

# Monadnocks and Ogradzieniec medieval castle ruins - an example of geotourism locality in the Cracow – Częstochowa Upland (Southern Poland)

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## ABSTRACT

The paper is on a very picturesque karst landscape of Upper Jurassic carbonate buildups and the Ogradzieniec medieval castle ruins integrated into them at the village of Podzamcze situated on the Cracow – Częstochowa Upland. Those two objects are the essential examples of geotourism locality in the most typical karstland in Poland. Around the Ogradzieniec Castle are very numerous magnificent karst Upper Jurassic limestone monadnocks, which could be very useful geosites for scientific research. Geotourism around Podzamcze could be easily developed when some educational trails, visitors' centre with geological information and geopark around Podzamcze are created.

**Key words:** geotourism, Upper Jurassic limestone, karst, monadnock, castle ruins

## INTRODUCTION

Upper Jurassic carbonate buildups complex and the Ogradzieniec medieval castle ruins integrated into them situated at the village of Podzamcze are ones of the most spectacular and picturesque monadnocks and cliffs on the Cracow - Częstochowa Upland. Podzamcze is located in the middle part of the upland in the eastern part of the Upper Silesia Region close to its border with the Małopolska Region (fig. 1). The village belongs to the Ogradzieniec municipality and Zawiercie county. Those characteristic monadnocks around the village are built of Upper Jurassic (Oxfordian) limestones with its numerous karst features, which can be observed. Podzamcze's surrounding is in the area of Eagle Nests Jurassic Landscape Park, which extends from Mstów, east of Częstochowa to Błędowny Dessert and Rabsztyn (Żerański 2003).

The ruins of the Ogradzieniec medieval castle are situated on the top of Janowski's Mountain, the highest rocky hill on the Cracow - Częstochowa Upland (515,5 m a.s.l.). Its role was defensive in the medieval times.

Very nice landscape of diversified landforms shaped by karst processes generated

the enlargement of joint, gravitational displacements of rocky mass, cave levels and rocky-shelters with traces of different prehistoric cultures. The ruins of medieval castles crowning rocky hills are enriching the natural landscape in Jura Chain representing the most typical karstland of Poland. It used to be visited by tourists for a very long time ago. That massive Jurassic limestone is a very essential example of geotourism attraction (Słomka, Świdorska 2004, Migoń 2012). The diversity of the karst rocks around the Cracow – Częstochowa Upland makes some possibilities of the tourism's different types development there. It can follow especially as geoprotection is developed just there too (Alexandrowicz 2006a, 2006b, Migoń 2012).

## GEOLOGICAL STRUCTURE AROUND PODZAMCZE

The Polish Jurassic Terrain where Podzamcze is situated in the southern part of large tectonic unit - the Silesian – Cracow Monocline – built of Triassic, Jurassic and Cretaceous sediments and extending NNW – SSE (Stupnicka 2007). The underground of Podzamcze is composed of Triassic, Ju-

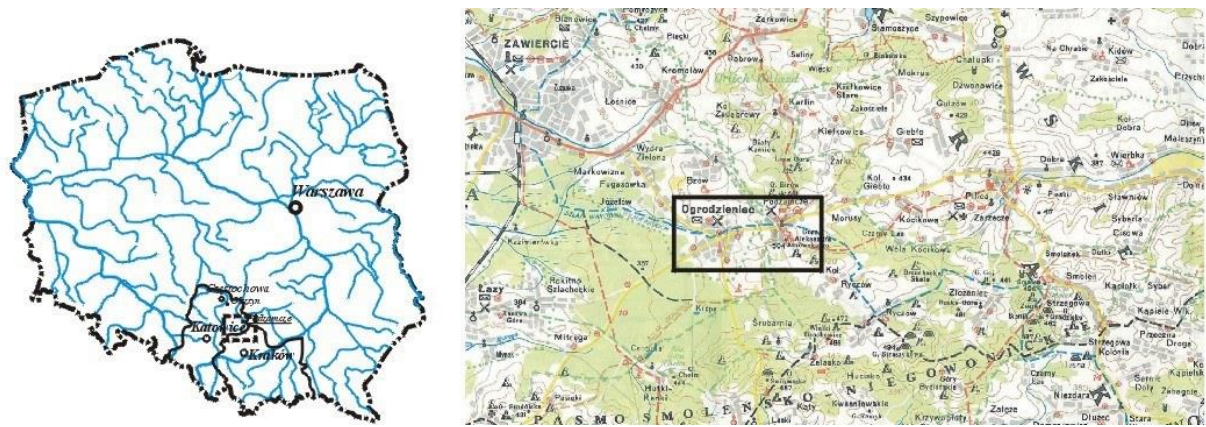


Fig. 1 Localization of the geotouristic objects around Podzamcze

rassic, Cretaceous and Quaternary sediments. There are also some vertical faults among them (fig. 2) (Kaziuk *et al.*, 1956).

Triassic formation around Podzamcze comprises Middle and Upper Triassic layers. Middle Triassic (Muschelkalk) formation comprises lower and upper Gogolin Beds, Olkusz Beds and the layer of crystal and diplopore dolomite. Upper Triassic formation occurs as the Rhaetian layer including clays, claystones and mudstones with conglomerates (fig. 2). Lower Gogolin Beds are composed of yellow and grey crinoid and wavy limestones, locally marly upwards passing into cellular limestones or grey dolomites. Upper Gogolin Beds are mainly composed of crystal and pelitic wavy and organogenic limestones. Total thickness of the Gogolin Beds is up to 35 m (fig. 2) (Bednarek *et al.*, 1978). The Olkusz Beds are composed of bright grey, beige and yellow dolomites and dolomite limestones containing some inserts of granular and pelitic limestones. Their thickness is not more than 50 m. On the ceiling of the Muschelkalk are crystal and diplopore dolomites, which host some zinc ores locally (fig. 2), (Bednarek *et al.*, 1978). Upper Triassic Formation, Rhaetian layer is composed of clays, claystones and cherry or green mudstones containing some quartz conglomerates. The thickness of this series is not more than 110 m (fig. 2) (Bednarek *et al.*, 1978).

Jurassic lithostratigraphic profile comprises six rocky series. First two are Lower Jurassic (Liasian) and Middle Jurassic – Kelowej sediments but four next ones - Upper Jurassic – Oxfordian. Lower Jurassic Beds (Li-

asian) are composed of gravels, clays, fire-proof clays, quartzites and quartzite conglomerates. Its total thickness is up to 26 m. Middle Jurassic Beds include gray marls and marly limestones thick on up to 30 cm. They contain some phosphorites and belemnites (fig. 2), (Bednarek *et al.*, 1978).

Upper Jurassic – Lower Oxfordian series is composed of thin bedded creamy limestones with some scyphian and sponge – tuberosite marls. They contain plenty of ammonites and their thickness is up to 2,5 m (fig. 2). The series of the border between Lower and Middle Oxfordian Beds include bedded marly limestones and some scyphian and sponge – tuberosite marls. Grey limestone beds are 1 m thick and grey marls - 30 cm. They also contain some brachiopods, ammonites, belemnites and flints (fig. 2). Middle Oxfordian Beds are composed of bedded sponge – tuberosite limestones. Those are bright creamy granular limestones containing some flints and ammonites. Upper Oxfordian Beds include mainly massive limestones which are the most essential exposing rocks at Podzamcze (fig. 2). These rocks create a typical and picturesque karst landscape for Cracow – Częstochowa Upland. Its thickness varies from 20 till 30 m and the total for all Oxfordian series is above 300 m (Bednarek *et al.*, 1978).

Quaternary coverage around Podzamcze comprises Pleistocene and Holocene sediments. Pleistocene includes thin gravel, water and glacier sands with some limestone and siliceous crumbs of the South Polish Glaciations. The thickness of Pleistocene sediments is up to tens of meters. Lower glacial sediments at Podzamcze are

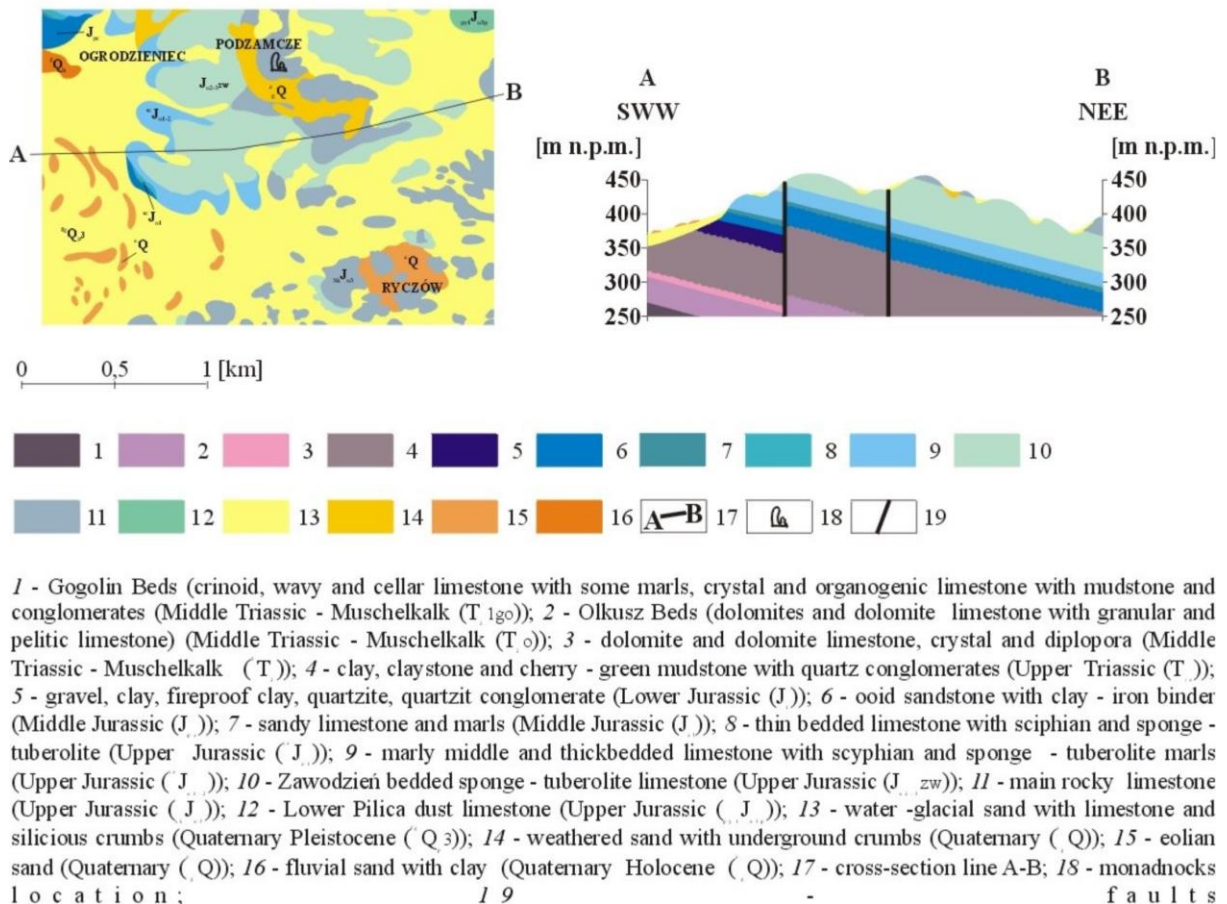


Fig. 2 Geological map of the area of the vicinity of Podzamcze (Kaziuk et al., 1956)

locally covered by weathered sands containing some crumbs of the underground rocks. Their thickness does not exceed a dozen meters. Holocene sediments are in the form of river sands with some clays (fig. 2) (Bednarek *et al.*, 1978).

### THE RELIEF AROUND PODZAMCZE

The area of the Cracow – Częstochowa Upland is a plateau of rather low elevation (300 – 515 m a.s.l.) and insignificant relative heights. The relief around Podzamcze is highly diversified. The landscape is created mainly by structurally controlled planation surface with Upper Jurassic limestone massifs and hills capped by spectacular cliffs (fig. 3c-d) (Nita 2004).

The origin of the monadnocks rising from the plateau around Podzamcze is erosional (Pokorny 1963). They were created by limestone rocks' dissolution by water containing a high concentration of carbon diox-

ide circulating in the rock (Dowgiałło *et al.*, 2002). In result, intensive karstification in Upper Jurassic limestones is observed, mainly in the form of vast morphological depressions around Podzamcze (fig. 3c-d). Much diversified shape of the carbonate monadnocks was caused by the limestone's facial diversity and resulting differences in resistance against weathering there. Those massive limestone rocks, known as the most characteristic monadnocks in the Polish Jura Terrain were preserved mainly in result of its highest resistance against weathering (Matyszkiewicz 2008, Krajewski, Matyszkiewicz 2009).

### THE OUTLINE OF THE OGRODZIENIEC CASTLE HISTORY

The Ogródzieniec Castle is situated on the top of Janowski's Mountain among the Upper Jurassic limestone buildups (fig. 3a-e, 4) in the southern part of Podzamcze (fig.





**Fig. 3** Pictures of the Ogradzieniec castle ruins and monadnocks of its surrounding (Photo: Author): a - view of the castle from the ward, b - Convicts Tower (on the left), Kredencerska Tower (on the right), c - Bear and Doll monadnocks, d - Convicts Tower, in the distance - Camle monadnock, e - Hen's Foot

1). It is the most beautiful and imposing object on the Cracow – Częstochowa Upland. The castle was built on the site of a wooden fortified settlement in the XIVth century during the reign of the King Casimir the Great. In the medieval times their role was Cracow's protection, which was the capital of Poland then and state border from any raids.

The castle changed hands many times. When the Boners inherited it, they rebuilt the building in 1530 – 1545 so that it grew up to an imposing Renaissance defensive residence. It consisted of four wings arranged around an arcaded courtyard. Next owners, the Firlejs (Boner's descendants) ruled the Ogradzieniec Castle for over 100 years. They added to the castle a residential building "Hen's Foot" (fig. 3e, 4) in the mid XVIth century and continued extending the castle. Its inside was decorated in a splendid, baroque style of a magnate mansion. Unfortunately, during the Polish - Swedish

wars in 1655 and 1702 the castle was damaged so seriously that it could not regain its former glory any more. Last owners left the castle around 1810, because of the danger of breaking ceilings. Since then, it was left uncared and served as source of building materials. In consequence of that, that mighty fortress was reduced to an abiding ruin. Only after the Second World War the castle has undergone some architectural, reconstructive, and protective works performed by state. Due to that, the castle ruins (fig. 3a-e, 4) have been available for tourists up to now. A large number of outdoor events, tournaments for example, are organised on the ward (fig. 4). *Holiday with Ghosts* are held inside (Kmiotek 1998, Żerański 2003).

The *Ogradzieniec* Castle was one of the most popular strongholds on the Cracow – Częstochowa Upland. Another such buildings located in the same region, at Mirów, Olsztyn, Bobolice and Ojców were also

situated on the top of the elevation and therefore called *eagle nests* (Kmiotek 1998, Żerański 2003).

## GEOTOURIST ATTRACTION AT PODZAMCZE

The most interesting geotourist attractions around Podzamcze are numerous massive Upper Jurassic - Oxfordian carbonate buildups of much diversified shape (Bednarek *et al.*, 1978) concentrated around the Ogrodzieniec Castle ruins. The height of those monadnocks varies from a few till over a dozen meters. They create a very picturesque superficial karst landscape at Podzamcze. The most extraordinary of them are *Wielbłąd (Camel)* (fig. 3c, 4), *Niedźwiedź (Bear)* and *Lalka (Doll)* (fig. 3d, 4).

Those Upper Jurassic - Oxfordian limestone monadnocks can be excellent geosites. The most important among them at Podzamcze are: petrological, paleontological, stratigraphical and geomorphosites. The particular problem of those monadnocks is defining the border between the strata of bedded limestone (Lower and Middle Oxfordian) and rocky limestone (Upper Oxfordian). Upper Jurassic platy limestone is outcropped only in the lower part of those carbonate buildups. Bedded limestone upwards passes into massive one (Matyszkiewicz, 2008, Krajewski, Matyszkiewicz, 2009). Detailed research of the fossils sponges and ammonites occupying in that two kinds of limestone creating the monadnocks around Podzamcze would be very useful for scientific purpose. The result of that would make possible obtaining the correct interpretation of those rocks' origin.

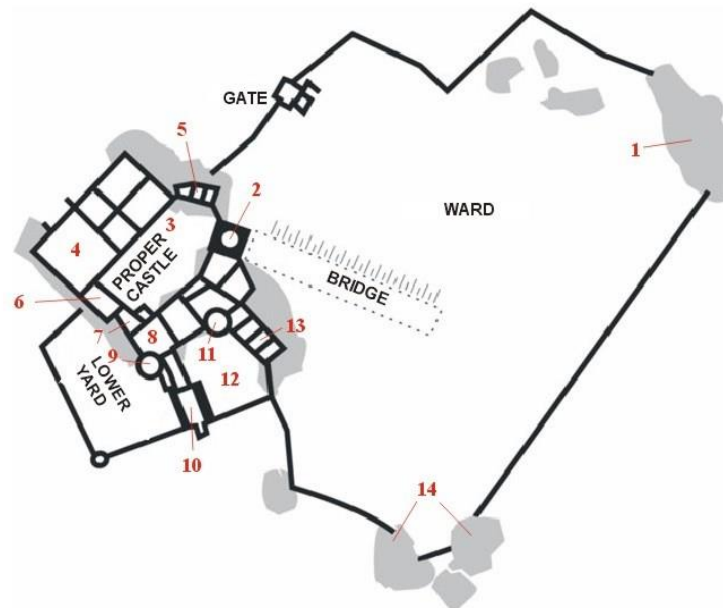
The ruins of the medieval *Ogrodzieniec* castle integrated into a huge number of Upper Jurassic carbonate monadnocks (fig. 3a-e, 4) are also a very popular and interesting geoturistic and sightseeing attraction at Podzamcze. Jurassic limestone and dolomite rock, used as the timber of the castle were the local material, which made its building much easier (Kmiotek 1998,

Żerański 2003). The stronghold has been open for tourists. They can watch the following retained parts: the gate tower, internal yard, kitchen, upper castle, bedroom, dining room, Kredencerska tower, hen's foot, convicts tower, farm yard and bastion – bulwark (corner bastion) (fig. 3a-e, 4). Large number of rooms on several floors and magnificent views from the tops of the towers and windows can be watched there too. Those viewpoints can be described as geomorphological geosites because the relief around Podzamcze and the Cracow – Częstochowa Upland in general can be observed by tourists from there. Apart from the very picturesque landscape of the Upper Jurassic monadnocks rising from the plateau, the people can also watch the extensive planation surface with some rocky hills rising up and covered by forests from the castle (fig. 3c-d).

Up to now, the magnificent rocky and karst landscape has been making the development of some different active and qualified tourism forms. Geotourism is the essential kind of them. There is a node of four tourist foot and bike paths running across the Cracow – Częstochowa Upland: *Eagle Nests* (red), *Jurassic Strongholds* (blue), *Millennium* (green) and *Zamonit* (yellow) (fig. 1). They connect many places of uniform or similar natural and anthropogenic Jurassic characteristics and have a very high geological value.

Massive limestone monadnocks located at Podzamcze and many other villages of the Polish Jura Terrain are also very interesting rocks for climbing tourism, very popular field in this area. For that reason, there have also been created “AdrenaLina Park” (rope park) located close to the Ogrodzieniec Castle at Podzamcze recently. It could have been made just for training and encouraging people to climb into the neighboring Upper Jurassic monadnocks.

The information about the Upper Jurassic monadnocks around the Ogrodzieniec Castle at Podzamcze as the local geoturistic attraction can be provided to the visitors in visitor's centre located in the castle's booking – office. The wide knowledge of the Upper Jurassic rocky limestone in the



**Fig. 4** The Ogródzieniec castle plan (Kmiotek, 1998): 1 - Wielblad (Camel) monadnock, 2 - Gate Tower, 3 - Internal yard, 4 - Kitchen, 5 - High castle, 6 - Bedroom, 7 - Library, 8 - Dining room, 9 - Kredencerska Tower, 10 - Hen's Foot, 11 - Convicts Tower, 12 - Farm yard, 13 - Bastion bulwark (corner bastion), 14 - Niedzwiedz (Bear) and Lalka (Doll) monadnocks.

Polish Jura Terrain can also be acquired in Jurassic Community Association office in Ogródzieniec and in Jurassic Tourist Information Headquarters office in Zawiercie (fig. 1). Thanks to those information offices and many other ones also situated on the Cracow – Częstochowa Upland and the websides presenting the Upper Jurassic monadnocks and the Ogródzieniec Castle at Podzamcze as the example of the local geotouristic attraction those objects have already become so much known and popular in Poland and Europe that accommodation and catering service and visitors' centre at the village need to be more expanded there than it has been done so far. Therefore, a new hotel is arising at the foot of Janowski Mountain at Podzamcze just now.

At present, local authorities of Ogródzieniec municipality and Zawiercie County have already been making some project of tourism development across the Cracow – Częstochowa Upland. A new network of tourist foot, bicycle and educational paths around Podzamcze is going to be created there under the direction of local authorities. Up to now, they have only made some design and study works about that for the project "Cycle route network to the central part of the Cracow – Często-

chowa Upland across the municipality of Ogródzieniec area" implemented by the Ogródzieniec municipality. The authorities of Zawiercie County have also developed a new strategy of active and qualified tourism complex promotion in the Polish Jurassic Terrain in cooperation with the other county's individual municipal and community authorities. The promotion of tourism in the Polish Jura Terrain is going to be made by local, national and active websides (Business Mobility International NV-SA (Brussels, Belgium) 2010, *Lokalny Program Rewitalizacji...* 2012).

## CONCLUSION

The very picturesque landscape of the Upper Jurassic karst massive carbonate buildups developed across the Cracow – Częstochowa Upland is really interesting, especially from geological point of view. What is more, the Ogródzieniec Castle at Podzamcze despite of its great destroy is the finest example of defense building integrated into those massive limestone rocks in the Polish Jura Terrain and open for tourists. In author's opinion, people will be able to acquire also some knowledge of the geo-

logical structure and the origin of the surrounding Upper Jurassic monadnocks and cliffs more easily when some educational and geotouristic trails connecting the most interesting carbonate buildups are designed. For example, the red *Eagle Nest* tourist path running across the Cracow – Częstochowa Upland between those beautiful rocks and the Ogrodzieniec Castle ruins at Podzamcze (fig. 1) could be described as an educational and geotourist trail as well. When plates with the designed geosites' explanation are given on the trail, it will be able to be described as a geotouristic object.

Apart from the geotourist trails around Podzamcze, a Geological Museum should be created by the local authorities in the visitor's centre at Podzamcze too. It could present the collection of the local Upper Jurassic limestone fragments and fossils, ammonites for instance. The outline of Jura's geological history and stratigraphy with illustration and detailed description could be shown there too.

The implementation of the above suggested enterprises should be considered by the authorities of the Ogrodzieniec municipality in their future local strategic programmes. The best solution of that could be doing it in cooperation with Polish Geological Institute – National Research Institute, whose main seat is in Warsaw and its Upper Silesian Branch in Sosnowiec. The authorities of Olsztyn municipality have already introduced some elements into their land. It has just been done in cooperation with Upper Silesian Branch of Polish Geological Institute. Olsztyn is a small town located in the northern part of the Cracow – Częstochowa Upland, about 10 kilometres south - east of Częstochowa (fig. 1). There have been paved two geotourist trails connecting a large number of very picturesque and interesting geosites, also as the Upper Jurassic monadnocks but around Olsztyn (Gaździcka E. *et al.* 2012). It could be done so at Podzamcze as well in future. The red *Eagle Nest* tourist path on its section passing through Podzamcze (fig. 1) could become a geotourist trail as well. In that way, that region would become much better known in Poland and Europe.

When geotourism around Podzamcze continues to be developed, geopark on the Cracow – Częstochowa Upland will be able to be created much more easily. Geological heritage of that area could be thus protected too. The criteria for a national geopark area definition considering its scientific and educational meaning, social and economical role and the way of management have already been developed. That could make possible to obtain some funds from UNESCO for the geopark maintenance (Alexandrowicz 2006a, 2006b). *Recommendation for geological heritage and areas of special geological chronological meaning in Europe protection* was accepted by the Committee of Europe Council's Ministers in 2004. That is a very important document on the geoprotection promotion. It suggests geoparks be created and emphasizes the need of distinguishing some very essential geological and geomorphologic objects situated in the areas protected by law, especially comprised by the World Heritage Convention (Alexandrowicz 2004). Jurassic Geopark would be an opportunity for the regional value of geological heritage protection, which would concern the landscape around too. It could help in its promotion.

Geotourism around the Ogrodzieniec Castle ruins could also be developed much more easily thanks to Eagle Nests Jurassic Landscape Park. Its rules are in accordance with geopark's assumptions. When geopark is set up around Podzamcze, educational programs on the tourist role of this area will be able to be more easily implemented. Close relationship between geotourism and geoprotection could have significant impact on geological knowledge dissemination by teaching and research on that.

The next very important means of the Upper Jurassic carbonate buildups promotion should be geotrails. Those are the names of education - geotourist information packages designed for display on outdoor billboards to be placed next to selected interesting geosites and to be distributed in the form of leaflets from local tourist information offices, visitor centers, libraries and schools (Szymkowiak, Kowalska

2011). The geotrails on the Upper Jurassic monadnocks around Podzamcze could be presented both on the website and the International Tourist Fair and even close to those picturesque karst massive limestone rocks at Podzamcze. The Ogrodzieniec municipality authorities should ask Polish Geological Institute for making that education – geotourist information packages about that attraction.

To sum up, the implementation of all the above suggestions would be necessary, especially for the Cracow – Częstochowa Upland tourist – geological map development and the “Jura’s Geopark” establishment in future. It will certainly be made by Polish Geological Institute in cooperation with Academy of Mining and Metallurgy in Cracow.

Recreation forms around Podzamcze should be improved by the Ogrodzieniec municipality authorities too. In author’s opinion educational tourism connected with geological sciences development could make much easier raise the level of the centers of higher education situated around Podzamcze, Zawiercie and the closest provincial capitals: Cracow and Katowice when geotouristic objects around Podzamcze belong to Jurassic Geopark.

All those possibilities should be considered in the future programme developed by the Ogrodzieniec municipality authorities also in cooperation with the bodies of the region as follows: “Polish Network Energie Cites”, Silesian Tourist Organisation, Local Action Group “Pearl of the Jurassic” Association, and Municipality and County Silesian Association (Business Mobility International NV-SA (Brussels, Belgium) 2010). Those bodies have already been taking part in tourism development all over the Upper Silesia Region, especially in the Upper Silesian Coal Basin area, where in most of the cities the coal mining industry has already been over.

In author’s opinion the funds for the implementation of some new future strategic programmes about geotourism development around Podzamcze prepared by the Ogrodzieniec municipality authorities should be at least partly provided from the

European Union budget just set up in Brussels for years 2014 – 2020. Local authorities should try to raise those money just in cooperation with a large number of other bodies within that region. They should send a common petition to Polish government for that.

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