Proposal for the protection and conservation of the terra rossa soil profile from Istria in the category of geological monument of nature

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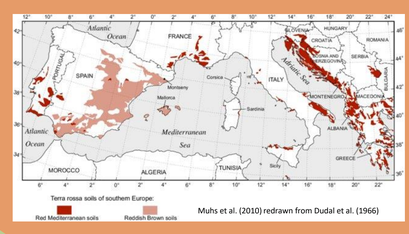
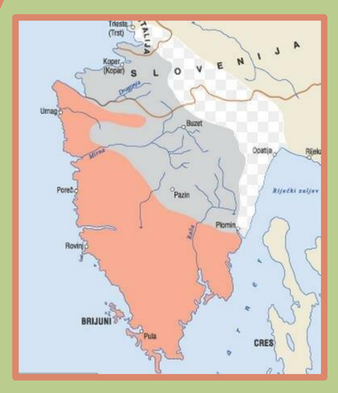
TERRA ROSSA

- ❖ Generic term for red soil formed on carbonate rocks in humid climate
- ❖ Cambisols, Luvisols, Nitisols, Leptosols, Lixisols
- ❖ Relict soil, polygenetic soil, palaeosol, lithified palaeosol, pedosedimentary complex,soil sediment sediment….
- ❖ Valuable archive of information that can be used to understand present and past soil formation processes related to climate variability and landscape dynamics



Soils and paleosols are essential component of geodiversity

embodying the various geological processes, formations and materials that contribute to the overall richness and complexity of the Earth's landscapes



WHERE?

- ❖ Peninsula Istria in Croatia (northwestern part of the Adriatic Carbonate Platform)
- ❖ SW Istrian planation surface – called „Red Istria”
- ❖ wineyard of Coronica winery

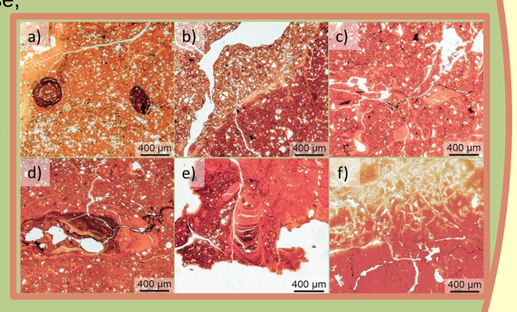
Koreniki terra rossa soil profile

- ❖ Soil profile thickness: 3 m
- ❖ Bedrock: lower Eocene limestone
- ❖ 8 non-calcareous soil horizons
- ❖ Soil texture: clay (increasing with depth)
- ❖ Soil mineralogy: phyllosilicates (kaolinite, muscovite/illite, chlorite and paragonite), quartz, haematite, plagioclase, K-feldspar, and anatase
- ❖ Soil geochemistry: low CEC and pH
- ❖ Soil processes: kaolinization and Fe-oxide formation
- ❖ Sedimentation processes: several signs of colluviation and polygenesis (at least 2 major erosion and sedimentation cycles involved
- ❖ Pedorelics – colluvial and aeolian contribution of allochtonous soil material

See more in: Durn et al. (2023): A tropical soil (Lixisol) identified in the northernmost part of the Mediterranean (Istria, Croatia).- Catena 228

WRB classification system:

Rhodic Lixisol – unique finding!



Soils have not yet received adequate recognition as Croatian geoheritage

“Gorjanović loess section” – cca 30 m high loess–palaeosol sequence exposed along the Danube in Vukovar is only geological monument partly related to soil.

Geosite protection procedure

- ❖ **Request** (issued by Public Institution Natura Histrica, Faculty of Mining, Geology and Petroleum Engineering, Croatian Geological Society)
- ❖ **Positive opinion** (Istrian County, Ministry of Economy and Sustainable Development (Nature Protection Directorate)
- ❖ **Proposal of the proclamation act** (Istrian County Assembly) based on:
  - **statement** (on the funds provided for the implementation and the management of the protected area)
  - **expert background** (values and characteristics of the area; management)
  - **geodetic reference frame**
- ❖ **Public consultation (**public inspection and public presentation)
- ❖ **Proclamation act** (Istrian County)

STRENGHTS	WEAKNESES
• the first classification of terra rossa soil as Rhodic Lixisol • evidence of climate change (tropical soil found in today's temperate humid climate) • terroir promotion (the land is used by a renowned Istrian winemaker) • visual appeal of the landscape	• limited availability (private property) • the need to open a profile in the form of a pedological pit (permits and investments required)
OPPORTUNITIES	**THREATS**
• organization of educational programs (field classes, field workshops, professional excursions) • additional scientific research (the construction of a pedological pit offers opportunities for further geological, pedological, environmental and agricultural research, monitoring and experiments) • the organization of tourist tours that promote the natural and cultural heritage of the region and sustainable tourism focusing on local geology and pedology, culture, history and the wine production process with an emphasis on the importance of terroir	• legal issues - permits for the construction of a pedological pit, declaration of a locality on a private parcel • technical challenges in the construction of a pedological pit • maintenance of the pedological pit

WIANLab

University of Zagreb FACULTY OF MINING GEOLOGY AND PETROLEUM ENGINEERING

HRZZ Croatian Science Foundation

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