NOVIKOV, G. A. (1962): *Carnivorous mammals of the fauna of the USSR.* Jerusalem: Israel Program for Scientific Translations.
PUSCHMANN, W. (1975): *Wildtiere in Menschenhand: Säugetiere.* Berlin: VEB Deutscher Landwirtschaftsverlag.
RIEGER, I. (1978): Social behavior of captive striped hyenas. *Carnivore* 1 (2): 49–60.
RIEGER, I. (in press, a): Mitteilung über die Aufzucht von Streifenhyänen, *Hyaena hyaena. Zool. Gart., Jena.*
RIEGER, I. (in press, b): *A review of the biology of striped hyaenas. Säugetierk. Mitt.*
SHULOV, A. (1958): Observations on parturition of *Hyaena striata* L. *Mammalia* 22: 595–597.
SHULOV, A. (1959): Observation of the suckling behaviour of *Hyaena striata. Mammalia* 23: 124–125.
SKINNER, J. D. (1976): Ecology of the brown hyaena, *Hyaena brunnea,* in the Transvaal with a distribution map for southern Africa. *S. Afr. J. Sci.* 72: 262–269.

Manuscript submitted 3 April 1978

Breeding the Mountain tapir

Tapirus pinchaque [Plate 46]

at the Los Angeles Zoo

SANDRA BONNEY[1] & MICHAEL J. CROTTY[2]

[1]*Animal Keeper and* [2]*Curator of Mammals, Los Angeles Zoo, 5333 Zoo Drive, Los Angeles, California 90027, USA*

The Mountain or Woolly tapir *Tapirus pinchaque* has always been a rarity in zoos, partly because of its remote habitat, but mainly because it is slow to acclimatise to captivity and, in particular, has more difficulty in adjusting to a captive diet than other tapirs (Wilson & Wilson, 1973).

At Los Angeles Zoo, where the other three species of tapir, the Malayan *T. indicus,* American *T. terrestris* and Baird's *T. bairdii,* have been successfully kept and bred, efforts have been made for over a decade to breed and rear *T. pinchaque.*

The first animal, acquired in March 1967, was a young ♂ estimated to be about four years of age. His first mate was received in May of the same year and three years later gave birth to a ♂ calf which did not survive (Table 1). She died in January 1971. The early captive history of this pair has been described by Gale & Sedgwick (1968). Two other young ♀♀, one received in June and the second in October 1968, died shortly after arrival.

Our only surviving ♀ arrived in May 1969. She was imported from Ecuador as a very young animal of about four months of age and weighed only 31·8 kg.

MAINTENANCE

The Mountain tapirs are housed, together with a group of Patagonian cavies *Dolichotis patagonum,* in an open kidney-shaped exhibit, 13 × 28 m, and containing a pool 3 × 5 × 1 m deep. Adjoining this is a smaller yard, 7 × 7 m, which allows the tapirs to be housed separately when necessary and a barn with two stalls, measuring 2·7 × 3·7 m and each provided with wooden pallets on which the tapirs sleep.

They are separated at night and fed in their own stalls, each animal receiving five lettuce (*c.* 3·6 kg), 3·6 kg apples, 0·9 kg carrots, 2·7 kg bananas, 0·5 kg Purina Monkey Chow and 1·8 kg yams.

DEATHS

The first ♀ was in the collection for nearly five years before her death, three months after giving birth to a live calf. The post-mortem findings indicated infectious pericarditis and pneumonia. Her weight at death was 147·3 kg.

The other two deaths occurred shortly after the animals arrived. One, an adult, died one week after arrival of acute haemorrhagic gastroenteritis, complicated by balantidiasis and chronic endometritis. The post-mortem revealed 2·25 kg

MOTHER	SEX OF CALF	DATE OF BIRTH	WEIGHT (kg)		LENGTH (BODY) (cm)		HEIGHT (AT SHOULDER) (cm)		COMMENTS
			birth	11 mths	birth	11 mths	birth	11 mths	
♀1	♂	16 Oct 70	4·05		58·7		27·9		Died day of birth — suspected heart defect
♀2	♂	21 Mar 76							stillborn
♀2	♀	4 Jun 77	5·4	91	62·2	132	31	78·7	survived

Table 1. Mountain tapirs *Tapirus pinchaque* born (at term) at Los Angeles Zoo.

of sand in the caecum and colon. The other ♀, which was estimated to be one year old, lived only 12 days. She had a well encapsulated cervical abscess, which led to chronic debility. She became ataxic and died of entero-toxaemia within eight hours.

BEHAVIOUR AND MATING

The ♂ has always been very aggressive and the animals have often been kept apart for long periods. On several occasions he has inflicted severe lacerations on the back and flank of the two ♀♀ with which he has been paired and this raises the question of how far we can put the ♀ at risk in order to achieve a successful mating. To reduce the possibility of serious injury, in December 1975, the ♂'s two lower canines and three lower incisors were blunted.

When the ♂ begins to chase his mate, there is a great deal of vocalisation, mostly from the ♀. Although the current ♀ is the larger animal and possesses all her teeth, she does not defend herself but, if cornered, lies down and squeals, allowing the ♂ to chew on her.

The pair mated in 1975 and a full-term stillborn calf was born on 21 March 1976. The cause of death was undetermined. Up to the birth they had been kept apart for some time but they were gradually reintroduced and mated on 6, 7, 8 and 9 April and again on 5, 6 and 7 May, suggesting an oestrous cycle of approximately 30 days. This time they were left together but there were no further observed copulations until on 26 April 1977 she allowed him to mate again. As we believed that she was pregnant, we separated the pair four days later. The attempted mating was, in fact, less than six weeks prior to parturition.

BIRTH

On 3 May a vaginal discharge was noted and ten days later a clear fluid could be extracted from the udder. Pregnancy was confirmed on 24 May by palpation and on 26 May examination with an ultra-sonic scanner determined that the foetus was alive. By 29 May the vulva was slightly dilated and there was some loss of muscle tone around the posterior region. The following day she was very restless. To ensure that serum would be available if the calf needed anti-bodies, the veterinarians drew off 30 ml of blood on 3 June. Waxing of the nipples was first seen on 27 May; a heavier waxing occurred on 3 June and the next day milk started to drip from the udder.

Periodic checks were made each night and on 4 June, at approximately 1900 hours, a ♀ calf was born. Calculating from the last series of observed matings, the gestation period was 392–393 days. This closely corresponds to the records for gestation in the other tapir species, 13 months for *T. indicus* and 395–399 days for *T. terrestris* (Asdell, 1964) and 390–400 days for *Tapirus bairdii* (Leopold, 1953; Alvarez del Toro, 1966; pers. obs.).

The calf was weighed and measured (Table 1) and iodine (7% solution) was applied to the umbilical stump. She was given 0·1 ml MU-SE and 5 ml Bicillin. Nursing was not observed until the following day. Owing to the slippery floor of the den, the calf's legs were splayed and gauze hobbles were put on her until she gained strength to stand unaided.

On day 9 she seemed lethargic and was given an injection of 5 ml of Liquamycin. There was some diarrhoea on day 57 and she was treated with 1 ml of Gentocin daily for eight days.

The calf was hand-fed with bananas and cooked yams from day 2 onwards and within a few weeks was eating solid foods on her own. When she was three months old she was observed ingesting faeces, but an extra morning hand-feed of the bananas and yams cured this.

The calf's pre-molars erupted on day 7, the bottom incisors on day 8, top incisors on day 9 and the molars on day 55. Her baby hair was very soft and thick, between 2–5 cm in length, and the juvenile markings were much more distinct than in the other species. At time of writing she is nearly one year old. She has completely lost the juvenile pattern and is still nursing. The diet offered to the mother and calf is double the ♀'s usual ration, plus 0·5 kg of cooked yams for the calf (Plate 46).

On 5 July when the calf was a month old, the ♂ was allowed to join the ♀ and young. On 20 August it was necessary to separate them because he was biting both his mate and the calf and similar behaviour occurred on the following two days. From then on the three animals were allowed together for at least a few hours a day, being separated only when the ♂ showed aggression.

The adult pair mated on 6 August and again on 11, 12 and 13 September. On 4 March 1978 a ♀ foetus, approximately half-term, was aborted but no cause was determined. The pair mated again on 9, 10 and 11 March.

PRODUCTS MENTIONED IN THE TEXT

Bicillin: penicillin G, manufactured by Wyeth Laboratories, Philadelphia, Penn, USA.

Gentocin: injectable antibiotic manufactured by Schering Corporation, Kenilworth, New Jersey, USA.

Liquamycin: injectable antibiotic manufactured by Pfizer Inc., New York, NY, USA.

MU-SE: vitamin E supplement manufactured by Burns, Biotec Laboratory, Oakland, California, USA.

Purina Monkey Chow-25: primate biscuit manufactured by Ralston Purina Company, St Louis, Missouri 63188, USA.

Realtime Ultra-Sonic Scanner—Model 2130: manufactured by Advanced Diagnostic Research Inc., Tempe, Arizona, USA.

REFERENCES

ALVAREZ DEL TORO, M. (1966): A note on the breeding of Baird's tapir *Tapirus bairdii* at Tuxtla Gutierrez Zoo. *Int. Zoo Yb.* **6**: 196.

ASDELL, S. A. (1964): *Patterns of mammalian reproduction.* New York: Cornell Univ. Press.

GALE, N. B. & SEDGWICK, C. J. (1968): A note on the woolly tapirs *Tapirus pinchaque* at Los Angeles Zoo. *Int. Zoo Yb.* **8**: 211–212.

LEOPOLD, A. S. (1953): *Wildlife of Mexico. The game birds and mammals.* Berkeley & Los Angeles: Univ. California Press.

WILSON, R. A. & WILSON, S. (1973): Diet of captive tapirs *Tapirus* spp. *Int. Zoo Yb.* **13**: 213–217.

Manuscript submitted 22 May 1978