
WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

CAVES OF THE AGGTELEK KARST AND SLOVAK KARST (HUNGARY / SLOVAKIA)

EXTENSION TO INCLUDE DOBŠINSKÁ ICE CAVE (SLOVAKIA)

Background note: The Dobšinská Ice Cave was part of the larger nomination from Slovakia considered by the 22nd session of the Bureau and Committee in 1998. The Committee report “recalled that the Bureau . . . decided to refer the nomination back to the State Party asking the Slovak authorities to consider incorporating the Dobšinská Ice Cave portion into the nearby World Heritage site of the Caves of The Aggtelek Karst and Slovak Karst. The report of the Committee session in 1998 shows that “the Committee did not inscribe the site on the World Heritage list” but that the State Party, the Centre and IUCN were encouraged by the Chairperson “to cooperate in the preparation of a revised nomination . . .”. This nomination of the Dobšinská Ice Cave in Slovakia as an addition to the existing cave site in Hungary is the result of that cooperation.

1 DOCUMENTATION

- i) **IUCN/WCMC Data Sheet:** (7 references)
- ii) **Additional Literature Consulted:** Lalkovic, M. 1995. On the Problems of the Ice Filling in the Dobšinská Ice Cave. *Acta Carsologica*. Krasoslovni Zbornik XXIV; Courbon, P. *et al.* 1989. **Atlas of the Great Caves of the World**; Waltham, T. 1974. **Caves**. Macmillan; Juberthie, C. 1995. **Underground Habitats and their Protection**. Nature and Environment No. 72. Council of Europe Press; Middleton, J. & T. Waltham. 1986. **The Underground Atlas: A Gazetteer of The World's Cave Regions**. St Martin's Press; Watson, J. *et al.* 1997. **Guidelines for Cave and Karst Protection**. IUCN World Commission on Protected Areas' Working Group on Cave and Karst Protection. IUCN; Stanners, D. & Bourdeau, P. eds. 1995. **Europe's Environment The Dobris Assessment** European Environment Agency; Esping, L. 1998. **Potential Natural World Heritage Sites in Europe**. Report on Parks for Life: Action for Protected Areas in Europe Priority Project 14a. IUCN-WCPA Europe/FNNPE-Europarc Federation.
- iii) **Consultations:** 22 external reviewers, Slovensky raj National Park staff and Slovak Government Officials.
- iv) **Field Visit:** J. Marsh and R. Hogan, May 1998.

2. SUMMARY OF NATURAL VALUES

The Dobšinská Ice Cave (DIC) is located in the western Carpathian Mountains and is a distinct feature within the Slovensky raj National Park. The DIC is located 21km north of the existing transfrontier Caves of the Aggtelek Karst and Slovak Karst site inscribed in 1995. It is one component of the Stratenská Cave network, all of which is part of the nominated site. DIC is isolated from the larger Stratenská cave by a fallen block of limestone, which traps cold air and permits the accumulation of ice. Cold air flows into the cave in winter and remains during the summer. The natural opening of the ice cave is north facing and shaded by forest so the cave is protected from warming. An ice mass with a maximum depth of 26.5m and a volume of approximately 110,000m³ fills a considerable part of the cave. The upper surface of this underground glacier, or glacière, is decorated with ice stalagmites from the freezing of local drip waters. The ice mass is stable in that the rate of ice accumulation in winter is in equilibrium with the rate of basal melt and lateral sublimation. Dobšinská Ice Cave contains one of the largest glacières known at a very low altitude (969m). Many reviewers consider the DIC to be a "textbook example" of an ice cave.

3. COMPARISONS WITH OTHER AREAS

Stratenská (of which DIC is a part) is one of the longest caves (23km) entirely on Slovak territory and contains the largest underground chamber (79,017m³) in the country. However, the 25km Baradla-Domica Cave System (part of the Caves of the Aggtelek and Slovak Karst World Heritage site), which straddles the Slovak-Hungarian border, is longer than Stratenská. On a global scale there are many cave spaces around the world which are measured in millions rather than thousands of metres cubed, e.g. Luse in Papua New Guinea (50Mm³).

Ice caves are relatively common at high altitudes. Small glaciers are found in caves in the Canadian Rocky Mountains and Nahanni World Heritage sites and other karst areas of the Mackenzie Mountains in the Canadian Northwest Territories. Indeed, the Grotte Valerie in Nahanni is recognised as the best example in the world of an ice cave. There are also ice caves in limestone areas of Europe such as Eisreisenwelt, Dachstein, Reisenhohle and Schellenburger Hohle in the Alps, Scarisoara glacier in Romania, and Kungur Ice Cave in the Urals. There are many other ice-clogged shafts and chambers known in limestone caves in Russia, the Alps and Pyrénées.

A distinct feature of Dobšinská is its topo-climatic setting. At 970m above sea level, it is lower than other tourist ice caves. The mean annual external air temperature is +6°C but the cave is able to conserve a -5 to -6°C temperature. In contrast, the glaciers in South Nahanni National Park are supported by mean annual external temperatures of -6°C to -8°C.

In terms of elevation, Dobšinská is by no means the lowest ice cave in the region. The mouth of the Silica Ice Cave in Hungary (part of the Caves of the Aggtelek and Slovak Karst World Heritage site) is at 503m and it is considered to be the lowest ice cave in the temperate zone. In Slovakia the opening to the Demänovská Ice Cave, in the Low Tatras is at 840m, again lower than the DIC. Up to the latitude of 50°, all other known ice caves are situated at higher altitudes: the Alps (940m); Bulgaria (830m); Croatia (600m); Georgia (above 1,000m); Poland (between 1010 and 1850m); Romania (840m); Slovenia (758-1090m).

However, the DIC is one of the largest glaciers in one of the warmest glacier sites that is known. It is considered by some to be a text-book example of an ice cave. There is also a long history of paleoclimatic research in Dobšinská Ice Cave and the site is important for research on climate change. (For further information on natural values and comparison with other areas see the 1998 IUCN Technical Evaluation of the Ravines of the Slovak Paradise and Dobšinská Ice Cave.)

4. INTEGRITY

The DIC was damaged to some extent during the first fifty years after its discovery, but current management now maintains the cave to a high standard. The area does not have any heavy industry in the immediate vicinity so damage from acid rain does not present a threat.

Protection of the area is complex. All land in the Slovak Republic is classified under one of five 'degrees of conservation' with the 'fifth degree of conservation' affording the highest level of protection. The nominated area is situated on the territory of the Slovensky raj National Park (IUCN category II protected area) with all the nominated area within zones of the fifth degree of conservation.

Only the caves themselves have been included in the nomination and not their protection zones above ground. However, a 6.6km² protection zone covers the karst plateau area immediately above the caves. The strict control of activities in this area is considered crucial to the protection of the caves. The Ice Cave is only open to the public for four summer months and is visited by about 90,000 tourists each year. The trail from the road up to the cave has been upgraded, and interpretive signs are being erected. All the boardwalks in the cave are new, and well-designed. At one point the route goes through a short tunnel cut many years ago in the ice, and elsewhere along a ledge cut into the ice, however, public access to the ice is generally prevented. Electric lighting has been installed, but is generally unobtrusive and designed to prevent excessive heating of the cave and algal growth. In several places instruments have been installed to monitor conditions in the cave, including the temperature of the air and the bedrock. Numerous survey points have been established to enable detailed mapping of the cave and ice, and to monitor changes in the volume and movement of the ice. A management plan covering the period 1996-2006 is available and is considered to be adequate for the management of the site.

The glacier is maintained by the plug or roof-fall, which prevents cool air escaping from the cave in summer. Should this plug become damaged dense cool air would quickly flow out of the ice cave causing the glacier to melt. Partly to avoid damage to this plug the Stratenská Cave remains closed to the public.

While IUCN finds the management of the DIC satisfactory it would like to remind the Bureau of concerns over threats to the transfrontier Caves of the Aggtelek Karst and Slovak Karst. The existing World Heritage site consists of underground caves and has no surface component. Though the surface area that protects the caves (60,000ha) has IUCN Category V protection, concerns have been raised about agricultural activities in this area effecting the caves. The 19th session of the Committee “requested the Centre to write to the national authorities to recommend that control is needed over surface activities such as agricultural pollution, deforestation and soil erosion” that could affect the caves.

5. ADDITIONAL COMMENTS

The authorities in Hungary have agreed (letter of 9 October, 1999) to the inclusion of DIC within the transfrontier Caves of the Aggtelek Karst and Slovak Karst.

The nomination document does not explain the functional linkages between the Stratenská caves and the existing World Heritage site 21km to the south. However, as the DIC is in close proximity and because the 722 caves of Aggtelek and Slovak Karst are not themselves a contiguous unit, the addition of DIC is a reasonable proposal.

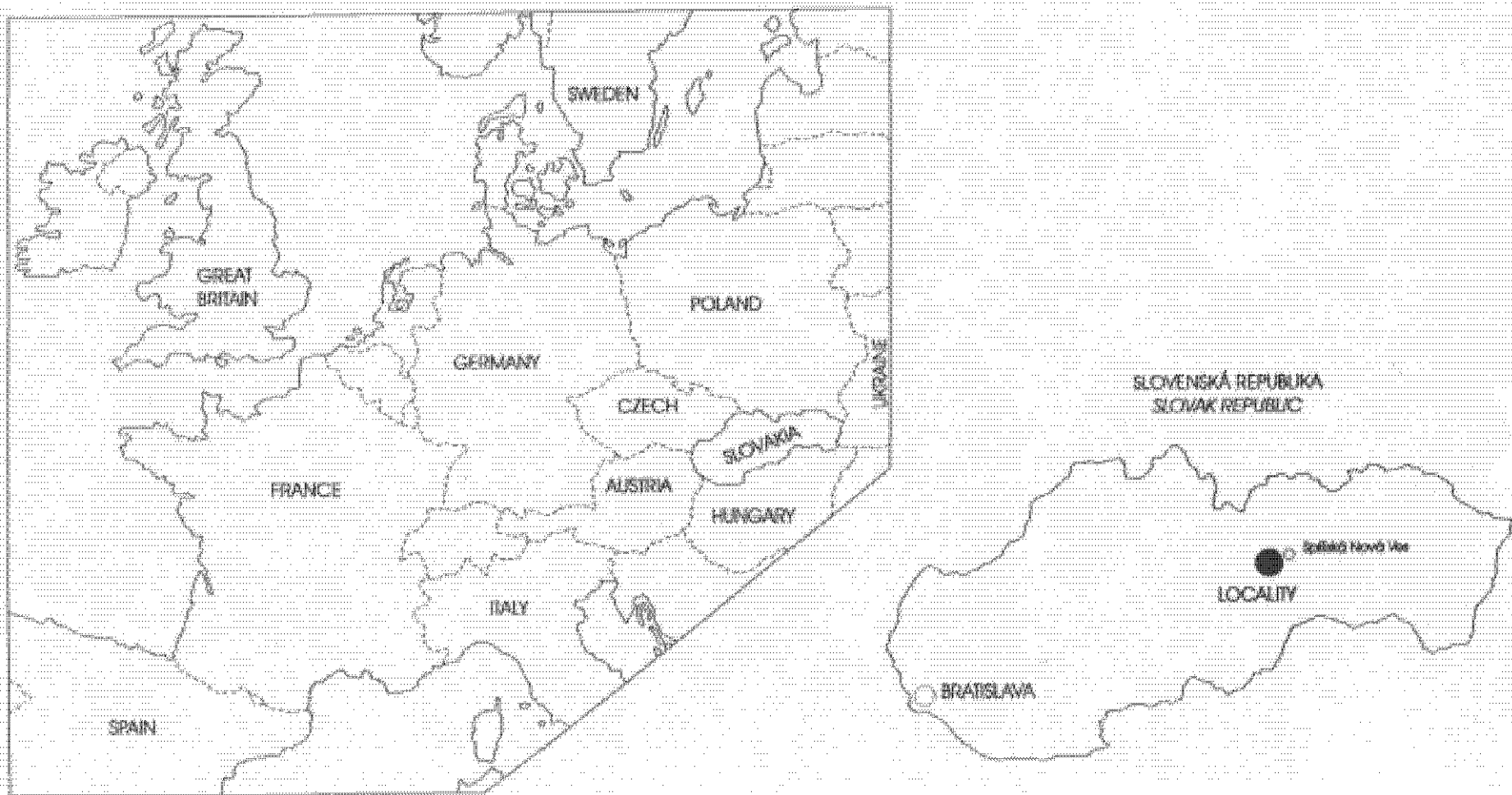
6. APPLICATION OF WORLD HERITAGE CRITERIA

As with the inscription of the Caves of the Aggtelek Karst and Slovak Karst in 1995, the DIC would qualify for incorporation within this site under natural criterion (i). Although the DIC is a relatively small (6km²) and specialised feature, it does add variety to the existing site. It would not merit inscription on its own but its features relate to and complement the Caves of Aggtelek Karst and Slovak Karst. Additionally, the proposal is in terms of the advice given to the Slovak authorities arising out of the Bureau and Committee sessions in 1998 as outlined in the Background Note.

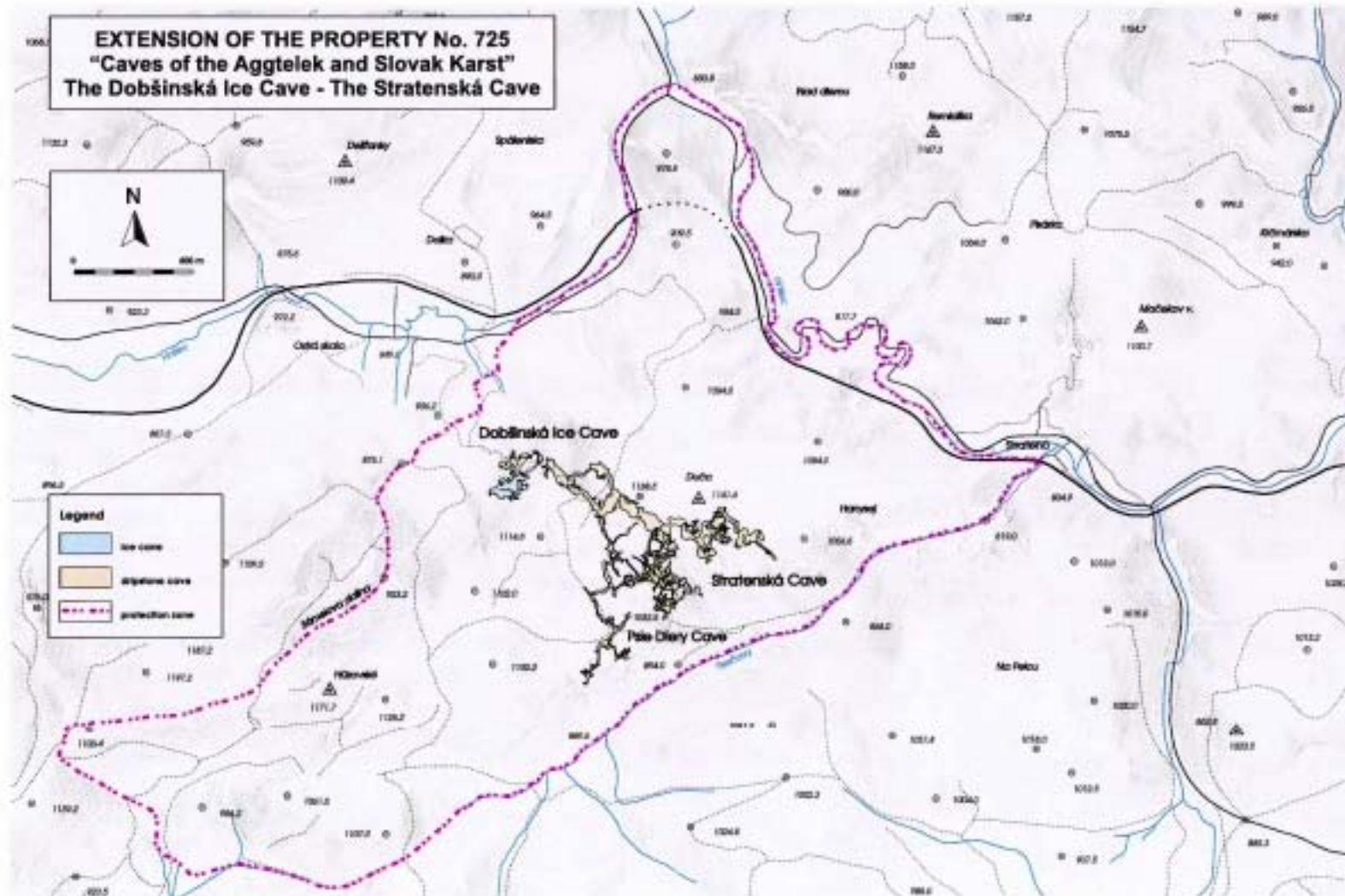
7. RECOMMENDATION

The Bureau recommend to the Committee that Dobšinská Ice Cave be **incorporated** as part of the Caves of the Aggtelek Karst and Slovak Karst World Heritage site. The Bureau noted that although the ice cave is a relatively small (6km²) and specialised feature, it does add variety to the existing site. It would not merit inscription on its own but its features relate to and complement the Caves of Aggtelek Karst and Slovak Karst

The Bureau encouraged both State Parties to regulate activities in the adjacent watershed that may affect the integrity of the Caves of the Aggtelek Karst and Slovak Karst World Heritage site.



**Map 1: Location Map - Caves of the Aggtelek Karst and Slovak Karst (Hungary / Slovakia)
Extension to include Dobšinská Ice Cave (Slovakia)**



**Map 2: Site Map - Caves of the Aggtelek Karst and Slovak Karst (Hungary / Slovakia)
 Extension to include Dobšinská Ice Cave (Slovakia)**