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A SURVEY OF
LIFE CONDITIONS IN ATJEH
NORTH SUMATRA

With special reference to the Orang-Utan

D. No. 780

by

C. R. CARPENTER

A Report prepared in cooperation
with H. J. Coolidge, Jr., former Secretary of the American Committee for
International Wild Life Protection, February 1938.

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FOREWORD

The protection of species of animal and plant life threatened by extinction is becoming increasingly a matter of world importance along with the development of our scientific knowledge of animals and plants and their uses to mankind. In 1900 there was an attempt to make an International Convention for the control of African Wild Life. This was never ratified but in 1933 a new convention was drawn up to meet the same problem which had become more acute in many parts of Africa. This Convention came into force in January 1936 and while it is only a first step, it has already led to the establishment of new reserves and important laws for the protection of primitive areas containing threatened species. It would now be extremely desirable to have similar conventions effective in Asia and the New World. Great Britain has taken the leadership in Africa, both by the example she has set in her colonies and by sponsoring the London Convention of 1933. She now proposes to do the same thing in Asia and deserves the fullest cooperation in this important work.

The Dutch have made great progress in organizing their Nature Protection in the Netherlands East Indies along with other far-eastern countries including the Commonwealths of Australia and New Zealand, but even so, a great deal remains to be done. There are several important species of animals, birds and plants in South Eastern Asia which need special protection. The forests of populous Java have been largely destroyed except for those now remaining in the limited reserves, and parts of Sumatra are being threatened with a similar fate, thus making necessary and desirable the establishment of large National Parks. There has been a growing awareness in the Netherlands Indies of the importance of Nature Protection but there are, however, widely varying reports on the effectiveness of what is actually being done and accurate information is not readily available as to the enforcement of protective laws or the general problems of their administration in the remote areas. It seemed that helpful information on these problems could be obtained by first-hand observations of an impartial, well qualified observer to whom the Government authorities would be willing to extend all available facilities and cooperation.

I have been for some years Secretary of the American Committee

for International Wild Life Protection and during this time I have particularly interested myself in measures that have been or should be adopted in many parts of the world for plant and animal preservation, and particularly for the protection of mammals or birds that have been so reduced in numbers that the species represented are threatened with extinction. My special interest in the problems of the Netherlands Indies has been stimulated through the work of the Netherlands Indian Society for Nature Preservation (with headquarters in Java) which is celebrating its twenty-fifth year of activity,¹⁾ and the Netherlands Committee for International Nature Protection (with headquarters in Holland). The active founder and leader of the latter organization, Dr. P. G. van Tienhoven, took a great personal interest in my proposed visit to the Nature Reserves of Java and Sumatra and together with Jhr. Dr. Ir. F. C. van Heurn was most helpful in making available facilities and valuable information. Dr. K. W. Dammerman, director of the Government Botanical Gardens at Buitenzorg had attracted world attention to some of the unique mammals, birds and reptiles in the Netherlands Indies by his special report to the Fourth Pacific Science Congress on "Preservation of Wild Life and Nature Reserves in the Netherlands Indies". He very kindly assured me of a warm welcome and cooperation in my proposed plans for visiting the Nature Reserves of Java and Sumatra.

The Bureau of International Research at Harvard gave me a grant to enable me to make a study of "The Enforcement of Nature Protection in the Netherlands Indies with Special Reference to a Pan Asiatic Convention". This report was to be prepared at the conclusion of my field work in connection with the Asiatic Primate Expedition in Siam and British North Borneo in the summer of 1937. In May I contracted an unfortunate illness in Borneo which forced me to abandon all hope of visiting Java and obliged me to spend the month of July in a hospital in Sumatra. My entire project would have had to be abandoned had it not been for my colleague, Dr. C. R. Carpenter of Bard College, Columbia University. He had completed the behavior studies on the wild gibbon in Siam which were his special mission on the Asiatic Primate Expedition, and he

¹⁾ They have celebrated this event with a beautiful publication: *Album van Natuurmonumenten in Nederlandsch-Indië* (December, 1937).

was interested in making a survey of the present status of the Sumatran orang-utan. We had planned to make this study together in August after I had completed my survey in Java and South Sumatra. Fortunately, I was able to transfer the North Sumatra part of my mission to him, together with certain funds which not only made it possible for him to make a preliminary survey study of orang-utans as planned, but also enabled him to make a survey of certain wild life problems in Northern Atjeh in my place.

The following report is based on Dr. Carpenter's field observations. His training in studying animal behavior both in extensive field work as well as in laboratory investigations qualified him particularly for this type of survey, and I hope his recommendations will be seriously considered by those enlightened private and governmental Netherlands agencies in a position to take effective action in these matters.

HAROLD J. COOLIDGE, JR.

February 28, 1938.

Cambridge, Mass.

INTRODUCTION

This report deals especially with the conditions of wild life, its protection, its cultivation and its proper use in the former State of Atjeh, Sumatra. Emphasis will be placed on the orang-utan and its habitat, although many observations were also made of gibbons, siamangs, langurs and other primates. Limited data was also gathered relative to conditions affecting elephants, rhinoceri and tapirs.

During the study, answers were sought to the following questions: What is the distribution and the status of the population of the important Sumatran mammals which are on the protected list?¹⁾ What ecological, economic or geographical factors are operative in changing the distribution and the population of some of these animals? What are the existing nature reserves and do they fulfill their functions in connection with the conservation, cultivation and use of wild life? In relation to certain ideals of wild life protection, what recommendations may be made regarding the extension of present reserves, the creation of new parks and the suitability of existing laws of wild life protection as well as their adequate enforcement? How do the military, civil and local government agencies of Atjeh cooperate in dealing with common problems of wild life protection? A factual basis was sought by means of which impartial, objective answers could be given to these questions, although it was realized that *complete* answers would demand a more extensive study than was possible at the time. Furthermore, it was realized that *final* answers could not be given to a constantly changing problem.

The field work was done between the dates of July 18th and August 14th, 1937. During this period, I travelled more than fifty-five

¹⁾ According to the Decree of 1931, Hunting and Animal Protection, the list follows: „ghost animals” (Tarsius), orang-utans (Simia satyrus), gibbons of all kinds (tailless apes, Hylobatidae), proboscis monkeys of Borneo (Kahau, Nasalis larvatus), rhinoceros (badak, Rhinoceros sondaicus and sumatrensis), tapirs (tjipan, tenoek, Tapirus indicus) Sumatra mountain goats (kambing oetan, Nemorhaedus sumatrensis), scaly ant-eaters (pangolin peusing, Manis javanica), elephant (Elephas indicus), buffalo (Bos sondaicus), dwarf buffalo (anoang, sapi oetan, Anoa), deer swine (babiroesa, Babirusa), deers (mendjangan, roesa, Cervus), kidangs (muntjak, Cervulus), dwarf deer (kantjil, pelandok, napoe, Tragulus).

hundred kilometers by car, fifty kilometers by foot and sixty kilometers by boat along the rivers. The itinerary included visits from Medan to Pematang Siantar and the environs, Lake Toba at Haranggoal, Kabandjahe, Koeala Simpang and the Serva Estate at Aloer Bjomboer, Peureulak, Bjamboer Batang,¹ Lokop, Rantaupandjang, back to Koeala Simpang, hence to Blangrakal, Takengon, Koeta Radja and hence to the West Coast of Atjeh including Lamno, Meulaboh, Lami, Blangpidië, Tapa Toean and finally Bakongan. Intensive observational work was done in and around Lokop, Aloer Bjomboer, Blangrakal, Takengon and Tapa Toean. (See map 1).

There was not sufficient time to investigate with care the Great Löser Reserve in the Gajo and Alas districts, but there was time for a more careful study of the smaller Rafflesia Reservation. It would have been desirable, had time permitted, to spend several months in the Löser Complex alone. However, since time was limited, it was necessary for me to select certain regions and subjects for study which could feasibly be undertaken under these conditions.

During the survey, thirty-eight carefully planned interviews were held with individuals whose work and interests brought them into intimate contact with some important phases of the problem of wild life protection. In addition, all possible first-hand observations were made in an attempt to find answers to the stated questions. Thus as an unbiased and non-partisan observer, I sought information which served as the basis for the recommendations given in the final section of this report.

Bitter experience in the United States and many other parts of the world has shown that unless a wilderness area is isolated by the physical nature of its surroundings, economic exploitation and especially devastation resulting from gun, axe and fire may in a short time cause the complete destruction of large areas and of certain species of the indigenous flora and fauna. Where the efforts to set aside certain areas as national parks or permanent reserves have been successful, primitive areas have been partially saved from destruction and species of plant or animal life saved from extinction.

Knowledge of what has happened in the past and of the basic needs of wild life as well as an appreciation of the value of wild life preserved in its native habitat for educational and scientific uses serve to indicate the importance of the investigation here reported.

Acknowledgements are made with sincere appreciation for the

indispensable assistance given in this study by the following governmental agencies, companies and individuals: The honorable Resident at Koeta Radja and his officers, especially Colonel G. F. V. Grosenson and the military authorities, the Deli-Maatschappij, especially its manager, Mr. J. H. Bitters, and directors, Mr. Herbert Cremer and Mr. Peter W. Jansen. Also personal thanks are due to Baron and Baroness Van Styrum, Mr. A. P. M. Audretsch, Lieutenant A. Weber now of Lokop, Lieutenant W. Damme now of Takengon and Lieutenant J. B. Doedans now of Blangpidië. Obligations to the Bureau of International Research of Harvard University and the American Committee for International Wild Life Protection are acknowledged.

I. HUMAN POPULATION AND ITS RELATION TO WILD LIFE AND TOPOGRAPHY

The native peoples of Atjeh depend primarily upon agricultural pursuits for their livelihoods; they are not huntsmen. They do attempt to protect themselves and their stock against tigers, wild hogs and elephants, but there is very little shooting because the people are, in the main, unarmed by established law. The military authorities enforce the regulations which prohibit the carrying of arms by the natives, except in the case of some native chiefs, and in these instances the possession of arms is carefully supervised by the soldiers of the Netherlands-Indies army. Since the natives do not depend upon wild game as a source of food supply, they constitute no great threat to wild life except in that as the population increases, there are fewer undisturbed habitats for the indigenous fauna.

Some hunting and trapping is carried on by the natives under the influence of Europeans who encourage them to cooperate in securing animal specimens for the European and American markets. Also, urged on by high prices from Chinese merchants, the natives trap certain animals, particularly the rhinoceros in order to secure especially their horns, urine and blood for "medicinal purposes". A forest officer in Medan reported¹⁾ that he had seen a rhinoceros which had been trapped in central Atjeh and which had the horns

¹⁾ Unless otherwise stated, reports were made directly to the investigator.

ATJEH, NORTH SUMATRA

x Showing reported and observed locations of
Orang-outans
1937

to accompany "A survey of wild life conditions in Atjeh, North Sumatra with special reference to the orang-outan" by C.R. Carpenter

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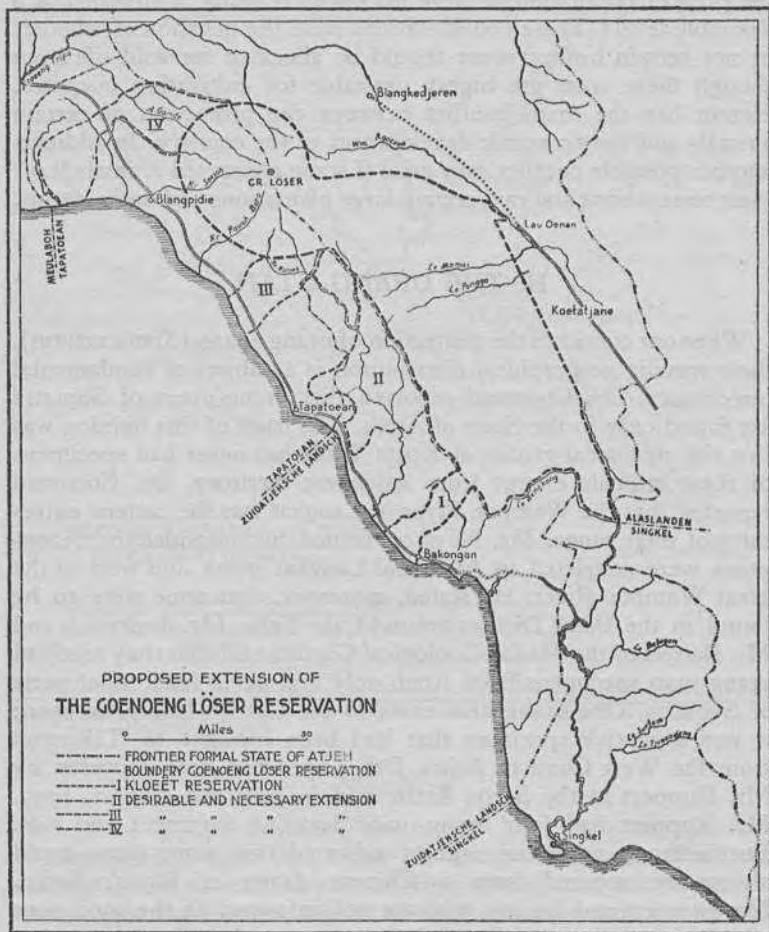
Map No. 1

and other preferred parts cut away. The carcass was covered with a crude shelter awaiting the return of the trappers to carry away the remainder. This is an example of the attitude of the natives toward certain wild animals; an attitude which is strongly determined by the demands of Europeans and of Chinese "medicine men". It would seem safe to conclude that the present native population does not constitute a serious threat to wild animal life in Atjeh.

In the main, the problem of protecting wild life, as far as human damages are concerned, lies in controlling the behavior of the Europeans who inhabit the region and those who come into the region for exploiting or collecting the indigenous wild life. As large tracts of land are given in concessions for the various companies operating in Sumatra, the habitats of orang-utans, other primates, elephants, tapirs and other animals are destroyed. This usually results in the destruction of the animals themselves, or in their displacement into regions which are often less suitable for their survival than were their original habitats. This has happened in relation to the large clearings along the Simpang Kanan River and adjacent territories between Peureulak and Koeala Simpang. The same thing will happen on the West Coast near Meulaboh, only to a lesser extent, for there is not as much land suitable for cultivation purposes.

Numerous opinions were expressed which indicated that there existed a conflict between the economic development of a region and the protection of its wild life. However, it is not realized that wild animals of desirable kinds and in suitable numbers may be economic assets and neither the wild life nor the plantations need suffer if an adequate program of wild life conservation and control is effectively applied.

A conservation program in Atjeh has its greatest asset in the topography of the region. Thousands of square kilometers of territory are still inaccessible and will remain so especially in the rugged mountains even after Atjeh has reached a high state of development. The question arises, however, of the suitability of these inaccessible regions as refuges for the animals which need protection. For example, have the large clearings for rubber around Koeala Simpang and Aler Bjomboer not only destroyed many orang-utans but also forced others to range into the highlands? Do these highlands afford an optimum or even an approximately optimum environment for these apes? Are conditions sufficiently favorable to insure that



to accompany "A survey of wild life conditions in Atjeh North Sumatra with special reference to orang-outan" by C. R. Carpenter

Map No 2

the present population of large mammals is being maintained at a desirable level? These considerations raise the question of whether or not certain limited areas should be allocated for wild life even though these areas are highly desirable for cultivation purposes. Herein lies the main conflict between the protection of certain animals and the economic development of the country. In addition another possible conflict may arise if some conserved animals leave their reservations and raid certain large plantations and native farms.

II. THE ORANG-UTAN

When one considers the protection of orang-utans (*Simia satyrus*), their specific geographical distribution is a subject of fundamental importance. Dr. Coenraad reported that orang-utans of Sumatra are found only in the State of Atjeh. The basis of this opinion was that the zoological garden at Koeta Tjane has never had specimens of these animals except from Atjehnese territory. Dr. Coenraad reported that the Wampoe River in Langkat was the eastern extremity of their range. Mr. Neys confirmed this and added that orang-utans were restricted to Atjeh and Langkat north and west of the great Wampoe River. He stated, moreover, that none were to be found in the Batak District around Lake Toba. Mr. Audretsch and Mr. Bartels of the Medan Zoological Garden said that they received orang-utan specimens from Atjeh only and never from other parts of Sumatra. One orang-utan came to the Garden from Takengon; it was a captive specimen that had been brought to Takengon from the West Coast of Atjeh. Other apes had been captured by Mr. Ruppert at the Serba Estate and in July and August, 1937, Mr. Ruppert had four orang-utans awaiting shipment and sale. Furthermore, numerous reports indicated that orang-utans could always be secured from a Chinese dealer at Blangkedjeren. Mr. Ruppert and his son, who are well informed on the conditions of wild life and especially of the orang-utan, described the orang-utan population on the East Coast of Atjeh as centering along the Simpang Kanan and Peureulak Rivers. The center of the population according to these men lies about two days up the Simpang Kanan River near or slightly above where it forks with the Simpang Kiri. (See map No. 3).

IV. OTHER PRIMATES

Many groups of macaques (*Macacus irus*) representing two or more sub species were observed along highways, trails, small streams and rivers throughout Atjeh. Near plantations and small farms as well as in the deep primary forests, macaques were abundant. The interesting behavior of these primates will be described in another paper and only phases relative to wild life protection will be dealt with here.

The troops ranged in size from five to fifty or sixty and in every group there was a high percentage of infants and juveniles. I interpreted this to mean that in the macaque groups the rate of reproduction is high compared with that of gibbons, siamangs or even langurs.

In certain sections of Atjeh macaques were seen very frequently. It would seem that considering the numbers, the lack of commercial value of these animals' skins and the variety of their diet, there is really no problem of protection. Instead, attention needs to be given to methods of control and use.

It was reported by Colonel Grössenson that because of the damage being done by a "kind of monkey", presumably the macaques, to the fruits and vegetables of the natives, that about five hundred of the monkeys were shot by soldiers. The location of this incident was a small town northeast of KoetaRadja. This occurrence illustrates the need for some procedure of intelligent control and adequate use of these primates. Macaques may be valuable if taken alive and shipped to medical research centers of the world or, if prepared as anatomical materials, for instructional and research purposes.

Although there are not as many langurs (*Presbytis sumatrana*) as macaques, nevertheless they are abundant in Atjeh. They were observed everywhere living in relatively small groups and usually ranging in forests away from native villages. They seem more arboreal and less likely to prove a nuisance to farms than the macaques, being less frugiverous in their food habits, but our information is not conclusive or complete.

The same suggestions of conservation apply to these monkeys as to macaques. The present regulations for protection are adequate in

statement and in application and control measures will probably be unnecessary. It would seem desirable to give attention to the adequate use of specimens, if control becomes necessary and to arrange for making specimens available for accredited research projects.

V. ELEPHANTS

A number of interesting facts were collected about elephants (*Elephas maximus sumatranus*) in Atjeh. Between Bjamboer Batang and Lokop I observed the spoor of a herd of elephants and according to the reports of Lieutenant Weber, he and his patrols have seen this or other herds repeatedly in the same territory. Also in a native village southeast of Lokop Lieutenant Weber had been called upon to kill a young bull elephant which was said to have threatened natives. Lieutenant Weber's opinion that there were relatively few elephants between Lokop and the East Coast was supported by direct observations and by numerous reports. However, it would be safe to estimate that several average sized herds range along the Peureulak and Simpang Kanan Rivers.

A herd of elephants was tracked for several hours out from Blangrakal to where it stopped to visit a warm mineral and salt water spring and then disappeared into the jungle. This was a small herd that, according to "The Datoek" of Blangrakal, was restricted in its territorial range to a region of the forest surrounding a mineral and salt spring. At intervals, however, according to the report, distant herds visited this spring. Lieutenant Damme, Mr. Obergasner and "The Datoek" were unanimous in their agreement that many elephants live in the high mountains toward Koeta Radja from Takengon. Lieutenant Christian said that he had seen elephants, as well as rhinoceri and orang-utans, in the mountains west of kilometer stone 274 near Lhokseumawe in a situation which appears to be ideally suited for a state reservation for these animals.

Lieutenant Bloom and his soldiers stationed at Lamno had, within seven months, killed thirteen elephants after these animals had raided native villages. Often herds of elephants were said to

wreck small native villages and destroy the people's rice fields. Having no guns, the natives requested the services of the military patrols in protecting themselves against such attacks. The soldiers seem to welcome these opportunities as sporting events and respond with enthusiasm to the requests for elephant control by shooting. Solitary bull elephants are most often shot after requests are received from natives when these bulls stray into or near their villages and plantings. The trophy incentive is countermanded by the government regulation that soldiers deliver tusks to the offices of the State in Koeta Radja. This law is an effective move in the direction of preventing unnecessary slaughter.

A large herd of elephants ranges in the swamp lands toward Tapa Toe an from Koeta Radja west of kilometer stone 330 on the West Coast. This herd periodically raids the rice fields of natives, who being unarmed, are forced to ask the military post at Blangpidië for assistance in protecting their fields from the elephants which at times are exceedingly destructive.

General reports hold that the largest number of elephants in Atjeh, outside of the little known Löser Complex, may be found in the region between Lamno and Sigli and between Lamno and Tangse. From this large general area a herd passes annually to the "Gold Mountain" forest which is situated left of the highway from Koeta Radja to Sigli. Captain Fet, Lieutenants Weber, Koedans, Bloom, Wonderwal and others confirmed the fact that elephants in rather large herds are to be found in the Löser Complex where they are adequately protected by the existing reservation, aided by the almost impenetrable character of the mountains.

As with no other animals on the protected list, a conflict arises and will continue to become more acute between the policy of having free ranging elephants and yet protecting cultivations, including both plantations and native farms. A general and widespread opinion exists that since the enforcement of the no-killing regulations in regard to elephants, they have increased in numbers. This fact, coupled with the anticipated development of the country, may mean that elephant raids and destructiveness will become a problem demanding intelligent handling. Decisions will have to be made as to whether or not certain herds which range near rather densely settled, cultivated areas should be allowed to exist or whether certain villages of natives should not be moved as an alter-

native to exterminating certain herds of elephants. Control measures may be necessary where villages are situated near reservations which are or will be established.

VI. RHINOCERI (RHINOCEROS SONDAICUS AND SUMATRENSIS)

The information regarding rhinoceri in Atjeh is indeed scanty and uncertain. It was impossible to get any definite reports about these animals in and around Lokop. "The Datoek" at Blangrakal reported having observed them in the high mountains west of that locality. Mr. Obergasner had seen and followed many rhinoceros trails in that mountainous district and he reported having discovered pools of water high in the mountains where these beasts regularly bathed. According to him, one could locate and observe rhinoceri of both the one-horned and two-horned variety without very great difficulty within three days of Takengon. Lieutenant Bloom at Lamno said that he knew of three warm mineral springs where rhinoceri came frequently for salt and bathing. Lieutenant Bloom reported that within three days of Lamno, rhinoceros trails and wallowing places were abundant. This would indicate that a number of these animals range in that section of rough mountains northeast of Lamno. Many reports were heard from military patrols to the effect that signs of rhinoceri had been seen in the Löser Complex, usually above the altitude of one thousand meters. Thus, it would seem that rhinoceri are fairly evenly dispersed throughout a considerable part of west central Atjeh.

In summary, it would seem that there are still a number of rhinoceri in various parts of Atjeh and that there are two rather definite regions where the population is centered; namely, in the Löser Complex and in the section northeast of Lamno. A number are reported to be living in the high mountains west of Takengon toward Pameue. Whereas it seems possible that the Löser Reservation may prove to be an adequate protection for some rhinoceri, nevertheless, it is desirable that another reservation be set aside for them. It is strongly recommended that further information be secured

in order that practical constructive moves may be made for the protection and, if necessary, the husbandry of this conspicuously interesting but vanishing mammal.

VII. RAFFLESIA RESERVATION NUMBER ONE

By means of the facilities afforded to me by Colonel Grössenson and through the extreme courtesy and considerations shown me by Lieutenant Weber, it was possible for me to visit the Rafflesia Nature Monument on the Simpang Kanan River near Rantaupandjang. The authorities responsible are to be congratulated upon the selection of this splendid site which may be approached by stream and trail, and which contains such a rich store of both flora and fauna. Not only is the magnificent Rafflesia flower found there but a good representation of the other flora of that area and a cross-section of the region's animal life.

There are several urgent needs which may be pointed out in connection with this reservation: In the first place it should be surveyed in detail and a census made of its plants and animals. Its boundaries should be more definitely marked and the natives informed of the reservation's limits. At present there is considerable doubt as to whether or not the natives are adequately informed and respect the park's boundaries. Clearings are being made which may be infringing on the reservation itself and there was definite evidence of some lumbering within the park's boundaries. If this is true, it is highly probable that hunting and plant collecting are also done by natives. Orang-utans definitely inhabit the reservation but the area is not large enough to include the territory of even a single family or for that matter a single individual. Since the reservation is located strategically in the heart of the East Coast distribution of the orang-utans, the larger purposes of the park should be foreseen, i.e., the reservation should be an area set aside not only for Rafflesia but also for other plants and animals characteristic of the region. We would suggest a large extension of this reservation that it may serve as a place for the protection of orang-utans, siamangs, gibbons, elephants and other indigenous fauna. (See map No. 3). It is possible

that for the purposes suggested there should be a system of Rafflesia Parks or extensive enlargements to supplement the present limited area. It is also possible that plantings should be made within the park in order to attract and hold larger numbers of orang-utans as well as to aid in their increase.

In some documents and correspondence with authorities in the Netherlands reference was made to a Rafflesia Park Number Two. However, Lieutenant Weber did not know of this second reservation. The district lies within the region supervised by him and it is a pity he had not been informed of the existence of it.

The question also arose as to whether or not the present reservation is located on the best site for a park protecting the Rafflesia flower. The officers of military patrols suggested other regions where, according to them, a greater number of this conspicuous and beautiful flower exist. Although the flower was, unfortunately, not in bloom when I visited the park, nevertheless it was quite evident that there were only a small number within the reserve.

VIII. THE LÖSER RESERVATION OR THE GAJO AND ALAS NATIONAL PARK

To reach the Löser Complex from Medan, even with the indispensable aid of the Atjehnese military patrols, is an undertaking of expeditionary proportions. In spite of the desirability of my going to the Löser, it was absolutely impracticable within the limits of time available for this study, since it would probably require at least two weeks to reach and even superficially survey the Löser Complex. It became necessary, therefore, to continue to gather information from the well informed soldiers, with the exception of brief observations made during a visit to the recent extension of this reservation to the sea near Bakongan. A visit to the Löser proper had to be postponed with the hope that it could be undertaken at a more suitable time.

In the main, the territory of the Löser Complex is unsurveyed and little known although the vigilant and determined soldiers from Bakongan, Tapa Toean and Blangpidië penetrate certain reaches

of the Löser Complex almost every month. Nevertheless, there are great stretches of that rugged mountain country which have not been explored. It is known that the highest part of the Löser peak itself reaches an altitude of about nine thousand feet. Judging from the information given by soldiers and from the sketchy contour maps which are available, it would seem that, with the exception of the limited extension to the sea at Bakongan, most of the reservation lies almost entirely above eight hundred meters in altitude. Thus, the reservation contains a fair cross-section of the flora of the region ranging from the sea to nine thousand feet. The patrols report that regions which have been visited are forested with a magnificent tropical forest, even over the highest slopes of the Löser itself.

Regarding the animal life, it is certain that elephants and rhinoceri are to be found there and it was reported that orang-utans and nests had been seen in the territory, even to a height of fifteen hundred meters. No reliable basis was found for estimating the numbers of these animals living in the reservation. Nevertheless, it seems probable that there are few orang-utans in the Löser Complex and the reason for this follows: The majority of our reports indicate that orang-utans do not live in large numbers above the altitude of about eight hundred meters. In fact, few men of experience have reported orang-utans *in families* as high as fourteen or fifteen hundred meters in the mountains. It is on this basis that we contend that the Löser Reservation with its present boundaries is not and cannot be a satisfactory reservation for orang-utans, since there is a marked preference in these animals for altitudes below eight hundred meters. Furthermore, since the lowland area of the reservation is so limited, the extension including as it does only a narrow section of open swamp land, the Löser Complex does not serve as a haven for the lowland elephants but only for those that habitually prefer the highlands and mountains.

It is with considerable anticipation that the report of Mr. A. Hoogerwerf is awaited, who has recently completed a collecting survey trip through a part of the Löser Reservation, entering it from Koeta Tjane roadway. If the reservation is to be expanded and planned to function as a comprehensive national park, I believe the extensions which are suggested in the recommendations should be made at an early date. In the meantime more facts are needed relative to the habits and numbers of animals in the Löser Complex.

IX. AN EDUCATIONAL PROGRAM AND ITS NEED

The people of Atjeh, natives and Europeans alike, are lacking in interest and information about wild life and its protection. Without a doubt, the soldiers of Atjeh are doing one of the most difficult jobs of patrolling in the world, and they are completely occupied with the heavy demands of the job in hand. Nevertheless they need and want information about the wild life with which they are so closely associated. The natives are not naturally interested in hunting the wild animals, since they are mainly an agrarian people and do not depend upon game as a source of food.

The soldiers of Atjeh are responsible for the enforcement of all regulations and laws applicable to wild life and its protection, yet they have not been *taught* to perform these duties; on the contrary they have been *ordered* to do so. Without exception, as far as my contacts indicated, they are soldiers, of course, and in no way naturalists. This applies to the officers as well. However, the officers especially are unusually intelligent men and would respond immediately to good literature, interestingly presented, about the wild life and its many interesting phases. Since the soldiers are the only effective agents for enforcing any program of nature protection in Atjeh, they should have adequate training for the work. At present they are receiving none of the bulletins either of the Netherlands Indies Society for the Protection of Nature or the Nederlandsche Commissie voor Internationale Natuurbescherming, nor do they receive other kinds of interesting literature on wild life or its protection. If appropriate literature were put into the hands of the soldiers of Atjeh and they were more adequately informed by general lectures at the time of their visits to Koeta Radja, they would become effective wardens and their long vigils in the forest would take on new interest and meaning.

Applicability of the law within the area of concessions: An important point was raised by an officer of the government at Meulaboh as well as by others. Regulations affecting wild life do not apply within the boundaries of concessions, according to him. It would seem that this situation should receive special consideration. If this is correct, it virtually means that all animals are condemned which live within territory given in concessions. This is certainly undesirable and unnecessary. However, it is merely our purpose to call the attention

of the authorities to this opinion which may be a misunderstanding of the game laws. If a misunderstanding does exist, this is further indication of the need for wider dissemination of information. If game regulations do not apply to concessions, it seems advisable that these regulations be altered to have a wider application.

The Cultivation and Use of Wild Animals: It would seem that the ends and objectives of a conservation program for any given country or district should justify its means. Protection of wild animals should meet the demands of desirable objectives which are related to human interests or needs. Animals which are preserved, frequently at large expense to governments, should be thought of as natural resources to be preserved for future generations and may be used intelligently for observational, recreational and scientific purposes. It would seem unjustifiable to reserve large tracts of valuable land for wild life, and then to leave this entire area completely untouched and unapproachable for interested people, and to withhold the animals, if they are plentiful enough, from being available for scientific research.

It is in my opinion especially important that when reservations are set aside, parts at least should be made accessible to visitors, for it has been repeatedly demonstrated that unarmed visitors to national parks constitute no serious threat to the animals of the region. Kruger National Park in South Africa is a perfect example of what is meant. Barro Colorado Island in the Panama Canal Zone is another example. The animals in these places have, to some extent, lost their fear of men and can be observed to far greater advantage by the visitor and nature student. These and other similar places are beginning to serve as Meccas for naturalists from many countries of the world. It should be noted that accessible reservations with an abundance of observable animal life may constitute a valuable asset for the country or state in which such reservations are located.

An ideal wild life conservation program must frequently go beyond mere protection. Where valuable animal types are in great danger of becoming extinct, a positive program of husbandry would be highly desirable if practicable. In the interest of making orangutans more accessible and in order to safeguard the present population level, steps must be taken to make foods available in certain districts; hence recommendations have been made to that end.

By cultivation and use is not meant commercial use. The economic assets should be by-products when the income is beyond that needed to maintain the program. An animal type as important as the orang-utan should be considered to belong to science and not to a particular country or people, and it should be available to naturalists the world over. The two anthropoid apes in the East and the two in Africa should be considered as international or world assets and as property they should be decommmercialized. If the orang-utans are as few in Atjeh as is believed to be the case, the present export trade is probably an undesirable drain on the population. The commercial value of orang-utans on the European market constitutes indirectly one of the greatest threats to the animal population in Atjeh. The Medan Zoological Garden is forced to depend upon the profits from the sale of orang-utans for much of its income. Several private individuals in Atjeh depend for considerable income upon the profits from the capture and sale of orang-utans. It would seem that this situation should be changed and therefore a complete decommmercialization of the Sumatran orang-utan is recommended. If, in the interest of science or natural history education, a specimen is needed, then it should be made available on a cost basis, after permits have been granted by a committee of qualified persons. The plan would seem to deserve careful consideration, since it seems feasible, desirable and meets an urgent need.

X. RECOMMENDATIONS

The former State of Atjeh, Sumatra, presents not only a unique opportunity to preserve from extinction two vanishing species of large mammals, namely, the Sumatran orang-utan and the *Sondaicus rhinoceros*, but also to set another example to the entire world on methods and objectives of wild life protection, cultivation and use. The Decree which initially established the great Löser Reserve is a commendable first step. The present superb military organization in Atjeh and the existing laws are further indications of progress, but much remains to be done.

The following suggestions or recommendations may indicate feasible projects, plans and developments. It may be desirable to

extend considerably the Löser and Rafflesia Reserves, to create others, to make some park areas more accessible, to make known these parks and their unique contents, to survey and make adequate censuses of the various reservations, and to instruct people, especially the native people but also people throughout the world, regarding the superbly rich store of wild life and primitive beauty which abounds in Atjeh.

I. In order to conserve still further cross-sections of the rich flora and fauna of West Coast Atjeh, it is suggested that the Gajo and Alas National Park or Löser Reservation be enlarged in several areas and that more additional extensions be made to the sea.

A. That a second extension to the sea be made through the rough non-cultivable mountains south of Tapa Toean and that this extension come nearest the sea along the highway from kilometers four to twelve (see map No. 2).

1. There is, apparently, an abundance of orang-utans, gibbons and siamangs in this beautiful, accessible but extremely rugged mountain region.

B. That a third extension to the sea be made over the mountain range which approaches the coast between Tapa Toean and Blangpidië (see map No. 2).

1. This extension brings the Reservation into an accessible region, but a region which may never be used for cultivation purposes. The area includes orang-utans and other primates which should not be disturbed.

C. That the Löser Reservation be extended north and west to the sea, Extension Four, crossing the highway in a strip of magnificent forest somewhere between Kilometer Stone 318 and 338, and including a large coastal swamp beyond the highway (see map No. 2).

1. This fourth extension brings part of the Reservation into an accessible range, it preserves a wonderful forest, a lowland district which serves as a habitat for both lowland elephants and orang-utans, which range even now near the highway.

II. It is strongly recommended that immediate steps be taken to set aside and develop a small reservation, especially for the orang-utan, south of Meulaboh. The nature monument or park would

cross the highway in a band of forest extending from Kilometer Stone 276 to 284 and, if at all feasible, the monument should extend from the coast high into the hills.

A. In connection with this monument, it is suggested that fruit tree plantings, especially of durian trees, be made along the highway in order to attract orang-utans into situations where they may be observed by those who are interested. Plantings could be made rather easily from Kilometer Stone 276 to 280.

III. It is recommended that full consideration should be given by the proper authorities to a considerable extension of the Rafflesia Reserve. It should be extended in plan to include the function of protecting all forms of wild life in that region, and it should be extended in area to include a large region between the Simpang Kiri and Simpang Kanan Rivers, to include territory east of the water divide of Lokop and to include a large section of the Peureulak River Valley. The present park and suggested extensions are shown on Map No. 3.

A. The extensions are considered necessary in order to include a representative sampling of the wild life of the region and a desirable section of altitudinal ranges. The extension is indicated if the Reserve is to function as an especially protected region for orang-utans and elephants.

B. It is strongly suggested that, under the supervision of military patrols, fruit tree plantings be made in abandoned clearings along the Simpang Kanan River, in an abandoned clearing near the Rafflesia Reserve on the trail to Lokop, and in clearings, some of which must be made, along the Peureulak River.

IV. It is strongly recommended that a reservation or park, corresponding to the Löser, be planned for the mountainous region which lies between Takengon and Koeta Radja in one direction, and Blangrakal, Tangse and Lamno in another direction.

A. A reservation in this area would be especially desirable for the protection of splendid and picturesque mountains, high altitude flora, the elephant and the rhinoceros.

V. It is recommended that in order more adequately to protect the Goudberg mountain, especially from prairie fires, that this

beautiful mountain which now harbors one or more tapirs and periodically a herd of elephants, be set aside as a nature monument and be put in charge of a competent ranger.

VI. It is suggested that careful consideration be given to the establishment and making accessible of a large nature reserve to be situated in the mountains and valleys between Lhokseumawe and Blangrakal, and between the latter point and Lhoksoekon.

A. The region indicated is said to have within it elephants, orang-utans and tapirs.

VII. It is believed that in order adequately to protect the orang-utan, the conservation program must extend beyond that of mere protection to cultivation. This is necessary because much of the most suitable habitat for orang-utans has been destroyed. It is believed that this situation has resulted in a decreasing population of this important anthropoid.

VIII. As a result of the importance of the orang-utan as a zoological organism, and since an urgent need exists for reliable and adequate data on the population and changes which are occurring in this animal type, it is strongly recommended that the *killing and capture of this animal for trading or exhibition purposes be completely stopped* and that its use for accredited but limited scientific purposes alone be permitted.

IX. On the basis of the improbability that orang-utans will attack man, and even if such were to occur in very rare instances, klawangs would be adequate protection from the rather slow animal, it is recommended that the soldiers in Atjeh be forbidden to shoot orang-utans under any circumstances.

X. It is suggested that when large tracts of land are given in concessions and when these areas include habitats of the orang-utan, the apes be transferred to primary forest either by driving them or by capturing and transporting them, rather than capturing them for sale or destroying them. In situations where it seems more feasible and desirable, plots of forest could be left standing for the specific purpose of harboring both orang-utans and gibbons.

XI. It seems very necessary and altogether desirable that the Indies-and-Netherlands Committees which are actively interested in and responsible for wild life protection, engage in an educational campaign in order to instruct natives, soldiers, naturalists and others in the interesting natural history of Atjeh. It is specifically recommended that all military posts and all officers receive regularly the publications on the many forms of Atjehnese plant and animal life and that lectures be arranged for the officers when they have conventions in Koeta Radja.