The Importance of indigenous domestic animal breeds for the conservation karst polje grassland habitats

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Photo by R. Ozimec
Grassland habitats developed mainly during Cretaceous period, together with many grass taxa (Poaceae), grass eating dinosaurs, but also some accompanied organisms (necrophiles, coprophiles, insectivores ...) changed by grass-eating Mammals.
After the Neolithic revolution in Europe, most wild large herbivores became progressively extinct following to the invention and expansion of agriculture and the breeding of domestic animals.
Their ecological functions were taken over by domestic animals, predominantly by ruminants (Ruminantia), like cattle, sheep and goats, and odd-toed ungulates (Perissodactyla), horses and donkeys.
Developed Agrobiodiversity (agricultural biodiversity), as part of general biodiversity, in closely meaning comprise of: traditional and modern cultivars, but in wider meaning also of wild species: used organisms; relatives of cultivars; taxa from agro ecosystems: directly influenced on crop production and related biodiversity.
Indigenous domestic breeds selected by humans in the Dinaric Karst zone are genetically closely related to their wild ancestors, because the breeding selection was determined by harsh environmental conditions and the relative isolation of the area. Their phenotypes were heavily influenced by extreme external factors, in particular the karst relief and climate.
During millennia grassland habitats in the Dinaric karst poljes were kept *almost naturally* through millions of specimens of *almost wild* breeds in a traditional nomadic pasture system: horizontal and vertical transhumance.

Photo by R. Ozimec
At the end of the 18th century (1781) only in Dalmatia more than 1,2 million of cattle, mostly sheep and goats, existed, in comparison to only 250.000 inhabitants. According to their sheer numbers and the lack of any other grazing animals, indigenous domestic breeds are crucial elements of grassland habitats which play an important ecological role for the biodiversity of Dinaric Karst.
Developed Agrobiodiversity (agricultural biodiversity), as part of general biodiversity, in closely meaning comprise of: traditional and modern cultivars, but in wider meaning also of wild species: used organisms; relatives of cultivars; taxa from agro ecosystems: directly influenced on crop production and related biodiversity.
Cattle are important for the propagation of plant seeds (zoochory), important prey for large predators, like the wolf (*Canis lupus*), the food base for scavengers like Griffon Vultures (*Gyps fulvus*) and necrotrophic insects, same as many other ecological groups of organisms directly or indirectly associated with traditional breeds: parasites, pests (*Insecta, Arachnida*), coprophiles (dung beetles, fungi), saprobionts (fungi), insectivores (many birds, bats, shrews and other *Insectivora*) and others.
During 20th Century (after 2nd World War) due to industrialisation of agriculture, traditional breeding systems crashed and the numbers of cattle decreased heavily, caused decrease of agrobiodiversity, separation of agriculture’s from natural ecosystems, degradation and disappearing of some ecosystems, habitats and taxa, but with some irreversible social consequences: depopulation, the abandonment of villages and agriculture in the karst poljes.
DINARIC KARST: Many exo- and endogenous karstic phenomena: polje (karstic field), uvala, ponikva, škrapa (karren), ponornica (lost river), Karstic river valley, Karstic springs, estavels, caves, pits, caverns.

Geopolitically Dinarids Belong to: Italia, Slovenia, Croatia, Bosnia & Herzegovina, Monte Negro, Serbia, Kosovo, Albania.

Three biogeographic regions: North, Central, South.
An analysis of the situation in the area of Biokovo Nature Park (Croatia) shows that after 80 years, with nomadic livestock keeping completely abandoned, only 4% of previous numbers of cattle remain.
<table>
<thead>
<tr>
<th>Taxonomical group</th>
<th>No. of taxa (literature)</th>
<th>No. Of taxa (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCOMYCOTA</td>
<td>-</td>
<td>25</td>
</tr>
<tr>
<td>BASIDIOMYCOTA</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>ZYGOMYCOTA</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>DIPTERA</td>
<td>-</td>
<td>1 (min.)</td>
</tr>
<tr>
<td>COLEOPTERA, SCARABAEIDAE</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>COLEOPTERA, GEOTRUPIDAE</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>COLEOPTERA, APHODIIDAE</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>COLEOPTERA, HYDROPHILIDAE</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>COLEOPTERA, NITIDULIIDAE</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 + ?</td>
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</table>

**Predators**

<table>
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<tr>
<th></th>
<th>No. of taxa (lit.)</th>
<th>No. of taxa (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLEOPTERA, HISTERIDAE</td>
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<td>4</td>
</tr>
<tr>
<td>COLEOPTERA, STAPHYLINIDAE</td>
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<td>7</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>11</td>
</tr>
</tbody>
</table>

**Parasites**

<table>
<thead>
<tr>
<th></th>
<th>No. of taxa (lit.)</th>
<th>No. of taxa (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACARI, MACROCHAELIDAE</td>
<td>-</td>
<td>min. 1</td>
</tr>
<tr>
<td>ACARI, PARASITIDAE</td>
<td>-</td>
<td>min. 1</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>min. 2</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>17</td>
<td>70 (73) + ?</td>
</tr>
</tbody>
</table>
3 strictly protected fungal species listed in the Red List of Croatian Fungi and treated in the Red Book of Croatian Fungi (Tkalčec et al. 2008) are found: *Poronia punctata*, *Stropharia dorsipora* and *S. semiglobata*. 
In total, 25 taxa of Coprophagous coleopterans belong to the five families are detected: Aphodiidae (8), Geotrupidae (2), Hydrophilidae (2), Nitidulidae (1) and Scarabaeidae (12), with most abundant taxa belong to genus *Aphodius* and *Onthophagus*.
cattle decreased heavily

Consequently,

grassland habitats in the Dinaric region are progressively reforested and

loose its biodiversity

Photo by R. Ozimec
Indigenous breeds are the most important natural resources for the maintenance of the cultural landscape in the Dinarids, because they represent the optimal ecological model for environmental conservation which was created over thousands of years through virtually natural selection.
Agricultural landscapes are amazing in Dinarides: Primoštenski vinogradi, starogradski agar, lokva Rajčica, krčki murgari
The most important advantages of using indigenous breeds in environmental management are:
the most economic way for the maintaining of the landscape,
prevention of succession,
reducing the threat of fire,
maintaining habitat diversity,
maintaining agro-biodiversity (breeds of domestic animals,
species diversity of accompanying (fungi, flora and fauna),
productions of basic foods,
preservation of traditional knowledge and skills,
the maintaining of architectural, cultural
and sociological traditions

Photo by R. Ozimec
Urgent interdisciplinary action is necessary to preserve indigenous breeds of domestic animals, to stop a further decrease of the numbers of cattle, and to create a breeding centre, as a basis for the propagation of cattle breeding which, finally, will support and increase the numbers of breeders who use traditional pasture cattle breeding systems.
Hrvatski ovčar

Ima pasmina

Hrvatski ovčar / Caucasian Sheepdog

Ostala poznata imana

Mali ovčar, hrvatski, grulis

Autor/teksta

Ljiljana Bednač, Jana Jenmíd

Kategorija ugroženosti: R/O / EU / NKU

Nije ugrožena / ugrožena / nije ugrožena

IUCN: Ređina – VU / D1C2a

Nastanak pasmina

Prvi počeci teorije o nastanku hrvatskog ovčara. Prema međunarodnom preiskivanju, ovčar je ta vrsta pasja, na najvišoj cijeni u svijetu, u različitim područjima Europom i Azijom. U dubini neznačajnosti pasja se koristi za ručne poslove, a u moderno doba, posebno u industrijskoj industriji, ovčar se koristi za ochranu ovine i stakla.

Kulturoplavna vrednost

U svijetu, pas je deo razvoja XX. stoljeća, gde je postao jedan od glavnih zvaničnih zanimanja. Pas je poznat po svojoj inteligenciji i sposobnosti na očuvanje. Ovčar je koristan za ručne poslove, a u industriji je koristan za ochranu ovine i stakla.

Ekologija

Kao pasma, hrvatski ovčar može se koristiti i za ručne poslove. Pas je poznat po svojoj inteligenciji i sposobnosti na očuvanje. Ovčar je koristan za ručne poslove, a u industriji je koristan za ochranu ovine i stakla.

Standard pasmina

Ovčar je poznat po svojoj inteligenciji i sposobnosti na očuvanje. Pas je poznat po svojoj inteligenciji i sposobnosti na očuvanje. Ovčar je koristan za ručne poslove, a u industriji je koristan za ochranu ovine i stakla.
Thank you for attention!

Photo by R. Ozimec