

CURATOR'S REPORT 2003

Dedi Chandra, Marcellus Adi, Nico van Strien (eds)
Yayasan Suaka Rhino Sumatera, Jakarta & Bogor, 30 May 2004

**Sumatran
Rhino
Sanctuary**
Way Kambas National Park



**Suaka
Rhino
Sumatera**
Taman Nasional Way Kambas

CURATOR'S REPORT 2003

A Compilation of the materials published in the monthly Curator's Reports from the Sumatran Rhino Sanctuary (SRS) Managed Breeding Facility in Way Kambas National Park, Lampung Province, Indonesia.

Way Kambas, 30 May 2004

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THE SUMATRAN RHINO SANCTUARY FIELD PERSONNEL:

Site Manager : Marcellus Adi C.T. Riyanto, DVM

Animal Curator/Veterinarian: : Dedi Candra, DVM

Facilities Supervisor: : Sumadi

Keepers : 1. Dede Nurdin
2. Lamijo
3. Rakimin
4. Rois Subadri
5. Sugiono
6. Sarno
7. Sunarto
8. Yuhadi

Housekeeper : Suratno

Cook : Cecep

Guards : POLHUT / NP guards (rotating)

Driver/food collector : Surono

Part 1

FOOD and WEIGHT TABLES

PRINCIPAL FOOD ITEMS (in order of importance) :

BROWSE : Collected in villages and outside SRS

jackfruit (*Artocarpus heterophylla*),
various *ficus sp* from the forest
pulai (*Alstonia scholaris*),
waru (*Mallotus mollucanus*),
mahang hijau (*Macaranga triloba*),
akar jitan (*Strophantus caudatus*),
akar merah (*Mussaenda frondosa*),
keputihan (*Clibadium surinaraense*),
akar mencret (*Meremia peltata*),
kasapan (*Croton caudatus*), and
torop (*Artocarpus elasticus*).

FRUITS :

banana,
carrot,
sweet-potato,
pineapple,
papaya,
watermelon,
rose apple,
pumpkin,
mango.

JANUARY 2003**FOOD AND WEIGHT (in Kg)**

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits	kg	Browse	Fruits	kg
1	24.5	6		31.0	6	
2	16.0	4		43.0	4	
3	26.0	6		37.0	6	
4	14.0	5		39.0	6	676.5
5	20.0	6	664.5	39.0	5	
6	15.0	5		44.0	3	
7	24.0	3		40.0	3	
8	20.0	6		31.0	6	
9	15.0	6		33.0	6	
10	21.0	5		35.0	5	
11	20.0	5		29.0	6	671.0
12	25.0	5	668.5	36.0	6	
13	25.5	5		34.0	5	
14	23.0	6		43.0	5	
15	32.0	5		39.0	5	
16	26.0	3		31.0	6	
17	37.5	2.5		23.0	2.5	
18	24.0	2		31.5	2	657.5
19	22.5	4	651.0	38.0	4	
20	22.0	4		21.0	5	
21	29.0	6		38.0	6	
22	19.0	5		33.0	4	
23	19.0	5		27.0	4	
24	24.0	5		30.0	3	
25	20.0	6		30.0	5	671.5
26	20.0	5	646.5	25.0	5	
27	24.0	5		35.0	5	
28	20.0	6		47.0	6	
29	20.0	6		35.0	5	
30	16.0	5		29.0	6	
31	15.0	5		34.0	5	
Mean	21.9	4.9	657.6	34.2	4.9	669.1

FEBRUARY 2003

FOOD AND WEIGHT (in Kg)

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits	kg	Browse	Fruits	kg
1	34.5	5		37.0	5	652.0
2	27.0	5	658.0	35.0	6	
3	28.0	6		30.0	4	
4	23.0	5		38.5	5	
5	22.0	5		22.0	5	
6	22.5	5		28.0	5	
7	29.0	4		25.0	4	
8	25.0	4		15.0	4	672.5
9	32.0	4	664.0	20.0	4	
10	27.0	4		27.0	4	
11	20.0	4		26.5	4	
12	22.0	3		31.0	0	
13	20.0	2		20.0	2.5	
14	14.0	2		29.0	2	
15	15.0	0		22.0	2	
16	20.0	2		32.0	2	
17	11.0	0		23.0	2	
18	23.0	4		31.5	2	
19	26.0	2		26.0	5	
20	20.0	5		32.0	5	
21	7.0	3.5		24.0	3	
22	18.0	2		24.0	3	
23	19.0	2		21.0	0	
24	13.0	5		24.0	6	
25	13.0	5		20.0	6	
26	14.0	5		16.0	6	
27	7.0	3		22.0	5	
28	19.0	3		19.0	4	
29	0.0	0		0.0	0	
30	0.0	0		0.0	0	
31	0.0	0		0.0	0	
Mean	18.4	3.2	661.0	29.1	3.4	662.3

MARCH 2003**FOOD AND WEIGHT (in Kg)**

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits	kg	Browse	Fruits	kg
1	15.0	4		21.0	4	
2	14.0	1		19.0	5	
3	16.0	3		0.0	5	
4	12.0	5		10.0	2	
5	12.0	4	633.0	16.0	5	
6	16.0	5		13.0	5	
7	15.0	5		10.0	4	
8	15.0	3		12.0	3	637.0
9	17.0	3		16.0	5	
10	22.0	5		20.0	5	
11	10.0	5		20.5	6	
12	22.0	5		20.0	6	
13	23.0	6		21.5	6	
14	20.0	6		24.0	6	
15	16.0	6		28.0	6	
16	18.5	6		29.0	6	
17	18.0	3		27.0	4	
18	31.0	6		29.5	5.5	
19	26.0	6		32.0	6	
20	24.0	6		25.0	5	
21	15.0	3		25.0	2	
22	18.0	6		26.5	6	
23	18.0	6		25.0	6	
24	17.0	5		27.0	5	
25	26.0	4		33.0	0	
26	17.0	2		26.0	1	
27	14.0	4		27.0	4	
28	22.0	4		23.5	4	
29	27.0	4		41.0	3	
30	20.0	4		27.0	4	
31	28.0	4		32.0	4	
Mean	18.9	4.5	633.0	22.8	4.5	637.3

APRIL 2003

FOOD AND WEIGHT (in Kg)

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits	kg	Browse	Fruits	kg
1	24.0	2		18.0	2	
2	32.0	3.5		32.0	0	
3	24.0	2		12.0	0	
4	19.0	4		19.0	3	
5	18.0	4		29.0	2	
6	26.0	0		35.0	2	
7	36.0	3		29.0	4	
8	15.0	5		43.0	4	
9	20.0	6		10.0	3	
10	23.0	4		35.5	4	
11	30.5	3		53.0	0	
12	50.5	2		40.5	3	
13	37.0	2		38.0	3	
14	7.5	3		51.0	4	
15	37.0	3		40.0	4	
16	17.0	7		41.0	4	
17	20.0	7		49.0	4	
18	18.0	5		45.0	6	
19	22.0	6		53.0	5	
20	27.0	5		36.0	6	
21	21.5	6		42.0	6	
22	26.0	7		35.0	6	
23	26.0	7		31.0	6	
24	33.0	5		45.0	5	
25	25.0	4		27.0	5	
26	18.0	2		35.0	5	
27	15.0	2		25.0	4	
28	15.0	3		43.0	5	
29	14.0	4		31.0	4	
30	29.0	4		33.0	4	
31	0.0	0		0.0	0	
Mean	23.4	3.9	-	34.1	3.6	-

MAY 2003**FOOD AND WEIGHT (in Kg)**

Date	♀ BINA		♂ TORGAMBA			
	Food taken		Weight	Food taken		Weight
	Browse	Fruits	kg	Browse	Fruits	kg
1	11.0	4		37.0	4	
2	27.0	4		32.0	4	
3	20.0	4		33.0	2	
4	32.0	4		33.0	4	
5	28.0	4		42.0	4	
6	28.0	6		26.0	5	
7	21.0	6		39.0	5	
8	37.0	6		27.0	6	
9	28.0	6		25.0	6	
10	35.0	6		39.0	6	
11	20.0	5		43.0	5	
12	25.0	4		36.0	4	
13	28.0	5		44.0	4	
14	32.0	5		53.0	4	
15	24.0	6		39.0	5	
16	24.0	2		25.0	4	
17	15.0	3		29.0	2	
18	26.0	2		17.0	3	
19	22.0	2		32.0	2	
20	36.0	2		52.0	2	
21	34.0	2		33.0	2	
22	33.0	3		37.0	3	
23	31.0	0		40.0	6	
24	19.0	0		34.0	6	
25	17.0	5		44.0	5	
26	19.0	5		37.0	5	
27	61.0	5		54.0	5	
28	26.0	6		42.5	5	
29	31.0	6		34.0	5	
30	35.0	6		37.0	5	
31	26.5	5		29.0	5	
Mean	27.5	4.1	-	36.3	4.3	-

JUNE 2003**FOOD AND WEIGHT (in Kg)**

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits	kg	Browse	Fruits	kg
1	27.0	5		33.0	5	
2	22.0	5		46.0	5	
3	28.0	5		35.5	5	
4	20.0	6		32.0	5	
5	25.0	5		31.0	5	
6	14.0	5		31.0	5	
7	23.0	5		33.0	5	
8	6.0	6		22.0	6	
9	21.0	5		35.0	6	
10	28.0	5		21.0	5	
11	21.0	5		33.0	5	
12	21.0	5		49.0	5	
13	27.0	6		33.0	6	
14	12.0	6		18.0	5	
15	16.0	6		22.0	6	
16	31.0	5		36.0	6	
17	31.0	6		37.0	6	
18	26.0	6		34.0	4	
19	18.0	6		26.0	6	
20	32.0	5		34.0	6	
21	21.0	4		25.0	4	
22	23.0	6		37.0	5	
23	20.0	5	641.0	32.0	5	
24	12.0	5		21.0	5	
25	25.0	5		31.0	5	
26	20.0	5		23.5	6	
27	23.0	6		28.0	6	
28	16.0	6	650.0	19.0	6	701.5
29	26.0	6		28.0	6	
30	31.0	5		20.0	5	
31	0.0	0		0.0	0	
Mean	21.5	25.2	645.5	29.2	5.2	701.5

JULY 2003

FOOD AND WEIGHT (in Kg)

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits	kg	Browse	Fruits	kg
1	27.0	6		32.0	6	
2	20.0	6		18.5	6	
3	20.0	5		33.0	6	
4	14.0	5		21.0	6	
5	14.0	7		23.0	6	
6	19.0	10		35.0	6	
7	25.0	6		30.0	5	
8	25.0	5		32.0	5	
9	27.0	5		28.5	5	
10	23.0	6		38.0	6	
11	17.0	5		37.0	4	
12	17.0	4		14.0	4	
13	27.0	6		38.0	6	
14	21.0	6		30.0	6	
15	30.0	6		26.0	6	
16	17.0	4		28.0	4	
17	21.0	4		25.5	3	
18	20.0	4		39.0	3	
19	16.0	5		44.0	5	
20	27.0	8		25.0	8	
21	29.0	5		25.0	5	
22	27.0	4		45.0	4	
23	29.0	5		37.0	5	
24	19.0	5		40.0	5	
25	20.0	5		54.0	5	
26	30.0	5		32.0	5	
27	26.0	5		25.0	5	
28	24.0	6		27.0	5	
29	22.0	6		18.0	6	
30	22.0	6.5		45.0	5.5	
31	22.0	4		50.0	4	
Mean	22.3	5.5	-	32.1	5.2	-

AUGUST 2003**FOOD AND WEIGHT (in Kg)**

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits	kg	Browse	Fruits	kg
1	29.0	5		34.0	6	
2	24.0	6	662.0	16.0	6	
3	16.0	7		28.0	7	
4	28.0	7		28.0	7	
5	29.0	5		35.0	5	
6	26.0	5		27.0	5	645.0
7	29.0	6		41.0	8	
8	28.0	4		28.0	8	
9	27.0	6		34.0	8	
10	28.0	3	657.5	36.0	4	
11	27.0	6		33.0	6	
12	24.0	5		21.0	8	
13	22.0	5		26.0	5	
14	26.0	6		21.0	6	
15	30.0	6		28.0	5	
16	24.0	5		33.0	6	
17	20.5	5	657.0	26.0	5	
18	27.0	5		49.0	7	
19	17.5	6		25.0	7	
20	26.0	6		31.0	6	
21	19.0	5		38.0	6	
22	29.0	5		28.0	5	
23	28.0	6		25.0	6	
24	24.0	6	672.0	23.0	6	
25	33.0	3		26.0	6	
26	22.0	4		45.0	6	
27	25.0	4		52.0	4	
28	26.0	6		36.0	6	
29	42.0	4		35.0	5	
30	24.0	6		38.0	5	666.0
31	23.0	5		28.0	4	
Mean	25.9	5.3	662.1	31.4	5.9	652.1

SEPTEMBER 2003

FOOD AND WEIGHT (in Kg)

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits	kg	Browse	Fruits	kg
1	15.0	4	673.0	36.0	4	
2	13.0	4		30.0	4	
3	15.0	4		24.0	4	
4	34.0	5		33.0	5	
5	24.0	5		25.0	5	
6	22.5	6		37.0	6	
7	20.0	6		7.0	6	
8	27.0	7	650.0	44.0	6	
9	22.0	6		34.0	6	
10	15.0	4		24.0	6	666.5
11	22.0	4		22.0	4	
12	25.0	4		30.0	5	
13	21.0	3		35.0	3	
14	18.0	4		23.0	6	
15	23.0	4	675.0	24.0	6	
16	29.0	4		47.0	4	
17	28.0	5		34.0	5	678.0
18	25.0	4		44.5	4	
19	29.0	3		38.0	2	
20	18.0	5		24.0	5	
21	26.0	5	667.0	41.0	5	
22	30.0	5		27.0	6	
23	26.0	7		38.0	6	
24	19.0	6		32.0	6	
25	27.0	6		45.0	5	
26	20.0	6	664.5	28.0	4	
27	19.0	8		29.0	6	661.0
28	22.0	6		37.0	5	
29	30.0	7		32.0	5	
30	35.0	5		31.0	6	
31	0.0	0		0.0	0	670.0
Mean	22.6	4.9	664.1	31.3	4.8	668.7

OCTOBER 2003**FOOD AND WEIGHT (in Kg)**

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits	kg	Browse	Fruits	kg
1	26.0	5		37.0	5	673.0
2	26.0	2.5	669.0	30.0	4	
3	18.0	6		33.0	7	
4	24.0	6		36.0	7	
5	25.0	5		29.0	6	
6	34.0	2		45.0	6	
7	34.0	6		26.0	5	
8	18.0	2		24.0	4	
9	21.0	4		21.0	3	
10	29.0	1		30.0	4	
11	17.0	6		34.0	6	
12	23.0	6		42.0	5	
13	23.0	7		48.0	4	
14	30.0	4		23.0	4	
15	27.0	3		29.0	4	
16	27.5	5		26.0	5	
17	24.0	5		28.0	5	
18	27.0	5		51.0	5	
19	23.0	4		24.0	3	
20	28.0	6		25.0	5	
21	20.0	5		20.0	3	
22	30.0	5.5		32.0	5	
23	26.0	4		53.0	4	
24	31.0	4		38.0	6	
25	35.0	6		38.0	7	
26	19.0	6		45.0	6	
27	17.0	5		19.0	6	
28	24.0	6		29.0	6	
29	27.0	6		29.0	6	
30	23.0	5		43.0	5	
31	30.0	6		37.0	4	
Mean	25.4	4.8	669.0	33.0	5.0	673.0

NOVEMBER 2003**FOOD AND WEIGHT (in Kg)**

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits	kg	Browse	Fruits	kg
1	26.0	5		31.0	5	
2	34.0	5		30.0	4	
3	19.0	6		28.0	5	
4	29.0	5		46.0	5	
5	29.0	3		34.0	5	
6	26.0	5		41.0	5	
7	21.0	5		38.0	5	
8	21.0	5		32.0	5	
9	24.0	5		34.0	5	
10	20.0	5		26.0	5	
11	12.0	5		22.0	5	
12	22.0	6		24.0	6	
13	17.0	6		38.0	6	
14	32.0	6		32.0	6	
15	27.0	4		32.0	4	
16	24.0	2		44.0	6	
17	31.0	4		28.0	4	
18	19.0	6		33.0	6	
19	25.0	4		38.0	6	
20	36.0	4		42.0	6	
21	25.0	3		34.0	5.5	
22	31.0	3		28.0	5	
23	25.0	4		37.0	6	
24	20.0	6		31.0	5	
25	18.0	5		28.0	6	
26	28.0	6		32.0	6	
27	26.0	6		42.0	7	
28	22.0	6		22.0	6	
29	28.0	6		38.0	6	
30	22.0	5		38.0	5	
31	0.0	0		0.0	0	
Mean	23.8	4.7	-	32.4	5.2	-

DECEMBER 2003**FOOD AND WEIGHT (in Kg)**

Date	♀ BINA		Weight kg	♂ TORGAMBA		Weight kg
	Food taken			Food taken		
	Browse	Fruits		Browse	Fruits	
1	26.0	4		40.0	5	
2	34.0	3		44.0	4	
3	26.0	5		26.0	5	
4	21.0	5		32.0	6	
5	17.0	5		33.0	6	
6	23.0	5		31.0	5	
7	26.0	4	650.0	28.0	5	
8	14.0	6		41.0	5	
9	18.0	6		38.0	6	
10	36.0	6		32.0	6	
11	31.0	6		39.0	6	
12	28.0	5		28.0	6	
13	30.0	7		31.0	6	
14	31.0	5		41.0	6	
15	38.0	3		43.0	5	
16	29.0	5		44.0	4	
17	37.0	5		32.0	4	
18	30.0	4		46.0	4	
19	32.0	5		39.0	5	
20	31.0	4		39.0	5	
21	35.0	3		43.0	4	
22	26.0	5		30.0	5	
23	23.0	6		43.0	6	
24	23.0	4		46.0	6	
25	21.0	4		35.0	6	
26	29.0	5		43.0	4.5	
27	22.0	6		33.0	5	
28	28.0	5		39.0	4	
29	32.0	4		36.0	4	
30	27.0	6		41.0	5	
31	34.0	6		36.0	5	
Mean	27.7	4.9	650.0	37.2	5.1	-

Part 2

**GENERAL OBSERVATIONS
and
TREATMENT RECORDS**

JANUARY 2003

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> - Together with Torgamba on 15 January - Activities pattern graphics attached
♂ TORGAMBA	<ul style="list-style-type: none"> - Together with Bina on 15 January - Torgamba enter to center area on 22 January (night) and together with Bina in Paddock 1 (incidental accident). No monitoring by keepers - Activities pattern graphics attached
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	Conjunctivitis on both eyes : Treated with ZnSO ₄
♂ TORGAMBA	Good condition
REPRODUCTION	
♀ BINA	<p>Period of 15 - 16 January No clear Signs of vaginal change except a slight redness of the vulva.</p> <p>Bina, no interest to be mounted, she always avoid when Torgamba already to mounting. We separated them on 16 January</p>
♂ TORGAMBA	<p>Period of 15 - 16 January During this period Torgamba did not show any strong interest in courtship and mounting. We separated them on 16 January</p>

FEBRUARY 2003

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> - No serious courtship in this period - Activities pattern attached on graphics
♂ TORGAMBA	<ul style="list-style-type: none"> - No serious courtship in this period - Activities pattern attached on graphics
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	Conjunctivitis on both eyes : Treated with Zn SO ₄
♂ TORGAMBA	The Eye : No discharge
REPRODUCTION	
♀ BINA	Period of 6 February and Period of 27 - 28 February No serious courtship in this period.
♂ TORGAMBA	Period of 6 February and Period of 27 - 28 February No serious courtship in this period

MARCH 2003

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> - No serious courtship in this period - Activities pattern attached on graphics
♂ TORGAMBA	<ul style="list-style-type: none"> - No serious courtship in this period - Activities pattern attached on graphics
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	<p>Conjunctivitis on both eyes. Still treated with The ZnSO₄.</p> <p>Urogenital Tracts Disorder (weakness)</p> <ul style="list-style-type: none"> - 27-28 February, Torgamba was kept together with Bina, but no serious courtship occurred in this period. - Signs of a urogenital tracts disorder were found on 28 February : urine spraying not fluent (unusual), looked weak when walking, no response for mating, that was much of drinking (unusual), but eating normal (leaves and fruits). - Urine analysis on 1 March with Combur test in SRS and analysis in Mardi Waluyo Hospital result erythrocyte (blood) in urine. Interpretation : Urogenital Tracts Disorder. - Treated with : Sulfa and Trimetoprim (antibiotic) 10 tabs per 12 hours, phenylbutazone (anti inflammatory) 3 tabs per days and hemaviton (multivitamin and mineral) 10 tabs per days. It was given for three days and after three days of treatment, the signs of weakness were gone. Activities of Torgamba become normal on 3 March.
♂ TORGAMBA	<p>The Eye</p> <ul style="list-style-type: none"> - Discharge from left eyes. - Threatened with garamycin salp (antibiotic) <p>Urogenital Tracts Disorder (a weakness) :</p> <ul style="list-style-type: none"> - At 28 February - 3 March 2003, kept together with Bina in central area, but no serious courtship in this period. - Signs of urinate spray no fluent (unusual), looked weak when walking (weakness), feeding abnormal (eat little leaves by keeper in his stall but he no resist fruits) and possibilities of urogenital or digestion tracts disorder was found at 28 February - Temperature 36.1^oC - 37.0^oC - Urine and Blood collections for urine and blood analysis in Mardi Waluyo Hospital (result : Erythrocyte, nitrit, protein and urobilinogen in urine, <i>Interprets</i> Tracts Urogenital Disorder) - Threatened with : Amphoprim and sulfa 10 tabs/12 hours per oral, for the possibility of Tracts urogenital disorder and Hemaviton 10 tabs for multivitamin and multimineral. Phenybutazone 3 tabs per oral for anti inflammatory. it was give for three days - After 3 days treatment , the signs of weakness were gone. Activities of Torgamba become normal.
REPRODUCTION	
♀ BINA	No serious courtship in this month
♂ TORGAMBA	No serious courtship in this month

APRIL 2003

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> - Together with Torgamba on 11 - 13 April - On 21 April Reproduction post mating (Full Intromission), USG result : Good condition, was found several follicle on right ovary. - Together again in central area on 25 - 28 April
♂ TORGAMBA	<ul style="list-style-type: none"> - Together with Bina on 11 - 13 April - Together again in central area on 25 - 28 April - Activities pattern attached on graphics
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	Conjunctivitis on both eyes : Treated with The ZnSO ₄ .
♂ TORGAMBA	The Eye : No discharge
REPRODUCTION	
♀ BINA	<p>Period of 11 - 13 April</p> <ul style="list-style-type: none"> - Since 9 April Bina always Approach to center area and did not want move from center gate and looks very interest to do courtship. - The vulva was reddish and little Swollen on 11 April. Bina showed interest to be mounted, she did some Behavior Courtship (Standing Heat) on 11 April : : 10. 43, 11. 10, 11. 33, 11. 40, 11. 56, 12. 14, 12. 22, 12. 29, 13. 04, 13. 21, 13. 42 and 20. 50.
♂ TORGAMBA	<p>Period of 11 - 13 April</p> <p>There were some serious courtship on 11 April (Morning - afternoon).</p> <ul style="list-style-type: none"> - Most of the mounting happened in the morning, Torgamba mount Bina 12 times on 11 April : 10. 43 for 6 minutes with erection and intromission (flaps), 11. 10 for 3 minutes without erection, 11. 33 for 3 minutes without erection, 11. 40 for 2 minutes with erection 11. 56 for 9 minutes with full erection, intromission (8 minutes) and ejaculation, 12. 14 for 1 minute with erection , 12. 22 for 2 minutes without erection, 12. 29 for 7 minutes with full erection, 13. 04 for 6 minutes with erection, 13. 21 for 1 minute without erection, 13. 42 for 10 minutes with full erection, full Intromission (5 minutes) and ejaculation and 20. 50 for 15 minutes with full erection and intromission (flaps) . <p>Note : There was 5 times intromission/penetration occurred on 11 April hour 10. 47 - 10. 49 (Flaps), 11. 57 - 13. 05 (Flaps), 13. 45 - 13. 52 (FULL) and 20. 54 - 21. 05 (Flaps). Torgamba's penis can only penetration 15 - 20 cm long/Flaps).</p>

Details of courtship behavior between Bina (B) and Torgamba (T) on April 11, 2003

- 08.40 Signs of estrous was observed on April 11 (morning) : vulva redness and little swollen but no discharge
- 09.08 B and T in the center area. Intense courtship in this period. B urine spray (09.32), wallowing (09.50)
- 10.42 T chin rest and B SH (Silent Heat)
- 10.43 T Mounting for 6 minutes, penis erect and intromission for 2 minutes
- 10.50 T urine spray and B urine spray too (10.57)
- 11.09 T chin rest and B SH
- 11.10 T Mounting for 3 minutes but penis no erect
- 11.14 B run to avoid and T more aggressive to chase B . T urine spray (11.15 and 11.21)
- 11.25 T walk to follow B and wallowing together (11.28) for 4 minutes
- 11.32 T chin rest and B SH
- 11.33 T Mounting for 3 minutes, penis unsheathed but no erect and T urine spray
- 11.39 T chin rest and B SH
- 11.40 T Mounting for 2 minutes and penis erect but no intromission
- 11.44 Wallowing together for 10 minutes, suddenly woke up and do courtship
- 11.55 T chin rest and B SH
- 11.56 T Mounting for 9 minutes in the wallow with good position and penis erect, intromission (8 minutes) but only till flaps
- 12.13 T chin rest and B SH
- 12.14 T Mounting for a minute and down, penis no erect
- 12.21 T chin rest and B SH
- 12.22 T Mounting for 2 minutes but penis no erect
- 12.26 B urine and T urine spray
- 12.28 T chin rest and B SH
- 12.29 T Mounting for 7 minutes, penis erect but no intromission
- 12.36 Wallowing together for 23 minutes
- 13.03 T chin rest and B SH
- 13.04 T Mounting for 6 minutes, penis erect but no intromission
- 13.20 T chin rest and B SH
- 13.21 T Mounting for 1 minutes, penis no erect
- 13.23 Foraging alone (B and T) for 5 minutes and feed by keeper in the center area gate till 12. 40 and walking to the forest
- 13.41 T chin rest and B SH
- 13.42 T Mounting for 10 minutes. Try to take good position, penis full erect, Full Intromission / penetration for 7 minutes and seems ejaculation occur because after intromission liquid semen dripped from the penis and relaxing in the last minutes.
- 14.00 Post good mating no more sexual activities between B and T till 20. 48.
- 20.49 T chin rest and B SH
- 20.50 T Mounting for 15 minutes, penis full erect, intromission for 11 minutes but only till flaps

Note : T mount B 12 times on April 11; There was 3 times intromission/penetration occurred on April 11 hour 11.57 – 12.05 (Flaps), 13.45 – 13.52 (FULL) and 20.54 – 21.05 (Flaps)

MAY 2003

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> - Together with Torgamba on 7 - 9 May - Together again on 31 May - Activities pattern attached on graphics
♂ TORGAMBA	<ul style="list-style-type: none"> - Together with Bina on 7 - 9 May. - Together again on 31 May - Activities pattern attached on graphics
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	<p>Conjunctivitis on both eyes,</p> <ul style="list-style-type: none"> - Still treated with The ZnSO₄. <p>Vulva Wound</p> <ul style="list-style-type: none"> - Clinical signs : a little inflammation and infection, no hyperaemia on 8 May. Possibly stabbed by broken wood when mating with Torgamba in the center area (7 May). - Topical treatment : Hydrogen peroxide (H₂O₂), antibiotic salp, and SWAT (fly repellent). - The vulva wound healed quickly and completely on 10 May.
♂ TORGAMBA	<p>Eye discharge</p> <ul style="list-style-type: none"> - Discharge and inflammatory was found in the left eye on 23 May. - Possibly stabbed by broken wood when he in the forest. - Temperature 36.8 °C - 37.0 °C - Treated with ZnSO₄ and Antibiotic (garamycin eye ointment) for 3 days. It is heal. <p>Weakness</p> <ul style="list-style-type: none"> - Torgamba looked weak when walking in the forest, feeding abnormal (eat little leaves by keeper in his stall but he no resist fruits) on 25 May. - Temperature 36.5 °C - 36.6 °C (normal) - Urine collections for urine analysis in SRS lab (result : Normal) - Threatened with : Neurotrophic vitamin (Neurobion 5000). it was give for two days - After 2 days treatment , the signs of weakness were gone. Activities of Torgamba become normal.

REPRODUCTION	
♀ BINA	<p>Period of 7 - 9 May</p> <ul style="list-style-type: none"> - Since 3 May Bina was already approaching to the center area and did not want to move from gate to center. Bina and Torgamba together again to the center area on 7 May (afternoon). - Estrus signs was observed on 7 May (morning) but unclear. Only detected a redness and slightly swollen of vulva. No estrus discharge was observed. - Bina showed interest to be mounted, she did some Behavior Courtship (Standing Heat) on 7 May (16. 24, 16. 28, 16. 37, 16. 42, 16. 49, 17. 03, 17.11, 17.17, 17.30 and 17 37). There was only good response from Torgamba at 7 April <p>Note : There was 5 times intromission/penetration occurred on 7 May hour 16. 42 - 16. 43 (Flaps), 16. 52 - 16. 56 (FULL), 17. 19 - 17. 23 (FULL) - 17.31 - 17. 34 (but Torgamba's penis can only penetration 15 - 20 cm long/Flaps) and 17. 36 - 18.13 (FULL).</p> <p>Post mounting :</p> <ul style="list-style-type: none"> - 16. 56 : liquid dripped from the penis - 18.13 : Torgamba's penis relaxing in the last minutes (was ejaculation), but difficult to collect sperm and difficult to see whether any semen dribbling from Bina's Vagina, because she run to forest. <p>Period of 31 May</p> <ul style="list-style-type: none"> - Bina showed interest to be mounted, she did some Behavior Courtship (Standing Heat) on 31 May (morning-afternoon) 09.27, 09.37, 09.46, 09.56, 09.58, 10.02, 10.08, 10.23, 10.34, 10.38, 11.10, 11.35, 11.52 , 12.06, 12. 12, and 12. 15). - There was only good response from Torgamba on 31 May. - We was success collect sperm from penis and vulva (10 cc). Observation under microscope was doing but not found spermatozoa. <p>Note : There was 4 times intromission with once FULL INTROMISSION/PENETRATION and ejaculation on 31 May.</p>

♂ **TORGAMBA****Period of 7 - 9 May**

- Since 4 May Torgamba was already approaching to the center area and he did not want to move from gate for several times.
- There were some serious courtship on 7 May (Afternoon - night).
- Most of the mounting happened in the afternoon.
- Torgamba mount Bina 10 times on 7 May : 16. 24 for 1 minute, 16. 28 for 1 minute without erection, 16. 37 for 1 minute with erection, 16. 42 for 1 minute with erection and intromission (till flaps), 16. 49 for 7 minutes with full erection, Full intromission (3 minutes) and ejaculation, 17. 03 for 2 minutes with full erection but no intromission, 17.11 for 2 minutes with full erection, 17.17 for 6 minutes with full erection and full intromission (4 minutes), 17.30 for 3 minutes with erection and intromission (flaps) and 17. 37 for 36 minutes with full erection, full intromission (35 minutes) and ejaculation (penis weak)

Period of 31 May

- There was some serious courtship on 31 May
- Torgamba mount Bina 16 times on 31 May : 09. 27 for 1 minute, 09. 37 for 1 minute but penis no erect, 09. 46 for 2 minutes penis erect, 09. 56 for 1 minute, 09. 58 for 1 minute, 10. 02 for 1 minute but penis no erect, 10. 08 for 4 minutes penis erect, intromission (3 minutes) but only till flaps (\pm 25 cm), 10. 23 for 2 minutes penis erect, 10. 34 for 1 minute penis no erect, 10. 38 for 6 minutes penis erect, intromission (5 minutes), 11. 10 for 3 minutes penis no erect, 11. 35 for 6 minute penis erect, , intromission (5 minutes) 11. 52 for 6 minutes with penis full erect , but no intromission , 12. 06 for 3 minutes penis erect, 12. 12 for 1 minute penis erect and 12. 15 for 21 minutes with penis full erect, full intromission (20 minutes) and ejaculation.

Details of courtship behavior between Bina (B) and Torgamba (T) on May 7, 2003

1. Since May 4, T was already approached to the center area and he did not want to move from gate for several times.
2. There were some serious courtship on May 7 (Afternoon - night) and most of the mounting occur in the afternoon.
3. Torgamba mount B 10 times on May 7 :

14.18 B entered to the center area, met with T (15.59) and to do courtship (T still in his paddock)

16.23 T chin rest and B SH (between the FENCE!)

16.24 T mounting for 1 minute, penis no erect , T looks very interest to mating. Keeper separated them because dangerous for T. T' foot can trap in the snare/fence)

16.26 T entered to the center area and directly do intense courtship

16.27 T chin rest and B SH

16.28 T mounting for 1 minute, penis no erect

16.36 T chin rest and B SH

16.37 T mounting for 1 minute, penis erect

16.41 T chin rest and B SH

16.42 T mounting for 1 minute, penis erect and intromission (till flaps)

16.48 T chin rest and B SH

16.49 T mounting for 7 minutes, penis full erect, Full Intromission (3 minutes) and ejaculation

17.01 B urine spray

17.02 T chin rest and B SH

17.03 T mounting for 2 minutes, penis full erect but no intromission

17.08 B wallowing alone

17.10 T chin rest and B SH

17.11 T mounting for 2 minutes, penis full erect

17.16 T chin rest and B SH

17.17 T mounting for 6 minutes, penis full erect and Full Intromission (4 minutes)

17.25 T urine spray

17.29 T chin rest and B SH

17.30 T mounting for 3 minutes, penis erect and intromission (flaps) and

17.36 T chin rest and B SH

17.37 T mounting for 36 minutes, penis full erect, Full Intromission (35 minutes) and ejaculation (penis weak)

17.14 T urine spray and after that no more sexual activities.

Note :

There was 5 times intromission/penetration occurred on May 7, hour 16.42 - 16.43 (Flaps), 16.52 - 16.56 (FULL), 17.19 - 17.23 (FULL) - 17.31 - 17.34 (but Torgamba's penis can only penetration 15 - 20 cm long/Flaps) and 17.38 - 18.13 (FULL).

Post mating :

16.56 :liquid dripped from the penis

18.13 : Torgamba's penis relaxing in the last minutes (was ejaculation), but difficult to collect sperm and difficult to see whether any semen dribbling from Bina's Vagina, because she run to forest.

Details of courtship behavior between Bina (B) and Torgamba (T) on May 31, 2003

There was some serious courtship and T mount B 16 times

- 07.19 Sign of B's vulva (reddish) was detected (estrous) and B stand by in the center area. B urine spray (07.37 and 08.21)
- 08.55 B entered to the center area
- 09.11 T entered to the center area and direct courtship with B
- 09.26 T chin rest and B SH
- 09.27 T mounting for 1 minute but penis no erect
- 09.36 T chin rest and B SH
- 09.37 T mounting for 1 minute but penis no erect
- 09.45 T chin rest and B SH
- 09.46 T mounting for 2 minutes, penis erect
- 09.55 T chin rest and B SH
- 09.56 T mounting for 1 minute, penis no erect
- 09.57 T chin rest and B SH
- 09.58 T mounting for 1 minute, penis no erect
- 10.02 T mounting for 1 minute but penis no erect
- 10.07 T chin rest and B SH
- 10.08 T mounting for 4 minutes, penis erect, intromission (3 minutes) but only till flaps
- 10.18 T and B wallowing together for 4 minutes and direct intense courtship
- 10.22 T chin rest and B SH
- 10.23 T mounting for 2 minutes, penis erect
- 10.29 T urine spray
- 10.33 T chin rest and B SH
- 10.34 T mounting for 1 minute, penis no erect
- 10.37 T chin rest and B SH
- 10.38 T mounting for 6 minutes, penis erect and intromission (5 minutes)
- 10.47 T urine spray, courtship, B running avoid and T follow (running too)
- 11.09 T chin rest and B SH
- 11.10 T mounting for 3 minutes, penis no erect
- 11.31 T and B wallowing together again for 2 minutes
- 11.34 T chin rest and B SH
- 11.35 T mounting for 6 minutes, penis erect, intromission (5 minutes)
- 11.51 T chin rest and B SH
- 11.52 T mounting for 6 minutes with penis full erect , but no intromission
- 12.05 T chin rest and B SH
- 12.06 T mounting for 3 minutes, penis erect
- 12.11 T chin rest and B SH
- 12.12 T mounting for 1 minute, penis erect but no intromission
- 12.14 T chin rest and B SH
- 12.15 T mounting for 21 minutes with penis full erect, Full Intromission (20 minutes) and ejaculation.
- 11.40. No more sexual activities and keepers separated them

Note : T mount B 15 times on May 31 :

There was 4 times intromission with once FULL INTROMISSION /PENETRATION and ejaculation on May 31 hour 10.09 – 10.11, 10.39 – 10.44, 11.36 – 11.41 (Flaps) and 12.16 – 12.36 (FULL)

JUNE 2003

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> - Together with Torgamba on 28 - 29 June - Activities pattern attached on graphics
♂ TORGAMBA	<ul style="list-style-type: none"> - Together with Bina on 28 - 29 June - Activities pattern attached on graphics
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	<p>Conjunctivitis on both eyes,</p> <ul style="list-style-type: none"> - Still treated with The ZnSO₄. <p>Vulva Wound</p> <ul style="list-style-type: none"> - Detected a wound of vulva on 28 June when Bina post successful mating with Torgamba. It looked hyperaemia and swollen on top of Bina's Vulva but no serious wound. - Possibly stabbed by Torgamba's Penis when Intromission. - Treated with Peroxide (H₂O₂), local antibiotic ointment and SWAT (fly repellent) for 3 days and wound was healed completely on 30 June.
♂ TORGAMBA	The Eye : No discharge
REPRODUCTION	
♀ BINA	<p>Period of 28 - 29 June</p> <ul style="list-style-type: none"> - Since 15 May Bina was already approaching to the center area and did not want to move from gate to the center area. - Bina and Torgamba together to the center area 3 times in this month (19, 22 and 28 June). - Estrus signs was observed on 28 June (morning) but unclear. Only detected a redness and slightly swollen of vulva. No estrus discharge was observed. - Bina showed interest to be mounted, she did some Behavior Courtship (Standing Heat) on 28 June (08. 24, 08. 50, 09.07, 09.18, 09.39 and 09.49). There was only good response from Torgamba on 28 June

♂ **TORGAMBA****Period of 28 - 29 June**

- Torgamba entered to the center area on 19 June (afternoon) and together with Bina but no serious courtship and keepers separated them.
- Together again on 22 June and still no serious courtship.
- Since 25 June Torgamba was already approaching to the center area and he did not want to move from gate for several time.
- There were some serious courtship on 28 June .
- Most of the mounting happened in the Morning.
- Torgamba mount Bina 6 times on 28 June : 08.24 for 1 minute, without erection, courtship for several time, 08. 50 for 12 minutes with full erection, Full intromission (8 minutes) and ejaculation (?), 09.07 for 6 minutes with erection but no intromission, 09.18 for 8 minutes with full erection, Full intromission (4 minutes) and ejaculation (?), Wallowing together, 09. 39 for 7 minutes with full erection, full intromission (6 minutes) ejaculation (?), and 09. 49 for 17 minutes with full erection, full intromission (15 minutes) and ejaculation (liquid dripped from the penis and penis weak)

Note :

There was 4 times intromission/penetration occurred on 28 June hour 08. 54 - 09. 02 (FULL), 09. 22 - 09. 26 (FULL), 09. 40 - 09. 46 (FULL) and 09. 51 - 10. 06 (FULL).

Details of courtship behavior between Bina (B) and Torgamba (T) on June 28, 2003

- 1 T entered to the center area on June 19 (afternoon) and together with B but no serious courtship and keepers separated them.
 - 2 Together again on June 22 and still no serious courtship.
 - 3 Since June 25 T was already approached to the center area and he did not want to move from gate for several time.
 - 4 B entered to the center area (07.45) because was found signs of estrous (reddish and swollen but no discharge) and T entered to the center area (08.18), there were some serious courtship and most of the mounting happened in the morning.
- 07.20 Sign of estrous was detected (vulva reddish)
- 08.18 T and B entered to the center area and direct courtship.
- 08.23 T chin rest and B SH
- 08.24 T mounting for 1 minute, without erection, courtship for several time. T urine spray (08.35, 08.44 and 08.46)
- 08.49 T chin rest and B SH
- 08.50 T mounting for 12 minutes, penis full erect, Full Intromission with strong and continue thrashing (8 minutes) and ejaculation (?).
- 09.04 T urine spray again and defecation
- 09.06 T chin rest and B SH
- 09.07 T mounting for 6 minutes, penis erect but no intromission.
- 09.17 T chin rest and B SH
- 09.18 T mounting for 8 minutes, penis full erect, Full Intromission (4 minutes) and ejaculation (?).
- 09.30 T urine spray and wallowing together.
- 09.38 T chin rest and B SH
- 09.39 T mounting for 7 minutes, penis full erect, Full Intromission (6 minutes) and ejaculation (?)
- 09.48 T chin rest and B SH
- 09.49 T mounting for 17 minutes, penis full erect, Full Intromission (15 minutes) and ejaculation (liquid dripped from the penis and penis become weak).
- 10.08 No more sexual activities

June 29

- 12.15 Keepers separated them

Note :

T mount B 6 times on June 28 :

There was 4 times intromission/penetration occurred on June 28 hour 08. 54 - 09. 02 (FULL), 09. 22 - 09. 26 (FULL), 09. 40 - 09. 46 (FULL) and 09. 51 - 10. 06 (FULL).

JULY 2003

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> - Together with Torgamba on 20-21 July - Activities pattern attached on graphics
♂ TORGAMBA	<ul style="list-style-type: none"> - Together with Bina on 20-21 July - Activities pattern attached on graphics
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	Conjunctivitis on both eyes : Still treated with The ZnSO ₄
♂ TORGAMBA	The Eye : No discharge
REPRODUCTION	
♀ BINA	<p>Period of 20 - 21 July</p> <ul style="list-style-type: none"> - Estrus signs was observed on 28 June (morning) but unclear. Only detected a redness and slightly swollen of vulva. No estrus discharge was observed. - Bina showed interest to be mounted, she did some Behavior Courtship (Standing Heat) on 20 July 09.36, 10.01, 10.30, 11.16, 11.30, 11.36, 11.57 and 12.14). There was only good response from Torgamba on 20 July.
♂ TORGAMBA	<p>Period of 20 - 21 July</p> <ul style="list-style-type: none"> - There were some serious courtship on 20 July. - Most of the mounting happened in the Morning. - Torgamba mount Bina 8 times on 20 July: 09.36 for 14 minutes, with erection, Full intromission (4 minutes), 10.01 for 2 minutes without erection, 10.30 for 4 minutes without erection, 11.16 full erection, Full intromission (5 minutes) and ejaculation (?), 11.30 for 1 minute with erection but no intromission, 11.36 for 4 minutes with erection, intromission till flaps (2 minutes), 11.57 for 15 minutes with full erection, full intromission (13 minutes) ejaculation (?), and 12.14 for 33 minutes with full erection, full intromission (33 minutes) and ejaculation (liquid dripped from the penis and penis weak) <p>Note : There was 5 times intromission/penetration occurred on 20 July hour 08.54 - 09.50 (FULL), 11.17 - 11.22 (FULL), 11.30 - 11.40 (Flaps), 11.59 - 12.12 (FULL) and 12.14 - 12.47 (FULL).</p>

AUGUST 2003

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> - Together with Torgamba on 13 August - 3 and 4 August Ultrasound examination. Result : Left ovary (Active follicle), right ovary (Corpus luteum/CL 27 mm) and not yet pregnancy. Drh. Agil, DR. Robin & Drh. Dedi - 29 August Ultrasound examination. Result :Left ovary (Active follicle and CL 21 mm), right ovary (several small follicle) and not yet pregnancy. Advice : mix with Torgamba on 2-7 September. Drh. Agil & Drh. Dedi - Activities pattern attached on graphics
♂ TORGAMBA	<ul style="list-style-type: none"> - Together with Bina on 13 August - 3 August electro ejaculation examination with sedative. Result : ± 30 cc semen but no spermatozoa (under microscope). DR. Terry Rott, Monica, DR. Robin, DR. Iman, Drh. Agil & Drh. Dedi & Bondan. - Activities pattern attached on graphics
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	Conjunctivitis on both eyes : Treated with Zn SO ₄
♂ TORGAMBA	Electro ejaculation examination, Details on Anesthesia Report
REPRODUCTION	
♀ BINA	<p>Period of 13 - 14 August</p> <ul style="list-style-type: none"> - Since 15 May Bina was already approaching to the center area and did not want to move from gate to the center area. - Estrus signs was observed on 13 August (morning) but unclear. Only detected a redness and slightly swollen of vulva. No estrus discharge was observed. - Bina showed interest to be mounted, she did some Behavior Courtship (Standing Heat) on 13 August (07.32, 07.38, 07.55, 08.04, 08.22, 09.18 and 11.10). There was only good response from Torgamba on 13 August.
♂ TORGAMBA	<p>Period of 13 - 14 August</p> <ul style="list-style-type: none"> - There were some serious courtship on 13 August. - Most of the mounting happened in the Morning. - Torgamba mount Bina 8 times on 13 August: 07.32 for 4 minutes, with erection, 07.38 for 1 minute, 07.55 for 1 minute, 08.04 for 1 minute without erection, 08.22 for 5 minutes with erection, 08.32 for 1 minute with erection and intromission (not Full), 09.18 for 49 minutes with full erection, Full intromission (42 minutes) and ejaculation (?) and 11.10 for 14 minutes with penis erection but no intromission. <p>Note :</p> <p>There was 2 times intromission/penetration occurred on 13 August hour 08.32 - 08.33(Not FULL) and 09.25 - 10.07 (FULL).</p>

SEPTEMBER 2003

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> - Together with Torgamba on 13 August - 3 and 4 August Ultrasound examination. Result :Left ovary (Active follicle), right ovary (Corpus luteum/CL 27 mm) and not yet pregnancy. DR. Agil, DR. Robin & DR. Dedi - 29 August Ultrasound examination. Result :Left ovary (Active follicle and CL 21 mm), right ovary (several small follicle) and not yet pregnancy. Advice : mix with Torgamba on 2-3 August. DR. Agil, & DR. Dedi - Activities pattern attached on graphics
♂ TORGAMBA	<ul style="list-style-type: none"> - Together with Bina on 13 August - 3 August electro ejaculation examination with sedative. Result : + 30 cc semen but no spermatozoa (under microscope). DR. Terry Rott, Monica, DR. Robin, DR. Iman, DR. Agil, DR. Dedi & Bondan. - Activities pattern attached on graphics - Activities pattern attached on graphics
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	Health : Good condition
♂ TORGAMBA	Health : Good condition
REPRODUCTION	
♀ BINA	<p>Period of 3 - 7 September</p> <ul style="list-style-type: none"> - Since 1 September Bina was already approaching to the center area and did not want to move from gate to the center area. - Estrus signs was observed on 3 September (morning) but unclear. Only detected a redness and slightly swollen of vulva. No estrus discharge was observed. - Bina showed interest to be mounted, she did some Behavior Courtship (Standing Heat) on 7 September (09.41, 09.57, 09.59, 10.21, 10.30, 10.42, 10.52 and 10.57). There was only good response from Torgamba on 7 September.
♂ TORGAMBA	<p>Period of 3 - 7 September</p> <p>3 and 4 September : Intense courtship but no try mating of Torgamba and keepers separated them (T to paddock III and B to paddock I)</p> <p>7 September :</p> <ul style="list-style-type: none"> - There were some serious courtship on 20 November. - 09.41 T mount for 3 minutes penis erect, 09.57 T mount for 1 minute penis no erect, 09.59 T mount for 5 minutes penis erect and intromission (2 minutes) but only till flap, 10.21 T mount for 1 minute penis erect, 10.42 T mount for 2 minutes penis erect, 10.57 T mount for 19 minutes penis full erect, intromission (18 minutes) and ejaculation.

OCTOBER 2003

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> - Together with Torgamba on 2-3, 8-10 and 23 October - Ultrasound examination (1, 5, 7, 20, 22 and 28 October). - Activities pattern attached on graphics
♂ TORGAMBA	<ul style="list-style-type: none"> - Together with Bina on 2-3, 8-10 and 23 October - Blood sample collection on 6 and 24 October, for blood analysis - Activities pattern attached on graphics
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	Conjunctivitis on both eyes : treated with The ZnSO ₄ .
♂ TORGAMBA	Wound on Foot, <ul style="list-style-type: none"> - One wound 1 cm wide and 3-4 cm long was found on the left foot (back) in the morning of October. - There was hyperaemia, a bleeding and inflammation and infection. - Possibly by tree in the forest - Threatened with : Hydrogen peroxide (H₂O₂), Antibiotic topical ointment and SWAT (fly repellent) - Healed in five days. No blood or inflammation
REPRODUCTION	
♀ BINA	Period of 2-3, 8-10 and 23 October <ul style="list-style-type: none"> - No serious courtship in this month - Bina showed no interest to be mounted in this period, she always avoided and run away from Torgamba
♂ TORGAMBA	Period of 2-3, 8-10 and 23 October <ul style="list-style-type: none"> - No serious courtship in this month

NOVEMBER 2003

EVENTS AND ACTIVITY

♀ BINA	<ul style="list-style-type: none"> - Together with Torgamba on 1 November - Together again with Torgamba on 19 - 21 November - Ultrasound examination (18 and 19 November), result on page 4. - Activities pattern attached on graphics
♂ TORGAMBA	<ul style="list-style-type: none"> - Together with Bina on 1 November - Together again with Bina on 19 - 21 November - Semen collection examination on 20 November, result on page 4 - Activities pattern attached on graphics

MEDICATION and SPECIAL TREATMENTS

♀ BINA	<p>Conjunctivitis on both eyes.</p> <ul style="list-style-type: none"> - Treated with : Zink Sulfate (ZnSO₄) <p>Vulva Wound</p> <ul style="list-style-type: none"> - Detected a wound of vulva on 20 November (night) when Bina post successful mating with Torgamba. It looked hyperaemia and swollen on top of Bina's Vulva but no serious wound. - Possibly stabbed by Torgamba's Penis when Intromission. - Treated with Peroxide (H₂O₂), local antibiotic ointment and SWAT (fly repellent) for 3 days and wound was healed completely on 25 November.
♂ TORGAMBA	<p>Special treatment for Reproduction (Spermatozoa),</p> <ul style="list-style-type: none"> - Treated with Traditional Medicine since 1 November for a month: - Bilo 6 pcs / day (3 morning and 3 afternoon) - Fit 1 tablet / day (afternoon) - Origin 1 tablet / day (afternoon)

REPRODUCTION

♀ BINA	<p>Period of 1 November</p> <ul style="list-style-type: none"> ● No serious courtship in this month ● Bina showed no interest to be mounted in this period, she always avoided and run away from Torgamba <p>Period of 19 - 21 November</p> <ul style="list-style-type: none"> ● Estrus signs was observed on 19 November (morning) but unclear. Only detected a redness and slightly swollen of vulva. No estrus discharge was observed. ● Bina showed interest to be mounted, she did some Behavior Courtship (Standing Heat) on 20 November (07.46, 18.57, 18.58, 19.32, 19.52, 20.10, 20.25 and 21.56). There was only good response from Torgamba on 20 November.
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♂ **TORGAMBA**

Period of 1 November

- No serious courtship in this month

Period of 19 - 21 November

- There were some serious courtship on 20 November.
- Most of the mounting happened in the Night.
- Torgamba mount Bina 8 times on 20 November : 07.46 for 1 minute without erection, 18.57 for 1 minute penis erection, 18.58 for 7 minutes with full erection, Full intromission (5 minutes) and ejaculation, 19.32 for 10 minutes , 19.52 for 1 minute, 20.10 for 4 minutes, penis no erection, 20.25 for 40 minutes with full erection, Full intromission (35 minutes) and ejaculation 21.56 for 23 minutes without erection.

Note :

There was 2 times full intromission/penetration occurred on 20 November hour 19.00 - 19.05 and 20.30 - 21.05

DECEMBER 2003

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> - Together with Torgamba on 14-15 December - Activities pattern attached on graphics
♂ TORGAMBA	<ul style="list-style-type: none"> - Together with Torgamba on 14-15 December - Activities pattern attached on graphics
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	<p>Conjunctivitis on both eyes : treated with ZnSO₄</p> <p>Chest Wound :</p> <ul style="list-style-type: none"> - One wound with 1 cm wide and 3 - 4 cm long found her chest in the morning of 25 December. There was hyperaemia, a bleeding and inflammation and a little infection. Threatened with : Hydrogen Peroxide (H₂O₂), Antibiotic topical ointment and SWAT (fly repellent). There is a healing process. - Latest condition, the wound become dry and healed. No blood or inflame
♂ TORGAMBA	The Eye : No discharge
REPRODUCTION	
♀ BINA	<p>Period of 14 December</p> <ul style="list-style-type: none"> - Estrus signs was observed on 14 December (morning) but unclear. Only detected a redness and slightly swollen of vulva. No estrus discharge was observed. - Bina showed interest to be mounted, she did some Behavior Courtship (Standing Heat) on 14 December (14.14, 14.22, 14.29, 14.48, 15.06, 15.12, 15.23 and 15.39). There was only good response from Torgamba on 14 December.
♂ TORGAMBA	<p>Period of 14 December</p> <ul style="list-style-type: none"> - There were some serious courtship on 14 December. - Most of the mounting happened in the Night. - Torgamba mount Bina 8 times on 14 December: 14.14 for 1 minute with erection and intromission but till flaps, 14.22 for 1 minute penis no erection, 14.29 for 7 minutes with full erection, intromission (2 minutes) but till flaps, 14.48 for 9 minutes penis full erection, full intromission and ejaculation , 15.06 for 2 minutes penis no erection, 15.12 for 7 minutes, penis erection and intromission (5 minutes) but till flaps, 15.23 for 3 minutes, penis erection and intromission (2 minutes) but till flaps and 15.39 for 23 minutes with full erection, Full intromission 20 minutes (no help, T success alone) and ejaculation. Keepers was success collect the semen (25 cc from penis and 15 cc from vulva). <p>Note : T mount B 8 times on December 14, There was 2 times full intromission/penetration occurred , hour 14.54 - 14.57 and 15.42 - 16.02</p>

Part 3

SEXUAL BEHAVIOR OBSERVATIONS RECORDS

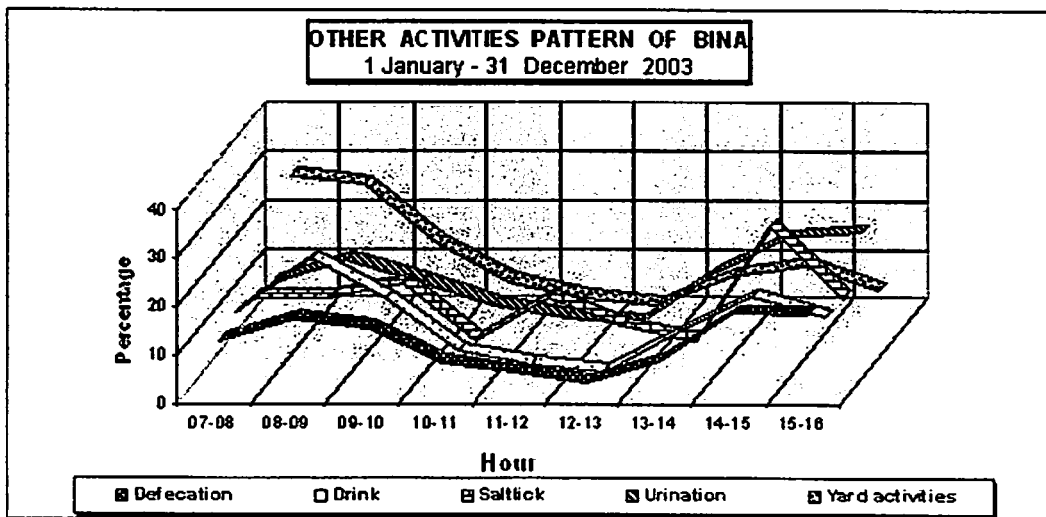
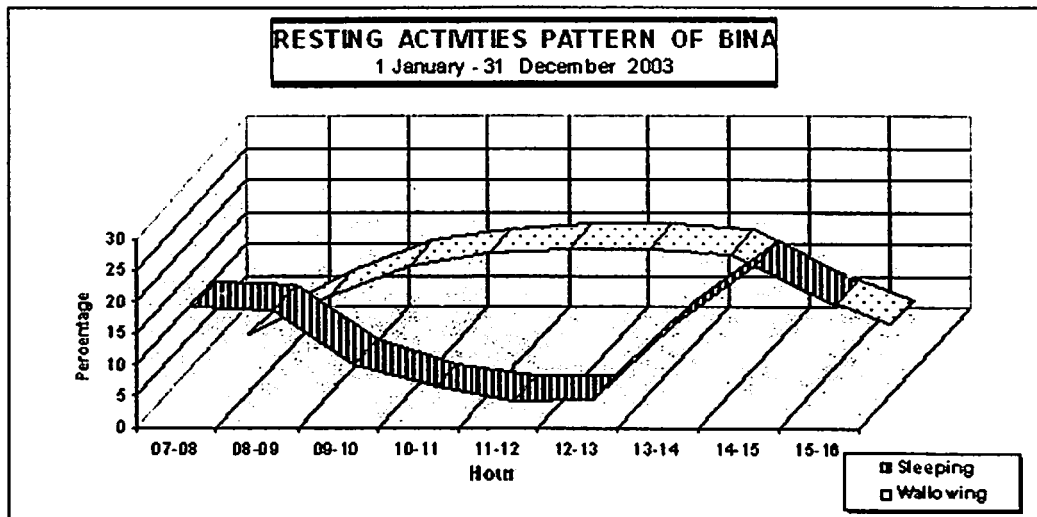
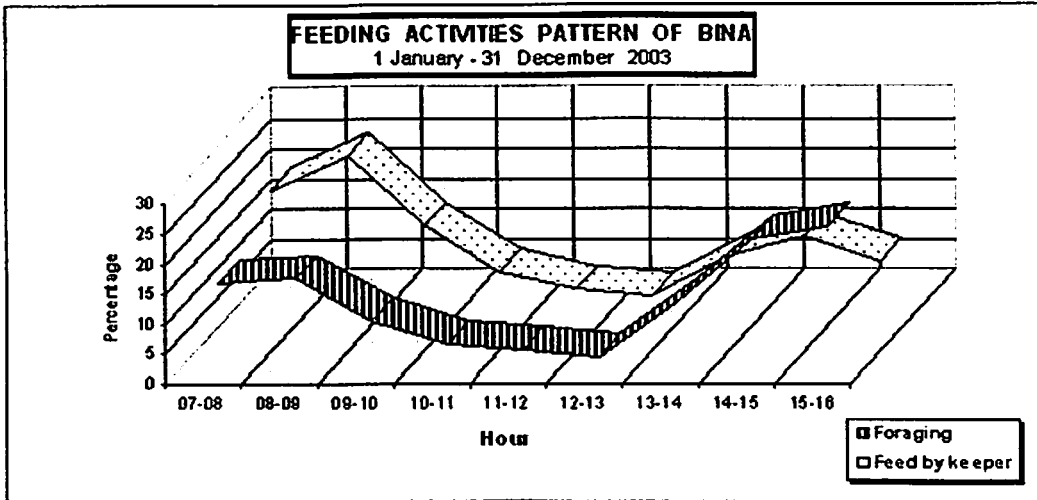
SEXUAL BEHAVIOR RECORDS of BINA and TORGAMBA, 2003

Month (date)	Days of Courtship	♀ Vaginal Oestrus Signs	Days to Cycle	♂ Mounting	♂ Erection	♂ Penetration	♂ Ejaculation
January	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-
April (11-13)	1 (11)	++	-	12	7	5 (1 full)	1
May (7-9)	1 (7)	++	26	10	8	5 (3 full)	3
May (31)	1 (31)	++	24	16	9	4 (1 full)	1
June (28)	1 (28)	++	28	6	4	4 full	4
July (13-14)	1 (13)	++	22	8	6	4 full	4
August (20-21)	1 (20)	++	24	8	5	1	1
Sept (3-7)	1 (7)	+++	26	8	7	1	1
Oct	-	-	-	-	-	-	-
Nov (1)	-	-	-	-	-	-	-
Nov (19-21)	3 (20)	+++	20	8	2	2	2
Dec (14-15)	2 (14)	+++	24	8	7	2	2
AVERAGE			24				

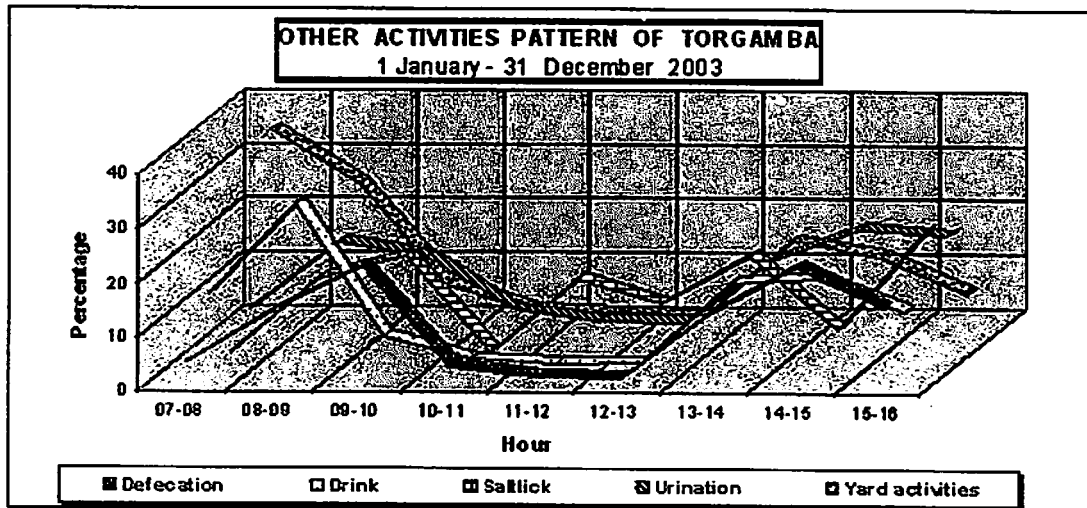
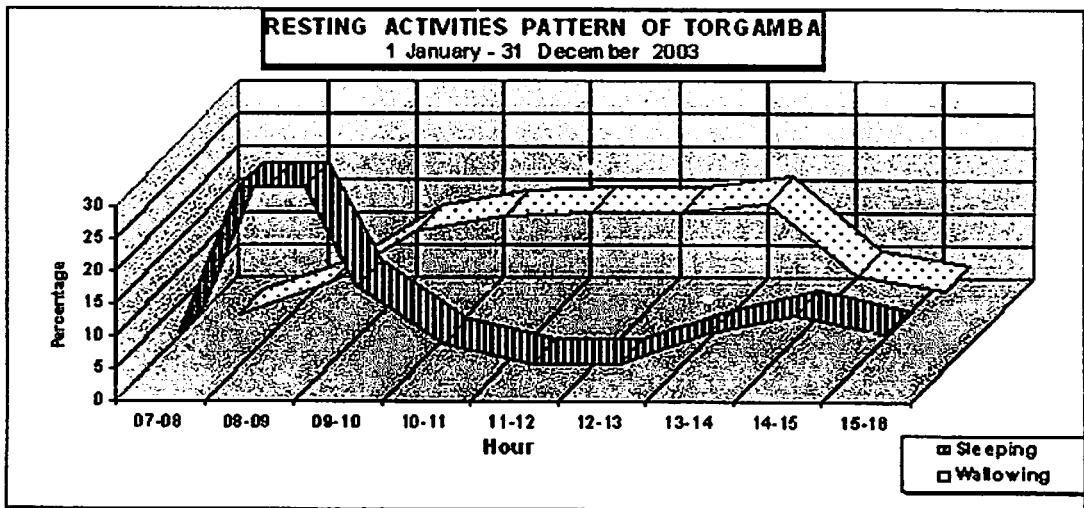
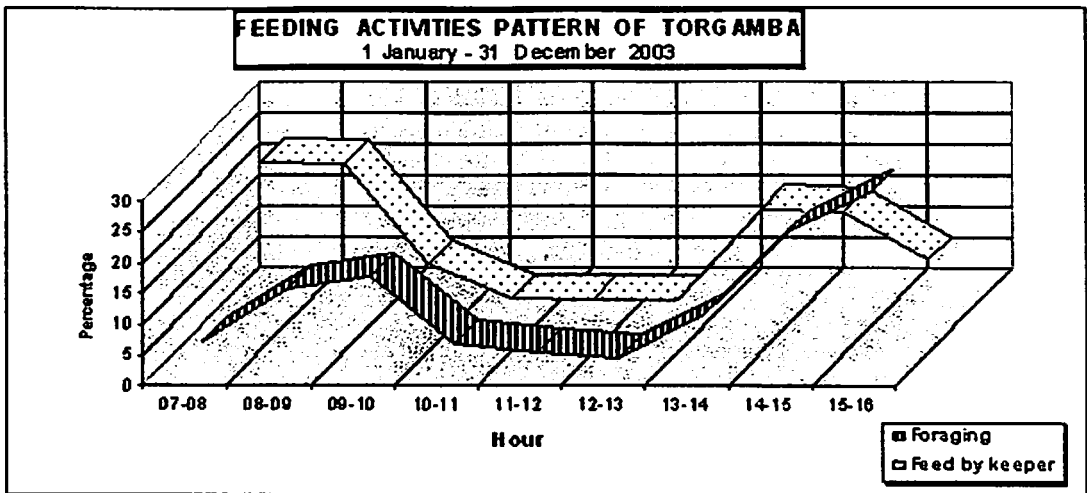
Part 4

DAILY ACTIVITY PATTERN

BINA



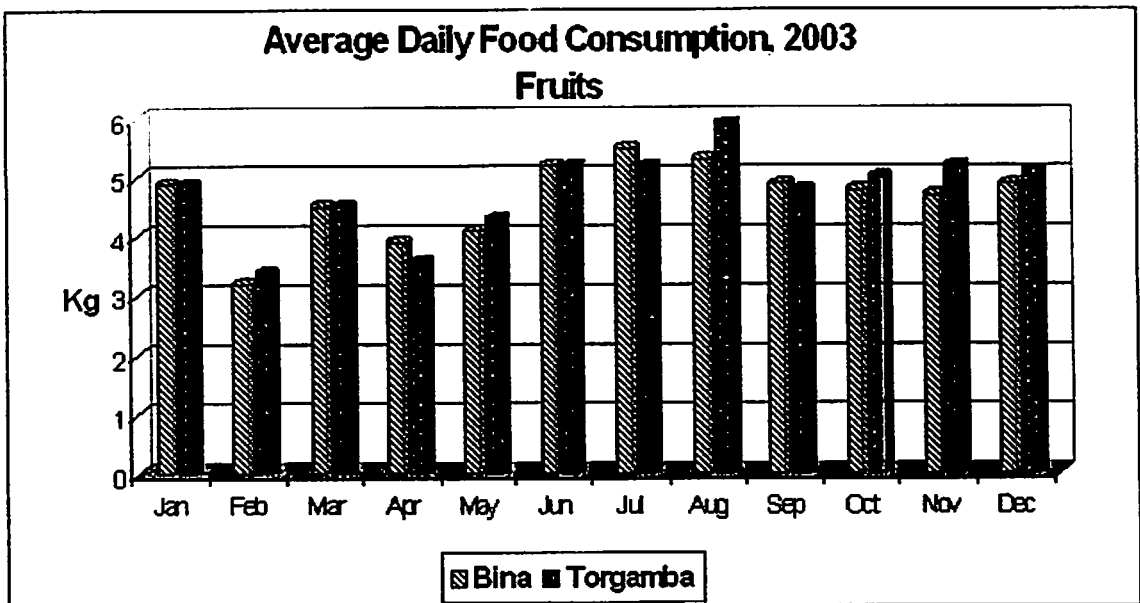
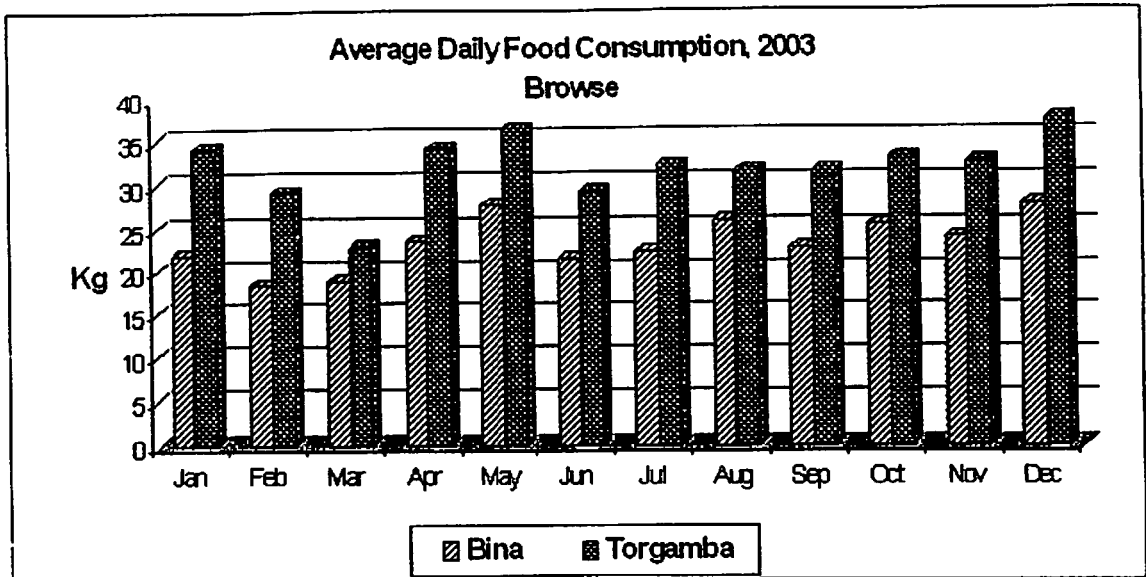
TORGAMBA



Part 5

FOOD CONSUMPTION and WEIGHT

AVERAGE DAILY FOOD CONSUMPTION (BROWSE AND FRUITS)



BODY WEIGHT

