

Determining whether catch per unit effort is a suitable proxy for relative crab abundance

L. G. Murray^{1,2}, R. Seed¹

¹*School of Ocean Sciences, University of Wales, Bangor, Menai Bridge LL59 5AB, UK*

²*Present address: Department of Agriculture, Fisheries and Forestry, Rose House, 51–59 Circular Road, Douglas, Isle of Man, IM1 1AZ, British Isles*

ABSTRACT

Stock assessments of crabs commonly rely on catch per unit effort (CPUE) data derived from catches in baited traps. Baited traps have been used for many years to estimate the relative abundance of predators in the marine environment. However, traps may result in biased estimates due to inter- and intra-species variations in physiology and behaviour. The aim of this study was to determine the suitability of CPUE as a proxy for the relative abundance of *Carcinus maenas*. Crab abundance estimates were obtained using underwater camera surveys. The study was conducted on commercial mussel beds in the Menai Strait, United Kingdom. CPUE data were obtained from the local *C. maenas* fishery operating over the mussel beds. The influence of temperature-dependent feeding rates on CPUE was predicted from the number of mussels consumed at different experimental temperatures in laboratory aquaria. Both CPUE and estimated abundance showed marked seasonal variation. Abundance maxima preceded temperature maxima by 2 mo. CPUE increased with temperature up to 15°C, while relative crab abundance based on visual surveys exhibited a strong positive correlation with day-length. CPUE appears not to be a suitable proxy for the relative abundance of *C. maenas* because of the effects of temperature on crab activity levels and thus catches.

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If you would like the full paper please contact the author:

l.murray@bangor.ac.uk

OR

fisheries@bangor.ac.uk