

Project Title: Monitoring of the Sumatran rhinoceros *Dicerorhinus sumatrensis* in Taman Negara, Peninsular Malaysia

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Statement of Need:

In Peninsular Malaysia, the current known distribution of Sumatran Rhinoceros in the wild, based on the surveys and monitoring program (1995-1999) are concentrated in four primary locations. These includes 28-32 in Taman Negara (comprising sections of the states of Pahang in the south, Kelantan in the north and Terengganu in the east), 3 in Endau Rompin (consisting of Johor in the south and Pahang in the north), 3 in Selama and 5-8 in Belum in Perak. The remaining populations were located in Johor, Kelantan and Trengganu. It is a fact that the population of Sumatran rhinoceros has declined terribly by about 50% over the past decade. Surveys and monitoring over the past 3-4 years showed a population of between 43-52, mainly in the four main areas indicated. The problem of habitat and rhino population fragmentation has a detrimental effect on the breeding capacity of the existing individuals. **The only large population of 28-32 individuals survived in Taman Negara National Park, which is legally protected by law.** Taman Negara is **4343km²** and has the most viable population of Sumatran rhinoceros in Peninsular Malaysia and effort must be concentrated on this park to ensure security for the surviving individuals. The population here has also indicated breeding activity with signs of calf observed previously. The size of Taman Negara is **4343km²** with a population density of **1/250km²** in the low-density area and **1/65km²** in high-density area. The Rhino Protection Units (RPU's) were established to monitor the current population in the wild. In Endau Rompin, Malaysia, the density of Sumatran rhinoceros is **1/40km²** in high-density area and **1/91km²** in the low-density area (Flynn and Tajuddin, 1984). Systematic monitoring of rhino population was low during the period 1985-1995 and a dramatic reduction in population was observed during the surveys of 1995 (Zainal-Zahari, 1995). The current strength of RPUs for Peninsular Malaysia was reduced to five units or 50% due to budget constraints with two units assigned for Taman Negara.

In Taman Negara, oil palm plantations are observed on the Kelantan border and had encroached into the park. Oil palm plantations are also found on the western borders that include the state of Pahang and Kelantan and south-west of Pahang. A smaller percentage of rubber estates are also observed close to these oil palm plantations. Rubber estates are located very close to the borders of Taman Negara on east. There are settlements located on the eastern (Sungai Sat), southern (Sungai Tembeling and Kuala Tahan) and western borders of Pahang. On the Kelantan side, human settlements are observed on the north-west of the park, including Merapuh. The motorable roads are located on the northern and north-western borders with several encroachments into the park. In Terengganu, the motorable roads are located at the borders close to Sungai Tersat on the east. Motorable roads are seen to encroach into the park around Kuala Sungai Sat. Encroachment into the park is also observed via the Lake Kenyir.

Similarly, in Taman Negara the areas of high conflict are concentrated in human settlements and plantations. Merapuh and Kuala Koh showed a high density of motorable tracks and encroachment. The areas of Kuala Tahan, Sungai Tembeling, Sungai Atok and Sungai Sat have human settlements and some agricultural development. Encroachments are seen in all the blocks patrolled, lower in areas where rhino tracks are located

The displacement of the Sumatran rhinoceros from its natural habitat into unnatural habitat that includes oil palm plantation, paddy fields, villages, logging and logged areas were observed from 1975 to 1999. The number of displaced animals increased from one animal in 1975 to two in 1984. Subsequently, irregular displacements of Sumatran rhinoceros were reported from the periods 1985 – 1999, ranging from 1-7 individuals. A sharp increase in the number of Sumatran rhinoceros displaced occurred from the period 1980 – 1984 (2 animals) to the period 1985 – 1989 (16 animals). This is followed by a sharp decrease within the period 1990 -1994 (3 animals). The same number of displaced animals was also observed for the period 1995 – 1999. The total number of displaced Sumatran rhinoceros from 1975 – 1999 was 25 animals. It should be noted that there is a strong positive correlation between the displacement of elephants and Sumatran rhinoceros (Julia *et. al*, 2000). This indicated that base on home range size, the largest species will be displaced first due to habitat disturbances. The state of Pahang has the most number of displaced animals (elephants, rhinos and tapirs) totalling 198 animals followed by the state of Johor, Perak and Trengganu. The annual rate of displacement for elephants, Sumatran rhinoceros and Malayan tapir in Peninsular Malaysia is 18.2 (over 25 years), 1.5 (over 16 years) and 3.1 (over 10 years) animals respectively (Julia, *et. al*, 2000).

The Department of Wildlife and National Parks (DWNP) introduced the Sumatran Rhinoceros Action Plan in 1993 for the conservation of the species in Malaysia. It concentrates on the survival and recovery of viable populations. The major components includes:

1. In situ protection and management to enable survival and recovery of viable population in the wild
2. Translocation of rhino in inviable situations into viable wild populations, "gene-pool" sanctuaries or captive facilities
3. Captive facilities programmes for propagation and research
4. Creation of a "gene-pool" sanctuary for propagation and research

Therefore the monitoring of Sumatran rhinoceros by RPU's must be increase to protect the *insitu* rhino population of Taman Negara to enable their recovery in the wild. RPU's are important in providing updates on the rhinos and encroachment of their habitat. In addition, they do act as a deterrent to would be encroaches. They also enforce the law and are capable of arresting anyone who violates the Wildlife Act. Their jurisdiction does extend beyond the borders of the national park. Although arrests is not regular, the RPUs are effective in preventing poaching of wildlife in the park or reserves. Prosecutions are effective as offenders rather pay a fine then be dragged into court but sometimes the amount compounded or charged are inadequate. The RPUs are normally unarmed as it is unnecessary in our situation and the laws pertaining to firearms in Malaysia is very strict. The results of the survey/patrolling is submitted to the Rhino Conservation Officer of DWNP for review and restructuring the monitoring plans according to the latest findings from the field. The confidentiality of the locations of the rhinos is maintained as RPUs selected are dedicated officers/rangers from the DWNP personnel and are also governed by the General Order with respect to confidentiality.

Objectives:

1. Monitoring and patrolling of the existing population within the Taman Negara on a monthly basis by RPUs with emphasis on encroachment and individual rhinos.
2. Locate and mark core rhino areas and their distribution within the Taman Negara. Population of other large mammals would also be observed and recorded.

Methodology:

Trained RPUs would monitor the 20 blocks of 100km² each within Taman Negara on a rotational schedule designated to each team. Topographic maps would be supplied to each team. A permanent line transect would be used taking into consideration the behaviour and preference of the rhino around river basin. Team leaders would fill up a data sheet, which includes Global Positioning System (GPS) location of rhinos and encroachment. A total of 5 personnel would comprise one group of RPUs. The survey blocks are indicated below in Table 1.

Table 1: RPU Patrolling Blocks and Sumatran Rhinoceros Distribution in Taman Negara

Blocks	Patrol Routes
1	Sg Ceruai - Sg Tanum - Sg Juram -Bukit 4035 - Sg Kemuai - Sg Relau
2	Sg Tanum - Sg Kepong - Gua Peningat - Gua Rimau - Bukit 1182 - Bukit 951 - Bukit 1041 - Bukit 1027 Kuala Yu
3	Sg Kechau - Bukit 118 - Sungai Mentut - Kuala Kechau
4	Sg Atok - Ulu Sg Atok - Bukit Ulu Ketil - Gua Siput/Tumpat - Sg Atok
5	Sg Teku - Pantat Lesung - Sg Dempong - Sg Tenor
6	Sg Tahan - Ulu Sg Tahan - Bukit 3477 - Bukit 2316 - Sg Trenggan - Sg Tahan
7	Sg Aring - Sg Cher - Bukit 6457 Sg Relai
8	Sg Koh - Ulu Sg Koh - Gunung Perlis - Bukit 4195 - Sg Koh
9	Sg Keniam Kecil - Bukit Batu remis - Kuala Perkai
10	Sg Koh - Bukit 1686 - Sungai Lebir - Kuala Koh
11	Sg Keniam - Gunung Penumpu 3585 - Ulu Sg Kelimus - Sg Sat
12	Sg Sat - Sg Goh - Bukit Milong - Kuala Kelapah
13	Sg Sepia - Sg Kin - Bukit 2802 - Sg Remis - Sg Sepia
14	Sg Sepia - Sg Dua - Gunung Cerlak - Sg Perus - Sg Sepia
15	Sg Jintoh - Gunung Belalai - Bukit Che Hassan - Sungai Sepia/ Jintoh
16	Kuala Jintoh - Sg Sat - Sg Gagau - Gunung Gagau - Kuala Jintoh /Jenut Jintoh
17	Sg Pertang - Bukit 3456 - Sungai Chicir - Sg Pertang
18	Sg Trenggan - Sg Perpek - Bukit 4249 - Sg Kenering - Sg Pering - Sg Trenggan
19	Sg Loh - Gunung Mandi Angin - Sungai Loh
20	Sg Cacing - Gunung Padang - Sungai Tersat - Kuala Tersat

Budget:

The RPU's worked in a team of five, consisting of an officer and wildlife rangers. Each patrol would cover an area of about 30km over a period of 7-10 days. RPU's are equipped with basic camping gear and topographic maps and a GPS. The additional request for funding for the patrolling would include the items listed in Table 2.

Table 2: Budget for a team of 5 RPU's for a 10-day patrolling.

Nos	Description	WWF(USD)	DWNP(USD)
1	Plaster Cast (POP) (25kg/bag) at @ USD53.00	53.00	
2	Gas canister refill @ USD1.20 X 5/ team/patrol	6.00	
3	Global Positioning System (1/team)		526.00
4	Topographic Maps @2.60/piece X 10 pieces	26.00	
5	Camping gear (rucksac, flysheet etc) @ 800.00 per RPU per year		1052.00
6	Allowances @USD56.60.00/day/team X10 days	566.00	
7	Overtime @USD34.50/day/team X 10 days	345.00	
8	Fuel @ USD0.17/L X 100L		17.00
	Total	996.00	1,595.00

Currently, two teams of RPU are active on a monthly basis to monitor Taman Negara. It would take at least 10 months for these two teams to cover the 20 designated blocks. Ideally, **two additional teams** of RPUs are necessary to cover at least 60% of Taman Negara or 20 blocks every five months over a period of one year. These additional teams would strengthened the monitoring program and provide data on the distribution, breeding status and level of encroachment. In budget requirement, the cost to maintain these two additional teams of RPU would add up to about **USD2, 000.00/month**. Recent appointment of a wildlife officer to co-ordinate the patrolling and effectively assign and reassign the RPUs would directly maximise the monitoring work. RPUs were also included in outreach program in co-operation with the DWNP's education division as carried out previously, with the natives of Endau Rompin, Malaysia.

References:

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