

THE ICHNOLOGICAL PARK OF PENHA GARCIA: BRINGING IT BACK TO NATURE AND SUSTAINABLE ENJOYMENT (WHAT'S NEXT?)

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Penha Garcia is a small village with less than 1000 inhabitants created by the Templar Order to protect Portuguese-Spanish borderland which is located 8 km to North and 15 km to East. This year Penha Garcia proudly celebrates 750 years of a history made by wars and hardships leading to scarce population and use of land as well as social and cultural isolation until the seventies of the 20th century. Nowadays this village suffers from a fast decrease of population characterised by an ageing population and lower productivity due to migration of working people to the coastal cities and European countries. Economic activities are still based on the agriculture sector made almost by retired people and traditional industry. Since 2003 the process of tourism development has started in this territory. Bypassed by the main country tourist routes, this Portuguese hinterland is waking up to Nature Tourism, where the visitor meets pristine landscapes, genuine people and hospitality.

The Ichnological Park of Penha Garcia is the core and case study of the Geopark Naturtejo Meseta Meridional (Neto de Carvalho, 2005, 2006a; Catana *et al.* 2007), the first Portuguese Geopark. Actions already undertaken by Idanha-a-Nova municipality with the help of Penha Garcia community include restoration of the medieval castle (nowadays a wonderful viewpoint) and the watermill complex (site museum with the Fossils House), as well as the ancient paths. The Fossils Trail and the Climbing School were the next steps to create visit corridors to control environmental pressure. The Ichnological Park was defined mainly on the existing geological heritage (Neto de Carvalho, 2004, 2005) and astounding invertebrate trace fossils with less than 480 M.y. (Lower to Middle Ordovician; Neto de Carvalho, 2006b) and all the area was protected by the national law of the Cultural Heritage. Since 2004 there have been regular guided visits organized by tourism technicians, sciences teachers and geologists from Idanha-a-Nova municipality and the staff of Naturtejo Geopark. Only three years have shown an increase of 40,5% in the visitors number, almost reaching 9000 in 2006, year of the integration of the territory in the European Geoparks Network, with 123,8% more foreigner visitors. The needs of visitor attendance and interpretation of natural and cultural sites led to the creation of a Tourism Office and recuperation of an entire group of quartzite houses to constitute the Palaeozoic Museum is been carried out. This museum will be an interactive experience devoted to understand the Ichnological Park of Penha Garcia including this sector in one of the most complete stratigraphic sequences of Europe for the Palaeozoic Era which outcrops in a major area of Portugal. Today, the museum already receives hundreds of visitors with a temporary exhibition “The world of Trilobites of Sam Gon III” starting from the famous website of this Hawaiian professor.

A new period, this time for Nature rehabilitation is beginning in Penha Garcia: an action plan of tourism management is proposed for the next five years in order to mitigate the extent of the landscape change by human activities (Neto de Carvalho & Baucon, 2007). Five strategies must be followed in order to benefit the Penha Garcia geomonument, a natural monument in the aesthetic/scenic meaning, with more than 70 identified geosites

that give birth to wonderful geological and life histories. These strategies must start now in the scope of the Nature School Project and ranges from restoring riverside flora to minimizing building impact in landscape; cleaning of infrastructure; implementation of geoconservation procedures and research; improvement of the management policies; innovating interpretation with social and environmental-friendly approaches. Below there is a summary of each of the programmed actions.

a) Reforestation procedures

In order to improve environmental quality by diversifying depauperate ecosystems and to decrease the insulation effect in the valley, providing shadow for the visitors and living conditions for a more diversified fauna, it is vital to reforest the valley with riverside endemic flora and progressively replace eucalyptus and pine trees by oaks, cork and holm oaks as well as chestnut-trees. Big trees must be planted to create a “green fence” which can hide big buildings such as the dam, the water plant and a private house. Other possibility is to cover white walls and dam buildings with schist or quartzite rocks, mimicking the outcrops and decreasing the negative effect in the landscape. There is a rare bog with *Sphagnum* and *Drosera rotundifolia* that is endangered and must be protected by creating wood fences and a bridge. Exotic plants must be eradicated from the valley and cutting actions should be controlled by environmental engineers from the Municipality. In the Nature School there must be presented the best practices for a sustainable tourism, by giving examples of ecology and carbon dioxide sequestration and relate them to past climate change events identified in the local geological landscape.

b) Cleaning of infrastructure

The Fossils Trail is the visitation path through the Ichnological Park. It must be clean of electrical and phone cables as well as TV antenna from the beginning of the route. All the wired fences near the path must be replaced. There is a strong need to improve the car park of Chão da Igreja with a place for bus and with the benefit of the green area and children playground. Traditional buildings and fountains must be restored along the path, the precarious roofs should be encouraged for substitution by slate tiles and the ubiquitous cement should be cleaned from the valley. The use of signs and panels must be conditioned. Dam tubes should be covered and the waters cleaned. Garbage baskets must be underground and allow separation for recycling near Pego fluvial swimming-pool. There are 3 precarious buildings near Pego that need to be destroyed and one must be restored with local stone to create a proper WC.

c) Research and geoconservation

Active research must continue to be carried on, improving the geological history of Penha Garcia and surroundings as well as its importance as one of the most didactic outcrops in Portugal. The identified geosites must be regularly monitored for natural and human mutilations; slabs with trace fossils need to be cleaned and restored, some of them should be strengthened and covered with transparent acrylic protections.

d) Management improvements

The only vigilant in the Ponsul Valley is not enough. The Ichnological Park must have vigilance every day and all the tourist facilities must be opened to public. Guided visits made only by qualified rangers are being prepared. Outdoor activities, celebrations such as the Ethnographic Celebrations and their impact need to be followed carefully not to damage the environment and the landscape. Garbage and toilets need regular monitoring and pockets of domestic and building wastes in the slopes must be eradicated. Motor vehicles must be prohibited in the valley.

e) Interpretation of Nature, History and Culture

The Palaeozoic Museum building is on the way but it is still needed to create the visitation logic and to improve the project for the contents. The House of Fossils will soon become a very important didactic tool “in situ” with workshops for schools and there is a project to produce electricity for the facilities by using the watermills. “Easy guides” with exploration activities for schools and “The complete nature guide” are still in their beginnings. A study is being carried on to establish a geobike and a geocaching tour around Penha Garcia syncline.



FIG. 1. The Ponsul valley in the Ichnological Park of Penha Garcia. From this viewpoint three of the main scars are shown in the privileged landscape: the water plant (white buildings, left) and the unfinished giant house (near the road, centre) that need to be covered with rock or hidden with a forest “fence”; the existence of rare vegetation with eucalyptus need a sustainable reforestation with autochthonous trees (river trees, Mediterranean forest).



FIG. 2. Strong bioturbation with *Cruziana* ispp. in the bedding plane presented during a guided visit. Amazing exposures like this proliferate in Penha Garcia but most of them lack conservation measures.

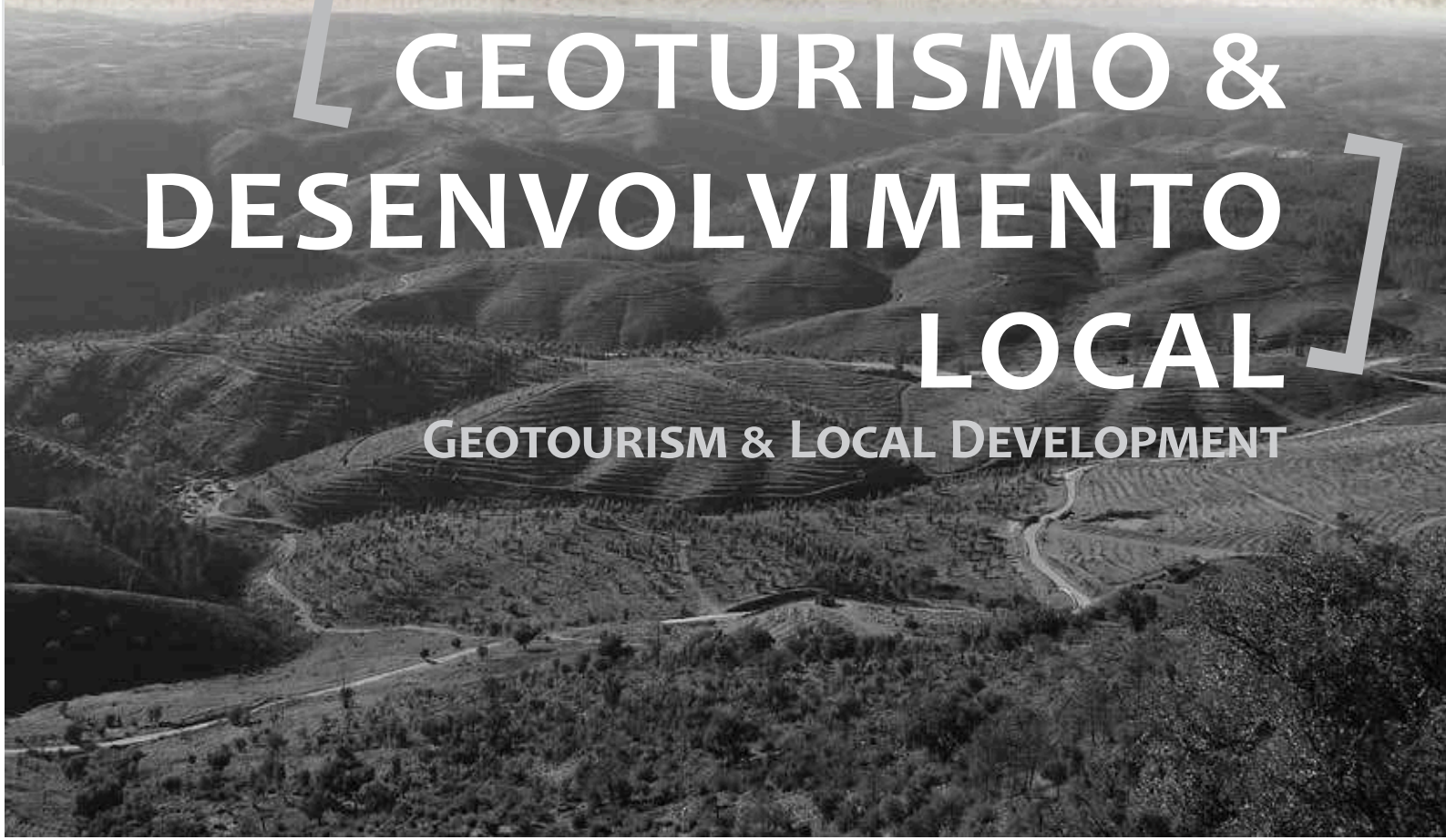
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