

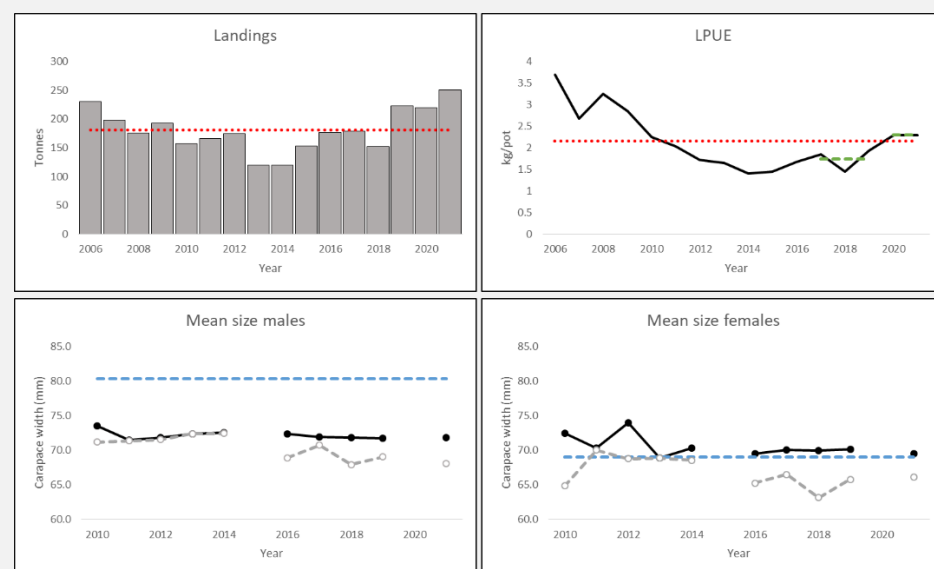
# Velvet crab, *Necora puber*

## ADVICE

Landings may be increased in line with the increasing Landings per Unit Effort (LPUE) trends and size indicators of crab catches. It is advised that landings in 2023 should be no more than 220 tonnes.

## FISHERY AND STOCK TRENDS

In 2021, 251 tonnes of velvet crab were landed by NI registered vessels from the ICES rectangles 37E3, 37E4, 38E4, 39E3 and 39E4. This is the highest volume of landings of velvet crab reported over the time series (Fig 1). The LPUE had decreased between the beginning of the time series and 2015 but has since increased slightly (Fig 1). The mean size of landed individual velvet crab measured indicates that whilst for landed females these are above the length at which growth is optimal (Lopt), for landed males these have been below Lopt since 2010. Using Lopt as a proxy for Maximum Sustainable Yield (MSY), males have been below possible  $MSY_{proxy}$  since the beginning of the time series whilst females are considered to be exploited sustainably.



**Fig 1.** Velvet in ICES rectangles 37E3, 37E4, 38E4, 39E3 and 39E4. Summary of the stock assessment. Landings, Landings Per Unit Effort (LPUE), length-based indicators. The dashed green lines indicate Index A and Index B. Red dashed line indicates time series average. For the length-based indicator the solid black line indicates mean size crab landed and the dashed grey line is mean size of all crabs measured. The dashed blue lines indicate Lopt.

**Table 1.** Velvet crab in ICES rectangles 37E3, 37E4, 38E4, 39E3 and 39E4. State of the stock relative to reference points and qualitative fishing pressure.

Fishing Pressure				Stock indicators (male)				Stock indicators (female)			
2019	2020	2021	Decreasing; Below average	2019	2020	2021	Increasing; Below Lopt	2019	2020	2021	Decreasing; Above Lopt
↑	↓	↓		↓	-	↑		↑	-	↓	

## ADVICE BASIS

A commercial LPUE time series is used to indicate stock trends. The advice is based on the ratio of the mean of the last two index values (Index A) and the mean of the three preceding values (Index B), multiplied by the recent average catch (3 years).

A precautionary buffer was applied for this stock as males are below Lopt and considered to be unsustainably exploited.

**Table 2** Velvet crab in ICES rectangles: 37E3, 37E4, 38E4, 39E3 and 39E4. Basis for advice.\*

Index A (2020 - 2021)	2.29 kg/pot
Index B (2017–2019)	1.74 kg/pot
Index ratio (A/B)	1.32
Recent landings for 2018 – 2021**	208 t
Precautionary Reduction	Applied (0.8)
Landings advice***	220 t
% Advice change ^	+5.4 %

\* The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

\*\* 2020 landings excluded due to Covid-19 impacts on landings

\*\*\* [Mean recent landings (2018 – 2021)] × [Index Ratio] × [Precautionary buffer].

^Advice change is based on the current advised landings compared to mean recent landings (2018 – 2021).

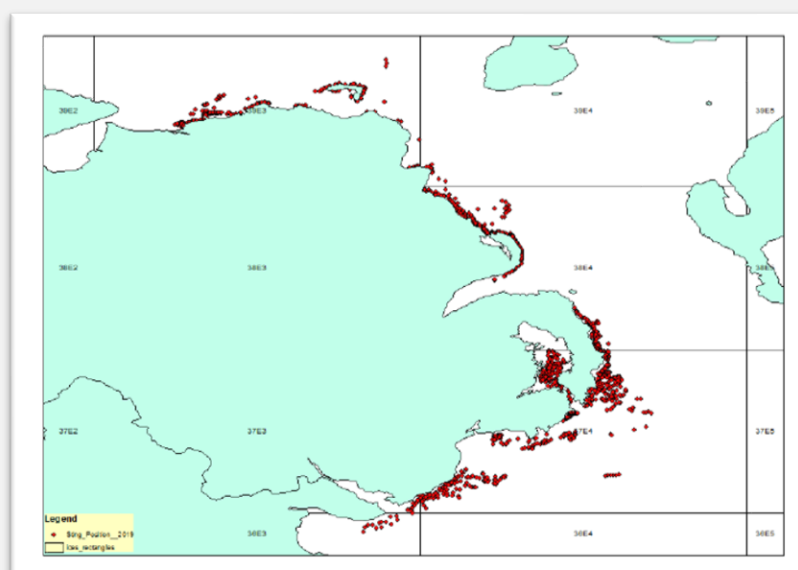
## REFERENCE POINTS

**Table 2. Reference points**

Reference point	Value	Technical basis
Lopt Male	80.4	Length at which growth rate is maximum
Lopt Female	69.0	Length at which growth rate is maximum

## QUALITY OF THE ASSESSMENT

The assessment is based on landings from NI waters (ICES rectangles 37E3, 37E4, 38E4, 39E3 and 39E4) by NI registered vessels. These landings are made into NI, other UK and Irish ports. The landings and effort in 2020 may have been impacted by Covid-19 due to market factors and public restrictions to limit Covid-19 spread.



**Fig 2.** At-sea observation of pot fishing.

A length-based model was used to examine the health of the velvet crab stock (based on mean length of landed animals). For a stock to be healthy the mean length should be at Lopt. The output of the assessment indicates that whilst female velvet crab are being fished sustainably, male velvet crab are shown to be overexploited (mean length is below Lopt).

The data used in the length-based model is collected at-sea, on board fishing vessels. This data is available from 2010 to 2021 (limited data is available in 2020 due to Covid-19). The data used in the assessments excludes lengths from crabs in Strangford Lough which are considered to have different growth characteristics. Between 2010 and 2021, an average of 18 trips have been carried out annually.

The LPUE series is derived from reported landings data. This data is reliant on accurate self-reporting from commercial fishers. Methods for automated data collection would provide more detail on effort trends, including the duration over which pots are deployed.

## ISSUES RELEVANT FOR THE FISHERY

A minimum landing size of 65mm is applied in NI.

## SUMMARY OF THE ASSESSMENT

**Table 3** *Necora puber* in ICES rectangles 37E3, 37E4, 38E4, 39E3 and 39E4.

Assessment summary.

Year	Landings	Effort*	Mean Length Males	Mean Length Females
2006	230.6	11013	-	-
2007	198.3	11216	-	-
2008	175.9	9855	-	-
2009	192.8	12176	-	-
2010	157.6	12685	73.5	72.5
2011	166.1	12518	71.5	70.3
2012	174.8	12895	71.8	74.0
2013	119.8	13197	72.4	68.9
2014	119.4	12772	72.5	70.3
2015	153.3	9257	-	-
2016	176.8	12158	72.4	69.5
2017	179.1	13973	72.0	70.0
2018	151.7	14424	71.8	70.0
2019	222.8	17164	71.7	70.1
2020	219.8	13100	-	-
2021	250.7	12429	71.8	69.5

\*This is the reported number of pots fishing not the number of hauls