ABORTION AND CANNIBALISM IN A CONFINED POPULATION OF COTTONTAIL RABBITS

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ABSTRACT

Abortion of 18 day old fetuses by a cottontail rabbit (*Sylvilagus floridanus mearnsii*) was observed in a 0.14 ha field enclosure in southern Illinois. Subsequent cannibalism of one of the fetuses by a male cottontail was also documented. These unusual cottontail behaviors were associated with an abnormal reproductive pattern involving this female.

INTRODUCTION

Cannibalism is a widespread phenomenon in vertebrates, usually involving young eaten by stronger littermates or parents (Errington, 1967). Within the leporids, cannibalism of juveniles by mothers is common in domesticated European rabbits (*Oryctolagus cuniculus*) (Sawin and Crary, 1954); however, only one instance of cannibalism in cottontails (of nestlings by a mother) has been reported (Smith, 1974). Prenatal mortality in the form of embryo resorption is common in European rabbits (Mykytowycz, 1961; Mykytowycz and Fullagar, 1973) and has occurred in 9.8% of cottontail litters in some populations (Pelton, 1969), but abortion appears to be unusual and has not been recorded in cottontails. This note represents the first record of abortion by a cottontail; in addition, the subsequent cannibalism of one of the fetuses by a male appears to be the first observation of cannibalism by an individual other than the maternal parent to be reported for any leporid species.

RESULTS AND DISCUSSION

Eight rabbits (5 males, 3 females) were present in a 22 m x 63 m field enclosure at the onset of the 1977 breeding season in late February. This 57 rabbits/ha density was considerably greater than natural densities of cottontails.

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One female (F201) initially came into estrus on 2 March 1977, and was observed in what should have been her first post-partum estrus on 31 March; however, an exhaustive search revealed no litters. This lack of litter production is an unusual situation for a female cottontail known to have been bred (copulation was observed during both periods) and experiencing estrus during the normal breeding season. On 18 April, F201 was unreceptive but exhibited an apparently high degree of attractiveness, manifested in searching behavior, chases, numerous attempted mounts, and continuous harassment by all five males. These and other types of sovial interactions typically associated with female estrous periods (Marsden and Holler, 1964) had been directed toward F201 at high frequencies for several days. This prolonged interest of males in F201 was unusual because estrous periods are limited to a few hours (Marsden and Conaway, 1963). In addition, aggressive responses by unreceptive females have been found to be sufficient in deterring further interest by males (Marsden and Holler, 1964) but F201 was unable to discontinue pursuit with this type of response.

At 2050 h on 18 April, a subordinate male (M198) followed and subsequently faced off with F201. Female 201 responded agressively by boxing M198, which retreated approximately 1 m. The female then entered a shallow depression approximately 25 m from the observation tower, followed 4-5 minutes later by M198. A brief series of interactions ensued, terminating when F201 ran from the site. Immediately thereafter, M198 left the depression carrying a relatively well developed fetus in his mouth, which he then completely consumed.

An hour later the area was searched and one intact fetus was found in the shallow depression, its fresh state indicating that it had just been deposited there. In addition, the other two females in the enclosure were known to have had normal litters on 13 and 29 April; these facts indicated the fetuses had been aborted by F201 during the described incident. The recovered fetus was in the 16-18 day old size range (Rongstad, 1969), so the last known estrous period for F201 (31 March) was probably the date of conception; thus, the fetuses were probably 18 days old. Brambell and Mills (1949) noted that in European rabbits (gestation period $\simeq$ 31 days) embryos less than 20 days old were most susceptible to resorption while older ones were more likely to be aborted. The relatively late stage of these cottontail fetuses (day 18 of approximately 27 day gestation period) might explain why they were aborted rather than resorbed, which appears to be the common mode of prenatal mortality in cottontails (Pelton, 1969). The abortion may have been a direct result of the abnormally high frequency of interactions and continued harrassment of F201 by males for several days prior to the incident. In turn, this harrassment was undoubtedly a consequence of the unusually prolonged apparent attractiveness of F201, the cause of which was unknown.

Although the incident of cannibalism appeared to be isolated and might be regarded as displacement behavior (Hinde, 1970), it is notable in part because the species is normally strictly herbivorous. Ingestion of placentae and associated tissues by mothers is common in nearly all mammals, including leporids. However, cannibalism by individuals other than litter mates or parents is rare, particularly in herbivores. Male 198 was a subordinate male and therefore probably not the parent of the fetuses (Marsden and Holler, 1964), although this could not be definitely established because cottontails exhibit a promiscuous

breeding system and primarily solitary lifestyle. This incident comprised the only evidence of abortion and/or cannibalism observed in 4 years (January 1976-December 1979) of study of this high density population; thus, abortion and cannibalism would not appear to be common or important mortality factors in cottontail populations.

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