

SUMATRAN RHINO CONSERVATION CENTRE
DEPARTMENT OF WILDLIFE AND NATIONAL PARKS
SUNGAI DUSUN, SELANGOR
MALAYSIA

WEEKLY REPORT

AUGUST 2000

BY

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&

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WEEKLY REPORT (AUG 2000)

Introduction

The blood collection was still carried out throughout the week as well as the daily introduction. Collection of the blood is done twice weekly concurrently with the vaginal cytology. The blood has been successfully collected from all females from the tail and each rhino adapted well to the procedure. The daily introduction of Shah and Mas Merah was continued since last month. Since Panjang is expected to be in estrus on the third week of the month, she was mixed with Shah again starting from 10 8/00. As for the vaginal cytology collection, it supposed to be collected from three females; Rima, Panjang and Mas Merah. However, Dr. Zainal did collect some samples from Seputih and Minah on a few occasions. The blood results for progesterone analysis as well as for complete blood count (CBC) has been received from UPM early this month and it showed that all females showed some cycling except for Minah.

Daily Introduction

From 1:8 to 9:8 period, Shah was mixed with Mas Merah daily around 8.30 a.m. Starting from 10 8 onwards, Panjang was mixed with Shah again. She is expected to come into estrus between 24 8 to 26 8. No positive response was observed from both rhinos throughout the period. The behavior observed throughout the procedure is attached below.

Blood Collection Procedure

The blood was collected twice a week after the daily introduction. It was done on Monday and Thursday on all females through the tail. It seems that all females tolerate well to the procedure. Sometime, blood is difficult to be collected from Seputih since she was not cooperative. The method used as well as the response from each female was summarized in Table 1.

Blood Results

a) Progesterone Hormone Profile

The results for the progesterone hormone profile for each rhino is attached.

b) Hematology Result

The blood parameter for the month of August is not arrived yet but the result for May and June is also summarized below. Routine screening was done by sending the blood samples to UPM or Veterinary Research Institute (VRI), Ipoh on monthly basis.

Table 1: Daily Introduction of Shah with Mas Merah and Panjang, Aug 2000

Date	Remarks
1 8 00	Mas Merah went straight to the area where Shah was eating, looking for food. No response from Shah when Mas Merah approached. Both rhinos were eating side by side and no breeding behavior observed. Separated after 10 minutes.
2 8 00	Shah was eating when Mas Merah entered paddock 1. Mas went straight to the feeding area where Shah was. No response from Shah although both rhinos were side by side. He was busy eating. Shah sniffed Mas but continue to eat.
3 8 00	Shah was busy eating when approached by Mas Merah. Shah sniffed her but no further response. Both rhinos were busy eating side by side.
4 8 00	Mas Merah approached the feeding area when released into paddock 1. Shah was busy eating and ignored Mas. Shah sniffed her but no further response. Both rhinos were busy eating side by side.
5 8 00	Mas Merah was released into paddock 1 from the gate in paddock 2. No response from both rhinos when they notice each other. Shah kept eating while Mas Merah went for food. Both rhinos were eating side by side.
7 8 00	Mas Merah went to the feeding area looking for fruits when released. No response from Shah when Mas Merah approached. Both rhinos were side by side eating.
8 8 00	Mas Merah went to the gate when released into paddock 2. She was called into paddock 1. She went straight to the feeding area where Shah was busy eating. Shah sniffed for a while when Mas Merah was near him but continue eating. Head butting was observed and both rhinos were separated to avoid fighting.
9 8 00	Released Mas Merah from night stall 2. She went to the gate and entered paddock 1. She approached the feeding area while Shah was eating fruits. Shah sniffed Mas Merah but no further response.

Date	Remarks
10/8/00	Mas Merah entered paddock 1 and approached the feeding area while Shah was busy eating. No response from Shah and both rhinos were eating facing each other.
11/8/00	Mas Merah went straight to the feeding area after releasing her from night stall 1. Shah was busy eating and ignored Mas Merah when he saw her. Both rhinos were side by side eating.
12/8/00	Mas Merah was released from night stall 2. She entered paddock 1 where Shah was busy eating. She approached the feeding area and Shah was observed sniffing. Head butting was observed and Shah was trying to use his teeth against Mas Merah. However, he stopped upon calling by the keeper. Separate the rhinos to avoid fighting.
13/8/00	Shah went to Mas Merah when she approached the feeding area. Mas Merah blows and Shah ignored her, went back to eat. No further response and both rhinos busy eating side by side.
14/8/00	Released Mas Merah from night stall 2. She went to the gate and entered paddock 1. She approached the feeding area while Shah was eating fruits. Shah sniffed Mas Merah but no further response.
15/8/00	Mas Merah was released from night stall 2. She entered paddock 1 where Shah was busy eating. She approached the feeding area and Shah was observed sniffing. Head butting was observed and Shah was trying to use his teeth against Mas Merah. However, he stopped upon calling by the keeper. Separate the rhinos to avoid fighting.
16/8/00	Start putting Panjang with Shah today. She went straight to the feeding area looking for fruits when released. No response from Shah when Panjang approached. Both rhinos were side by side eating.
17/8/00	Panjang was released into paddock 1 and she approached the feeding area while Shah was busy eating. Shah sniffed Panjang but no other response. Shah tried to use his canine teeth (nipping) against Panjang but she moved away. Then she went to wallow.

Date	Remarks
18/8/00	Panjang was released from night stall 2 and she went straight to gate and enter paddock 1. Both rhinos were eating side by side and sometimes facing each other. No other response. Panjang then went to wallow and moved back into paddock 2.
19/8/00	Shah was eating when Panjang was released into the paddock. She went straight to Shah and started to eat near him. No response from the male and he continued to eat. Shah sniffed Panjang but no further response. Both rhinos were eating facing each other.
21/8/00	Panjang entered paddock 1 while Shah was busy eating and approached him. Head butting was observed but the male returned to his fruits after a while. They were eating side by side. Panjang made a lot of noise. Shah ignored her but continued eating. Panjang went to wallow and then go into paddock 2.
22/8/00	Panjang entered paddock 1 and went straight to the feeding area. Shah was eating when she approached the area. Food was not given for about 5 minutes and both rhinos were observed busy looking for fruits. Shah sniffed Panjang but no further response. Then, she went to wallow and went into paddock 2.
23/8/00	Panjang went straight to feeding area when released into paddock 1. Shah was eating and ignored her. Stopped giving fruits for a while. No breeding behavior was observed. Both rhinos were eating the browse provided. Shah sniffed Panjang no other response. Panjang went to wallow and then straight back into paddock 2.
24/8/00	Panjang entered paddock 1 and went straight to feeding area. Shah sniffed her but no further response. She kept eating and Shah tried to nip her. She moved away from Shah and went to wallow. Then, she went straight to gate, entering paddock 2.
25/8/00	Panjang was released from night stall 1. She went to the feeding area and approached Shah. Shah ignored her and continued eating. No fruits were given for a while but no positive interaction was observed. Shah tried to nip Panjang but she moved away to wallow.

Table 2: Blood Collection from the Rhinos, Aug 2000

Date	Rhino ID	Area taken	Remarks
3/8/00	Minah Mas Merah Minah Rima Seputih	Tail Tail Tail Tail Tail	Dr. Zainal took the blood from all females through the tail.
7/8/00	Rima Panjang Mas Merah Minah Seputih	Tail Tail Tail Tail Tail	Get blood samples from all females. The rhinos seem very cooperative. Each rhino adapt well to the procedure except Seputeh.
11/8/00	Minah Mas Merah Rima	Tail Tail Tail	Tried on three females and get blood samples from all the females via the tail. They seem very cooperative.
12/8/00	Panjang Seputih	Tail Tail	Get blood samples from Panjang but not from Seputih. Seputih is very restless and moves a lot.
14/8/00	Rima Panjang Mas merah Minah Seputih	Tail Tail Tail Tail Tail	Get blood samples from all females. CBC samples was taken from Rima.
17/8/00	Rima Panjang Minah Mas Merah Seputih	Tail Tail Tail Tail Tail	Get blood on all females except for Seputeh. Tried again on 18/8/00 but failed.
21/8/00	Minah Mas Merah Panjang Rima Seputih	Tail Tail Tail Tail Tail	Get blood from all females. All rhinos seem cooperative except for Seputeh. She reluctant to get into the chute. She wagged her tail during the procedure and moved a lot.

Date	Rhino ID	Area taken	Remarks
25/8/00	Minah	Tail	Get blood from all females except from Minah. She did not cooperative today and moved a lot.
	Mas Merah	Tail	
	Panjang	Tail	
	Rima	Tail	
	Seputih	Tail	
28/8/00	Rima	Tail	
	Minah	Tail	
	Mas Merah	Tail	
	Panjang	Tail	
	Seputih	Tail	
31/8/00	Rima	Tail	
	Minah	Tail	
	Mas Merah	Tail	
	Panjang	Tail	
	Seputih	Tail	

Blood Parameters of Sumatran Rhino, May 2000

Haemogram	Panjang (30.5/00)	Sepuluh (30.5/00)	Ruma (26.5/00)	Mintah (25.5/00)
Erythrocytes (RBC) $\times 10^{12}/l$	3.75	5.11	4.70	4.94
Haemoglobin (Hb) g/l	120	150	134	145
PCV l/l	0.33	0.42	0.35	0.41
MCV fl	88	80	74.5	83
MCH p.g	---	---	---	---
MCHC g/l	304	371	382	354
Leukoocytes $\times 10^3/l$ (WBC)	45	0.8	7.5	13.0
Seg. neutrophils	2.01 --	5.39/ --	4.80/ --	9.49/ --
Neutrophils				
Lymphocytes $\times 10^3/l$	1.39	3.33	1.57	1.82
Monocytes $\times 10^3/l$	0.14	0.69	0.30	1.30
Eosinophils $\times 10^3/l$	0.36	0.39	0.83	0.39
Basophils $\times 10^3/l$	0	0	0	---
Thrombocytes $\times 10^3/l$	5	0	0	21
Plasma protein g/l	---	---	66	68
Icteric index units	5 (lysed)	2	(lysed)	2
Blood Protozoa	---	---	---	---

Blood Parameters of Sumatran Rhino, June 2000

Haemogram	Panjang (19.6/00)	Mintah (19.6/00)	Pangs (19.6/00)
Erythrocytes (RBC) $\times 10^{12}/l$	3.88	6.34	4.62
Haemoglobin (Hb) g/l	11.5	17.5	12.6
PCV l/l	0.31	0.48.5	0.35.3
MCV fl	81.6	76.5	70.5
MCH p.g	29.6	27.6	27.3
MCHC g/l	36.3	36.1	35.7
Leukoocytes (WBC) $\times 10^3/l$	8	5.4	4.5
Seg. neutrophils	-- 02	--/51	--/21
neutrophils			
Lymphocytes $\times 10^3/l$	31	43	56
Monocytes $\times 10^3/l$	---	0	1
Eosinophils $\times 10^3/l$	---	6	22
Basophils $\times 10^3/l$	---	0	0
Thrombocytes $\times 10^3/l$	---	---	---
Plasma protein g/l	---	---	---
Icteric index units	---	---	---
Blood Protozoa	negative	Negative	negative

Vaginal cytology

The procedure has been continued on three females this month but on a few occasions. Dr. Zainal and Dr. Sandie did collect some samples from Seputih and Minah. The observation made during this procedure is attached in the report.

Daily Husbandry

Steve Romo suggested the routine activity of the daily husbandry and it was summarized below.

Morning

- a) Cleaning and remove all feces and the remained food.
- b) Hose and scrub the stalls, water container and feed trough.
- c) Remove all the mud from walls inside the stall.
- d) Hose the sliding door track completely to remove the stagnant water.
- e) Hose off the mud from the concrete wall outside the stall.
- f) Clean all feces and remained food (if any) from every paddock daily.
- g) Once a week dug out the mud from the drain and removes them to yard.
- h) Hose all the empty stalls daily and scrub them once a week.

Afternoon

- a) Lock the rhinos outside, put all the morning browse back into the feeding trough and wash off the mud from them.
- b) Clean the stalls in the afternoon before putting back the rhinos for the night.
- c) Clean the water containers by flushing and then refill them.

Discussion with UPM

A discussion has been held with Dr. Wahid and Mr. Yap on 18/8/00 regarding the problem they faced to analyze the fecal and blood samples in UPM. The following topics have been discussed especially about the budget.

a) Fecal Analysis

Mr. Yap has analyzed the fecal samples both on Toronto Zoo and Franz technique and he informed that the Franz's technique is working. At the moment, he will proceed to use the latter technique but need to obtain more reagents (Antibody 2) from Dr. Franz. They would like to know whether Dr. Franz or IRF will be responsible to sent the reagents needed.

Apart from that, they do have problem with the dispenser (repeater pipette) used during the protocol. They would like to suggest that IRF to buy at least one dispenser, which cost about RM 700.00. This dispenser is needed so that they can minimize their error during analyzing the samples. Other problems faced including the need to service the interference filter and auto-diluter syringes. This cannot be done since the budget is not enough for servicing.

b) Progesterone Hormone Analysis

At the moment the main problem of analyzing the blood samples is to obtain the RIA kit from Antah Sri Radin. According to Mr. Yap, the purchasing order was done at least one month prior to analysis. However, there were problems faced by the supplier and this make the blood result cannot be analyzed on time.

On top of that, Dr. Wahid informed that there is no budget allocated for buying RIA kit in the initial budget given by IRF to UPM and this also contribute to some problems. However, the RIA kit has been bought for the July analysis and will be arrived soon for August analysis. According to Mr. Yap, Dr. Zainal has been agreed that PERHILITAN will buy the RIA kit for September. Meanwhile, there is no budget for the RIA kit in the future.

Beside that, Mr. Yap also has tried to analyze the blood samples using the EIA technique and the result is encouraging. Dr. Wahid suggested that the method can be used in the future but EIA reagents must be easily obtained. However, Dr. Zainal recommended that this matter should be discuss further to avoid any unnecessary problems in the future.

c) Financial Report

i) The Budget

The initial budget given by IRF to UPM is based on the three months pilot project (May 2000 to July 2000) to analysis the fecal samples. The amount given is about RM 18,500.00 (in bank draft) and RM 350.00 in cash. According to Dr. Wahid, the budget is basically based on one method i.e. the Toronto Zoo technique. Since they have to try on Dr. Franz's technique, they also have to buy some equipment for the purposes. The receipts of purchasing are attached with the report.

Therefore, they face the problem of having over budget by doing both techniques. A few equipment, which is not included in the budget needed to be repaired for the analysis and resulted in over spending as well as the need to buy RIA kit for blood analysis.

Apart from that, Dr. Wahid would like to know whether IRF would continued the project of both fecal and blood analysis so that he can give the detail budget. The budget should include both the blood and fecal analysis to avoid any unnecessary problem. They also need to have the budget as soon as possible to continue the analysis.

b) The Report

According to Dr. Wahid, he has sent the financial report via email both to Mr. Mohd Khan and Dr. Tom Foose to inform the problems but no response. After discussing with Mr. Mohd Khan, he informed that he did not receive any email regarding the matter. However, Steve Romo suggested that further correspondence via email should be given a copy to Dr. Aidi to avoid any problem in the future. A copy of the financial report is attached to this report.

Meanwhile, Dr. Wahid mentioned that he will do the fully report on the fecal and blood analysis and will sent to IRF as soon as possible.

d) Others

i) It is agreed that Dr. Aidi and Steve Romo will visit UPM once in two week to discuss any progress or problem in the future.

ii) Mr. Yap suggested that the sending of the fecal samples should be hold for a moment since they are out of storage.

iii) Steve Romo informed Dr. Wahid and Mr. Yap that any report should be sent through Dr. Aidi to give to Mr. Mohd Khan in the future. He suggested also that copies should be made for himself and Dr. Aidi.

Recommendations / Suggestions

1) Daily Introduction

i) Breeding yard

- a) The rhinos should be left longer for at least 30 to 45 minutes to see any interaction between them especially prior to estrus. Fruits should be prepared to avoid any fight. At least two personnel are needed for observation and the others should be in stand by.
- b) The breeding yard used for daily introduction is too open and made the procedure very laborious. This can endanger either the personnel or the female rhino if fighting occurred. The designated breeding yard should be fixed as soon as possible as planned before.
- c) If the female is expected coming to estrus, confirmation should be made either based on the blood result or using ultrasound.

ii) Ten Acres Enclosure

- a) Steve Romo suggested that Ara should be mixed with the female for at least three hours daily or prior to estrus. If no positive interaction was observed during this period, the female should be separated and mixing should be done later or the next morning. He recommends this based on his experience during mixing Ipuh and Emi.

2) Blood result

- a) The hormone progesterone profile suggested that all females are cycling except for Minah. However, based on the result the pattern of each rhino is different. Some are showing longer cycling period and some did not show low activity. Therefore, it is very difficult to predict the estrus cycle and continuous monitoring using blood analysis should be done.
- b) According to Dr. Terri Roth, it is advisable to use ultrasound to confirm the follicle activity especially prior to estrus. This will make the prediction of estrus easier.

3) Vaginal cytology procedure

- a) Based on the last Committee meeting, the samples collection is supposed to be finished by third week of August but Dr. Zainal and Dr. Sandie are continued collecting them. A discussion prior to this matter should be done accordingly.
- b) Dr. Zainal has collected some samples from Minah and Seputeh and this should be clarified in the next Committee meeting.

4) UPM

- a) Dr Abd. Wahid Haron needs the new budget as soon as possible to continue the fecal and blood analysis.
- b) Extra budget is needed to do the maintenance of the SRCC's equipment in UPM hormone lab.
- c) Mr. Yap has analyzed the fecal samples using Dr. Franz's method but he needs more reagents to continue the procedure. Therefore, an arrangement should be made with Dr. Franz regarding this matter.

5) Rhinos management

- a) Steve Romo suggested a daily routine, which has been summarized before. However, this routine should be discussed first either with Dr. Zainal or in the next committee meeting.

6) Maintenance and Repair

- a) Repair all the water containers so that they can be drained.
- b) Repair the electrical wiring at the rhino barn.
- c) Repair all shift doors between the stalls.

7) Agreement of the SRCC Committee Meeting

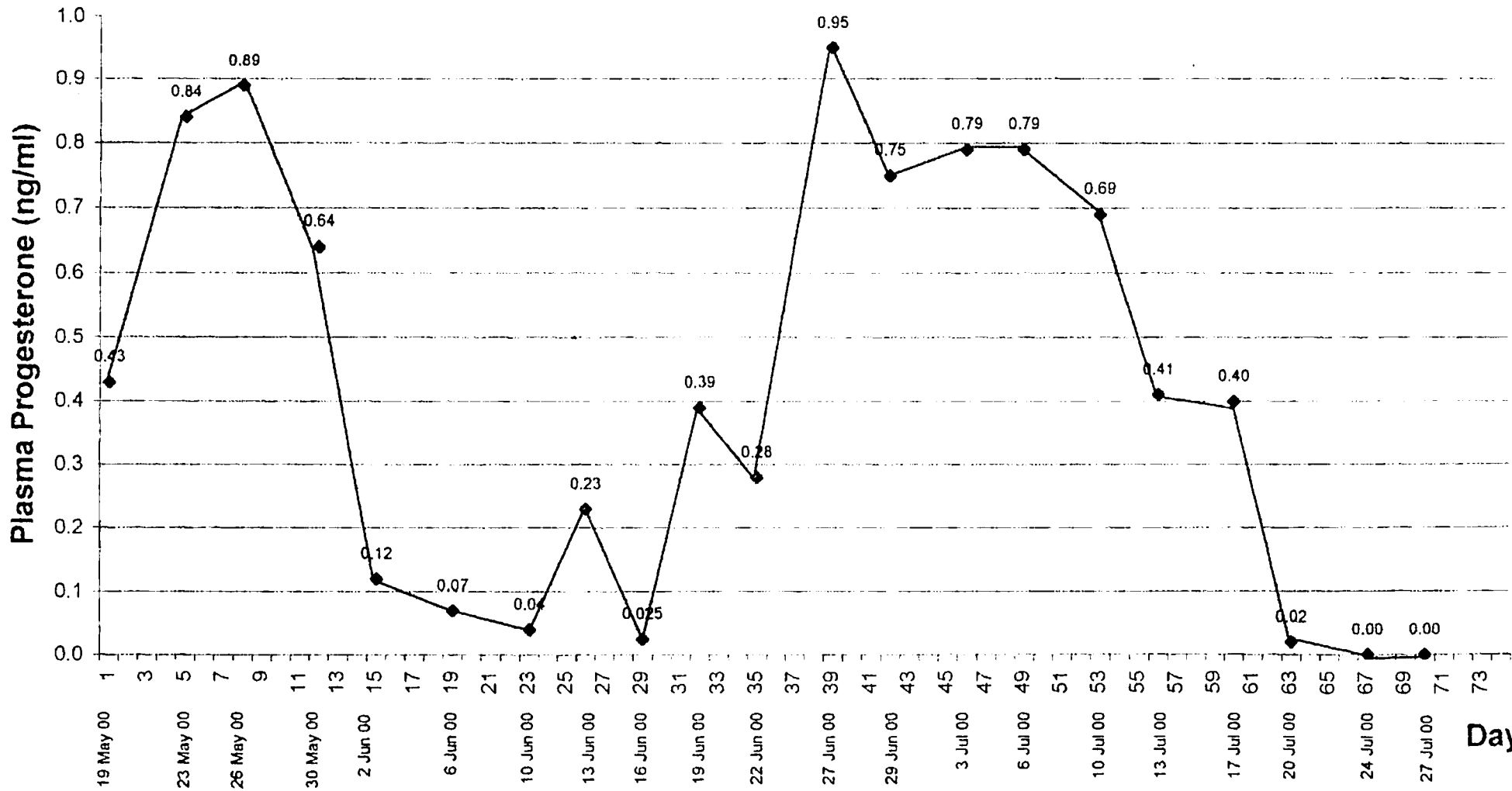
- a) All the decision made during the meeting should be in written form and a copy should be sent to all interested personnel especially the Center Supervisor.
- b) Any recommendation or comment should be sent to the committee and they will make the decision.

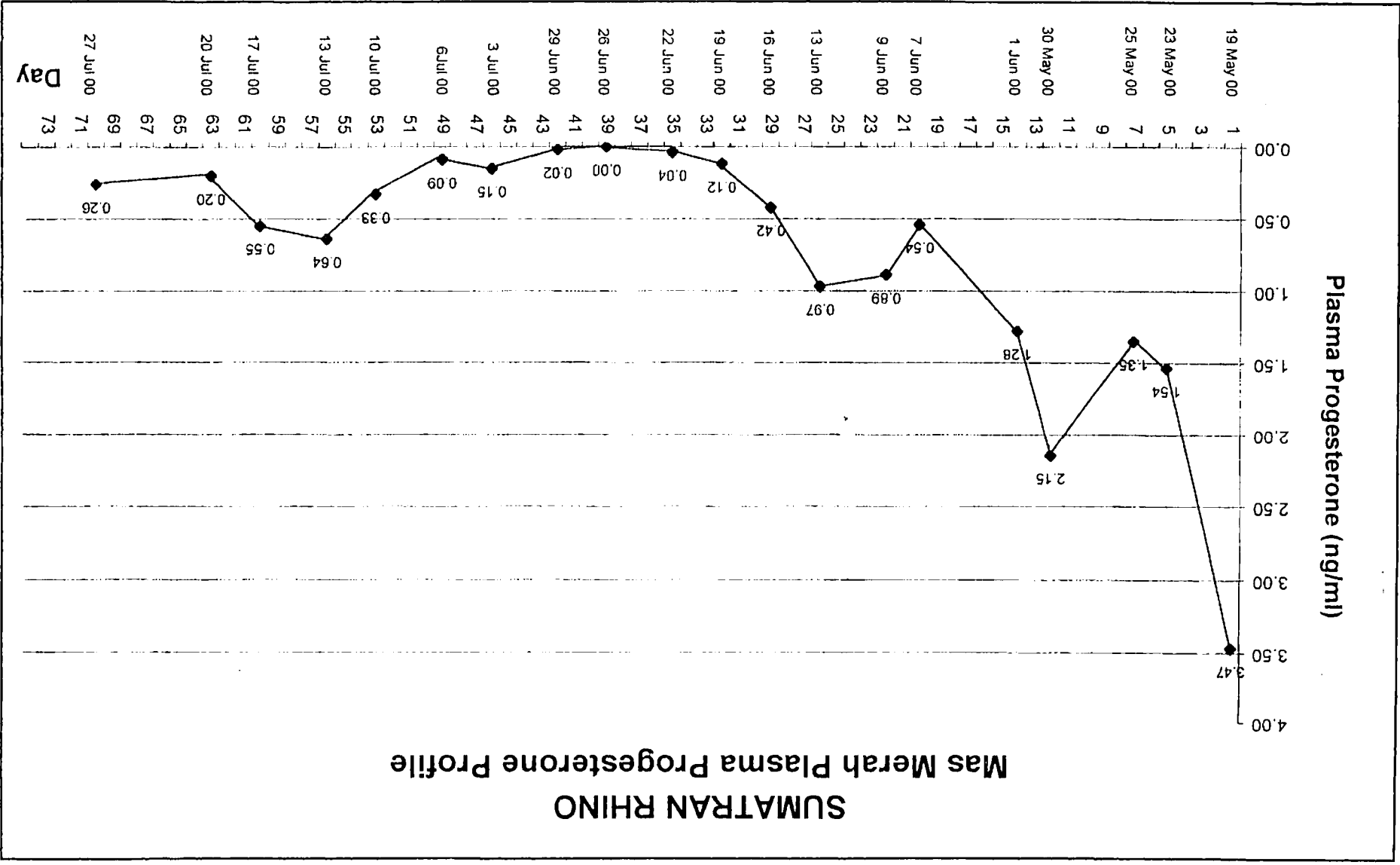
VAGINAL CYTOLOGY COLLECTION, AUG 2000

Date	Rhino ID	Remarks
3/8/00	Mas Merah Rima Panjang Minah	Samples were collected from the four females. Response was good from all females.
7/8/00	Mas Merah Rima Panjang Minah	Samples were collected from the all females except for Seputeh. Response was good from all females but Minah was a bit uncooperative.
11/8/00	Mas Merah Rima Minah	Collection was done on three females today. The rhinos tolerate well to the procedure. Sample from Panjang will be collected tomorrow.
12/7/00	Panjang	Samples were collected from Panjang today and she responded well during the procedure.
14/8/00	Mas Merah Rima Panjang Minah	Collection was done on four females and all rhinos adapted well to the procedure. Minah seems a bit restless.
17/8/00	Mas Merah Rima Panjang Minah	Samples were collected from all females except for Seputeh. However, Minah did not response well to the procedure compared to the other three females.
21/8/00	Mas Merah Rima Panjang Minah Seputeh	Collection was made from all females. Minah and Seputih did not cooperative during the procedure.
22/8/00	Seputeh	Dr. Zainal collected some samples from Seputeh today.
23/8/00	Seputeh	Dr. Zainal collected some samples from Seputeh today.
25/7/00	Mas Merah Rima Panjang Minah	Samples were collected from all females except for Seputeh. However, Minah did not response well to the procedure compared to the other three females.

SUMATRAN RHINO

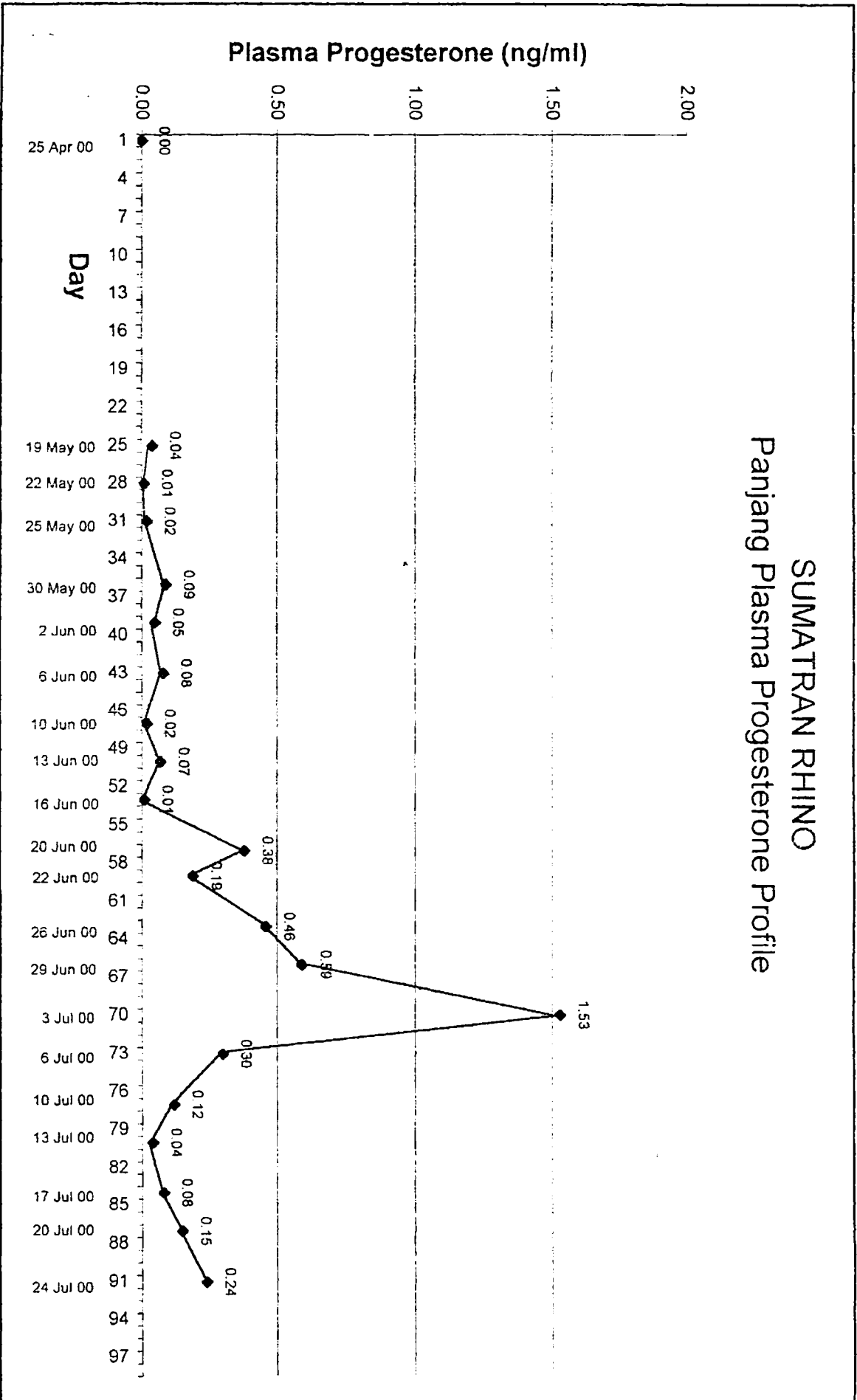
Rima Plasma Progesterone Profile



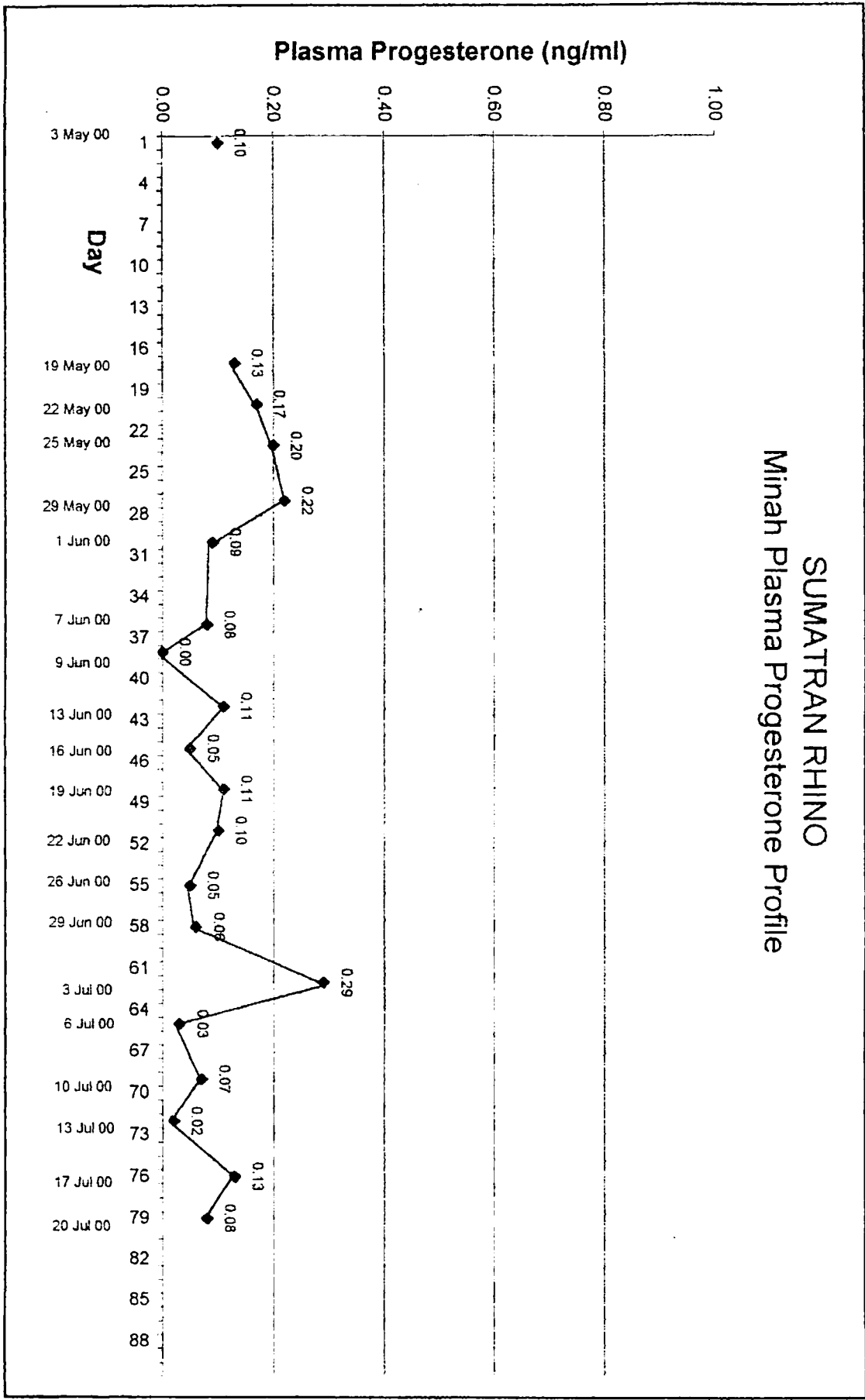


SUMATRAN RHINO

Panjang Plasma Progesterone Profile



SUMATRAN RHINO
Minah Plasma Progesterone Profile



SUMATRAN RHINO

Seputih Plasma Progesterone

