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The proceedings are the papers of students, undergraduates, doctoral students and young researchers on topical issues of natural and technical sciences and humanities.

В сборник вошли доклады студентов, магистрантов, докторантов имолодых ученых по актуальным вопросам естественно-технических и гуманитарных наук.

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©Л.Н. Гумилев атындағы Еуразия ұлттық университеті, 2024 табака. В 2010 году была отреставрирована и оснащена инженерно-техническими средствами. Сегодня включена в список национальных исторических памятников США и активно используется в качестве места для экскурсий и торжеств, в особенности свадебных. Помимо этого, огромную популярность сейчас набирают сафари. Это возможность наблюдать за животными в их естественной среде обитания. Отличным примером организации наблюдений за дикими животными является национальный парк «Баварский лес», так как здесь организованы специальные частично отгороженные зоны обитания диких животных, которые оснащены башнями со смотровыми площадками и ограждениями, чтобы человек мог наблюдать за такими животными, как рысь, волк или тур, не вторгаясь в мир дикой природы. В России данный вид досуга имеет огромный потенциал развития на особо охраняемых природных территориях, так как у нас на особо охраняемых природных территориях имеются огромные пространства нетронутой дикой природы и большое количество возможностей для организации наблюдений за её представителями.

В заключение хотелось бы отметить, что указанные мероприятия по улучшению сервисного наполнения на особо охраняемых природных территориях были выбраны исходя из реалий, в которых сегодня находится экологический туризм в Российской Федерации. Из-за климатических и географических особенностей не все мировые практики могут быть успешно адаптированы в России, однако нам всё же следует обращать внимание на общие мировые тенденции в развитии сервисного наполнения на особо охраняемых природных территориях, чтобы перенимать и адаптировать только лучшие и уже успешно зарекомендовавшие себя практики экологического туризма.

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EAST KAZAKHSTAN'S RECREATIONAL OPPORTUNITIES FOR THE DEVELOPMENT OF TOURISM

Kadyrkhanov Bauyrzhan Zhanatuly

vip.kadyrkhanov@mail.ru

Bachelor's student at L.N. Gumilyov Eurasian National University Scientific advisor Zhanabay A.A.

The most promising and rapidly developing area for recreation is East Kazakhstan. Today, it is feasible to plan and develop a variety of tourism activities on its territory due to the uniqueness of nature, the diversity and uniqueness of landscapes, and the presence of the rarest monuments of history and culture.

The fact that the tourism sector has not been actively pursued as an economic sector at the state level for a while is one of the factors contributing to its slow development. Comprehensive forecasting, long-term planning, tourism territorial organization, and non-governmental tourism structures received no attention. As a result of recent changes in the situation, the state program for 2007–2023 places more emphasis on the growth of tourism in East Kazakhstan. Based on the master plan that is being developed, a number of measures have been outlined to create and develop a tourism cluster.

The area offers a wide variety of recreational and natural resources. East Kazakhstan is situated in one of the most picturesque areas of the mountainous Altai-Sayan nation, thanks to the favorable climate. The mountain range system of the Southwestern Altai (Kazakhstani Altai) represents the mountains, which make up a sizable portion of the region. Within the East Kazakhstan region are high ridges that act as a watershed for the Ob and Irtysh rivers. These ridges include the Tigiretsky, Koksuisky (2292 m), Kholzun (2599 m), Listvyaga (up to 2,720 m), and Katunsky, which has the highest point in Altai, Belukha (Muztau, 4506 m). High-altitude Alpine terrain with significant fragmentation and a predominance of precipitous, steep, and occasionally nearly vertical slopes and cliffs are their defining features. There are many developed glacial and nival landforms in this area. Above the modern level of the snow line, the centers of modern glaciation have been formed.

The region has traditionally had distinct seasons throughout the year. The thermal resources of the Alakol Lakes are linked to the Mediterranean, and they are comparable to those of Crimea. The best time to take summer vacations is between 105 and 120 days, with both hot and comfortable weather. In Altai, the swimming season lasts 60–80 days, while on Lake Alakol, it can extend up to 100 days. In the foothill zone, the ski season runs roughly five months, from November through May.

The tourist season is short in mountainous areas. It lasts three to four months in the mountains and five months on the plains and in the foothills (May to September). In mountainous regions, many passes are closed, and snow may start to fall by the end of August. However, the most alluring tourist destinations are found in mountainous regions. As a result, the brief travel season may be viewed as an unfavorable aspect of the climate in the East Kazakhstan region [3, 4].

The region's hydromineral resources are limited to three balneological groups of mineral waters out of the six species that Kazakhstan is home to. Large resort areas are run by the two largest thermal mineral deposits, Rakhmanovskoye and Barlyk-Arasan. The waters of other sources are either not conditioned or not significant in reserves. Mud therapy resources are important in the area. The biggest of them is Karabastuz, which is located west of Semey on the same-named salt lake. In cities and work towns, therapeutic mud is extracted for mud baths or used for self-treatment.

One of the most important recreational resources of the region is water resources. The region has a dense river network, which attracts many recreation centers. The recreational value of the territory is increased by the Shulbinsky, Ust-Kamenogorsk and Bukhtarma reservoirs. The latter became the core of a large territorial recreational system. But, in general, reservoirs worsened the conditions of rest on the Irtysh in the lower reaches of the Ust-Kamenogorsk hydroelectric complex due to a decrease in water temperature to 11-12 ° C, which excludes mass bathing.

The natural objects traditionally used for recreation are numerous lakes. Many of them are the centers of recreation areas and are already experiencing recreational overload. Lake Alakol stands out in particular – the largest and warmest lake in the East Kazakhstan region. It has good sandy and pebble beaches, salt water of the marine type. There are large recreation centers on the lake – "Alakol", "Aigerim", "Dorozhnik" and many others. Popular recreation centers are located on Sibinsky lakes, Air lakes (Monasteries), Dubygalinskoye (Okunki), Shybyndykul (Mysterious) and others [5, 8]. The alpine lake Markakol (1,449 m above sea level) is one of the most beautiful lakes in Altai.

The lake's water area is part of the Markakol State Nature Reserve. The climate in the area of

the reserve and its surroundings is sharply continental, with maximum temperatures in summer reaching +29 °C, and in winter down to minus 55 °C. The lake is an interesting object for fans of sport fishing. It is inhabited by grayling and uskuch (lenok). Annually, the lake district of Markakol and the Kaldzhir rivers are visited by 2-3 thousand vacationers (in the summer-autumn season).

Eighty kilometers from Ust-Kamenogorsk lies one of the wonders of nature in East Kazakhstan and a popular vacation spot: the Sibinsky Lakes. These are five relatively small lake reservoirs located in the Koktau mountain range. The water temperature in May is about 15 °C, in June 20 °C, and in July 20-23 °C. Under favorable climatic conditions, it reaches 24.5–25 °C. In November and December, the lakes freeze over. Sibiny has 5 recreation centers and a children's summer and sports camp. Scuba divers go diving on the largest lake, Ulmeis. In total, up to 7,000 people relax on the lakes per year.

At the northwestern foot of the granite Ayirtau groups (1003 meters above sea level) and monasteries (816 meters) in the weathering basins, three lakes are located stepwise, known collectively as monastic lakes. The largest of them is Lake Ayir [5].

Dubygalinsky Lake, popularly known as "Okunki," is a unique reservoir in terms of the chemical composition of the water. The presence of a large natural reservoir, the healing properties of water, and the uniqueness of the landscape with good accessibility attract a lot of vacationers here in the summer, with the number on Sundays reaching up to 1.5–2.5 thousand at the same time. A large private recreation center, "Okunki," is located on the shore of the lake.

Table 1: Popular Recreational Lakes in East Kazakhstan

	diai Recreational Lakes	III East Razakiistaii	
Lake Name	Description	Notable Features	Tourists per Year (estimated)
Alakol		Sandy and pebble beaches, salt water	High (large recreation centers)
Markakol		Picturesque scenery, grayling and uskuch fishing	2,000-3,000 (summer-autumn season)
Sibinsky Lakes (5 lakes)		Warmer water in summer, scuba diving	Up to 7,000
Monastic Lakes (3 lakes)		1 1 2	High on weekends (up to 2,500)
	_		High in summer (private recreation center)

The leading recreational resource in a mountainous region are mining and tourism resources. This is due to the large extent of the mountains, their altitude, landscape, and climatic diversity. The mountains of the Kazakh Altai have great opportunities for hiking, both sports and recreational, for organizing ski and other types of slope recreation, for water tourism (rafting), rock climbing, and mountaineering. Southwestern Altai has long been popular as a mountaineering and mountain tourist area. There are peaks ranging from 2,700 to 4,500 meters, including Belukha (4506 meters), high mountain passes, exceptionally picturesque landscapes, glaciers, lakes, and waterfalls. The main centers of mountaineering in the region are the majestic Belukha, SarymSakty ridges, and the Above-Ivanovsky Belok [7].

Barnaul held commemorative events in July and August 2014 to mark the 100th anniversary of

Boris and Mikhail Tronov's Belukha ascent, which made them the first brothers in Siberian mountaineering history. At 15:30 on August 8, 1914 (July 26, in old time), it occurred. For many years, scientists from Tomsk University, including geographers, glaciologists, meteorologists, and geophysicists, have been carrying out methodical, meticulous, and productive research in the Belukha region. Their expeditions conducted hydrological, meteorological, glaciological, and geomorphological research as well as route exploration to the Sapozhnikov and Berelsky glaciers.

V.V. Sapozhnikov created the first map of Belukha with its glaciers on it. Glaciologists from Russia (M.V. Tronov, R.M. Mukhametov) and Kazakhstan (R.V. Khonin, Belaya Berel) later carried out surveys of individual glaciers. The Ust-Koksinsky District Council established the Belukha Nature Park in 1997. Belukha and the Katunsky Reserve were added to the list of World Heritage Sites by UNESCO in December 1998 [6].

Belukha has ushered in the third millennium alongside the rest of the world. The popularity of Belukha increases year after year, with new visitors appearing. This is a destination for mountain tourists, climbers aiming to reach the peaks, and rafters speeding down the Katun River, reminiscent

of the days of N.K. Roerich. Numerous routes connect Kazakhstan with Russia and vice versa. Belukha is so well-liked by people in the CIS and Baltic nations that practically all serious travelers feel obligated to visit Altai and its highest peak. The jubilee year of 2014 saw a sharp rise in interest in Altai and the peak. Numerous activities were organized, beginning with a special glaciological symposium that was held in January 2014 in Novosibirsk, Russia, as part of the International Snow Forum [6].

East Kazakhstan boasts favorable opportunities for ecotourism. The region's diverse wildlife is a treasure trove. Its flora encompasses about 3,000 species of higher vascular plants, including over 100 species of endemic and relict plants. The fauna of the region is rich as well, with over 110 mammal species and around 400 bird species calling it home. From majestic bears, lynxes, sables, and wolverines to graceful elks, marals, roe deer, and argali, the animal kingdom of East Kazakhstan is truly remarkable. Species commonly found in Kazakhstan include bears, squirrels, ermine, weasels, chipmunks, flying squirrels, lynxes, sables, wolverines, wolves, foxes, hares, elks, marals, roe deer, leopards, argali, Siberian mountain goats, wild boars, and many species of rodents and reptiles. Birds include whooper swans, black storks, relict gulls, cranes, pelicans, and rare birds of prey such as golden eagles, peregrine falcons, and saker falcons. The region is home to about three dozen reptile and amphibian species [7, 2].

The rivers and lakes of East Kazakhstan teem with fish, offering a paradise for fishing enthusiasts. Anglers can cast their lines and attempt to reel in a variety of fish species, including ide, bream, carp, pike, uskuch, trout, taimen, walleye, grayling, perch, crucian carp, nelma, and sturgeon. This makes the region a promising destination for fishing tourism as well. Big game hunting for argali, maral, roe deer, and wild game birds (grouse, black grouse, hazel grouse) is also practiced here [1].

There are 14 specially protected natural areas in the region. The total area of protected areas in the Kazakh Altai is 7462.77 square kilometers. East Kazakhstan boasts numerous natural monuments and captivating tourist attractions. These primarily include Kiin-Kerish, Ashutas, Chakelmes (variegated clays with prints of ancient animals and plants), the Konur-Aulie cave, Kokkolsky waterfall, and a number of other objects. Specially protected areas are suitable only for the development of ecological tourism (ecotourism). The presence of unique natural sites makes ecotourism a viable option here. Reserves in East Kazakhstan have experience in conducting specialized scientific and educational tours along specially designed ecological trails. These excursions often include consultations with botanists, landscape scientists, zoologists, and historians, providing a well-rounded educational experience. The organization of guided tours to ecological trails has minimal impact on natural complexes. Excursions are designed around various themes, including biogeographic, ecosystem, botanical, seasonal, and specific natural phenomena.

As a result, East Kazakhstan has favorable conditions and opportunities for the growth of the tourism industry. The region's unique nature should be recognized as a single natural historical monument of regional and global significance. All interested government agencies and tour operators

should hold a special meeting to discuss issues concerning recreational activities and tourism in specially protected natural areas. Carrying out the proposed scientific research with access to practical results will improve the effectiveness of the long-term development of recreational activities in East Kazakhstan.

Table 2: Recreational Resources of East Kazakhstan

Category	Description	Examples
Natural Landscapes	Mountain ranges (Altai Mountains), Lakes (Alakol, Markakol, and Shulbinsk Reservoir), Rivers (Irtysh, Bukhtarma, Kurchum), Forests	High mountains, glaciers, valleys, and diverse flora and fauna
Climate	Favorable conditions for summer vacations, Short tourist season in mountainous areas	Hot and comfortable summers, long swimming season on some lakes
Hydromineral Resources	Thermal springs (Rakhmanovskoye, Barlyk-Arasan), Mud therapy resources (Karabastuz)	Limited resources compared to Kazakhstan as a whole
Water Resources	Dense river network, Lakes suitable for recreation	Increased recreational value due to reservoirs, potential for water sports
Forest Resources	Diverse forest areas are suitable for recreation	Proximity to populated areas, diverse species composition
Wildlife	Rich biodiversity: Mammals (bears, lynxes, elks, and marals), birds (eagles, falcons, swans), Fish (trout, taimen, pike)	Diverse animal life creates opportunities for ecotourism and hunting
Protected Areas	National parks and reserves (14 in total)	Kiin-Kerish, Ashutas, Chakelmes, and Konur-Aulie cave

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