



THE CONCEPT OF TOURIST-RECREATION MANAGEMENT OF EASTERN PART OF “KRZYWIŃSKO-OSIECKI” LANDSCAPE PROTECTED AREA

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Abstract

Eastern part of “Krzywińsko-Osiecki” Landscape Protected Area is located in central part of Wielkopolska region. The land use of analyzed area is dominated by arable lands, smaller area is covered by forests. The aim of present study was to determine the current state of tourism development in Borek Wielkopolski and Piaski communes, as well as to evaluate the nature-cultural values of eastern part of “Krzywińsko-Osiecki” Landscape Protected Area. Afterwards the possibilities of tourism management were designed based on above mentioned analyses. For this purposes the calculation of tourist function’s indexes, creation the map of valorization and the concept of tourism and recreation development with the aid of GIS tools were performed. The obtained results revealed, that tourist activity at Borek Wielkopolski and Piaski communes area is very low. However, eastern part of “Krzywińsko-Osiecki” Landscape Protected Area is characterized by a diversity of natural-landscape values. The proposed activities would influence on better recognition of natural values and increase of tourism attractiveness of analyzed area. Two tourist trails were proposed, as well as recreation development of water reservoir in Jeżewo and improvement of existing tourist infrastructure.

Keywords: tourist function’s indexes, natural-landscape valorization, tourist-leisure management, landscape protected area, GIS tools

INTRODUCTION

Poland is a very varied country concerning tourist values. Moreover, there are a lot of areas highly attractive for tourism development, due to their geographical location, as well as occurrence of natural (protected areas) and cultural objects (Chudy-Hyska 2006, Durydiwka 2013). Rural areas can be characterized by high tourism potential, in spite of their agricultural activity. Recently, these areas can play an important role of tourist-recreation areas. This is mainly connected with diversity of rural landscape, richness of green areas, high forestry areas and water reservoirs, as well as high resources of cultural and natural heritage. The latter one is the basis for further planning of local tourism-recreation development (Jaszczak and Hernik 2012).

Due to many natural values the special care for tourism potential is undertaken at rural areas for protected areas. These areas are highly important for each landscape, including rural one. Protected areas play not only an important role for the nature, but also have an aesthetic function positively influencing on landscape perception. Additionally, the tourism activity is allowed almost in every protected area forms. However, some limitation of tourism-recreation development can be noted, due to the level of protection (Łabaj 2003).

Concerning ecological point of view landscape protected areas should ensure nature and landscape conservation and maintenance of biodiversity. On the other side, landscape protected areas should play a social-economic function, such as access to interesting places for tourism purposes, as well as for local society interests (Batyk 2012). Tourism-recreation management is not very limited. All activities should be considered with taking into consideration the rules of sustainable development, such as do not disturb environmental processes, as well include benefits to economic and social aspects (Eagles et al. 2002, Font et al. 2004, Zaręba 2008, Sobczyk et al. 2012).

The aim of present study was to determine the current state of tourism development in Borek Wielkopolski and Piaski communes, as well as to evaluate the nature-cultural values of eastern part of „Krzywińsko-Osiecki” Landscape Protected Area. The possibilities of tourism management were designed based on above mentioned analyses.

MATERIALS AND METHODS

The study included two stages: the first consisted of calculation tourist function's indexes and creation the map of valorization with the aid of GIS tools, while the second phase consisted of creating of tourism and recreation development concept of certain area.

For the purpose of this study the four tourist function's indexes were calculated, which determine the degree of tourists frequency at analyzed area. The tourist function's indexes were divided into two groups. The first group of indicators involved the intensity of tourist traffic: Defert's index and Charvat's index. In the second group the follow indicators were calculated: Baretje – Defert's index and index of accommodation's density (Szromek 2012).

Table 1. Parameters analyzed in valorization and points designated for each parameter

No.	Parameter	Points
Natural – landscape parameters		
1.	natural monument	1 point for each object
2.	High Conservation Value Forests area	1 point for each object
3.	forest area	1 point for every 0.10 km ²
4.	tree rows	1 point for each object
5.	meadows and pasture areas	1 point for every 0.10 km ²
6.	orchard	1 point for each object
7.	littoral zone	1 point for area <0.50 km ² , 2 points for area >0.50 km ²
8.	water reservoir	1 point for area <0.50 km ² , 2 points for area >0.50 km ²
9.	river	1 point for every 1 km of river course in a non-protected area, 2 points for every 1 km in a landscape protected area
10.	relief	1 point for slope of more than 6 degree 2 points for slope of more than 12 degree
Cultural parameters		
11.	park and other green areas	1 point for each object
12.	architectural monument	1 point for each object
13.	tourism development	1 point for each object (i.e. hotels, restaurants, tourist routes)
Other parameters		
14.	industrial-commercial zones	minus 1 point for each object
15.	main roads	minus 0.25 points for each object of regional road, minus 0.5 point for each object of national road

Source: author's study based on Narankiewicz (2003)

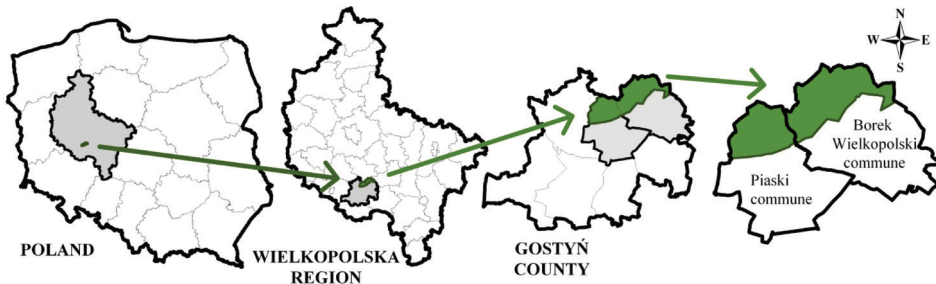
Afterwards map of natural-landscape valorization has been made. For this purpose the eastern part of “Krzywińsko-Osiecki” Landscape Protected

Area was divided into squares with an area of 1 km². Natural-landscape, cultural and other parameters were analyzed. Furthermore points for each parameter were calculated for each squares (tab. 1). The sum of points obtained for these parameters classify square into a one of five classes (tab. 2), however squares on the commune boundaries with area below 0.35 km² were excluded (Narankiewicz 2003).

RESULTS

RESEARCH AREA CHARACTERISTICS

“Krzywińsko-Osiecki” Landscape Protected Area is located in central part of Wielkopolska region and covers an area of 714.25 km². “Krzywińsko-Osiecki” Landscape Protected Area was created to protect areas similar to the natural environment, plays a role of ecological corridors, meets human needs for recreation and admiration of natural-landscape values (the Journal of Law of Leszno Region of 1992 r. No. 11, 131). The analyzed eastern part of „Krzywińsko-Osiecki” Landscape Protected Area covers an area of 66.97 km² and is located in the northern region of Borek Wielkopolski and Piaski communes (fig. 1).



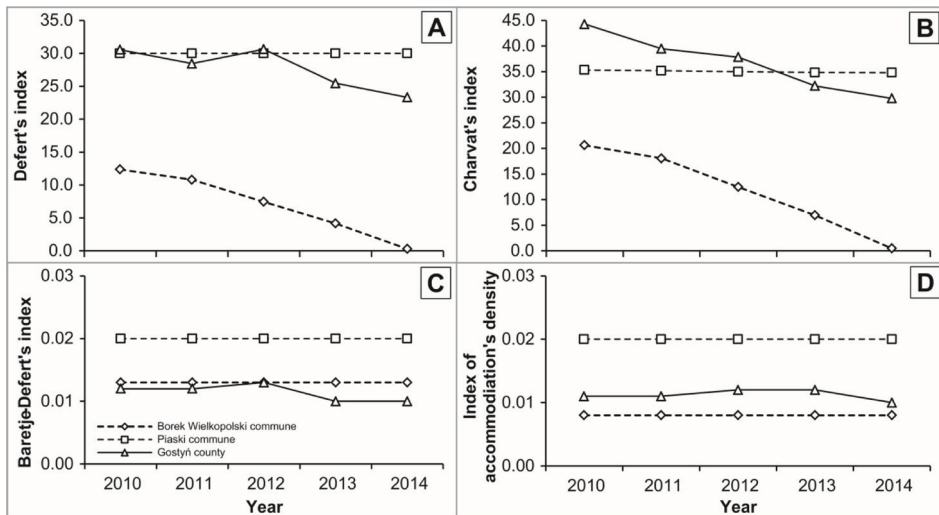
Source: author's study

Figure 1. Location of eastern part of “Krzywińsko-Osiecki” Landscape Protected Area

The land use of eastern part of “Krzywińsko-Osiecki” Landscape Protected Area is dominated by arable lands (54.7%), smaller area is covered by forests (30.9%), as well as meadows and pastures (8.0%). The analyzed area is rich in natural values, such as: nine natural monuments, three manorial parks and High Conservation Value Forests areas (HCVF areas). Additionally, in the eastern part of “Krzywińsko-Osiecki” Landscape Protected Area are cultural values e.g. old abbey, historic city buildings, three manors and lots of churches.

TOURIST'S FUNCTION INDEXES

Analysis of tourist function's indexes in 2010-2014 revealed that tourist development, as well as tourist activity in Borek Wielkopolski and Piaski communes, is very low (fig. 2a-2d). Based on Defert's index (Fig. 2a) it was found that the area of the two communes were not crowded by tourists. The higher number of tourists was noted in Borek Wielkopolski commune in 2010. In the following years numbers of tourists decreased. In Piaski commune value of Defert's index is constant, which is connected with regular pilgrimage at this area. Both communes were characterized by low number of tourists with accommodation, which is determined by Charvat's index (fig. 2b). The highest number of accommodation was recorded in Borek Wielkopolski commune in 2010 (Charvat's index 20.63). The index is systematically decreasing from 2011. The number of accommodation in Piaski commune was equal to 3000 every year, and Charvat's index maintain at level 34.81-35.31. Low level of accommodation development influence on two other indexes: Baretje-Defert's (fig. 2c) and index of accommodation's density (fig. 2d). In 2010-2014 the number of touristic accommodation places in Borek Wielkopolski was constant and lower than in Piaski commune. The Baretje-Defert's index indicates on low or even lack of touristic activity in both communes.

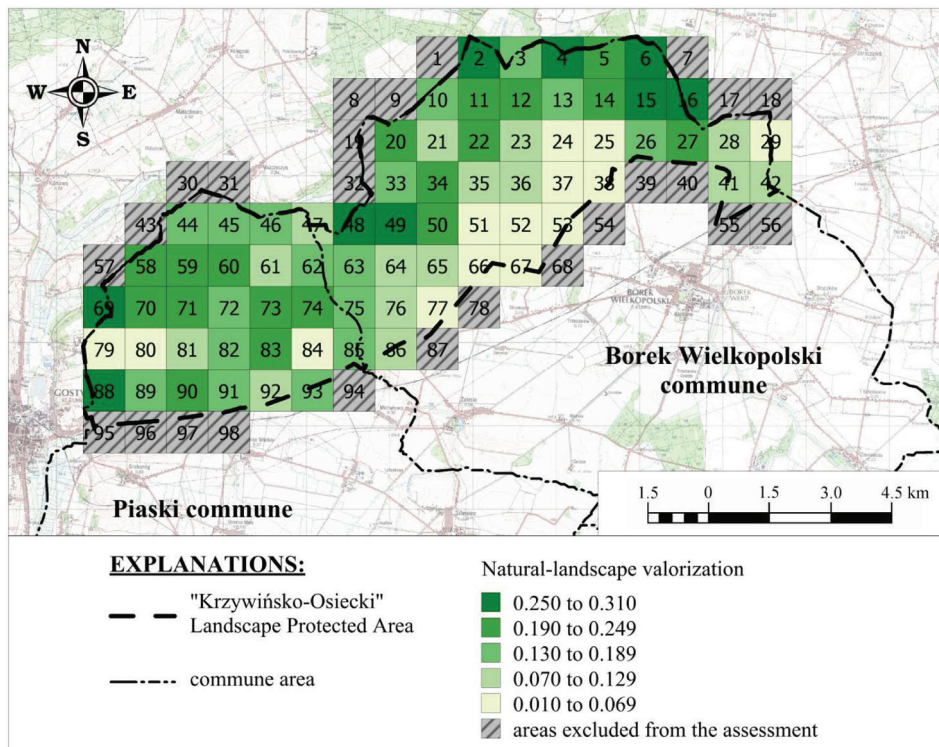


Source: author's study

Figure 2a-2d. Tourist function's indexes for Borek Wielkopolski commune, Piaski commune and Gostyń county

NATURAL-LANDSCAPE VALORIZATION

73 squares were analyzed from total number of 98 (tab. 2). Very high values were noted in 9.2% of squares and are located in HCVF areas, around the water reservoir in Jeżewo in the northern part of Borek Wielkopolski commune and in the western part of Piaski commune. There are existing several tourist routes and historical buildings. High levels of analyzed values were observed in 18.4% of squares and are focused mainly in forest areas. Areas with a medium level of values (17.3%) are mainly located close to forests or meadows and pastures. Low and very low level of values were noted in 29.6% of squares. These areas are dominated mainly by arable land and built-up areas (fig. 3).



Source: author's study based on topographic map on a scale of 1:50 000 from the Provincial Centre for Geodesic and Cartographic Documentation in Poznań

Figure 3. Results of natural-landscape valorization of eastern part of "Krzywińsko-Osiecki" Landscape Protected Area

Table 2. Categories of natural-landscape values and results for examined communes

Class	Characteristics	Range of values for one square	Number of squares	Percentage of class
I	very high level of values	0.250 to 0.310	9	9.2%
II	high level of values	0.190 to 0.249	18	18.4%
III	medium level of values	0.130 to 0.189	17	17.3%
IV	low level of values	0.070 to 0.129	15	15.3%
V	very low level of values	0.010 to 0.069	14	14.3%
N.C.	areas not classified	-	25	25.5%

Source: author's study

CONCEPT OF TOURIST-RECREATION MANAGEMENT OF EASTERN PART OF "KRZYWIŃSKO-OSIECKI" LANDSCAPE PROTECTED AREA

Based on the tourist function's indexes and natural-landscape valorization it was found that the most favorable for tourist-leisure management are the north-eastern part of Borek Wielkopolski commune and the western part of Piaski commune (fig. 3). The proposed idea of tourist-recreation management consists of three components: improvement of existing routes, creation hiking trails and *Nordic Walking* trail, as well as the concept of leisure development of areas around the water reservoir in Jeżewo (fig. 4).

There are hiking, horse and bike trails on "Krzywińsko-Osiecki" Landscape Protected Area (tab. 3). The most of them are in a good condition with a proper assignment. The biggest problem is existing three types of trails in the same place without considering their proper and safe separation – pedestrian, horse and bike trails. Here is proposed the determination two separate trails due to safety conditions of tourists. The hiking-bike trail requires 3.5 m wide trail, and the rest part of the trail can be indicated as a horse one. Moreover, for this purpose the information signs should be clearly located. Simultaneously, it is recommended to unify the hiking, bike and horse trails assignments, as well as to supplement the signs with information about changes directions of the course.

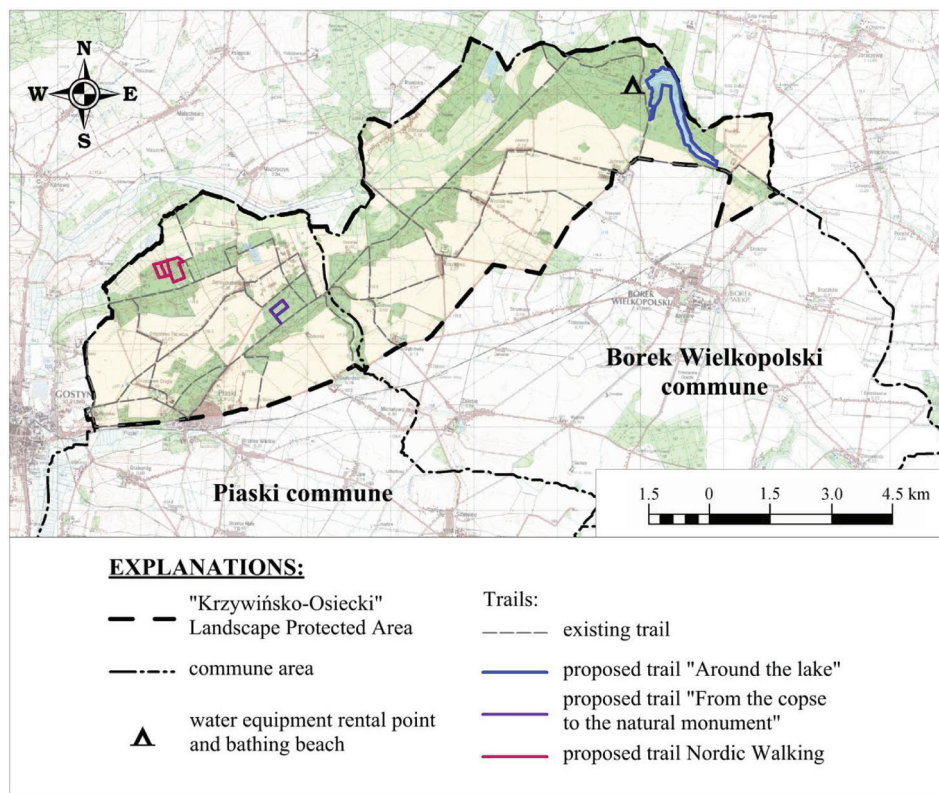
Due to low number of hiking trails in Piaski and Borek Wielkopolski communes (tab. 3) two hiking trails are here proposed. The first one, named "Around the lake", was designated based on valorization, on area with high and very high natural values of Borek Wielkopolski commune. The trail was conducted around water reservoir in Jeżewo, along natural forest and meadows boundary, as well as on the existing dirt roads and forest paths. The total length of this trail is about 8.3 km and takes more than 2 hours. The most comfortable hiking trail width

would be 2 m. This width would be proper for individual tourists, families with children as well as for organized school groups. The trails are not recommended for sport purposes. The second trail named “From the copse to the natural monument” is a short forest route from forest education point to five natural monuments. The length of the trail is 1.3 km and is mainly addressed to educational purposes of children. The *Nordic Walking* trail was planned in Piaski commune at areas with high natural and landscape values, with a possibility for sightseeing of tree rows and water reservoirs. The whole trail would be long for 3.0 km and was conducted on forest roads. The linking elements allow to diversify the chosen trail, as well as to adjust to the tourist’s possibilities and time.

Table 3. Currently existing tourist routes at eastern part of “Krzywińsko-Osiecki” Landscape Protected Area

No.	Name of trail	Location	Distance	Type of trail
1.	Euro Velo no. 9	Piaski commune	0.48 km	bicycle
2.	P1 – Trail of Gostyń tradition	Piaski commune	12.75 km	bicycle
3.	P2 – Trail of saints and musicians	Piaski commune	0.52 km	bicycle
4.	P3 – Trail of hunters, foresters and carpenters	Borek Wielkopolski commune	21.55 km	bicycle
5.	P4 – Trail to the office and to the fair	Borek Wielkopolski commune	8.50 km	bicycle
6.	P6 – Trail of Święta Góra sponsor	Piaski commune	0.48 km	bicycle
7.	P8 – Trail of soldier’s tradition	Piaski commune	2.40 km	bicycle
8.	Chłapowski’s trail	Piaski commune and Borek Wielkopolski commune	21.36 km	horse
9.	Landowning bicycle route	Piaski commune	0.48 km	bicycle
10.	The first bicycle route of county	Piaski commune and Borek Wielkopolski commune	43.77 km	bicycle
11.	E. Bojanowski’s trail	Piaski commune	0.48 km	bicycle
12.	K. Miaskowski’s trail	Piaski commune	19.08 km	bicycle
13.	Baroque trail	Piaski commune	0.48 km	bicycle
14.	Hiking trail	Piaski commune and Borek Wielkopolski commune	15.77 km	hiking
15.	Bicycle trail of Borek Wielkopolski commune	Borek Wielkopolski commune	13.99 km	bicycle
16.	Route of eastern area of Leszno	Piaski commune	0.48 km	bicycle

Source: author’s study



Source: author's study based on topographic map on a scale of 1:50 000 from the Provincial Centre for Geodesic and Cartographic Documentation in Poznań

Figure 4. Proposed tourist-recreation management of eastern part of "Krzywińsko-Osiecki" Landscape Protected Area

The most attractive point in Borek Wielkopolski commune, which make possibilities for recreation development is water reservoir in Jezewo (fig. 5). Presently, the reservoir did not play a function of local bathing beach. Hence, here the recreation management of this place and surroundings areas is proposed. The first important activity would be an organizing the existing bathing beach and creation the water equipment rental point. Rental point with berth was planned nearby existing platform for fishers. Berth was planned as wooded floating platform, which easily compose to surrounding areas and simultaneously limit the negative effect on aesthetic values. Additionally, the small woody architecture was also planned as bench, trash cans and information signs concerning local flora and fauna, as well as rules existing at area of bathing beach and water

equipment rental point. Moreover, the location of wooded lifeguard tower near-by planned platform was also proposed.



Figure 5. Water reservoir in Jezewo (author: Joanna Wierzbicka)

CONCLUSIONS

1. Tourist activity at Piaski and Borek Wielkopolski communes area is very low. These communes are not very attractive for potential tourists and do not possess a good accommodation basis. However high level of natural-landscape values can be noted at this area, especially at “Krzywińsko-Osiecki” Landscape Protected Area.
2. Eastern part of “Krzywińsko-Osiecki” Landscape Protected Area is characterized by a diversity of natural-landscape values. The most attractive was north-eastern and north-western part of the study area, where plentiful natural (forests, HCVF areas, natural monuments) and cultural (historic buildings and manors) objects occur. The lowest level of values were noted at southern part of the area due to location of industrial areas and dense road network.

3. The proposed activities would influence on better recognition of natural values and increase of tourism attractiveness of analyzed area. An introduction of hiking trails and *Nordic Walking* trail would make possible to organize the tourist activity. The proper management of water reservoir in Jeżewo would be the recreation for incoming tourists and local inhabitants far from the local buildings. Moreover, the location of this area would minimize the potential negative effects to local citizens living at the nearby towns.

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