

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

**A. PROPOSAL:** Inclusion of the Barbary sheep *Ammotragus lervia* on Appendix II

**B. PROPONENT:** Government of Algeria

**C. SUPPORTING STATEMENT**

**1. Taxon**

<b>1.1</b>	<b>Classis</b>	Mammalia
<b>1.2</b>	<b>Ordo</b>	Artiodactyla
<b>1.3</b>	<b>Familia</b>	Bovidae
<b>1.4</b>	<b>Genus and species</b>	<i>Ammotragus lervia</i> (Pallas, 1777)
<b>1.5</b>	<b>Common name(s)</b>	English - Barbary sheep, UADDAN, Aoudad French - Mouflon à manchettes
<b>1.6</b>	<b>Taxonomy and evolution</b>	

The morphology and physiology of the Barbary sheep do not allow a clear classification in the zoological system. While the species can be classed easily as part of the family *Bovidae* and the subfamily *Caprinae* (goats and sheep), its sub-classification is less obvious. In fact, some of its characteristics suggest kinship to sheep (genus *Ovis*), others kinship to goats (genus *Capra*), which does not provide for a solid basis for sub-classification in the system.

The paleontological discoveries relating to this species are few and confirm the occurrence of Barbary sheep in North Africa during the Pleistocene and alluvial periods. Based on a number of criteria, it can be assumed that the Barbary sheep branched off from the common ancestor of sheep and goats before the two separated.

The skull of the Barbary sheep bears testimony to the species' kinship with the *Caprinae* taxon. The frontals and the parietal cavity are characteristic signs. Incisors are typically goat-like, while molars are sheep-like. Although the horns of the Barbary sheep resemble the horns of sheep, their diameter and shape remind of goat's horns.

**Sub-species described:**

*Ammotragus lervia lervia*  
*Ammotragus lervia angusi*  
*Ammotragus lervia blainei*  
*Ammotragus lervia fassini*  
*Ammotragus lervia sahariensis*

*Ammotragus lervia ornatus*: According to IUCN data (2007), this subspecies was listed as Extinct in 1996, and relisted later as Extinct in the Wild (on the grounds that the taxon still existed as part of a captive breeding programme). The conservation status of this taxon is currently under further review, following recent reports documenting the continued existence in the wild in Egypt (Saleh 1991, 1993, 2000).

## 2. Biological data

The Barbary sheep (*Ammotragus lervia*) or aoudad is native to the Sahara and its sub-Saharan fringes. It can still be found in most suitable habitats in the region, from the Atlantic coast to the Red Sea, and from the Mediterranean Atlas Mountains to the steep slopes of the northern Sahel. Impressive in size (males weigh up to 145 kilos), the Barbary sheep is an extremely resilient and incredibly nimble animal, and manages to survive in some of Africa's most arid regions receiving little or no rainfall for several years at a time. This does not mean that Barbary sheep do not drink, but rather that they are able to satisfy their water requirements through the plants they eat. When water is available, after rainfall or from springs or mountain pools (gueltas), they do drink, which makes them extremely vulnerable to hunters, especially during the hot season. Traditional hunters set traps and build blinds from which they shoot passing animals. Despite their adaptability, Barbary sheep are severely affected when vegetation disappears and entire populations may become extinct suddenly. When conditions are good, however, the sheep breed well and react rapidly to favourable circumstances by giving birth to twins or even triplets.

A skilful climber, used to moving on steep rocky surfaces, the sheep can find food and water in areas that other grazers cannot reach, such as deep canyons and high rocky plateaus. In the Moroccan High Atlas, they can be found as high as 3,000 m in areas with lots of snow. In the Red Sea Mountains of Egypt, they share their habitat with another local species, the Nubian Ibex (*Capra ibex*). Typically, Barbary sheep will shelter from the midday heat and from wind under boulders, in caves or on sheltered plateaus. They love to dust themselves in specially excavated holes. If disturbed, they flee quickly for rocky slopes where they are safe. When they leave the mountains to come into *wadis* to feed or cross between rocky outcrops, they are extremely vulnerable.

The male sheep have very big and heavy horns they use to ram acacia trees and shake them so that the nutritious pods fall down. Barbary sheep live in extended families; there are also bachelor herds. They can cover large distances and colonize suitable areas rapidly. This is the case in southern Tunisia, where the protected populations in the Bou Hedma and Dghoumes National Parks were able to recolonize mountain ranges from which they had been eliminated some 50 years ago.

In large protected areas, such as the Hoggar and Tassili National Parks in southern Algeria, Barbary sheep populations are healthy and may number several thousand heads. But despite their resilience and rock-loving habits, Barbary sheep are very vulnerable and many small, fragmented populations have either been wiped out by hunting or are in a critical state. The spread of automatic weapons throughout the Sahara, coupled with insecurity in many mountainous areas, has resulted in serious declines in many places. Although the Barbary sheep is listed as a globally vulnerable species on the IUCN Red List, this does not reflect the local situation, where its conservation status is often quite dramatic.

The pelage of the Barbary sheep is tawny brown, with stiff and bristly hairs and a soft, curly undercoat. Very long tawny brown hairs cascade down from the neck, throat and withers in the shape of a heavy fringe, which in the lower part extends to the front portion of the front legs in the shape of a mane that starts near the jaw. The mane divides at the brisket and continues down the clavicle and front legs. Even the underbelly is covered in curls. The top of hoof is covered in a crown of longish, chestnut-coloured hairs.

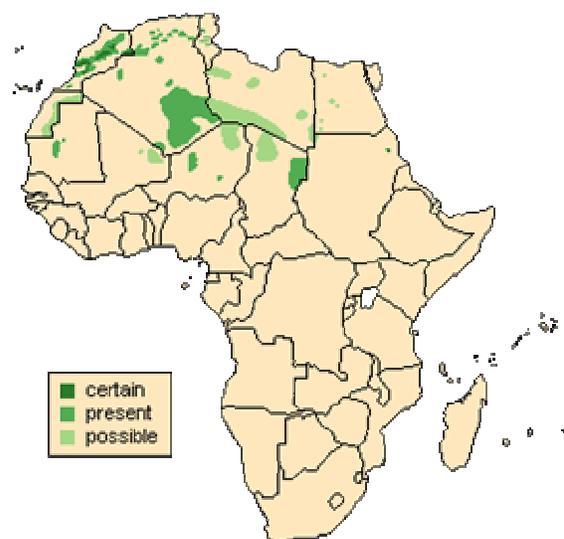
The basic social unit of the Barbary sheep consists of a male, one or two females and their offspring. Larger groups may be formed between different sexes or several males. If various nubile males live in a herd, a stable linear hierarchy is established between them.

## 2.1 Distribution (current and historical)

Barbary sheep are native to the arid and semi-arid mountains of the North African Atlas and the rocky areas of the Sahara stretching from the Atlantic ocean to the Red Sea (southern Mauritania, Algeria, Chad, Niger, the Aïr and Ennedi mountain ranges and northern Sudan). Data for the Middle East are less precise. High population densities are restricted to the regions of Darfur, north-eastern Sudan, Ennedi, Tibesti, Aïr, Hoggar, the Tassili-Nadger range, Adrar, central Mauritania and Morocco.

Barbary sheep were introduced into Europe and North America (New Mexico, Texas, California). Some introduction efforts in Europe such as, for example, in Italy were not crowned with success. In the Czech Republic, there is a small population descendant from animals that escaped from the Plzeň zoo.

In Morocco, the species is still found in the wild in the Anti Atlas region; the Bani, Zini, Aydar and Adrar Souttouf ranges; and in the mountains in general. Traditionally, the species' range extended across arid to semi-arid slopes and foothills of the High Atlas, Anti Atlas and Bani massifs. It is highly uncertain whether the species still exists in the mountains of southern Sahara, which are currently hardly accessible (Cuzin, 2003).



Range map Barbary sheep (redrawn from Shackleton, 1997).

## 2.2 Population

The species is listed as globally vulnerable (VU A2cd), and occurs in the wild in North Africa and the Sahara regions only.

Across its geographic range, except in Morocco, little is known about population sizes and trends.

In Morocco, the species is considered “endangered” (Cuzin, 1996). The population is estimated at 800 to 2000 individuals (Cuzin, 2003). Most of these animals live within protected areas. Outside the reserves small, highly threatened populations survive. The species is near-extinct in the Middle Atlas (small populations are probably still existent in the Outat Oulad El Haj region) and in decline in the Anti Atlas and the Saharan Atlas; the highest densities are found in the High Atlas.

## 2.3 Habitat

Barbary sheep mainly occur in arid, mountainous terrain, and in those environments mostly at high altitudes, and in the xerophyte and chamaephyte steppes. The species also frequents the rocky hills of the Saharan steppe.

They strictly avoid dense forests and low Saharan plateaus. They are never found in sandy environments, irrespective of the amount of accumulated sand. Given that Barbary sheep were hunted extensively, which often drove them into the highest mountains, current habitat preferences are mainly resulting from human hunting practices.

## 2.4 Cross-boundary migration and movement

While there are no migratory movements in the biological sense of the term, Barbary sheep populations are found - or used to be found – in certain mountains ranges straddling international borders.

# 3 **Threats**

IUCN status (2007): the species is listed as globally vulnerable (VU A2cd).

## 3.1 Direct and potential threats

It is undeniable that grazing areas, especially in the mountains, have been reduced in recent decades (Gauquelin 1988, Ou Tahar 1994, Quézel & al 1994, Maselli 1995, Ouhammou & al. 1996). However, given the extensive range of *Ammotragus lervia*, its excellent adaptability and extremely flexible feeding habits (Cassinello 1998), and the fact that it was introduced successfully into the United States and Spain, it appears that anthropogenic environmental destruction is only a minor factor in the decline of the species (Cuzin, 2003).

The most significant factor in the species’ decline appears to be overharvesting, notably abusive hunting, which is strictly regulated since the 1950s and illegal as of 1968 (Aulagnier & Thévenot 1986). To mountain dwellers, the Barbary sheep is the game par excellence and its meat is highly prized as a tonic (Roux 1955).

The species is further threatened by disturbance and predation from dogs (Loggers & *al.* 1992).

### 3.2 Habitat destruction

### 3.3 Indirect threat

Increasing population fragmentation and the desertification of their habitat threaten the long-term survival of the species.

### 3.4 Threats connected especially with migration

### 3.5 National and international utilization

It is a huntable species and is hunted across most of its range.

## **4 Protection status and needs**

### 4.1 **National protection status**

Not known.

### 4.2 International protection status

Listed in Annex II of CITES.

### 4.3 Additional protection needs

- Need for information on the current numbers and trends in isolated Barbary sheep populations.
- Implementation of relevant legislation throughout range states.

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

ALGERIA, LIBYA, MALI, MOROCCO, NIGER, Sudan, CHAD, TUNISIA.

## **6. Comments from Range States**

## **7. Additional remarks**

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

## 8. References

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