

Six hundred years of agricultural activity in the Gorce Mountains (Polish Carpathians)

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The role of human activity on agricultural land use were studied in the Ochotnica village (105 km²) with Jaszczce and Jamne catchments (the Gorce Mountains in Polish Carpathians) from the beginning of human settlement to present-day with special emphasise on the period 1846-2009. The visual interpretation of cadastral maps and air photos, combined with palynological and radiocarbon data as well as analysis of historical and census reports indicates more permanent conversion of land-cover of the Gorce Mountains were started by the expansion of Wallachian shepherds at the turn of the 14th and 15th centuries. In the years 1846-2009, there was an increase in the forest area of Ochotnica by 77%, and in the Jaszczce and Jamne catchment by 29% and 43%, respectively. The arable land decreased in that period by 94% in both catchments. The period of 163 years shows diverging trends and dynamics of land use, referring to the three stages of the socio-economic development observed in the Polish Carpathians. Until World War II, agriculture was the main source of income of the growing rural population. The contribution of the agricultural land was approximately 70% in the 1930s., reaching the highest level in the history of human activity in the Gorce Mountains. After World War II, because of a shortage of food in the communist economy, the pressure on land cultivation resulted in the keep of the land use structure inherited from the past. The transition from the communist economy to a free market after 1989 and the accession of Poland to the European Union, forced a rapid increase in forest area at the expense of the agricultural land. They were the most significant land use changes from the time of the Wallachians' colonization of the Gorce Mountains.

The changes in land use contributed to a decrease in the intensity of soil erosion on the slopes and an increase of channel incision in the both streams and Ochotnica river, draining the area of 107.6 km² of the Gorce Mountains. Forest expansion, although delayed for 150 years compared to those observed in the mountains of Western Europe, have a positive impact on the environment (reduction of erosion and frequency of large floods).