

SITUATION OF THE JAVAN RHINO IN UJUNG KULON NATIONAL PARK

ASSESSMENT IN MARCH 1982

AFTER THE SUDDEN DEATH OF FIVE RHINOS

Prepared by

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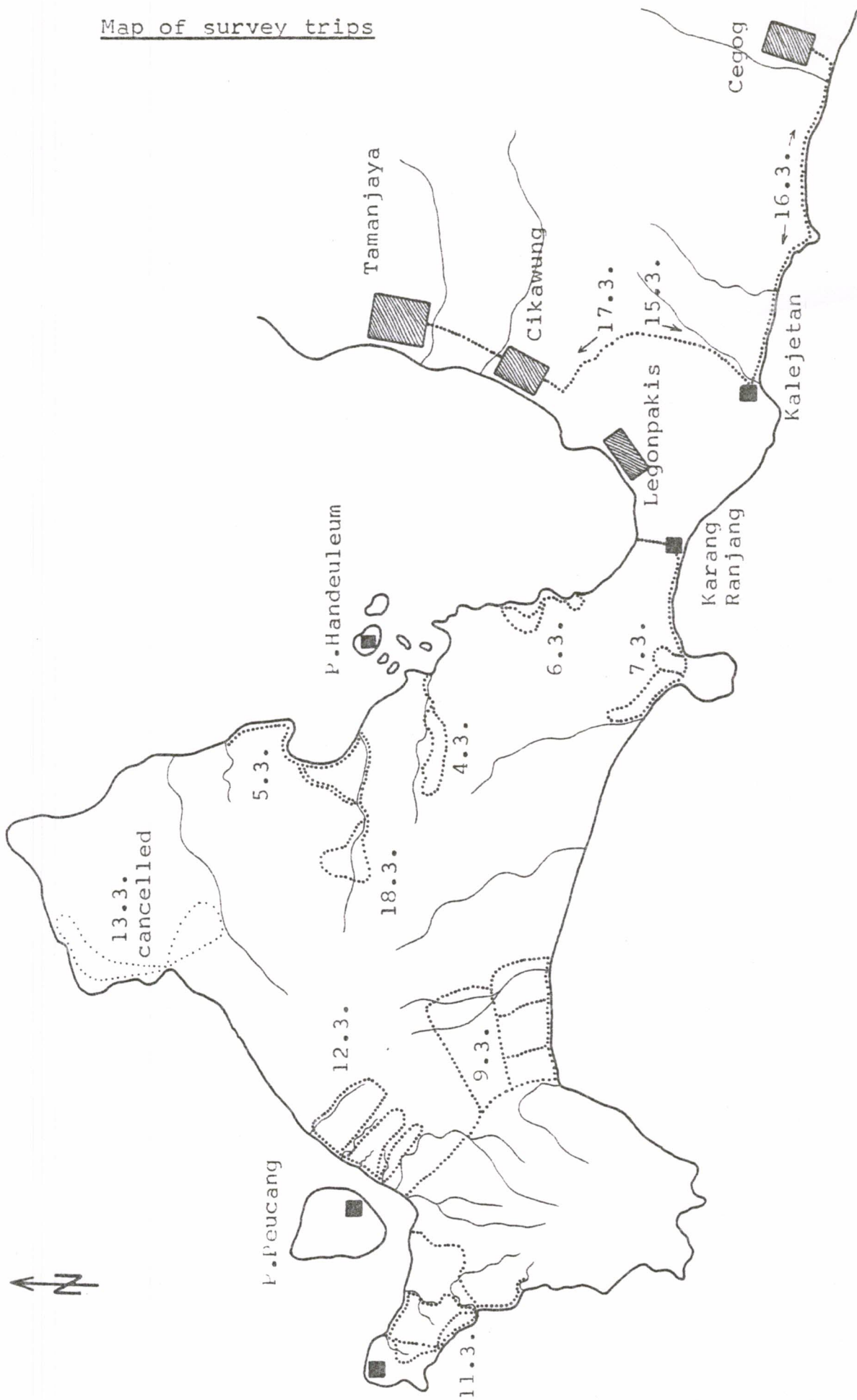
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1. TIME TABLE OF INVESTIGATION / SURVEY TRIP TO UJUNG  
KULON 2.3. - 21.3.1982

- 2.3. Bogor - Labuan
- 3.3. Labuan - Tamanjaya - P.Handeuleum
- 4.3. Survey Cihandeuleum area
- 5.3. Survey lower Cigenter - Balagadigi
- 6.3. Survey Legon Kamara - Tanjung Cakir
- 7.3. Survey Laban - Karang Ranjang - Tanjung Tereleng -  
lower Cibanawoh; examination of places where  
rhinos died
- 8.3. P.Handeuleum - P.Peucang
- 9.3. Survey of area Cibunar - Citadahan - Gunung Kendeng
- 10.3. Resting day and search for 1 group
- 11.3. Survey of area west of Gunung Payung (Cikembang -  
Boom - Ciramea - Kelapa beureum)
- 12.3. Survey of area Gunung Telanca North - Citerjun -  
Cinogar - Rora Kawung
- 13.3. Heavy rain throughout the day; survey of area  
Nyawaan - upper Cikarang - Nyur cancelled
- 14.3. P.Peucang - P.Handeuleum
- 15.3. Dr. L. Schenkel off to Labuan - Jakarta; R.S. Taman-  
jaya - Kalejetan
- 16.3. Survey trip Kalejetan - Tanjung Sodong - Cegog and  
back
- 17.3. Kalejetan - Tamanjaya - P.Handeuleum
- 18.3. Survey middle course of Cigenter
- 19/20.3. Preparing report and departure
- 21.3. P.Handeuleum - Labuan - Bogor

Map of survey trips



## 2. THE PROBLEM OF AN EPIDEMIC DISEASE CAUSING THE DEATH OF RHINOS

### 2.1. No direct evidence of the cause of death

According to reports the five carcasses were all found in a very restricted area. These rhinos definitely did not die of old age; one was even an immature individual. These facts point to an epidemic disease or to poisoning.

When the carcasses were still fresh, unfortunately no tissue, mucus or other samples were collected for examination in the laboratory. This might have provided a chance to identify the cause of death. (On the other hand, taking samples carelessly might have been dangerous to people involved.)

Dr. L.S. has collected soil samples on two sites where a dead rhino had been lying. These samples are at present being examined in Basel. However, the chance to resolve the problem is small.

We have to base our assumptions on indirect evidence.

### 2.2. How the animals died

In accordance to the reports obtained it appears that the animals all died in a similar way - a fact which points to an epidemic disease or intoxication.

The sequence leading to death as deduced from traces was: walking & feeding, diarrhoea, lying down, some convulsive leg movements, death. (One comparatively fresh carcass showed prolapse of rectum and foamy mucus at mouth and nostrils.)



### 2.3. Septic aemia, poisoning, anthrax ?

#### Septic aemia epizootica (S.E.)

In November 1981, an epidemic disease killed about 50 kerbau and 350 goats in some kampungs west of G. Honje, while it did not occur in the kampungs SE of G. Honje, i.e. at Cegog, Aerjeruk, etc. In accordance to veterinarian reports this was an outbreak of S.E. (Septic aemia epizootica). However, samples tested in the laboratory were all negative.

The question arises: Did the disease spread into Ujung Kulon? Did it kill the five rhinos?

In accordance to former publications S.E. is more or less species-specific or at least family-specific. Kerbau, goat and sheep as well as banteng are ruminants; kerbau and banteng especially are closely related. The rhinoceros on the other hand is not a ruminant, but a relative of tapir and horse.

If the presumed S.E. of domestic ruminants had spread into Ujung Kulon, the first species to be attacked by the disease would have been a closely related wild ruminant with a high population density: the banteng. Yet, there is no sign that an epidemic disease occurred in the large and dense banteng population of Ujung Kulon. How then could rhinos have been killed by a ruminant strain of S.E.?

We think S.E. as the cause of death of rhinos is out of question, and other possibilities should be considered, i.e. poisoning or an endemic source of disease.

#### Poisoning

Poisoning seems unlikely. A large amount of poison dumped into the sea from a vessel would have killed large numbers of marine animals which would then have been washed ashore. Poisoning of rhino food plants or of freshwater is impossible.

## Anthrax

The agent of an endemic disease, on the other hand, might persist in special localities within Ujung Kulon. Usually it would remain in a dormant or latent status, but might become infective under special climatic conditions.

In a general way, anthrax would fit with this kind of appearance. Its agent (esp. spores) can survive for decades in the soil. The spores remain considerably below the soil surface. But heavy rain can stir up muddy soil. The spores then reach the water surface, and infection e.g. of a mammal is possible.

It appears worthwhile to mention that the symptoms indirectly observed in the dying rhinos would fit with anthrax. In addition, unconfirmed reports claim that the last tigers in Ujung Kulon died of anthrax; anthrax is endemic in Indonesia (e.g. in Bogor). The soil samples collected by L.S. were however negative as to anthrax spores.

### 2.4. Summary

In summarizing we would like to express our opinion as follows:

- The five rhinos were possibly the victims of the same epidemic disease.
- The epidemic disease S.E. which in November 1981 killed domestic ruminants in villages west of G. Honje has probably not invaded Ujung Kulon and not caused the death of the five rhinos.
- Poisoning also is out of question.
- It appears most likely that the five rhinos were killed by a disease which is endemic in Ujung Kulon, i.e. usually persists in a dormant status in special localities, but can cause local outbreaks under special climatic conditions.
- Anthrax would fit with this kind of appearance; so far, however, no proof has been obtained for this assumption.



### 3. THE PRESENT SITUATION OF THE RHINOS IN UJUNG KULON

#### 3.1. Result of February census

From 3 to 7 February 1982, Mr Wachyu, Kepala Sub-Balai Ujung Kulon, together with his field staff has carried out a rhino census, which was well planned but may have been hampered somewhat by bad weather.

Results: (1) No additional carcasses of rhinos found; (2) Rhino population smaller than in 1980, i.e. minimum number 53, maximum number 59.

We have checked the census figures and came to the conclusion that minimum numbers are too optimistically calculated. We would rather think that the traces observed during the census would justify a minimum number of approximately 40.

#### 3.2. Results of our survey trips

We surveyed several areas where in former years traces of rhinos were frequently observed. Admittedly our survey is incomplete. In addition, heavy rain could have caused the disappearance of rhino tracks. Nevertheless fresh traces of rhinos were surprisingly rare, whereas banteng tracks were found everywhere in large numbers.

We would like to mention an impression gained through observation: In different areas local patches of low growing, bush-like vegetation which in former years were crossed by habitual feeding routes of rhinos, seemed not to be visited any more. The vegetation had grown higher and denser and was not crossed by breaches made by rhinos on their feeding trips.

### 3.3. Population decrease and its possible causes

The rhino census (3 to 7 February 82) as well as our survey trips (4 to 19 March 82) lead to the impression that the rhino population of Ujung Kulon has somewhat decreased, and this not only since December 1981 when the first signs of rhino disease were observed.

Although the evidence of such decrease is not conclusive, it appears worthwhile to check whether other observations might corroborate the above mentioned impression. In this context some observations appear meaningful:

- It seems that the rhinos have, during the last 10 years, changed their feeding habits.

- In quite a number of local areas we had the impression that the vegetation had slightly changed in disfavour of the rhinos, i.e. that the availability of food plants for the rhino has been reduced.

- The large number of banteng tracks almost everywhere in Ujung Kulon as well as the many banteng seen, indicate a remarkable increase of its population during the last years.

These observations will be discussed in the following.

Have the rhinos changed their feeding habits?

When we studied ecology and behaviour of the Javan rhinoceros in 1967/68, most feeding traces of rhinos were observed on saplings of large trees (Spondias, Ficus, etc.) and on small trees like Leea. Feeding traces on vines (lianae) were only occasionally found.

During the study of Hartmann Ammann and Haerudin S. Sajuddin in 1979/80, a large proportion of food plants were not saplings but vines.

This year there was clear evidence for the first time that rhinos fed on Rhizophora, a mangrove tree.

It seems also that feeding on Pandanus has become more frequent than formerly.

These differences could originate in different procedures of observation and sampling. The above mentioned food plants are each characteristic of different plant societies, and it may well be that in 1967/68, 1979/80 and 1982 respectively the observation was focussed on different areas and plant societies.

However, a change in feeding habits cannot be excluded. If it has occurred, it might be caused by decreasing availability of preferred food plants which forced the rhinos to compensate in feeding more frequently on less attractive food plants. We are then faced with the question why preferred food plants have become rare.

Has there been a vegetational change?

A vegetational change in certain areas of Ujung Kulon could indeed reduce the growth of rhino food plants.

This would mean that at present the vegetation in its relation to abiotic as well as biotic factors (soil, topography, water, climate, animals, microorganisms) is not in a stabilized equilibrium but rather in a dynamic irreversible process (succession). This might still be a consequence of former human agriculture and of the tidal wave caused by the eruption of Krakatau in 1883.

Does an important rise of the banteng population affect the rhinos?

This must be the case if badak and banteng are ecological competitors with regard to food resources.

Banteng undoubtedly feed on many plants - e.g. grass, bamboo, palm leaves - not utilized by the rhino and vice versa. However, our food plant list 1969 for badak and U. Halder's 1975 for banteng show a certain overlap in utilization of plants as food. Furthermore,

we may assume that the present banteng population which is no longer controlled by the tiger or by hunting, has grown to a level which necessitates the extension of its feeding habits from preferred food plants to additional species.

We may conclude that a certain degree of ecological competition between rhino and banteng does exist and might act in disfavour of the small badak population. The extent of food competition is a problem to be tackled by research.



## 4. PROPOSALS

### 4.1. Proposals concerning the epidemic disease of rhinos

#### Electric fencing

With the cause of the disease and the process of infection still unknown, an electric fence is of no use. Putting it up and maintaining it would be an effort which would not pay out. Wild animals might react to such a fence differently from domestic stock. Once broken, the wire could even be harmful for wild animals.

Conclusion: no electric fence!

#### Desinfection measures

If the agent of the disease was a bacterium and its spores (as is the case in anthrax), then the soil in those localities where rhinos died might harbour those microorganisms in large numbers.

Anthrax spores cannot survive in an acid medium. We therefore would recommend to disinfect the sites of dead rhinos with one of the appropriate disinfectants.

### 4.2. Research in Ujung Kulon

#### Monitoring the rhino population

In the present situation it is extremely important to monitor the rhino population. Annually one or preferably two rhino censuses should be carried out, one in the dry and one in the wet season. It is of special importance to know whether the rhinos are breeding successfully. It will also be important to check whether rhinos start to visit areas where formerly no traces



were observed or on the contrary disappear from areas which formerly were regularly visited.

#### Vegetation map - food resources map

It is important to approximately know the extent of areas within Ujung Kulon which provide food for rhinos. Accordingly a vegetation map of Ujung Kulon should be prepared, showing topography and water courses and above all the distribution of the prominent plant societies of Ujung Kulon. In collaboration with the rhino specialists the vegetation map should be transformed into a map showing the distribution of food resources for rhinos.

#### Feeding preferences of badak and banteng

The presently prevailing feeding habits of badak and banteng should be carefully studied and compared. It is important to know whether and to which extent the two species are ecological competitors.

### 4.3. Management measures within Ujung Kulon

#### Vegetation management in favour of the rhino

In former years we have performed experiments to assess a method of vegetation management in favour of the rhino. The results are published (s. R. Schenkel et al., Malay.Nat.J. 31: 253-275 (1978)).

We now propose to start with such management to a limited extent in selected areas:

In a number of areas adjacent to habitual rhino routes, in areas where palms (mainly *Arenga obtusifolia*) dominate the vegetation and prevent the growth of tree saplings, the palm component of the vegetation has to be cut. Small plots of about 50 x 50 metres should be

selected in different parts of Ujung Kulon. The total area should have a size of approximately 10 ha in the first year. If seedlings of shrubs and trees are growing in the second year, another area of approximately 10 ha should be cleared of palms.

According to our study, 2 to 3 years after cutting, the secondary vegetation could already provide food for the rhinos. If in fact rhinos would visit these plots and feed there, the measure should be continued for the next years to come.

#### Measures to control the banteng population

We do not recommend to start with any measures to control the banteng population before it appears an established fact that banteng are ecological competitors of the rhino.

Certainly it would be absolutely unforgivable to consider shooting of banteng: At present the banteng herds on the grazing fields Ciujungkulon and Cigenter are an important attraction for tourists. They have become increasingly habituated to man and can be observed and photographed. If the banteng would be controlled by shooting, they would quickly become shy again and come to the grazing fields at night only.

#### 4.4. Translocation of Javan rhinos to another reserve

The fact that the only surviving population of the species is located in one single area of approximately 400 sq.km presents a risk in itself. If in addition this area would harbour an endemic disease, the risk is great indeed.

We therefore recommend to carefully plan a translocation action with the aim to create the nucleus of a second local population.

Planning should start now while the rhino population

of Ujung Kulon is - hopefully - recovering. Vegetation management (see 4.3.) should enhance recovery, and monitoring should ascertain whether reproduction of rhinos occurs.

The translocation project will require very careful and long-term planning. In the preparatory phase the following steps will be essential:

1. Preliminary selection of areas for further examination.

2. Feasibility study concerning a selected area.

- Examination as to biological suitability! Most important: examination of the vegetation based on research in Ujung Kulon (see 4.2.). Freshwater must be available throughout the year; clay soil for wallowing, salt licks or seawater must be present. Does the area harbour the tiger or the elephant, animals to-day unfamiliar to the rhino?

- Examination as to possible protection - legal and strict actual protection! Is it possible to effectively protect the area by putting up a guard system?

- Examination of the attitude of the people who live around the protected area; and steps to create a positive relation between human communities and the protected area. In this context recruitment of local people as guards, for construction of guard posts, for cutting patrol paths, etc. may be mentioned.

3. Technical plan for translocation.

Planning and execution must be entrusted to an experienced specialist. Capture, transport, habituation to the new area in individual enclosures, and releasing will have to be planned in detail. Costs will be very high, and each individual animal a precious potential.

Therefore (1) translocation should only be started when the rhino population of Ujung Kulon has recovered and is reproducing, (2) not a single rhino should be lost by translocation!



#### 4.5. Protection of Ujung Kulon

Optimal protection of Ujung Kulon will remain essential for the survival of the Javan rhinoceros.

From 1967 until 1979, while on mission by WWF, we have assisted the Indonesian authorities in reorganizing protection of Ujung Kulon. We made the experience that three conditions are essential to reach this aim:

##### Sufficient payment of the guards

The guards who are mostly married men with several children must be able to maintain their families with the salaries they receive. In the town, government employees live with their families and often have the possibility to earn some additional money. Guards live usually separated from their families and have no additional income. Yet, protection of Ujung Kulon depends on efficiency and devotion of the guards.

At present the lower staff - pegawai harian - are not sufficiently paid! Also the other guards are far from well paid.

We suggest that all those men who actually live and work in Ujung Kulon and not in the kampung with their families, receive an additional field allowance.

We would like to point to another unfortunate circumstance: The guard salaries depend on school education. This may be justified in the case of office people, but school education is irrelevant for guard work. Actually, by far the best guard and team leader of Ujung Kulon, Sakmin, has never been to school!

However, we would like to mention that the guard post buildings are well maintained, and that the guards are well equipped with uniforms, shoes and golok.

##### Appreciation of the guards' work

Most of the time the guards living in the posts are not visited by somebody they respect as an authority

and leader. They are lacking the feedback from a leader, and it makes practically no difference whether they work conscientiously or are lazy. Only Sakmin is a mature man and leader himself, and men working with him develop the sense of responsibility.

Most of the guards have a good character and they enjoy work when it is appreciated by somebody competent.

We have the impression that the present administrative tasks of the Kepala Subbalai make it impossible for him to visit his field staff as often as would be desirable.

#### Medical care for the guards

Efficiency of the guards depends also on reliable medical care for them as well as their families. Our observations as also complaints of the guards evidence serious shortcomings with regard to medical care.



5. FINAL REMARKS

In the short time at our disposition we have attempted to analyse the situation of the rhinos and of Ujung Kulon generally as best we could.

On this incomplete analysis we have based our recommendations. We hope this report with its shortcomings is accepted, and we will be satisfied if the Indonesian authorities concerned will examine and make use of it in the endeavour to save the Javan rhinoceros from extinction.