

# Maria Soja

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## Demographic development and changes of land-use in the Beskid Niski Mountains, Poland, between 1869 and 2009

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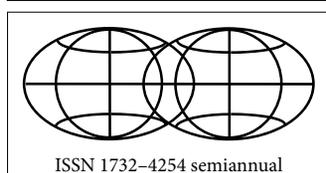
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Tekst jest udostępniony do wykorzystania w ramach dozwolonego użytku.



## Demographic development and changes of land-use in the Beskid Niski Mountains, Poland, between 1869 and 2009

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**Abstract.** Two different stages of demographic development with successive changes in land-use patterns and directions can be distinguished in the Beskid Niski in Poland during the past 140 years. These stages are separated by tragic events this region experienced in the 1940s (forced population resettlement). The first stage of demographic development is characterised by natural, consecutive changes comparable to other areas in the whole Carpathians. The second stage stretches from the end of World War II until the present day. The ‘revolutionary’ character and changes initiated by this stage are nothing like these observed in other regions of the Polish Carpathians back then as well as presently (except for Bieszczady Mountains). Stemming from rapid demographic processes most changes are observed in land-use and natural environment (unexpectedly halted anthropopression), although they also affect social structures and economic processes specific for mountainous areas.

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### 1. Introduction

Specific character of natural environment in mountainous areas greatly determines any human activity including settlement and land-use. Progressive evolution of civilisation and society results in increased demographic pressure, escalating housing and agricultural settlement all responsible for slow, but gradual

and irreversible degradation of natural environment (Richling, Solon, 1998). However, in some regions of the Polish Carpathians this adverse influence was suddenly and violently halted. In the aftermath of political decisions after World War II, evidenced by population forced resettlements, the ongoing degradation of natural environment, once unrestrained, vanished partially or completely. As a consequence, changes

in land-use triggered by unexpectedly stopped anthropopression influenced demographic structures and socio-economic processes distinctive for human existence in the mountains. Notably, a complete or partial change of human economic activity in an area is not always connected with decreasing population density. As noticed by J. Wolski (2009), economic activity may be also shaped by changes in mentality and lifestyle of particular groups causing populations to move from agricultural to other sources of income. The notion of 'selective land abandonment' has long been embedded into the EU Common Agricultural Policy and termed *semi-abandonment* (Wolski, 2009, after Land Abandonment..., 2005).

## 2. Material and research methods

The main goal of this study is to demonstrate the changes of land-use in the Beskid Niski Mts. stimulated by diverse, in both time and space, socio-demographic development in the years 1869–2009. A large body of statistical data was utilised in this research, of which most was derived from Austrian population censuses (1869, 1880, 1890, 1900, 1910). This source of data was determined by political jurisdiction as formerly the Beskid Niski Mts. belonged to Galicia, i.e. one of the Provinces of the Austro-Hungarian Empire. The remaining data was obtained from the Polish population censuses: pre-World War II (1921, 1931) and post-World War II (1950, 1960, 1970, 1978, 1988, 2002). Finally, the most recent information was derived from the Polish running records (2009).

All of the obtained figures required thorough processing as demographic data had to be aggregated to villages (more than 180 administrative units) and qualified to pre-established hypsographic levels. Consequently, the whole research procedure included the following information for each administrative unit in the Beskid Niski Mts.: total area, altitude, total population, national and religious affiliations, and land-use structure.

## 3. Research results

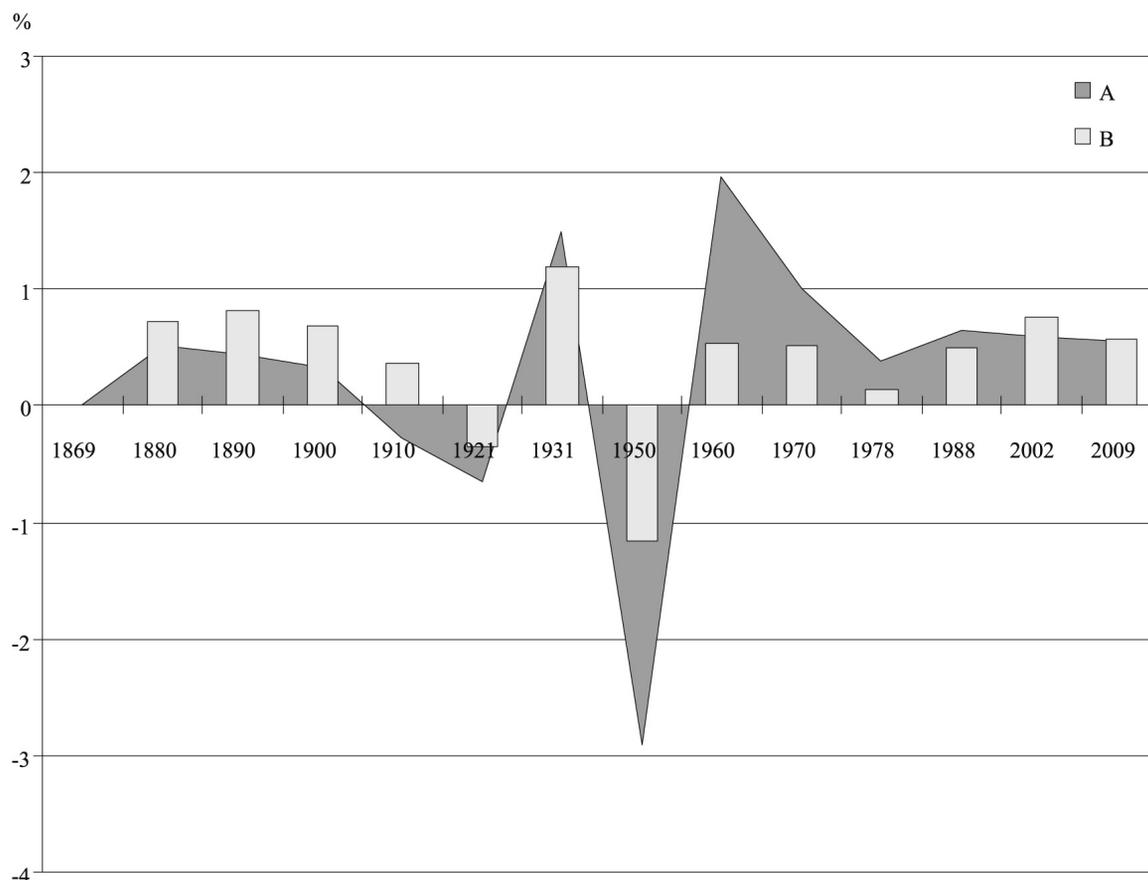
The Beskid Niski Mts. is the largest physiographic unit in the Polish Carpathians as measured by total area (2,000 km<sup>2</sup>), but the lowest when measured by altitude (up to 1,000 m) (Adamczyk, Gerlach, 1983). This mountainous area is most diversified as far as

land relief is concerned. This, along with sizeable elevations, political location and dense medieval forests, made it almost inaccessible for settlement. Thus, until the 14<sup>th</sup> century these mountains remained unpopulated (*anecumene*) (Adamczyk, 1980). The Beskid Niski Mts. were gradually colonised by two culturally diverse ethnic groups, namely Rusyns and Vlachs from the east, and Poles from the west. These groups formed one uniform ethnic region called Lemkivshchyna (after the ethnic group of Lemkos) (Reinfuss, 1936, 1998). According to the first post-World War I Polish national census conducted in 1921, the Beskid Niski Mts. were inhabited by such populations as: Rusyns (55% of the total population), Poles (42%) and Jews (3%), who represented the following religious affiliations: Greek Orthodox (59% of the total population), Roman Catholic (37%) and Judaism (4%) (Soja, 2001a).

Two different stages of demographic development with successive changes in land-use patterns and directions can be distinguished in the Beskid Niski Mts. during the past 140 years. These stages are separated by tragic events this region experienced in the late 1940s. In the aftermath of World War II and gradual forced resettlements of post-war Poland's Ukrainian minority in 1944–1947 (especially Operation Vistula conducted in 1947) the Beskid Niski Mts. incurred great human and material loss. In spite of the fact that over sixty years have passed from this event, consequences of this resettlement are still clearly visible in the contemporary landscape.

The first stage of demographic development is characterised by natural, consecutive changes comparable to other areas both in the Carpathians and the whole of Poland. Between 1869 and 1931 population dynamics in the Beskid Niski Mts. was unstable, although the total population increased by 18% (from 102,000 in 1869 to 120,000 in 1931). Nevertheless, at the turn of the 19<sup>th</sup> and 20<sup>th</sup> centuries the population growth first slowed, and then turned to a decline at the beginning of the 20<sup>th</sup> century (Fig. 1). This decrease stemmed primarily from a continuous emigration of rural population and World War I death toll. The most significant population increase in both the Beskid Niski Mts. and the Polish Carpathians took place between the First and Second World War peaking in 1931 (120,000 inhabitants).

The second stage of demographic development started during World War II and sustained until the present day. The 'revolutionary' character and changes initiated by this stage are nothing like those observed in other regions of the Polish Carpathians back then as well as presently (except for the



**Fig. 1.** Annual population growth rate in Beskid Niski Mts. and the Polish Carpathians between 1869 and 2009 (%)

Explanation: A – Beskid Niski; B – Carpathians

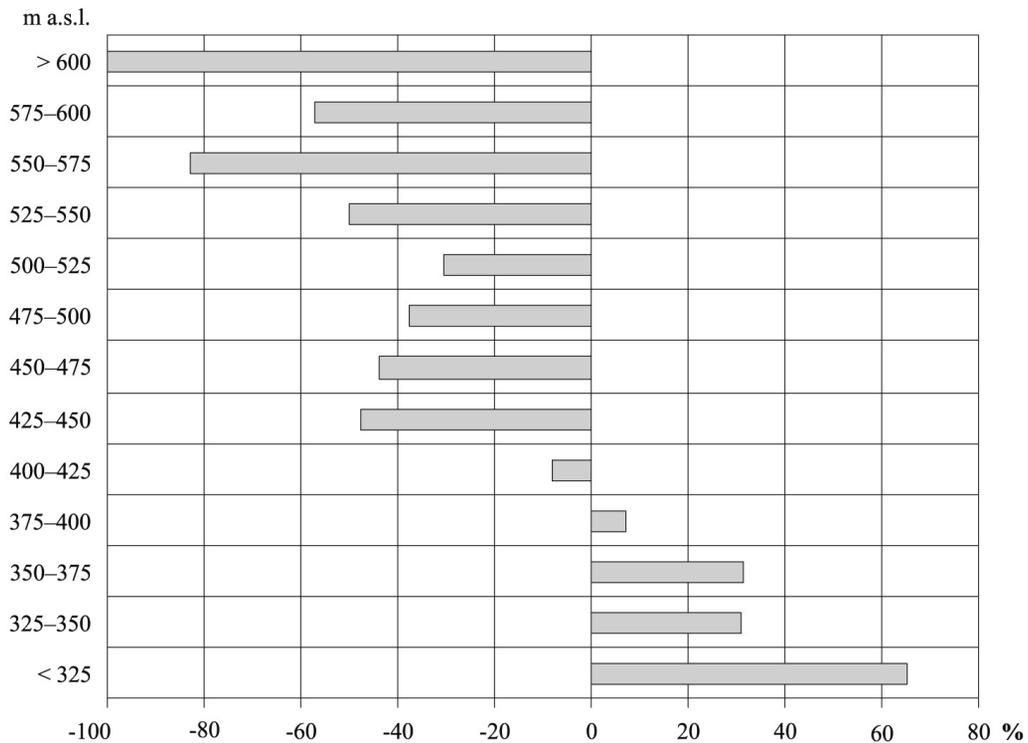
Source: Compiled by the author on the basis of the Austrian national censuses (1869–1910), as well as Polish national censuses (1921–2002) and public running records (2009)

Bieszczady Mts.). Complete or partial depopulation of most villages caused vast areas of ‘demographic emptiness’ to emerge in the whole of the Beskid Niski Mts. (as termed by Maryański in 1961). Resettlement in these areas was a challenging, long-lasting and yet unfinished process as many uninhabited villages still exist in the most inaccessible parts of the Beskid Niski Mts.. Notably, the first settlement of these deserted and undeveloped areas was pioneering. In medieval Europe, this kind of settlement was unusual and happened rarely.

As in medieval times, post-World War II recolonisation progressed gradually. First recolonisation currents encompassed attractive and easily accessible villages reaching these higher up in the mountains later (Soja, 2001b, 2008). Parallel recolonisation of the Bieszczady Mts. was very different from this that took place in the Beskid Niski Mts.. Whereas the former was planned and managed by the state officials, the latter remained unorganised and spontaneous.

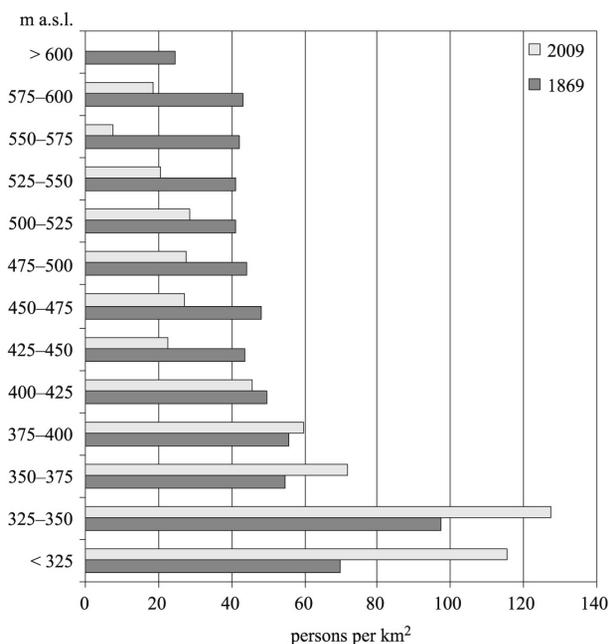
Demographic restoration advanced along with the population influx. The changes in population density within particular hypsographic levels indicate that new settlers were more likely to populate villages located up to 400 meters altitude. This border height became a natural threshold value that determined the regions’ ‘population’ or ‘depopulation’ (Fig. 2). Depopulation processes along with the increasing altitude have been long acknowledged as a typical phenomenon for mountainous areas (Staszewski, 1957; Guzik, Zborowski, 1988). This rule has been proven correct in the Beskid Niski Mts., but only in the second half of the 20<sup>th</sup> century. In the 19<sup>th</sup> and at the beginning of the 20<sup>th</sup> century agricultural overpopulation made population density similar at all hypsographic levels (Fig. 3).

Agriculture dominated the land-use pattern in the Beskid Niski Mts. between 1869 and 1931. Cultivated lands had been expanding continually until 1900, but their area started to dwindle at the beginning of the



**Fig. 2.** Dynamics of population changes in Beskid Niski Mts. between 1869 and 2009 (1869=100%) by elevation levels (%)

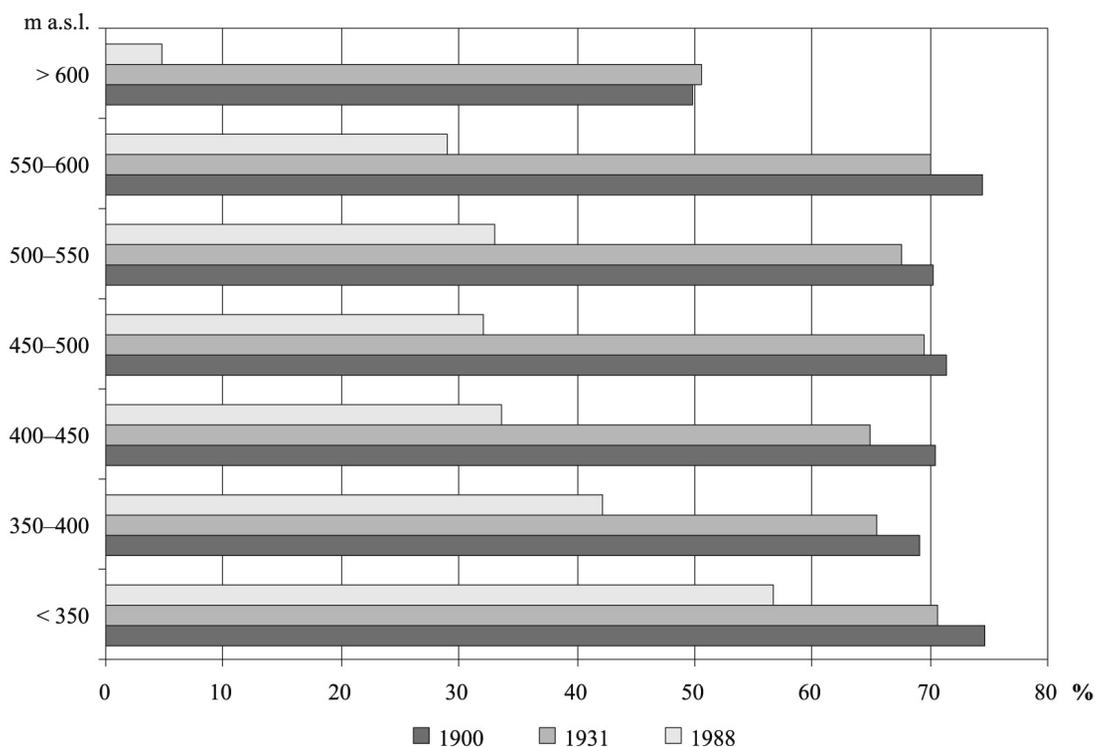
Source: Compiled by the author on the basis of the Austrian national censuses (1869-1910), as well as Polish national censuses (1921-2002) and public running records (2009)



**Fig. 3.** Population density in the Beskid Niski Mts. in 1869 and 2009 by elevation levels (people per km²)

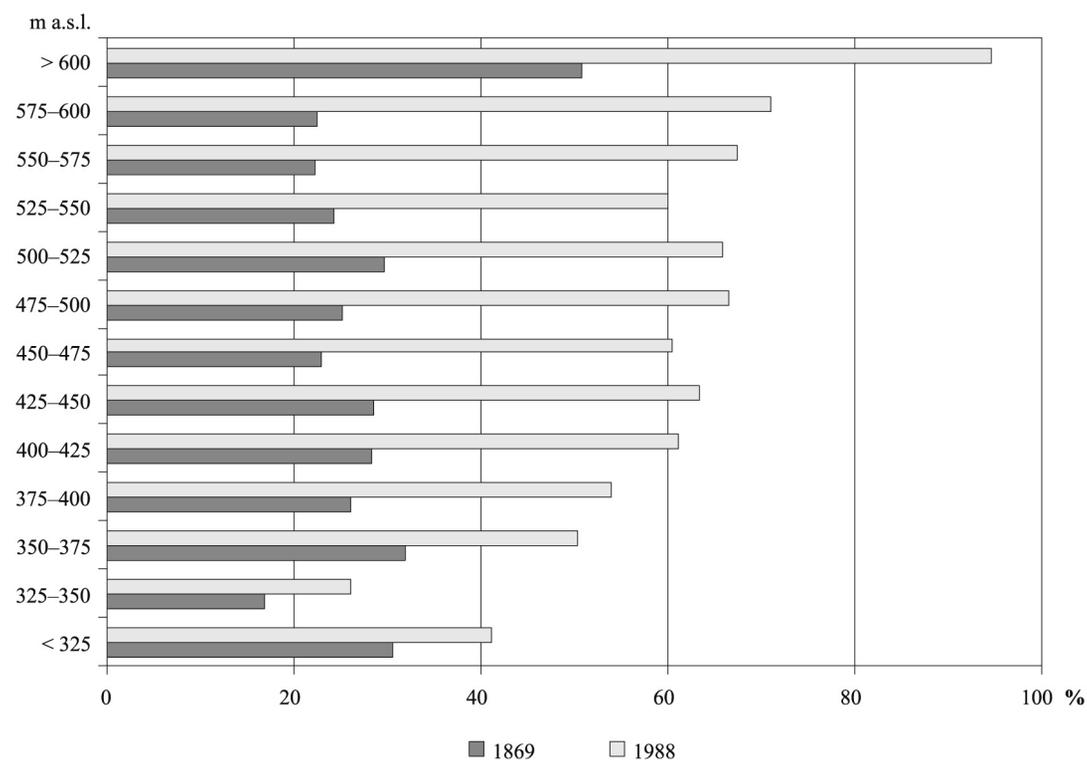
Source: Compiled by the author on the basis of the Austrian population census (1869) and public running records (2009)

20<sup>th</sup> century. The share of agricultural land in the total area of the Beskid Niski Mts. fell from 70.6% in 1900 to 67.0% in 1931. Similar trends were observed shortly after World War I (Bański, 1997). Deforestation, a process concurrent to expanding agriculture, was almost over by the end of the 19<sup>th</sup> century as the share of forests in 1931 (30.1%) was greater than both in 1869 (27.1%) and 1900 (26.6%). The proportion of forested and agricultural lands before World War II was determined by demographic pressure as settlers were prone to engage in farming at the cost of forested areas. At the turn of the 19<sup>th</sup> and 20<sup>th</sup> centuries agricultural overpopulation (137 persons per 100 hectares of agricultural land) along with no perspectives for further expansion of new arable land (more than ¾ area within hypsographic level had already been devoted to agriculture, even these located over 500 m) caused pervasive out-migration from the Beskid Niski Mts. (Fig. 4). As a result, total population dropped from 117,000 in 1900 to 114,000 in 1910. Simultaneously, considerable anthropogenic pressure upon natural environment was diminished by increasing availability of non-agricultural sources of income. In spite of significant demographic growth between 1921 and 1931 (from 105,000 to 120,000 inhabitants) the



**Fig. 4.** Share of agricultural lands in the Beskid Niski Mts. in 1900, 1931 and 1988 by elevation levels (%)

Source: Compiled by the author on the basis of the Austrian national census (1900), as well as Polish national census (1931) and the data of the Central Statistical Office (GUS)



**Fig. 5.** Share of forests in the Beskid Niski Mts. in 1869 and 1988 by elevation levels (%)

Source: Compiled by the author on the basis of the Austrian national census (1869) and the data of the Central Statistical Office (GUS)

proportion between particular types of land-use did not change substantially.

As mentioned previously, World War II military actions and post-war population forced resettlements greatly affected the Lemko minority. According to the 1950 Polish National Census, only 55,700 of permanent residents remained in the Beskid Niski Mts.. This figure clearly explains demographic decline, which reached 65,000 fewer inhabitants (54% of total population) as compared to 1931. Suddenly and violently broken demographic, settlement and economic continuity caused sizeable changes in land-use structure. Entirely or partially desolated villages in post-agricultural areas were gradually taken up by forests (Fig. 5). This natural succession resulted in reposition of lower tree line from 700–750 to 400–450 m (Lach, 1975; Warcholik, 2005). The share of forested area was changing dynamically; in some regions this proportion has doubled or even tripled. This is clearly depicted by an increase from 30% share of forests in 1931 to 60% by the end of the 20<sup>th</sup> century in the entire Beskid Niski Mts.. Vertical changes of this share (across elevation levels) illustrate the following regularity, which is also common for other mountainous areas: the proportion of forested areas increases with elevation. This rule was unprecedented towards the end of the 19<sup>th</sup> century, when forests uniformly covered particular hypsographic levels (on average: 20–30% of a level's area). Agricultural pressure upon natural environment (less evident in the northern part of the Beskid Niski Mts.) completely vanished in many villages located to the south, closer to the Slovakian border. Hence, the share of cultivated land there fell almost twofold (from 67% in 1931 to 37% in 1988). Presently, their spatial distribution across elevation levels corresponds to diverse conditions of natural environment. The share of cultivated land decreases along with the growing altitude (Fig. 4). Noticeably, slight but continuous population growth in the Beskid Niski Mts. has not considerably changed low population density, which now amounts to 46 people per km<sup>2</sup> (2009), and is lower than in 1869 (51 people per km<sup>2</sup>). This region has never regained as large population as in the 19<sup>th</sup> century. In 2009 the Beskid Niski Mts. were inhabited by 91,000 people, i.e. 90% of the 1869 population, and 75% as compared to the peak of 1931. This decline is evident when considered through the lenses of elevation levels (Fig. 2, Fig. 3). Contemporary land-use structure inversely mirrors the one existing at the beginning of the 20<sup>th</sup> century, which, in this respect, makes the Beskid Niski Mts. unique in Poland or even in the whole Carpathians (Soja, 2001b).

#### 4. Conclusions

To recap, the Beskid Niski Mts. is the only region of the Polish Carpathians (except for the Bieszczady Mts.), where human activities in the 20<sup>th</sup> century have not exerted significant and adverse consequences for natural environment. This is attested by an increase of forested area in the region during the last few decades (Fig. 5). On the other hand, renaturalisation in the Beskid Niski Mts. was neither planned nor controlled, but occurred spontaneously and practically without any human interference. This renaturalisation has lasted for over sixty years as an unintentional result of the forced Lemko population resettlements that took place in the 1940s. To put it simply, massive depopulation across the whole region back then let higher parts of the Beskid Niski Mts. to be reshaped by the natural processes.

Until the mid-1940s most changes regarding natural environment in the Beskid Niski Mts. had been generated by the local inhabitants. Consequently, mutual proportions of agricultural and forest areas were, by and large, very changeable. In the second half of the 20<sup>th</sup> century rapid technological advancements altered both agrotechnology and crop structure. Large-scale agriculture and modern machinery replaced traditional cultivation, machine saws took the place of manual woodcutting, and chemical fertilisers were used instead of the natural ones. This extensive management dominated economic activity in the mountainous areas of the Beskid Niski Mts. until the early 1990s. Present land-use pattern is optimal and no further interferences are necessary in order to retain all of the natural and cultural values of this region (Soja, 2001b).

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