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## Notes on *Ovis aries musimon* in the Bohemian Lands according to hunting statistics (Artiodactyla: Bovidae)

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**Abstract.** Determining the exact numbers of introduced or invasive species is generally complicated. The mouflon (*Ovis aries musimon*) has been bred in the territory of the present Czech Republic since the 18th century as a game. It is known from archival sources when and through which channels the species appeared in the Czech territory. Its population growth can be assessed based on hunting statistics, which cannot provide completely accurate numbers, but indicate the trends reliably. During the 20th century, however, the mouflon occurred increasingly in the wild. Data from hunting statistics indicate a massive increase in its population during the second half of the 20th century.

**Key words.** Mouflon, introduction, hunting statistics, Czech Republic.

The mouflon (*Ovis aries musimon*) is a non-native species bred in the Bohemian Lands for a long time. The first undisputable records of its professional breeding come from the 18th century (see KOKEŠ 1976, ANDRESKA & ANDRESKOVÁ 1993, ANDRESKA 2005). The mouflon appeared relatively late in the harvest statistics; for the first time in 1902. It is therefore missing in the data compiled from 1874, even though it was demonstrably bred at that time, for example in the Hluboká estate (since 1803) and at Žinkovy (since 1898). Relevant data and harvest statistics from the time of the Protectorate of Bohemia and Moravia are not available. This reduces the presence of the mouflon according to reports from the first half of the 20th century to just 16 years. Irrespective of this, the increase in mouflon population numbers is noticeable. Explaining the growth in popularity of mouflon breeding and hunting is not easy and is only speculative.

During the Protectorate, Professor Julius KOMÁREK wrote a textbook *Gamekeeping in the Bohemian Lands* (1945), which was published shortly after the end of the war. The author described mouflons as animals of the future. KOMÁREK's authority was enormous among gamekeepers, and therefore it cannot be ruled out that his reasoning was the source of motivation for the wild breeding of mouflons. Interest in mouflon breeding may have also been encouraged by the success of trophies of the Czechoslovakian origin at an exhibition in Berlin (in 1937).

The mouflon is almost absent from the old statistics coming from the time of Austria-Hungary (Table 1). During the entire period of the statistic processing, it appears in the reports only sporadically, e.g., for altogether five times in the period 1902–1912. In all instances, harvests were reported only for Bohemia, while for Moravia and Silesia the mouflon harvests were missing. The reason of the incompleteness of the statistics is not known.

During the period of the first Czechoslovak republic (1918–1938), the mouflon harvest is evidenced in officially published statistics for five years only, starting in 1933 (Table 2). This is due to the absence of data collection after the creation of the new state. The data show a gradual increase in the number of the

Table 1. The numbers of mouflons harvested in Bohemia in the period 1902–1912, as reported by official statistics

year	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912
number	15	0	0	19	0	0	0	77	0	83	36

population bred outside game enclosures. Moravia and Silesia are reported together after the territorial administrative reform. A distinction is made between harvests from game enclosures and from the wilds. The statistical data may be supplemented according to ČERVENÝ et al. (2004), who covered the period 1924–1929 in the territory of the Czech Republic within the current borders, see Table 3, Fig. 1. With regard to any plausible interpretation, ČERVENÝ et al. (2004) did not differentiate between harvests in game enclosures and those in the wild. A gradual and continued growth in the numbers of the mouflon population was evidenced in the period 1950–2020 (Fig. 2), which resulted in the increase in the recorded mouflon

Table 2. The numbers of mouflons harvested in the Bohemian Lands in the period 1933–1937, as reported by official statistics

year \ province	Bohemia		Moravia and Silesia		total
	enclosures	in the wild	enclosures	in the wild	
1933	8	49	4	7	68
1934	37	52	9	10	108
1935	75	82	24	19	200
1936	46	58	9	17	130
1937	93	96	13	23	225

harvest from 190 individuals in 1950 to 10,417 individuals in 2019. In the following years, harvested numbers always exceeded 10,000 individuals with a peak of 10,791 in 2020.

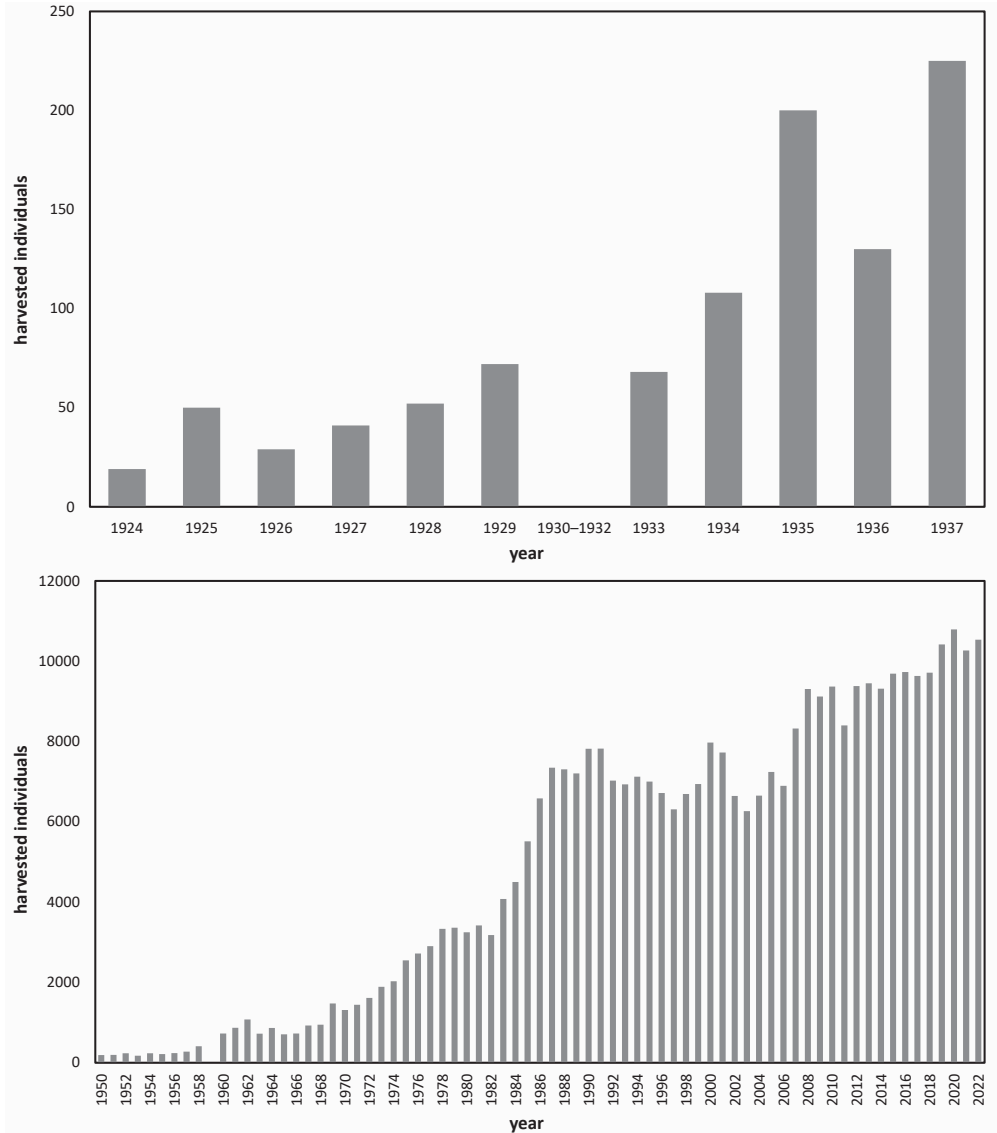
Since 1950, the statistics are almost complete, the only exception being the data for 1959, which are most probably missing due to the territorial administrative reform (adjustments made to the regional territorial division) during which data were not collected. It is evident that the number of harvests in 1950 (190) roughly corresponds to the situation in the 1930s. During the 1950s, however, the number gradually increased, in 1960 it exceeded the threshold of 500 killed individuals, and in 1962 the reported harvest reached more than 1,000 individuals. In 2019, the reported numbers exceeded 10,000 individuals.

The period 1950–2020 showed a gradual and continued growth in the numbers of the mouflon population (Fig. 2), which resulted in the increase in the number of recorded mouflon catches from 190 in 1950 to 10,417 in 2019 and the highest recorded number of 10,791 mouflons in 2022. This more than fifty-fold increase in 70 years suggests three phenomena, namely ill-advised (and irresponsible) introductions, insufficient killing of females, and the long-term absence of predators in the wild. The current return of

Table 3. The numbers of mouflons harvested in the Bohemian Lands in the period 1924–1929 reported by ČERVENÝ et al. (2004)

year	1924	1925	1926	1927	1928	1929
number	19	50	29	41	52	72

the wolf population to the Czech Republic seems to be a possible solution. However, it can be predicted that gamekeepers – mouflon breeders – will very likely oppose such course of events. For the time being, the number of harvests is not decreasing significantly. The extent of damage caused by mouflons is still a matter of debate, but the fact that it occurs is reliably documented.



Figs. 1, 2. Recorded mouflon harvests in the Bohemian Lands in the period 1924–1937 (top), and 1950–2022 (below).

The numbers of caught mouflons are the only reliable information from the statistical and available data. Although its absolute reliability can be doubted, much more intense doubts are raised by the reported spring stock status, which is undoubtedly less accurate in view of all circumstances.

The data provided on the website of the Ministry of Agriculture and the data of the Statistical Office differ slightly, which can be easily explained by the fact that the data of the Ministry do not include the data on hunting in national parks and in hunting areas of military-controlled forests. However, the mouflon is not supposed to be present in the national parks in high numbers due to the consistent nature protection merits.

The data collected over 120 years show a gradual increase in the mouflon population in the Bohemian Lands. The species can be unequivocally considered non-indigenous, and even expansive concerning the dynamics of its population growth.

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