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Breeding the fossa *Cryptoprocta ferox* at Montpellier Zoo

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The first birth of the Malagasy fossa *Cryptoprocta ferox* in captivity was observed a few years ago (*1*). On that occasion a pregnant ♀ had been captured two months before parturition; this time, however, a pair which had been raised in

captivity has bred at the Montpellier Zoo.

The fossa is a carnivore which is found only in the forested areas of Madagascar and is nowhere abundant. The morphological characteristics, intermediate between viverrid and felid, make its precise classification uncertain and subject to frequent revision (*3*). It is a medium sized animal. The adult weight varies between 7–12 kg, ♂♂ always being larger than ♀♀. The head and body length is 75 cm, with a 70 cm tail.

In general appearance the fossa is rather unique. It is low-slung, with a long body and a tail of equal length used as a balancing organ during arboreal locomotion. The fur is a uniform rusty-brown, slightly lighter on the underside. The snout is flattened with a felid-like dentition. The claws are retractile but the animal is semi-plantigrade. Unlike other Malagasy carnivores which have only one pair of nipples, the fossa has three pairs, one inguinal, one ventral and one pectoral.

BEHAVIOUR

The fossa is primarily crepuscular and nocturnal, hiding by day in the fork of trees or small remote caves. It is both arboreal and terrestrial, extremely agile in climbing and jumping from branch to branch as easily as a lemur. The soles are naked, with numerous pads which keep it from slipping and allow it to perform dangerous acrobatics.

Diet consists mainly of small mammals and birds. Its mainly nocturnal activities and great agility are interesting ecological adaptations, permitting the fossa to catch large perching birds such as guinea fowl *Numida mitrata* or sleeping diurnal lemurs of the genus *Lemur*. It will also eat insectivores such as *Tenrec ecaudatus*, and probably also rodents. In captivity it is fed 800–1000 g of meat a day and the size of prey at its disposal in the wild seems to suit its requirements perfectly.

BREEDING

Copulations were observed several times in captivity and in the wild and always take place in September and October (*2*). The animals copulate in the highest part of the trees on branches 20 cm in diameter. The ♀ lies down on the branch, grasping it with her forepaws, her hindpaws tucked under her. The ♂ lies on top of her, slightly to one side, grasping her tightly around the waist with his forepaws. The very anterior position of the penis and posterior position of the testicles seem perfectly adapted to this copulatory posture. Intromission lasts one to 1½ hours and meanwhile the ♂ licks the neck, ears and back of the ♀.

In the wild I have observed up to four ♂♂ near a ♀ in oestrus but only one ♂ appears to be allowed to mate with her. It is probably her plaintive miaows voiced at this time that attracts them. It should be noted that this mating behaviour is unique and quite different from that of other Malagasy animals.

MONTPELLIER BIRTH

The pair which bred at Montpellier Zoo came from a litter of four collected on the east coast of Madagascar at the beginning of January 1970 when they were a month old. The four (2.2) were hand-raised and were all kept together for the first 1½ years; they were quite tame at this time. They were then separated into pairs and have lived so ever since, arriving at Montpellier in November 1973.

The first matings were observed in Tananarive in October 1972, when the animals were almost three years old. Spermatogenesis was evident in the ♂♂ but as far as we know no birth took place. The ♀♀ were almost certainly still immature. At the end of October 1973 (in Tananarive) more copulations were noted and in Montpellier on 17 January 1974 between 1200 and 1500 hours one of the ♀♀ had a litter of two cubs (see Plate 16). The birth was not observed but at 1500 hours the mother could be seen nestling two cubs, already clean and dry, in the box which had been provided, filled with straw, a few days earlier. She removed the straw the day before parturition.

We were able to predict the birth at least two weeks beforehand as the nipples, the inguinal and ventral ones in particular, had begun to swell and the ♀'s breathing was more spasmodic than usual At birth the cubs were of a light colour, almost white and well furred. They seemed smaller in size than the two previously observed in Tananarive and they weighed no more than 80 g each. It is possible that being the ♀'s first litter they may have been a little premature.

The ♀ guarded the cubs protectively in the nestbox and licked them often. They could not walk yet but managed to drag themselves along the ground. On the first day they accidentally strayed from the nestbox and the ♀ did not retrieve them. She seemed not to dare touch them, and merely guided them back to the box entrance, cuffing them lightly with her paws. On later occasions, however, she lost her fear and would seize them by the throat in her jaws. Initially the cubs suckled from both ventral and inguinal nipples but from Day 2 they used only the inguinal ones, which grew even bigger. From that day on also the ♀ sometimes left them for periods, and the cubs miaowed repeatedly until her return. They rested curled up under her forepaws and not in the more usual position in her groin. She is probably able to lick them more easily this way.

On Day 7 the ♀ brought out the cubs for the first time and deposited them one by one on the bedding on the floor of the cage. She remained with them for 1½ hours before returning them to the nestbox. Her demeanour was nervous and she seemed unable to decide where to place the cubs. The presence of the ♂ in the adjoining cage probably disturbed her greatly. In Tananarive, on the other hand, the ♀ had waited a month before bringing the cubs out of the nestbox. On that occasion the box had been situated 1·5 m above ground whereas this time it was on the cage floor.

The next day a partition was erected between the two enclosures so as to isolate mother and young, and as a result the ♀ grew more calm and kept the cubs inside the nestbox. In the days that followed she would leave the den more and more often to rest on a branch above. During her absence the cubs stayed much quieter than before and usually slept. Once so tame, the ♀ had become extremely aggressive towards her keepers since the birth, probably considering that they, like the ♂, were a potential danger to the young.

The cubs' initial development was slow. Their pale blue eyes did not open until Day 25 (in our first litter they were wide open on Day 16). From then on they were more agile and could walk virtually normally, but they still stayed in the nestbox and made no attempt to leave it. The ♀ could still carry them but they would wriggle and resist when she grabbed them and miaowed until they were dropped back into the box. Their darkening fur was now a pearl grey.

At the time of writing the cubs are six weeks old and the ♀ plays more frequently with them. She bites them and they usually respond by simulating attack. They now emerge from the nestbox on their own accord as did the young born at Tananarive. Their fur is ashy grey and the head a light brown; the blue eyes have turned a light chestnut. The cubs are much more lively, beginning to play with each other, climbing over the box and generally taking an interest in their surroundings.

Their external development, however, remains very slow. The hand-reared parents were two years old before they reached adult size and they were only fully developed at three or four years (Figs 1 and 2). Prolonged observation of these four animals since 1970 has confirmed that the fossa does not reach maturity until at least three years of age and that breeding only begins at four. This second captive birth has allowed us to substantiate our findings from the first

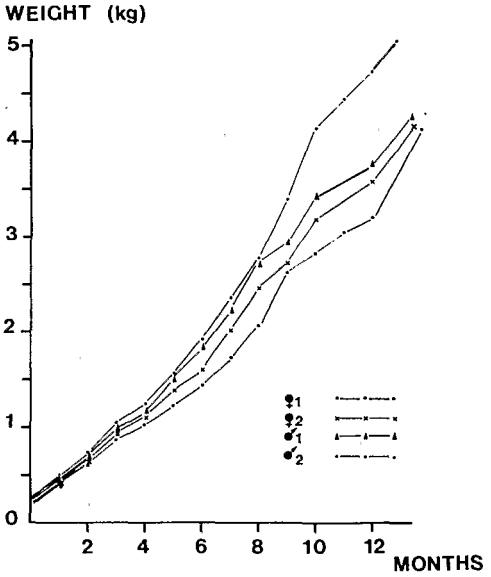

Fig. 1. Weight increase in a litter of four fossas *Cryptoprocta ferox* hand-reared at Tananarive Zoo in 1970.

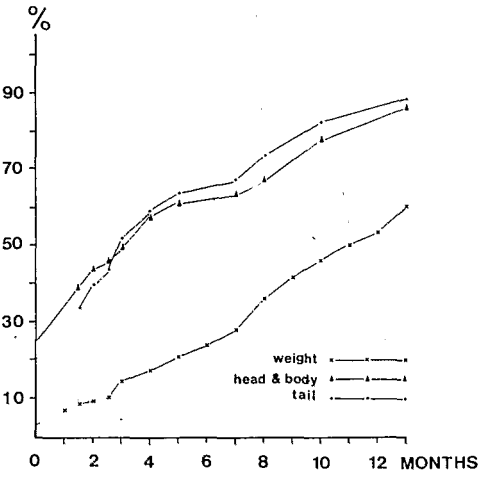

Fig. 2. Relative increase in weight and body measurements of the hand-reared fossas.

birth, and the minor disparities in development rate are probably accounted for by different rearing conditions and the fact that it was the ♀'s first litter. The three month gestation period has also been established, as has the four year age of sexual maturity. The birth has made it possible for the first time to observe and record the complete reproductive cycle of the fossa.

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