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INTERNATIONAL UNION
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OF NATURE AND NATURAL
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SURVIVAL SERVICE COMMISSION
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RED DATA BOOK

VOLUME 1 — MAMMALIA

a compilation

by

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Introduction

The IUCN Survival Service Commission has been faced with constant difficulties from lack of reliable information on the majority of mammals which qualify as "rare and endangered" species.

To meet the situation the SSC decided to establish a list of mammals falling within this category, and to set up a programme for the acquisition and collation of data on each of the listed species.

In a number of instances where, despite all efforts, reliable information about reputedly rare or endangered species so far remains inadequate, it has been hard to decide whether or not to include them. In many borderline cases, decisions have for the time being had to be taken in an arbitrary manner. The list is therefore intended to be flexible, additions or deletions being made as and when sufficient firm evidence is obtained to enable a more accurate assessment of each animal's status to be made. Adoption of a loose-leaf format allows each report to be replaced whenever new data warrant the publication of a more comprehensive or more up to date sheet.

Purpose of the volume

Material is assembled in the form of short reports, not exceeding two sides of a page, under a series of uniform headings. Each report is therefore an abstract of available data, and this, in combination with the standardized method of presentation, has the advantage of enabling the reader to refer at once to the particular information he requires. It also serves the equally important purpose of showing at a glance what is not known and what gaps need to be filled. It is therefore hoped that the publication of these reports will stimulate interest in filling the gaps as well, of course, as helping to encourage action to remedy the situations described.

Supplementary List

The present column covers mammals believed to be rare and endangered. It excludes the large number which are rare in the sense that they are known only from a type specimen or a type locality, unless there is good reason to believe that they are also endangered. Many rarities may be scarce only in museums or as observed by humans, and these have accordingly been relegated to a Supplementary List, which it is not at present intended to publish.

Subspecific forms

In a number of instances it has been considered appropriate to give each race of a particular species a separate data sheet, especially when dealing with wide-ranging species distributed over several or many different countries, or in some instances over more than one zoogeographical region. For reasons of national pride there is often a better chance that a government will take responsibility for effective action to safeguard a race known to be more or less restricted to its own country than interest itself in a species which occurs over a wide region.

First issue of data sheets

The current list of rare and endangered mammals names 277 species and subspecies. The present volume is being published with 210 data sheets. The remaining 67 will be issued as and when completed, and will be despatched to subscribers at approximately six-monthly intervals, together with any replacement sheets for species on which significant new information becomes available. Thus the number of data sheets in each twice-yearly issue will vary according to circumstances. It is hoped in this way to provide a service, not available elsewhere, which will ensure that subscribers have information that can be relied upon as fully up to date.

Any necessary explanations will be circulated with each fresh consignment of data sheets and, if studied carefully, should obviate queries and correspondence. To avoid confusion it will generally be found advisable to destroy original sheets removed from the volume when replacements are received.

Classification

With few exceptions the system of classification adopted for the data sheets follows the undermentioned authors, details of whose publications are included in the bibliography:

Allen, 1939
Cabrera, 1957–1960
Chasen, 1940
Ellerman and Morrison-Scott, 1951
Ellerman, Morrison-Scott and Hayman, 1953
Hall and Kelson, 1959
Iredale and Troughton, 1934
Laurie and Hill, 1954
Medway, 1965
Morris, 1965
Simpson, 1945
Taylor, 1934

Bibliography

The bibliography is not designed to be comprehensive but includes only those works which have actually been employed in compiling the data sheets. A new issue of the bibliography will be sent to subscribers at irregular intervals whenever sufficient titles have accumulated to justify printing a fresh edition.

Coloured sheets

Pink sheets are used to draw particular attention to those mammals which are believed to be the most gravely endangered.
Green sheets are used for mammals whose survival was at one time in question but which are now regarded as out of danger. They are not included in the index since that is essentially a checklist of rare and endangered forms.

Code number and sequence

Because deletions and additions will periodically be made to the list, numbering of pages would be inappropriate. Instead a "code number" has been given to each sheet to facilitate placing it in the correct sequence. This comprises: the prefix MA = Mammalia; the number in the Index of Families; the first five letters of the generic name, the first three letters of the specific name and, where applicable, the first three letters of the subspecific name. In accordance with this code, therefore, the species will be placed in alphabetical sequence *within the family*. Some subscribers may of course prefer to follow the Systematic order of species used in the Index.
The reference number in the bottom left hand corner of the sheet, set at right angles to the text, should be ignored since it is only for the convenience of the printers.

Measures proposed

In order to avoid any possibility of misunderstanding, it is necessary to explain that proposals under this head are derived from a variety of sources. They are included in the data sheet, without prejudice, to indicate that they have actually been made but not necessarily that they have the considered support of IUCN. Conversely, where no entry is included under this head, IUCN may well have proposals under consideration, but not yet at the stage where they can be published.

Acknowledgements

The collection of the basic information contained in this volume has involved a systematic search of the literature as well as correspondence with zoologists, museums, game departments, national park authorities and many other sources, without whose assistance little progress could have been made. The names of those who have kindly provided information are recorded on the relevant data sheet under "References", and their generous help is gratefully acknowledged. Much more information is required, however, and IUCN would be glad to receive any further data that would help to make the reports as accurate and as comprehensive as possible.

IUCN, Morges, Switzerland, June 1966.

RED DATA BOOK VOLUME I MAMMALIA

To: All recipients of the Red Data Book Ref: Circular letter No. 1

From: IUCN, 110 Morges, Switzerland Date: January 1967

The first consignment comprising a new Index, to which a small number of additions and deletions have been made, as well as 5 new and 18 replacement sheets is made up as follows:

NEW DATA SHEETS

Canis niger	Red wolf
Panthera tigris altaica	Amur tiger
Panthera tigris sumatrae	Sumatran tiger
Phoca kurilensis	Kurile harbour seal
Budorcas taxicolor tibetana	Szechwan takin

REPLACEMENT SHEETS

Callimico goeldi	Goeldi's tamarin
Gorilla gorilla beringei	Mountain gorilla
Arctocephalus philippii townsendi	Guadalupe fur seal
Odobenus rosmarus rosmarus	Atlantic walrus
Monachus schauinslandi	Hawaiian monk seal
Trichechus manatus manatus	West Indian manatee
Rhinoceros unicornis	Great Indian rhinoceros
Rhinoceros sondaicus	Javan rhinoceros
Didermoceros sumatrensis	Sumatran rhinoceros
Ceratotherium simum cottoni	Northern square-lipped rhinoceros
Cervus nippon taiouanus	Formosan sika
Cervus nippon keramae	Ryukyu sika
Cervus elaphus corsicanus	Corsican red deer
Cervus elaphus hanglu	Kashmir stag
Bubalus bubalis	Asiatic buffalo
Addax nasomaculatus	Addax
Alcelaphus buselaphus swaynei	Swayne's hartebeest
Hemitragus hylocrius	Nilgiri tahr

Note: the figure ['(2)' in this instance] in the top right hand corner next to the date indicates the number of times the data sheet has been re-issued.

Sequence: Attention is drawn to the section of the Introduction entitled Code number and sequence which suggests two alternative methods of placing the sheets in the correct sequence - either alphabetically within the family, or following the Systematic order used in the Index.

To avoid the possibility of confusion it is recommended that the relevant original sheets which are now being replaced should be removed from the volume and either destroyed or kept separately.

NORTHERN SQUARE-LIPPED RHINOCEROS

Ceratotherium simum cottoni (Lydekker, 1908)

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "The Nile race resembles very closely, in external appearance and size, the southern race. ... It differs, however, by the possession of a flatter dorsal outline to the skull ... and by the smaller size of the teeth. The measurements of skulls of the two races show them to be of practically the same bodily size. ... Height at shoulders, 5 feet 8 inches. (Roosevelt and Heller, 1914, vol. 2, pp.662, 670)" (3:408).

Present distribution: (a) Southwestern Sudan to the west of the White Nile, in the provinces of Bahr-el-Ghazal and Equatoria. (b) Parts of the West Nile Province, Uganda (Madi, West Madi and Aringa counties) on the western bank of the Albert Nile, an area about 70 miles long by 20-30 miles wide (6:26). (c) Garamba National Park, in extreme northeast Congo (8:3). (d) The subspecies was known to be living in the Ndende and Birao areas of Northern Ubangui in 1965 (11), but there are no recent reports from this region.

Former distribution: "... used to be spread from the Anglo-Egyptian Sudan westwards right up to Lake Tchad in all regions suitable to its existence: ... mostly situated between 13° and 9° North, but extending beyond these latitudes in places" (5:101).

Status: The status of this subspecies gives cause for grave concern.
Sudan: No recent data are available from the Bahr-el-Ghazal, but the present disturbed situation is unlikely to favour the rhinoceros.
Uganda: A substantial decline has taken place; only a remnant population now remains, and this is unlikely to survive for long.
Congo (Kinshasa): Since 1963 the Garamba population has been reduced from abundance almost to the point of extinction.
Central African Republic: Almost if not completely extinct.

Estimated numbers:
Sudan: Unknown; no recent estimate exists.
Uganda: The population declined from about 350 in 1955 to 80 in 1962 (6:28), to about 20-25 in 1969 (10).
Congo (Kinshasa): Number fell from 1,300 in 1963 to about 50 at the beginning of 1970. Since then, intensive poaching from the Sudan has reduced the population to about 30, and perhaps to as few as 20 (12).
Central African Republic: "There are certainly not above 10 in Northern Ubangui" (11).

Breeding rate in wild: Gestation period is uncertain although Dekeyser believes that it is probably about 530-550 days (17-18 months). A single calf is born and breeding may commence at 4-5 years of age (4:317). "Reproduction is ... unexpectedly rapid ... often troops of five included besides the adults, a calf, a three-quarter grown and another still youthful member" (1:88).

Status category: 1(b)*** P Code number: MA/113/CERAT/SIM/COT

Reasons for decline: The chaos arising from the disintegration of law and order in the Congo and occupation of the area by rebel forces account for the heavy losses of rhino in the Garamba National Park. In May 1966, the entire northern, western, and eastern sectors of the park were almost devoid of large mammals with the exception of a few lelwel hartebeest (8:3).

Protective measures already taken: 12 rhinos introduced into the Murchison Falls National Park from the West Nile between 1961 and 1964 have increased to 18 (Oryx 9(5):326).

Measures proposed: The Congolese authorities are taking all possible action to disarm the large gangs of poachers from the Sudan who are systematically ravaging the Garamba National Park, and who lie beyond any control exercised from Khartoum (12).

Number in captivity: 4 males and 4 females in 5 zoos (9:335).

Breeding potential in captivity: Poor.

References:
1. Lang, 1920
2. Brocklehurst, 1931
3. Harper, 1945
4. Dekeyser, 1955
5. Blancou, 1960a
6. Cave, 1963
7. Schomber, 1966
8. Curry-Lindahl, 1966
9. Int. Zoo Yearbook, vol. 11, 1971
10. SSC Minutes, 24:11:69
11. R. Paulian in litt. 23:3:65
12. J. Verschuren in litt. 16:10:70

SOUTHERN SQUARE-LIPPED RHINOCEROS

Ceratotherium simum simum (Burchell, 1817)

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "Largest of all land mammals after the elephants; hairless except for a fringe along the edge of the ear and for the tail bristles; color a slaty gray-black; upper lip straight all round with no trace of a proboscis; ears longer than in the Black Rhinoceros, springing from a closed cylinder about 3 inches long; anterior horn usually longer and slenderer than in the other species; posterior horn usually short, straight, conical. Height of male at shoulder up to 6 feet 6 inches; female rather smaller. Record length of horn, 62.5 inches. (W.L. Sclater, 1900, vol. 1, pp. 300-301)." (1:403)

Present distribution: "... now confined to the Umfolozi Game Reserve, the unoccupied State-owned Lands adjoining, the Hluhluwe Game Reserve and in small corners of neighbouring Native Reserves. Straying to the south is a seasonal occurrence and also less regularly to the west and east. ... Of the 212,000 acres now inhabited, 92,000 are proclaimed Game Reserve containing about half the present population." (2:6) During the last three years surplus animals have been reintroduced into a number of national parks and reserves in southern Africa (particulars given below).

Former distribution: "From the accounts of the early hunters and travellers it is clear that the Southern Square-lipped rhinoceros was formerly widely distributed over Southern Africa. It was found in what are now Southern Angola, part of South West Africa, Bechuanaland, Southern Rhodesia, Transvaal, Zululand and at least a part of Portuguese East Africa. It is generally accepted that it did not occur south of the Orange River." (3:6) "Ansell (1959) has indicated that the species is likely to have occurred in the extreme south-west of Barotseland (Northern Rhodesia), in the country between the Mashi and the Zambezi rivers, even during historical times." (2:3)

Status: "Today, as a result of sound conservation measures, a subspecies once on the brink of extinction has been restored to abundance." (6:4)

Estimated numbers: Approximately 800 in Zululand. (Umfolozi 730; Hluhluwe and Corridor 75). In addition 150 have been reintroduced into other National Parks and Reserves in Southern Africa (Natal 25; elsewhere in South Africa 113; Rhodesia 12). (6:4)

Breeding rate in wild: "The period of gestation is only known from observations ... on a female marked by a slit horn. It was estimated, probably with little error, to be eighteen months (547 days) but it is not possible to say whether this figure is close to the mean of the species. A single calf is normally dropped but twins have been noted on one occasion by ourselves and on others by earlier writers. The calf is able to accompany its mother within twenty-four hours of birth. It begins to graze when about a week old but suckles for at least a year." (2:15) "Net increase in Natal appears to be not less than 12½ annually and is improving." (5)

Status category:

Code number: MA/113/CERAT/SIM/SIM

Reasons for decline: "Almost from the time of Burchell's description of the species from Kuruman in 1812 its elimination from its extensive range began. This coincides with the coming of fire-arms in the hands of the European hunters, who increased rapidly in succeeding years. These more potent weapons were quickly obtained by the Natives, thus hastening the process. By 1880 the species had disappeared from the Northern Cape Province, South West Africa and Bechuanaland. In 1896 it had become extinct in the Transvaal and Southern Rhodesia. At the turn of the century only a few bleached skulls remained in Portuguese East Africa. In eighty years it had been reduced to its present territory where it was from then on protected. ... One European trader in Southern Rhodesia, on the Bechuanaland border, employed some 400 Native hunters in the years around 1890, and the rhinos were exterminated in a very considerable territory through his agency alone. Apart from the sheer love of killing ingrained in most Europeans, there were four attractions about the species to hasten its end; it was easy to approach and kill, the flesh was highly esteemed for its tastiness, the skin was prized for the making of whips and the horns were of value overseas." (2:4)

Protective measures already taken: Due to the very efficient control by the Natal Parks, Game and Fish Preservation Board the Southern Square-lipped Rhinoceros has steadily increased in numbers since the 1920's. (2:9)

Measures proposed: "Translocation of Square-lipped Rhinos from Umfolozi will continue within the limits of available finance." (5) "Sheer pressure of numbers has become almost an embarrassment to the Natal Park's Board. ... In the interests of the survival of the southern race it is apparent that the population will have to be reduced in order to ensure the lasting preservation of the strictly limited habitat." (6:4)

Number in captivity: In addition to 3 at the Pretoria Zoo a further 27 have been sent to overseas zoos. (4:3)

Breeding potential in captivity: None kept in zoos until 1946, consequently no data on breeding potential in captivity. (5)

References:

1. Harper, 1945
2. Player and Feely, 1960
3. Bigalke, 1963
4. Brand, 1964
5. J. Vincent, in litt. 20/6/63
6. IUCN Bulletin No. 15, April/June 1965

BLACK RHINOCEROS

Diceros bicornis (Linnaeus, 1758)

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "12' long, 5½' at shoulder, 2 tons wt., 2 horns, anterior horn up to 53½" (average 20"), muzzle pointed, upper lip prehensile, hide dark grey, lacks incisors in both jaws." (5:209)

Present distribution: Similar to former distribution except that south of the Limpopo the species now occurs only in Zululand and south of the Cunene only in the northern part of South West Africa. (4)

Former distribution: " ... included formerly the Cape region in the south, from southwestern Angola across the Cape Province to eastern Africa, and north, avoiding the Congo Basin and its rain forests, to Somaliland and southwestern Ethiopia, thence westward along a strip between the Sahara and the Congo and Nigerian forests to the region of Lake Chad and the French Cameroons. Over this vast area are localities where rhinos are absent, as along the coast of Kenya and Tanganyika Territory, or between the Chobe and the Zambesi, where according to Selous the natives say there were none even in days before white occupation." (2:397)

Status: " ... now practically exterminated south of the Zambesi and much reduced in numbers elsewhere ... It had been almost exterminated in the former French territories of Africa by 1930, at which time strict protection was applied with surprisingly satisfactory results." (6:256) Hobley (1936) stated that during the previous 20 years the rhino population had declined to probably about 20% of its former numbers. (2:399) "Where effectively protected rhinoceros are still reasonably common, but elsewhere there are only remnant populations." (3:53)

Estimated numbers: Cameroon (400), Tchad (500), Centrafrique (300), Sudan (200-300), Ethiopia (a few), Somalia (almost extinct), Kenya (2,500), Uganda (500), Tanzania (3,000-4,000), Congo (a few in Kagera and Upemba National Parks), Zambia (400), Rhodesia (1,500), Mozambique (500), Angola (150-200), Southwest Africa (280), Bechuanaland (20), Malawi (12?), Republic of South Africa (408). Total 11,000 - 13,500. (4)

Breeding rate in wild: "Rhinoceroses appear to have no well-defined breeding season. Single young per birth are the rule (Asdell, 1946). From reports of breeding in captivity, the gestation period for the black rhinoceros seems to be between 15 and 16 months (Ulmer, 1958)." (8:513) Net annual increase under normal conditions estimated at about 5 - 8%. (4)

Reasons for decline: The presence of rhinos was incompatible with settlement and in many areas they were systematically exterminated. Its great bulk and blundering, aggressive tendencies resulted in this pachyderm falling an easy prey to modern weapons. The greatest threat today lies in illegal hunting for the horn, regarded in the East as a powerful aphrodisiac. (2:401-402) "The decrease in its numbers during recent years is phenomenal. The author is acquainted with one area in Kenya of about 1,600 square miles which twenty years ago contained several thousand rhino; today they have entirely disappeared from that region. European licensees may have killed a few hundred, the remainder have been poached. This rate of slaughter is widespread and not confined to one region." (1:22)

Protective measures already taken: Although legally protected throughout most of its range, the high price of horn leads to extensive illicit slaughter. (4)

Status category: 2(a)P Code number: MA/113/DICER/BIC

Measures proposed: The best hope for the species appears to lie in the national parks or other sanctuaries where adequate protection can be given. Where possible rhinos should be moved into national parks and reserves from areas where they conflict with development or cannot be adequately protected. (4) "The National Parks Board of South Africa is at present considering the re-introduction of the Black Rhinoceros in the Kruger National Park, as soon as the re-stocking of this Park with White Rhinos has been completed." (7:4)

Number in captivity: 53 ♂♂, 52 ♀♀ + 8 in 63 zoos. (9:382)

Breeding potential in captivity: Of the above, 6 ♂♂, 5 ♀♀ + 7 were bred in captivity. (9:382) Crandall provides evidence of increasing breeding successes in recent years which "indicate that the black rhinoceros, at least, is definitely established as a breeding species in the zoological garden. ... In general, female rhinoceroses have proved to be excellent mothers in captivity, and most of the calves born have been reared. The greatest obstacle to successful breeding continues to be the difficulty in persuading potential parents to tolerate each other long enough for the purposes of procreation." (8:512-513)

References:

1. Hobley, 1931
2. Harper, 1945
3. Ansell, 1960
4. SSC Memo. No. 4., 1960
5. Burton, 1962
6. Rowland Ward, 1962
7. Brand, 1964
8. Crandall, 1964
9. Jarvis, 1965

SUMATRAN RHINOCEROS

Didermocerus sumatrensis (Fischer, 1814)

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "This is the smallest of the living rhinoceros. Height at the shoulder may be from 4 to 4½ feet; length from snout to root of tail, 8 to 9 feet. There are two horns, the anterior one generally under a foot long ... the posterior 2 to 4 inches. ... Unlike the Javan and Indian rhinos, whose skin appears to be made of armor plates, the Sumatran rhino's hide appears relatively smooth, with a conspicuous fold just behind the shoulder. ... in young animals at least [the skin] is thinly covered with short hair. The color and density of this hair varies with geographic locality ..." (1:13)

Present distribution: Small isolated populations still occur in a few widely separated localities in Burma, Thailand, Malaya, Sumatra and Sabah, and possibly India (Lushai Hills and Tirup Frontier Tract), East Pakistan (Chittagong Hills), Cambodia, Laos, Viet Nam, and Kalimantan. (1:18-27) In Sumatra the rhino is found mainly, in the Löser Reserve (approximately 1,700 sq. miles). (5:177)

Former distribution: Ranged from parts of East Pakistan and Assam, throughout Burma, much of Thailand, Cambodia, Laos and Viet Nam, Malaya, Sumatra and Borneo. (1:18-26)

Status: "The widely dispersed survivors are being hunted down constantly, and unless effective measures can be taken soon, there may be no survivors in a few years' time. Small as Burma's rhino population is, it is still the largest known "concentration" of Sumatran rhinos left in any one country, which shows the extremely critical state of the Sumatran rhino throughout its range." (1:22)

Estimated numbers: Total world population is estimated to be about 100 to 170, distributed as follows: Thailand (on Tenasserim border) 6; Cambodia, possibly 10; Borneo, possibly 10. (2:3) Burma, 20-30. (4:69) Malaya, probably about 30. (7:5) "An estimated 20 in North Sumatra / Acheen; 25 in Riau; 15 in South Sumatra / Lampong." (11)

Breeding rate in wild: "Gestation 510-550 days." (3:209) Single young are the rule and there appears to be no well-defined breeding season. (6:513)

Reasons for decline: Like the other two species of Asian rhinoceroses, sumatrensis has been hunted almost to extinction throughout its range because of the "belief in the medicinal, religious or magical value of the various parts and products of the rhinoceros [which] is common to all peoples of south and east Asia, with the possible exception of a few hill tribes. Every part of the body is highly prized, from hide, hair and toenails to the blood and visceral organs ..." (1:13)

Protective measures already taken: Although legally protected over most of its range, the law is difficult to enforce. Talbot states, for example, that "although the live animal is protected by law in the Union of Burma, it is legal to sell rhino blood and other parts as medicine, and in recent years several rhinos have been killed on official permits by high Burmese officials 'for medicinal purposes'." (1:20)

Measures proposed: Adequate law enforcement is essential and reserves should be established to include the known range of the greatest number of rhinos. Such reserves should be large enough to cover the wandering propensities of the animal. The law, which in Burma permits the sale of parts of the rhino for medicinal purposes, should be abolished. (1:21) H.G. Hundley has suggested to the Chief Conservator of Forests, Burma, that measures should be taken to concentrate the remaining rhinos in three areas - North Burma, Arakan Yomas and Tenasserim. (8)

Number in captivity: One ♀, Copenhagen Zoo. (9) The Board of Management of the Rangoon Zoological Gardens proposes to trap a pair of Sumatran rhinos for breeding purposes. (10)

Breeding potential in captivity: No data, but there appears to be no reason why the Sumatran rhinoceros should not breed as successfully in captivity as the Indian rhinoceros. (9)

References:

1. Talbot, 1960
2. S.S.C. Memorandum No. 10, 11/9/62
3. Burton, 1962
4. Milton & Estes, 1963
5. Milton, 1964
6. Crandall, 1964
7. Hislop, 1965
8. H.G. Hundley in litt. 12/1/63
9. E.M. Lang in litt. 21/1/63
10. U Tun Yin in litt. 5/12/63
11. H. Basjarudin in litt. 28/10/65

GREAT INDIAN RHINOCEROS Indische neushoorn

Rhinoceros unicornis Linnaeus, 1758

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "This is the largest of the Asiatic rhinoceroses, reaching a height of 6 feet 4 inches at the shoulder and a total length if 14 feet 1 inch, with a horn of 24 inches; fold of skin in front of shoulder not continued across back of neck; other folds behind shoulder, in front of and across thigh, and around neck; sides of body and upper limbs studded with large rounded tubercles; skin naked except for a fringe of hairs on the margin of the ears and some bristly hairs on the tail; general color uniformly blackish gray, with more or less pink on the margins of the folds (Lydekker, 1900, pp. 21-22)." (1:375-376)

Present distribution: "The present range of the Indian rhino consists of eight reserves or sanctuaries in India, and the Rapti Valley region of the Nepal Terai. Occasionally individual rhinos are reported outside the reserves, some of them presumably stragglers from the Indian reserves or the Nepalese Rapti Valley area. In the latter category are those occasionally reported from Northern Champaran District of Bihar State which adjoins Nepal. Other reported individuals may indicate small isolated populations, such as the few animals consistently reported from an area a little way up the Brahmaputra river from the Kaziranga Sanctuary in Assam. E.P. Gee estimates this group at about ten animals. The occasional but unverified rhino reports from the Tirup Frontier Tract in Assam may indicate the presence of a few survivors in that area." (3:35)

Former distribution: "Five hundred years ago the Indian rhino ranged over a large part of northern India and Nepal. The westerly boundaries of its range were the foothills of the Hindu Kush west of Peshawar and the bush country south along the Indus River; the northern limit was the frontier of Kashmir. The boundary presumably then went south-eastward along the foothills of the Himalayas, through the Terai to the Burmese border. The southerly limit is uncertain, although arid conditions presumably limited its southern extension in much of India." (3:32-34) "If the Great Indian Rhinoceros ever inhabited Burma, its range by the late 1800's was probably limited to the areas adjoining Assam and Bengal." (3:32) Reports of its occurrence in Cambodia, Laos, Viet Nam and Thailand are questionable. (3:32 and 1:380)

Status: Stable or increasing in northeastern India. (9) Until recently the population was reported to be decreasing in Nepal (9) but Willan states that during the past three years protection has greatly improved and it is "possible to hope that the future of the rhinoceros is now brighter than ever before ..." (7:8)

Estimated numbers: 1959 - 700 (400 in India and 300 in Nepal) : 1961 - 600 (440 in India and 160 in Nepal). 1966 population totals 740, made up as follows:

Chitawan, Nepal	165	Raja Mayang, Assam	6
Jaldapara, West Bengal	50	Orang, Assam	12
Gorumara, West Bengal	5	Sonarupa, Assam	5
Kaziranga, Assam	400	Manas, Assam	15
Laokhowa, Assam	40	Elsewhere in Assam	35
Kukurata, Assam	7	Total :	740 (9)

Breeding rate in wild: Gestation period approximately 16 months. (4:513) According to Walker, calves are suckled for two years. (6:1351) Thus an adult female may breed only every fourth year or so.

Status category: 2(a)·P Code number: MA/113/RHINO/UNI

Reasons for decline: "Hunting was doubtless important, and may well have been a sort of coup de grâce to a population already in rather desperate straits, but instrumental in reducing the rhino population to the point where hunting became critical was man's modification of the rhino's habitat. As the human population of India increased so did the land area put under cultivation or grazing. One expression of this increased pressure on the land has been the growing area covered by desert in west and north-western India, where it is largely a result of man's land abuse." (3:34)

Protective measures already taken: Eight sanctuaries have been established of which the most important is the Kaziranga in Assam, covering 166 sq.m. (3:35-37) Willan (1965) reports that the Government of Nepal has taken measures to remove some 22,000 people from the forest area and the rhinoceros sanctuary of the Chitawan (Rapti Valley) and to resettle them elsewhere. "The whole of the area of the rhinoceros sanctuary and proposed National Park is therefore now clear of settlement, an outstanding achievement ..." (7:8)

Measures proposed: Among Mr. Gee's recommendations for Nepal are: an extension of the Mahendra National Park to embrace the rhinoceros migration routes; the establishment of additional sanctuaries in the valleys of the Narayani, Rapti and Reu rivers; the re-introduction of the rhino into a suitable new sanctuary in the Morang District in southeastern Nepal; the constitution of a Nepal Board for Wild Life. (2:84) Referring to Kaziranga, which contains the largest known concentration of Indian rhinos, Talbot states that domestic livestock, which at present are permitted within the boundaries, represent a considerable threat to the rhino and other forms of wildlife through competition for grazing and the disease factor. He recommends that all domestic animals should be excluded from the sanctuary. (3:46-47)

Number in captivity: 45 23 ♂♂ and 16 ♀♀ in 24 zoos. (8:445)

Breeding potential in captivity: Of the above, 5 ♂♂ and 5 ♀♀ were born in captivity. (8:445) 7 have been bred at the Basle Zoo and 2 at Whipsnade. (10) "Rhinos in captivity have proved very difficult to breed, as both the male and female appear to come into breeding condition separately at varying seasons and their seasons do not necessarily coincide." (5:149) "The female Indian rhino at Hagenbeck's had a male calf recently, a result of her union with the Basle male. The calf is being weaned by hand. A male born early this year at Basle has arrived at Vincennes Zoo as a mate for the adult female received by them 2 years ago. Thus there are 2 potential breeding pairs in Europe." (11)

References:

1. Harper, 1945
2. Gee, 1959
3. Talbot, 1960
4. Crandall, 1964
5. Ripley, 1964
6. Walker, 1964
7. Willan, 1965
8. Jarvis, 1966
9. E.P. Gee in litt. 10/4/63 & 26/7/66
10. E.M. Lang in litt. 30/7/63
11. Marvin L. Jones in litt. 29/10/64

JAVAN RHINOCEROS

Rhinoceros sondaicus Desmarest, 1822

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: General appearance similar to (and size only slightly smaller than) Rh. unicornis; but the head of the latter is noticeably heavier. The skin folds of the two species differ slightly, notably on neck and shoulders. The skin of Rh. sondaicus lacks the conspicuous tubercles of the Indian species. Schenkel refutes the widely-held belief that the horns of the male Rh. sondaicus is invariably about half the length of that of Rh. unicornis, and that females are either hornless or have only a token horn (8).

Present distribution: Known with certainty only from the Udjung Kulon Reserve (360 sq.km.) in extreme western Java (5:36), but not the Löser Reserve (6000 sq.km.) in Sumatra (9). Unconfirmed reports suggest that a few individual animals may still exist in Tenasserim, on the Thailand frontier (7). Guggisberg alludes to a report that some may have survived into the 1960s in the montane regions of Laos north of the Srepok River (4:120).

Former distribution: The range included parts of India, East Pakistan, Burma, Thailand, Cambodia, Laos, Viet Nam and Malaysia. "R. sondaicus was definitely reported as far north as Tonkin. Other reports indicate that it may have been found over the Chinese border, particularly up the Song Koi and Mekong Rivers." Also occurred throughout the greater part of Sumatra and Java (3:48).

Status: Critically endangered.

Estimated numbers: 21-28 individual animals in Udjung Kulon (8). The size of the Löser population is not known, but is thought to be about the same (9).

Breeding rate in wild: A single calf after a gestation period of about 16 months. Mature females are believed to calve only about every third year (6:129).

Reasons for decline: Primarily attributable to the horn trade. According to Peacock, the horns and blood of Rh. sondaicus were considered more valuable than those of the Sumatran rhinoceros (1:78). Schenkel has shown that the preferred habitat of Rh. sondaicus is secondary vegetation. The animal was therefore attracted to the man-made clearings, temporarily cultivated and then abandoned, which accompanied the spread of human settlement; this brought it into conflict with man (6:112). "In the last century with the tremendous population growth in Java the rhinos would have been excluded from most of the island by agriculture, even if they had not been hunted to death for their horns" (3:49).

Protective measures already taken: "The [Udjung Kulon] peninsula was set aside by the Netherlands Indies Government in 1921 as a Nature Monument to preserve the Javan rhino, the Banteng and the Javan tiger, all of which were threatened with extinction" (3:52).

Status category: 1(a)*** P Code number: MA/113/RHINO/SON

In 1937 the status of the area was altered to that of Nature Reserve, from which all human habitation was excluded. In 1967 Schenkel commenced his ecological study. The following year this was placed on a more permanent footing by the World Wildlife Fund and the University of Basle, who formed the "Basle Patronage Committee for Udjung Kulon" to give practical help to the Indonesian authorities, notably in ensuring continuity in studying the Javan rhinoceros and its ecology. Since May 1967 the WWF have made available special funds on a continuing basis for the provision of effective anti-poaching measures, including the construction of guard posts, money for guards' wages, uniforms, and medicaments, as well as supplying a Landrover and boat (8). A three-month preliminary survey of the Löser Reserve undertaken by Kurt in 1970 was followed by the formation of a "Netherlands Co-responsibility Committee for Gunung Löser" to act on similar lines to the Basle Patronage Committee (9).

Measures proposed: Continued protection, research, and management are the essential requirements for Udjung Kulon. The reserve does not contain large stands of the saplings and plants that comprise the rhinoceros's diet: these are scattered and scarce, and in many parts of the reserve have been replaced by unfavourable plant species. As the rhinoceros population increases it will therefore be essential to develop a programme for managing the habitat in a way that will be most beneficial to the rhinoceros (6:133). Much of the Löser Reserve is subjected to large-sclae timber extraction, accompanied by illegal cultivation and hunting. A firmly administered management programme is an urgent necessity if this potentially great reserve is to fulfil the purpose for which it was created (9).

Number in captivity: None. Few have ever been exhibited in zoos.

Breeding potential in captivity: There are no records of captive breeding.

References:

1. Peacock, 1933
2. Sody, 1959
3. Talbot, 1960
4. Guggisberg, 1966
5. Schenkel & Lang, 1969
6. Schenkel & Schenkel-Hulliger, 1969
7. Boonsong Lekagul in litt. 31:8:63
8. R. Schenkel in litt. 11:1:70
9. F. Kurt in litt. 6:1:71

NUBIAN WILD ASS

Equus asinus africanus (Fitzinger, 1857)

Order PERISSODACTYLA Family EQUIDAE

Distinguishing characteristics: "'General colour of upper-parts greyish-fawn, with the muzzle, a broad ring round each eye, ... and the under-parts, white or whitish; the legs being of the same pale hue, with some greyish on the front surface, and a few small dark spots on each side of the fetlocks. The mane ... is short, upright, and dark brown or blackish ... The narrow dorsal stripe is continued as a thin line well on to the tail'; the two branches of the shoulder stripe are about 5 - 6 inches in length. ... The ears are ... black at their tips ... On the inner side of the lower part of the fore-leg is a chestnut patch. Baker (1867, p. 56) gives the height of a male from the Atbara River as 55 - 56 inches." (1:345)

Present distribution: "Red Sea Hills south of Suakin and Eritrean Border as far south as Atbara River." (2:20) Blancou states that the wild ass occurs north of Tibesti-Ennedi, in Tchad, (4:321) and a recent report, said to be reliable, refers to the presence of a small herd in the salt marshes, called Hatiyet el Melva, about 60 km. east of Giarabub, north of the northern edge of the Great Libyan Sand Sea. They are well known to the inhabitants of Giarabub, who do not molest them. (9) However, there is considerable difference of opinion whether such reports refer to wild or feral specimens. Harper reviews the arguments for and against the occurrence of true wild asses west of the Nile. (1:349-350)

Former distribution: Antonius (1938) states that "until recent times [the Nubian wild ass] spread over the mountainous semi-deserts of Nubia and the Eastern Sudan from the Nile to the shores of the Red Sea." (1:348)

Status: "No specimens of this animal have been seen. It is now considered to be extinct in its former range in Nubia." (3:569) Talbot concludes that all surviving stocks are feral. (6:116)

Estimated numbers: Unknown.

Breeding rate in wild: The gestation period is 11 to 12 months and a single young is normally born. Mature mares usually breed every alternate year. The life span is 25 to 30 years. (7:1342)

Reasons for decline: Several authors provide evidence that the Arabs do not molest the wild ass because they do not eat its flesh.(1:347-348 and 6:116) Owen states that the animal was "exterminated early this century on the plains along the river Atbara" but offers no explanation beyond the surmise that "probably the main threat to their existence was less persecution than a gradual deterioration and extinction of the true stock through inter-breeding with tame donkeys in the valleys." (5:77)

Protective measures already taken: Accorded protection under the 1933 London Convention. (1:348) Legally protected in the Sudan.

Measures proposed:

Status category: 4(b)***P Code number: MA/111/EQUUS/ASI/AFR

Number in captivity: 46 ♂♂, 9 ♀♀ in 3 zoos. (8:382) However, many of the so-called Nubian wild asses that have been exhibited at zoos in the past were not derived from pure-bred stock. (1:348)
1966: 6/3 [illegible]

Breeding potential in captivity: Of the above, 4 ♂♂ and 5 ♀♀ were bred in captivity. (8:382)

Remarks: On the island of Socotra, off the extreme northeast coast of the Somali Republic, are herds of wild or feral asses which are similar to E. a. africanus but smaller in size. They are said to be descended from Nubian stock, originally brought there by the Ancient Egyptians. (1:349)

References:

1. Harper, 1945
2. Mackenzie, 1954
3. Setzer, 1956
4. Blancou, 1960
5. Owen, 1960
6. Talbot, 1960
7. Walker, 1964
8. Jarvis, 1965
9. E.J. Hufnagl in litt. 28/1/65

SOMALI WILD ASS

Equus asinus somalicus P.L. Sclater, 1884

Order PERISSODACTYLA Family EQUIDAE

Distinguishing characteristics: "Differs from the Nubian wild ass in its generally paler and more greyish colour, in the entire absence of the cross-stripe over the shoulders, in the very slight indication of the dorsal line, and in the numerous black markings on both front and hind legs" (5:12).

Present distribution: "The range of the Somali wild ass in Ethiopia extends from the Danakil Depression southwards to Lake Hertale, east of Addis Ababa (9° 55' N., 40° 24' E.)" (8:279). "It appears that the Sardo population, the last major group known to persist in Ethiopia, exists in a rectangular area of approximately 20 x 25 kms. lying to the west of the village of Sardo and bisected by the Dessie-Assab highway. The main concentration is reported to be at the eastern end of this rectangle" (4:4). "There may be other thriving populations further north waiting to be discovered. Ato Habte Selassie stated that he had seen wild ass 'in large numbers' at a place called Buri which, I understand, lies in a small peninsula 'some distance' south of Massawa. He also said that they were reported to exist in several other places near the coast. It is just possible, but unlikely in my opinion, that these northern herds might be of the Nubian race" (9). In Somalia there have been sightings in the upper Nogal (1964), and 'between Erigavo and El Afuein' (1963) (6:297).

Former distribution: "The coastal plain from Massawa in the north to the Webi Shebeli in the south, extending inland across the Danakil plains to the Awash Valley" (4:1).

Status: "This species ... only survives in any significant numbers in central Danakil" (8:279). In Somalia it is now "exceedingly rare" (6:296).

Estimated numbers: "It is doubtful if the total population exceeds a few hundred" (8:279). The Sardo population (the largest in Ethiopia) can be estimated at about 200, with a possible maximum of 300-350 (9). This same population has more recently been sighted by two Danakil game scouts who report a herd of about 140 in the Tendaho area (Ethiopian Nat.Hist.Soc. Newsletter, No. 17, May 1968). 8 adults and 2 immatures have so far been sighted near Lake Hertale (9). According to Dr. E. Hufnagl, not more than two very small herds, totalling about 10-12 animals, survive in Somalia (Oryx 8(4):232).

Breeding rate in wild: The average gestation period is 365 days (2:3), and mature females normally bear a single foal every alternate year.

Reasons for decline: The decline has coincided with the various military campaigns that have taken place in Ethiopia and Somalia during the first half of the 20th century (3:208). Antonius (1938) stated that "the Abyssinian war has its consequences for the African wild asses: warring soldiers, and especially askaris, are never the best protectors of vanishing game" (1:352). According to Menges (1887) "most of the Somalis do not touch the flesh" (1:351), but, although this statement may be strictly correct, the Somalis certainly hunt wild asses for the fat which is highly regarded as a medicine against tuberculosis (10). Wild asses are very wary animals, occupying uninhabited semi-desert regions, but they are predominantly grazers and need to drink every second or third day. Increasingly severe competition from domestic livestock for the limited pasture and water, particularly during periods of prolonged drought, is probably an important factor in their decline (6:296).

Status category: 1(b)*** Code number: MA/111/EQUUS/ASI/SOM

Protective measures already taken: In Somalia "they are strictly protected by law" (6:296).

Measures proposed: "The establishment of a game reserve in the upper Nogal and of a breeding enclosure where a certain number of captured animals could be confined is to be strongly recommended" (6:297). "A game reserve or similar sanctuary should be declared covering part, or the whole, of the Sardo population, from which humans and their domestic animals should be wholly excluded. To do that, however, may be difficult where competition for grazing is so acute, and in any case it is essential first to confirm the findings of this preliminary report ... It is therefore recommended that as soon as possible a warden be posted to the area with the duty of studying the distribution, movements, numbers and general biology of these animals. ... It will probably be necessary to allow a certain amount of grazing of domestic stock to continue within this reserve under agreement ... but it must be under control and must not be allowed to increase above present levels at the highest" (4:5). Grimwood also recommends that "every effort should be made to determine the status of the species elsewhere in Ethiopia. To do this a careful survey of the Danakil Depression and the whole of the little-known area between Massawa and the Dessie-Assab highway is required. Further surveys of the Awash plains and the region northeast of Diredawa up to the Somalia and French Somaliland borders should also be carried out" (4:6). "The species is certainly in urgent need of both effective protection and scientific investigation of its status and ecological requirements" (8:279).

Number in captivity: 3 ♂♂ and 3 ♀♀ at Catskill Zoo, U.S.A. (7:371).

Breeding potential in captivity: The six at Catskill were all bred in captivity (7:371).

References:

1. Harper, 1945
2. Kenneth, 1953
3. Simon, 1962
4. Grimwood, 1965
5. Sidney, 1965
6. Funaioli & Simonetta, 1966
7. Jarvis, Vol. 7, 1967
8. Blower, 1968
9. I.R. Grimwood in litt. 10/2/65 to 13/1/66
10. P.R. Bally in verbis 9/10/67

SYRIAN WILD ASS

Equus hemionus hemippus I. Geoffroy, 1855

Order PERISSODACTYLA Family EQUIDAE

Distinguishing characteristics: "This is the smallest of the Recent Equidae. The general color of the male is 'avellaneous' (Ridgway), becoming a sort of mouse gray with age; the color is lightest on the head, darkest on the haunches; a light area in front of hips; buttocks, belly, and inner side of legs dirty grayish white; outer side of legs, lower side of neck, and outer surface of ears 'tilleul buff'; tips of ears originally dark brown, later almost white; mane rather long, 'natal brown'; vertebral stripe, of the same color, extending from the mane to the tail tuft, and bordered by a lighter area; area above the nostrils grayish white; nostrils very large and nasal region swollen. Height at shoulder, 1 meter." (1:367)

Present distribution: "Most of the works on threatened species consider the Syrian wild ass as extinct 'since 1927'. I heard of it only in the Djezireh Desert, north-east of Racca, Syria, in 1955: it might still be found there." (3:36) "The one area where such an animal might still exist lies just north of the Syrian-Turkish border midway between Aleppo and Mosul. This area is little known and virtually uninhabited and I could get no reports from there at all. A large animal might live there, but it seems highly improbable." (4:92)

Former distribution: "The question of the Wild Asses of the Syria-Palestine-Arabia-Iraq region is ... complicated by the fact that a number of authors recognise two distinct species [e.g. hemippus and onager] in the region, although in no other part of the world are as many as two different forms of Wild Asses definitely known to occur together." (1:367) Harper reviews the problem and concludes that "it is perhaps now too late to secure conclusive light on the subject." (1:368)

Status: The Syrian Onager, ... has been extinct in the Syrian Desert for at least 100 years. Recently Misonne (1957) expressed belief in rumours of local inhabitants that it still exists in the extreme north of Syria, but we believe that these are merely rumours which have survived for generations." (2:177) "Occasionally reports come of asses which have gone wild but which might be mistaken for truly wild ones. ... From my enquiries and the literature I conclude that the truly wild asses that inhabited the greater Syrian Desert have been extinct for 20-30 years." (4:92)

Estimated numbers: Believed nil.

Breeding rate in wild: Probably similar to the other members of the genus i.e. a gestation period of 11-12 months and normally a foal every alternate year.

Reasons for decline: "... since firearms have come to be used by the Bedouins, Wild Asses have become less and less numerous." (Carruthers, 1935, pp. 147-149) (1:370) "The fluctuations of the Bedouin troops during the

Status category: 4(b) Code number: MA/111/EQUUS/HEM/HEM

World War in general and of the Wahabi tribes in late years have quite wiped out the limits of both species of Wild Ass." (Aharoni, 1930, p. 330) (1:369) "The little Hemippus ... of Mesopotamia and Syria, domesticated by the ancient Sumers before the introduction of the horse ... could not resist the power of the modern guns in the hands of the Anazeh and Shammar nomads, and its speed, great as it may have been, was not sufficient always to escape from the velocity of the modern motor car which more and more is replacing the Old Testament Camel Caravan." (Antonius, 1938, p. 559) (1:370-371)

Protective measures already taken: None.

Measures proposed: None.

Number in captivity: None. "Antonius (1928, pp. 19-20) records a male that had been received in 1911 from the 'desert north of Aleppo', Syria, and was still living in the Schönbrunn Zoo in 1928, also three preserved specimens that had lived at Schönbrunn in the latter part of the past century." (1:370)

Breeding potential in captivity:

References:
1. Harper
2. Bodenheimer, 1958
3. Misonne, 1959
4. Talbot, 1960

MONGOLIAN WILD ASS : KULAN Kulan

Equus hemionus hemionus Pallas, 1775

Order PERISSODACTYLA Family EQUIDAE

Distinguishing characteristics: "In size it is about equal to the kiang, standing 4 feet 3 inches at the shoulder. The ears, compared with those of the wild ass (Equus asinus), are relatively small and, as in the kiang, horse-like, and the hoofs are large and broad, the width of the front pair greatly exceeding that of the hind ones. The tail-tuft resembles that of the kiang in being well developed, and a slight rudiment of a forelock is present. The dark dorsal stripe, which is relatively narrow, reaches as far as the tail-tuft, and is, as a rule, not bordered with white. There is no shoulder stripe, or dark markings on the limbs, other than a dark ring immediately above the hoofs. The general colour above, in the summer coat, varies from bright rufous to reddish sandy; the neck is rather greyer. The muzzle, the inside of the ear, the throat, under-parts, the inner side of the legs, and a streak on the buttocks, are pure white or buffish white. In the long winter coat, the general colour is rather greyer." (1:47-48)

Present distribution: "Typical hemionus is the race of the Gobi eastward of the Great Altai to Transbaikalia." (3:293) "During recent years, in all its vast range, the Mongolian Wild Ass seems to have been reported as plentiful in only one region - that about Orok Nor and Zagan Nor in central Mongolia (about long. 100°-102°E.). It has apparently disappeared from eastern Mongolia (including adjacent parts of Siberia and Manchuria)." (4:353-354) " ... it extends over almost all the south-west and southern border of the Mongolian People's Republic, including the southern parts of the aimaks (provinces) of Kobdo, Govi-Altai, Bayan-Khongor, South Gobi and East Gobi. (9)

Former distribution: "The former range apparently covered the greater part of Outer Mongolia (except the present Tannu-Tuva), small areas in Siberia and Manchuria adjacent to the northeastern corner of Mongolia, at least the western part of Inner Mongolia, and the northern part of Chinese Turkestan (chiefly north of the Tian Shan)." (4:354) "The living space of the Mongolian wild ass has been diminishing steadily for the last 2,000 years. Around 200 B.C. the species bred abundantly in Europe in the region of Odessa and persisted in the province of Kiev as late as the 12th Century A.D. Six hundred years later, there were still kulans in Europe on the west bank of the river Volga - while in Asia they could be found over a wider area extending north as far as latitude 50°, along the upper reaches of the Amur river." (6:84)

Status: As recently as 1937 Sowerby described the kulan as "abundant in Chinese Turkestan and Western Mongolia, and at present needs no protection." (2:250) Since then the position has deteriorated until, today, the Chinese consider the kulan rarer than the kiang, the latter having a wider distribution. (10)

Status category: 4(b)P Code number: MA/111/EQUUS/HEM/HEM

Estimated numbers: "Dr. Dashdorj personally saw a herd of 20 on the 1947 expedition, and although it is known that the numbers were reduced by the severe winter of 1948, he also saw numerous herds between the aimak centres (provincial capitals) of E. Gobi and S. Gobi in 1955. Its population cannot be less than several thousand." (8:428)

Breeding rate in wild: Rutting time in Mongolia is from June to September. "The young are foaled in the spring after a gestation period of about 12 months." (6:85) Under natural conditions females become sexually mature at two or three years of age: males a year later. (5:96)

Reasons for decline: "It may be assumed that water availability is the chief factor determining the present day distribution and species number in Turkmenistan, Mongolia and other countries. The reduction of available open watering places owing to man's activity and cattle breeding drove off the animal from most areas." (5:94) "As much esteemed for its meat as for its hide it has today been hunted close to the point of extinction - not an easy task considering the remote country into which it has retreated. Nearly as fast as a race horse, the kulan almost from birth can escape its chief predator, the wolf, and before the use of firearms, could be taken by man only in cleverly laid ambushes." (6:104) "Wu-t'ung Wo-tze, about 100 miles northeast of Kucheng, in the Dzungarian Gobi ... was formerly a well-known wild-ass ground; but the wild ass in this region has been almost killed off by the Qazaks. Both Mongols and Qazaks will put themselves to more trouble to bag wild ass than almost any other game ... The meat is something like beef, but a sublime beef. It is very dry, with a coarse grain and a strange aromatic sweetness. Chinese and Mongols put it above any other game, and it undoubtedly ranks with the noblest venison." (Lattimore, 1929) (4:356)

Protective measures already taken: " ... now under strict protection, with penalty of five years' imprisonment and a fine for any breach of the law." (8:427) Officially protected by the Chinese authorities. (10)

Measures proposed: "The general scientific, cultural and practical value of the wild ass is so great that it is essential to prevent its extermination. Favourable conditions to preserve this species and to increase its numbers should be created in all countries where the animal still occurs." (5:99)

Number in captivity: Askaniya Nova 2 ♀♀; Leningrad 1 ♂, 1 ♀: Ostrava 1 ♀. (7:382) Whipsnade possesses the only pair in the U.K. (Daily Telegraph, 19/8/65).

Breeding potential in captivity: Successful breeding has occurred at both Leningrad and Ostrava zoos. (7:382) Whipsnade Zoo also bred the kulan in 1965. ('Daily Telegraph' 19/8/65).

Remarks: "Besides having the stamina of true nomads, the kulans are remarkably fleet. During the Central Asiatic Expeditions for the American Museum of Natural History in the 1920's, Roy Chapman Andrews tested their speed and endurance powers. He chased a group of kulans by automobile for 16 miles, hitting speeds of up to 40 miles an hour. One stallion maintained an average speed of 30 miles an hour over the entire distance." (6:85)

References:

1. Lydekker, 1924
2. Sowerby, 1937
3. Allen, 1939b
4. Harper, 1945
5. Bannikov, 1960
6. Bourlière, 1964
7. Jarvis, 1965
8. Montagu, 1965
9. I. Montagu in litt. 4/1/65
10. C. Jarvis in litt. 7/1/66

INDIAN WILD ASS: GHOR-KHAR

Equus hemionus khur Lesson, 1827

Order PERISSODACTYLA Family EQUIDAE

Distinguishing characteristics: "A bright yellowish sandy colour, with a short mane of a dark chestnut colour and a line of the same colour extending down the back to the root of the tail. The lower parts are white. It has light fawn-coloured shoulders, saddle and sides to the rump, constituting an example of disruptive colouration. The ears are shortish, like those of a zebra". Stands 11 to 12 hands (44 to 48 inches) at the shoulder (2:10).

Present distribution: The main range is the Little Rann of Kutch, a salt-encrusted desert region about 1,000 sq. miles in extent, situated along the Gujarat/Pakistan border (4:8). A small herd of 20-30 is also reported to occur regularly in the Great Rann, near Nagar Parkar, Pakistan (3).

Former distribution: "Wild asses appear to have once had a fairly wide distribution in the dry regions of north-west India and West Pakistan. During the last century they existed as far north as Jaisalmer and Bikaner of Rajasthan (India), and Sind and Baluchistan (West Pakistan)" (2:17).

Status: A substantial and continuing decline has taken place since the end of the Second World War (4:9).

Estimated numbers: Numbers declined from the 3,000 to 5,000 estimated by Salim Ali in 1946 to 870 in 1962 (2:18). By October 1969, the population had further declined to about 400 (4:9).

Breeding rate in wild: "The wild ass is said to mate in August, September and October and to bring forth young in July, August and September, the gestation period being eleven months" (2:11).

Reasons for decline: Harper quotes various reports showing that the decline of the wild ass throughout the greater part of its range was due to direct destruction by man. "The Baluchis ride down and catch numbers of foals, finding a ready sale in the cantonments for them, as they are taken down on speculation to Hindustan. They also shoot great numbers of full grown ones for food" (Jerdon, 1874) (1:365). "The testes are believed to possess aphrodisiac qualities" (1:366). Since 1960 "the chief danger to the wild asses is undoubtedly the susceptibility to diseases contracted from domestic stock" - surra and African horse sickness (2:19). There is also considerable competition from increasing numbers of domestic livestock for the limited grazing (4:9). Recent contributory factors include the allocation of previously unused land around the edges of the Rann to farmers; the Forestry Department's policy of planting the African babul tree (Proscopis juliflora); the construction of dams; disturbance arising from the presence of a military camp on the Rann; and the construction of a new road and railway across the Rann (Oryx 10(4):213).

Protective measures already taken: "A government-financed programme for vaccinating horses and donkeys in the region against horse sickness has been in operation annually since 1961, but has not been wholly successful as some owners refuse to allow their horses to be treated on the ground that they cannot afford to have them idle for the 8-14 days of rest which the treatment requires. Unless vaccination is made compulsory and strictly enforced this constructive programme cannot hope to achieve its purpose" (4:9).

Measures proposed: "The wild ass is not yet protected in a legally constituted sanctuary, and it is important that a reserve should be established while the land is still available. There is also a great need for a comprehensive ecological study of the wild ass" (4:9).

Number in captivity: 5 ♂♂ and 4 ♀♀ in 4 zoos (5:322).

Breeding potential in captivity: "One born 13/8/64 at the Maharaja Fatesingh Zoo at Baroda" (6). "As nine foals were born at the Paris Zoo between 1842 - 1849, and now at Baroda, it seems that the breeding potential in captivity is good" (7).

References:

1. Harper, 1945
2. Gee, 1963
3. Mountford & Poore, 1968
4. Schaller & Simon, 1970
5. Int. Zoo Y'book, vol.10., 1970
6. C. Jarvis in litt. 2:11/64
7. E. P. Gee in litt. 6:1:65

TIBETAN WILD ASS : KIANG

Equus hemionus kiang Moorcroft, 1841

Order PERISSODACTYLA Family EQUIDAE

Distinguishing characteristics: "According to Schwarz, the race kiang is in point of size, nearest to the Mongolian hemionus, differing from it only in the darker, more reddish color of the rump, correlated with the greater paling of the markings and the almost white legs. The blackish-brown hoof stripes are wide and the narrow spinal stripe, about 40 mm. wide, shows no trace of a pale border." (3:293) "Of all the wild ass races, the kiang is the most thickest and the largest." (6:37)

Present distribution: " ... the race kiang is the form of the Tibetan plateau from Kokonor in the northeast to the sources of the Indus in the southwest." (3:293) "Range: Ladak, Nepal, Sikkim, Tibet to Kukonor district." (5:342)

Former distribution: "The Kiang inhabits the higher desert tracts of Ladak and Tibet, from about 13,000 to 18,000 feet above the sea, or even more; and is found commonly in the Chang-Chen-Mo valley, as well as on the Indus itself, some few days' march above the town of Leh." (1:45) " ... very plentiful in Eastern Tibet and Chinghai (Kokonor)." (2:250)

Status: According to Chinese sources the population is very scattered and thought to be rare but not endangered. (8)

Estimated numbers: Unknown. (8)

Breeding rate in wild: "Males and females live together during the coldest season, but as soon as the weather becomes less severe, the old stallions detach themselves from the rest to form small bands ranging from two to ten animals, which forage together until the rutting season. The females and their foals, together with the younger males, meanwhile wander in herds of 20 to 40 individuals. Rutting takes place at the end of August or early September and the females foal toward the end of July or beginning of August." (6:39)

Reasons for decline: "Increasing use and precision of firearms in the hands of the Asiatics have undoubtedly contributed chiefly to the decline of the wild asses." (4:357)

Protective measures already taken: Protected by the Chinese. (8)

Status category: 4(b)P Code number: MA/111/EQUUS/HEM/KIA

Measures proposed: "The time has surely come to devote as much attention and care to the breeding of other Asian equids [in captivity] as has been done for the Przewalski horse." (7:37)

Number in captivity: " ... one of the rarest of all equids in captivity." (7:37) Peking 7; Harbin 1; Riga 1 ♂ + 1 ♀; Prague 1 ♂. (8)

1966 Peking 5/6, Harbin 0/0, Riga 1♂ + 1 ♀, Prague 1♂.
1967 " (♀), Moscow [illegible]

Breeding potential in captivity: Several have been bred at Peking Zoo, and the Prague specimen was bred at Riga. (8)

Remarks: "The kiang, in many respects, seems to stand somewhere between the wild asses and the wild horses: it is almost as big as a horse and neighs like one, but it has the squat head of an ass, a short, stocky neck, erect mane and a mulelike tail, long and thin with a tassel of hair at the end ..." (6:38-39)

References:
1. Lydekker, 1924
2. Sowerby, 1937
3. Allen, 1939b
4. Harper, 1945
5. Ellerman & Morrison-Scott, 1951
6. Bourlière, 1964
7. Veselovsky & Volf, 1965
8. C. Jarvis in litt. 7/1/66

PERSIAN WILD ASS : ONAGER Onager

Equus hemionus onager Boddaert, 1785

Order PERISSODACTYLA Family EQUIDAE

Distinguishing characteristics: "In the male the top and sides of the head are half-reddish, the lower side and the muzzle white; ... sides of neck and of body and fore part of haunch reddish yellow (isabelline), mane light brown, ... a light-brown vertebral stripe, up to 2½ to 3 inches wide, extending from the mane to end of the tail; a similar but smaller stripe crossing this at right angles on the shoulders; ... Height at shoulder, 50 inches; ... The female is similar, but smaller, and lacks the shoulder stripe. Height at shoulder, 44 inches; ..." (1:360)

Present distribution: "The Persian form ... persists only in the Badkhyz game reserve in Turkmenistan and in northeastern Iran." (6:84) In Iran "the habitat of this ungulate is the salt steppe (dascht) east of Gum, and east and south of Mesched and Ispahan ... Other populations south of Mesched have been brought to my notice from information provided by Iranian and American pilots." (4:84) Also occurs in North-Western Afghanistan. (2:342)

Former distribution: "It is clear [from Strabo's account] that the wild ass (onager) existed all across southern Russia in the fifth century B.C., for it was hunted both by the Sarmatian tribes who lived on the east side of the Don (Tanais) and by the Scythians who occupied the region to the west of that river. It is even possible that the wild ass dwelt in the Danube valley almost down to the beginning of the historical period." (Ridgeway, 1905, pp. 51-52) (1:357) There is considerable uncertainty, however, as to the boundary between the ranges of this and the Indian subspecies." (1:360) By 1919 wild asses were restricted to two isolated areas in the USSR: a) Turkmeniya where they were found in the eastern part at the foot of Kopet Dag and further eastwards in Badkhyz; b) Kazakhstan - including the desert Bet-Pat-Dala, on the shores of lakes Balkhash and Zaysan. (Bannikov, 1961) (10)

Status: "[The Badkhyz Reserve] is the only place in the USSR where Equus hemionus are still found in considerable numbers ..." (3:75) The small, isolated population in Kazakhstan was unable to survive beyond the 1930's, although some were seen near the River Ili and on the eastern extremity of Lake Balkhash in 1935-36. (Selevin, 1937) (10) In Iran "extinction is well on the way." (9) No data on status in Afghanistan.

Estimated numbers: "When the Badkhyz Reserve was established in 1941 the number of wild asses was about 300. However, in the early years the Reserve encountered difficulties in protecting wild asses and their numbers declined; they reached their lowest figure in 1952-53, when only about 120-150 remained in Badkhyz. By 1955 their numbers had increased to 200 because of an influx of animals from Afghanistan. In 1956 there were about 360 in Badkhyz and in 1957 about 600. Since 1959 and up to the time of writing (1965) the population has stabilized and now numbers approximately 700." (10) Trense (1959) estimated the population in Iran at 400-1,000. (4:84) Haltenorth quotes a report that there were an estimated 300 in the whole of Iran in 1960. (9)

Breeding rate in wild: In Badkhyz the rutting season is at the end of February or beginning of March. The young are foaled in the spring after a gestation period of about 12 months. (6:85) "In 1953 8 wild asses (1 ♂ and 7 ♀♀) were sent from Badkhyz Reserve to the island of Barsa-Kel'mes in

Status category: 4(b)P Code number: MA/111/EQUUS/HEM/ONA

the Aral Sea. The solitary male was impotent, and only in 1955 could a replacement be sent to the island: by 1957 successful breeding commenced. Between 1957 and 1963 the numerical increase on Barsa-Kel'mes varied from 15% to 44%, averaging 28%. Total births on the island are 38 Equus hemionus, 16 ♂♂ and 22♀♀. During the same period 5 wild asses died (2 ♂♂ and 3♀♀) from accidental causes." (10)

Reasons for decline: Pallas (1780) recorded that the young were captured alive in pitfalls and "sold for a considerable price for the studs of the nobles ... The bile is esteemed among the Persians as a remedy for obscure vision and for cataract." (1:361) Hamilton Smith (1841) wrote that "in the eastern provinces of Persia ... their venison is highly prized, and the chase of them, from the time of Rustum to the present, has always been held the pastime of heroes and princes." (1:361) Kennion (1911) stated that "these animals have always been remorselessly persecuted for the sake of their meat and hides ..." (1:362) In more recent times shooting from cars has reduced the population in Iran to a very low level. (9) "Numbers in Kazakhstan were very low as a result of the severe winters which occurred at the end of the nineteenth century and persecution by humans." (10)

Protective measures already taken: Hunting has been prohibited throughout the USSR since 1919. The Badkhyz Reserve, situated between Tedzhen and Murgab, was established in 1941 with the special purpose of preserving and studying wild asses. "The Badkhyz Reserve covers an area of 75,000 hectares and in addition there are three subsidiary areas: 2 of them are watering places in the flood plain of the rivers Kushka (13,000 hectares) and Tedzhen (15,000 hectares); and the third area east of the Kyzyl-Dzar Ravine where wild asses congregate at the time of parturition." (10) In 1953 a herd was successfully established on the island of Barsa-Kel'mes in the Aral Sea. (10) (see 'Breeding rate in wild'.) "It is true that the onager is legally protected in Iran and a notice to that effect is displayed in every police station in the region where the animal occurs. However, this does not deter the police, officials or influential people who are powerful enough to disregard the law from poaching; and onager meat is much in demand." (9)

Measures proposed:

Number in captivity: "On realising the danger of extinction to which this species was exposed Arnulf Johannes working for the Hamburg firm, Hagenbeck, captured a group of young animals in 1954/55. They were caught in a vast dry desert region 2 days from Teheran where no other creature could exist. Taken to Hamburg, the animals formed the first and the only European herd of onagers." (5:113) 36 ♂♂ and 47 ♀♀ + 1 in 24 zoos. (8:383) (These figures include all the Turkmenian wild asses imported from Russia).

Breeding potential in captivity: "It does well in captivity and today there are more than eighty onagers in zoos and of these at least thirty-three were bred in captivity." (7:pl.32)

References:
1. Harper, 1945
2. Ellerman & Morrison-Scott, 1951
3. Lavrenko & Kirikov, 1958
4. Trense, 1959
5. Gijzen, 1961
6. Bourlière, 1964
7. Veselovsky & Volf, 1965
8. Jarvis, 1965
9. Th. Haltenorth in litt. 28/2/63
10. A.G. Bannikov in litt. 9/12/65

PRZEWALSKI'S HORSE

Equus przewalskii Poliakov, 1881

Order PERISSODACTYLA Family EQUIDAE

Distinguishing characteristics: "Dr. Dashdorj states the characteristics of E. przewalskii as: adult dimensions - height 13-14 hands, length 8½-9½ ft., tail 2½-4 ft., mane erect and short, not more than 6-8 inches; well-marked dark stripe on back, summer colour light yellowish, winter yellowish-brown" (1:426).

Present distribution: "... the animal survives today in only one area - the Takhin Shar-nuru mountain massif on the frontier of China ... an area from 190-220 miles N. and S. by 60-90 miles E. and W. This habitat is mountain semi-desert. The animal moves into the desert, and also crosses the border into China according to the pasturage and the season of the year" (1:426). "On May 27th 1967, a mare and a yearling foal were encountered in the region of Takhiin us ("Wild Horse water" - an oasis or damp patch frequented by the wild horse, about 60-75 miles from the Chinese frontier on the northern slope of the Takhiin Shar-nuruu) ... In addition, 4 tracks of horses were seen in other places. Professor Dashdorj notes four accepted sightings in 1966: (a) 15th June (by herdsman Tuvden of Tonkhii somon, Gobi-Altai aimak); 11 horses on the northern slope of Gobi-Servei mountain. (b) 29th June (by Dr. Zoltan Kaszab); 7 horses about 110-125 miles east of the other sightings at Dukhonin khundi ("damp hollow", i.e. dry river bed). (c) August (by local inhabitants); 20 horses and 2 colts in the region of Khonin us. (d) 'Autumn' (by herdsman Khichgei of Altai somon, Khold aimak); 7 horses on the northern slopes of Takhiin nuruu in the region of the Tsakhir massif. He lists in all eleven localities on the northern slopes of Takhiin Shar nuruu as having been the scene of reliable recent sightings: Khar Serten uul, Elkhen gobi, Takhiin usni khundi, Takhin us, Galvyn gozgor uul, Khalzan burgediin uul, Khalzangiin us, Tsagan shalyn us, Nuuts us, Kharul us, Toodogiin us" (6).

Former distribution: Statements of former distribution are contradictory, but at most the range did not extend beyond Latitude 44-48° and Longitude 84-92°, perhaps extending in the southern part to 96°. Mountain ranges exceeding 7,000 m. proved an effective barrier against southerly movement (5).

Status: "... must now be very rare, to be numbered perhaps only in scores" (6).

Estimated numbers: "Between 1958 and 1963 [Mongolian hunters] have several times seen what they distinguish as 3-4 separate herds, not more than 7-8 to a herd, usually in autumn and led by a stallion. The leader drives younger and weaker stallions from the herd, which explains why solitary stallions are seen more often. These have been encountered on the western slopes of the massif, particularly near Khorin-us ("Sheep-water"), a desert oasis, where rushes and various grassy desert shrubs are abundant" (1:427).

Breeding rate in wild: To judge from experience with the wild mares at Jargalant, the breeding season is the Mongolian spring (May/June), the foals being born April/May (period of gestation 11 months) (1:427).

Reasons for decline: "Dr. A.G. Bannikov has expressed the view that the extinction of Equus przewalskii would be a consequence not of slaughter but of the driving of this shy animal from its sources of water as result of the increasing use of such sparse sources by spreading human population even in these rough areas, and Dr. Kaszab has recommended the construction and maintenance of a few artificial pools as an essential measure" (6).

Status category: 3(a)E Code number: MA/111/EQUUS/PRZ

Protective measures already taken: "... now under strict protection, with penalty of five years' imprisonment and a fine for any breach of the law" (1:427). A stud book of Przewalski's horse is maintained at the Prague Zoo, Czechoslovakia (5).

Measures proposed: The USSR Academy of Sciences is to be requested to establish a special reserve as soon as sufficient numbers have been bred up in captivity to enable a breeding nucleus to be released (5).

Number in captivity: 1956, 36; 1957, 46; 1958, 50; 1959, 56; 1960, 59; 1961, 73; 1962, 84; 1963, 90; 1964, 110 (2:35). "As of January 1, 1967 there were 146 Przewalski horses (64 stallions and 82 mares), representing a net increase of 13 during the last year, i.e. 10%" (4:166).

Breeding potential in captivity: The Prague horses become sexually mature at an early age and have a high reproductive rate. "All our mares remain fertile until they are twenty years old or even more" (2:30-31).

Remarks: "... the mountain ridge which serves as the Przewalski horse's last retreat is right on the frontier of the Chinese People's Republic ... The frontier dividing the Mongolian provinces of Gobi Altay and Khovd from the Sinkiang-Uighur Autonomous Region of the CPR runs along the crests of Baytag Bogd Uul, Khavtag Uul and Takhiyn Shar Nuruu. The Dzhungarian Gobi, in which ... the horse may continue to survive, is in Sinkiang ... It is unlikely that anything short of close collaboration between the Academies of Sciences of the CPR and the MPR could lead to sound methods of investigation and conservation" (3:198). "The hope for survival of the wild horse rests on the fact that its area is in a region never visited by nomad herdsmen on the Mongolian side of the frontier, and almost certainly not visited by them on the Chinese side either. The development of modern methods of animal husbandry (shelter, winter fodder and the like) is halting the expansion of nomads into this area, formerly the chief threat to its existence" (1:427).

References:

1. Montagu, 1965
2. Veselovsky & Volf, 1965
3. Hibbert, 1967
4. Pedigree Book of the Przewalski Horse, 1967
5. J. Volf in litt. 3/1/63 to 28/1/64
6. I. Montagu in litt. 4/1/65 to 18/2/68

HARTMANN'S MOUNTAIN ZEBRA

Equus zebra hartmannae Matschie, 1898

Order PERISSODACTYLA Family EQUIDAE

Distinguishing characteristics: "Hartmann's zebra differs from the typical race in being considerably larger in every respect, and in fact can be compared with a horse in build, whilst the Cape Mountain zebra is more like a donkey. The stripes in Hartmann's zebra are more widely spaced so that the pale stripes are equal to and sometimes slightly wider than the black ones, this fact being particularly noticeable on the hind quarters. The legs of Hartmann's zebra are almost evenly banded black and buff, and the black does not predominate as in the Cape Mountain zebra. ... The neck is short and thick, the ears are long and narrow, the hoofs are narrow, elongated and hard, whilst the tail has long hair only at the tip (Ewart 1900, p.10)" (6:38).

Present distribution: In South West Africa "this zebra is distributed between Long. 13°48' and 17°36'E. and Lat. 19°18' and 28°24'S., with approximately 83.2 per cent of the population occurring north of Lat. 24°S." (5:51). Confined almost entirely to the mountain escarpment zone in the western part of the territory (8). "It is in the mountain ranges bordering the Namib, from the vicinity of the Orange river northwards to Angola that this species is most at home. Shortridge describes a similar range ... Natives state that occasional wanderers have been seen near the Etosha Pan but no recent occurrences are known to me. ... When the rains have been favourable it ranges deep into the desert and may sometimes cause severe damage to grazing on the nearby farms" (2:487).

Former distribution: "The original range of Hartmann's zebra covered the coastal regions of Angola, south of 14° latitude, through South West Africa, to Little Namaqualand in the Union of South Africa. Its most southerly boundary was probably in the Kamies Berg range, where it has become extinct. Today, the only Hartmann's zebras ever found in the Union are stragglers which have crossed the Orange River from South West Africa. The Orange river now marks the southern range limit of the subspecies" (6:40).

Status: Bigalke (1958) recorded that this subspecies was numerous within its restricted range (2:487), but more recently there has been a substantial decline.

Estimated numbers: The population has declined from an estimated 10,500 in 1962 (3:51), to about 7,000 in 1967 (9).

Breeding rate in wild: "...believed to be a slow breeder, the mares only giving birth to foals every second year or so. Old stallions are said to have a habit of 'gelding' a percentage of the young males". Gestation period about 12 months (1:394). "... it would appear that there is no clearly defined foaling season ... Only single births have occurred in the National Zoological Gardens of South Africa" (4:642).

Reasons for decline: Outside the reserves, and especially in the farming areas, illegal hunting is widespread. The meat is used by farmers to feed their labourers, and the skins find a ready market. The staff of the Department of Nature Conservation is too small to control poaching (9).

Protective measures already taken: Classified as 'Protected Game' under the Game Ordinance, i.e. "may only be hunted on a special permit, normally granted by the Administration when crops or grazing are endangered. For non-farmers, hunting is only legal in the hunting season" (2:483). A special reserve, the Naukluft Mountain Zebra Park (approximately 22,000 ha. and situated about 150 miles south of Windhoek), has recently been proclaimed. It contains about 500 zebras. The Namib Desert Park (5,067 sq. miles) contains a relatively small and migratory population. A small herd inhabits the Daan Viljoen Game Park (approximately 4,000 ha.) near Windhoek; and a few have been introduced into the Willem Pretorius Game Reserve in the Orange Free State, which lies far outside the natural range of the subspecies. The S.W.A. Department of Nature Conservation is currently undertaking an ecological study of the mountain zebra (9).

Measures proposed: If the recommendation of the Odendaal Commission are implemented, Hartmann's mountain zebra will be severely affected, especially in the Kaokoveld (9).

Number in captivity: 39 ♂♂ and 55 ♀♀ in 33 zoos (7:323). The Catskill Game Farm has a small herd.

Breeding potential in captivity: Of the above, 16 ♂♂ and 22 ♀♀ were bred in captivity (7:323).

Remarks: "In the Kaokoveld its range overlaps that of Burchell's Zebra and mixed herds have been recorded" (2:487).

References:
1. Shortridge, 1934
2. Bigalke, 1958
3. van der Spuy, 1962
4. Brand, 1963b
5. Morris, 1965
6. Sidney, 1965
7. Int. Zoo Y'book, vol. 10., 1970
8. S.W.A. Dept. of Nature Conservation in litt. 10:2:67
9. W. von Richter in litt. 20:8:69

CAPE MOUNTAIN ZEBRA

Equus zebra zebra Linnaeus, 1758

Order PERISSODACTYLA Family EQUIDAE

Distinguishing characteristics: Smallest of all the zebras. "...long ears, narrow hooves, and heavy head. Except for the belly, where markings are absent, the Mountain Zebra is covered with rumerous stripes over the head, neck, body, and legs down to the black hooves. The stripes are narrow and close-set, except on the hindquarters, where they are broader and more widely spaced. The arrangement of the stripes is unique in having a grid-iron pattern on top of the rump ... The presence of a distinct dewlap on the throat distinguishes the Mountain Zebra from all other Equidae. ... It has a more high-pitched voice than other zebras, and neighs more like a horse, although as a rule it is a rather silent species (2:350).

Present distribution: Mountain Zebra National Park, Provincial Wildlife Farm de Hoop, as well as on farms in the Gamka, Kamanassie, Outeniqua and Kouga mountain ranges, Cape Province (5).

Former distribution: "Occurred only in the mountain ranges of the Cape, chiefly in those of the southwestern and western areas" (3).

Status: The herd in the Mountain Zebra National Park is steadily increasing, and the survival of the subspecies within the park seems assured. Zebras living outside the park are in a precarious position, however, and are unlikely to survive, unless special measures are taken for their protection (5).

Estimated numbers: 98 in the Mountain Zebra National Park; 3 at Wildlife Farm de Hoop: approximately 12 in the Gamka Mountains; 7 in the Kamanassie Mountains; and 3 in the Outeniqua Mountains; 7 in the Kouga Mountains; a total of 130 animals (5). This compares with a total of 75 in 1965 (4).

Breeding rate in wild: "Slow-breeders, a single foal dropped every second year. Gestation period 12 months" (3).

Reasons for decline: "Settlement resulted in ousting the zebra from its habitat into unsuitable surroundings. It never occurred in large numbers and was already afforded protection by Commander Jan van Riebeeck in 1656. Unfortunately, however, when the British took over the Cape in 1806, hunting laws were relaxed and professional hunting became very popular" (3). In analysing the reasons for the decline of the mountain zebra outside the National Park during the last 30 years or so, Brynard suggests that they may include: increased competition from domestic animals, including merino sheep, which in times of drought may have accounted for a number of deaths: 'development' forcing the zebra into less suitable areas; inbreeding (4).

Protective measures already taken: "The Mountain Zebra National Park was established with six Cape Mountain Zebras (only one of these a mare) on 2nd July 1937..." By 1950 only 2 stallions remained and these were both destroyed (2:190). In 1950 a total of eleven zebras (5 ♂♂; 6 ♀♀), presented by Messrs. H.K. and J.K. Lombard, were transferred to the Mountain Zebra National Park, and a fresh start made in preserving the subspecies. In 1964 the size of the Mountain Zebra National Park was increased by approximately 6,000 morgen, including the 'Doornhoek' herd of 30 mountain zebras purchased from the Michau brothers. The Park has thus been trepled in size and "includes some of the best mountain zebra habitats I know of" (4).

Status category: 2(b)MP Code number: MA/111/EQUUS/ZEB/ZEB

Measures proposed: The Cape Province Department of Nature Conservation proposes to establish a new reserve in the Gamka Mountains, into which all mountain zebras currently living outside the Mountain Zebra National Park will eventually be transferred (5).

Number in captivity:

Breeding potential in captivity:

References: 1. Bigalke, 1951
2. Morris, 1965
3. National Parks Board, Pretoria, in litt. 18/1/63 and 17:2:65
4. A. Brynard in litt. 28:9:65
5. W. von Richter in litt. 20:8:69

CENTRAL AMERICAN TAPIR

Tapirus bairdii (Gill, 1865)

Order PERISSODACTYLA Family TAPIRIDAE

Distinguishing characteristics: "A large, heavy-bodied ungulate the size of a pony but chunkier and with much shorter legs. Nose elongate, bending downward over the mouth like a short trunk, or proboscis. Ears short, rounded, and white-tipped. Tail stubby. Four toes on front feet, three on rear. Dusky brown, much paler on face, throat and breast." (3:488) "The size of the animal is characteristic of Tapirella bairdii as well as the absence of mane on the nape of the neck the remains of which in this species are indicated by small bristles along the nape of the neck. A very light and distinctive colouration of the under throat and lower part of the neck appears to be typical." (2:180)

Present distribution: Ecuador and Colombia, west of the Andes and the Rio Cauca, from the Gulf of Guayaquil in the south as far as the Rio Sinu in the north: also found in Central America as far as Mexico and Veracruz. (4:315) Leopold gives the distribution in Mexico as the "wet tropical forests of southeastern Mexico, west to southern Veracruz and eastern Oaxaca. The tapir has been exterminated in much of this range and now lives in only the wildest and least disturbed forests." (3:488) "The best remaining tapir habitat in Mexico is the marshy lowland forest which has been little altered by settlement." (3:490) "In Panama the species is known to range from sea level to the summits of the highest ridges of the eastern and western mountains. ... In northwestern Colombia, east of the Rio Atrato, Baird's tapir lives side by side with Tapirus terrestris colombianus." (1:490)

Former distribution: "Even at the time of the conquest the tapirs were gone from Yucatan, presumably as a result of Mayan settlement and clearing of the forest. ... Originally tapirs occurred in much of the upland forest as well, and there still are a few in the more remote tracts. But most of the uplands are now too heavily settled to afford a home for this shy and retiring animal." (3:490)

Status: The tapir is the only North American Perissodactyl. (3:488) "Considering southeastern Mexico collectively ... there remains no secure and assured population anywhere. The tapir ... must be added to the list of important species that are dangerously reduced in number and very much in need of active protection." (3:491) Hershkovitz describes it as the least known species of the genus. (1:492)

Estimated numbers: Unknown.

Breeding rate in wild: Gestation period 390 - 400 days. (6) "In Mexico the breeding season is in March: ... a single young is born, and remains with its mother for about a year. ... Young tapirs are subject to predation by several of the smaller cats and by the tayra in addition to the prime enemy, the jaguar." (3:492)

Status category: 4(a)**P Code number: MA/112/TAPIR/BAI

Reasons for decline: "Rivers, lakes or swamps seem to be an essential part of the tapir habitat along with dense forest." (3:491) "Most of the uplands are now too heavily settled to afford a home for this shy and retiring animal. Even in the lowlands the encroachment of settlers who persistently pursue the tapir has reduced populations to a dangerously low level." (3:490) "They are shy animals, highly intolerant of disturbance by man or his dogs." (3:491)

Protective measures already taken: Listed in the Mexican Hunting Regulations under 'Animals the hunting of which is permanently prohibited'. (3:544)

Measures proposed: "The tapir is associated with and completely dependent upon undisturbed climax rain forest for its existence. It adjusts poorly or not at all to settlement and seemingly can be retained only in virgin areas; it is hoped that some of these will be set aside as national parks or wilderness preserves. One such area that might well be designated as a permanent rain forest reserve for tapirs and other elements of the wet tropical fauna and flora is the northeastern slope of Volcan San Martin in the Tuxtla Range of Southern Veracruz. There may still be other suitable sites in southern Campeche, Quintana Roo, or Chiapas. The creation of one or more rain forest preserves and the extension of effective legal protection to tapirs everywhere in southern Mexico are steps that should be taken quickly to save this unique member of the Mexican fauna from ultimate extinction." (3:492)

Number in captivity: 6 ♂♂ and 8 ♀♀ + 3 in 7 zoos. (5:381)

Breeding potential in captivity: Of the above 2♂♂ and 3♀♀ + 1 have been born in captivity. (5:381)

References:

1. Hershkovitz, 1954
2. Eigener, 1954
3. Leopold, 1959
4. Cabrera, 1960
5. Jarvis, 1965
6. F.J. Appelman in litt. 9/3/64

MOUNTAIN TAPIR

Tapirus pinchaque (Roulin, 1829)

Order PERISSODACTYLA Family TAPIRIDAE

Distinguishing characteristics: The smallest of the tapir species. "... the inch-long, crinkled hair is black or blackish brown over the body with the sides of the head paler, white ear fringes and lips being made more conspicuous by the dark coloration and dense coat" (2:500).

Present distribution: "From upper subtropical and temperate zone forests into bordering 'paramos', or grasslands, of the Andes in Colombia, Ecuador, and possibly in northern Peru and western Venezuela (Sierra dé Mérida)" (1:470). "[Tapirus pinchaque] is not recorded from lower slopes of the Andes and the other tapirs are not known to encroach upon the upper levels, or temperate zones, of the Cordilleras" (1:468).

Colombia: The northern limit of its range is roughly 5°N., in the temperate and cold zones around Mount Tolima. The species is entirely absent from the western Cordillera. It exists or existed, however, in the northern parts of the eastern Cordillera, at 7°N., near the Venezuelan frontier (4:215).

Ecuador: Occurs in a few restricted and localised areas of the eastern chain of the Andes. None has ever been taken or seen in the western Cordillera, although favourable biotopes exist (4:215).

Peru: "This species appears to be restricted to the Ayabaca and Huancabamba Provinces of the Department of Piura, and the Jaen Province of the Department of Cajamarca, where it occurs on high ground from the Ecuadorian border to about 6°00'S. It is absent from the Department of Tumbes. The mountain tapir is locally reported to be common in the mountains between the towns of Ayabaca and Huancabamba and to the east of the latter town, where it inhabits thick bush country in the zone of wind-dwarfed Polylepis trees and Hypericum. It is probably also to be found along the mountainous ridges running south from Huancabamba, for several small groups are known to exist where those ridges are cut by the Olmos-Jaen road some 60 kms. to the south, including one party of five to seven animals living at only 2,000 m. 35 kms. east of Olmos. The species is also known from several localities near to Tabaconas and Chontali in the Jaen Province (3:77-78).

Former distribution: "Distribution of pinchacus points to its prior arrival into South America and at a period when a temperate climate prevailed at sea level in equatorial latitudes. It inhabits an area representing part of the original Colombian Central Land Mass, and South American side of the inter-continental land bridge where Tertiary mammals entering from North America established foothold. Present restriction of pinchacus to the Colombian Central Land Mass, now the temperate zone of the bulk of the Venezuelan, Colombian, and Ecuadorian Andes, probably is the result of an inherited urge for sustentation in cooler climates pari passu with increasing rise in height of the Andes above sea level and rising temperatures at sea level. Newly established tropical zone habitats at the base of the Andes were invaded subsequently by other kinds of tapirs" (1:470).

Status: Available data are insufficient to enable a precise assessment to be made, but there is evidence that during the last few decades the species has undergone a substantial and continuing decline (4:214-220).

Estimated numbers: "The Peruvian population cannot number more than one or two hundred individuals" (3:78).

Status category: 1(a) Code number: MA/112/TAPIR/PIN

Breeding rate in wild: "Births of tapirs are usually of single young and apparently may occur at any season. The gestation period is roughly 13 months or 400 days" (2:502).

Reasons for decline: Agricultural and pastoral expansion have resulted in increasing loss and degradation of habitat, thereby reducing the animal's range and compelling it to retreat into the higher, less accessible parts of the eastern Cordillera (4:252). Since 1966, the hunting and capturing of tapirs for zoos has reduced numbers. It has been estimated that for every tapir exported alive, 40 to 60 have been killed (4:247). In Peru "the mountain tapir does not appear to be much persecuted by hunters, but the species is said to be intolerant of disturbance and to be disappearing from areas where it was formerly common" (3:78).

Protective measures already taken: At IUCN's request, AAZPA and IUDZG have agreed to impose restrictions on the purchase of further specimens by their members.

Measures proposed: "The creation of a national sanctuary in the Huancabamba Province [of Peru] to preserve a representative group of this species, but ... ultimate responsibility for the mountain tapir must lie with Ecuador or Colombia. The mountain tapir has also been included on the list of animals to be accorded complete protection when control of hunting is introduced" (6). The best hope for safeguarding this species lies in the establishment of large national parks or equivalent reserves in the still untouched areas of the eastern Ecuadorian Andes (4:252).

Number in captivity: 6♂♂ and 5 ♀♀ in 7 zoos, all except one pair captured during 1968 (5:65). Of the three specimens recorded by Crandall as having been kept at the New York Zoological Park up to 1955 none survived more than a little over two years (2:503-504).

Breeding potential in captivity: "Neither the mountain tapir nor Baird's appears to have been bred in captivity up to 1963" (2:502).

References:

1. Hershkovitz, 1954
2. Crandall, 1964
3. Grimwood, 1968
4. Schauenberg, 1969
5. Int. Zoo Yearbook Vol. 9., 1969
6. I.R. Grimwood in litt. 13/5/67

NORTHERN SQUARE-LIPPED RHINOCEROS

Ceratotherium simum cottoni (Lydekker, 1908)

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "The Nile race resembles very closely, in external appearance and size, the southern race. ... It differs, however, by the possession of a flatter dorsal outline to the skull ... and by the smaller size of the teeth. The measurements of skulls of the two races show them to be of practically the same bodily size. ... Height at shoulders, 5 feet 8 inches. (Roosevelt and Heller, 1914, vol. 2, pp. 662, 670). Record length of front horn, 45½ inches (Ward, 1935, p. 347)." (3:408)

Present distribution: (a) Southwestern Sudan to the west of the White Nile, in the provinces of Bahr-el-Ghazal and Equatoria. (b) Parts of the West Nile Province, Uganda (Madi, West Madi and Aringa counties) on the western bank of the Albert Nile, an area about 70 miles long by 20 - 30 miles wide. (8:26) (c) The indications which allow one to hope that it is present (perhaps as a reintroduction from the Sudan) in the Upper-Kotto and the Upper-Chinko, i.e. in the basin of the Upper Ubangui, between latitudes 9° and 6°N. But this has not yet been confirmed ..." (6:101) "Dr. Lartizien who only yesterday returned from a long safari in Northern Ubangui states that the species is still living in the Ndende and Birao areas." (11)

Former distribution: "... used to be spread from the Anglo-Egyptian Sudan westwards right up to Lake Tchad in all regions suitable to its existence: ... mostly situated between 13° and 9° North, but extending beyond these latitudes in places. However, since 1900 it does not seem to have been met with anywhere else than in the S.E. of the Tchad district and in the N.E. of Oubangui-Chari, mostly along the Aouk River. In the course of time it was annihilated even here and since 1931 it has not been possible to find a single specimen or even traces of one." (6:101)

Status: (a) Sudan. "According to Sir Eric Pridie (1962) it still flourishes in the Bahr-el-Ghazal district under the strictest protection: in the Nimule Reserve Captain C.R.S. Pitman (1963) reports an increase of numbers, due to the rigorous measures taken by the Sudan Government against poachers." (8:26) (b) Uganda: a substantial decline. "The shyness of the surviving animals, their persistent numerical reduction, and the number of skeletons to be encountered in the bush, are plain indications that the present protection afforded the White Rhinoceros is ineffective, despite unremitting watch and labour on the part of devoted Game Department Officers." (8:29) (c) Congo: "Undoubtedly increasing satisfactorily." (9) (d) Central African Republic: the position is obscure. Bourgoin (5:374) Blancou (6:101) and Dekeyser (4:316) considered that a few may have survived. Paulian (1965) confirms the existence of a handful of specimens. (11)

Estimated numbers: (a) Sudan: very uncertain. No accurate figures exist and estimates vary from a few hundred to 2,000. (8) (b) Uganda: Cave provides evidence that the population declined from about 350 in 1955 to 80 in 1962. (8:28) (c) Congo: "the last (1960) census revealed the presence of ± 700." (10) (d) Central African Republic: "At least two or three have

Status category: 4(b)P Code number: MA/113/CERAT/SIM/SIM

have been seen but there are certainly not above ten living specimens in Northern Ubangui." (11)

Breeding rate in wild: Gestation period is uncertain although Dekeyser believes that it is probably about 530 - 550 days (17 - 18 months). A single calf is born and breeding may commence at 4 - 5 years of age. (4:317) "Reproduction is ... unexpectedly rapid ... often troops or five included besides the adults, a calf, a three-quarter grown and another still youthful member." (1:88)

Reasons for decline: "Owing to the fact that the cow carries the longest horn, they were more sought after by hunters, which would account for their rapid decrease and almost entire extermination." (2:109)

Protective measures already taken: "Totally protected by the 1933 London Convention (7:57) 10 have been moved from the West Nile to the Murchison Falls National Park, of which 8 survived." (8) Fully protected in the Sudan. Of the nine protected areas which have been established in south-western Sudan, four contain white rhinos, namely the Southern National Park, the Nimule National Park, the Numatina Game Reserve and the Shambe Game Reserve. (8) "The Sudanese game wardens are armed, and under orders where poachers are concerned, to shoot to kill, with the result that rhinoceros poaching has become too hazardous a venture." (8:26)

Measures proposed:

Number in captivity:

Breeding potential in captivity:

References:

1. Lang, 1920
2. Brocklehurst, 1931
3. Harper, 1945
4. Dekeyser, 1955
5. Bourgoin, 1958
6. Blancou, 1960
7. Roure, 1962
8. Cave, 1963
9. Schomber, 1964
10. Institut des Parcs Nationaux, in litt. 23/4/64
11. R. Paulian, in litt. 23/3/65

NORTHERN SQUARE-LIPPED RHINOCEROS Perissodactyla broad-nosed

Ceratotherium simum cottoni (Lydekker, 1908)

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "The Nile race resembles very closely, in external appearance and size, the southern race. ... It differs, however, by the possession of a flatter dorsal outline to the skull ... and by the smaller size of the teeth. The measurements of skulls of the two races show them to be of practically the same bodily size. ... Height at shoulders, 5 feet 8 inches. (Roosevelt and Heller, 1914, vol. 2, pp. 662, 670)." (3:408)

Present distribution: (a) Southwestern Sudan to the west of the White Nile, in the provinces of Bahr-el-Ghazal and Equatoria. (b) Parts of the West Nile Province, Uganda (Madi, West Madi and Aringa counties) on the western bank of the Albert Nile, an area about 70 miles long by 20 - 30 miles wide. (8:26) (c) Garamba National Park, in extreme northeast Congo. (10:3) (d) "The indications allow one to hope that it is present (perhaps as a reintroduction from the Sudan) in the Upper-Kotto and the Upper-Chinko, i.e. in the basin of the Upper Ubangui, between latitudes 9° and 6°N." (6:101) "Dr. Lartizien who only yesterday returned from a long safari in Northern Ubangui states that the species is still living in the Ndende and Birao areas." (11)

Former distribution: "... used to be spread from the Anglo-Egyptian Sudan westwards right up to Lake Tchad in all regions suitable to its existence: ... mostly situated between 13° and 9°North, but extending beyond these latitudes in places." (6:101)

Status: (a) Sudan: "According to Sir Eric Pridie (1962) it still flourishes in the Bahr-el-Ghazal district under the strictest protection: in the Nimule Reserve Captain C.R.S. Pitman (1963) reports an increase of numbers, due to the rigorous measures taken by the Sudan Government against poachers." (8:26) (b) Uganda: a substantial decline. "The shyness of the surviving animals, their persistent numerical reduction, and the number of skeletons to be encountered in the bush, are plain indications that the present protection afforded the White Rhinoceros is ineffective, despite unremitting watch and labour on the part of devoted Game Department Officers." (8:29) (c) Congo: A drastic decline has occurred since 1963. (10:3) (d) Central African Republic: Bourgoin (5:374) Blancou (6:101) and Dekeyser (4:316) considered that a few may have survived. Paulian (1965) confirms the existence of a handful of specimens. (11)

Estimated numbers: (a) Sudan: very uncertain. No reliable figures exist and estimates vary from a few hundred to 2,000. (9:216) (b) Uganda: Cave provides evidence that the population declined from about 350 in 1955 to 80 in 1962. (8:28) (c) Congo: "In 1963 the population was assessed at about 1,000 but, so far as can be judged, fewer than 100 now remain alive." (10:3) (d) Central African Republic: "At least two or three have been seen but there are certainly not above ten living specimens in Northern Ubangui." (11)

Breeding rate in wild: Gestation period is uncertain although Dekeyser believes that it is probably about 530 - 550 days (17 - 18 months). A single

calf is born and breeding may commence at 4 - 5 years of age. (4:317) "Reproduction is ... unexpectedly rapid ... often troops of five included besides the adults, a calf, a three-quarter grown and another still youthful member." (1:88)

Reasons for decline: "Owing to the fact that the cow carries the longest horn, they were more sought after by hunters, which would account for their rapid decrease and almost entire extermination." (2:109) The chaos arising from the disintegration of law and order in the Congo and occupation of the area by rebel forces account for the heavy losses of rhino in the Garamba National Park. In May 1966 the entire northern, western and eastern sectors of the park were almost devoid of large mammals with the exception of a few lelwel hartebeest. (10:3)

Protective measures already taken: "Totally protected by the 1933 London Convention." (7:57) "10 have been moved from the West Nile to the Murchison Falls National Park, of which 8 survived." (9:220) Legally protected in the Sudan. Of the nine protected areas which have been established in south-western Sudan, four contain white rhinos, namely the Southern National Park, the Nimule National Park, the Numatina Game Reserve and the Shambe Game Reserve. (9:217) "The Sudanese game wardens are armed, and under orders where poachers are concerned, to shoot to kill, with the result that rhinoceros poaching has become too hazardous a venture." (8:26)

Measures proposed: There is a pressing need for a faunal survey of the Bahr-el-Ghazal.

Number in captivity: [illegible]

Breeding potential in captivity:

References:

1. Lang, 1920
2. Brocklehurst, 1931
3. Harper, 1945
4. Dekeyser, 1955
5. Bourgoin, 1958
6. Blancou, 1960a
7. Roure, 1962
8. Cave, 1963
9. Schomber, 1966
10. Curry-Lindahl, 1966
11. R. Paulian in litt. 23/3/65

NORTHERN SQUARE-LIPPED RHINOCEROS

Ceratotherium simum cottoni (Lydekker, 1908)

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "The Nile race resembles very closely, in external appearance and size, the southern race. ...It differs, however, by the possession of a flatter dorsal outline to the skull ..., and by the smaller size of the teeth. The measurements of skulls of the two races show them to be of practically the same bodily size. ... Height at shoulders, 5 feet 8 inches. (Roosevelt and Heller, 1914, vol. 2, pp. 662, 670)" (3:408).

Present distribution: (a) Southwestern Sudan to the west of the White Nile, in the provinces of Bahr-el-Ghazal and Equatoria. (b) Parts of the West Nile Province, Uganda (Madi, West Madi and Aringa counties) on the western bank of the Albert Nile, an area about 70 miles long by 20-30 miles wide (6:26). (c) Garamba National Park, in extreme northeast Congo (8:3). (d) The subspecies was known to be living in the Ndende and Birao areas of Northern Ubangui in 1965 (11), but there are no recent reports from this region.

Former distribution: "...used to be spread from the Anglo-Egyptian Sudan westwards right up to Lake Tchad in all regions suitable to its existence: ...mostly situated between 13° and 9°North, but extending beyond these latitudes in places" (5:101).

Status: The status of this subspecies gives cause for concern.
Sudan: No recent data are available from the Bahr-el-Ghazal, but the present disturbed situation is unlikely to favour the rhinoceros.
Uganda: A substantial decline has taken place; only a remnant population now remains, and this is unlikely to survive for long.
Congo (Kinshasa): Since 1963 the Garamba population has been reduced from abundance almost to the point of extinction.
Central African Republic: Almost, if not completely extinct.

Estimated numbers:
Sudan: Unknown; no recent estimate exists.
Uganda: The population declined from about 350 in 1955 to 80 in 1962 (6:28), to about 20-25 in 1969 (10).
Congo (Kinshasa): Numbers have fallen from 1,263 in 1963 to about 20 in 1969 (10).
Central African Republic: "There are certainly not above 10 in Northern Ubangui" (11)

Breeding rate in wild: Gestation period is uncertain although Dekeyser believes that it is probably about 530-550 days (17-18 months). A single calf is born and breeding may commence at 4-5 years of age (4:317). "Reproduction is ... unexpectedly rapid ... often troops of five included besides the adults, a calf, a three-quarter grown and another still youthful member" (1:88).

Reasons for decline: "Owing to the fact that the cow carries the longest horn, they were more sought after by hunters, which would account for their rapid decrease and almost entire extermination" (2:109). The chaos arising from the disintegration of law and order in the Congo and occupation of the area by rebel forces account for the heavy losses of rhino in the Garamba National Park. In May 1966, the entire northern, western, and eastern sectors of the park were almost devoid of large mammals with the exception of a few

lelwel hartebeest (8:3).

Protective measures already taken: Legally protected in the Sudan. Of the nine protected areas which have been established in south-western Sudan, four contain white rhinos, namely the Southern National Park, the Nimule National Park, the Numatina Game Reserve and the Shambe Game Reserve (7:217). The 12 introduced into the Murchison Falls National Park between 1961 and 1964 have increased to 18 (Oryx 9(5):326).

Measures proposed: As many as possible of the surviving remnant on the West Nile should be translocated to the Murchison Falls Park (10).

Number in captivity: 40 ♂♂ and 43 ♀♀ in 40 zoos (9:323).

Breeding potential in captivity: Poor.

References:
1. Lang, 1920
2. Brocklehurst, 1931
3. Harper, 1945
4. Dekeyser, 1955
5. Blancou, 1960a
6. Cave, 1963
7. Schomber, 1966
8. Curry-Lindahl, 1966
9. Int. Zoo Y'book, vol.10, 1970
10. SSC Minutes, 24:11:69
11. R. Paulian in litt. 23:3:65

SUMATRAN RHINOCEROS

Didermocerus sumatrensis (Fischer, 1814)

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "This is the smallest of the living rhinoceros. Height at the shoulder may be from 4 to 4½ feet; length from snout to root of tail, 8 to 9 feet. There are two horns, the anterior one generally under a foot long ... the posterior 2 to 4 inches. ... Unlike the Javan and Indian rhinos, whose skin appears to be made of armor plates, the Sumatran rhino's hide appears relatively smooth, with a conspicuous fold just behind the shoulder. ... in young animals at least [the skin] is thinly covered with short hair. The color and density of this hair varies with geographic locality ..." (1:13)

Present distribution: Small isolated populations still occur in a few widely separated localities in Burma, Thailand, Malaya, Sumatra and Sabah, and possibly India (Lushai Hills and Tirup Frontier Tract), East Pakistan (Chittagong Hills), Cambodia, Laos, Viet Nam, and Kalimantan. (1:18-27) In Sumatra the rhino is found mainly, if not entirely, in the Löser Reserve (approximately 1,700 sq. miles) in south-west Atjeh. (5:177)

Former distribution: Ranged from parts of East Pakistan and Assam, throughout Burma, much of Thailand, Cambodia, Laos and Viet Nam, Malaya, Sumatra and Borneo. (1:18-26)

Status: "The widely dispersed survivors are being hunted down constantly, and unless effective measures can be taken soon, there may be no survivors in a few years' time. Small as Burma's rhino population is, it is still the largest known "concentration" of Sumatran rhinos left in any one country, which shows the extremely critical state of the Sumatran rhino throughout its range." (1:22)

Estimated numbers: Total world population is estimated to be about 100 to 170, distributed as follows: Thailand (on Tenasserim border) 6; Cambodia, possibly 10; Borneo, possibly 10. (2:3) Burma, 20-30. (3:69) Malaya, 47. (4:8) "An estimated 20 in North Sumatra / Acheen; 25 in Riau; 15 in South Sumatra / Lampong." (10)

Breeding rate in wild: "One young per birth is the usual number. The gestation period has been reported as seven to eight months." (6:1352)

Reasons for decline: Like the other two species of Asian rhinoceroses, sumatrensis has been hunted almost to extinction throughout its range because of the "belief in the medicinal, religious or magical value of the various parts and products of the rhinoceros [which] is common to all peoples of south and east Asia, with the possible exception of a few hill tribes. Every part of the body is highly prized, from hide, hair and toenails to the blood and visceral organs ..." (1:13)

Status category: 1(a)•••P Code number: MA/113/DIDER/SUM

Protective measures already taken: Although legally protected over most of its range, the law is difficult to enforce. Talbot states, for example, that "although the live animal is protected by law in the Union of Burma, it is legal to sell rhino blood and other parts as medicine, and in recent years several rhinos have been killed on official permits by high Burmese officials 'for medicinal purposes'." (1:20)

Measures proposed: Adequate law enforcement is essential and reserves should be established to include the known range of the greatest number of rhinos. Such reserves should be large enough to cover the wandering propensities of the animal. The law, which in Burma permits the sale of parts of the rhino for medicinal purposes, should be abolished. (1:21) H.G. Hundley has suggested to the Chief Conservator of Forests, Burma, that measures should be taken to concentrate the remaining rhinos in three areas - North Burma, Arakan Yomas and Tenasserim. (7)

Number in captivity: One ♀, Copenhagen Zoo. (8) The Board of Management of the Rangoon Zoological Gardens proposes to trap a pair of Sumatran rhinos for breeding purposes. (9)

Breeding potential in captivity: No data, but there appears to be no reason why the Sumatran rhinoceros should not breed as successfully in captivity as the Indian rhinoceros. (8)

References:

1. Talbot, 1960
2. S.S.C. Memorandum No. 10, 11/9/62
3. Milton & Estes, 1963
4. Milton, 1963
5. Milton, 1964
6. Walker, 1964
7. H.G. Hundley *in litt.* 12/1/63
8. E.M. Lang *in litt.* 21/1/63
9. U Tun Yin *in litt.* 5/12/63
10. H. Basjarudin *in litt.* 28/10/65

GREAT INDIAN RHINOCEROS

Rhinoceros unicornis Linnaeus, 1758

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "This is the largest of the Asiatic rhinoceroses, reaching a height of 6 feet 4 inches at the shoulder and a total length of 14 feet 1 inch, with a horn of 24 inches; fold of skin in front of shoulder not continued across back of neck; other folds behind shoulder, in front of and across thigh, and around neck; sides of body and upper limbs studded with large rounded tubercles; skin naked except for a fringe of hairs on the margin of the ears and some bristly hairs on the tail; general color uniformly blackish gray, with more or less pink on the margins of the folds (Lydekker, 1900, pp. 21-22)." (1:375-376)

Present distribution: "The present range of the Indian rhino consists of eight reserves or sanctuaries in India, and the Rapti Valley region of the Nepal Terai. Occasionally individual rhinos are reported outside the reserves, some of them presumably stragglers from the Indian reserves or the Nepalese Rapti Valley area. In the latter category are those occasionally reported from Northern Champaran District of Bihar State which adjoins Nepal. Other reported individuals may indicate small isolated populations, such as the few animals consistently reported from an area a little way up the Brahmaputra river from the Kaziranga Sanctuary in Assam. E.P. Gee estimates this group at about ten animals. The occasional but unverified rhino reports from the Tirup Frontier Tract in Assam may indicate the presence of a few survivors in that area." (3:35)

Former distribution: "Five hundred years ago the Indian rhino ranged over a large part of northern India and Nepal. The westerly boundaries of its range were the foothills of the Hindu Kush west of Peshawar and the bush country south along the Indus River; the northern limit was the frontier of Kashmir. The boundary presumably then went south-eastward along the foothills of the Himalayas, through the Terai to the Burmese border. The southerly limit is uncertain, although arid conditions presumably limited its southern extension in much of India." (3:32-34) "If the Great Indian Rhinoceros ever inhabited Burma, its range by the late 1800's was probably limited to the areas adjoining Assam and Bengal." (3:32) Reports of its occurrence in Cambodia, Laos, Viet Nam and Thailand are questionable. (3:32 and 1:380)

Status: Stable or increasing in northeastern India. (7) Until recently the population was reported to be decreasing in Nepal (7) but Willan states that during the past three years protection has greatly improved and it is "possible to hope that the future of the rhinoceros is now brighter than ever before ..." (6:8)

Estimated numbers: 1959 - 700 (400 in India and 300 in Nepal) : 1961 - 600 (440 in India and 160 in Nepal). (7)

1963 :	Nepal	: Rapti Valley	185	Assam :	Orang		12
	W. Bengal	: Gorumara	5		Manas		15
		Jaldapara	60		Sonarupa		5
	Assam	: Kaziranga	275		Elsewhere		43
		Laokholsa	25				625

(7)

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Status category: 2(a)*P Code number: MA/113/RHINO/UNI

Breeding rate in wild: "A rhinoceros lives to be about 50 years old. It is presumed adult at 12 to 15 years, and the gestation period in the female is approximately 19 months. Thus a female of adult age can breed, assuming she feeds her calf for at least six to ten months, only every three years or so." (4:149)

Reasons for decline: The principal reason for the decline of the great Indian rhinoceros was human pressure on the land resulting in extensive alteration of the natural habitat and consequent restriction of the animal to the remoter parts of its range. In more recent years hunting has had the effect of reducing the remnant to a low level. Hunting has been mainly due to fanciful belief in magical properties of the horn. (1:376-379 and 3:34)

Protective measures already taken: Eight sanctuaries have been established of which the most important is the Kaziranga in Assam, covering 166 sq.m. (3:35-37) Willan (1965) reports that the Government of Nepal has taken measures to remove some 22,000 people from the forest area and the rhinoceros sanctuary of the Chitawan (Rapti Valley) and to resettle them elsewhere. "The whole of the area of the rhinoceros sanctuary and proposed National Park is therefore now clear of settlement, an outstanding achievement ..." (6:8)

Measures proposed: Among Mr. Gee's recommendations for Nepal are: an extension of the Mahendra National Park to embrace the rhinoceros migration routes; the establishment of additional sanctuaries in the valleys of the Narayani, Rapti and Reu rivers; the re-introduction of the rhino into a suitable new sanctuary in the Morang District in southeastern Nepal; the constitution of a Nepal Board for Wild Life. (2:84) Referring to Kaziranga, which contains the largest known concentration of Indian rhinos, Talbot states that domestic livestock, which at present are permitted within the boundaries, represent a considerable threat to the rhino and other forms of wildlife through competition for grazing and the disease factor. He recommends that all domestic animals should be excluded from the sanctuary. (3:46-47)

Number in captivity: 17 ♂♂ and 17 ♀♀ in 22 zoos. (5:382)

Breeding potential in captivity: Of the above, 3 ♂♂ and 3 ♀♀ were born in captivity. (5:382) 4 have been bred at the Basle Zoo and 2 at Whipsnade. (8) "Rhinos in captivity have proved very difficult to breed, as both the male and female appear to come into breeding condition separately at varying seasons and their seasons do not necessarily coincide." (4:149) "The female Indian rhino at Hagenbeck's had a male calf recently, a result of her union with the Basle male. The calf is being weaned by hand. A male born early this year at Basle has arrived at Vincennes Zoo as a mate for the adult female received by them 2 years ago. Thus there are 2 potential breeding pairs in Europe." (9)

References:

1. Harper, 1945
2. Gee, 1959
3. Talbot, 1960
4. Ripley, 1964
5. Jarvis, 1965
6. Willan, 1965
7. E. P. Gee in litt. 10/4/63
8. E. M. Lang in litt. 30/7/63
9. Marvin L. Jones in litt. 29/10/64

JAVAN RHINOCEROS

Rhinoceros sondaicus Desmarest, 1822

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "The Javan Rhinoceros looks much like a slightly smaller edition of the Great Indian Rhinoceros. ... The obvious points of distinction between the two rhinos are the horn and the body folds. While the Indian rhino has a prominent horn which attains a length of 2 feet, and both sexes are conspicuously horned, the male Javan rhino's horn may be only slightly over 10 inches in length; the female's horn is very slight or totally lacking. Both Indian and Javan rhinos have prominent folds in the hide across the back, over the withers, and behind the shoulder. In addition to these, the Javan rhino has a similar fold just in front of the shoulder ..." (2:48)

Present distribution: The Udjung Kulon Reserve in extreme western Java, an area of 117 sq. miles. (2:50) Boonsong Lekagul states that the Tenasserim area, on the Thailand frontier, may contain a few Javan rhinos. "I recently made a trip into the area west of Kanchanaburi and learned from the local tribes that both species of rhino are still successfully hunted in this frontier area." (6)

Former distribution: "Typically an inhabitant of Java, this rhinoceros is also found in the islands of Borneo and Sumatra, as well as in the Malay Peninsula, whence it extends northwards through Burma into Assam, and so into Eastern Bengal and the Sandarbans. ... it has been killed as far west as the Sikhim Terai." (1:26) "R. sondaicus was definitely reported as far north as Tonkin. Other reports indicate that it may have been found over the Chinese border, particularly up the Song Koi and Mekong Rivers." (2:49)

Status: "In terms of total numbers, there is still a reasonable, if small, population within the reserve. However, the total lack of any evidence of young animals (except for one subsequent unconfirmed report from outside the reserve) indicates a critical situation. During the past decade, six young rhino have been reported, and about twice that many rhinos killed or died. With reproduction or at least replacement at this extremely low level, when the present animals are killed or die, the species will be gone." (3:6)

Estimated numbers: Two dozen in Udjung Kulon. (5) "From the survey conducted by the Project it would appear that there is an absolute minimum population of 25 animals in the Udjung Kulon Reserve, and a probable populati population at least in the forties." (7)

Breeding rate in wild: A single young after a gestation period of about 17 months. (4:1351) "The greatest threat to the rhinos at present may be biological ... perhaps the population has reached such a low level that adequate reproduction may not occur." (2:50) Mature females are thought to calve only every 4th or 5th year. (8)

Status category: 1(a)***P Code number: MA/113/RHINO/SON

Reasons for decline: "In the last century with the tremendous population growth in Java the rhinos would have been excluded from most of the island by agriculture, even if they had not been hunted to death for their horns." (2:49)

Protective measures already taken: "The [Udjung Kulon] peninsula was set aside by the Netherlands Indies Government in 1921 as a Nature Monument to preserve the Javan rhino, the Banteng (Bos sondaica) and the Javan tiger (Felis tigris sondaica), all of which were threatened with extinction. Human habitation has been excluded since that time ... In the early 1930's the status of the area was changed ... to a Game Reserve." (2:52-54)

Measures proposed: "It is clear that there is a need for intensive study leading to effective management action on the problem of replacement in the Javan rhino population, or the species will not survive." (3:6) Arrangements have now been made whereby Dr. Schenkel will undertake such a study, commencing April 1966.

Number in captivity: None. Very few have ever been exhibited in zoos.

Breeding potential in captivity: There are no records of breeding in captivity.

References:

1. Lydekker, 1900
2. Talbot, 1960
3. Talbot & Talbot, 1964
4. Walker, 1964
5. G.C. Ruhle in litt. 9/7/63
6. Boonsong Lekagul in litt. 31/8/63
7. Lee. M. Talbot in litt. 4/10/64
8. H. Basjarudin in litt. 28/10/65

JAVAN RHINOCEROS

Rhinoceros sondaicus Desmarest, 1822

Order PERISSODACTYLA Family RHINOCEROTIDAE

Distinguishing characteristics: "The Javan Rhinoceros looks much like a slightly smaller edition of the Great Indian Rhinoceros. ... The obvious points of distinction between the two rhinos are the horn and the body folds. While the Indian rhino has a prominent horn which attains a length of 2 feet, and both sexes are conspicuously horned, the male Javan rhino's horn may be only slightly over 10 inches in length; the female's horn is very slight or totally lacking. Both Indian and Javan rhinos have prominent folds in the hide across the back, over the withers, and behind the shoulder. In addition to these, the Javan rhino has a similar fold just in front of the shoulder ..." (1:48)

Present distribution: The Udjung Kulon Reserve in extreme western Java, an area of 117 sq. miles. (1:50) Boonsong Lekagul states that the Tenasserim area, on the Thailand frontier, may contain a few Javan rhinos. "I recently made a trip into the area west of Kanchanaburi and learned from the local tribes that both species of rhino are still successfully hunted in this frontier area." (4)

Former distribution: The range included parts of India, Sikkim, East Pakistan, and possibly parts of Burma, Thailand, Cambodia, Laos, Viet Nam and Malaya. "R. sondaicus was definitely reported as far north as Tonkin. Other reports indicate that it may have been found over the Chinese border, particularly up the Song Koi and Mekong Rivers." Also occurred throughout the greater part of Sumatra and Java. (1:48-49)

Status: "In terms of total numbers, there is still a reasonable, if small, population within the reserve. However, the total lack of any evidence of young animals (except for one subsequent unconfirmed report from outside the reserve) indicates a critical situation. During the past decade, six young rhino have been reported, and about twice that many rhinos killed or died. With reproduction or at least replacement at this extremely low level, when the present animals are killed or die, the species will be gone." (2:6)

Estimated numbers: "From the survey conducted by the Project it would appear that there is an absolute minimum population of 25 animals in the Udjung Kulon Reserve, and a probable population at least in the forties." (5)

Breeding rate in wild: A single young after a gestation period of about 17 months. (3:1351) "The greatest threat to the rhinos at present may be biological ... perhaps the population has reached such a low level that adequate reproduction may not occur." (1:50) Mature females are thought to calve only every 4th or 5th year. (6)

Status category: 1(a)•••P

Code number: MA/113/RHINO/SON

Reasons for decline: "In the last century with the tremendous population growth in Java the rhinos would have been excluded from most of the island by agriculture, even if they had not been hunted to death for their horns." (1:49)

Protective measures already taken: "The [Udjung Kulon] peninsula was set aside by the Netherlands Indies Government in 1921 as a Nature Monument to preserve the Javan rhino, the Banteng (Bos sondaica) and the Javan tiger (Felis tigris sondaica), all of which were threatened with extinction. Human habitation has been excluded since that time ... In the early 1930's the status of the area was changed ... to a Game Reserve." (1:52-54) Udjung Kulon is now a Strict Nature Reserve. (6)

Measures proposed: "It is clear that there is a need for intensive study leading to effective management action on the problem of replacement in the Javan rhino population, or the species will not survive." (2:6) Arrangements have been made whereby Dr. J. Verschuren will undertake such a study, commencing November 1966.

Number in captivity: None. Very few have ever been exhibited in zoos.

Breeding potential in captivity: There are no records of breeding in captivity.

References:

1. Talbot, 1960
2. Talbot & Talbot, 1964a
3. Walker, 1964
4. Boonsong Lekagul in litt. 31/8/63
5. Lee M. Talbot in litt. 4/10/64
6. H. Basjarudin in litt. 28/10/65