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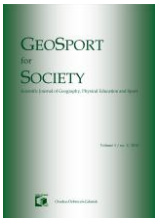

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Winter sports - tourism activities in the Bâlea glacial area, Făgăraş massif (Southern Carpathians-Romanian Carpathians)

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Abstract. Winter recreational activities (alpine skiing and touring ridges) are known in the Făgăraş massif since the end of the 18th century, and early of the 19th century. Due to terrain parameters (high elevations, favourable slopes) and climate (snowfalls and persistence of snow depth) Bâlea glacial area is famous for winter sports and tourism activities and for tourism infrastructure (cable car, several chalets and hotels and 2 points of Mountain Rescuer Public Services). Today, in contrast, off-piste skiing (freestyling and freeriding) is a younger and very popular sport activity. Therefore, skiing is only for experts and advances skiers. In recent years in the Bâlea glacial cirque, several forms of niche tourism were introduced: Church Ice and Ice Hotel and Inferno extreme skiing for skiers and snowboard competition. In the future heliskiing will develop, and for those who do not practice ski activities, snowmobile, paragladiders, photography.

Keywords: winter sports - tourism activities, off-piste skiing, niche tourism, Bâlea glacial area, Făgăraş massif, Romanian Carpathians

Introduction

Tourism, through its forms is an important economic activity in mountain areas and was discussed in several research papers (Booth & Cullen 2001; Heberlein et al., 2002, UNEP, 2002, 2007). Ski activities have been described as a distinctive form of winter tourism, an economic activity of mountain areas (Agrawala, 2007;

Hudson, 2002, 2004) or as the most spectacular form of mountain tourism (Booth & Cullen, 2001; Heberlein et al., 2002; Jeanneret, 2001; Godde et al., 2000; Yang et al., 2009) or have been mentioned as other forms of mountain tourism (Jeanneret, 2001; Nepal, 2002; Valaoras, 2002; Yang et al., 2009; Wyder, 2001).

Romanian Carpathians and the Southern Carpathians, especially have a great potential for tourism activities and winter sports. Recently, scientific research highlighted tourist activities in mountain areas (Popescu et al., 2009a; Popescu, 2010b), the impact of natural hazards on them (Gratton et al., 2015), terrain factors and climatic variables and their impact on ski activities (Popescu, 2009, Popescu et al., 2009b), patterns of winter tourism activities (Voiculescu et al., 2012) or ski activities and their patterns in the Southern Carpathians (Popescu, 2010a; Voiculescu et al., 2011a,b) or the management of snow avalanches in the ski areas (Voiculescu & Popescu, 2011). There have also been studies concerning other mountain areas of the Romanian Carpathians, regarding winter tourism in the Apuseni Mountains (Gaceu et al., 2015) or on patterns of the ski areas from the Romanian Carpathians (Lesenciuc et al., 2013). In his monograph book on the climate and climatic hazards Bogdan (2008) refers to their impact on ski activities.

The purpose of this study was: (i) to supplement our previous research in the Bâlea glacial area on winter sport tourism activities, and (ii) to highlight the current state of tourism and types of sport activities during winter season.

Geographical setting

The Făgăraş massif is situated in the central part of Romania, at the intersection of the parallel of 45°30' N and the 24°30' E meridian, in the eastern part of the Southern Carpathians and occupies a surface of approximately 1500 km² (fig. 1):

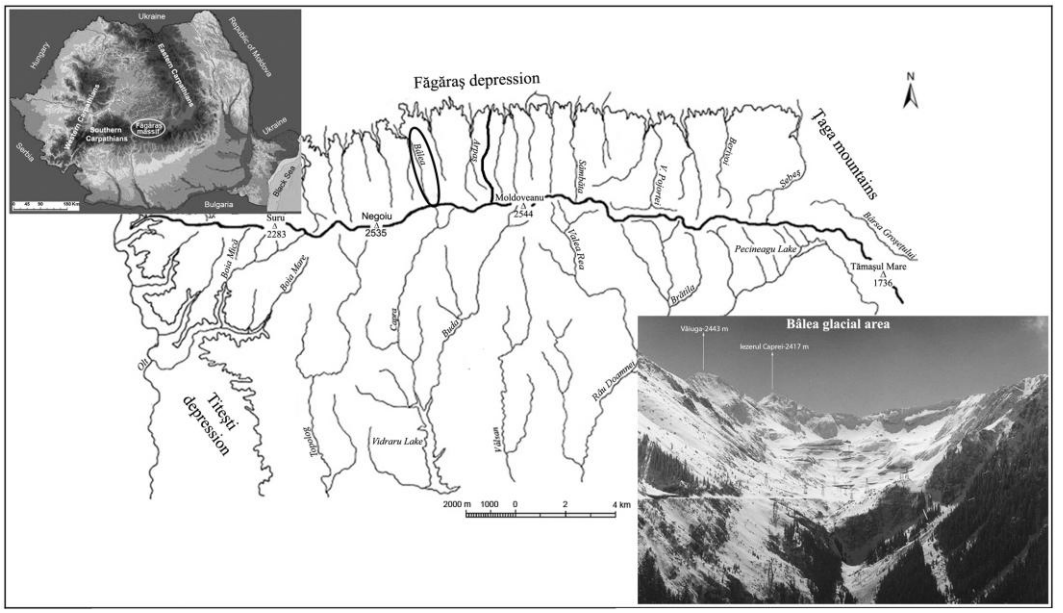

Figure 1. The location of the Făgăraş massif and of the Bâlea glacial area

The massif has the aspect of an enormous glacial ridge long of approximately 70 km, orientated East-West, rendering in appearance two high macro-slopes, one facing north (short and steep) and one facing south (much longer and less steep). The Făgăraş massif is the highest range in the Southern Carpathians and also the highest of the Romanian Carpathians (Moldoveanu - 2544 m a.s.l. and Negoiu - 2535 m a.s.l.). On the other hand, the Făgăraş massif is distinguished by its inherited glacial relief and by the present periglacial processes of a high spatial dynamic (Voiculescu, 2002).

Bâlea glacial area is located in the central glacial sector of the Făgăraş massif, on its northern slope, has a north-south longitudinal direction (see Fig. 1), is characterized by steep slopes and sharp peaks and is flanked by peaks of over 2400-2500 m (Vânătoarea lui Buteanu - 2507 m a.s.l., Capra - 2494 m a.s.l. and Iezerul Caprei - 2417 m a.s.l.). Bâlea glacial area is characterised by metamorphic rocks such as micaschists, gneiss, amphibolites and sometimes, crystalline limestone and amphibolites scattered along the valley (Voiculescu, 2002). From a geomorphological point of view, Bâlea glacial area still has vestiges of the last glaciation, such as well-developed glacial cirque, a glacial lake, glacial valley and two topographical thresholds (verrous) (Germain & Voiculescu, 2007; Voiculescu et al., 2011). The U-shaped valley is dominated by present-day geomorphological processes such as snow avalanche that fragment the steep slopes, rockfall, solifluctions and erosion (Voiculescu et al., 2011).

The mean annual air temperature (MAAT) on the highest ridges is -2.5^{o}C, 0.2^{o}C in the lower part of alpine zone and 3^{o}C at timberline. The coldest month of the year is February (-8.4^{o}C, -6.3^{o}C and 3.6^{o}C, respectively). The warmest month of the year is August (8.8^{o}C, 12.3^{o}C and 15.3^{o}C, respectively). The mean annual precipitation (MAP) exceeds 1200 mm in the alpine zone, reaches 880 mm at timberline and is about 770 mm in the forestry zone. The highest amount of precipitation falls during summer, e.g. June (206.4 mm in the alpine zone, 129.3 mm at timberline and 112.7 mm within the forestry zone). Snow depth is high. At the highest elevations of the alpine zone, snow depth constantly grows from October until April or even May. In the glacier cirques or on the sheltered northern slopes the snow cover is persistent, sometimes until the next year.

The alpine slopes are covered by herbaceous vegetation and by some shrub species (*Rhododendron kotschy, Vaccinium myrtillus, Pinus mugo* or *Juniperus nana*). Between 1450-1500 and timberline (1700 m a.s.l.), prevailing coniferous, such as Norway spruce *(Picea abies)* forests covers the slopes, while at lower altitudes, beech trees *(Fagus sylvatica)* and other deciduous species become predominant (Voiculescu, 2002). On the other hand, the Făgăraş massif is endowed with genuine natural potential, which acts as a great setting for numerous tourist activities: glacial relief, 22 Carpathian endemic species of which the most important are: *Pinus mugo, Rhododendron kotschy, Festuca glacialis, Leontopodium alpinum, Trollium europeum, Silene dinarica,* alpine fauna *(Rupicapra rupicapra, Marmota marmota)* (Voiculescu, 2002).

In order to protect the extraordinary picturesque landscape as early as 1932 the Bâlea Reservation was founded. It is a complex reservation which is bound to protect the relief, the lake, the flora and fauna, and which is classified today

according to the International Union for Conservation of Nature (IUCN). The reservation comprises the northern Bâlea area, but continues onto its southern counterpart - the Capra Valley, with a total surface of 180 ha (Voiculescu, 2002). This protected area increases the tourist attraction potential of the area.

Within this large massif, the highest tourist frequency is to be found in the Bâlea glacial area due to the Transfăgărăşan highway access. The summer season is the one favoured by tourists, since during winter this highway is closed and most importantly there is no winter-sport infrastructure other that the almost 50 year-old cable car (Popescu, 2009).

Tourist and sport activities have developed here especially after 1990 by practicing winter sports: alpine off-piste skiing and its newer forms - freestyling and freeriding, in the classic areas, under the Capra saddle, under the Doamnei saddle and on the Bâlea glacial valley (fig. 2):

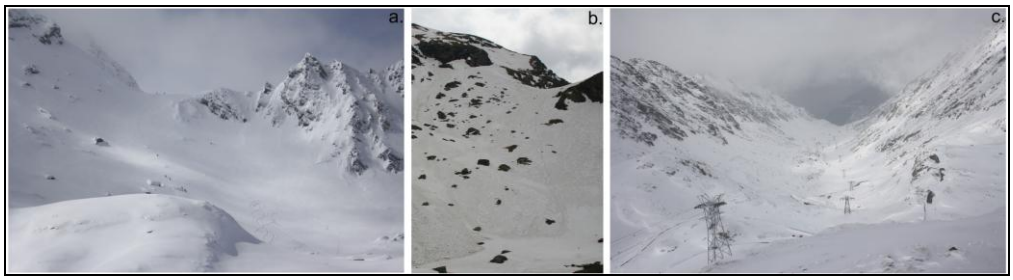

Figure 2. The main off-piste skis: under Capra saddle (a.) under Doamnei saddle (b.) and on Bâlea glacial valley (c.)
(by Popescu and Voiculescu)

The first documented ascents, with recreational purpose in Romania are in fact done in the Făgăraş massif around the year 1700 by a *magnates society* for a hunting party in the area of Bâlea and Doamnei glacial valleys, but also in 1750 by Jacob Zultner & Fichtel in 1782 only for the love of nature (Baticu & Ţiţeica 1984, FRAE, 2007). The number of ascents rises progressively after the middle of the 19th century with individuals that came from the Austro-Hungarian Empire, where the fashion of ascents was promoted by naturalists, other scientists but also by the bourgeoisie and event people of the Court for various reasons from science ones to recreation, art and even health. An important role in the promotion of such reasons to the Romanian public had the alpine clubs, of which we note the *Siebenburgischer Karpatenverein* (SKV) founded in 1880 and still works to this day (with an unfortunate hiatus during the communist period). They had an important role in introducing and promoting winter-sports as well. The first documented descents were the ones in the area that is called today Poiana Braşov and what were in 1892 the heights of Kronstadt. The next year, Bergen demonstrates gliding techniques in Laiţa valley (Erhard, 1990). Just as in the case of hiking and mountaineering, an important role in spreading the word about the new winter sports had the ski clubs - the first one, *Kronstäder SkiVerein* opened in 1907 in Braşov and in 1911 the next one in Sibiu - *Hermannstädter Skiklub* (HSK), where Nordic skiing was taught rather than alpine skiing, which was much more appreciated in Braşov (Baticu & Ţiţeica 1984).

Materials and methods

The position of the chalets, the cable car and the lakes was determined using both the topographic maps (1: 25000) and also with the help of aerial photographs with a resolution of 0.5 m, courtesy of ANCPI. Local data was collected with a GPS (the location of the cable car and the chalets) to corroborate with the other data used. In order to show the altitudinal position of the above mentioned features, we used a 30 meters resolution DEM of derived through stereorestitution from the images of SPOT 5 satellite. The same DEM was used also for the derivation of terrain parameters such as hypsometry and slope.

In order to analyse the climate of the Bâlea glacial area we use the database from the three weather stations: Bâlea Lac (2070 m a.s.l., 45°36′ N; 24°37′ E, observation period 1979-2014), Cozia (1577 m a.s.l., 45°18′ N; 24°20′ E, observation period 1980-1994) and Cumpăna (830 m a.s.l., 45°26′ N; 24°37′ E, observation period 1983-1996). This data was processed in order to derive the climatic models (number of days with snow cover and snow depth of the Bâlea glacial area).

Other data sources used were statistical data from the The Romanian National Institute for Statistics – INSSE referring to the number of accommodation places and the tourist flow. For the whole area of the Făgăraş massif, the data belonging to 29 localities from 4 counties (Argeş, Braşov, Sibiu, Vâlcea) was processed (the area being divided administratively among these). Bâlea Cascadă area is in the administrative territory of the locality of Cârţisoara, so that the data used to express tourist indices, belongs to this locality.

To classify the skier categories, we used the Borgersen (1977, quoted by Penniman, 1999) and Gaylor & Rombold (1964) classifications in: beginners or novice, intermediates, advanced or expert or according to Tremper classification (2001) in moderate skiers, good skier and very good skier.

We also took suggestive photos that highlight elements of tourism infrastructure.

Results

Winter sport activity. Ski activity

Terrain parameters

Terrain parameters are very important for ski activities and are represented by elevation, declivity and aspect. The hypsometric map highlights the high elevation of Bâlea glacial area, with values over 2400-2500 m (fig. 3a), the maximum elevation is 2507 m a.s.l., the minimum over 660 m a.s.l., and the mean value is 1559.9 m.

The Capra off-piste ski has the departure altitude at 2314 m a.s.l. and the arrival point close to the Bâlea Lac (2040 m a.s.l.) and even over it, when the lake is frozen. The Doamnei off-piste ski has the departure altitude at 2150 m a.s.l. and the arrival point close to the Bâlea Lac (2040 m a.s.l.). The Bâlea valley off-piste ski has the variable departure point at 2040 m a.s.l. close to the Paltinu chalet and the arrival point at 1248 m a.s.l. close to the Bâlea Cascadă Hotel. Table 1 shows the patterns of ski pistes from Bâlea glacial area.

Table 1. Morphometrical patterns of the ski pistes from the Bâlea glacial area

No.	Ski piste name	Departure (m)	Arrival (m)	Vertical drop (m)	Length (m)	Average slope (º)	Difficulty level
1.	Capra saddle	2314	2040	274	480	30	difficult level
2.	Doamnei saddle	2150	2040	110	630	27	difficult level
3.	Bâlea glacial valley	2040	1248	792	3700	27	very difficult level in the upper and lower parts

Figure 3b shows the high declivity of Bâlea glacial area, suited for expert or advanced off-piste skiers. Therefore, slopes with declivity between 0º-5º represent 2.7% of the area, slopes between 5º-15º represent 6.1% of the area, slopes between 15º-25º represent 13.9% of the area, slopes between 25º-35º represent 30.5% of the area and slopes over 35º represent 46.8% of the total area. The average slope of the main ski pistes show high values (see table 1).

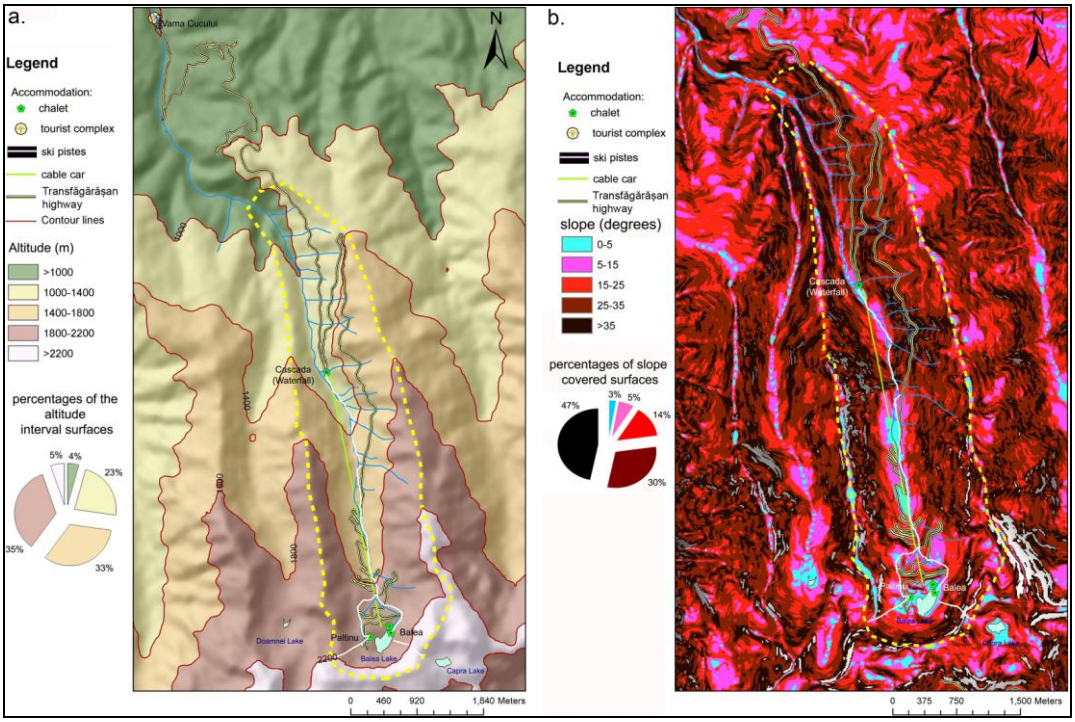

Figure 3. Hypsometry (a.) and declivity maps (b.) of the Bâlea glacial area in combination with the main tourist features (Transfăgărășan highway, accommodation, cable car, ski pistes)

Climate variables

At the alpine level of the Bâlea glacial area, 90-100 days with snowfall and 8-9 months/year with snow cover (from October to May or even July) are recorded. Therefore, a good correlation (R^2=0.831) is given between the elevation and the

number of days with snowfall (fig. 4a). A good correlation (R^2=0.896) was also found between the snow cover and the number of days with snowfall (fig. 3c) and very good correlation (R^2=0.992) between the snow depth and the elevation (fig. 4b):

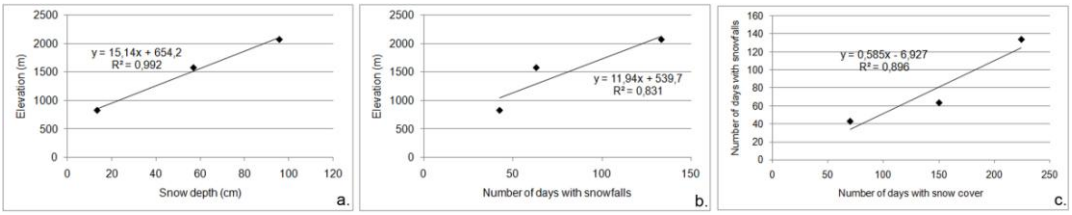

Figure 4. Correlation between elevation and snow depth (a.), elevation and between number of days with snowfall (b.) and between number of days with snowfall and number of days with snow cover (c.) (Gratton et al., 2015)

The highest values of days with snow cover and of snow depth were found between the highest alpine ridges and timberline (fig. 5a,b). A reasonable snow depth and snow cover for about 3 months are favourable for ski activities.

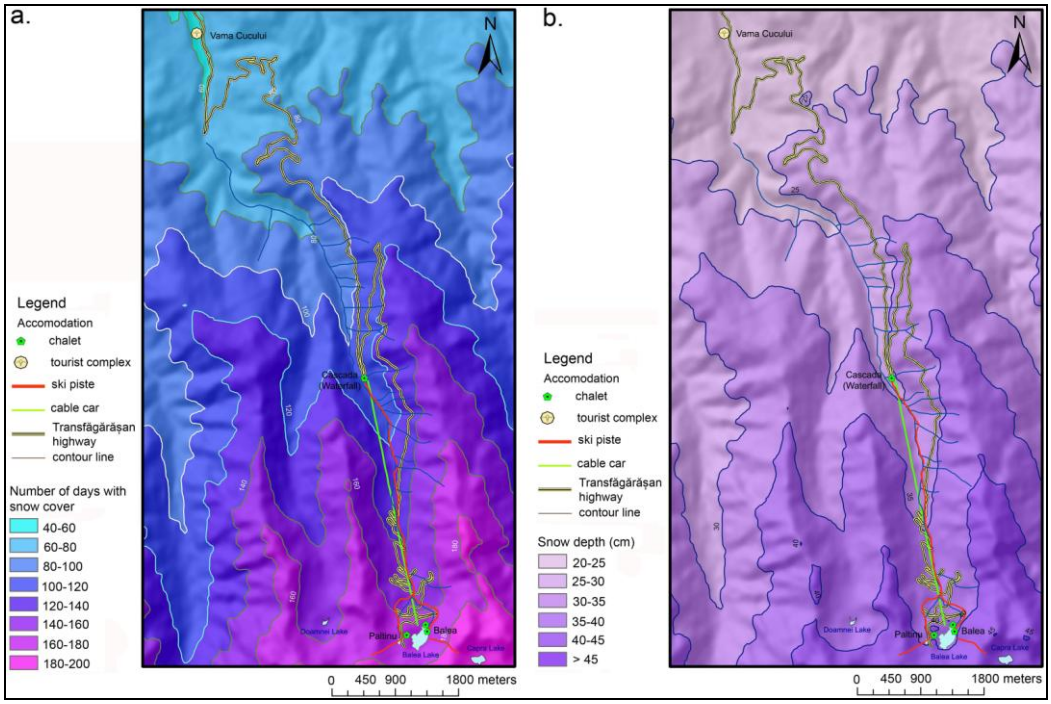

Figure 5. Climatic models of the number of days with snow cover (a.) and yearly average snow depth (b.)

Tourism activity

Bearing in mind the social-economic development within the Romanian Carpathians, tourism certainly represents an important driver of progress, as it is in other mountain areas, where it became a genuine industry, yet having a certain

impact upon the environment (UNEP, 2002, 2007; Yang et al., 2009). Unfortunately, due to the poor infrastructure (low accommodation capacity and almost no cable transportation) the potential we mentioned is under-capitalized. Since the 19th century, when the first accommodation structures were built, tourism has developed very differently within the Făgăraş massif, according to the local interest, but also in accordance with the social-economic changes that occurred after 1990 (table 2):

Table 2. Evolution of Bâlea glacial area tourist management (Gratton et al., 2015 with additions)

Period	Tourist management of Bâlea glacial area
1880-1914	Siebenbürgischer Karpatenverein (SKV): construction of the first chalet, Podragu, and creation of the first hiking trails in the valley. Construction of a small stone shelter for the shepherds (1907) and reconstruction of the shelter in wood (1912).
1930-1940	National club of Romanian Tourism: restoration of old lodging infrastructures and construction of new chalets and alpine shelters.
1950-1970	National Organization of Tourism: modernization of lodging infrastructures.
1970-1985	Ceauşescu's regime: construction of the Transfăgărăşan highway (1970-1974), Ceauşescu's hunting chalet (now called Cabana Paltinu Hotel) (1970) and of the cable car (1973). Sibiu department: Bâlea glacial area *ski resort* project, which was not functional (1972).
1990-2000	Transport, Construction and Tourism Ministry (1999): Implementation of seven laws aiming at managing the cost of tourist infrastructures according to their quality. Private owner: construction of Bâlea Lac Hotel (hotel/restaurant) (2000).
2006-2010	Private owner: launch of the event of the Ice hotel and Church in the glacial cirque (2006). Construction of Bâlea Lac Hotel (second hotel) (2007). Regional Development and Tourism Ministry: creation of this new Ministry (2008). Creation of *Inferno* ski and snowboard competition (2010). Launch of *Explore the Carpathian Garden* (2010).
at the moment	non equipped ski pistes, only for advanced and expert skiers

Overall, in the Făgăraş massif, the accommodation facilities are represented by 16 chalets (12 on the northern slope and 4 on the southern slope), 2 tourist complex (only one on the northern slope and one on the southern slope) and 6 alpine refuges (only one on the northern slope and 5 on the southern slope) each with its own characteristic features (table 3 and fig. 6):

Table 3. Situation of the accommodation in the Făgăraş massif: in chalets, in alpine refuges and in tourist complex

No	**Chalet/hotel**	**Alt (m a.s.l.)**	**Slope**	**Capacity**
1	Suru	1450	N	81 – destroyed
2	Bărcaciu	1550	N	52
3	Poiana Neamţului	706	N	30
4	Negoiu	1546	N	243 (summer) 140 (winter)
5	Bâlea Lac Hotel	2027	N	100
6	Paltinu	2044	N	36
7	Bâlea Cascadă Hotel	1234	N	67
8	Podragu	2136	N	60

9	Turnuri	1550	N	30
10	Arpaş	600	N	60 - abandoned
11	Sâmbăta	1401	N	60
12	Urlea	1533	N	53 - abandoned
13	Cumpăna	840	S	88
14	Piscu Negru	1340	S	34
15	Capra	1585	S	52
16	Cota 2000	2000	S	24
No	**Alpine refuges**	**Alt (m a.s.l.)**	**Slope**	**Capacity**
1	Puha	2146	S	8-10
2	Chica Fedeleşului	1800	N	-
3	Bâlea	2080	N	20
4	Călţun	2175	S	10
5	Moldoveanu	2137	S	6-8
6	Berevoiescu	2190	S	24
7	Zârna	1923	S	8
No	**Tourist complex**	**Alt (m a.s.l.)**	**Slope**	**Capacity**
1	Vama Cucului	700	N	55
2	Sâmbăta	690	N	87

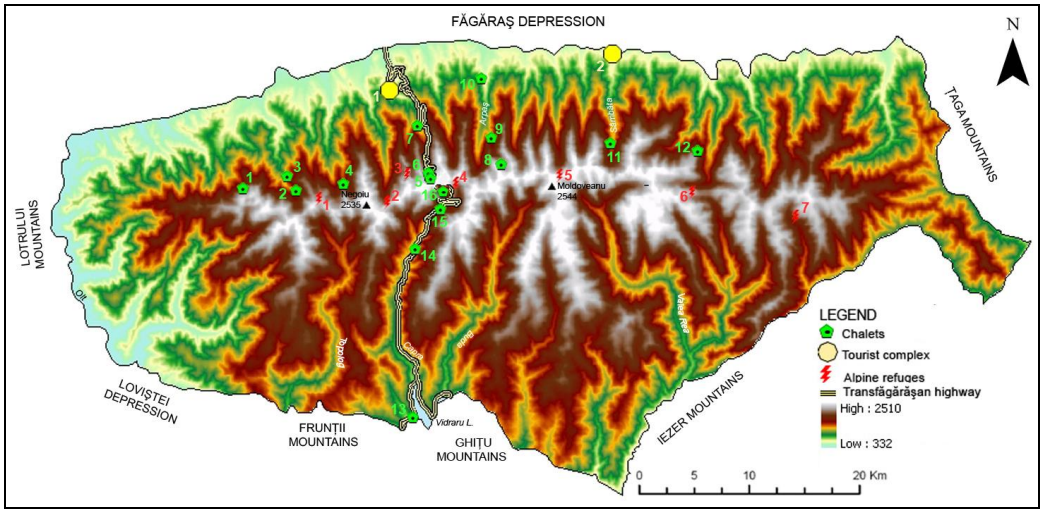

Figure 6. The location of the accommodation facilities in the Făgăraş massif

It need be mentioned that 7 accommodation facilities: (6 chalets and one tourist complex), representing 43.7% out of all the facilities in the Făgăraş massif are located along the Transfăgărăşan highway, a reality that has created the proper environment for tourism development and especially of the activities of activities mentioned above. Within the Bâlea area, there is only one tourist complex at the foothills (Vama Cucului), and three chalets, integrated in the tourist circuit as hotels lately, which are higher up – one of them located at 1234 m altitude, near a beautiful waterfall cast over a glacial step - the Bâlea Cascadă Hotel and two others located in the Bâlea glacial cirque: Paltinu (Ceauşescu's former hunting lodge) and Bâlea Lac.

After 1990 the accommodation capacity registered a significant drop, especially between 1990 and the year 2000: from 2785 lodging places to 2209 places and to 2169 places in 2008, observing certain stabilization in the last years, even though the total capacity lost appreciatively 800 places. This phenomenon is the result of the precarious economic context, the privatization of the chalets and the lack of financial means of the private owners to refurbish and/or to upgrade them, but also to the lack of interest of the local authorities. The accommodation capacity in the Bâlea valley including the bed and breakfasts found at the foothills the village of Cărţişoara dropped from 149 places in the year of 1990 to 145 in the year 2000 and the rose to 394 in 2010, while in 2015 342 places were available. As for the tourist flow in the Făgăraş Mountains, from the year 2000, when there we noted 47742 tourists in 2008 the flow rose to 69405, therefore the rate of increase in 8 years is of 68%. The majority of tourists remain, naturally, accommodated in chalets, in the year 2000 being registered 23859 tourists and in 2008, 23963 tourists in this forms of accommodation.

The tourist flow in the Bâlea glacial area has shown a continuous increase from the year 2001 when 2979 tourists were registered to 4044 in 2010 and 16620 in 2014. Therefore, the increase of visits from 2001 to 2014 was of 458%. Comparing the available data from INSSE (from 2010 onwards, considering the same months January, February, March and April) we can observe same major change: 626 tourists in 2010 and 1934 in 2015. This is a 208% rise. This shows the increasing interest of tourists for the afore mentioned area. On the other hand the high percentile rise is not hard to attain once the value we started from is rather low. Nonetheless the reason for this increased interest in the area is the rise of new forms of mountain tourism, especially niche tourism and the revival of old ones that are nature based.

The infrastructure for the Bâlea area is insured by the Transfăgărăşan highway, built during the communist years of 1971-1974, with a length of 90 km, crossing-over to the Capra Valley on the southern side of the massif, reaching its maximum altitude of 2070 m at the tunnel that connects the two valleys and by a cable car that transports people from the Bâlea Cascadă Hotel up to the Bâlea glacial cirque. The movement satisfaction index (MSI) is an index which shows the correlation between the number of places in the accommodation facilities and the hourly capacity of cable transportation (Ţigu, 2001).

$$MSI = Qt / Np,$$

where

MSI = movement satisfaction index, Qt – hourly capacity of cable transportation, Np – number of places in the accommodation facilities

Worldwide the values are situated between 1.25-1.75 (Ţigu, 2001). Within the Bâlea valley, this value is of 0.96 if we consider only the accommodation facilities mentioned above and shown in fig. 5 (at Bâlea Lac and Bâlea Cascadă Hotel). Even so the index has a value well under the average value. The reason is the even though

the accommodation places are not many, there is only one, very old cable car, build in the 1970s, with a low passenger hourly capacity.

Discussion

Ski activities

Winter activities are represented by alpine skiing, off-piste skiing, especially and snowboarding mainly, to which skating on the frozen Bâlea Lac can be added. In the Bâlea glacial area there are no delineated, groomed or classified ski pistes. Also, with one exception (found Bâlea glacial valley) there are no visual warning systems, such as display panels which read, for example, ''No Stopping'' or ''Avalanche Area'' (Voiculescu, 2009). Moreover, due to the characteristic glacial relief, the declivity of the slopes is rather high, that would be properly attributed to expert skiers, as shown in table 1.

In the temperate continental climate, ski activities should take place at altitudes above 1000 m a.s.l., which provide conditions with snow for at least 3 months/year (Besancenot, 1990). Both ski pistes from Bâlea glacial cirque (Capra and Doamnei) have high absolute altitude, over 2000 m a.s.l. but with short vertical drop. In terms of vertical drop, the Bâlea valley ski piste is very well integrated into Petterson's principle (2005). In order to have a real ski area the vertical drop must be of at least 400 m (according to Petterson, 2005). If this were a regular ski area, with groomed pistes this would be the largest in Romania, from the vertical drop point of view. Also here would be found the longest ski slope in Romania (the Bâlea valley ski piste is approximately 3700 m long). We need to draw the attention to the fact that the described ski pistes are more or less guides lines, for as mentioned above, since there are no groomed ore delineated ski-slopes every skier/snowboarder chooses his/her own trail. In any case, any trail they use, the difficulty degree is rater high due to the high slopes which are a result of the glacial relief.

Slope declivity is another terrain factor of ski activity, which separates the skier categories in the following categories: skiers and beginners. The first category was defined: "as users of skis, snowboards or other gravity-propelled recreational devices whose design and function allow users a significant degree of control over speed and direction on snow" (Penniman, 1999, 36) and as for beginning skiers or beginners as: "those individuals who are using one or another of these devices for the first time or who possess marginal abilities to turn or stop on slopes with incline greater than 20%" (Penniman, 1999, 36). The ski pistes between 25^{o}-30^{o} are considered to be destined only to moderate skiers, who are able to descent off-piste in any condition (Tremper, 2001). Any ski piste with slopes steeper than 30^{o}-35^{o} is considered to be destined only for good skiers and over 45^{o} to very good skiers (Tremper, 2001). All three ski pistes in the Bâlea glacial area have an average slope over 25^{o}, but there are sections of these pistes that reach even 48^{o}-50^{o}.

Moreover another difficulty parameter is given by the fact that the snow in not groomed so that the snow-depth can be in some areas even of several meters. High declivity, large snow depth and differently layered snow-packs reclaim a high avalanche risk level and also a high injury risk level. All these ask that the

skiers/snowboarders that ride in the Bâlea glacial valley be expert skiers/snowboarders.

Apart from slope, in order to be able to practice winter sports, the most important parameter is snow, through its two most important components: number of days with snow cover and snow depth (see fig. 5). In order to have a reliable winter season for skiing/snowboarding it is important that in 7 out of 10 winters there are at least 100 days with snow cover (Burki et al., 2005). Another opinion is that there must be at least 120 days with snow cover so that the winter-season is economically efficient (Ţigu, 2001). In the Bâlea glacial valley, the 100 days limit is situated just below 1200 m a.s.l. and the 120 days mark is situated around 1400 m a.s.l., which show that the season for practicing winter sports is on average a good one, without the need of artificial snow.

Not only the snow cover is important, but also its depth. On groomed ski pistes, today's technologies have reduced the minimum snow depth to 20 cm. But on unprepared terrain used for freeride, the minimum rises to 40 cm or even 70 cm (Gumuchian, 1983, quoted by Besancenot, 1990) depending on the terrain's roughness. As we can see in fig. 5, this minimum is reached even at the lowest altitudes, as a yearly average, but the largest snow depths are reached only around the highest altitudes. The important matter here is to note that these values are yearly averages, during the season the snow depth reaching even several meters in the area of Bâlea Lac in some instances (according to National Meteorological Agency archives). These being said – the danger is not of having to little snow, but having too much snow and being rather difficult to ski in for the amateur skiers/snowboarders

Tourism activities

The first forms of tourism practiced were ridge touring and climbing with the primary motivation of recreation (motion, fresh air), landscape experience (Muhar et al., 2007) and alpine skiing. Thereafter, especially in the last 10-15 years new forms of tourism have emerged. In this respect and according to Beedie & Hudson (2003), Buckley (2006) and Pomfret (2006) we need to mention a series of adventure mountain tourism as niche tourism. Niche tourism refers to forms of tourism destined to be practiced by a reduced number of individuals due to its unusual nature when attributed to the general public (either to dangerous, or too expensive or too difficult for non-athletes) (Popescu et al., 2009b). These forms are recently rather well represented in the Făgăraş massif. Summer activities refer to cycling the Transfăgărașan highway, climbing and walking, as traditional forms of mountaineering (Hudson, 2004), hiking, hunting, or air based activities as paragliding. During winter these refer to skiing, snowboarding and riding snow-mobiles. Skiing and snowboarding are considered here niche tourism due to the fact there are no groomed ski pistes so that the attribute *of extreme* is added to the two activities. Furthermore, due to the fact that there is almost no ski infrastructure (cable cars, skilifts etc), heliski has found a well-represented terrain in the Făgăraş massif, where helicopters are used to drop-off skiers or snowboarders on different heights so that the only effort the enterprise is riding down the powder-covered slopes.

Due to the need to increase tourist attraction after 1990, there were adopted new forms of tourism that were not characteristic to the Romanian Carpathians until then: organizing ski and snowboard competitions and a particular type of religious tourism, both activities taking place in the winter season. The first activities are for certain part of the sport-tourism defined as: "all forms of active and passive involvement in sport activity, participated in casually or in an organized way for noncommercial or business/commercial reasons, that necessitate travel away from home and work locality" (Standeven & DeKnop, 1999, quoted by Daniels et al., 2004, 180-181).

A particular extreme ski and snowboard competition has increased the reputation of the Bâlea glacial area - *Inferno*, which reached its 4th edition in 2010 and has been imported from Austria (Popescu, 2010b) (fig. 7):

Figure 7. *Inferno* extreme ski and snowboard competition (4th edition in 2010) (by Popescu, 2010)

Unfortunately due to lack of implication of the local authorities that was also the last year it was organized in Romania. Nonetheless its importance cannot be undermined since it was the main promoter of extreme skiing and snowboarding in Romania. It is considered to have less impact on the sensitive high mountain environment due to the fact that it needs no groomed are planned ski slopes – it just uses the slopes as they are and the powder snow.

The competition usually had the starting point in one of the saddles found in the upper part of the Bâlea glacial cirque. In the year 2010, Administraţia Naţională de Meteorologie (ANM) (2009-2010) using the European five-level avalanche danger scale, issued of considerable snow avalanche danger level. Therefore, due to snow avalanche risk and due to safety measures, the starting point was set just under the first glacial-step, where the end-point of the cable car is located; the finish line is always at the Bâlea Cascadă Hotel at 1234 m a.s.l. (Popescu, 2010b). This ski piste is in fact the Bâlea glacial valley ski piste described above.

On the other hand another type of tourism rose from the initiative of a private endeavour. In the Bâlea glacial cirque, there have been built an *Ice Hotel* and an *Ice Church* (fig. 8):

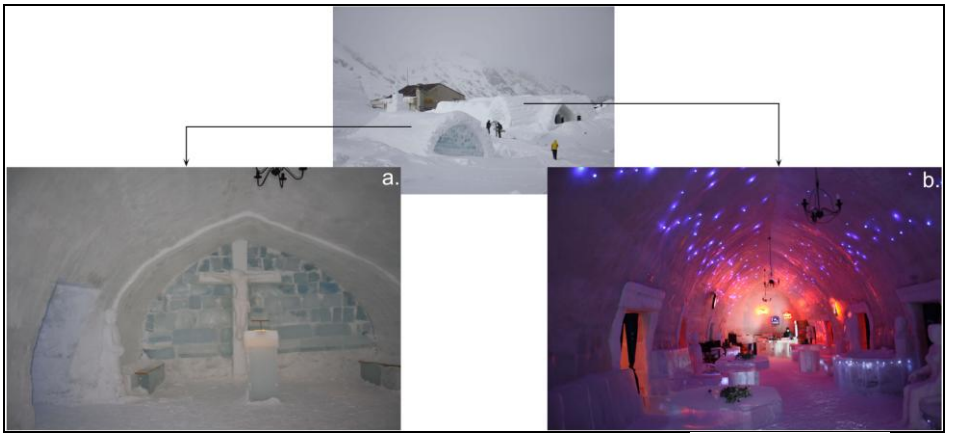

Figure 8. The Ice Churh (a.) and The Ice Hotel 2010 (b.) (by Popescu, 2010)

The Ice Hotel has become a traditional project. The marketing theme of the 2010 Ice Hotel is *Ice Hotel Cold Think*. The hotel is the sole project of this kind in the Carpathian Mountains offering privacy and comfort to its tourist at affordable prices (www.euro-turism.ro) and nonetheless a unique experience. It is built every year at an altitude over 2000 m in the month of December depending on the weather and on the quantity of snow and ice. The purpose of the hotel is to promote tourism within the massif and beginning with this year to create a brand for the area. The hotel is built in the shape of a cross and covers around 650 sq m. The 2010 hotel has 12 double rooms, an Ice Bar, an Ice Restaurant and an exhibition of various ice statues. The hotel is open to Romanian and to foreign tourists alike. Close to the hotel, the *Ice Church* is built just as the hotel every year. It was built for the very first time three years ago on a surface of 70 sq m. It is the only such establishment in southeastern Europe and has the purpose of promoting tourism in the area. It is inaugurated each year in the month of January and accepts Christians of all confessions. On this year's inauguration participated the high priests of the Catholic, Greek-catholic and Protestant Churches. The church is adorned with furniture, icons and statues made of snow and ice and is illuminated by a chandelier. In the church services for wedding and christenings are officiated (www.euro-turism.ro). According to Arnold Klingeis, the manager of the *Bâlea Ice Hotel* the two buildings have attracted tens of thousands of visitors and over 2000, from which 600 were Romanians who have beneficiated from the services of this brand until last year's count (www.agenda.ro, www.sibiul.ro). In this context we mention that this kind of tourism represents the result of a learning experience (Cohen, 2006), but also of local development as it is noted for other mountain areas in the world (Yang et al., 2009).

Conclusions

The natural potential of the Făgăraş massif in general, but of the Bâlea valley in particular favours the development of tourist activities, most of them belonging to niche tourism – extreme sports and extreme accommodation facilities (as the Ice Hotel). The natural parameters important for the development of winter sports are

met – the ones regarding slope and snow. But it is important to stress that in today's conditions, when no ski pistes are delineated or groomed only expert skiers/snowboarders should be the ones practicing such sports in the Bâlea cirque and valley in order to limit the number of injuries. Moreover good knowledge of snow dynamic is important due to the fact that conditions of snow avalanches are rather frequent, because of heavy snowfall and high declivity (but also due to important triggering factors: wind, sun, quick temperatures rises a.s.o.). Also the management of the snow avalanche risk is based primarily on announcements of the risk level rather than on other forms active or passive (only a few snowpack fences and a deflecting wall survive from the era of the Transfăgărășan highway construction) (Voiculescu & Popescu, 2011).

The tourist activities are capable of boosting the economy of the Făgăraş massif, as we could see in the rise of number of visitors on the course of a 15 year time span. Even though most of the new forms of niche tourism (extreme skiing, heliskiing and snowboarding) and other alternative attractions like the Ice Hotel and the Ice Church are winter-based activities or attractions, due to marketing plans and promotion campaigns, the area was brought to the attention of a larger potential tourist market. So that not only during winter and not only extreme skiers and snowboarders begun to frequent the area more and more, but also other tourist types: nature lovers, snow mobil, paragladiders, photography enthusiasts, seekers of unique attractions (the Ice hotel and Church are unique, for each year are built differently). These unique features of the Bâlea area have drawn it on the international tourist map of Romania.

Nonetheless we need to mention the implication of the local and even foreign investors in the Bâlea area. Even though these are modest endeavours they seem to have reached its goal in generating the snowball effect and have gathered the laurels of other major marketing campaigns (like *Discover the Carpathian Garden*). Although years ago the plans of a ski resort (Berbecaru & Botez, 1977) that would rival the resorts of the Alps were drawn, nothing was accomplished in this respect up to the present moment.

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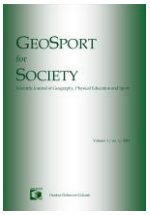

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The tourist map, scientific tool that supports the exploration of protected areas, Bihor County, Romania

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Abstract. The study area is a Nature 2000 protected site from Bihor County, Romania. The present study aims at identifying the opportunities for the implementation of a bio-economic exploitation system, by tourism development, according to its necessities for conservation and protection of cultural and natural elements. The landscape value is assessed, using different available thematic layers, using a combination of GIS and graphics. The resulting visibility of the tourist map of natural and anthropic values can be a very useful tool for tourists, the conservational custodian of the Nature 2000 site, local public administration for tourism development and leisure activities, participative touristic planning etc.

Keywords: Nature 2000, sites, tourism, tourist resources

Introduction

The Valea Roşie (Red Valley) Nature 2000 site is situated on the territory of Bihor County, in north-western Romania (Figure 1). By Government Order no. 1964 / 2007 of the Ministry of Environment and Sustainable Development, with regard to the creation of the protected natural area sites of European Community importance it was declared a Nature 2000 site, an integral part of the European Nature 2000 ecological network in Romania, with ID ROSCI0267. It is a complex specific habitat of beech forests Asperulo-Fagetum type, of which deciduous forests occupy 86%, followed by land occupied by forests in transition (5%), pastures (5%), grape vine (2%) orchards (2%). In this area, with a surface of 819 ha there are 14 species protected of rare plants found on the red list, species of amphibians and reptiles of national importance (Covaciu-Marcov et al., 2009; Ghira et al., 2002) and a well preserved natural forest habitat. In this context, the conservation management actions must be complementary in terms of capitalizing the touristic and recreational aspects of the site.

The preparation of cartographic materials constitutes a first step towards the superior capitalization of an area of European importance in proximity to an urban center, Oradea, which is in continuous expansion. Using such cartographic resources, masses of tourists could be mobilized and coordinated along certain routes so that their recreational needs can be met, and also issues related to conservative-protective aspects of the site can be served. It should be noted that although currently the site is visited frequently, there is not a clear record of the number of visitors. Also there are few sources underlying the basis of the map drawing and graphical materials (tourist maps, maps of the habitats of protected flora and fauna species, tourist brochures, info boards, tourist signs, website etc). All these materials have a decisive role for facilitating the sustainable educational environment (Berbecaru & Botez, 1977; Bădulescu, 1999; Kostova & Atasoy, 2008; Rodrigues & Teresinha, 2015; Nelson & Seraphim, 1997).

The documents drafted constitute an important scientific tool for both the management team and custodians of the Nature 2000 site, the local public administration, for tourism and leisure activities, participative tourist planning in the area protected (Tomczyk & Ewertowski, 2011) etc.

Therefore the goal of the Tourist map of Valea Roşie Nature 2000 site (Bihor county), Romania, lies in the fact that the Nature 2000 network is a system that does not exclude humans, rather it is intended as a network integrator that seeks a better human-nature communion, with certain facets towards the sustainable development and sustainable planning of the territory. Following this tendency, we can affirm that the map is a useful tool which can contribute with its role and functions, to a better conservation of biodiversity, the preservation and conservation of the environment, development of tourist and recreational activities (Martinez-Graña et al., 2011). Among the main functions this cartographic tool can fulfil we mention interconnection, development, protection, knowledge, awareness etc. The main goal was to develop a map that was easy to read and understand by tourists, represented by people with specialized training in this area or close to the domain, but also for people with no specialist training (Castaldini, 2008; Ilieş et al., 2011).

For this purpose, because of the lack of specialty studies regarding the mapping of rare species (which will be elaborated within the management plans), the trails have been proposed following the field observations and the results obtained through a focus group, with the participation of specialists from the domains of geography, biology, sports, medicine, environmental protection, sociology, geology and the custodian. Most part of the trails proposed this way follow the existent forest roads. We also mention the fact that in the moment of establishing exactly the habitats of rare species, the proposed trails will be updated so as they would not get in conflict with the need to protect them.

Study area

The study area is located in the north-east of Romania, in Bihor County, in close proximity to Oradea City (fig. 1). From an orographic point of view Valea Roşie Nature 2000 site is located in the morphological subunit of the Oradea Hills in the Western Hills unit of Romania, north of the Crişul Repede River (fig. 1).

Figure 1. Local and regional location of Valea Roşie Nature 2000 site

From geological point of view, the study area is composed of clays, rocks and sands of Panonian age, with the development of certain slope processes: landslides, flows, ravines, in the Hills of Oradea and from Quaternary formations, actual and sub actual alluviums in the Western Plain, Crisurilor Plain subunit (Pop, 2005, Geological map 1 : 200 000).

Regarding the soils, representative for the Nature 2000 Valea Rosie site are the brown soil and regosoil (The Soil Map of RSR 1: 200 000).

From a morphological perspective, the analyzed area overlaps with the Oradea Hills subunits with an altitude between 150 m and 296 m; the study area is drained in the south, by the Crişul Repede River and among the representative lake units we can mention: Lake Paleu, Lake Săldăbagiu, Lake Fughiu and a string of man-made lakes located along the Crişului Repede River, on its right side, upstream of Oradea.

The area is located in the temperate zone, the annual average temperature is 10.3°C and yearly rainfall average is 612.9 mm yearly rainfall average (Posea, 1997; Pop, 2005; Dragotă, 2006; Aurelia, 2007; Herman, 2012). The altitude characteristics have created a series of conditions favourable for other aspects of climate, hydrographic and bio-edaphic factors with decisive impact on the installation of a distinct ecosystem in which has developed a specific habitat of beech forest Asperulo Fagetum. In this habitat live and cohabit the following protected species of flora and fauna: Triturus cristatus, Bombina variegate, Bombina bombina, Bufo bufo, Rana ridibunda, Aster sedifolius ssp. canus, Cimicifuga europea, Dianthus guttatus, Leontodon croceus ssp. Rilaensis, Potentilla norvegica, Rumex thyrsiflorus ssp. Thryrsiflorus, Vicia sparsiflora, Rana dalmatina, Alopecurus pratensis ssp. laguriformis, Chamaecytisus rochelii, Corydalis solida ssp. slivenensis, Dianthus trifasciculatus ssp. deserti, Orchis morio, Rhinanthus borbasii, Salvia amplexicaulis, Natrix natrix (Covaciu-Marcov et al., 2009; Ghira et al., 2002). The presence of the above listed species in the analyzed area has contributed to the introduction of this area, with a surface of 819 ha, by the Order 1964 / 2007 of the Ministry of Environment and Sustainable Development, regarding the institution of protected natural area regime of the sites with communitarian importance, as integrating part of the ecological European network Nature 2000 in Romania, within the European network of Nature 2000 sites under the name of Valea Rosie, with the identification code ROSCI0267. On this background, special attention has been given to the anthropic component analysis, with emphasis laid on the study of population and human settlements (the localities Oradea, Saldabagiu de Munte, Paleu, Uileacu de Munte, Ineu and Fughiu), regarded through the perspective of their role referring to the impact upon Nature 2000 site Valea Rosie. Since the belonging of an area to the Nature 2000 network does not necessarily imply the conservation of this area, but rather the identification of the optimum human-nature communion, a kind of bio-economic development, of integration of the anthropic component into a given are, we consider fortunate the elaboration of "The tourist map of Nature 2000 site Valea Rosie, (Bihor County), Romania" as a first step in accomplishing this purpose.

Materials and methods

Field survey

In order to create the tourist map of the Valea Rosie Nature 2000 site (Bihor, Romania), between September 2014 and December 2015 a series of activities were carried out in the field by the research team. Their purpose was to confront the information obtained from bibliographical sources, aerophotointerpretation etc.,

with the reality in the field and possibly to complete the analysis initiated by earlier studies and research (Baias et al., 2010; Herman & Tătar, 2015; Ilieş et al., 2011; Ilieş et al., 2013; Ilieş et al., 2015; Ilieş & Wendt, 2015; Pop, 2005; Wendt, 2011). There have been identified six routes for optimal practicing of tourism and other environmentally friendly sport activities, in the Nature 2000 protected site, such as jogging, tourist orientation, hiking, horseback riding, Nordic walking, cycling; the locations of lookout points, place for picnic, observation gazeboes were marked. Further more the locations of the following future intended features were marked: tourist boards, tourist signs, tourist trails, parking and not least the objectives of tourist interest among which: man-made resources such as wooden churches and cellars dug into the substrate (forming part of the cultural heritage) and also touristic structures of public food services and accommodation, locations for practicing pleasure flights, horse-riding, other recreational activities (fishing, golf, etc). Among the working instruments used we mention: topographic maps scales (1: 5,000, 1: 10,000 1: 100,000), orthophotoplans, satellite images, word topographical maps, DEM (Digital Model Elevation), GPS, software (GIS), etc.

Data base creation

The map database was made up of information: text (various texts, records of observations), graphics (shape file sites, icons, symbols, graphics), photos (pictures taken in the field), video material (recordings made in the field) (Rosa, 2011).

Map creation

When making the touristic map of Valea Roşie Nature 2000 site (Bihor County, Romania), the "Topographical map 1:100 000" elements was used as a background on which were overlaid text, photographic and graphic information shapefile type (point, line and polygon) (fig. 2).

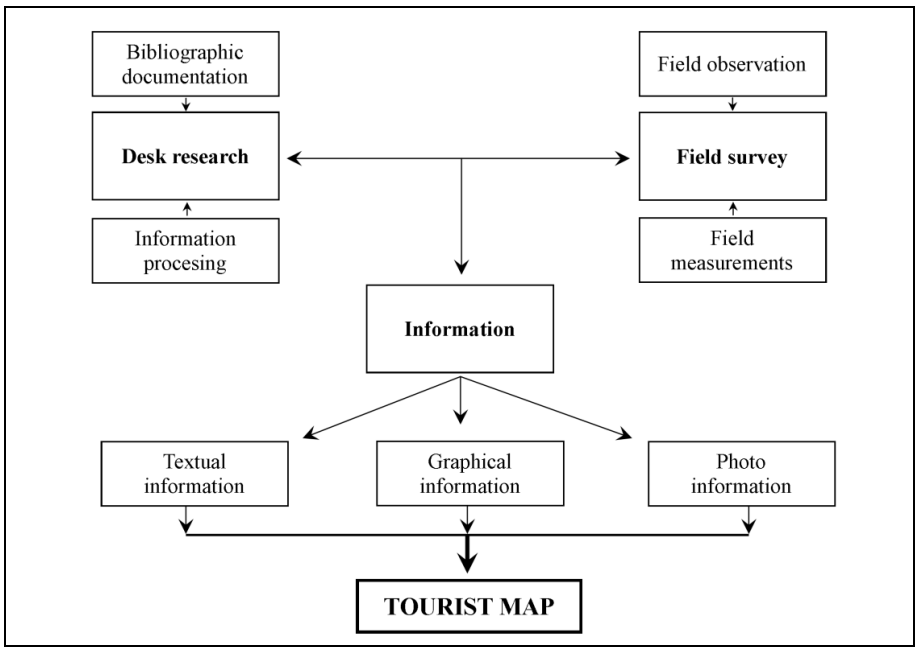

Figure 2. The conceptual scheme of methodology used

They were obtained by the research team during the fieldwork phase using the tools provided, including: anecdotal notes, camera, camcorder, GPS etc. In this way the land was mapped with all the highlights that will create the touristic map structure proposed in the present study. Their processing was done in GIS, by creating and overlapping layers corresponding to each and every structural element (trails, tourist attractions, background elements, etc.).

After a detailed analysis (bibliography, focus group and field survey) of the information thus gathered, it was decided to keep the following structural elements in order to make the map: 6 tourist trails proposed of a total length of 111.5 km (Table 1); 6 graphics related to tourist routes, with the name of the route length, maximum altitude, minimum altitude, degree of difficulty; 5 photos with related information, which illustrate various aspects of the area defining the site, information on the morpho-hydrographic units; the locations of: 4 restaurants; 4 accommodation units; 4 points where you can practice other recreational activities; 2 equestrian centres; 1 monastery; 1 wooden heritage church; 2 areas with cellars dug into the substrate, registered as part of the cultural heritage, 1 place where one can practice pleasure flights, 4 points of interest and the locations where it is proposed to be placed: 8 observation gazebos; 6 places for picnic, 2 lookout points; 1 parking; 4 proposed tourist boards; 7 proposed tourist indicators.

On the map, each structural element is represented in such a manner as to be readily accessible to the general public and provide useful information quantitatively and qualitatively, in as short a time as possible.

Table 1. Proposed tourist trails

No. Crt.	Trail name	Trail colour	Maximum altitude (m)	Minimum altitude (m)	Length (km)	Degree of difficulty
1	Trail no. 1 - Valea Roşie	Red	286,5	127	39,6	Medium
2	Trail no. 2 - Valea Roşie	Violet	286,5	133,8	30,2	Medium
3	Trail no. 3 - Valea Roşie	Brown	273	150,5	14,3	Easy
4	Trail no. 4 - Valea Roşie	Pink	271,5	159,4	10,2	Easy
5	Trail no. 5 - Valea Roşie	Black	271,5	159,4	9,1	Easy
6	Trail no. 6 - Valea Roşie	Light blue	271,2	159,4	7,1	Easy

Results and conclusions

The tourist map of Valea Roşie Nature 2000 site (Bihor County, Romania) is meant to cover the existing gap in terms of scientific and promotional material that can be easily read and understood by tourists, by people with specialized training in this area or close to the domain, but also for people with no specialist training or even for people with secondary education. It is a very useful tool, both scientifically

and from a practical point of view. If the scientific importance emerges from its methodology, which targeted detailed analysis of each structural element and the relationships that these elements develop in relation to each other, the practical importance emerges from the functions that the proposed map may perform for tourists, public administration, custodians, etc.

Figure 3. The tourist map of Valea Roşie Nature 2000 site, Bihor County, Romania

Further on, the studies on optimizing the use of Valea Roşie Nature 2000 site, will be continued by other actions including the creation of touristic boards, tourist signs, tourist trails, leaflets, a website, various applications for smartphones, virtual flight etc.

Software

Collecting the information related to the tourist routes and locations in which to place various elements of the map and also the locations of tourist objectives was done using the GPS. The information thus obtained was then converted to shapefile. The maps were prepared in ESRI ArcGIS 9.3. We used GIS to produce materials based on various published and unpublished information sources.

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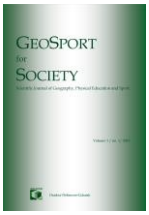

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Tourism and Geocities: Geographical Implications

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Abstract. This study analyzed geographical implications of first race of 34th America's Cup on Naples. According to our results, America's Cup contributed to create a positive image of Naples as touristic destination. Results of this study indicated that both male and famale enjoied American's Cup in Naples. These results can be used by policy-makers in planning future turistic events in Naples.

Keywords: economic-geography, tourism, geocities, sport

Introduction

Since the 90s, many studies have been focused on the effects of sport events on the host city (Chalip et al., 2003; Baloglu & McCleary, 1999; Waitt, 2003; Zukin, 1995; Pearce, 1982). These studies have attracted the interest of economic-geography researchers (Korstanje, 2012 ; Gartner, 1989; Ritchie & Smith, 1991). Sport events can affect quality of host residents' life, support the realization of infrastructure that are used after the event and increase opportunities of recreational activities for the community (Litvin & Fetter, 2006; Gartner & Hunt; 1987). These events can also strengthen local traditions and cultural identity. These events can also influence destination image promoting its beauties, evidencing efficiency of local services and reinforcing its traditional reputation (Littlejohn & Watson, 2004; Goodrich, 1978; Sinclair, 2005; Roche, 1994).

However, touristic events not only reinforce the image of the city but also the reputation of managers and policy-makers that support them in several ways (Crompton & Ankomah, 1993; Echtner & Ritchie, 1991). Despite of the relevance of geographical aspects, several studies evidences only the economic effects

(Richardson, 2012; Paddison, 1993; Roche, 2000; Richardson & Crompton, 1988). This study try to fill literature gap examining geographical effects of a touristic event (Bramwell & Rawding, 1996; Chon, 1990; Zhang et al., 2009; Tapachai & Waryszak, 2000). At the aim to evaluate implications of a touristic event on a City, we anlyzed the effects of the first race of America's Cup on Naples.

Some journal evidenced that regional and national policy-makers supported the 34th America's Cup at the aim put under the global reflectors Naples' beauties. Previous races of this sailing competition, in fact, had reinforced the image of Valencia-Spain (2010, 2007), Auckland-New Zealand (2003, 2000), San Diego-California (1995, 1992, 1988), and Fremantle-Australia (1987, 1983). Thus, following the process used in literature we tested the the effects of the first race of 34th America's Cup on Naples.

Methods

On-site survey is believed to be an appropriate method to evaluate geographical implications of America's Cup. The respondents were requested to complete the questionnaire and put forward practical suggestions or any other perspectives they would like to share about the event and the host destination. The questionnaire included demographic information and Likert-type questions related to the attributes. Respondents were given the list of attributes in order to measure the performance of each attribute. The survey asked respondents to assess the performance of the attributes during the visit at Naples using a five-point Likert scale.

Results

A sample of 88% Male and 12% Famale were collected. The age group most represented in both groups was 20–29 years. The majority of female and male tourists had achieved an education at university level.

Table 1. Socio-demographic variables

	Male Percent (88%)	Female Percent (12%)
Age		
20-29	44.0	41.0
30-39	29.0	33.0
40-49	16.0	16.0
50 and above	11.0	10.0
Educational level		
Primary	2.0	1.0
Secondary	5.0	3.0
University	53.0	44.0
Graduate/postgraduate	40.0	52.0

We used a one-sample t-test to evaluate the relevance of each attribute in the process of evaluation of Naples as touristic destination. The mean scores for all attributes were significantly higher than the scale's midpoint, which means that Naples performed well in all the attributes. According to our results all tourists enjoyed offerings provided by Naples. Although the perceptions of male and female tourists were primarily similar, different views on Naples's image attributes did emerge and these differences are worthy of discussion.

Table 2 Performance

	M (SD) Male	M (SD) Female
Climate	3.74 (0.98)	3.58 (1.05)
Natural attractions	3.41 (0.94)	3.71 (0.84)
Entertainment	2.88 (0.85)	1.77 (0.88)
Shopping facilities	2.91 (0.82)	2.05 (0.84)
Sports facilities	1.35 (0.81)	1.74 (0.91)
Local transportation	0.10 (0.84)	0.02 (1.06)

Results of this study indicated that both male and famale enjoied American's Cup in Naples. The majority of respondents have had a good image of Naples for its natural beauties and climate. These results can be used by governments in planning and implementing future turistic events in Naples. Future events could be organized paying more attention to a territorial marketing strategy establishing strategies to promote transport and sports facilities. This study suggest that Naples has to work on a territorial brand creating a geographical image that could survive behind the single event.

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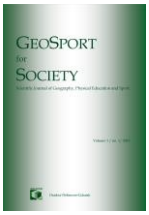

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The role of natural environment in the development of tourism in the Kashubian Lake District (on the example of Kartuzy county)

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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 ressources determine the concentration of touristic traffic.

Keywords: Kashubia, Kartuzy country, touristic natual 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 analysys 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

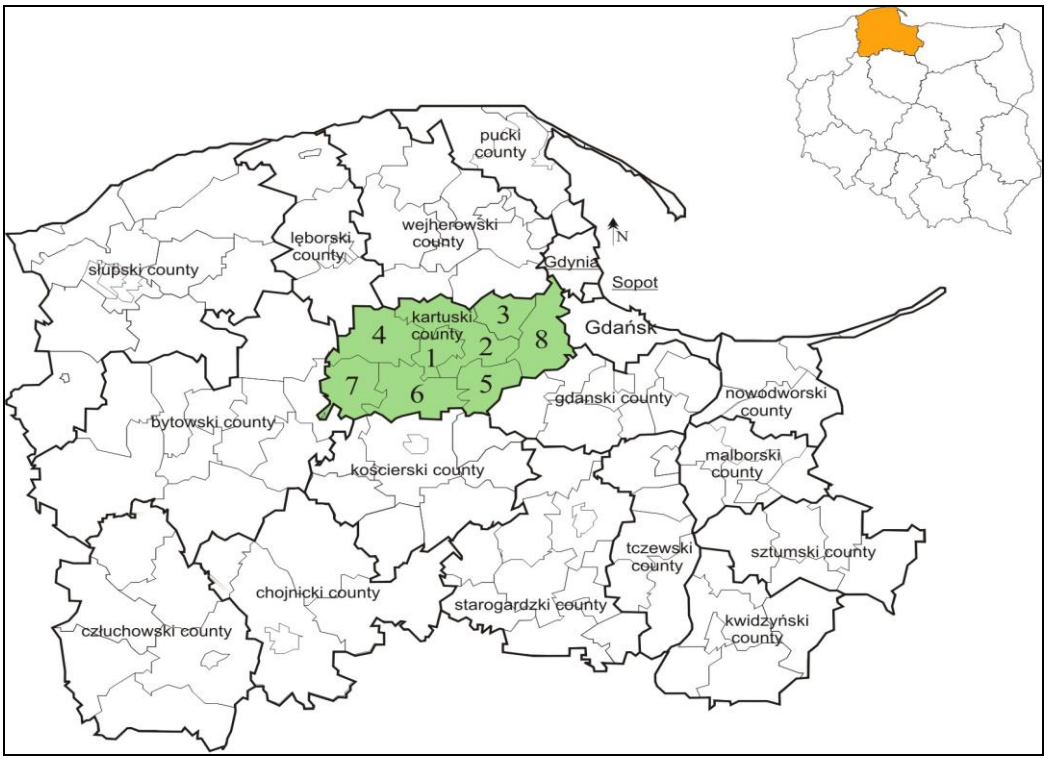
The area of empiric study of this article is Kartuzy county, located in northern Poland, in the central part of Pomeranian province. Its main territory is located in physio-geographical region of Kashubian Lake District. The area of this lake district includes : on the north and north-east the edge of 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 Coniforous 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 km^2 , 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, Stężyca 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 km^2.



Gminy: 1 – Chmielno, 2 – Kartuzy, 3 – Przodkowo , 4 – Sierakowice, 5 – Somonino, 6 – Stężyca, 7 – Sulęczyno, 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, occurence 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 occurence 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 occurence 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 overflood 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 viscinity of zonal circular atmospheric domination, however from the west together with active circularic systems follows advection of polarmarine air masses, cool in the summer, warm in the winter, whereas from the east there usually come polarcontinental 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 prevailance 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 temerature 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 smmer 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 precipitaton ranging between 0,1 and 0,9 mm – this takes place on average 32 days a year. The highest totals of precipitaton, 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 borogh) 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: Trzebno, 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 occurence 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 occurence 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 povitively influence the reception of a cetain place or area by a tourist (Zyber, 1977). Forestal areas on this territory take 334,2 km^2, 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 Sulęczyno (38,2% each), Stężyca (30,1%). In the remaining boroughs there have beed 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 pecularities 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 sancturary, 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 chracterised 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 (Berno 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 viscinity 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 Paiul 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 dificult to unambiguously assess due to a subjective viewpoint of each touist 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 usefullness 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 carthographic materials, there was also used information from local cataloguing, which frequently was a valuable supplementation of carthographic sources.

The base for creating a network of elementary squares was a carthographic 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 km^2 each, and the elementary squares were alloted numeric markings (verically 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 occurence of hot springs and mineral waters of set treating features. In this analysis there were left out cultual 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 followng formula was applied:

The natural attractiveness factor $(W_P) = \dfrac{\sum_{i=1}^{n} N_i + \sum_{i=1}^{k} S_i \div \sum_{i=1}^{j} P_i}{\sum_{i=1}^{n} N_{max\,i} + \sum_{i=1}^{k} S_{max\,i} + \sum_{i=1}^{j} P_{max\,i}}$

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 Przodkowo – 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 geoecological 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.

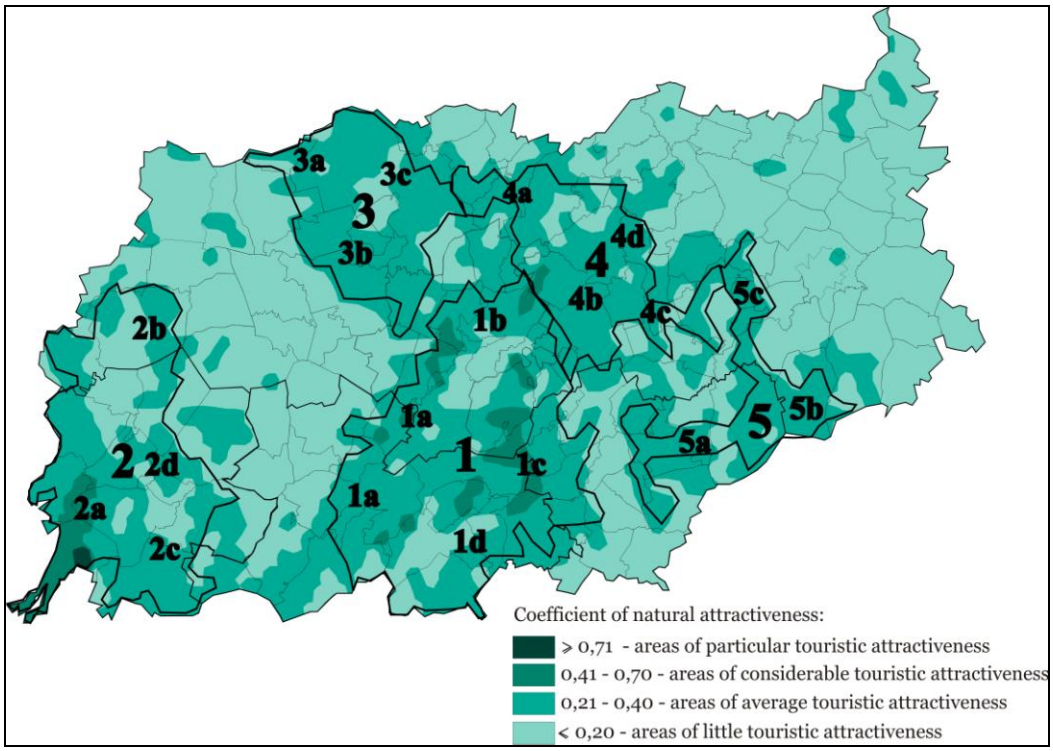


Figure 2. Tourist attractiveness of Kartuzy county in relation to the tourist attractiveness factor (Source: own study based on J. Warszyńska 1970)

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** – mojuszewsko-miechuciński; **3c** – mirachowski; **4** – Sianowsko-Dzierżąskie Lake District; **4a** – sianowsko-pomieczyński; **4b** – kosieńsko-kartuski; **4c** – mężowsko-dzierżąski; **4d** – grzybieński; **5** – Żukowsko-Przywidzka Height; **5a** – hopowsko-borczański; **5b** – skrzeszewski; **5c** – sicieńsko-borkowski

On the other hand the region of Sulęczyńska Flume was divied 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 Kartuzy 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 Kartuzy 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 pecularities 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).

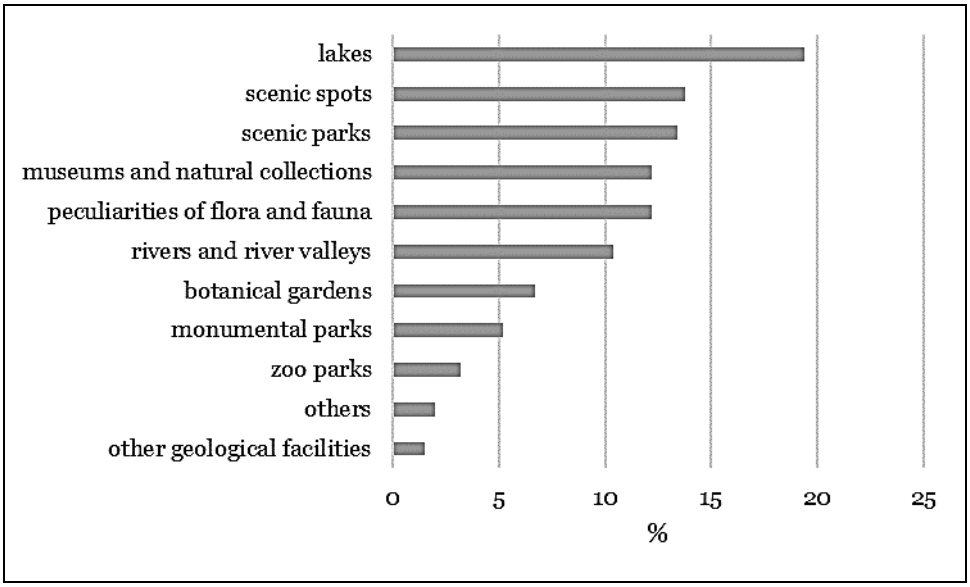


Figure 3. The most attractive natural resources of Kartuzy county in relation to survey research conducted

(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).

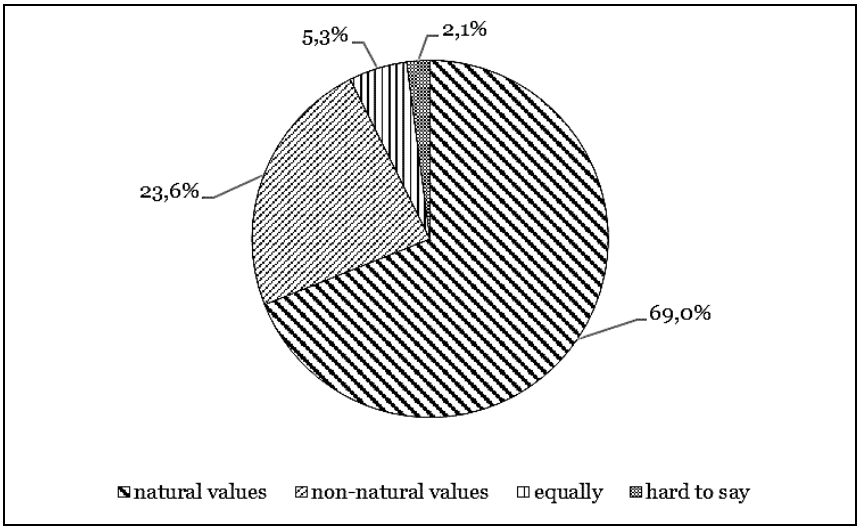


Figure 4. The usage of tourist resources of Kartuzy county in relation to survey research conducted (Source: results of the survey research conducted in July and August 2011, own study)

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 usefullness (Gacki, 1973). Diverse scenery, especially in the viscinity 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 Sulęczyno.

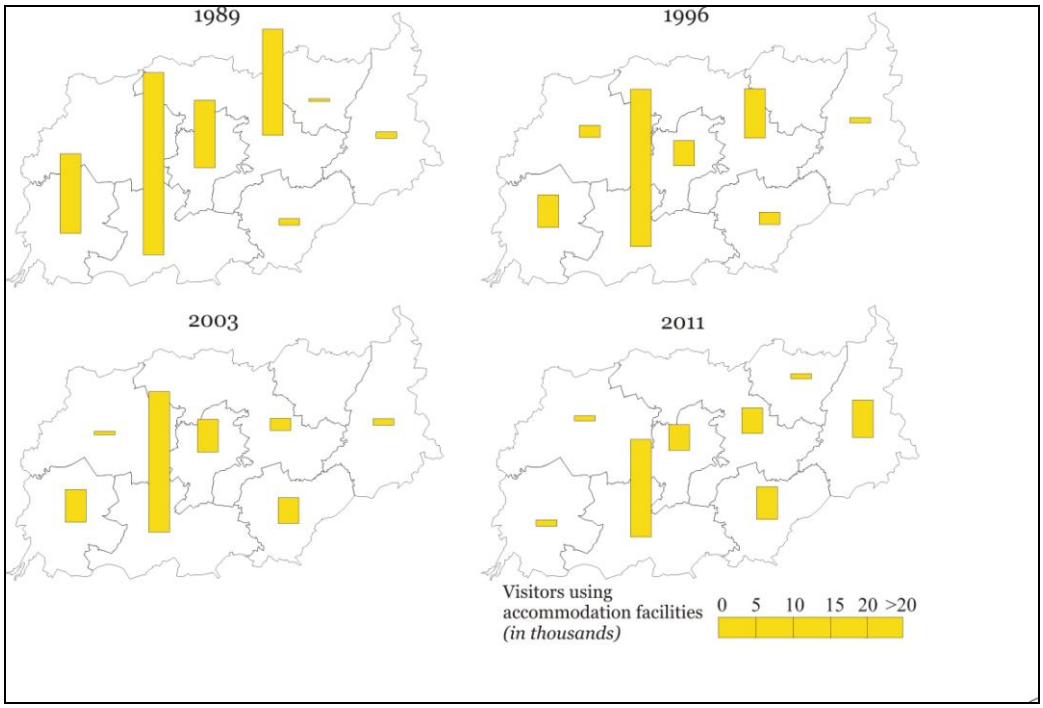


Figure 5. Tourists using accommodation facilities in Kartuzy county in years 1989-2011 (Source: Register of Collective Accommodation Facilities Kt-1 for 1989, Statistical Office in Gdańsk, Register of Accommodation Facilities for years: 1995-2011, Local Data Bank - Central Statistical Office, www.stat.gov.pl/bdl,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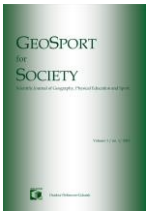

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The Romanian cultural-sports scenery defined by volleyball competitions through structure, dynamics and systemic functionality during 2009-2016

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Abstract. The Romanian cultural-sports scenery results from the combination of a series of elements that are essential to such a system composed of a dynamic component (athletes, coaches, spectators) and a static component (infrastructure and competitions). By extending the spatial, geographic position, the structure, the dynamics and the functionality, such a scene can define an entire urban or rural (locality) area. Volleyball is an indoors team sport, practiced by different age groups and by athletes with a certain body structure, and it can determine a certain type of cultural-sports scenery that has its own specificity. The present study, based on the specialized literature and analytical methods validated by the scientific research, proposes an analysis of the elements emerging from volleyball at the level of the Romanian competitions during the period 2009-2016. In order to define this scene we conducted an analysis, at a local level, of the static component: infrastructure and the dynamic component: sports clubs, sports persons and their gender, age, level of professionalism, geographic distribution.

Keywords: Romania, volleyball, spatial analysis, cultural-sports scenery, sport teams

Introduction

The sports movement, in all its forms of organization and manifestation, involves the presence of three key elements: sportsmen and coaches, spectators at which we add the static component-the specific infrastructure and competition (Ilieş

et al., 2014a). The purpose of this scientific approach is to analyse in detail, through interdisciplinary investigation, the peculiarities of each group of elements, together with their dynamics and sizing, thus making available to the specialists in planning and spatial development a database comprehensive and indispensable for the drawing up of such strategies. At Romanian level, volleyball may be considered an average sport (Apostu et al., 2008), given the number of practitioners (about 4100), the number of competitions (6 levels for both genders, two of which for seniors and 4 for juniors), and the comparison with other team sports. The existence of two levels of competitions both for men and women, with a number of teams not very large (130 clubs and 338 teams), has the advantage of being quite inexpensive and thus accessible for the medium and small communities (Kozma et al., 2014a). Of the 25 men teams and 25 women teams that entered the competition for seniors in the year 2015-2016, a total of 17 were University students teams, which leads volleyball, beside basketball, in the category of sports prevailing in Universities (Ilieş et al., 2015b). In order to mark out a cultural (social)–sports area (Bale, 1994), we will focus on outlining the cultural-sports scenery defined by "anthropic elements, natural elements (physicality) and derivatives (Cocean & David, 2014, 35). Defining and implementing new concepts such as cultural-sportive landscape and sportive space (Bale, 2003; Voiculescu & Creţan, 2005; Hallinan & Jackson, 2008; Bramham & Wagg, 2009; Calcatinage, 2013; Conner, 2014; Buhaş, 2015; Dragoş, 2015; Ilieş et al., 2015b) and based by results of different study case (Bale & Vertinsky, 2004; Gaffney, 2008; Ahlfeldt & Maenning, 2010; Hubbard, 2010; Ilieş et al, 2014b; Kozma, 2014;), through analogies (Bale, 1982; Giulianotti, 1999; Ilieş M., 2007; Szabo-Alexi et al., 2008; Ilieş et al., 2014b) and generalizations we will be able to define a type of cultural-sports space marked by volleyball. Once identified the elements of the dynamic and static components, their evolution and dynamic, their quantitative and qualitative particularities, we could outline an evolving and animated cultural scenery with economic and social impact (Kozma et al., 2014b), generator of a certain type of urban culture.

2. Database, tools and methodology

In the case of this study, the database consists of information about the clubs and the athletes gathered from the website of the specialized federation, from mass media and implicitly from on the field activities. The information focuses on the number of clubs and athletes, the level of participation and performance, their dynamic on a series of 8 years (2009-2016), the age of the athletes, all connected with the particularities of each locality (urban/rural area, size, specific infrastructure, number of inhabitants etc). By using as a powerful instrument of work the geographical information system (GIS), all of the information gathered shall be systematized depending on the purpose and objectives of the study. By using methods validated in the specialized literature (Coakley, 1990; Ronney & Pillsbury, 1992; Brabyn, 2009; Hubbard, 2010; Zale & Bandana, 2012, Marcu & Buhaş, 2014; Dragoş, 2015; Ilieş & Wendt, 2015; Ilieş et al., 2015a), the data processed facilitates a high volume of combinations between the components and hence a consistent and complex analysis with quantifiable, measurable results that are useful in the strategies for planning and spatial development. The area of the

analysis shall be superimposed over the localities within which there are specific items of infrastructure and volleyball clubs entered in national competitions. We analyse a specific anthropic space, determined by the spatial contour of a type of cultural-sports scene created by the fact that "the products of the anthropic intervention become the foreground, constituting its essence" (Cocean & David, 2014, 34). Thus, the typology of the cultural-sports scenery shall be determined by the combination between the quantitative component-number of athletes and clubs and the qualitative one - level of performance. The statistical and mapping methods (Ronney & Pillsbury, 1992; Slocum et al., 2009; Ilieş et al., 2015) will represent the basis of this approach, strongly supported by the thematic maps that are expressive and representative for the studied phenomenon. In the end, our study must answer the following set of questions: where? why? how? and which are the perspectives? (Ilieş et al., 2014a). Moreover, the value and the number of the elements analysed through comparison with other sport activities must outline the typology that reflects the imprint of volleyball in the social and cultural life of the belonging town.

The qualitative dimension is given by the hierarchical level of the competition and the performance in terms of rankings, both in the women and men senior competitions held currently (2016) on six levels (fig.1). *The quantitative dimension* is reflected in the number of athletes and coaches, the number of clubs by gender, infrastructure, number and levels of competitions involved, all related to the demographic, economic, political and social status of the analysed town.

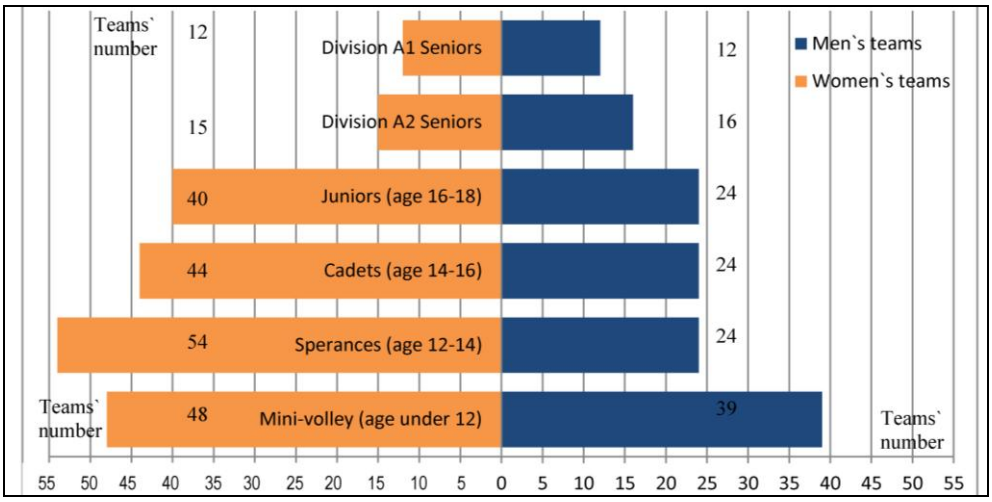

Figure 1. Levels of national volleyball competitions, age groups and number of teams (2015-2016 competition) *(sources: www.frv.ro, accesed 2016)*

3. Management, competitions and elements of support - infrastructure

3.1. The management and organization of competitive volleyball games in Romania is handled by *Romanian Federation of Volleyball* for the national competitions and by the *Volleyball County Associations* for the local and especially junior competitions. The Romanian counties volleyball map recorded that of the 41 administrative units, volleyball clubs are not found at any level in 5 counties (fig. 4): Covasna, Giurgiu, Ialomiţa, Mehedinţi and Vaslui.

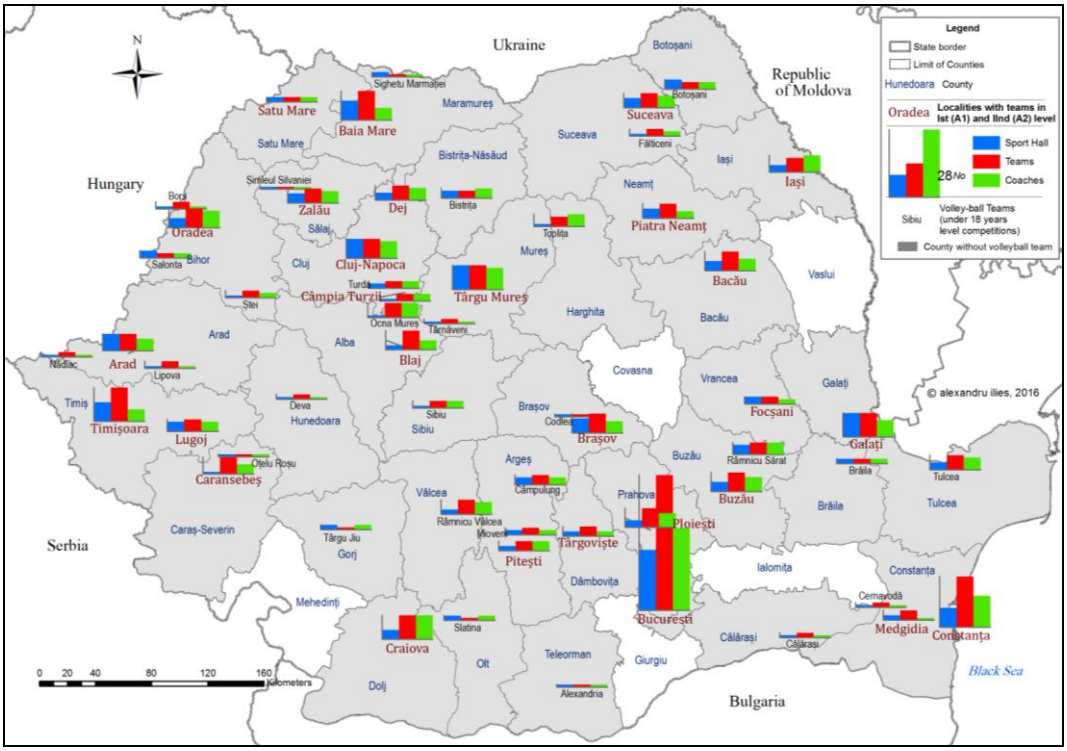

Figure 2. Romania. Number of volleyballs` teams, sports hall and coaches by localities
(sources: www.frv.ro, accesed 2016)

3.2. The competitive level, correlated with the number of participating teams and clubs can be an indicator that reflects the social status of sport in general and of volleyball in particular in a locality or region (country). In 2016, both women and men senior competitions are organized on two levels (divisions A1 and A2). If the first division consists of 12 teams registered both for the men and women competitions, for the second division the number of teams varies from one competition to another depending on the clubs registered (an average of 5-7 teams by series). The involvement of clubs in developing children and youth centres is reflected in the competitions for juniors (16-18 ages), cadets (14-16 ages), hopes (12-14 ages) and mini-volleyball (under 12 years) on both genders. Basically, from a hierarchical and age point of view, the Romanian volleyball is divided into six levels: two for seniors and four for juniors (figure 1), each with separate men and women competitions.

3.3. Infrastructure. Volleyball competitions involve the distinctive sports hall as an element of the support infrastructure that is a part of the static component for the systemic spatial construction (Kozma, 2014). The number of sports hall officially registered in 2016, and where teams operate, reaches 210[1]. The localities with the largest number of sports hall for volleyball are (figure 2), Bucharest (25), Galaţi (10),

[1] *www.frv.ro*

Târgu Mureş (10), Constanţa (9), Cluj-Napoca (9), Timişoara (8), Arad (7), Baia Mare (8), Braşov (6), Piatra Neamţ (5), Zalău (5) etc. Usually, when it comes to official games, senior teams get to use, besides the smaller sports hall used for practice, larger sports hall like the polyvalent ones: Oradea (figure 3a), Zalău (figure 3b) and Baia Mare (figure3c). They exist in all municipalities involved in the two competitions.

Figure 3a. *Antonio Alexe Arena* from Oradea *(photo A.Ilieș, 2015)*

Figure 3b. Sports Hall from Zalău *(photo A.Ilieș, 2015)*

Figure 3c. Lascăr Pană Sports Hall from Baia Mare (photo A.Ilieș, 2015)

4. The Romanian volleyball map and the quantitative and qualitative dimension

The quantitative dimension is represented by the number of localities that support volleyball clubs, the number of clubs by gender, the number of athletes and the number of competitions, all in reference with the demographic, economic (Kozma et al., 2014c), social and political aspects of the analysed locality.

The cultural-sports area determined by volleyball can be administratively identified with the localities in which we identified volleyball activity during the last 7 years. By identifying these localities and their rank we can determine the "systemic functionality of a locality and the outline of such a cultural-sports area" (Szabo-Alexi et al., 2003; Ilieş et al., 2015b; Kozma et al, 2015).

4.1. Localities and clubs[1]. According to the data processed for the year 2016[1], at the level of the administrative map of Romania (fig.4), volleyball is practiced in 36 counties (88%) organized at the level of 130 clubs officially registered on the specialized website[1], representing 73 municipalities, of which only one rural: Borş (Bihor). There are also seven clubs affiliated but not involved in competitions. Volleyball is absent in 5 counties Covasna, Giurgiu, Ialomiţa, Mehedinţi and Vaslui (fig. 4) where there is no official record of volleyball clubs.

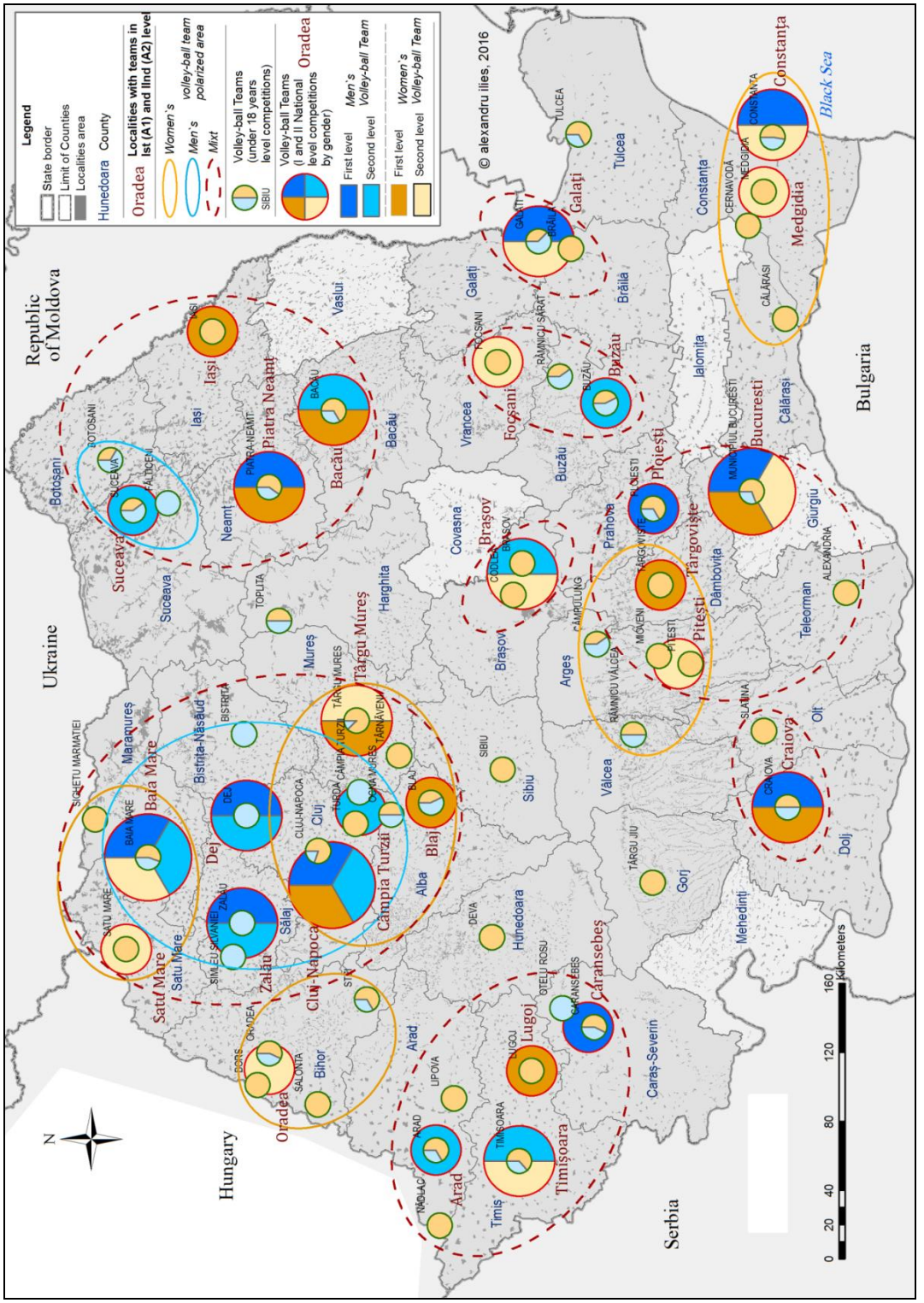

Figure 4. Romania. Areas, counties and localities polarized by volley-bal teams (2016)
(datas source: www.frv.ro, accesed in 2015 and 2016)

At a local level, the traditional volleyball clubs are the most numerous, as there are qualified human resources as coaches, thus a number of 341 teams, most of which in: Bucharest (55), Constanţa (22), Timişoara (14), Baia Mare (12), Craiova (10), Galaţi (10), Târgu-Mureş (10) etc.

An important aspect is related to the names of clubs from the same locality, a situation when they are in continuous relationship. In these situations the team name is different from one competition to another. The main reason is represented by the changes in the organizational and functioning structure or the withdrawal/ emergence of a new sponsor. For example the club that in 2013 was CS Remat Zalău currently operates under the name ACS VM Zalău.

An important role at these levels is played by the 48 students' sports clubs and high schools with a sports profile which, based on certain protocols or associations with divisional clubs, provide in a locality the natural succession on age categories (figure 4 and 6).

In what concerns the middle level, there is only one club active in Borş, Bihor County, with three women teams registered in the juniors' championships (cadets, mini-volleyball and hopes). Until 2015 in the womens' A2 division the club Ştiinţa activated, from Miroslava (Iaşi County), now retired from competition. All other 129 clubs are operating in urban areas, especially in large urban centers, in 32 county seats, except the 5 counties and 3 other residences with volleyball teams in other cities (Alba, Caraş-Severin and Harghita). In the three counties volleyball is polarized by smaller cities like Blaj, Caransebeş and Topliţa.

Along with the county seats, another 22 cities and towns promoted volleyball clubs in 2016 (figure 4), of which 5 at the senior level in the first division (men`s team: Caransebeş, Dej and women`s: Blaj-champion and Lugoj) and in the second division (women`s: Medgidia; men`s: Dej and Câmpia Turzii). 17 other towns are focused on junior competitions, an important role being played by sports clubs and high schools with sports program – a number of 48 (37% of the total). In most cases these clubs are associated with those activating in the first two divisions, thus ensuring locally a functional hierarchical structure, by age. Such clubs are present in almost every county seat active in volleyball, plus: Blaj, Câmpulung-Muscel, Salonta, Ştei, Râmnicu Sărat, Caransebeş, Oţelu Roşu, Turda, Dej, Topliţa, Sighetu Marmaţiei, Târnăveni, Fălticeni and Lugoj. At the same level, local or private clubs are present in the towns of Cernavodă, Medgidia, Şimleul Silvaniei, Câmpia Turzii, Codlea, Ocna Mureş, Lipova, Nădlac and Mioveni (figure 4).

4.2. The quantitative-qualitative component: the human resources include, besides athletes, the professional personnel in charge with training the teams, an important role being played by the coaches. In 2016, of the 130 affiliated clubs there is a number of 256 qualified coaches[1]. Of these, 136 (53%) are working with the women and men junior athletes, in 48 sports clubs and high schools with a sports program. Most of them are working in the sports school centres from Baia Mare (10), Timişoara (8), Constanţa (8), Blaj (7), Galaţi (7), Caransebeş (7), Buzău (6), Bacău (6) etc. At the level of the centers, the total number of coaches are more numerous in Bucharest (36), Constanţa (13), Craiova (10), Târgu Mureş (9), Cluj-

Napoca (8), Galaşi (8), Iaşi (7), Oradea (7), Zalău (7), Buzău (6), Caransebeş (6), Ploieşti (6) etc, which are also important centres of the Romanian volleyball.

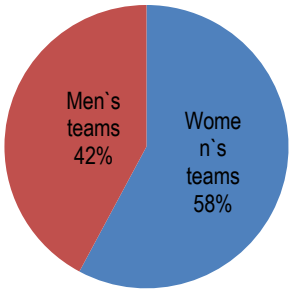

Figure 5. Number of the coaches of the volleyball teams by gender *(source: www.frv.ro, accesed in 2016)*

The specialization in certain age groups or by gender is reflected in the statistics of 2016, about 42% (105 coaches) coach men teams and 58% (144 coaches) eight for women volleyball (fig.5). The clubs with the most coaches (men+women) are CNNT Craiova (7), CSM Bucharest (6), CSS 5 Bucharest (5), LPS Oradea (5), CVM Tomis Constanţa (5) and CSS Constanţa, CSS Topliţa (5), CSS Unirea Iaşi (5), CNMB Râmnicu Vâlcea (5) etc.

In the case of *women volleyball*, the clubs that stand out are the following: CSS Unirea Iaşi (5), LPS Viitorul Piteşti (4) and CSS Lugoj, CSS Sibiu, CS U Târgu Mureş, CSS 1 Constanţa, CSS Turda, CSS Caransebeş, CSS 5 Bucharest, CSM Bucharest (3) etc.

In the case of the *men volleyball*, the clubs that stand out are the following: CSS LAPI Dej, CVM Tomis Constanţa, CSS 2 Baia Mare, CS Dinamo Bucharest with 5 coaches each; CSS Buzău, CSS 1 Constanţa, CSS Blaj, CSS Zalău, CNNT Craiova, CSS Galaţi, CSS Bega Timişoara, CSM Bucharest with 4 coaches each; and CS Ocna Mureş, CSS DG Câmpulung Muscel, LPS Oradea, CSS Râmnicu Sărat, CSS Caransebeş, CSM Câmpia Turzii, LPS Suceava CSS *Nicu Golescu* Fălticeni, CNMB Râmnicu Vâlcea with 3 coaches each.

An interesting aspect results from the average of 0.73 coaches/team at the national level. By gender, the men teams benefit from a ratio of 0.81, as compared to 0.68 for women's teams. Effectively, every coach for the men's team rests on an average of 1.23 teams, versus 1.47 for the women's case.

The total number of legitimated volleyball players in Romania, on all levels, amounts to about 4,100[1] of which 1600 (39%) in men teams and around 2,500 (61%) in women teams, following an average batch of 10-12 players at all levels.

In what concerns the age groups, the juniors sector, with 288 teams, comprises around 3,400 players, of which about 2,200 girls (66%) and 1,200 boys (34%). In figures 1 and 4 highlights the numerical distribution of volleyball players by teams and competition levels in 2016. Most children play in the mini-volleyball and hopes teams, about 900 each, followed by cadets with 816 players and juniors with 768 players. For seniors, the two divisions total a number of 612 players, evenly distributed by gender, with a higher share of divisions A2 (53%) with about 325 players as compared to 290 in the first division.

Correlated with the number of teams, the towns with the highest number of players are (figure 4): Bucharest (660), Constanţa (264), Timişoara (168), Baia Mare (144), Craiova (120), Galaţi (120), Târgu Mureş (120), Caransebeş (108), Bacău (96), Blaj (96), Braşov (96), Buzău (96), Cluj-Napoca (96), Oradea (96), Ploieşti (96) etc. The centres mentioned for the number of teams entered in the competition are the most important poles of the Romanian volleyball. At the level of clubs, by the

number of teams entered in the 6 most important competitions, we have: CS Dinamo Bucharest and CSS 2 Baia Mare with 10 teams (5M + 5W) and 120 players each; with 8 teams and 96 players are: CVM Tomis (3W + 5M) and CSS 1 (4W + 4T) both from Constanţa, CSS Bega Timişoara (4M + 4W); 7 teams and 84 players for CSS Galaţi (3W + 4M), CSS Caransebeş (4 W + 3M), CTF Mihai I Bucharest (5W + 2M), CSM Bucharest (3W + 4M) and CSS Blaj (3W + 4M). 11 girls' junior clubs have entered teams in all 4 competitions, the situation being similar for the boys' side. CSS Bega Timişoara, CSS 2 Baia Mare, CSS 1 Constanţa and Dinamo Bucharest CS are present in all junior competitions. If Dinamo Bucharest has its own nursery, in the other three cases the main beneficiaries are the clubs in the premier league that they have partnerships with: Ştiinţa Explorări Baia Mare, CVM Tomis Constanţa and CSU Vest Timişoara.

4.3. Volleyball in Universities. The latest edition of the volleyball competitions from the Romanian political space once again demonstrated that, after basketball, volleyball has a great grip over the academic institutions (Ilieş et al., 2015b). Thus, the first division in 2016 enclosed a total of 8 university teams (33% of total teams) from 6 centres and the second division 9 teams from seven universities (table1; fig.6). This year, the main point of concentration in the university women's volleyball can be considered the University centre Târgu Mureş with 2 teams at all levels (fig.4). The interest towards the children's centres in academia highlights the women's teams, where at the junior level competitions there are 3 teams from 2 universities: Târgu-Mureş (2) and Cluj-Napoca (1).

Table 1. University centers, teams and representation levels in men's (M) and women's (W) volley-ball seniors competitions (Data's sources: *www.frv.ro*, accesed in 2016)

no	**University center**	**Team**	**University or/and CSU/USC**	**A1 Division** (12 men's teams and 12 women's teams) with **3 men's** and **5 women's** universitie's teams		**A2 Division** (13 men's and 13 women's teams) with **4 men's** and **5 women's** universitie's teams	
1	Baia Mare	Ştiinţa Explorări	Technical University of Cluj-Napoca	**M**			
2	Bucureşti	CSU Ştiinţa	CSU			**M**	
3	Bacău	CS Ştiinţa	*Vasile Alecsandri*	**M**	**W**		
4	Braşov	CSU Braşov	*Transilvania*			**M**	**W**
5	Cluj-Napoca	CS "U"	*Babeş-Bolyai*	**M**	**W**		
6	Craiova	CSMU	University	**M**	**W**		
7	Galaţi	CSU	*Dunărea de Jos*		**W**		
8	Iaşi	ACS Penicilina	Medical University		**W**		
9	Oradea	CSU	University				**W**
10	Timişoara	CSU Vest	West University			**M**	
		CSU Politehnica	Politehnica				**W**
11	Tg Mureş	CSU Medicina	Medical University		**W**		**W**

The map of the Romanian university volleyball in 2016 (figure 6): from the 50 participating teams in national competitions (men and women) from the top two divisions a total of 17 were from university (4 men teams and 10 women teams) with headquarters in 11 university cities: Baia Mare, Bucureşti, Cluj Napoca, Craiova,

Timişoara, Braşov, Bacău, Iaşi, Tg Mureş, Oradea and Galaţi (figure 6 and 7). The only universities with representation for both genders are: Bacău, Braşov, Cluj Napoca, Craiova, Suceava and Timişoara.

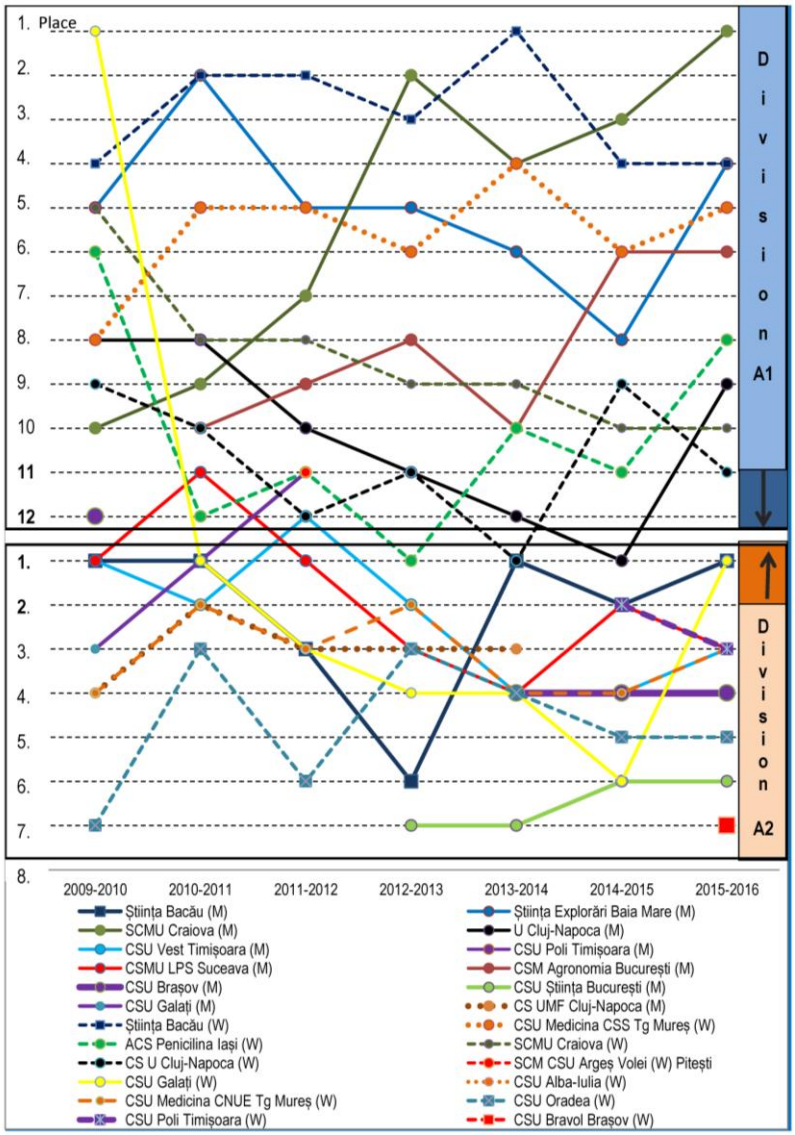

Figure 6. Evolution of universities volley-ball men`s and women`s teams from the first and second divisions (A1 and A2) during the period 2019-2016 (*source: www.frv.ro, accessed 2016*)

The sports cultural scene, defined by the university teams (17; figure 6 and 7) that participated in national competitions of volleyball and analysed in the period of 2009-2016 , can be found in 11 university cities and representing 50% of the 22 existing at the national level (2016). Unfortunately, they disappeared from the national competitions of volleyball universities as: Piteşti, Constanţa, Suceava and Alba Iulia.

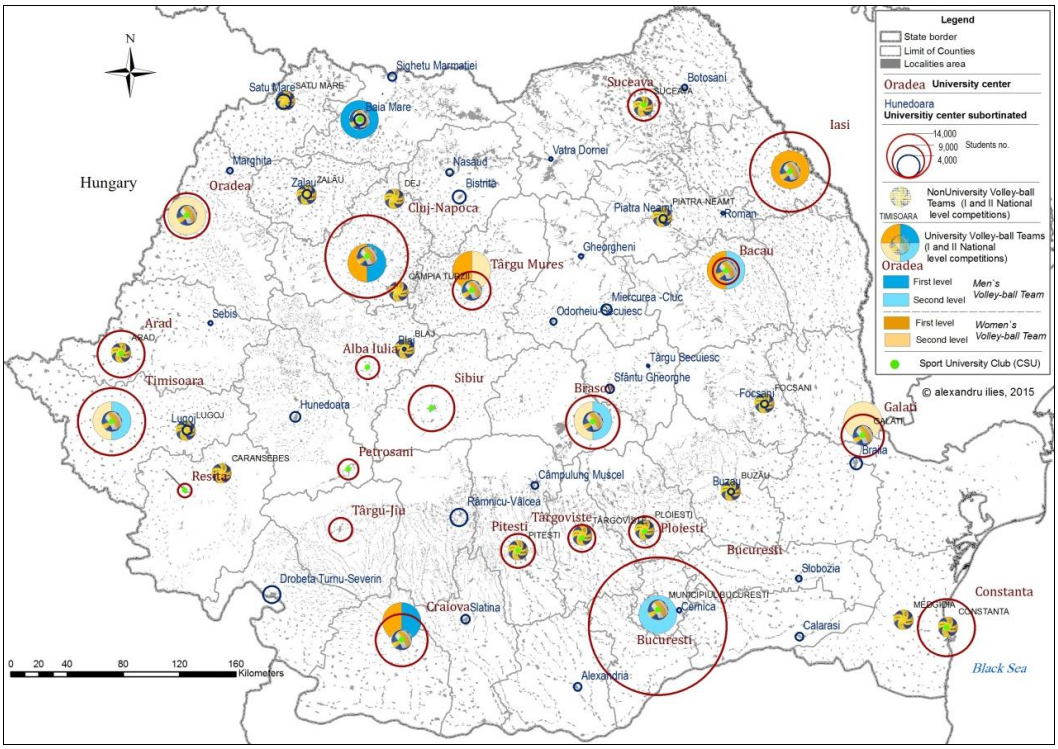

Figure 7. University centers, teams and representation levels in men's and women's volleyball seniors competitions (Data's sources: Romanian Federation of Volleyball, 2015; 2016: *www.frv.ro*, accesed in 2015; Ilieş et al., 2015b, 73)

4.4. The analytic quantitative-qualitative component for seniors

4.4.1. Seniors' competition

The complete map of the Romanian volleyball (figure 4, 8, 9 and 10) from the two senior divisions (men and women) included a total of 36 towns at the level of the 7 analysed editions (2010-2016). At the level of the last edition (2015-2016) volleyball could be found in 24 towns which means that over time, 12 teams from these towns have disappeared from senior competitions.

At the level of first divisions, both for women (A1W) and men (A1M), during the 7 editions have participated 39 teams from 34 clubs from 27 towns. Of these, six towns were present with teams of both genders: Craiova, Bucharest (two clubs), Galaţi, Cluj-Napoca, Piatra Neamţ and Constanţa. (the women's team from Constanţa was disbanded 4 years ago and the men's team withdrew before completing the division in the 2015-2016 edition).

Nowadays, after the last edition (2015-2016), the map of the Romanian First Division volleyball includes 24 teams (12W + 12M) from 17 towns (figure 8) : 4 teams from Bucharest and Craiova, Cluj -Napoca , Piatra Neamţ with two teams each (men and women) and a total of about 300 players.

The second division included 16 teams for men and 13 for women in the year 2015-2016, representing 19 cities, each gender category being divided into two series (East and West) with about 325 players. The cities Bucharest (3M+1W

teams), Timisoara (1M+2W), Baia Mare (1W+1M) and Brasov (1W+1M) had representatives of both genders. Men`s volleyball was represented in towns such as: Campia Turzii (promoted in A1), Arad, Dej, Zalău, Bacău, Suceava and Buzău, while women volleyball was represented by teams from Constanţa, Focşani, Galaţi, Piteşti, Medgidia, Târgu Mureş, Oradea and Satu Mare (figure 8).

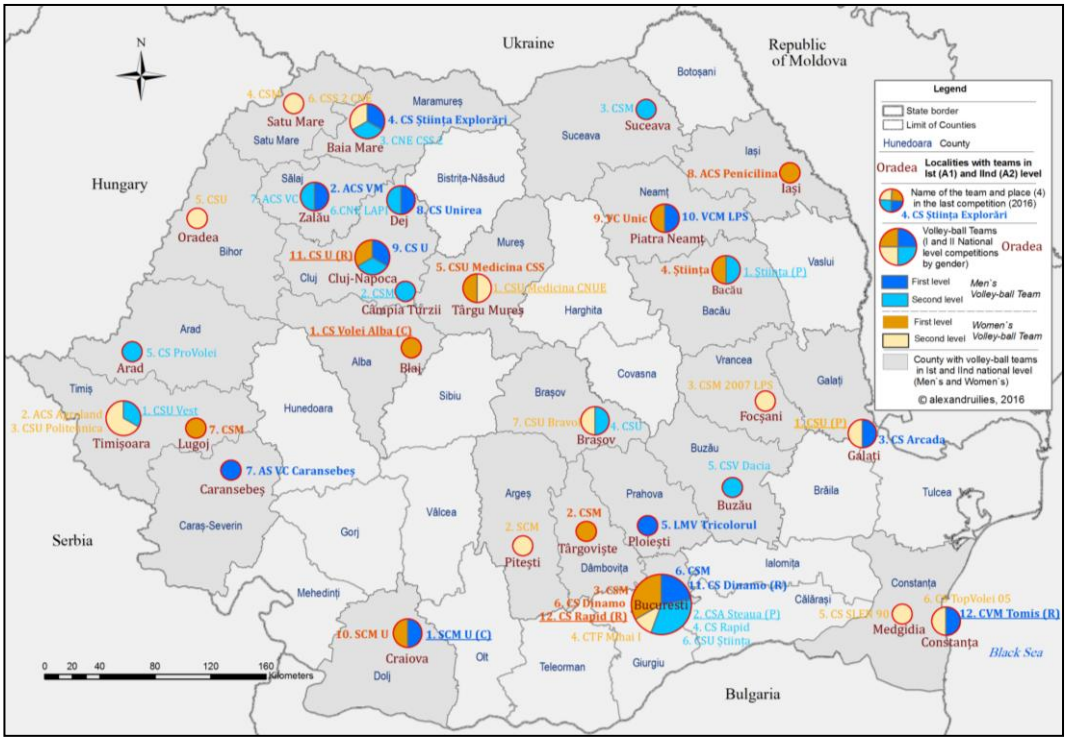

Figure 8. Romania. Counties, localities and teams in the national senior`s competitions
(source: www.frv.ro, accesed in 2016)

Volleyball Men's Division

For the data analysed between 2009-2016 including the 7 editions of championship, men volleyball appeared on the map of Romania's volleyball with 30 teams from 22 cities (fig.8 and 9), Bucureşti having only 9 clubs (3A1+6A2), Cluj-Napoca 2 (1A1+1A2), Râmnicu Vâlcea (1A2), Galaţi 2 (1A1+1A2), Baia Mare 2(1A1+1A2), Zalău 2 (1A1+1A2), Dej 2 (1A1+1A2), Timişoara 2 (1A1+1A2), in the analyzed period (figure 9).

The latest edition (2015-2016) at the level of the two divisions included 19 cities and 28 teams. Some cities being represented by more than one team: Bucureşti (2A1+3A2 teams), Cluj Napoca (1A1+2A2); Baia Mare (1A1+1A2), Zalău (1A1+1A2) and Dej (1A1+1A2). The other teams, all from urban areas and mapping the Romanian's volleyball are: Caransebeş, Constanţa, Craiova, Galaţi, Piatra-Neamţ and Ploieşti in the first division; Arad, Bacău, Bistriţa (withdrew before the start of the championship), Braşov, Buzău, Câmpia Turzii, Suceava şi Timişoara in the second division (A2).

At the level of the first division, the title in the last seven editions **was won** by three clubs from three cities: SCMU in Craiova (2016), CVM Tomis Constanţa (2015, 2014 and 2013) and CS Remat Zalău (2012, 2011 and 2010).

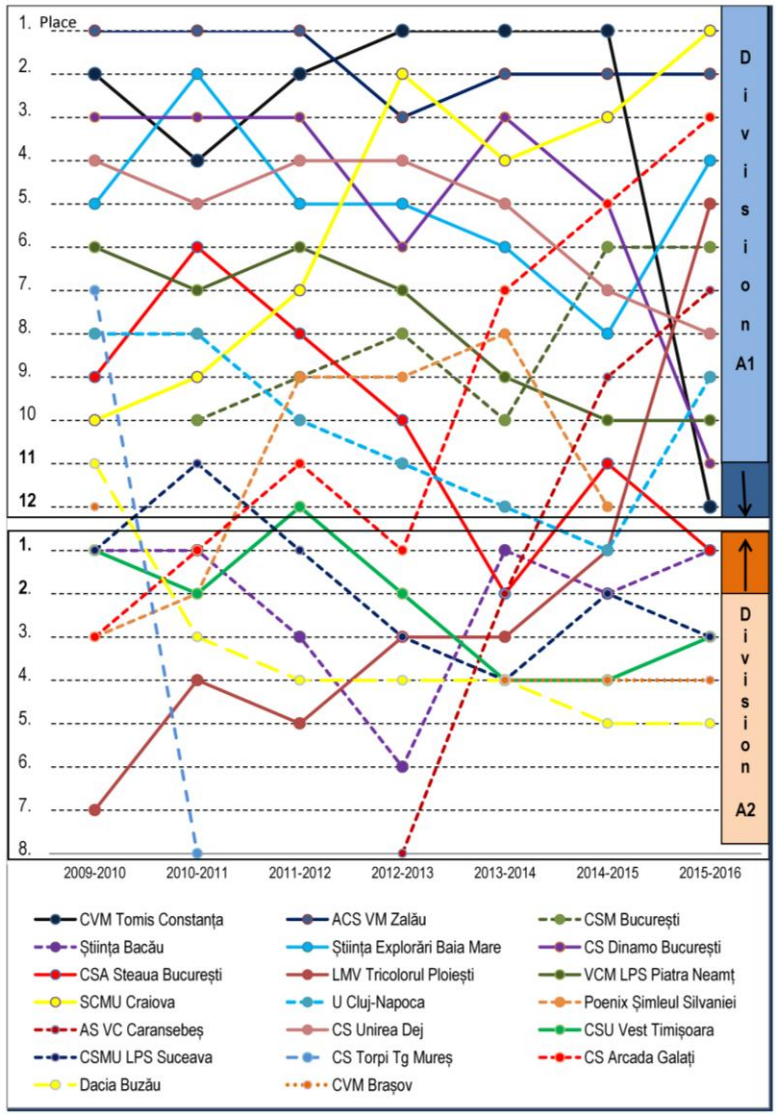

Figure 9. Evolution of volley-ball men`s teams from the first division (A1) during the period 2019-2016 *(source: www.frv.ro, accesed 2016)*

The most permanent clubs in the range of 7 analyzed years are: Craiova, Zalău, Baia Mare, Dej, Piatra Neamț, Dinamo Bucharest and CVM Tomis Constanţa (figure 9).

The abandonment from competition is a cause of reducing the number of clubs and that was due in most cases because of the lack of financial support. CVM Tomis Constanţa champion after three national league titles won consecutively in the 2015-2016 competition had to withdraw from the championship.

From the 22 cities, seven recorded an abandonment of this sport: in 2016 in Constanţa (A1), 2015 Bistriţa (A2) and Şimleul Silvaniei (A1) 2014 Oradea (A2), Râmnicu Vâlcea (A2) and Târgu Mureş (A2) and in 2010 in Tulcea (A2).

Women's volleyball was represented by 43 clubs from 31 cities (figure 8 and 10) and more than 500 sportswomen in the first two divisions of the 7 editions of championship.

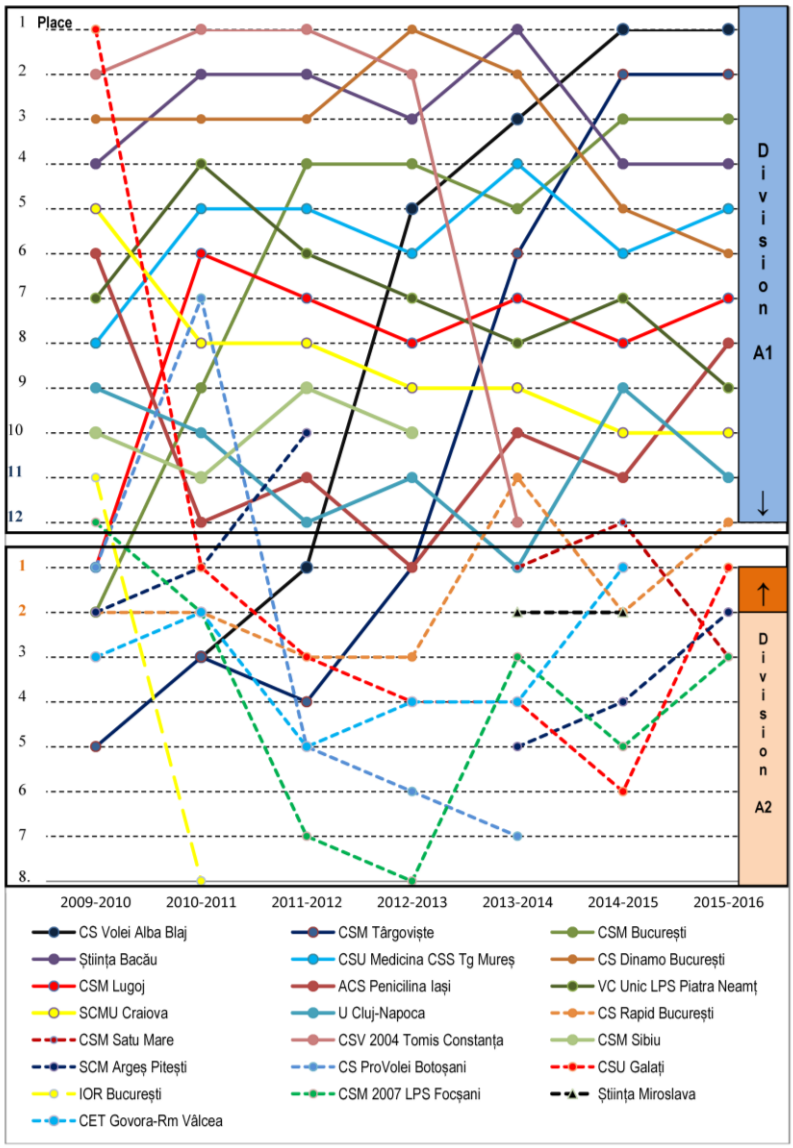

Figure 10. Evolution of volley-ball women`s teams from the first division (A1) during the period 2019-2016 *(source: www.frv.ro, accesed 2016)*

Along with the 10 cities (12 teams and about 150 sportswomen) represented at the latest edition of First Division (figure 10): Bucharest (3 teams), Bacău, Blaj, Cluj-Napoca, Craiova, Iaşi, Lugoj, Târgu Mureş, Târgovişte and Piatra Neamţ there

also participated 7 other cities (in the previous editions): Constanţa (2010-2014 - CSV 2004 Tomis-*champion* in 2011 and 2012 and vice-champion in 2010 and 2013, relegated in 2014, reappears in 2016 in Division A2 under the name CS TopVolei 05, Satu Mare (2010-2015), Botoşani (CS CSS ProVolei in 2011, disappears from A2 in 2014), Sibiu (SCM 2010-2013 relegated in 2013 and disbanded), Piteşti (2012-2013, 2010-2012 and 2013-2016 in A2), Focşani (A1 in 2010 in A2 from 2011 to 2016) and Galaţi (2010 *champion* in A2 from 2011 to 2016).

The title of Romania's women's volleyball champion in the series of years analysed was won by 5 cities (figure 8): Blaj (CS Volei Alba in 2015 and 2016), Bacău (Ştiinţa in 2014), Bucharest (Dinamo 2013), Constanţa (CSV 2004 Tomis in 2011 and 2012) and Galaţi (CSU Metal in 2010 and then withdrawing in A2).

The second level competition is divided into two series (East and West) each with an average of 6-8 teams per edition (figure 11). The last edition (2015-2016) included 13 teams from 12 cities, Timişoara having two teams. Galaţi and Piteşti succeeding in promoting in A1.

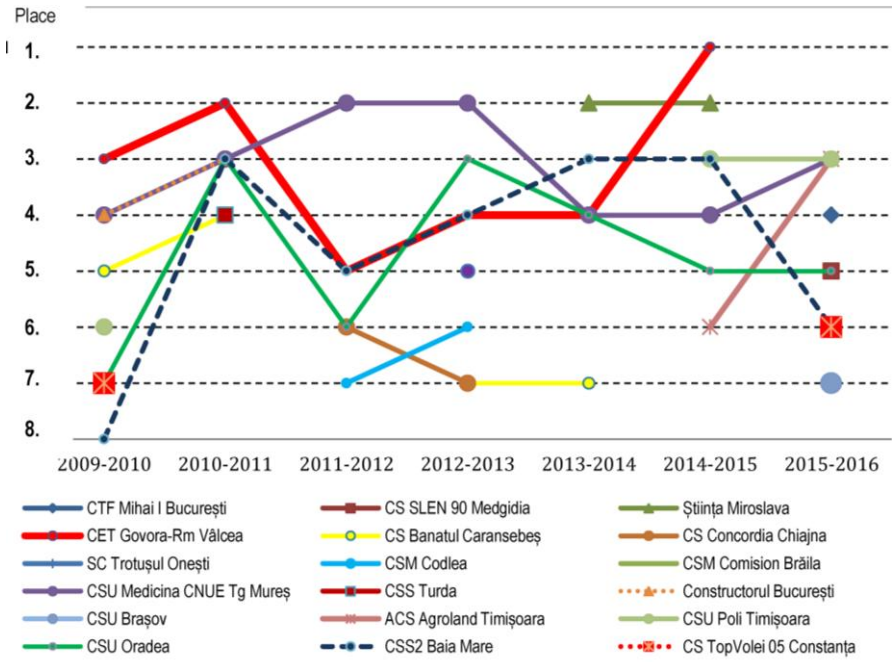

Figure 11. Evolution of volleyball women`s teams with evolution only in the Second Division (A2) during the period 2009-2016 *(source: www.frv.ro, accesed 2016)*

Over the 7 editions the number of participating teams was 27, representing as many localities. If 7 localities were temporary playing in A1, in 14 localities the representative teams were active only in A2: Baia Mare (2009-2016), Brăila (2010/2011), Medgidia (2015/2016), Târgu Mureş (CSU Medicina CNU, 2009-2016), Oradea (CSU, 2009-2016), Timişoara (CSU Poli and ACS Agroland, 2015 and 2016), Braşov (CSU Bravol 2016), Râmnicu Vâlcea (2009-2015 and then

disappears), Caransebeş (2010- 2014 after which it closes down), Codlea (2012 and 2013), Oneşti (2013), Chiajna (2013), Brăila (2012), Turda (2010 and 2011) and Alba Iulia (2010 and 2011). We can add to these the rural club Ştiinţa Miroslava (Iaşi) that played in the A2 for two editions (2014 and 2015).

During the 7 editions a number of 31 municipalities supported women's volleyball teams of which 17 were or are active also in A1, and in 14 localities volleyball was present only in the second division level (fig.11). During those seven years, in 11 localities the volleyball teams have terminated through dissolution: Alba Iulia, Botoşani, Caransebeş, Turda, Brăila, Codlea, Chiajna, Oneşti, Sibiu (from A1), Govora-Rm Vâlcea, Miroslava.

Conclusions

The cultural-sports scenery shaped by the sports competitions of volleyball is defined by the static component (infrastructure and competitions) and the dynamic one: the human resource (spectators, athletes, coaches and referees). In order to render a more complete picture of the territorial realities, the present study was focused on a string of data that includes 7 competitive years (2010-2016) and 6 competition levels: senior (A1 and A2) and juvenile (juniors, cadets, hopes and mini-volleyball). The cultural-sports scene is defined by the spatial positioning of the infrastructure elements and volleyball teams (130 clubs with a geographical distribution in 36 counties, volleyball being absent in 5 counties), 73 towns and two rural communes: Borş (Bihor) and Miroslava (Iaşi). From an infrastructural point of view, along with Bucharest that has 25 halls used for practicing competition volleyball, stand 10 other cities by an average of 7 sports hall/centre. The human resource engaged at the level of competitions consists of 256 qualified coaches and about 4100 athletes of which 61% belonged to 341 women's teams, distributed on all levels. An important role in the juniors' activities is played by the 48 sport clubs and high schools with sports program, most being connected with the divisional teams. By gender, the dominance of the girls' volleyball teams stands out in the juvenile competitions with about 2200 players (66%) while the number of senior teams is distributed in equal proportions. A special place is held by the university volleyball, played in 11 university cities, representing 50% of the 22 teams existing nationwide.

The cartographic representations and graphs from this study fully reveal the outline of a cultural-sports scene defined by the sports area of the 73 municipalities in 36 counties connected to the national competitions through the 341 volleyball teams. Thus, along with the capital Bucharest that has the largest number of volleyball clubs, other representatives for the Romanian volleyball are the counties of Braşov, Cluj, Maramureş, Sălaj, Mureş, Dolj, Timiş, Bacău, Iaşi, Bihor, Neamţ, Dâmboviţa, Argeş. At the local level, in terms of historical regions, the representatives for Transylvania Cluj-Napoca, Târgu Mureş, Blaj, Braşov; for Banat are Timişoara, Caransebeş, Lugoj and Arad; for Crişana-Maramureş are: Baia Mare, Zalău, Oradea, Satu Mare, for Moldova are Piatra Neamţ, Iaşi, Bacău, Focşani, Suceava; for Muntenia-Oltenia are Bucharest, Buzău, Târgovişte, Piteşti, Galaţi, Ploieşti, and Dobrogea: Constanţa and Medgidia.

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