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ASSESSMENT OF THE TOURIST ATTRACTIVENESS OF GLOBAL GEOPARKS IN EUROPE

(Представлено членом редакційної колегії д-ром геол. наук, проф. В.А. Нестеровським)

The article provides an inventory of geoparks from the list of the UNESCO Global Geoparks Network. It is noted that geoparks as important tourist attractions have been the subject of scientific attention of many authors, but the data presented in these publications are outdated and can not claim to be relevant to the current state of the geoparks network, as it is quite dynamic and changes every year. The research of the chosen topic in the scientific domestic and foreign literature is characterized. The insufficiency of the tourism research of the UNESCO geoparks system is pointed out. The structural-territorial analysis of the distribution of objects is performed: absolute and relative indicators of the number of objects by macroregions are established. A cartographic model of the distribution of objects on the planet is presented. Monitoring of a specific set of geotourism attractions within each of the geoparks is done taking into account the following thematic types: geological and geomorphological (geological and geomorphological formations - the mountains, intermountain basins and gorges, craters and cones of volcanoes, river valleys, deltas and canyons, lakes, waterfalls, sea coasts, deserts and aeolian, glaciers and glacial, karst and pseudo-karst landforms, geological forms and phenomena - the minerals, rocks, structural and tectonic formations, paleontological fossils, geothermal phenomena; geological and geomorphological processes - volcanic eruptions, geyser explosions, avalanches, coastal processes on sea and lake coasts, melting glaciers, dune movements, erosion processes); industrial (the open and underground mine workings, clay and sand quarries, pits, exploratory shafts, drain lines, rock dumps, tunnels, catacombs, surface and underground military objects, engineering and geological activities, construction of tunnels, construction of roads and highways, use of geothermal water); cultural and cognitive (works of material culture are different buildings made of natural materials and the elements of their arrangement, stone pyramids, rock cities and temples, the stone elements of urban infrastructure, the works of art, jewellery, museum and other expositions, open-air expositions, such places of fossils, supporting stratigraphic sections, places of minerals and rocks location); tourist and infrastructural attractions (availability of the geopark for the access by several types of transport, several tourist accommodation options, currency exchange offices, recreation facilities, parking lots, places for tents; Tourist Information Centres; marked tourist routes for the needs of several types of tourism (cycling, green-, caving, water- tourism); marking of tourist attractions (information stands. Information support of tourism (creating internet portals of the geopark, mobile applications); accessibility of the geopark to the inclusive tourists). According to the indicators of occupancy of various thematic blocks, geoparks were ranked according to the scale of levels of attractiveness.

Keywords: geoparks, geomorphosites, geotourism attractions, geotourism attractiveness.

The problem in general and its relationship with important scientific and practical tasks. The different geological and geomorphological formations: mountain masses, canyons and river deltas, karst and glacial forms, volcanoes, waterfalls, etc. have attracted people's attention since ancient times. People settled near them, used for defence or conducting religious rites. Over time, the meaning and the functions of such places have changed: they became important not only for studying the unique features of a particular geographical place, but also for the history of the entire Earth. They began to be visited by tourists and scientists. In many countries around the world, a number of inanimate objects particularly valuable in the scientific (geological, mineralogical, paleontological, geographical, etc.) and aesthetic terms have legal protection. Every year, the tourists' interest in the geological and the geomorphological objects as an alternative to the historical and the cultural monuments is growing. The geotourism is developing, which is a type of travel related to the inspection and the study of objects of inanimate nature (Chen, 2015; Cutler, 2010; Dowling, 2011; Hose, 2005; Khomenko, 2018; Newsome, 2005; Ollier, 2012). The geosites are the main attractions for tourists on these trips, which, in particular, are the interesting geological and geomorphological objects in combination with the surrounding area, reflecting the history of the nature and society development on a certain territory. These objects are a part of the general concept of protection, education and sustainable (balanced) development, which has found its

practical expression in the idea of creating geoparks (Alexandrowicz, 2006). A geopark is a protected area of national significance that contains particularly important, rare (or unique), aesthetically attractive geological and geomorphological objects of the scientific, educational and recreational value. In addition to the objects representing geological heritage, the geoparks also contain archaeological, ecological, historical and cultural monuments, which form the geotourism attractiveness of geoparks (Alexandrowicz, 2006; Geotourism, 2006; Gray, 2004). It is the assessment of the geotourism attractiveness of geoparks that is the subject of our study.

Analysis of recent researches and publications in which there is the solution of the problem, is relied upon by the author. According to the initial functioning principles, the geoparks take an active part in the social and economic development of the location region by popularizing geoheritage and developing geotourism, as well as cooperating with the local enterprises to popularize and create the new tourist products related to the geoheritage. The geoparks try to modernize the information in communities about the importance of protecting and using the unique heritage of the Earth in order to preserve it for the future generations, and hold the actions to study public opinion on the problems of natural (including geological) sciences. The geoparks hold the scientific researches, inventory, mapping, protection and preservation of geosites, they lay the tourist routes connecting the park objects with the tourist infrastructure, organize educational programs,

cultural and scientific events, and so on. They play an active role in organizing and implementing educational activities related to the Earth Sciences, the sciences on natural environment and the balanced development. The geoparks are managed in accordance with the state legislation of the country of its location, in compliance with the protection and sustainable development policy. One of the main goals that all geoparks set for themselves is to improve and expand the methods of protecting, arranging and popularizing geological and geomorphological objects located on their territories. For this purpose, the geoparks are constantly experimenting, developing and improving the methods of activities, supporting scientific researches in different branches of Earth Sciences. In order to facilitate the implementation of these tasks, they are combined into the networks of geoparks. The Global Geopark Network (GGN) was launched in 1998 as an element of the UNESCO's activities (UNESCO Geoparks Programme, 1999).

The main material of the research with the full substantiation of the received scientific results. The UNESCO's structural and full-fledged work with geoparks began in 2001. In 2004, 17 European and 8 Chinese geoparks met at the UNESCO headquarters in Paris to form the GGN, where the national geological heritage initiatives promote membership in the global network of exchange and cooperation. Since then, the network of Geoparks has grown. During the 38-th session of the UNESCO General Conference in 2015, 195 UNESCO member states ratified the creation of a new sign, that is, the UNESCO Global Geoparks. They are becoming an increasingly important tool for UNESCO to engage member states and their communities in the Earth Sciences and geological heritage.

According to UNESCO, in order for a geopark to apply for inclusion in the global network, it should have a management plan developed on the basis of geotourism, to promote sustainable social and economic development; demonstrate methods of preserving and protecting geological heritage, provide funds for teaching geo-scientific

disciplines and environmental issues; have joint proposals from public authorities, local communities and individuals working together, and demonstrate best practices for preserving the land's heritage and integrating it into the sustainable development strategies.

There are many studies on a comprehensive research of the UNESCO Global Geopark Network evolution (Du, Girault, 2018). The literary and bibliographic reviews of the interdisciplinary and the narrow-industry researches on the geoparks functioning in the recent years confirm the high popularity and relevance of the scientific researches in this field (Stoffelen, 2019; Ólafsdóttir, Tverjónaite, 2018; Herrera-Franco et al., 2021). The works of the following researches are devoted to the features of creating geoparks and studying geotourism objects on the territory of Ukraine, namely the works by H. Denysyk, Yu. Zinko, V. Maniuk, O. Shevchuk, H. Bairak, L. Teodorovych and many others (Bairak, Teodorovych, 2020; Denysyk, 2014; Kravchuk. 2012; Maniuk, 2007; Shevchuk, 2011; Zinko, 2008a, b).

Since 2015, the parks that are a part of the Global Geoparks Network have been officially recognized as UNESCO Global Geoparks (Gordon, 2005; Ramsay, 2017). At the same time, with the increased interest in geoheritage objects and an increase in the number of people who want to visit them, the issue of preservation and the rational use arose, the need for further study of these objects has increased as well.

According to the list of UNESCO Global Geoparks (UGGp) of May 2021, there are 169 parks in the UNESCO Global Geopark Network in 44 countries around the world (Fig. 1, Table 1).

The largest number of geoparks is located in Europe, that is – 88 (over 52% of their total number) located on the territory of 27 UNESCO member states. The majority of geoparks operate in such countries as Spain (15), Italy (11) and the United Kingdom (8). There are also the geoparks located within the territories of two states: Austria- Slovenia; Germany-Poland; Ireland &UK (Table 1, Fig. 2, Fig. 3).

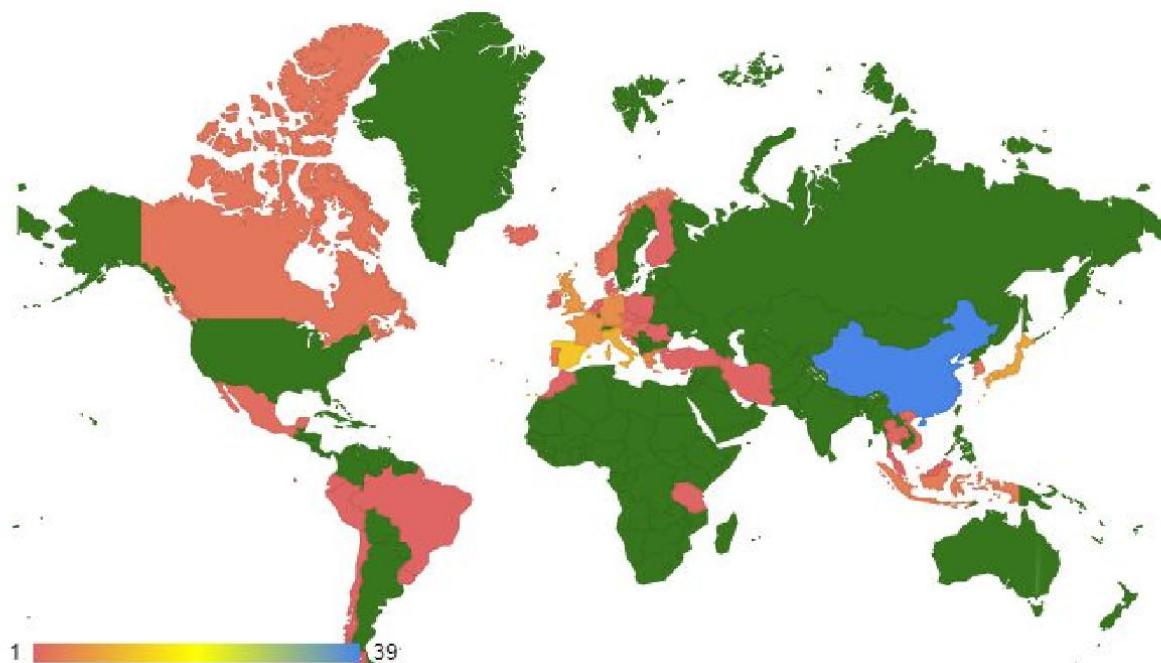


Fig. 1. List of UNESCO Global Geoparks

Table 1

Number of geoparks in the world (List of Geoparks..., 2021)

Part of the world / country	Numbers of geoparks		Part of the world / country	Numbers of geoparks		Part of the world / country	Numbers of geoparks		Part of the world / country	Numbers of geoparks	
	pcs	%		pcs	%		pcs	%		pcs	%
Europe	88	52, (1)	Asia	66	39, (1)	America	13	7, (7)	Africa	2	1, (2)
<i>Austria</i>	2	1.8	<i>China</i>	41	24.3	<i>Brasil</i>	1	0,(6)	<i>Morocco</i>	1	0,(6)
<i>Belgium</i>	1	0,(6)	<i>Indonesia</i>	6	3,(6)	<i>Canada</i>	5	3	<i>Tanzania</i>	1	0,(6)
<i>Austria-Slovenia</i>	1	0,(6)				<i>Nicaragua</i>	1	0,(6)			
<i>Croatia</i>	2	1,(2)				<i>Chile</i>	1	0,(6)			
<i>Cyprus</i>	1	0,(6)	<i>Japan</i>	9	5.3	<i>Ecuador</i>	1	0,(6)			
<i>Czech</i>	1	0,(6)	<i>Malaysia</i>	1	0,(6)	<i>Mexico</i>	2	1,(2)			
<i>Denmark</i>	2	1,(2)	<i>Republic of Korea</i>	3	1,(8)	<i>Peru</i>	1	0,(6)			
<i>Finland</i>	3	1,(8)	<i>Thailand</i>	1	0,(6)	<i>Uruguay</i>	1	0,(6)			
<i>France</i>	7	4,(1)	<i>Turkey</i>	1	0,(6)						
<i>Germany</i>	7	4,1	<i>Vietnam</i>	3	1,(8)						
<i>Germany-Poland</i>	1	0,(6)									
<i>Greece</i>	6	3,(6)									
<i>Hungary</i>	1	0,(6)									
<i>Iceland</i>	2	1,(2)									
<i>Ireland</i>	2	1,(2)									
<i>Ireland &UK</i>	1	0,(6)									
<i>Italy</i>	11	6,(5)									
<i>Netherlands</i>	1	0,(6)									
<i>Norway</i>	3	1,(8)									
<i>Poland</i>	2	1,(2)									
<i>Portugal</i>	4	2,(4)									
<i>Romania</i>	1	0,(6)									
<i>Russian Federation</i>	1	0,(6)									
<i>Serbia</i>	1	0,(6)									
<i>Slovakia</i>	1	0,(6)									
<i>Slovenia</i>	1	0,(6)									
<i>Spain</i>	15	8,(9)									
<i>United Kingdom</i>	7	4,(4)									

The Asian region is slightly inferior to Europe, and concentrates on its territory 66 (39% of the total list) geoparks of the world, on the territory of 9 states. In terms of the number of geoparks, the undisputed leaders of this macro-region are China (41), which is the leader of the region and the world, Japan (9) and Indonesia (6). The Asian "threesome" is fully included in the top 5 world leaders and takes the 1-st, 3-rd and 5-th places, respectively (Fig. 2, Fig. 3).

The American region is represented by 8 states with 13 objects. It is five times inferior to the Asian one. The region's share reaches only 7.7% of all the attractions. Canada is the leader here, with 5 geoparks on its territory; there are 2 of them in Mexico, and the remaining 6 countries have 1 geopark each.

Only 2 Geoparks have been created on the territory of the African continent, while none have been created in the Australian-Oceanic macro-region (Fig. 2, Fig. 3).

Each of the geoparks has a specific set of geotourism attractions, and therefore a different level of geotourism attractiveness. Based on the inventory results of the geomorphosites on the territory of the Global European Geopark Network we will assess the tourist attractiveness of the European geoparks.

According to the definition made by Polish researchers Ye. Zhaba and K. Gaidzik (2010), the objects of geotouristic interest are the objects and the phenomena of inanimate

nature that were formed in a natural way, as well as the anthropogenic forms and formations that arose as a result of unconscious or purposeful human activity. Among them:

- Landforms (geological and geomorphological formations) are the mountains and mountain countries, intermountain basins and gorges, craters and cones of volcanoes, river valleys, deltas and canyons, lakes, waterfalls, sea coasts, deserts and aeolian landforms, glaciers and glacial landforms, karst and pseudo-karst (surface and underground) landforms, ravines, springs and landforms formed by them, coral reefs, etc;

- Geological forms and phenomena are the minerals, rocks and their varieties, structural and tectonic formations (folds, scales, slices, slopes, discharges, specific bedding, etc.), magma intrusions and different manifestations of volcanism, paleontological fossils, mineralization processes, mineral deposits, geothermal phenomena (etc.);

- Geological and geomorphological processes are volcanic eruptions, geyser explosions, mud volcano activities, avalanches, coastal processes on sea and lake coasts, melting glaciers, dune movements and other aeolian processes, landslides, land slips, erosion processes, etc.;

- Forms of anthropogenic transformation of the environment are the open and underground mine workings, clay and sand quarries, pits, exploratory shafts, drain lines, rock dumps, active and ancient mining objects and related transformations of the

territories, tunnels, catacombs, surface and underground military objects (for example, tunnels, fortifications, etc.);

• Engineering and geological activities are the drilling wells, dams, operation of marine and oceanic drilling platforms, search for minerals on the Earth's surface and on the ocean floor, construction of tunnels, construction of roads and highways, use of geothermal water, etc.;

• Works of material culture are different buildings made of natural materials and the elements of their arrangement, stone structures (pyramids, rock cities, temples, etc.), the stone artefacts found during archaeological excavations, the stone elements of urban infrastructure, the works of art, jewellery and their connection with the extraction of precious stones, etc.;

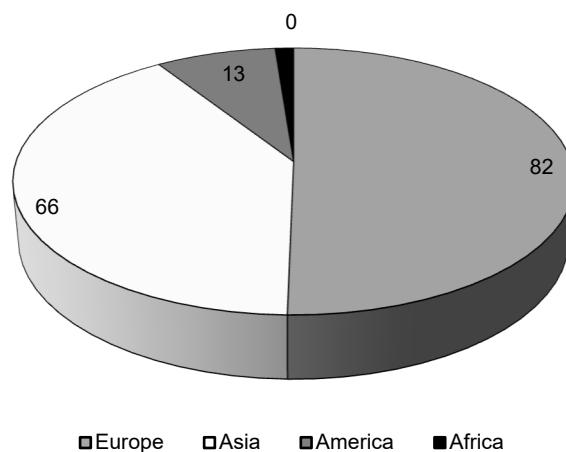


Fig. 2. Number of geoparks in the world by region
(List of Geoparks..., 2021)

• Museum and other expositions are the geological, mineralogical and paleontological museums, demonstration geosites (open-air expositions), such places of fossils, supporting stratigraphic sections, places of minerals and rocks location, geotouristic trails. Adapting this objects' classification for the needs of tourism, we can distinguish the following thematic blocks of the geotourism attractions:

- Geological and geomorphological;
- Industrial;
- Cultural and educational;
- Tourist and infrastructure.

Based on the objects' typology, we will hold an inventory of the objects of all geoparks in Europe (Table 2).

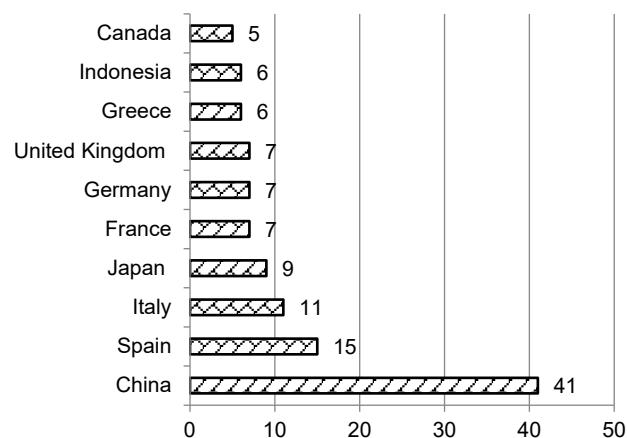


Fig. 3. Countries with the largest number of geoparks
(List of Geoparks..., 2021)

Table 2

Geotouristic attractions	Geological and geomorphological attractions	Industrial attractions	Cultural and educational attractions	Tourist and infrastructure attractions
Ore of the Alps	Slate mountains, glaciation, excessively deep river valleys and slopes, instability of slopes, landslides and rockfalls, deposits of valuable mineral resources, geological rock outcrops, waterfalls	Exhibition mines of villages, traces of ancient mining activities	Environmental programs, minery for visitors, exhibition tunnels, museum of minerals	Tourist centre for visitors, bike routes, hiking trails, mystical tours
Styrian Eisenwurzen	The mountains up to 1000 m high, the wide valleys of the main rivers, deep gorges, Cretaceous and Paleogene rocks, the boundary of the Cretaceous and Tertiary period, the springs, some of which have huge power, a large gypsum cave, an ice cave and a cave in which the remains of a cave bear were found as well as some remarkable artefacts of 30,000 years old (known fossil fauna of corals and molluscs, including ammonites, snails, bivalves. The remarkable fossils also include the rudist reefs, a type of sessile bivalve mollusc. In the landscape, the moraines and the river terraces witness the Great Ice Age)	Steel mills, historic churches, houses and manors, rich heritage of traditional customs, water factory	GeoCenter, Silvanum Austrian Forest Museum and HochQuellenWasser Museum, unique fruit orchards	Special programs for the private participation of local children and for schools, Natural Diet detox programs
Karawanken/ Karavanke	Alpine mountains with a height of more than 2000 meters, the remains of sea snails, sea lilies and even ichthyosaur bones, which testify to the rich life of the former Tethys Sea, Smrekovets underwater volcano	Rich mining and iron production, old mineries		Courses for teachers and master classes for kindergarten and school-age children

Based on this monitoring, we were able to obtain the comprehensive information for each geopark, hence, all the geoparks were ranked according to the level scale (fig. fullness of different thematic blocks) – Fig. 4.

This systematization allows us to talk about the different geotourism potential of the geoparks themselves, and, accordingly, the different tourist use of the geoparks (Table 3).

Levels	Geological and geomorphological attractions	Industrial attractions	Cultural and educational attractions	Tourist and infrastructure attractions
High +	The site is a "key" area for studying the geological history of the Earth. It is a unique object on a global scale. It accumulates different types of geomorphological objects (at least 3 types, for example, karst, glacial and aeolian landforms), different geological formations (for example, sections, folds, scales) that are the visual locations for demonstrating the manifestations of modern or ancient geological and geomorphological phenomena or processes (for example, the eruption of mud volcanoes, the activity of artesian springs)	The site is a visual demonstration of historical crafts, the former military structures, and the ancient infrastructure facilities (at least 2 types)	The site is an object of a cultural and educational tourism. There are museum and other expositions, exhibitions of the archaeological artefacts. The site is a venue for scientific, entertainment and festival events, actively used in local history awareness and education. It is a training centre for professional guides and tour guides, a place for holding trainings on the geotourism activities. The territory plays a significant role for the local culture and it is associated with the artistic events	Availability and accessibility of the geopark for the access by several types of transport. Several tourist accommodation options. Currency exchange offices. Recreation facilities, parking lots, places for tents. Availability of Tourist Information Centres. Marked tourist routes for the needs of several types of tourism (cycling, green-, caving, water-tourism). Marking tourist attractions (information stands). Information support of tourism (creating internet portals of the geopark, mobile applications). Accessibility of the geopark to the inclusive tourists
Average +	The site has a relatively high level of geological uniqueness on a regional scale. It accumulates the geological and geomorphological sites of different origins (at least 2 types) that are visual for demonstrating the manifestations of modern or ancient geological and geomorphological phenomena or processes (at least 1 type)	The site is a visual demonstration of historical crafts, the former military structures, and the ancient infrastructure facilities (at least 1 type)	Geological, mineralogical and paleontological museums, demonstration geosites (open-air expositions). The site is a venue for scientific, entertainment and festival events (at least 1 type). It is used in the field of awareness-raising and education	Available access. Accommodation (minimum 1) and meals (minimum 1) facilities. Availability of Tourist Information Centres. Marked tourist routes for the needs of different types of tourism (at least 2). Marking tourist attractions. Informational support of tourism (at least 1 type of activity)
Low +	The site is unique on a regional scale and it is represented either by one- or two-type geological-geomorphological sites, or it is demonstrable for the manifestations of modern or ancient geological and geomorphological phenomena	The site is visual for demonstrating at least some objects of the ancient industry, or there are no such objects at all	The territory has no museums or exhibition expositions, but only the open-air demonstration expositions. The site is a venue for festivals or the other events, or it is used for the awareness-raising and education of the schoolchildren / students	No tourist accommodation and catering establishments. Marked tourist routes for the needs of only one type of specialized tourism or lack thereof

Fig. 4. Level scale

Table 3

Assessment of the geoparks' geotourism potential

№	Geotouristic attractions	Geological and geomorphological attractions	Industrial attractions	Cultural and educational attractions	Tourist and infrastructure attractions	TOTAL
1	Ore of the Alps	+++	+++	+++	+++	+++
2	Styrian Eisenwurzen	+++	++	+++	+++	++
3	Karawanken / Karavanke UGGp*	++	++	+	+	+
4	Famenne-Ardenne	++	++	+++	+++	++
5	Papuk	+++	+	+++	+++	++
6	Vis Archipelago	++	++		+	+
7	Troodos	+++	++	++	++	++
8	Bohemian Paradise	+++	+++	+++	+++	+++
9	Odsherred UGGp	+++	++	+++	+++	++
10	Vestjylland	++	++	+	+	+
11	Rokua	++	++	+++	+++	++
12	Lauhanvuori-Haemeenkangas	+++	+	+++	+++	++
13	Saimaa	++	++		+	+
14	Beaujolais	+++	++	++	++	++
15	Causse du Quercy	+++	+++	+++	+++	+++
16	Chablais	+++	++	+++	+++	++
17	Haute-Provence	+++	+++	+++	+++	+++
18	Luberon	+++	++	+++	+++	++

19	Massif des Bauges	++	++	+	+	+
20	Monts d'Ardèche	++	++	+++	+++	++
21	Bergstraße-Odenwald	+++	+	+++	+++	++
22	Harz, Braunschweiger Land	++	++		+	+
23	Swabian Alb	+++	++	++	++	++
24	TERRA.vita	+++	+++	+++	+++	+++
25	Vulkaneifel	+++	++	+++	+++	++
26	Thuringia Inselsberg -Drei Gleichen	++	++	+	+	+
27	Muskauer Faltenbogen / Łuk Mużakowa **	++	++	+++	+++	++
28	Chelmos Vouraikos	+++	+++	+++	+++	+++
29	Lesvos Island	+++	++	+++	+++	++
30	Psiloritis	++	++	+	+	+
31	Sitia	++	++	+++	+++	++
32	Vikos-Aoos	+++	+	+++	+++	++
33	Grevena - Kozani	++	++		+	+
34	Katla	+++	++	++	++	++
35	Reykjanes	+++	+++	+++	+++	+++
36	Burren & Cliffs of Moher	+++	++	+++	+++	++
37	Copper Coast	++	++	+	+	+
38	Marble Arch Caves ***	++	++	+++	+++	++
39	Adamello-Brenta	+++	+	+++	+++	++
40	Alpi Apuane	++	++		+	+
41	Beigua	+++	++	++	++	++
42	Cilento, Vallo di Diano e Alburni	+++	+++	+++	+++	+++
43	Madonie	+++	++	+++	+++	++
44	Pollino	++	++	+	+	+
45	Sesia Val Grande	++	++	+++	+++	++
46	Rocca di Cerere	+++	+	+++	+++	++
47	Tuscan Mining Park	++	++		+	+
48	Aspromonte	+++	++	++	++	++
49	Maiella	+++	+++	+++	+++	+++
50	De Hondsrug	+++	++	+++	+++	++
51	Gea Norvegica	++	++	+	+	+
52	Magma	++	++	+++	+++	++
53	Trollfjell	+++	+	+++	+++	++
54	Holy Cross Mountains	++	++		+	+
55	Açores	+++	++	++	++	++
56	Arouca	+++	+++	+++	+++	+++
57	Estrela	+++	++	+++	+++	++
58	Naturejo da Meseta Meridional	++	++	+	+	+
59	Terras de Cavaleiros	++	++	+++	+++	++
60	Haëg	+++	+	+++	+++	++
61	Djerdap	++	++		+	+
62	Idrija	+++	++	++	++	++
63	Basque Coast	+++	+++	+++	+++	+++
64	Cabo de Gata-Níjar	+++	++	+++	+++	++
65	Central Catalonia	++	++	+	+	+
66	Origens	++	++	+++	+++	++
67	Courel Mountains	+++	+	+++	+++	++
68	El Hierro	++	++		+	+
69	Granada	+++	++	++	++	++
70	Lanzarote and Chinijo Islands	+++	+++	+++	+++	+++
71	Las Loras	+++	++	+++	+++	++
72	Maestrazgo	++	++	+	+	+
73	Molina & Alto Tajo	++	++	+++	+++	++
74	Sierra Norte de Sevilla	+++	+++	+++	+++	+++
75	Sierras Subbéticas	+++	++	+++	+++	++
76	Sobrarbe-Pirineos	++	++	+	+	+
78	Villuercas Ibores Jara	++	++	+++	+++	++
79	Black Country	+++	+	+++	+++	++
80	English Riviera	++	++		+	+
81	Fforest Fawr	+++	++	++	++	++
82	GeoMôn	+++	+++	+++	+++	+++
83	North Pennines AONB	+++	++	+++	+++	++
84	North-West Highlands	++	++	+	+	+
85	Shetland	++	++	+++	+++	++

* – Austria and Slovenia,

** – Germany and Poland,

*** – Ireland & United Kingdom of Great Britain and Northern Ireland.

To geoparks with high geotourism attractiveness, we have included those geoparks which are absolutely unique object on a global scale. Various types of geological and geomorphological formations (mountains, intermountain basins and gorges, volcanoes, river valleys or canyons, lakes), waterfalls, seashores, deserts, glaciers and glacial landforms, karst, erosions, coral reefs, etc.), various geological formations (eg sections, folds, scales), volcanic eruptions, geyser eruptions, avalanches, melting glaciers, dune movements, landslides, landslides, erosion and abrasion processes are organically combined on their territory. The territory of these geoparks has undergone a certain anthropogenic transformation and preserves the material memory of mining, quarries, existing and ancient mining facilities, surface and underground military facilities. The site is actively used in tourism and cultural and cognitive social activities: there are museums and exhibitions, mass events (scientific, artistic, entertainment, etc.), the area is adapted for tourists (there are tourist infrastructure, available tourist marking of objects and routes, the territory is accessible for inclusive tourist, there is information support of tourist activity, several directions of tourism are developing).

Geoparks with medium geotourism attractiveness have a relatively high level of geological uniqueness on a regional scale, on their territory are geological and geomorphological objects of at least two geneses (eg., mountains and waterfalls, volcanic cones and sea coasts), the site clearly demonstrates the manifestations of modern or geological and geomorphological phenomena or processes. It has everything you need to carry out tourist activities (exhibitions, infrastructure, tourist markings), but on a much smaller scale.

Geoparks with low tourist attractiveness include those geoparks that are at the stage of increasing their tourist potential. Among the tourist attractions here are mostly open-air exhibitions, tourist infrastructure (accommodation, food, other services) are still developing, tourist marking is either absent or partial, the area is used only by one specialized type of tourism.

Conclusions. The structural-territorial analysis of the distribution of objects is performed: absolute and relative indicators of the number of objects by macroregions are established. A cartographic model of the distribution of objects on the planet is presented. The specific set of geotourism attractions within each of the geoparks was monitored by the following thematic types: geological-geomorphological (landforms (geological-geomorphological formations), geological forms and phenomena, geological and geomorphological processes); industrial (forms of anthropogenic transformation of the environment, engineering and geological activities); cultural and cognitive (works of material culture, museum and other expositions, events); tourist-infrastructure (catering and accommodation, transfer, tourist marking, information support) attractions. According to the indicators of filling of various thematic blocks, geoparks were ranked according to the scale of levels of

attractiveness, on the basis of which geoparks with high, medium and low tourist attractiveness were distinguished.

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ОЦІНКА ТУРИСТИЧНОЇ ПРИВАБЛИВОСТІ ГЛОБАЛЬНИХ ГЕОПАРКІВ ЄВРОПИ

Подано інвентаризацію геопарків зі списку Глобальної мережі геопарків ЮНЕСКО. Зазначається, що геопарки, як важливі туристичні об'єкти, були предметом наукової уваги багатьох авторів, але дані, представлені в цих публікаціях, є застарілими і не можуть претендувати на відповідність сучасному стану мережі геопарків, оскільки вона досить динамічна і щороку змінюється. Охарактеризовано дослідження обраної теми у науковій вітчизняній та зарубіжній літературі. Вказано на недостатність туристичних досліджень системи геопарків ЮНЕСКО. Проведено структурно-територіальний аналіз розподілу об'єктів: встановлено абсолютні та відносні показники кількості об'єктів за макрорегіонами. Представлено картографічну модель розподілу об'єктів по планеті. Здійснено моніторинг конкретного набору геотуристичних об'єктів у межах кожного з геопарків за такими тематичними типами: геолого-геоморфологічні об'єкти (геолого-геоморфологічні утворення – гори, міжгірські улоговини та ущелини, кратери та конуси вулканів, річкові долини, дельти та каньйони, озера, водоспади, морські узбережжя, пустелі та еолові, льодовикові, карстові й псевдокарстові форми рельєфу; геологічні форми та явища – мінерали, гірські породи, структурні та тектонічні утворення, палеонтологічні скам'янілості, геотермальні явища, геологічні та вулканоморфні процеси вибухи гейзерів, лавини, берегові процеси на узбережжях морів і озер, танення льодовиків, рухи дюн, процеси ерозії); промислові об'єкти (відкриті та підземні гірничі виробки, глинисті та піщані кар'єри, кар'єри, пошукові шахти, дренажні лінії, гірські відвали, тунелі, катакомби, наземні та підземні військові об'єкти, інженерно-геологічна діяльність, будівництво тунелів, будівництво доріг і автомобільних доріг, використання геотермальної води); культурно-пізнявальні об'єкти (твори матеріальної культури – це різні будівлі з природних матеріалів та елементи їх облаштування, кам'яні піраміди, скельні міста та храми, кам'яні артефакти, кам'яні елементи міської інфраструктури, витвори мистецтва, ювелірні вироби, музей та інші експозиції, експозиції під відкритим небом, місцезнаходження скам'янілостей, опорні стратиграфічні розрізи, місця розташування мінералів і гірських порід); туристичні та інфраструктурні об'єкти (транспортна доступність геопарку для кількох видів транспорту, декілька варіантів розміщення туристів, пункти обміну валют, бази відпочинку, стоянки, місця для наметів). Туристично-інформаційні центри. Марковані туристичні маршрути для потреб кількох видів туризму (велосипедний, зелений, спелеологічний, водний туризм). Маркування туристичних об'єктів: інформаційні стенді, інформаційне забезпечення туризму (створення інтернет-порталів геопарку, мобільні додатки), доступність геопарку для інклюзивних туристів. За показниками наповненості об'єктами різних тематичних блоків геопарки Європи були ранжовані за шкалою рівнів привабливості.

Ключові слова: геопарки, геоморфозити, геотуристичні атракціони, геотуристична привабливість.