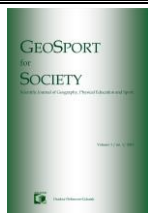

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The role of natural environment in the development of tourism in the Kashubian Lake District (on the example of Kartuzy county)

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Abstract. The aim of this article was to present a particular role of natural environment in the development of tourism in Kashubian Lake District. In the research process there have been shown natural conditions of one of the most touristically attractive region of Polish lake districts, i.e. The Kashubian Lake District on the example of Kartuzy county. The natural resources mentioned in the study were analysed with the help of spot bonitation, thanks to which there were appointed main areas of touristic attractiveness. A supplement of the conducted research was a survey carried out among tourists spending holiday on the presented area, examining to what extent natural resources determine the concentration of touristic traffic.

Keywords: Kashubia, Kartuzy country, touristic natural attractiveness, touristic traffic

Introduction

Natural environment sets the possibilities of developing space and influences the level and living conditions. Natural elements, such as water reservoirs and forestal areas, lay of the land or climate, influence settlement processes and pose opportunities or barriers for the development of various life spheres of a man. With the increase of free time, these factors, together with socio-economic environment, determine the development of tourism in a particular area.

The location of touristic resources and their quality give optimal possibilities of full satisfaction of the needs of touristic traffic. At the same time they are a subject

of tourists' interest and determine touristic attractiveness of a region. This results from the fact that apart from objectively existing geographical conditions - both natural and cultural - psychological factor plays a considerable part in forming their opinions (Warszyńska, 1970).

The aim of this article is to present the role of natural resources in the development of tourism on the Kashubian Lake District on the example of Kartuzy county. In the study touristic attractiveness will be presented with the help of a modified method of spot bonitation (Warszyńska, 1970), thanks to which there were determined main areas of this county's attractiveness. The analysis was supplemented by the results of a survey conducted among tourists spending holiday in this area and was connected with the intensity of touristic traffic.

General profile of the area of study

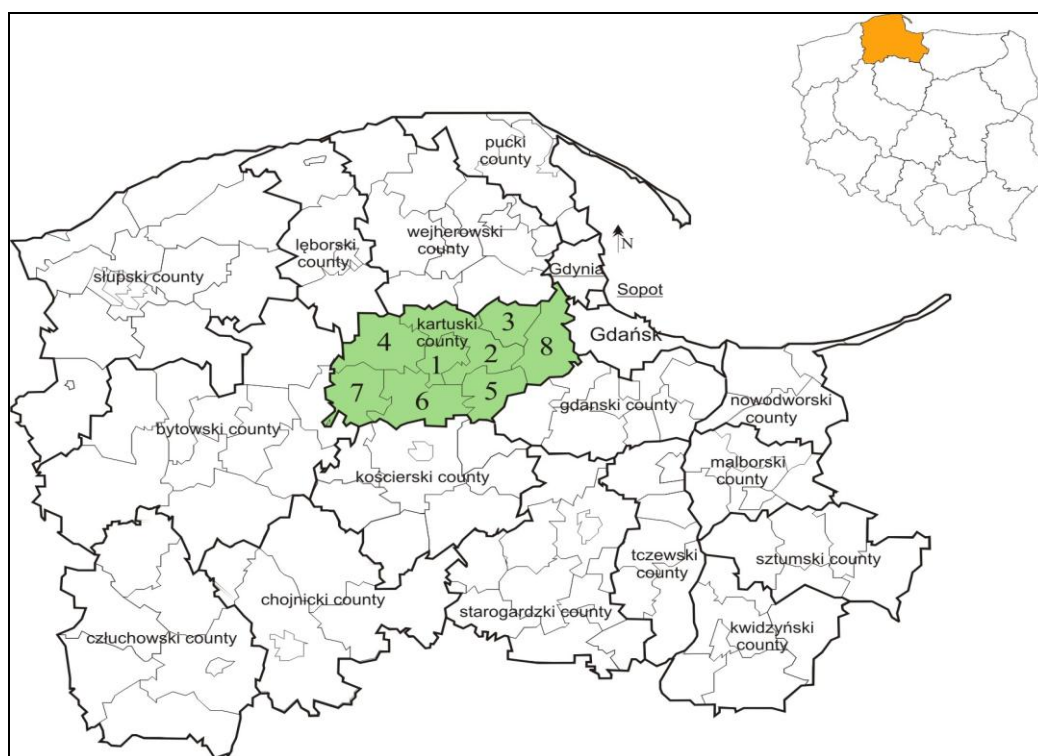
The area of empiric study of this article is Kartuzy county, located in northern Poland, in the central part of Pomeranian province. Its main territory is located in physio-geographical region of Kashubian Lake District. The area of this lake district includes : on the north and north-east the edge of proglacial stream valley system (Reda proglacial stream valley of Reda-Łeba, Kashubian Meander, Redłowskie Lowland), and on the east highland edge, going along the slope into Wisła Haughs and Oliva-Sopot terrace. The western border is the valley of Pogorzelica and Łupawa, lake flumes of: Jasień, Żukowskie, Stopowa, Glinowskie, Wielkie Sarnowicze and Somińskie. The southern border goes along the zone of contact of moraine surfaces on the edge of Tucholskie Coniferous Forests and various surfaces of bottom-moraine - from north-eastern areas of Somińskie Lake towards the east across the whole group of lakes connected with going along the line of latitude of Wdzydze system (Augustowski & Sylwestrzak, 1979).

This county lies between 54°09' and 54°27' northern latitude and 17°41' and 18°32' eastern longitude. On the south-east it borders Gdańsk county, on the south - Kościerzyna county, on the west - Bytów county, on the north - Lębork and Wejherowo counties. On the east it borders cities of Gdańsk, Gdynia and Sopot (figure 1).

The described county is one out of 20 counties in Pomeranian province taking approximately 1120,0 km², which is nearly 13,0% of the area of the whole province and is inhabited by almost 128,9 thousand people. In 2015 it was visited by 48,9 thousand tourists. The province consists of 2 boroughs: Kartuzy (the capital of the county) and Żukowo as well as 6 rural boroughs: Chmielno, Przodkowo, Sierakowice, Somonino, Sężyca and Sulęczyno.

The element which is individualizing this county in relation to other administrative units of Poland is also its location within the borders of the so called ethnic Kashubia (Mordawski 2008), which is reflected in the existence of Kashubian dialect, as well as in the folk art and objects of material culture. These objects are spread out on the territory of the county, and an enormous meaning in shaping touristic function is given to the existence of natural attractions. Suffice it to say that on the territory of as many as six boroughs of the county there is The Kashubian National Park, whose main aim is to protect typical scenery of young-glacial lake

districts of the central part of Kashubian Scenic Park. It was founded in 1983 and covers territory of the total ground of 176,5 km².



Gminy: 1 - Chmielno, 2 - Kartuzy, 3 - Przdokowo , 4 - Sierakowice, 5 - Somonino, 6 - Stężycza, 7 - Sulęczyño, 8 - Żukowo

Figure 1. The Location of Kartuzy County in relation to the Pomeranian voivodship in 2011 (Source: own study based on Yearbook of the Pomeranian voivodship 2011, Provincial Statistical Office, Gdańsk 2012)

Natural resources of Kartuzy county

In the assessment of natural attractiveness there are usually some factors taken into account: climate, lay of the ground, waters, occurrence of flora and fauna. According to some authors (Krzymowska-Kostrowicka, 1995; Ciechorska, 1998) for tourism not only water and forestal areas are of significant importance, but also zones of bordering contrasting pieces of landscape. Contrast and mosaic of a landscape influences its aesthetic qualities, various opportunities of doing different forms of tourism, which in consequence is connected with touristic attractiveness of a certain area.

As it has already been mentioned, Kartuzy county is marked by young-glacial lay of the ground and is known for optimal scenic, natural and ecological conditions. The most scenically varied area is the territory located in the central and southern part of this county. It is marked by the occurrence of a complex system of flumes, in accordance with directions NNE and NE, going across nearly all of the territory, gaining the clearest setting in the Ostrzycko-Raduńska flume. The highest natural

hill of the county and the whole European Lowland is the peak of Wieżyca measuring 328,7 meters over sea level. The largest height differences are located in the central part of the county, where in some places they measure from 100 to 150 m. A peculiarity of this Park is also the occurrence of sandbars, which are best restored at the exits of subglacial flumes (Augustowski & Sylwestrzak, 1979).

As a result of succession of glacials and interglacials on this area many forms of lay of the ground were shaped, e.g. accumulative ones and those formed as a result of erosion and denudation. Accumulative glacial forms are represented among others by moraine highlands, banks of frontal moraines and marginal hills, drumlins. There also occur forms of river-glacial accumulation – kames, sandbars. The remains of the period of the Pleistocene and the Holocene are forms of erosion and river accumulation, such as flood and overflow plains and alluvial cones. An interesting geomorphical form is Kashubian Proglacial Stream Valley as an example of a wide valley, in contrast to other proglacial stream valleys having a meridian course (Mordawski, 2008).

Other natural factors of touristic development of the researched territory are specific climatic features and location of hydrographic network. Kartuzy county is located over 300 meters over sea level, which makes up a certain orographic barrier for air masses coming from all directions. Air currents, which encounter a territorial obstacle, flow it around, ascend on it, often also flow across forestal areas. Apart from that the climate on the presented area is influenced by direct neighbourhood of the Gdańsk Bay and waters of the open Baltic Sea. All this makes the climate of the area changeable on both daily and yearly basis. These changes are the consequence of location in the vicinity of zonal circular atmospheric domination, however from the west together with active circularic systems follows advection of polar marine air masses, cool in the summer, warm in the winter, whereas from the east there usually come polar continental air masses with anticyclonal systems, bringing longlasting frosts in the winter and heatwaves in the summer. Tropical air masses are always marked as warm, whereas arctic air masses – as cold; they usually come during meridian circulation, whose frequency is much less than zonal ones. On the territory of the presented area there is a prevalence of winds from western sector - 55% of winds blowing. The share of south-western direction of the winds blowing approaches 38% of the total. In spring there is also observed a frequency increase of winds from northern sector, and in summer period – from the south. There are very few windless days. The atmospheric pressure on the territory of the county in a yearly period is quite varied. In October, March, December and July maximum values are marked and the pressure ranges between 1014 and 1017 hPa. From October to December there is the biggest decrease of atmospheric pressure, which in consequence influences the changeability of the weather. Total pressure extremes range between 940 and 1030 hPa (Kwiecień, 1979).

For the development of tourism air temperature is crucial; it conditions practising particular forms of tourism. As one of the main elements of climate, it is determined by geographical location. On the other hand, the afflux of solar energy in a yearly cycle is regulated by the changeability of general atmospheric circulation and by many local factors (Kirschenstein, 2013). Thermal situation of the discussed

geographical space is connected with lay of the ground in higher located places of the Kashubian Lake District, where are the lowest air temperatures. The average temperature in January and February equals 3,5°C. The minimum in February witnesses the influence of the Baltic Sea on thermal relations in this area. The temperature in spring is by about 3°C lower than in autumn. In summer the warmest month is July with average temperature of 16°C.

A very important factor for the tourism development in relation to the intensity of touristic traffic is also precipitation. Kartuzy county is located in the reach of marine-continental type of precipitation, whose characteristic is little yearly amplitude, as well as the existence of reasonably substantial rainfall in July and August and the predominance of autumn rainfall over spring one. It is estimated that the average number of days with precipitation equals from 160 to 170 in a year, with snowfall appearing from October to April on average during 40-50 days. The total amounts of precipitation equal from 1 to 5 mm (recorded during 71 days). A little less frequent is precipitation ranging between 0,1 and 0,9 mm – this takes place on average 32 days a year. The highest totals of precipitation, over 60 mm, are very rare.

One of the highlights of the presented administrative unit is areal waters. Kashubian hydrographic system is marked by a large variety of elements. The fluvial system creates a clearly marked system, whose hub region are Szymbarskie Hills with directly adjoined area. In this place main directions of drain split radially: basins of Radunia, Reda, Łeba, Łupawa and Słupia as well as Wda and Wierzyca, where the system axis is water division of the first row, separating the basins of Wisła and Przymorze.

Lakes are one of the most important hydrographic elements determining the attractiveness of natural environment for tourism, mainly in the season of summer, and in some cases also winter (Dedio 1989). Areal water objects take in total 5247,40 ha, i.e. 4,7% ground of Kartuzy county (Majkowski, 2009; Węsierski, 1961). The indicator of lake percentage equals here 6,17%, where the average lake percentage in Poland is 0,9% (Choiński, 1991). On the territory described there are 194 lakes of different size which developed in different ways. The largest of them are flume lakes: The Higher Lakes of Radunia (they are all located on the territory of Stężyca borough) and Lower (Chmielno borough), which take in total 1123,7 ha of ground and 43 m of maximum depth. To the largest water reservoirs belong lakes such as Mausz (Sulęczyno borough), Gowidlińskie (boroughs Sierakowice and partly Sulęczyno) and Ostrzyckie (boroughs of Stężyca and Kartuzy). To the type of flume lakes in this area belong also smaller reservoirs, which do not have typical characteristics of this type (e.g. Glinno Lake). Part of flume lakes belongs also to the tidal type, among others Lakes: Trzebnno, Guścierz Duży and Guścierz Mały. On the described territory there also occur lakes of bottom moraine, which developed as a result of uneven accumulation of ice sheet or melting isolated lumps of dead ice. Their characteristic features are: small depth, irregular and strongly marked bank lines. To lakes developed in the process of meltdown belong among others Mezowskie, Dzierżążno, Głębokie, Boruckie Lakes.

The occurrence of lakes has an enormous impact on water tourism, mainly on kayacking one. In the central part of the county there is a water trail, the so called

Raduńskie Circle measuring approximately 40 km. The route of the rafting goes across the following lakes: Higher Raduńskie – Lower Raduńskie – Kłodno – Białe – Małe Brodno – Wielkie Brodno – Ostrzyckie – Patulskie – Dąbrowskie – Lubawisko. Touristically the most valued lakes are the ones in the central part of the county – in the basin of higher section of Radunia, because of the possibilities of their usage and developed facilities.

The values of living nature also decide about the touristic-recreational usefulness. The occurrence and the character of vegetation on the researched area determines many factors, to which belong: climate, rocky substratum, lay of the ground and hydrographic network. Nowadays an important factor influencing the size and quality of vegetation is to a large extent human activity (Zienkiewicz, 2016).

An exceptional natural asset of the Kartuzy county remain forests. Forest, as a vital element in the process of mental and physical recovery of a tourist, has unusually beneficial features, such as: clean air, silence, natural scenery, and, what is connected with it, the lack of industrial or urbanized areas and a peculiar microclimate. It is also a source of stimuli, which directly influence mentality and physical body of a visitor. Substantial importance is given to chemical stimuli (connected with the contents of clean air), photochemical, visual, thermal, biochemical, electrical, mechanical, gustatory, olfactory and auditory. Forests deliver aesthetic experience, influence mental state of a person in a positive way and are especially beneficial for touristic purposes in the season of late summer and autumn. Many forms of recreation are connected with this period, including fishing, hunting, mushroom picking or photography. Hence all the above mentioned features and stimuli developed by forest positively influence the reception of a certain place or area by a tourist (Zyber, 1977). Forestal areas on this territory take 334,2 km², i.e. 41,5% of general ground of the county, while the average forest percentage in Poland equals 29,1%. The highest forest percentage is in Kartuzy county (45,2%), Somonino and Sulęczyño (38,2% each), Stężyca (30,1%). In the remaining boroughs there have been recorded a smaller percentage forest share in total grounds of boroughs: Sierakowice – 28,4%, Żukowo – 21,0%, and the smallest one in the borough of Chmielno – 16,2% and Przodkowo – 11,5%. Some of the best-known forestal systems are beechen forests of Szymbarskie Hills and water meadows, in which dominate such species as grey alder, willow and poplar. On the described area there are a lot of peatlands – low, powered by soil waters, on which grow: reed, sedge and moss (Mordawski 2008). The most valued tree stands are groups of ochid beechmast and among rare vessel plants there are aconite, polygonatum and andromeda (Zalewski, 2010). The most peculiarities both among fauna and flora is on the territory of the Kashubian Scenic Park. There have been developed 12 sanctuaries: Kurze Grzędy, Staniszewskie Błoto, Lake Turzycowe, Peak Wieżyca, Szczelina Lechicka, Żurawie Chrusty, Ostrzycki Forest, Żurawie Błota, Lake Lubygość, Zamkowa Góra, Leśne Oczko, Staniszewskie Zdroje. In these sanctuaries there have been recorded a range of rare and protected plant species, such as *Cephalanthera*, *Cimicifuga*, *Listera*, *Polygonatum*, *andromeda*, *Cypripedium*, *Platanthera*, *Blechnum*, *Isoetes*, *Veronica*, *Sundew*, *Sour grass*, *Akonit*, *Christmas green*, *Corallorhiza*, *Cardamine*. Within the borders of this county, apart from the

area of the Kashubian Scenic Park, there are two more sanctuaries. One of them is a forestal sanctuary Old Larches located in the Kartuzy county. It was founded in 1972 and covers in total 4,85 ha ground and another one – a scenic sanctuary, Jar Rzeki Raduni, located within the borders of boroughs Somonino and Żukowo, which was created in 1972 and which covers 84,24 ha ground.

Another feature of natural environment, rising its touristic attractiveness is the world of fauna. What decides about it is the variety of species (especially birds and mammals), diversity of game or lack of species threatening human health or life. When it comes to animals, Kartuzy county, just like the remaining part of the country, is located in european-obsk district. The Kartuzy county, because of young-glacial character of lay of the ground, including the accumulation of lakes, is the perfect area for fishing in Kashubian rivers – Słupia, Radunia, Wierzyca as there live a lot of fish species.

One of the natural elements under protection in the Kartuzy county remain nature monuments. These are individual creatures of living and inanimate nature or their groups of special natural, scientific, cultural, historical and scenic values. They are also marked by individual traits, distinguishing it from other forms, trees of stately sizes, bushes of domestic and foreign species, brooks, waterfalls, exsurgents, rocks, ravinesglacial boulders and caves.

On the described territory there have been set up as many as 121 living and inanimate natural monuments. Most of them are located in the boroughs of Żukowo (40), Stężyca (27), Kartuzy (22), and Chmielno (10). Particularly valuable ones are old trees, avenues, erratic boulders and brooks. One of the most interesting monuments of inanimate nature is the Damned Stone – an erratic boulder located on Lake Kamienne in Kartuzy borough. Its measurements are 3 m of height, 5 m of length and 4,75 m width (Zalewski, 2008). Another object of special touristic value because of specific scenic assets is a fluvial fracture – Radunia ravine. It was comprised by protection within the distance of 6 km and is within the borders of Babi Dół Forestry (Żukowo borough). It covers 84,24 ha of ground and it is characterised by a variety of vegetation and diversity of fauna (especially reptiles and birds). In terms of geomorphology in the sanctuary there are hilly, moraine areas, in which a river indents, creating an interesting scenery.

Another natural highlight of the county are two grots located on River Lubygość, called Mirachowskie Grots. The first one is about 9 m long, covered with moss, created by a rocky cornis, which impends swamp. The slot of the grot is at the height of 175 m over sea level. Another grot is a little shorter, approximately 6 meters long and is covered with a clay-sand landslide.

Natural resources which have been developed thanks to human activity in the Kartuzy county involve Gołubieński Botanical Garden in Stężyca borough. It was set up in 1971 and is located on a bank of a higher terrace flume of Patulskie Lake as well as on its bank. The total area of the garden equals 3,68 ha, and on the area of 2,27 ha there have been planted as many as 5500 species of taxons in conditions of substitute ecosystem, 1,41 ha is natural meadow with aggregated vessel plants (170 species) and bryophytes (over 20 species). There grow among others kalcyphytes, which are boreal relics. Among aggregated plants there should be mentioned

protected species (191), written in the Red Book of Plants (119 taxons) and a new red register of plants (10 taxons). Fourteen species are a subject to the Berne agreement (Bern 19 X 1979 r., ratification by Poland 31 I 1996 r.). One of the attractions of the county is also the only zoo in the county „Zoo – Exotic Kashubia”, located in Tuchlin in the vicinity of Sierakowice. Here live different exotic animal species: birds, mainly parrots, the biggest snakes in the world, reptiles and insects.

On the discussed geographic territory, in spite of low heights over sea level, however with varied lay of the ground, there is a lot of attractive scenic spots. The best known place is a John Paul II metal scenic tower on top of Wieżyca. The first tower was built here in the 90s of XIX century. It was dismantled before the start of World War I and on this site Germans built Bismarck stone tower. Then there were two wooden towers on top of Wieżyca – the fire tower and scenic tower, which was dismantled in the 80s of XX century. The current tower was built in 1997 and is 35 m high (Ellwart, 2009).

Main areas of touristic attractiveness of Kartuzy county in the light of occurrence of natural resources

Touristic attractiveness is a very complex notion and one that is difficult to unambiguously assess due to a subjective viewpoint of each tourist who visits this area. It is a resultant of individual likings and personal selection of touristically attractive facilities. Touristic attractiveness of a certain area could hence be a degree, to which objectively existing resources attract a potential tourist. According to some authors (Rogalewski, 1974) the most important elements deciding about the degree of touristic attractiveness are touristic assets, the condition of natural environment as well as accessibility to public transport.

Aiming at natural delimitations of areas attractive in terms of tourism in the county of Kartuzy, there was applied a method of spot bonitation, which is the most frequently used method of usefulness assessment of a certain area for tourism (Radziejowski, 1979; Michowiak, 2004). In the study to a large extent there was implemented a method developed by J. Warszyńska (1970). At conducting bonitation apart from data, which was on available maps and other cartographic materials, there was also used information from local cataloguing, which frequently was a valuable supplementation of cartographic sources.

The base for creating a network of elementary squares was a cartographic network of a map in the scale 1:50 000. The territory of Kartuzy county was divided into 1340 elementary squares of side length 1,5 km² each, and the elementary squares were allotted numeric markings (vertically from 1 to 36, horizontally from 1 to 58). Each square was given a suited total amount of bonitational points gained as a result of calculation. Criteria suggested by J. Warszyńska were applied here, i.e. natural touring assets and especially for the needs of this work there have been implemented some modifications connected with the specific character of the area researched. There were 'additional points' and specialist assets to the natural part because of thematic similarity. There were left out however the score regarding conditions for highmountain tourism and the occurrence of hot springs and mineral waters of set treating features. In this analysis there were left out cultural values of

Kartuzy county, so that the presented results would regard only the role of natural environment in the development of tourism.

While calculating the natural attractiveness factor the following formula was applied:

$$\text{The natural attractiveness factor } (W_p) = \frac{\sum_{i=1}^n N_i + \sum_{i=1}^k S_i + \sum_{i=1}^j P_i}{\sum_{i=1}^n N_{max\ i} + \sum_{i=1}^k S_{max\ i} + \sum_{i=1}^j P_{max\ i}}$$

where:

N – elements of the environment in the scenic-recreational aspect

S – specialist elements of the environment,

P – additional points resulting from a combination of features

The attractiveness factor accepts values from 0 to 1, where value 0 means complete lack of attractiveness, and 1 – maximal theoretical degree of attractiveness.

The calculated coefficients allowed separating areas of different natural attractiveness, i.e. particularly attractive areas (0,71 i więcej), considerably attractive ones (0,41-0,70), averagely attractive areas (0,21-0,40) and those of small attractiveness (0,20 and less).

From the reaserch conducted conclusions can be drawn that areas of particular natural touristic attractiveness cover mainly central part of Kartuzy county (figure 2).

They stretch out meridionally, cutting into areas of Szymbarskie Hills and Stężycko-Brodnickie Highlands. These are areas of a large lake percentage, numerous groups of young-glacial forms, i.e. groupings of frontal moraines highly situated, spread out hilly valleys, wavy, deeply cut in flumes and valley lowerings developed by meltwaters. Lakes are then a critical element of high values of the attractiveness coefficient. Most of these areas are under protection of natural environment by founding Kashubian Scenic Park and numerous natural sanctuaries. South-western areas of the county are also particularly attractive in terms of nature. The quality determining the assessment turned out to be Lake Mausz.

The least attractive areas in terms of natural environment were located within the borders of counties Żukowo and Przdokowo – located in the eastern parts of the county. This part of the county spreads out on the Chwaszczyńsko-Ręboszewska Plain. It is a sandy plain taking its start at the stoop of frontal morains of Chwaszczyn and goes along the postglacial flume of Strzelbiczka River. A substantial flatness of the ground, good patency create conditions for the development of bike tourism. On the other hand, weak afforestation, not beneficial soils, contribute to the development of tricity suburban settlement.

As a result of conducted analysis, which is at the same time an extension of earlier research (Jażewicz & Zienkiewicz, 2013), there were separated in total 5 main regions of natural attractiveness, i.e. Nadjeziorne Heights, Sulęczyńska Flume, Mirachowskie Forests, Sianowsko-Dzierżąskie Lake Districts and Żukowsko-Przywidzka Height.

The region of Nadjeziorne Height, one of two of the highest attractiveness, was divided into two zones: Raduńskie Lakes, chmieleński, ostrzycki and dąbrowsko-patulski. It stands out for the largest geocological diversity. Within its borders

there are the largest lakes of the county, as well as a big woodliness and considerable differences in lay of the ground. These features make the scenery have special scenic values.

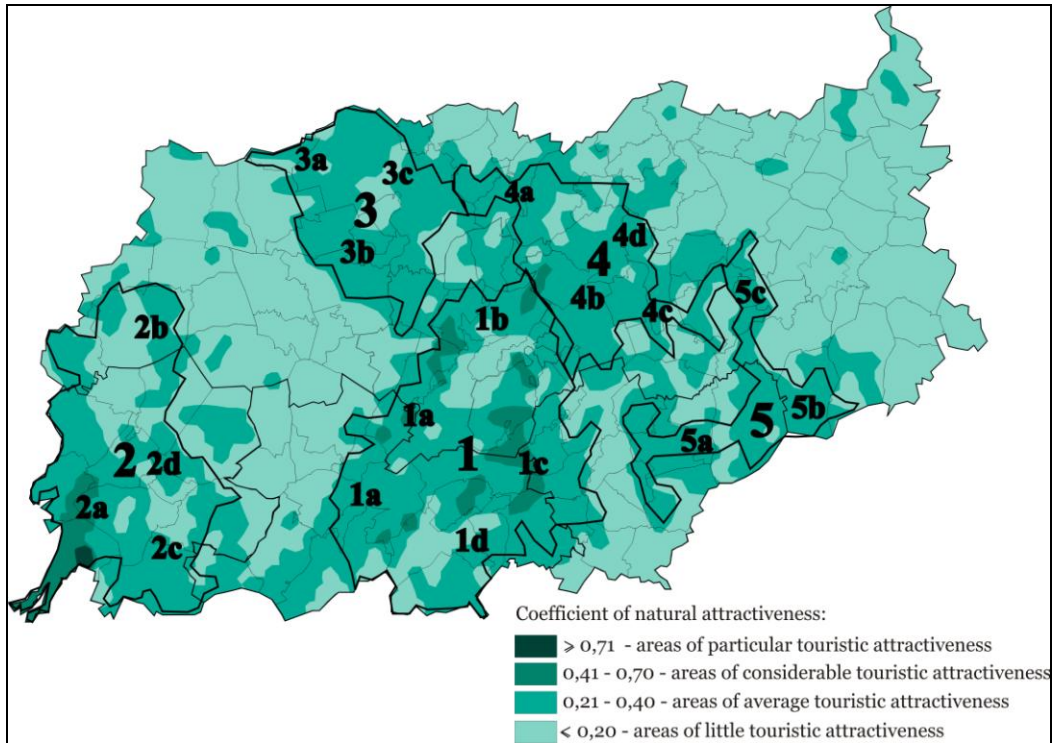


Figure 2. Tourist attractiveness of Kартуzy county in relation to the tourist attractiveness factor (Source: own study based on J. Warszyńska 1970)

Areas of touristic attractiveness: **1** - Nadjeziorne Heights; **1a** - Raduńskie Lakes; **1b** - chmieleński; **1c** - ostrzycki; **1d** - dąbrowsko-patulski; **2** - Sulęczyńska Flume; **2a** - Lake Mausz; **2b** - gowidliński; **2c** - zdunowicko-węsierski; **2d** - podjasko-mściszewski; **3** - Mirachowskie Forests; **3a** - kamienicki; **3b** - mojużewsko-miechuciński; **3c** - mirachowski; **4** - Sianowsko-Dzierżąskie Lake District; **4a** - sianowsko-pomieczyski; **4b** - kosieński-kartuski; **4c** - mężowsko-dzierżąski; **4d** - grzybieński; **5** - Żukowsko-Przywidzka Height; **5a** - hopowsko-borczafski; **5b** - skrzyszewski; **5c** - sicieńsko-borkowski

On the other hand the region of Sulęczyńska Flume was divided into the following areas: Mausz Lake, gowidliński, zdunowicko-węsierski and podjasko-mściszewski. This territory is also marked by a large woodliness and the occurrence of quite big lakes, mainly of flumic origin.

The role of natural resources of Kартуzy county in the opinion of tourists

Research on the role of natural resources in this study covered also survey research. These questionnaires were carried out in July and August 2011 among 685 visitors to Kартуzy county in 15 holiday towns: Kłodno, Sulęczyno i Węsiory (Sulęczyno borough), Gołubie, Sikorzyno, Stężyca, Szymbark, Wieżyca, Wygoda Łączyńska (Stężyca borough), Chmielno, Miechucino i Zawory (Chmielno borough),

Brodnica Górna i Dolna, located in the borough of Kartuzy and Ostrzyce (Somonino borough). The respondents were found in places of intense touristic traffic (near beaches, scenic spots, museums etc.). The choice of these particular towns for research was conditioned to a large extent by the location in these areas holiday cabins, beaches and potential groups of tourists or places of touristic traffic.

The conducted research allowed to state which natural resources are rated the highest as an element attracting a potential tourist to the territory of Kashubia (figure 3). The respondents in majority (19,4% answers) claimed that the existence of lakes in the area influenced their choice of Kartuzy county. To a large extent tourism was also conditioned by the location of scenic spots on heights (13,8%), which is connected with a unique landscape (13,4%). To remaining natural resources, important in terms of tourism, the respondents included also peculiarities of flora and fauna (12,2%), man-made museums and natural collections (12,2%), as well as rivers and fluvial valleys (10,4%). Botanical gardens, monumental parks, zoological parks and other geologic facilities were to tourists of secondary importance (between 7 and 1,5% responses; figure 3).

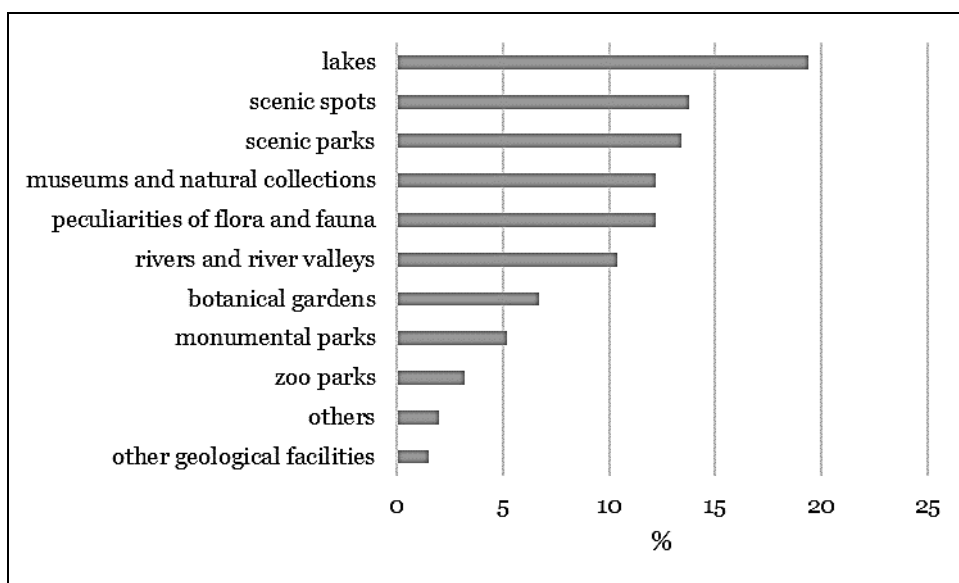


Figure 3. The most attractive natural resources of Kartuzy county in relation to survey research conducted

(Source: results of survey research conducted in July and August 2011, own study)

As it results from the conducted research, the most significant role in the attractiveness of this territory to tourists play natural values connected with the occurrence of lakes and forests and general lay of the ground, which influences the variety of scenery. The majority of respondents – 475 people (69,3%) indicated prevailing role of natural values in the decision-making process of choosing a holiday destination (figure 4).

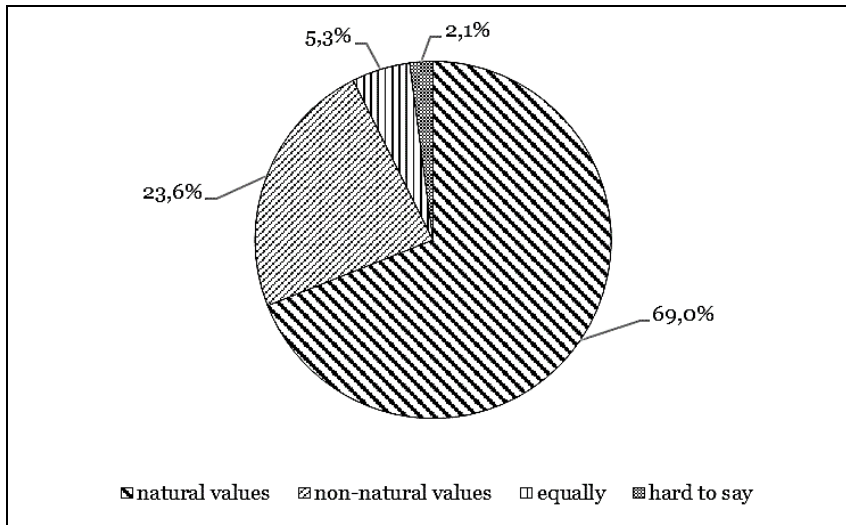


Figure 4. The usage of tourist resources of Kartuzy county in relation to survey research conducted (Source: results of the survey research conducted in July and August 2011, own study)

The local scenery fostered visits to Kashubia. The scenery affects a human in terms of ecology and physiology. Direct neighbourhood of various scenic units makes the territory unique for its visual-aesthetic values of significant recreational usefulness (Gacki, 1973). Diverse scenery, especially in the vicinity of Wieżyca and holiday qualities of the climate, i.e. snow retention in winter contribute to the development of winter sports, e.g. skiing or snowboarding.

Lakes located on the territory of Kartuzy county, mainly the ones making up the trail of „Raduńskie Circle” and rivers, are used by tourists not only for the purpose of kayacking, sailing or swimming and diving, but also fishing. Fishermen appreciate the occurrence of trouts, more rarely – salmons. The representative of the salmon family in the rivers are whitefish. A very common species is Europeanwhitefish, among others in Raduńskie and Głębokie Lakes.

A beneficial features of lay of the ground and the existence of forestal areas as well as the mosaic structure of the landscape make the territory developing walking tourism (in general, together with *nordic walking* trails – ok. 590 km routes), horse-riding (approximately 50 km) and cycling (approximately 92 km).

The people who took advantage of non-natural values more eagerly and frequently were in the minority - 162 people (23,6%). Interestingly, these people were mostly middle-aged and older people. Among the elderly, it might be connected with less mobility and physical possibilities, and consequently, a greater interest in culture than in active forms of spending leisure time in open air. A different situation occurred among the young people under the age of 35. Only 2,1% of the respondents were not able to state which values they used more often or did not answer the question, and 5,3% of them claimed that they use them equally often.

The research done on touristic traffic in years 1989-2011 indicate that the existence of natural assets influences to a large extent the location of touristic facilities and the intensity of touristic traffic in Kartuzy county. Touristic traffic

concentrates mainly in two most touristically attractive areas, i.e. Nadjeziorne Heights and Sulęczyńska Flume (figure 5) in the years mentioned most tourists visited the following boroughs: Stężyca, Chmielno, Kartuzy and Sulęcyno.

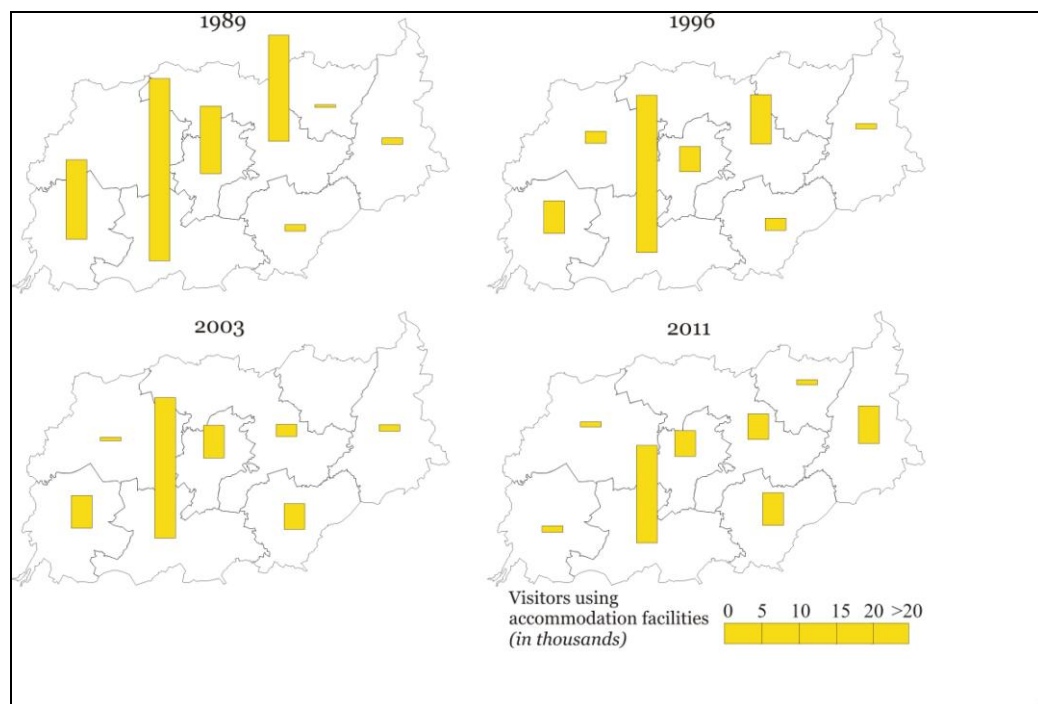


Figure 5. Tourists using accommodation facilities in Kartuzy county in years 1989-2011
(Source: Register of Collective Accommodation Facilities Kt-1 for 1989, Statistical Office in Gdańsk, Register of Accommodation Facilities for years: 1995-2011, Local Data Bank - Central Statistical Office, www.stat.gov.pl/bdl, access 06 February 2014, own study)

Conclusions

As a result of the research done there have been shown a specific role of natural environment of Kartuzy county by deep analysis of individual groups of natural resources as well as separation of 5 main regions of touristic attractiveness, of which the most important regions turned out to be the areas of Nadjeziorne Heights and Sulęczyńska Flume.

The research done on natural attractiveness, both with the method of spot bonitation and survey research indicated that the touristic attractiveness of Kartuzy county is mainly determined by natural values. The primary importance is given to a large number of lakes, widespread forestal areas and substantial diversity in lay of the ground connected with young-glacial type of scenery.

The analysis of the location of natural values and concentration of touristic traffic in accommodation facilities of the presented county showed a certain convergence – most tourists usually choose holiday destinations following large water and forestal areas, as well as territories of great denivelations of the ground.

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