

The Sumatran Rhinoceros (*Dicerorhinus sumatrensis*):
"Out of the Jungle and into the City "

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The Sumatran rhinoceros (*Dicerorhinus sumatrensis*) has already disappeared from most of its former range of Burma, Laos, Vietnam, Thailand and Malaysia (Figure 1). Small populations have been reported on peninsular Malaysia and Burma in addition to some sightings in Thailand. However, the surviving populations on the Indonesian islands of Sumatra and Borneo are believed to be the strongest with an estimated 483 to 877 individuals in three countries (Penny, 1988).

With 180 million people, Indonesia has the fifth largest population in the world. The island of Java alone has more than 100 million people, nearly two-thirds of the nation's population. Unfortunately, the population is still growing at the rate of two million a year . The government transmigration program will move an estimated 90 million people from Java, Madura, Bali and Lombok to the island of Sumatra where the government has promised five acres of land, a two-room house, tools, seed, fertilizer, herbicides, pesticides and food for a year (Zich, 1989). The impact of the transmigration program on the Sumatran rhinoceros means a severe loss of its habitat. Another factor contributing to the rhinoceros' demise is subsistence cultivation and expansion of rubber, palm oil, timber and sugar industries coupled with oil and natural gas exploration. The forest is now so

severely reduced that the situation has become exceedingly critical for the remanant population of rhinoceroses. In addition, these disturbances of the land force the rhinoceros to become less territorial and more nomadic due to their dependence on the shrinking regions of undisturbed rainforest. Breeding opportunities are thus limited.

The agelong persecution of the Sumatran rhinoceros for its horn and other marketable parts, has contributed significantly to the precarious situation of this rare animal. This trade has caused the Sumatran rhinoceros to disappear from most of the remaining rainforest areas in its former distribution (van Strien, 1986). There have been some recent advances in wildlife protection in Malyasia with a 1988 amendment to the 1955 Wild Animals and Birds Protection Ordinance which provided total protection for the rhinoceros, elephant, sun bear and other threatened species. Currently, the penalties for poaching are quite severe and serve as effective deterrents to violators of the law. For example, the fine for killing a Sumatran rhinoceros is \$15,000 or five years imprisonment (Cranbrook, 1988). At present, although laws appear satisfactory there is still an urgent need for captive breeding efforts to ensure the survival of this highly endangered species.

The Sumatran Rhinoceros Trust (SRT) was established as a joint operation which initially included five United States zoological institutions. Currently four (San Diego, Cincinnati, Los Angeles and New York) are operating together within the Species Survival Plan (SSP) of the American Association of Zoological Parks and Aquariums (AAZPA) and in cooperation with first the Malaysian and now the Indonesian goverment. Dr. Warren Thomas, director of the Los Angeles Zoological Society, is the species coordinator for the SRT.

The SRT is funding the surveying, trapping and relocation of the Sumatran rhinoceros' into captive breeding pairs; two pairs within Indonesia and five pairs in the United States. The goal is to establish and maintain successful captive propagation of this species. Administrative and political aspects of this project in southeast Asia are managed for SRT by Francesco Nardelli.

David Anthony Parkinson, a specialist in capture, care and transport of wild animals directs the field project. Parkinson has extensive experience in this field working with both large and small mammals. With over 30 years experience in Africa and the Phillipines, of particular relevance is his background with rhinoceroses. He has successfully captured, transported and maintained approximately 100 African rhinoceroses. He has advised and assisted the Department of Wildlife and National Parks in peninsular Malaysia with the capture, transport and maintenance of five Sumatran rhinoceroses. Parkinson was in charge of the Howletts-Port Lympne/ Indonesia Sumatran rhinoceros operation where six rhinoceroses were collected.

SRT field operations are supervised by Tony Parkinson. Local residents and government workers assist in surveying the jungle for rhinoceros trails, building traps and managing the rhinoceroses while in Sumatra.

Surveying the jungle for rhinoceros trails is the most time consuming task. There are two basic types of trails. The first type is a small feeder trail formed by animals passing through and eating vegetation as they move. The second type, is a larger trail which is frequently used by the animals to move within a territory. It was found by the field team that the Sumatran rhinoceroses primarily used the larger trails. Unfortunately, the process of locating a fresh well used trail can take months in the dense forest foliage. Another difficulty often encountered in this operation is that the larger trails, once discovered, are also used by the logging industry. Heavy trafficking of these trails forces the wildlife, including the Sumatran rhinoceros, away from the disturbed area. When a larger undisturbed trail is discovered it is monitored until a rhinoceros passes through with the knowledge that within the next six weeks the animal would most likely again use the trail if undisturbed. A trap was then constructed. The type of trap used in the capture project is a modified pit fall trap. The traps are dug by the Indonesian workers.

The traps are six feet deep, lined with timber and the floor cushioned with one foot of leaf litter. The top is covered by a set of doors that meet in the middle. A trigger mechanism is adjusted to allow smaller animals to pass over without falling in the trap but when an animal with sufficient weight passes over, the doors fall open and the animal slides down the doors onto the cushioned floor. In addition to rhinoceroses, Malayan tapirs commonly triggered the trap. The unwanted animal is easily released unharmed. When the trap is completed and set, the workers retreat to a small fly camp three to five kilometers away from the trap site. Two to three people monitor the trap on a daily basis. The fly camp is supplied via a foot path leading to the base camp located on the periphery of the jungle at the end of an old logging road allowing reliable four wheel drive vehicle support.

When a rhinoceros is discovered in a trap all available workers enter the jungle with equipment and tools needed to build a holding corral for the captured animal. Time is a significant factor in getting the rhinoceros out of the trap since it may take approximately two days to complete a corral under the best of circumstances. The corral is at one end of the trap with an alley serving as connection to the trap. Dirt is piled into the trap and the animal walks up the dirt ramp into the corral. Once in the corral a door blocks the alley keeping the rhinoceros inside. A small barn for protection and an area for a mud wallow are added as preparations are made to move the rhinoceros to another holding structure at the base camp.

The most efficient way to move the rhinoceros out of the jungle is to put it into a crate. Workers at base camp begin building a crate while others work to widen the foot path and lay wooden tracks on which the crate will be moved. It takes approximately one month to complete these tasks. The crate is fastened to a sledge with rollers and is then manually pushed on the tracks to the trap site. Meanwhile, at the trap site the rhinoceros is becoming acclimated to its captive diet of alfalfa hay, alfalfa pellets and native plants. The rhinoceros is fed in a chute, part of the corral to prepare the animal for easier loading into the crate. When the crate arrives it is firmly attached to the end of the chute. The rhinoceros is then coaxed into

the crate with food and is ready to be transported. The loaded crate is replaced on the sledge and is pushed towards the base camp.

In the moves I experienced, base camp was reached within one or two days. The animal was then released into a holding pen and health conditions monitored. It took approximately two months to coordinate the land, sea and air transport for the rhinoceroses. Transporting the rhinoceroses by truck from the base camp to Dumai took approximately eight hours. Unfortunately, Sumatran airports do not accommodate the large commercial planes needed to ship the animals, thus in Dumai the rhinoceroses were transported by ship to Singapore. It was a 26 hour voyage from Dumai, through the straits of Malacca, to Singapore. The plane trip from Singapore to Los Angeles took approximately 20 hours. On November 26, 1988 the rhinoceroses arrived in the United States and were transported to either the Los Angeles or San Diego Zoo. The rhinoceros in San Diego was released into a quarantine facility for a 30 day period where it was checked for parasites and received a routine health exam. The animal also adjusted to its new diet which consisted of alfalfa hay, alfalfa pellets and a variety of browse (acacia, hibiscus, eugenia and mulberry) and a mineral salt block. Finishing touches were made on its exhibit area which simulated its natural environment with mud wallows, trees, bamboo, grass and a pool. After the 30 day period the animal was moved to its new home completing its transition out of the jungle and into the city.

On July 8, 1988, SRT successfully captured its first Sumatran rhinoceros in Indonesia. "Dalu Dalu", a female, presented the team with a unique problem. She was captured 12 km from the base camp and had to be pushed in her crate over terrain which necessitated building of bridges across swamps and rivers. "Mahato", a female believed to be the youngest of the three rhinoceroses, was captured July 22, 1988. In transporting her to base camp a 30 m wide river had to be bridged. The first bridge was washed out and had to be rebuilt. She was not moved out of the corral and trap site until October, four months after capture. In November, she finally arrived at the Los Angeles Zoo. "Kumu", a female, trapped July 24, 1988, had to be moved only 500 m but steep hills had to be navigated. To move

her those 500 m required the use of ropes and a hand winch and took the team an entire day.

"Mahato", wintered in Los Angeles and was moved to the Cincinnati Zoo in the summer of 1989. Rhinoceroses being transported to cold weather zoological institutions will winter in Los Angeles so that they can gradually adjust to the climatic changes. "Kumu" has settled into her exhibit in San Diego and seems comfortable. "Dalu Dalu" was kept at the Boger Zoo in Indonesia and will remain there. All three rhinoceroses are in good health and are now awaiting males for breeding.

The first rhinoceros born in captivity was a Sumatran rhinoceros at the Calcutta Zoo in 1889. It has been almost 100 years since a Sumatran rhinoceros has been in the United States. Currently, there are 18 rhinoceroses in captivity a ratio of 5.13 held in eight institutions around the world. The sudden decline of this species is all the more tragic because almost nothing is known about its biology. With the environmental pressures affecting and leading to the diminishing population of the Sumatran rhinoceros, as well as continuing loss of habitat, captive breeding maybe one of the last hopes for this species.

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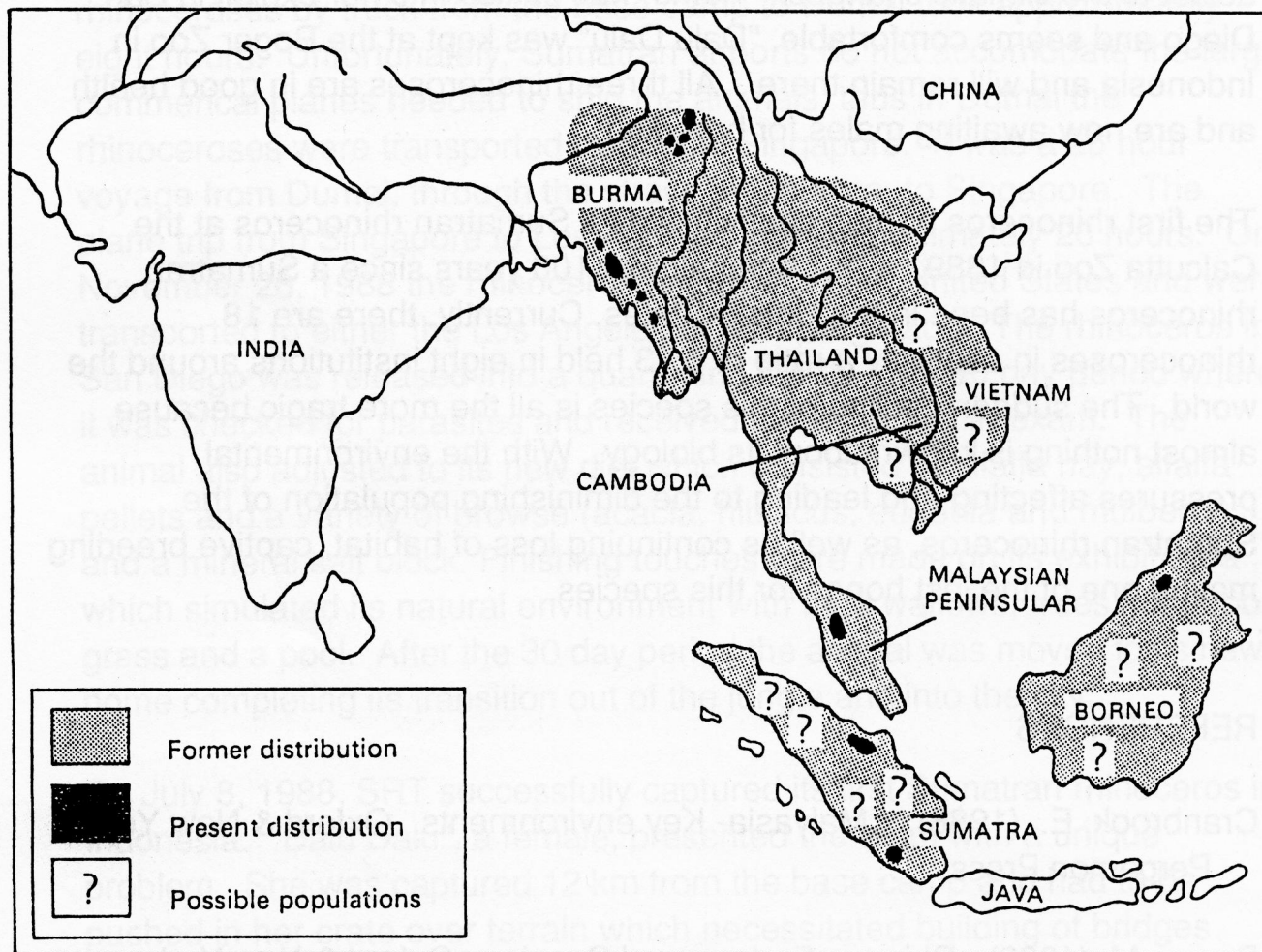
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Past and present distribution of the Sumatran rhinoceros