

## Geotourism in the Suwałki Landscape Park

Dorota Nizicka<sup>1</sup>, Katarzyna Pochocka-Szwarc<sup>1</sup>, Andrzej Ber<sup>1</sup>



D. Nizicka



K. Pochocka  
-Szwarc



A. Ber

The spectacular landscape and nature of the northeastern part of the Suwałki Lakeland, partly occupied by present territory of the Suwałki Landscape Park have been known since the beginning of the 20<sup>th</sup> century.

The Suwałki Landscape Park located in the northeastern part of the Podlasie Voivodeship and in the northern part of the Suwałki Lakeland, within districts: Jeleniewo, Wizajny, Przerośl and Rutka Tartak (Fig. 1), was established on January 12, 1976, based on resolution of the Voivodeship Council in Suwałki. The park area covers 6 284 ha, totally with the surrounding zone 8 917 ha.

The main purpose of the park founders was to protect the unique and unaltered, by agriculture, the great diversity glacial and postglacial landscape of the last Wisła (Vistulian) Glaciation. It comprises well-preserved marginal forms (end and push moraines, drumlins, outwash plains, eskers, crevasses and subglacial valleys) as well as

the dead-ice forms such as: dead-ice moraines, kames, kame terraces and kettle holes presently filled with lake waters.

Establishment of the park was also an action against the planned exploitation of iron, titanium and vanadium ores occurring within the present park area at depths from 800 to 2000 m below present surface, as well as against construction of the pumped-storage power plant planned to locate close to Smolniki village.

The Suwałki Landscape Park will be included into the European Ecological Network Natura 2000 program and into the Geopark Yotvings (see p. 611), as a natural habitat of many rare geological and nature reserves and monuments as well as fauna and flora species.

Until now within the park territory many protected areas and landforms were established in form of inanimate nature reserves, nature reserves, inanimate and nature landmarks and geosites (geotops).

The present, unique relief of the Suwałki Landscape Park was created by the activity of the last Vistulian Glaciation ice sheet during time period from 20 000 to 10 000 years ago. However, during the whole Pleistocene period the Suwałki Lakeland with territory of the Suwałki Landscape Park was covered by continental ice sheets of eight glaciations: Narevian, Nidanian, Sanian 1, Sanian 2, Liviecian, Odranian, Wartanian and Vistulian (Ber, 1999).

The present relief of the park is highly diversified with the highest point (280 m a.s.l.) in the vicinity of the Dzierwany and Smolniki villages, and with the lowest

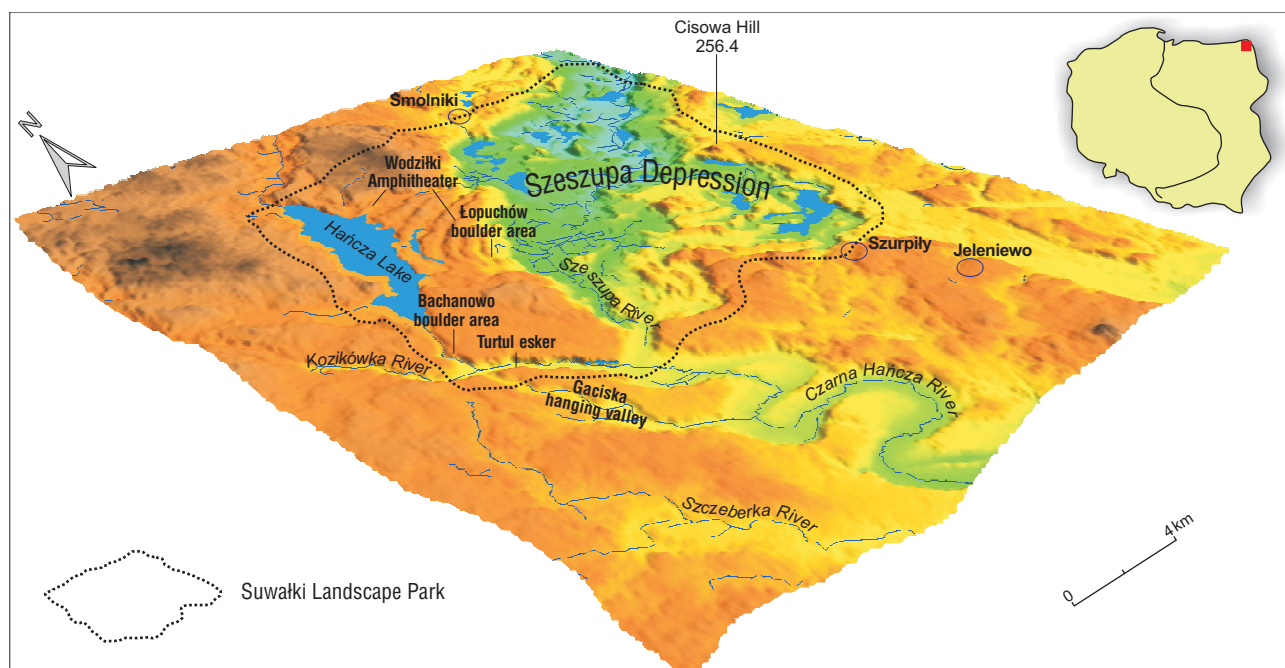


Fig. 1. Localization of the Suwałki Landscape Park

<sup>1</sup>Polish Geological Institute, ul. Rakowiecka 4, 00-975 Warszawa, Poland; dorota.nizicka@pgi.gov.pl, katarzyna.pochocka-szwarc@pgi.gov.pl, andrzej.ber@pgi.gov.pl



Fig. 2. View of the Szeszupa Depression from the Smolniki viewpoint. Photo by P. Bułanow

determined by water level of Postawełek Lake (146 m a.s.l.).

The central and eastern parts of the Suwałki Landscape Park are occupied by the Szeszupa Depression.

**The Szeszupa Depression** (Fig. 2) covers an area of about 50 km<sup>2</sup> and lies in the hinterland of the end and push moraines of the Pomeranian Phase of the Vistulian Glaciation with thickness of the Quaternary deposits ranging from 200 to 290 m. It seems that this depression already existed at the end of the Wartanian (Saale) Glaciation and was formed by neotectonic, glacial erosional and glaciotectionic processes. The area was incessantly ice covered by the Vistulian ice sheet throughout the entire Pomeranian Phase. During the deglaciation period the Szeszupa Depression was filled with dead-ice blocks. The present landscape of the depression with its numerous kame hills and kettle holes currently occupied by lakes and the Szeszupa River valley which running across the Szeszupa Depression was formed during Late Glacial and early Holocene periods. Besides the scientific values, the Szeszupa Depression represents the most beautiful landscape in the northeastern part of Poland. The area is protected within the Suwałki Landscape Park and represents high scientific values as well as good sightseeing accessibility (Ber, 1999).

In the northeastern part of the Szeszupa Depression there are scenic lakes such as: Kleszczówek and Smolniki with Jaczno Lake surrounded by kame hills and forests (Fig. 2).

The Wodzilki Amphitheater with the Łopuchów boulder area are located and protected within the Szeszupa Depression.

**The Wodzilki Amphitheater** lies on the western slope of the Szeszupa Depression and consists of six ridges, probably of push moraines parallel to each other and separated by shallow depressions filled with peats. The fourth ridge, counting from the west, of relative height about 40 m constitutes the geological reserve the **Łopuchów boulder area** (Fig. 3). It covers the area of about 16 ha and consists numerous Scandinavian erratic boulders (mainly granites).

In the western and southwestern part of the Suwałki Landscape Park occurs: the glacial trough of Hańcza Lake,



Fig. 3. Łopuchów boulder area. Photo by D. Nizicka





Fig. 4. View over the southern part of Hańcza Lake. Photo by A. Ber

the Turtul esker, the Gaciska hanging valley and the Bachanowo boulder area.

**Hańcza Lake** (Fig. 4) is a typical example of subglacial channel lake. It is the deepest lake (108.5 m) in Poland and in the North European Lowland. The lake covers the area of 304 ha, its length is 4.5 km, and maximum width is about 1 km. The subglacial channel of the lake was formed during Middle Polish and Vistulian glaciations. The underwater slopes, well-known of scuba diving, have steep walls up to 30 m in height. There are impressive clusters of boulders along the shores of the lake. Hańcza Lake is protected as an inanimate nature reserve.

**The Turtul esker** (Fig. 5) forms a range of 13 hillocks and ridges extending at the distance of 3 km, situated at the bottom of a subglacial channel used presently by the Czarna Hańcza River and its tributary the Kozikówka Stream. The height of the esker ridges reaches 20 m. The thickness of sands and gravels which build the particular ridges and hills is about 10–15 m. The northwestern part of the esker occurs within a somewhat shallower and broader section of the valley. Farther, the esker enters the narrower, deeper and steep-sided lower part of the Czarna Hańcza valley, that widens only in its terminal part near its mouth, which were barred by the dam of the Turtul mill and occupied by a pond.

The Turtul esker is protected as a nature reserve within the Suwałki Landscape Park and represents high scientific values and a good sightseeing accessibility (Ber, 1999; Alexandrowicz, 2006).

The main office of the Suwałki Landscape Park Headquarters with tourist lodging, an exhibition room, the shop with information materials and souvenirs are located in Turtul.

**The Gaciska hanging valley** (Fig. 6) was created when the dead-ice blocks of the Vistulian (Pomeranian Phase) Glaciation ice sheet blocked the previous flow of the pre-Hańcza River. Then, after dead-ice blocks disappearance, the river found another outlet and a new valley about 4 km long was formed and named by geomorphologists the Gaciska hanging valley. The bottom of the valley hangs about 10 m above level of the

Czarna Hańcza River (Nizicka & Pochocka-Szwarc, 2005).

**The Bachanowo boulder area** is a geological natural reserve of the area of 0.98 ha, situated in the fork of the Czarna Hańcza River and its tributary the Kozikówka Stream. This spectacular place comprises 10 000 stones



Fig. 5. Turtul esker, view over the northern part. Photo by A. Ber



Fig. 6. The Gaciska hanging valley. Photo by D. Nizicka



Fig. 7. View over the Cisowa Hill. Photo by P. Bułanow

mostly igneous and metamorphic rocks, about 0.5 to 0.3 m in diameter and several ones from 6 to 8.7 m in diameter. The formation of this boulder site is connected with the erosional remain of the esker ridge, older than the Turtul esker. These processes took place during the last glacier retreat and also in the early Holocene due to erosion of the Czarna Hańcza River waters.

**The Cisowa Hill (Gulbieniska Hill)** (Fig. 7), is located close to the eastern slope of the Szeszupa Depression, which has a longitudinal form with clearly visible cone-like crest described as a frontal moraine, built of sands with gravel and pebbles. The summit of the Cisowa Hill, characteristically shaped and therefore also named Suwalska Fuji, is located 70 m above the surface of the nearby located Kopane Lake. The Cisowa Hill was accumulated during one retreated phase of the last Vistulian Glaciation ice sheet. The legend called that the Cisowa Hill was created of soil taken from Kopane Lake.



Fig. 8. The Border Boulder. Photo by D. Nizicka

Today, on the Cisowa Hill summit there is a Holy Cross and a table commemorating Pope John Paul II's stay in Suwałki Lakeland in 1999.

Single erratic boulders preserved as geological monuments occur locally on the surface of the Suwałki Landscape Park area. One of the largest, called "**Wielki Kamień**" (**the Big Stone**), is located on the western bank of Hańcza Lake. It is grey and black gneiss, 1.3 m high and 9.3 m in diameter. Another boulder "**Głaz Graniczny**" (**the Border Boulder**) (Fig. 8) is located on the eastern bank of Hańcza Lake, about 600 m to the north of the outlet of a little stream connecting Lake Hańcza with Lake Boczniel. The boulder is 11.4 m in diameter with engravements on its surface (Nizicka & Pochocka-Szwarc, 2005).

The Suwałki Landscape Park area besides of the numerous tourist guides also possesses the geological map (Nizicka & Pochocka-Szwarc, 2005) and geological guide (Ber, 1981), and in a whole represents an excellent sightseeing accessibility for tourists.

#### References

- ALEXANDROWICZ Z. 2006 — Frame work of European geosites in Poland. *Nature Conservation*, vol. 62, 5: 53–63.
- BER A. 1981 — *Przewodnik geologiczny. Pojezierze Suwalsko-Augustowskie*. Wyd. Geol., Warszawa.
- BER A. 1999 — Preliminary list of the Quaternary geosites in Northern and Central Poland, their age and geological position. *Pol. Geol. Inst. Special Pap.*, 2: 77–86.
- NIZICKA D. & POCHOCKA-SZWARC K. 2005 — Geological tourist map of the Suwałki Landscape Park 1 : 25 000 [in Polish, English summary]. Państwowy Instytut Geologiczny, Warszawa.