

A NOTE ON REPRODUCTION OF *DIDELPHIS MARSUPIALIS* IN CAPTIVITY

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*Conditions leading to successful reproduction of Didelphis marsupialis in captivity are described. A trial involving four mating pairs which had been maintained at least four months in the laboratory resulted in three litters and one false pregnancy. This is, to our knowledge, the first record of successful breeding of this species in captivity.*

Opossums are generally recognized as important reservoir hosts for Chagas' disease (Barretto 1979), and a study of experimental infections by *Trypanosoma cruzi* in these animals is presently under way at our Institution. As part of this programme we have established a colony of *Didelphis marsupialis*. Our first attempts to induce mating in captivity with wild specimens were unsuccessful and frequently resulted in one of them, usually the female, attacking and mutilating or killing its mate.

We describe below conditions which permitted the production of three litters in one tentative involving seven animals: two males and one female siblings aged about two months when captured within their mother's pouch; one female caught with an estimated age of three months and probably recently weaned; and one male and two females which were adults when captured. All animals had been four to ten months in captivity.

Since early in the year (1982) several couples in succession were confined in adjoining 180x175-174 cm pens separated by a large mesh screen panel with a door that was opened only for short periods at night when behaviour of the pair suggested that some interest had arisen between them. By mid-May, courtship was noticed but, if given access to the female pen, the males were met with indifference or aggressive reactions. Only by mid-August signs of female responsiveness were noticed and from this time up to mid-September, the couples were allowed to stay together for longer periods.

It was the female that migrated to the other pen, and the pair rested together in the male nesting box during daytime. After five to seven days of cohabitation of each of the three males with one of the four females (one male was accepted by two females

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in succession) the pairs separated and signs of pregnancy such as described in the literature (Hartman, 1923; Reynolds, 1952) were found in all the females. These symptoms subsided in one female after a genital bleeding was noticed, on the 15th day following her segregation. As for the other three females events were as follows:

Female No.	Permanence with ♂, in days	Young first found in marsupium		
		day after first contact with ♂	litter size	mean length of young, in cm
*28	5	15th	12	1
32	7	16th	11	1
**37	7	16th	12	1,5

\*Female No. 28 has been trapped at the end of November 1981 with eight young of about three days of age in her pouch.

\*\*Female No. 37 showed signs of parturition on the 14th day but the embryos were seen only on the second day after that; since at this time they were longer (1.5 cm) than the average for the other two litters, it is probable that they were born actually sooner than recorded.

Since we avoided close watching that could disturb the animals, we did not observe the actual times at which intercourse and birth of the litters took place. However, the period of gestation recorded for the species *D. virginiana* – 13,25 days (Hunsaker & Shupe, 1977) – is well within the limits registered above for the time elapsed between first contact with male and detection of embryos in the pouch. Copulation probably took place within the first two days of cohabitation.

## COMMENTS

The biology of the North American species *D. virginiana* has been studied both in the field and in captivity, and detailed accounts on reproductive behaviour and other aspects of breeding and development are found in the literature. For this species there are two litters per year, exceptionally three, mid-January through February being the average time for the birth of the first litter; some variation has been recorded between Northern and Southern regions of North America, probably due to climatic difference, but little difference has been found in the annual cycles of wild and captive specimens (Hunsaker II, 1977).

Available data on *D. marsupialis*, mostly from Panama (Fleming, 1973) and Colombia (Tyndale-Biscoe & Mackenzie, 1976), point to January as the month when the first annual breeding starts, second litters appearing in April and May and some in August and October in Brazil (Hunsaker II, 1977). In Venezuela, January was the month recorded for the annual first litters, but it was in June and July that the largest numbers of pregnant females and pouch young were caught, according to Telford & Tonn (1982). From a study made in Minas Gerais (Brazil), Valle et al. (1981) concluded that the breeding season for *D. marsupialis* extends for 9 months, beginning in July.

The size of the litters in our laboratory was an average 10.7, larger than the averages of 6 (Tyndale-Biscoe & Mackenzie, 1976) or 6.5 (Valle et al. 1981) for *D. marsupialis* and 7.5 for *D. virginiana* recorded in field studies by various authors (Hunsaker II, 1977).

It is most probable that *D. marsupialis* has 2-3 litters a year and that breeding cycles are less well defined than for *D. virginiana* in the Northern hemisphere. Failure of

our previous trials to induce mating may have been due to various factors related to caging conditions, feeding and general management. Several changes may have contributed to success such as utilization of animals that had been in captivity for long periods (some since early age) and of the described adjoining pens. Possibly the most important was the change in feeding, since with the previous use of a commercial dog food the animals were becoming obese and lethargic. Raw beef liver were later offered every other day, in addition to a daily allowance of fruits (banana, papaya, oranges) and eggs.

To our knowledge this is the first record of *D. marsupialis* breeding in captivity. Genital bleeding after mating has been observed in *D. virginiana* and interpreted as false pregnancy (Hartman, 1923). A detailed study of reproduction of *D. marsupialis* in the field and in captivity, including vaginal cytology, is now under way in our laboratory.

## RESUMO

As condições utilizadas para o sucesso da reprodução de *D. marsupialis* em cativeiro são descritas. Esta tentativa envolveu quatro casais, os quais haviam sido mantidos no mínimo por quatro meses em laboratório e resultou em três ninhadas e uma falsa prenhez. Julgamos ser este o primeiro registro da reprodução desta espécie em cativeiro.

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