
THE SUMATRAN RHINOCEROS IN KALIMANTAN, INDONESIA: ITS POSSIBLE DISTRIBUTION AND CONSERVATION PROSPECTS

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INTRODUCTION

The Bornean rhinoceros (*Dicerorhinus sumatrensis harrissoni*) is considered to be a subspecies of the two-horned Sumatran rhinoceros (Groves, 1965). Compared to the Sumatran rhinoceros of Sumatra and the Asian mainland, its teeth are smaller and its skull has slightly different proportions. The animal is also believed to be smaller and generally has longer hair (Nico van Strien, 1985; and pers. comm.).

The range of the Sumatran rhinoceros is rapidly decreasing, as hunting and the disappearance of suitable habitat have brought the species to the brink of extinction in many parts of its former range. In 1993 the total world population of the Sumatran rhinoceros was estimated at between about 400 to 550 individuals, most of them living in Indonesia and Malaysia, with some possible survivors in Myanmar and Thailand (YMR, 1993). At present, the species is listed as "Endangered" on the IUCN Red Data List of Threatened Animals, meaning that it is "facing a very high probability of extinction in the wild in the immediate future" (Groombridge, 1993). As precarious as the situation is for the mainland and Sumatran form of the Sumatran rhinoceros, the situation for the Bornean subspecies seems to be even more serious. The rhino has vanished from most of the island of Borneo, and there are virtually no populations left in the reserves.

DISTRIBUTION IN KALIMANTAN

Since 1840 the rhinoceros was known to inhabit Borneo, but agreement about its specific identity was not reached until 1895 (Rookmaaker, 1977a). It appears from historic data that, until relatively recent times, the Sumatran rhinoceros was widely spread throughout Borneo. Rookmaaker (1977b) provides a map with the rhino's approximate range in 1850, which shows that the species was still present in Borneo, except in: 1) the coastal area of northern Sarawak, 2) the Sangkulirang peninsula in what is now East-Kalimantan, 3) the southern part of what is now Central-Kalimantan,

roughly between Banjarmasin and Kotawaringin, 4) in West-Kalimantan north of the Kapuas River, or just south of it in the lower part of its course and 5) in southern Sarawak. Within the next hundred years, until approximately 1940, the Sumatran rhinoceros disappeared from most of the lowland areas of West, Central, South and East-Kalimantan.

After the surveys and literature searches which were conducted in the 1930s by Zondag (1931), Westermann (1939) and Witkamp (1932), rhino data in the scientific literature from Kalimantan became scarce. This paucity of new data was generally interpreted as a sign that the Kalimantan population had all but disappeared. Rookmaaker (1977b) stated that "I am confident that some individuals survive in Kalimantan, but probably not more than five... A few wandering individuals, or tiny remnant populations, may still occur in the upper reaches of the Mahakam, Kayan and Bahau Rivers, and in northern East-Kalimantan. More information does not exist".

However, now and then, reports of sightings or signs of rhinos have appeared in survey reports or newspaper articles. Pfeffer (1958), for instance, reported the tracks of two animals in the mountainous parts of East-Kalimantan. Van der Zon (1977) and Cockburn and Sumardja (1978) reported tracks in the Banamuda area in East-Kalimantan. However, after a survey was conducted in the latter area in 1980 and no signs of rhinos were found, it was concluded that there was no viable rhino population. Further rhino sightings were reported in the Nunukan area in 1975, around Muara Teweh in 1978; and in 1981-1982, it was also reported that Sarawak hunters regularly crossed the border with Indonesia to hunt rhinos in the upper Kayan or upper Mahakam area (van Strien, 1985). Van Strien (1985) stated, based on this information, that "these reports indicate that there might be rhinos left in some forgotten corners of this vast island. If the rumours are true there might be a few rhinos left along the Kalimantan - Sarawak border, probably in upper Kayan or upper Mahakam. This needs confirmation, but the chances

that a viable population can be found in the Indonesian part of Borneo are extremely slim. The rhino is probably not extinct, but very rare”.

Probably due to a combination of this gloomy outlook for long-term conservation of the rhino in Kalimantan, limited financial means for conservation work and an extensive potential distribution range for the last surviving rhinos, no further surveys were conducted to elucidate the present conservation status of the Sumatran rhinoceros in Kalimantan.

In 1994, a survey was initiated to investigate the present distribution range of the Bornean orang utan (*Pongo pygmaeus pygmaeus*) in Kalimantan. This survey was conducted in co-operation with the Ministry of Forestry (MOF) Tropenbos Kalimantan Project, based in East-Kalimantan. As this survey was going to cover potential rhinoceros habitat in Kalimantan, it was decided to include the gathering of information on recent sightings of rhinoceros in the orang utan survey. A budget for this was provided by the van Tienhoven Foundation in the Netherlands.

This paper will provide the anecdotal reports of rhino sightings in Kalimantan, as they were recorded during the above mentioned orang utan surveys.

METHODS

The information on absence and presence of both the orang utan and the Sumatran rhinoceros has been collected in an indirect manner. Firstly, the available literature was studied, both historic and recent, on rhino distribution. This included all available recent Environmental Impact Assessment (EIA) reports of logging concessionaries and the Department of Transmigration, as well as research reports from a wide variety of exploratory sectors. Secondly, experienced field workers from a number of research projects in Kalimantan were contacted to ask about their knowledge of recent rhino sightings. Last, and perhaps most important, field surveys were undertaken in Kalimantan. The 1994/1995 surveys were executed by Meijaard, in co-operation with the Directorate General of Forest Protection and Nature Conservation (DG PHPA) of the Ministry of Forestry of the Republic of Indonesia.

Because of the wide variety of sources, it must be realised that the incoming information may have been of varying accuracy. Consequently, the information was interpreted as absence or presence only. In addition, the sources of information were divided into

classes, and the information evaluated in relation to a supposed reliability of presence statements by each class.

These reliability classes were differentiated as follows:

1.00: Actual sightings of rhinos, their tracks or other clear signs of their presence, by the author.

0.75: Sightings of rhinos, their tracks or other clear signs of their presence, reported in the literature.

0.50: First-hand information on the sightings of rhinos by persons other than the authors (mainly local people interviewed during the surveys).

0.25: Second-hand information on the sightings of rhinos, either directly reported to the authors or reported in literature.

All individual presence reports were recorded and duly supplemented with data on the source of information, the longitude and latitude of the location, the name of the location, the date of reported sighting, the estimated value of reliability and the numbers of rhinos sighted. In some cases it was impossible to provide the exact geographical location of a rhino sighting, when for instance a relatively large area was mentioned. In that case the approximate central point of the area was used as the geographical location of the sighting. The value of geographical accuracy (A) indicates how far the actual geographical location of the sighting may be located from the point provided in the text, as follows:

- 1: between 0 and 20km
- 2: between 20 and 50km
- 3: between 50 and 100km.

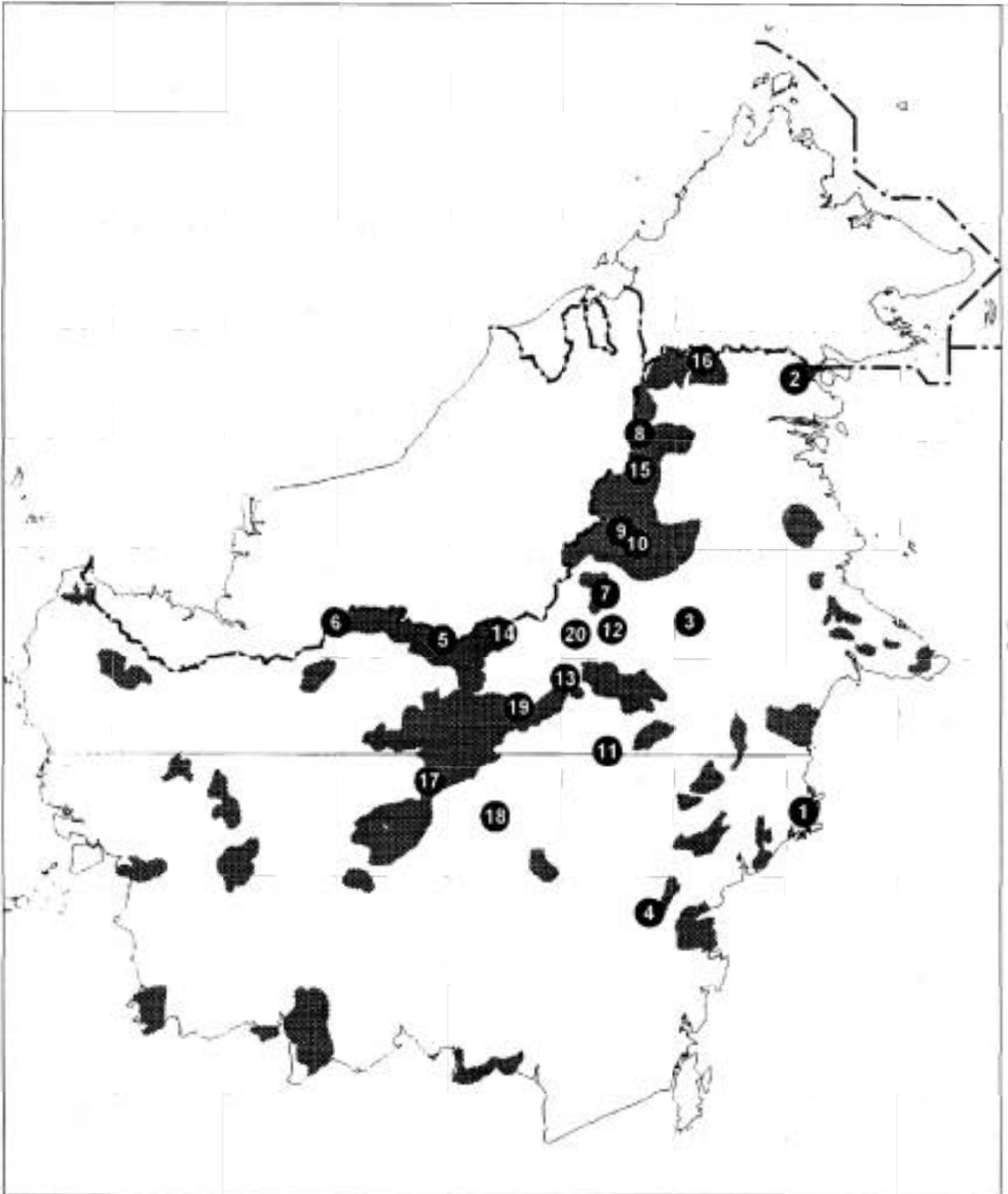
Nonetheless the resulting interpretations are not more than a very generalised indication of absence or presence of a rhino in a particular area varying between a few hundred to tens of thousands of hectares of rainforest. For the present objective, i.e. to obtain a quick, general overview of the whereabouts of remaining rhinos in order to prioritise action for survival of the species, such crudeness is considered tolerable. However, this coarse-grained picture should be refined once the priorities have been set and up-to-date information becomes available.

Information on the geographical extent of protected areas and the current forest cover is still crude (scale

1: 1,000,000). It was obtained from the World Conservation Monitoring Centre (WCMC), the DG PHPA, and the Tropical Ecosystem Environment Observation by Satellites (TREES) Project.

RESULTS

The estimated reliability of each report is expressed by the value of reliability (R), while A is a measure



A map of Kalimantan in Indonesia, showing the sites of rhino presence reports. The shaded areas represent the proposed and existing protected areas in Kalimantan.

for the geographical accuracy of a reported sighting. The author saw no rhinos or signs of rhinos, so none of the reports were classed as R= 1.00. The map shows an overlay of the rhino presence reports and the proposed and existing protected areas in Kalimantan. The numbers on the map refer to the rhino sightings listed below in the text.

1) Samarinda

An informant at the board of tourism heard of a rhino sighting by people in Kutai Lama (E 117.42 S 0.62) in 1993. The informant went to check it in the village, but could not verify the sighting. If information is correct there might be one or a few rhinos left in the swamp-mangrove area east of Samarinda.

R=0.25, A= 1

2) Sungai Sebuku

During a survey around the S. Sebuku (E 117.31 N 4.04) in 1994 the informants from "Plasma", a nature conservation NGO in Samarinda, East-Kalimantan, were told of encounters with elephants and very occasional ones with rhinos. The informants were also told that around S. Sebuku, Kecamatan Nunukan, rhinos were still reported by logging concessions in 1980.

R= 0.25,A= 2

3) Gunung Belayan

On his rhinoceros distribution map, Yasuma (1994) indicates one location of "information of inhabitation from hearing" at ± 20km north of Gunung Kong Botak (E 116.17 N 1.42).

R=0.25, A= 1

4) Meratus Mountains

Rhino droppings and tracks were found by an Australian geologist on a recent survey in the Meratus area (E 115.74 S 1.72). The informant used to work for the PT Kelian Equatorial Mining and accompanies gold explorations. Unfortunately, so far it has not been possible to substantiate this information further.

R= 0.25, A= 3

5) Bentuang Karimun Nature Reserve

An employee of the Agency for the Conservation of Natural Resources (SB KSDA) in Pontianak, West-Kalimantan, heard rumours from local people in the Bentuang Karimun Nature Reserve (E 113.47 N 1.22) that there were still rhinos around. Further affirmative information on rhino presence in the Bentuang Karimun Reserve came from employees of the provincial Department of Forestry (Kanwil Kehutanan) in Putussibau, upper Kapuas.

R= 0.25, A= 3.

6) Bentuang Karimun Nature Reserve

Tasker (1994) reported that "on the Kalimantan side (of Lanjak Entimau) (E 112.30 N 1.40), the rare Sumatran rhinoceros has been seen". It is unclear what the original source of information was.

R= 0.25, A= 2.

7) 5. Irun, south-east of the Apo Kayan area

In the Ulu S. Irun (E 115.25 N 1.72) rhinoceros droppings of one animal were found in 1995 by a WWF fieldworker. According to the local people in that area rhinos were occasionally encountered, and also in the same area an army helicopter pilot claimed to have seen a rhino on a river bank.

R=0.75, A= 1

8) Upper S. Bahau

On the border between Indonesia and Malaysia, Indonesian army field surveyors saw tracks of rhinos in the area up from Ulu Bahau (E 115.62 N 3.45). Elephants were also reported to occur in this area.

R = 0.25, A= 2

9) Ulu S. Iwan in Apo Kayan

In the area between Ulu S. Punjungan, Ulu S. Iwan and Ulu S. Lurah (E 115.48 N 2.38) the "sightings" of three rhinos, or their signs (it is unclear if animals were actually seen), were reported by "geharu" (*Aquilaria malaccensis*) collectors.

R=0.25, A=2

10) S. Kat

Rhino tracks were found between the headwaters of S. Punjungan and S. Kat. (E 115.58 N 2.27) close to Apau Napu in 1988. Informants were pretty sure that footprints were made by a mother and calf.

R= 0.25, A= 2

11) Bkt. Buringajok

In 1985, a rhinoceros was killed in the Bkt. Buringajok area (E 115.28 N 0.03) close to the border between Central and East-Kalimantan. According to the informant, a Dayak from Damai in the Melak region, rhinos are not hunted anymore now that there is a law against this. It is unclear if rhinos still exist in this area.

R= 0.25, A= 1

12) S. Boh, close to Kubu Long Bakung

The informant himself saw one poached rhinoceros around S. Boh (E 115.33 N 1.33) (tributary of S. Mahakam) and he saw tracks of two rhinos, in the years between 1969 and 1972.

R = 0.50, A = 2

13) G. Bntuajau, East-Kalimantan

In 1986 the informant from the Dayak Uma tribe in Batu Majang (Long Bagun), clearly identified rhino tracks and droppings in a pass between lime stone rocks on G. Batuajau (E 114.82 N 0.80).

R=0.50, A= 1

14) Upper Kapuas, West-Kalimantan

Several accounts were collected from people in Putussibau, upper Kapuas, West-Kalimantan (E 114.00 N 1.25), as follows:

Rhinos are possibly still present in the Ulu Kapuas area; in the mountains upstream from Putussibau “geharu” collectors sometimes see their tracks. They are still being hunted for the medicinal and ornamental value of their horns.

In the 1950s and 1960s, there were several Chinese and Dayak people who were specialised rhino hunters. Several rhinos were shot in the vicinity of Putussibau. Now people never, or hardly ever, go out to look for rhinos.

In the 1960s and 1970s, people from the Ulu Kapuas were still hunting rhinos in the mountains, but now they report that because rhino products cannot be sold anymore, they have stopped looking for them. Also as a result of other work in the area (logging, gold mining, bird nest collecting), people are less willing to spend months in the forest looking for rhinos.

R=0.25, A=3

15) Apau Ping

In the Ulu Bahau area (E 115.62 N 3.05) a WWF official was told of the presence of rhinos. No further information available.

R= 0.25, A= 2

16) Ulu Sembakung

A “few” rhinos were reported to exist in the Ulu Sembakung Nature Reserve (E 116.30 N 4.23) (YMR, 1994).

R = 0.75, A = 2

17) Ulu S. Ketiagan and Ulu S. Kahayna

Rhinos were supposed to be present in 1987 in the area east of Bukit Raya, between Ulu S. Ketingan and Ulu S. Kahayan (E 113.33 S 0.30). However, the story is rather vague with indirect information.

R = 0.25, A = 3

18) Ulu S. Barito km 30 PT Tunggal Pemennag (now PT KTC)

An informant saw foot prints the size of a food plate in 1984, which he assumed to be of the rhinoceros. He clearly described the shape and three toes that were visible in the print. (Location: E 114.05 S 0.68)

R= 0.50, A= 3

19) Dudson *et al.* (1990) reported the following: “Sumatran rhinoceros and banteng were both rumoured by local people to occur to the north-east of Barito Ulu (E 114.31 N 0.49). While these reports are best treated with extreme caution, it is worthwhile recording them, considering the critical global status of these species”.

R = 0.25, A = 3

20) S. Boh, S. Merasah (east of Long Pahangai)

A former inhabitant of this area (E 114.93 N 1.28) claimed that rhino tracks were quite often found there in 1969. However, he was not aware of reports of actual encounters with the rhinoceros.

R = 0.25, A = 4

DISCUSSION

The paucity of reported rhino sightings during this survey may be for two different reasons. First, the survey was designed for gathering information on the distribution patterns of orang utans, and not specifically for information on rhinos. While orang utan density generally declines precipitously with increasing altitude, rhinos now seem to be restricted to mountainous areas. This implies that a relatively large amount of survey time was spent away from potential rhino habitat, limiting the amount of information that could have been gathered. Second, rhinos are rare in Kalimantan and information on the abode of this elusive animal is hard to obtain. In addition, rhinos are still highly valued as an illegal hunting trophy in Kalimantan, and therefore people may be less enthusiastic about sharing information on the animals' whereabouts.

Kayan-Mentarang

The results of the survey indicate that the present rhino population is probably concentrated in and around the 1.6 million hectares of the Kayan-Mentarang Reserve in East-Kalimantan. Inside the Reserve there are probably two important areas:

- 1) the headwaters of the S. Bahau in the G. Latuk (1850m) and Bkt. Kalung (1724m) areas.
- 2) the Bkt. Tikung (1 804m) range in the upper reaches of the Kat, Iwan and Punjungan Rivers. The forest is relatively undisturbed, but "geharu" collectors are active in the area, which implies a potential threat to the population as these are often the people who track down the rhinos.

The Kayan-Mentarang Nature Reserve is currently the focus of a WWF community-based management project to review existing boundaries. MacKinnon (1988) remarked that "the Reserve, as gazetted, exists only on a map - no boundaries are marked on the ground and indeed, maps of the area are rather inadequate and often wrong. The long, thin shape of

the Reserve and its huge size make it impossible to manage, even if staff were to be sent into the field. Within the Reserve boundaries are numerous old settlements and "ladang" lands - these should be excised". He further stated that "the Kayan-Mentarang Reserve adjoins Pulong Tau in Sarawak and the Maliau basin in Sabah. The adjacent Maliau basin is still known to have a small resident population of rhinos, as does the adjoining Baram basin in Sarawak". MacKinnon did not find any direct evidence for the presence of rhinos in the Kayan-Mentarang Reserve.

Up until now the WWF project has not investigated the presence of rhinos in the Reserve. No extensive mammal surveys have yet been conducted, nor have there been any attempts to pin-point the remaining rhinos in the Reserve by indirect data collection. The reasons for this are twofold: WWF personnel do not believe that rhinos are present in the Kayan-Mentarang area because the rumours about rhinos are considered unreliable and secondly, if any rhinos exist within the Reserve, they suggest that it would be better to leave them alone because surveys would only draw the attention of rhino hunters. The second point should be carefully considered. Would a possible rhino population benefit from the increased attention generated by conservation attempts? How should these conservation attempts be directed in order to avoid negative effects?

The author still suggests that surveys be conducted in the two above-mentioned areas in the Kayan-Mentarang Reserve, in order to establish the present conservation status and survival chances of the remaining animals. This should be done as soon as possible, preferably in a secretive way and in cooperation with reliable people. The outcome of these surveys should indicate if there is a viable population and if so, what kind of future activities would be needed to improve its protection.

Bentuang Karimun

The presence of rhinos in the 600,000ha Bentuang Karimun Nature Reserve could not be substantiated as reports were contradictory. However, rhinos were hunted in the upper Kapuas area until quite recently. Furthermore, the Bentuang Karimun area is virtually uninhabited and recent satellite imagery shows that its forests are more or less untouched. The area is almost exclusively visited by "geharu" collectors who tend to penetrate into the most remote corners and are likely to track down any remaining rhinos. It is

interesting to note that professional hunting in the area apparently has stopped since the 1970s, because the density of the remaining animals became economically too low to sustain the hunters, and other more rewarding activities were developed. This may mean that hunting pressure for the remaining rhinos, if any, is currently low. The Bentuang Karimun Reserve is going to be part of a WWF management project from 1995 onwards.

S. Irun/G. Belayan/S. Boh

Four different sources mentioned the presence of rhinos in the area of G. Belayan, among which the reported finding of tracks and faeces in upper S. Irun was thought to be reliable. The S. Irun report came from the area of the proposed Apo Kayan Reserve. It is unclear if this population or individual is in any way connected to the rhinos which were reported around the very remote G. Belayan. The areas of S. Boh and S. Kayaniut on the west side of the G. Belayan complex are inaccessible because of the many rapids on the rivers and the quality of the (mostly heath) forest, which provides travelers with very few forest products. Consequently, the density of the human population is low with only a few villages in a large area.

Ulu Sembakung

The proposed 500,000ha Ulu Sembakung Nature Reserve was reported to contain Kalimantan's only wild populations of elephants and possibly rhinos (MacKinnon, 1981). YMR (1994) mentions that a few rhinos occur in this proposed reserve, but it is unclear which source of information has been used.

G. Meratus

The supposed sighting of rhino signs in the Meratus Mountains has not been substantiated and a request for further information has remained unanswered. The exact location of the sighting was a guess, because there is a mountain named G. Meratus and a mountain range named the Meratus Mountains. These two possible location sites could therefore be as far apart as 200km. Supposedly, there are photographs available of the reported tracks and faeces, but so far these have not been obtained.

Bkt. Batuajau/S. Murung

A few rhinos may still roam the mountains between Central and East-Kalimantan and also between Central and West-Kalimantan. Several reports of rhino

sightings came from this large area but none of the reports were very convincing. This large, mountainous area consists mostly of Protection Forest, and therefore threats of habitat destruction are negligible. However, a lot of people move through these forests in search of "geharu", edible swifts' nests and other forest products, which may constitute a potential threat to any surviving rhinos.

RECOMMENDED ACTIONS

- 1) Conduct initial small-scale rhino surveys in the following areas (which are listed in accordance to decreasing priority of action):
 - upper S. Bahau
 - upper reaches of the Kat, Punjungan and Iwan Rivers
 - Ulu Sembakung Nature Reserve
 - G. Belayan/S. Boh/S.Kayaniut
 - upper S. Irun
 - S.Sebuku area
 - the eastern part of Bentuang Karimun
 - G. Meratus
- 2) Based on the initial surveys, select the areas where the highest densities of rhinos are expected to occur, and conduct more detailed surveys in order to indicate local densities and distribution range. These surveys should use the standardised methods recommended by the IUCN/SSC Asian Rhino Specialist Group (Tom Foose, pers. comm.).
- 3) Decide whether there are enough rhinos in a population to withstand the combined effects of demographic, environmental and genetic chance events, based on Minimum Viable Population estimates.
- 4) Decide whether the *in situ* protection of the selected population of rhinos is feasible, and if so produce a management plan for implementing protective measures.
- 5) Take the necessary steps to provide long-term protection for the selected populations of rhinos.

CONCLUSIONS

Recent reported sightings indicate that the Sumatran rhino is still present in Kalimantan. Although the reports vary in accuracy and reliability, a cautious conclusion may be that since 1985 at least some 20 rhino sightings, including that of one young rhino,

have been reported in Kalimantan. The killing of a rhino was reported twice. The rhino sightings imply that the remaining animals are spread out over the most mountainous and remote areas of Kalimantan. The present distribution range of the Sumatran rhino in Kalimantan most likely includes the Ulu Bahau area and the southern region of the Kayan-Mentarang Nature Reserve, the Ulu Sembakung Reserve, the S. Sebuku area, possibly the Bentuang Karimun Reserve in the Upper Kapuas area, the area south of Kayan-Mentarang, towards Central-Kalimantan, the Ulu Barito, Ulu Kahayan and Ulu Ketingan areas in Central-Kalimantan and possibly the Meratus Mountains in East and South Kalimantan.

The author was surprised to find several indications of the presence of rhinos, and although some of them may be unreliable, more rhinos may remain in Kalimantan than was previously assumed. However, an optimistic attitude for the future of the rhino may be premature, because the remaining rhinos face an uncertain future with an expected increase in human encroachment, habitat perturbation and fragmentation. Unless some drastic measures for improved protection of the species are enforced, the disappearance of the last remaining rhinos of Kalimantan may just be a matter of time.

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