

CONFERENCE PAPER

MONITORING OF AN ORPHANED BOSNIAN MOUNTAIN HORSE FOAL: A ONE-YEAR CASE STUDY

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ABSTRACT

This case report describes a foal of the Bosnian Mountain Horse (*Equus ferus caballus*) type, found in a cachectic and life-threatening condition in Eastern Bosnia, in April 2024. The foal, approximately two months old and orphaned, was adopted by local residents. It was fed a diet based on diluted cow's milk, forage and concentrates, supplemented with minerals and vitamins. The foal was monitored until it reached one year of age. Morphometric measurements included front cannon girth, thorax girth, body length, height at withers, and height at croup. Despite non-standard feeding and care conditions, the foal showed progressive recovery and development comparable to healthy foals of the same breed.

Keywords: Bosnian mountain horse, orphan foal, morphometry

INTRODUCTION

The Bosnian Mountain Horse (also known as the Balkan Pony or Bosnian Pony) is considered the oldest and most versatile indigenous horse breed in the Balkans. It was primarily developed in Bosnia and Herzegovina and later spread throughout the region, particularly during the era of the former Yugoslavia (Bunevski et al., 2019; Mesaric et al., 2015; Trajkovski and Bunevski, 2007). The Bosnian mountain horse is a warmblooded oriental indigenous breed, a product of the hot karst and strict selection. It belongs to the group of small horses, it is very hardy, resistant and modest in its diet. It is irreplaceable on rocky and hilly terrain, and its gait is very safe. It is mostly brown, reddish and black in color. It serves as a pack horse that, under a load of 100 to 120 kg, reaches a speed of 5-6 km per hour on a flat track, and can travel up to 40 km during the day. It is also used for towing and riding (Srebočan and Gomerčić, 1996).

This breed has faced a drastic population decline, particularly during and after the 1992–1995 war in Bosnia and Herzegovina, when many animals were abandoned. Presently, populations survive in isolated locations such as the Kruzi plateau at the foot of Mount Cincar (Katica et al., 2010).

Orphaned foals represent a management challenge in equine rearing, as the absence of maternal imprinting and nutrition can impact both welfare and growth (Tateo et al., 2009). There is limited literature on orphan foal rearing in the Bosnian Mountain Horse population, and this case study seeks to contribute data on growth under alternative nutritional and environmental conditions.

CASE PRESENTATION

In early spring, an orphan male foal of Bosnian Mountain Horse breed was found in cachectic condition on Gosina mountain, near the village of Hrenovica (Pale municipality, Bosnia and Herzegovina). The foal was estimated to be between 1–2 months of age and was unable to stand or walk independently (Figure 1). It was taken in by local residents and initially treated with vitamin and mineral supplementation provided by a local veterinarian.

Due to the unavailability of mare's milk, a surrogate mare, or commercial milk replacer, the foal was fed with cow's milk diluted 1:1 with boiled and cooled water. In addition, it had free access to fresh water, hay, and a mash made of bran and oats soaked in water. The foal was kept in a fenced pasture with a simple shelter, providing protection from weather conditions.

Despite the challenges associated with early orphaning, the foal adapted well to the new



Figure 1 Initial condition of the foal at time of rescue and local rescuer (April 2024)

environment. No major health issues (e.g., diarrhea, colic, respiratory infections) were observed throughout the monitoring period.

Morphometric measurements were conducted monthly from the 2nd to the 12th month of age using a standard flexible measuring tape. All measurements were conducted by the same trained individual to ensure consistency. The following body dimensions were recorded: height at withers, height at croup, body length, chest girth and cannon bone circumference (front limb).

Table 1 Monthly morphometric values of the Bosnian Mountain Horse foal from 2 to 12 months of age

Specification (cm)	Age in month										
	2	3	4	5	6	7	8	9	10	11	12
Height at withers	89	95	101	106	108	115	120	123	129	129	130
Height at croup	90	91	92	110	111	120	123	126	130	131	131,5
Body length	85	86	87	98	106	115	126	128	129.5	130	131
Thorax girth	90	91	92	106	125	128	135	137	139	139	140
Cannon girth	14	15	16	18	20	22	23	23.5	24	24	25

Ethics committee approval

This study was approved by the Ethics Committee of the Veterinary Faculty of the University of Sarajevo, who gave a positive opinion under number: 07-03-583-2/25, from 19.06.2025.

DISCUSSION AND CONCLUSION

The orphan foal monitored in this study exhibited a consistent and proportional growth pattern throughout the observation period, aligning with findings reported by Bochiş and Țăpălagă (2012), who described normal growth trajectories in orphaned warmblood foals reared on artificial feeding. The morphometric data collected in this study indicate a developmental progression comparable to their findings, with notable increases in withers and croup height, chest girth, and cannon bone circumference.

Unlike the findings of Bochiş and Țăpălagă (2012) where peak growth occurred in the fourth month and gradually declined afterward, our foal exhibited more rapid gains between the fifth and eighth months. This discrepancy may be attributed to different feeding protocols, environmental adaptation, or individual variability. Notably, the foal in the present study showed no signs of developmental disturbances, such as diarrhea or respiratory complications, throughout the observation period, which likely contributed to its uninterrupted growth.

In agreement with the results of Yakan et al. (2012), the values recorded in this study—particularly withers height (130 cm) and croup height (131.5 cm) at twelve months—exceeded several previously reported norms for orphan foals and even surpassed those of some mare-raised foals, including two half-siblings from the same mother (HSM). This may be influenced by sex-related growth tendencies, as multiple studies have shown that colts are generally larger and grow faster than fillies (Hintz et al., 1979; Knight and Tyznik, 1985; Thompson, 1995).

The increase in cannon bone circumference from 14 cm to 25 cm is particularly noteworthy, confirming healthy skeletal development and supporting the observations of Yakan et al. (2012) that adequate nutrition and care can ensure normal skeletal growth in orphan foals.

Overall, the findings of this study reinforce the notion that, with proper management, a balanced diet, and absence of health complications, orphan foals can reach morphometric values comparable to-or even exceeding-those of mare-reared counterparts.

This case aligns with reports emphasizing the resilience of the Bosnian Mountain Horse in harsh conditions and minimal management (Katica et al., 2010; Srebočan and Gomerčić, 1996). The absence of health complications also underscores the importance of a hygienic and stable environment

in managing orphan foals.

Despite lacking maternal support and being fed a non-standard diet, the foal demonstrated a healthy and progressive growth trajectory. Although cow's milk does not provide the immunological benefits of mare's colostrum, early supplementation with vitamins and minerals may have contributed to initial immune support and overall development. Furthermore, the breed's genetic adaptation to karst terrain and selective breeding at the Goražde stud may explain its ability to thrive under suboptimal conditions (Bunevski et al., 2019).

In conclusion, this case highlights the potential of the Bosnian Mountain Horse to achieve satisfactory growth outcomes despite orphanhood and suboptimal feeding protocols. These findings reinforce the value of conserving and studying this genetically and culturally significant breed. Future research should explore long-term health and performance outcomes and compare growth profiles with foals raised under standard conditions.

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CONFLICT OF INTERESTS

The authors have no conflict of interest to declare.

CONTRIBUTIONS

Conception – MK, NKD; Design – MK, NKD; Supervision – MK, NKD; Materials – MK, NKD, A.A.; Data Collection and Processing – NKD; Interpretation – NKD, MK, AA.; Literature Review – NKD, MK; Writing – NKD; MK; Critical Review – MK, NKD

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PRAĆENJE SIROČETA BOSANSKOG BRDSKOG KONJA: JEDNOGODIŠNJA STUDIJA SLUČAJA

SAŽETAK

Ovaj prikaz slučaja opisuje ždrijebe bosanskog brdskog konja (*Equus ferus caballus*), pronađeno u kahektičnom i po život opasnom stanju u istočnoj Bosni, u aprilu 2024. godine. Ždrijebe, staro otprilike dva mjeseca i bez majke, usvojili su lokalni stanovnici. Hranjeno je razrijeđenim kravljim mlijekom, kabastom hranom i koncentratima, uz dodatke minerala i vitamina. Praćeno je do navršene jedne godine starosti. Morfometrijska mjerenja uključivala su obim prednje cjevanice, obim grudnog koša, dužinu tijela, visinu u grebenu i visinu u sapi. Uprkos nestandardnim uslovima ishrane i njege, ždrijebe je pokazalo postepeni oporavak i razvoj uporediv sa zdravim ždrjebadi iste pasmine.

Ključne riječi: Bosanski brdski konj, morfometrija, siroče, ždrijebe