

Sustainable development in the Hateg Country Dinosaurs Geopark

GEO 1 Group

March 2014



Introduction

Conservation of geological – ecological – cultural heritage



Worldwide: Global Geoparks Network



In Europe: European Geoparks Network



In Romania: Hateg Country Dinosaurs Geopark

Prerequisite for conservation: **Sustainable development**

Three aspects:

- ***Geological/ecological***: Geological/biological heritage
- ***Economic***: Eco-agriculture, Geotourism/Ecotourism
- ***Socio-cultural***: Involvement of local communities

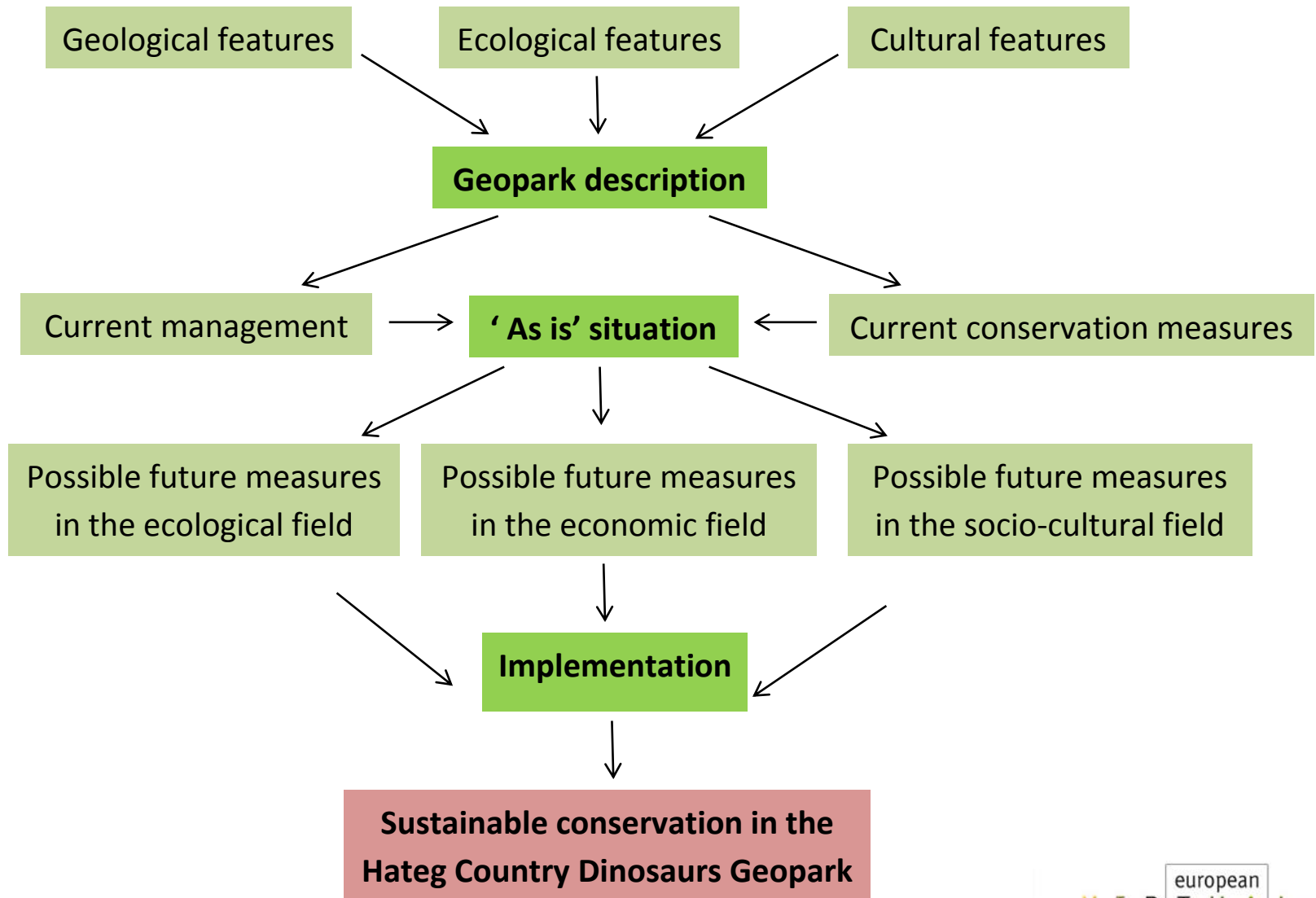
Research question

How can sustainable geoconservation take place in the Hateg Country Dinosaurs Geopark, taking into account the ecological, economic and socio-cultural aspects in the area?

Subquestions:

- What are the important geological, biological and cultural features in the Geopark that are worth being conserved?
- How is the geopark currently managed and which conservation measures are already taken?
- How could the conservation and use of the important geological, biological and cultural features in the geopark be improved further in a sustainable way, both on ecological, economic and socio- cultural level?

Methods



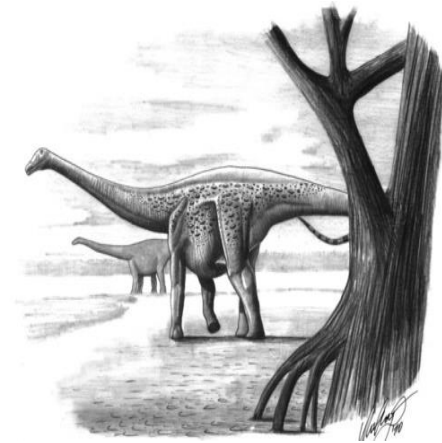
Geopark description

■ Geology

Sedimentary history: from Permian until now.

Fossil vertebrates: 65 taxa, all classes.

Important: Upper Cretaceous dinosaurs and dinosaur egg clutches.



■ Ecology

- *Flora*: 5 reserve sites: Marsh from Pesteană, Pick of the Glade, Narcissus Hay Fields from Nucsoara, Slivut Forest, Hay Fields from Pui.

- *Fauna*: Great variety in mammals, birds, reptilians, amphibians. Important: butterflies.



■ Culture



Roman ruins, medieval fortresses, churches, monasteries.

Current management

Geopark structure:

- Geopark Administration Unit
- Consultative Board
- Scientific Board
- Geopark centre for the Geopark Administration
- Protected sites network
- Trails/Georoutes
- Educational/scientific materials and packages
- Conferences and workshops

Sustainable improvements

■ Education

Many facilities for formal education > mainly informal improvements:

- Information centers/points
- Museums
- Guided tours (example: Expedition portals and hotspots)

Biological reserves



The Pick of the Glade. Botanical reserve with a 0.8 ha surface. It contains remarkable floristic elements like *Plantagoholosteam* and *Astragalusobrycnis* var. *lineariflorus*.



Hay fields from Pui. This one contains ancient associations with endemism like *Peucedanumrochelium* and wet plant associations.

The Narcissus Hay Fields from Nucsoara. It includes ancient associations with endemism like *Peucedanumrochelium*.



Silvut Forest. Here we find plants associations with: *Crocusbanaticus*, *Melampyrumbihariense* and *Lembotropispignicans*. Also, in 1958 a reserve with European bison was created



The list of vertebrates for Hateg Country Dinosaurs Geopark includes more than 100 species of butterflies, 7 mammal species, 5 European levels of endangered bird species, 1 bat species, a reptile species.



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→ Interpretive panel example for Biological Reserves

Flyer Example (Natural and Cultural Sites)

Geological sites

Săpătești fossiliferous sites

Location

Sibiel Valley, south of Săpătești village.

Geology and Paleontology

Deposits are represented by clastic sediments ranging from coarse conglomerates to siltstones and carbonaceous marls.

These deposits provided the largest quantity of dinosaur and other reptile fossils (crocodiles and turtles) from the Hațeg Basin.



Tupiza fossiliferous site

Location

Near the village of Tupiza. The site belongs to the middle member of the Devesu-Chișu Formation.

Geology and Paleontology

The site from Tupiza is known especially for the nests with dinosaur eggs. The egg clutches are included in a red massive mudstone that lack interbedding due to pedogenic modifications, marked by levels of malcarbonate concretions (calcrete).

Paleontology: Dinosaur (*Rhabdodon priscus*) and small theropods, as well as crocodile, turtle and microvertebrate remains.



Biological sites

The Narcissus Hay Fields from Nucșoara (Fânețele cu narcise de la Nucșoara), botanical reserve with a 20 ha surface, (Law 5/2000). Ancient associations with endemism like *Pseudolanum rochelianum*. Remarkable landscape thanks to the populations of *Narcissus stellatus*.



The Pick of the Glade (Vârful Potolii), botanical reserve with a 0.8 ha surface, contains remarkable floristic elements. (Law 5/2000). It is the only certain place in Romania for *Plantago holostium* and it is classic for *Astragalus onobrychis* var. *lineariflorus*.



Silviu Forest (Pădurea Silviu), botanical reserve, 40 ha surface, (Law 5/2000). Plant association with: *Crocus banaticus*, *Melampyrum bivaricatum* și *Lambertia nigricans*. In 1958 a reservation with European beech was created.



Hay Fields from Pui (Fânețele cu narcise de la Pui), botanical reserve with a 5 ha surface, (Law 5/2000). Ancient associations with endemism like *Pseudolanum rochelianum* and wet land plant associations.



Archaeological sites

Sarmizegetusa

Under the complete latin name of *Ulpia Traiana Augusta Dacica Sarmizegetusa*, this locality, situated in the western part of the "Hațeg Country" was for more than a century and a half (106 - 271 A.D.) the capital of the Roman province of Dacia. The archaeological vestiges of the ancient capital are found everywhere within and near the actual village of Sarmizegetusa. Among the better preserved ones there are: the ruins of the amphitheater and gladiators barrack, the temple of the Goddess Nemesis (the Goddess of Good Fortune and Destiny, worshiped by gladiators), the Liber Pater Temple (an archaic deity, protector of the vineyards and crops).

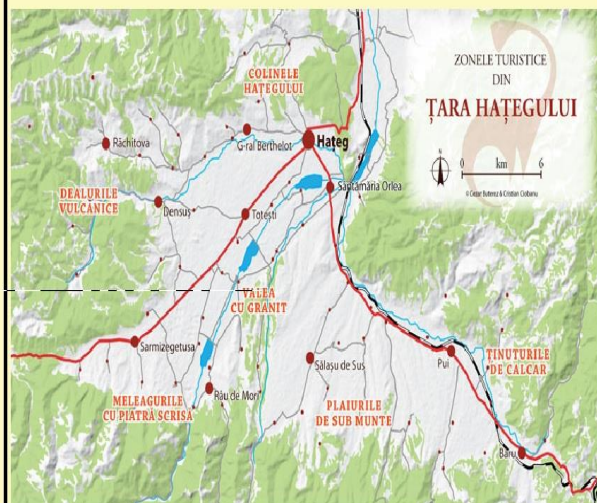


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Another Flyer Example for Cultural Sites

Hațeg Country Dinosaurs Geopark



The Hațeg Country Dinosaurs Geopark, figure 1, is located in the western part of Romania, in a very fertile region, surrounded by mountains from all directions. These natural features along with the cultural background make Hațeg Country a miniature Transylvania. The region is called a “country” from the Latin word “terra”, used in all the medieval documents to show the special character of this land. The Geopark covers an area of 102.392 hectares, including 11 mayoralties, among them Hațeg with 13.000 inhabitants. The total population of the Geopark area is about 39.000 people (European Geoparks Network, n.d. e).

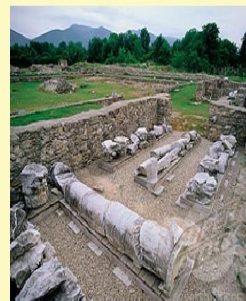


Android
Application

Cultural sites

Sarmizegetusa

Under the complete Latin name of Ulpia Traiana Augusta Dacica Sarmizegetusa, this locality, situated in the western part of the “Hațeg Country” was for more than a century and a half (106 – 271 A.D.) the capital of the Roman province of Dacia.



Sarmizegetusa (Super Stock, n.d.)

Răchitova watch-tower

The tower is part of the chain of watchtowers built on the top of hills of “Hațeg Country” during the Middle Ages, to survey and protect the region from the eventual invaders. The tower was built probably in the 16th century on a volcanic neck that dominates the panorama of the village and its surroundings.



panorama with Răchitova watch-tower and the surrounding village

Prislop Monastery



Prislop Monastery
(Dinosaur Geopark, n.d. c)

The history of the monastery is linked with the monk Nicodem who received support from one of the greatest Valachian king Mircea cel Bătrân. He founded the monastery in 1404 in a glade within a beech forest, a few kilometers north of the village of Sălașu de Sus.

Densuș Church

This church might have small dimensions, it's one of the most important sights of the region. The church has an unusual appearance, being a mixture of Gothic and Roman architectural elements. It has first documented in 1360, but the church was probably built in the 12th century on the ruins of a former religious monument from the 10th century. Remainings of the original fresco from the 15th century are poorly preserved on the inside walls. The church is still used by the local orthodox villagers for the Sunday services; some religious but also laic festivals take place in the large yard around the church throughout the year.



Densuș Church
Dinosaur Geopark, n.d. d)

Sântămăria-Orlea Church

This church was built in late Romanesque style. It was dedicated to the Virgin Mary. The construction is simple, but has impressive dimensions. It is the largest medieval church in the park. With the changes in religion, the community became Orthodox and the church was repainted in a style that combines elements of the Western Byzantine. Later, being converted to the reformed church paintings were covered with frescoes. You will see that in some places the Byzantine frescoes are faded, and because of this, oldest layer of painting are revealed.



Sântămăria-Orlea Church
Dinosaur Geopark, n.d. e)

Sustainable improvements

- **Tourism management**
 - Geopark Guide Accreditation System with local guides
 - Connection agriculture and society/tourism
- **Integration and collaboration**
 - Unique Geopark Strategy
 - Involve partners and local business
- **Digital developments**
 - Improving website (English, customized services for tourists)
 - Communication without visual contamination: digital geoguides; AR
 - Involve social media



App example

Conclusions

- Geo-education is a very important conservation measure: awareness people of heritage is a prerequisite for sustainable development.
Mainly informal improvements.
- Optimize tourism's potential as an economic and social development: Accreditation System; connection agriculture with society/tourism
- Integrate activities/partners in unique Geopark Strategy
- Digital improvements: website; innovative communication

Team members



- Alexander Steenbergen, Netherlands.
Environmental Sciences

- Bram Robberecht, Belgium.
Environmental Sciences



- Stef Houben, Belgium.
Environmental Sciences

- Marius Sfetcu, Romania.
Geology and Geophysics, Geoconservation



- Magda Nechita, Romania.
Geography, Geoconservation



Use of disciplinary and national backgrounds

- **Use of disciplinary backgrounds**

- Marius and Magda: specific knowledge about geoconservation
- The other ones: general knowledge about geology, ecology, biology, nature conservation and management, the relation of the nature with agriculture , tourism and environmental policies.
- Shared our knowledge to each other and applied it in the case study

- **Use of national backgrounds**

Comparison of the 'Hateg Geopark' in Romania with 'De Hondsrug Geopark' in the Netherlands (in Belgium there are currently no geoparks).

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Thank you for your attention!

Group GEO 1



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