Nowell K, Jackson P. 1996. North Africa and Southwest Asia, Cheetah. In: Nowell K, Jackson P, editors. Wild cats: Status survey and conservation action plan. Gland, Switzerland: IUCN/SSC Cat Specialist Group; p 41-44.

Keywords: 1Afr/1ZA/45Asia/Acinonyx jubatus/action plan/behavior/cheetah/conservation/status/survey/threat

Abstract: The book chapter describes the cheetah's behaviour, habitat, past and present distribution, population and protection status in North Africa and Southwest Asia and the principal threats for this endangered species.

mals, but then the lions disappeared, presumably shot or poisoned (Negi 1969).

Theoretically, the captive population of Asiatic lions can be considered to represent a second population. A Species Survival Plan (SSP) was established by the American Zoo and Aquarium Association (AZA) to manage the >200 Asiatic lions held by western zoos. However, not only is this SSP-managed population entirely descended from five founder animals, but two of the founders were African or African-Asiatic hybrids, as demonstrated by genetic studies and morphological characteristics (O'Brien *et al.* 1987c). Only three individuals in North American zoos are of pure bloodline (Wildt *et al.* 1992a). The total global captive population of pure Asiatic lions is believed to be 82, of which 23 are held outside of India (Walker 1994: 21). The government of India is currently considering offering problem wild lions to western zoos as new founders. The AZA's Felid Taxon Action Group has recommended that hybrid lions may continue to be bred to monitor their vigor until such time as space is required for pure Asiatic lions. It also called for collection of germ plasm from wild animals, which could be used to infuse genetic diversity into the captive population (Wildt *et al.* 1992a: 80).

Action Planning

Project 35.

Cheetah, *Acinonyx jubatus* Schreber, 1776

Other Names

Guépard (French); Gepard (German); guepardo, chita (Spanish); fahad (Arabic); yeoz (Brahui: Pakistan); pulam (Bukharian & Turkmenian); chita, laggar (Hindi: India); tazy palng (Dari: Afghanistan); yuz, yuz peleng (Farsi: Iran); ala bars, pyestrai, or pyatnistai bars (Kazakh); gurk (Mekrani: Pakistan); tazy prang (Pashto: Afghanistan); Asiaskii gepard (Russian); adèle amayas (Tamahaq, Tamacheq [Touareg]): Northwest Sahara); myallen, koplon (Uzbek).

Description and Behavior (Plate 8)

See full species account under *Sub-Saharan Africa.* Some authorities consider the cheetahs of north Africa and southwest Asia to be a single race, *A.j. venaticus* (Pocock 1939a, Ellerman and Morrison-Scott 1951), while others argue that north African populations have only become isolated from populations at the southern edge of the Sahara within the last century (K. de Smet *in litt.* 1993). Harrison and Bates (1991) label the distinction between Asian and African cheetahs dubious, while other anatomists consider Asian cheetahs to differ in morphology (Hemmer 1988) and pelage (pale fawn as opposed to sub-Saharan yellow, with spots more widely spaced: Heptner and Sludskii 1972, C. Groves in Karami [1992]). Dragesco-Joffé (1993) has observed that cheetahs of the open, sandy Saharan desert tend to be pale, with ochre rather than black spots, and muted "tear line" and tail rings. There is a rare form, locally called "white cheetah," which is exceptionally pale. However, cheetahs living around the black rocks of the Saharan mountain ranges tend to retain the black spots common to sub-Saharan cheetahs. Dragesco-Joffé has also reported that Saharan cheetahs tend to be rather small: two adult males killed in the Ténéré region of Niger had a shoulder height of only 65 cm, as compared to 85 cm for sub-Saharan cheetahs (Bowland *et al.* 1993). The genetics of north African and southwest Asian cheetahs have yet to be investigated.

While the question of evolutionary relationships remains to be resolved, the main difference between cheetahs of this region and those south of the Sahara is that they are much more rare. Some of this rarity is natural, given the harsh conditions of sand desert. However, severe depletion of the cheetah's ungulate prey base (East 1992a, b) and direct persecution are the major threats to the cheetah's survival in this region.

There is little information available on the ecology of these cheetahs. Gazelles are generally indicated as the main prey species (Heptner and Sludskii 1972, Harrison and Bates 1991). In India, cheetahs took primarily blackbuck antelopes and chinkara gazelles, but were also known to attack nilgai antelope and domestic goats and sheep (Pocock 1939a). In Turkmenistan, cheetahs primarily took goitered gazelles, and their disappearance from this area is strongly associated with the decline of gazelles in the mid-1900s (Heptner and Sludskii 1972). In Iran, cheetahs outside protected areas with gazelle populations are reported to prey mainly on hares, an abundant food source because they are not usually taken by Muslim hunters (M. Karami *in litt.* 1990). Cheetahs in sub-Saharan Africa are known to take hares opportunistically. Whether cheetahs can subsist almost entirely on small prey needs to be investigated.

Dragesco-Joffé (1993) reported that cheetahs living in the Saharan mountains often hunt at night, when temperatures are cooler. He translates the Touareg name for cheetah as "one who advances slowly"—a reversal of the popular perception of the cheetah as one of the fastest land mammals. The name is a tribute to the cheetah's slow, patient stalking of gazelles in open terrain with very little cover. Dragesco-Joffé also states that Saharan cheetahs occasionally take ostrich and Barbary sheep.

Throughout this region and in Europe as well, captive cheetahs were kept by the nobility and trained to hunt, a practice dating back about 5,000 years to the Sumerians.

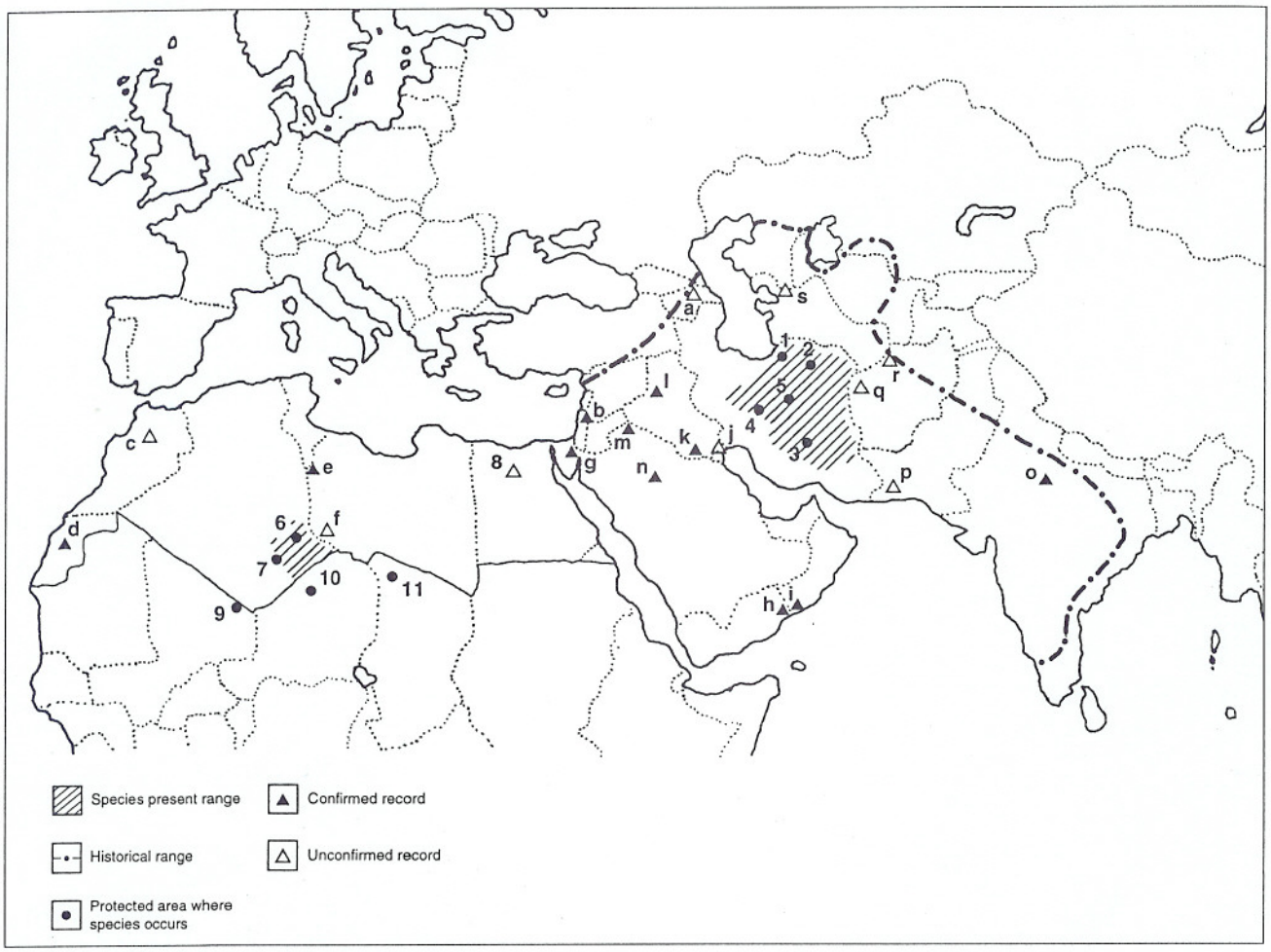

Figure 2. Past and present distribution of the cheetah (*A. jubatus*) in north Africa and southwest Asia.

Historical range: a. The Azerbaijan khans and Armenian and Kartlian (eastern Georgian) princes hunted with trained cheetahs up to the 14th century. In 1472, Josef Barbaro saw the "100" hunting cheetahs of an Armenian prince. The Georgian Chronicles (Kartlis Tskhovreba) place the cheetah in eastern Georgia in the Middle Ages. Fossil remains dating to the middle Pleistocene document the cheetah's presence in the Caucasus region, but it is unclear whether wild cheetahs persisted there in historical times (Vereschagin 1959). b. Tristram (1866, cited in Harrison and Bates 1991) noted the presence of a few cheetahs in Gilead, the vicinity of Mt. Tabor and the hills of Galilee, but cheetahs have been extinct in this area for over 100 years (Harrison and Bates 1991). c. Cheetahs were still found up to 40 years ago in the Atlas mountains of Morocco (Wrogemann 1975). d. The last record for the cheetah in Western Sahara dates to when an animal was captured in 1976 and given to the Algiers Zoo. e. The last known cheetah in Tunisia was killed in 1960 near Bordj Bowrgiba in the extreme south of the country. f. The last observation of a cheetah in Libya was in 1980 in the southwestern part of the country bordering Algeria, where cheetahs are still known to exist (K. de Smet, pers. comm. 1990, cited in Kraus and Marker-Kraus 1991). g. Hardy (1947) mentions seeing two cheetahs in the Sinai Desert in 1946. h Last record of the cheetah in Yemen dates to an observation by J.T. Ducker in 1963 in Wadi Mitan (Harrison and Bates 1991). i. Last known cheetah in Oman shot near Jibjat, Dhofar in 1977 (Harrison 1983). j. Dickson (1949) remarked on the presence of cheetahs in Kuwait. k. Cheetahs were reported to be rare in the desert west of Basra, Iraq, in 1926 (Corkill 1929). l. Last record of the cheetah in Iraq is a photograph of one killed by a car between the H1 and H2 pumping stations (Harrison and Bates 1991). m Cheetahs were killed in the early 1950s by oil workers near the Saudi Arabian, Jordan and Iraq border intersections (Hatt 1959). n. Last record for the cheetah in Saudi Arabia dates to 1973, when two were killed near Ha'il and exhibited for a few days near the Imara palace (Nader 1989). o. The last record of the cheetah in India, where the species was formerly widespread, dates to 1947, when the Maharajah of Korwai (misprinted as "Korea" in *J. Bombay Nat. Hist. Soc.* Vol. 47:719) in northern Madhya Pradesh, shot three cheetahs (with two bullets) at night, spotlighting them with his car headlights. Taxidermists van Ingen and van Ingen (1948) transmitted the "record of this shoot" in a letter to the Journal of the Bombay Natural History Society. The editors appended a note saying, "The editors were so nauseated by the account of this slaughter that their first impulse was to consign it to the waste-paper basket. Its publication here is intended in the nature of an impeachment rather than any desire on their part to condone or extol the deed." p. Cheetahs formerly occurred throughout the dry hills west of the Indus river in Pakistan at the end of the 19th century, but subsequent reports are sparse and they are probably now extinct (T. Roberts *in litt.* 1993). The last record is of a trade skin obtained

Continued on next page

in 1972, which reportedly originated from the Mekran border region near Iran (Roberts 1977, Groombridge 1988). q-r. Habibi (1977) and Sayer and van der Zon (1981) believe the cheetah to be extinct in Afghanistan, where it was formerly found throughout the lower steppes up to 1,000 m. Skins were purchased in fur markets in Fara (q) in 1948 and in Herat (r) in 1971, but their origin is not known. s. The cheetah has disappeared in recent times from the trans-Caspian region (Bannikov and Sokolov 1984). It was probably extirpated from the Kyzylkum desert region southeast of the Aral Sea in the early 1960s, and from the Ustyurt and Mangyshlak regions west and southwest of the Aral by the late 1970s (Ishadov 1992; E. Matjuschkin, E. Mukhina *in litt.* 1993). The last unconfirmed observation of a cheetah in this region dates to 1982 on the Turkmenistan-Kazakhstan border (s); the last confirmed evidence of a small, established population dates from 1973 in Turkmenistan, further south on the Uzboy dry watercourse on the edge of the Karakum desert (Anon. 1985).

Present range: 1. Khoshyeylag I; 2. Miandasht I + Touran V* complex; 3. Bahramgor IV; 4. Moteh V; 5. Kavir II* complex (Iran); 6. Tassili N'Ajjer II#; 7. Ahaggar II (Algeria); 8. Possible cheetah tracks seen in the Qattara Depression, Egypt (Amman 1993); 9. Adras des Iforas Mts. reserve (proposed: Mali); 10. Aïr & Ténéré VIII (Niger); 11. Tibesti Massif (not protected: Chad).

In India, the Moghul Emperor, Akbar, is reputed to have collected some 9,000 animals in his lifetime. According to Pocock (1939a), the animals were better captured adult for this purpose, after having learned to hunt from their mother. By the early 1900s, however, Indian cheetahs had become so scarce that imports of African animals were required to sustain the princes' stables (Divyabhanusinh 1984), as there was no success breeding them in captivity (see also Part II Chapter 5).

Habitat and Distribution

Cheetahs were once widely distributed across the region, absent only from extensive sand plains and massifs, and from areas of dense tree and shrubby vegetation (Heptner and Sludskii 1972). At present, only two main population concentrations can be confirmed: in the southwestern Sahara and in Iran (Fig. 2). In the southern Sahara, mountain ranges in Algeria, Chad, Mali, and Niger form the cheetah's stronghold, although they can range far out onto sandy plains where there is sufficient prey. Cheetahs have been observed at elevations up to 2,000 m in the rocky mountains (Kowalski and Rzebik-Kowalska 1991, Dragesco-Joffé 1993, K. de Smet *in litt.* 1993). In Iran, there are reliable recent records of cheetahs from the provinces of Khorasan (northeastern part of the country), Markazi (central), and Fars (southwest) (Karami 1992).

It is possible that cheetahs occur sporadically in other parts of the Saharan and southwest Asian regions (such as Egypt's Qattara Depression, where tracks possibly made by a cheetah were recently found [Ammann 1993]), but most records date back at least 20 years (see Fig. 2 caption). In southwest Asia, the locations of the greatly reduced gazelle populations are fairly well-known (East 1992b), and it is unlikely that cheetahs would be overlooked. In north Africa, the situation is more optimistic: although no longer common, the dorcas gazelle (which cheetahs in Algeria have been observed to prey upon: Dragesco-Joffé 1993, K. de Smet *in litt.* 1993) still occurs widely in certain parts of Egypt, locally in Libya, and in the southern deserts of Tunisia (East 1992a).

In Iran, cheetahs are found mainly in the central shrub steppe, a broad zone of bush and grassland where most of Iran's cities are located. It snows in the winter. The Saharan mountains are hyper-arid, but still receive slightly higher rainfall than the surrounding desert. They are thus better vegetated and support small permanent waterholes and antelope populations (Swift 1975, Le Berre 1991).

Population Status

Global: Category 3(A). Regional: Category 1(A). IUCN: Endangered. Cheetahs were probably extirpated in the following countries during the mid- to late 1900s: Afghanistan, Iraq, Israel, Jordan, Libya, Kuwait, Morocco, Oman, Pakistan, Saudi Arabia, Syria, Tunisia, Turkmenistan, Uzbekistan, Western Sahara, and Yemen (Wrogemann 1975, Kraus and Marker-Kraus 1991: see Fig. 2). A small, isolated population may persist in Egypt's Qattara Depression (IUCN 1976, Kraus and Marker-Kraus 1991, Ammann 1993).

De Smet (1989) estimates that "several dozen" cheetahs persist in the mountains of southeastern Algeria, and it is not clear whether the population is isolated from that centered on the Aïr massif 500 km to the south in Niger. There are no records of cheetahs from the extreme south of Algeria (Kowalski and Rzebik-Kowalska 1991, K. de Smet *in litt.* 1993). Dragesco-Joffé (1993), based on his travels in the region, estimated the number of cheetahs remaining in Chad, Mali, and Niger to be between 300 and 500—however, most of these animals are found in the sub-Saharan dry woodland Sahel region (J. Newby, pers. comm.). Millington and Anada (1991) estimated the number of cheetahs in Niger, concentrated in the Aïr and Termit desert regions and the Sahelian "W" National Park, at 200. In Iran, B. Dareshuri estimates the Iranian population to be fewer than 50, with the northeastern province of Khorasan being the stronghold (Karami 1992). The population has declined steeply in recent years: there were said to be over 200 cheetahs in Iran in the mid-1970s (E. Ferouz, pers. comm. 1974), although some experts consider this figure an over-estimate (P. Joslin, pers. comm.).

Various proposals have been put forward to re-stock depleted areas with cheetahs of sub-Saharan stock (e.g.

Israel, India, Turkmenistan, and Uzbekistan), but conserving extant populations is the priority. In addition, reintroduction should not be seriously considered until genetic comparisons (Hemmer 1988) and environmental impact evaluations have been carried out. The advice of the IUCN/SSC Reintroduction Specialist Group should be obtained.

Protection Status

CITES Appendix I. National legislation: protected over its known extant range, and in many historical range states. Hunting prohibited: Algeria, Egypt, Iran, Kazakhstan, Morocco, Mali, Niger, Pakistan, Sudan, Tunisia, Turkmenistan, Uzbekistan. No information: Iraq, Libya, Mauritania, Jordan, Oman, Saudi Arabia, Syria, Yemen (IUCN Environmental Law Centre 1986, Nichols *et al.* 1991, E. Mukhina *in litt.* 1993).

Principal Threats

The cheetahs of Iran and the Sahara exist in very low numbers, divided into widely separated populations. Their low density makes them particularly vulnerable to reduction of antelope prey through livestock overgrazing and hunting, coupled with direct persecution (cheetahs prey on livestock, especially young camels: K. de Smet, pers. comm.). While protected areas comprise a key component of cheetah range, management needs to be improved. For example, grazing of domestic stock is reported to be particularly serious in Iran's Khosh Yeilagh Reserve (Karami 1992), once known to hold an important resident cheetah population (Harrington 1977).

Cheetahs native to north Africa and southwest Asia are not known to be held in captivity.

Action Planning

Projects 36, 37, and 78.

Leopard, *Panthera pardus* (Linnaeus, 1758)

Other Names

Panther (English); léopard, panthère (French); Leopard, Panther (German); leopardo, pantera (Spanish); alym (Abkhazian); prang, palang, dikho (Afghanistan); nimr (Arabic); anzariuts, indz, hovaz (Armenian); jiki (Georgia); namer (Israel); pling (Kurdish); plang, palang kouh (Persian); bars (Russian); pars, kaplan, panter (Turkey); koplon (Uzbek).

Description and Behavior

See main species account under *Sub-Saharan Africa.* Across their wide range in north Africa and southwest Asia, leopards have so far been studied only in Israel's Judean Desert, a pristine mountainous region bordering the Dead Sea, where 6-9 individuals have been radio-collared and monitored since 1979 (Ilani 1990). These leopards prey mainly on rock hyrax, followed by ibex and porcupine. Ilani (1981) observed a female leopard hunt hyrax by leaping blindly over large boulders, surprising a group of hyrax on her fourth attempt and killing a young male. Roberts (1977) records an incident of a pair of leopards attacking a camel in Baluchistan, but describes more typical prey as smaller female and sub-adult Sind ibex and markhor, as well as porcupine. Ibex and hyrax were also reported, along with the Arabian red-legged partridge, to be the principal prey of leopards in Oman (Daly 1990). Wild pig were reported as major prey in the forests of northern Algeria (Kobelt 1886, cited in Kowalski and Rzebik-Kowalska 1991) and northern Iran (Joslin 1990a). In the Caucasus mountains, leopards are believed to prey primarily on wild goats and moufflon (M. Akhverdian *in litt.* 1993). In Turkmenistan, the leopard's range almost totally coincides with that of Turkmenian sheep (Heptner and Sludskii 1972), but where these have been depleted wild boar are the major prey (Lukarevsky 1993).

Leopards from the Arabian peninsula are pale in color and of small average size (Harrison and Bates 1991). Further north, in the Judean Desert, one male leopard weighed 30 kg and two females averaged 23 kg (Ilani 1981). Leopards attain larger size in the mountains of Iran and central Asia, with recorded weights for males up to 90 kg (Harrington 1977). Leopards in these areas are often referred to as "snow leopards" in local parlance because of their light color and long-haired winter coat (Ognev 1935, Hatt 1959, Harrington 1977)

Habitat and Distribution

Leopards are believed to be absent from the true desert of the central Arabian peninsula (Harrison and Bates 1991), although they are found near the Dead Sea, where annual rainfall is less than 50 mm (Ilani 1990). Pine forest and Mediterranean scrub are also suitable habitats for the species in northwest Africa (Drucker 1990, Kowalski and Rzebik-Kowalska 1991), Iran (Joslin 1990a), and the Caucasus (Ognev 1935). Throughout the region they are confined chiefly to the more remote montane and rugged foothill areas (Fig. 3), ranging up to 1,800 m in Turkmenistan (Bragin 1990), 3,000 m in Morocco (Drucker 1986), 2,600 m in Saudi Arabia (Biquand 1990) and 3,200 m in Iran (Misonne 1959).

Population Status

Global: Category 5a(A). Regional: Category 3(A). IUCN: South Arabian subspecies *nimr* Endangered (Oman, Saudi Arabia, Yemen); North Persian subspecies *saxicolor*