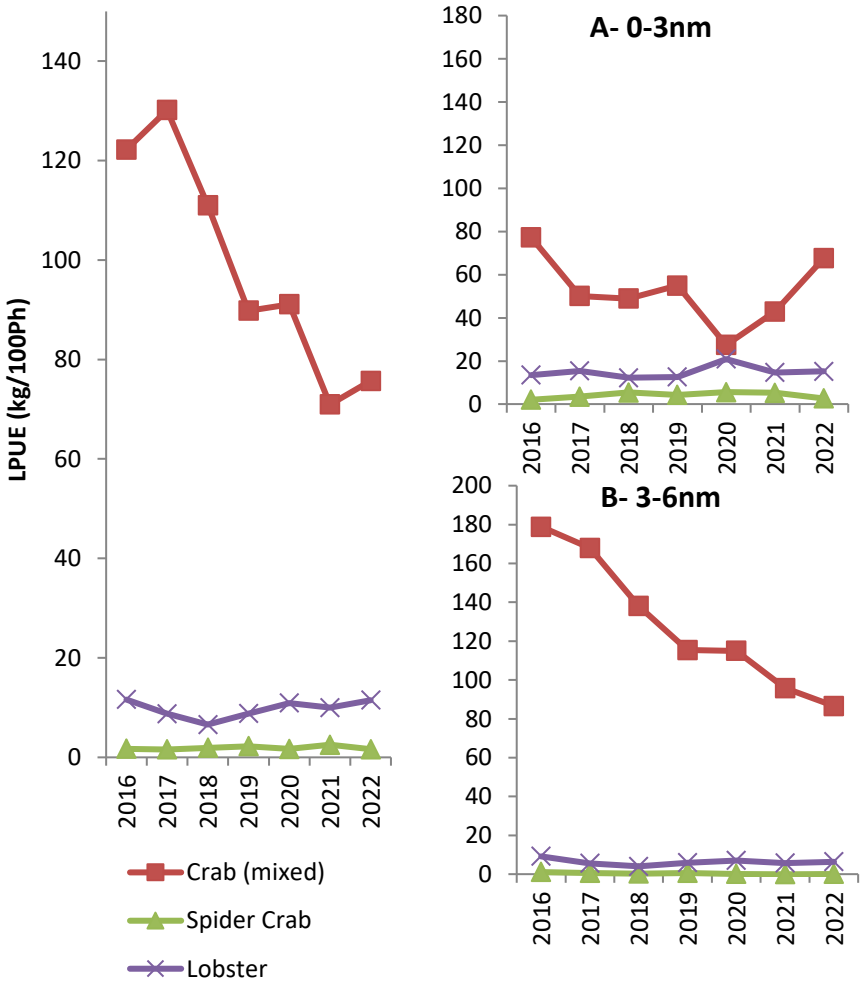
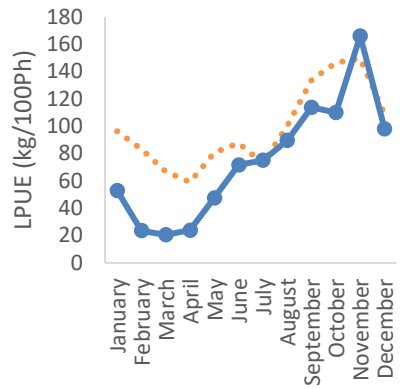


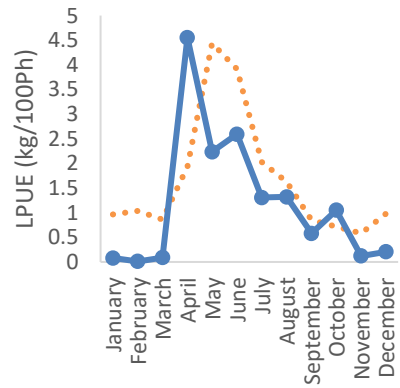
Figure WP2: (left) annual LPUE (kg/100Ph) of edible crab, spider crab and lobster from 2016 to 2022 in the west coast analysis area, further split by band; inshore A (*top right*) and offshore B (*bottom right*).

Seasonality

Edible Crab



Spider Crab



Lobster

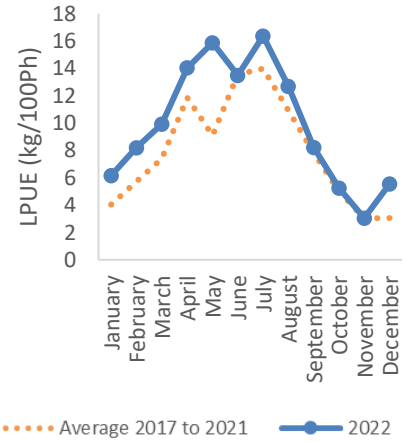


Figure WP3: monthly LPUE (kg/100Ph) in the west coast analysis area in 2022 (blue line) and the five year monthly average from 2017 to 2021 (orange dotted line) of edible crab *(top)*, spider crab *(middle)* and lobster *(bottom).*

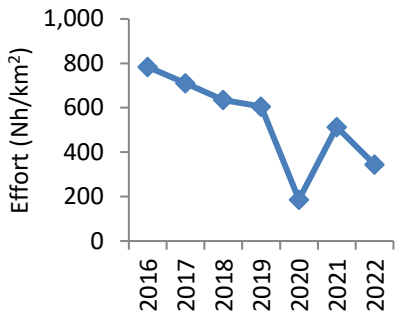
Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

West Coast Demersal Net Fisheries

Summary Statistics 2022

- In 2022 effort decreased from 2021 (Fig. WN1). Monthly effort was higher than the 5-year average in January, then from February onwards monthly effort followed a similar pattern to the 5-year average, though at a lower level (Fig. WN1).
- Monthly LPUE of crawfish was higher than the 5-year average from August to October (Fig. WN3) and annual LPUE increased from 2021 levels though remained lower than the 2020 peak (Fig. WN2).
- In 2022 spider crab LPUE increased, both inshore and offshore (Fig. WN2), with a similar seasonality to average (Fig. WN3).
- Edible crab LPUE increased from 2021 to a higher than the peak in 2018, both inshore and offshore increased (Fig. WN2).

Effort



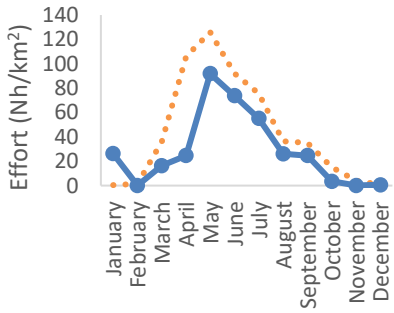


Figure WN1: (left) Annual netting effort (Nh/km²) in the west coast analysis area from 2016 to 2022, and *(right)* monthly netting effort (Nh/km²) in the west coast analysis area in 2022 (blue line) and 5 year average monthly potting effort from 2017 to 2021 (orange dotted line).

Annual LPUE

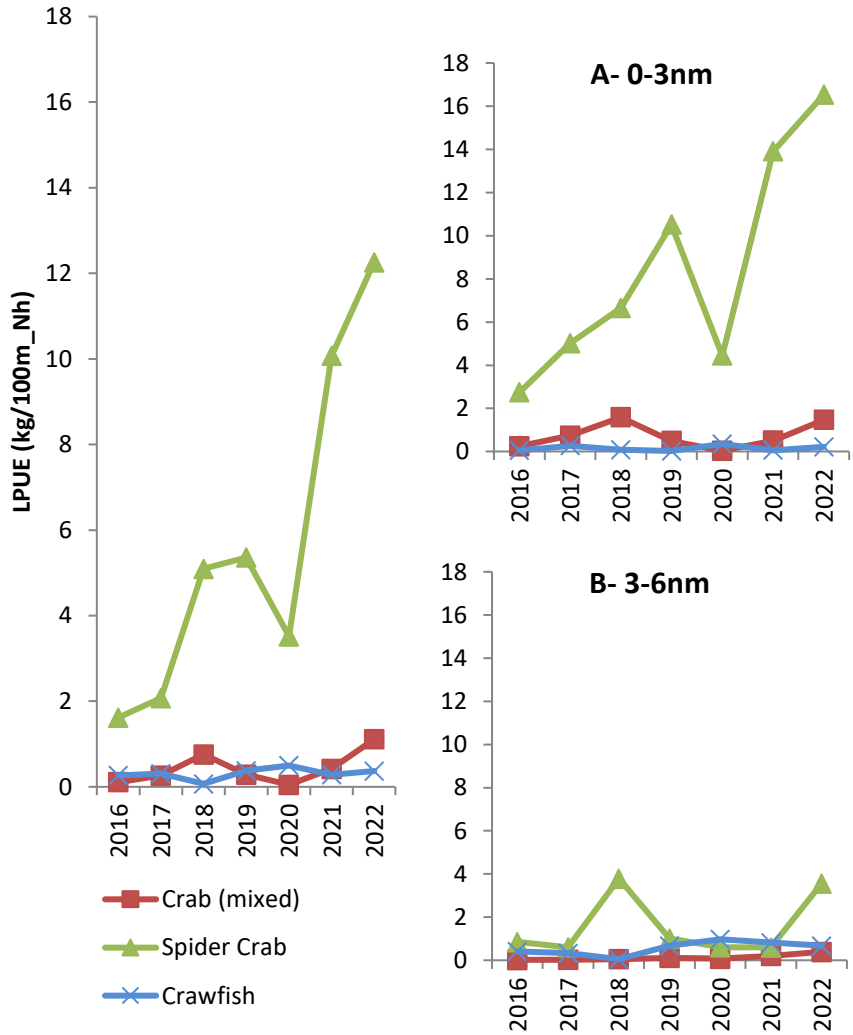
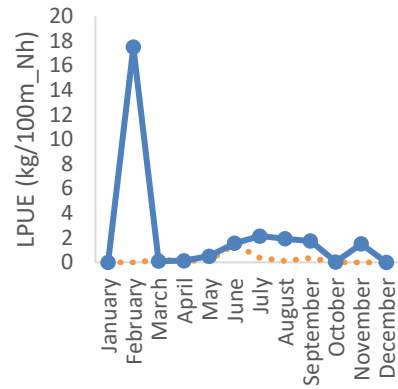


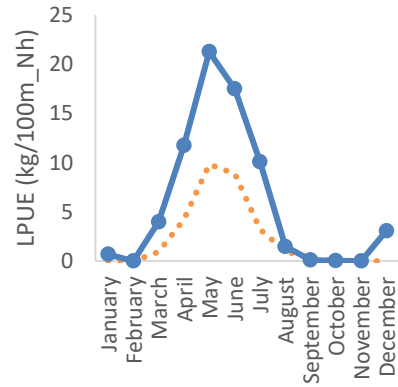
Figure WN2: (left) annual LPUE (kg/100m_Nh) of edible crab, spider crab and crawfish from 2016 to 2022 in the west coast analysis area, further split by band; inshore A (*top right*) and offshore B (*bottom right*).

Seasonality

Edible Crab



Spider Crab



Crawfish

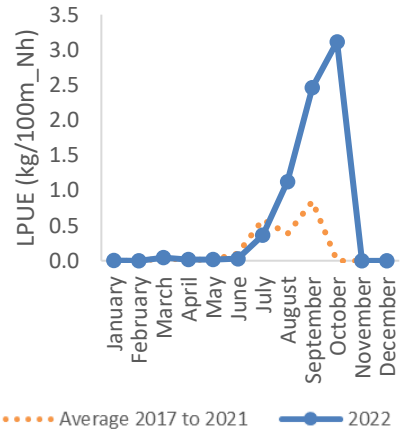


Figure WN3: monthly LPUE (kg/100Ph) in the west coast analysis area in 2022 (blue line) and the five year monthly average from 2017 to 2021 (orange dotted line) of edible crab *(top)*, spider crab *(middle)* and crawfish *(bottom).*

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

South Coast Pot Fisheries

Summary Statistics 2022

- In 2022 potting effort remained relatively similar to 2021 levels (Fig. SP1). Monthly effort was lower in the second half of the year than the 5-year average (Fig. SP1), as was LPUE of edible crab (Fig. SP3).
- The LPUE of edible crab declined both inshore and offshore in 2022 (Fig. SP2).
- Annual LPUE of spider crab and lobster both increased in 2022 to almost double the annual LPUE at the beginning of the reporting period (Fig. SP2). The seasonality for both fisheries remained relatively similar to the 5-year average, however at higher monthly values (Fig SP3).

Effort

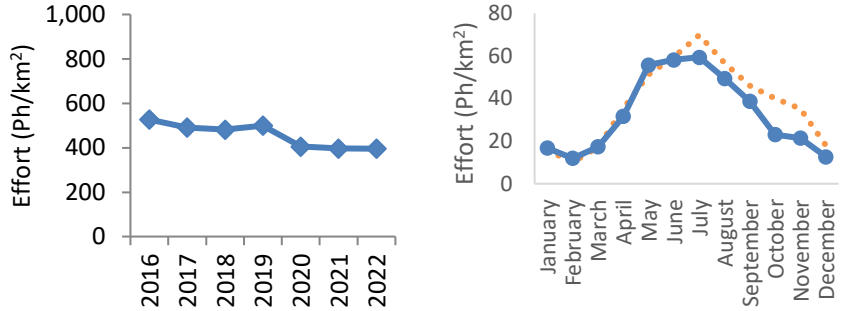


Figure SP1: (left) Annual potting effort (Ph/km²) in the south coast analysis area from 2016 to 2022 and (*right*) monthly potting effort (Ph/km²) in the south coast analysis area in 2022 (blue line) and 5 year average monthly potting effort from 2017 to 2021 (orange dotted line).

Annual LPUE

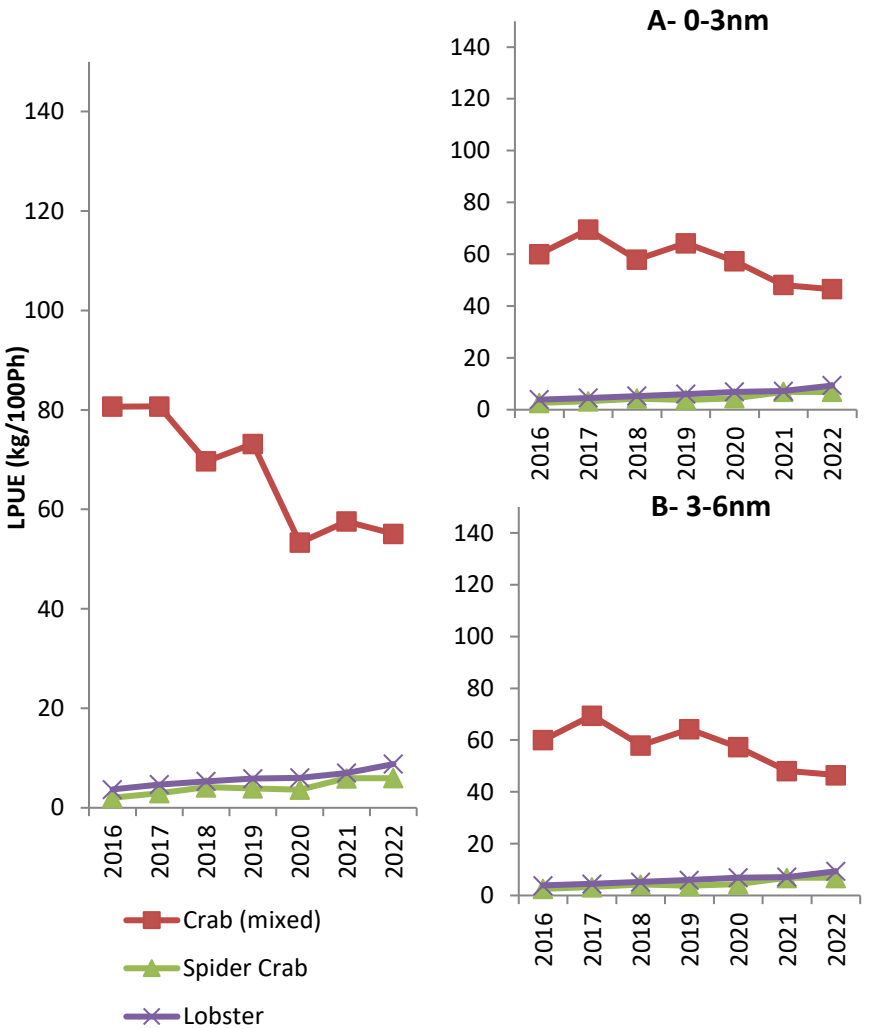


Figure SP2: (left) annual LPUE (kg/100Ph) of edible crab, spider crab and lobster from 2016 to 2022 in the south coast analysis area, further split by band; inshore A (*top right*) and offshore B (*bottom right*).

Seasonality

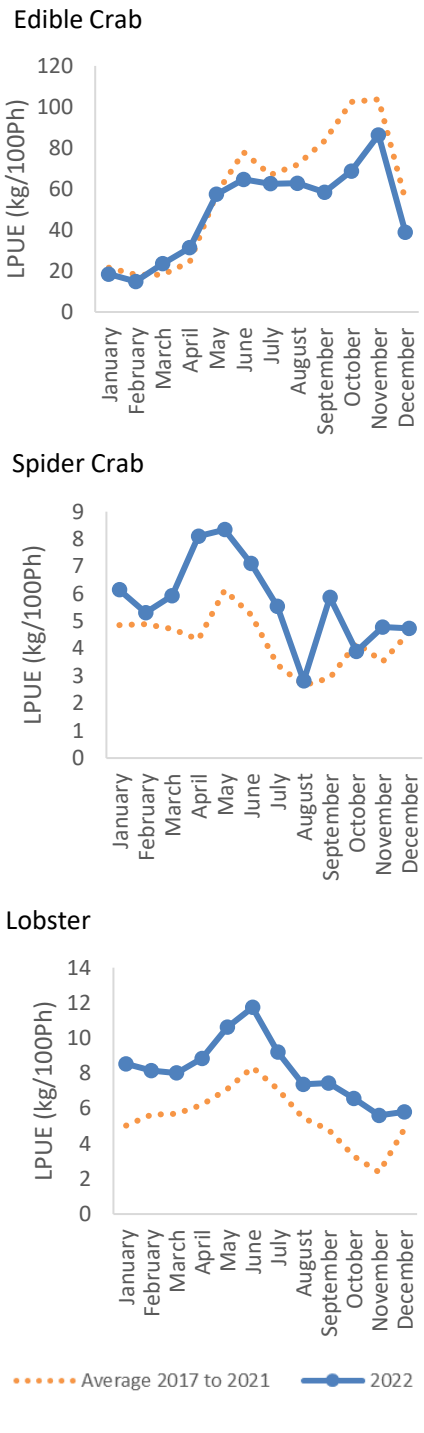
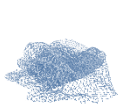


Figure SP3: monthly LPUE (kg/100Ph) in the south coast analysis area in 2022 (blue line) and the five year monthly average from 2017 to 2021 (orange dotted line) of edible crab *(top)*, spider crab *(middle)* and lobster *(bottom).*

Cornwall IFCA Monthly Shellfish Permit Statistics Analysis

South Coast Demersal Net Fisheries

Summary Statistics 2022



- Crawfish LPUE increased most notably offshore where LPUE doubled from 2021 to 2022 (Fig SP2).
- Spider crab LPUE declined inshore in 2022 however offshore LPUE has continued to rise from 2019 (Fig. SN2).
- Effort levels declined slightly in 2022 from 2021, though higher than the low in 2020 (Fig. SN1). Monthly effort was consistently lower than the 5-year average (Fig. SN1). Effort peaked in May then declined for the remained of the year, in previous years effort remained high until declining from August (Fig. SN1).
- Edible crab LPUE fluctuated with a low in 2018 and a high in 2020, followed by decreases to 2022 (Fig, SN2).

Effort

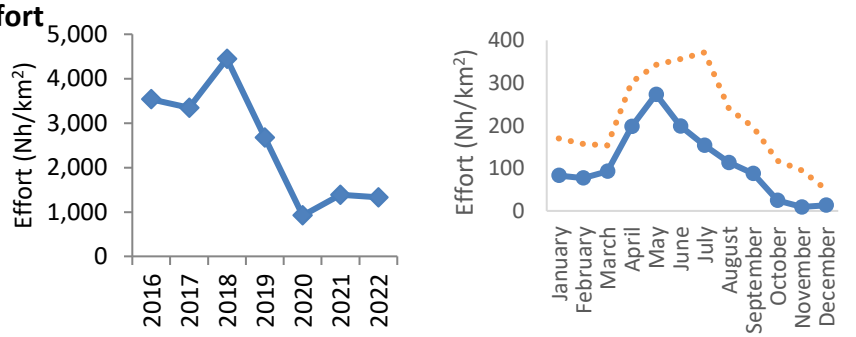


Figure SN1: (left) Annual netting effort (Nh/km²) in the south coast analysis area from 2016 to 2022, and *(right)* monthly netting effort (Nh/km²) in the south coast analysis area in 2022 (blue line) and 5 year average monthly potting effort from 2017 to 2021 (orange dotted line).

Annual LPUE

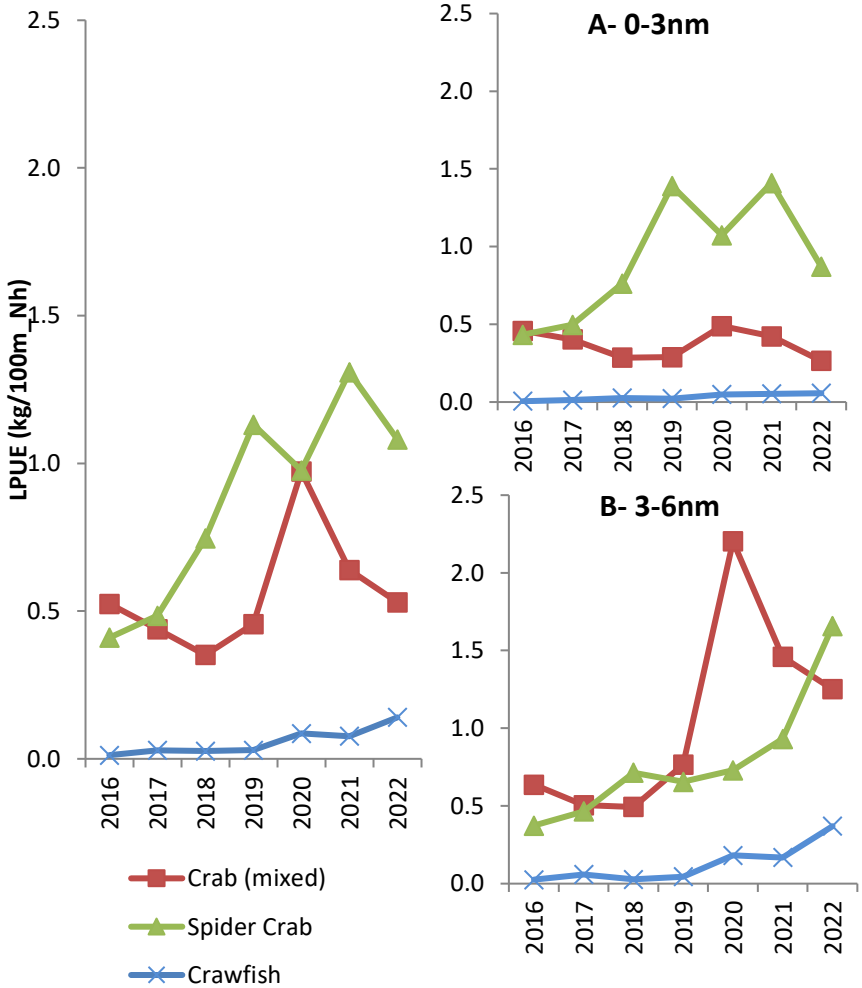
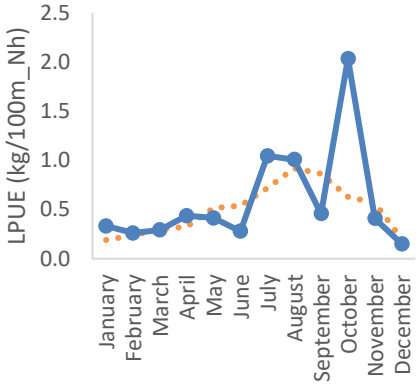


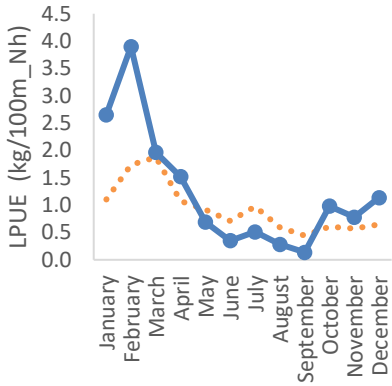
Figure SN2: (left) annual LPUE (kg/100m_Nh) of edible crab, spider crab and crawfish from 2016 to 2022 in the south coast analysis area, further split by band; inshore A (*top right*) and offshore B (*bottom right*).

Seasonality

Edible Crab



Spider Crab



Crawfish

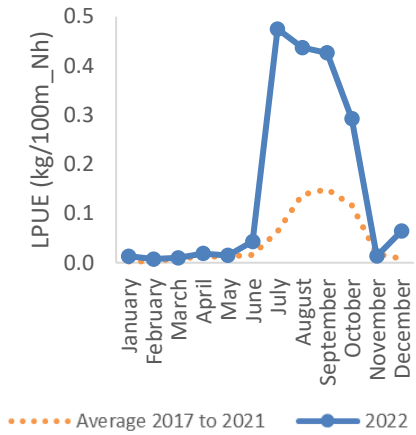


Figure SN3: monthly LPUE (kg/100Ph) in the south coast analysis area in 2022 (blue line) and the five year monthly average from 2017 to 2021 (orange dotted line) of edible crab *(top)*, spider crab *(middle)* and crawfish *(bottom).*

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