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Research Article

The influence of the geographical features of Kyrgyzstan on the choice of types of recreational activities (A case study: issyk-kul region)

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Abstract

Economic impact is a stimulating effect on the economic condition of various regions. The paper describes the influence of the structure of the object on the choice of recreational activities, taking into account the sensitivity of the mountain structure to anthropogenic impact.

Determined the value of the initial values of the applications of sociological research, which used to calculate the natural-territorial complexes - these are water bodies located on the territory with identified orographic structures, surrounded by forests, taking into account possible options for recreation.

Evaluated of the assessment and comfort of the recreational area, based on the identification of psychophysiological characteristics, such as the sensation of noise, thermal effects of the environment. The development of recreation centers associated with the demand for recreationists, which also determined by the level of development and material base.

Studies on the study of the Issyk-Kul region that the geographical characteristics of the territory (relief, water bodies, climate, etc.) have not only attractiveness, but inhibitory factors for rare types of recreational activities.

Introduction

Kyrgyzstan distinguished by its geographical conditions for the implementation of various activities.

Income from recreational and tourism activities is 3.9% of GDP, which is increasing every year.

The development of tourism will allow our country to improve the socio-economic situation of citizens and preserve its natural resources. Since the study area is one of the main tourist centers, the dynamics of the development of the flow of tourists depend on the characteristics of the socio-cultural development of the territory.

This work is aim at studying the geographical features, which affect the condition of the recreants and their choice of types of recreation, which will ultimately affect the sustainable development of recreational areas.

The purpose of the study was the scientific substantiation of the choice of types of recreational activities on the territory of Kyrgyzstan, taking into account its geographical features.

The Territory under consideration belongs to one of the main Tourist and Recreational Centers of the Kyrgyz Republic and their spatial manifestations seriously depend on the characteristics of the Socio-Cultural development of the territory.

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This work aim is studying the Geographical Features of the study area, which affect the State of the Recreants and their choice of recreation types. There is a large number of different studies in the field of industry, population, services, and so on. The space of sociocultural systems (SCS) is consider as a changeable system. The Recreation Area is also undergoing a corresponding evolution. Its subject varies depending on the change in the object itself (i.e., recreation) and its state in various SCSs.

The main task is to identify the objective patterns of formation and development of TRS and the mechanism of their action in the specific Socio-Economic and Natural Conditions of Kyrgyzstan. Among other tasks, the study of individual TRS of various types and ranks is of particular importance in order to substantiate their specialization and level of concentration, to establish optimal relationships and interdependencies between their subsystems in order to reliably meet the requirements of vacationers and create comfortable conditions for Recreational Activities.

Materials and research methods

The main materials of the study were the existing scientific data of domestic and foreign scientists in the field of recreational and tourist activities.

For the theoretical justification of the choice of the object of study, were used the data of the physiological characteristics of vacationers, as well as the natural conditions of the study area.

To select the types of recreational activities carried out sociological studies, which made it possible to identify promising areas.

Field research methods to clarify were also used the number of hotels and development.

In the process of assessing the conditions of natural components, were studied data from hydro meteorological stations located on the territory of the object under study.

To carry out any activity, including recreational, it is necessary to have certain resources. This category includes natural and anthropogenic objects (or part of natural and cultural resources), which, with the current level of development of productive forces, can be used to meet the needs of society and the organization of an industry specializing in recreational services to the population.

The study object occupies the Eastern part of the Kyrgyz Republic (41-43° north latitude, 76-81° east longitude). It borders in the East and Northeast with Kazakhstan, in the Southeast with the China, in the West and Southwest with Naryn region, in the Northwest with Chui regions. The center is the city of Karakol [1,2].

The population is 505.9 thousand people. The area is 43.1 thousand km, which is 22% of the territory of the Kyrgyz Republic. The length of the territory from East to West is 390 km, from North to South - 210 km. The Region is located at an altitude of 1600-7439 m above sea level. The Issyk-Kul Region includes 5 districts, 3 cities (2 cities of Regional significance - Karakol, Balykchy and one city of Regional significance - Cholpon-Ata), 2 Urban-type Settlements and 61 Villages [1,2].

The main Factor in the Location of Resort Centers is now not so much Cultural Resources as Natural ones. Recreational activity without Natural Resources loses its meaning. Of paramount importance in economic terms is the character of new Populated Territories. The presence of Natural Complexes, especially Mountainous Terrain, is an important prerequisite for attracting the flow of tourists [3-13].

The largest Number of Relics, Endemics and Subendemics is concentrated here Figure 1.

The mild Climate of the Lake Basin, High Solar Insolation, Sandy Beaches and Healing Thermal Springs have led to the Tourist and Recreational Development of the Lake Coast.

The main Feature of the Relief of the Issyk-Kul Region is the alternation of Mountain Ranges and Intermountain Basins. Four-fifths of the Region's Territory is occupy by Mountains. The highest mountain knot in the Tien Shan, Khan-Tengri, is located in the extreme east of the Region. It is form by the articulation of the Meridional Ridge and several latitudinal Ridges adjoining it from the West, which exceed 5-6 and even 7 km above sea level, the Khan-Tengri peak reaches 7010 m, and Pobeda Peak-7439 m. The largest Tien Shan glaciers, including Enilchek, lie in the valleys separating the Ranges. In the extreme South is the Eastern Part of the Kakshaal-Too ridge, to the North Stretches a Chain of Enilchek-Too, Ak-Shyirak, Borkoldoy Ridges, descending to the West. Further North is the Chain of Ridges Sary-Jaz, Ak-Shyirak, Zhetim-Bel, Zhetim, behind them is the Teskey Ala-Too ridge system. On the West are the Ridges, the height of which decreases to the West, pass into the so-called syrts. Syrts are flat elevated spaces lying at an altitude of 3.5 km above sea level. Syrts of the Issyk-Kul Region is an Area of alternation of the highest mountains and intermountain depressions. Two main regions can be distinguish here: the Central Tien Shan with the powerful Khan-Tengri mountain junction and the upper reaches of the Naryn River, the border between them is the Ak-Shyirak mountain range [14-17].

The Issyk-Kul depression is the universally recognized pearl of not only the region, also the entire Tien Shan area. According to the surveys of different years, 2 underwater terrace complexes are distinguish in the relief of the bottom of the depression, associate with the stages of sediment accumulation, during which the lake level rose from an absolute mark of 400 m (15-20 million years ago to 1675 m). One of the main elements of the relief is a deep-water plain, located at a depth of 500-600 m. The maximum depth of 668 m is confining to one of the meridional hollows on the meridian of approximately the village of Bosteri. The lower terrace complex at a depth of 200-350 m formed by the surface of merged deltas and annular ledges falling towards the center of the lake to a depth of 300 m. reaches a depth of 100-200 m (according to R.D. Zabirov) [15].

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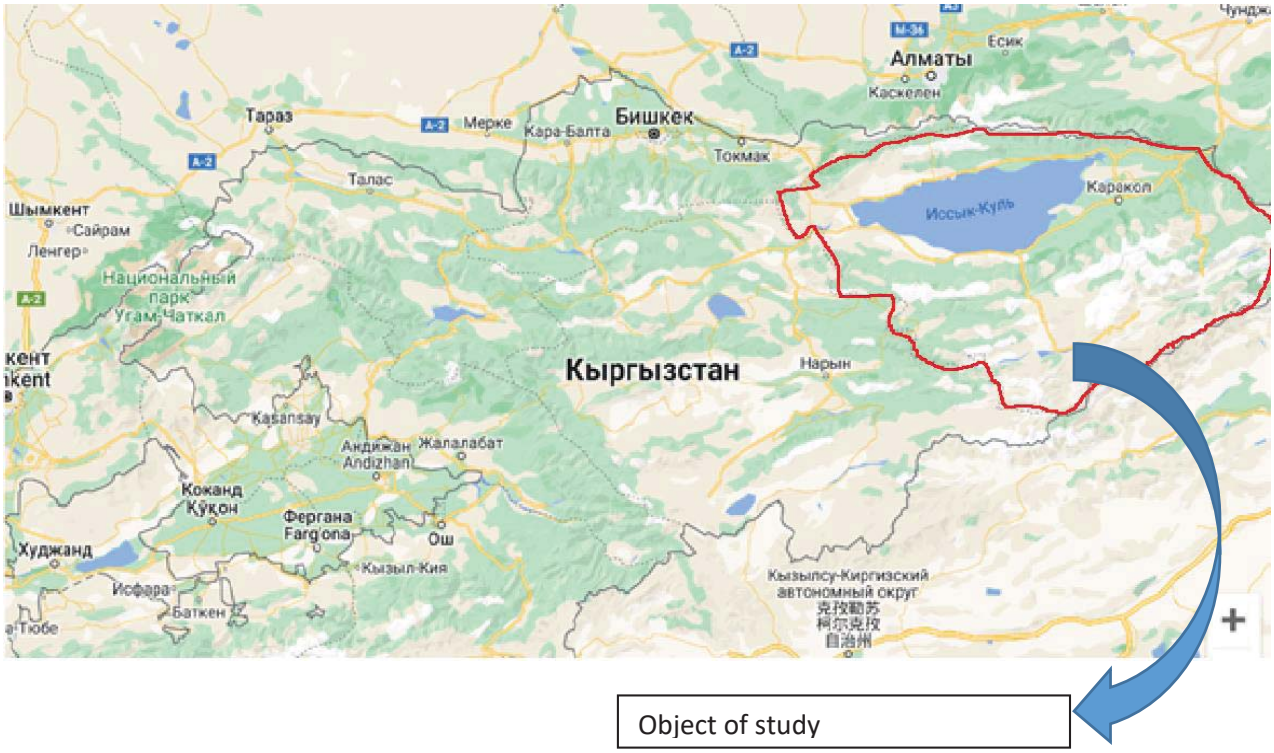

Figure 1: Location of the study area.

In the North of the Issyk-Kul depression, in the watershed part of Kungei Ala-Too is visible the Chok-Tal peak (4771 m). In the south of the depression, there is a thin snow edge, where the height of the ridge does not exceed 4500 m., it is increasingly expanding to the east, due to the increase in the heights of Terskey Ala-Too up to 4500-5000 m. The highest point is Ailampa Peak (5216 m).

In the Northwest is intermountain tectonic depressions Semiz-Bel, Kaji-Sai, Ak-Terek, Temir-Kanat. To the West and Southwest of the Issyk-Kul basin lie the Ortotokoy depression and the Kochkor depression. To the south of Teskey Ala-Too syrts - plateau-like plains in the upper reaches of the rivers Naryn and Sary-Jaz, Koylu-Too, Ak-Shyirak, Enilchek, Kakshaal, Kaiyndy. The ridges are oriented from Southwest to Northeast. In the easternmost part, approaching, they form a powerful mountain junction - Muztag, here is the second highest peak in the CIS - Pobeda Peak (7439 m).

The entire environment of Issyk-Kul divided into 3 macro level, that depending on Altitude Position and Morphology. Below all is the Coastal Plain sloping towards the Lake. The middle position occupied by Foothills, sometimes represented by a Flat or Hilly, almost undivided surface, sometimes by a significantly thinned Ravine-Beam Network (Sais). Both of these steps are variable in their width up to complete wedging in some places. Above the foothills rise the actual mountains, either covered with vegetation or characterized by rocky relief.

The Relief is different in the West and East of the depression, due to the low amount of precipitation in the west and their abundance in the East, which is why desert-steppe landscapes in the West replaced in the east by Meadow-Steppe Landscapes in the Coastal Zone, and Forest-Steppe Landscapes replaced by Meadow-Forest and Subalpine Meadows.

The great importance of Relief in the development of Tourism is undeniable. Mountain Ranges occupying 4/5 of the Territory of the Region of the main Recreational Potential for the development of Adventure Tourism (Trekking, Horseback Riding, Hunting, and Skiing).

There are Glaciers Enilchek Southern, Northern Eiilchek, Kaiyndy, Semenov, Mushketov, Kan-Dzhailoo, Petrov and others also one of the important Recreational Potentials for the development of Mountaineering in this Region.

The Khan-Tengri mountain junction is one of the largest Centers of modern glaciation in the CIS.

Manifold climate of Issyk-Kul area determined the following main Factors:

- Their southern position (41-43 with Northern Latitude);
- The elevations of large range (1.6-5 km, some peaks reach 6 or even 7 or more kilometers);
- The location in the inner Regions of the Tien Shan, blocked by high outer ridges-barriers;
- The orographic structure complex of the territory.

There are three climatic zones (cold, boreal, moderately warm), which correspond to 12 climatic regions: from arid steppe climates to climates with sufficient moisture, tundra

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climates and permafrost. In the bottom zone of the Issyk-Kul Region, an increase in moisture from west to east is clearly visible, and in the western part is a boreal desert climate, gradually turning into arid steppe climates, it is replace by a climate with sufficient moisture in the eastern part of the basin. In the rest of the territory of the Issyk-Kul region and on the slopes of the mountains surrounding the lake basin, ridges, altitudinal zone of climatic regions noted.

The weather of the Issyk-Kul region considered to clear, semi-clear and overcast. The number of cloudy days per year ranges from 10 to 20. The number of clear days is great - 150-190 a year. The average annual duration of sunshine in the region is 2500-290 hours per year. Lake Issyk-Kul, which does not freeze due to its great depth, has a great influence on the climate of the region. In summer, thanks to the lake, there is no exhausting heat, since it accumulates solar heat and energy in itself, and the winter lake, cooling down, gives off heat to the coastal area, thereby favoring moderate, not so cold air temperatures in winter period of the year. With an average annual temperature of about 6-7°, the average annual maximum is -27-30°, and the absolute maximum is -31-35°. The average of the annual temperature minimums is 12-18°, an absolute minimum is - 17-23°. It is clearly how the severity of the climate naturally increases with the height of the place and it passes from moderately warm to eternal frost.

Recreants take into account the peculiarities of the landscape and climate, the richness and diversity of flora and fauna, natural opportunities for sports, hunting, fishing, etc. The organization of the type of recreational activity, as well as the type of complex, depends on the set of natural factors of the territory. The value of Natural Resources determined, on the one hand, by their type (mountains, lakes, forests), and, on the other hand, by what properties they possess.

Analytical and experimental part

When assessing areas, there is a problem of the correct development of general and particular approaches, since as a rule, not their individual types, but territorial combinations act as recreational resources. Therefore, in many works, attention drawn to the question of the relationship between recreational conditions and resources [18].

Evaluation work reduced to a comprehensive quantitative and qualitative analysis of the territorial and to the identification of combinations of recreational resources. I.V. Komar (1975) emphasizes that the interaction of society and nature carried out not between isolated natural components, but between their aggregates [19]. This requires the study of the relationship between man and nature in terms of territorial combinations.

The main prerequisite is the opinion of vacationers when choosing a recreation area. Recreants take into account the peculiarities of the landscape and climate, the diversity of the biogenesis, natural opportunities for one or another kind of recreation. The right choice of a recreational goal provides the basis for the development of recreational complexes.

The terrain surface appears to be a contradictory condition. On the one hand, terrain with complex terrain, including mountainous [20], and frequent landscape changes is the most attractive for vacationers, but at the same time is a particularly vulnerable region of the globe. Particularly favorable are areas with mountainous terrain combined with the seacoast, significant forests, rivers, lakes and reservoirs, provided with good transport conditions [21,22].

Thus, the whole task of assessing the territory for recreational purposes divided into two components:

a) Assessment of natural components for human use in various types of recreational activities;

b) Assessment of the PC for the creation of recreational facilities.

When assessing the suitability of the territory, the condition of comfort taken into account (the convenience of beaches, the presence of forests, mineral springs, etc.) [23,24].

When assessing climate resources, VB. Nefedova, et al. [8] propose to use the duration of the favorable period [8]:

- The best - 9.5-10.5 months;
- Good - 7-9 months;
- Satisfactory - 3-6.5 months;
- Bad - 3 months;
- Very bad - 1-2 months.

The thermal conditions of resort and medical areas for summer time proposed to be estimated by indicators of average daily comfortable temperatures (+17) - (+21) ^{o}C [25].

According to Kotlyarov E.A. (1978 in the book Geography of Tourism and Leisure) this indicator fluctuates between (+10) - (+22) ^{o}C. For winter types of recreation, most researchers consider the most favorable conditions for average temperatures (-5) - (-28) ^{o}C [26].

In mountainous areas, the height of the area above sea level should take into account with an increase in altitude (H), humidity and air temperature, atmospheric pressure decrease, which causes oxygen starvation [18].

The thermal effects of basin on the human body evaluated as follows: at t_a = 14-16 ^{o}C - cold (strongly invigorating effect); 17-19 ^{o}C - cool (toning and hardening), 20-24 ^{o}C - lukewarm, 25-27 ^{o}C - warm, more than 27 ^{o}C - very warm (neutral).

The best health maintained with the following combination of temperature and humidity (Table 1) [18]

In these ranges, a person does not feel either cold or heat - an average weighted skin temperature of 31-33 ^{o}C occurs (Table 2).

For people in need of treatment, the average daily

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comfortable temperature of the zone is in the range of 17.2-21.2 °C [18] Table 3.

For healthy people, lower and higher temperatures are quite favorable and freely tolerated, and this limit proposed in the range of 10-22 °C.

The ratio between foreign tourists and vacationing residents of the country plays a significant role. Foreign tourists often use the most advertised areas. Important is to assess the needs of foreign tourists, the indicator of the duration of their trips. Depending on free time, the choice of remoteness of the recreational area determined, in which many authors agree [27-31. Based on these studies, the best option for transporting recreants proposed - within a three-hour trip [27-31].

To improve the environment and recreation conditions, according to the assumptions of Margus M.M. it is necessary to establish the optimal forest cover by laying forest park crops [32]. An essential factor in improving recreation areas is the expansion of forest areas at the expense of land unsuitable for agriculture [33-40].

Although motorways in Issyk-Kul laid about a kilometer from recreational areas, special attention must paid to combating noise sources.

D.N. Andreeva found that about 30% of vacationers attach special importance to silence. The sources of noise in recreation areas in 60-80 cases out of 100 are vehicles [41-43]. Vehicle noise is generally low frequency and travels farther than high frequency noise [1].

According to doctors, primary pathological changes caused by noise above 40 dB [2,20]. Places with such a level of noise load are naturally not suitable for recreation. Noise above 60 dB affects the central nervous system, and above 70 dB - on the autonomic nervous system [26].

Noise control is possible in two directions: 1) due to technical measures - noise reduction in the source itself; 2) isolation, by creating artificial barriers - hedges, etc. Afforestation best reduces the noise of the most harmful - high frequency. It founded that the crowns of hardwoods absorb 26% of sound energy falling on them, reflect and scatter 74% (Eesti NSV puhklealad, 1974; Teder, et al. 1975) [32]. In the course of study the sound absorption capacity of various tree species, it was determined that within the frequency range of 160-1800 Hz, it more dependent on the height of the noise. Noise absorption increases significantly in the direction from low frequency to relatively high-frequency noise. Therefore, in conifers, the sound-absorbing ability intensified at frequencies of 63-330 Hz. A strip of dense spruce young growth 2, 5 m and a width of 7 m well absorbs noise at frequencies of 1600-2000 Hz by 13 dB (train noise). The same band is able to reduce noise in the low-frequency range by 38 dB (vehicle noise).

A 200 m wide mixed forest strip has a sound-absorbing effect that can spread to a distance of 2 km from the noise source. The required width of noise-protective strip-like forest plantations for recreation areas is approximately 400 m.

Table 1: The best health maintained with the following combination of temperature and humidity [18].

Temperature, °C	20	25	30	35
Relative humidity,%	85	30	44	33

Table 2: Heat sensation, perspiration and thermoregulatory load in different weather.

	T - warm type of weather;		X - cold type of weather	
Weighted average skin t, °C	Thermal sensation	Sweating g/h	Thermoregulatory load	weather type
>34	Very hot	750	excessive	4-T
>34	hot	750-400	big	3-T
>34	very warm	400-250	moderate	2-T
33-34	warm	250-150	weak	1-T
31-32.9 32.9-31	comfortable	150-100	absent	H
30.9-29	chilly	150-100	absent	1-X
28.9-27	cold	0	moderate	3-X
26.9-23	very cold	0	big	3-X
<23	extremely cold	0	excessive	4-X

Table 3: Assessment of natural conditions (NC) for Alpine skiing*

Scoring Conditions	Elevation marks of tracks [m]	Distance to slopes [m]	Track length [m]	Average slope steepness [deg.]	The nature of the surface of the slopes	Avalanche danger	aesthetic value
Unfavorable 0	4000	>30	50	5-25	The predominance of heavily dissected stony areas not covered by snow	Multiple intersections of routes with avalanche areas	—
Unfavorable 1	3000-4000	5-30	50-200	5-10 20-25	Heavily dissected with many rocky areas not covered by snow	Crossing by routes of individual avalanche areas	Monotonous non-contrasting landscapes
Favorable 2	1000-3000 <1000	1-5	200-1000	10-12 18-20	The predominance of moderately dissected with separate stony areas not covered by snow	The possibility of avalanches in the area of piste after snowfalls	Low contrast with significant vertical and horizontal dissection. Overview over 15 km.
Very favorable 3	1000-2500	<1	>1000	12-18	Moderately dissected with practically no unsuitable for skiing areas	Possibility of predicted avalanches after heavy snowfalls	Contrasting, with significant vertical and horizontal dissection. Overview over 25 km.

* According to O.A. Saveliev [43]

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A comparative analysis of Tables 1,2 with the data of Tables 4-6 showed the possibility of regulating various types of recreational activities, taking into account the thermoregulatory feature of active recreation, and the data of Table 3 indicate the favorableness of winter recreation in the territory under consideration.

Were interviewed 150 respondents (vacationers, students, students of educational institutions and their parents). The survey conducted in the following order: the actual stay in the bosom of nature taken into account, since for many respondents the degree of access to nature is low for one reason or another, and their desired needs, which could be satisfied under favorable conditions. The analysis of the questionnaire showed that out of 1599 cases of the desired exit to natural and recreational objects, each person has 10.6 exits per year, or almost 1 time per month.

The analysis shows that the highest indicator of going out into the Natural Environment falls on the summer months - 681 cases (41.5%). In the responds, the need has little difference.

By the method of overlaying the obtained data, it revealed that in winter months, high mountains, snow and glacier zones - 121 cases (39.4%), foothills and middle mountains - 75 cases (24.4%) are in greatest demand. In spring, foothills and middle mountains are very popular - 60 cases (19.9%) and river valleys - 55 cases (18.2%). In the summer months, high demand falls on the valleys of Mountain Rivers and the coastal zone of Lake Issyk-Kul - 144 cases (21.1%), valleys of flat rivers - 126 cases (18.5%), and deciduous forests - 100 cases (14.7%). In the autumn months, the greatest demand falls on the zone of deciduous forests - 81 cases (26.2%) and the zone of coniferous forests - 64 cases (20.7%).

Of the available set of landscape conditions, the zone of deciduous forests has the greatest preference - 316 cases (19.8%), the zone of coniferous forests - 253 cases (15.8%), the valleys of lowland rivers have an average demand - 226 cases (14.2%) and mountain rivers (14.1%), high mountains - 200 cases (12.5%). Less attractive are the foothills of rocks - 167 cases (10.5%), semi-deserts and deserts (saxaul forests) - 106 cases (6.7%), as well as lakes and reservoirs - 104 cases (6.4%) Tables 4-8.

Table 4: Maximum annual daily precipitation (mm) of various probability.

Station	Provision,%						Observations maximum	
	63	20	10	5	2	1	mm	day
Cholpon-Ata	22	31	35	38	42	44	42	21.YIII.1975
Karakol	25	36	41	46	55	62	61	15.YIII.1958
Balykchi	12	22	29	35	44	52	48	18.YI.1955
Koilu	19	33	42	50	61	68	57	13.YI.1962
Tamga	21	31	36	40	46	49	48	21.YIII.1975

Table 5: Average number of foggy days.

Stations	months												Year
	1	2	3	four	five	6	7	8	nine	10	eleven	12	
Cholpon-Ata	0.02		0.2	0.2						0.07		0.02	0.5
Balykchi	0.06	0.2	0.2	1	0.1	0.05							0.5
Przhevalsk	0.05	0.2	1	0.1	0.05					0.03	0.08	0.05	2
Tamga			0.2	0.1	0.1					0.04			0.4
Koilu	0.07	0.07		0.1	0.07				0.06	0.1	0.2	0.3	1

Table 6: Average number of thunderstorm days.

Stations	months												Year
	1	2	3	4	5	6	7	8	9	10	11	12	
Przhevalsk			0.07	0.8	4	8	8	7	5	2	0.7	0.07	36
Balykchi				0.5	4	12	10	7	3	0.8			37
Cholpon-Ata				0.7	3	11	12	10	7	3	0.7	0.2	48
Tamga	0.02	0.02	0.04	0.6	4	11	10	9	5	2	0.5	0.04	42

The zone of coniferous forests is in the greatest demand in the summer months -35.6%. In the winter months, highlands attract 60.5% of the respondents. Lakes and reservoirs are preferred by 85.4%) during the summer months.

The analysis of climatic characteristics was the basis for determining the duration and optimal season's types of recreation.

Taking into account the comfort of the area contributes to the provision of the region with recreants in accordance with its throughput. In order to increase the efficiency of the use of tourist resources, it proposed to use these facilities within 215 days for mountainous areas, 100 for hunting zones, 300-365 days for tourist hotels.

Main conclusions and suggestions

The unique nature of the Issyk-Kul region is the main factor in its use for recreational purposes. Each ballot of constituent physical and geographical characteristics (relief, water, climate, etc.) form the basis for the recreational development of the region. The geographical features of the Issyk-Kul region were a powerful prerequisite for the development of recreational activities and tourism.

Rational nature management based on the correct environmental and economic assessment of attracted resources for various kinds of human activity. The degree of development of recreational resources depends on the information awareness about these resources of potential recreants from other countries.

Unfavorable natural conditions determined as inhibitory factors - the number of days with fogs, thunderstorms given in Table 4-6, according to which their maximum number reaches 45 days for active types of recreation, and they do not have a special effect for tourist hotels and recreation complexes, since these types of activities carried out in specially equipped facilities.

The limiting factor in the development of tourism and recreation in winter is the natural factor: the continental climate, the complex orographic structure of the Inner Tien Shan. The mentality and economy of the peoples of Central Asia have created the prerequisites to take summer recreation as a fundamental type in the Issyk-Kul region.

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Table 7: Average wind speed.

Stations	Wind vane height	months												Year
		1	2	3	4	5	6	7	8	9	10	11	12	
Cholpon-Ata	10.6	1.9	2.0	1.7	1.8	1.8	1.7	1.6	1.5	1.7	1.9	2.1	2.0	1.8
Karakol	10.5	1.4	1.6	1.7	2.0	2.0	1.6	1.4	1.4	1.6	1.6	1.7	1.4	1.6
Balykchi	11.0	3.7	4.3	4.5	4.8	4.3	3.6	3.3	3.6	4.0	4.4	4.3	3.6	4.1
Tamga	11.0	1.9	1.7	1.4	1.5	1.5	1.5	1.4	1.4	1.6	1.7	1.8	1.9	1.6

Table 8: Actual and probable values of snow loads (kg/m^2) according to hydrometeorological stations.

Station Post	Altitude, km	Actual			Likely once a year		
		Average long-term	Average of the annual maximums	Absolute maximum	Mediumnya a lot summer	Average of the annual maximums	Absolute maximum
Issyk-Kul basin							
Cholpon-Ata	1.64		21	62	35	48	62
Horse farm	1.70	32	55	94	78	84	91
Semyonovka	1.74		48	111	70	95	120
Tamga	1.69		24	81	44	62	80
Pokrovka	1.74	28	54	122	80	105	130
Tup	1.63		80	138	117	156	192
Kuturga	1.63		85	153	115	145	175
Red October	1.65	53	92	216	131	178	212
Curments	1.72		92	141	123	142	162
Mikhailovka	1.62		58	125	90	117	147
Dry ridge	1.62		56	94	76	88	100
Orlinovka	1.70		57	107	-	-	-
Karakol	1.72	39	58	136	84	114	142
Irdyk	1.72		43	99	74	106	136
Northern slope of Terskey and southern slope of Kungei Ala-Too							
Grigorievka	1.95		36	39			
Barskoon	1.83		16	23			
Juuku	1.90		40	106	53	80	98
Sawmill	2.31		49	98	72	90	112
Sary-Moinok	2.66	11	28	64	42	56	69
Teploklyuchenka	1.80		58	83	78	93	108
Karakol Gorge	1.98	49	79	122	114	147	180
Pokrovka	2.10	44	66	118	98	110	126
Small Kyzyl-Suu	2.10		73	123	98	110	126
Jety-Oguz	2.20	43	67	134	93	114	138
Big Kyzyl-Suu	2.55	60	102	235	120	165	205
Soviet	1.88	58	99	202	150	200	250
Sarytologoi	1.90	48	77	304	163	234	306
San Tash	2.00		200	354			
Bozuchuk	2.10		132	208	164	194	225
Jergalan	2.40	126	204	336	245	280	315
San Tash	2.32		197	387	250	325	400
Syrts and the river Sary Jazz							
Koilu	2.80		22	40	36	42	47
Ak-Shyirak	2.84		19	54	36	51	68
Karakol	3.08		12	14			
Tien Shan	3.61	41	70	166	116	152	186
Alabelle	3.24		344	514	435	525	600
Too-Ashu southern	3.23		406	662	580	740	900

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