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(Warsaw, Poland)**



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(Warszawa, Polska)**

**SOCIAL AND LEGAL ASPECTS OF THE DEVELOPMENT OF  
CIVIL SOCIETY INSTITUTIONS**

Collective monograph

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*This collective monograph offers the description and analysis of the formation and development of civil society institutions at various levels of government in the field of politics, economics, education and culture. The authors of individual chapters have chosen such point of view for the topic which they considered as the most important and specific for their field of study. Theoretical and applied problems and the existing legal base of practical activities of civil society institutions in the context of growing interdependence of economic, cultural, demographic, political, environmental processes are investigated. The prospects for the further development of civil society and its institutions, their relations with the state, as well as the promotion of the participation of civil society organizations in socio-economic development.*

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**REGIONAL FEATURES OF THE NATURAL ENVIRONMENT AND THEIR  
CONSIDERATION IN THE PROCESS OF EXTREME TOURISM  
DEVELOPMENT**

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***Abstract.** We have studied the problem of availability and knowledge of extreme natural conditions on the flat land, in particular, Ukraine, and their possible influence on the formation and development of extreme tourism. We have distinguished and characterized the extremity of climatic, geochemical, biological, geological-geomorphological and landscape conditions, and we have shown their special nature and the need to take into account their peculiar parameters in extreme tourism. Besides, we have presented the possibilities of using extreme natural conditions in the development of extreme tourism within the limits of Podillya as one of the most promising regions for this type of tourism on the flat land of Ukraine. It should be noted that the natural conditions and resources of Podillya are favorable for the development of certain types of extreme tourism. Two groups of factors that make it possible to develop extreme tourism: geological and geomorphological and hydro-climatic are distinguished and characterized. On their basis, it is advisable to develop such kinds of extreme tourism as the caving tourism, horseback riding, tracking, mountain biking, X-racing, hang-gliding, etc., which are untypical for the flat land of Ukraine.*

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**Introduction.**

In the modern environment, natural conditions have a wide range of effects on human activity: from the most favorable (comfortable) to completely unusable – discomfort, under which life and economic activity of people are impossible. The latter type of natural environment is often called extreme. From the point of view of human health, the extreme nature of the natural conditions can be manifested in any of the components of the environment. The problem is, what conditions should be considered extreme, which are the criteria of extreme natural and social conditions of life, including tourism, people. This problem is still poorly studied not only for natural complexes in general, but also for certain components of the natural environment.

A modern research on the development of extreme tourism is devoted mainly to the general natural and socio-economic aspects, its development, as well as the characteristics of certain types of extreme tourism. Almost no attention is paid to extreme natural conditions that contribute to its development on the flat land. So far, there is only one monograph, where this problem is partially studied [11]. It studies the possible impacts on human health of various, in particular, extreme, types of environment, and analyzes geographic approaches to its optimization. Extreme tourism is not considered.

In this regard, an attempt was made to consider the possibilities of using the peculiar natural conditions of Podillya for the development of extreme tourism.

From the beginning of the XXI century sufficient deal of interest is given to the development of tourism within the Podillya. The following types of tourism such as trekking, water tourism, bicycle touring, partly caving tourism and automobile tourism are actively developed. However, there are still some types of tourism which are of little interest. The main reason for this is inadequate study and substantiation of the possibilities to develop non-standard types of tourism for the flat land of Ukraine, in particular Podillya. One of these is extreme tourism. A preliminary analytical review of literary and cartographic sources and field studies show that, in Podillya, natural conditions and resources in some cases are favorable for the development of some, quite popular, types of extreme tourism, in particular those created on the basis of geological and geomorphological and hydro-climatic special features of the territory of Podillya.

### **1. The human adaptation problems to extreme natural conditions.**

The present state of the landscape and ecologically destabilized natural environment is such that man needs to adapt almost everywhere to it, no matter if these are mountainous areas or flat land, agricultural or industrial and other regions. In the process of adaptation, the most important component is the ability of a person to adapt to adverse, sometimes extreme, natural conditions. This form of adaptation is the main factor that stimulates and activates the performance of biological and nonbiological adaptation mechanisms. In order people better adapt to the natural conditions, especially under tourist conditions, it is advisable to consider possible types of extreme conditions according to their individual components.

*Climatic conditions.* Influence of climatic conditions on the state of human health in the process of tourism, is various. It can be direct and indirect. The first one is reflected, for the most part, in the thermal state of a person, which not only strongly affects the state of health and performance, but can also provoke appropriate changes in the body, which often lead to a transition from the normal state to the pathological one. Under extremely cold and sometimes just cold conditions (depending on the human body and its tourist endurance), the physiological mechanisms that control thermoregulation with the existing forms of nonbiological adaptation are often insufficient, which also causes the state of hypothermia, which significantly limits the tourist activity.

Under extreme hot conditions, these shifts are due to excessive heat entering the body, which contributes to the development of hyperthermia.

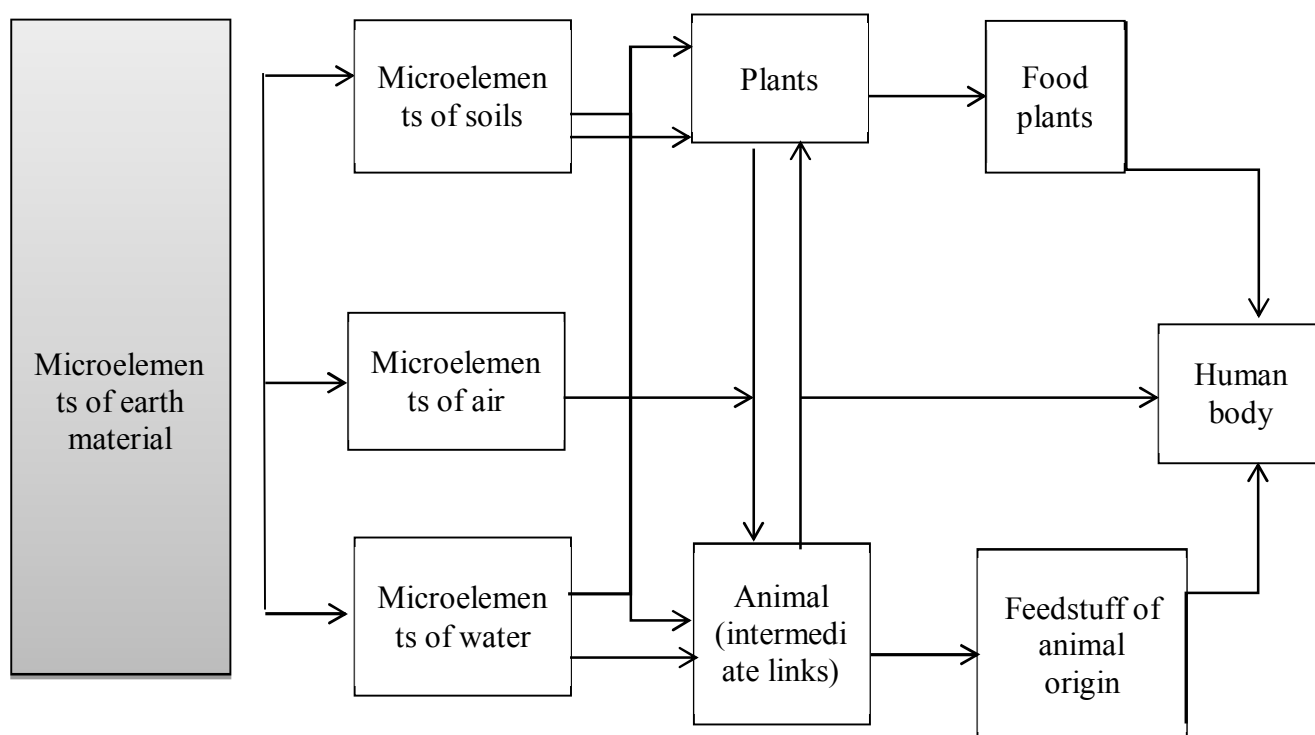
To separate the lands with climatic conditions extreme for people Studies which consider spatial distribution of complex indicators of climate impact, which are reflected on the maps of bioclimatic assessment of the territory, have substantial significance. More often, such studies are devoted to small areas. However, the bioclimatic maps of these territories are constructed on the basis of various initial data using different methods [9, 11]. The most popular are regional maps of the distribution of average monthly effective temperatures in January and June, constructed taking into account the joint effect of temperature and relative humidity of air, the display of extreme climatic phenomena and the processes caused by them. In terms of location these are the maps of mainly natural lands, administrative regions or districts of active development of extreme types of tourism.

In the course of studying the importance of extreme climatic conditions for the development of extreme tourism, in addition to regional, increases the importance of global climate change. The surface layers of the atmosphere, systemically associated with global changes in the surface of the earth, reacted by appropriate changes in the gas composition of air masses, the increase in the number of climatic extremes and hard-to-predict trends. So, during the twentieth century, the concentration of carbon dioxide – the main cause of the greenhouse effect - increased by 25% (from 280 to 360 ppmv), and the amount of methane doubled, the average annual air temperature on Earth increased by 0.6 °C [4,10].


*Geochemical conditions.* Close ecological connection and dependence between people and geochemical conditions, especially in extreme situations and periods of tourism development, is determined primarily by the fact that the geochemical environment is an important factor in the evolution of the entire organic world. It has long been known that more than 70 chemical elements are directly related to the living tissues of organisms and play an important role in life activity, affect morphological, physiological, biochemical, and genetic changes at different levels of wildlife organization [8, 11]. Human relationships with the geochemical conditions of the environment are manifested primarily through biochemical food chains. However, it is important to take into account the fact that in ecological relations with the geochemistry of the landscapes of any region, people are mostly the last link, and therefore they feel their influence less than plants and animals, even under extreme conditions. This is shown by the scheme of biochemical food chains of microelements (Fig. 1)

In general, the chemical composition of the landscape sphere of the Earth is very inhomogeneous. A spatial change is observed not only in its separate natural components, but also in landscape complexes. In some cases, these changes can reach significant values. The unity of the geochemical environment and life determine the conditions under which we distinguish distinct geographical special features of the regional "standard" for the flora, fauna, as well as for the person – its health [5,8].





**Fig. 1. Microelements in the schemes of biochemical food chains**

 – [11] *anthropogenic landscape*

Insufficient quantity or excess of different chemical elements affects all the links of biochemical food chains, including humans. Under normal conditions, as a result of the homeostatic balance of metabolic processes, pathological deviations may not occur. However, the possibility of their regulation can only be carried out within the appropriate limits, which in literary sources are often defined as thresholds, or borders of critical concentrations [8]. They provide an opportunity to create scientifically well-grounded ideas about the quality of geochemical environment of human life: regions between the lower and upper thresholds of the concentration of chemical elements - comfortable, beyond their borders - extreme. In the process of tourism activity, especially extreme, when a person is found under uncomfortable conditions, the surplus or insufficient quantity of certain or other chemical elements in the environment, may rather lead to the violation of important functions in the human body, and manifest in the relevant pathological conditions, even diseases. Such diseases are often localized (the area of extreme tourism development), their genes are known, and therefore these diseases are, in most cases, referred to endemic, which, if necessary, are taken into account in further treatment. However, as with any endemic disease, a continuous disease of the population in the areas of geochemical endemic is not observed, and it is necessary to bring to the attention of extreme tourists.

The absence of continuous diseases in the areas of extreme tourism development (geochemical aspect) is due to greater heterogeneity of populations in relation to the perception of chemical factors of the environment. Usually in geochemical endemic regions, as a rule, healthy people are more than patients. The state of health of people in these regions, is more often determined by the influence of one of the chemical elements. For a tourist found under the extreme geochemical conditions, some other chemical elements, along with the main one, are more active, and under different natural conditions – in different ratios and concentrations. The possibility to become sick is clearly increasing. Thus, the factors that spatially locate the endemic disease of Derbyshire neck through diet may be the specialization of agriculture and the system of food supply to the population. V.M. Meshchenko and V.K. Symonovych believe that the «outgrowth» of goitrous endemia among the population of individual endemic areas is dependent on the share of cultivated land and the ratio of cereals crops used in food [9]. These are the factors that determine the ecological relationships of the local population and extreme tourists that are found here, with the geochemical features of a particular region. It should also be noted that the biogeochemical conditions of the environment can also indirectly contribute to the emergence of extreme human health situations. At the same time, they act as factors that deepen or reduce the development of individual human diseases other than of biogeochemical origin, in particular the malignant development of hypertension against the background of excessive intake of sodium chloride.

At the beginning of the XXI century there is no doubt that, along with natural geochemical landscapes, the role and significance of extreme, anthropogenic, especially man-made landscapes significantly grows. This applies not only to the regions of development of large areas of mineral deposits or radioactive contaminated areas, where the contact of the population and tourists with different chemical and radioactive elements can create the conditions for the emergence of biogeochemical endemics, but also concerns the general biogeochemical and radioactive changes of the landscape shell caused by migrations of chemical elements, often referred to only its pollutants. According to FAO data at the end of the 20th century, completely abandoned land totaled 3% of land that is 4.5 million km<sup>2</sup>, which is almost half of the territory of China or the United States. On the one hand, this is an example of the planetary scale of civilizational de-constructivism of the natural environment, on the other – expansion of areas and opportunities for the development of extreme types of tourism. Was it possible to predict in 1986 that in the first decade of the XXI century, the Chernobyl zone will become the most popular tourist destination in Ukraine?

*Biotic conditions.* In comparison with climatic and geochemical conditions, biotic ones, in relation to the development of extreme tourism, are much less studied. It applies to both plant and animal life. It is known that vegetation in most cases determines the general image of the landscape and the animal population belonging to it.

For a person the regions without vegetation are considered to be extreme, which is a source of food resources for it, and a forage base for animals. These are regions of known deserts, as well as areas covered with glaciers and age-old snows. However, the extremity of these regions is primarily due to their climatic conditions, and the difference in the nutrient component only increases the extremity of the environment, but does not form it. However, biotic conditions can directly negatively affect people, including extreme tourists. We are talking about a well-known property of individual biocenoses to include parasitic systems in the structure of which there are dangerous and very dangerous diseases for a person. Such diseases include transmissible anthroponosis and zooanthroponosis, as well as individual geohelminthiasis and biogelmintosis. That is, biota can be an element of the natural conditions of these diseases. Perhaps the regions extreme in terms of their biotic conditions, can include those where biotic factors contribute to the high risk of human infection and where it is necessary to implement special preventive and other measures for human normal life. In such cases, distinguishing extreme regions for the development of extreme tourism involves the nosogeographic assessment of the biota: knowledge of the landscape patterns to distribute animals that support the development of epizootic and (i) epidemic processes, analysis and assessment of their nosogeographic role.

To substantiate the extremality of the region under the biotic conditions of the natural environment is probably only possible when the natural-endemic or naturally-focal diseases of people caused by them are characterized by high mortality, severe chronic course or lead to disability. It also depends on the population and development of extreme tourism in such regions. In particular, in some regions in temperate and subtropical latitudes people have long refused to settle in swampy areas, so as not to become infected with malaria. This is also typical for some river valleys of Africa and South America.

Under active economic development of regions there is a deepening of extreme biotic conditions of the environment (Table 1). This is well illustrated by the example of tropical areas. Here, deforestation and the creation of plantations in the equatorial regions, the construction of hydrotechnical structures, the creation of reservoirs and the expansion of irrigation systems in more arid tropical areas without the use of special measures have led to a significant expansion of areas of tropical diseases, an increase in their epidemics [4,5].

The approach to distinguishing regions of extreme biotic conditions seems at first glance somewhat mechanical and formal, especially when trying to take into account the conditions for the manifestation of complex diseases. However, this is fair only in relation to the external expression of this landscape reception, but in essence – it has a profound ecological meaning. The fact is that certain types of landscapes differ not only in their vegetation and animal world, but also in the appropriate groups of parasites - viruses, bacteria.

*Geological and geomorphological conditions.* Determining the parameters of direct relief, extreme for tourists, is sometimes more complicated than determining the parameters of any other geocomponent of the natural environment. This is due to the fact that the geological and geomorphological conditions are closely related to the climatic and biotic conditions, and affect the person mainly through them. However, the extreme influence of geological and geomorphological conditions on the tourist is shown directly through:

– differentiation of high-altitude environment, in particular relief. That confirms the nature of the resettlement of the inhabitants of the Earth. Most of them have long given preferences to flatland. Even now, the regions with marks more than 500 m above sea level, is inhabited by only 20-22% of the Earth's population, and above 2000 m – 1.5% [4,5]. One of the most important manifestations of the direct influence of the relief on tourists is the influence of its high and middle mountain variants. Only on the highlands there is such a pathological phenomenon as a complex of symptoms of mountain sickness. In general, in the mountains, a person feels discomfort from lowering atmospheric pressure and air temperature, lack of oxygen, increased solar radiation and wind force, etc. Therewith, almost all of these phenomena can manifest themselves on the flatland, but do not cause a mountain disease in a tourist. This is one of the factors that often leads to false thinking about the impossibility of developing extreme tourism in flatland conditions.

Operational conditions extreme for a tourist are as well available below ground level, particularly, in the deep and dark, almost closed caves, numerous mines and tunnels, or in the water environment. In this case, the tourist's perception of an extreme environment is determined not only by the surface morphology and its height, but by other specific conditions of the natural environment. They include the closed and limited space, the lack of light and usual composition of air or its absence. In any case, the activity of a tourist in such environment is impossible without the use of special life support systems, that is, it is necessary to create an artificial environment;

– slope ratio. It is apparent when it refers to the mountains; on the flatland the conditions and opportunities for the formation and development of certain types of extreme tourism depends on the slope ratio. On the flatland there are regions with the so-called low-mountain topography (Middle Trans-Dniester) or «mountains» – in Podillya – the Kremenets Mountains and the Podilsky Tatras, where the slope ratio of some mountains and river valleys from 35 to 90 is not that rarity. It is characterized by canyon-like valleys of rivers, caves, cave labyrinths and others. All this, sometimes contributes to the formation of even better conditions for the development of such types of extreme tourism, as trekking, horse riding and cycling, especially for older people, mountaineering, caving tourism, as well as extreme aerial types, and others.

– available appropriate (stone, clay, sand, combined, "artificial") substrate of routes. In combination with the slope ratio, and even in rainy weather, one or another substrate can clearly enhance or weaken the extreme conditions, and in some cases, prevent the appropriate measures on the routes.

## 2. Extreme conditions of Podillya nature.

Landscape conditions, their extremality, form together the geo-component conditions described previously. That is, in the process of formation and development of extreme tourism it is necessary to take into consideration not only tourism in the landscape, but also the landscape in the development of extreme tourism. This is a complex problem and requires a certain study. It is just noted that great attention will be paid to the special features of extreme tourism in anthropogenic landscapes. According to approximate estimates, the total area of anthropogenic landscapes on all continents of the Earth (without Antarctica) reaches 60% at present time, and at the beginning of the 20th century it was only 20%. The largest in Europe is 84%, in Ukraine it is 92-94% [4,10]. Taking into account the above-mentioned peculiarities of natural conditions in the development of extreme tourism, we shall consider by the example of Podillya region typical for Ukraine.

The name and limits of modern Podillya have a long history of formation, which is discussed in detail in numerous publications [2, 13, 14]. Here we only note that the term Podillya (Podolye, Podollya, Podil, Podilska land, Podoliya, Podillya) was first recorded by the Lithuanian princes in 1351, in Ukrainian letters - in 1389, in chronicles – in 1392. [5]. Among naturalists, the idea that Podillya is associated with flat placement (in proportion to the Carpathians) prevails. Other thoughts have been analyzed in detail in the works by Denysyk G.I. [2, 14], who believes that the name of Podillya was established from the XIV century after the seizure and division, distribution of modern lands of the western regions of Ukraine between feudal Lithuania, Poland and partly Crimean Tatars. "Divided" lands of the lower reaches, the Bug-Dniester interfluve and Pobuzhzhya got the only one name - Podillya. Subsequently, history repeatedly confirmed the validity and truthfulness of such meaning of the region name.

However, *the historical and geographical boundaries* of Podillya are interpreted differently by different authors: from the central part of modern Khmelnytskyi region, along with the left bank of the Middle Trans-Dniester to the vast territory between the northwestern borders of Ukraine and the shores of the Black Sea. At the beginning of the XXI century the boundaries of Podillya, according to the scheme of natural-economic and administrative zoning of Ukraine, include territories of three administrative regions - Vinnytsia (Eastern Podillya), Khmelnytskyi (Central Podillya) and Ternopil (Western Podillya), with a total area of 60.9 thousand sq. km or 10.1 % of territory of Ukraine. In the long run, these regions will be the basis for the formation of Podillya province.

Analysis of literary and cartographic sources shows that the views of naturalists on the natural boundaries of Podillya coincide in general. There are discrepancies only in certain areas. Podillya is Podilska highlands. However, the boundaries of Podillya in the Middle Pobuzhzhya should be marked not by the modern valley of the Southern Bug, but by the ancient valley of the flow of glacial waters of Southern Bug from the village of Ulaniv through the town of Kalynivka and Turbiv, then the Sob river, through the town of Dashiv

and Gaysyn, and to the south where the influx of Udych River joins the Southern Bug River. This boundary is clearly traced not only according to the features of the geological structure, relief, soil cover and vegetation, but also in the structure of modern landscapes and the nature of their economic use.

A significant variety of natural conditions and resources of Podillya contributed to the wide and diverse use of them in various spheres of economic activity, including tourism. The issue of tourism development within Podillya is constantly in the field of view of scientists [4, 13, 14]. Particular attention is paid to such types of tourism as cognitive, recreational, event and others. Proper attention has not been paid to extreme tourism. It is in the "shadow" of others, although the natural and social conditions for the formation of extreme tourism within the Podillya are good. Let's consider them in more detail.

*Geological and geomorphological preconditions.* Podillya, especially its Transdnestrrian part, was formed on the border of two different types of natural structures: on the one hand, the southwestern wing of Podilsky monoclinial of the East European Precambrian platform, on the other hand, the Pre-Carpathian mountain trench of the Carpathian folded structure of Alpine orogeny. This was reflected in the development of tectonic processes, the unique geological structure, the original orography and morphostructural plastics of Podillya surface.

Actually the territory of Podillya is located within two genetically related tectonic structures - Ukrainian crystalline massif (shield) and Volyn-Podilsky plate. Shepetivka - Letychiv - Mohyliv-Podilskyi makes the line between them [3]. Podillya part of the Ukrainian crystalline massif is composed of magmatic (charnokite-norite complex, main and ultrabasic rocks) and metamorphic (pyroxene-plagioclase and garnet-biotite gneisses, migmatites) rocks. Charnokite-norite complex is represented by hypersteinal granites, diorites, migmatites, which form large massifs along the Pivdennyi Buh River in the district of Vinnytsia city and the city of Gnivan, along the Zgar River, in the basin of the Soba River, and also found in all regions of crystalline rocks of Trans-Dniester. Upper and Middle Pobuzhzhya is the most widespread area of pyroxene-plagioclase and garnet-biotite gneiss within the limits of the Ukrainian crystalline massif. The first ones are often found in Trans-Dniester region, especially near the villages of Porogy, Rusava, Pysarivka, and Dzygivka. The base of Volyn-Podilsky plate is composed of rocks of the charnokite complex, gneisses and granites. Their yields are known in the valleys of the rivers in Lyadovo, Zhvan, Derlo. In the west, they are covered with a thick layer of sedimentary rocks and studied only by the results of drilling. Structurally, the base is inhomogeneous [3, 12].

Available crystalline rocks, their widespread occurrence, which often has landscape significance, especially in river valleys, creates good preconditions for the development of extreme types of tourism within the boundaries of Podillya, in particular in its eastern part.

This is facilitated by the yield of crystalline rocks in the form of powerful system of thresholds in the course of the Southern Bug River (Strilchynetski, Pechero-Sokiletski, Gubnykski, etc.), granite «walls» and grooves on the slopes of the Southern Bug Valley, as well as often unique section-walls of deep (up to 60-70 m) numerous quarries of the crystalline rocks in the Middle Pobuzhzhya.

The crystalline rocks of Podillya are covered with a complex of sedimentary deposits, the capacity of which increases from 0-10 m in the northeast to 3-3,500 m in the southwest. These deposits in the Middle Trans-Dniester are represented by aleurites and sandstones of Valdai series. Their numerical cleavage in the form of steep walls 10 meters in height and more occur everywhere on the slopes of the valleys of the rivers in Lyadova, Zhvan, Kalyus, Karayets. The industrial reserves of phosphorus are concentrated in the stratum of argillites and aleurites of the Nagoryan rock formation [3, 12]. Silurian and devonian deposits are widely spread in Podillya. Silurian is represented by dark gray and black clay limestones - the lower part, the formation of tiled and lumpy limestones with the layers of marls, clay, dolomite and shale - the upper part. The total capacity of the deposits is 800-850 m. In the valleys of the Dniester, Smotrych, Studenytsia, Zhvanchyk, Zbruch limestones form the steep picturesque shores and caves.

The Devonian cleavage is found in the valleys of the Dniester, Nichlava, Seret, Strip, Koroptsia, and Zolota Lipa rivers. It mainly include clay, marl, fine grains, sandstones, aleurites and argillites, mostly of reddish-brown colour with a total capacity of up to 80 m [1, 9]. Jurassic deposits are widespread in the utmost west of Podillya in the valleys of the Zolota Lipa (the village of Zavadvka), Koropets (Monastyrysk) and Dniester River near the village of Ustya-Zolote. Presented by argillites, aleurites, limestones and dolomite with a capacity up to 30 m. Cretaceous deposits of rocks of the Mesozoic series have become most widespread and have a capacity of up to 150 m. In Podillya they are found everywhere, except for the Middle Pobuzhzhya [5, 9]. From the end of the Cretaceous period to the middle of the Paleogene, Podillya territory developed in the continental regime, and therefore the deposits of the Paleogene - sandstones, sand, clay and marls with a total capacity of up to 25 meters rarely peel off in the valleys of the Goryn, Southern Bug, Lyadova and Murafa rivers. The Neogene deposits - torton and sarmatian are found more often. Sandstones, clay, marl, quartz-glaucinite sands are developed everywhere in the southern and western parts of Podillya, plaster - only in the Trans-Dniester, in the valleys of the Zbruch, Nichlava, and Zhvanchyk rivers. In the Tortonian age takes place the formation of a barrier reef in the zone of modern Tovtry mountain range. Its base was formed by lithotamines and reef limestones. On the sides of the reef there were the rock masses of marl clay and sandy-clay rocks with a capacity up to 20 m. Sarmatian deposits are widespread everywhere, except for the Middle Pobuzhzhya. Their facial composition is diverse: within the Tovtr - reef, oolitic, shellfish limestones, in the lower reaches - sand, marl, and in the watersheds - sandy-clay rocks. The total capacity of Sarmatian deposits is about 200 m [5, 9, 14].

The aforementioned variety of bedding rocks, especially in the Western and Southern Podillya, is essential for the development of extreme tourism in the region. These rocks form a unique system of Canyons of the Middle Trans-Dniester, lowland landscapes of Podilsky Tovtry and Kremenets Mountains, original Podilsko-Bukovinska karstland. Knowledge of the rocks forming the territory and suitable for extreme tourism, for individual tourists, is related to the safety of their lives.

Bedding rocks are covered everywhere by quaternary deposits. Their capacity and genesis are different. The location of the territory in the extraglacial and partly (northern regions) in the periglacial zones had a great influence on the formation of the quaternary deposits of Podillya. The covering of forest trees of various capacity (up to 30 m) is the most widespread. Forests and loess loams are connected with the slopes of hills and watercourses. In the central regions their capacity does not exceed 12-15 m, and in the Trans-Dniester, in connection with the development of high terraces, forest trees occur only in certain areas [5, 9].

The geological structure and peculiarities of the development of tectonic processes are caused by the *plastic surface* of the main morphostructures of Podillya and Podilska and Trans-Dniester highlands. Modern features of the relief of Trans-Dniester highlands occupying the utmost north-eastern districts of Vinnytsia region are directly dependant on the surface of the ancient foundation of the Ukrainian crystalline massif. The maximum marking of the surface in the area of Tucha village of Kozyatyn District is 322 m, the minimum is 130 m in the suburb of the village of Stavky in Bershada district of Vinnytsia region.

Podilska highlands corresponds to the slope of the Ukrainian crystalline massif, which monoclinically declines to the southwest. However, as a result of the newest Pliocene-Holocene elevations, inversive relief was formed in relation to the ancient structure. Moreover, within the limits of Podillya highlands and in its immediate surroundings, there are the highest marks of not only flatland of Ukraine, but also of the Eastern European flatland: Mount Kamula (+473 m) in the south-east of Lviv in Gologory and Mount Berda (+515 m) within the limits of Khotyn highlands. The relief also clearly distinguishes Voronyaky (+436 m), Kremenets mountains - Bona (+409 m). Podilsky Tovtry stretched in the form of an increase of 200 km with relative heights – 60-80 m. Significant fluctuations of heights (up to 220 m) in Trans-Dniester region provide this part of Podillya highlands with the nature of foothills. Here is one of the most original geological and geomorphological sites in Europe – the *Grand Canyon* of the Dniester [7].

Structural-denudation flatland with absolute marks of surface of 300-320 m prevailing in Podillya often in the southwestern parts are complicated by surface forms of karst – swallow holes, panoramic views, rock rills, ancient valleys («poplavy») and lakes. The underground karst caverns represented by the caves in gipso-anhydrite provide tourist significance of Podillya karst. These include the world's longest gypsum cave Optimistic



(165.0 km), Lake (107.3 m), Cinderella (82.0 km) and others [3]. The presence of original canyons, steep (up to 40-60°) «walls», numerous picturesque with the height of 15-30m tracts on the slopes of the valley of the Dniester and its left side streams, deep pits of various rocks - the perfect base for active development of mountaineering, including children, tracking, mountain biking, X racing, and underground karst caves and developments of limestones and gypsum – caving tourism. None (except the Carpathians and Crimean mountains) of the Ukrainian regions has such unique geological and geomorphological conditions for the development of extreme types of tourism.

*Hydro-climatic preconditions.* The peculiarities of geospatial location and contact are also determined by the regional uniqueness of Podillya climatic conditions. They are formed under the influence of the Atlantic Ocean and the continent of Eurasia. The climate of Podillya is moderately continental, humid. Summer is long, the winter is short and warm. In the region, the values of solar energy and atmospheric precipitation exceed the average latitudinal rate. The annual radiation balance varies from 1850 in the south to 1,780 MJ / m<sup>2</sup> in the north [7]. The average annual air temperature is from + 8.1 ° to 6.5 ° C, which is 2-3 ° lower than in the eastern regions of Ukrainian forest area. Podillya receives more atmospheric precipitation than average zonal rate - 500-600 mm/year. For a warm period there is 65-70% of the annual amount. A stable snow cover is set up in the second half of December. Its average height in the highlands is 10-16 cm, in the lower reaches it is 40-50 cm.

Together with the geological and geomorphological, climatic conditions influenced the formation of river network within the limits of Podillya, the most densely flooded in Ukraine: in average 0.36-0.40, and in the Middle Trans-Dniester region – 0.53-0.58 km / km<sup>2</sup> versus 0.24 km / km<sup>2</sup> in Ukraine [3, 5]. In the Middle Trans-Dniester region, the river valleys are deep-cut, canyon-shaped, flood plains are narrow, fragmented or quite absent. On some parts of the river valleys there are 6-7 terraces [2]. Within the limits of the Middle Pobuzhzhya, the course of the Southern Bug and its influx are complicated by the systems of original thresholds from the crystalline rocks of the Ukrainian Shield. According to the structure, these thresholds are the most complicated and powerful, not only within the limits of Podillya, but also of the entire Eastern European flatland. If taking into consideration the storm rains resulting from floods, as well as the fact that in the spring period 55-56% of the water flow and the water level in the Southern Bug rises by 2-3 m, and on the rivers of the Middle Trans-Dniester up to 4-5 m, then opportunities for the development of extreme types of water tourism - rafting, kayaking (slalom, rodeo, rafting), etc. on the Middle Trans-Dniester and Middle Pobuzhzhya, are significant.

The uniqueness of the soil cover, vegetation and animal life of the territory of Podillya is caused by the location. They can not be attributed to any one natural area. Now a special biogeocoenosis of the western forest of Ukraine has been formed here.

Within the limits of Podillya soils, flora and fauna of the mountain system of the Carpathians and the East European highlands are closely interconnected. Here, vegetative groups interact with zoocenoses of the broad-leaved forests of Central Europe (with beech), the forest-steppe of Eastern Europe (forests with oak), mixed coniferous-broad-leaved forests of northern Europe, and through the Dniester valley, the watersheds of the meadow-steppe Black Sea coast. Such a large variety of soils and plant communities significantly complicates not only their bordering, but also the allocation of the boundaries of various typological and regional landscape complexes and their unique features [5, 13].

### **Conclusions.**

The development of extreme tourism, including on the highlands, requires detailed study of various conditions that contribute to its effectiveness. In this case researches related to the knowledge of extreme climatic, geochemical, geological and geomorphological, biotic and landscape conditions are of particular importance, as well as their impact on health and activities of tourists under extreme conditions. There are few such studies, especially in Ukraine. At the beginning of the XXI century extremality on the highlands of climatic and biotic conditions are studied better, the rest requires detailed study. Undoubtedly, under modern socio-economic conditions, it will be more difficult to determine the extreme conditions of both certain regions and Ukraine as a whole in terms of geochemical (significant financial costs) and landscape (complex researches). However, the activity of development of extreme tourism in the twenty-first century in Ukraine makes it possible to conclude that the costs will be repaid in the coming years. Regarding certain regions and exploring opportunities for development of extreme tourism within the limits of Podillya, it is possible to note the following:

- natural conditions and available natural resources are suitable for the development of extreme types of tourism within the limits of Podillya;
- the most favorable for the development of extreme tourism are the Middle Trans-Dniester and Middle Pobuzhzhya, Podilski Tovtry and Kremenets mountains;
- the main groups of natural factors that will promote the development of extreme tourism in the above-mentioned areas of Podillya are geological and geomorphological and hydroclimatic;
- taking into account the geological-geomorphological and hydroclimatic features of the territory within Podillya it is expedient to develop such types of extreme tourism as mountaineering, caving tourism, tracking, mountain biking, X-racing, rafting, kayaking, and their combinations.

Further research on the possibilities of development of extreme tourism within the limits of Podillya should be directed to the clarification of social factors of its development, structure, regional features, environmental and economic consequences.

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**SOCIAL AND LEGAL ASPECTS OF THE DEVELOPMENT OF  
CIVIL SOCIETY INSTITUTIONS**

Collective monograph

Part I

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