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Asdell's Patterns of Mammalian Reproduction

A Compendium of Species-Specific Data

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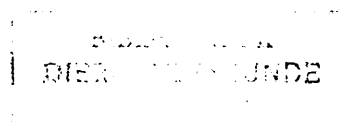
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GESTATION

<i>Tapirus indicus</i>	9 mo; n1	3237
	13 mo	1355
	~13 mo; n1	9625
	390-395 d	6369
	401 d; r396-407; n4	8990
	403 d	9738
	405 d; n1	11352
<i>Tapirus pinchaque</i>	392-393 d; n1	1099
<i>Tapirus terrestris</i>	385-402 d	11352
	r392-405 d; n8 lt, 2 f	509
	~13 mo	1355

LACTATION

<i>Tapirus spp</i>	wean: 3 mo	12032
<i>Tapirus indicus</i>	wean: 153 d	8990
	wean: 6-8 mo	6369
<i>Tapirus terrestris</i>	milk present: 9 mo	6748

INTERLITTER INTERVAL

<i>Tapirus indicus</i>	2 yr	6369
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SEASONALITY

<i>Tapirus indicus</i>	mate: Apr-May; Thailand	6369
<i>Tapirus terrestris</i>	birth: Feb, May-June, Aug-Oct; n7; zoo	12128

Order Perissodactyla, Family Rhinocerotidae

Rhinoceroses (*Ceratotherium* 1400-3600 kg; *Dicerorhinus* 900-2000 kg; *Diceros* 720-1800 kg; *Rhinoceros* 1600-4000 kg) are large, terrestrial herbivores in Africa, India and southeast Asia. The 4960 g (n1), epitheliochorial, diffuse placenta (232, 2674, 6635) implants into a bicornuate uterus (3844a, 4108) and may be eaten after birth (4024, 6185, 6255, 9571). Estrus occurs from 2 wk to 8 mo (1433, 2599, 5762, 6185, 6251, 8167, 8973) after the birth of an open-eyed, mobile neonate (3983, 4024, 5504, 5762, 8167, 8798, 10118, 10158, 10867). Females have 2 teats (9155, 10158). Males have seminal vesicles, but no scrotum (3395).

Details of anatomy (3844a), endocrinology (5549, 5552, 8893), copulation (3827), birth (6255, 6943), suckling (6703), and milk composition (407, 4025, 4057, 4117, 5551, 6185) are available.

NEONATAL MASS

<i>Ceratotherium simum</i>	m: est 32-36 kg; n1	6943
	~40 kg	10158
	~47.7 kg; n1, 10 d	920
	48.5 kg; n1	10118
	f: 55 kg; n1, 1 wk diseased	11785
	m: est 100 kg	2604
<i>Dicerorhinus sumatrensis</i>	23 kg; n1	4108
<i>Diceros bicornis</i>	est 22-34 kg	4521
	35 kg; r25-45	8798
	39.04 kg; n1 term emb	3830
	~40 kg	5762, 10158
<i>Rhinoceros unicornis</i>	33.75 kg; r33-34.5; n2	1820
	44.0 kg; r33.6-54.4; n2	155, 3656
	48.6 kg; n1, 2 d	7406
	56.8 kg; n1	6703
	m: 62.7 kg; r40-79; n9	153, 6181, 6185, 6194
	m: 63.5 kg; r59-68; n2	2674
	f: 68.6 kg; r55.7-81; n9	153, 6181, 6185, 6194
	70 kg	6190
	71.3 kg; r40-81; n20	6255

NEONATAL SIZE

<i>Dicerorhinus sumatrensis</i>	914 mm; n1	4108
<i>Rhinoceros unicornis</i>	HB: 96.5-122 cm	6255
	99.0 cm; r96.5-101.6; n2	155
	105 cm; n1	6181

LITTER SIZE

<i>Ceratotherium simum</i>	1 yg	4642a
	1 yg	5762, 8798, 10158
	1 yg	8514
	1 yg; n5 lt	5973
<i>Dicerorhinus sumatrensis</i>	1 yg	4108
<i>Diceros bicornis</i>	1	5762, 8798, 10158
	mode 1	2449
	1 yg	2599
	1 yg	9155
	1; n1 lt	5504
<i>Rhinoceros unicornis</i>	1 yg	1820
	1; n1 lt	6133
	1 yg; n1 lt	4197
	1 yg; n1 lt	6033
	1 ea; n24 lt	994
	1 yg ea; n27 lt	6194
	2 yg; with 1 f	3657

SEXUAL MATURITY

<i>Ceratotherium simum</i>	f: 1st estrus: 3 yr	4642a
	f: 1st birth: 6.5-7 yr	8167
	f: 3 yr	4107
	m: 12 yr	8167
	f/m: 1st mate: ~5 yr	8973
	f/m: 4-5 yr	10158
	f/m: 7-10 yr	8798
<i>Diceros bicornis</i>	f: 1st conceive: 4.5 yr; n1	3829
	f: 1st birth: 4.75-5.25 yr	9592
	f: 1st birth: 6.42 yr	4831
	m: spermatogenesis: 7-8 yr	4831
	m: 1st mate: 5.5-6 yr	9592
	m: hold territory: 9 yr	4831
	m: 1st sire: 4.3 yr; n1	3829
	m: 6-7 yr	8798
	f/m: ~5-6 yr	5762
	f/m: 5-6 yr	5762
<i>Rhinoceros unicornis</i>	f: 1st estrus: 4 yr	6255
	f: 1st birth: 7.1 yr; r6-8	6251
	f: 4 yr	6190
	m: 7 yr	6190

CYCLE LENGTH

<i>Ceratotherium simum</i>	estrus: 30 d	8167
<i>Diceros bicornis</i>	estrus: 6-7 d	4831
	18 d	4251
	26-30 d	2599
	28-30 d	11998
	30-35 d	3983
	35 d; sd7.7; r26-46; n10 cycles, 4 f	4831
<i>Rhinoceros unicornis</i>	estrus: 24 h	6181
	24 d; r21-33; n1 f	6255
	27-42 d	6251
	36-58 d	6181, 6185
	40-50 d; n2 yr, 1 f	10868
	40-50 d; n10 cycles; 1 78 d cycle, 1 126 d cycle	10867
	43 d; sd2; r41-45; n4 cycles, 2 f	5552
	45 d; r24-57; n3	1433

GESTATION

<i>Ceratotherium simum</i>	>15 mo 3 wk	10118
	484 d; n1	9571
	~16 mo	5762, 10158
	16 mo	8167
	est 17 mo; ibi minus ppe	8973
	547 d; n1	8798
	18 mo	8514

	584 d; n1	11785
	~20 mo; n2	3062
<i>Dicerorhinus sumatrensis</i>	8 mo; questionable	4108
<i>Diceros bicornis</i>	431.67 d; r419-438; n3	4024
	15-17 mo; n5	4251
	458 d; n1	3983
	458.0 d; r454-463; n3	4521
	462 d; r446-478; n2	3828
	463.5 d; r462-465; n2	11998
	469 d	2599
	16-18 mo	5776
	530-550 d	2449
	540 d	9155
<i>Rhinoceros unicornis</i>	463 d; r462-464; n2	994
	464 d; n1	4197
	474 d; r471-477; n2	994
	478 d; r465-489; n17	994
	478.5 d; r462-489; n27	153, 6181, 6185, 6188, 6194
	479 d; r470-490; n3	994
	479 d; r462-491; n31	6255
	484 d; n1	901
	484 d; n1	7406
	486 d; n1	6033
	16 mo	1433
	488 d	10867, 10868
	18 mo	1820
	est 18.5-19 mo	155, 3656
LACTATION		
<i>Ceratotherium simum</i>	solid food: 1 wk	8798
	solid food: 2-3 wk	3062
	solid food: 2 mo	8167
	wean: ~1 yr	8167
<i>Diceros bicornis</i>	solid food: 9 d	8798
	solid food: 30 d	5504
	solid food: few wk	10158
	nurse: ~1 yr	10158
	nurse: 2 yr	9155
	wean: 2 yr	11697
	wean: >17.5 mo; n1f	3828
	wean: 1.5-2 yr	8798
<i>Rhinoceros unicornis</i>	solid food: 2-3 mo	6251
	solid food: 7 wk	6703
	wean: 12-18 mo	6251
	wean: 15 mo	6703
INTERLITTER INTERVAL		
<i>Ceratotherium simum</i>	21-22 mo; est from 6-7 mo ppe & gest	7204
	2-3 yr	8167
	3-5 yr	4246a
<i>Diceros bicornis</i>	2-4 yr	5762
	27.3 mo; r25-29; n3	3828
	2.5-3.25 yr	9592
	30.6 mo; r22-55; n13; 28 mo if drop >40 mo	4831
	~3 yr	10158
	44.5 mo; r20-89; n32; 32 mo if drop >40 mo	4831
<i>Rhinoceros unicornis</i>	2 yr	6188
	25.8 mo	9364
	median 34 mo; max 50; n50	6251

SEASONALITY

<i>Ceratotherium simum</i>	mate: Feb-May; Uganda	4642a
	mate: peaks Feb, Nov, few July-Sept; Zululand, S Africa	8168
	mate: peak Oct-Dec; Zululand, S Africa	8167
	birth: peak Mar-May; Zululand, S Africa	8167
	birth: peaks Mar, July; Zululand, S Africa	8168
<i>Diceros bicornis</i>	birth: yr rd; S Africa	10158
	estrus: Jan-Feb; Okavango, Angola	11697
	mate: peak est Mar-Apr, Sept-Nov; Kenya	5762
	mate: Aug-Dec; Kaokoveld, Namibia	5455
	mate: Nov-Dec; Okavango, Angola	11697
	mate: yr rd; Kenya	9155
	mate: yr rd; Tanzania	3827
	birth: Jan-May; Okavango, Angola	11697
	birth: peak Jan, June, low Mar-May; n Natal, S Africa	4831
	birth: Feb, May, July, Sept-Nov; n32; zoo	5818
	birth: peak June-July; Kenya	9592
	birth: Dec-Aug; Kaokoveld, Namibia	7204
	birth: yr rd; est peaks Jan, June; n Natal, S Africa	4831
	birth: yr rd; S Africa	10158
	birth: yr rd; Tanzania	5762
<i>Rhinoceros unicornis</i>	estrus: Aug; n1; zoo	1433
	mate: est Feb-Apr; India	3656
	birth: Oct; n1; zoo	10867
	birth: yr rd; Chitwan valley, Nepal	6251
	birth: yr rd; n36; zoo	6194