



Suaka Rhino Sumatera



Sumatran Rhino Sanctuary



TORGAMBA ♂

♀ BINA

# CURATOR'S REPORT 2001

Dedi Chandra, Marcellus Adi, Nico van Strien (eds)

Yayasan Suaka Rhino Sumatera, Jakarta & Bogor, 1 June 2002

# **CURATOR'S REPORT 2001**

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, 1 June 2002*

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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. Samo  
7. Sunarto  
8. Yuhadi

**House Keeper** : Suratno

**Cook** : Cecep

**Guards** : POLHUT (Forest Police)

**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*, various 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*),  
ttop (*Artocarpus elasticus*).

#### FRUITS:

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

# JANUARY 2001

## FOOD AND WEIGHT (in Kg)

Date	♀ BINA			♀ DUSUN			♀ TORGAMBA		
	Food taken	Weight		Food taken	Weight		Food taken	Weight	
	Browse	Fruits		Browse	Fruits		Browse	Fruits	
1	22.0	5		18.0	5		27.5	5	
2	26.5	5		23.0	5		37.5	5	
3	36.0	4		31.0	4	523	31.0	2	
4	21.0	5	632	30.0	5		25.5	5	675.5
5	38.0	5		22.0	5		34.0	5	
6	28.0	7		25.5	5		51.0	5	
7	28.0	7		20.0	5		26.0	6	
8	25.0	6		27.0	5		34.0	5	
9	27.0	7		26.5	5		35.0	5	
10	23.0	7		21.0	6	523.5	29.5	7	681.5
11	30.0	7	640.5	21.0	5		29.5	5	
12	25.5	6		22.0	6		30.0	6	
13	34.5	7		21.0	5		28.5	5	
14	23.5	6		27.0	5		40.0	6	
15	39.0	7		27.0	6		40.0	6	
16	24.0	6		26.5	6		26.0	5	
17	33.0	7		22.0	6	510.5	32.0	7	683
18	35.0	6	630.5	25.5	6		46.0	7	
19	32.0	6		26.0	6		32.0	6	
20	32.5	7		21.0	6		32.5	7	
21	38.0	4		12.5	6		38.0	6	
22	21.0	6		21.5	6		26.0	6	
23	23.0	5		27.5	5		28.0	5	
24	30.5	8		32.5	6	538.5	38.5	6	689
25	29.5	6	640	26.0	6		33.0	6	
26	22.0	4		24.0	4		30.0	4	
27	30.5	5		26.0	6		32.0	5	
28	16.5	5		19.0	11		35.5	5	
29	32.0	5		22.5	7		36.5	5	
30	24.5	5		28.0	3		38.5	5	
31	39.0	5		15.0	5		35.5	5	691
Mean	28.7	5.8	635.8	23.8	5.5	523.9	33.5	5.4	684.0

# MARCH 2001

## FOOD AND WEIGHT (in Kg)

Date	♀ BINA		Weight	♂ TORGAMBA		Weight
	Browse	Fruits		Browse	Fruits	
1	29.0	7		36.0	7	
2	34.0	7		29.0	7	
3	31.5	7		31.5	7	
4	28.5	7		28.5	7	
5	36.0	7		36.0	7	
6	26.0	6		28.5	6	
7	18.0	5	647.0	40.5	6	
8	37.0	5		36.0	6	
9	28.0	4		35.5	4	
10	34.0	6		36.5	6	675.0
11	26.0	5		30.5	6	
12	31.0	6		41.5	6	
13	30.0	6		28.0	6	
14	19.0	6	649.0	40.0	6	678.0
15	29.0	7		37.5	7	
16	22.0	6		34.0	7	
17	28.5	7		37.5	7	
18	19.0	7		23.0	7	
19	15.0	7		32.5	7	
20	22.5	7		38.0	7	
21	27.5	7	637.0	34.0	7	706.0
22	29.0	7		35.0	7	
23	31.0	7		40.5	7	
24	30.0	7		36.5	7	
25	17.0	7		28.0	7	
26	24.0	6		29.0	7	
27	28.5	5		31.0	5	
28	48.0	6		51.5	6	680.5
29	35.0	6	639.0	52.5	6	
30	33.0	6		44.0	6	
31	37.0	7		46.5	6	
Mean	28.5	6.3	643.0	35.7	6.5	684.9



# FEBRUARY 2001

## FOOD AND WEIGHT (in Kg)

Date	♀ BINA			♀ DUSUN			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight	Food taken		Weight
	Browse	Fruits		Browse	Fruits		Browse	Fruits	
1	26.0	5	648.0	23.5	4		39.0	5	691.0
2	28.5	5		18.5	4		36.5	5	
3	27.0	5		10.5	4		29.5	5	
4	29.0	5		22.0	4		37.5	5	
5	29.0	5		12.0	4		30.5	5	
6	26.5	5		28.0	4		40.5	5	
7	41.5	5		<i>Dusun died of old age and multiple internal pathologies</i>			40.0	5	
8	24.5	5	638.0				41.0	5	702.0
9	39.0	6				33.5	6		
10	25.0	6				32.0	5		
11	29.0	6				29.0	6		
12	46.0	6				46.0	6		
13	33.5	6				33.5	6		
14	30.5	4	637.0			34.0	4	673.5	
15	27.0	5				35.5	5		
16	25.5	5				31.0	5		
17	28.5	6				32.0	6		
18	33.0	7				30.0	7		
19	31.0	7				33.0	7		
20	29.0	5				35.0	6		
21	27.0	6				29.0	7	672.5	
22	33.0	7	635.0			33.0	7		
23	23.0	7				37.0	7		
24	30.0	7				40.0	7		
25	26.5	7				37.0	7		
26	31.0	7				36.5	7		
27	27.0	7				36.5	7		
28	26.0	7	646.0			31.0	9	676.0	
29									
<b>Mean</b>	<b>26.9</b>	<b>5.3</b>	<b>640.8</b>	<b>17.4</b>	<b>4.0</b>		<b>31.6</b>	<b>5.4</b>	<b>682.7</b>

# APRIL 2001

## FOOD AND WEIGHT (in Kg)

Date	♀ BINA		♂ TORGAMBA		Weight
	Food taken		Food taken		
	Browse	Fruits	Browse	Fruits	
1	27.0	6	43.0	7	
2	34.0	7	46.5	7	
3	22.5	7	45.0	7	
4	22.0	6	34.0	7	
5	36.5	6	38.0	6	
6	28.0	6	18.0	6	
7	21.0	6	34.5	6.5	
8	27.0	6	14.5	6	
9	42.0	6	12.0	6	
10	41.5	6	10.0	6	
11	32.0	6	7.5	6.5	
12	38.5	6	13.0	6	
13	38.0	6	12.0	6	
14	34.0	6	20.0	6	
15	38.0	6	21.5	6	
16	31.0	6	25.5	6	
17	24.0	5	28.5	6	
18	11.0	4	28.0	6	
19	7.0	5	23.0	5	
20	20.0	4	13.0	4	
21	18.0	4	31.0	4	
22	19.0	7	23.0	6	
23	17.5	6	17.0	5	
24	29.5	7	15.0	7	
25	31.5	9	20.0	7	
26	25.0	7	18.0	7	
27	22.0	4	22.5	4	
28	17.0	7	21.5	6	
29	30.0	7	25.0	4	
30	30.0	7	25.0	7	
31					
<b>Mean</b>	<b>26.3</b>	<b>5.8</b>	<b>22.8</b>	<b>5.8</b>	

Note: Scale in repair.

# MAY 2001

## FOOD AND WEIGHT (in Kg)

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits		Browse	Fruits	
1	25.0	7		19.0	7	
2	26.0	7		18.0	7	
3	35.0	7		18.0	7	
4	23.0	7		14.0	7	
5	37.0	7		18.5	7	
6	28.0	7		15.0	7	
7	17.0	6		18.0	4	
8	42.5	6		19.0	6	
9	38.5	7		14.0	7	
10	23.5	7		33.0	7	
11	28.0	5		32.0	5	
12	15.5	4		15.5	4	
13	23.0	4		7.5	5	
14	19.0	5		14.0	5	
15	22.0	5		23.0	5	
16	19.0	6		23.5	3	
17	22.0	6		28.5	3	
18	27.5	6		18.5	4	
19	27.0	6		16.5	3	
20	28.5	6		17.0	3	
21	16.0	5		12.0	3	
22	18.0	5		9.0	4	
23	32.0	6		19.0	4	
24	19.0	6		17.0	3	
25	22.0	6	637.0	23.0	3	670.0
26	19.0	6		21.5	5	
27	18.5	6		13.5	5	
28	18.0	6		20.0	5	
29	15.0	6		15.0	5	
30	14.0	6		25.0	5	
31	23.0	6		17.0	5	
Mean	23.9	6.0	637.0	18.5	4.9	670.0

Note: Scale in repair.

# JUNE 2001

## FOOD AND WEIGHT (in Kg)

Date	♀ BINA		Weight	♂ TORGAMBA		Weight
	Browse	Fruits		Browse	Fruits	
1	29.0	6		17.5	5	
2	22.0	6	620.0	22.5	5	656.0
3	32.0	6		21.5	6	
4	32.0	6		15.0	5	
5	22.0	6		30.0	5	
6	26.0	6.5	634.5	17.0	5	680.5
7	26.0	6		16.5	5	
8	25.5	6.5		25.5	5	
9	18.5	6.5		18.5	5	
10	25.0	6.5		24.5	5	
11	27.5	3		21.5	3	
12	24.0	5		27.5	6	
13	16.5	5	632.0	17.5	5	673.5
14	23.5	5		18.0	5	
15	17.0	5		28.0	5	
16	25.0	5		29.0	5	
17	29.0	5		26.5	5	
18	15.0	5		21.0	6	
19	37.0	6		28.0	6	
20	25.0	6	643.0	21.5	6	658.0
21	21.5	6		24.5	6	
22	18.5	6		28.0	6	
23	28.0	6		30.0	6	
24	27.0	6		42.0	6	
25	26.0	6		32.0	6	
26	30.0	6		32.0	6	
27	40.0	6	641.0	38.5	6	685.0
28	30.0	5		30.0	5	
29	28.0	4		28.0	4	
30	37.0	5		37.0	5	
31						
Mean	25.3	5.4	634.1	24.8	5.1	670.6

# JULY 2001

## FOOD AND WEIGHT (in Kg)

Date	♀ BINA			♂ TORGAMBA		
	Food taken		Weight	Food taken		Weight
	Browse	Fruits		Browse	Fruits	
1	28.5	6		38.5	6	
2	31.0	6		38.0	6	
3	29.5	6		36.0	6	
4	12.0	6	616.5	32.0	6	687.0
5	43.0	5		25.5	6	
6	26.0	5		22.0	5	
7	25.5	5		19.5	5	
8	21.0	11		28.5	7	
9	28.0	7		25.0	7	
10	19.0	7		40.0	7	
11	21.0	7	621.0	26.0	6	690.0
12	23.0	7		32.5	6	
13	24.5	7		41.0	6	
14	31.5	7		40.5	7	
15	26.0	7		44.0	7	
16	31.0	7		29.0	7	
17	28.0	7		28.0	7	
18	37.0	7	628.0	24.0	7	677.0
19	27.0	7		37.0	7	
20	25.0	7		33.0	7	
21	24.0	7		45.5	7	
22	28.0	7		40.0	7	
23	33.0	7		38.5	7	
24	26.5	7		40.5	7	
25	35.0	7	634.5	39.0	7	687.0
26	34.5	7		30.0	7	
27	37.0	7		33.0	7	
28	44.5	7		37.5	7	
29	28.0	7		36.5	7	
30	48.5	5		35.0	7	
31	31.0	7		21.0	7	
Mean	29.3	6.7	625.0	33.4	6.6	685.3

**AUGUST 2001****FOOD AND WEIGHT (in Kg)**

Date	♀ BINA		Weight	♂ TORGAMBA		Weight
	Browse	Fruits		Browse	Fruits	
1	41.0	7		40.5	7	
2	15.5	7		39.5	5	
3	34.5	7		29.5	7	
4	19.5	7		30.0	6	694.0
5	31.0	7	633.5	35.0	6	
6	29.0	7		33.5	7	
7	36.5	7		30.0	7	
8	24.0	7		35.0	7	
9	29.0	6		36.0	7	
10	33.0	6		28.5	6	
11	27.0	6		39.0	7	679.0
12	34.0	6	633.5	38.5	7	
13	38.5	6		29.0	6	
14	33.0	6		37.5	6	
15	34.0	5		40.0	5	
16	33.5	6		44.5	5	
17	29.0	5		39.0	5	
18	48.0	6		40.0	6	685.5
19	40.0	6	652.0	44.5	6	
20	32.0	6		32.0	6	
21	50.5	6		40.5	5	
22	31.0	6		39.0	7	
23	41.0	5		39.0	6	
24	39.5	5		33.0	6	
25	37.0	6		30.5	7	694.0
26	36.0	6	644.0	42.0	6	
27	40.0	6		38.0	6	
28	35.0	5		39.0	6	
29	35.0	6		38.5	6	
30	31.5	7		39.5	7	
31	40.5	7		37.5	7	
Mean	34.2	6.2	640.8	36.7	6.2	688.1

# SEPTEMBER 2001

## FOOD AND WEIGHT (in Kg)

Date	♀ BINA		Weight	♂ TORGAMBA		Weight
	Browse	Fruits		Browse	Fruits	
1	29.0	7		48.5	7	686.0
2	41.0	7	643.5	36.5	7	
3	29.0	7		30.5	7	
4	33.0	7		37.0	7	
5	31.5	7		39.5	7	
6	29.0	7		51.5	7	
7	24.0	7		47.0	7	
8	37.5	6		44.0	6	673.0
9	27.5	5		38.5	7	
10	32.5	5		32.5	5	
11	43.0	5		36.0	5	
12	35.0	7		45.0	5	
13	31.0	6		38.5	5	
14	34.0	5		46.5	5	
15	32.0	5		46.0	6	671.5
16	36.0	6	644.0	38.5	6	
17	26.0	5.5		51.0	5.5	
18	21.5	5.5		37.5	5	
19	37.0	5.5		51.0	5	
20	43.0	5		36.0	5	
21	27.0	6		53.5	5	
22	35.0	6		36.5	5	672.5
23	34.0	6	643.5	39.5	4	
24	28.0	5		42.5	4	
25	37.5	5		36.0	4	
26	34.5	4		34.5	4	
27	27.0	5		56.0	4	
28	35.0	5		43.0	4	
29	32.0	3		31.0	5	677.5
30	50.0	5.5	632.0	44.0	5	
31						
Mean	32.0	5.5	640.8	40.3	5.3	676.1

**OCTOBER 2001****FOOD AND WEIGHT (in Kg)**

Date	♀ BINA		Weight	♂ TORGAMBA		Weight
	Browse	Fruits		Browse	Fruits	
1	37.0	5		37.0	5	
2	32.0	5		32.0	5	
3	27.0	6		43.0	6	
4	25.5	6		31.0	4	
5	28.0	5		44.0	8	
6	33.0	5		37.5	4	686.0
7	30.5	6	630.5	46.0	8	
8	34.0	6		37.5	6	
9	26.0	6		40.0	6	
10	28.5	6		34.0	5	
11	27.0	6		35.0	5	
12	26.0	6		36.0	6	
13	38.0	6		37.5	7	660.0
14	24.0	6	639.0	38.0	7	
15	31.0	7		42.0	7	
16	28.0	6		42.5	7	
17	31.5	6		34.5	7	
18	49.0	6		39.0	7	
19	40.0	6		35.5	7	
20	56.0	5		55.5	6	653.5
21	43.0	2		43.0	2	
22	48.5	4		48.5	4	
23	43.0	7		53.0	7	
24	46.0	7		46.0	7	
25	49.5	7		43.5	7	
26	41.5	7		55.0	5	
27	30.5	6		37.0	5	688.0
28	29.5	7	623.5	35.5	6	
29	34.5	7		48.0	7	
30	29.0	6		47.0	6	
31	39.5	6		54.0	7	
Mean	35.0	5.9	631.0	41.6	6.0	671.9



# NOVEMBER 2001

## FOOD AND WEIGHT (in Kg)

Date	♀ BINA		Weight	♂ TORGAMBA		Weight
	Browse	Fruits		Browse	Fruits	
1	31.5	6		44.0	6	
2	41.0	5		51.5	4	
3	36.0	6		65.5	7	677.5
4	42.0	6	630.0	50.5	7	
5	29.0	6		54.0	7	
6	36.5	6		58.0	6	
7	36.0	6		42.0	7	
8	43.0	6		49.5	7	
9	33.0	5		47.0	5	
10	30.0	5		52.0	6	678.5
11	31.0	7	645.5	39.0	7	
12	31.0	7		49.0	7	
13	37.0	6		47.0	6	
14	32.5	6		42.0	6	
15	53.0	6		58.0	6	
16	51.5	6		41.0	6	
17	38.5	7		51.0	6	
18	39.0	7		51.5	7	
19	40.0	7		44.0	7	
20	40.0	7		48.0	7	
21	34.0	5		35.0	5	
22	28.0	7		42.0	7	
23	50.5	7		32.0	7	
24	38.0	7		43.0	7	
25	31.0	7		31.5	7	
26	23.0	7		45.0	7	
27	25.0	7		47.0	7	
28	42.0	7		39.0	7	
29	29.5	7		4.0	7	
30	25.0	7		49.0	7	
31	0.0	0		0.0	0	
Mean	34.8	6.2	637.8	44.9	6.3	678.0

Note: Scale in repair.

# DECEMBER 2001

## FOOD AND WEIGHT (in Kg)

Date	♀ BINA		Weight	♂ TORGAMBA		Weight
	Food taken			Food taken		
	Browse	Fruits		Browse	Fruits	
1	29.0	6		42.0	6	
2	37.5	7		38.0	7	
3	22.0	6		40.0	6	
4	31.0	6		50.0	5	
5	50.5	6		50.5	6	
6	41.5	5		41.0	5	
7	44.0	5		44.0	5	
8	40.0	5		40.0	5	
9	33.0	6		33.0	5	
10	8.0	6		35.0	6	
11	17.0	6		32.0	6	
12	16.0	4		33.0	6	
13	17.5	3		26.0	4	
14	25.0	4		29.0	3	
15	14.0	3		32.5	3	
16	21.5	4		36.0	3	
17	24.0	4		26.5	4	
18	20.0	3		22.0	3	
19	21.0	2		34.0	0	
20	9.0	0		17.0	3	
21	18.0	3		38.0	2.5	
22	20.0	4		33.0	4	
23	25.5	3		23.0	3	
24	16.5	3		20.0	3	
25	21.0	4		17.0	3	
26	38.0	3		26.0	3	
27	28.0	2		37.0	2	
28	24.0	3		23.0	4	
29	41.0	6		36.0	6	
30	13.5	5		32.0	5	
31	20.0	4		26.0	4	
Mean	25.4	4.2	-	32.7	4.2	-

Note: Scale in repair.



Part 2

**GENERAL OBSERVATIONS  
and  
TREATMENT RECORDS**

# JANUARY 2001

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> <li>• Together with Torgamba 18 - 20 January</li> <li>• Blood sample collection on 24 January</li> <li>• Daily activities pattern in part 4</li> </ul>
♀ DUSUN	<ul style="list-style-type: none"> <li>• Loss of tooth (Premolar) on 11 January</li> <li>• 28 January Dusun was sick with signs of Posterior Paralysis</li> <li>• Blood sample collection on 30 and 31 January for serum analysis.</li> <li>• Daily activities pattern in part 4</li> </ul>
♂ TORGAMBA	<ul style="list-style-type: none"> <li>• Together with Bina on 18 - 20 January</li> <li>• Semen collection on 23 January (2x) and 24 January (1x)</li> <li>• Blood sample collection on 24 January</li> <li>• Daily activities pattern in part 4</li> </ul>
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	<b>Conjunctivitis on both eyes:</b> Treated with ZnSO <sub>4</sub> .
♀ DUSUN	<p><b>Conjunctivitis on both eyes:</b> Treated with ZnSO<sub>4</sub> 2% (Zink Sulfate), garamycin ointment or Terramycin ointment.</p> <p><b>Vulva Wound:</b> One wound, 1 cm wide and about 2-3 cm long, was found in her vulva in the morning of 28 January. There was hyperaemia, a bleeding and inflammation and a little infection. Possibly stabbed by broken wood. Treated with Rivanol, Betadine, Antibiotic salp and Swat (fly repellent).</p> <p><b>Posterior Paralyzed:</b> on 28 January</p>
♂ TORGAMBA	<b>Eyes:</b> No discharge
REPRODUCTION	
♀ BINA	<p><b>Period of 18 - 20 January,</b> The vulva was reddish on 16 - 18 January but no discharge was observed. Bina showed interest to be mounted almost during this period, she did some <b>standing heat</b> on 18 January (17:21, 18:10, 18:12, 18:37, 19:02, 19:41, 20:36, 20:56, 21:20, 21:25, 21:59, 22:18, 22:24, 22:41, 22:42, 22:54, 23:10, 23:13, 23:16), 19 January (00:20, 02:40, 02:41), and 20 January (06:33, 06:35, 08:40, 10:02). Only on 18 and 19 January there was a good response from Torgamba.</p>
♀ DUSUN	No signs of heat in January

## ♂ TORGAMBA

**Period of 18 - 20 January**

There was some serious courtship on 18 and 19 January.

Torgamba mounted Bina 14 times on **18 January**.

- 17:22 for 4 minutes,
- 18:12 for 1 minute,
- 18:44 for 1 minute,
- 19:02 for 2 minutes without erection,
- 19:41 for 20 minutes with full erection but no intromission,
- 20:36 for 1 minute,
- 20:56 for 5 minutes without erection,
- 21:25 for 4 minutes with full erection and **Intromission**,
- 21:59 for 3 minutes with erection and **Intromission**,
- 22:18 for 2 minutes with full erection and **Intromission**,
- 22:24 for 4 minutes with full erection and **Intromission**,
- 22:42 for 2 minutes with erection,
- 22:54 for 4 minutes and **Intromission**,
- 23:16 for 9 minutes with full erection and **Intromission**.

Torgamba mounted Bina 2 times on **19 January**:

- 00:39 for 5 minutes but Torgamba mount from Bina's head(ear)/mismount with erection,
  - 02:41 for 4 minutes and **Intromission**,
- and 1 time on 20 January:
- 10:02 for 8 minutes without erection.

**Note:**

There was 6 times intromission on 18 January and one time on 19 January, but penis could only penetrate 15 - 20 cm.

**MISCELLANEOUS****DUSUN'S Posterior Paralysis****28 January 2001**

**Dusun was sick.** Several week ago, one tooth (pre-molar) was lost.

**Clinical signs:** Could not move, both hind leg are paralyzed. Laying down on the ground since 08:00 PM, reflexes still good except reflexes from hind leg, right hind leg was a little bit stiff. Vulva has a small wound.

Body temperature has been stable and normal ( 37.6 Celsius) after she became sick. Appetite is good, no defecation and urination.

**Diagnose: Posterior Paralysis**

**Differential Diagnose:** - Hypocalcemia

**Medicine:**

- Multi vitamin (ardivit) 10 tabs PO
- Anti bloat/tympani (dhimeticon) 1 dose PO
- Neurotrophic vitamin with vit B1, B6, B12 (15 tabs PO)
- Amphoprim (sulfamethoxy-pyridazine and trimetoprim), 10 tabs PO
- Kalzana D (calcium and Vitamin D) 10 tabs PO and
- Phenylbutazone (anti inflammation) 2 tabs PO.

**Notes:**

**Defecating:** First time at 09:40 PM, but not as much as usual.

**Last situation:** Until 24:00 AM still no movement of hind feet and no urination. **Cucumber and water melon (4 Kg)** given to stimulate urination. Temperature, gas and feces normal. Need rectal palpation for removal of feces. Rectum slightly prolapsed. No signs of tympani. Appetite normal. Change position every one hour to sit or lay down ventral.

**Suggestions:** - Muhammad Agil, D.V.M. recommended to give **Biosalamine (ATP source)** and additional **Calcium** to overcome the paralyzed of muscle.  
- Change Dusun position from time to time to avoid decubitus problem.

**29 January 2001**

Good appetite but still looks weak. Starting to urinate, but very little. Move hind legs more but cannot stand. There are no signs of tremor or stiffness of muscle. No signs of Tetanus, no general paralysis like in Hypocalcemia in cattle or horse. Flatus many time.

**Medicine:**

- Lasix (diuretika), 5 tabs PO
- Neurologic vitamin (neurofort), 15 tabs PO
- Phenylbutazone (anti inflammation), 2 tabs PO
- Multi vitamin (ardivit), 10 tabs PO
- Anti bloat (dhimeticon) 1 dose PO
- kalzana D (calcium and Vitamin D) 10 tabs PO

**Advice:**

- Blood Collection for Blood Analysis (CARITAS Bogor)
- Urine Collection for Urine Analysis

**Differential Diagnose:**

- Parasite (Brain Worm) ?
- Spinal Diseases (Tumor/cancer) ?
- Pituitary Tumor (the past history of staggering and blindness with persistent lactation)
- Nerve disorder

**30 January 2001**

Urinate a lot, small amounts but many times. Feces still normal (about 2-3 balls per defecating but occurs till 10 times a day). Flatus a lot, more relaxed when asleep and eating as usual. Reflexes on both hind legs are also better. The right leg has more progressive reflex than the left one, but still cannot stand up.

**Medicine:**

- Biosalamin (ATP and vitamin), 20 cc IM
- Amphoprim (antibiotika) 10 tabs PO
- Cucumber (diuretika), 4 kg
- Neurologic vitamin (neurofort), 15 tabs PO
- Phenylbutazone (anti inflammation), 2 tabs PO
- Blood Collection (2 cc)

**31 January 2001**

Not much different from yesterday. Appetite normal. Urinating many times, sometime already reddish in color (like when the urine color changes outside). Defecating only one time, but it was a lot, and need help to pull out the rest.. Temperature normal (37.5 Celsius). Deep sleep laterally on both side.

**Medicine:**

- Biosalamin (ATP and vitamin), 20 cc IM
- Amphoprim (antibiotika) 10 tabs PO and
- Ardivit (multi vitamin), 10 tabs PO

**Treatment:**

- Blood Collection (3 cc) for Blood analysis.

# FEBRUARY 2001

<b>EVENTS AND ACTIVITY</b>	
♀ BINA	• Together with Torgamba on 10 - 13 February
♀ DUSUN	• Blood, feces and urine sample collection on 1 and 2 February for serum analysis. • Dusun died on 7 February 2001 (01:50 PM) and send to Faculty of Veterinary Medicine - IPB Bogor for Necropsy.
♂ TORGAMBA	• Together with Bina on 10 - 13 February
<b>MEDICATION and SPECIAL TREATMENTS</b>	
♀ BINA	<b>Conjunctivitis on both eyes: Treated with ZnSO4.</b>
♀ DUSUN	<b>Conjunctivitis on both eyes: Treated with ZnSO4.</b> <b>Vulva Wound, Topical treatment:</b> Rivanol, betadine, antibiotic ointment, and SWAT (fly repellent). Clinical signs: a little inflammation and infection, no hyperaemia. The vulva wound healed quickly and completely <b>Paralyzed ?</b>
♂ TORGAMBA	<b>Eyes: No discharge</b>
<b>REPRODUCTION</b>	
♀ BINA	<p><b>Period of 6 - 8 February,</b> On 5 and 6 February it was seen that the vulva was reddish and a little swollen. But no discharge was observed. In this period Bina stayed with Torgamba only until 8 February. We separated them because no sexual activities. No serious courtship was observed during this period.</p> <p><b>Second period of 10 - 13 February,</b> During the second period the signs of estrus were detected on 10 - 12 February were the reddish and little swollen but no discharge. Bina showed interest to be mounted almost throughout this period, she did some standing heat on 10 Feb (21:40) and 12 Feb (06:16, 06:17, 06:41, 06:44, 06:54, 06:56, 07:18, 07:19, 07:32, 07:33, 08:17, 08:31, 08:32, 08:48, 08:49, 08:58, 09:00, 09:12, 15:01, 20:25, 21:13). There was only a good response from Torgamba on 12 February 2001</p> <p><b>Period of 8 - 13 February,</b> Some courtship was observed, but it never looked intense. On 10 and 11 Feb, Bina looked so aggressive and many times presented her back to be mounted by Torgamba. But only one time on 15:53 10 Feb Torgamba mounted. Actually the vulva show not so clear signs of estrus. But 10 and 11 Feb were the expected days of estrus.</p>
♀ DUSUN	No signs of heat in January



## ♂ TORGAMBA

**Period of 6 - 8 February,**

No serious courtship was observed during this period.

We separated them on 8 February because Torgamba did not show good response and there was no mounting.

**Second period of 10 - 13 February,**

There were some serious courtship on 10 and 12 February 2001.

Most of the mounting happened in the morning.

Torgamba mounted Bina 10 times on 12 February: 06:17 for 1 minute without erection, 06:41 for 4 minutes with erection, 06:57 for 4 minutes, 07:19 for 3 minutes with full erection, 07:33 for 6 minutes without erection, 08:18 for 2 minutes, 08:33 for 6 minutes, 09:00 for 2 minutes with full erection, 09:13 for 15 minutes with full erection and Intromission, 15:01 for 9 minutes, 20:25 for 4 minutes without erection

**Note:**

One intromission occurred on 12 February 09:13 - 09:28, but Torgamba's penis can only penetrate  $\pm$  15 cm.

**MISCELLANEOUS****DUSUN'S Condition (Paralyzed Posterior)****1 February 2001**

No progress. Condition like yesterday

**Medicine:**

- Biosalamin (ATP and vitamin), 20 cc IM
- Neurologic vitamin (neurofort), 10 tabs PO
- Amphoprim (antibiotika), 10 tabs PO and
- Ardivit (multi vitamin), 10 tabs PO
  
- Urine collection and blood collection (Caritas Bogor)
- Feces collection (FKH-IPB Bogor)

**2 February 2001**

Showed more reflexes and pushing down on the hind legs when trying to push up and move. Swinging head left-right, making voices and snorting. Heart beat is 52-56 per minute, respiration 12-24 but mostly 15-18 per minute, body temperature 36.4-39.1 Celsius; mostly 37.3-37.6 Celsius. Urine thick and colored with some very tiny white particles. Eating, drinking and defecation are OK. Applying warm-hot compresses every few hours for the legs since the beginning.

**Medicine:**

- Amphoprim (antibiotika), 10 tabs PO
- Equuform (amino acid, vitamin and mineral), 10 cc IM

**3 February 2001**

No progress. Urine normal again

**Feeding record of Dusun since the 1st day:**

	<b>Browse (kg)</b>	<b>Fruits: banana, carrot and water melon (Kg)</b>
28 Jan 2001	19	9 (we give extra cucumber to stimulate urination)
29 Jan 2001	22.5	7 (idem)
30 Jan 2001	28	3 (carrot only)
31 Jan 2001	15	5 (carrot and banana)
01 Feb 2001	30.5	4 (idem)
02 Feb 2001	18.5	4 (idem)

For comparison: monthly average feeding

October 2000	23.5	5.1
November 2000	22.6	4.8
December 2000	22.7	4.8

**Medicine:**

- Neuroboran (neurologic vitamin), 20 cc IM
- Delamidon (anti inflammatory and analgesic), 20 cc IM
- Menorox (norfloxacin/antibiotika), 12 cc IM
- Equuform (amino acid, vitamin and mineral), 10 cc IM

#### **4 February 2001**

No progress. Condition as yesterday.

**Medicine:**

- Biosalamin (ATP and vitamin), 20 cc IM
- Menorox (norfloxacin/antibiotika), 12 cc IM
- Equuform (amino acid, vitamin and mineral), 10 cc IM
- Delamidon (anti inflammatory and analgesic), 20 cc IM
- Neuroboran (neurologic vitamin), 20 cc IM

#### **5 February 2001**

Dusun's condition appears weaker. Appetite, defecation and urination normal.

**Medicine:**

- Menorox (norfloxacin/antibiotika), 12 cc IM
- Equuform (amino acid, vitamin and mineral), 10 cc IM
- Delamidon (anti inflammatory and analgesic), 12 cc IM
- Neuroboran (neurologic vitamin), 20 cc IM

#### **6 February 2001**

More active and appetite more than a day before. Eating, drinking and temperature OK. Urinating many times.

**Decubitus!** (Left leg lesion/wound). Mammae and leg also have lesions because she remains sitting down.

**Medicine:**

- Menorox (norfloxacin/antibiotika), 12 cc IM
- Equuform (amino acid, vitamin and mineral), 10 cc IM
- Delamidon (anti inflammatory and analgesic), 20 cc IM
- Neuroboran (neurologic vitamin), 20 cc IM
- Biosalamin (ATP and vitamin), 20 cc IM
- Infus Calcidex (calcium, dextrose), 700 cc SC

After receiving the infus, Dusun's is more active and appears stronger, she tries to stand up but can't, she can only manage the 'dog sit'.

#### **7 February 2001**

Midnight 01:40 Dusun looks weak, suddenly hyper active, uncontrolled. Stiffness and tremors of the whole body. 01:50 PM Dusun dies.

# MARCH 2001

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> <li>• Together with Torgamba in the central area on 2 - 4 March</li> <li>• Bina and Torgamba were put together on 7 - 8 March</li> <li>• Together again in the central area on 26 - 28 March</li> <li>• Daily activities pattern in Part 4</li> </ul>
♂ TORGAMBA	<ul style="list-style-type: none"> <li>• Bina and Torgamba were put together on 2 - 4 March</li> <li>• Semen collection experiment on 5 March</li> <li>• Bina and Torgamba were put together on 7 - 8 March</li> <li>• Together again in the central area on 26 - 28 March</li> <li>• Semen collection experiment on 30 March</li> <li>• Blood sample collection on 30 March (1 cc) for Blood analysis</li> <li>• Daily activities pattern in Part 4</li> </ul>
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	<p><b>Conjunctivitis on both eyes:</b> treated with ZnSO<sub>4</sub>.</p> <p><b>Forehead/eyebrow wound,</b> Possibly stabbed by broken wood when she was running in the central area . Treated with Hydrogen Peroxide, betadine, antibiotic topical ointment and swat (fly repellent). The wound become dry and healed.</p>
♂ TORGAMBA	<p><b>Eyes:</b> No discharge</p>
REPRODUCTION	
♀ BINA	<p><b>Period of 2 - 4 March,</b> Estrus signs was observed on 2 - 4 March, redness and slight swelling of the vulva. No estrus discharge was observed. Since 1 March Bina was approaching the central area and did not want to move away from the gate to the center. But when they were put together on 2 - 4 March there was no reaction from Bina. and Bina was returned to her paddock. There was not much interest from Bina to approach Torgamba. Mostly she avoided Torgamba.</p> <p><b>Period of 8 - 9 March,</b> On 8 - 9 March estrous discharge was detected. Bina and Torgamba were put together again in the central area . Bina showed interest to be mounted, she did some <b>Standing Heat</b> on 8 March (12: 34, 12: 36, 12: 44, 12: 50, 12:55, 13:01, 13:03, 13:16, 13:20, 14: 34, 15: 20, 15: 51, 16: 23). Only on 8 March 2001 there was a good response from Torgamba</p> <p><b>Period of 26 - 28 March,</b> On 26 March the vulva was reddish but no swollen and no discharge was observed. No serious courtship was observed during this period.</p>

## ♂ TORGAMBA

**Period of 2 - 4 March 2001,**

When together with Bina on 2 - 4 March, Torgamba showed high interest in courtship and mounting, but there was no reaction from Bina.

No serious courtship was observed during this period.

We separated them on 4 March

**Period of 8 - 9 March 2001,**

Since 7 March Torgamba was approaching the central area and he did not want to move away from the gate.

There was some serious courtship on 8 - 9 March. Most of the mounting happened in the afternoon.

Torgamba mounted Bina 9 times on 8 March:

- 12: 36 for 1 minute without erection,
- 12: 51 for 1 minute with erection,
- 13: 01 for 1 minute,
- 13: 03 for 3 minutes without erection,
- 13:16 for 1 minute,
- 13: 20 for 1 minute without erection,
- 14:35 for 18 minutes with full erection and intromission,
- 15: 29 for 8 minutes with full erection,
- 15: 57 for 7 minutes with full erection,
- 16: 24 for 24 minutes with full erection and intromission.

**Period of 26 - 28 March 2001,**

Torgamba did not show any interest in mounting, except horn to horn pushing and other courtship behavior on 27 March afternoon and evening but no mounting was observed.

**Note:**

There was **two times intromission/penetration** on 8 March 2001, 14:35 -14:53 and 15:24 -15:48, but Torgamba's penis could only penetrate 15 - 20 cm.

# APRIL 2001

## EVENTS AND ACTIVITY

♀ BINA

- Urine collection experiment for urine analysis with combuur test on 7 April
- Urine collection experiment for urine analysis with Laboratory test in "Mardi Waluyo" Hospital on 9 April
- Kept together with Torgamba in the central area on 17 - 18 April
- On 19 April in her paddock. Bina did not return to the yard. The keepers try to call her and attract with fruits, but they failed to bring her back to the yard. Bina appeared to be stressed.
- On 20 April Bina entered into Torgamba's paddock.
- They were kept together in Torgamba's area on 20 - 21 April
- Urine collection experiment for urine analysis with combuur test on 26 April
- Blood Collection for blood analysis in Bogor on 29 April (no results)
- Daily activities pattern in part 4

♂ TORGAMBA

- Urine collection experiment for urine analysis with combuur test on 4 April
- Torgamba was moved to a new paddock ( ± 50 ha) on 6 April 10 AM local time. After the release in the new paddock, Torgamba made a wallow, slept in the paddock and foraged extensively.
- Urine collection experiment for urine analysis with Laboratory test in "Mardi Waluyo" Hospital on 9 April
- Bina and Torgamba were put together on 17 - 18 April
- Together again in Torgamba's area on 20 - 21 April
- Blood Collection for blood analysis in Bogor on 28 April
- Semen collection experiment for Semen analysis on 28 April (no result).
- Daily activities pattern in part 4

## MEDICATION and SPECIAL TREATMENTS

♀ BINA

**Conjunctivitis on both eyes: treated with ZnSO4**

**Anorexia:**

On 24 - 28 April, Bina showed anorexia

Causa: Bina was stressed because she touched the electric wire in her paddock.

Treated with:

- Multivitamin and mineral (Ardivit)

- Neutrophic vitamin (Neurofort), for 5 days

Bina started eating normal on the third day.

♂ TORGAMBA

**Eyes: No discharge**

## REPRODUCTION

♀ BINA

**Period of 17 -18 April,**

Estrus signs was observed on 17 - 18 April but unclear. Only redness and slight swelling of the vulva. No estrus discharge was observed.

No serious courtship was observed during this period

**Second Period of 20 - 21 April,**

During the second period the signs of estrus were detected on 20 April, a reddish and slightly swollen vulva, but no discharge. Bina and Torgamba were together again in Torgamba's area.

Bina showed interest to be mounted, she did some **Standing Heat** on 20 April (13: 58, 15: 30, 15: 51, 15: 52, 15: 54, 15: 57, 15: 58, 16: 05, 16: 17, 17: 26, 17: 32, 17: 58, 18: 06 and 19: 02).

There was only a good response from Torgamba on 20 April

♂ TORGAMBA

**Period of 17 -18 April,**

When together with Bina on 17 - 18 April, Torgamba showed strong interest in courtship and mounting, but there was no reaction from Bina.

No serious courtship was observed during this period.

We separated them on 18 April

**Second Period of 20 - 21 April,**

There was some serious courtship on 20 April

Most of the mounting happened in the afternoon and evening.

Torgamba mount Bina 9 times on 20 April:

- 13: 58 for 15 minutes without erection,
- 15: 30 for 10 minutes with erection, 15: 58 for 3 minutes with erection,
- 16: 05 for 7 minutes with full erection and intromission,
- 16:17 for 2 minutes without erection,
- 17: 26 for 5 minutes,
- 17: 32 for 3 minutes,
- 17: 58 for 3 minutes with erection without intromission,
- 18: 06 for 45 minutes with full erection and intromission.

**Note:**

Two times intromission/penetration occurred on 20 April, 16: 05 - 16: 12 and 18: 06 - 18: 51, but Torgamba's penis could only penetrate  $\pm$  20 cm.

In the second penetration, although it was dark already, it was clearly observed that Torgamba's penis was relaxing in the last minutes. It seemed that he did ejaculate, but it was difficult to see whether any semen was dripping from Bina's vagina, because she moved away deep into the forest.

# MAY 2001

## EVENTS AND ACTIVITY

♀ BINA

- Together with Torgamba in the central area on 9 - 10 May
- Together again in Bina's area on 11 - 12 May
- Daily activities pattern in part 4

♂ TORGAMBA

- Bina and Torgamba were put together on 9 - 10 May
- Together again in Bina's area on 11 - 12 May
- Semen collection experiment for Semen analysis on 12 May
- Daily activities pattern in part 4

## MEDICATION and SPECIAL TREATMENTS

♀ BINA

**Conjunctivitis on both eyes:** Treated with ZnSO<sub>4</sub>.

**Skin Fold Wounds:**

Two wounds, 1 cm wide and 5-6 cm long, were found in her anterior Skin Fold (left and right) in the afternoon of 9 May in the central area. There was hyperaemia, a bleeding and inflammation and a little infection. Possibly stabbed by Torgamba's tooth (lower incisor teeth).

Treated with Hydrogen Peroxide, Betadine, Antibiotic topical ointment and Swat (fly repellent).

Latest condition, the wounds have become dry and are healed.

♂ TORGAMBA

**Eyes:** No discharge

## REPRODUCTION

♀ BINA

**Period of 9 - 10 May,**

Estrus signs were observed on 8 - 9 May but unclear. Only detected a reddish and slightly swollen vulva. No estrus discharge was observed.

No serious courtship was observed during this period

We separated them on 9 May

**Second Period of 11 - 12 May,**

Signs of estrus were detected on 11 May, a reddish and little swollen vulva but no discharge. Bina and Torgamba together again in Bina's area.

Bina showed interest to be mounted, she did some **Standing Heat** on 11 May (15:03 15:19, 15:58, 16:06, 16:41, 16:48, 16:52, 17:20 and 17:30). Only on 11 May there was a good response from Torgamba.

## ♂ TORGAMBA

**Period of 9 - 10 May,**

When with Bina on 8 - 9 May Torgamba showed interest in courtship and mounting but there was no reaction from Bina.

No serious courtship was observed during this period.

We separated them on 9 May

**Second Period of 11 - 12 May,**

There was some serious courtship on 11 May

Most of the mounting happened in the afternoon.

Torgamba mounted Bina 9 times on 11 May:

- 15:04 for 1 minute without erection,
- 15: 19 for 4 minutes without erection,
- 15: 58 for 2 minutes without erection,
- 16: 07 for 13 minutes with full erection but no intromission,
- 16:41 for 6 minutes with erection,
- 16: 49 for 3 minutes with erection,
- 16: 52 for 22 minutes with erection,
- 17: 20 for 4 minutes with erection,
- 17: 30 for 7 minutes with full erection.

**Note:**

In this period there was no intromission /penetration because the area /location was not good for mounting (Bina's paddock).

**Miscellaneous****Wild Rhino. 1 May 2001**

Samo, Rakimin and Yuhadi (Bina's Keepers) saw a wild Sumatran rhino coming out of the forest and walking along the perimeter road for about 200 m. The rhino was a female. The location is close to Torgamba's paddock (fence post number 650). The rhino was not bothered at all by the keepers, when they followed the rhino from 10 m distance behind the fence for almost 15 minutes. The body size looked similar to Torgamba's. She attacked the fence two times to try to get into the Torgamba paddock. Around the location of the attack, there was a strong smell of Torgamba's urine. After attacking, she walked back and went into the forest close to the location where she first appeared.



# JUNE 2001

<b>EVENTS AND ACTIVITY</b>	
♀ BINA	<ul style="list-style-type: none"> <li>• Kept together with Torgamba in the central area on 1 - 2 June</li> <li>• Together again in the central area on 8 -9 June</li> <li>• Bina and Torgamba were put together in the central area on 28 - 30 June</li> <li>• Daily activities pattern in Part 4</li> </ul>
♂ TORGAMBA	<ul style="list-style-type: none"> <li>• Bina and Torgamba were put together in the central area on 1 - 2 June</li> <li>• Together again in the central area on 8 - 9 June</li> <li>• Bina and Torgamba were put together in the central area on 28 - 30 June</li> <li>• Daily activities pattern in Part 4</li> </ul>
<b>MEDICATION and SPECIAL TREATMENTS</b>	
♀ BINA	Conjunctivitis on both eyes: Treated with ZnSO <sub>4</sub> .
♂ TORGAMBA	Eyes: No discharge
<b>REPRODUCTION</b>	
♀ BINA	<p><b>Period of 1 - 2 June,</b> Estrus signs were observed on 1 - 2 June but unclear. Only a reddish and slightly swollen vulva. No estrus discharge was observed. No serious courtship was observed during this period We separated them on 2 June</p> <p><b>Period of 8 - 9 June,</b> Together again on 8 - 9 June in the central area, but no good courtship was observed during this period. Bina and Torgamba did only head to head pushing on 8 June We separated them on 9 June</p> <p><b>Period of 28 - June,</b> Signs of estrus which had detected on 27 - 28 June, a reddish and little swollen vuva, but no discharge. Bina and Torgamba together again in the central area . Bina showed interest to be mounted. There was 1 times <b>Standing Heat</b> on 28 June (08: 45) but no response from Torgamba. We separated them on 30 June and Bina was released to Dusun's Paddock.</p>
♂ TORGAMBA	<p><b>Period of 1 - 2 June,</b> Kept in the central area together with Bina on 1 - 2 June No serious courtship was observed during this period We separated them on 2 June</p> <p><b>Period of 8 - 9 June,</b> When together with Bina on 8 - 9 June Torgamba showed interest in courtship and mounting but there was no reaction from Bina. Only some head to head pushing on 8 June We separated them on 9 June</p> <p><b>Period of 28 - June,</b> Torgamba was already approaching the central area and Bina's paddock. He did not want to move away from to gate to Bina's yard, but when they were put together in the central area here was no good response from Torgamba. Serious courtship only occurred on 28 June (morning). Torgamba did not try mounting in this period, and also appeared Bina to be not ready yet. We separated them on 30 June and Torgamba was released into the large paddock (± 50 Ha).</p>

# JULY 2001

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> <li>• Kept together with Torgamba in the central area on 29 -31 July</li> <li>• Daily activities pattern in part 4</li> </ul>
♂ TORGAMBA	<ul style="list-style-type: none"> <li>• Kept together with Bina in the central area on 29 -31 July</li> <li>• Daily activities pattern in part 4</li> </ul>
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	Conjunctivitis on both eyes: Treated with ZnSO4
♂ TORGAMBA	<p><b>Eye discharge:</b> 18 July, discharge was found in the left eye. Treated with ZnSO4 and garamycin eye ointment for 3 days. It is healed.</p> <p><b>Scratch during courtship:</b> Some scratches were found after hard courtship with Bina, but no serious wounds. treated with Hydrogen peroxide and betadine.</p>
REPRODUCTION	
♀ BINA	<p><b>Period of 29 - 31 July,</b> No clear signs of vaginal change except slight redness of the vulva. Bina was already approaching the central area and she did not want to move from the central gate on 29 July (morning) and in the afternoon Bina put together with Torgamba in the central area Serious courtship was observed on 29 - 30 July Standing Heat occurred on 29 July (17: 04, 19: 57, 20: 24, 22: 15 and 22: 24) We separated them on 31 July</p>
♂ TORGAMBA	<p><b>Period of 29 -31 July,</b> When Bina was in the central area, Torgamba approaching the central area too (afternoon), and they were put together in the central area. Serious courtship was observed during this period, but no others reactions (mounting, erection and intromission) We separated them on 31 July</p>

# AUGUST 2001

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> <li>• Kept together with Torgamba in the central area on 19 - 20 August</li> <li>• Blood sample collection on 3 August (no result)</li> </ul>
♂ TORGAMBA	<ul style="list-style-type: none"> <li>• Kept together with Bina in the central area on 19 - 20 August</li> <li>• Blood sample collection on 2 August</li> </ul>
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	<b>Conjunctivitis on both eyes:</b> Treated with ZnSO <sub>4</sub>
♂ TORGAMBA	<b>Eyes:</b> No discharge
REPRODUCTION	
♀ BINA	<p><b>Period of 19 - 20 August,</b></p> <ul style="list-style-type: none"> <li>• No clear signs of vaginal change except a slight redness of the vulva.</li> <li>• Bina was already approaching the central area and she did not want to move from the central gate on 19 August (morning). Bina was put together with Torgamba in the central area</li> <li>• Serious courtship was observed on 19 - 20 August</li> <li>• Bina showed interest to be mounted throughout this period, and she did <b>standing heat</b> on 19 August ( 09:49, 11:34, 11:37, 11:38, 11:39, 11:44, 12:09, 12:10, 12:16, 12:19, 12:24, 12:28, 12:42, 12:44, 12:48, 12:49, 12:50, 12:56, 12:57, 12:58, 13:31, 14:00, 14:27, 14:30, 14:39, 14:42, 14:45, 15:03, 15:18, 15:26, 15:54, 17:14, 17:15, 17:43 and 23:60 ) Only on 19 August there was a good response from Torgamba</li> <li>• We separated them on 20 August (night)</li> </ul>
♂ TORGAMBA	<p><b>Period of 19 - 20 August,</b></p> <ul style="list-style-type: none"> <li>• When Bina stayed in the central area, Torgamba approaching the central area too (19 August). Torgamba and Bina were put together in the central area (morning).</li> <li>• Torgamba also showed interest in mounting and serious courtship</li> <li>• Torgamba mounted Bina 16 times on <b>19 August:</b></li> <li>• 09:50 for 5 minutes,</li> <li>• 11:36 for 1 minute,</li> <li>• 12:10 for 1 minute,</li> <li>• 12:19 for 1 minute,</li> <li>• 12:45 for 1 minute without erection but penis unsheathed,</li> <li>• 12:50 for 3 minutes with full erection and <b>Intromission,</b></li> <li>• 12:58 for 5 minutes with full erection and <b>Intromission,</b></li> <li>• 13:27 for 1 minute without erection,</li> <li>• 13:32 for <b>21 minutes</b> with full erection and <b>Intromission,</b></li> <li>• 14:02 for 2 minutes with erection,</li> <li>• 14:37 for 1 minute without erection,</li> <li>• 15:04 for 2 minutes,</li> <li>• 15:21 for 2 minutes,</li> <li>• 15:32 for 2 minutes,</li> <li>• 17:14 for 1 minute with erection, and</li> <li>• 17:44 for <b>28 minutes</b> with full erection and Intromission</li> </ul> <p>On 19 August one mis-mount (15:03) We separated them on 20 August (night)</p> <p><b>Note:</b> There was 4 times penetration/Intromission on 19 August. 20 - 23 centimeters of the penis could penetrate ill the flaps, but it could not enter further.</p>

# SEPTEMBER 2001

## EVENTS AND ACTIVITY

♀ BINA

- Kept together with Torgamba in the central area on 9 - 10 September
- Blood sample collection on 11 September (no result)
- Monitoring Reproduction (Palpation per rectal and palpation per vaginal) on 10, 11 and 12 September 2001. No indications for a pregnancy
- Ultra Sonography (USG) on 11 and 29 September. No pregnancy
- Urine collection experiment for urine analysis with Combur Test and pH strip on 20 September
- Together again in the central area on 30 September - 3 October
- Daily activities pattern in part 4

♂ TORGAMBA

- Kept together with Bina in the central area on 9 - 10 September
- Blood sample collection on 10 September
- Urine collection for urine analysis with Combur Test and pH strip on 17 September
- Semen Collection experiment on 29 September with massage method and artificial vaginal for spermatozoa analysis (result: no spermatozoa)
- Together again in the central area on 30 September - 3 October
- Daily activities pattern in part 4

## MEDICATION and SPECIAL TREATMENTS

♀ BINA

**Conjunctivitis on both eyes:** Treated with ZnSO<sub>4</sub>

**Head Wound:**

One wound, 1 cm wide and 5-6 cm long, was found on her head in the morning of 9 September. There was hyperaemia, a bleeding and inflammation and a little infection. Possibly stabbed by Torgamba's horn during courtship.

Treated with: Hydrogen Peroxide (H<sub>2</sub>O<sub>2</sub>), Betadine, Antibiotic topical ointment and SWAT (fly repellent). Latest condition, the wound is dry and healed

**Preventive Medicine:**

Multivitamin and mineral (ARDIVIT) 10 tabs / week  
Mineral Block (every day)

♂ TORGAMBA

**Eyes:** No discharge

## REPRODUCTION

♀ BINA

**Period of 9 - 10 September,**

No clear signs of vaginal change except a slight redness of the vulva.

When Torgamba stayed in the central area, Bina approached the central area too (9 September). Torgamba and Bina were put together in the central area (08:06 AM/morning).

Bina showed interest for courtship on 9 September (afternoon)

Bina showed interest to be mounted throughout this period. She did some **standing heat** on 9 September 2001 (15:33, 16:03, 16:08, 16:12, 16:19, 16:37, 21:19 (mounting male/Torgamba and 22:04 ). Only on 9 September(afternoon) there was a good response from Torgamba

We separated them on 10 September (Afternoon)

**Period of 30 September - 3 October,**

Bina was already approaching the central area and she did not want to move from the central gate on 30 September (morning). Bina was put into the central area together with Torgamba.

Signs of estrus seen on 29 September, but unclear. Only some redness of the vulva, no swelig and discharge

*Continued in the October report.*

♂ **TORGAMBA**

**Period of 9 - 10 September,**

Torgamba was already approaching to the central area and he did not want to move from central gate on 9 September (morning), Torgamba entered the central area and was put together with Bina

We separated them, because of a fight and Torgamba was moved to his paddock (11:35 AM)

Torgamba entered the central area again(13:52 AM)

Torgamba showed interest in mounting and serious courtship (afternoon)

Torgamba mount Bina 5 times on **9 September:**

- 15: 33 for 2 minutes without erection,
- 16:03 for 2 minutes with erection,
- 16:12 for 4 minutes with erection,
- 16:19 for 7 minutes with erection,
- 16:37 for **32 minutes** with full erection and **Intromission (30 minutes)**

We separated them on 10 September (Afternoon)

**Note:**

There was only **1 time penetration/intromission** on 9 September. **20 - 23 centimeters** of the penis could penetrate till the flaps, but it could not enter further.

**Period of 30 September - 3 October**

Torgamba approaching central area too (30 September). Torgamba and Bina were put together in the central area (morning).

*Continued in the October report.*

# OCTOBER 2001

## EVENTS AND ACTIVITY

♀ BINA	<ul style="list-style-type: none"> <li>• Kept together with Torgamba in the central area on 30 September - 3 October and 20 - 25 October, during the estrus period.</li> <li>• Urine collection for urine analysis with Combur Test and pH strip on 28 October</li> <li>• Daily activities pattern in part 4</li> </ul>
♂ TORGAMBA	<ul style="list-style-type: none"> <li>• Kept together with Bina in the central area on 30 September - 3 October and 20 - 25 October.</li> <li>• Blood sample collection for blood analysis on 26 October</li> <li>• Urine collection for urine analysis with Combur Test and pH strip on 26 - 27 October</li> <li>• Daily activities pattern in part 4</li> </ul>

## MEDICATION and SPECIAL TREATMENTS

♀ BINA	Conjunctivitis on both eyes: treated with ZnSO <sub>4</sub> .
♂ TORGAMBA	Eyes: No discharge Urogenital Tracts Disorder (weakness) See below

## REPRODUCTION

♀ BINA	<p><b>Period of 30 September - 3 October,</b> Vulva reddish but not swollen, and discharge was observed on 1 - 2 October Bina was already approaching to the central area and she did not want to move from the central gate on 30 September(morning) Bina also showed interest for courtship on 1 October Bina showed interest to be mounted throughout this perio. She did some standing heat on 1 October (12: 45, 13: 02, 16: 24, 16: 27, 18: 16, 18: 18, 18: 43 and 18: 52: Only on 1 October (afternoon) there was a good response from Torgamba We separated them on 3 October (Afternoon)</p> <p><b>Period of 20 - 25 October,</b> Bina was already approaching the central area and she did not want to move away from central gate on 20 October (10:50) Bina entered the central area and was put together with Torgamba. Signs of estrus seen on 20 October, but unclear. Only some redness of the vulva, no swelling and discharge. Bina showed interest to be mounted throughout this period, she did some <b>standing heat on 24 October</b> (13: 58, 14: 05, 14: 13, 14: 20, 20: 33, 20: 52 and 21: 07 (mounting male/Torgamba 05: 54, 18: 20, 19: 48 and 21: 18). There was no good response from Torgamba because he was sick When Torgamba returned to his paddock on 22 October, Bina stayed in the central area. We separated them on 25 October (Afternoon)</p>
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## ♂ TORGAMBA

**Period of 30 September - 3 October,**

When Bina was put in the central area, Torgamba approached the central area too (30 September). Torgamba and Bina were put together in the central area.

Torgamba was also interested in courtship with Bina

Torgamba mounted Bina 5 times on **1 October**.

- 12: 45 for 3 minutes with erection,
- 13: 02 for 5 minutes with erection,
- 18: 18 for 8 minutes with **full erection and Intromission (3 minutes)**,
- 18: 43 for 3 minutes with erection,
- 18: 52 for **40 minutes with full erection and Intromission (38 minutes)**

We separated them on 3 October (Afternoon)

**Note:**

There was only 2 times penetration/intromission on 1 October. 20 - 23 centimeters of the penis could penetrate till the flaps, but it could not enter further.

**Period of 20 - 25 October,**

Torgamba approached the central area too on 20 October (13:47)

Torgamba looks weak when walking and did not show a good response in the courtship with Bina, possibly because Torgamba was sick

Torgamba not interested to mate with Bina, except horn to horn pushing and others courtship behavior. When Bina was ready to be mounted, Torgamba did not show a good response to mount Bina

Torgamba mount Bina 3 times on **24 October**.

- 13: 59 for 1 minute without erection,
- 14: 14 for 3 minutes with erection, and
- 21: 07 for 2 minutes without erection

We separated them on 22 October (15: 52) and entered to his paddock. At 23 October (07: 58) Torgamba approached the central area and entered again

We separated them on 25 October (Afternoon)

*Miscellaneous***Urogenital Tracts Disorder (weakness):**

**20-25 October**, Torgamba was kept together with Bina in the central area, but no serious courtship occurred in this period

Signs of a urogenital or digestion tracts disorder were found on 26 October: urine spraying not fluent (unusual), looked weak when walking, eating abnormal (eats few leaves but likes fruits). Temperature 36.1 °C - 36.6 °C  
Urine and Blood collections for analysis in Mardi Waluyo Hospital (result: Erythrocyte in urine, *Interpretation* Tracts Urogenital Disorder)

Treated with: Amphoprim 10 tabs per oral, for the possibility of urogenital tracts disorder and Ardivit 10 tabs for multivitamin and multimineral (morning). Paracetamol 10 tabs per oral for analgesic and antipyretic (afternoon). it was given for three days.

After 3 days of treatment, the signs of weakness were gone. Activities of Torgamba become normal again.

# NOVEMBER 2001

EVENTS AND ACTIVITY	
♀ BINA	<ul style="list-style-type: none"> <li>• Kept together with Torgamba in the central area on 13 - 16 November</li> <li>• Daily activities pattern in part 4</li> </ul>
♂ TORGAMBA	<ul style="list-style-type: none"> <li>• Kept together with Torgamba in the central area on 13 - 16 November</li> <li>• Daily activities pattern in part 4</li> </ul>
MEDICATION and SPECIAL TREATMENTS	
♀ BINA	<p><b>Conjunctivitis on both eyes:</b> Treated with ZnSO<sub>4</sub>.</p> <p><b>Preventive Medicine:</b>            Multivitamin and mineral (ARDIVIT) 10 tabs / week            Mineral Block (every day)</p>
♂ TORGAMBA	<p><b>Preventive Medicine:</b>            Multivitamin and mineral (ARDIVIT) 10 tabs / week            Mineral Block (every day)</p> <p><b>Eyes:</b> No discharge</p>
REPRODUCTION	
♀ BINA	<p><b>Period of 13 - 16 November,</b>            Estrus signs were observed on 13 - 16 November but unclear. Only detected redness of the vulva, no swelling and no discharge.            Bina is more aggressive than Torgamba in sexual activity, but received a very poor response from Torgamba.            Bina mounted Torgamba on 13 November two times (15: 13 and 15: 46), 14 November two times (15: 26 and 15: 29) and 16 November one time (05: 09).</p>
♂ TORGAMBA	<p><b>Period of 13 - 16 November,</b>            When together with Bina in the central area on 13 -16 November, still not much interested in mating, except horn to horn pushing and other courtship behavior, but when Bina was ready to be mounted, Torgamba did not show a good response.</p>



# DECEMBER 2001

## EVENTS AND ACTIVITY

♀ BINA

- Kept together with Torgamba in the central area on 4 - 9 December
- Stayed with Torgamba again on 28 - 29 December

♂ TORGAMBA

- Kept together with Bina in the central area on 4 - 9 December
- Stayed with Torgamba again on 28 - 29 December

## MEDICATION and SPECIAL TREATMENTS

♀ BINA

Conjunctivitis on both eyes: Treated with ZnSO<sub>4</sub>.

♂ TORGAMBA

Eyes: No discharge

## REPRODUCTION

♀ BINA

### Period of 4 - 9 December 2001

Estrus signs were observed on 4 - 9 December but unclear. Only detected a redness of the vulva, no swelling and no discharge.

Bina is more aggressive than Torgamba in sexual activity, but received very poor response from Torgamba. Bina Standing Heat on 4 December one time (14:43). Bina mounted Torgamba on 4 December 6 times (15:10, 15:39, 15:41, 15:42, 15:44, and 17:34), 6 December 3 times (17:42, 17:48 and 19:14) and 7 December one time (15:50).

We separated them on 9 December 2001:

### Period of 28 - 29 December 2001

Bina serious courtship on 28 December and Standing Heat one time (17:30), but no good response from Torgamba.

We separated them on 29 December 2001.

♂ TORGAMBA

### Period of 4 - 9 December,

When together with Bina in the central area on 4 - 9 December little interest in mating, except horn to horn pushing and other courtship behavior. When Bina was ready to be mounted, Torgamba did not show a good response.

We separated them on 9 December

### Period of 28 - 29 December,

No serious courtship in this period from Torgamba, he always avoided Bina.

We separated them on 29 December

Part 3

**SEXUAL BEHAVIOR  
OBSERVATIONS RECORDS**

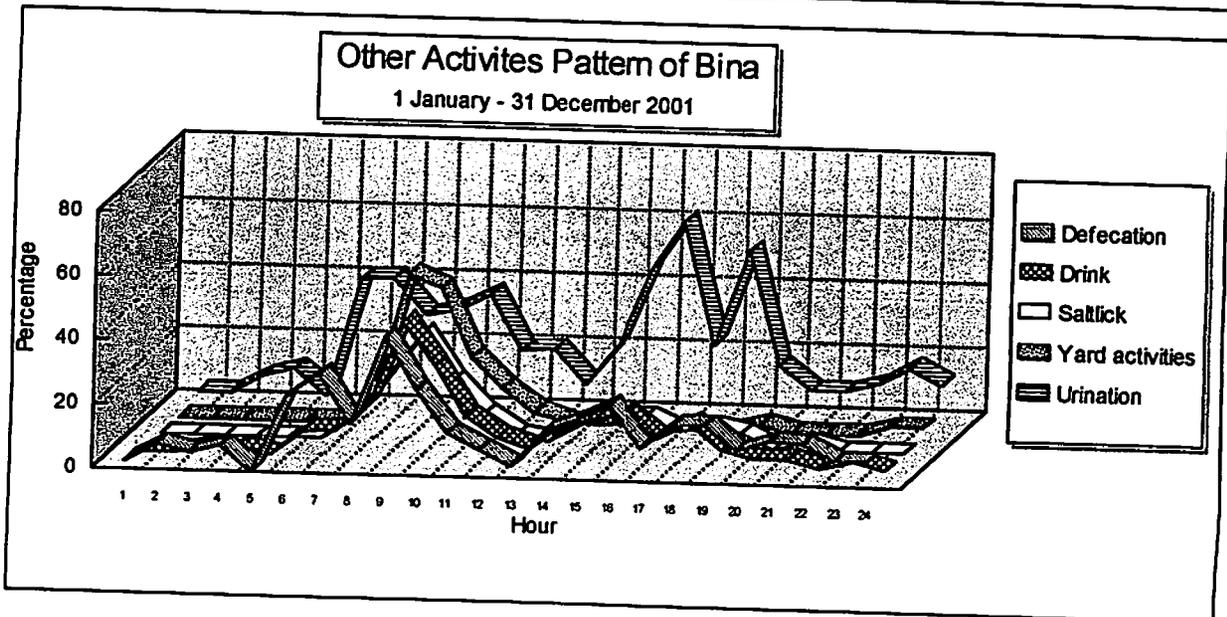
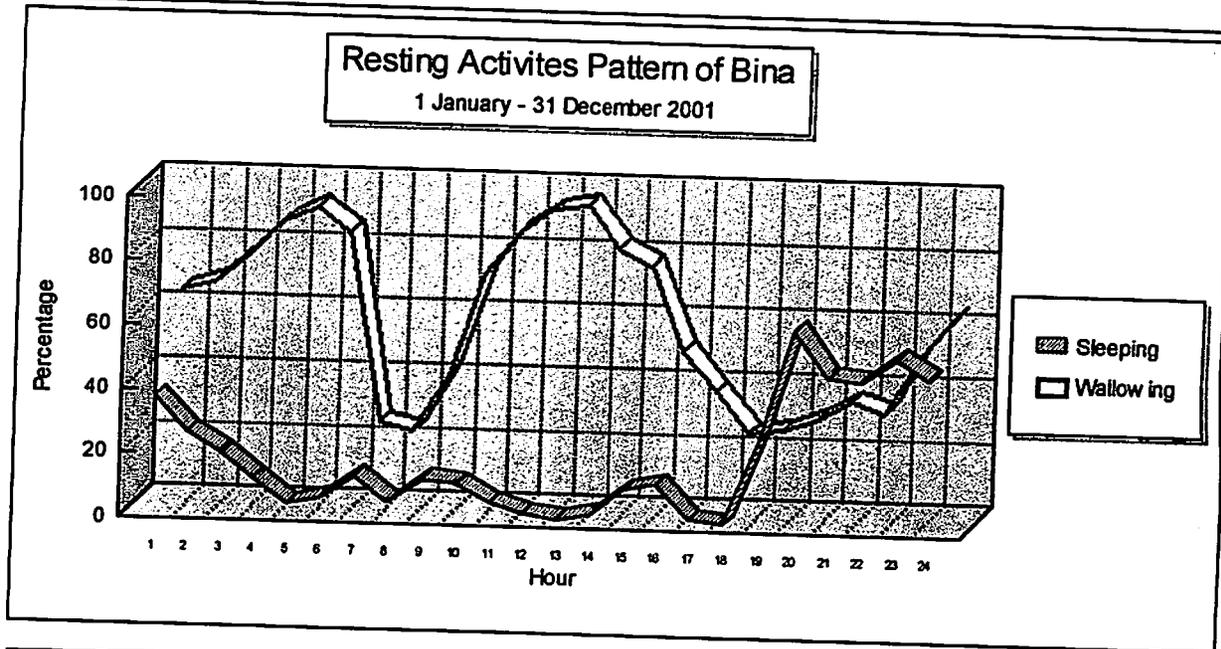
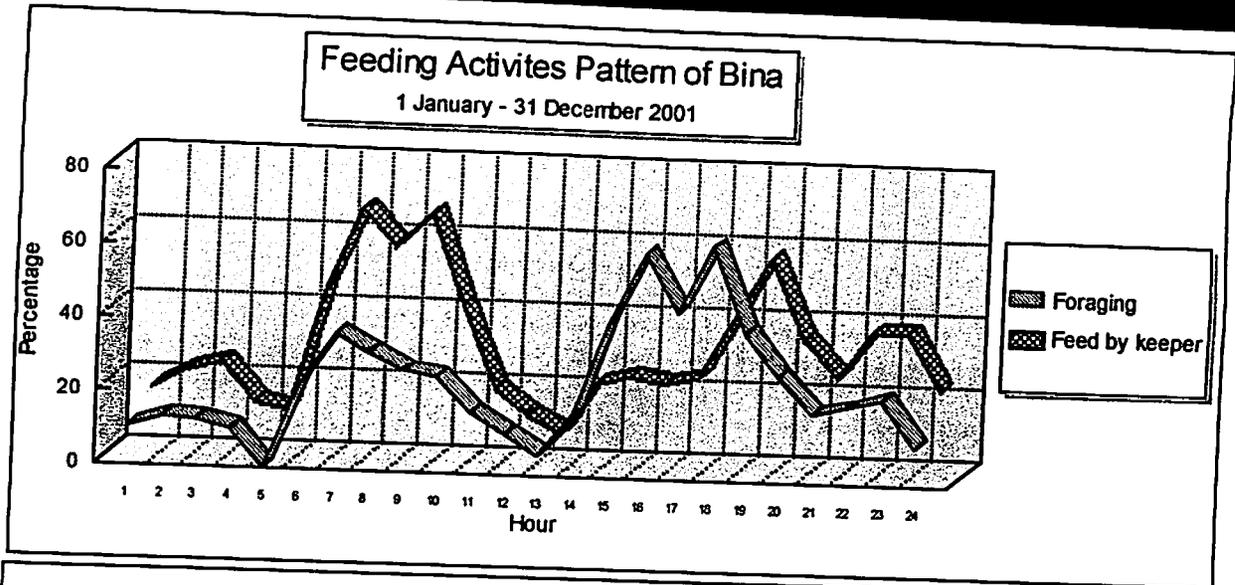
**SEXUAL BEHAVIOUR RECORDS of BINA AND TORGAMBA, 2001**

Month (date)	Days of Courtship	♀ Vaginal Oestrus Signs	Days in Cycle	♀ Standing heat	♂ Mounting	♂ Erection	♂ Penetration	♂ Ejaculation
January (18-20)	4	+++	25	23x	14x	9x	6x (15-20 cm)	
February (10-13)	8	++	23	22x	10x	7x	1x ± 15 cm	
March (8-9)	2	++	24	13x	9x	5x	2x	1x on ground
March (26-28)	3	+	18					
April (20-21)	5	++	24	14x	9x	7x	2x ± 20 cm	1x
May (9-12)	4	++	21	9x	9x	6x		
June (1-2)	2	+	20					
June (28-29)	3		25	1x				
July (29-30)	3	++	31	5x				
August (19-20)	3	+++	21	33x	16x	9x	4x ± 20 cm	
Sept (9-10)	3	+	20	6x	5x	4x	1x ± 23 cm	
October (1-3)	3	+	21	8x	5x	5x	2x ± 23 cm	
October (20-25)	6	++	22	7x	3x	1x		
Nov (13-16)	5	+	20		5x (Bina)			
Dec (4-9)	6	+	21		10x (Bina)			
Dec (28-29)	2	+	23					
<b>AVERAGE</b>			22.5					

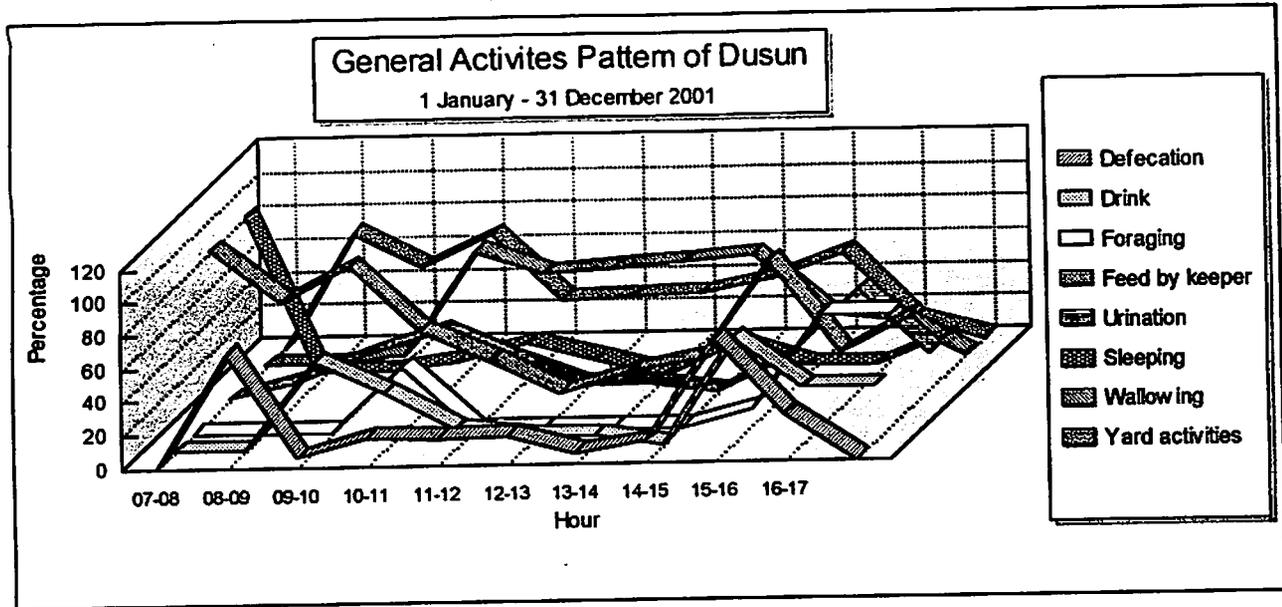
## Part 4

# DAILY ACTIVITY PATTERNS

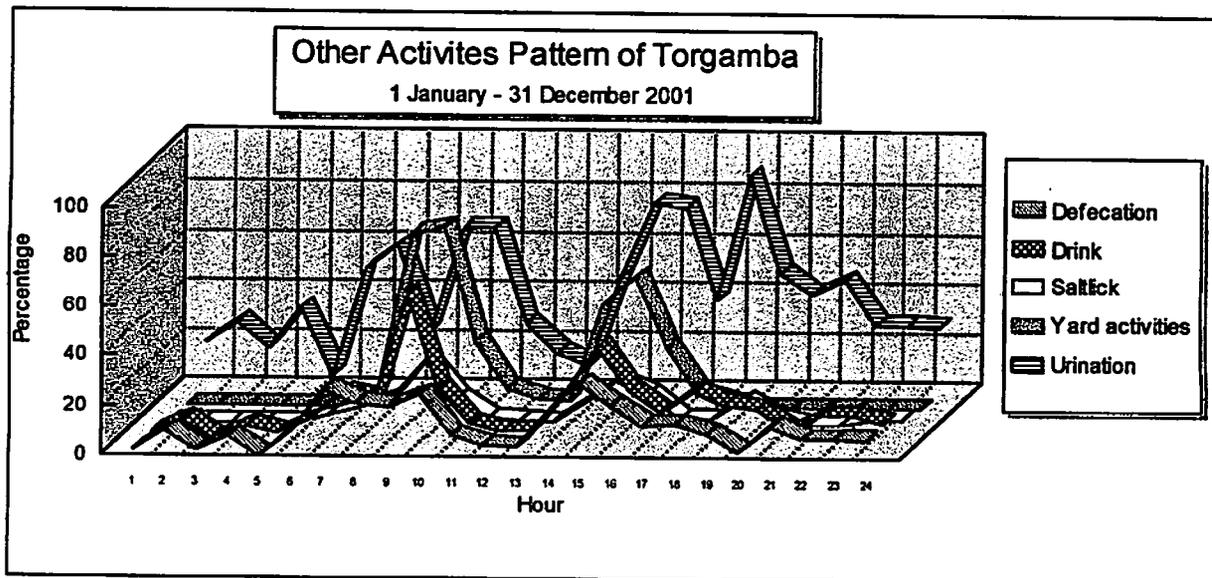
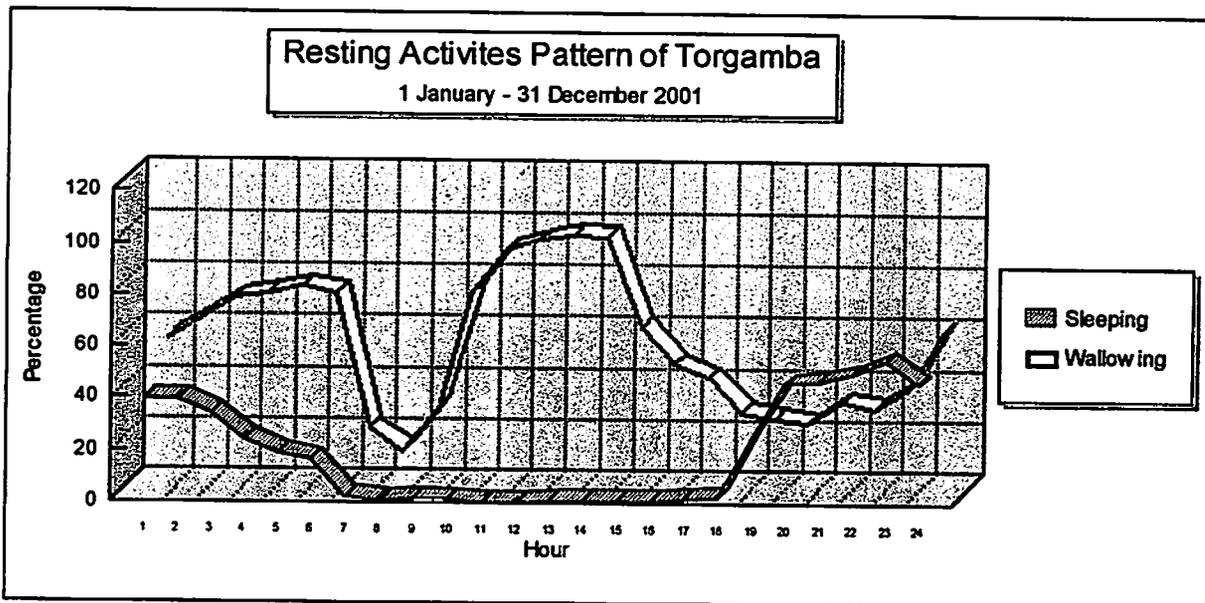
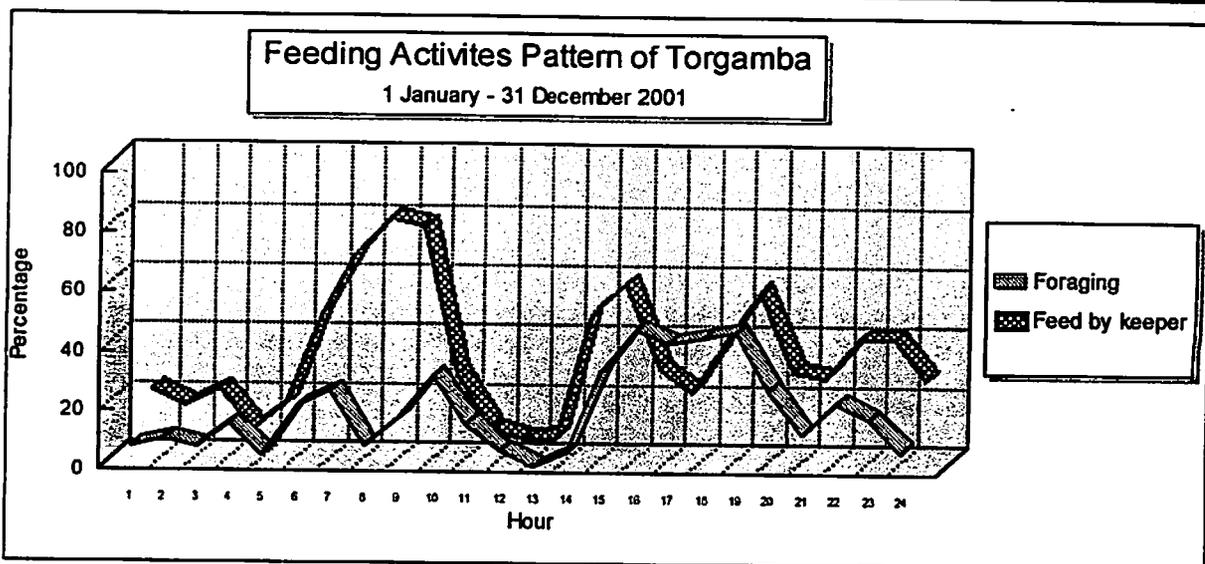
# BINA



# DUSUN



# TORGAMBA



Part 5

**FOOD CONSUMPTION  
AND  
WEIGHT**



### AVERAGE DAILY FOOD CONSUMPTION (BROWSE AND FRUITS)

