

**Preliminary Report**  
on the  
**Current Status of Sumatran Rhino**  
in  
**Bengkulu Region**  
of  
**Kerinci Seblat National Park.**

Based on work by Sumatran Rhino Survey  
between August 1992 and October 1993.

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**The following document is not an official report of the work  
of the Sumatran Rhino Survey Project, but has been put  
together exclusively for the purposes of the  
Sumatran Rhino PHVA at this workshop.**

**Bandar Lampung, November, 1993.**

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## ABSTRACT

The Sumatran Rhino Survey project has been operating in the Kerinci Seblat National Park over the last 16 months. From the beginning of this period the objectives have included an assessment of the current status of the Sumatran Rhino within this national park, as well as an investigation into the poaching intensity on the remaining population. To achieve these ends a two-phase approach to surveying has been employed. Initial work has concentrated on the Bengkulu section of Kerinci Seblat, accounting for 2440 of the total 12165 square kilometres of national park.

In the first phase, a Permanent Study Site was mapped and monitored, covering an area of 220 square kilometres. A permanent presence was maintained in this study site from February to November of this year (typical field times ranging from 10 to 34 days), and the intensity of the patrolling has resulted in a total of two rhinos being identified as living within the region. Trapping was also found to be common, and a total of 23 traps, of various ages, were discovered during the 8 months work within this study site.

The second phase required the surveying of several other areas within the Bengkulu section of the Kerinci Seblat National Park, survey methodology designed to allow the largest area to be investigated in the shortest time possible. Typical survey field-times ranged from 8 to 14 days, with all data collected in the field recorded in comprehensive survey reports. The evidence of rhino encountered within these external survey sites has enabled the categorisation of the external survey sites as having rhino densities equivalent to, better than, or worse than, that found from the Permanent Study Site.

Integrating work from the Permanent Study Site, the external surveys, and information from other sources (e.g. physical map data, land use data, local knowledge, park staff knowledge, etc.) has led to the assigning of rhino densities to the Kerinci Seblat region found within Bengkulu Province. In the calculation of the size of the remaining population several scenarios have been tried, differing in the way they treat the areas as yet unsurveyed.

However, the preferred scenario is based on an inferred core region of rhinos, covering approximately 1250 square kilometres of the province. All evidence collected over the last 16 months suggests that this is a correct assumption. Hence, for the Bengkulu section of the Kerinci Seblat National Park, it is suggested that approximately 17 rhinos presently exist there whilst, by direct extrapolation, the total Kerinci Seblat National Park has a population of approximately 83 individuals.

**Considering this in combination with data from the second most likely scenario, the Sumatran Rhino Survey project suggests that the range of 80 to 100 individuals be considered as the present population size for the Kerinci Seblat National Park**

## I. Introduction - Sumatran Rhino Survey.

The Sumatran Rhino Survey is a small, independently funded group dedicated to the study of the current status of the Sumatran Rhino (*Dicerorhinus sumatrensis* (Fischer, 1814)). The project commenced field-work in August of 1992, in the Taman Nasional Kerinci Seblat (TNKS), working jointly with:

LIPI (Indonesian Institute for Science - Puslitbang Biologi), and in cooperation with

Dit. Jen. PHPA (Directorate of Conservation),

Litbang Hutan (Forestry Dept.), and

Menteri Negara LH.

The team operates with support of The Royal Geographic Society,  
Save the Rhino International,  
London Zoological Society,  
several large companies, and many private individuals.

The work carried out by the project during the initial phase has involved:

- An investigation into the current status of the Sumatran Rhino in the Taman Nasional Kerinci Seblat, Sumatera, Indonesia.
- An investigation into the threats to the Sumatran Rhino population in this area.
- Consideration and formulation of possible management strategy alternatives for this population.
- Provision of other related ecological, biological and socio-economical data, about the TNKS, to the head of the Park management staff.

Within these broad goals, the project team also examined a number of other factors. These included (i). the disincentive effects, on local people, from entering a continually monitored study-site, (ii). the collection of distribution data on other species, especially Sumatran tiger (*Panthera tigris*), (iii). destruction of active rhino traps and, (iv). the noting of park areas under particularly intense pressure from external influences.

Finally, throughout the surveying work of the last 16 months, special consideration has been invested in the formulation of possible future ecological study programmes for the Sumatran rhino. The lack of ecological information on the species remains a considerable hurdle in the construction of sensible conservation strategies, and this project has been looking at the feasibility of a number of alternative ways of increasing this essential knowledge.

## II. The Taman Nasional Kerinci Seblat

The Taman Nasional Kerinci Seblat (TNKS) is distributed throughout four of the southern and central provinces of Sumatra. The park area within the province of Bengkulu accounts for approximately 2440 square kilometres of the total 12165 square kilometres. This 2440 square kilometres represents some of the prime rhino habitat for the Sumatran rhino, in that it is, in most parts, further from settlements, logging concessions, resource exploitation, and other disturbances, than the majority of the National Park contained within the other three provinces. It is for this reason that the Sumatran Rhino Survey decided to concentrate on this area in the initial phases of the programme.

The TNKS in Bengkulu province represents much of the core of the mountainous rainforest habitat available to the Sumatran Rhino. It forms a strip of forest running approximately from NW to SE, along the provinces eastern border with Jambi. Altitude ranges from 50 metres to over 2000 metres a.s.l., and represents the water catchment areas for numerous large, and vital, river systems. These include the Ketaun, the Ipuh, the Seblat, the Dikit, the Bantal, and the Menjuntio; rivers upon which Northern Bengkulu's population depend. The main road runs parallel, and close, to the coastline, though there are an increasing number of roads that enter into the interior of the province, whether this is to access logging concession areas, to access plantations, or to reach the numerous transmigration villages that have been developed over the last ten years. Frequently these various projects run very close to the national park boundary, though an advantage has been that they have enabled the survey teams to reach, using a 4 WD vehicle, the border of the TNKS relatively easily. These entry avenues have, on the other hand, made the national park open to exploitation by various groups, as discussed in Section VIII - "Poaching intensity and disturbance in TNKS Bengkulu".

Throughout the last 16 months the Sumatran Rhino Survey teams have concentrated on accessing a variety of forested areas throughout the province, including areas outside of the park (though these details have been omitted from the analysis and interpretations that follow later on in this report). All survey work in the province has been coordinated from the team's headquarters at Agro Muko plantation, 15 kilometres south of Muko Muko. Agro Muko is situated on the coast approximately equidistant from the towns of Padang (to the north) and Bengkulu (to the south). The headquarters is equipped with HT radio, allowing continuous contact with survey teams, as well as HF radio, allowing contact to be maintained with PHPA offices, Taman Nasional central office and the Permanent Study Site Base Camp. From the headquarters in Agro Muko it is possible to reach the border of 90% of the Bengkulu section of TNKS in an average of 3 hours travelling time, and this base is central to the entire eastern section of the national park.

The access path to the Permanent Study Site (discussed in more detail in Section III and IV) is situated some 2 hours drive from the Agro Muko Headquarters, followed by a two day trek from the final drop-off point. The Permanent Study Site (P.S.S.) itself accounts for approximately 220 square kilometres of N.P., and covers an area between the TNKS boundary and the Jambi-Bengkulu border. It encompasses the water catchment area of the Bantal, the Berau, and the Dikit rivers, and altitude ranges from 122 metres to 1375 metres a.s.l.

Map D., on page 15, shows the Kerinci Seblat National Park. The south-west province of Bengkulu represents the area in which the surveys, described below, have been carried out.

### III. Working Strategy for the Last Year

With the primary objective of the team being to assess the status of the Sumatran Rhino in the TNKS the strategy of operation was formulated. Bengkulu province was chosen as an initial site of study, for the reasons outlined in Section IV. However, the ever-present constraints imposed by time and lack of resources forced us to further modify survey methodology. In an ideal world, of course, the most accurate method would be to systematically visit all areas of the TNKS in Bengkulu. This was clearly unfeasible, since the team had no access to a helicopter, and only one vehicle. For this reason, a two-phase approach was considered to be appropriate, and this is described below.

Initially, the team spent considerable time selecting an area that represented a very typical section of TNKS within Bengkulu, though in choosing the site we did our best to find an area remote from settlements known to be active in entering the forest. This proved difficult, though a region of 220 square kilometres was finally chosen, situated between the Bantal Kiri and Bantal Kanan rivers (the geographical position of this region is described in the previous section, and results from the area are discussed in Section IV). Once the area had been confirmed as a suitable site a Base Camp was established in the centre of the region, with radio facilities allowing communication with the forest exterior. This base camp allowed the team to keep a permanent stock of food items, and other logistics, enabling surveying teams to stay within the locality for greatly increased lengths of time. These periods within the **Permanent Study-Site (P.S.S.)** ranged from 2 weeks to 5 weeks and this Base-Camp, used as a "stepping-stone", allowed the teams to penetrate deep into the National Park. On several occasions the survey teams were able to access as far as the Bengkulu-Jambi border. The continual presence of team members in the area, between February and November of this year, also had a significant effect in deterring intrusions by people intending to enter the forest.

From February of 1993 this P.S.S. area has been patrolled constantly. It was the teams intention to move through as large an area as possible, systematically noting all evidence of use of the region by Sumatran rhino. With sufficient patrolling intensity it was suggested that a reasonably accurate estimation of the numbers of rhino inhabiting the P.S.S. could be made. In the end the team has spent a total of 115 days on patrol in the P.S.S., covering approximately 240 kilometres of trail. Towards the end of September this system of patrol routes was further extended in the desire to thoroughly cover an even larger area. All wallows, signs of feeding, hoof prints, scrape marks, tree twists, and dung piles were recorded, and this detailed information can be found in the comprehensive set of individual P.S.S. survey reports that have been produced.

Naturally it is not possible to spend equivalent amounts of time in all areas of Bengkulu TNKS, thus a different approach was used to survey regions outside of the P.S.S. In these other areas, teams of 4 to 5 people were driven to the nearest access point, frequently a logging road, or transmigration village. From there the teams would depart on foot, carrying all provisions and equipment for between 8 and 14 days in the forest. Radio contact would be maintained with the HQ in Muko Muko, allowing the 4WD vehicle to pick the surveying team up at their exit point, towards the last day of that survey. Accurate communication of the teams' position has been enabled by the use of G.P.S. hand-held units, accurate maps, and a GRID reference system. All team movements can, as a result, be monitored from the HQ; and latitudinal/longitudinal positions verified upon exit from the forest.

During these surveys outside of the P.S.S. similar methods were used. All evidence of rhino within an area were noted, including all associated physical, meteorological, chronological and biological details. All the information from these surveys has been written up into full, and detailed, field-reports - including accurate maps - showing survey routes and positions of field-observations. This approach has been used so as to enable the repetition of surveys at a future date, thus allowing comparison of regions over a period of elapsed time.

Finally, the team has attempted to procure as much information as possible from local sources, including knowledgeable villagers, from gahru foragers (a valuable, aromatic and woody substance used in the perfume/incense industry), from PHPA staff, and from other staff involved in TNKS management.

Using the detailed work from the P.S.S. in conjunction with survey patrols external to this area, and with the information collected from other sources (as outlined above), it has been possible to construct a map of the present distribution of Sumatran Rhino in Bengkulu. This has allowed more accurate analysis of the species' present status within the province and, by extrapolation, with the TNKS taken as a whole. The interpretation of this distribution and inferred density map is discussed in more detail in Section VI

It was a concern, initially, that the survey teams were missing evidence of rhinos in the field. The work from the P.S.S. has, on the other hand, suggested that this is not the case, and that the intensity of the surveys in TNKS Bengkulu is, indeed, sufficient to discover whether a region has either no rhinos, a low density of rhinos, or a high density of rhinos. The value of the Permanent Study Site has been that it has allowed the team to assign a high degree of confidence to the results of the surveys in other areas of Bengkulu, having established that the survey methodology employed does indeed provide good indication as to the "quality" of a rhino area. The survey methodology has also been found sufficient to assess the poaching and intrusion threat for a particular area. Further discussion of these topics can be found in Section VIII - **"Poaching intensity and disturbance in TNKS Bengkulu"**

#### **IV. Summary of Survey Work in the Permanent Study Site.**

The reasons for the choice of the Permanent Study Site have been outlined above, but can be summarised as follows:

- It appeared to be an area at the core of the National Park, situated at a greater distance from villages, and other sites of potential disturbance, than many other comparable regions.
- Initial exploratory surveys showed no evidence of rhino trapping
- The area appeared to have a diverse fauna, an ideal flora, and suitable topography - factors again suggesting relatively little disturbance, and providing seemingly appropriate conditions for rhino habitation.

- Physical factors within the area were typical for much of the T.N.K.S., hence deemed to be representative of a wider area. Nothing has since suggested that the Permanent Study Site is anything but a fairly standard region of the National Park, at least for the factors that were investigated.

Beginning in February of 1993, the P.S.S. has been constantly monitored, with survey teams, over time, pushing out to investigate the surrounding area as far to the north and east as the Bengkulu-Jambi border allowed. Survey routes, frequently patrolled several times, were eventually extended to a total length of 220 kilometres, achieved after 115 days in the field. This comprehensive and systematic covering of such an area is suggested to be sufficient to estimate the approximate number of individual rhinos using the region, with the regular revisiting of locations increasing the likelihood that no individuals were missed.

All signs indicating presence of rhino were recorded, and these have been entered into the map (Map A.) of the Permanent Study Site shown overleaf.

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In summary, the Permanent Study Site was found to be almost completely devoid of Sumatran rhino. In all, evidence exists of 2 individuals within the area, though 1 of these animals probably spends a significant part of its life outside of the T.N.K.S. boundary. This has been ignored.

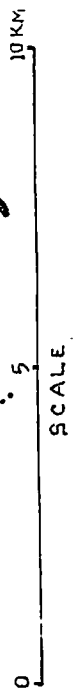
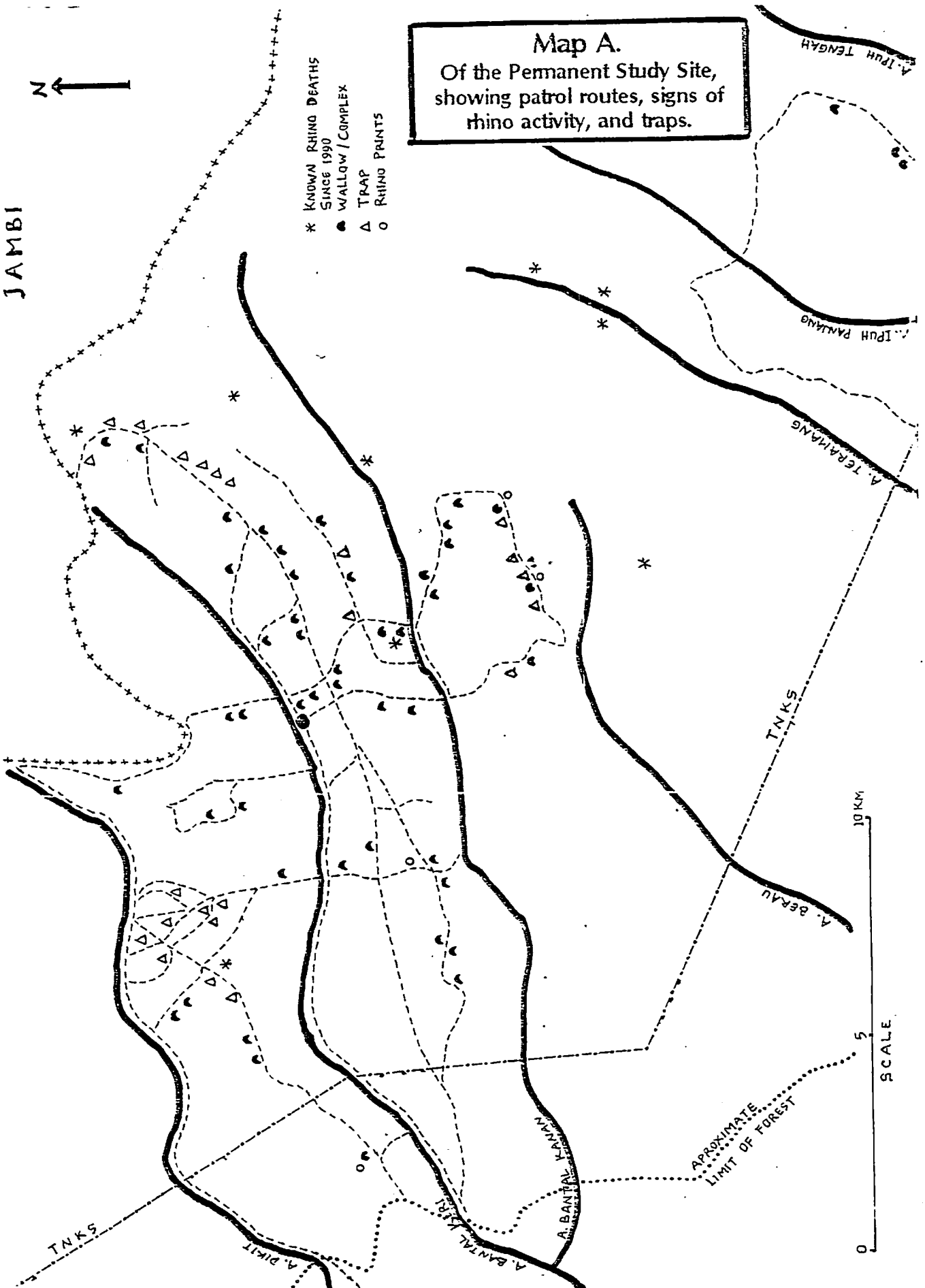
In only a small proportion of the P.S.S. were good quality rhino paths seen, though throughout the study there was little evidence of recent use of these trails. This was thought to be unusual until an area of intense trapping was discovered (traps approximately 6 months old), clearly removing virtually all the rhinos that had previously frequented that particular locality. Surveying of the surrounding area showed no signs of recent use, and all wallows were found to have been inactive for some considerable time. A second area was also discovered to contain numerous traps, though the ages of these were considerably older (approximately 2 years old). Furthermore, conditions of the rhino paths running through this area were in an overgrown and generally unused state, quite different from the recently poached section that was found initially. Obvious differences were the lack of wear marks on trail-side tree-trunks, a characteristic of the recently poached site. Trap construction, however, was almost identical in both cases, and it is likely that a single group of poachers has managed to systematically remove virtually all rhinos from the locality in, what appears to have been a two-phase operation. A third region was then discovered to have been systematically trapped, and the ages of these traps again ranged in age from 6 months to 3 years or more. Only one other area within the P.S.S. had rhino trails of such good quality, though again evidence of trapping was found (5 traps). However, observations suggest that this small section of trail is still used by rhino. Total area trapped, accounting for approximately 18 kilometres of trails, represents the only regions within the P.S.S. that have had, at some time in the recent past, a density of rhino perhaps comparable to that found in some areas of Taman Nasional Gunung Leuser during the long-term field study of Van Strien. However, at the present time it seems that these previously good rhino areas have been reduced to a state and density resembling that of the rest of the study-site. No other areas in the permanent study site were found to have good deep rhino trail systems, whether presently in-use or long since abandoned.

JAMBI



Map A.  
Of the Permanent Study Site,  
showing patrol routes, signs of  
rhino activity, and traps.

- \* KNOWN RHINO DEATHS SINCE 1990
- WALLOW / COMPLEX
- △ TRAP
- RHINO PRINTS



APPROXIMATE  
LIMIT OF FOREST

SCALE



## V. Summary of survey work from areas external to Permanent Study Site.

The surveys outside of the Permanent Study Site are planned, ultimately, to cover the entire area of the T.N.K.S., though the huge area to be covered means that investigations of the intensity employed in the P.S.S. are impossible. Instead, the survey methodology was constructed such that large regions could be investigated in the time available. After one year the surveying of the Bengkulu component of the T.N.K.S. is almost complete. The remaining regions will require a further 5 weeks of field-work, and this will be carried out in January/February of 1994.

Surveys within Bengkulu have been carried out between August 1992 and October 1993, though the work within the P.S.S. has interfered with this at times. Altogether eight self-contained surveys were conducted, with average length of the field-periods being 11 days. The area covered was approximately 629 square kilometres, from a total of 2440 square kilometres for Bengkulu T.N.K.S. as a whole. As Map B. shows, the surveys have reached into some of the most remote regions of the national park. The surveys have usually involved following the main ridges between river courses, since all previous work has shown that such ridges are favoured by rhinos for moving from one part of their home range to another. As described above, all evidence of use of the area by rhino was noted, whether these observations indicated present occupation of the habitat, or occupation at some time in the past.

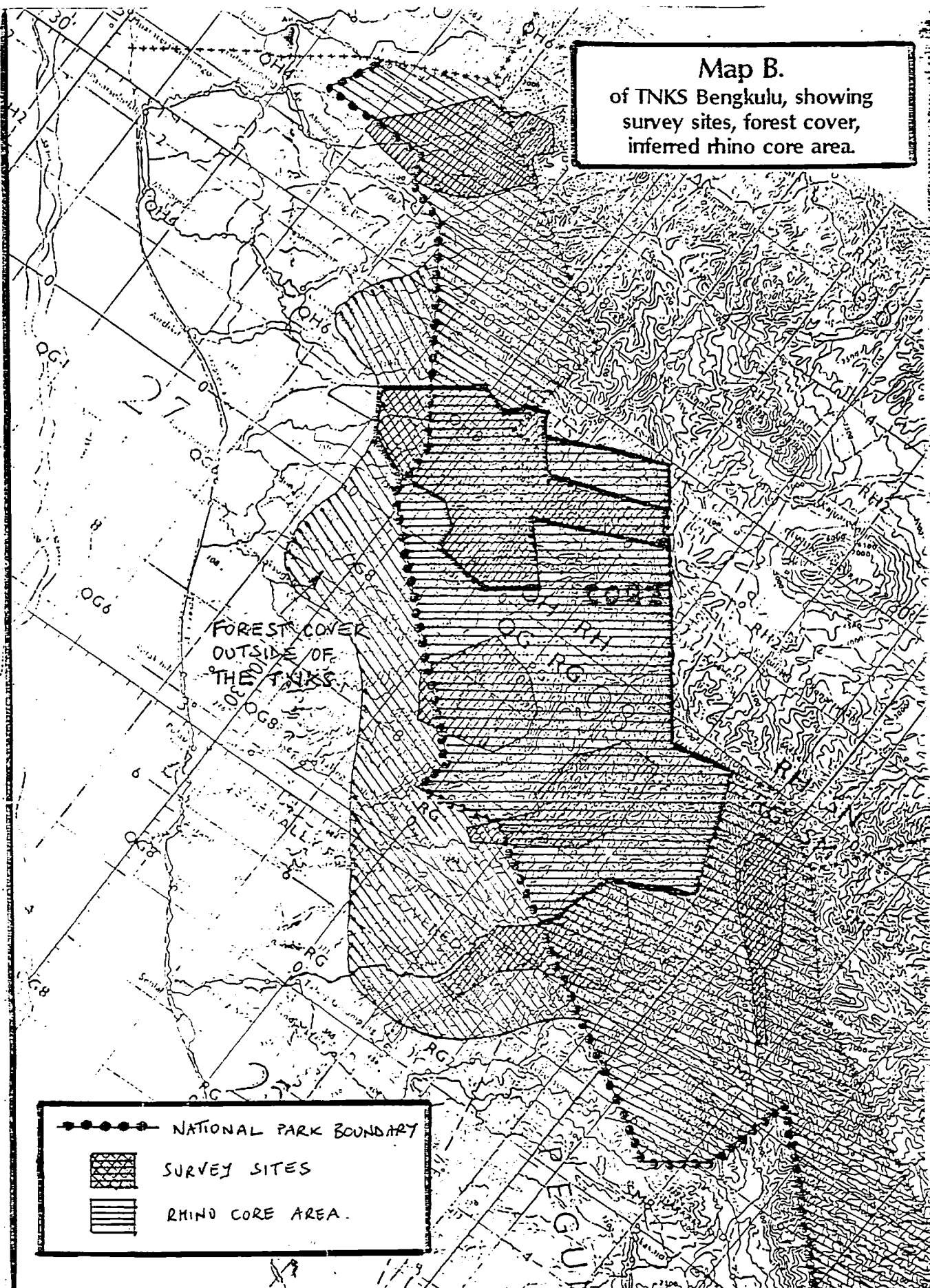
During the surveys of these regions the most basic questions were asked. Does the area show evidence of use by Sumatran rhino? Does the area appear to have a density approximately equal to, greater than, or less than the Permanent Study Site?

Surveys revealed no areas of TNKS Bengkulu with densities of rhino comparable to those found in some regions of Taman Nasional Gunung Leuser. Many areas were, to all extents and purposes, completely devoid of rhino, and it is likely that extremely intense poaching is the factor behind this. It is true to say that all of the areas which, from field observations, previously possessed good densities of rhino had been systematically and intensively poached over the last five years. Almost all wallows discovered were inactive, and many of them had been for months to years. No dung was found of age less than several weeks, and the majority was in the order of several months old. Needless to say, rhino tracks were rarely seen. Tree scrape marks, ground scrape marks, sapling twists and other marking signs were similarly uncommon. The quality of trails often suggested that these had been produced by rhinos in the past, with trees alongside the trails in some of the more recently poached regions still showing the characteristic wear marks, produced by passing rhinos. Invariably, in regions with trails of this quality, the density of traps was always extremely high. Traps were never found in areas that showed no evidence of having held rhinos in the past.



Details of the observations made during the surveys can be found in the original survey reports.

The map below (Map B.) shows the regions that have been surveyed so far. The remaining regions will be investigated in January/February of 1994.

Map B.  
of TNKS Bengkulu, showing  
survey sites, forest cover,  
inferred rhino core area.



FOREST COVER  
OUTSIDE OF  
THE TNKS.

- NATIONAL PARK BOUNDARY
-  SURVEY SITES
-  RHINO CORE AREA.

## **VI. Results interpreted from the integration of Permanent Study Site survey work and surveys external to the P.S.S.**

As outlined in previous sections of this report it has not been possible to carry out intensive long-term monitoring of all the TNKS in Bengkulu because of the enormous size of the region. The methodology used is believed to be an adequate compromise between the need to see as large an area as possible, and the need to spend as long as possible within each of these survey sites.

In the final analysis of the data collected over the last 16 months several liberties have been taken, and these must be borne in mind throughout the consideration of the results. First of all, the evidence from the Permanent Study Site indicated a total population of two individual rhinos within an area of 220 square kilometres. This gives a density of 0.9 rhinos per 100 square kilometres.

Secondly, it is believed that the Permanent Study Site proved to be a physically and ecologically representative sample of the TNKS Bengkulu as a whole. For no factor could the P.S.S. region be considered unusual, and the frequency with which signs of rhino were encountered during surveys there was not atypical of the rest of TNKS Bengkulu.

Thirdly, though the various areas surveyed were of much the same quality throughout, differences were noticeable. This has allowed an index of quality (hence rhino density, as explained below) to be allocated to each region surveyed, essentially necessitating a decision to be made as to whether the survey area had a density approximately equal to, less than, or greater than the density of rhino found in the Permanent Study Site. This qualitative question was answered by referring to a combination of the detailed field observations collected, to the poaching intensity, information collected from other sources (such as from local people known to frequently enter the forest), and geographical/physical data from available maps.

In the calculation of rhino numbers that follows two approaches have been taken. The first involves treating the regions not yet surveyed as either good quality, poor quality, or intermediate quality rhino habitats (designated zones C, A, and B). These three scenarios provide upper and lower limits for the size of the population that probably exists in TNKS Bengkulu and, by simple extrapolation, in the TNKS as a whole.

The second approach to the calculation of probable population size in TNKS is the one favoured by the Sumatran rhino Survey team. This estimation is based on the inference of a core rhino area, a conclusion itself based on survey work, geographical and physical data, poaching intensity, and human disturbance. This core region, in the calculation of the population size, is assigned a density equal to that found in the Permanent Study Site (0.9 rhinos per 100 square kilometres). The areas of TNKS Bengkulu outside this core (Peripheral area) is assigned a density of 0.45 rhinos per 100 square kilometres (half that of the Permanent Study Site). This seems a reasonable assumption, bearing in mind that many areas surveyed appeared to be completely empty of rhino. Furthermore, this density of 0.45 rhinos agrees well with recent data from the Taman Nasional Gunung Leuser taken as a whole.

The following data is used throughout the calculations:

Area of Permanent Study Site	220 square km
Rhinos identified in Permanent Study Site	2 individuals
Area of Bengkulu Component of the TNKS	2440 square km
Total area of the TNKS	12165 square km

From Map B. showing zones of rhino density in TNKS Bengkulu:

Area surveyed within TNKS Bengkulu density similar to P.S.S.	382 square km
Area surveyed within TNKS Bengkulu density less than P.S.S.	247 square km
Area surveyed within TNKS Bengkulu density greater than P.S.S.	0 square km
Area of TNKS Bengkulu as yet unsurveyed	1811 square km

From Map B. showing inferred Core and Peripheral Rhino areas in TNKS Bengkulu:

Total core rhino area within TNKS Bengkulu	1250 square km
Total peripheral rhino area within TNKS Bengkulu	1190 square km

For the population sizes calculated based on these two approaches see the tables below:

**Three scenarios for calculation of the rhino population in the TNKS Bengkulu and the TNKS as a whole.**

***Scenario A (areas unseen assigned density 0.45 rhinos per 100 square km)***

	Assumed Density (rhinos per 100 square km)	Total area of Zone in square km	Rhino population in Zone
Zone A (TNKS Bengkulu)	0.45	247	1
Zone B (TNKS Bengkulu)	0.9	382	3
Zone C (TNKS Bengkulu)	3.6	0	0
Remaining (TNKS Bengkulu)	0.45	1811	8

Total for TNKS Bengkulu 13

Extrapolated total for the Taman Nasional Kerinci Seblat 63

**Scenario B (areas unseen assigned density 0.9 rhinos per 100 square km)**

	Assumed Density (rhinos per 100 square km)	Total area of Zone in square km	Rhino population in Zone
Zone A (TNKS Bengkulu)	0.45	247	1
Zone B (TNKS Bengkulu)	0.9	382	3
Zone C (TNKS Bengkulu)	3.6	0	0
Remaining (TNKS Bengkulu)	0.9	1811	16

*Total for TNKS Bengkulu* 21

*Extrapolated total for the Taman Nasional Kerinci Seblat* 104

**Scenario C (areas unseen assigned density 3.6 rhinos per 100 square km)**

	Assumed Density (rhinos per 100 square km)	Total area of Zone in square km	Rhino population in Zone
Zone A (TNKS Bengkulu)	0.45	247	1
Zone B (TNKS Bengkulu)	0.9	382	3
Zone C (TNKS Bengkulu)	3.6	0	0
Remaining (TNKS Bengkulu)	3.6	1811	65

*Total for TNKS Bengkulu* 70

*Extrapolated total for the Taman Nasional Kerinci Seblat* 347

**Calculation of the rhino population in the TNKS Bengkulu based on an inferred rhino core area of 1250 square km**

	Assumed Density (rhinos per 100 square km)	Total area of Zone in square km	Rhino population in Zone
Peripheral Area TNKS Beng.	0.45	1190	5
Core Area TNKS Bengkulu.	0.9	1250	11

*Total for TNKS Bengkulu* 17

*Extrapolated total for the Taman Nasional Kerinci Seblat* 83

## VII. Recommendations to the Sumatran Rhino PHVA Working Group

In summary, the scenarios chosen have produced population sizes for TNKS Bengkulu ranging from 13 to 70 animals. By extrapolation, in the TNKS as a whole, this would give a remaining rhino population of between 63 and 347 animals.

However, it must be borne in mind that the highest number (347) was achieved by assigning a density of 3.6 rhinos per 100 square kilometres to all the regions in the TNKS as yet unsurveyed. This density figure has been obtained from present data on the population in the Upper Mamas of Gunung Leuser National Park. Since this probably represents the highest density of rhino existing in Indonesia, the use of this density figure is clearly unrealistic. The scenario has only been tried in order to show the inappropriateness of previous population estimates for the TNKS.

The most appropriate scenario, based on an inferred rhino core distribution, of density equivalent to that found in the Permanent Study Site, gives a TNKS Bengkulu population of 17 individuals and a total TNKS population of 83 individuals. The second most appropriate scenario, in the opinion of the team, relies on extrapolating the rhino density found within the Permanent Study Site to the entire TNKS. This gives a Bengkulu population of 21 and a total TNKS population of 104 individuals.

**It is suggested that 80 and 100 animals be considered as best estimates for the likely size of the remaining population in the Taman Nasional Kerinci Seblat. However, many areas in the Kerinci Seblat are known to be devoid of rhinos, and it is estimated that this total population size will be downgraded after survey work in 1994.**

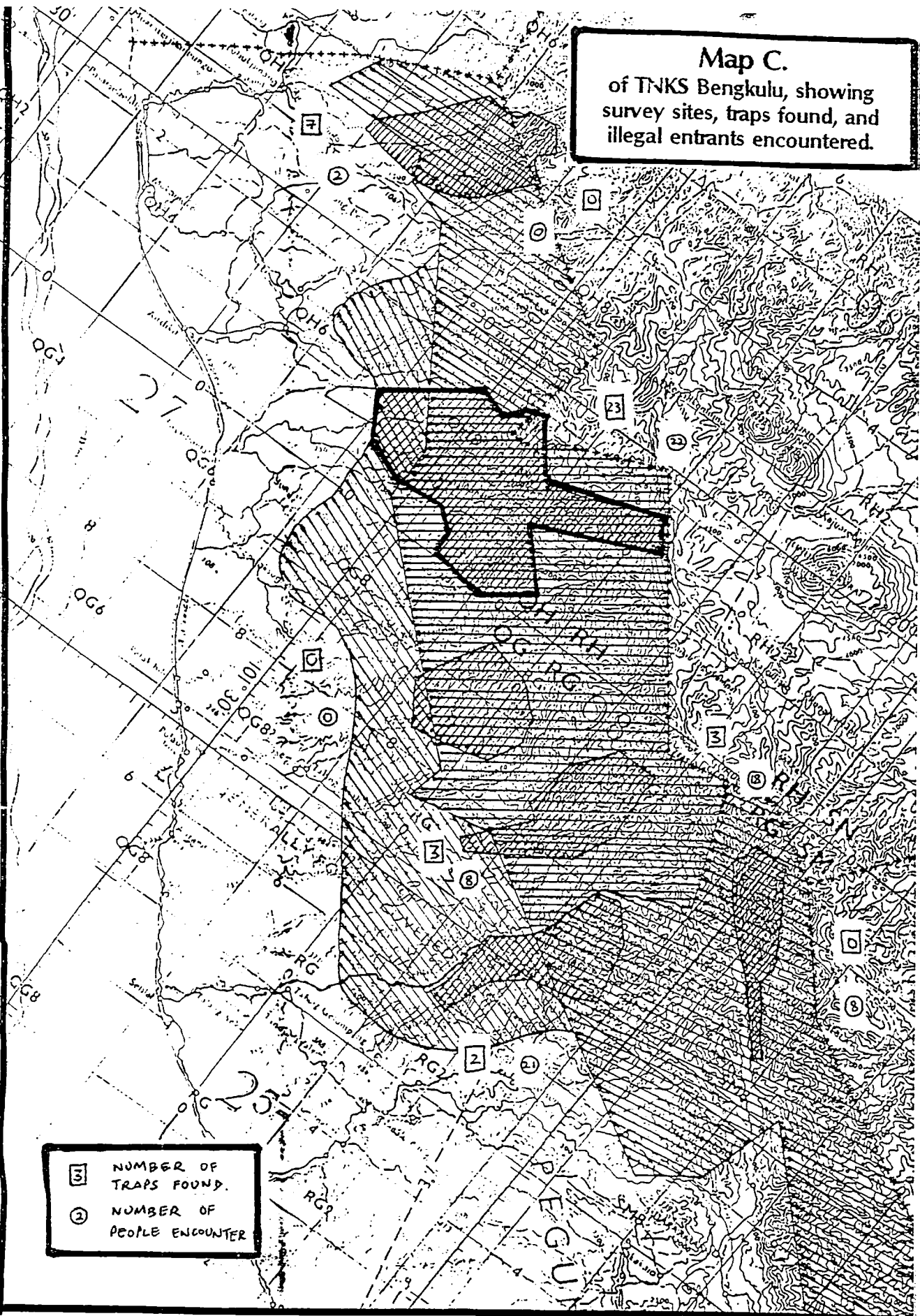
## VIII. Poaching intensity and disturbances in TNKS Bengkulu.

Poaching has already been discussed in relation to the Permanent Study Site, though surveys external to this site have consistently showed a similar pattern and intensity. As expected, absence of traps was only encountered in areas exhibiting no evidence of present, or previous, populations of rhino.

Similarly, all surveys revealed that intrusion of the National Park is a major problem. Camps are found along all rivers, even as far as the very core of the national park. People commonly enter from surrounding villages in order to collect gahru (expensive aromatic wood used in incense manufacture), rattans, wood resins; timber, gold, silver and birds' nests from caves, song-birds themselves, and primates. Hunting is common - sambar, rusa, mouse-deer, Argus pheasant and monitor lizards, amongst many other species, are often taken. Poaching of Sumatran tiger and Sumatran rhino still occurs.

The map overleaf, Map C., shows traps found in other areas of Bengkulu TNKS, as well as showing the numbers of people encountered illegally within the forest during these surveys.

**Map C.**  
of TNKS Bengkulu, showing  
survey sites, traps found, and  
illegal entrants encountered.



☐ NUMBER OF TRAPS FOUND.  
○ NUMBER OF PEOPLE ENCOUNTERED

**Map D.**  
of Taman Nasional Kerinci Seblat,  
showing province boundaries,  
and major roads/settlements.

