

**PROPOSAL FOR INCLUSION OF SPECIES ON THE APPENDICES OF THE  
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF  
WILD ANIMALS**

- A. PROPOSAL:** Include the Cheetah *Acinonyx jubatus* on CMS Appendix I (except populations of Namibia, Botswana and Zimbabwe)
- B. PROPONENT:** Government of Algeria
- C. SUPPORTING STATEMENT:**

**1. Taxon**

- |                       |   |
|-----------------------|---|
| <b>1.1 Classis</b>    | Mammalia  |
| <b>1.2 Ordo</b>       | Carnivora   |
| <b>1.4 Familia</b>    | Felidae   |
| <b>1.5 Species</b>    | <i>Acinonyx jubatus</i> (Schreber, 1775)              |
| <b>Common name(s)</b> | English: Cheetah<br>French: Guépard<br>Spanish: Chita |

**1.6 Taxonomy and evolution**

Cheetah ancestors seem to have originated in North America about 4 million years ago during the Pliocene period (5.2 to 1.6 million years ago). This cheetah relative, *Miracinonyx*, appears to be a common ancestor of both the cheetah and the puma (cougar). During the Ice Age, *Miracinonyx* migrated across continents. Its descendants developed the characteristics that make the cheetah the unique animal that it is today.

Cheetahs hunted prey in the open plains as grasslands replaced forests during this time period. The sleek characteristics of the modern cheetahs became more prominent. This was especially evident in reduced body size and elongated limbs. The modern cheetah evolved into its present form about 200,000 years ago. Cheetah relatives had worldwide distribution until about 20,000 years ago. They were common throughout Africa, Asia, Europe and North America.

Genetic research has shown that today's cheetah populations are descendants of but a few animals that remained after the Pleistocene era about 10,000 years ago, at which point the population experienced a founder event generally referred to as a population bottleneck (Menotti-Raymond and O'Brien 1993, O'Brien et al. 1985, O'Brien et al. 1983). The cheetah somehow survived this time of mass extinction and the population gradually increased.

**Cheetah Subspecies**

Five subspecies are considered valid by most taxonomists. But the validity of the existence of sub-species is now questioned. Genetic research has shown the genetic distance between two subspecies *A. j. jubatus* and *A. j. raineyi*, is trivial, 10 to 100 times less, for example, than the genetic distance between human racial groups (Marker, 1998).

The recognized subspecies are as follows:

- *Acinonyx jubatus venaticus* (Griffith, 1821): **North Africa and Asia**  
Africa: Algeria, Djibouti, Egypt, Libya, Mali (northern), Mauritania (northern), Morocco, Niger (northern), Tunisia, Western Sahara.  
Asia: Afghanistan, India, Iran, Iraq, Israel, Jordan, Oman, Pakistan, Saudi Arabia, Syria, Russia and the Commonwealth of Independent States.
- *Acinonyx jubatus hecki* (Hilzheimer, 1913): **West Africa**  
 Benin (northern), Bukina Faso, Ghana, Mali (southern), Mauritania (southern), Niger, and Senegal.
- *Acinonyx jubatus soemmeringii* (Fitzinger, 1855): **Central Africa**  
 Cameroon (northern), Chad, Central African Republic (northern), Ethiopia, Nigeria (northern), Niger (southern), and Sudan.
- *Acinonyx jubatus raineyii*: (Heller, 1913): **East Africa**  
 Kenya, Somalia, Tanzania (northern), and Uganda.
- *Acinonyx jubatus jubatus*: (Schreber, 1976): **Southern Africa**  
 Angola, Botswana, Democratic Republic of Congo (southern), Mozambique, Malawi, South Africa, Tanzania (southern), Zambia, Zimbabwe.

Once thought to be a separate subspecies, *Acinonyx jubatus rex*, the king cheetah, is in fact no different than any other cheetah: its coat pattern is just a rare colour variation with stripes versus spots.

## 2. Biological data

Due to the cheetah's specialization for speed, it has developed many morphological and physiological adaptations. For aerodynamics, it has a small head, lightweight and thinly boned skull, flat face, and a reduced length of muzzle that allows the large eyes to be positioned for maximum binocular vision, enlarged nostrils, and extensive air-filled sinuses (Ewer 1973). Its body is narrow and lightweight with long, slender feet and legs and specialized muscles, which act, simultaneously, for high acceleration and allow for greater swing to the limbs (Hildebrand 1959, Hildebrand 1961, Neff 1983). The cheetah is the only cat with short, blunt claws, which lack skin sheaths, making the claws semi-retractable, thus providing added traction like a sprinter's cleats (Ewer 1973). The distinguishing marks of a cheetah are the long tear-drop shaped lines on each side of the nose from the corner of its eyes to its mouth.

Even though it is customized for speed, the cheetah can run only 300 to 400 meters before it is exhausted; at this time the animal is extremely vulnerable to other predators, which may not only steal its prey but attack it as well (Caro 1994).

Cheetahs are primarily diurnal, possibly due to the nocturnal behavior of competing predators (Nowell and Jackson 1996). It has been suggested that the cheetah has larger litter sizes as a strategy to offset high juvenile mortality caused by lions and hyenas (Burney 1980, Caro 1994, Hamilton 1986, Laurenson et al. 1995). Cheetahs have been observed scavenging and returning to a kill, but this is not common behavior (Burney 1980, Caro 1982, Graham 1966, Pienaar 1969, Stander 1990). Cheetahs also are known to remain on kills in areas where lions and hyenas are not present (Nowell and Jackson 1996, Wacher et al, 2005).

Cheetahs are considered more social than most other felids, with the exception of the lion (Caro 1994). Large groups of cheetahs (up to 19 individuals of different age groups) have been observed and reported in Namibia and east Africa (Graham 1966, Marker-Kraus et al. 1996, McVittie 1979). Male and female siblings tend to stay together for several months after independence from their dam (Caro 1994), and male littermates remain together in coalitions (Caro 1994). Males in coalitions have been reported to better hold and defend territories (Caro 1994), were found to be in better physical condition and had better access to females for breeding than solitary males (Caro 1994, Caro and Collins 1987).

There is considerable variation in cheetah prey, ranging from Thomson's gazelle (*Gazella thomsoni*) on the Serengeti plains (Schaller 1968), impala (*Aepyceros melampus*) in Kruger National Park (Broomhall 2001, Mills and Biggs 1993, Pienaar 1969) to kudu (*Tragelaphus strepsiceros*), gerenuk (*Litocranius walleri*) and dik-dik (*Madoqua kirkii*) in the arid areas of northern Kenya (Hamilton 1986). Other species reported as prey include puku (*Kobus vardoni*), kob (*Adenota kob*) and oribi (*Ourebia ourebi*) (Nowell and Jackson 1996), springbok (*Antidorcas marsupialis*) (Mills 1990, Nowell and Jackson 1996, Smithers 1975), wildebeest (*Connochaetes taurinus*) (Eaton 1974, Skinner and Smithers 1990), hare (*Lepus spp.*) (Labuschagne 1979), and seasonally a large proportion of prey consumed consists of immature ungulates (Burney 1980, McLaughlin 1970). Additional prey species in the Sahara include dorcas gazelle (*Gazella dorcas*), hare (*Lepus capensis*), barbary sheep (*Ammotragus laervia*), feral asses (*Equus asinus*) and immature camels (Wacher et al 2005).

### **Cheetah's early association with humans**

The earliest record of the cheetah's long association with humans dates back to the Sumerians, 3,000 BC, where a leashed cheetah, with what appears to be a hood on its head, is depicted on an official seal (Grzimek 1972, Guggisberg 1975). It was believed in Egyptian history that the cheetah would quickly carry away the Pharaoh's spirit to the afterlife (Wrogemann 1975) and symbols of cheetahs have been found on many statues and paintings in royal tombs (Guggisberg 1975).

Cheetahs were used for hunting in Libya during the reign of the pharaohs (Harper 1945). Cheetahs were not hunted to obtain food, but for the challenge of sport, known as coursing (Guggisberg 1975, Kingdon 1977). In Italy, cheetahs were coursed during the fifth century (Guggisberg 1975, Harper 1945). Russian princes hunted with cheetahs in the 11th and 12th centuries, and, at the same time, crusaders saw cheetahs being used to hunt gazelles in Syria and Palestine (Grzimek 1972). The best records of cheetahs having been kept by royalty, from Europe to China, are from the 14th, 15th and 16th centuries (Guggisberg 1975). Cheetahs also were used for hunting in Russia (Novikov 1956). Eighteenth and 19th century paintings indicate that the cheetah rivalled dogs in popularity as hunting companions (Wrogemann 1975).

During his 49-year reign as an Indian Mogul in the 16th century, Akbar the Great had more than 39,000 cheetahs in total, which were called Khasa or the Imperial Cheetahs, and he kept detailed records of them (Caro 1994, Guggisberg 1975). However, all the cheetahs kept for hunting and coursing purposes were taken out of the wild from free-ranging populations. Because of this continuous drain on the wild populations, the numbers of cheetahs declined throughout Asia. In the early 1900s, India and Iran began to import cheetahs from Africa for hunting purposes (Pocock 1939).

In Africa, the cheetah was important to many local ethnic groups: the San hunting communities of southern Africa ate cheetah meat for speed; traditional healers used cheetah foot bones for fleet-footedness; and kings wore cheetah skins for dignity (Nowell and Jackson 1996, Wrogemann 1975). These practices, combined with exportation to other countries, contributed to the beginning of the cheetah's decline in Africa.

## 2.1 Distribution (current and historical)

The cheetah was once one of the most widely distributed of all land animals (Wrogemann 1975). Through the course of time, the cheetah migrated over land bridges from North America into China, through Asia, India, Europe, and finally to Africa (Adams 1979, Kurten 1968, Kurten and Anderson 1980, Martin et al. 1977, Martin and Bateson 1986, van Valkenburgh et al. 1990), settling in its worldwide range as recently as 20,000 years ago (Adams 1979, Wrogemann 1975).

In 1900, approximately 100,000 cheetahs were found in at least 44 countries throughout Africa and Asia (Myers 1975, Figure 1.1).

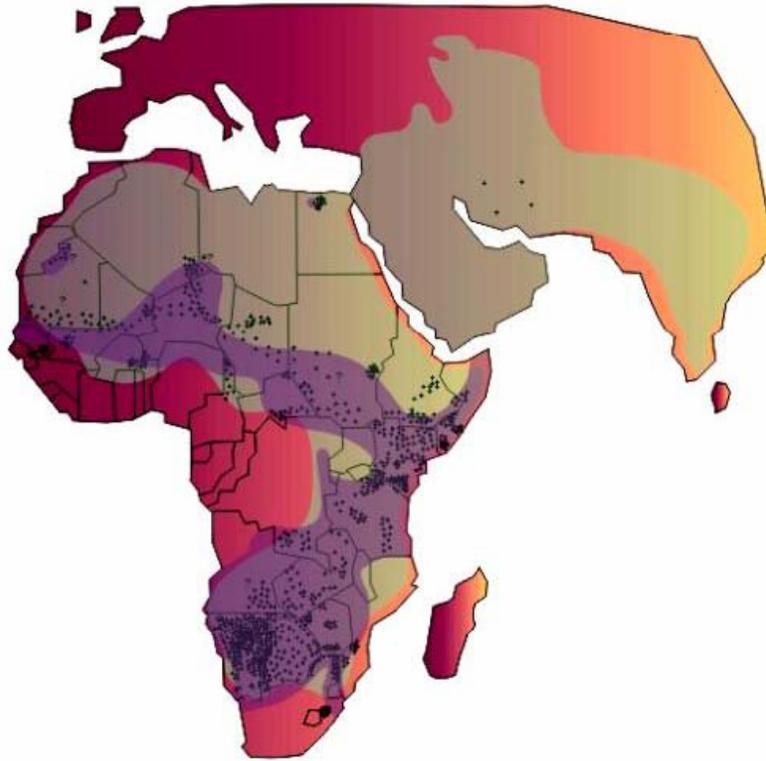
Cheetahs have become extinct in the 20th century from large parts of their range in Southwest Asia and North Africa, and in these regions they are now restricted to small isolated populations (Nowell and Jackson 1996).

The current free-ranging African populations of cheetahs are found in small, fragmented areas spread in 29 African countries of North Africa, the Sahel, East and southern Africa (Marker 1998, Nowell and Jackson 1996, see Figure 1).

Current Range States are:

In Africa: Algeria, Angola, Benin, Burkina Faso, Botswana, Cameroon, Central African Republic, Democratic Republic of Congo, Egypt, Ethiopia, Gambia, Kenya, Libya, Malawi, Mali, Mauritania, Mozambique, Namibia, Niger, Senegal, Somalia, South Africa, Sudan, Tanzania, Tunisia, Uganda, Zambia, and Zimbabwe.

In Asia: Iran and possibly Pakistan.



**Fig.1. Distribution of cheetahs throughout Africa and Asia (in Iran) in 1900 (grey), showing 1975 range (purple) and current range (dots) (Marker 1998). Many remaining populations are trans-border.**

## 2.2 Population

In 1900 there were 100,000 cheetahs in 33 African countries and 11 Asian countries.

In 1975 there were 30,000 cheetahs in Africa. Only 100 survived in Iran.

Based on estimates of density and geographic range (Nowell and Jackson 1996), the cheetah's total effective population size is estimated at below 10,000 mature breeding individuals, with a declining trend due to habitat and prey base loss and persecution, and no subpopulation containing more than 1,000 mature breeding individuals). This represents a decline of nearly 90% over the century (Marker 1998). In one century man has reduced the cheetah population to less than 10% of its original population.

Cheetahs are now **critically endangered** on a regional basis in Iran, where the population is estimated at approximately 50 mature individuals, found only in the Kavir desert region of Iran and possibly in the boarding areas of Pakistan. It is also critically endangered in North Africa, where no populations hold more than 50 mature individuals, with a total of approximately 250 individuals, and a declining trend.

Less than 10,000 adult cheetahs live in 29 African countries. But viable populations may be found in less than half of the countries where cheetahs still exist (Kraus and Marker-Kraus 1991, Marker 1998).

Current information about the status of the cheetah in many countries, especially countries that have been engaged in long civil wars, is lacking (Breitenmoser 1998, Breitenmoser and Breitenmoser 2001, Nowell and Jackson 1996). The information from North and West Africa is particularly limited, and the cheetah's future in these areas is questionable (Marker 1998, O'Mopsan 1998). The remaining strongholds are Kenya and Tanzania in East Africa, and Namibia, Botswana and Zimbabwe in southern Africa (Marker 1998). A summary of available information on the status of the species in individual range states is provided in the Annex.

### 2.3 Habitat

In Africa at least, until recently, the cheetah has generally been considered to be an animal of open country and grasslands. This impression is probably due to the ease of sighting cheetahs in the shorter grass, and the long-term studies conducted on cheetahs in East Africa (Caro 1994, Caro and Laurenson 1994, Schaller 1968). However, cheetahs use a wider variety of habitats and are often found in dense vegetation, e.g. the Kora Reserve in Kenya, Botswana's Okavango Delta, and Namibian farmlands (Broomhall 2001, Marker-Kraus et al. 1996).

In Asia and North Africa the habitat of *Acinonyx jubatus venaticus* consists of desert, much of it with precipitation of fewer than 100 mm per year. The terrain ranges from plains and salt pans to eroded foothills, and rugged desert ranges that rise to an elevation of up to 2,000-3,000 m. The vegetation, if any, consists of a sparse cover of shrubs, most less than one meter tall, of the genera *Salsola*, *Artemisia*, *Zygophyllum*, *Astragalus*, *Aphaxis*, and others. Gazelles were preferred prey but they have now become scarce through over-hunting and replacement by livestock.

Although the species tolerates a broad range of habitat types, its essential requirements for long term survival is for suitable prey and the reduction of conflict with humans and other large predators.

### 2.4 Migrations and/or transborder movements

Cheetahs have large home ranges on the order of 800-1,500 km<sup>2</sup> and are semi-nomadic, ranging widely to follow prey movements and avoid other large competing predators (Nowell and Jackson 1996).

There are clear and observed transboundary movements of cheetahs in several part of the Range.

## 3 Threat data

IUCN Status VU C2a(i) (2001).

### 3.1 Direct threat

#### Actual and potential threats

Cheetah numbers throughout their ranges are declining due to loss and fragmentation of habitat, and a declining prey base (Nowell and Jackson 1996). The Cheetah is threatened indirectly by loss of prey base through human hunting activities and directly because it is considered to be a threat to livestock. Livestock overgrazing has a negative effect on the habitat. Low population densities make cheetahs vulnerable to human induced threats (Nowell and Jackson 1996).

Intra-guild competition from more aggressive predators decrease cheetah survivability in protected game reserves, causing larger numbers of cheetahs to live outside protected areas and therefore coming into conflict with humans (Caro 1994, Marker 1998, Nowell and Jackson 1996). As human populations change the landscape of Africa by increasing the numbers of livestock and fenced game farms throughout the cheetah's range, addressing this conflict may become the most important factor in their conservation.

Cheetahs may suffer from the associated risks of low genetic diversity from a hypothetical bottleneck that occurred 10,000 years ago. A potentially critical factor for the long-term persistence of the cheetah is its lack of genetic variation relative to other felids. The genetic structure of the cheetah has received considerable attention over the past several years (Driscoll et al. 2002 (Driscoll et al. 2002, May 1995, Menotti-Raymond and O'Brien 1993, Merola 1996, O'Brien et al. 1985, O'Brien et al. 1987, O'Brien et al. 1983). It has been suggested that the genetic homogeneity could make the species more susceptible to ecological and environmental changes (Menotti-Raymond and O'Brien 1993, O'Brien et al. 1985, O'Brien et al. 1987, O'Brien et al. 1983). This has been interpreted in the context of two potential risks, including the expression of recessive deleterious alleles, and increased vulnerability to viral and parasitic epizootics that can affect genetically uniform populations (Brown et al. 1993, Evermann et al. 1988, Heeney et al. 1990, Munson et al. 1993, O'Brien et al. 1985). Given the lack of genetic diversity, monitoring the overall health of cheetah populations is an important component of understanding and promoting long-term viability (Munson and Marker-Kraus 1997).

A further concern is that cheetahs breed poorly in captivity (Marker 2002) and wild populations have continued to sustain captive ones. Until the 1960s, most cheetahs were imported from East Africa (Marker-Kraus 1997) but, as the numbers of cheetahs decreased in this region, Namibia became the major exporter of cheetahs (Marker-Kraus 1997). Today more than 90% of all cheetahs in captivity are descendants of Namibian cheetahs (Marker 2000, Marker-Kraus 1997). This additional pressure, together with ineffective captive breeding programmes, further endanger cheetah populations.

Over the past few years, the impact of infectious diseases on endangered species has become well known (Burrows et al. 1994, Munson et al. 1993, Roelke et al. 1993, Roelke-Parker et al. 1996). Cheetahs are known to be very susceptible to several feline diseases, and are possibly more vulnerable to such diseases due to the lack of heterogeneity in the population (Evermann et al. 1988, Munson 1993, Munson et al. 1993, O'Brien et al. 1985). In addition, captive populations world-wide have been known to have a high prevalence of unusual diseases that are rare in other species, and these diseases impede the goal of maintaining self-sustaining populations (Bartels et al. 2001, Munson 1993). Although the specific causes of these diseases

are not known, the character of these diseases implicate stress as an important underlying factor, and genetic predisposition and diet are possible confounding factors. While it is assumed that these diseases did not historically affect wild populations, there is concern that these diseases may arise in wild animals that are trapped, held in captive facilities and translocated.

Other threats

Severe habitat loss has occurred in this century with the growth and spread of human populations, settlement and activities. The relationship between farmer and cheetah has traditionally been one of conflict. Commercial farmers and ranchers have seen the cheetah primarily as a threat to livestock, especially to calves (Zimmerman 1996). While livestock losses result from many factors, including drought, reproductive failure, disease, injury, theft, and natural causes, farmers cite predation by jackal, caracal, leopard, and cheetah as significant. Elimination of predators became the accepted practice in many countries early farming years, when close monitoring and protection of livestock was impractical. Currently, when the cause of death of livestock is unknown, predators are often assumed to be responsible (Marker-Kraus et al. 1996). However, a survey of Namibian farmers conducted by the Directorate of Nature Conservation and Tourism (DNCT) from 1991-1993 indicates that ranchers' negative attitudes toward the cheetah do not necessarily correlate with actual cheetah predation of livestock (Morsbach 1986).

3.2 Habitat destruction

3.3 Indirect threat

3.4 Threat connected especially with migrations

3.5 National and international utilization

**4 Protection status and needs**

4.1 National protection status

The species is protected at the national level throughout most of its range (Nowell and Jackson 1996).

4.2 International protection status

All Cheetah populations are listed on the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) Appendix I.

IUCN classification: (as of 2002)

*Acinonyx jubatus jubatus* : VU C2a(i)

*Acinonyx jubatus venaticus*: CR C2a (i); D

*Acinonyx jubatus hecki*: EN C2a, D

Only in two or three countries are cheetah populations considered only threatened and are killed legally if found to be in conflict with human interests. In 1992, at the CITES meeting,

quotas were set for export of 150 animals from Namibia, 50 animals from Zimbabwe, and 5 animals from Botswana, as live animals or as trophies<sup>16</sup>.

#### 4.3 Additional protection needs

As reported throughout Africa, cheetahs are not doing well in protected wildlife reserves due to increased competition from other, larger predators such as lion and hyenas. Therefore, the majorities of the remaining, free-ranging cheetah populations are found outside of protected reserves or conservation areas and are therefore increasingly in conflict with humans. As human populations increase, the reduction of prey species available to cheetahs and the loss of habitat are the biggest threats facing the cheetah today. If these populations are to be protected, legislation must be reinforced and implemented, and education campaigns must be developed, on the model of what has been developed in Namibia.

There is a need to continue enhancing captive management to ensure optimal captive breeding. The implementation of management programs such as the African Preservation Program (APP) within the Pan African Association of Zoos, Aquariums, and Botanical Gardens (PAAZAB) are designed to facilitate cooperative management to the benefit of the population as a whole. As free-ranging populations of cheetahs continue to decline, and a large amount of genetic diversity of the wild population is lost, the captive and wild populations should be managed in cooperation. In the future, in the absence of further imports from the wild, the size of the world's captive population could be expected to decline, unless there is continued improvement in captive breeding efficiency. This trend, coupled with the continuing decline of the wild population, leaves the species extremely vulnerable. There is only one Asiatic cheetah in captivity, a wild-caught female in the Teheran Zoo.

## 5 **Range States<sup>1</sup>**

The African Range States are ALGERIA, ANGOLA; BENIN; Botswana; BURKINA FASO; CAMEROON; Central African Republic; CHAD; THE DEMOCRATIC REPUBLIC OF CONGO; EGYPT; ERITREA; Ethiopia; KENYA; Malawi; MALI; MAURITANIA; Mozambique; Namibia; NIGER; NIGERIA; SOMALIA; SOUTH AFRICA; Sudan; Swaziland; the United Republic of Tanzania; TOGO; UGANDA; Zambia; Zimbabwe.

In Southwest Asia, only a very small population remains in Iran (and possibly Pakistan?).

Cheetahs have become extinct in at least 18 countries in the very recent past (50-100 years): Djibouti, Ghana, India, Iraq, Israel, Jordan, Morocco, Nigeria, Oman, Saudi Arabia, Syria, Tunisia, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan. (Note: In the former Soviet Republics, considered extinct as of 1989. No confirmed sightings in the past few years. Cheetahs existed in many areas until the 1940's and 1950's when their prey, the goitered gazelle, was reduced drastically from over-hunting. Some cheetahs were believed to have moved down into Afghanistan when the goitered gazelles conducted a permanent move southward. In the 1960's and 1970's the last cheetahs existed in parts of Turkmenistan and Uzbekistan (east and west of Murgab, east of the Caspian sea, and in the Badkhyz Preserve). In these areas they lived mostly on remnant populations of goitered gazelle and arkhar sheep, saiga antelope, kopet-dag sheep and hares. In 1972 it was suggested that the cheetah be listed as a living monument and very strict international laws be proposed to save the last of the

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<sup>1</sup> CMS Parties in capitals.

Asian cheetahs. There are proposals to reintroduce cheetahs into areas with sufficient prey populations such as the Ustyurt Plateau of Uzbekistan (Marker, 1998).

## 6 Comments from Range States

## 7 Additional Remarks

## 8 References

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## ANNEX

**Current status, Range State by range State:**

- 1. Afghanistan:** *Population.* No information at this time. Possibly still a few animals in the southwest above Baluchistan, Pakistan and the Iranian border region. There is no protection for cheetahs.
- 2. Algeria:** *Population.* Still to be found in a few areas of southeast Algeria, between 3 1/2 E to the Libyan border and between 27 1/2 N to 20 1/2 N, with concentrations in Tassili N'Ajjer Range, Tassilis du Hoggar, Ahaggar, and Teffedest. Females with two cubs are seen regularly by tribesman complaining that cheetahs attack their camels. Rainfall was good from 1987-1990 in these areas, and there were increasing populations of Dorcas gazelle and Barbary sheep for cheetahs to prey upon. It is thought that the majority of the remaining Algerian cheetahs are living in the mountains of Tassili n'Ajjer and Ahaggar, because these areas are far more rich in water and vegetation. It is difficult to see the last Algerian cheetahs, native people know their presence mainly through their traces. This country could be a very important area for saving the North African cheetah. *Principal Threats:* conflict with nomadic herders and individual persecution by armed officials.
- 3. Angola:** *Population.* No recent information due to the long-standing civil war. Estimate of 500 with a range of 200- 1000 animals. Range was confined to the drier, arid areas in the central and southern parts of the country. In 1975 cheetahs were reported in the following parks and protected areas: Iona National Park (14,500 Km<sup>2</sup>), Bicuar National Park (7,900 Km<sup>2</sup>), Cameia National Park (14,450km<sup>2</sup>), Luando National Park (8,280 km<sup>2</sup>), Quicama National Park. The cheetah was declared protected game in 1957, but legislation is difficult to enforce, and the military community is exempt from these provisions of the law. *Principal Threats.* Large scale poaching which has helped support the long, civil war, cultivation and overgrazing of cattle in the arid areas will contribute to the elimination of cheetah habitat.
- 4. Benin:** *Population.* Thought to be extinct outside of the tri-country national park in the north of Benin, the Park Nationale du W, which adjoins Niger, Burkina Faso and Benin. In this park, a very small population of 2 or 3 pairs may exist. A few cheetahs exist in and around the Pendjari complex of protected areas in northwestern Benin. *Principal Threat.* Insufficient numbers of cheetahs to sustain a viable population and lack of habitat.
- 5. Botswana:** *Population.* Estimates vary between 1,000 and 1,500. Cheetahs have a wide distribution throughout Botswana, but are absent from areas of dense human settlement in the extreme south. In the northern districts of Ngami West, Ngami East, and Tutume areas, the cheetah is found throughout and is often in conflict with communal farmers who graze livestock and the commercial farmers of the Botswana Livestock Development Corporation. Freehold lands make up a small percentage of the overall land base in Botswana, but appear to harbour relatively large cheetah populations. This is especially true in the commercial farming areas of Ghanzi district and the Tuli Block and communal livestock areas in the south central Ghanzi district. Cheetahs have been reported in the following protected parks and reserves: Chobe National Park (11,000 km<sup>2</sup>), Moremi Wildlife Reserve (3,880 km<sup>2</sup>), Nxai Pan National Park (2,100 km<sup>2</sup>), Makgadikgadi Pans Game Reserve (3,900 km<sup>2</sup>), Kalahari Game Reserve (24,800 km<sup>2</sup>). Cheetahs have been protected game since 1968 but can be shot for livestock defense even before any damage has been noted. Recent quotas set by CITES in 1992 allows for 5 animals for export. *Principal Threats.* Livestock farming and poaching.
- 6. Burkina Faso:** *Population.* Extremely low. Estimated at 10. Perhaps only found, now, in the complex of national parks and protected areas and the tri-country national park in the eastern point of the country that borders Niger and Benin where 2 or 3 pairs exist. A few cheetahs exist in the Singou Fauna Reserve and the adjacent proposed Arli National Park.

Cheetahs may now be extinct in the vicinity of Kabore Tambi National Park and the Nazinga Game Ranch in southern Burkina Faso. The cheetah is totally protected but enforcement is likely to be inadequate. *Principal Threats.* The country is under growing invasion by large numbers of nomads from the north, which has increased the pressure on the cheetah's range. Loss of habitat, poaching and insufficient numbers of cheetahs to sustain a viable population.

**7. Cameroon:** *Population.* Population very small. In 1975, small populations of cheetahs were still found in Bénoué National Park. Between 1974 and 1976, a census was carried out in Bouba Nr'dijida National Park, which resulted in finding no cheetahs. *Principal Threats.* Decline of prey species, poaching and environmental degradation.

**8. Central African Republic:** *Population.* Still found in the southeastern area of the country, bordering Sudan and in the southern middle of the country, bordering Democratic Republic of Congo. A small population still existed in Saint Floris National Park bordering Chad and the hunting domains in the north. *Principal Threats.* Extensive poaching and limited prey species. *Taxonomy.* North Central African Republic listed as *A.j. soemmeringii*, there is no listing for southern Central African Republic.

**9. Chad:** *Population.* Possibly a very small population still exists in the Tibesti Highlands where prey species still are rather abundant, and there may also be a very small population in the Ennedi mountains. As of 1975, there was a small population of cheetahs in the Zakouma National Park. *Principal Threats.* Changing climate conditions have reduced the carrying capacity of the land and have over-burdened the sensitive environment. Currently, the many years of war have armed the general population, which puts all wildlife in danger of poaching for food and profit.

**10. Democratic Republic of the Congo:** *Population.* No current information. Estimated at 300 and could be below 100. Small populations found in parts of Shaba, Kasai and Kwango Provinces in the southern and southeastern part of country. Kundelungu National Park (7,600 km<sup>2</sup>) and Upemba National Park (10,000 km<sup>2</sup>) did contain a few cheetahs. *Principal Threats.* Agricultural development, poaching and loss of habitat. *Taxonomy.* There is no listing for the Northern Congo population.

**11. Egypt:** *Population.* Cheetah tracks have been seen and at least 5 animals were seen around the Sitra water source in the Qattara Depression in the western and northwest parts of the country, and north of Qara Oasis. It is believed there is still a small population that remains there. In 1994, tourism was banned in Marsa Matruh Province (where the Qattara depression is situated) for five years to protect wildlife from poaching. A proposed cheetah-gazelle sanctuary in northwest Qattara has been prepared. The cheetah is totally protected, although enforcement is likely to be inadequate. *Principal Threats.* Restricted habitat, possible conflict with nomadic herdsman, and insufficient numbers of cheetahs to sustain a population.

**12. Ethiopia:** *Population.* In 1975 the population was estimated to be 1000 animals and it was believed that the populations could decline to 300 animals by 1980. The cheetah was widely distributed from Addis (?) to Djibouti in eastern Ethiopia. Also widely distributed through the southern parts of the country, between 200-1500m elevation, absent from the low lands of the Ogaden in the east, and no sightings in the north since 1937. A small population was known to be in the Danakil Reserve. In 1995, cheetahs were sighted near Dolo. Two cheetahs were seen in the dry desert scrub, 100km from Dolo, by American oil company employees. The cheetahs were seen on a rocky plateau. This area has a fairly large antelope prey population. Other cheetah sightings have recently been in the Afder Zone, in and around the CherriHi/El Kere area, and in the Dolo region skins and live cheetahs are offered for sale. One cheetah from the Dolo region is in captivity at the Royal Palace as of 1996. Cheetahs are protected against hunting and capture although legislation is difficult to enforce. *Principal Threats.* Civil war, habitat loss, extensive poaching, decline of prey, and fur trade.

**13. Gambia:** *Population.* Reported that cheetahs may wander into Gambia from Senegal.

**14. Iran:** *Population.* Estimates of 30-60. Twenty years ago, the population was estimated at 400-450. As of 1998 cheetahs are still to be found in very small groups in a variety of areas of this large country. A relatively recent survey has been conducted by Hormoz Asadi showing 6 areas in the country where cheetahs still exist. 1. Evidence indicates definite dispersal of cheetahs from the Koshe-Yeilagh and Miandasht protected areas towards the southern Khorasan. The survey indicates that there are at least 15 to 20 cheetahs in southern Khorasan and groups of 5-8 cheetahs have been reported to be hunting wild sheep. 2. Cheetahs are surviving in the unprotected areas in Bafgh region of Yazd province. A protected area has been designated, the Kuh-E Bafgh PA. Much of this region consists of arid mountains and population estimates are still 10 to 15 animals including the Kalmand protected area. 3. A population is in the unprotected area of eastern Isfahan where the terrain consists of vast expanses of desert, unpopulated except for herdsmen grazing goats and camels. Here livestock numbers have increased and the past gazelle population has decreased, but this region may still support 5-10 cheetahs that are widely scattered. 4. A population is found in Kavir National Park and reports are frequent in this vast desert with arid mountains. The population corresponds with a gazelle population and there may still be 10 to 15 cheetahs here. 5. A population exists in the Garmsar, Damghan and Semnan unprotected areas in the northern part of the plateau. Here, 5 to 10 cheetahs are in conflict with growing agriculture and human populations. 6. A population is found in the Khar Touran National Park and protected area, which may possess the highest cheetah density in Iran. Cheetah reports are frequent in this vast expanse of desert where there may be 15 to 20 cheetahs still alive. *Principal Threats.* Loss of habitat, poaching, limited numbers of prey species. Direct persecution by humans, either shepherds or local hunters. They are easy targets for people in four-wheel drive vehicles and motorbike riders who chase cheetahs if they see them, causing them to die of exhaustion or leave the area.

**15. Kenya:** *Population.* Estimation of 1,200 animals. Species still occurs throughout the country, except in forests, montane moorland, swamps, and areas of dense human settlement and cultivation. Cheetahs are absent in western Kenya, the more densely populated parts of Central Province, and most parts of the coastal strip. Its distribution coincides with the distribution of Thompson's gazelle, Grant's gazelle, and gerenuk. Cheetahs occur throughout most of the arid northern and north eastern parts of Kenya. Although this area is vast and mostly unpatrolled and poaching is on the increase. Populations of cheetahs are found in the following national parks and reserves: Nairobi National Park (114 km<sup>2</sup>), Tsavo National Park (20,821 km<sup>2</sup>), Amboseli National Park (329 km<sup>2</sup>), Meru National Park (870 km<sup>2</sup>), Samburu-Isiolo Reserve (504 km<sup>2</sup>), Kora Reserve (1500 km<sup>2</sup>), Masai Mara Reserve (1510 km<sup>2</sup>), Marsabit Reserve (2088 km<sup>2</sup>), Tana River Reserve (165 km<sup>2</sup>). All hunting of cheetahs is completely banned. Exports of live cheetahs stopped in the 1960's. *Principal Threats.* Poaching, habitat loss, competition with agriculture and farming development.

**16. Libya :** *Population.* Cheetahs may still live around Fezzan oasis, SE of the country. Little information is available. Formerly found across the south of the country, but last seen in 1980, possibly still exist in the south west corner where the country borders Algeria, in the Tassili National Park. Until 1969 still found sparsely throughout the country except for the south and southeast. *Principal Threats.* Unknown, lack of information, presumed lack of prey species and habitat loss.

**17. Mali :** *Population.* Estimated to be 200 to 500, believed to be much less than this currently. Probably a small population still exists in the north west of the country bordering Mauritania and in the south part of Adrarh des Ifora mountains, where cheetahs have been reported in late 1970's. In 1990 skins were found for sale in Tibuta, north Mali. There were a

few cheetahs in Gurma National Park in the 1970's. *Principal Threats*. Decline of prey, poaching, environmental desiccation and reduction of habitat due to drought conditions.

**18. Malawi:** *Population*. Estimated at 50. Absent in southern part of the country. A small population still exists in the western parks and a few individuals around Chiperi area south of Kasurgu Park. Animals seen to be coming and going from Zambia into parks with very few resident individuals in Malawi parks. There have been sightings of individual cheetah in Nyika National Park (3134 km<sup>2</sup>), Vwaza Marsh Game Reserve (986 km<sup>2</sup>), and Kasunga National Park (2316 km<sup>2</sup>). *Principal Threats*. Human population growth, loss of habitat and poaching.

**19. Mauritania :** *Population*. Estimated at 100 to 500. Possible small population and isolated individuals still exists in Aouker Plateau, Mauritania Adghagh, at the NE of Banc d'Arguin National Park, in the northwest of the country (thought to be extinct due to the disappearance of their main prey, the Mhorr gazelle and decrease of dorcas gazelle) and Tidjika. No cheetahs exist in protected areas. *Principal Threats*. Decline of prey, poaching, environmental desiccation and reduction of habitat. *Taxonomy*. Northern Mauritania are *A.j. venaticus* and in the south, *A.j. hecki*.

**20. Mozambique:** *Population*. Estimated at 100. Once widely distributed, now relic populations perhaps survive in parts of Gaza and Inhambane Provinces and south of the Zambezi River, and in the southern regions of Tete Province. The Tete Region is believed to be absent of cheetahs now. The Gorongosa National Park (3,770 km<sup>2</sup>) had a small population of cheetahs. *Principal Threats*. Poaching due to civil war situation, lack of enforced protection.

**21. Namibia:** *Population*. Estimated at 2,000-3,000 animals. Still widely spread throughout the country, although only small populations are found in the southern part of the country due to small stock farming, jackalproof fences and eradication of predators. Ninety-five percent of the population is on commercial farmlands to the north of the Tropic of Capricorn. Apart from farmlands, very small numbers of animals still occur in communal farming areas of Damaraland, Hereroland, Bushmanland, and Kaokaland. Individual animals are seen in Kavango and Caprivi. Only two conservation areas have populations of cheetahs Etosha and the Namib/Naukluft, but only 1.4 to 4% of the population lives in proclaimed conservation areas. Possibly less than 100 animals live in the 2 conservation areas, Etosha National Park (22,270 km<sup>2</sup>) because high predator competition, and Namib/Naukluft National Park (49,768 km<sup>2</sup>), because of low prey density. Although protected game, cheetahs can be killed if livestock is threatened. In January 1992, at the CITES meeting a quota of 150 animals was given to Namibia for live export and trophy hunting. *Principal Threats*. Live capture and shooting by livestock farmers and game farmers. Cheetahs are easily trapped, in large numbers, on farms that have "cheetah play trees". The trapping is indiscriminate. These animals are then shot as there is little export market for live animals. The majority of the current world's captive population of cheetahs has originated from Namibia.

**22. Niger:** *Population*. Estimated at 50 to 40. Still found in the Niger Sahel running from Mali to Chad with concentrations of 10 to 15 pairs in the Air Tenere RNN (77,360 km<sup>2</sup>) in the northwest central park of the country. A few remain in the Termit Area. In Niger's Park W (the entire tri-country park is over 11,000 km<sup>2</sup> of which Niger part is about 2,200 km<sup>2</sup>) in the extreme south west of the country bordering Benin and Burkina Faso there are still cheetahs. In a study between 1993 and 1995, 22 cheetahs were seen in this park in eight sightings with an estimation of at least nine cheetahs living in the park. *Principal Threats* . Poaching, lack of prey species, conflict with livestock. *Taxonomy*. *A.j. venaticus* in northern Niger and *A.j. hecki* in southern Niger.

**23. Pakistan** (Possibly Extinct): *Population*. Information collected suggests that there are no more cheetahs in northern Baluchistan from Quetta westward. This was thought to be the last

area claiming cheetahs in Pakistan. Possibly some still exist in southwest Baluchistan on the Iranian border. It is very difficult for Pakistan officials to get information from these semi-autonomous areas. Specimens of hides were collected in the early 1970's. There is a current proposal to conduct a survey in Baluchistan and the Nushki desert region close to Iran for the potential occurrence of the cheetah. *Principal Threats.* Loss of habitat, competition with livestock and poaching.

**24. Senegal:** *Population.* No current information. Possibly still a few animals in Parc National du Niokolo-Koba (8,000km<sup>2</sup>).*Principal Threats.* Lack of habitat.

**25. Somalia:** *Population.* Only proof of existence is from cubs being sold by locals in the Kismajo area. The situation for cheetahs in the country is at a critical point. They have been on the decline since the 1970's, in the north the records are old and not current and in the south of the country the civil war has caused an impact on the species. Estimated at 300. A traveler reported seeing eight animals in one days travel in the south of the country along the main road from Kenya, suggesting some numbers still occur in this region. Formerly found throughout the entire country, reduced by half to two thirds as of 1975. Previously found along the Ethiopian border in the north west and central areas of Somalia. Live cheetahs and skins for sale in Djibouti market place and thought to come from Somalia. *Principal Threats.* Civil war, agriculture expansion caused reduction of prey, and poaching for skins and live trade. Due to Shifta bandits and civil war, enforcement is inadequate.

**26. South Africa:** *Population.* Estimated at 500-800. Individuals occur sporadically in the northern parts of the Cape Province. In the Kalahari Gemsbok National Park there is a small population of approximately 50 animals. A small population is found on the extensive commercial farmlands in the north western, northern and eastern Transvaal, to the southern border of the Kruger National Park and along the Zimbabwe and Botswana borders. They were exterminated in Natal by the 1930's. Since 1965, 64 animals from Namibia were reintroduced to Hluhluwe/Umflozi, 33 into Mkuzi Game Reserves, 18 into Eastern Shores, 13 into Itala, and 14 into Ndumu and over 10 into Phinda. Other reserves contain isolated groups too small to be considered as viable populations. The population in the Kruger National Park is approximately 250 animals. Many cheetahs are imported to South Africa from Namibia for zoos, parks and private facilities, as well as for trophy hunting in small camps. South Africa does have several successful captive breeding facilities. Only two parks hold large enough populations: Kruger National Park (19,485 km<sup>2</sup>) and the Kalahari Gemsbok National Park (9,591 km<sup>2</sup>). The cheetah was taken off the South African endangered species list in 1989. Permits are issued to control problem animals through shooting and live capture. Trophy hunting is allowed, but there is no legal export of the trophy. *Principal Threats.* Livestock farming, small populations in unconnected conservation areas, and the believed success of captive breeding programs in South Africa, which has eliminated the need to put much effort into the conservation of the remaining wild populations.

**27. Sudan:** *Population.* Recent reports indicate that cheetahs are mainly distributed in Southern Sudan. Estimates are of 1,200 animals, which could have declined by half by 1980. Recent information in the north indicates that cheetah skins are used to make slippers and these are in great demand by rich Sudanese. Populations may still be present where adequate prey and livestock exist in semi-arid areas below the true desert in the central middle of the country. Widely distributed throughout the south, as of 1982. Recent information is lacking from the south of the country due to the long civil war. The population there could be greatly affected by the eight years of war. All wildlife has been severely affected by the availability of guns and ammunition. Were very rare or non-existent in all parks and reserves. Sightings of 10 animals in the southern reserve, Southern National Park (23,000 km<sup>2</sup>), sightings also seen in Boma National Park (22,800 km<sup>2</sup>), Boro Game Reserve (1,500 km<sup>2</sup>), Meshra Game Reserve (4,500 km<sup>2</sup>), Badingile Game Reserve (8,400 km<sup>2</sup>), Ashana Game Reserve (900

km<sup>2</sup>), Chelkou Game Reserve (5,500 km<sup>2</sup>), Kidepo Game Reserve (1,400km<sup>2</sup>), Numatina Game Reserve (2,100 km<sup>2</sup>), and Shambe Game Reserve (620 km<sup>2</sup>) (Hillman,1982). The cheetah has been a protected species since 1972. Effective 1 January 1989 Wildlife Conservation and National Park forces of Sudan issued a 3-year notice banning the hunting and capture of mammals, birds and reptiles in the Republic of Sudan. *Principal Threats.* Poaching, loss of prey, indirect affects of the long civil war in the south of the country.

**28. Tanzania:** *Population.* Estimated at 1000, with a range of 500-150062. Found in the grasslands of Masailand and a few localized areas of woodlands. Populations do exist in the Serengeti/ Ngorongoro Conservation Area (25,000 km<sup>2</sup>), possibly as many as 500, however, the population suffers due to competition with lions and hyenas. There have been sightings in Mikumi National Park (3,230 km<sup>2</sup>), Tarangire National Park (2,600 km<sup>2</sup>), Katavi National Park (2,250 km<sup>2</sup>), and Ruaha National Park (10,200 km<sup>2</sup>). *Principal Threats.* Poaching, predation and competition with other large predators.

**29. Uganda:** *Population.* Estimated less than 200. No current information available. Small numbers are thought to be found in the north east sector of the country and a few may still found in Kidepo National Park (1,400 km<sup>2</sup>). *Principal Threats.* Poaching and loss of habitat.

**30. Zambia:** *Population.* Although cheetah records are very scant, the species distribution in the last three decades is encouraging. The species is uncommon in many areas, however, as of 1969 cheetahs were still widely distributed in various parts of the country, but in low densities. Populations were concentrated in the flood plains and along dry riverbeds. It was thought that the majority of the suitable habitats would disappear by the 1980's. Recently cheetahs occur in relatively low numbers in Kufe National Park (22,400 km<sup>2</sup>), South Luangwa National Park and Sioma Ngwezi National Park. In Lower Zambezi National Park, one or two have been sighted by tour operators at Jeki plain since 199075. Experimental re-introduction of three male cheetahs into the Lower Zambezi took place in 1994. *Principal Threats.* Poaching, loss of habitat, and expanding human population.

**32. Zimbabwe:** *Population.* Estimated at 500-1000. A 1991 Department of National Parks and Wildlife Management (DNPWLM) report estimated cheetah numbers using a computer model. This model predicted there were over 600 cheetahs within the Parks and Wildlife Estates, nearly 200 in communal lands, 400 on alienated land and nearly 200 on other state land, resulting in a total of 1,391 cheetahs throughout Zimbabwe. These estimates should however, be treated with caution as they are not based on actual data. Farmers on private and commercial land in southern Zimbabwe have indicated an increase in the cheetah population and are concerned over the loss of valuable game and livestock to cheetahs. According to a 1997 report from the Ministry of Environment and Tourism DNPWLM, the amount of commercial ranchland with permanently resident cheetah populations has more than doubled in the last decade, with an estimate of 5,000 animals. Cheetahs are largely absent from the northeast part of the country. Two main populations are found in the southern commercial farming areas and in the northwest conservation areas. These two areas account for about 400 animals. The remainder of about 100 animals is distributed over the middle Zambezi Valley, the Midlands and Gonarezhou. Over 50% of the population occurs on privately owned farmland. Less than 200 animals are thought to be in the conservation areas including Hwange National Park (14,650 km<sup>2</sup>), Matetsi Safari Area (2,920 km<sup>2</sup>), Kazuma National Park (313 km<sup>2</sup>) and Zambezi National Park (564 km<sup>2</sup>). Occasional sightings are reported in Matobo National Park (432 km<sup>2</sup>) and 10-20 animals are in the National Park and Safari area around Lake Kariba Valley. Small numbers occur in the Mana Pools National Park (2,196 km<sup>2</sup>) and the lower Zambezi area, unknown number in the Gonarezhou National Park (5,053 km<sup>2</sup>). Cheetahs are on the sixth schedule of the Parks and Wildlife Act and are also specially protected, which means that it is illegal to kill a cheetah under any circumstance without a Section 37 permit. This includes trophy hunting a cheetah, killing one as a problem animal or

live capture. The Government opened trophy hunting on the cheetah in 1990, which is monitored by "hunting returns". Quota's set at the January 1992 CITES meeting allows for the export of 50 animals. *Principal Threats.* Conflict with farmers and livestock and illegal killing of cheetahs.