Velvet crab, Necora puber

ADVICE

Landings should be reduced in line with reduced LPUE and the size indicators of crab catches being below L_{opt}. It is advised that **landings in 2025 should be no more than 182 tonnes.**

FISHERY AND STOCK TRENDS

In 2023, 204 tonnes of velvet crab were landed by NI registered vessels from the ICES rectangles 37E3, 37E4, 38E4, 39E3 and 39E4. This is down from a peak in landings in 2021 (Fig 1). The Landings per Unit Effort (LPUE) had decreased between the beginning of the time series and 2015 but had been increasing again. However, 2023 saw a reduction in LPUE, falling below the time series average (Fig 1). The mean size of individual landed velvet crab measured indicates that whilst females are above the length at which growth is optimal (L_{opt}), males have been below L_{opt} since 2010. Using L_{opt} 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.

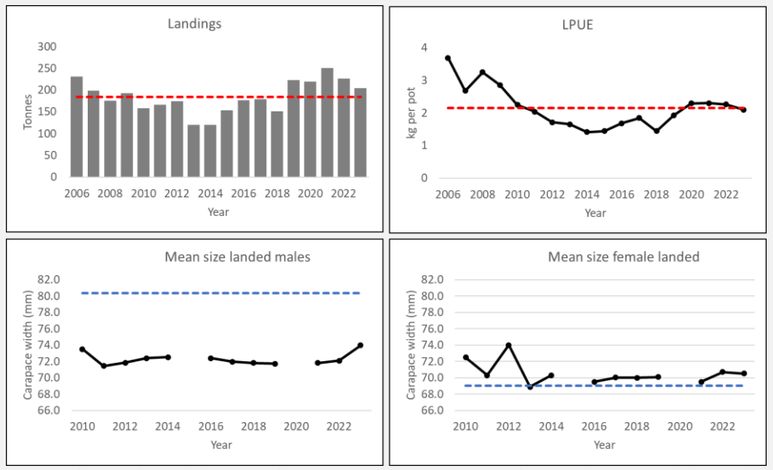

Fig 1. Velvet crab in ICES rectangles 37E3, 37E4, 38E4, 39E3 and 39E4. Summary of the stock assessment. Landings, Landings per Unit Effort (LPUE), length-based indicators. Red dashed line indicates time series average. For the length-based indicator the solid black line indicates mean size crab landed. The dashed blue lines indicate L_{opt}.

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 Indicator (males)				Stock Indicator (females)			
2021	2022	2023	Decreasing; Above average	2021	2022	2023	Increasing; Below Lopt	2021	2022	2023	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 L_{opt} and considered to be unsustainably exploited.

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

Index A (2022 - 2023)	2.18 kg/pot
Index B (2019–2021)	2.17 kg/pot
Index ratio (A/B)	1.00
Recent landings for 2021 – 2023	227 t
Precautionary Reduction	Applied (0.8)
Landings advice**	182 t
% Advice change ^	-20 %

* 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.
** [Mean recent landings (2021 – 2023)] × [Index Ratio] × [Precautionary buffer].
^Advice change is based on the current advised landings compared to mean recent landings (2021 – 2023).

REFERENCE POINTS

Table 2. **Reference points**

Reference point	Value	Technical basis
L_{opt} Male	80.4	Length at which growth rate is maximum
L_{opt} 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 current assessment does not account for landings from other nations vessels, information on these landings could improve the assessment of stock. 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.

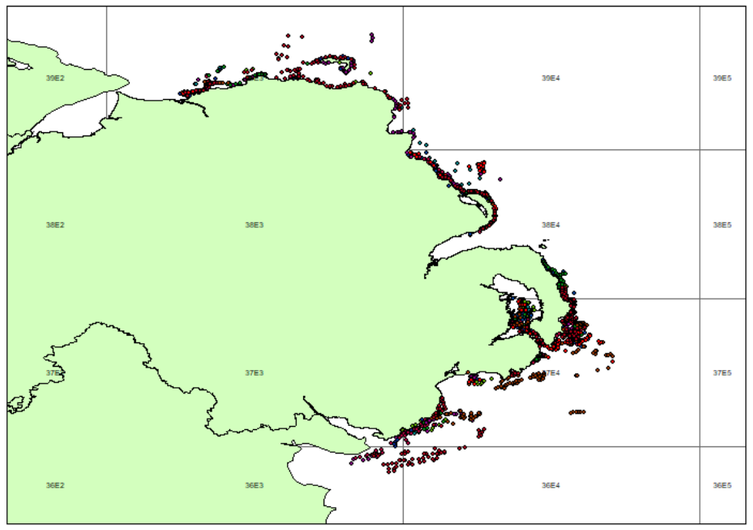

Fig 2. At-sea observation of pot fishing.

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 L_{opt}. 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 L_{opt}).

The data used in the length-based model are collected at-sea, on board fishing vessels. These data are available from 2010 to 2023 (limited data are available from 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 2023, an average of 22 trips have been carried out annually and 2,007 velvet crabs measured annually.

The LPUE series is derived from reported landings data. These data are 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 Velvet crab 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
2022	226.4	13558	72.1	70.7
2023	204.4	13538	74.0	70.5

*This is the reported number of pots being fished not the number of hauls