

# Landscape changes of the former Łopienka village in the Bieszczady Mountains

Adam Snopek

Department of Geoecology, Faculty of Geography and Regional Studies, University of Warsaw  
Krakowskie Przedmieście 30, 00-927 Warszawa  
e-mail: adamsnopek@gmail.com

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**Abstract:** The aim of the work consists of determination of the direction and intensity of previous transformations, evaluation of sustainability and prognosis for further transformations of actual structure of abandoned rural landscape of Łopienka valley in Cisna-Wetlina Landscape Park, in Western Bieszczady Mountain Range. Traditional agriculture on analyzed area has been aborted in cause of displacement of Ruthenian highlanders from Polish part of Bieszczady in 1946-47, later pastoral use has also been aborted. Landscape virtues formed in consequence of that phenomenon, related to material culture remains and meadows surrounded by forested hills, determine tourism attractiveness of the valley. Fieldwork included mainly photo records preparation and phytosociological relevés in meadow communities. Analysis took advantage of variable maps, ortophotomaps and photographs documenting the land cover in several periods since 1855. The results were compared to parallel cases from Bieszczady National Park and Magura National Park.

Key words: Bieszczady Mountains, plant succession, reforestation, abandoned rural landscape

**Key words:** landscape structure, rural landscape, landscape transformations, Łopienka valley

## Introduction

Łopienka valley, named from former village, is situated in Western Bieszczady Mountain Range, between Korbania, Jamy and Łopiennik hills, in Cisna-Wetlina Landscape Park. The village, located in the XVI century and settled by Ruthenian highlanders (Boyko group), was completely depopulated in 1946-47 in cause of the displacement of Ukrainians from southeastern Poland (Orłowski 2004), just like many other Boyko villages. The abortion of agriculture and later pasturage on former cornfields triggered secondary succession leading to regeneration of forests (mainly *Dentario glandulosae-Fagetum* association). The work attempts to approximately determine the direction and intensity of previous transformations, evaluate of sustainability and predict further transformations of actual structure of Łopienka valley landscape, with a focus on reforestation and decrease in meadows, which are an important habitat for animals, as well as a main element of landscape interior (Wolski 2007) determining tourism attractiveness of such valley.

## Methods

Inventory was conducted in the largest complex of meadows (15 ha), situated on the northern hillslope of Jamy. Ten phytosociological relevés from diverse altitudes (in range 566 - 670 m AMSL) were made during the summer of 2010 by the Braun-Blanquet method (Wysocki & Sikorski 2009) in homogeneous meadow patches. Data were compiled in a phytosociological table (Rogala, unpublished).

Actual afforestation was compared to conditions revealed approximately by several topographic maps, following

the example of Frączek & Zborowska (2010). Austrian maps from 1855 (Administrativ Karte von den Königreichen Galizien und Lodomerien...) and 1878 (Spezialkarte der österreichisch-ungarischen Monarchie...), as well as Polish maps from 1938 (Mapa Taktyczna Polski...), 1978 (Bieszczady...) and 2007 (Bieszczady zapraszają...) have been chosen (fig. 1-3). Photographs from 2011 were compared to ones from 1994.



Fig. 1. Łopienka valley at the map from 1855

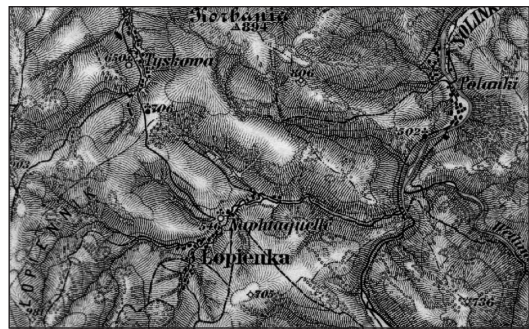


Fig. 2. Łopienka valley at the map from 1878

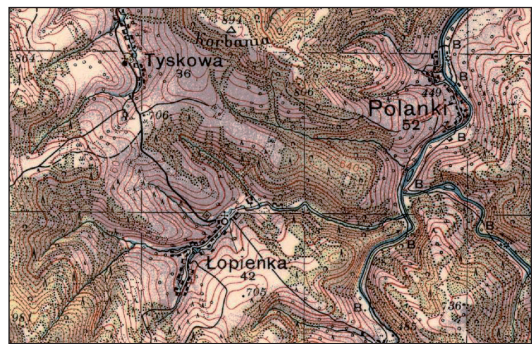


Fig. 3. Łopienka valley at the map from 1938

## Results

Main plant species on meadows are turf grasses (*Agrostis capillaris*, *Deschampsia caespitosa* and *Dactylis glomerata*) and dicotyledon species typical for *Arrhenatherion elatioris* alliance and *Trifolio-Geranietaea* class. Researched phytocenosis has been classified as *Campanulo serratae-Agrostietum* association, firstly described from former cornfields in Bieszczady National Park by Denisiuk & Korzeniak (1999).

Total number of noticed taxons constitutes 23 % of Łopienka valley flora known from previous researches (Bolibok et al. 1991).

Comparison of maps shows the most significant decrease in afforestation of the valley after 1978. Fluctuations before 1878 were insignificant and decrease in afforestation in the next 100 years progressed slowly. Photographs (fig. 4-5) present progress in artificial reforestation and increase of *Rhamno-Prunetea* class thickets in recent years.

## Discussion

*Campanulo serratae-Agrostietum* meadow communities deserve protection as valuable habitats with important landscape virtues connected to attractively blooming plants. Maintaining of these communities requires active protection by mowing and, in a lesser degree, extensive grazing (Denisiuk & Korzeniak 1999). In Łopienka valley case, mowing was premeditated as a part of Cisna-Wetlina Landscape Park assignments (Plan ochrony Ciśniańsko-Wetlińskiego Parku Krajobrazowego). Besides probable importance of those meadows for birds of prey, the inventory conducted in 2008 (Dziankowska & Snopek, unpublished) revealed the Łopienka valley as an important habitat of Corncrake *Crex crex*. Corncrake habitat protection in the Bieszczady Mountains as a Natura 2000 site enables correct mowing to be realized (Zieliński 2004), giving meadows a chance to be protected. Orchidaceae species (mainly found outside relevés): *Gymnadenia conopsea*, *Platanthera chlorantha*, *Platanthera bifolia* and *Dactylorhiza fuchsii* deserve special attention.



Fig. 4. Northern hillslope of Jamy in 1994 (photo J. Natkański)



Fig. 5. Northern hillslope of Jamy in 2011 (photo A. Snopek)

Patterns of the transformations of abandoned rural landscape in the Bieszczady Mountains are known from Bieszczady National Park (Wolski 2007, 2009), as well as from Magura National Park in Beskid Niski Mountain Range (Frączek & Zborowska 2010). Grazing transforms *Campanulo serratae*-*Agrostietum* communities into *Cynosurion* alliance grasslands (Wolski 2009). Regeneration of meadow communities on the hillslope of Jamy, where grazing was aborted over 20 years ago (Bolibok et al. 1991), seems to be complete. Localization of Grey Alder *Alnus incana*, colonizing post-agricultural sites in parallel cases in the Bieszczady Mountains (Wolski 2009), outside the sites signed on old maps as meadow or thicket deserves an attention. It seems to be an evidence of artificial origin of Common Beech *Fagus sylvatica* on such sites. However, it is impossible to prove it for sure and lack of thicket layer on the map from 1978 interferes with this trial, as well as the uncompliance of small patches of forest plant communities (Frączek & Zborowska 2010). The increase of afforestation after 1978 was probably caused by the economic conditions worsening (Wolski 2009). In general, the simple comparison of topographic maps proves to be helpful in such researches, but conclusions require considerate approach.

## Conclusions

- Proportion between plant formations in Łopienka valley case is a result of former human activity and requires active protection to persist, as well as the most valuable meadow vegetation persistence,

- Despite the initiation of reforestation caused by abandonment, possible beech forest regeneration would be a long-term process.

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