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## ИЗВЕСТИЯ

НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК  
РЕСПУБЛИКИ КАЗАХСТАН

## NEWS

OF THE ACADEMY OF SCIENCES  
OF THE REPUBLIC OF KAZAKHSTAN

ГЕОЛОГИЯ ЖӘНЕ ТЕХНИКАЛЫҚ ҒЫЛЫМДАР  
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**THE GEOECOLOGICAL CHARACTERISTICS AND RECREATIONAL  
POTENTIAL OF THE PROJECTED STATE NATURE RESERVE  
«BOKEYORDA» IN WEST KAZAKHSTAN REGION**

**Abstract.** The results of exploring touristic-recreational potential in the territory, the State Nature Reserve, called "Bokeyorda" in West Kazakhstan region, posturize the great interest for the development of educational, sporting, educational, scientific, medical, pilgrimage and eco-tourism. In combination with a variety of archaeological and historical objects, cultural monuments form a significant potential for the development of the leisure industry. In general, sparsely populated area contributes to the conservation of biological diversity of the projected State Natural Reserve "Bokeyorda" in West Kazakhstan region.

**Keywords:** touristic and recreational potential, tourism, the ecosystem, the projected state nature reserve, steppe.

The conservation of biological diversity of ecological systems, unique natural complexes, objects of natural reserve fund, cultural and natural heritage of the Republic of Kazakhstan - one of the most important tasks of the state at the present stage. Kazakhstan, with its unique natural resources and unique culture of the nomadic people, has a huge untapped potential for tourism development at the international and regional markets. The tourism potential of recreational resources and historical and cultural heritage allows country integrate into the international tourism market and achieve rapid development of tourism in the country. This will ensure a steady growth of employment and income, stimulating the development of the tourism-related industries and increase investment in the national economy. In order to maintain and restore biodiversity and natural ecosystems Resolution of the Government of Kazakhstan approved the "Concept of development and location of specially protected natural territories of the Republic of Kazakhstan till 2030", aimed, inter alia, to create conditions for regulated tourism and recreation in the natural environment and the further development of tourism and recreation for the type of protected areas (PAs), their functional areas, socio-economic factors and the interests of the local population.

The main task of the conservation of biological diversity as defined by this concept - it is primarily the preservation of the whole variety of microorganisms, flora and fauna, as well as natural ecosystems, preventing their losses as a result of economic and other activities. Saving tourist and recreational resources is regulated at the legislative level, in particular, the laws of the Republic of Kazakhstan;

“On the protection of historical and cultural heritage”

“On natural areas of preferential protection”

“On the architecture and urban planning”

“On touristic activity” and other regulatory legal acts.

The resource potential of the sphere of tourist and recreational services can be regarded as a spatial system, including the natural, technological, labor, investment and financial, organizational, institutional and information elements of the economic system of the region, the connection of which takes into account the natural, cultural and historical features of the development of the territory. The support role in

the development of the sphere of tourist and recreational services play a direct natural, historical and cultural resources. Natural areas should be protected from various risks, such as pollution, poisoning plants, the presence of dangerous, wild animals, and others. All the natural resources, as the carriers of energy and information, serve as tourist and recreational resources of a wide range. The presence of natural resources is the first condition of productive forces in the region. The quantity, quality and the combination of natural resources define the resource potential of the territory, which is an important factor in the distribution of population and economic activity. Natural resource potential of the sphere of tourist and recreational services has an impact on its market specialization and place in the territorial division of labor.

Now the system of specially protected natural territories of the West Kazakhstan region is represented by 3 state nature reserves of national significance and 7 protected areas of regional importance, the total floor area of 188.7 thousand hectares, or 1% of the total area of the region. At the same time, there are no protected areas in the region with a strict regime of protection and with legal status [1].

*Aim of the research:* to study and assess the ecological state of ecosystems in the Volga and Ural intersteram, and to develop the scientific rationale in order to create the state natural reserve “Bokeyorda” in the West Kazakhstan region for the conservation of habitats of rare and endemic species of biodiversity, as well as description and assessment of natural touristic-recreational potential for the development of different types of tourism. Forestry and Animality Committee of the Ministry of Agriculture of the Republic of Kazakhstan has adopted a Program developing scientific research on the conservation of biological diversity within the framework of which works for creating “Bokeyorda” State Nature Reserve are stipulated. Research has been carried out within the framework of the project of the Government of the Republic of Kazakhstan and the Global Ecological Fund with the United Nations Development Programme (UNDP) “Conservation and sustainable management of steppe ecosystems” aimed at increasing the steppe ecosystems.

*Subject and methods research.* The results of the present study are based on data analysis of the Tourism and Sports Department of the West Kazakhstan region, expert appraisal of Kazakhstani specialists, employees of the West Kazakhstan regional center of history and archeology, and monitoring indices carried out by own investigations.

*Theoretical and methodological basis of the research contains scientific methods:* descriptive, comparative, statistical, systematic analysis, cartographic. The research methodology is based on a system of common principles and approaches. Scientific functions: a comprehensive, integrated, systematic, ecological, geographical [2-13].

*Subject of the research:* natural resource-recreational resources of the projected State Nature Reserve “Bokeyorda” in the West Kazakhstan region, where marker of monitoring sites with the application of their data on topographic base and recorded GPS data on the sites has been made. A mapping of habitats of key species of plants and animals has been conducted. The assessment of the negative factors impact on biological diversity has been accomplished. The underlying principle for allocating valuable area in designing the natural areas of preferential protection should be an ecosystem approach based on the comprehensive assessment of the ecological state of the natural components of the projected area dominating biogeocenosis and zoocenosis steppe environment by using remote sensing and GIS technology.

The project area is located in the northwestern part of the Caspian lowland in the West Kazakhstan region within the territory of Zhanibek, Bokeyorda, Kaztalovka raion districts. The total area of the studied region is 690.929 thousand ha, or about 4.5% of the region area (Fig. 1). The nature of its relief is almost a hollow, flat and slightly rolling plain with slight slope to the south. This plain is represented by places of depressions, clayish salt marshes and ancient channels of temporary streams. The hydrographic network on the territory of the nature reserve is very weakly developed. The river Aschyozek flows on the east of the project area, with several tributaries – the largest of them are the right-bank tributaries Sherembetsay, Tatkensay, Zhamansay, Astausalgan arroyo, Bersharal, and the left-bank tributaries Koldybaysay and Tereksay, flowing into the large lake Aralsor. Due to the frequent alternation of soil conditions, soils are inhomogenic and have different structure. However, within the individual parts of the territory of the future nature reserve in the watershed areas, the zonal types of soils prevail – kastanozems, light-kastanozems and brown earth [14].

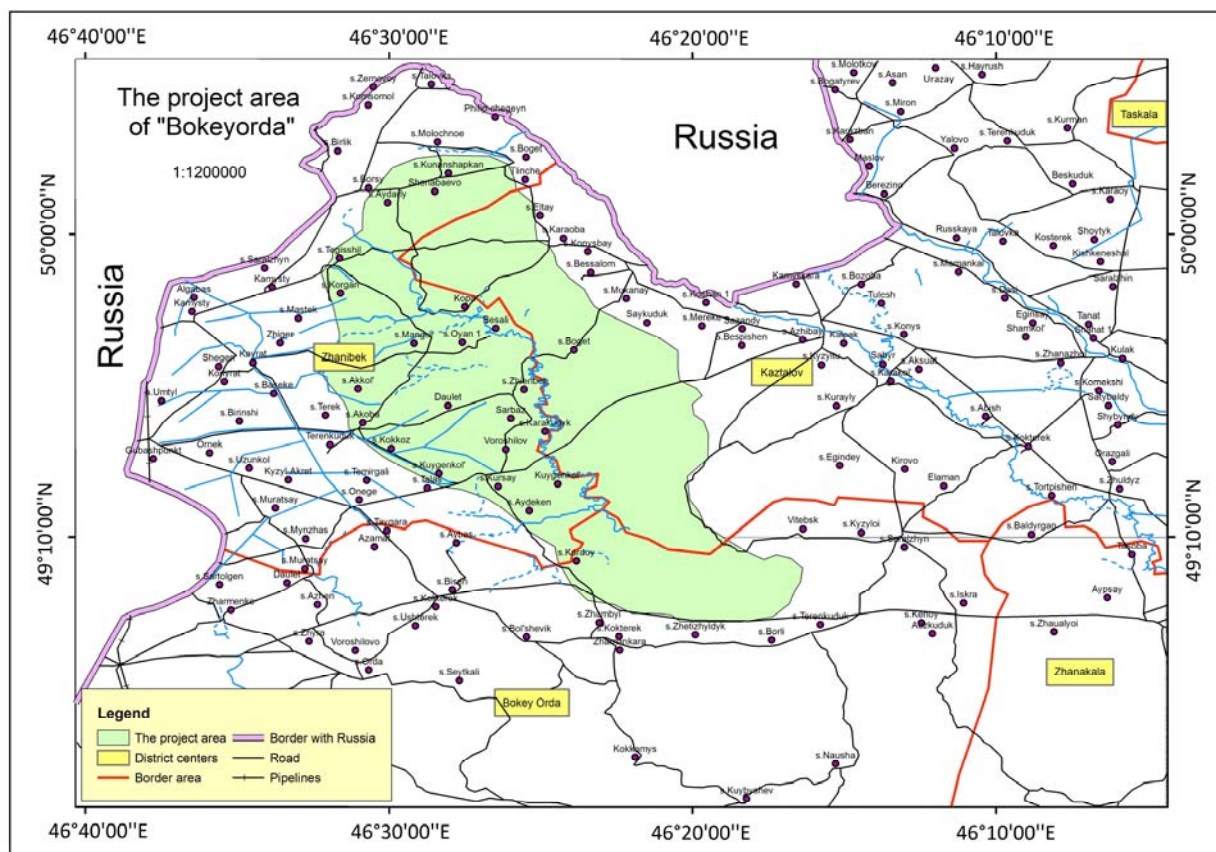


Figure 1 – Map of the projected State Natural Reserve ‘Bokeyorda’ in West Kazakhstan region

The flora of the project area is very diverse and poorly investigated. We have identified 537 species of vascular plants from 66 families and 265 genus. However, this is not complete species composition. In the overall flora of the West Kazakhstan region it constitutes 42.7% of total number of species (537), 54.4% (265) of total number of genera and 56.4% (66) of total number of families. The representatives of 3 families are the most numerous in the studied area – *Compositae Biseke*, *Gramineae Juss* and *Chenopodiaceae Vent*. *Compositae Biseke* is represented by 95 (17.3%) species, *Gramineae Juss* – by 54 species (9.8%) and *Chenopodiaceae Vent* – by 42 species (7.6%) [15].

The project area ‘Bokeyorda’ belong to two natural zones – the steppe zone (subzone of *Gemifructis-gramen-poaceae* desertified steppes on light-kastanozems) and the semi-desert zone (northern subzone of *Artemisia* and long-term *Salsola* semideserts on brown earth). According to the system of phyto-geographical zoning, the project area is represented by the Eurasian steppe and the Afro-Asian desert areas. Steppe is represented by its most arid subzone – Zavolzhye-Kazakhstan *Gemifructis-gramen-poaceae* desertified steppes, which includes the northern part of territories. Desert is represented by the least arid north-western outskirts of the Caspian province – the North Turan steppeified desert, which include the large part of the Caspian depression [16]. 7 types of vegetation are well represented in the project area: steppe, desert, forest, shrub, meadow, swamp, submerged-water [17].

Animals of the project area are represented by steppe and desert zone species. Among rodents are little souslik *Spermophilus pygmaeus*, several species of hamsters (*Cricetidae*), dipodids (*Dipodidae*), gerbils (*Gerbillidae*), voles (*Microtidae*), mice (*Muridae*). Carnivores are represented by wolf *Canis lupus*, red fox *Vulpes vulpes*, korskak *Vulpes corsac*, steppe polecat *Mustela eversmanni*, stoat *Mustela erminea*, badger *Meles meles*, common weasel *Mustela nivalis*, and others. Among even-toed ungulates are two species: saiga antelope *S. tatarica* and wild boar *Sus scrofa*. The very characteristic for the studied territory are such birds as larks (*Melanocorypha*), swallows (*Hirundinidae*), little bustard *Tetrax tetrax*, demoiselle crane *Anthropoides virgo*, and others. Among the small birds of prey are kestrel *Falco tinnunculus* and red-footed falcon *Falco vespertinus*, and among the large ones are common buzzard

*Buteo buteo*, hen harrier *Circus cyaneus* and steppe eagle *Aquila nipalensis*, which is rarely observed. The waterbodies are very rich in various waterfowl species. Among reptiles, steppe-runner *Eremias arguta*, sand lizard *Lacerta agilis* and steppe viper *Vipera ursinii* are ordinary to the desert.

We identified 57 individual ecosystems within the planned State Nature Reserve ‘Bokeyorda’, which were arranged in a hierarchical classification by their typological groups, structural and genetic classification. This classification was the basis of the legend displayed on the map (Figure 2). This map shows classification of ecosystem ranks (Legend in Figure 2).

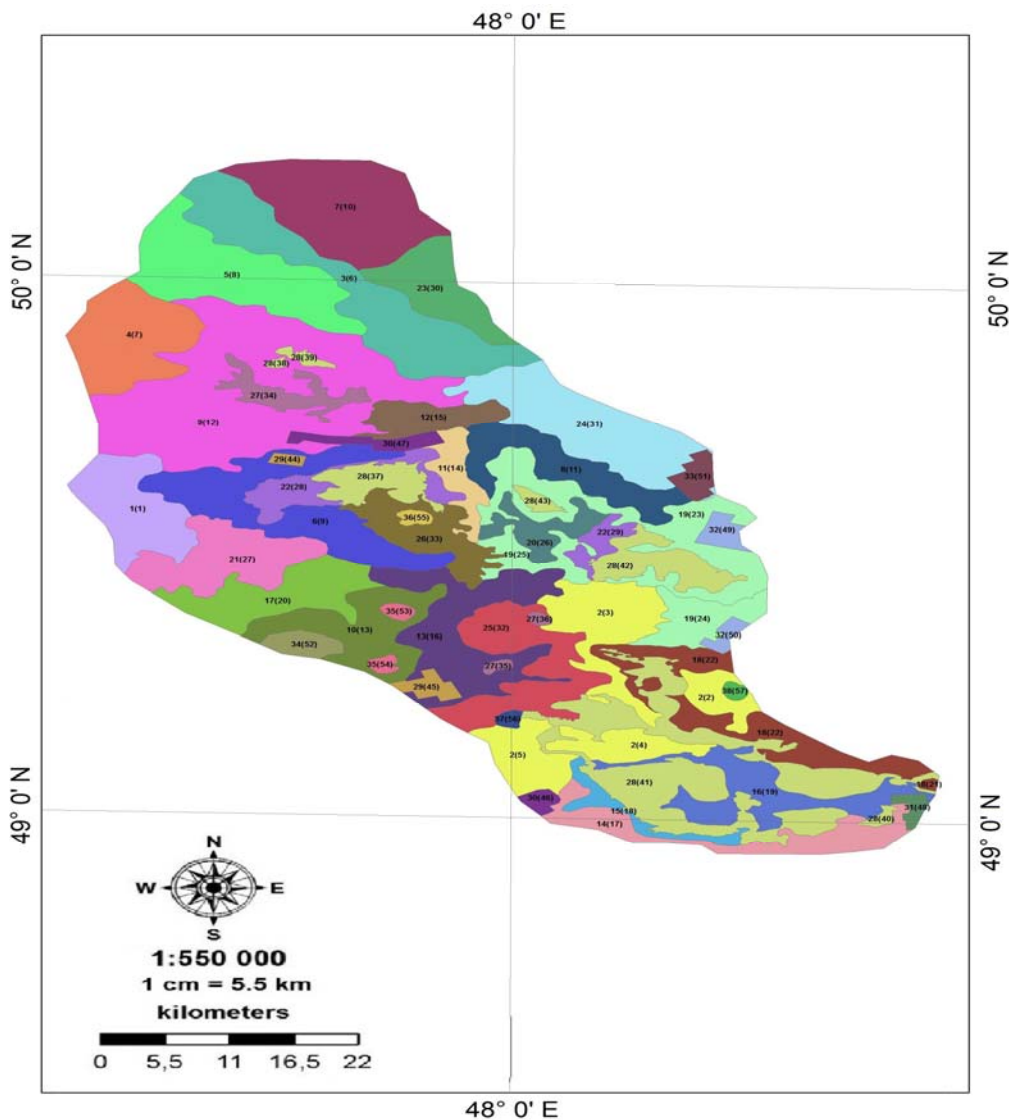


Figure 2 – Map of ecosystems of the projected State Natural Reserve ‘Bokeyorda’ in the West Kazakhstan region

**Legend of map for ecosystems in projected State Natural Reserve «Bokeyorda» in the West Kazakhstan region**

**GROUND AUTOMORPHIC**

Desert-steppe ecosystems on light-kastanozems soils

*Gramen-poaceae* of flat plains

1(1) – With the predominance of *Poaceae-flipéndula*, *Artemisia-roaceae-festuca*, *Tanacétum-festuca* associations

2(2-5) – With the predominance *Variherbetum-poaceae-agropyron* associations

3(6) – With the predominance of *Poaceae-festuca*, *Artemisia-festuca* associations in combination with *Variherbetum-gramen-poaceae* in depressions

*Gramen-poaceae* of sloping plains dissected by erosion



- 4(7) – With the predominance of *Poaceae-filipéndula*, *Artemisia-roaceae-festuca*, *Tanacétum-festuca* associations
- 5(8) – With the prevalence of *Artemisia-poaceae-stipa* associations with a predominance of *Filipéndula*
- 6(9) – With the prevalence of *Artemisia-poaceae-festuca* associations with a predominance of *Filipéndula* in conjunction with the cultivated lands
- 7(10) – With the prevalence of *Artemisia-poaceae-stipa* dominated communities *Filipéndula* in conjunction with *Sálsola-artemisia pauciflora*, and cultivated lands
- 8(11) – With the predominance of *Poaceae-festuca* with in conjunction with *Sálsola-artemisia pauciflora*
- 9(12) – With the prevalence of *Artemisia-poaceae-festuca* dominated communities *Filipéndula* in conjunction with the *Sálsola*
- Artemisia* of flat complicated by suffusion slides plains
- 10(13) – With the prevalence of *Poa praténsis-artemisia pauciflora* sometimes with *Poaceae* and *Sálsola* together with representatives of the *Sálsola-artemisia pauciflora*
- 11(14) – With the prevalence of *Gramen-poaceae-artemisia pauciflora*, sometimes with *Poaceae* and *Sálsola* together with representatives of the *Sálsola-artemisia pauciflora*
- 12(15) – With the prevalence of *Artemisia-roaceae-festuca* dominated communities *Filipéndula* in conjunction with the cultivated lands
- Artemisia* of sloping plains dissected by erosion
- 13(16) – With the prevalence of *Gramen-poaceae-artemisia pauciflora* in combination with the black *Sálsola-artemisia pauciflora*
- Desert-steppe ecosystems on brown earth soils  
*Artemisia* of sloping plains dissected by erosion
- 14(17) – With the prevalence of *Artemisia lerchiana* and bluegrass during *Poa praténsis-artemisia lerchiana* community *Sálsola* in depressions and depressions
- 15(18) – With the predominance of *Variherbetum-poaceae-euphórbia* communities with a predominance of *Artemisia* and *Filipéndula*
- 16(19) – With the prevalence of *Artemisia pauciflora-limonium*, *Poaceae-artemisia lerchiana* and *Artemisia-ruccinelli* communities
- Halophytes-artemisia ecosystems on solonetz  
*Artemisia* of flat complicated by suffusion slides plains
- 17(20) – With the predominance of *Sálsola-artemisia pauciflora* complex with *Festuca-roaceae-artemisia* communities with a predominance of *Filipéndula*
- Artemisia* of sloping plains dissected by erosion
- 18(21-22) – With the predominance of *Artemisia pauciflora*, *Sálsola* in complex with *Artemisia-roaceae-agropyron* communities
- 19(23-25) – With the predominance of *Sálsola-artemisia pauciflora* in the complex, *Ephemeræ-proaceae-artemisia lerchiana* communities
- 20(26) – With the predominance of *Sálsola-artemisia pauciflora* in conjunction *festuca-roaceae-artemisia* communities with a predominance of *Filipéndula*
- Sálsola* of flat complicated by suffusion slides plains
- 21(27) – With the predominance *Petrosimonia sibirica (Pall) Bge Ahab Rev* in a complex of *Sálsola-artemisia pauciflora* and *Poaceae-filipéndula* communities
- Sálsola* of gently rolling plains dissected by erosion
- 22(28-29) – With the predominance of *Artemisia-sálsola-limonium* communities
- SEMIHYDROMORPHIC  
Meadow-desert ecosystems on meadow-light kastanozems soils  
*Poaceae* of sloping plains dissected by erosion
- 23(30) – With the prevalence of *Leymus poaceae* communities
- Gramen-poaceae* of flat complicated by suffusion slides Plains
- 24(31) – With the prevalence of *Gramen-poaceae-artemisia-variherbetum* communities

Meadow-desert ecosystems in the meadow solonetz  
*Artemisia* in depressions

25(32) – With the predominance of *Salsola-artemisia pauciflora* communities in a complex *Artemisia pauciflora-suaeda* and *Artemisia-roaceae*

*Salsola* in depressions

26(33) – With the prevalence of *Puccinelli-halimione-artemisia* communities

HYDROMORPHOUS

Meadow-desert ecosystems in the meadow soils  
*Variherbetum-poaceae* in depressions

27(34-36) – with a predominance of *Variherbetum-poaceae* communities sometimes with *Carex*  
The hyper halophytic ecosystems of depression  
Sors in depressions and in the saline depressions

28(37-43) – Sors, salt marshes with sparse *Salsola* vegetation

GROUND ANTHROPOGENICALLY DISTURBED ECOSYSTEMS AGRO-ECOSYSTEMS

Anthropogenically transformed ecosystems on light-kastanozems soils  
Parturition of arable and cultivated land

29(44-45) – Arable land and cultivated land on the site of *Tanacetum-festuca-stipa* communities

30(46-47) – Arable land and cultivated land on the site of *Variherbetum-stipa* communities  
Anthropogenically transformed ecosystems on brown earth soils  
Parturition of arable and cultivated land

31(48) – Arable land and cultivated land on the site of *Festuca-artemisia pauciflora*, *Festuca-linosyris* communities  
Anthropogenically transformed ecosystems on solonetz  
Parturition of arable and cultivated land

32(49-50) – Arable land and cultivated land on the site of *Tanacetum-festuca-stipa* communities  
Anthropogenically transformed ecosystems on meadow light-kastanozems soils  
Parturition of arable and cultivated land

33(51) – Arable land and cultivated land on the site of *Tanacetum-festuca-stipa* communities

DEGRADED

Anthropogenically disturbed ecosystem on eroded light-kastanozems soils  
Parturition of pasture failures around residential housing

34(52) – *Ephemera-ceratocarpus* overgrazing or anthropogenic disturbances

35(53) – *Artemisia lerchiana-ephemeral*

36(54) – *Artemisia procera*. Ruderal thickets

Anthropogenically disturbed ecosystem on eroded solonetz  
Parturition of pasture failures around residential housing

37(55) – *Ephemerae-egetorugit*

38(56) – *Artemisia pauciflora-salsola* thickets

Note: 1. The first number has specified number of a type of an ecosystem according to the table of a legend

2. The second number (in brackets) has specified serial number of an ecosystem according to the table of a legend

As initial information ecosystem mapping the projected nature reserve used component of ecosystems studies, satellite images, field research with a GPS-bound, integrated into a single map projection and coordinate system, topographic maps, and others.

The project area includes the habitat of the Ural population of the saiga antelope *S. tatarica*. Saiga antelope of the Azgir-Urda grouping usually lives here in the spring and autumn periods. In the winter they leave the territory of Atyrau region. The main areas of its habitat are neighborhood of the Sors Khaki, river Aschyozek, lake Aralsor. In some years it rises to the north to the settlements Kaztalovka and Borsy [18, 19].

Areas of the main habitat of the saiga antelope, including wintering, summering and mass calving, currently occupy the neighbourhood of the north-western part of the Volga-Ural interfluvium. Basically, these territories are less affected by economic activity and are remote from major population centers. Obviously, the saiga antelope prefer to feed here. In the Volga-Ural interfluvium, the most part of saiga antelope population is concentrated now in Aralsor solonchak-lake structural basin, where a desert-

solonchak complex of vegetation is predominant, with the most preferred by saiga antelope (*S. tatarica*) plant of the families *Asteraceae*, *Chenopodioideae*, *Cruciferae* and *Rosaceae* [20-22]. These are not only such plant species as *Chenopodium album*, *Kochia prostrata*, *Potentilla* sp., *Crinitaria tatarica*, *Polygonum patulum* and others, that are usually preferable by herbivorous mammals, but also many weeds and poisonous plants, such as *Lactuca serriola*, *L. tatarica*, *Artemisia austriaca*, *Thlaspi arwense* and others, which other ungulates do not eat by *S. tatarica* [23]. Our investigation of plant communities showed that the flora of the project area 'Bokeyorda' consists of 104 species of fodder plants. A wide range of forage grasses indicates their unpretentiousness.

During the development of the project, it was necessary to take into account the recommendations for the conservation of biological diversity of the region. Rare and endangered species with important economic, scientific and aesthetic value were included in The Red Book of Kazakhstan [24, 25].

Our investigation of plant communities showed that the flora of the project area 'Bokeyorda' consists of 104 species of fodder plants. We noted the presence of at least 4 unique and significant plant communities, which represent a kind of original botanical-geographic phenomenon and have an important environmental, water regulation, water protection, soil protection, and other roles. Despite of widespread plowing, the small natural sites of zonal steppe complexes were fragmentary preserved. These are the Sherembetsay tract, Tegishshyl complex steppe, steppe Aralsor steppe, Karaoba *Festuca* steppe.

The studied territory is also important for the conservation of habitats of steppe animal species. We revealed 37 species of mammals, 71 species of birds and 7 species of reptiles. 5 species are listed in the Red Book – demoiselle crane *Anthropoides virgo*, little bustard *Tetrax tetrax*, eagle-owl *Bubo bubo*, golden eagle *Aquila chrysaetos* and steppe eagle *Aquila nipalensis*.

With an aim to study the natural recreational resources by the principle of "green" route [26-28] analysis of the main types of recreational landscapes area features has been conducted. Their geographical allocation is carried out under A. A. Chibilev's method [29-31]. On the basis of the landscape analysis of the project area and aesthetic information estimator within the study area, the following types of recreational landscapes can be defined: steppe rivers and lakes, sandy, recreational objects with balneological resources, fragments of virgin steppes, historical-landscape objects and landscape-aesthetic area evaluation.

Steppe rivers are mainly represented by Aschyozek river, as well as other small gullies and gulches. These river flows dry up in some places in the middle of summer and form a chain of separate lake-shaped pools. Deep-water lake-shaped pools with seepage flow correspond to valuable recreational water bodies that are used for fishing of local significance and summer sanative leisure.

*Steppe lakes* are spread in small quantities with small areas and intermittent saline. Steppe lakes are represented by artificial lakes near villages Mangur, Kuygenkol and etc. that are located in the tideway of small ducts flowing to the south in the direction of the Caspian depression. The areas of them range from a few up to tens of hectares. These artificial lakes are important for a variety of recreational activities. Here, in the long term it is possible to organize seasonal sport hunting for local and migratory natatorial wild fowl at authorized locations, and also possible to do sport fishery. Besides, lakes are of great value as water reservoirs for fishing of local significance (including under-ice fishing) and summer holidays. In prospect for the development of tourism in the area of these lakes it is necessary to develop and construct the infrastructure.

*Recreational assets with balneological resources.* The projected area has huge balneological resources, especially in the south-eastern and southern parts. It is contributed by the presence of a significant amount of salt lakes with natural replenishment of therapeutic mud and healing water. In the middle of the summer local people start using mud from joint diseases and skin diseases. Assets with balneological resources are found everywhere of the projected area. These assets include Aralsor lake, Batpak sor, as well as many sors, scattered across the projected area. Recreational importance is given to the sanative holiday and organization of mudtherapy.

In the projected area there are desirable conditions (especially in summer) for the treatment of people with milk products such as koumiss and shubat made from the milk of horses and camels that are bred in the territory, since it has necessary pastures.

*Fragment of virgin steppes.* Unplowed fescue and herb-bunchgrass, maiden desert-wheat grass, herb-bunchgrass steppe areas are preserved fragmentarily in the form of "islands". Small in size steppe areas

are located in the north near the village Tegishshil and the south-west in the way of villages Zhanibek and Uzunkol where two- and threefold steppe complexes are preserved. The largest steppe areas occur in the peninsular part of the lake Aralsor. A person who loves nature gets spiritual pleasure from maiden primeval steppes. Particularly, bright and beautiful picture of the steppes can be observed in the late spring and early summer. In these steppe areas there are ash-grey sea of blooming feather grass, where bushes of almond and meadowsweet are scattered in the small amount of green, light-red and yellow colours. Bright red, yellow Schrenk tulips appear in the remained unplowed areas and a variety of plant colours enliven the steppe. Virgin steppe landscapes are rare and unique assets for photo and video shooting.

*Landscape and aesthetic assessment of territory* comes to the definition of the human's emotional response to a particular natural complex. The aesthetic roots in the human psyche, or demand for beauty is one of the strongest manifestations of his/her spiritual world. Beauty dignifies and educates. It is no mere chance, the territory having a great aesthetic value with the equality of other properties are in heightened interest among tourists. It is specified by baffling complexity, and its method is poorly designed. In recent years psychologists, sociologists and geographers have suggested a number of indicators to measure the aesthetic properties of landscapes.

Studies show that edge zones (especially on the flat terrain) and focal points have the greatest power of attraction and. The boundary zones are regarded as frontier belts between two dissimilar media or natural systems: water - land (profound effect), wood - glade (average effect), the hill - plain (low effect). Many researchers believe that the aesthetic value of the landscape depends on its morphological structure, diversity of landscape elements and introduce the concept of "landscape diversity" which is divided into internal and external. The internal diversity of a landscape is determined by the structure of the natural complex (the nature of the relief, vegetation, hydrological features, correlation between the various components, and etc.). There are a number of indicators of the internal landscape diversity. They are:

- pattern structure degree the of landscape, i.e. the ratio of the number stow contours to the tracts of the landscape;

- landscape diversity degree, i. e. the ratio of the number of stow species to tracts of the landscape;

- occurrence frequency of the background dominant and the structural determinants on the route;

- probable number of stow contours per unit on the tourist route.

Internal aesthetic properties of natural systems are also specified by the degree of forest coverage, normality, forest layerage, abundance of undergrowth and underwood. Depending on the degree of forest coverage open, semi-open and closed spaces are distinguished. In assessing natural complexes with semi-open spaces, i.e. those spaces structure of which includes both forested and non- forested territory, receive the highest score. Should the forested area exceeds 50%, the aesthetic value of the landscape is sharply reduced. While traveling in the heavily forested spaces with frequent changes of scenery hiker gets tired quickly and cognizes everything as a monotonous scenery set. Open spaces by virtue of its visual statics do not provide diversity. Undamaged areas by economic activity, which are proposed for the creation of nature reserve, have good recreational and aesthetic potential. Aesthetic and recreational values in the study area are beautiful scenic landscapes in some of its sites, as well as many objects of flora and fauna.

Naryn sands are covered with pine forest. This forest looks like a green oasis amidst the surrounding treeless spaces. Major natural aesthetic and recreational resources are semi-desert, sandy landscape and the high number of rare species of animals and birds combined with a favorable climate for leisure. Colourful scenery and the opportunity to observe the animals have a high emotional impact on people. Aesthetic value of the landscape depends on the combination of vegetation and topography. For instance, the average range of the forest to upland undulating terrain visually enhances the ruggedness of the terrain. Whereas, low forest occupancy creates the effect of landscape uniformity. In the former case, aesthetic assessment of natural territorial complex is increased, while the second is reduced. External landscape variety of natural complexes of the projected area is specified by a diversity of landscapes that appear in many of the neighboring natural complexes. Obviously, semi-open and open spaces have the greatest external landscape diversity than closed territory. The indicators of the external landscape diversity includes a number of visible adjacent natural systems, an amount of horizontal and vertical angles of the external landscape perception, perspective depth, crossing the line of the horizon, as well as plenty of places offering exterior views. For example, lake Aralsor is one of the most picturesque places in the region of the Western Kazakhstan. Few, if any, places have a beautiful salt lake. Tall cliffs are reflected in the glass

calm. Lunar landscapes with the highest point of the photo and video shooting - islands of pink crystals, fantastic sunsets, which is generally impossible to describe; that is something unearthly, can be observed.

Methods of psychological and aesthetic assessment of natural systems developed in recent years are based on the rate of exoticism and unique. The exoticism is defined as a degree of contrast of resting place in relation to the place of permanent residence, and the uniqueness is a degree of occurrence or the originality of objects and phenomena. Landscape and aesthetic assessment of the projected area is very high. Landscape diversity is achieved by endless flat spaces, presence of a large number of species panoramas, open and closed spaces, the bizarre combination of a semi-desert tracts sor and meadow vegetation. Historical and archaeological sites in the landscape background of wild desert-steppe nature impart a special attraction to the landscape. The most significant in shaping the image of the landscape is the terrain and vegetation. And the terrain is a leading component, which determines the entire look of the landscape, and is perceived as the core of the composition. Water bodies have a local distribution, are rare and uniquely enhance the aesthetic properties of the landscape

They have a pronounced attractive effect and definitely dominate in the landscape. Areal (lakes) and linear (river) water bodies are allocated. The areal are more important in shaping the landscape image of the projected area for its exoticism and uniqueness. In assessing the lakes primary importance is attached to their "immensity", i.e. water-surface area, as well as water transparency. Combination of territories and aquatories form so-called edge zones - the border of various media. For example, steep coast of sors and river Aschyozek. In aesthetic assessing of natural systems, colour palette is also considered which according to scientists, has a significant psycho-physiological influence. According to the external assessment of colour, colour combinations of earth and vegetable nature, which are considered in medicine as viable for a person: yellow, orange, green, chestnut, are predominated in the projected area. Psycho-physical influence of these colours is positive. Needless to say the aesthetic appeal of changing aspects of the vegetation in the projected area, irises, tulips, goose onions, almond blooming in early spring, in the summer: carpet grasses on the plains, blue and yellow fields of veronica, sage, clover, bedstraw, sea lavender and other herbs on yellow-green background of grass communities.

Not only visual, ocular properties of the landscape, but also sound (acoustic) and odor (smells) can be attributed to the aesthetic features of the territory. Landscapes of the study area in this respect are specified by considerable diversity of plant species creating a special aura steppe air, its aroma and taste, significantly increasing the therapeutic and healing effect of the air environment. It is difficult to enumerate all ether-bearing plants: wormwood, thyme, astragalus, sage, meadowsweet, and many others. In the natural flora of the projected area most species of different life forms belong to the groups of spice-aromatic and essential oil plants. Among the most widely represented are umbrella-shaped, composite (wormwood, elecampane, burdock), but particularly widely found are labiate (sage, mint, ziziphora). Dwarf semishrubs are represented everywhere by thyme, different kinds of wormwood, and others. An important aesthetic impact grants trill of larks, rustling of leaves, crackle of cicadas, crickets and other soundscape. Steppe sounds in all their voices: squeaky, monotonous music of grasshoppers, mole crickets, violinists, and merry voices gophers at sunrise; gurgling of waters bodies and "fun, young rattle" in the grass, when "steppe bass, tenor and treble - all mixed into a continuous, monotonous hum"; gurgling of water, bird cries, whistles and noise of wind and thunder sounds in the prethunderstorm evening. Wonderful acoustic modulations of landscapes.

Thus, beautiful landscape is scene of evolving nature that can be expressed in the variety of elements, and their monotony, and the riot of colours, and in one or two colours (shades) ... A person organically becomes a part of in this beauty only when his own perception is also free. And only while meeting this main condition, more frequent, to a certain extent formal criteria for assessing the aesthetic value of the landscape - the uniqueness, diversity and etc. will retain its value.

Historical and cultural landscape and archaeological objects. The project area is located at the junction of two continents - Europe and Asia, through which in ancient times numerous migrations of tribes and peoples took course. Within the territory there are about 45 historical and archaeological sites represented by ancient burial mounds.

Evidence of residence in this land of various peoples is numerous monuments of ancient cultures explored by archaeologists today. Ancient burial complexes are scattered everywhere. The largest are Akadyr, Koltaban, Akoba and etc., also there are necropolis with tombstones.

The organization and implementation of the project of natural reserve “Bokeyorda” in the prospect enables to preserve the unique objects of history and archeology. Historical and archaeological landscape objects have cognitive, educational and scientific interest, as well as touristic importance for the organization of archaeological training camps. In general, the landscape diversity of the projected area is of great interest for the development of educational and scientific tourism. Along with a variety of archaeological and historical sites, cultural monuments form a significant potential for the development of the leisure industry.

However, account must be taken of the negative impact of tourism activities, namely uncontrolled visit. Currently, the projected area is not involved in the travel industry of the West Kazakhstan region. Within the sites and in their immediate vicinity there are no holiday hotels and tourist routes. Available small flow of tourists does not have disruptive influence on the natural assets. Littering the areas, most frequent uncontrolled visiting within places of leisure are not expressed. The most promising in this respect are:

- routes of historical and environmental directivity;
- routes associated with hunting and fishing tours;
- routes of recreational directivity;
- caravan routes by camel, horse and hiking;
- routes neighboring to the regions of Russia.

Recreational resources of the projected area are multifarious. They are sport tourism which includes such activities as hiking, horse riding, cycling. It is possible to develop varieties of tourism: family, school, youth, sanative, ecological, foreign, language, pilgrim. Yet for the development of tourism it is necessary to create infrastructure and material and technical base for every kind of tourism. In general, a relatively sparsely populated area contributes to the conservation of biological diversity of the given area. However, the economic difficulties of the 90s, the transition to a free market economy and the reorientation of the population activity into the field of small and medium-sized businesses stipulate necessity of consideration of arising consequences, in this connection, of uncontrolled activity and threats of anthropogenic impact on the region nature.

#### **Conclusion (findings).**

1. Steppe rivers and lakes with a seepage flow correspond to valuable recreational water bodies which are used for fishing of local and sporting significance. Also here in prospect, it is possible to organize seasonal sport hunting for local and migratory natatorial wild fowl at the authorized area and sanative summer holiday.

2. The projected area has a huge balneological resources, salt lakes with natural replenishment of therapeutic mud and healing water are the basis for the development of sanative holiday and mudtherapy. Production of koumiss and shubat for the treatment of the local population and visitors also promotes good conditions. Sanative holiday and organization of mudtherapy has recreational importance. In the middle of the summer local people start using therapeutic mud from joint and skin diseases.

3. Fragment of virgin steppe landscapes represent an appreciated value for photo and video shooting of rare and unique assets of nature.

4. High landscape and aesthetic assessment of the territory is determined. In this respect, historical and archaeological landscapes in the background of wild desert-steppe nature assign a special allurements to the scenery.

5. The organization and implementation of the project on creation of the natural reserve “Bokeyorda” in prospect will contribute to the preservation of unique objects of history and archeology: historical and archaeological landscapes that represent educational, cognitive and scientific interest, as well as touristic value.

In general, the landscape and biodiversity of the projected area represent great interest for the development of cognitive and scientific tourism. Especially in combination with a variety of archaeological and historical sites, cultural monuments form a significant potential for the development of the leisure industry.

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**БАТЫС ҚАЗАҚСТАН ОБЛЫСЫНДА ЖОБАЛАНҒАН «БӨКЕЙОРДА» МЕМЛЕКЕТТІК  
ТАБИҒИ РЕЗЕРВАТ ТЕРРИТОРИЯСЫНЫҢ ГЕОЭКОЛОГИЯЛЫҚ СИПАТТАМАСЫ  
ЖӘНЕ РЕКРЕАЦИЯЛЫҚ ӘЛЕУЕТІ**

**Аннотация.** Батыс Қазақстан облысында «Бөкейорда» атты жобаланып отырған мемлекеттік табиғи резерватында туристік-рекреациялық әлеуетін зерттеулер нәтижелері бұл территорияларда оқу, спорттық, танымдық, ғылыми, емдік, дінитанымдық және экологиялық туризм түрлерін дамытуға үлкен қызығушылық тудыруда. Зерттеліп отырған территориядағы әр-түрлі археологиялық, тарихи және мәдени ескерткіштер демалыс индустриясының дамуына айтарлықтай әлеует қалыптастырады. Жалпы алғанда, зерттеліп отырған Батыс Қазақстан облысында «Бөкейорда» атты жобаланып отырған мемлекеттік табиғи резерватында аз қоныстану биологиялық әралуандылықты сақтауға ықпал жасайды.

**Түйін сөздер:** туристік-рекреациялық әлеуеті, туризм, жобаланып отырған мемлекеттік табиғи резерват, дала аймағы

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**ГЕОЭКОЛОГИЧЕСКАЯ ХАРАКТЕРИСТИКА И РЕКРЕАЦИОННЫЙ ПОТЕНЦИАЛ  
ТЕРРИТОРИИ ПРОЕКТИРУЕМОГО ГОСУДАРСТВЕННОГО ПРИРОДНОГО РЕЗЕРВАТА  
«БОКЕЙОРДА» ЗАПАДНО-КАЗАХСТАНСКОЙ ОБЛАСТИ**

**Аннотация.** Результаты исследования туристско-рекреационного потенциала территории проектируемого государственного природного резервата «Бокейорда» Западно-Казахстанской области представляют большой интерес для развития учебного, спортивного, познавательного, научного, лечебного, паломнического и экологического туризма. В сочетании с разнообразными археологическими и историческими объектами, памятниками культуры образуют значительный потенциал для развития индустрии отдыха. В целом, относительно слабая заселенность территории способствует сохранению биологического разнообразия проектируемого государственного природного резервата «Бокейорда» Западно-Казахстанской области.

**Ключевые слова:** туристско-рекреационный потенциал, туризм, экосистема, проектируемый государственный природный резерват, степи.



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