

THE MUFFLON (OVIS AMMON MUSIMON SCHREBER, 1782)
IN THE SOUTHERN AND WESTERN COUNTRIES OF EUROPE.

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ABSTRACT

For more than a hundred thousand years the range of the Mufflon was restricted to small retreat areas such as Corsica and Sardinia, Isles in the Tyrrhenian Sea, which these wild sheep had already occupied during the Diluvium period. Heavy human population increases on the European continent associated with the destruction of the natural landscape through the creation of settlements and transportation corridors brought about a reduction of arable lands and wildlife habitat.

Important autochthonous game species, such as red deer (Cervus elaphus), were forced back into certain retreat areas, and their numbers were substantially reduced. As a consequence of these developments ecological niches came into being that were suitable for less pretentious wildlife species. During the last 100 years the Mufflon, which was formerly rather unimportant, has been introduced to numerous areas on the European continent. The stock has gradually built up particularly since the second world war, and is estimated to have reached about 60,000 in 1984. Considerable knowledge has been gained in recent decades regarding the biology and ecology of these wild sheep, which has led to the establishment of quantitative and qualitative management standards important for proper hunting regulations and conservation.

INTRODUCTION

The existence of wild sheep of the "Argali-type" living during prehistoric miocene and pleistocene periods can be demonstrated through fossil evidence from the Sea Alps and other mountain ranges on the European continent in the vicinity of the Mediterranean Sea. During the middle of the pleistocene period sheep of the "Mufflon-type" appeared as well. These were members of populations which had to withdraw to the south because of advancing ice masses in northern and central Europe, and they found a new home in the Tyrrhenian Mountains. Tectonic changes resulting in disruption of landbridges brought into existence the Isles of Corsica and Sardinia. For thousands of years the distribution of these recent representatives of European-Near Eastern wild sheep has been restricted to these two isles.

RESULTS AND DISCUSSION

First evidence of the existence of Mufflon on the European mainland can be found in documents relating to the construction of a Renaissance Palace in Vienna, Austria, in the years 1566 to 1569. The original stock, whose offspring were later transplanted to many areas of Europe, were obtained from the Isle of Sardinia and brought to Vienna by Prince Eugen of Savoy in 1729. Being kept first at the Prince's Belvedere palace and afterwards in the Imperial Zoological Garden Schonbrunn in Vienna, the Mufflon were moved in 1840 to the Lainzer Tiergarten near Vienna, an enclosure 2600 ha in size. Almost all existing European Mufflon populations are descendants of this original Lainzer stock.

The first free-living Mufflon population on the European continent was the result of a transplant to the North Italian Apenine Mountains in 1780 by Duke Leopold of the Toscana, German Emperor from 1790 to 1792. Another transplant followed about 100 years later to an area presently known as Slovakia (C.S.S.R.), and in the following decades numerous transplants were conducted. For the first half of the 20th century, 10 European nations reported Mufflon populations totalling about 8,000 in 1939. Today almost all central and southeastern European countries have more or less well-established Mufflon stock, as Table 1 will reveal as well as the accompanying report on the Mufflon sheep in eastern Europe by Uloth (1984).

Table 1. Numbers of Mufflon in the countries of western and southern Europe (1978).

Nation	Numbers of Sheep	Percentage of Europe's Total Population
Austria	6,000	11.4
Denmark	200	0.4
France	4,500	8.5
France-Corsica	300	0.6
German Federal Republic	7,200	14.0
Italy	3,350	6.3
Italy-Sardinia	400	0.7
Luxembourg	75	0.0
Netherlands	400	0.7
Spain	3,000	5.6

In 1978 the number of Mufflon for all of Europe was estimated at 53,100 head. For 1984 no estimates are available as yet, however a further build-up of stock to 60,000 is assumed.

In contrast to other wild sheep species the Mufflon is a forest dweller and its range of distribution is directly related to forest cover density. Its adaptability to very different biotope conditions is astonishing. Thus, it is found in habitats with a great range of altitudes, ranging from sea level (Isles of Corsica and Sardinia) up to 2,000 m a.s.l. (Austrian Alps). Accordingly, the reproductive capacities of given populations vary accordingly and range from 40 to 70% expressed as increases in relation to numbers of females in spring. The expected sex ratio is 100 males: 100 females. In order

FIGURE 1. MUFFLON SHEEP IN EUROPE EXPRESSED IN THOUSANDS.

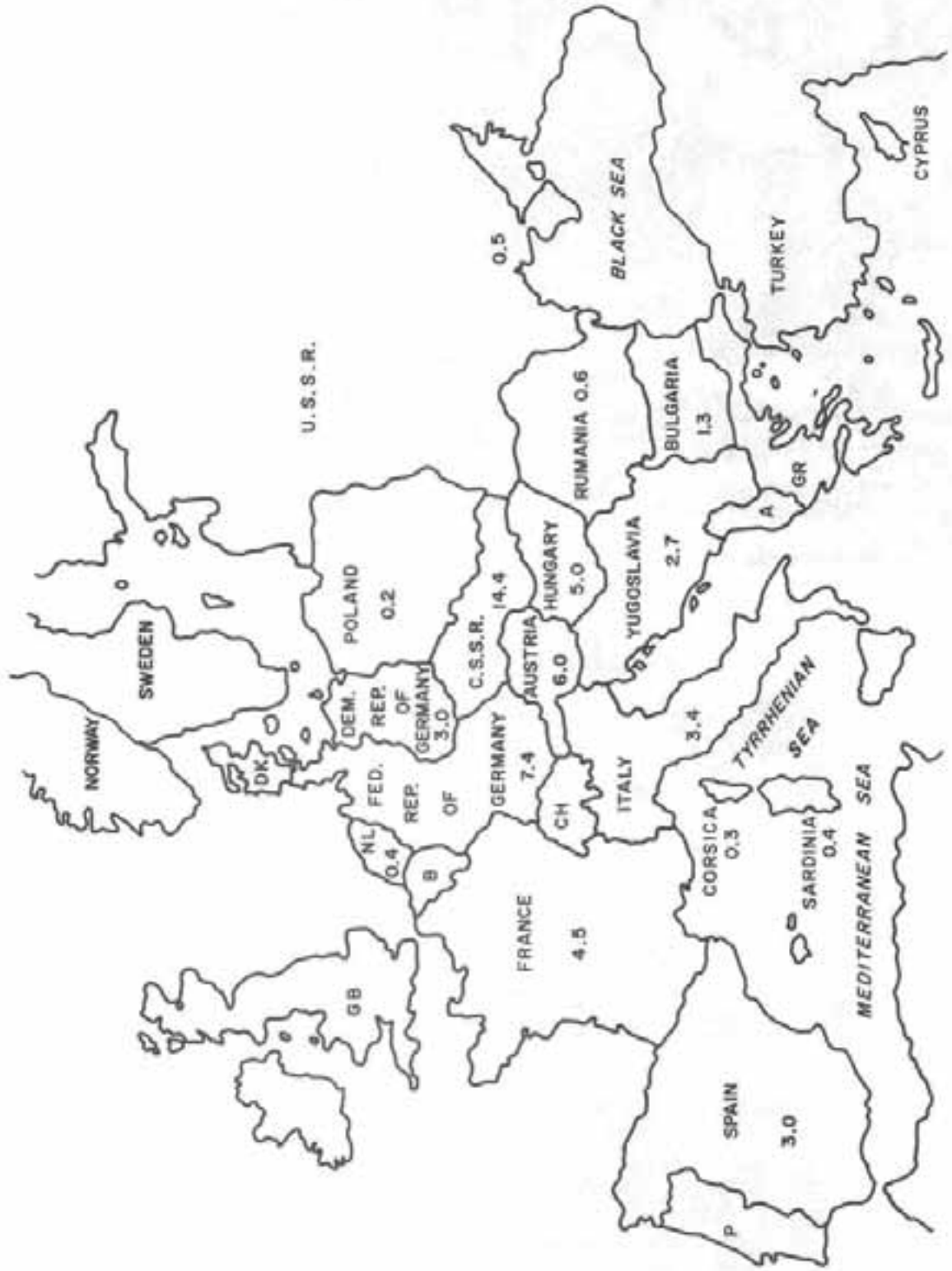




Fig. 1: Adult mouflon Ram
(Photo: E. Mader)

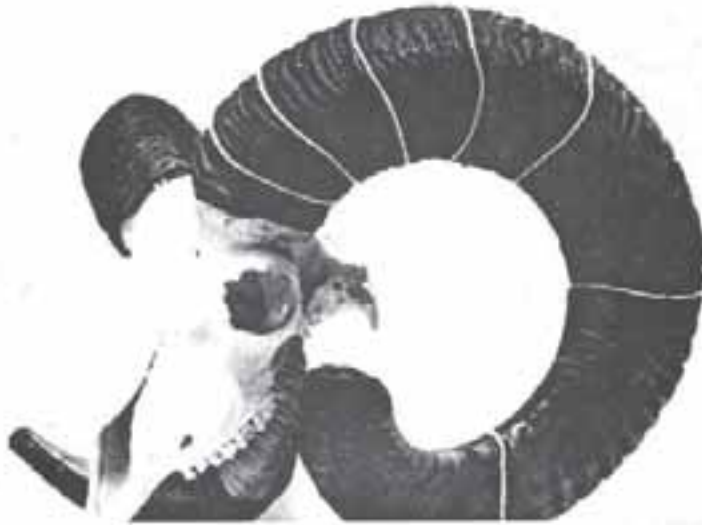


Fig. 2: Skull of mouflon ram
with annual horn
growth increments
indicated by white
lines (Photo: H.
Tomiczek)



Fig. 3: Mature mouflon ewe
with twin lambs.
(Photo: W. Tilgner)

to avoid damage to forest plantations and agricultural fields and to fulfill certain requirements in relation to landscape maintenance, densities of Mufflon populations are kept to a rate of 3 to 10 heads per 100 ha, with the average being about 6 sheep per 100 ha.

The horns of Mufflon rams grow in a circular manner similar to North American sheep and reach a length of 700 to 900 mm at an age of 6-8 years. Horn lengths over 1,000 mm are rare. The horn spread varies between 400 and 500 mm, the circumference at the horn base between 230 and 270 mm, with 330 mm being the reported maximum.

Population dynamics parameters as well as individual body growth rates vary with habitat quality, and great differences between populations have been documented. On the average rams without head and eviscerated weigh between 20 and 28 kg, ewes between 16 and 23 kg. However, weights exceeding these averages by as much as 100% have been documented.

Mufflon crossbreed readily with various domestic sheep races and produce fertile offspring. For this reason many crosses have been done intentionally until the beginning of this century in order to improve domestic breeds in relation to body size, trophy quality and resistance to diseases. By the same token, crosses (intentionally as well as unintentionally) have changed the genetic make-up of wild Mufflon populations. Attempts are being made, to establish standards for a true, genetically pure, Mufflon, and to eliminate totally all elements of alien blood in "mixed" populations. This strategy has not always nor everywhere been successful, therefore, differences remain in quality of various European populations.

Recently the lynx has been reintroduced to several areas in western Europe, after being absent for many decades. It appears that observations made in Eastern Europe, where wolves as well as lynx were able to reduce or even eliminate Mufflon populations, will be repeated here.

SUMMARY

It has been possible to preserve the Mufflon, Ovis ammon musimon, on its very restricted original range on the Isles of Corsica and Sardinia, and to subsequently spread its distribution to many countries on the mainland of Europe over the past 100 years. The total European stock is now estimated at 60,000 head. Without any doubt, these large-scale conservation attempts have resulted in an enrichment of the large mammal fauna on the continent of Europe. However, considering the much more numerous populations of red deer, roe deer and wild pigs, and the associated hunting economy, the Mufflon is still not a very important local big game species.

LITERATURE CITED

- Hoefs, M. 1982. Die Muffelwildvorkommen im Lande Nordrhein-Westfalen. Zeitschrift für Jagdwissenschaft 28:31-49, 28:88-108.
- Langrehr, H. 1977. Zur Herkunft des Mufflon. Allgemeine Forstzeitung, München.

- Lochman, J. 1979. Mufioni zver. Prag, C.S.S.R.
- Perco, F. 1977. Il Muflone. Edagricole, Italy.
- Silvestri, A. 1975. Il Muflone sardo. Editrice Forum, Sardinia, Italy.
- Türcke, F. and H. Tomiczek, H. 1982. Das Muffelwild. Verlag P. Parey, Hamburg.
- Uloth, W. 1976. Das Muffelwild, Die Neue Brehm Bücherei, Wittenberg.
- Uloth, W. 1984. Die Muffelwildvorkommen in Osteuropa. Proceedings of the 4th symposium of the Council for Northern Wild Sheep and Goats.