MATING BEHAVIOUR IN THE EUROPEAN EDIBLE CRAB
(CANCER PAGURUS L.)

BY

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INTRODUCTION

The behaviour of Crustacea at the time of mating is believed to affect their catchability by baited pots; a knowledge of this behaviour is therefore important for the interpretation of field data obtained in population studies. The published information on the mating behaviour of the edible crab is, however, limited to early incomplete descriptions by Williamson (1900, 1904) and Pearson (1908) and some additional data presented in a more recent general account of the Scottish crab fishery by Williamson (1940).

During the course of current studies on the stocks of edible crabs (Cancer pagurus) on the east coast of England, involving field observations and tank experiments on growth and the effects of tagging (Edwards, 1965), a considerable amount of information has been obtained on their mating behaviour which adds substantially to that presented by Pearson and Williamson. These observations form the material for this account.

METHODS

During the course of these studies more than 300 crabs of all sizes (>60 mm carapace width) were collected from the Norfolk fishing grounds and established in concrete tanks, each 1 metre square and holding approximately 900 litres of sea water. Between 20 and 30 crabs were kept in each tank and the water was aerated continuously and changed every week. Food was given daily to excess and consisted of opened mussels, Mytilus edulis L., and individuals separated from chains of slipper limpets, Crepidula fornicata (L.). Each individual crab was labelled with a numbered plastic disc to allow immediate identification. Under these conditions many of the crabs survived for two years.

PAIRING

A powerful attraction appears to exist between the sexes prior to the female casting her shell. On 37 occasions females were continuously attended by a male for a period of 3 to 21 days before the moult and for a further period of between 1 and 12 days after the moult (text-fig. 1). Fig. 1 shows no correlation between the duration of premoult and postmoult attendance, although in 26 of the 37
observations the attendance before moulting was longer. The average attendance was 8 days premoult and 5 days postmoult. Copulation always took place a short time after the female moulted.

During attendance the male assumed a protective position astride the female’s back, with claws held in front (pl. I fig. 1). The pair usually moved to a secluded part of the tank and remained stationary. Whilst attending, the male would become very aggressive if disturbed or if another male approached the female (pl. I fig. 2). If separated the male would return, usually within 30 minutes, and resume its former position. The observations suggest that females co-operate in this behaviour and they have on occasions been seen actively to help the male into position; also, after separation, a female would sometimes herself return to the male.

![Diagram](image)

**Fig. 1.** Number of days of attendance by males of *Cancer pagurus* L. before and after the females moulted.

In 29 out of the 37 observations the female was accompanied by only one male throughout the period of attendance; in the remaining 8 cases a change of partner occurred during the early premoult attendance. Whenever there was a change a larger male took the place of a smaller one, which was sometimes seen to be actively displaced. The smallest male which attended a female had a carapace width of 102 mm, and copulation had apparently been successful as the female was later found to be impregnated, i.e., sperm had been introduced into the female. In the laboratory tanks males tended to be polygamous. One male attended