THE STATUS AND CONSERVATION OF THE CLOUDED LEOPARD (Neofelis nebulosa diardi) IN SUMATRA

Charles Santiapillai
World Wildlife Fund
Bogor

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TABLE OF CONTENTS

INTRODUCTION

The clouded leopard (Neofelis nebulosa diardi) is a magnificent but little studied big cat in Sumatra. Very little is known about the animal on account of its largely nocturnal and arboreal habits. Pieters (1938) emphasised that it is much more arboreal than many other felids. Studying the animal by conventional method is difficult, and much of the information currently available still comes from the incidental observations of early naturalists, professional hunters and game guards. There has never been any serious study of the clouded leopard in Sumatra. The problem of studying such an elusive carnivore is further increased by the fact that it becomes extremely cautious and exclusively nocturnal in areas close to human habitation.

In recent decades, the primary forest in Sumatra has been shrinking rapidly in extent. The conversion of forests to agriculture is a particularly serious cause of conservation problems (Seidensticker, 1984). Between 65 and 80% of the forests in the lowlands have already disappeared in Sumatra according to Whitten et al., (1984). The disruptive processes have become apparent also in the forests covering the mountains where the scanty data available would suggest that perhaps about 15% have disappeared to date. The altitude range of the forests in Sumatra is such that most of it will be rich habitat. Unless conservation measures are adopted soon, the clouded leopard will become even more at risk from the consequences of unplanned, indiscriminate land-use policies. The animal is listed as endangered in the Red Data Book (IUCN, 1972). Although it has been legally protected against being killed in Indonesia since 1973, this measure alone will not save the

animal if its habitat is lost. The tiger in Java similarly was exterminated, following loss of habitat although likewise given legal protection.

DISTRIBUTION AND HABITAT

The clouded leopard until recent times was widely distributed in Southeast Asia from Nepal and Sikkim east to Southern China and Formosa, and south through Burma, Thailand, and Indochina, Malaya, Borneo and Sumatra (Lekagul & McNeely, 1977). Three subspecies are known (Ellerman & Morrison-Scott, 1966), of which Neofelis nebulosa diardi is found in Sumatra. Prior to the turn of the century, when much of Sumatra was principally covered with primary rainforest, the clouded leopard must have maintained substantial, continuous populations throughout the island. The loss of habitat first became serious at the turn of the century when large tracts of forests first started to be cleared to make way for agriculture and human settlements. The clouded leopard is much less capable of adapting to environments dominated by man than the smaller felids such as leopard cat (Felis bengalensis), which is known to inhabit areas close to human settlements (Santiapillai & Suprahman, 1985). Today the clouded leopard, although still found in all the eight provinces of Sumatra (Fig. 1) occurs only in a few discontinuous areas.

While the animal inhabits principally primary rainforest habitats, it is not contrary to popular belief, confined to them exclusively (Banks, 1931). In Sumatra, tracks of the clouded leopard had been frequently found in the Barisan Selatan National Park (FAO,

Fig. 1. Map of Sumatra showing the localities from where the Clouded Leopard has been reported.
Scale: 1:5,800,000

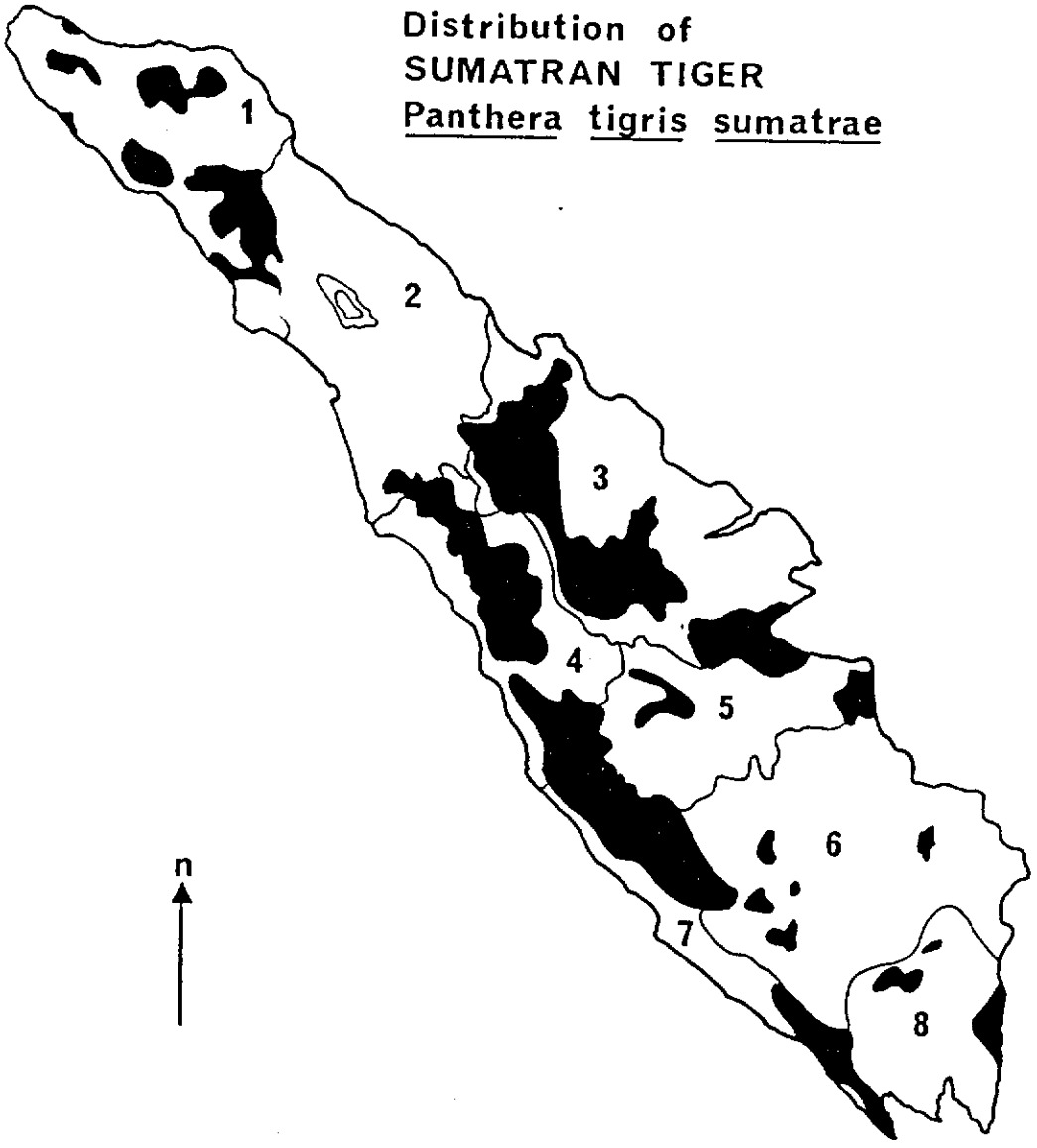

Distribution of
CLOUDED LEOPARD
Neofelis nebulosa diardi
ACEH
Gg. Leuser
NORTH
SUMATRA
Torgamba
RIAU
WEST SUMATRA
Tigapulu hills
Kerinci Seblat
JAMBI
SOUTH SUMATRA
PALMBANG
Gumai Pasemah
BENGKULU
LAMPUNG
Way Kambas
Barisan Selatan
n

1981). This park is about 3,500 km^2 and has suffered seriously in the past from illegal logging, uncontrolled fuel wood collection and shifting cultivation largely caused by transmigrants from Java and Bali. Elsewhere, in the province of Jambi, Blouch (1984) reported finding the track of clouded leopard on well drained soil in a lowland forest that had been logged just a year previously. The author stated that in this forest, the intensity of logging had not been severe and that at least 50% of the forest stand was left undisturbed. These observations indicate that the animal is perhaps not as strictly arboreal as it was previously claimed (Rabinowitz, 1986). Clouded leopard is also known from the Tigapulu hills which straddle the Riau/Jambi provincial border (Fig. 1). These hills are mostly under 700m in altitude whose steeper parts are classified as protection forest while the lower reaches constitute production forest (Blouch, 1984). The clouded leopard is also known to be present in the Torgamba production forest (R. Blouch,. pers. comm.) along the Riau/North Sumatra provincial border. This area harbours a few Sumatran rhinos (Dicerorhinus sumatrensis) but was declared a doomed area for the animals and so a programme is currently underway to capture and transfer some of the rhinos to zoos for captive breeding.

In the much larger Gunung Leuser National Park (10,000 km^2) in the northern part of Sumatra, clouded leopard is known to inhabit a variety of habitats that range from primary forests, forests limited to the valley slopes, and even secondary forest habitats such as pine forests (Kurt, 1970). There are specimens in the Bogor Museum labelled as coming from Palembang (provincial capital of South Sumatra) in the '40s. This means that the specimens could have come from anywhere in

the province of South Sumatra. But today it is known only in the extreme west of the province, in the Gumai Pasemah Game Reserve (Blouch, 1984). About 50% of this small reserve (450 km^2) is montane. The lower slopes remain well forested although encroachment has taken place well within the reserve boundaries (FAO, 1982). In the Way Kambas Game Reserve (1,300 km^2) situated in the province of Lampung, where as a result of indiscriminate logging during the past three decades, over 70% of the lowland dipterocarp forest had been converted by exposure to sun and frequent brushfires into alang-alang (Imperata cylindrica) grasslands (Caufield, 1984), clouded leopard was reported as recently as May 1985 (R. Widodo,. pers. comm.), which points to the animal's adaptability. Previously, it had been reported from the mangrove swamps in the same reserve by game guards. Clouded leopard occurs in Sumatra's largest National Park, the Kerinci-Seblat (14,800 km^2) which owing to its remoteness and enormous size provides one of the key areas in Sumatra where the animal can be expected to survive for a long time. The overall distribution as recorded of the clouded leopard in Sumatra (Fig. 1) is about a third of that of the tiger (Figs. 2 & 3). This is no doubt a reflection partly of ignorance. The distribution marked is that where presence of clouded leopard is most probable. The distribution given for tiger is perhaps the absolute maximum for both clouded leopard and tiger. Major uncertain localities include the large tracts of lowland forests in the province of Riau, and the hill forests in the province of West Sumatra.

Fig. 2. Map of Sumatra showing the distribution of the Tiger, based on a survey carried out in 1984.
Source: Santiapillai & Widodo, 1985.
Scale: 1:5,800,000


Distribution of
SUMATRAN TIGER
Panthera tigris sumatrae
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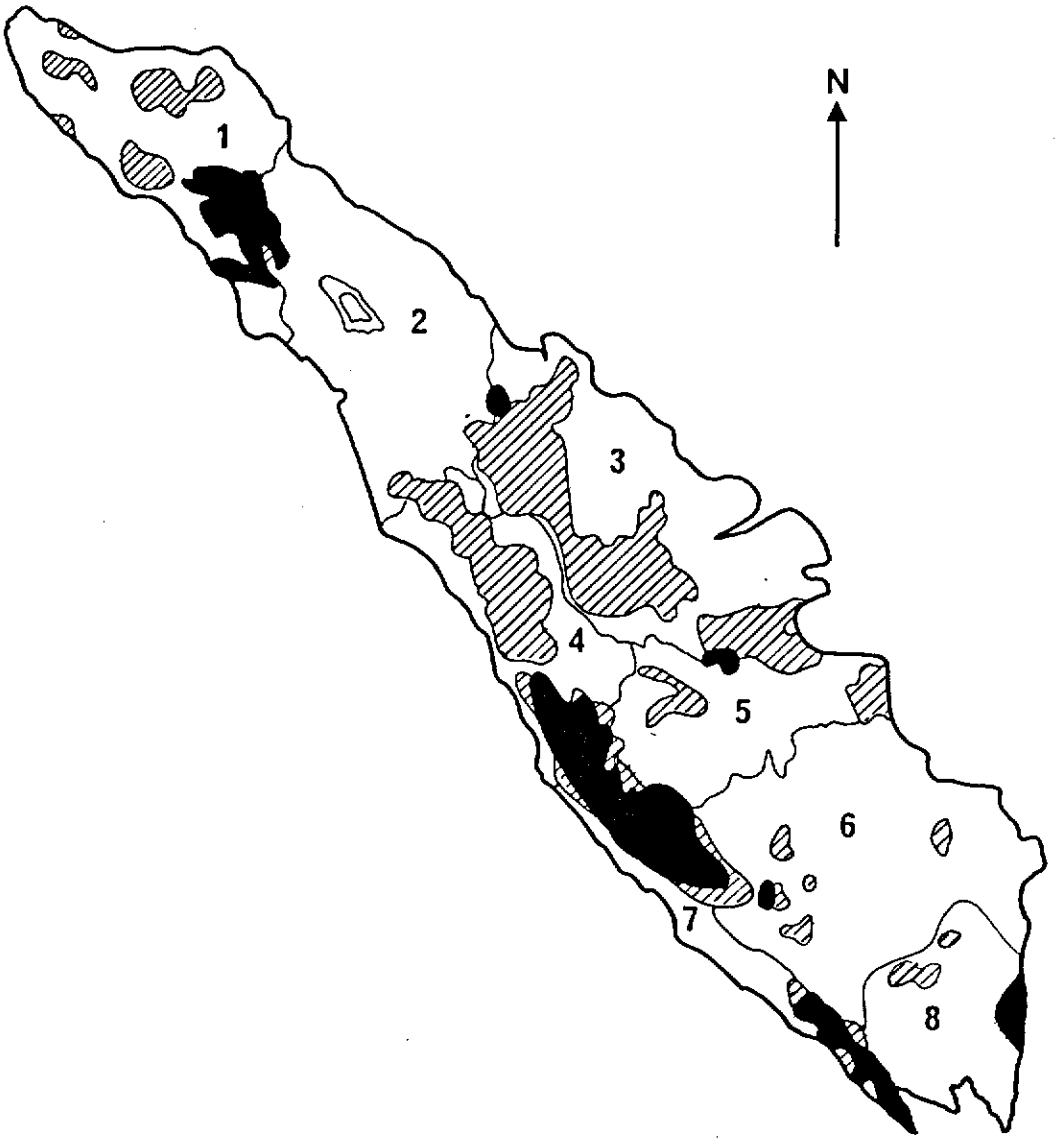
ECOLOGY

The clouded leopard is nevertheless usually more strictly confined to the deeper forests than are the other felids in Southeast Asia (Harrison, 1974). The few sightings recorded in the older literature suggested that the animal is solitary in habit, but Lekagul & McNeely (1977) have reported that 'they may hunt together, especially when after animals such as porcupine, which can be quite hazardous game unless the attack is well coordinated'. In the forest habitats, there are abundant food resources at all levels for a carnivore able to take advantage of them (Myers, 1976). Its principal prey is likely to be monkeys. Pieters (1938) recorded many instances of his finding clouded leopard devouring monkeys on the ground after having killed them by inflicting a bite on the head. But his judgement needs to be regarded cautiously. According to him the clouded leopard is reported to always drop a monkey as soon as it has killed it, so as to be ready to attack the next one! Horror stories of this type concerning predators occur in hunting literature throughout the world. The canine teeth in these aniamls are exceptionally long (Lekagul & McNeely, 1977) which might be an adaptation to kill such relatively large prey as the Proboscis monkey (Nasalis larvatus) and the Pig-tailed macaque (Macaca nemestrina) in Borneo (Davis, 1962). In Borneo it is also known to feed on Orang utans (Pongo pygmaeus), deer and pigs (Payne et al., 1985). Pieters (1938) reported that occasionally the animal was observed trying to catch fish in the swamps.

Given the high density of primates in areas where the clouded leopard is known to be present, one would assume that a relatively small

Fig. 3. Current probable minimum distribution of clouded leopard in Sumatra and maximum possible distribution as indicated by survey for tiger done in 1984.
Solid shading: presence of clouded leopard (as well as tiger) probable or certain.
Cross hatch: additional area of good habitat for clouded leopard and tiger as indicated by survey in 1984, and where tiger is believed to be present, clouded leopard may still be present in at least part of this area.

Scale: 1:5,800,000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home range perhaps of the order 5 km^2 would be sufficient to provide it with food, but it is presumably territorial like other solitary felids and its maximum density may be much less if territory sizes are in fact large. It is very agile and able to catch its prey entirely in the crowns of the forest trees. Pieters (1938) reported that the animal can easily jump distances of 5m or more between trees. In Sumatra, the clouded leopard shares its habitat with six other felids namely, leopard cat (Felis bengalensis), marbled cat (Felis marmorata), fishing cat (Felis viverrina), flat-headed cat (Felis planiceps), golden cat (Felis temmincki), and the tiger (Panthera tigris). Intra-specific competition will be reduced by the adoption of an arboreal hunting habit. The only sympatric felid which also hunts arboreally is the golden cat. This may be expected to concentrate on smaller prey so that the clouded leopard may not suffer serious competition from the other felids. Ecological competition between predators is reduced by their taking different sections of the prey population (Bertram, 1979).

THREATS TO CLOUDED LEOPARD

The most serious threat for clouded leopard as well as all other large mammals in Sumatra is clear felling of forests for conversion to agriculture or human settlements. It is particularly serious in the case of clouded leopard given that it hunts arboreally. Another agency which represents a very serious threat to carnivores in general is poison (Myers, 1976) which is readily available in Sumatra. Organochlorines such as DDT are often used as poison in agricultural settlements in the vicinity of game reserves to kill predators that attack cattle and poultry. This was perhaps the main cause for the extinction of the tiger

in Java following the fragmentation of its habitat (Hoogerwerf, 1970). Poison could also be used for deliberately killing the clouded leopard for its skin, which Altsheler (1936) amongst others has praised for its beauty. Given also the animal's rarity, the skin can be sold in the black market for as much as US$ 2,000/-. Since the clouded leopard is listed in Appendix I by CITES (Convention on International Trade in Endangered Species of Wild Flora and Fauna) its trade is banned. Nevertheless skins are still exported illegally. Singapore acts as an entrepot through which much illegal traffic in furs is known to take place. Such traffic is inherently extremely difficult to suppress or even control. It may be suggested that the primary protection of the species must be good cover for the living animal in extensive forest remote from the nearest road.

CONSERVATION REQUIREMENTS

We are still far from knowing the ecological and behavioural characteristics of the clouded leopard sufficiently to suggest specific measures for its management and conservation other than to emphasise at this point the overriding need of forest protection. The species offers the following problems making it perhaps the most demanding type of felid to conserve in Sumatra:-

1. Its requirement for high forest as habitat.
2. Its large body size and consequent need for relatively large home range.
3. The high commercial value of its pelt, making poaching potentially very profitable and difficult to control.

Conservation efforts must be aimed at maintaining as many viable populations as possible throughout Sumatra. As in the case of the tiger, it is essential to maintain individual wild populations even when they are believed to be small (Schaller, 1986). More intensive surveys are needed to identify viable populations so that their habitats can be given better protection. Logging per se need not conflict with the conservation of clouded leopard provided it is strictly controlled and limited to trees above 50cm diamter at breast height. However, clear felling should be stopped in areas where clouded leopard is known to be present. A more careful and selective utilization of forests is needed to replace the indiscriminate approach. As in the case of the elephant and tiger, planning for clouded leopard conservation requires as a basic premise that clouded leopard and human settlements need to be kept apart (Ashby & Santiapillai, 1986). Strict control of the use of poison, particularly in and around the game reserves is needed. Finally for long-term success of the conservation efforts, it is essential that conservation education should be aimed at grassroot level so that people would shed their traditional antipathy to predators and learn to regard them as important components of ecosystems.

REFERENCES

Altsheler, B. 1936. A monograph of Neofelis nebulosa and Pardofelis marmorata or The Clouded Leopard and The Marbled Cat. Nat. Hist. Publishing Co. Kentucky, USA

Ashby, K.R. & Santiapillai, C. (in press). An outline strategy for the conservation of the tiger (Panthera tigris) in Indonesia. A paper presented at the International Symposium, World Conservation Strategies, April 13-16, 1986, Minneapolis, Minnesota. In: Tigers of the World.

Banks, E. 1931. A popular account of the mammals of Borneo. J. Malay. Branch R. Asiatic Soc., 9 (2): 1-139

Bertram, B. 1979. Serengeti predators and their social systems. In: Serengeti, dynamics of an Ecosystem. Eds. A.R.E.Sinclair & M.Norton-Griffiths. The University of Chicago Press, Chicago. 221-248

Blouch, R.A. 1984. Current Status of the Sumatran Rhino and Other Large Mammals in Southern Sumatra. IUCN/WWF Report No: 4., Bogor. 37 pp.

Caufield, C. 1984. In the Rainforest., Heinemann, London. 304 pp.

Davis, D.D. 1962. Mammals of the lowland rain-forest of North Borneo. Bull. Nat. Mus. Singapore., 31: 1-129

Ellerman, J.R. & Morrison-Scott, T.C.S. 1966. Checklist of Palaearctic and Indian Mammals. 1775-1946. British Museum, London. 810 pp.

FAO, I98I. Barisan Selatan Game Reserve Management Plan 1982-1987 Field Report No: 21, Bogor

FAO, 1982. National Conservation Plan for Indonesia. Vol. II. Sumatra. Field Report No: 39, Bogor

Harrison, J. 1974. An Introduction to Mammals of Singapore and Malaya. Malayan Nat. Soc., Singapore. 340 pp.

Hoogerwerf, A. 1970. Udjung kulon: the land of the last javan rhinoceros. E.J. Brill, Leiden. 512 pp.

IUCN, 1972. Red Data Book. Vol. I. Morges, Switzerland

Kurt, F. 1970. Final Report to IUCN/SSC and WWF International of WWF Project 596. Leuser Reserve (Sumatra). 139 pp.

Lekagul, B. & McNeely, J.A. 1977. Mammals of Thailand., Association for the Conservation of Wildlife, Bangkok. 758 pp.

Myers, N. 1976. The Leopard Panthera pardus in Africa. IUCN Monograph No: 5, IUCN Morges, Switzerland. 79 pp.

Payne, J., Francis, C.M. & Phillipps,K. 1985. A Field Guide to the Mammals of Borneo. The Sabah Society, Malaysia. 332 pp.

Pieters, D. 1938. Along Jungle Streams and Game Trails. The Swamp forest country of Southern Sumatra. Unpublished report. 143 pp.

Rabinowitz, A. 1986. in Cat News., No: 5, August. IUCN/SSC, Gland.

Santiapillai, C. & Suprahman, H. 1985. On the Status of the Leopard Cat (Felis bengalensis) in Sumatra. Tigerpaper FAO Asia & the Pacific., XII (3): 8-13

Santiapillai, C. & Widodo, S.R. 1985. On the Status of the Tiger (Panthera tigris sumatrae Pocock, 1829) in Sumatra. Tigerpapear FAO Asia and the Pacific., XII (4): 23-29

Schaller, G.B. 1986. On pages 6 & 7: In Cat News., No: 5, August. IUCN/SSC, Gland, Switzerland.

Seidensticker, J. 1984. Managing Elephant Depredation in Agricultural and Forestry Projects. The World Bank, Washington DC. 33 pp.

Whitten, A.J., Damanik, S.J., Anwar, J. & Hisyam, N. 1984. The Ecology of Sumatra. Gadjah Mada University Press, Yogyakarta. 583 pp.