

EXTERIOR DESCRIPTION OF TWO LOCAL CROATIAN DONKEY BREEDS

Littoral-Dinaric donkey



Figure S1. Littoral-Dinaric donkey (*nine-year-old female*)

The *Littoral-Dinaric donkey* has a smaller body frame, adopted to the dry karst environment. The coat colour is mostly ashy grey, and to a lesser extent dark brown. The head, tail and legs are a shade darker in lower part than the body. The dark stripe along the shoulder blades and back (cross) is clearly expressed. The mane is strong, hairy, with dark top rim, and rarely completely black. The head is medium sized, with a flat to mildly concave nose profile, short ears with darker outer rim and white hair in the ear and around the eyes. The neck is of medium length and muscular. The withers are long but weakly expressed, the back is straight to mildly concave. The croup is steep, weakly muscled with protruding sacral part. The chest is shallow and narrow. The legs are firm with medium strong bones.

Istrian donkey



Figure S2. Istrian donkey (*seven-year-old male*)

The *Istrian donkey* has a firm posture and a large square frame. The coat colour is mainly black, rarely dark brown. Cross and zebras on the legs are not visible. The withers are black, expressive and hairy. The head is large, with a straight to slightly concave nose profile and long ears with white hairs on the inside. The neck is wide, muscular and well positioned. The withers are long and expressive, the topline usually slightly concave. The croup is slightly steep, moderately muscular with a pronounced sacral part. The chest is of medium depth, but narrow. The legs are firm with strong bones. The Istrian donkey is very adaptable, strong and compact, tolerates modest housing and feeding conditions and is an excellent working animal.

Table S1. Basic body measurements Littoral-Dinaric and Istrian donkeys (Ivankovic *et al.*, 2000.)

Littoral-Dinaric donkey	Body measurements	Istrian donkey
96,9 \pm 5,09	Wither height (cm)	124,1 \pm 4,32
99,8 \pm 5,33	Croup height (cm)	128,3 \pm 4,82
102,6 \pm 6,65	Body length (cm)	131,3 \pm 5,62
42,0 \pm 3,04	Chest depth (cm)	54,8 \pm 4,15
23,1 \pm 2,62	Chest width (cm)	29,8 \pm 3,84
32,5 \pm 2,84	Croup length (cm)	41,0 \pm 2,74
31,6 \pm 3,07	Croup width (cm)	41,4 \pm 2,50
112,7 \pm 6,82	Chest circumference (cm)	144,0 \pm 7,07
12,8 \pm 1,11	Tibia circumference (cm)	16,3 \pm 1,33
93,3 \pm 20,36	Body weight (kg)	218,5 \pm 29,35

BREEDING AREA OF TWO LOCAL CROATIAN DONKEY BREEDS

Littoral-Dinaric donkey

The main breeding area of the Littoral-Dinaric donkey is the area of the Dinaric Karst and the central and southern Adriatic coast (Dalmatia). A smaller part of the population is scattered over the continental part of Croatia (*with the exception of the Istrian region*). There is a trend of population expansion, but crossbreeding with other donkey breeds is not allowed (*breeding in pure blood allowed*).

Istrian donkey

The breeding area of the Istrian donkeys is the area of the Istrian peninsula and the Kvarner archipelago. A smaller number (6%) of Istrian donkeys is also distributed in the continental part of Croatia.

The population has an expansion trend with the breeding practice of avoiding crosses with individuals of other donkey breeds (*breeding in pure blood allowed*).

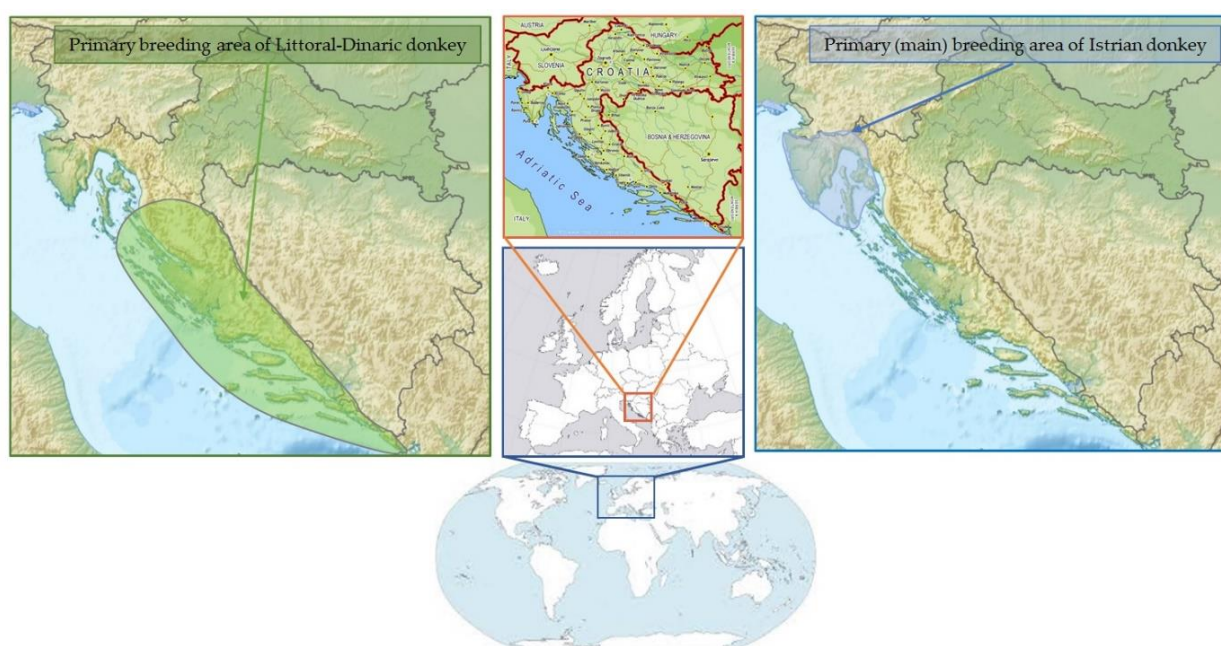


Figure S3. Primary (main) breeding area of the Littoral-Dinaric donkey and the Istrian donkey

ECONOMIC USE OF TWO LOCAL CROATIAN DONKEY BREEDS

Donkey milk

Donkey milk is traditionally used in Croatia for feeding infants and treating some diseases. In fact, in the past centuries, when there were no pharmaceuticals and the population was looking for a 'cure' in their environment, a particularly positive effect of donkey milk was noted in the treatment of bronchitis, especially whooping cough (traditional name is 'donkey cough'). In the last decade, more and more donkey farms have taken up the production, processing and sale of donkey milk, mostly as a complementary economic activity. It is estimated that there are about 150 donkey farms producing donkey milk in Croatia. The average prices for donkey milk are between 30 and 50 euros/kg.

The technology of milk production of donkeys practices the beginning of milking in the third month of lactation and then regular milking once or twice a day. The average milk production of Littoral-Dinaric jenny is 0.2 to 0.5 dL/milking and the average milk production of Istrian jenny is 0.4 to 0.7 dL/milking. Donkey milk is usually cooled after milking and quickly frozen (in bottles of 1 to 2 dL) and sold at a donkey farm. Fresh milk is rarely sold directly. Some of the milk is processed into cosmetic products or milk powder.



Figure S4. The farm of the Littoral-Dinaric donkeys in Dalmatia for the milk production



Figure S5. Donkey milk in bottle and glass **Figure S6.** Cosmetics on basis of donkey milk



Figure S7. The farm of Istrian donkeys in Istria for milk production

Donkey meat

Donkey meat in Croatia is traditionally consumed only in Istria, while the population in other parts of the country traditionally does not consumed horse and donkey meat. The majority of the Croatian population is still not inclined to consume equine meat. However, the vitality of the donkey population is also maintained through regular reproduction. Some donkeys are used in a program for the production of meat and meat products and are placed in areas where the population consumes such products. In Istria, an innovative program is being developed for the production of quality dishes and meat products from the Istrian donkey, and this breed is being further strengthened economically through the traditional gastronomic offer of high quality food products.



Figure S8. Donkey meat



Figure S9. Sausage with donkey meat

IMPORTANCE IN TRADITIONAL AND CULTURAL EVENTS

Donkeys are traditionally bred in the Mediterranean part of Croatia and have an added emotional value to the local population. Their presence makes local breeds recognizable and complete rural areas, nurturing the overall diversity of flora and fauna, traditional livestock production systems and lifestyles.



Figure S10. The emotional value of the donkey in the experience of the elderly population



Figure S11. Children show interest in donkeys

Promoting donkey breeds through breeding and educational exhibitions increases the local community's awareness of the value of local breeds as genetic, economic, and cultural heritage. Local breeds of donkeys evoke emotions, especially in the older population (due to the experience of emotions from youth) and in children, in whom awareness of the need to preserve diversity (including domestic breeds) is developed in this way. Activities such as donkey races are more dynamic events that also attract the attention of the local and wider community and further promote breeds and breeders.



Figure S12. Traditional donkey races in Dalmatia



Figure S13. Traditional donkey races in Istria

ECO-SERVICE FUNCTION IN ECOSYSTEMS PRESERVATION

Locally adapted donkey breeds have an important function in preserving the diversity of habitats, especially in preventing succession of pastures that disrupts (reduces) plant and animal species diversity. Although donkeys effectively conserve habitats, it is desirable to combine several domestic animal species (cattle, sheep, donkeys, etc.) in grazing to avoid selectivity (favouring) certain plant communities and disrupting their relationships.



Figure S14. Istrian donkeys on pasture



Figure S15. Donkey in ecosystem function

In addition to the positive impact on the diversity of habitat ecosystems, the ecoservice function of donkeys in Mediterranean areas is important for the control of fires, which are more dangerous in the summer months.

Reference

1. Ivanković, A.; Caput, P.; Mioč, B.; Pavić V. The Phenotype Features of Donkeys in Croatia. *Agric. Conspec. Sci.* 2000, 65, 99-105.