

The list of Geotopes in Austria

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Because of a strong and traditional predomination of the biologic aspects in practical and scientific nature-conservation all over the world, the importance of geotopes in our natural heritage is not sufficiently realized up to now. Often the term "ecology" deals nearly only with biotic and recent facts.

Although the memory of geological and geomorphological sites represents the main part of the history and the development of our earth and all the conditions of life on it, there is still a lack. We see this also in governmental conservation-work in most countries. Ecologic (often used nearly synonymous with biologic) ideas are common and acknowledged, abiotic ideas are not. Many countries have biotope-registers at one's disposal, but only very few also geotope-registers of the territory of their state. And the legal situation is often at the same unsatisfactory condition: Although exposures, sites and abiotic natural monuments are extremely valuable for science as well as impressive and precious for the broad public, especially although our geotopes are lost one for ever, if they become destroyed, there are in the conservation laws only comparable weak and unspecific rules. This situation is a result of intensive successful (and of course valuable) work of biologists. Simultaneously it is a strong call to all earth scientists to reduce this dramatic backlog.

Three years ago I tried to analyse the situation in Austria. The area is not very typical for Europe, because it is rather mountainous and especially the young Alps are high, partly steep and crowded with giant exposures. The morphology is the main reason for intensive tourism. We should expect a relative high importance of geotopes and geotope conservation.

Both the administration and the main-types of geotopes are unevenly distributed in Austria:

The federal system divides politics, laws and administration in 9 different "Countries", the geology classifies very different landscapes: 63 % of Austria belong to the Eastern Alps, 11 % to the Alpine Foreland, 10 % to the Bohemian Massif, only 4 % to the Vienna Basin and 11 % to the foreland east of the Alps. Most of Austria has been heavily glaciated. We may expect, that a list of Geotopes in Austria reflects these changing conditions.

The first surprise was, that no country knew what happened in the neighbour country. Some countries did not even possess a list of geotopes under conservation status. And only few have at one's disposal a geotope inventory as a tool for practical conservation work. At last, it was necessary to select the different lists, to compile them and to pull out earth scientific aspects, which are included in cultural and ecological monuments. The outcome is therefore more accidental and irregular, but not at all systematic. It seems that the majority of sites is the result of endeavours of single, mostly private persons.

A first attempt to classify the 700 geotopes of Austria in categories came to the picture shown in the Table:

Austrian countries	B	K	N	O	S	ST	T	V	W	total
geomorphological sites	1	68	13	3	12	4	8			109
blocks, exposures	3	74	35	2	5	3	3	2		127
waterfalls	11	7	2	3	24	5	8			60
palaeontologic sites	2	1					2	1	3	9
sources of minerals		4				3	5			12
glaciation features	7	8	2	9	5	6	9			46
gorges, ravines	4	16	1	16	11	12	5			65
lakes, ancient river beds	2	8	2		1	3				16
springs, caves	2	1	31	7	27	102	40	20		230
others (incl. cultural)		16					2	1	1	20
total	5	282	232	62	60	165	81	54	6	693

Names of the countries: B – Burgenland, K – Karnten, N – Lower Austria, O – Upper Austria, S – Salzburg, ST – Styrien, T – Tyrol, V – Voralberg, W – Vienna.

The conditions of protection by the law are different: 61 sites (at Tyrol) are without protection up to now, 4 sites are "protected parts of landscape", an important number is part of larger, protected nature-parks, and most of the sites are protected natural monuments.

Besides these sites, there is a great amount of monuments within nature trails, used in education and tourism. In fact, these sites enjoy effective protection too.

Very distinct is the uneven intensity of the uplisted geotopes in the countries. Lower Austria is the leader of the list, Styria is following. We find only one third in the exciting countries of Tyrol, Upper Austria and Salzburg. Even the very small Vorarlberg possesses a comparable number. The real protection of geotopes shows still more differences. Without protection is one geotope in Burgenland, but 61 in Tyrol. Of course these remarks do not include the meaning, that we should have abundance of protected geotopes. But we should secure the systematic maintenance of the necessary witnesses of the earth history.

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Though rather accidentally elaborated, the list shows a kind of systematics. The protected "blocks and exposures" are in Lower Austria most frequent, depending on the presence of the Bohemian Massif with granites and gneiss. The

low amount of "lakes and former river courses" may be easily explained by the protection of biotic phenomena of those features, and the striking high amount of karstic features ("springs and caves") is due to the long working special cave law in Austria.

But it should be also very clearly recognized, that important natural features, documented in the landscapes, are more or less underrepresented. They are palaeontologic and mineralogic monuments as well as stratigraphic or tectonic phenomena. Nearly no quarry, representing an important exposure, is protected up to now. And in view of the importance of former glaciations and the frequent glacial remnants, the number of 46 geotopes in Austria seems to be very scanty.

The situation is unsatisfactory. Systematisation and standardization seem to be useful, although difficult. In spite of the fact, that geotopes should be an educating and positive access to earth science, some type localities are not easily understandable to the public, some are far away in the mountains, some should not be made public because they are endangered by collectors. Rarity, danger by planned constructions, conspicuousness, attractivity and ability for conservation could be more important criteria for selection of geotopes.

To reach such aims, nothing can be done without information and education. We need a real management for geotopes, including their cleaning! Posters, booklets and folders are of utmost importance. Meetings may help to a large extent, and information centres are necessary for this management.