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THE ASIAN ELEPHANT IN SUMATRA, INDONESIA*
A RESEARCH PROPOSAL OF THE NATURE CONSERVATION DEPARTMENT
OF THE WAGENINGEN AGRICULTURAL UNIVERSITY, NETHERLANDS

by **Willem Bongers**

I. INTRODUCTION

In a number of countries, World Wildlife Fund (WWF) supports research on endangered species and advises governments on management of nature reserves. One of the countries on which the activities of WWF are focussed is Indonesia, which is still rich in nature and wildlife.

Besides WWF, in Indonesia the Food and Agriculture Organization of the United Nations (FAO) also is engaged in nature conservation and nature management, for which it is financed by the United Nations Environment Programme (UNEP). However, in both organizations the emphasis is on advisory work for management, thus on applied research and not on fundamental research.

In the past, this gap was filled by the Netherlands Foundation for the Advancement of Tropical Research (WOTRO) by supporting research conducted by the Nature Conservation Department of the Wageningen Agricultural University on the distribution, ecology, behaviour and ethology of the orangutan and the Sumatran rhinoceros and by the University of Utrecht on the macaque. Both institutions are in the Netherlands; WOTRO also supported botanical research by the Rijksherbarium, Leyden, Netherlands.

Since 1970 WWF has been actively involved in research for nature management in Indonesia by providing funds and experts for nature management and by stimulating scientific research.

Recently the Nature Conservation sent a proposal for a research project on the Asian elephant in Sumatra to WOTRO. Following are details of that proposal.

II. AIMS OF THE RESEARCH

The research aims at obtaining detailed data on the distribution abundance, migration, population size and density, population and group composition, home range, food choice, food preference, and interspecific relationships of the Sumatran elephant (Elephas maximus sumatranus) in Sumatra, to learn the ecological conditions elephants require from their biotope, the factors determining their distribution, and their ecological function in the tropical rain forest.

III. ELEPHANTS IN SUMATRA

The Sumatran elephant is a subspecies of the Asian elephant, which is found in southeast Asia. In Indonesia elephants are confined to Sumatra and Kalimantan (Borneo). In the latter place, the species probably was introduced by man.

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The Sumatran elephant was once widespread throughout Sumatra and was an important domestic animal in Atjeh (Sumatra). The Sumatran elephant inhabits the tropical rainforests of Sumatra which were abundant in the past. It is a migratory species. During the wet season it migrates to higher areas in the mountains, where it is less wet, and in the dry season it returns to the extended marshy areas of east Sumatra, following centuries-old elephant trails, which sometimes are deeply cut into the soil. But due to the spread of agriculture and logging, elephant habitat is rapidly shrinking, and trails have become blocked. Elephants are now a nuisance in agricultural lands and plantations¹. This has resulted in a heavy hunting pressure. The animals are also hunted for their tusks. As a result, the elephant population is rapidly decreasing. The IUCN Survival Service Commission Elephant Specialist Group estimates that only about 300 are left in all Sumatra, with the best protected populations being found in the Gunung Leuser Nature Reserve in Atjeh, where about 200 individuals are to be found (van Strien, 1978) and Wai Kambas, Berbek, and South Sumatra (Fig. 1).

Quite a number of publications on the Sumatran elephant exist (van Strien, 1975), but little is known about its actual distribution, its abundance, its behaviour and its ecology, and its ecological requirements. Olivier (1978b) made a detailed study on the Asian elephant in Malaya and Sri Lanka, but his results cannot be applied to the Sumatran subspecies without further detailed study.

Because of their great mobility and the enormous amounts of food they consume daily, and because of the short time this food stays in the intestine, elephants play an important role in the dissemination of seeds in the forest. By this and by trampling they have a marked role in the dynamics of the forest ecosystem. No research has yet been done on this phenomenon, on its influence on regeneration of the forest, or on the forest composition.

In view of the grave danger of extinction, a comprehensive study of the Sumatran elephant in its own habitat on the island of Sumatra, and in particular in the Gunung Leuser area, is urgently needed, scientifically as well as for nature conservation reasons.

IV. THE GUNUNG LEUSER NATIONAL PARK

The Gunung Leuser (North Sumatra and Atjeh, spelled Acen on map) actually forms a group of reserves which comprise one of the biggest remaining natural areas in Indonesia and in Southeast Asia. In 1980 the status was altered to that of a national park. It is also, next to Ujung Kulon, one of the best known reserves in Indonesia, and it is, compared to most other reserves, less influenced by human activities and better guarded. Gunung Leuser incorporates a wide variety of habitats and landscapes, from coastal swamps to high-altitude vegetation on Sumatra's highest mountains. Lowland habitats are represented, but only in small areas, and the largest part is mountainous. Much of the wildlife concentrates in the lower parts of the reserve, which are accessible

¹See item in ELEPHANT NEWS AND INFORMATION on crop damage by elephants in Sumatra.

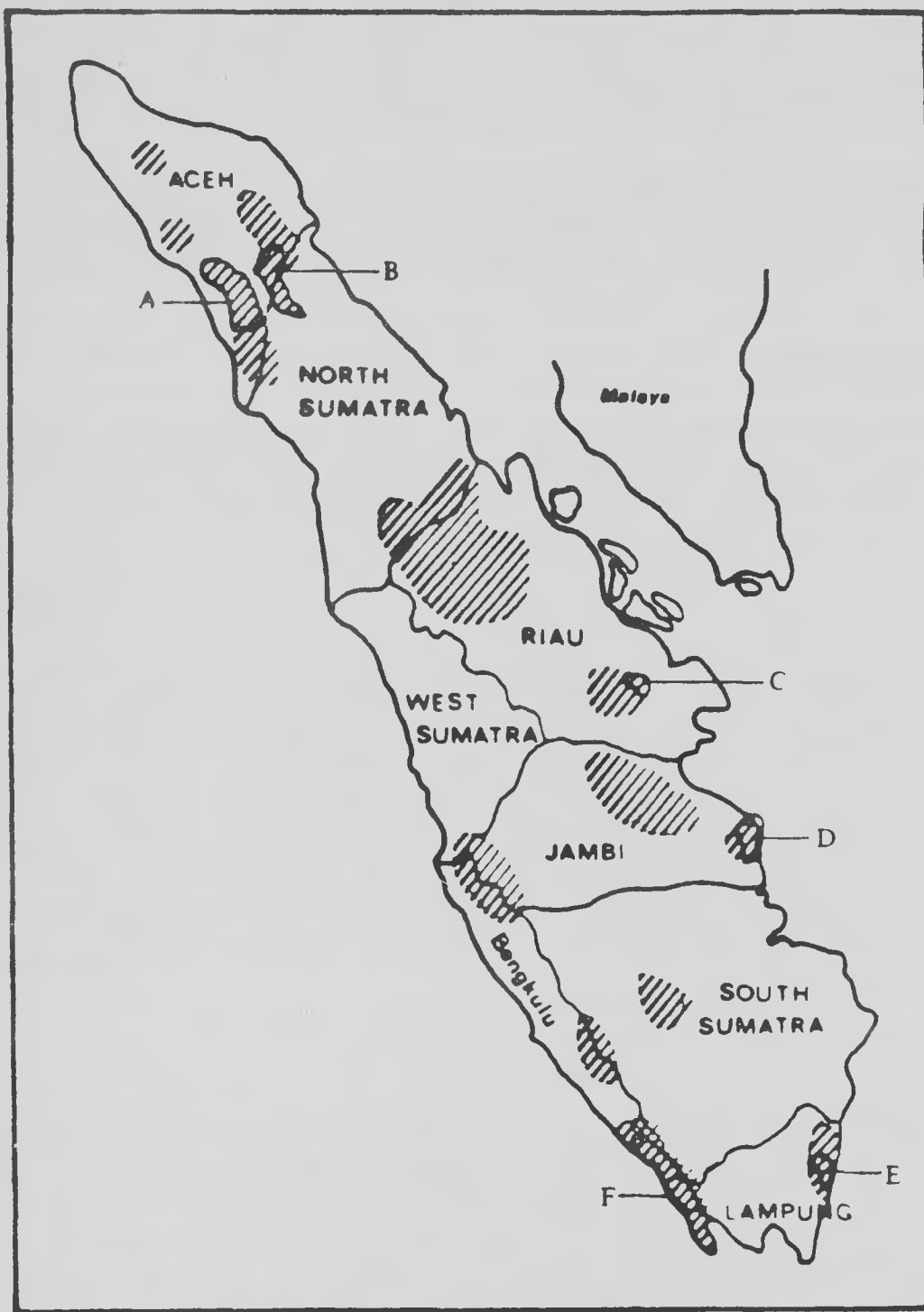


Figure 1. Circled, hatched areas depict the approximate distribution of elephants in Sumatra's provincial parks: A=Gunung Leuser, B=Sikundur and Langkat, C=Kerumantan, D=Berbek, E=Wai Kambas, F=Sumatera Selatan or Lampung (after Olivier, 1978b).

to illegal hunting, and are most threatened by logging and shifting cultivation. Several endangered species still occur in fair numbers in the Leuser Reserve. Most remarkable is the Sumatran rhinoceros, of which about the last viable breeding population finds a relatively safe refuge in the interior. Other endangered species are orangutan, Sumatran tiger, Sumatran elephant, wild dog, clouded leopard, and many others. These animals have a rather large distribution outside the reserve, but their numbers are steadily decreasing due to the fast clearing of forested areas throughout Sumatra (van Strien, 1978).

The Gunung Leuser Reserve has been adopted by WWF-Netherlands Appeal since 1970. The Nature Conservation Department of the Wageningen Agricultural University has been involved in the management of the reserve and in research since that time.

V. MANAGED ELEPHANT RANGES

The nature reserves in Sumatra do not give sufficient protection to the elephants because the ranges inside their boundaries are too small. Special measures should also be taken to protect the animals outside the reserves (van Strien, 1978). The establishment of managed elephant ranges would preserve the elephant population from extinction. (These are specially managed areas for the conservation of elephants. They need to be extensive, covering the whole migration area of a population. They can be protected areas as well as agricultural or forested lands. Human use of the areas need not be excluded; it can even be beneficial for the elephants.) Amongst other purposes, the proposed study would help to provide the basis for the establishment of protected and managed elephant ranges and for management plans. Proposals for the establishment of such areas are under preparation by the Indonesian Nature Conservation Service. These proposals require basic data on distribution, abundance, ecology, migration routes, and behaviour of the species, in order to find the most promising locations, the required extent of the areas, and the measures needed for protection.

VI. THE RESEARCH

The research will start with a survey on the elephants in Indonesia. Data will be collected on the former and present distribution of elephants in Sumatra, their official and actual conservation, land use, forest exploitation, hunting and poaching, and threats to the survival of elephants. These data will be derived from literature or collected locally, in the field, from local authorities, or from other experts in Indonesia or elsewhere.

In the Gunung Leuser research areas the following subjects will be studied in detail: habitat, spatial distribution of food plant species, home range, tracks and wanderings, salt licks, food, feeding behaviour, dung and urine, bathing and wallowing, resting and sleeping places, interaction with other animals and with man, parasites and diseases, reproduction, population size and composition.

In the field, encounters with elephants will occur occasionally. However, to obtain the necessary information, the research will be focused on tracks, foot prints (plaster casts), dung, feeding marks, salt licks, etc. Research on

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the Sumatran rhinoceros (Dicerorhinus sumatrensis)² in the same area has proven that this kind of approach is feasible and gives fruitful results. Even individuals can be traced and observed in this way.

The research will start as soon as funds are available and will last for at least three years in the field and one year in the Netherlands to work out the results. The proposed study which primarily aims at the ecology of the elephant, will also contribute to the knowledge of ecosystems of the tropical rain forest and of interspecific relations between elephants and other large herbivores in this habitat. In this way the research is in line with previous research of the Nature Conservation Department in this area on the Sumatran rhino, performed by van Strien (1975-1980). His thesis will be published in 1981. Van Strien stresses the necessity of research on elephants in his management plan for the Gunung Leuser (1978). Before van Strien started his research, the Nature Conservation Department was engaged in research on the orangutan in the same area (Rijksen, 1978). Much experience already exists in this department, and that is why this elephant research has been proposed to the Netherlands Foundation for the Advancement of Tropical Research after consultation with IUCN/WWF and the Nature Conservation Directorate of Indonesia.

VII. REFERENCES

- IUCN/WWF. 1979. Sumatra, Indonesia - management of elephants. Project proposal to IUCN/WWF, Typescript, 4 p.
- Olivier, R.C.D. 1978a. Present status of the Asian elephant (Elephas maximus Linnaeus, 1758). *Elephant*, 1(2):15-17.
- Olivier, R.C.D. 1978b. On the ecology of the Asian elephant, Elephas maximus Linn., with particular reference to Malaya and Sri Lanka. Ph.D. dissertations, Sidney Sussex College, Cambridge, 454 pp.
- Olivier, R.C.D. 1978c. Distribution and status of the Asian elephant. *Oryx*, 14(4):379-424.
- Rijksen, H.D. 1978. A field study on Sumatran orang-utans (Pongo pygmaeus abeli Lesson, 1827); ecology, behaviour and conservation. Thesis, Wageningen Agricultural University, 420 pp.
- van Strien, N.J. 1975. Bibliography on the Indian elephant (Elephas maximus). Meded: Vakgroep Natuurbeheer, 103:1-22 (Mimeographed).
- van Strien, N.J. 1978. Draft management plan for the proposed Gunung Leuser National Park. Bogor, Indonesia, 123 p. (Mimeographed).
- van Strien, N.J. (In preparation). A field study on the Sumatran rhinoceros, Dicerorhinus sumatrensis (preliminary title). Thesis, Wageningen Agricultural University.

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²See Note No. 4 in Simpson, G.G. 1945. *Bull. Amer. Mus. Nat. Hist.*, 85:142, and Groves, C.P., and F. Kurt. 1972. *Mammalian Species*, No. 21:1.