Annuaire de l'Université de Sofia "St. Kliment Ohridski"
Faculte de Biologie
First National Conference of
Reintroduction of Conservation-reliant Species, Sofia 2015
University Press 2016, pp. 171-175

# BEZOAR WILD GOAT (*CAPRA AEGAGRUS* ERXLEBEN, 1777) – HISTORY AND OPPORTUNITIES FOR DEVELOPMENT OF THE SPECIES IN BULGARIA

ATIDZHE AHMED[1*], ALBENA VLASSEVA[1],
STEFKA KITANOVA[2], PETER GENOV[1]

*1 – Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 2 Gagarin Street, 1113 Sofia, Bulgaria*
*2 – Forest Research Institute, Bulgarian Academy of Sciences, 132, St. Kliment Ohridski Blvd.,1756 Sofia, Bulgaria*
**Corresponding author: atidje_dj@abv.bg*

**Keywords:** Bezoar wild goat, *Capra aegagrus*, reintroduction, Bulgaria

**Abstract:** The Bezoar wild goat (*Capra aegagrus* Erxleben, 1777) is assumed that in the past was a natural inhabitant of our mountains, but subsequently disappeared. The aim of this article is to confirm or refute this assumption on the basis of literature data and to answer the question is there a future for the development of the *Capra aegagrus* in Bulgaria? If the answer is „yes", then where are suitable habitats for it?

Paleontological research proves that the *C. aegagrus* is not aboriginal in the European continent and in Bulgaria, but was brought by the people as a live stock at first on islands and then in the mountains in Northern Greece. The Bezoar wild goat has been most probably living in Bulgarian southern mountains, for a short period though, which explains the lack of species' fossil remains and other proof for its dwelling in Bulgaria as well.

The species' low nutritional requirements and successful adaptation are the prerequisites for its development and displacement in the country. C. aegagrus could and should be part of Bulgarian fauna, because the mountains of Bulgaria are beautiful, but will be even more beautiful if they are inhabited by this majestic goat – the Bezoar wild goat.

## INTRODUCTION

Taxonomically the Bezoar wild goat (*Capra aegagrus* Erxleben, 1777) refers to the family Bovidae, genus Capra which includes 8 species and 11 subspecies. The *C. aegagrus* has 4 subspecies – *C. a. aegagrus* (distributed in Afghanistan, Armenia, Azerbaijan, Lebanon (extinct), Russia (Eastern Caucasus), Turkey,

Georgia, Iran); *C. a. blithy* (Pakistan, Iran, Irac, Turkmenistan); *C. a. chialtanensis* (Pakistan); *C. a. cretica* (Greece), (Pidancier et al., 2006). It is considered that *C. aegagrus* is one of the ancestors of the domestic goat (*Capra hircus*) (Clutton-Brock J., 2001). The species inhabits mountainous areas where there is a mixture of rocky hills and shrub thickets or coniferous forests. It feeds on grasses, herbaceous plants and shrubs. Although it inhabits rocky dry areas in the Caucasus, it is described as one of the leading forest species by adhering more often to the middle mountain heights (Weinberg et al., 2008; Spasov, 1982).

*C. aegagrus* is assumed that in the past was a natural inhabitant of our mountains, but subsequently disappeared. The aim of this article is to confirm or refute this assumption on the basis of literature data and to answer the question is there a future for the development of the *C. aegagrus* in Bulgaria? If the answer is „yes", then where are suitable habitats for it?

## RESULTS AND DISCUSSION

### *Short description of the Bezoar Wild Goat*

In comparison with other species of the genus Capra, *C. aegagrus* and *C. pyrenaica* are the smallest of all species of the genus. The Bezoar legs are relatively short. Males have massive back-curved saber-like horns. Females have short horns. Coloration is rusty-red in summer and grayish-brown in winter. Throat and chest are almost black. Neck and sides of the body are gray. Belly and feet are gray-white. Their body length is 120-160 cm and the height at the withers 70-100 cm. Both sexes have a distinctive black beard that in the males reache 20 cm, which is why the species is known as the bearded goat (Mihailov & Stoyanov, 2001; Genov et al., 2009).

The breeding period is from mid-December to late January. Females give birth from mid-June to mid-July very often to two offspring (Gundogdu and Ogurlu, 2009). In many countries where the bezoar dwells it is a game species, but is included in the IUCN red list as a vulnerable species (Weinberg et al., 2008).

### Historical Data

It is assumed that in the past the bezoar inhabited our mountains as well. Data which gives grounds for this is a capricorn skull excavated in a cave in Troyan, which was defined by Popov (1934) as *C. aegagrus*, (in Spasov, 1982). Later, however, Spasov (1982) proved that this skull is ibex (*C. ibex*), as well as the other remains of legs that were also found. Since then there are 9 Pleistocene deposits of C. ibex in Bulgaria found (Georgiev and Stoicheva, 2010). *C. aegagrus* however, has no traces amongst them.

According to different authors the bezoar occurred in the mountains of Albania, Greece, Crete, Asia Minor until Persia, and some say even in Macedonia (Belon du Mans 1953; Brenties, 1981; Konsulov, 1926). In 1916 a group of soldiers

went out hunting for wild boar in the mountains Parnar dag (Greece) and killed an adult Bezoar Ibex, whose horns are still kept in the Natural History Museum in Sofia (Konsulov, 1926). According to the author, this individual was not a single one, because the horns show visible traces of fights with other males. This is actually the closest known habitat of bezoars to the territory of Bulgaria. Petrov (1986) wrote that in Europe only wild bezoar goat *C. aegagrus* was distributed, and its population was destroyed by hunters during the Middle Ages.

According to Couturier (1962) (in Spasov, 1982) in the recent past wild goats have been displaced from the Greek islands in the mountains of northern Greece, where they gradually disappeared. A similar hypothesis is supported by other authors. Horwitz & Bar-Gal (2006) made a genetic analysis of the Cretan wild goat (*C. a. cretica*), which, although morphologically resembles *C. aegagrus*, its mitochondrial DNA shows affinity to the domestic goats. The authors explain that most likely *C. a. cretica* was imported to the island as a wild primitive form during the sixth millennium BC as a food source. In subsequent interbreeding with domestic goat the species has kept its wild morphotype but has undergone significant genetic change. The authors say that these findings are applicable to other free-living goats and sheep as the mouflon for example. Masseti (2009) noted that there was no evidence of fossils of *C. aegagrus* found on the continent of Europe. Originating from the Middle East, which is its natural habitat, the species was introduced by people of Mediterranean islands from the Pre-Pottery Neolithic period. On the other hand, Van den Brink (1967), (in Geskos, 2013) mentions that *C. aegagrus* once inhabited the European continent occurring in Bulgaria until 1891. According Hadzissarantos & Kanellis (1955), (in Geskos, 2013) however, some naturalists of the nineteenth century and earlier have mistaken *C. aegagrus* with the wild goat *Rupicapra rupicapra*. Brehm (1963) writes that the bezoar occurred in Central and Western Asia, singly on the island of Crete, but also it was dwelling in the Balkans.

A definite proof that *C. aegagrus* was brought to the European continent is described by Konsulov (1926) with a case of a male killed in 1916. It is possible that some animals have come to our southern mountains (Pirin, the Western Rhodopes). Mihailov Stoyanov (2001) writes that the species has disappeared from Bulgaria in the early 20th century and the last habitats were in Slavyanka and Alibotush mountains and the southern units of the Rhodopes. According to L. Harizanov (personal message) the last bezoar in the country was killed in 1939 on the territory of present State Hunting Enterprise „Kormisosh".

**Status and development of the species in Bulgaria**

Suitable habitats for *C. aegagrus* in the country are found in all of our larger mountains (Stara Planina, Rila, Pirin, the Rhodopes mountain). That's why in 2012 introduction of bezoars from the Czech Republicwas undertaken, where the species was introduction in 1953-1967 (Masseti, 2012). 20 young individuals equal

in gender (10 males and 10 females) were brought in a fenced area in Zabardo, the Rhodopes. The altitude of the place chosen for the introduction is 1200-1300 m. Tree species occurring around are Scots pine (*Pinus sylvestris*) and deciduous species, some of which are remnants of orchards. The animals were brought in December. Due to the harsh climatic conditions three of them died. In the spring of 2013 one of the females gave birth to a lamb. The animals quickly adapted to the local conditions. They had no problems with regard to food, none was hurt and in 2014, eight females have given birth to nine cubs. It is noteworthy that the cubs grew very quickly, especially their horns. In the spring of 2015 5 lambs were born. The same fenced area is also inhabited by a mouflon (*Ovis orientalis musimon* Schreber, 1782) and until one year ago there was a Himalayan Thar (*Hemitragus jemlahicus* H. Smith, 1826). Due to the pronounced aggressiveness of the latter species, they are separated. So now within the fenced area without competitive relationships only Bezoar goat and mouflon live together. This may be due to the common origin of both species from the region of Western Asia. The successful development of these Bezoar goats showed that they could easily be released and settle rocky habitats in our mountains, especially in places where there is no wild goat. In its natural habitat, such as the Caucasus, the Bezoar goat inhabits together with the wild goat and ram without any problems.

## CONCLUSION

Paleontological studies have shown that *C. aegagrus* is not aboriginal species to the continent of Europe and our country, but was transported by people as human food stocks first on the islands, and later in the mountains of northern Greece. Most likely the bezoar inhabited our southern mountains, although for a short period of time, which explains the lack of its fossils, and no other evidence of its existence on the territory of Bulgaria

Nevertheless, the low nutritional requirements of the species and its successful adaptation are the prerequisites for future development and displacement. *C. aegagrus* could and should become part of the Bulgarian fauna, because the mountains of Bulgaria are beautiful, but will be even more beautiful if they are inhabited by this majestic goat – Bezoar wild goat.

## REFERENCES


1. Belon du Man, P. 1953. Observations of many rare and wonderful things seen in
2. Greece, Asia, Judea, Egypt, Arabia and other foreign countries by Pierre Belon du Man. BAS, Sofia, 308 pp. (in Bulgarian)
3. Brehm A. 1963. Życie zwirząt. Ssaki. Państwowe Wydawnictwo Naukowe, Warszawa, 519 pp.
4. Brenties, B. 1981. „Discovery“ of domestic animals. Zemizdat, Sofia, 159 p. (in Bulgarian)

5. Clutton-Brock, J. 2001. Storia naturale della domesticazione dei mammiferi. Bollati Boringhieri, Torino, 279 pp.
6. Genov, P., Georgiev, G., Georgiev, V. 2009. Persian wild goat (*Capra aegagrus* Erxleben) – biology, ecology and possibilities for its re-introduction in Bulgaria. *Biotechnology & Biotechnological Equipment*, Special Edition, 23 (1): 341-342.
7. Georgiev, D., Stoicheva, S. 2010. New Late Pleistocene habitat of ibex (*Capra ibex* L.), (Mammalia: Bovidae) in Bulgaria. ZooNotes, 14: 1-4. (in Bulgarian)
8. Geskos, A. 2013. Past and present distribution of the genus Capra in Greece. *Acta Theriologica,* 58:1-11.
9. Gundogdu, E., Ogurlu, I. 2009. The distribution of wild goat *Capra aegagrus* Erxleben 1877 and population characteristics in Isparta, Turkey. *Journal of Animal and Veterinary Advances*, 8 (11): 2318-2324.
10. Horwitz, L. K., Bar-Gal, G. K. 2006. The origin and genetic status of insular caprines in the Eastern Mediterranean: a case study of free-ranging goats (*Capra aegagrus cretica*) on Crete. Human. *Evolution*, 21: 123–138.
11. Konsulov, St. 1926. Bezoar goat (*Capra aegagrus*) on the Balkan Peninsula. Hunter, 8/9: 7-8. (in Bulgarian)
12. Masseti, M. 2009. The wild goats *Capra aegagrus* Erxleben, 1777 of the Mediterranean Sea and the Eastern Atlantic Ocean islands. *Mammal Review*, 39 (2): 141–157.
13. Masseti, M. 2012. Atlas of terrestrial mammals of the Ionian and Aegean islands. De Gruyter, Berlin/Boston. 302 pp.
14. Mihailov, Hr. Stoyanov, St. 2001. Hunting birds and mammals in Bulgaria. Practical guide. Pensoft. Sofia. 208 p. (in Bulgarian)
15. Petrov, A. 1986. Early history and evolution of domestic animals. BAS, Sofia, 262 pp. (in Bulgarian)
16. Pidancier, N., Jordan, S., Luikart, G., Taberlet, P. 2006. Evolutionary history of the genus *Capra* (Mammalia, Artiodactyla): Discordance between mitochondrial DNA and Y-chromosome phylogenies. *Molecular Phylogenetics and Evolution,* 40: 739–749.
17. Spassov, N. 1982. Fossils of the Alpine Ibex and the Giant Deer in Bulgaria and role of the horns of the Giant Deer. *Priroda*, BAS, Sofia, 5, 21-27. (in Bulgarian)
18. Weinberg, P., Jdeidi, T., Masseti, M., Nader, I., de Smet, K., Cuzin, F. 2008. *Capra aegagrus. The IUCN Red List of Threatened Species 2008*: e.T3786A10076632. http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T3786A10076632.en