Diversity Research & Conservation: Agrobiodiversity & Nature in the Dinarik, Balkans; Example for Biokovo Mt.

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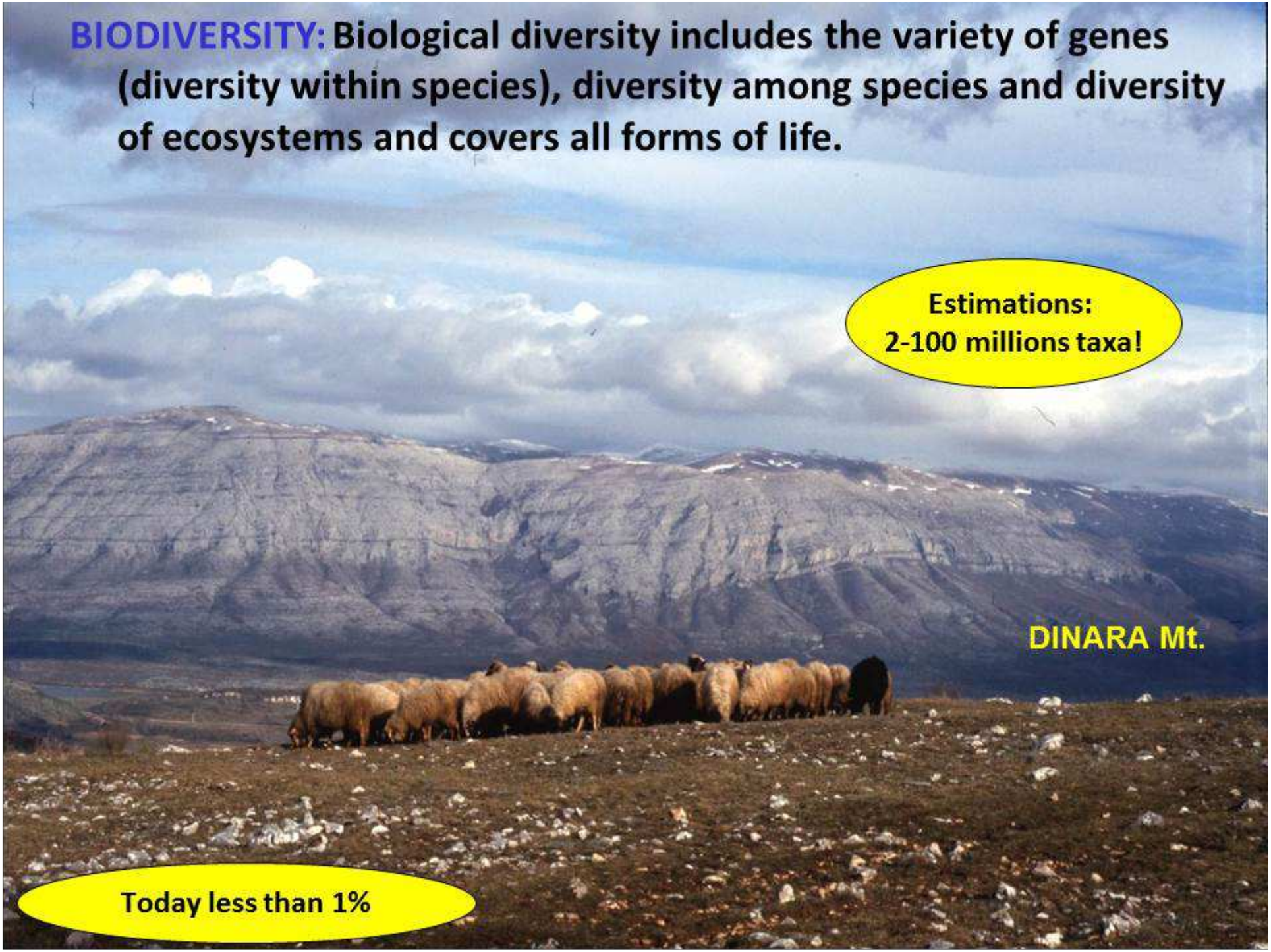
ADIPA - Croatian Society for Natural History Diversity Research & Conservation

8. Seminar on Agrobiodiversity "Agrobiodiversity and nature Conservation"

Krapje, Lonjsko polje; 18. September 2014.


BIODIVERSITY: Biological diversity includes the variety of genes (diversity within species), diversity among species and diversity of ecosystems and covers all forms of life.
Estimations:
2-100 millions taxa!
DINARA Mt.
Today less than 1%

Imperium	Kingdom	Members
Prokaryota	Viruses	
	Bacteria	
Eukaryota	Archaea	trihozoa, metamonada, trihomonada , mikrosporida
	Protista	Flagelata, Ciliata, Amoebozoa, Choanozoa, Excavata
	Chromista	Diatomeae, brown and red algae (Alveolata, Cryptophytes, Heterokonta (stramenopiles), Haptophyta, Rhizaria)
	Plantae	Glaucofiti, red and green algae, higher plants
	Fungi	
	Animalia	

Agrobiodiversity (agricultural biodiversity), is a part of general biodiversity,
but created by humans and with some important differences.

AGROBIODIVERSITY versus BIODIVERSITY:

1. Agrobiodiversity can not survive without active duty of man.
2. Disappearance of agrobiodiversity mean also disappears of cultural heritage, as well as knowledge's.
3. Agrobiodiversity is based on alochtone taxa, and consequently its disappearance creates a great dependence on external genetic resources.
4. In agrobiodiversity, diversity within a species even more important as diversity between species (interspecies diversity even more important as intraspecies diversity)
5. Preservation of agrobiodiversity depends on sustainable use, and conservation through protected areas has no effect.
6. Agrobiodiversity dominates ex-situ storage, in-situ conservation is very rare, and even rarely reintroduction. UNFORTUNATELY!
7. Agrobiodiversity have a more expressive genetic erosion than biodiversity.
8. While biodiversity law protects all transparent, agrobiodiversity systematically placed outside the law with the favoring of industrial varieties and hybrids.

Closely comprise of: traditional and modern cultivars,
Broadly also of wild species: used taxa; relatives of cultivars; taxa of agro ecosystems (directly influenced on crop production) and related biodiversity.

Taxa of agro ecosystems

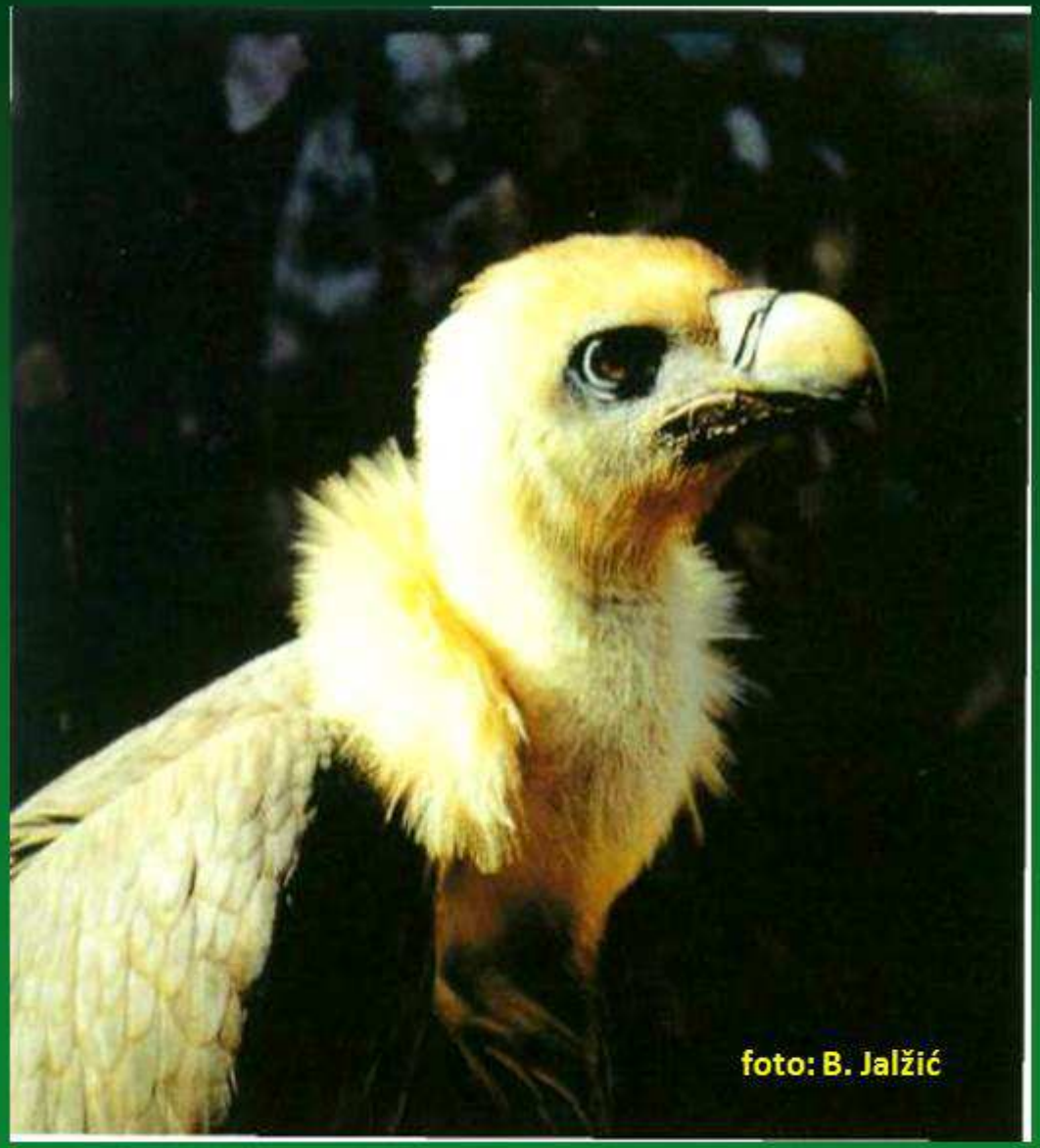
Taxa directly related to the agro ecosystems: soil micro and macrobiota, pollinators, specialized pests, weeds, offenders, parasites, pests, etc..

These species are in the direct impact on agriculture.

There is a possibility that these species are subject to selection and production,

as well as measures to improve agricultural production: bacterial cultures of nitrogen fixing bacteria, bumblebees and solitary bees, various predators of pests, etc..

Related biodiversity

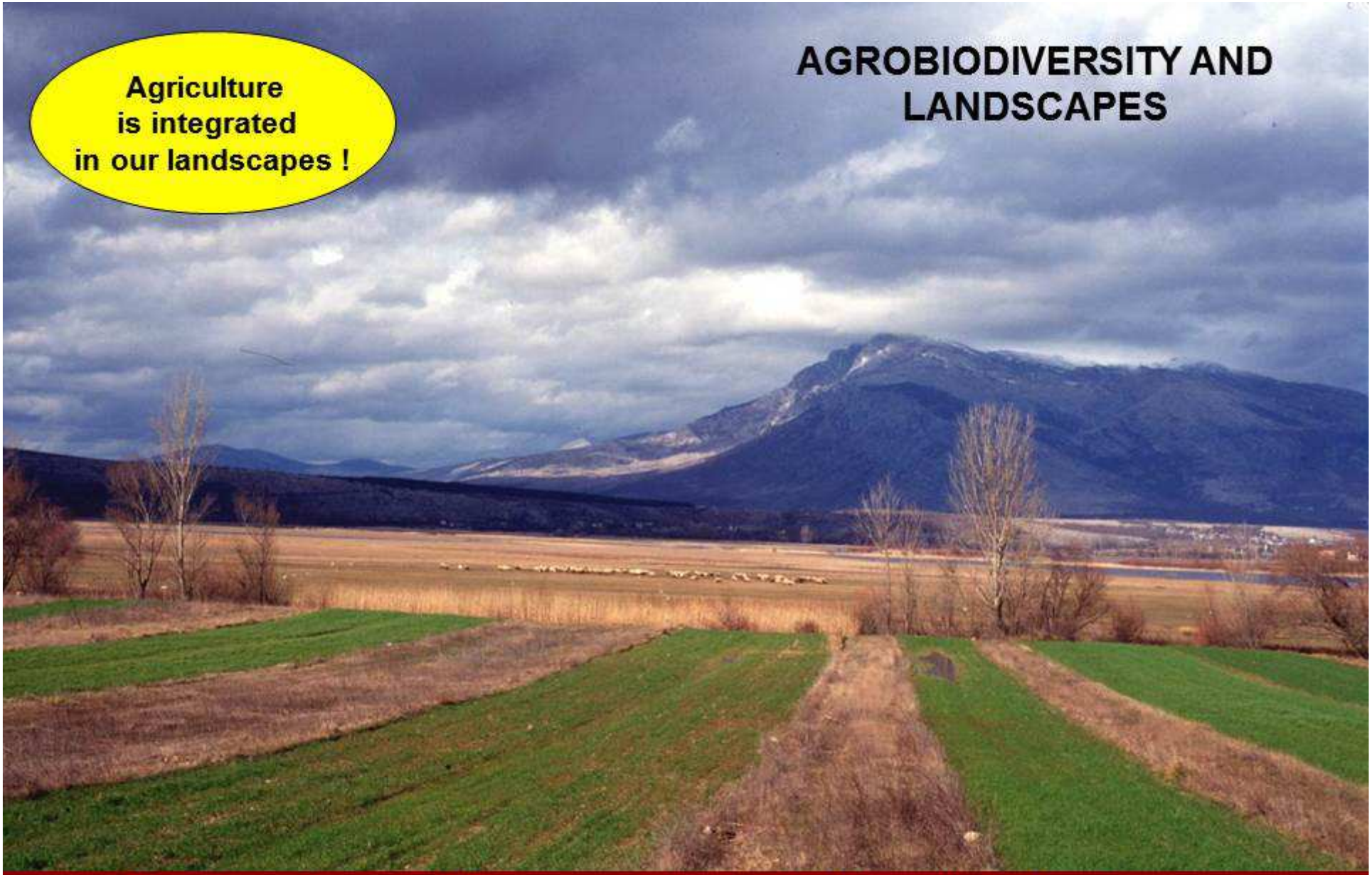


species that primarily supporting ecosystems of grasslands, forest and aquatic ecosystems.

Optionaly related to agro ecosystem: grassland flora and connected fauna, larger predators, parasites, fimicoles, necrophiles, etc..).

In terms of failure or degradation of existing habitats and ecosystems, this species can become directly dependent of agro ecosystems:

freshwater fauna in the Karst,
a wolf in Dalmatia,
vulture on Cres,
fimicoles in the absence of wild ruminants etc.



Developed areas of Europe are dominated by artificial landscapes.
Preserved natural and semi-natural landscapes of the Dinarik
– are of special value for Europe

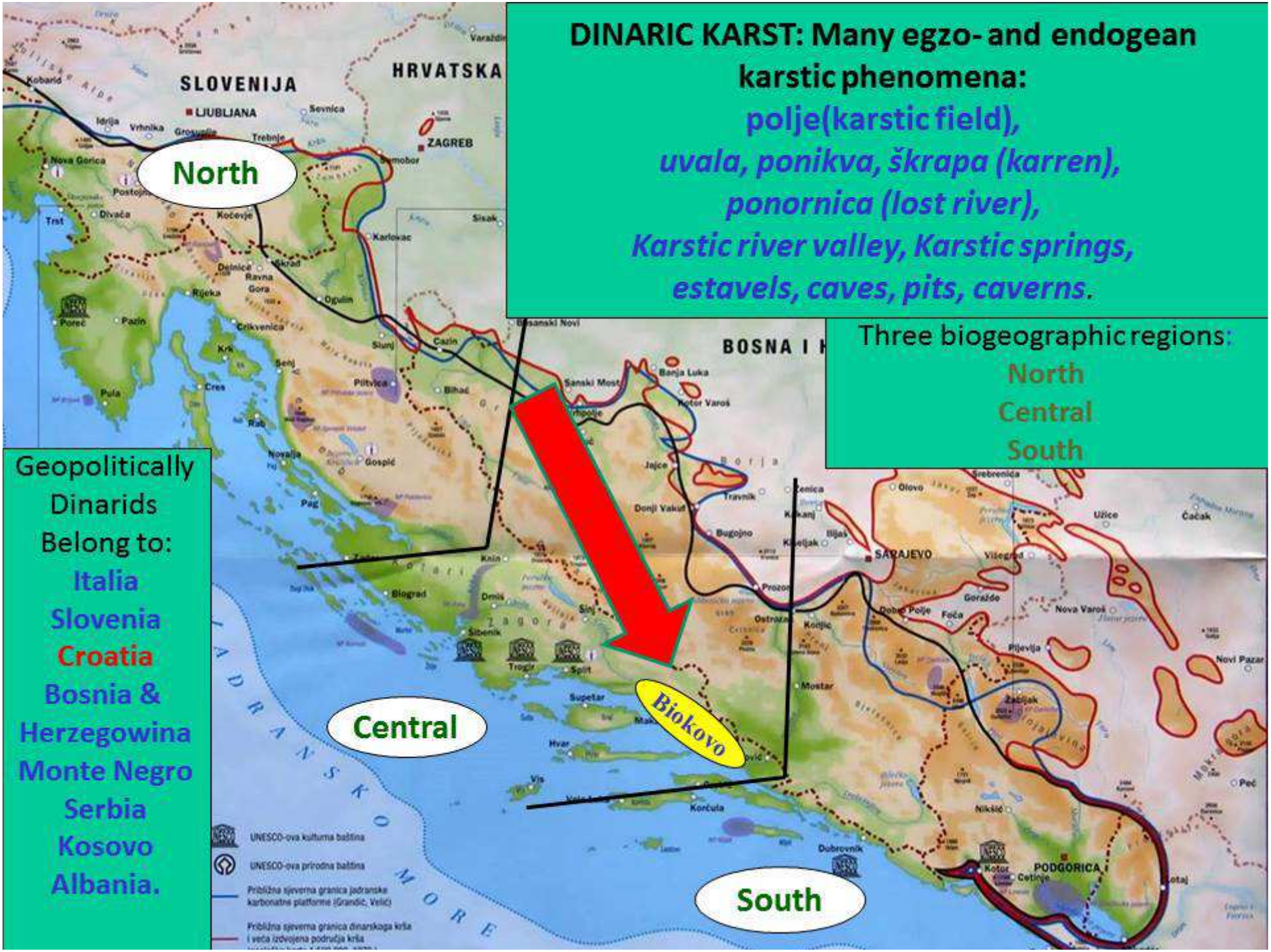
Agricultural landscapes and architecture are amazing in Balkans: drywalls, Primošten vineyards, Ager of Starigrad, Rajčica pool, murgars of Krk island

After 2nd World War, due to industrialization of agriculture, traditional agriculture crashed and caused decrease of agrobiodiversity , agriculture separations from natural ecosystems, degradation and disappearing of some ecosystems, habitats and taxa with some irreversible social consequences:
depopulation, the abandonment of villages and agriculture in the Dinarik

Agriculture is the single largest user of land;

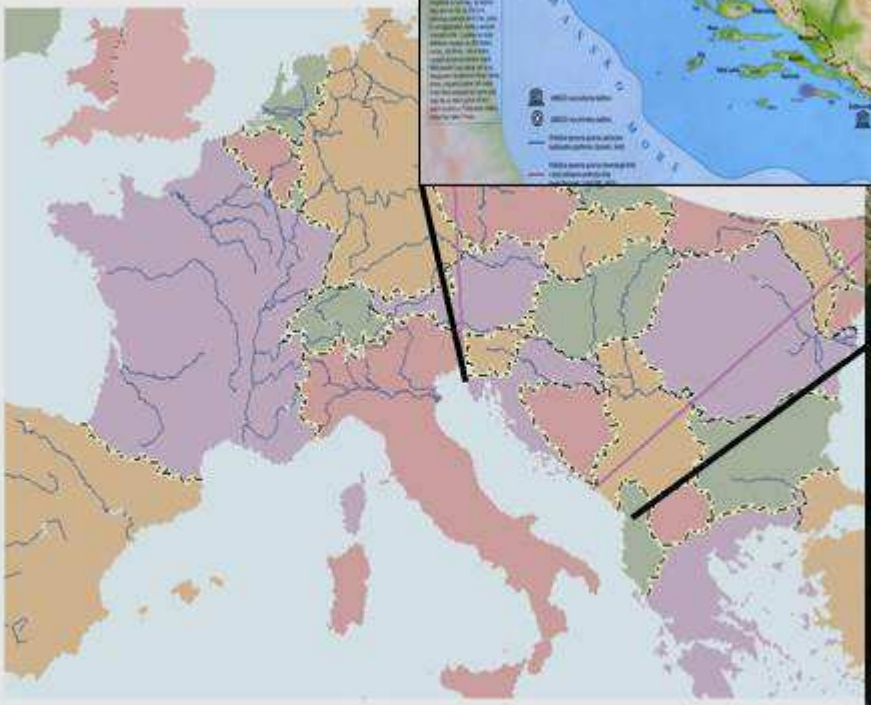
Many habitats, which is attributed to high natural value, in Europe have created the farmers and their traditional agricultural practices;

1/3 of the NATURA 2000 areas in HR are agricultural areas but biodiversity is under significant pressure as a result of the and neglect intensification of production of land.


DINARIC KARST: Many egzo- and endogean karstic phenomena:
polje(karstic field),
uvala, ponikva, škrapa (karren),
ponornica (lost river),
Karstic river valley, Karstic springs,
estavels, caves, pits, caverns.
Three biogeographic regions:
North
Central
South
Geopolitically Dinarids Belong to:
Italia
Slovenia
Croatia
Bosnia & Herzegowina
Monte Negro
Serbia
Kosovo
Albania.
North
Central
South
Biokovo
SLOVENIJA
HRVATSKA
BOSNA I H
LJUBLJANA
ZAGREB
SARAJEVO
PODGORICA
JADRANSKO MORE
UNESCO-ova kulturna baština
UNESCO-ova prirodna baština

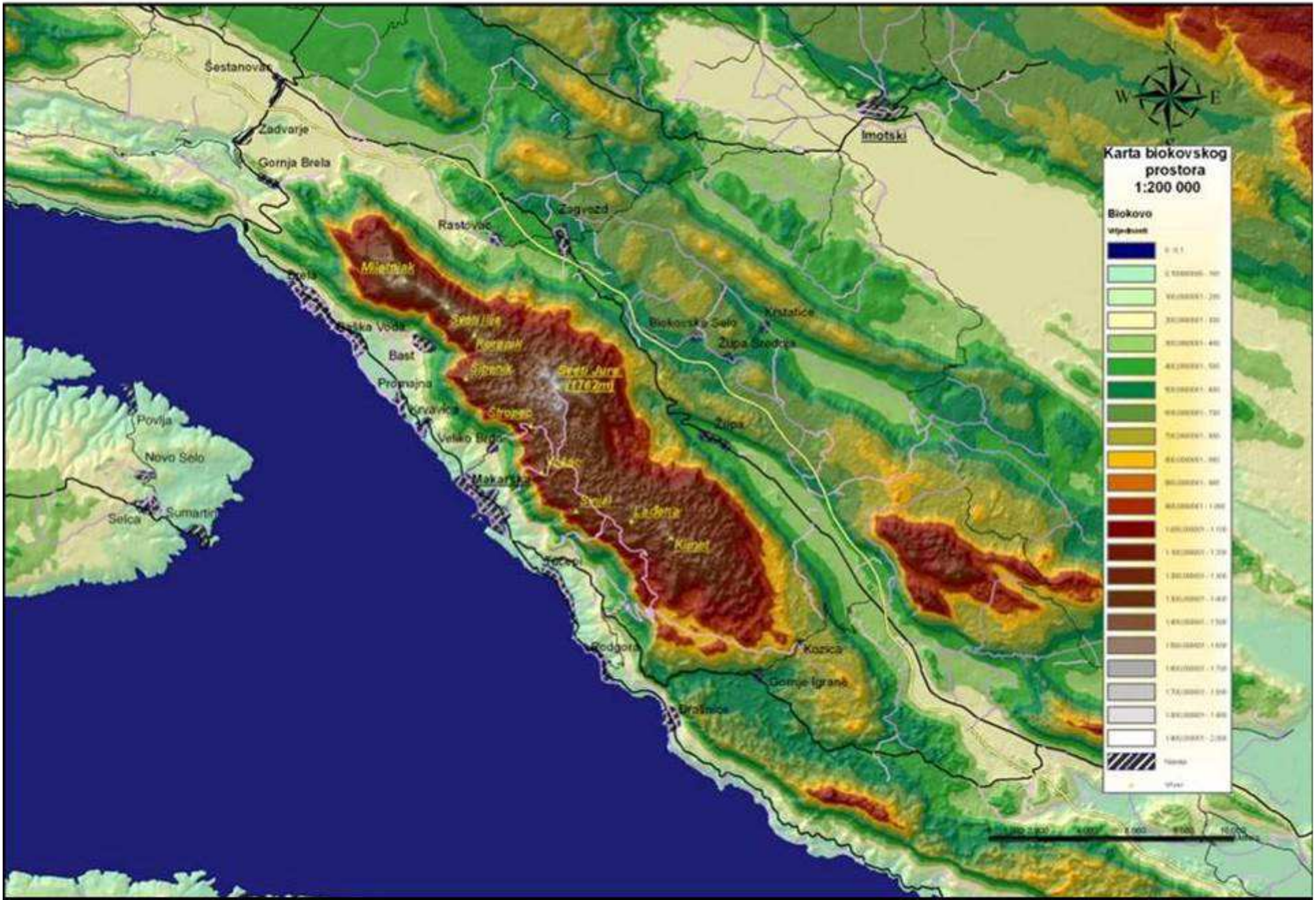
DINARIK, SE EUROPE

Geotektonic unit
700 km long
Alpe - Tauridi
Wide 50-160 km
60 000 km^2
Klasical Karst



Biokovo Mt. (1762 m);
situated in Central Dalmatia (Croatia);
Nature Park since 1981.

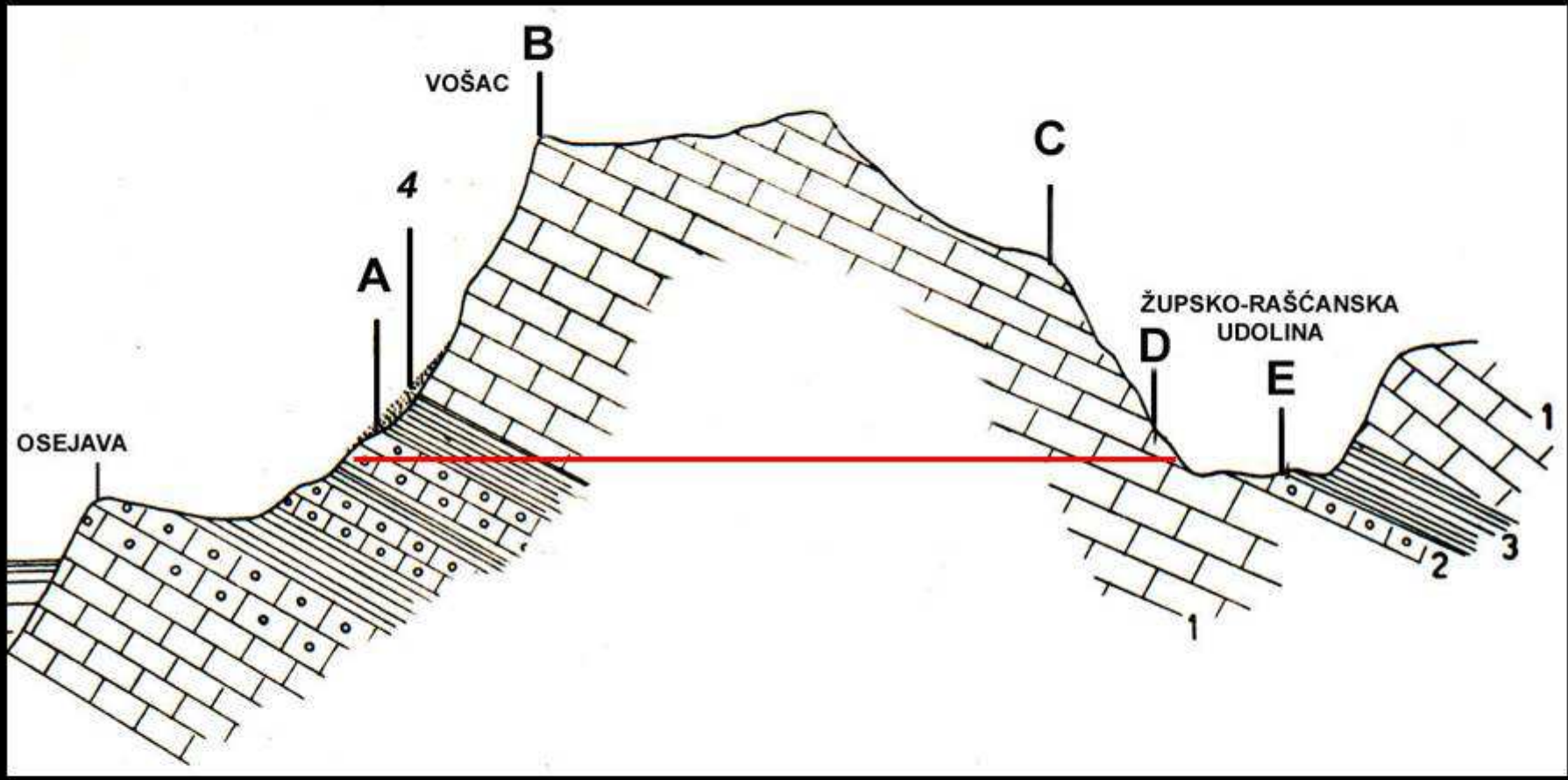
surface 200 km^2 (25 x 8 km)
belongs to the Dinarides.
Dinaric direction NW-SE



Morphometric map of Biokovo Mt. (after Dragušica & Ozimec, 2008)

Profile of Biokovo Mt. SW-NE

(After Roglić, 1935)



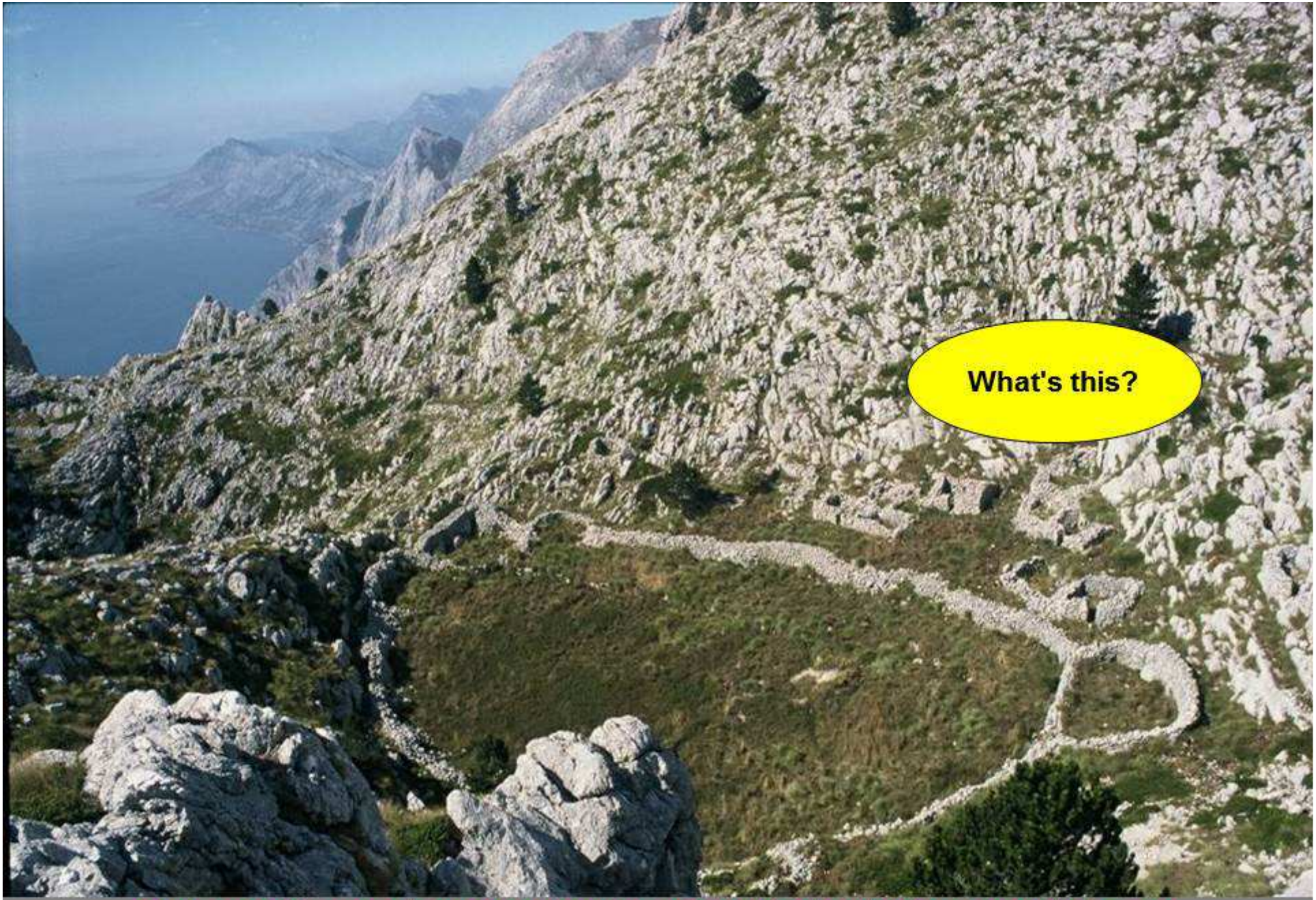
1.– Mezozojski (rudistni) vapnenci
2. – Paleogeni (numulitni) vapnenci
3. – Paleogeni lapori, gline i pješčenjaci
4. – Sipari i breče

do A – Podgorski pojas
A-B – Prigorski pojas
B-C – Gorski pojas
C-D – Pojas zagorske prigore
D-E – Pojas zagorske podgore

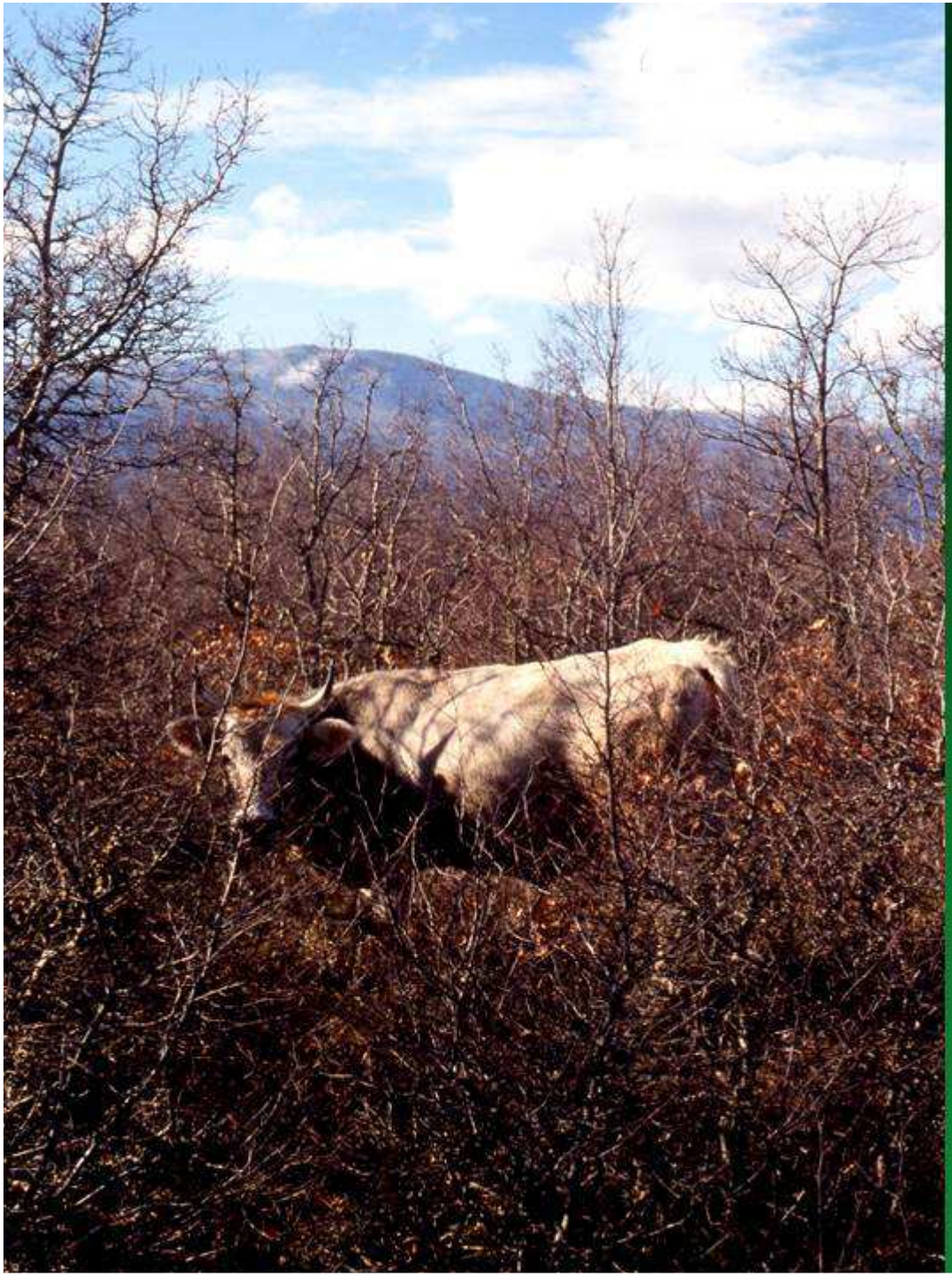
The unique geomorphological units, natural landscape with fascinating karst features and exceptional biodiversity with a large number of endemic species, were crucial to designate the Nature park Biokovo Mt. in 1981.


Biokovo south slope


photo: M. Pavlek



Biokovo Mt. man inhabited and worked the land since Neolithic age
and only in recent times mountaineers, play sports or just visiting.



Basis of agriculture on Biokovo Mt. is livestock:

Biokovo buša

Dalmatian grey cattle

Dalmatian ass

Dalmatian horse

Dalmatian sheep

Dinarik goat

Mediterranean bee

Vines, olives, Mediterranean fruit, on south slopes, and grains, vegetables: cabbage, potato, are the foundation of plant agriculture in Biokovo .

The old olive groves, vineyards, wheat, meadows, pastures, fields, gardens, sinkholes and original varieties and breeds are crucial for the development of the landscape and biodiversity of Biokovo Mt.

COPROPHAGOUS & COPROPHILES

Taxonomical group	No. of taxa (literature)	No. Of taxa (total)
ASCOMYCOTA	-	25
BASIDIOMYCOTA	-	8
ZYGOMYCOTA	-	1
DIPTERA	-	1 (min.)
COLEOPTERA, SCARABAEIDAE	4	12
COLEOPTERA, GEOTRUPIDAE	2	2
COLEOPTERA, APHODIIDAE	8	8
COLEOPTERA, HYDROPHILIDAE	-	2
COLEOPTERA, NITIDULIIDAE	-	1
	14	60 + ?

Predators	No. of taxa (lit.)	No. of taxa (total)
COLEOPTERA, HISTERIDAE	2	4
COLEOPTERA, STAPHYLINIDAE	1	7
	3	11

Parasits	No. of taxa (lit.)	No. of taxa (total)
ACARI, MACROCHAELIDAE	-	min. 1
ACARI, PARASITIDAE	-	min. 1
	-	min. 2
TOTAL:	17	70 (73) + ?

FUNGI
Ascomycota

FOTO: R. OZIMEC

Poronia punctata

FOTO: N. MATOČEC

Pseudombrophila sp.

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*.

ANIMALIA, INSECTA, COLEOPTERA

Coprophagous: Fam. Scarabaeidae

FOTO: R. OZIMEC

Copris lunaris

FOTO: R. OZIMEC

Sisiphus schaefferi L.

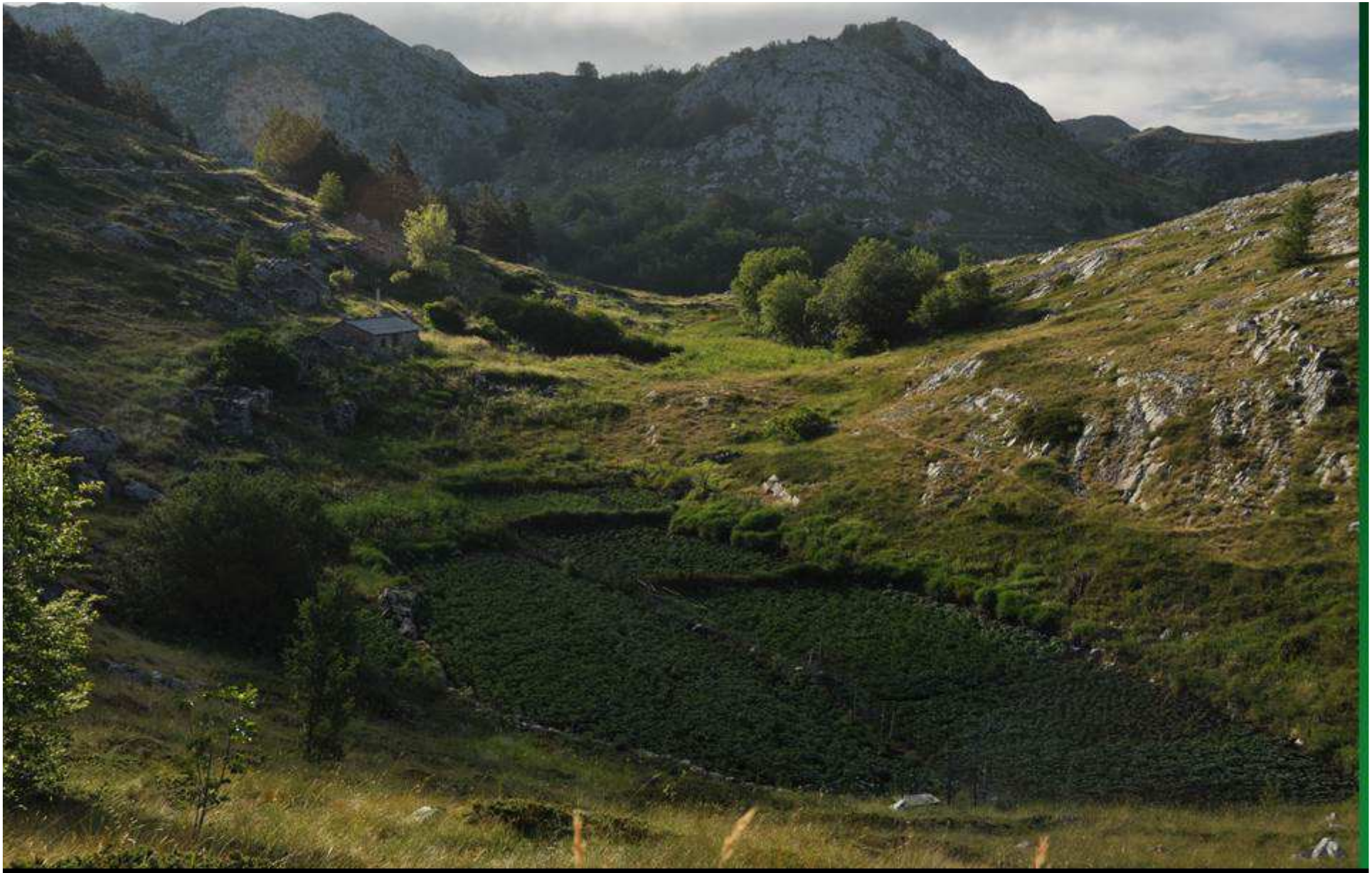
In total, 25 taxa of Coprophagous coleopterans belong to the five families are detected: Aphodiidae (8), Geotrupidae (2), Hydrophilidae (2), Nitidulidae (1) and Scarabaeidae (12), with most abundant taxa belong to genus *Aphodius* and *Onthophagus*.

An analysis of the situation in the area of Biokovo Nature Park (Croatia) shows that in 2011., with nomadic livestock keeping completely abandoned, only 4% of previous numbers of cattle remain.

Plant production with exception of Olive production, are reduced also on a few percent.

Many cultures disappearing from production, but also some biodiversity:

vultures during 70-ties, big owl , velika sova (Bubo bubo), wild pigeons, many insects



During the last 5 years with the lectures began, in collaboration with three NGOs
with whom the Realized revitalize agricultural production
in a dozen sinkholes and several smaller fields.


LUKA LIZATOVIĆ
KRSTATICE
08/214

After more than 60 years again wheat production.
More about old wheat on Biokovo Mt. on: http://www.hpd-sveti-jure.com/

Research: agrobiodiversity, agro habitat and related biodiversity
Motivation: local people, experts
Acts: integrated projects, cooperation with NP Biokovo

Finally, the idea is to establish together a Project
100 treated sinkholes on Biokovo Mt., as a contribution to the
conservation of agro biodiversity & biodiversity,
but associated with the creation of native agricultural products.


Thank you
for attention!