

Tabulated data on the breeding biology of the Black rhinoceros

Diceros bicornis

compiled from reports in the Yearbook

NAME OF ZOO	AGE AT 1ST MATING (in years)	AGE AT 1ST SUCCESSFUL MATING (in years)	OESTROUS CYCLE LENGTH (in days)	DURATION OF (in days)	DURATION OF COPULATION (in mins)	GESTATION PERIOD (in days)	BIRTHS
Bristol	♂ 4½ ± ca. 4½	♂ 6 ± ca. 6	21-45	1-2	2-20	438	♂ Bobby 22.8.58
Bristol			17-60		5-15	419	♂ Ronald 28.12.61
Bristol			21		55	438	♀ Rhona 24.8.64
Hanover	♂ ca. 7 ± ca. 9	♂ ca. 7 ♀ ca. 9	28	3-4	30	469	♂ Kasper 28.6.65
Kobe			28-30	5-6	ca. 40	ca. 465	♂ Bobby 16.11.63
Kobe						ca. 462	♂ Rock 2.11.65
Mysore		± ca. 17	30-35	1-2	20	458	♂ Nandi 26.8.66
Pittsburgh	± ca. 7	± ca. 8			60--	463	♂ Faru I Oct. 1960
Pittsburgh						454	♂ Faru II Apr. 1963
Pittsburgh						457	♂ Faru III Oct. 1965
Sydney			18	2-3	15-40	ca. 476	1♂ 6½

Semen extraction by manipulative technique in the Black rhinoceros

Diceros bicornis

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A young female Black rhinoceros *Diceros bicornis* at Pretoria Zoo regularly came into oestrus in a cycle of about four weeks. The male was interested in her during oestrus and attempted to mate with her. However, copulation was never achieved and it was therefore decided to try and inseminate the female artificially.

There appeared to be no reference in literature to successful semen collection from a rhinoceros. At first an attempt was made to insert the male's

penis into various artificial vaginas, commonly used to collect semen from horses and cattle. The natural backward curve of the semi-erected penis of this species made the use of these long, straight artificial vaginas rather difficult. It was found that the distal part of the penis is most sensitive to stimulation and an artificial vagina, much shorter than the ordinary equine or bovine types, may be found to be more effective and easier to use.

The bull could not be restrained in any way and

the possibility of electro-ejaculation was excluded. Like most other Black rhinos, he was quite aggressive, but fortunately he allowed me and his keeper, Mr H. J. Grobler, to stroke him through the bars of the enclosure. It was found that partial erection of the penis could sometimes be induced by gentle massage of the preputial sheath and it was decided to attempt semen collection by manipulation of the penis.

While the male was feeding next to the rail of his enclosure, he was stroked along the side of the belly and in the preputial area. Once the penis emerged through the preputial opening, it was gently grasped by a gloved hand and slowly pulled out. It was then secured by holding it at the two lateral alar protrusions, while the keeper assisted in massaging the well lubricated penis with gradual downward strokes along its entire length. Liquid paraffin was used as a lubricant. Erection developed slowly and the penis gradually straightened so that finally it pointed forwards. Complete erection was obtained by applying pressure over the proximal part of the penis, which contains numerous, large, subcutaneous blood-vessels.

At this stage the use of the ordinary artificial bovine vagina was again attempted but it was abandoned due to difficulties in handling such a heavy piece of apparatus. Instead, a latex funnel with a collecting tube at its end was folded over the tip of the penis. Continuous gentle massage of the penis caused the rhino to ejaculate after about 15 minutes. On different occasions from 3 to 15 ml of semen was collected successfully with this technique.

The semen was yellowish, slightly alkaline, and had the consistency of cow milk. Microscopic examination of the samples revealed numerous dead spermatozoa, neutrophils and squamous

epithelium cells. The semen was obviously of poor quality, but better results might be expected once the bull had become used to the procedure.

Semen can be collected much more easily if a female rhino in oestrus is present. When the Pretoria Zoo rhinos attempted to mate they were easy to approach. When the male mounted the oestrous female, he had a habit of standing with his front feet on her back. This gave the semen collector ample opportunity to insert a collecting tube or artificial vagina between the two animals. If a short vagina is used, the rest of the penis which will not be covered by the vagina, can then be massaged with a lubricated, gloved hand.

It is important that the semen collector and his assistant should gain the confidence of the rhino before semen collection is attempted. The presence of strange people or other disturbing factors during semen collection should be avoided. Success depends completely on the co-operation of the male rhino and he should be handled gently and with great care.

Tranquilliser and anaesthetic drugs may prove valuable if artificial insemination techniques are to be applied to wild animal species. Although we did not use any chemical agents, it is possible to apply electro-ejaculation techniques to tranquillised or possibly even to anaesthetised animals.

The White rhinoceros *Diceros simus* generally has a quieter temperament than *bicornis* and the technique described above could also be used on this species.

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