

# Conceptualization of Natural Heritage in the Context of the Ecosystem Approach

Mariyana Nikolova, Stoyan Nedkov

National Institute of Geophysics, Geodesy, and Geography at the Bulgarian Academy of Sciences

Steliyan Dimitrov, Bilyana Borisova

Sofia University "St. Kliment Ohridski"

Miglena Zhiyanski

Forest Research Institute at the Bulgarian Academy of Science

**Abstract:** *The article aims to explore natural heritage as a socio-ecological phenomenon. The definitions and cycle of development of the concept of natural heritage is explained. The process of provision and demand of ecosystem services that benefit socio-environmental systems is presented to illustrate how an element of the natural system becomes natural heritage. As a result of the analysis, the authors propose a definition of "natural heritage" in the context of an ecosystem-based approach. The results would support the sustainable use of natural heritage sites for the development of nature-based tourism<sup>1</sup>.*

**Keywords:** natural heritage, ecosystem services, socio-environmental systems

*Prof. Dr Mariyana Nikolova is working in the Department of Geography at the National Institute of Geophysics, Geodesy, and Geography at the Bulgarian Academy of Sciences. Her research activities are focused on physical geography, ecosystem services, climatology, natural hazard and risk assessment.*

*Dr Stoyan Nedkov is a professor in the Department of Geography at the National Institute of Geophysics, Geodesy, and Geography at the Bulgarian Academy of Sciences. His research area is landscape ecology and application of GIS in environmental assessment.*

*Assoc. Prof. Dr Steliyan Dimitrov is an Associate Professor, Head of the Department of GIS and Cartography, Faculty of Geology and Geography at Sofia University "St. Kliment Ohridski". Currently he is a Director of the National University Center for Geospatial Research and Technologies.*



<sup>1</sup> The study is a result of the project BG05M2OP001-1.001-0001 "Building and Development of Center for Excellence "HeritageBG", funded by the OP Science and Education for Innovative Development 2014-2020, co-financed by the European Regional Development Fund".

## FORMING THE IDEA FOR NATURAL HERITAGE AND DEFINING THE CONCEPT

Defining the concept of “natural heritage” should lead to a better understanding of the following questions: 1) What do we call “natural heritage” and what distinguishes a natural site from a natural heritage site? 2) How does a natural site become natural heritage? Is it through a particular regulatory act, or is it the result of indisputable and time-tested value that site brings to the inhabitants of the territory in which it is situated? 3) If so, to what extent is natural heritage a natural phenomenon versus a social phenomenon?

The World Heritage Convention<sup>2</sup> (WHC) links in one document the concepts of preserving nature and preserving cultural values. An important feature of the Convention is that it applies only to sites of exceptional worldwide importance (exceptional worldwide value) and in no way addresses the question of natural heritage of exceptional worldwide or national value. The Convention does assess the relationship between humans and nature and the fundamental need to ensure sustainable interaction between them. According to Article 1 of the Convention, cultural landscapes “are examples of the evolution of human society and settlements over time under the influence of physical constraints and/or opportunities provided by their natural environment and consistent social, economic and cultural forces, both external and internal”.

The European Landscape Convention<sup>3</sup> (ELH) also defines landscape as a dynamic complex of territories, the specific appearance and the elements of which have arisen as a result of actions and interactions between natural and/or human factors”. The aim of the ELC is to unite the member states of the Council of Europe on the issue of preserving the quality and diversity of landscapes, which represent both a common heritage and a common resource<sup>4</sup>. In this regard, Selicato<sup>5</sup> observes that, according to the Convention, “the landscape itself is a heritage and at the same time an economic and cultural asset”.

Gurkov et al., comment on the relationship between the ELC and the Cultural Heritage Act<sup>6</sup> and stress that “the main elements of cultural values in the landscape are embedded by and are the result of human activity in the past, present and future.

They carry information of extraordinary historical and cultural value through generations, determine and demonstrate the nature of development during individual periods and contribute to their study and analysis as an immeasurable element of human progress. They determine their essence as movable and immovable cultural heritage encompassing cultural values that are permanently attached to the land, including underwater, as well as their adjacent environment.

It is clear from what has been said so far that, both in a broad sense and in the specific context of the two conventions (the WHC and the ELC), the concept of “natural heritage” is characterized by unity between place, time and value. Natural heritage is always associated with a specific territory in which it is located, i.e. it has a spatial dimension. To become heritage, this territory must have been subjected to development and changes over time, over the course of which it does not lose its importance and value from one generation to the next. For this to happen, it must provide benefits to address a fundamental need of the recipients (material or spiritual, or both). The concept of cultural and/or natural heritage is formed in a protracted process of historically changing value systems, in which their value remains recognised by different groups of people<sup>7</sup>.

The process of forming the concept of natural heritage is described by the so-called “Heritage Cycle Diagram”, proposed by Simon Thurney<sup>8</sup>. It shows how the awareness of the spiritual or material benefit of an object gives rise to a desire for it to be researched, evaluated and preserved for future generations (Fig. 1). Simon Thurney does not talk about a natural or cultural object, but uses the term “historic environment”, which synthesizes the interaction between the natural and anthropogenic components of the environment over time. This shows that the process of forming an attitude towards an element of the natural system or an object of the anthropogenic system as a “heritage” of particularly high value and importance for the social system, is identical.

Considering the arguments put forward so far, for the purposes of this study we propose the following definition: *Natural Heritage is a geospatial natural element of the socio-ecological system, which provides material and spiritual benefits of timeless importance for previous, present and future generations.*

<sup>2</sup> World Heritage Convention 1972.

<sup>3</sup> European Landscape Convention 2005.

<sup>4</sup> Gurkov et al. 2013: 1-25.

<sup>5</sup> Selicato 2016.

<sup>6</sup> Cultural Heritage Act 2009.

<sup>7</sup> CEU 2019.

<sup>8</sup> Thurney 2005.

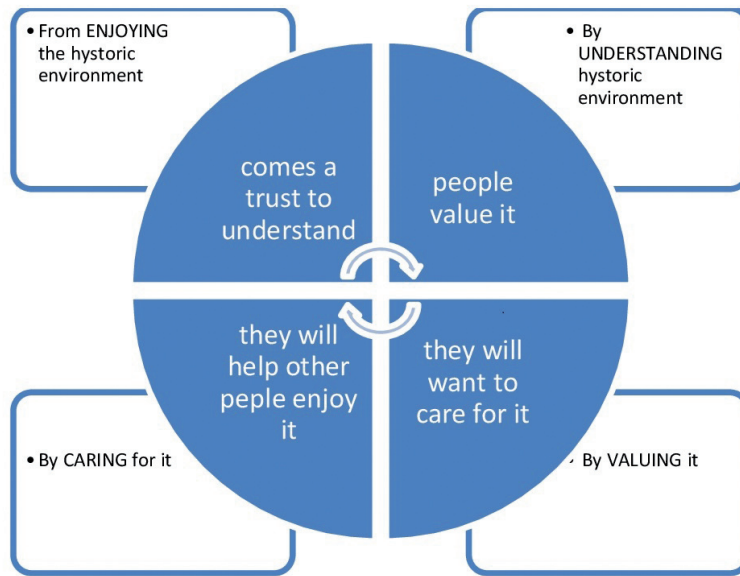


Figure 1. Heritage Cycle Diagram (after Simon Thurney<sup>8</sup>)

As a geospatial element of the socio-ecological system, natural heritage sites are closely linked to the adjoining ecosystems and to the benefits and services they provide.

**CONCEPTUALISATION OF NATURAL HERITAGE IN THE CONTEXT OF AN ECOSYSTEM APPROACH**

By adopting such a definition of “natural heritage”, we should also specify what these “material and/or spiritual benefits of high value for previous and present generations” are, where they arise from, and how we can interpret them in the context of an ecosystem approach. Natural

heritage has benefits that people seek to meet their needs. Over time, these needs often change. A natural site may have been a source of aesthetic delight initially, subsequently becoming a place of worship, sanctuary or otherwise, and today it may be a source of knowledge of the past or a tourist attraction. The concept of ecosystem services aims to identify the benefits that people receive from nature. Each ecosystem service is based on a specific ecosystem function. In some cases, a function can provide several services and, accordingly, a service can be the result of several functions<sup>9</sup>. At the same time, information about the significance of the site is transmitted and remains durable over time, regardless of the

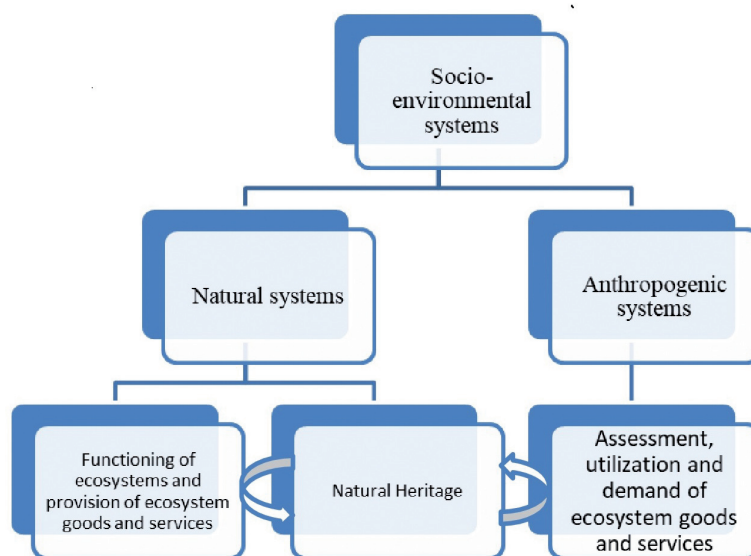


Figure 2. Conceptual model of natural heritage formation through the constant flow of provision and demand for ecosystem services and benefits

change in the services provided by the site. This requires us to delineate the element of the natural environment that has retained its significance over time and is “a carrier of material and/or spiritual benefits of extremely high value for previous and present generations,” i.e. natural heritage (Fig. 2). Illustrates precisely how the constant process of providing and seeking ecosystem services and benefits transforms an element of the natural system into a natural heritage.

Nature is at the heart of human existence and is a legacy that we must preserve and use sustainably, but in this case we try to identify only those elements of geosystems that bear specific lasting (recreational) ecosystem services and benefits. An example of such elements are therapeutic mineral waters, which have been valued and sought-after for millennia for their direct restorative benefit to human health and other, indirect recreational benefits. Such indirect benefits include the development of related tourist infrastructure, employment, production, prestige and popularity of the place, as well as financial benefits from all this. Similarly, specific objects from the cultural environment bear constant respect, admiration, a sense of national or civilizational pride, and/or a number of other timeless cultural and spiritual benefits acquired over the course of their historical development to this day. There are many examples of how natural sites have acquired specific cultural dimensions over time because of the benefits that people have drawn and continue to draw from them, even if the concrete benefits vary due to the different needs they meet. Examples of such objects include Beglik Tash, Belintash, Karadzhev Kamak, etc. For ancient civilizations, these objects served a function to measure astronomical time, as sanctums, etc. Today, the same objects satisfy people’s cognitive and recreational needs. Evidently, the process of forming an attitude towards an element of the natural system or object of the anthropogenic system as a “heritage” of particularly high value and importance for the social system is identical. The state and capacity of ecosystems to provide the benefits and services sought can also change, requiring the sustainable use and preservation of natural heritage.

## NATURAL HERITAGE AS A SOURCE OF ECOSYSTEM SERVICES FOR RECREATION AND TOURISM

Ecosystem benefits and services are seen as the contribution of ecosystems to human well-being<sup>10</sup>. This term is the basis for the overall methodological framework of the concept of ecosystem services and effectively completes the logical sequence representing the relationship between ecosystems and humans. Ecosystem services supply and demand for ecosystem services are two of the key notions in the concept.

At the initiative of the European Environment Agency (EEA), a Common International Classification of Ecosystem Services (CICES V.4.3)<sup>11</sup> was developed. In its latest version, (CICES V. 5.1)<sup>12</sup>, there are three main groups of ecosystem services: provisioning, regulating and supporting, and cultural. The later have the highest priority for the provision of services from nature heritage to the recreation and tourism<sup>13</sup>. Cultural services are defined as “All the non-material, and normally non-rival and non-consuming, outputs of ecosystems (biotic and abiotic) that affect physical and mental states of people. A distinction between cultural services that are enabled as a result of direct or indirect interactions of people and living systems has been made in the classification”. There are 9 classes of ecosystem services in the section “Cultural (biotic)” and 4 classes in “Cultural (abiotic)”. The class “Characteristics of living systems that are resonant in terms of culture or heritage” of section “Cultural (biotic)” in CICES V. 5.1 is equivalent to the class “Heritage, cultural” in CICES V.4.3. Cultural services are closely linked to each other and are often also linked to different material and regulatory services. All ecosystem services relevant to recreational industries are conditionally called “Recreational ecosystem services”. Some of them have a direct impact by creating an environment for recreative activities, while others indirectly influence individual aspects of recreation. They are identified by prioritising ecosystem services relative to recreation<sup>14</sup>.

Definitions and indicators for the evaluation of cultural ecosystem services are often intertwined with definitions and indicators for tourist services

<sup>9</sup> De Groot et al. 2002: 393-408.

<sup>10</sup> MEA 2005.

<sup>11</sup> Haines-Young, Potschin 2013.

<sup>12</sup> Haines-Young, Potschin 2017.

<sup>13</sup> Nedkov et al. 2021.

<sup>14</sup> Nedkov et al. 2021.

and recreation activities. To avoid this, the concepts of “benefits” and “value” must be well distinguished. The contribution of ecosystem services to human well-being has two main components: benefit and value. The ecosystem service is the ecosystem’s contribution to benefits. The term “benefits of ecosystems” describe their impact on various aspects of the social sphere, such as the impact on people’s health, security, intellectual development, etc. The term “value” describes the economic value of ecosystem benefits, such as the monetary value of the raw materials obtained (e.g. timber), the costs saved for air and water treatment, or for the cost of damages of floods, etc.

The role of natural heritage for the development of recreation and tourism has been explored in a number of publications, including ones focusing on the territory of Bulgaria<sup>15,16,17,18,19,20,21,22,23,24,25,26</sup> etc. These studies illustrate well the link between biodiversity, geo-diversity and cultural ecosystem services for recreation, mental and physical health, educational and cognitive activities, sports and spiritual practices, aesthetic enjoyment of the diversity of plant and animal species, etc. Cultural ecosystem services provided by biodiversity often overlap or complement those provided by the geo-diversity of the territory. Gordon looks at the relationship between geo-diversity and geotourism in the context of cultural ecosystem services stemming from geo heritage. But by “geo heritage”, he understands only the geological heritage. The same understanding of “geo heritage” is shared by Sinnyovsky<sup>27</sup>. In our opinion, in the context of natural heritage, geo heritage includes elements of biodiversity and geo-diversity in a given territory. In addition, geo-diversity must also include pedo- and hydro-

climatic elements, which in many cases are crucial for the absorption of recreational potential in a given territory. Ecosystem services provided by soil, water and climate provide conditions to obtain a very wide range of recreative and tourism benefits and are an important part of the geo-diversity of the territory. These result in the recreative and health benefits of, for example, climate treatment, mud treatment and balneotherapy.

## DISCUSSION AND CONCLUSIONS

Both the definition of the concept of ‘natural heritage’ and its conceptualisation in the context of the ecosystem approach are subordinated to the idea that natural heritage is a source of a constant flow of information and benefits, transmitted through the ecosystem services it provides. This approach corresponds to the definition of cultural ecosystem services by Havinga et al.<sup>28</sup> as “information-flows generated by ecosystems that contribute to cultural experiences”, where the “cultural experiences” is the equivalent of the cultural benefit or the “cultural good” of an individual.

Distinguishing ecosystem benefits from the value of their economic use is important theoretically for cultural ecosystem services accounting and, respectively, for the sustainable use of natural heritage for the development of tourism and recreation.

The treatment of geo-heritage as a unity of biodiversity and geodiversity enables the assessment of recreational ecosystem services and natural heritage site benefits as a geospatial natural element of the socio-ecological system.

The results of the analysis are of important methodological significance for research on natural heritage in different scientific fields.

<sup>15</sup> Gordon 2018.

<sup>16</sup> Tengberg et al. 2012.

<sup>17</sup> Osipova et al. 2014: 1-58.

<sup>18</sup> Georgiev 2005: 65-80.

<sup>19</sup> Georgiev 2006: 14-29.

<sup>20</sup> Popova 1993: 1-27.

<sup>21</sup> Toncheva 2014: 1-98.

<sup>22</sup> Tomova, Borisova 2018: 123-144.

<sup>23</sup> Vasileva 2018: 1-313.

<sup>24</sup> Ihtimanski et al. 2019.

<sup>25</sup> Nikolova et al. 2020: 1-8.

<sup>26</sup> Nikolova et al. 2021.

<sup>27</sup> Sinnyovsky 2011: 99-110.

<sup>28</sup> Havinga et al. 2020: 101-091.

## BIBLIOGRAPHY

- De Groot et al.* 2002: *de Groot*, Rudolf, Matthew *Wilson* and *Boumans* Roelof. A Typology for the Classification, Description and Valuation of Ecosystem Functions, Goods and Services. *Ecological Economics* 41 (3), 393-408.
- Haines-Young, Potschin* 2013: *Haines-Young*, Roy and Marion *Potschin*. Common International Classification of Ecosystem Services (CICES) V 4.3: Consultation on Version 4, August-December 2012. EEA Framework Contract No EEA/IEA/09/003, Available from <https://biodiversity.europa.eu/maes/common-international-classification-of-ecosystem-services-cices-classification-version-4.3>.
- Haines-Young, Potschin* 2017: *Haines-Young*, Roy and Marion *Potschin*. Common International Classification of Ecosystem Services (CICES) V5.1 and Guidance on the Application of the Revised Structure. Available from [www.cices.eu](http://www.cices.eu)
- Havinga, Bogaart, Hein, Tuia* 2020: *Havinga* Ilan, Patrick *Bogaart*, Lars *Hein* and Devis *Tuia*. Defining and Spatially Modelling Cultural Ecosystem Services Using Crowdsourced Data, *Ecosystem Services*, Volume 43, June 2020, 101-091.
- Gordon* 2018: *Gordon*, John. Geoheritage, Geotourism and the Cultural Landscape: Enhancing the Visitor Experience and Promoting Geoconservation, *Geosciences*, 8 (4), 136 <https://doi.org/10.3390/geosciences8040136>
- Ihtimanski et al.* 2020: *Ihtimanski* Ivo, Stoyan *Nedkov* and Lidiya *Semerdzhieva*. Mapping the Natural Heritage as a Source of Recreation Services at National Scale in Bulgaria, *One Ecosystem* 5, <https://doi.org/10.3897/oneeco.5.e54621>
- Nedkov et al.* 2021: *Nedkov*, Stoyan, Mariana *Nikolova*, Radenka *Mitova*, Bilyana *Borisova*, Dessislava *Hristova*, Lidiya *Semerdzhieva*, Miglena *Zhiyanski* and Hristina *Prodanova*. Prioritization of Ecosystem Services Related to the Natural Heritage in Bulgaria, *JBGS*, Pentsoft, (in print).
- Nikolova et al.* 2021: *Nikolova* Mariana, Stoyan *Nedkov*, Bilyana *Borisova*, Velimira *Stoyanova* and Radenka *Mitova*. Cultural Ecosystem Services Provided by Natural Heritage Sites in Karst Territories of Smolyan Region, Bulgaria (in this volume).
- Osipova et al.* 2014: *Osipova*, E., *Wilson*, L., Ralph *Blaney*, Yachuan *Shi*, Max *Fancourt*, *Strubel*, M., *Salvaterra*, T., *Brown*, C. and B. *Verschuuren*, The Benefits of Natural World Heritage: Identifying and Assessing Ecosystem Services and Benefits Provided by the World's Most Iconic Natural Places. Gland, Switzerland: IUCN. vi + 58.
- Selicato* 2016: *Selicato*, Francesco. The Concept of Heritage. In: *Rotondo F., Selicato F., Marin V., Lopez Galdeano J.* (eds.) *Cultural Territorial Systems*. Springer Geography. Springer, Cham. [https://doi.org/10.1007/978-3-319-20753-7\\_2](https://doi.org/10.1007/978-3-319-20753-7_2)
- Sinnyovskiy* 2011: *Sinnyovskiy*, Dimitar. Geoconservation and the Geological Heritage of Bulgaria. *Journal of the Bulgarian Geological Society*, year 72, vol. 1-3, 99-110.
- Thurney* 2005: *Thurney*, Simon. Into the Future. Our Strategy for 2005-2010. In: *Conservation Bulletin English Heritage* (49), 25 – 26. Retrieved from <https://historicengland.org.uk/images-books/publications/conservation-bulletin-49/cb-49/>
- Tengberg et al.* 2012: *Tengberg*, Anna, *Fredholm*, Susanne, *Eliasson*, Ingegard, *Knez*, Igor, *Saltzman*, Katarina and Ola *Wetterberg*. Cultural Ecosystem Services Provided by Landscapes: Assessment of Heritage Values and Identity, *Ecosystem Services*, 2012, <http://dx.doi.org/10.1016/j.ecoser.2012.07.006>.
- Vasileva* 2018: *Vasileva*, Vanya. Природни туристически ресурси на България [Prirodni turisticheski resursi na Balgariya], Shumen.
- Georgiev* 2005: *Georgiev*, Georgi. Критерии и индикатори за рекреационна оценка на биологичното разнообразие на защитените територии в България [Kriterii i indikatorii za rekreatsionna otsenka na biologichnoto raznoobrazie na zashtitenite teritorii v Balgariya] *Problemi na geografiyata*, kn. 3-4, BAN, Sofiya, Balgariya, 65-68.
- Georgiev* 2006: *Georgiev*, Georgi. Някои проблеми на рекреационното усвояване на защитените територии в България [Nyakoi problemi na rekreatsionnoto usvoyavane na zashtitenite teritorii v Balgariya] [http://oldweb.ltu.bg/jmsd/files/articles/14/14-29\\_G\\_Georgiev.pdf](http://oldweb.ltu.bg/jmsd/files/articles/14/14-29_G_Georgiev.pdf)
- Gurkov et al.* 2013: *Gurkov*, Rosen, *Galev*, Emil, *Perchiklijski*, Grigor and Ivan *Golomehov*. Европейска Конвенция за Ландшафта. Въвеждане в България [Evropeyska Konventsia za Landshafta. Vavezhdane v Balgariya] *AGENTSIIYA DEYTA-SPP SPP*, Sofia, 1-25.
- ЕКА* 2005: Европейската конвенция за ландшафта. ДВ бр. 22 от 15 март 2005. [Evropeyskata konventsia za landshafta]. DV br. 22 ot 15 mart 2005.
- Nikolova et al.* 2020: *Nikolova*, Mariyana, *Nedkov*, Stoyan and Bilyana *Borisova*. Природно наследство и рекреационни екосистемни услуги [Prirodno nasledstvo i rekreatsionni ekosistemni uslugi], *SocioBrains*, Issue 66, 1-8. <http://sociobrain.com/>
- Popova* 1993: *Popova*, Nikolina. Природни рекреационни ресурси [Prirodni rekreatsionni resursi], Univ. izd. „Sv. Kliment Ohridski”, Sofia, 1-127.

Tomova, Borisova 2018: Tomova, Katrin and Biliyana Borisova. Биосферните паркове по програмата „Човекът и биосферата“ на ЮНЕСКО като инструмент за регионално развитие и осъзнаване на пълния набор от екосистемни услуги (на примера на Централен Балкан) [Biosfernite parkove po programata „Chovekat i biosferata“ na YUNESKO като instrument za regionalno razvitiie i osaznavane na palniya nabor ot ekosistemni uslugi (na primera na Tsentralen Balkan)]. Godishnik na SU „Sv. Kliment Ohridski“, kn. 2, tom 110. 123-144.

Toncheva 2014: Toncheva, Todorka. Влияние на биоразнообразието върху развитието на туризма [Vliyanie na bioraznoobrazieto varhu razvitiето na turizma], Avangard Prima, Sofia, 1-98.

#### SITES:

CEU 2019: Central European University. The Concept and History of Cultural Heritage. Available at: <https://medievalstudies.ceu.edu/concept-and-history-cultural-heritage>

Cultural Heritage Act, 2009 adopted Official Journal No.19/13.03.2009, amend. OJ. 17/26. 02. 2021 [https://en.unesco.org/sites/default/files/bulgaria\\_culturalheritageact\\_2009\\_entof.pdf](https://en.unesco.org/sites/default/files/bulgaria_culturalheritageact_2009_entof.pdf)

World Heritage Convention, 1972. UNESCO World Heritage website: <http://whc.unesco.org/>

---

### Концептуализация на природното наследство в контекста на екосистемния подход

Марияна Николова, Стоян Недков, Стелиян Димитров,  
Биляна Борисова, Миглена Жиянски

Изследването разглежда обектите на природното наследство като елемент на социално-екологичната система и изяснява теоретичната основа за приложение на екосистемния подход при идентифициране на обектите на природното наследство от национално значение. Изяснен е процесът на формиране на представата за природно наследство чрез проследяване на единството между място, време и ценност. Предложена е дефиниция на понятието „природно наследство“ в този контекст. Посочени са основанията природното наследство да бъде изследвано като източник на културни екосистемни услуги за рекреация и туризъм. Разгледани са някои важни терминологични особености, които имат ключово значение за прилагането на екосистемния подход за оценка на културните екосистемни услуги, предоставяни от природното наследство.

