World Natural Heritage of the Baltic Drainage Sea Basin: Problems and Solution

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Abstract. Problems in formation of favorable environment cause search of more and more optimum decisions such as practice of preservation of ecosystems in specific territories and sites of natural heritage are the most significant. In this regard, the authors analyze some aspects of the activities of the Baltic Sea countries to preserve such territories. We pay special attention to the implementation of international conventions. They are the Ramsar Convention and the Convention on the protection of the world natural and cultural heritage. This article uses a statistical method of analyzing the data, which is presented in official sources. The main result of our research is identification of insufficient practical efforts of the Baltic States to preserve the natural heritage. The authors propose a number of actions aimed at strengthening of environmental protection in this region as an example of the Russian Federation.

1 Introduction

The increasing intensive influence of new forms of human activity and technological process appear as increasing threat to the safety of the environment. Obviously, a consequence of the modern stage of human development are environmental problems. They are in primary importance of social, economic and political parts of life and go far beyond of some individual societies and territories.

The expansion of the boundaries of scientific discourse and especially the arguments about the need to preserve the biosphere and natural landscapes, contributes to the formation of environmental competence in one of the fundamental directions of development and existence of humanity [1-14].

The ecological component becomes an integral part of the development of many modern societies that aspire to create a favorable environment. Therefore, among the many urgent problems of the XXI century, the issues of preservation of the environment and natural landscapes are of particular importance.

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Against the background of the desire for development and ecological and economic optimization of economic, including recreational, activities, new approaches appear in the practice of implementing the principles of sustainable development of territories. This practice is due to the continuing influence of synthetic threats, and increasingly - socio-ecological nature, on the environment. The development of new corners of nature and the activity of large masses of tourists on these sites causes a number of changes and lead to recreational regression, creating clear prerequisites for strengthening the processes of destruction of ecosystems of individual regions.

In this context, the protection and reproduction of components of natural complexes and, above all, unique objects of natural heritage is an urgent task for the modern socio-economic development of the region. For many decades, the environmental issues of the Baltic sea basin that have lagged behind in the focus of specialists’ attention have led to the consideration of unique natural heritage sites that need constant environmental monitoring and protection [2-18].

The Baltic Sea basin is an amazing and delightful natural region, where as of September 1, 2019 there are 52 world heritage sites (47 cultural, 4 natural and 1 natural-cultural), which is 4.64% of the total number of sites [19-30]. One of the features of the region is the presence of natural sites included in the UNESCO world heritage list, half of which are located on the coast [19-30]. A unique feature of the Baltic Sea basin is its “icy heritage” [5]. In addition, the region has preserved distinctive cultural traditions, some of which are also included in the List of world intangible heritage [19-30]. For several millennia, a crossroads of cultures formed for numerous peoples [19-30].

The solution of actual problems of preservation of natural landscapes and unique ecosystem of the Baltic sea basin in practice is connected with preservation of unique natural complexes-wetlands and objects of natural heritage of UNESCO, and also with complex development of system of specially protected natural territories of this region [31]. Improving the system of conservation of unique natural objects as an objective need is a timely and effective way to protect nature and form a sustainable ecological framework.

The ecosystem of the Baltic Sea basin is complex and unique, because of purposeful development, every year it experiences an increasing negative impact of human activity [30–35]. This trend gave rise to separate forecasts, the essence of which is to the fact that while maintaining the same rate of deterioration of the environmental situation; it believed that in 10 years the Baltic water cannot used for domestic purposes, marine fauna might disappear forever [2, 19, 36–43]. The current negative picture is largely associated with the natural isolation of the Baltic Sea, which loses oxygen [44 - 47] and overgrown with blue-green algae that secrete cyanide compounds. 7 of the world's 10 largest extinct marine areas are in this region. Many forecasts on this problem have a logical explanation. They were made to assess the long-term trends in the environmental situation in the region in the past and on this basis to identify the most likely continuation in the future.

Today, many factors have a sensitive impact on natural heritage sites. Industrialization of the region has a great environmental impact [44, 45, 48-50]. A huge role for the development of the territory, in addition to forest, water and fish resources, in all historical epochs played almost the only field in the world of fossil resin-amber. The intersection of important trade and transport routes (it accounts for more than 15% of the world's sea freight traffic), as well as the proximity of the EU and NATO countries, and other countries of Russia allowed to keep the focus on current environmental problems of the region [44, 45, 48]. At the same time, the increasing impact of both anthropogenic and non-anthropogenic factors on this environment attributed to be the significant factors intensively influencing the state of natural heritage objects [44, 45, 50-52].

Given the current complex features of the development of the Baltic Sea basin and despite the presence of a small number of UNESCO natural heritage sites in the region, it seems
necessary to update the academic discourse of the place and importance of natural heritage sites in the ecosystem of the region. Youth plays an important role in the preservation of natural heritage [44, 45, 52].

The focus of the authors’ attention on such an urgent, but not always focused topic both in the scientific discourse and in the framework of insufficient development of international and bilateral cooperation is due to the need to effectively use the phenomenon of UNESCO's natural heritage in the preservation of the region's ecosystem. Moreover, today it is important that the methods of management and socio-economic sustainable development corresponded to the main objectives of the protection of world heritage sites, biodiversity conservation, sustainability of ecosystems and landscapes [44, 45, 52].

The aim of this study was to identify the practical contribution of each country in the region to the conservation activities of the Baltic Sea basin.

To achieve this goal, it proposed to solve the following tasks to identify:
  - the existing diversity of the natural heritage of the Baltic States in comparison with other regions of the world;
  - problems in the implementation of world heritage Conventions in the countries of the region;
  - potential objects of natural heritage of the region, which have ecological, historical and aesthetic value.

2 Methods

The study conducted using data presented on the official Ramsar Convention Sites and UNESCO world heritage sites using a statistical method. The countries of the region divided on two grounds-Baltic Countries and the Baltic Drainage Sea. For each group, the number of protected areas calculated, based on which the contribution of each country to environmental activities was determined.

The results plotted on a map. Grid-Arendal materials used as a cartographic basis [44, 45, 52].

The reliability of the proposed research results determined by the use of international data.

3 Results and Discussion

The results of the study of the distribution of wetlands in the countries of the Baltic region and the Baltic Sea basin presented in table 1.

| Countries | Baltic Region | Baltic Drainage Sea |
|-----------|---------------|---------------------|
| Sites     | ha            | Sites | ha |
| NO        | 63 | 909134 | 3 | 6846.9 |
| SE        | 68 | 665474 | 68 | 665474 |
| FI        | 49 | 799518 | 47 | 461779 |
| RU        | 35 | 10323767 | 6 | 312600 |
| EE        | 17 | 304778 | 17 | 304778 |
| LV        | 6 | 150318 | 6 | 150318 |
| LT        | 7 | 65581 | 7 | 65581 |
Data analysis (table 1) shows that the number of wetlands in the Baltic Sea basin is quite large, accounting for 8.98% of all such areas in the world. At the same time—their area is extremely small and is only 1.12%. Sweden, Denmark and Finland make the greatest contribution to the protection of the Baltic Sea ecology. Slovakia, the Czech Republic and Ukraine make the least contribution to the protection of the Baltic Sea ecology.

The results showed that the regional model of ecosystem conservation differs to some extent from the models of environmental protection in other regions of the world. This is largely determined by the peculiarity of the Baltic Sea basin and the uneven interest of individual countries, which do not always pay due attention to these problems. Of great importance is the complexity of the military-political and organizational factors that exist between the countries of the region. In this regard, the joint solution of tasks to solve environmental problems depends on the existing competition between the individual countries of the region.

The results of the study of the distribution of UNESCO world heritage sites by countries of the Baltic region and the Baltic Sea basin presented in table 2.

| Countries | Baltic Regions | Baltic Drainage Sea |
|-----------|----------------|---------------------|
|           | Culture | Nature | Mixed | Culture | Nature | Mixed |
| NO        | 7       | 1      | 0     | 0       | 0       | 0      |
| SE        | 13      | 1      | 1     | 12      | 1 (SE)  | 1      |
| FI        | 6       | 1      | 0     | 6       | 1 (FI)  | 0      |
| RU        | 19      | 11     | 0     | 5       | 0       | 0      |
| EE        | 2       | 0      | 0     | 2       | 0       | 0      |
| LV        | 2       | 0      | 0     | 2       | 0       | 0      |
| LT        | 4       | 0      | 0     | 4       | 0       | 0      |
| BY        | 3       | 1      | 0     | 3       | 1 (PL)  | 0      |
| UA        | 5       | 1      | 0     | 2       | 1 (DE)  | 0      |
| PL        | 15      | 1      | 0     | 15      | 1 (BY)  | 0      |
| CZ        | 14      | 0      | 0     | 0       | 0       | 0      |
| SK        | 5       | 2      | 1     | 1       | 0       | 0      |
| DE        | 43      | 3      | 1     | 3       | 1 (UA)  | 0      |
| DK        | 7       | 3      | 5     | 1       | 0       | 0      |
Data analysis (table 2) shows that the number of world cultural heritage sites in the Baltic Sea basin is significant, accounting for 5.4% of all such sites in the world. At the same time, the share of world natural heritage sites is quite small – 1.9%. Poland and Sweden – leaders in the preservation of cultural heritage sites.

Interest in the problems of natural heritage sites of the Baltic Sea basin, which have ecological, historical and aesthetic value can be an incentive, stimulating factor for the actualization of the expansion of the discourse around their rational use in the preservation of the ecosystem of the region.

The authors believe that the insufficient number of natural heritage sites in the Baltic Sea basin, thanks to which the boundaries of protected natural landscapes are expanding and control mechanisms appear both at the national and international level, necessitates the expansion of environmental activities in this direction.

4 Conclusions

The analysis of materials reflecting the diversity of natural heritage sites in the ecosystem of the Baltic Sea basin demonstrates the extreme unevenness of their distribution. At the same time, in recent decades, public concern about the deterioration of the environment in the region has increased dramatically. To address this issue, it is necessary to change the attitude of States to specially protected natural objects and improve international cooperation of the countries of the region.

The total number of natural heritage sites is extremely small for such a large and unique region as the Baltic Sea basin, which to some extent cannot but affect the nature of environmental policies in the region, Fig. 1.

However, some objects included in the world heritage List according to cultural criteria, quite meet the natural criteria. Let us consider this on the example of the world heritage sites of the Russian Federation [18, 19].

1. Baltic glint—the shore of the ancient sea, formed because of the melting of the glacier about 11 thousand years ago. Its length is more than a thousand kilometers from the Swedish island of Eland through a chain of Islands, then along the Northern coast of Estonia to Lake Ladoga in the Leningrad region (Russia). A well-marked projection of the relief used as a fortification: the fortresses of Staraya Ladoga, Koporye, Yamm, Ivangorod, Narva, Tallinn, etc. in the highest part of the glint South of St. Petersburg (Pulkovo heights) is the Pulkovo astronomical Observatory. The height difference of the clay used by Peter I in the construction of Peterhof fountains, which allows the fountains to work from water flowing by gravity.

It is important to note that the Russian segment of the Baltic glint was included in the world heritage List according to cultural criteria in 1990 in the nomination "Historical center of St. Petersburg and related groups of monuments”.

2. The Varangian way is one of the most important trade routes of Northern Europe. It connected the largest cities of the Baltic Sea basin with a trade network between themselves and neighboring river basins: with the Dnieper river basin (the way from the Varangians to the Greeks) and with the Volga river basin along the Mariinsky water system (the way from the Varangians to the Persians).
It is important to note that many segments of this famous route are included in the world heritage List according to cultural criteria (St. Petersburg, Veliky Novgorod, Visby, Riga, Tallinn, Stockholm, Hansa, etc.).

Fig. 1. World Nature Heritage of the Baltic Drainage Sea.

3. Royal road (fin. Kuninkaantie, Sweden. Kungsvägen) - a network of ancient roads connecting medieval Sweden with the cities and castles of its provinces. Unlike other roads, the condition of the Royal road maintained at the expense of the Swedish Treasury. In the XIII—XVI centuries, the Royal road connected the fortress cities of ABO (Turku), Tavastehus (Hameenlinna), Vyborg and Olafsborg (Savonlinna), with the very first part of the road connecting Turku and Tavastehus. Often the Royal road means the road from
Stockholm to Vyborg – the sea route from the Swedish capital to Turku, and then the coast of the Gulf of Finland through Espoo and Porvoo to Vyborg. Currently, the Royal road is a tourist route Bergen-Oslo-Stockholm-Aland Islands-Turku-Helsinki-Vyborg-St. Petersburg, in the organization of which Norway, Sweden, Finland and Russia participate.

It is important to note that the section of this road is included in the world heritage of St. Petersburg, as the Primorsky highway.

4. The Curonian spit is a unique natural formation located between Russia and Lithuania. Here is one of the world's oldest ornithological centers (Fringilla), because migratory birds use this spit as a natural corridor - a bridge linking Central and Northern Europe. In addition, there are the only desert landscapes in Europe, characterized by large dunes.

It is important to note that the Curonian spit is included in the world heritage List by cultural criteria, as a cultural landscape.

Thus, it can be considered that the level of socio-economic development of the Baltic Sea basin territories and individual countries own environmental interests have different rates. This problem solved through a more active practice of identifying, studying and preserving natural heritage sites. In the future, this problem solved only through active international cooperation of the countries of the region due to the presence of many transboundary objects in the Baltic Sea basin.

The diversity of natural and cultural heritage of the region, including underwater heritage, requires the joint efforts of specialists in different fields.

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