



Data from Cornwall IFCA's shellfish permit returns has been analysed and presented as 'landings per unit effort' (LPUE). This has been calculated by dividing the weight of shellfish removed by the total length of nets hauled, or number of pot hauls, used. Therefore **LPUE in the net fishery is the average weight of retained spider crabs from every 100m of nets hauled (100m_Nh) in a defined area and time**, and **LPUE in the pot fishery is the average weight of retained spider crabs from every 100 pot hauls (100Ph), in a defined area and time**. The method is outlined in 'Data Handling Method, Summary Statistics 2016-2018'.

Summary

In the Cornwall IFCA District spider crab is targeted in a pot fishery, and also targeted and retained as a by-catch in the demersal net fishery. The fishery is largely driven by market demand, and therefore landings per unit effort (LPUE) is not always a reflection of stock abundance. Overall landings per unit effort (LPUE) in both the net and pot fishery remained stable from 2016 to 2017, and increased in 2018 (Table 1, and Fig. 2). Across the reporting period, a higher volume of spider crab was removed by pots than nets (Table 1).

North Coast; in both the pot and net fisheries overall LPUE increased from 2016 to 2018 (Fig.6 and 14) and LPUE in quarters two and three was higher in 2018 than in the previous two years (Fig 7, and 15). In the net fishery inshore LPUE increased in 2017, and offshore LPUE increased in 2018 (Fig. 14). The pot fishery inshore increased in 2018 to over three times higher LPUE than inshore which remained stable (Fig 6).

West Coast; the net fishery off Lands End intensified in 2018 (Fig. 12 and 13), and the pot fishery appeared to move from Lands End to Mounts Bay (Fig. 4 and 5). Offshore potting was the only analysis area to show a slight decline in 2018 (Fig. 8), whilst netting LPUE in this area increased to over six times the 2017 value (Fig. 16).

South Coast; the south coast had the lowest LPUE for both potting and netting of all analysis areas (Fig. 10 and 18). There was little difference in inshore and offshore LPUE in both fisheries, and all increased between 2016 and 2018 (Fig. 10 and 18).

Annual Data

Table 1: Total kg of spider crabs (*Maja* spp.) reportedly removed from the Cornwall IFCA District in 2016 to 2018 from both the pot and net fisheries, total gear hauled, and resultant calculated LPUE (kg/100Ph, or kg/100m_Nh).

		2016	2017	2018
Pots	Total Gear Hauled	1,984,868	2,012,495	2,048,872
	Total Landed (kg)	91,666	84,632	118,801
	LPUE (kg/100Ph)	4.62	4.21	5.80
Nets	Total Gear Hauled (m)	7,308,578	6,684,300	8,359,890
	Total Landed (kg)	44,468	44,851	96,190
	LPUE (kg/100m_Nh)	0.61	0.67	1.15

Difference in LPUE since 2016 baseline

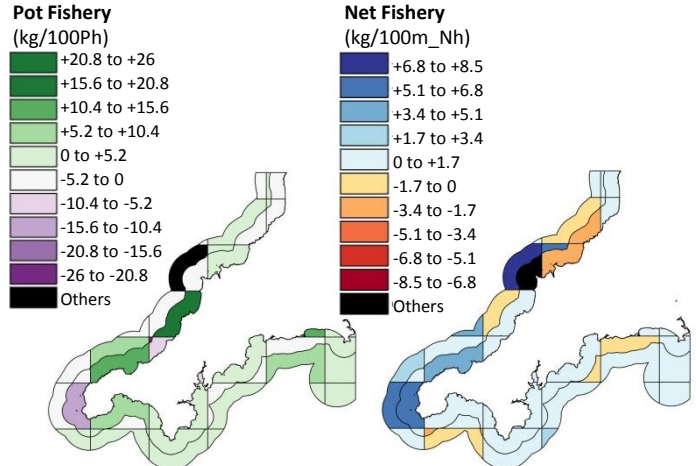
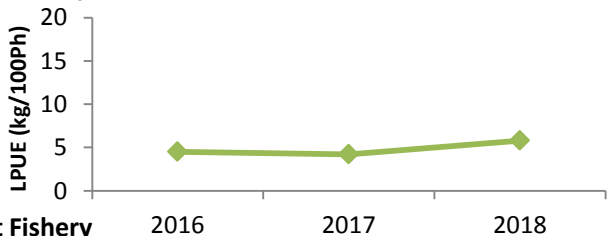


Figure 1: The difference in spider crab (*Maja* spp.) annual LPUE (kg/100Ph and kg/100m_Nh) in the pot and net fisheries, in belted statistical areas between 2016 and 2018. Thematically mapped in 5.2kg/100Ph ranges (pot fishery), and 1.7kg/100m_Nh ranges (net fishery), positive values indicate an increase in LPUE and negative values a decrease. 'Others' in the pot fishery refers to -42.3kg/100Ph in 30E49B and in the net fishery 'Others' refers to +13.2kg/100m_Nh in 30E49A.

Pot Fishery



Net Fishery

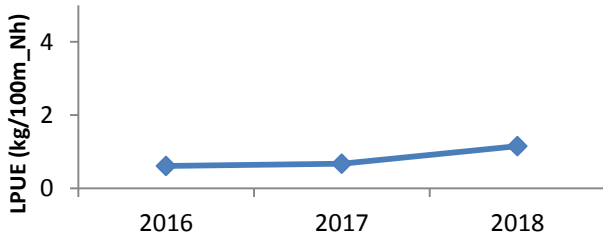


Figure 2: Annual LPUE in the pot fishery (kg/100Ph, top) and annual LPUE in the net fishery (kg/100m_Nh, bottom) of spider crab (*Maja* spp.) in the Cornwall IFCA District in 2016 to 2018

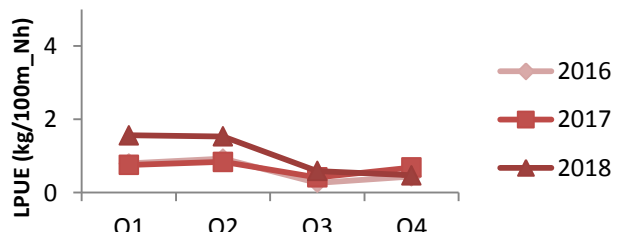
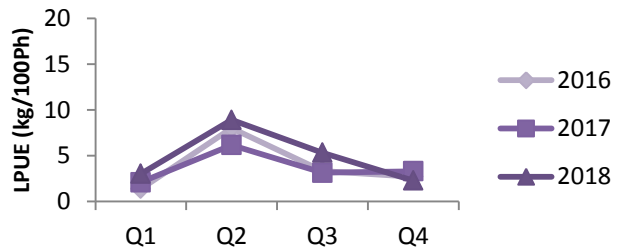


Figure 3: LPUE by calendar year quarter* in the pot fishery (kg/100Ph, top) and the net fishery (kg/100m_Nh, bottom) of spider crab (*Maja* spp.) in the Cornwall IFCA District in 2016 to 2018

* Calendar year quarters split as Q1(January to March), Q2 (April to June), Q3 (July to September) and Q4 (October to December)



Annual LPUE

(kg/100Ph)

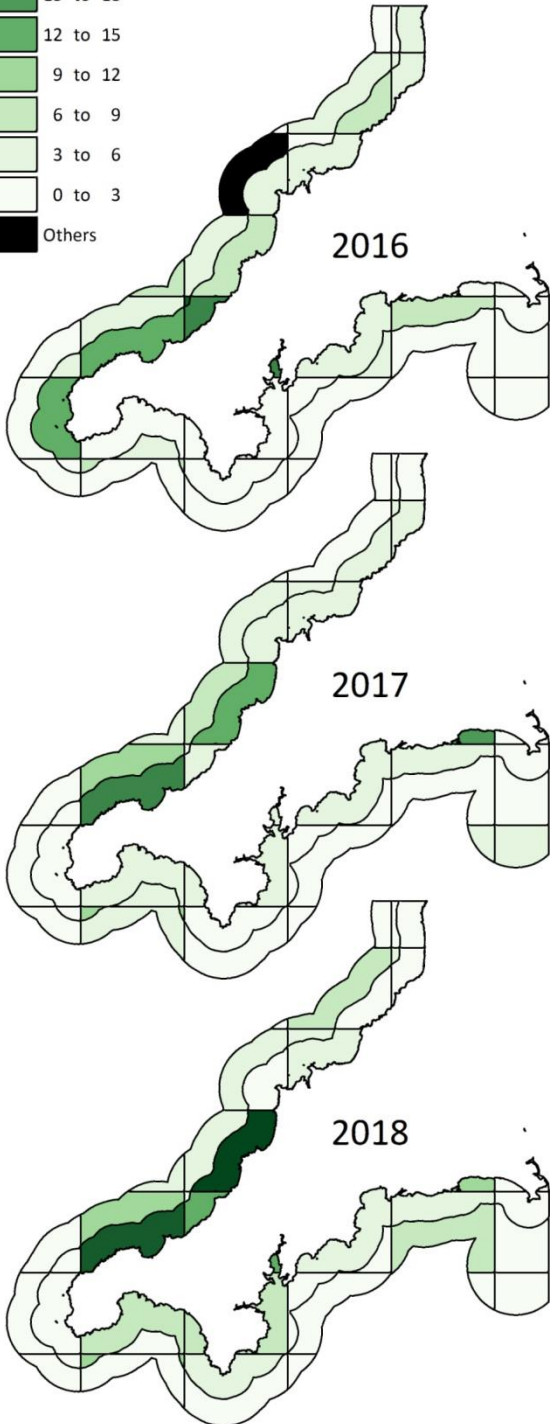
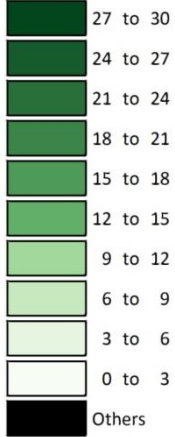


Figure 4: Thematic mapping of annual potting LPUE (kg/100Ph) of spider crab (*Maja* spp.) in belted statistical areas in 3kg /100Ph increments. 'Others' refers to 47.7kg/100Ph in 30E49B (offshore near Padstow) in 2016.

Difference in Annual LPUE

(kg/100Ph)

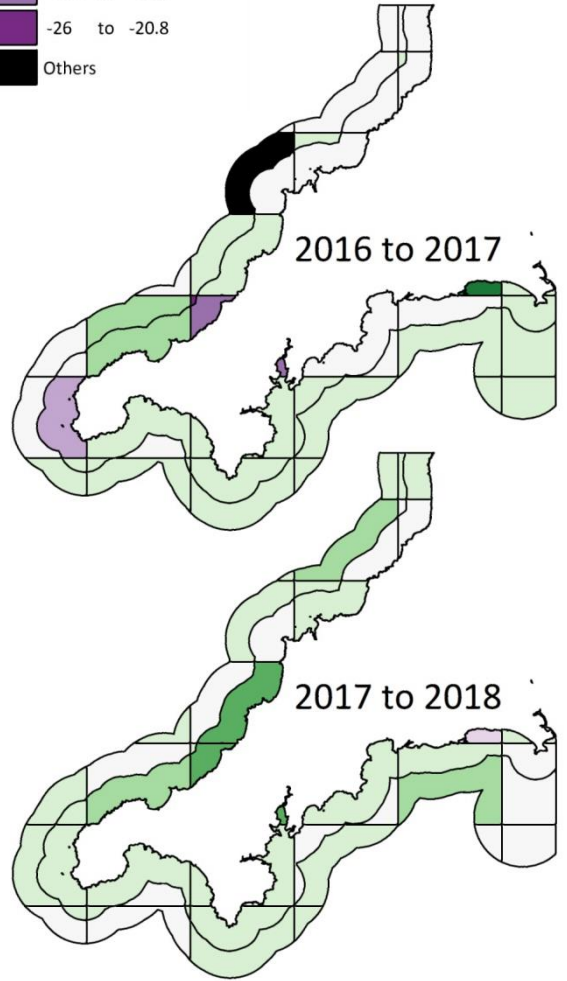
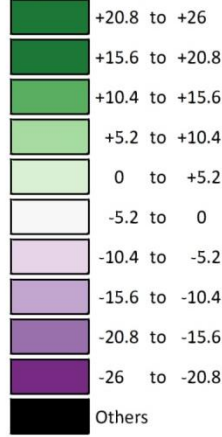


Figure 5: Thematic mapping of the difference in annual potting LPUE (kg/100Ph) of spider crab (*Maja* spp.) in belted statistical areas in ranges of 5.2kg/100Ph where a positive value i.e. increased LPUE is green and a negative value i.e. a reduction in LPUE is purple. 'Others' refers to -42.6kg/100Ph in 30E49B (offshore near Padstow) in 2016 to 2017.



North Coast

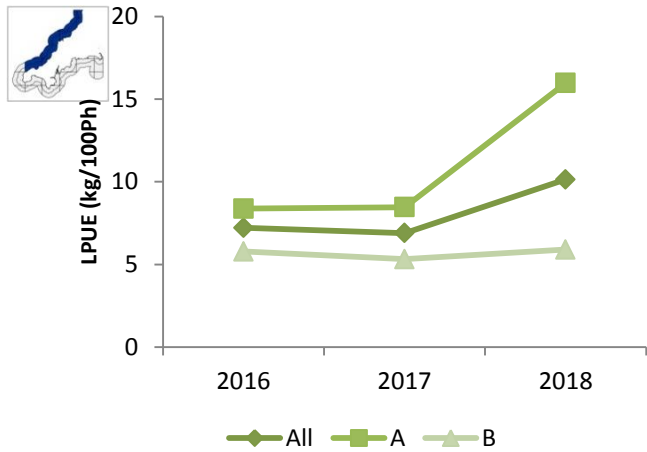


Figure 6: Annual LPUE (kg/100Ph) of spider crab (*Maja* spp.) on the 'North Coast' in 2016 to 2018 (diamonds), further split by band A (inshore 0-3nm, squares) and B (offshore 3-6nm, triangles).

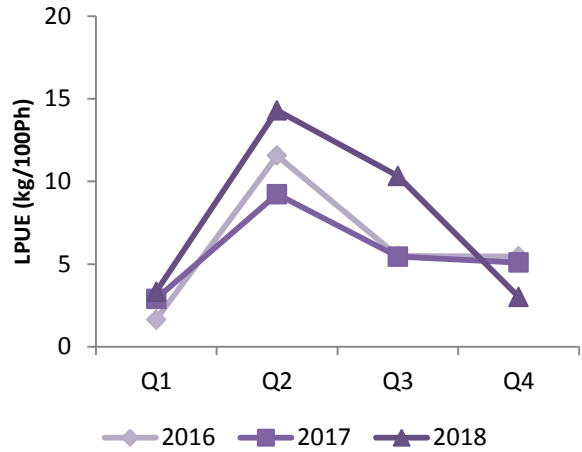


Figure 7: LPUE (kg/100Ph) by calendar year quarter* of spider crab (*Maja* spp.) on the 'North Coast' in 2016 (diamonds), 2017 (squares) and 2018 (triangles).

West Coast

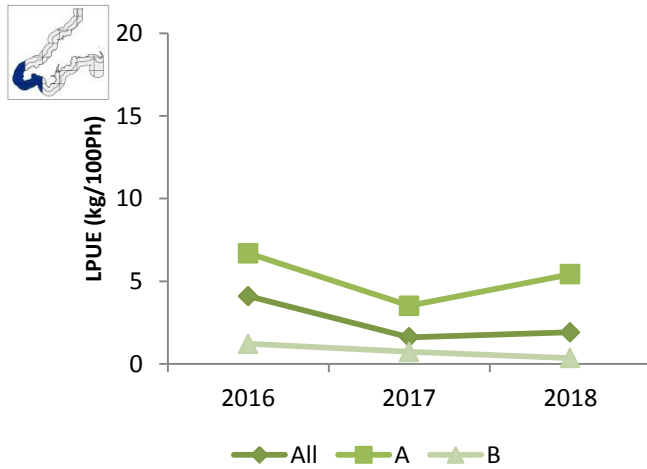


Figure 8: Annual LPUE (kg/100Ph) of spider crab (*Maja* spp.) on the 'West Coast' in 2016 to 2018 (diamonds), further split by band A (inshore 0-3nm, squares) and B (offshore 3-6nm, triangles).

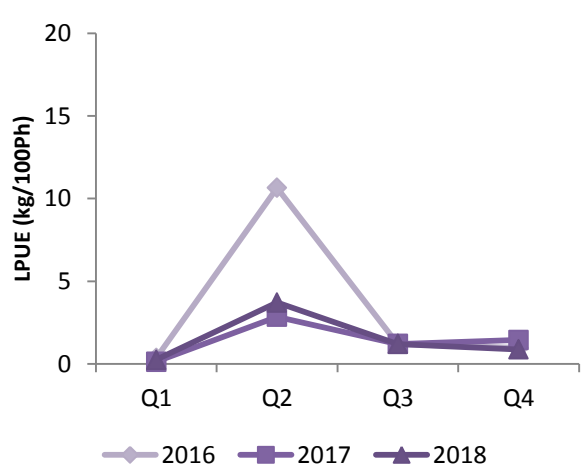


Figure 9: LPUE (kg/100Ph) by calendar year quarter* of spider crab (*Maja* spp.) on the 'West Coast' in 2016 (diamonds), 2017 (squares) and 2018 (triangles).

South Coast

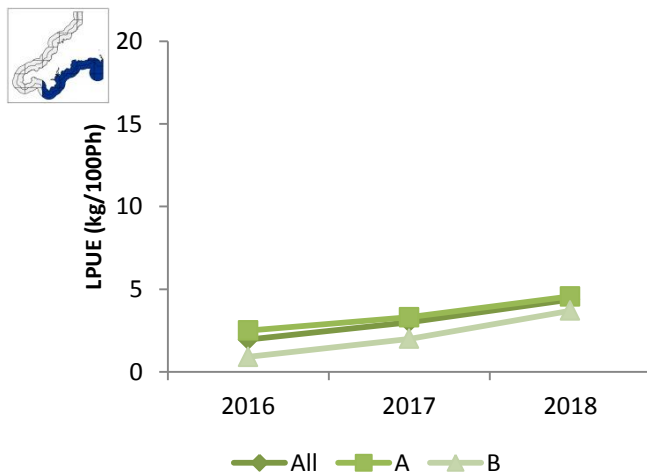


Figure 10: Annual LPUE (kg/100Ph) of spider crab (*Maja* spp.) on the 'South Coast' in 2016 to 2018 (diamonds), further split by band A (inshore 0-3nm, squares) and B (offshore 3-6nm, triangles).

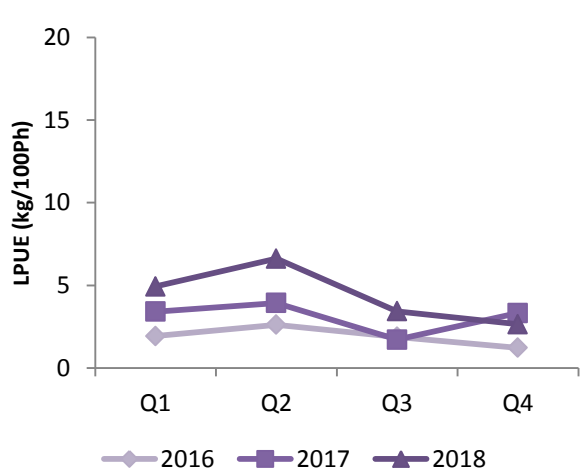


Figure 11: LPUE (kg/100Ph) by calendar year quarter* of spider crab (*Maja* spp.) on the 'South Coast' in 2016 (diamonds), 2017 (squares) and 2018 (triangles).

* Calendar year quarters split as Q1(January to March), Q2 (April to June), Q3 (July to September) and Q4 (October to December)

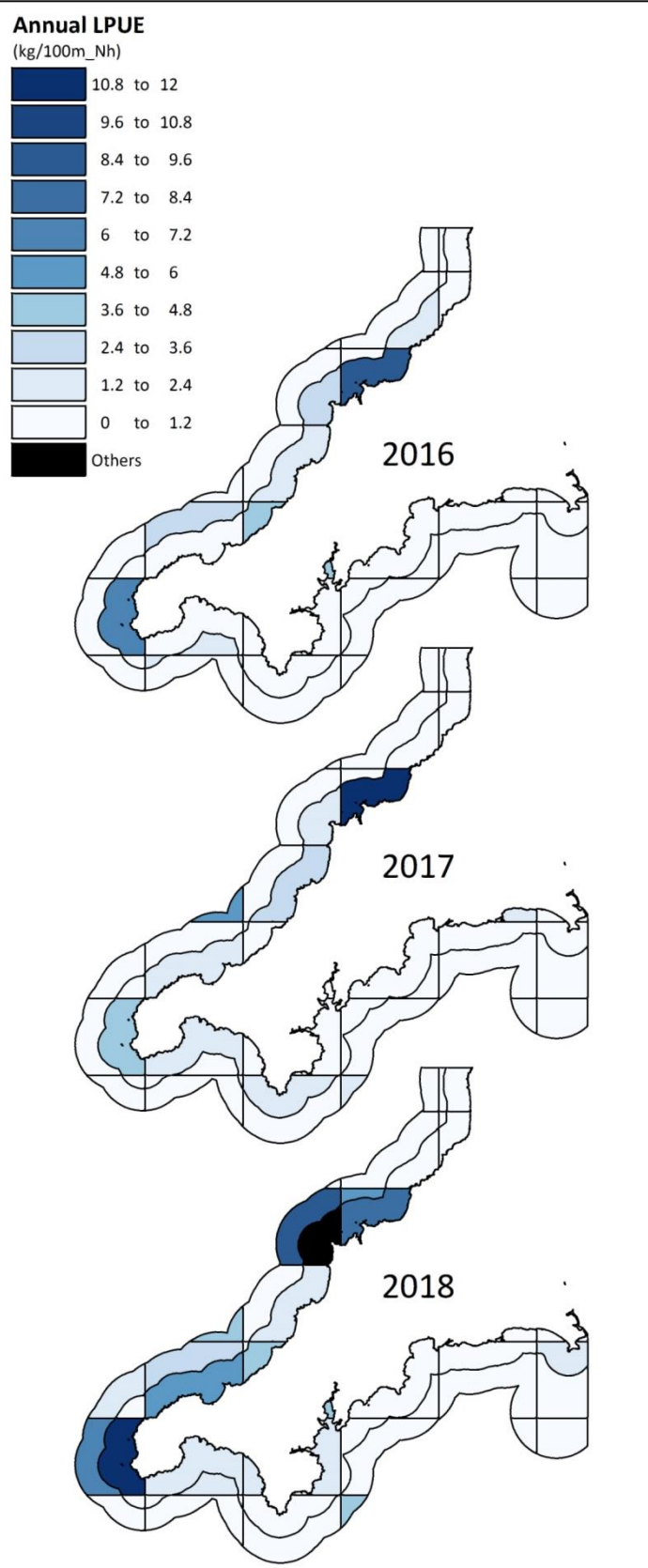
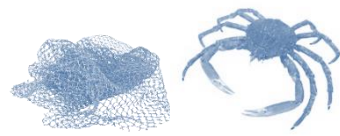


Figure 12: Thematic mapping of annual netting LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) in belted statistical areas in 1.2kg /100m_Nh increments. 'Others' refers to 16.2kg/100m_Nh in 30E49A (inshore around Trevoze Head) in 2018.

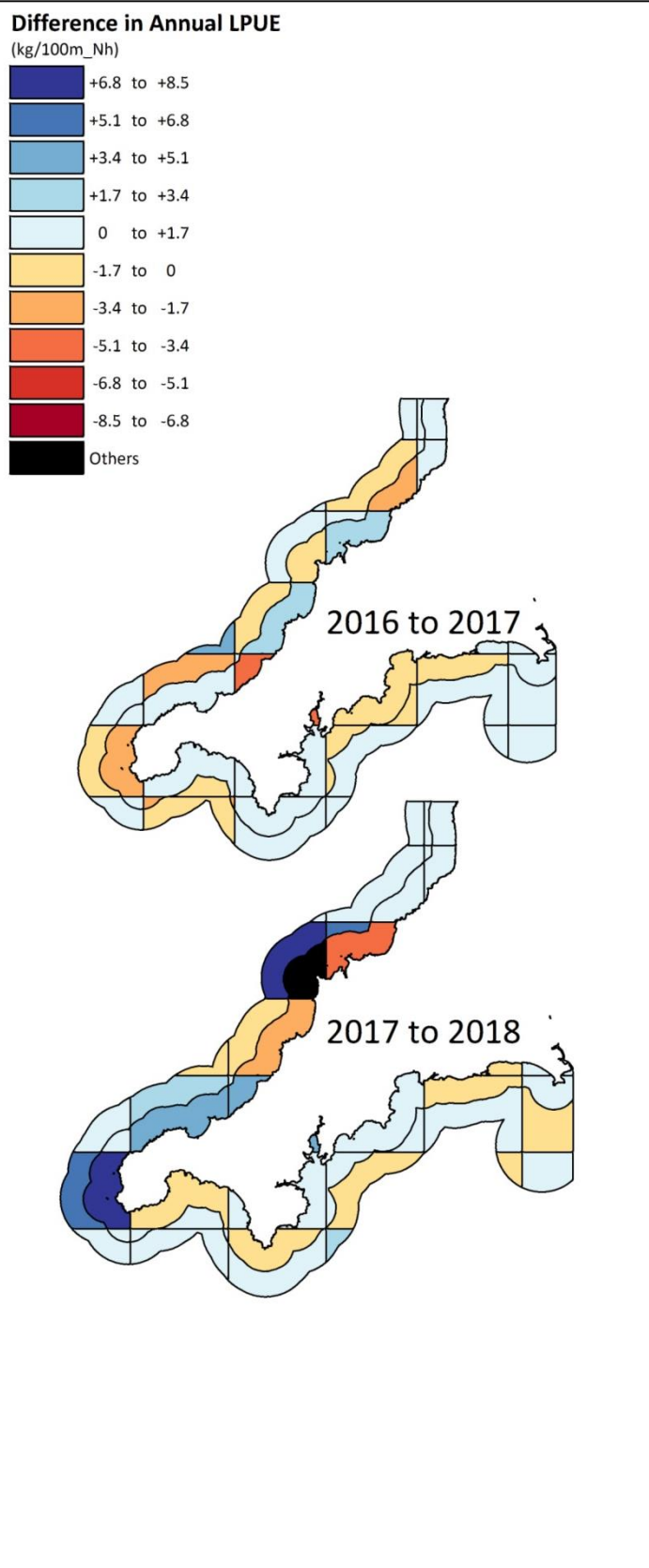
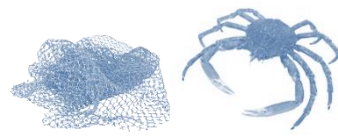


Figure 13: Thematic mapping of the difference in annual netting LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) in belted statistical areas in ranges of 1.7kg/100m_Nh where a positive value i.e. increased LPUE is blue and a negative value i.e. a reduction in LPUE is red. 'Others' refers to +14.5kg/100m_Nh in 30E49A (inshore around Trevoze Head) in 2017 to 2018.



North Coast

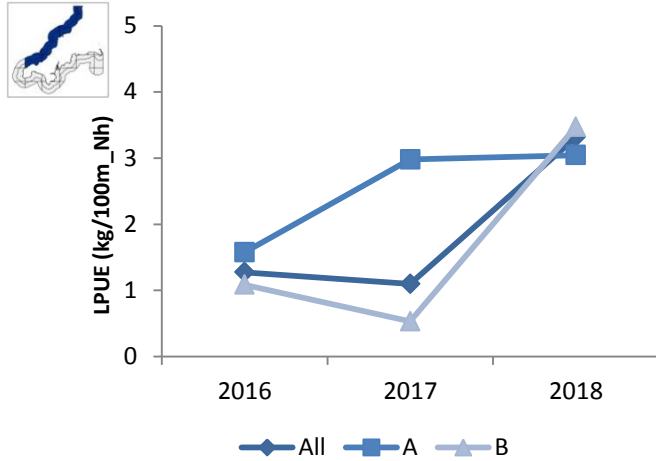


Figure 14: Annual LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) on the 'North Coast' in 2016 to 2018 (diamonds), further split by band A (inshore 0-3nm, squares) and B (offshore 3-6nm, triangles).

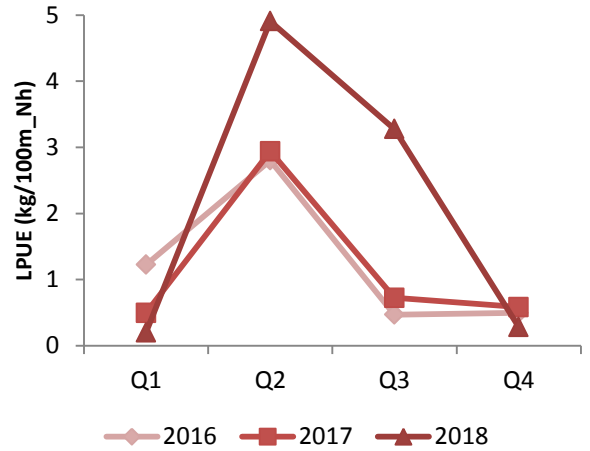


Figure 15: LPUE (kg/100m_Nh) by calendar year quarter*of spider crab (*Maja* spp.) on the 'North Coast' in 2016 (diamonds), 2017 (squares) and 2018 (triangles).

West Coast

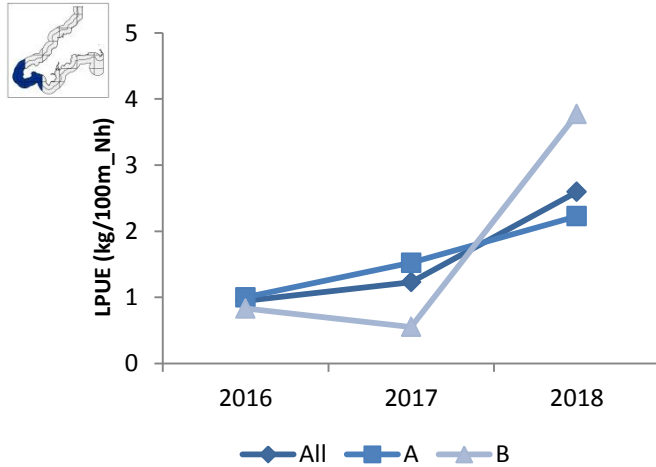


Figure 16: Annual LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) on the 'West Coast' in 2016 to 2018 (diamonds), further split by band A (inshore 0-3nm, squares) and B (offshore 3-6nm, triangles).

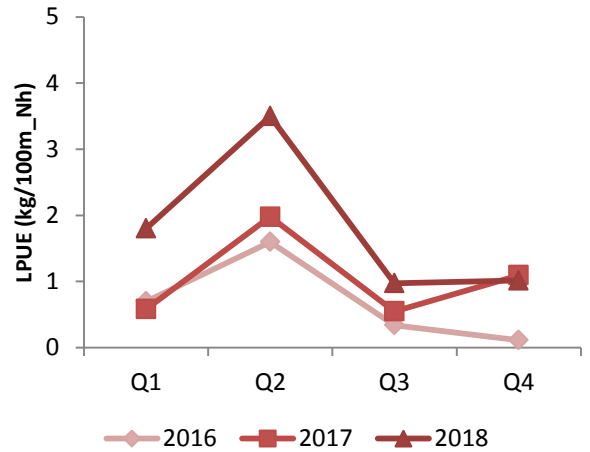


Figure 17: LPUE (kg/100m_Nh) by calendar year quarter*of spider crab (*Maja* spp.) on the 'West Coast' in 2016 (diamonds), 2017 (squares) and 2018 (triangles).

South Coast

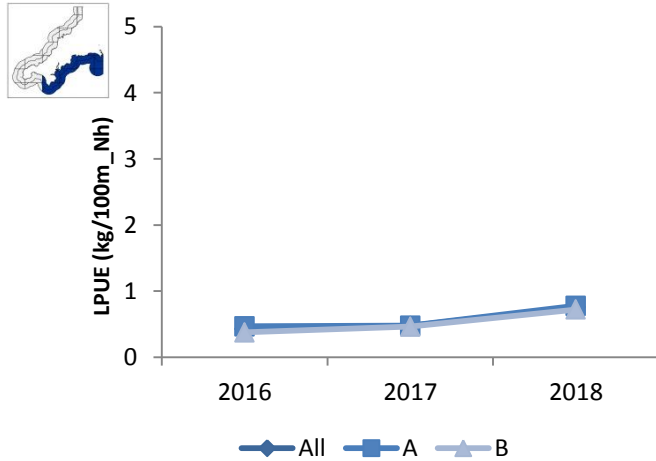


Figure 18: Annual LPUE (kg/100m_Nh) of spider crab (*Maja* spp.) on the 'South Coast' in 2016 to 2018 (diamonds), further split by band A (inshore 0-3nm, squares) and B (offshore 3-6nm, triangles).

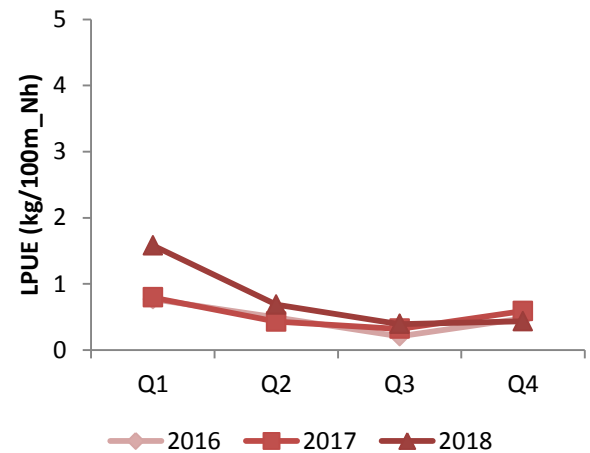


Figure 19: LPUE (kg/100m_Nh) by calendar year quarter*of spider crab (*Maja* spp.) on the 'South Coast' in 2016 (diamonds), 2017 (squares) and 2018 (triangles).

* Calendar year quarters split as Q1(January to March), Q2 (April to June), Q3 (July to September) and Q4 (October to December)

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Cited as:

Street, K., Stidwell, H., Sturgeon, S., Jenkin, A., and Trundle, C. 2019. Cornwall IFCA Monthly Shellfish Permit Statistics Analysis, Spider crab (*Maja* spp.) Net Fishery, Summary Statistics 2016-2018. Cornwall Inshore Fisheries and Conservation Authority (Cornwall IFCA), Hayle.