

**IN-SITU CONSERVATION OF THE SUMATRAN RHINOCEROS**  
**(*Dicerorhinus sumatrensis*) A MALAYSIAN EXPERIENCE**

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## **INTRODUCTION**

The Sumatran rhino is considered to be one of the most endangered wildlife species in Peninsular Malaysia. Surveys conducted throughout the peninsula in 1987 estimated that the population stands at more than 100 animals with most of the population inhabiting the forest of Taman Negara, Endau Rompin and the forest between Gunung Inas and Ulu Selama in Perak. The population in these three locations are considered viable for long-term genetic management. The remainder of the population survives in the forest reserves and state land throughout the peninsula (Map 1, Table 1).

The Sumatran rhinoceros population in the wild is found in mountain ranges and forest of higher elevations in Peninsular Malaysia. This should provide a consolation in terms of the animals' protection, as these forests are seldom logged because they play an important part in water catchment and the prevention of soil erosion. Nevertheless, steps should be taken to ensure the survival of these animals, as deforestation is rapidly approaching these areas.

Poaching activities increase with the demand for rhino products. The popular beliefs of the horn's medicinal property, especially as an aphrodisiac, escalates the demand for rhino products. This, coupled with the high price of horns, prompts illegal hunters to hunt down these animals. The risks of selling illegal rhino products is high, especially in Kuala Lumpur, thus contributing to the high price of the products. The retail price of Sumatran rhino horn is \$6,641 per kg. The rhino hide is priced at \$220 per kg., while the hooves can cost up to \$3,670 per kg. Records have shown that these products surfaced in the black markets of Hong Kong, Taiwan, South Korea, Thailand and the Middle East. The Department of Wildlife and National Parks, Peninsular Malaysia has recorded at least six cases of Sumatran rhinoceros being snared or hunted down for their horns.

The decline of most wildlife species in the wild, including the rhino population, can be attributed to the loss of suitable habitats to logging activities, agricultural development, and human settlement. The National Park and Wildlife Reserves constitute approximately 0.74 million ha. or 6 percent of the land area in Peninsular Malaysia. The total forested area in the peninsula forms 47 percent or 6.19 million ha. of the land area (Table 2). Logging activities have forced the rhino out of their natural habitat as witnessed in Selama, Perak. The destruction of natural salt licks, food plants and wallows will significantly reduce the suitability of an area to the local rhino population. The presence of logging machinery in the area, coupled with the noise, will further deter the animals from frequenting the area.

## **IN-SITU CONSERVATION EFFORTS**

### **1. SURVEYS ON EXISTING WILD POPULATIONS**

An inventory of the existing wild population should be carried out prior to any conservation efforts to save the animals. This includes thorough surveys of the wild

population and identifying viable populations in established and safe habitats. This initial step is very important as we need to know what we are conserving. Conservation requires huge financial support along with time and manpower. Therefore, conservation efforts should focus on wild populations with the best prospect of surviving the pressure and threats set by development. This survey will also help to determine the efforts that need to be taken to conserve the remaining animals in addition to identifying isolated or 'doomed' animals that need to be relocated to other suitable habitats or captured for a gene pool project.

The department's rhino research team has carried out extensive surveys on potential rhino areas and achieved encouraging results. An additional 14 animals were located in Ulu Selama, Perak, Taman Negara, Pahang and at least a single animal in the Krau Game Reserve in Pahang. The lifting of curfew in security areas should provide more information on the status of rhino population in the areas. As most security areas are off limits to the people, the wildlife in the areas are protected from poaching and other disturbances such as logging, agricultural practices, and land development which contribute to most habitat destruction.

## **2. PROTECTION OF EXISTING POPULATION**

Protection of existing wild populations can be afforded if the animals are confined in wildlife reserves, sanctuaries or national parks. Ranger posts can be set up at strategic locations along the boundary to discourage encroachment into the protected areas. Wildlife rangers posted at the various locations along the boundary will be given ample training to enable them to conduct field surveys to monitor rhino populations in the protected areas. This training is conducted at the Wildlife Training Center at Bukit Rengit, Lanchang, Pahang. The rangers posted at these locations are also equipped with communication facilities, like wireless set and vehicles to enable them to communicate with the state office during patrolling. The four-wheeled drive vehicles can cut down their traveling time and this would enable them to patrol the area more effectively. Routine checks should also be carried out as part of the monitoring process. The presence of rangers in the areas will discourage poachers from hunting the animals in the areas.

The wildlife rangers posted in the protected areas must be committed to their duty as this is important to the success of the project. They should not be neglected by the department once they are posted to the area. As it is not an easy task to post rangers in remote areas away from all phases of life, the department should provide housing and other basic amenities to enable the rangers to perform their duty with full commitment. The welfare of their families, whom they left behind when they are in the field, is also important and the department should take every effort to assist them in their children's schooling, hospitalization during emergency, and provide security to the homes during their absence. It is worthless to post rangers in strategic locations in the protected areas if these basic requirements are not met, as this will affect their work morale. The department of wildlife has spent some M\$ 5.13 million in 1988 to provide the basic amenities to the staff posted in these protected areas. A big chunk of the budget went into the construction of living quarters and other amenities at various posts in the protected areas.

Encouragement and incentives must also be given to these rangers. The department has done this by paying them allowances and frequent visits by the head of department. Commitment to the project needs to be reflected in the person in charge of the project. As a leader, the person should lead the way in every aspect of the conservation work. The staff look upon him as an example and his commitment to the project will be followed by the rest of the team. However, not everybody can fit into the field of wildlife conservation.

It would really be good fortune if the intake of new personnel brings people with interest in conservation into the department. During interviews most people show their interest in conservation and the willingness to carry out field work, but the results have often been disappointing. Training new personnel to carry out their duties is just part of the problem.

Turning them into conservationists dedicated to their work would be the most difficult task. This is true in all categories of personnel. Wildlife rangers would take orders from their superiors, who might be assistants or deputy directors of wildlife. The effectiveness of their work really depends on the dedication and leadership of the state director of wildlife.

A director of wildlife who does not go into the field can seriously affect the work of the department. This may be an unimportant point for us here, because we all like to go to the field and expect everyone to like it. A field oriented state director of wildlife will know what has to be done to conserve wildlife.

A case in point was the presence in one area of more than sixty gaur, more than one hundred sambar deer, and many barking deer in a very rich wildlife habitat. Previous game wardens had made a lot of effort to protect the wildlife. Then, three state directors of wildlife who were assigned as heads of department in the state consecutively for seven years never once visited this wildlife area. They were people who gave orders from the comfortable air-conditioned rooms of their offices. Two years ago, the director-general made a visit to this wildlife area and after a determined search found the tracks of only two sambar deer. Barking deer were scarce and about fifty percent of the gaur have been poached.

An even more serious case involving the Sumatran rhinoceros took place in one of the southern states of Peninsular Malaysia. Wildlife rangers were directed to make regular patrol of rhino areas, working up to a week during each visit. Two to three visits were made each month. This worked very well, and rhinos in the areas were well protected. The wildlife rangers were paid unlimited allowances, and although the work was difficult, they were happy.

When the new state director took office, the amount of allowances was reduced to \$40.00 per month based on the advice by his deputies, who felt that the allowances being paid in the past were too high. This had gone on for six to eight months when a report on the discovery of between three to five rhino skeletons deep in the forests was received. The skeletons were collected and identified. Three of these were positively identified as rhino skeletons. The director and his deputies were immediately transferred, but the damage had been done. It was difficult to imagine that the director general was not informed of this change by the state director. Worse still, the rhino officers were mum about it.

Therefore, the selection of a suitable person responsible for the conservation project is important for the successful conservation of the endangered species.

Restriction of entry into the protected areas should be enforced thoroughly. In Peninsular Malaysia, only the Director General of the Department of Wildlife and National Parks and State Directors have the authority to grant permission to enter protected areas like the national parks, wildlife reserves, and sanctuaries. This will enable the department to monitor visitors entering the areas. Presently, only researchers are allowed to enter the protected areas with permission from the Director General of the Department of Wildlife and National Parks, Peninsular Malaysia.

The Department of Wildlife and National Parks, Peninsular Malaysia also spent M\$ 1.03 million to survey and demarcate the boundary around the protected areas. This will enable the department to identify the boundary and prevent illegal activities from encroaching into the areas. The department has posted deterrent notices around the protected areas to prevent trespassers from entering the areas.

### **3. LAW ENFORCEMENT**

Law enforcement plays an important role in the conservation of endangered wildlife species including the Sumatran rhino. There is a dire need to protect the remaining wild

population of rhino in the peninsula. Constant patrolling of important rhino areas has proved to be one of the effective ways to stop rhino poaching.

Crackdown on illegal trade of rhino products has escalated. The Department of Wildlife is undertaking the task seriously after Malaysia joined CITES. Priority is given on clamping down the major suppliers and exporters of the product. Routine checks on traditional Chinese pharmacies are carried out, and no doubt this will deter the proprietor from carrying out illegal transactions of rhino products. Departure points like airports and harbors need to be routinely checked. The enforcement unit will need to develop close liaison with the related departments such as customs, the airport, and the harbor authority. Effective enforcement can only be achieved by giving both logistics and moral support to the enforcement team. The techniques employed by the smugglers are always one step ahead of the enforcement agency. The enforcement team should be given proper training on anti-smuggling to put them at par with the smugglers. This can be achieved by attending the appropriate courses conducted at the various agency training centers locally or abroad.

Corruption is a term frequently affiliated with law enforcement. Although the extent of corruption in wildlife law enforcement is not known, efforts are needed to eradicate this 'disease' from the enforcement agency. Monetary awards and other forms of appreciation should be given to the enforcement unit for successful operations. This should boost the morale and commitment of the unit. The exchange of monetary rewards with information leading to the arrest of smugglers and illegal traders should motivate the public to become informer for the authority. Enforcement activities need support from all quarters, but especially from the general public for them to be effective in checking the illegal trade of wildlife products.

The appointments of Honorary Game Wardens from carefully selected people can also contribute towards the conservation of wildlife species in the country. Estate managers, police personnel, village headmen, and youth leaders are some of the people who can perform this task when appointed. Their positions in the local community should provide them the edge when confronting with the offenders. However, the appointments of these game wardens should only be a temporary measure in combating wildlife offenses, as the department would perform better with permanent game wardens over a long period of time because their services could be diverted to other sections of the department when required.

The legal system in the country can also contribute towards the conservation of wildlife species by imposing maximum penalties allowed by the Wildlife Act on offenders. When implemented, the penalties should discourage poachers from carrying out their activities. The Department of Wildlife apprehended a total of 4,111 cases of wildlife offenses in 1990 while the fines, permits, and compound from these offenses amounted to M\$ 2,057,603.89. Thus, the court can be used as a mean to reiterate the importance of abiding the existing laws pertaining to wildlife in the country. Therefore, it is important to have a good legal system to protect wildlife in the country.

The involvement of politicians in wildlife enforcement can hamper the effectiveness of the Wildlife Act. This practice is common in countries where politics always play the upper hand in the everyday running of the government departments. There is a need to eradicate this intervention to enable the department to bring the offenders to justice. Furthermore, this intervention, in the long run, will erode the commitment of the staff carrying out the enforcement work.

#### **4. CONSERVATION EDUCATION**

Creating public awareness is another conservation tool used in most conservation programs worldwide. The Department of Wildlife and National Parks, Peninsular Malaysia has implemented conservation education programs to create awareness among students in both primary and secondary schools. The department is also in the process of

including conservation education as part of the curriculum in secondary schools after it was accepted into the curriculum in the primary schools. The conservation education program conducted at these schools provides the students with various nature oriented activities such as attending the Nature Study Centers in Taman Negara and Bukit Rengit, Pahang, a weekend camping program, and weekend excursions. The department also organizes nature courses for school teachers to help them plan the activities of their nature clubs in their respective schools. At present, there are 180 nature clubs in schools around the peninsula and this number is expected to grow during the years to come. The department contributes to these clubs by mailing nature newsletters and magazines and by giving talks on nature conservation to the club members.

New plans are being considered to intensify the program to include the general public, government departments, Non-Government Organizations (NGOs), political leaders, and policy makers.

The general public should be informed of the factors threatening the existence of animal populations and gather their support to carry out conservation efforts to save the remaining population. There is an increase in public awareness, especially of conservation and environmental issues, and the department has taken this opportunity to voice the plight of the Sumatran rhinoceros through several programs conducted by the Conservation Education branch. The zoo extension programs conducted at the Malacca Zoo exposed the participants to the Sumatran rhinoceros captive breeding program at the zoo. The presence of the rhinoceros should invoke the desired response from the participants.

Besides students and the general public, decision makers were also informed on the state of the natural environment of the country and the problems threatening the Sumatran rhinoceros population in the country. The department has done this by mailing nature magazines, pamphlets, and other publications published by the department, which emphasized the importance of nature conservation to the country policy makers. These people must be influenced to support conservation efforts in the country.

The signing of the Langkawi Declaration on 21 October 1989 in Pulau Langkawi, Kedah was a major achievement for nature conservation in Malaysia. The declaration implied the government's concern on the state of nature in the country and its approval for conservation efforts carried out. In response to the government's stance on environmental issues, several state governments in Peninsular Malaysia have put the brake on logging activities in their respective states. It is hoped that the ban on logging will benefit the rhino population inhabiting the isolated upper elevation forests in the peninsula.

With the recent understanding on Environmental Impact Assessment (EIA) stressed by the Economic Planning Unit (EPU) of the Prime Minister's Department, numerous development plans should be accompanied with an EIA report. The benefit cost analysis in the EIA report must include the matrix value of nature.

## **5. RESEARCH**

The application of research data in conservation work is necessary to achieve the preset objectives. The data gathered is important, especially when making crucial decisions. Without these data, the authority is taking calculated chances on the future of these animals. Presently, there is insufficient information on several aspects of the Sumatran rhino to aid the authority in making management decisions.

Most of the data on the Sumatran rhinoceros are gathered through observations of captive animals. Little is known on their food habits in the wild, home range, reproduction biology, and behavior. There is an urgent need to study the effects of logging and other related activities on the wild population as some isolated populations still thrive in logged-over forest in the peninsula. A detailed study on the habitat requirements of this species

needs to be carried out as this information is essential in the relocation of 'doomed' animals.

The Department of Wildlife and National Parks, Peninsular Malaysia has developed an experimental "gene pool project" for the Sumatran rhinoceros in Sungai Dusun, Selangor. The rhinos would be managed in a semi-wild state while the founder population will consist of 'doomed' animals from isolated and threatened areas in the peninsula. This experiment should provide headway for other similar projects elsewhere, especially in places where the rhino population is in isolation and threatened.

## **6. ACTION PLAN FOR RHINO CONSERVATION**

The Action Plan for Asian rhinos was developed by the SSC Asian Rhino Specialist Group in 1989 to conserve the remaining rhino population in this region. The group recommended several actions to conserve the rhinoceros population in the country.

1. Protection and management of rhinoceros and their habitats.
2. Scientific research.
3. Gathering information on population viability and habitat requirement.
4. Captive breeding for reintroduction.

The Department of Wildlife and National Parks, Peninsular Malaysia, which is responsible for the conservation of Sumatran rhino in Peninsular Malaysia, is at the moment implementing these recommended actions. Rhinoceros are classified as a "totally protected" animal under the Wildlife Protection Act of 1972 and heavy penalties are imposed on offenders found guilty of violating the act.

Both regular and random patrol of important rhino habitats are carried out to protect the rhino population and their habitats. Wildlife rangers are posted at strategic locations around important rhino habitats. Besides protection, the staff are also responsible for gathering information on population and habitat. Monthly reports are sent to the headquarters for compilation and analysis.

The research on Sumatran rhino that is currently going on at the Malacca Zoo focuses on the collection of data for the purpose of captive breeding. The data include aspects of physiology, pathology, parasitology, feeding, growth and reproduction. A study on the carrying capacity of existing habitats should be conducted as this is important in determining the number of rhinos that can be translocated into the area from isolated and threatened habitats. As part of the *in situ* conservation program, research is being conducted on the food plants consumed by rhinos in several known rhino habitats.

## **7. MANAGEMENT OF EXISTING RHINO HABITATS**

Management of wildlife reserves and sanctuaries which support viable rhino populations is one of the important *in situ* conservation program for the rhino. Taman Negara and Endau Rompin are considered the two viable protected areas for rhino in Peninsular Malaysia.

Taman Negara, which is familiar to tourists as a nature paradise, should be managed to accommodate the presence of the rhino population in it. The rhino population in Taman Negara is estimated to be between 26 to 40 animals which inhabit the hilly and mountainous region of the park. The Taman Negara Management Plan needs to demarcate these important rhino habitats in the park and to exclude these areas from the park's recreation plan. No development should be carried out in or around these areas. The park authority has identified core areas where the rhino population are found and buffer zones around the rhino habitats to provide protection for wandering individuals.

Although Endau Rompin has been designated as a state park by both the Pahang and Johore State governments, steps should be taken to protect the important rhino areas in the park from disturbances that might arise from activities carried out in the park. This point must be considered during the initial planning process. Like Taman Negara, certain areas need to be excluded from any activities and buffer zones created around the habitats to protect wandering individuals.

Rehabilitation of rhino habitats might attract the wild population which left the habitats due to disturbances that occur in the past. Observations in Ulu Selama indicated that rhinos were present in logged-over areas after logging operations have ceased. The habitat which was not totally destroyed still held basic requirements such as salt licks and food plants.

## **8. REINTRODUCTION PROGRAM**

Reintroduction of rhino population into areas previously occupied by the species includes capturing doomed animals from threatened and isolated areas and reintroducing them into these areas. The factors most closely associated with the success of reintroduction program are excellent habitat quality at the release site and the use of wild-caught animals.

Reintroduction program should include four phases:

1. Feasibility studies (including an ecological study of the proposed habitat into which the animals would be introduced and the amount of resources needed to carry out the program).
2. Preparation phase.
3. Release phase where the introduced animals are marked or attached with radio-telemetry before being released. This will enable the authority to carry out follow-up studies to determine the survival and movements of the animals.
4. Follow-up phase where long term studies are conducted on the animal.

Since reintroduction programs are expensive, it should not be carried out unless adequate resources are available. It should be noted that reintroduction can only be carried out when the original causes of extinction have been controlled or removed and the habitat is still suitable for the species.

## **9. NATIONAL CONSERVATION STRATEGY**

The Department of Wildlife and National Parks, Peninsular Malaysia is the authority responsible for the conservation of wildlife species in the peninsula. The department's objectives include conserving in perpetuity the country's wildlife species and managing them with the goal of fulfilling the various needs and interest of the people. The department is also managing National Parks, Wildlife Reserves and Sanctuaries for the purpose of preservation and conservation of flora and fauna and their natural habitats.

The department has adopted five strategies to achieve the above objectives and they include law enforcement, wildlife management programs which comprise both *in situ* and *ex situ* conservation, research, conservation education and training, and management of reserves and national parks.

The conservation of endangered wildlife species was given the highest priority by the department in its overall objectives and this is reflected in the annual budget allocation. Development of wildlife reserves for *in situ* conservation is still underway with the construction of various facilities including rangers' posts and captive breeding facilities in the protected areas that could aid the conservation efforts. The department has allocated US\$ 6 million for development and wildlife management projects in the current financial year.

Conservation requires substantial resources for it to be effective. Financial resources are the most important factor, and government commitment towards this effort should be sought by the relevant authority if it is still non-existent. Every effort should be made to include the government in the conservation programs, as it could provide the needed resources over a long period of time. Most aid agencies could not afford financial assistance over a long period of time due to commitments in other places and the lack of funds. The Department of Wildlife and National Parks, Peninsular Malaysia is fortunate to get all its support from the government. The department is allocated a budget totaling US\$ 8 million for operating and development expenses during 1991.

Conservation of endangered wildlife species should include local participation. Currently, the budget allocated by the aid agencies is benefited by foreign experts hired to carry out the project in a particular country. Malaysia, for example, is not lacking in the expertise to carry out conservation program to save the endangered Sumatran rhinoceros. Retired wildlife officers can be hired by the aid agencies to prepare conservation and management plans for important rhino areas in the country. These people, equipped with their vast knowledge and experience, are more familiar with the situation in the country as they dealt with these matters during the course of their service in the department. They can be considered assets to the conservation of the Sumatran rhino in Malaysia. Therefore, local experts should be given priority by aid agencies to conduct the conservation program in their respective countries. Nevertheless overseas experts can still be hired as transitional coordinators along with these local counterparts.

#### **CONCLUSION**

The misconception of conservation being a simple matter can contribute towards the failure of the effort. Realistically, it covers everything from planning, research, management, law enforcement, and education. The authority or agency responsible for conservation needs to have strong support from the government or donor agency. Staff commitment towards conservation is also vital for the success of program. The involvement of local participation in the country's conservation projects will further enhance the success of the program due to their knowledge, experience and understanding of the country's situation. Conservation will not achieve any progress if the matter is only pursued on paper and handouts.

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Map 1 D Distribution of the Sumatran rhinoceros in Peninsular Malaysia

Table 1. Distribution and population estimates of Sumatran Rhinoceros in Peninsular Malaysia

LOCATION	NO. OF RHINO	PROTECTION STATUS
1. Endau Rompin	10 - 25	State Park
2. Taman Negara	26 - 40	National Park
3. Sungai Dusun	3 - 4	Wildlife Reserve
4. Gunung Belumut	3 - 5	Wildlife Reserve proposed
5. Mersing coast	5 - 6	Being deforested
6. Sungai Depak	2 - 4	Being deforested
7. Sungai Yong	3 - 5	No information
8. Kuala Balah	3 - 4	Being deforested
9. Bukit Gebok	2	Being deforested
10. Krau Reserve	1	Insecure
11. Sungai Lepar	2	Unprotected and being deforested
12. Ulu Atok	1	No information
13. Ulu Selama	6 - 7	Unprotected
14. Ulu Belum	2 - 4	Insecure
15. Bubu Forest	2	No information
16. Kedah	1	Insecure
	72 - 113	

Table 2. Distribution and Extent of Major Forest Types in Peninsular Malaysia

Forest Types	Area (million ha)	Percent of total
		Forested land
Dipterocarp forest	5.62	42.71
Swamp forest	0.46	3.50
Mangrove Forest	0.11	0.84
Total Forested Area	6.19	