World Heritage Sites

Protected Areas and World Heritage

ŠKOCJAN CAVES
SLOVENIA

This exceptional system of vast limestone caves lies in the Kras plateau after which the global karst landscape type is named. It contains 5 kilometres of underground passages, one of the largest underground caverns in the world, caves more than 200 metres deep, dramatic collapsed dolines and many waterfalls. It is a world famous site for the study of karst limestone phenomena.

COUNTRY
Slovenia

NAME
Škocjan Caves

NATURAL WORLD HERITAGE SITE
1986: Inscribed on the World Heritage List under Natural Criteria vii and viii.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

INTERNATIONAL DESIGNATION
1999: Skocjanske Jame designated a Wetland of International Importance under the Ramsar Convention (305 ha).
2004: Part of The Karst Biosphere Reserve designated under the UNESCO Man and Biosphere Programme (60,193 ha).

IUCN MANAGEMENT CATEGORY
III Natural Monument and V Protected Landscape

BIOGEOGRAPHICAL PROVINCE
Balkan Highlands (2.33.12)

GEOGRAPHICAL LOCATION
The Park lies on the Kras plateau of southwest Slovenia in the commune of Divaca in the Obalno region, 13km east of Trieste. It includes an area to the east where the River Reka first appears in a shallow canyon, the lower part of River Susica, and the area above the caves. A highway to Italy borders the western side of the site the centre of which is located at 45° 40'N and 14° 00'E.

DATES AND HISTORY OF ESTABLISHMENT
1815: The caves were discovered and named the Reka Höhlen und Dolinen von St Kanzian, or Grotten und Höhlen von Sankt Kanzian; also known 1918-45 as the Grotti di San Xanziano;

1980: Designated a Natural Monument (200 ha) under Law 1/1981;

1990: The site was enlarged to its current size by Order of Amendment (Official Gazette 47/90);

1996: The Skocjan Caves Regional Park gazetted (401 ha), Gazette 57/96;

1999: Designated a Ramsar Wetland site.

2004: Designated part of a UNESCO MAB Biosphere Reserve

LAND TENURE
The state owns the cave system but the land surface is mainly privately owned; its acquisition is not envisaged in the management plan (Ramsar, 1999). The management authority is the Office of Tourism at Portoroz, monitored by the Nature Protection Agency of the Ministry for Environment and Physical Planning.

AREA
413 ha.

ALTITUDE
The surface elevations range from 214m to 475m. The caves extend 230m below a surface level of 317m (J. Thorsell, pers. comm., 1995; Ramsar, 1999).

PHYSICAL FEATURES
Skokjan is a shallow limestone canyon in the Dinaric Karst with an associated underground river and cave system featuring four deep and picturesque chasms. It is a classic example of contact karst between the limestone and impermeable rock and is the type location for the landforms and terms karst and doline (swallowhole). The subterranean passages carved by the Reka River are dramatic examples of large-scale karst drainage. Its grottos are the beginning of a system of subterranean passages from their source to Timavo on the Gulf of Trieste in Italy. In places gallery surfaces have collapsed on several levels producing the deep chasms. These include Sokolak to the south, Globocak in the west and Sapen dol and Lisicina to the north, all part of the system and floristically alike. Also included, apart from 2.5 km of river, is the Mahorcic grotto which has several underground pools and five cascades.

The river enters Skocjan grotto in an underground passage 350m long, reappearing at the bottom of two 150m-deep and 300m-long chasms, before disappearing into a passage 2 km long. This passage, one of the largest underground canyons in the world, is up to 148m high and in places 100m wide. The Mahorcic Cave includes several underground lakes and five cascades. The flow rate can reach 300 cu.m per second and there can be extremely high fluctuations of water level. There are five side galleries and a canal. A 500m long gallery with stalactites and stalagmites leads to the surface. The total length of the grottos is over 5 km with a depth of 230m in some places. In all there are 25 cascades along the river and a 163m waterfall. A.C.Waltham in *The World of Caves* noted that the grotto's "enormous river galleries make it one of the wonders of the world". The caves are surrounded by many archaeological sites.

CLIMATE
The caves are situated in a Mediterranean climate. The annual rainfall of the region is 1,449mm but internally the temperature is a constant 12°C.

VEGETATION
The caves harbour a variety of habitats, Dinaric, Mediterranean, Submediterranean, Illyrian and relict Alpine, all occurring side by side in the Great Valley. This is due to the microclimatic conditions present in the collapsed galleries and the shallow chasms of the river valley, allowing Mediterranean species such as *Adiantum capillus-veneris* to grow beside Alpine species such as *Primula auricula* and *Viola biflora*. The endemic giant dead nettle *Lamium orvala* var.*wettsteinii* and *Campanula justiniana* also occur. The surface is mainly dry grassland with dominant autumn moorgrass/hop hornbeam *Seslerio autumnalis-Ostryetum* forest and plantations of Austrian pine *Pinus nigra*. Nine species classified as rare in the Slovenian Red Data Book are present and include *Aconitum anthora*, *Cercis siliquastrum*, *Delphinium fissum*, *Euphrasia italica*, *Juniperus oxycedrus*, *Laburnum alschingeri. Orobanche hederae* is found only in the Great Valley.

FAUNA
The grotto system has a typical speleofauna and provides habitat for the European snow vole *Chionomys nivalis*. The underground galleries hold ten species of wintering bat in considerable numbers including Shreiber's bent-winged bat *Miniopterus schreibersii*, lesser horseshoe bat *Rhinolophus hipposideros*, long-fingered bat *Myotis capaccinii* (VU), greater mouse-eared bat *M. myotis*, Savi's pipistrelle *Pipistrellus savii* and western barbastelle *Barbastella barbastellus*. The caves also support many endemic and endangered species, such as the proteus or cave salamander *Proteus anguinus* (VU), but mainly invertebrates, crustaceans and cave beetles.

The site is identified as an Important Bird Area by BirdLife International. The dry karst grasslands above the caves hold several uncommon and threatened bird species: short-toed snake-eagle *Circaetus gallicus*, European nightjar *Caprimulgus europaeus*, hoopoe *Upupa epops*, Eurasian skylark *Lullua arborea*, tawny pipit *Anthus campestris*, rednecked shrike *Lanius collurio* and ortolan, rock and cirl buntings *Emberiza hortulana*, *E. cia* and *E. cirlus*. It is a breeding area for the Alpine swift *Apus melba* and a wintering site for the wallcreeper *Tichodroma muraria*.

CONSERVATION VALUE

The caves are a well preserved and unique example of a karstic cave system, vast underground river galleries and dolines which contain a number of internationally threatened species. The caves lie within a WWF Global 200 Eco-region and a UNESCO Biosphere Reserve and contain an underground Ramsar site.

CULTURAL HERITAGE

30 areas of archaeological excavation near the caves show that the site has been occupied for more than 10,000 years, and a further 18 such areas exist in the nearby region. Archaeological finds point to continuous settlement from the middle Stone Age to the Iron Age, when a fort was constructed where Skocjan stands today. The Romans erected another fortification in the same place, and during the Middle Ages a fortified rural settlement was established (Puc, 1987).

LOCAL HUMAN POPULATION

The three villages within the protected area (Skocjan pri Divaci, Matavun and Betanja) have a resident population of 90 (J. Thorsell pers. comm., 1995). They are themselves considered to be worthy of classification as national cultural monuments.

VISITOR AND VISITOR FACILITIES

Tourism in the cave started in 1819. At present parts of the grottos are accessible to tourists all year and apart from safety walkways, bridges and an outdoor escalator no other constructions exist. Some 50,000 tourists visited the caves in 1985, 60% of whom were foreigners. Owing to war in the former Yugoslavia, visitor numbers decreased in 1995, with only 40% coming from outside Slovenia. However, visitor numbers in 2001 were 57,000, and in 2002 increased to 66,000. Entrance fees are €9 for foreigners, €6 for students and €4 for children.

SCIENTIFIC RESEARCH AND FACILITIES

The caves continue to be zoologically surveyed. Documentary references exist since the time of Poseidonius (135-50BC), and the caves were described in 1599 and 1689. The site has been fundamental to research on karst phenomena since the 19th century and it is from here that the geomorphological terms 'karst' and 'doline' originate. It was first explored in 1839 by Svetina, who descended 100m into the Reka, and in 1894 the famous speleologist Martel published his work *Les Abimes*. The continuing importance of the site was reflected in the proceedings of the International Symposium on Protection of Karst which was held at Skocjan in 1982. The archaeological finds are possibly among the most significant in Europe, and accompanying documentation is lodged in a number of museums at Trieste, Vienna, Padua, Postojna and Ljubljana. A popular account is given by Puc (1987). As a result of continuing explorations in the Skocjan caves, new caves are still being discovered (M. Simic, *in litt.*, July 1997).

MANAGEMENT

A major part of the grotto system is located within the protected area which is considered as a natural and cultural monument. The legislation which applies to the area is the Law of Protection of Natural and Cultural Heritage (Official Journal of the Slovenian Republic No.1/81 Annex 1, 1981) and Decree (Official Journal of the Slovenian Republic No.17/80, 17 July 1980 and 11/81, 1981, Annexes 2 and 3) which give specific protection to the grottos. The grottos have been administered by several groups, including the Italian Alpine Club from 1918 to 1945 and from then by the Speleological Association of Slovenia, the Karst Research Institute, the Archaeological Institute of the Academy of Sciences in Ljubljana and the Office of Tourism, Portoroz. In October 1996 a law on the Skocjan Caves Regional Park (*Regijski Park Skocjanske Jame*) was passed giving greater State control over the area. The law also provided legislative mechanisms for the establishment of a management authority for the site, then the Skocjan Caves Regional Park Management Authority under the administration of the Nature Protection Agency of the Slovenian Ministry for Environment and Physical Planning. The tourist

organisation *Hoteli,Turizem in Gostinstvo Sezana* (HGT Sezana), who were former managers of the area, is licensed to use part of the Park for catering and tourist facilities.

The 1996 law introduced a special protection regime for the entire Reka river catchment area of 40,000 hectares. In this buffer zone activities are prohibited which might change the existing quantity or quality of the water regime of the river, threatening the grotto system. The Regional Park is zoned, with the most important areas receiving special protection as Natural Monuments. The following are so designated: the last 150m of the canyon before the entrance to Skocjan Caves, the collapsed dolines Mala dolina and Velika dolina, all the caves in the Park, and a dripstone formation on the surface near the Lipje cave. The settlements of Skocjan and Betanja and 35 archaeological, ethnological, historical and technical features are also protected as cultural monuments. In the natural monument areas all forms of direct and indirect pollution and construction are prohibited, and all flora and fauna in these areas is protected. In the peripheral areas all forms of pollution are prohibited, and building is not permitted beyond existing village boundaries (M. Simic, *in litt.*, 1997, UNESCO 1997). In 1998 the World Heritage Bureau urged the Authority to complete its work on a management plan with IUCN assistance (UNESCO, 1998).

MANAGEMENT CONSTRAINTS

The main threat to the caves has been from pollution of the Reka River by two factories located 130 km away in Ilirska Bistrica making organic acids and salonite plates. In 1982, an agreement to combat the degradation of the river was signed between those responsible for the pollution and the executive committee of the Republic of Slovenia, the Sezana commune and those at Ilirska Bistrica (Official Journal of the Republic of Slovenia No.31/82, annex 12). Water quality improved with the closure of the organic acid factory for economic reasons in December 1986, and the introduction of new production procedures at the salonite factory. US$22 million has reportedly been spent on upstream pollution control and aquatic life has returned to some sections of the river. In 1997, reports conclude that water quality is much better, but the river is still polluted by sewage effluent from settlements within the catchment area, and could be further polluted by agriculture and infrastructure on the surface. However, despite the large numbers of visitors, the caves are mainly well preserved, and it is thought that an increase in visitor numbers will not damage them (M. Simic, *in litt.*, 1997). There is some concern about the effect of proposed wind generators on the nearby Vremscica plateau (UNESCO, 2004).

STAFF

In 1995 there were six staff including four guides, one labourer and one superintendent (J. Thorsell, pers. comm., 1995). In 1997 the newly formed Skocjan Caves Management Authority employed two members of staff (M. Simic, *in litt.*, 1997).

BUDGET

The Park receives financial support from HTG Sezana and from the State (*Hotelo Turizem Gostinstvo, in litt.*, 1995). The budget for the Skocjan Caves Management Authority was US$120,000 in 1996 and US$190,000 in 1997 (M. Simic, *in litt.*, 1997).

LOCAL ADDRESSES

The Director, State Nature Conservation Authority, Vojkova 1b, SI-1000 Ljubljana, Slovenia.

Public Service Agency of the Skocjan Caves Park, Skocjan 2, SI 6215, Slovenia.

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DATE

November 1986, 5-1990, 10-1995, 7-1997, 3-2003, 7-2005, May 2011.