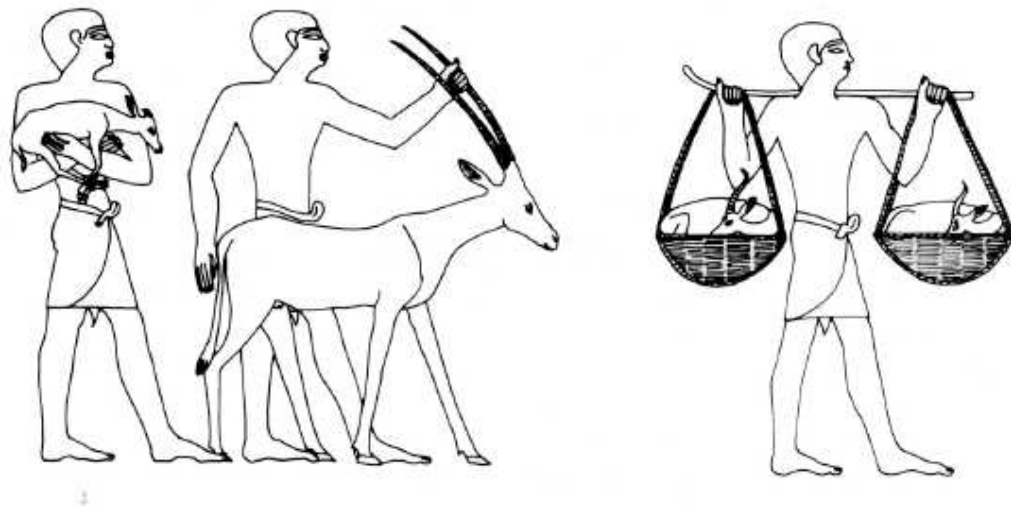


# *Gazella dorcas*



© Ouadi Rimé-Ouadi Achim Faunal Reserve.  
Chad, 1999, François Lamarque. ONCFS

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*Gazelles dorcas and Oryx with calf. Mural in an egyptian tomb "Ukht-Hop". 2000 to 1780 BC*

# Gazella dorcas

## 1. TAXONOMY AND NOMENCLATURE

### 1.1. Taxonomy.



*Gazella dorcas.*  
© Mar Cano. EEZA.

*Gazella dorcas* belongs to the tribe Antilopini, sub-family Antilopinae, family Bovidae, which comprises about twenty species in genera *Gazella*, *Antilope*, *Procapra*, *Antidorcas*, *Litocranius* and *Ammodorcas* (O'Reagan, 1984; Corbet and Hill, 1986; Groves, 1988). Genus *Gazella* comprises one extinct species, and 10 to 15 surviving species, usually divided into three sub-genera, *Nanger*, *Gazella*, and *Trachelocele* (Corbet, 1978; O'Reagan, 1984; Corbet and Hill, 1986; Groves, 1988). *Gazella dorcas* belongs to sub-genus *Gazella* (Groves, 1969; O'Regan, 1984; Corbet and Hill, 1986) and to its central group (Groves, 1988), within which species limits are not entirely clarified. Groves (1988) distinguishes seven species, *Gazella dorcas* of North Africa, northern Somalia and Ethiopia, the Sinai and southern Israel, *Gazella saudiya* of Saudi Arabia, Kuwait and southern Iraq, *Gazella gazella* of the Arabian peninsula, Israel and Lebanon, *Gazella bilkis* of northern Yemen, *Gazella arabica* of Farasan Island in the Red Sea, *Gazella spekei* of Somalia and eastern Ethiopia, *Gazella bennetti* of Iran, Pakistan and India. *Gazella dorcas* is polytypic and comprises, in Africa, besides *Gazella dorcas pelzelni* of the Somalian region, about four Sahelo-Saharan subspecies, *Gazella dorcas dorcas* in the Western Desert of Egypt, *Gazella dorcas isabella* (*G. d. littoralis*) in the Eastern Desert and the hills of the Red Sea, *Gazella dorcas massaesyla* on the Moroccan high plateaux and in the Atlantic Sahara and its fringes, *Gazella dorcas osiris* (*G. d. neglecta*) in the Sahel, the central Saharan massifs and the northern fringes of the western Sahara (Groves, 1969, 1988; Osborn and Helmy, 1980; Alados, 1988). Possible isolation of these forms does not seem entirely documented and they do not seem to present clear-cut ecological differences congruent with the taxonomic divergences. Moreover, recent genetic analysis tend to show that there is only a single sub-species in the whole southern Saharan region, from the Atlantic coast to the Nile, this homogeneous population being probably partially isolated from the northern Saharan populations.

### 1.2. Nomenclature.

#### 1.2.1. Scientific name.

*Gazella dorcas* (Linnaeus, 1788)

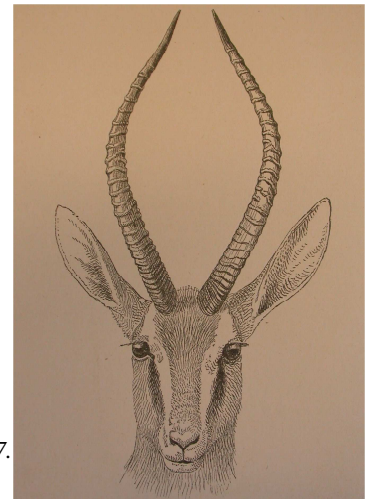
#### 1.2.2. Synonyms.

*Capra dorcas*, *Antilope kevela*, *Antilope corinna*, *Antilope dorcas*,  
*Gazella lisabella*, *Gazella littoralis*

#### 1.2.3. Common names.

English: Dorcas Gazelle  
French: Gazelle dorcas, Gazelle dorcade  
German: Dorkasgazelle  
Arabic: Ghazel, Rhazel, Afri  
Tamashek: Ahenkod  
Toubou: Oueden

*Gazella Dorcas. Mâle.*  
in P.L. Sclater & Thomas. 1897.  
*The book of Antelopes.*



#### 1.2.4. Description

A small gazelle with a very pale fawn coloured coat and white underside bordered with a brown stripe, above which there is a sandy stripe. Forehead and face are darker than the body. Well marked dark lines from eye to nostril; between those two lines, a white stripe extends from upper lip to horn base. Horns are present in both sexes, male's horns being longer and thicker. Horns are lyre shaped, strongly curved, which bow outwards then turn inwards and forwards at the tips; they may have up to 25 annular rings.

TL :	90 - 110 cm
T :	15 - 20 cm
H :	55 - 65 cm
Weight:	15 – 20 kg
Horns :	25- 38 cm

## 2. BIOLOGICAL DATA

### 2.1. General Biology.

#### 2.1.1. Habitat

The Dorcas Gazelle is a species of arid and sub-arid zones. It is the most ubiquitous of all the Sahelo-Saharan Antelopes. Habitats in which *Gazella dorcas* has been observed include regs, dunes, flat gravel-plains, mixed gravel and dune areas and gravel plateaux, wadis and rocky areas. It can be found throughout the Sahara and the Sahel, but it tends to avoid very sandy areas or true deserts such as the Majabat al Koubra (Lavauden, 1926c; Dupuy, 1967; Osborn and Helmy, 1980; Kacem *et al.*, 1994). It occurs from coastal plains and desert depressions (Osborn and Helmy, 1980) to 2.000m elevations in the Hoggar Mountains (Dupuy, 1967). Higher elevations, as well as interiors of deserts, are apparently avoided (Grettenberger, 1987).

Important dry season food items include *Acacia spp.*, *Maerua crassifolia*, *Nitraria retusa*, *Citrullus colocynthis* (= *vulgaris*), *Chrozophora brocchiana*, *Leptadenia pyrotechnica*, *Zizyphus spp.*, *Balanites aegyptiaca*, (Carlisle and Ghobrial, 1968; Osborn and Helmy, 1980; Newby, 1974; Grettenberger, 1987; Anon., 1987f). During the wet season, perennial grasses and forbs, such as *Panicum turgidum*, *Tribulus spp.* and *Stipagrostis spp.*, are heavily utilized (Grettenberger, 1987). During dry periods, in southern Morocco, plant species most sought after include *Maerua crassifolia*, *Acacia raddiana*, *Nitraria retusa*, *Argania spinosa* and *Antirrhinum ramosissimum* (Cuzin, 1998). North of the Atlas chain, Dorcas Gazelles mostly feed on herbaceous plants in the wet season, but turn to browsing in the dryer months, in particular on *Ziziphus lotus* (Loggers, 1991)

Use of wooded riparian habitats reportedly is high during the dry season, whereas use of more open habitats, such as flat gravel-plains and outwash steppes, is relatively high during the wet season (Newby, 1974; Grettenberger, 1987).

#### 2.1.2. Adaptation

Dorcas Gazelles are able to withstand high temperatures, but when it is very hot they are active mainly at dawn, dusk and during the night. In areas where they face persecution, they tend to be active only at night in order to minimise the risk of hunting.

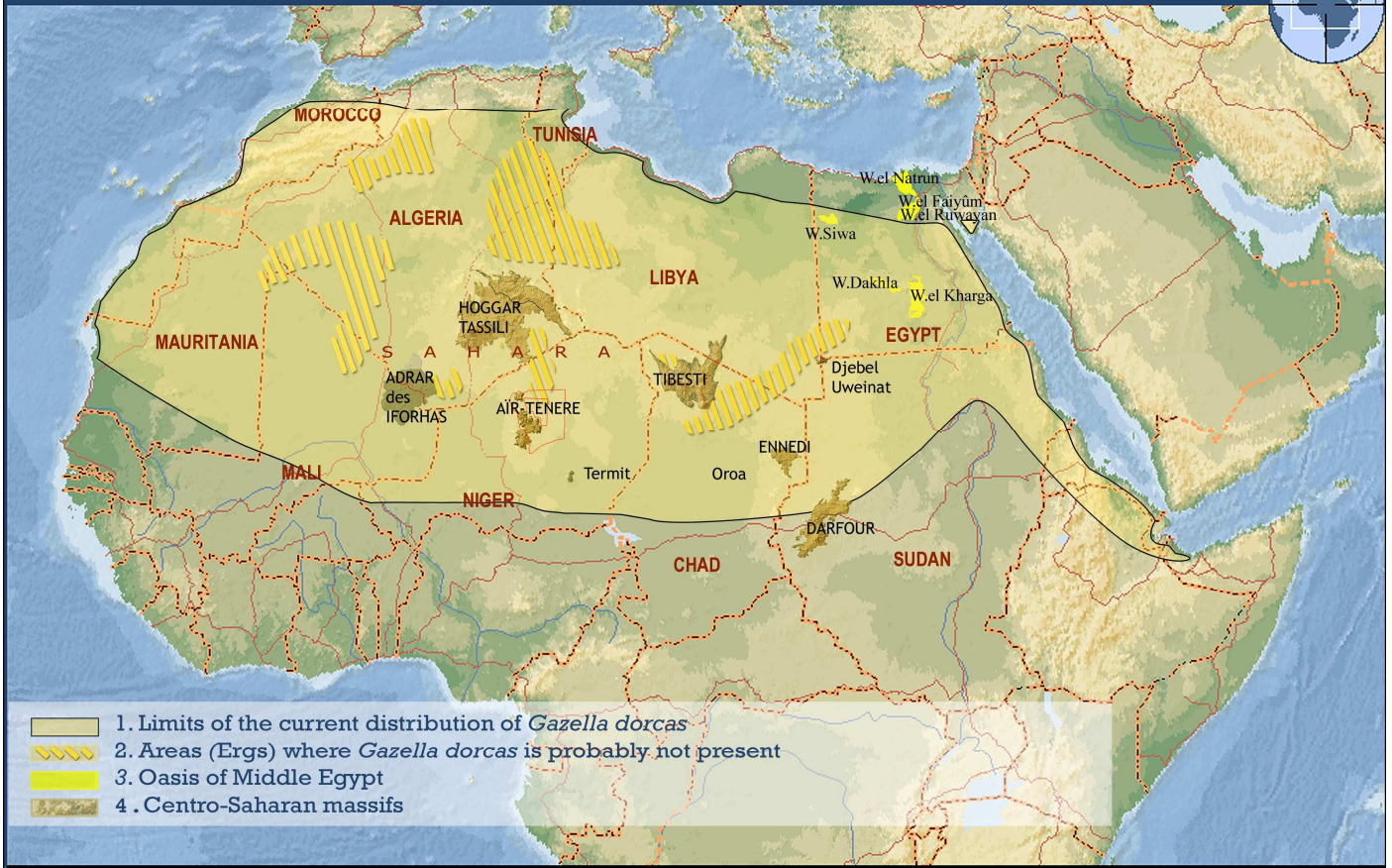
Like other Sahelo-Saharan antelopes, Dorcas Gazelle does not need free water (Kowalski and Rzebik-Kowalska, 1991) and is capable of satisfying its water requirements by selecting plant foods with high water content (Osborn and Helmy, 1980). It is a flexible browser and a grazer and emphasizes either feeding strategy depending on habitat conditions and the availability of food. For example, in the Aïr-Ténéré reserve in Niger, during a relatively dry period, Dorcas Gazelles primarily browsed, apparently due to a lack of grasses and leguminous plants, whereas in Chad, where these foods were available, it primarily grazed (Newby, 1981). Food habits in these two areas nonetheless overlapped substantially.

#### 2.1.3. Social Behaviour

When conditions are harsh, dorcas gazelles live in pairs, but when conditions are more favourable they occur in family herds with one adult male, several females and young. During the breeding season, adult males tend to be territorial, and mark their range with dung middens. In most parts of the range, mating takes place from September to November.

Gestation takes six months; a single fawn is the norm, although twins have been reported in Algeria. The newborn is well developed at birth, with fur and open eyes. Within the first hour, the fawn attempts to stand, and it will suckle on this first day of life. In the first two weeks, the young gazelle lies curled up in a scrape on the ground or beneath bushes while the mother grazes close by. The young then starts to follow its mother around and begins to take solid food. After around three months, the fawn stops suckling and is fully weaned, at which time the pair rejoins the herd.





Group of Dorcas Gazelles and Dama Mohor Gazelles (back), R'Mila Reserve, Morocco. 2004. © Mar Cano - EEZA



Dorcas Gazelle. Jbilet, Morocco. 2004. © Mar Cano - EEZA

## 2.2. Distribution.

### 2.2.1. Historical distribution.

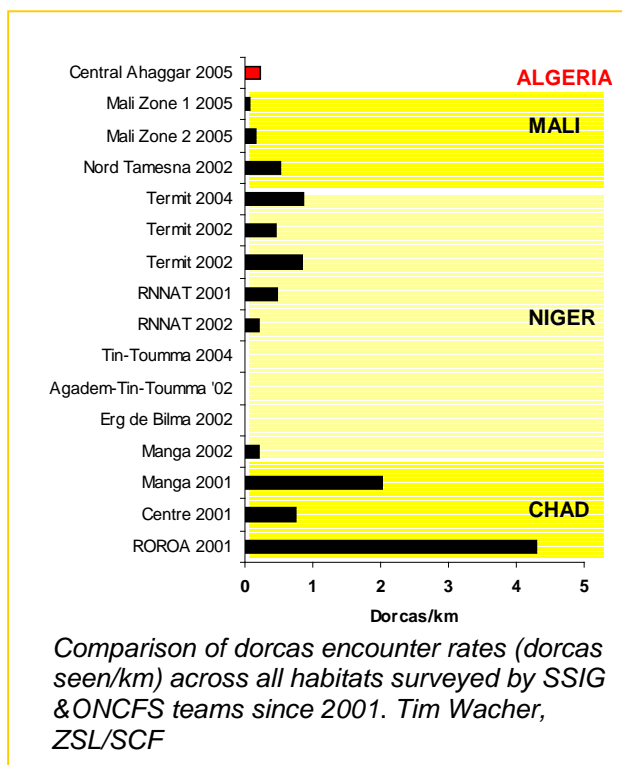
Available information indicates that Dorcas Gazelle historically occurred throughout the Sahelo-Saharan region, from the Atlantic Ocean to the Red Sea and from the Mediterranean coast to the southern Sahel. Its distribution across this area appears to have been relatively uniform, with the exception of hyper-arid deserts and the upper elevations of the central-Saharan massifs. Literature on the species from the 19<sup>th</sup> and early 20<sup>th</sup> centuries typically described it as common and locally abundant (e.g., Whitaker, 1896; Lavauden, 1926b; Joleaud, 1929).

### 2.2.2. Decline of the range.

The distribution of *Gazella dorcas* has been slowly declining, by fragmentation, in northern Africa since the late 1800s. By the mid-1900s, it had largely disappeared from the Atlas Mountains and Mediterranean coastal areas, but southward as far as the Sahel, it remained relatively well distributed. During the 1950s, 1960s, and 1970s, motorized hunting and, to a lesser extent, degradation and loss of habitat, severely impacted the species throughout its range, and although its overall distribution remained intact, its numbers had been greatly reduced (Dupuy, 1967), probably by half (Dragesco-Joffé, 1993), and it had been eliminated from large areas of its range, particularly those accessible to motorized vehicles. In the late 1980s, *Gazella dorcas* still occurred in all the Sahelo-Saharan Range States except Senegal, but its numbers had been substantially reduced, and it was considered threatened or endangered throughout the region with the exception of Niger and Chad, where relatively large populations occurred in the Air-Ténéré and Wadi Rimé-Wadi Achim reserves, respectively (East, 1988, 1990, 1992).

### 2.2.3. Residual distribution.

The most recent information is that Dorcas Gazelle still naturally occurs in all the Range States, except Senegal; however, with the exception of Algeria and Mali, where the distribution and abundance of gazelles may be increasing due to civil war (K. De Smet, *pers. comm.*, January 1997; East, 1997), and Ethiopia, where several hundred occur in protected areas, *Gazella dorcas* continues to be threatened by illegal hunting and, to a lesser extent, loss of habitat due to livestock overgrazing, and its numbers are declining. About a hundred reportedly still occur in the Air-Ténéré National Nature Reserve in Niger (Poilecot, 1996). In Morocco, numbers are estimated at 500-1500; about half of which occur in protected areas; an important population of possibly several hundred animals occurs in the Adrar Soutouf in southern Western Sahara (F. Cuzin, *comm. pers.*, May 2003). According to recent surveys, a population of 1000-2000 is in rapid decline in Egypt (Saleh, *in press*). Numbers in Mali are estimated at 2000-2500 (East, 1997), the area with the highest density is the North Tamesna (Lamarque, *comm. pers.* 2005). It still occurs in the Wadi Rimé-Wadi Achim reserve, but numbers are much reduced (East, 1996a). There are no recent estimates of total numbers of *Gazella dorcas* in Mauritania (B. Lamarche, *in litt.*, October 1996; O. Hamerlynck, *in litt.*, July 1996) or Tunisia (K. De Smet, *pers. comm.*, January 1997). Its status is not known in Burkina Faso or Nigeria. The species qualify for vulnerable status (Hilton-Taylor 2002).



A comparison of dorcas encounter rates, based on the number of G; Dorcas seen per km during all recent surveys, since 2001, was done by Tim Wachter. It shows that the highest densities are found in Ouadi Rimé-Ouadi Achim, Manga and Termit.

## 2.3. Evolution and estimation of populations.

Formerly common in its entire range, *Gazella dorcas* has entirely disappeared from many regions and been gravely reduced in numbers where it subsists.

## 2.4. Migration.

Dorcas Gazelle are nomadic and exhibit relatively small-scale seasonal movements in response to the availability of pasture (Heim de Balsac, 1936; Newby, 1974), sometimes of a trans-border character, but within the same geographical region.



### 3. CONSERVATION STATUS, BY PARTY

#### IUCN : RedList of Threatened Species 2004 : VU A1a

**Morocco** : Endangered (Cuzin, 1996 and 2003).

With the possible exception of the high elevation of the Atlas Mountains, Dorcas Gazelle was historically distributed throughout Morocco and Western Sahara (Aulagnier, 1992). In the 1800s, it reportedly occurred west of the Atlas Mountains at low densities and remained uniformly distributed and abundant elsewhere. By the 1950s, the species had disappeared west of the Atlas, except for one population in the vicinity of Safi, and had been reduced to low numbers on the northern, eastern and southern flanks of the Atlas; at the time, it also had become rare along the coast in the Western Sahara nearly to Dakhla (Aulagnier, 1992). In the early 1990s, the extent of the species' range had not changed, but it had been reduced to small widely dispersed groups east and south of the Atlas and throughout the Western Sahara (Aulagnier, 1992; Loggers *et al.*, 1992). Nowadays, the only remaining population in the North-West of the Atlas chains is the small population of the M'Sabih Talaa Reserve, near Chichaoua. The species disappeared from the Souss plains in 1987, from the Noun region in 1996, and the only remaining individuals in the plains between Ouarzazate and Tafilalet survive in the enclosures of the El Kheng Reserve. Elsewhere, the distribution of the species remains the same, but groups have been reduced to small sizes, continuously decreasing in numbers, dispersed to the East and South of the Atlas and throughout Western Sahara (Aulagnier, 1992, Loggers *et al.* 1992, Cuzin 2003) : in the Bas Draa, numbers went from 150 individuals in 1997 (Cuzin 1998) to around forty individuals (F. Cuzin, comm. pers., 2003).

It was recently estimated that a population of approximately 100-200 animals occurs west of the Atlas in the M'Sabih Talaa Reserve, near Chichaoua (Marraha 1996). East of the Atlas it is very rare, typically occurring in widely dispersed populations of 20-50 animals. A population of about 100 occurs at the base of Jebel Gouz and west to Figuig along the Algerian border. Approximately 50 are found in the upper Draa Valley in the vicinity of Zagora; 100-200 remain in the Middle Draa, primarily in the Tata Province, and about 200 occur in the Lower Draa between Assa and Msseyed (F. Cuzin, *in litt.*, May 1996; Aulagnier *et al.*, in press). The remnant population in the Souss Valley has been extirpated (Cuzin, 1996). The total number in Morocco, from the Draa Valley northwards, is estimated at 500-800 (F. Cuzin, *in litt.*, May 1996). Southward through the Western Sahara, the distribution and abundance of the species has been considerably reduced, but several hundred are thought to remain, mostly in the Adrar Soutouf in the far south (F. Cuzin, *in litt.*, May 1996; Aulagnier *et al.*, in press).

Poaching, habitat loss due to overgrazing and permanent agriculture are the primary threats to the species (Aulagnier *et al.*, in press, Cuzin 2003).

**Algeria**: Probably Vulnerable.



*Young dorcas. Enclosure. El Bayad. Algeria.*  
2000. © Amina Fellous-ANN Algeria

With the possible exception of the dunes in the southwest (i.e., Erg Chech and Erg d'Iguidi), Dorcas Gazelle historically occurred throughout Algeria (Lavauden, 1926; Dupuy, 1967; DeSmet, 1988; Kowalski and RzebiK-Kowalska, 1991). There is some question of the validity of, 19th century reports of the species in the Mediterranean coastal area, because of possible confusion with *Gazella cuvieri* (Kowalski and RzebiK-Kowalska, 1991), but given the species broad occurrence in coastal areas elsewhere in its range, it is likely that the reports are valid.

The distribution of *Gazella dorcas* has gradually retracted southward throughout the 19th and 20th centuries. In the 1920s and 1930s, it remained widely distributed and common on the High Plateau from Morocco to Tunisia, on the plateaux south of the Saharan Atlas, between the Great Eastern and Great Western ergs, and throughout the southeastern portion of the country (Joleaud, 1929; Maydon, 1935).

Its distribution and numbers declined through the mid-1900s, particularly during the 1960s and 1970s due to motorized hunting, but it remained common and locally abundant in many parts of its Algerian range into the 1970s and 1980s (Dupuy, 1966; Anon., 1987f). The northern limits of the species' range continued to move southward, however, and by the 1980s, it did no longer occurred north of the Saharan Atlas (Kowalski and RzebiK-Kowalska, 1991; De Smet and Mallon, in press).

Dorcas Gazelle presumably remains widely distributed in the Saharan zone of Algeria, but numbers are believed to greatly reduced (De Smet and Mallon, in press). Control of firearms due to military activity in recent years apparently has reduced poaching (De Smet, *pers. comm.*, March 1997) but not enough to stop the decline of the species (De Smet and Mallon, in press). No estimate of numbers in the wild is available.

**Tunisia:** Vulnerable.

Dorcas Gazelle formerly occurred throughout Tunisia, south and east of the Tell Atlas, and north and east of the Great Eastern Erg (Whitaker 1896; Lavauden, 1926b, Joleaud, 1929; De Smet, *pers. comm.*, May 1996). In the early 1900s, the species remained well distributed in the country and was observed in large herds in areas such as the grassland plains bordering the Mehedra plateaux (Lavauden, 1926b, Schomber and Kock, 1961). At that time herds, of 50-80 were not uncommon, and occasionally concentrations of several hundred animals were seen. By the 1920s, however, the species reportedly was in decline. The northern limit of its range was moving southward, and large herds were uncommon (Lavauden, 1920, 1926). In the 1960s, *Gazella dorcas* had largely disappeared from the north. It still occurred north of Chott El Jerid to the Saharan Atlas (Müller, 1966), but it was markedly less numerous in the central than in southern districts, where moderate herds could still be found in sub-desert steppe east of the Great Eastern Erg (Schomber and Kock, 1961).

Dorcas Gazelle is presently limited to the southern half of the country, approximately south of a line between Gafsa and Gabes (i.e., 34° -35° N Latitude) (Smith *et al.*, in press). Specific information on distribution and numbers of the species within this range is largely lacking. Illegal hunting and habitat degradation due to livestock overgrazing continue to be threats.

**Libya:** Endangered.

Limited information from Libya, coupled with reports of the species in bordering areas of Algeria (De Smet, 1988), Tunisia (Lavauden, 1926b), Niger (Grettenberger and Newby, 1990), Sudan (Hillman and Fryxell, 1990), and Egypt (Saleh, 1987), indicate that *Gazella dorcas* was historically distributed throughout the country (Hufnagl, 1972; Essghaier, 1980; Esschaier and Johnson, 1981; Anon., 1987; Khattabi and Mallon, in press).

In the 1960s and 1970s, the species was still widely distributed across the northern and central regions (Essghaier, 1980), and in the southeast, and it remained abundant in a few areas, such as the Hammada El Hamra in the west and Djebil Uwenait in the southeast (Misonne, 1977; Essghaier, 1980). Overall, however, its numbers and distribution were declining rapidly at that time, due to uncontrolled motorised hunting (Hufnagl, 1972).

In the late 1980s, the species still occurred locally in Libya but in greatly reduced numbers (East, 1992). The situation reportedly remains the same (Khattabi and Mallon, in press), however, information on the current distribution and numbers of the species is lacking.

**Egypt:** Vulnerable.

The historical range of *Gazella dorcas* included the northern, central, and eastern parts of Egypt (Saleh, 1987). With the exception of the vicinity of Djebil Uwenait and Gilf Kebir (Osborn and Krombein, 1969), there are no records of the species in the arid west-central and southwestern districts (Osborn and Helmy, 1980; Saleh, in press). Due to human pressure, primarily hunting and trapping, the distribution and abundance of the species declined considerably during the late 1800s and early 1900s, and by the 1920s, it had disappeared from entire districts (Flower, 1932). By the 1960s, *Gazella dorcas* had been eliminated from the immediate vicinity of the Mediterranean coast and semi-desert areas with good pasture; elsewhere herds were small and uncommon (Hoogstraal, 1964).

In the late 1980s, Dorcas Gazelle no longer occurred in the northcentral region of the country from the Suez Canal through the Nile delta and westwards to the Quattara Depression, where important populations historically occurred. It still occurred over most of the remainder (i.e., southern parts) of the country, but populations were widely scattered. The few concentrations that remained were limited to remote, inaccessible areas, and the species was considered in eminent danger of extinction (Saleh, 1987).

Recent information is that Dorcas Gazelle populations continue to decline throughout Egypt, due to uncontrolled hunting; it is estimated that between 1000 and 2000 survive, mostly outside protected areas (Saleh, in press).

**Mauritania:** Endangered.

Trotignon (1975) concluded that Dorcas Gazelle historically was abundant throughout Mauritania, with the exception of the desertic heart of the Majabat Al Koubra in the east, and the southern portion of the Sahel zone in the south. Given the occurrence of the species in northern Senegal (Sournia and Dupuy, 1990) and in Mali adjacent to the southeastern corner of Mauritania (Heringa, 1990), it is very likely that the historical range of Dorcas Gazelle encompassed all of the country.



The species experienced a catastrophic decline during the 1950s and 1960s. In areas where herds numbering in the dozens were once common, only isolated individuals were observed by the early 1970s (Trotignon, 1975). In the late 1970s, Lamarche (1980) reported that it was rare in the Majabat al Koubra. A population in the Banc d'Arguin National Park, which once numbered 200 (Anon., 1987f), declined from approximately 100 to less than 10 between 1970 and 1983 (Verschuren, 1985). In the early 1980s, Dorcas Gazelle was considered threatened (Newby, 1981a), and by the late 1980s, it had been largely extirpated and survived only in small numbers in very remote areas (Sournia and Verschuren, 1990). More recently, a population of ca 40 individuals survived on Tidra, an island situated in southwest of Banc d'Arguin National Park (F. Lamarque, com. pers., 2005).

Dorcas Gazelle has recently been observed in the Maqteir in the northwest, and it probably still occurs in the Areg Chach and Hank Escarpment in the northeast (B. Lamarche and O. Hammerlynck, *in litt.*, April 1997). Information on the status of the species elsewhere, e.g., in the continental part of Banc d'Arguin NP, is unavailable. Illegal hunting is a serious threat to this and other antelope species, and it largely occurs in inaccessible areas. (O. Hammerlynck, *in litt.*, April 1997).

**Mali:** Probably Endangered.

Heringa's (1990) range map for Dorcas Gazelle includes all of the Sahel and Sahara zones of Mali, i.e., everything north of about 15°N latitude, which probably represents the overall historical distribution of the species. It apparently never occurred, however, in most arid deserts in the north (Heringa, 1990). This is consistent with the lack of records for the species in adjoining, hyper-arid areas of Algeria (De Smet, 1988). However, records of *Gazella leptoceros*, a desert-loving species, also are lacking from northern Mali and southwestern Algeria, and the absence of records of Dorcas Gazelle (and other antelopes) in this area (Sayer, 1977) may be related to its remoteness.



*Gazella dorcas*. South-Tamesna.Mali 2004. © Stéphane Bouju

*Gazella dorcas* was formerly locally common in Mali (Heringa, 1990). In the 1970s, it still occurred throughout the country, but it was rare and locally extirpated in much of the Sahel zone, and its numbers had been greatly reduced in the northeast (Adrar des Iforhas and Tilemsi) (Sayer, 1977). In the early 1980s, its distribution and overall abundance had been further reduced, but it remained locally abundant in a few areas, such as the vicinity of Gao (J.M. Pavy, *in litt.*, September 1996). In the late 1980s, small populations also survived in the Elephant Faunal Reserve and the Ansongo-Manaka Faunal Reserve in the Sahel zone, at the southern extremity of the species' range (Heringa, 1990).

Uncontrolled hunting and severe drought have severely impacted the Dorcas Gazelle population in northern Mali in recent years (East, 1997a). To the south in the sub-desert zone (northern Sahel), the species remains widely distributed in small populations that may total 2000 to 2500 animals (Niagate, 1996; J.M. Pavy, *in litt.*, September 1996). Numbers apparently increased during the rebellion in early 1990s (Niagate, 1996). Information is lacking on the status of remnant populations in the Elephant and Ansongo-Manaka, but recent records of Dorcas are rare. Nowadays, the area with the highest density of Dorcas Gazelle is the Northern part of the Tamesna plain, in the South-West of the Adrar des Iforas. However, Dorcas Gazelles are heavily poached in that easily accessible area which make them particularly vulnerable (Lamarque et Niagaté, 2004). If present population estimates are reasonably accurate, the species undoubtedly is threatened.

**Niger:** Probably Vulnerable or Endangered.

The historical range of *Gazella dorcas* in Niger likely was not substantially different from that in the 1980s, when the species occurred throughout the country north of approximately the 14th parallel (Grettenberger, 1987; Grettenberger and Newby, 1990). Within this area, it apparently was absent from the high elevations of the Air Mountains and the interior of the Ténéré Desert to the northeast.

In the early 1980s, it was estimated that 5000 or more survived within the Air Ténéré National Nature Reserve, and several thousands occurred in the Termit area to the southeast (Grettenberger and Newby, 1990). Historically the species probably numbered in the tens of thousands, or more.

Recent estimates of 20000 country-wide (Dragesco-Joffe, 1993) and several thousand in the Air Ténéré National Nature Reserve (Poilecot, 1996) are based on data from 1991 or before, and the present status of the species is unknown. Illegal hunting, habitat degradation, and competition with livestock (Grettenberger and Newby, 1990) probably remain threats.

The SSIG reconnaissance survey through ATNNR in Feb-Mar 2002 estimated a crude density of c. 0.25 dorcas seen/km<sup>2</sup> on the perimeter of the Air massif, well within the range of densities reported by Poilecot 10 years previously.

**Chad:** Probably Vulnerable or Endangered.

In the late 1970s, Dorcas Gazelle occurred throughout Chad north of 13° 30' N latitude (Newby, 1981a), and this probably represents the species' historical distribution in the country. It reportedly does not occur on the high massifs (Thomassey and Newby, 1988), but elsewhere its former distribution probably was uniform. In the late 1970s, it was estimated that approximately 35000 to 40000 Dorcas Gazelles occurred in the Wadi Rimé Wadi Achim Faunal Reserve, which encompasses possibly a quarter of the species distributional range in Chad (Newby, 1981a). Despite intensive hunting pressure, particularly during the civil war, Dorcas Gazelle remained widely distributed in Chad through the 1980s, when it was estimated that the species numbered in the low tens of thousands (Thomassey and Newby, 1990).

Information on the status of the species since the 1980s is lacking. During the 1990s, the Chadian Direction of National Parks and Faunal Reserves reported that Dorcas Gazelle remains in the Wadi Rimé Wadi Achim Faunal Reserve but in greatly reduced numbers (East, 1996a), and this likely is indicative of the species' status elsewhere in the country. However, recent inspections in the reserve in 2001 showed that Dorcas Gazelles are still abundant in Wadi Rime Wadi Achim Faunal Reserve, this reserve having the highest density for the species for the whole of the Sahel region (Encounter rate index: 4,3 Dorcas gazelles /km) (Wacher et al. 2001).

**Sudan:** Probably Near Threatened or Vulnerable.

Dorcas Gazelle was formerly well distributed throughout the desert and sub-desert zones of central and northern Sudan, from Chad and Libya to the Red Sea (Hillman and Fryxell, 1988). The southern limits of its range were approximately 14° N latitude in the West and ±16°N latitude in the East. It was probably common and locally abundant throughout this range. *Gazella dorcas* was once particularly abundant in the vicinity of the Nile, from Wadi Halfa at the Egyptian border southward through Dongola and the Bayuda Desert (Hassaballa and Nimir, 1991) and in the vicinity of Wadi Howar in Northern Darfur (Maydon, 1923). It was common in the Red Sea Hills (Maydon, 1935).

Dorcas Gazelle undoubtedly has declined considerably in recent decades due to uncontrolled hunting and degradation/loss of habitat due to livestock overgrazing and agricultural encroachment (Hillman and Fryxell, 1988; East, 1996). The effects of land degradation have been compounded by drought. In the 1930s, *Gazella dorcas* remained well distributed throughout its historical range (Brockelhurst, 1931; Maydon, 1935), but by the 1970s, it had disappeared from most of the northwestern and northeastern parts of the country (Ghobrial, 1974). In the 1980s, it remained widely distributed but in ever-fragmented and greatly reduced populations (Newby, 1981a; Hillman and Fryxell, 1988).

The species still occurs in the deserts of northern Sudan, and unconfirmed information from hunters is that numbers in the region are locally good, and recent surveys have indicated that the species is still common in the Red Sea Hills (I. Hashim *in litt.*, November 1996, December 1996).

**Senegal:** Extinction in the wild; Reintroduced in large fences within protected areas.

Poulet's (1972) sighting of Dorcas Gazelle in the Fete-Ole area 100km east of St. Louis is the only record for the species in Senegal. Peul tribesmen in the Ferlo region apparently have no name for the species, and it is likely that it historically occurred in Senegal only as a vagrant (Dupuy, 1984). Newby (1981) considered it rare in the country. In 1972; the Senegalese National Park Service introduced 15 Dorcas Gazelles within Djoudj National Park in the northwest of the Park (Dupuy, 1984). This captive herd grew to approximately 50 by the early 1980s (Dupuy, 1984) but experienced a serious decline during the late 1980s (Sournia and Dupuy, 1990). It reportedly still occurs, but numbers are not known (B. Clark, *in litt.*, September 1996). Cette partie n'est pas dans le texte français!

**Burkina Faso:** Probably Endangered.

*Gazella dorcas* historically occurred in the Sahel zone of northern Burkina Faso, where it still survived in the late 1980s. It was considered endangered at the time, due to poaching and habitat lost, and largely confined to the Seno-Mango area at the northern extremity within the Sahel Partial Faunal Reserve, at the Mali border (Heringa *et al.*, 1990).

There was no mention of Dorcas Gazelle in a recent update on antelopes in Burkina Faso (East, 1996a), and its status in the country is unreported. Given the present level of human activity in the Sahel region, illegal hunting and habitat degradation probably remain serious threats to the species.

**Nigeria:** Possibly Extinct.

Dorcas Gazelle reportedly is a rare inhabitant of the small area of Sahel in northeastern Nigeria, in the vicinity of Lake Chad (Anadu and Green, 1990). In the late 1980s, its status in the area was unknown, but it very possibly was extinct, due to overhunting hunting and habitat encroachment by livestock (Anadu and Green, 1990).

**Ethiopia:** Lower Risk.

The historical range of *Gazella dorcas* included the arid lowlands (steppe, semi-desert, and desert) of northern and eastern Ethiopia from the extreme north of the Eritrea province through the Danakil plains and to the foothills of the Chercher Mountains (Anonymous, 1987f, Hillman, 1988; Yom-Tov *et al.*, 1995; Kingdon, 1997). In the mid-1980s, its numbers were unknown, but presumably stable, and its conservation status was considered satisfactory (Hillman, 1988).

*Gazella dorcas* was not observed in recent aerial and ground surveys in Yangudi NP, but a population of several thousand is estimated to occur in the adjacent Mille-Serdo reserve and Danakil desert to the north (East, 1997b). No information is available on the status of the species in the northwest, but given estimated numbers and tribal stability in the Mille-Serdo/Danakil area, the species presently appears to be stable and not threatened.

## 4. ACTUAL AND POTENTIAL THREATS

### 4.1. Degradation and decline of habitats.

The species has suffered, though to a lesser degree than other sahelo-saharan antelopes, , because of its greater ecological flexibility, from catastrophic droughts, degradation of pastures through overgrazing, cutting of woody plants and loss of optimal habitats to development pressures.

### 4.2. Direct exploitation.

The decline of *Gazella dorcas* has to be attributed primarily to uncontrolled hunting. Traditional hunting could have had a substantial impact on local populations but it is modern hunting with firearms and motor vehicles (Newby, 1990) which constitutes the primary threat.

### 4.3. Other threats.

There are no other known threats.

## 5. REGULATORY PROVISIONS

### 5.1. International.

Bonn Convention: Appendix I, Resolution 3.2; paragraph 4.

Washington Convention (CITES): Appendix III (Tunisia).

### 5.2. National.

Protected or partially protected in Morocco, Algeria, Tunisia, Libya, Egypt, Mali, Sudan, Burkina Faso, Nigeria, Ethiopia, Somalia



*Gazella dorcas*. North Tamesna. Mali. 2002  
1999. © François Lamarque.



## 6. CONSERVATION MEASURES, BY PARTY

### 6.1. Ban on taking.

Algeria:	protected
Tunisia:	protected
Morocco:	protected
Egypt:	protected
Mali:	protected
Ethiopia:	hunnable under license



### 6.2. Habitat conservation.

#### Morocco

Dorcas Gazelle occurs in the M'Sabih Talaa reserve (100-200 ind.), the El Kheng Reserve (15-30 ind.) (Marraha 1996, Aulagnier *et al.*, 2001, Cuzin 2003), and in the recently gazetted reserve in the Lower Draa Valley (40 ind.) (F. Cuzin, pers. comm., 2003), as well as more to the East in the Drâa Valley (50-200 ind.) (Cuzin 2003), and in the far South, south of Dakhla (several hundreds individuals, Aulagnier *et al.* 2001). Small herds may intermittently occupy permanent hunting reserves, but no specific measures for conservation or management of the species are taken in such areas.

Protection of remnant populations in the M'Sabih Talaa, El Kheng and Lower Draa reserves and evaluation of the potential for establishing a protected area in the Adrar Soutouf are priority actions for *Gazella dorcas* in Morocco and Western Sahara (F. Cuzin, *in litt.*, May 1996; Cuzin 2003).

Establishment of a reserve at Jebel Grouz would protect remnant populations in eastern Morocco, and enlargement of El Kheng reserve would help ensure protection of the Tafilalt population (Aulagnier *et al.*, 2001). Restoration of the species in the semi-desert zones of northeastern Morocco, along the Eastern Plateau, may be accomplished by reintroductions and reinforcements in several large hunting reserves that occur in the area (Aulagnier *et al.*, 2001).

Attempt at reintroduction or reinforcement should be preceded by a global genetic analysis of the different national stocks, both wild and semi-captive, in order to ensure the scientific soundness of such projects. (Cuzin 2003).

#### Algeria:

Dorcas Gazelle occurs in large numbers in the Hoggar and Tassili national parks in the south of the country, but receives little protection there. A 1300km ground survey through the central Ahaggar National Park in March 2005 recorded 263 dorcas gazelles seen (mean group size 2.6, range 1-17), with evidence of their regular presence in 9 out of the 10 half degree grid squares crossed.

*Gazella dorcas* is included in the Algerian Agency for Nature Conservation's proposed captive-breeding programme for Sahelo-Saharan wildlife (B. Kadiak, *in litt.*, June 1996). Surveys are needed to determine the distribution and abundance of the species. Establishment of a reserve in the western High Plateau would protect a distinct geographic form of the species (De Smet and Mallon, *in press*).

#### Tunisia:

Approximately 120-150 Dorcas Gazelle occur in Bou Hedma National Park, near the northern extremity of the species current distribution (H. Lazhar, *pers. comm.*, June, 1997), and approximately 30 are estimated to inhabit Sidi Toui National Park in the southeast (A. Mertah, *pers. comm.*, June 1997). The species also occurs in Djebil National Park on the northeastern edge of the Great Eastern Erg, as well as in several smaller reserves (Anon., 1987; De Smet and Mallon, *in press*), but numbers in these areas are not known. A small faunal reserve, completely fenced (200 ha), the Orbata Reserve, near Gafsa, contains a population of over 180 Dorcas Gazelles: the objective of this reserve is to breed Dorcas Gazelle in Tunisia for reintroduction purposes.

Dorcas Gazelle is among the species identified in the DGF's programme for restoration of wild fauna in Tunisia, but no measures aimed specifically at conservation of the species have been proposed. Illegal hunting is the greatest threat to the

species and strict enforcement of hunting laws is essential. The fundamental priority for the species is systematic survey to determine its status in the wild and identify areas with needs and potential for conservation action.

### **Libya:**

Approximately 150 Dorcas Gazelles occur in the 1000 km<sup>2</sup> New Hisha Nature Reserve. In 1991; 15 animals were translocated from Sudan to El-Kouf NP (85km<sup>2</sup>).

The Libyan Wildlife Technical Committee plans to establish a network of protected areas that will include the southern parts of the country (Khattabi and Mallon, in press). Selection of sites for protection should consider existing needs and potentials for restoration and conservation of Dorcas Gazelle and other antelopes. In the short-term, conservation actions should focus on protection of populations that occur in conservation areas, particularly New Hisha Reserve, and reintroduction of the species into suitable protected areas, such as the Zella Nature Reserve.

### **Egypt:**

Dorcas Gazelle occurs in the Djebel Elba protected area in the southeast and the El Omayed Scientific (Biosphere) Reserve west of Alexandria (Anon., 1987f). Protection in these reserve is very limited, however, and considerable poaching occurs (Saleh, in press).

Stronger enforcement of hunting regulations and effective management of protected areas are conservation priorities for the species. Reintroduction into a planned protected area in northern Sinai has been proposed (Saleh, in press).

### **Mauritania:**

Dorcas Gazelle occurs in Banc d'Arguin National Park. The population suffered tremendous losses in the 1980s due to illegal (Sournia and Veschuren, 1990) but reportedly is currently stable (O. Hammerlynck, *in litt.*, April 1997). No other protected areas are located in the range of the species, and no measures have otherwise been taken for its conservation.

Effective management of Banc d'Arguin NP is a priority for conservation of the species in Mauritania (Sournia and Verschuren, 1990). Establishment of protected areas for restoration of scimitar-horned, oryx, addax, and dama gazelle would benefit the species.

### **Mali:**

Dorcas Gazelle may still occur in low number in the Elephant and Ansongo-Menaka faunal reserves, but these areas are seriously threatened by habitat degradation and hunting (East, 1997). There are no protected areas in the sub-desert and desert zones to the north.

Rehabilitation of the Ansongo-Menaka and Elephant reserves is important for restoration of *Gazella dorcas* in Mali. The latter reserve lies in the Gourma area, which has been identified as an important site for biodiversity conservation (J.M. Pavy, *in litt.*, January 1996) and may be the best opportunity for conservation of the species (East, 1997 ). The Gourma elephants and biodiversity conservation programme (FFEM/GEF) which is still in its early phases (2005) should contribute to the restoration of the residual Dorcas Gazelle populations. The Adrar des Iforhas and associated plains of Tilemsi and Tamesna, where Dorcas Gazelle still occurs, have been identified in several occasions as priority areas for biodiversity conservation projects (J.M. Pavy, *in litt.*, January 1996). Several areas are currently under process for designation as protected areas in the region (Tamesna Reserve, strict nature reserves of North Azawagh and Ouest Zdjaret); such protected areas, if they materialise, could contribute significantly to Dorcas Gazelle preservation in Eastern Mali (Lamarque, 2005).

### **Niger:**

Dorcas Gazelle occurs in the Air Ténéré National Nature Reserve. The Gadabedgi Faunal Reserve formerly harboured a small population (Grettenberger and Newby, 1990), but there is no recent information of the status of the species in this area. Effective management of the Air Ténéré National Nature Reserve and establishment of a protected area in the Termit region are actions that would improve the conservation status of the species.



*Gazella dorcas*. Ouadi Rimé-Ouadi Achim Reserve. Chad. 1999. © François Lamarque, ONCFS..

**Chad:**

The species occurs in the Wadi Rimé Wadi Achim Faunal Reserve, where control has been regained. It also may occur in the unmanaged Fada Archei reserve in the Ennedi east of the Wadi Rimé Wadi Achim Faunal Reserve (Thomassey and Newby, 1990). Further surveys of the Wadi Rimé Wadi Achim Faunal Reserve and other areas of Chad for Scimitar-horned Oryx and Addax will provide information on the status of Dorcas Gazelles. This and rehabilitation of the Wadi Rimé Wadi Achim Faunal Reserve are priority actions for conservation of the species.

**Sudan:**

There are no protected areas within the range of Dorcas Gazelle in Sudan. Survey and protection of remnant populations and habitat in the desert and sub-desert regions of the northwestern section of the country are priority actions for conservation action (I. Hashim, *in litt.*, November 1996). Specifically, planning and development of the proposed Wadi Howar National Park (East, 1996b) would be a major step towards regional restoration and protection of the species.

*Ouadi Rimé-Ouadi Achim Reserve. Dorcas, female & male. © Tim Wachter-ZSL/SCF.*

**Senegal:**

In 1972, the Senegalese National Park Service introduced 15 Dorcas Gazelles at the Djoudj National Park in the extreme northwest (Dupuy, 1984). This captive herd reportedly still exists, but numbers are not known (B. Clark, *in litt.* September 1996). If Ferlo Faunal Reserve is upgraded to national park status and receives adequate protection, (re)introduction of Dorcas Gazelle into the area could be accomplished in conjunction with planned reintroductions of Scimitar-horned Oryx and Dama Gazelle (B. Clark, *in litt.*, September 1996).

**Burkina Faso:**

The range of Dorcas Gazelle lies entirely within the Sahel Partial Faunal Reserve, where hunting is restricted (IUCN, 1987). The Seno-Mango area in the north of the Sahel zone was proposed for development of a Biosphere Reserve. Establishment and effective management of this proposed protected area is essential for conservation of the Dorcas Gazelle in Burkina Faso (Heringa *et al.*, 1990). The GEF transborder programme for the Malian Gourma and the Burkinabe Sahel biodiversity conservation and natural resources management, should contribute to the conservation of Dorcas Gazelles residual populations in these areas.

**Nigeria:**

There are no protected area within the range of Dorcas Gazelle in Nigeria (Anadu and Green, 1990).



## **Ethiopia:**

Dorcas Gazelle occurs (or occurred, Hillman, 1988) in Yangudi Rassa National Park and adjacent Gewane and Mille-Sardo wildlife reserves in the northcentral section of the country.

In the 1980s, priorities for conservation of Dorcas Gazelle and other wildlife were to enhance the capacity of the Ethiopian Wildlife Conservation Agency, through international support, and to develop the existing framework of conservation areas into an effective protected area system (Hillman, 1988). Planning to improve protected area management has begun, but implementation of actions has not (East, 1997b). In the case of Dorcas Gazelle, development of the Mille-Sardo wildlife reserve and Yangudi NP are priorities.

## **Erithrea:**

Dorcas Gazelles are known to occur in Nakfa and Yob wildlife reserves in the northwest (Hillman, 1988). No recent information available on population sizes.

### **6.3. Attenuation of obstacles for migratory animals.**

Only protection within a network of protected areas, especially cross-border protected areas, is plausible.

### **6.4. Regulations concerning other detrimental factors.**

Such regulations can only be taken within a framework of management plans for protected areas. This paragraph consequently merges with paragraph 6.2.

### **6.5. Other measures.**

## **Morocco:**

Captive herds that total more than 500 animals have been established at the Royal farms of Bouznika and Douyiet and, more recently, R'Mila Royal Reserve and Souss-Massa National Park (Aulagnier *et al.*, in press; Bousquet 2002). The latter area is the site of a large-scale captive management programme for Sahelo-Saharan wildlife with the aim of producing stock for reintroductions elsewhere in the country, primarily proposed reserves in southern Morocco (Lower Draa-Aydar) and the Western Sahara (Adrar Souttouf) (AEFCS 1995 ; H.P. Müller, *in litt.*, December 1996).

## **Sudan:**

Dorcas Gazelle is not protected by law and there are no protected areas within its range in Sudan. It is found in captivity in and around Khartoum, where many wildlife farms exist.

## **Outside Sahelo-Saharan range:**

Dorcas Gazelles in semi-captivity are present in various locations, in particular in the United States, in Spain and in Israel.

## **7. RESEARCH ACTIVITIES**

### **7.1. Public authorities.**

### **7.2. N.G.O.s**

## **8. NEEDS AND RECOMMENDED MEASURES**

Recommended measures are included in an associated Action Plan (Beudels *et al.*, 1998).

*Male. Aïr-Ténéré. © John Newby.*



*Landscape South Tamesna and training under an Acacia. Mali. 2005. © Stéphane Bouju & François Lamarque ONCFS*



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# La Faune du Massif de TERMIT

## Un patrimoine mondial à sauvegarder au NIGER



Talanda de Termit (Falco tinnunculus)  
Statut : LC\*

Le NIGER est un pays totalement aride et les quatre décennies de sécheresse ont entraîné la disparition de nombreuses espèces animales.

À l'heure de la lutte contre le réchauffement climatique, il est urgent de protéger les espèces animales et végétales qui ont disparu.

Le NIGER est un pays totalement aride et les quatre décennies de sécheresse ont entraîné la disparition de nombreuses espèces animales.



Faune (Gazelle sahélo-saharienne)  
Statut : LC\*



Struthionidé (Struthio camelus)  
Statut : LC\*



Hibou grand Corne (Bubo scopsus desertorum)  
Statut : LC\*



Gazelle (Gazelle gazelle)  
Statut : LC\*



Gazelle (Gazelle gazelle)  
Statut : LC\*



Gazelle (Gazelle gazelle)  
Statut : LC\*



Leopon (Acinonyx jubatus)  
Statut : EN\*



Tortue (Testudo horsfieldi)  
Statut : EN\*

\* Statut de conservation des espèces. Dernière liste UICN 2009. Statut de conservation UICN (voir liste UICN)

# MOBILISONS NOUS POUR LE MASSIF DE TERMIT

Édité grâce au soutien de :



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