

Distribution and status of Nubian ibex in Saudi Arabia

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*Despite increased hunting pressure accompanied by habitat degradation, the current distribution of Nubian ibex *Capra ibex nubiana* in Saudi Arabia closely resembles that of historical record and spans a wide diversity of habitat types. Efforts are under way to conserve the species and two special ibex reserves have been created.*

Introduction

This paper reports recent records of the Nubian ibex in Saudi Arabia, where wildlife, as in most of the Arabian Peninsula, has declined considerably in recent decades. Although this has affected mammals in general, it has been most serious for large ungulates. The Arabian or white oryx *Oryx leucoryx* became extinct in the wild in the early 1960s (Dolan, 1976) and the same fate appears to have befallen the Saudi dorcas gazelle *Gazella dorcas saudiya*, while the sand gazelle *G. subgutturosa marica* and the mountain gazelle *G. gazella* have been reduced to relict populations (Habibi, 1986).

The principal causes for this extirpation of wildlife in Saudi Arabia lie in the recent acceleration of habitat destruction, chiefly through overgrazing by livestock, and excessive hunting. Severe competition for grazing from increased numbers of domestic stock has caused a dramatic contraction in the formerly extensive range of most of the Arabian ungulates, which are now restricted to 'islands' of marginal habitats where they maintain a tenuous existence.

Major wildlife conservation initiatives have taken place in several countries of the Arabian Peninsula in the last decade, of which the Omani Arabian oryx reintroduction programme is perhaps the best known. In Saudi Arabia the major efforts to reverse the decline in wildlife have been initiated by the National Commission for Wildlife Conservation and Development (NCWCD), which was created

by royal decree in 1986.

An important part of the Commission's programme has been to locate relict wildlife populations and evaluate the status of their habitats throughout the Kingdom. The eventual aim is to establish a system of wildlife reserves in which the large mammal fauna in particular may be rehabilitated.

The Nubian ibex, a species of major interest to the NCWCD, was widely distributed in the Arabian Peninsula (Philby, 1933; Carruthers, 1935; Raswan, 1935; Schwarz, 1935). The current status and distribution of the species in Saudi Arabia were uncertain until recently with few confirmed sightings (Harrison, 1968; Gasperetti, 1978).

Methods

Since 1987 NCWCD field staff have undertaken aerial and ground surveys to locate ibex in the western and central regions of Saudi Arabia, which constitute the historical range of the species. Specific survey locations were identified by reference to historical records and also on the basis of undocumented reports, for example by field geologists, helicopter pilots and information received in the field. Aerial surveys, using Bell 212 helicopters provided by the Royal Saudi Air Force, were made over rugged terrain generally favoured by ibex. Ground traverses were used to gauge range conditions and habitat utilization in those areas where ibex were found to be resident.

Results

Nubian ibex distribution

Fifteen extant ibex populations have so far been located in Saudi Arabia. The animals are largely concentrated in the mountains of the Arabian shield in the west of the country, with isolated groups located in the northern, north-central and central regions (Figure 1).

The currently known distribution of ibex, with some exceptions, closely conforms with that of historical record. The confirmed range has been extended in the south-western mountains, but there appears to have been some reduction of the range in the northern border areas. The most dramatic contraction, however, has been in the central region, where

only one population is known to survive in the extensive Tuwayq escarpment (site 1, Figure 1), although ibex were more common there in the past.

Ibex habitats

The distribution of the Nubian ibex in Saudi Arabia spans a wide diversity of habitat types (Table 1). The relict population found in the central Tuwayq occupies low-altitude, dissected escarpments of sedimentary rock, which are treeless, except in narrow canyons, and where precipitation averages 50 mm a year. By contrast, ibex in the south-west of the country occupy juniper-dominated mountain summits with elevations in excess of 2000 m, and where rainfall averages over 350 mm a year.

Table 1. Ibex observations made during reconnaissance surveys (1987–1989) in Saudi Arabia

Location	Maximum altitude (m)	Average precipitation mm/year (min. 6-year record)	Physiography
1. Hawtat bani Tamim	500	52.6	Sedimentary cuestas
2. Wadi Tiyah	2300	369.0	Crystalline montane
3. Hema Fiqrah	1500	100.0*	Crystalline montane
4. Jabal Qaraqir	1200	50.0†	Sandstone pinnacles
5. Jabal Salma	1100	108.0†	Dissected granitic plutons
6. Jabal Aja	1200	108.0†	Dissected granitic plutons
7. Jabal Irnan	900	44.7	Sandstone hills
8. At Tubayq	1000	33.0	Sandstone cuestas
9. Jabal al Gharir	1400	47.5†	Crystalline montane
10. Jabal al Kalab	1700	47.5†	Crystalline montane
11. Jabal Lawz	2580	44.7†	Crystalline montane
12. Hisma	1821	44.7†	Sandstone mesas
13. Hawsal	1502	44.7†	Sandstone mesas
14. Jabal Dibbagh	2268	44.7†	Crystalline montane
15. At-Tawil	890	100.0*	Sandstone massif

* Estimated precipitation, no records.

† Closest station record.

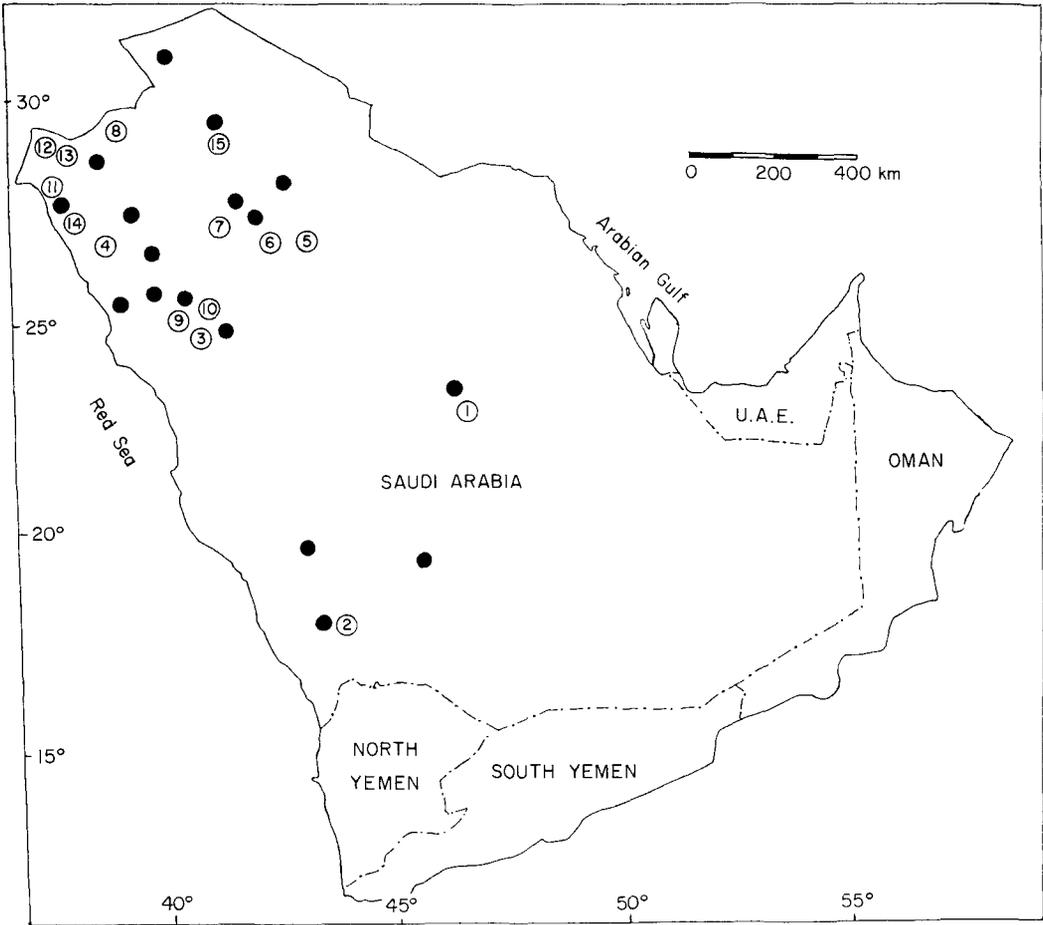


Figure 1. Distribution of ibex in Saudi Arabia. Open circles indicate sightings by field survey personnel during 1987–1989. Closed circles show recent observations, reports and historical sightings.

Habitat conditions for ibex in general were found to have been less degraded than those of other wild ungulates. All the sites were characterized by difficult terrain, which tends to limit access to livestock, and the vegetation, in terms of structure and species diversity, has remained relatively intact in these areas.

The general ecological requirements of Nubian ibex are, however, poorly understood, especially with regard to food plant selection, habitat preferences and water requirements. The latter is of particular interest as the availability of permanent water sources is uncertain in two of the most arid sites supporting ibex (sites 7 and 8, Figure 1). Nievergelt (1981),

in a year-long study of the Walia ibex *Capra ibex walie* in the Simien Mountains, observed only two instances of these ibex drinking water, although the study site receives more than 1500 mm rainfall a year. It is interesting to note, in this regard, that in Arabia hunters traditionally used stone hides overlooking water holes to lay in wait for ibex.

Population status

It was impossible to determine the status of Nubian ibex populations in the Kingdom during reconnaissance surveys. The animals appear to be locally distributed throughout

their range at low density levels (Table 2). The 51 observed groups had a mean group size of 3.4 animals, although large groups, of up to 26 animals, have been reported by NCWCD rangers (Table 2) in the two locations where hunting is now prohibited.

Little information is currently available on the social organization of Nubian ibex. Harrison (1968) reported that the animals occur in small groups, although aggregation into larger groups, especially during the rutting season, is common among caprids (Geist, 1971; Schaller, 1977). In this study variation in group size was small, with most observed groups being close to the mean, although habitat conditions in terms of food plant availability were markedly different. The small group size, therefore, may be a social feature of this subspecies rather than an indicator of habitat or carrying capacity. A similar mean group size was reported for *Walia ibex* by Nievergelt (1981).

Table 2. Numbers of ibex seen during reconnaissance surveys (1987–1989) in Saudi Arabia

Location	No. observed	No. groups observed
1. Hawtat bani Tamim*	66	12
2. Wadi Tiyah	7	1
3. Hema Fiqrah	18	3
4. Jabal Qaraqir	55	17
5. Jabal Salma	7	3
6. Jabal Aja	1	1
7. Jabal Irnan	5	2
8. At Tubayqt	22	5
9. Jabal al Gharir	7	2
10. Jabal al Kalab	6	1
11. Jabal Lawz	5	1
12. Hisma	10	5
13. Hawsal	5	1
14. Jabal Dibbagh	6	2
15. At-Tawil	9	4
Total no. observed: 229		
Mean group size: 3.4		
Range: 1–8		

* Group of 17 observed by NCWCD rangers, January 1989.

† Group of 26 observed by NCWCD rangers, January 1989.

Due to observation difficulties in the rugged terrain, the long flight distances of the animals, and their propensity to hide when disturbed, it was impossible, in all instances, to ascertain sex–age ratios for the observed groups during the aerial surveys. Where sex–age ratios could be determined, groups were found to be composed of either a mature male (7–10 years) with several females and juveniles, or groups of subadult males and individual adult males. Although juveniles were observed in almost all localities it would be premature to speculate on the long-term viability of these various ibex populations.

Conservation requirements

In contrast to other ungulate species in Saudi Arabia, the Nubian ibex appears to have survived, albeit in enclaves, in most parts of its known historical range. The species continues to be threatened by habitat degradation, particularly through extension of roads, which allows for further encroachment by livestock and other development pressures in and around its remaining refuges. The continued displacement and isolation of ibex populations will further limit opportunities for dispersal and genetic interchange between populations. Though caprids are considered to be resilient to genetic bottle-necking (R. Valdez, pers. comm.), the long-term effects of inbreeding and loss of genetic diversity may be debilitating to the future survival of these populations. This aspect of ibex biology is in urgent need of investigation.

The conservation of the Nubian ibex in Saudi Arabia is a major concern of NCWCD and two ibex reserves, totalling over 14,500 sq km, were established in 1988 and 1989 in the northern and central regions to protect isolated populations. All hunting is prohibited in these reserves, which are patrolled by rangers, and management plans, which include controls on access and livestock grazing, are being implemented.

The general ban on hunting of ibex in Saudi Arabia, which was promulgated in 1979, should be enforced more vigorously and the

NCWCD is raising public awareness of the plight of ibex and other wildlife through a concerted information campaign.

Ancient rock drawings dating back several thousand years depicting Nubian ibex are to be found throughout Saudi Arabia and testify to man's long association with this species. It is to be hoped that with the establishment of a system of national reserves, the Nubian ibex and other wildlife species will maintain permanent places in the country's natural heritage. The current priority must now be to establish contiguous reserves in the mountain chain of western Saudi Arabia, which is the main area for ibex distribution.

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