

SEXUAL BEHAVIOUR CYCLES IN THE WILD RABBIT,
ORYCTOLAGUS CUNICULUS (L.)*

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It is generally accepted that the period of oestrus in the rabbit is more or less continuous during periods of favourable environmental and nutritional conditions (Hammond and Marshall 1925; Robson 1949; Bullough 1951; Eckstein and Zuckerman 1956). It is also known of both the domesticated rabbit (Hammond and Marshall 1925) and the wild rabbit (Brambell 1944) that, given suitable conditions, the doe will accept the buck at any time although with reduced frequency during pregnancy.

During the course of a biological study at Thurgoona, N.S.W., of 52 reproductively active rabbits (35 females and 17 males) confined in a 2-acre enclosure, a suggestion of a cycle in sexual behaviour became apparent. Observations were intensified and continued daily for 17 weeks, involving 600 man-hours. They covered a period from the end of the 1957-58 summer, through the autumn flush of green pastures when breeding commenced, and concluded in midwinter. Sexual attractiveness of the does was demonstrated by the behaviour of the males who followed and circled them persistently, attempted copulation, and frequently smelled and nipped at their hindquarters. Females became sexually attractive for short periods at intervals of 7 days or multiples thereof. Their attractiveness to the males in their group at these behavioural peaks appeared to vary greatly. When weak the attraction seemed to be analogous with the "weak oestrus" in sheep observed by Quinlan, Steyn, and Vos (1941). At the conclusion of periods of strong sexual attraction the does actively solicited the bucks and fertile copulations occurred, following which the females rapidly lost their attractiveness. The 7-day behavioural cycle continued during pregnancy and was especially evident at 14 days when many pregnant females apparently mated again. After the gestation period of 30-32 days a fresh 7-day cycle commenced, either during the succeeding pregnancy or after an apparent failure to mate or conceive at the post-partum oestrus; and also following known cases of resorption. The initial stimulus to the males was probably an odour since their excitement always commenced after smelling the ground where the females sat, and also since the attractiveness of a female to the males in her group was greatly diminished on rainy nights.

In view of evidence that the female rabbit has a follicular cycle of about 7 days (Shibata 1931; Buttner and Wienert 1935) or 7-10 days (Hill and White 1933), and of the demonstration by Hamilton (1951) of a regular peak in the number of cornified cells in the vaginal smear from unmated does occurring at 4-6 day intervals, it seems possible that the cycle observed in the mating behaviour of the rabbits at Thurgoona could be associated with follicular development.

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Under the conditions of the experiment these observations indicate a type of mating behaviour in the wild rabbit not previously recorded and apparently analogous to the reproductive behaviour of the field vole, *Microtus agrestis hirtus* Bellamy. Brambell and Hall (1939) described this vole as polyoestrous and exhibiting spontaneous ovulation when in the wild; however, Chitty and Austin (1957) have shown that depending on environmental conditions, the field vole is capable of two kinds of oestrus—a typical short oestrus with sexual receptivity restricted to a particular stage of the cycle, or else prolonged periods during which coitus is effected at any time and is associated with induced ovulation.

This experiment was designed as a long-term study and could not permit disturbance to the population to give physiological and histological evaluation of the behaviour observations. However, a separate experiment is planned to allow such manipulation. The details of the observations just described will be published in full at a later date.

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