

DETERMINANTS OF TOURISM DEVELOPMENT IN AREAS OF HIGH NATURAL VALUE

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Abstract

Development of tourism, understood as the result of human activity aimed at adapting space to the needs of tourism, requires a variety of specific spatial determinants recognized from the viewpoint of multi-dimensionality of tourist space. One of the major determinants of tourism intensity in an area are landscape values, including natural values. Natural elements of the environment (including the terrain, water reservoirs, natural forms of land cover), sustainable landscape, or the unique cultural objects are the basis for long-term development of tourist activities. These values are characteristic of the so-called naturally valuable areas, including areas under the national and international law of different forms of nature protection. The paper aims at examining the relationship between the existing natural determinants affecting the development of tourism and the intensity of tourist movement as well as tourism intensity and the level of development of tourist facilities in the gminas of the Warmińsko-Mazurskie voivodship.

The overall objective will be implemented in three stages. The first one will be to identify the existing natural determinants for the development of tourism in the Warmińsko-Mazurskie voivodship. The second phase will consist of an examination of the intensity of tourist movement and the level of the development of tourism by designating Schneider's, Baretje's and Defert's indicators and the share of recreational areas. The final step will be to identify relationships between the variables obtained in the process of obtained in the two previous stages.

Key words: areas of high natural value, tourism development, natural values.

Introduction

The development of tourism as a phenomenon with great economic potential has been accompanied by the appearance of the notion of tourism management understood as the result of activities whose main goal is the adaptation of space to tourist function. The formation of so-called 'tourist space', i.e. the space in which human tourist activity is observed, is the result of 'the co-operation and the co-existence' of varied geographic sub-spaces: social, ecological, cultural, technological, and economic. One of the most important sub-spaces is the ecological one. Tourism uses the following elements of ecological space: terrain, water reservoirs, climate, biological diversity, and landscape. These often unique natural creations are at the same time the natural values of a tourist space. The use of ecological space for tourist purposes is a desired phenomenon but only under one condition: the use of natural elements must be responsible and reasonable. In other words, natural resources should be used in a way that guarantees their durability of nature and minimizes irreversible environmental changes caused by anthropopressure.

Naturally valuable areas are one of the most significant components of ecological space. In Poland, in the previous two decades the concentration of tourist movement has gradually progressed. Hence, extending the range of activity on naturally valuable areas is connected with the expectations and needs of increasingly demanding tourists (Michałowski, 2008). Moreover, the development of tourism is a chance for socio-economic stimulation. It often happens that tourism is a privileged form of activity in naturally

valuable areas. Sometimes it is the only form of economic activities allowed within their borders (Schubert, 2010).

In the literature, there exist various, sometimes imprecise definitions of a 'naturally valuable area' (Ryszkowski, 1985). In the most general sense this area can be understood as a space of high values determined by the presence of different, unique natural resources (Dobrzańska, 2005). Taking into account only the ecological aspect, there are no doubts that space described as a naturally valuable area should be characterized by high degree of biodiversity -the diversity of organisms and ecosystems (Dobrzańska, 2005; Szczepanowski, 2007). These areas should be distinguished by low degree of anthropogenic transformation (from natural, unchanged forms to forms changed in small degree) (Dobrzańska, 2005). Moreover, they should perform various functions: environmental (regulating), social, cultural, aesthetic, recreational, scientific, and educational (Łuszczuk, 2010).

Definitions of naturally valuable areas should take into account not only the ecological aspect, but also the socio-economic one. Land with high biological diversity often is or may be the dominant factor determining economic activation (Dobrzańska, 2005). The management of such areas should reflect the principles of sustainable development where the process of socio-economic development should not disturb the environmental balance and the durability of natural processes so as to ensure the opportunity to fulfill the needs of the present and future generations (*Act of 27 April 2001 on the protection of nature*).

In light of these assumptions, any economic activity in naturally valuable areas should be conducted in a way which guarantees adequate protection (Łuszczczyk, 2010). Effective protection of valuable areas should be regulated (Łuszczczyk, 2010).

Development of tourism is mainly determined by the presence of the so-called tourist values – unique features of space, attracting the interest of potential tourists (Gołembski, 2002). Taking into account tourist motives, we may distinguish three main groups of values: recreational, landscape (including natural, cultural and advantages connected with contemporary human achievements) and specialist (Kiryluk, 2005). On the basis of the definition of naturally valuable areas in which high degree of biodiversity is noted, we can state that the areas are characterized by significant natural values. Besides the presence of rare species of fauna and flora in the areas there are additional values, such as varied terrain, natural streams, rivers and water reservoirs, underground forms of erosion (caves, vaucluse springs, ravines), favorable microclimate, and clean air. A large part of naturally valuable areas is legally protected land, which points to the fact that such areas constitute significant natural value. The use of natural conditions is conducive to the formation of additional values with natural features (botanical parks, wildlife parks, etc.).

The existence of naturally valuable areas is a guarantee of the presence of recreational values. The higher the quality of particular components of natural environment, the greater the attractiveness of leisure (Kiryluk, 2005). Recreational values are the set of features of space providing optimal conditions for leisure and recreation (Płocka, 2009). Natural conditions and features of naturally valuable areas determine specialist values. The latter create the opportunity to develop various forms of qualified tourism, e.g. canoeing, sailing, fishing (Łuszczczyk, 2010). In such areas there often appear products of material and non-material culture which are the results of human activity and which constitute the so called cultural values.

Although naturally valuable areas are characterized by a variety of tourist attractions, their presence alone may not guarantee tourism development. From the point of view of a tourist, it is also important whether the area has a system of functionally connected devices and services aimed at satisfying their basic requirements (Kowalczyk and Derek, 2010).

The development of tourism in naturally valuable areas should be realized in a sustainable way in the social, ecological and economic dimensions (Gałązka, 2009; Niezgoda, 2008). Such development is determined by a rational distribution of elements of tourist infrastructure in the area. The implementation of tourist infrastructure puts an increasing burden on the natural ecosystem. Tourist investments should be

realized in a way which will not lead to exceeding the resistance of the environments and to irreversible loss of natural values (Szczapanowski, 2007). In accordance with the trends in contemporary tourist management of naturally valuable areas, three concepts can be used: spatial zoning, concentration-dispersion and restriction of accessibility (Kowalczyk and Derek, 2010).

Functional zoning of space is recommended in order to reduce, on the one hand, spatial conflicts within the biodiversity of naturally valuable areas and, on the other, the intensity of tourist infrastructure. The main rule here is to plan tourist movement in a way which will not contribute to damaging areas of great importance for the protection of environment (Kowalczyk and Derek, 2010). The implementation of functional zoning of space is connected with dividing an area into zones with varied tourist accessibility depending on the specificity of the naturally valuable area. In each zone there is allowed an appropriate composition of elements of tourist infrastructure.

Another concept which may be useful in tourist management of naturally valuable areas is concentration-dispersion of tourist movement. There are two alternative ways of its implementation. The most common one is to concentrate tourist movement in selected places with greater resistance to negative human impact on the environment. In these places there are usually main elements of tourist infrastructure (car parks, campsites, tourist information, catering objects, etc.). An alternative way of implementing the concept includes actions aimed at the dispersion of tourists. As a result, there are visits of small groups of tourists in particular areas (Kowalczyk and Derek, 2010).

The third strategy aimed at controlling tourist use of naturally valuable areas is associated with limiting accessibility. Unlike the above-presented methods, this one depends on the use of administrative regulations which may decrease tourist movement. The most common way of implementing this strategy is to determine the limit of the number of tourists or to set an entrance fee (Kowalczyk and Derek, 2010).

The selection of the strategy for tourist use of naturally valuable areas depends on the character of an area, the forms of its protection, resistance to anthropogenic factors and the current intensity of tourist exploitation. The use of appropriate plan may determine adequate strategies for socio-economic activation of an area in accordance with the principles of sustainable development.

Materials and Methods

The study area is located in the administrative borders of the Warmińsko-Mazurskie voivodship¹, in north-eastern part of Poland (Fig. 1). A large part

¹ Voivodship – administrative region of the 1st order in Poland (NUTS 2).



Figure 1. Administrative division of the Region of Warmia and Mazury.

Source: Own elaboration.

of the voivodship belongs to the macro-region of the Masurian Lake District and a small northern part to the Gdańsk Shoreland. In the West, it is located in the Iława Lake District and in the Chełmińsko-Dobrzyńskie Lake District. Due to the fact that the terrain has been shaped by the activity of ice sheet and fluvioglacial water, the voivodship is characterized by richness of natural values (varied terrain, numerous lakes, a developed river network) (Cabaj and Kruczek, 2010). The terrain, high share of forest cover (30.9%), of water area (6%) and of areas under legal protection (more than 4%) determine the tourist attractiveness of the land.

Almost the entire area of the Warmińsko-Mazurskie voivodship (except for Kiszielice gmina²) is located within the borders of the Green Lungs of Poland (in Polish *Zielone Płuca Polski*, ZPP).

Warmińsko-Mazurskie voivodship, with the total area of 24,173 km² and population amounting to 1 446 915, has one of the lowest population density in the country (59 persons per 1 sq. km; average population density in Poland amounts to 122 persons per sq. km). The voivodship includes 116 gminas (16 urban, 33 urban-rural and 67 rural gminas).

In order to determine the natural conditions important for the development of tourism in the Warmińsko-Mazurskie voivodship, we have conducted spatial analyses aimed at determining the share of naturally valuable areas in the total area of individual gminas.

² Gmina – administrative region of the 3rd order in Poland (NUTS 5).

It is really very difficult to classify naturally valuable areas due to the lack of precise indicators that would allow us to compare the natural diversity of objects (Dobrzańska, 2005). According to the Act of 16 April 2004 on the protection of nature, naturally valuable areas include protected land. Because of the above-mentioned reason, in this classification we have taken into account only protected areas.

In the research we have considered the legal, national forms of the protection of nature: landscape parks, nature reserves, areas of protected landscape, landscape nature protected complexes, ecological lands and documentation sites (as total). The source data on the forms of the protection of nature was derived from the Central Statistical Office (<http://stat.gov.pl/>, DoA: 23.05.2014). When we obtained the data, we checked different forms of protection and eliminated the problem of the duplication of areas.

According to the Central Statistical Office, data on the legally protected land does not contain information on the areas comprising Natura 2000. Therefore, we collected data on the Natura 2000 areas as they are a form of the protection of nature within the EU legal system, operating independently of the national system. Spatial data on Natura 2000 areas was obtained in the process of the digitalization of their borders available at the Geoservice of the General Directorate for Environmental Protection (<http://geoserwis.gdos.gov.pl/mapy/>). Analyzing Natura 2000 areas we considered the fact that the Special Areas of the Protection of Sites (in Polish *Specjalne Obszary Ochrony Siedlisk* - SOOS) and the Areas of Special Protection of Birds (in Polish

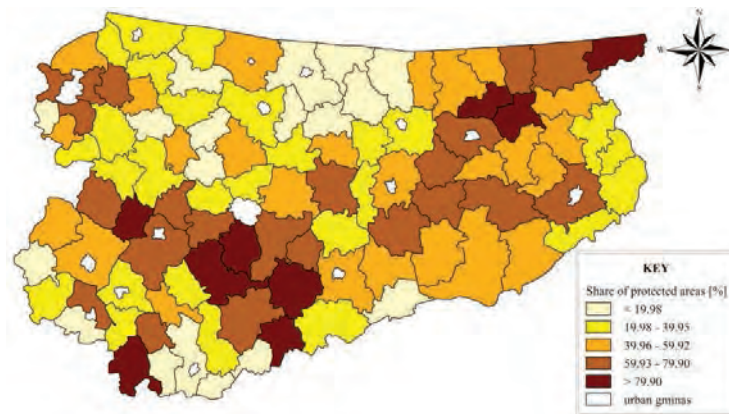


Figure 2. Share of protected areas in the total area of particular municipalities of the Region of Warmia and Mazury.

Source: Own elaboration.

Obszary Specjalnej Ochrony Ptaków -SOO) may be partly the same.

In order to determine the intensity of tourist movement and the level of development of tourist facilities in gminas (NTS 5) of the Warmińsko-Mazurskie voivodship we have prepared spatial analyses including:

- Schneider's indicator – describing the intensity of tourist movement and calculated as the number of tourists using accommodation per 100 permanent inhabitants,

- Baretje's and Defert's indicator – calculated as the number of tourist beds per 100 permanent inhabitants,

- the share of recreational areas in the total area of individual units³.

Statistical data necessary to calculate first two indicators was derived from the Central Statistical Office. Information on the recreational area was obtained from the register of land and buildings (state as of 1 January 2013) provided by the Regional Center of Geodetic and Cartographic Documentation in Olsztyn.

The results of spatial analysis with regard to the natural conditions determining tourism development, intensity of tourist movement and the level of development of tourist facilities in the gminas of the Warmińsko-Mazurskie voivodship were presented as maps (made by the usage of ArcGIS 10.2.2. software). The final stage included the calculation of linear

³ According to the Regulation of the Ministry of Regional Development and Construction of 29 March 2001 on land and buildings registers: recreational areas comprise land not occupied by buildings belonging to recreational centers; land occupied by children playgrounds; squares; arranged parks; green areas (out of streets); land with historic objects: ruins of castles; fortified settlements; barrows; natural monuments, etc.; sport grounds: stadiums; sports grounds; ski jumps; toboggan runs; shooting ranges; swimming pools; etc., areas performing recreational functions: amusement parks, etc.; zoological and botanical gardens; non-arranged green areas including forests; wooded and bushed land).

correlations between natural conditions determining tourism development and the intensity of tourist movement as well as the level of development of tourist facilities in particular gminas. The results were presented in a table. The calculations were conducted by the usage of Statistica software.

Results and Discussion

The spatial distribution of natural determinants of tourism was presented as the share of protected areas (total: landscape parks, nature reserves, areas of protected landscape, landscape nature protected complexes, ecological lands, documentation sites) in the total area of individual gminas (Fig. 2).

The most favorable conditions occur in the gminas located to the south of the capital of the voivodship. It is a relatively compact area including the following gminas: Gietrzwałd, Stawiguda, Olsztynek, Purda, Pasym, Jedwabno, Nidzica, Janowo. The Protected Area of Napiwodzko-Ramucka Forest is located within the area of the gminas. The area is connected through Gietrzwałd gmina with another group of gminas characterized by high share of protected land. This area consists of the following gminas: Łukta, Ostróda, Miłomłyn, Zalewo. Within its borders there are areas of protected landscape including, among others, the Elbląg Canal, the Tyborskie Forest, the Dylewskie Hills, and the landscape parks of, among others, the Iławskie Lake District and of the Dylewskie Hills. Moreover, there are two units of high natural value, i.e. the group of gminas forming the Land of Great Masurian Lakes and the area of so-called Masuria Garbate including the following gminas: Dubieninki, Gołdap, Banie Mazurskie, Kruklanki, and Pozezdrze. The weakest natural determinants for the development of tourism are noticed in the group of six gminas located in the north of the voivodship: Barciany, Sępól, Bartoszyce, Korsze, Bisztynek and Kiwity.

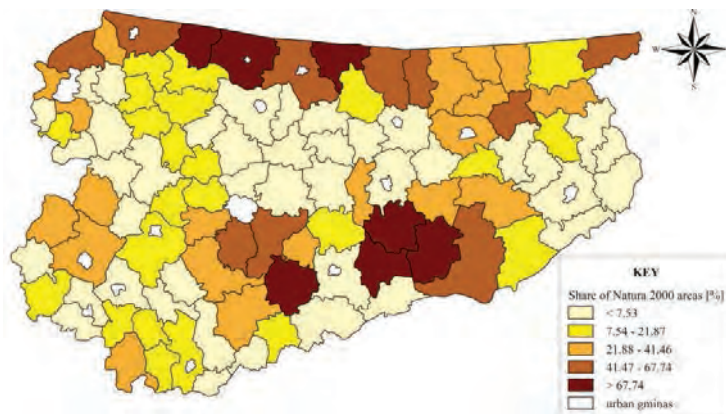


Figure 3. Share of Natura 2000 areas in the total area of gminas of Warmińsko-Mazurskie voivodship.

Source: Own elaboration.

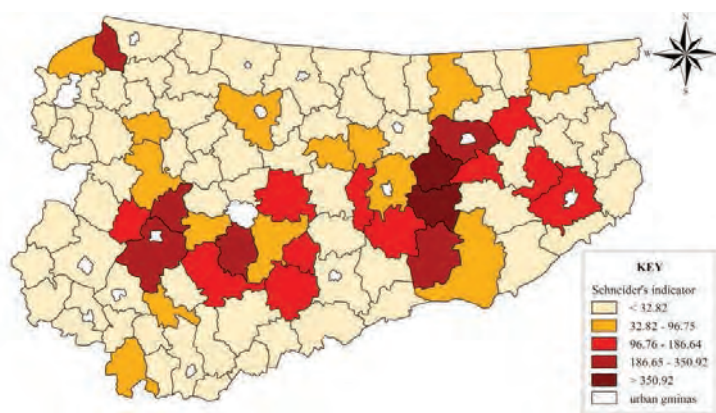


Figure 4. Schneider's indicator in the gminas of Warmińsko-Mazurskie voivodship.

Source: Own elaboration.

In order to complete the research results concerning natural conditions affecting tourism, we have also analyzed the spatial distribution of the Natura 2000 areas in the total area of individual gminas (Fig. 3). We have found that some parts of these areas are also the areas with the most favorable conditions. These are areas located in the south of Olsztyn and the group of gminas forming the Land of Great Masurian Lakes. The whole area of two gminas, Ruciane Nida and Piecki, is included in Natura 2000. A completely different situation has been observed in the gminas located in the north of the voivodship: from Tolkmicko gmina to Srokowo gmina. There is an area of bird protection called the Ostoja Warmińska.

The gminas where Natura 2000 areas have a very small share are located to the north and east-north of the capital and on the eastern border of the voivodship.

The intensity of tourist movement in the individual gminas of the voivodship has been measured by Schneider's indicator (Fig. 4). The highest intensity of tourist movement is observed in the group of nine gminas located in the Land of Great Masurian Lakes:

Sorkwity, Mrągowo, Ryn, Giżycko, Pozezdrze, Mikołajki, Piecki, Ruciane Nida, and Pisz. One of the main conditions affecting the tourist movement in this part of the voivodship is natural richness (wooded areas, lakes and microclimate). The second group of gminas (Purda, Pasym, Jedwabno, Stawiguda, Olsztynek, Giętrzwald, Łukta, Ostróda, Miłomłyn and Barczewo) intensively visited by tourists is located south of Olsztyn. Besides natural values, the tourist attractions in this area include cultural values. Additionally, the areas where the intensity of tourist movement is slightly higher in the voivodships are located near Elk and in the gminas near the Vistula Lagoon.

The spatial distribution of Baretje's and Defert's indicator presenting tourist function (Fig. 5) is analogous to the results of Schneider's indicator. Gminas with the most developed tourist accommodations are located in the center of historic lands: Warmia (south of Olsztyn) and Masuria (the Land of Great Masurian Lakes). In the remaining part of the voivodship tourist accommodations are not well-developed.

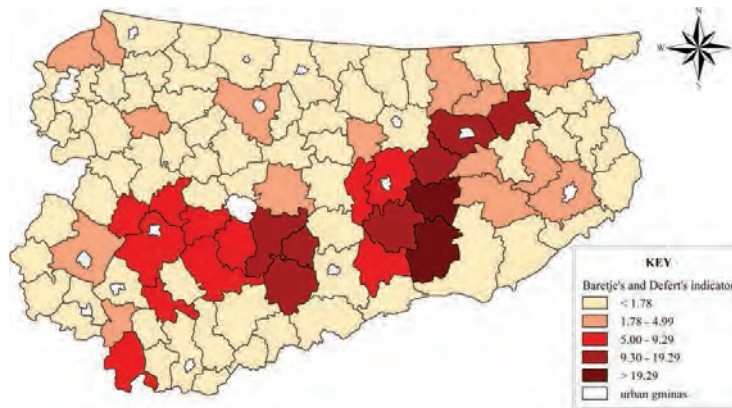


Figure 5. Baretje's and Defert's indicator in the gminas of Warmińsko-Mazurskie voivodship.

Source: Own elaboration.

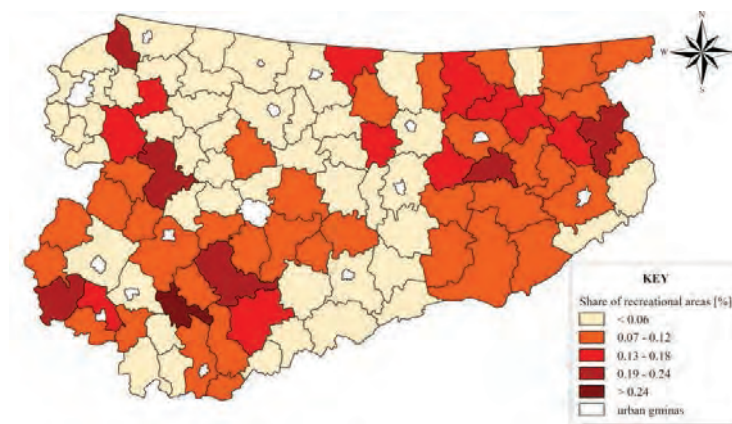


Figure 6. Share of recreational areas in the total area of gminas of Warmińsko-Mazurskie voivodship.

Source: Own elaboration.

Table 1

Linear correlation between analyzed variables

Variable	Statistically relevant values, $p < .05000$, $N = 100$		
	Schneider's indicator	Baretje's and Defert's indicator	Share of recreational areas [%]
Share of protected areas [%]	0.33	0.48	0.13
Share of Natura 2000 areas [%]	0.09	0.17	0.08

Source: Own elaboration

The spatial distribution of the intensity of tourist infrastructure is presented as the share of recreational area in total area of individual gminas (Fig. 6). It has been noticed that the most developed recreational area is observed in the north and in the group of gminas located to the south and to the west of the capital of the voivodship. The least favorable conditions for tourism are noted to the north of Olsztyn.

The correlation between natural determinants of tourism and the intensity of tourist movement as well as the level of development of tourist facilities (Schneider's indicator and Baretje's and Defert's indicator) in the gminas of the Warmińsko-Mazurskie

voivodship is presented in Table 1. It shows that there is an average relationship between the considered variables. It means that the increase in the share of protected areas is connected with average increase in tourist intensity and tourist facilities. A similar trend is observed in the relationship between the share of protected area and the share of recreational areas but the correlation is stronger.

The values of Person's correlation indicator showing the strength of the relationship between the share of the Natura 2000 areas and the indicators of the intensity of tourist movement as well as the level of development of tourist facilities are very low. The

results of this analysis and comparison cartogram of the share of Nature 2000 areas in the total area of gminas of Warmińsko-Mazurskie voivodship (Fig. 3) with cartograms showing the intensity of tourist movement and the level of development of tourist facilities in gminas of the Warmińsko-Mazurskie voivodship (Fig. 4, Fig. 5, Fig. 6), mean that the Natura 2000 areas located in the voivodship, especially those in the northern part of the region, are not used for tourist purposes too intensively in the analyzed period.

Conclusions

Warmińsko-Mazurskie voivodship is characterized by high values of natural environment. Naturally valuable areas are mainly located in the central part of Warmia (south of Olsztyn) and in the Land of Great Masurian Lakes. In the same areas there is the highest intensity of tourist movement. Moreover, these areas are well-equipped in tourist accommodations and

tourist recreational facilities. There is also observed a high level of the use of unique components of ecological space for tourist purposes, especially with regard to terrain, water reservoirs, climate, biodiversity, and landscape.

It is recommended that the study area should be developed according to the principles of sustainable development aimed at achieving balance between social, ecological and economic dimensions. The main determinant of sustainable development in the naturally valuable areas of Warmia and Masuria is adequate distribution of tourist facilities. The optimal concept of management may determine socio-economic activation in accordance with sustainable development. The desired forms of tourist activity in the study area should include the so-called light tourism, such as spa tourism, educational tourism, tourism connected with horse riding, fishing, canoeing, walking, eco-tourism, and agro-tourism.

References

1. Cabaj W., Kruczek Z. (2010) *Podstawy geografii turystycznej (Basics of geography of tourism)*. PROKSENIA, Kraków, pp. 83-85. (in Polish).
2. Dobrzańska B.M. (2005) *Obszary przyrodniczo cenne jako rejony recepcji turystycznej (Naturally valuable areas as districts of tourist reception)*. In: Poskrobko B. (eds.) *Zarządzanie turystyką na obszarach przyrodniczo cennych (Tourist management in naturally valuable areas)*. WSE, Białystok, pp. 9-24. (in Polish).
3. Gałązka M. (2009) *Turystyka zrównoważona w parkach narodowych w opinii turystów (Sustainable tourism in national parks in the opinion of tourists)*. *Studia i Materiały Centrum Edukacji Przyrodniczo-Leśnej*, 4(23), pp. 123-130. (in Polish).
4. Gołembski G. (eds.) (2002) *Kompendium wiedzy o turystyce (Compendium of knowledge on tourism)*. PWN, Warszawa – Poznań, pp. 61-77. (in Polish).
5. Kiryluk H. (2005) *Walory i atrakcje turystyczne obszarów przyrodniczo cennych (Tourist values and attractions in naturally valuable areas)*. In: Poskrobko B. (eds.) *Zarządzanie turystyką na obszarach przyrodniczo cennych (Tourist management in naturally valuable areas)*, WSE, Białystok, pp. 25-45. (in Polish).
6. Kowalczyk A., Derek M. (2010) *Zagospodarowanie turystyczne (Tourist management)*. PWN, Warszawa, pp. 13-21; 183-196. (in Polish).
7. Łuszczek M. (2010) *Uwarunkowania rozwoju turystyki na obszarach przyrodniczo cennych (Determinants of tourism development in naturally valuable areas)*. In: Młynarczyk Z., Zajadacz A., Słowik M. (eds.) *Uwarunkowania i plany rozwoju turystyki. Aspekty przyrodnicze rozwoju turystyki (Determinants and plans of tourism development. Natural determinants of tourism development)*. Tom 5, Bogucki, Poznań, pp. 9-19. (in Polish).
8. Michałowski K. (2008) *Podstawy zarządzania turystyką (aspekt przestrzenny) (Basics of tourism management (spatial aspect))*. WSE, Białystok, pp. 68-71. (in Polish).
9. Niezgoda A. (2008) *Turystyka zrównoważona – istota, zasada i kryteria koncepcji (Sustainable tourism – concept and criteria)*. In: Wodejko S. (eds.) *Zrównoważony rozwój turystyki (Sustainable development of tourism)*. SGH, Warszawa, pp. 83-93. (in Polish).
10. Płocka J. (2009) *Wybrane zagadnienia z zagospodarowania turystycznego. Część pierwsza (Selected issues on tourist facility development. Part one)*. CKU, Toruń, pp. 20-21. (in Polish).
11. Ryszkowski L. (1985) *Ekologiczne prawidłowości funkcjonowania ekosystemów na obszarach przyrodniczo cennych (Ecological rules of functioning ecosystems in naturally valuable areas)*. In: Ryszkowski L. (eds.) *Ekologiczne, medyczne i socjologiczne przesłanki kształtowania obszarów przyrodniczo cennych (Ecological, medical and social factors affecting spatial planning of naturally valuable areas)*. PWN, Warszawa – Poznań, pp. 61-73. (in Polish).

12. Schubert T. (2010) *Obszary Natura 2000 i turystyka w krajowym prawie ochrony przyrody (Natura 2000 areas and tourism in national regulation on environmental protection)*. In: Stanisławska – Zakątek W., Wołoszyn A. (eds) *Turystyka i rekreacja w regionie (Tourism and recreation in a region)*. PWSZ, Gorzów Wielkopolski, pp. 37-44. (in Polish).
13. Szczepanowski A.E. (2007) *Infrastruktura turystyczna i paraturystyczna na obszarach przyrodniczo cennych (Tourist and paratourist facilities in naturally valuable areas)*. In: Czarnecki W. (eds.) *Rekreacja, turystyka i agroturystyka w gospodarce przestrzennej – wyzwanie XXI wieku (Recreation, Tours and agri-tourism in spatial planning – a challenge of 21st century)*. WSFiZ, Białystok, pp. 31-44. (in Polish).
14. *Ustawa z dnia 27 kwietnia 2001 r. Prawo ochrony środowiska (Act of 27 April 2001 on the protection of nature)*. Consolidated text Journal of Laws of 2013, item. 1232, pp. 14. (in Polish).
15. *Ustawa z dnia 16 kwietnia 2004 r. o ochronie przyrody (Act of 16 April 2004 on the protection of nature)*. Consolidated text Journal of Laws of 2013, item. 627, pp. 10. (in Polish).
16. Geoserwis Generalnego Dyrektora Ochrony Środowiska (Geoserwis portal of the Director-General for Environmental Protection). Available at: <http://geoserwis.gdos.gov.pl/mapy/>, 20 January 2015 (in Polish).
17. Główny Urząd Statystyczny. Portal Informacyjny. (Central Statistical Office of Poland. Information Portal). Available at: <http://stat.gov.pl/>, 19 January 2015 (in Polish).