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## Impact of Climate Change in the Little Ice Age on Mountain Communities of the 15th and 16th c. The Polish Carpathians: a Case Study

*Wpływ przemian klimatycznych w dobie małej epoki lodowej na społeczności  
 gór w XV i XVI stuleciu. Przykład Karpat polskich*

Because the land of the county of Sambir is situated mostly in the mountains where winter crops are not born since winter lasts there for a long time and it quickly freezes in autumn, the vast majority of villages in the county of Sambir is founded on the Wallachian law<sup>1</sup>.

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<sup>1</sup> G. Jawor, *Commentary by Jan Zamoyski, the Royal secretary, on legal customs of the Vlachs of Sambir from 1568*, „Analele Universitatii din Craiova. Seria Istorie” 2019, 24, s. 11.

## ABSTRACT

The aim of this article is to trace reactions to the cooling of climate in the 15th and 16th century caused among the communities living in mountain areas, who were particularly affected by the consequences of this phenomenon. The Polish Carpathians are the subject of a detailed study here, but it would be tempting to compare the obtained results with research analyses of other mountain areas in the northern hemisphere. This work examines in detail the condition of settlement networks in the mountains in the abovementioned period, and it analyses their economic profile. Particular attention is given to rapid changes observed there, undoubtedly associated with the progressing climate cooling. At the same time, a crisis of an older settlement process based on agricultural activities was taking place. Its most evident symptoms were poverty and, as a consequence, the abandonment of villages by their residents and depopulation of entire settlements. On the other hand, this phenomenon was simultaneously accompanied by a progressing wave of new colonization, introducing a different economic model based on a skillful joining of pastoral activities with agriculture, as well as other tasks. It turned into an enormous success resulting in the settlement of hundreds of new villages in the 16th century. The sources refer to this process as „the settlement based on the Wallachian law”. It was initiated by immigrants from the Balkans, but soon its elements were adopted by the local population, primarily Ruthenian. This colonizing movement entailed deep transformations of social, ethnical, and religious nature in the examined area, the consequences of which are visible even today.

**Key words:** Little Ice Age, mountain farming and pastoralism, Wallachian law, migrations, settlement

## STRESZCZENIE

Celem artykułu było prześledzenie reakcji na ochłodzenie klimatu w XV i XVI w. społeczności zamieszkujących szczególnie narażone na konsekwencje tego zjawiska obszary górskie. Przedmiotem szczegółowych obserwacji stał się teren Karpat polskich, lecz kuszącą perspektywą byłoby porównanie uzyskanych wyników z efektami badań innych obszarów górskich na półkuli północnej. W pracy analizie poddałem zwłaszcza stan sieci osadniczej w górach w badanym przedziale czasowym oraz dokonałem analizy ich profilu gospodarczego. Na szczególną uwagę zasługują obserwowane tam gwałtowne przemiany, bez wątpliwości powiązane z postępującym ochłodzeniem klimatu. Z jednej strony miał miejsce kryzys starszego osadnictwa opartego na zajęciach rolniczych. Jego najbardziej widocznymi symptomami była nędza a w konsekwencji opuszczanie wsi przez dotychczasowych mieszkańców i wyludnianie całych osad. Z drugiej strony zjawisku temu równocześnie towarzyszyła postępująca fala nowej kolonizacji, wprowadzająca odmienny model gospodarczy, oparty na umiejętnym łączeniu zajęć pasterskich z rolnictwem i innymi aktywnościami. Odniosła ona olbrzymi sukces mierzony powstaniem w XVI w. setek nowych wsi. W źródłach określa się ją jako „osadnictwo na prawie wołoskim”. Zainicjowali ją imigranci z Bałkanów, lecz wkrótce jej elementy przyswoiła miejscowa, głównie ruska ludność. Ten nurt kolonizacyjny pociągnął za sobą głębokie przemiany natury społecznej, etnicznej i religijnej na badanym obszarze, których konsekwencje widoczne są również współcześnie.

**Słowa kluczowe:** mała epoka lodowa, górskie rolnictwo i pasterstwo, prawo wołoskie, migracje, osadnictwo

## PRELIMINARY REMARKS

The problem of the Wallachian migrations has been present in the historiography of the Central European nations for more than two hundred years and it still triggers lively discussions, often going beyond the academic discourse. They focus on consequences of ethnic transformations that these changes had entailed. To a much lesser extent, the scholarly debate refers to a new model of rural economy based on the domination of pastoral activities spread by immigrants. Until recently, the reasons for these trans-border migrations were considered to have been strictly homogenous<sup>2</sup>. Only a few years ago, a small number of works by historians and geographers were published, which strongly emphasized the existence of a relationship between the dissemination of the pastoral model of the Carpathian settlements' economic functioning and the replacement of the older rural settlements by it, as well as a deep and long-lasting climate breakdown known as the Little Ice Age [hereinafter: LIA]<sup>3</sup>. This was made possible by abandoning the traditional interpretation of the sparsely preserved historical sources from the 15th and 16th centuries, which stressed the information on specific climatic events that could have been linked with the LIA's progress. The major research effort is focused here on the analysis of settlement processes taking place in the sub-mountain areas, attempting to correlate them with the gradually occurring environmental changes. The arguments presented below aim at applying a method of settlement analysis which focuses on a relatively large area, situated – in terms of geographical divisions – within the part of the Western and Eastern Carpathians<sup>4</sup>. I will also discuss broadly the results of the observed processes, which go far beyond the economic sphere. For there are many indications that the period in question offers the origins of the then existing specific ethnic and religious structures, as well as the region's cultural diversity.

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<sup>2</sup> This problem was discussed in detail in the publication by G. Jawor, *Osady prawa włoskiego i ich mieszkańcy na Rusi Czerwonej w późnym średniowieczu*, Lublin 2000, s. 15–57, and idem, *Așezările de drept valah și locuitorii lor din Rutenia Roșie în Evul Mediu târziu*, Jași 2012, s. 27–54.

<sup>3</sup> Idem, *La colonisation valaque sur les versants nord des Carpates pendant le Petit Âge Glaciaire (aux XVe et XVIe siècles)*, „Balcanica Posnaniensia. Acta et Studia” 2018, 25, s. 251–268; P. Kłapyta, *Klimatyczne uwarunkowania rozwoju osadnictwa na prawie włoskim w Karpatach Zachodnich na przełomie XV i XVI wieku na przykładzie Podtatrza*, „Balcanica Posnaniensia. Acta et Studia” 2021, 28: *Ius Valachicum II*, s. 133–148.

<sup>4</sup> The border between the Western Carpathians and the Eastern Carpathians runs in Poland, along the Łupkow Pass. The Bieszczady mentioned in the text, currently divided by the Polish-Ukrainian state border, belongs to the area of the Eastern Carpathians.

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CLIMATE AND FARMING IN THE CARPATHIANS  
IN THE 15TH AND 16TH CENTURY

There is no possibility at present to determine the exact date of the beginning of the Little Ice Age in the Carpathians due to the inability to conduct glaciological research in this area. It is generally assumed that, similarly to the Alps, the initiation of this phenomenon took place at the turn of the 14th and 15th century. The process of climate deterioration was not homogenous. Its major phase, characterized by the intensifying weather anomalies and natural disasters associated with them, took place over the period of 1550–1700. Moreover, the LIA's period was marked by considerable climatic fluctuations in the scale of respective decades (alternating cycles of stability and extraordinary events lasting from twenty to forty years) or even shorter periods. In the Tatras, the highest mountain range in the Western Carpathians, the prolonged cold phase is dated back to 1576–1675<sup>5</sup>. It is beyond dispute that the intensity of heavy rains and, consequently, floods, hurricanes, low temperatures in summer seasons and frosty, long-lasting winters did result in giving smaller harvest. Therefore, the threat of hunger was increasing and it was shaking the foundations of the very existence of the population at the time. Not all of the LIA's consequences, particularly in the sphere of settlement and farming, have been fully recognized. Any further discussions should take into consideration the important opinion of Henryk Maruszczak who stated that the food crisis had an impact mostly on people living in the mountain and sub-mountain regions, i.e. at the borderlands of natural areas and vertical environmental levels, as these places reacted even to relatively small deviations from climatic factors<sup>6</sup>. Throughout the LIA, the average long-term temperature per annum in the sub-mountain areas (only one degree Celsius lower than nowadays) could mean serious

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<sup>5</sup> J.M. Grove, *The initiation of the „Little Ice Age” in regions round the North Atlantic*, „Climatic Change” 2001, 48, s. 53–82; H. Holzhauser, M. Magny, H.J. Zumbuhl, *Glacier and lake-level variations in west-central Europe over the last 3500 years*, „The Holocene” 2005, 15, s. 797; A. Kotarba, *Mała epoka lodowa w Tatrach Wysokich*, w: *VII Zjazd Geomorfologów Polskich. Współczesna ewolucja rzeźby Polski*, red. A. Kotarba, K. Krzemień, J. Świąchowicz, Kraków 2005, s. 50–65; idem, *Zdarzenia geomorfologiczne w Tatrach Wysokich podczas małej epoki lodowej*, w: *Rola Małej Epoki Lodowej w przekształcaniu środowiska przyrodniczego Tatr*, red. idem, Warszawa 2004, s. 10; T. Niedźwiedz, *Rekonstrukcja warunków termicznych lata w Tatrach od 1550 roku*, w: *Rola Małej*, s. 57–88.

<sup>6</sup> H. Maruszczak, *Tendencje sekularne i zjawiska ekstremalne w rozwoju rzeźby małopolskich wyżyn lessowych w czasach historycznych*, „Czasopismo Geograficzne” 1986, 57, s. 271–288; idem, *Zmiany środowiska w okresie historycznym*, w: *Geografia Polski. Środowisko geograficzne*, red. L. Starkel, Warszawa 1999, s. 182–205.

changes in the then farming conditions<sup>7</sup>. In practice, the temperature cooling led to a shortened vegetation period and, as a consequence, to a decrease in the upper level of profitability in growing winter crops, which, depending on the local conditions, varied between several dozen to even one hundred meters<sup>8</sup>. It should be noted here that today's vegetation of plants is reduced by eight days a year for every one hundred meters in altitude difference. The same hypsometric range engenders an increase in: annual sums of atmospheric precipitation (thirty millimeters on average), snow cover's duration, and intensity of winds. Sloping of hills and activity of extreme geomorphological processes (mass wasting, erosion) are increasingly more visible. This hinders the vegetation of plants, eliminating from cultivation particularly the species with higher maintenance requirements<sup>9</sup>.

Early medieval Slavic settlement based on primitive farming avoided the high-altitude areas. A certain change took place only in the 13th and 14th century when relatively numerous rural settlements appeared at the foot of the Carpathians in the areas within the range from three hundred to six hundred meters above sea level. It is worth noting that this period includes the final phase of the climatic optimum, while the symptoms of the approaching cooling in the Carpathians had not been noticeable yet<sup>10</sup>. The crop yield was influenced by various factors, but in the Polish territories at the turn of the 15th and 16th century, similarly to Bohemia, England, and Provence, it was on average within the range of three to four grains from one sown crop<sup>11</sup>. Even this number was difficult

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<sup>7</sup> J. Luterbacher et al., *European Seasonal and Annual Temperature Variability, Trends, and Extremes Since 1500*, „Science” 2004, 303, s. 1500; J.A. Matthews, K.R. Briffa, *The „Little Ice Age”: Re-Evaluation of an Evolving Concept*, „Geografiska Annaler” 2004, 87, s. 21; P. Dobrovolný et al., *Monthly, seasonal and annual temperature reconstructions for Central Europe derived from documentary evidence and instrumental records since AD 1500*, „Climatic Change” 2010, 101, s. 93.

<sup>8</sup> Currently it is possible in Podhale's region, which is situated between four hundred and six hundred meters above sea level, to cultivate winter crops, rye in particular, and in the best soil and climate conditions – even wheat; however, above seven hundred meters above sea level no winter crops or spring barley can be grown. A short vegetation period, thick and long-lasting snow cover eliminate these crops from cultivation, see Cz. Guzik, *Zmiany użytkowania ziemi i sposobów gospodarowania w rolnictwie Podhala*, w: *Geografia i Sacrum*, vol. 1, red. B. Domański, S. Skiba, Kraków 2005, s. 89.

<sup>9</sup> P. Kłapyta, *op. cit.*, 135.

<sup>10</sup> V. Chaloupecký, *Valaši na Slovensku*, Praha 1947, s. 6–8; A. Rutkowska-Płachcińska, *Sąddeczyzna w XIII i XIV wieku*, Wrocław 1961, s. 67; M. Parczewski, *Początki napływu ludności ruskiej na teren Karpat Zachodnich w świetle archeologii*, „Archaeologia Historica” 1993, 18, s. 4.

<sup>11</sup> P. Guzowski, *Chłopi i pieniądze na przełomie średniowiecza i czasów nowożytnych*, Kraków 2008, s. 116.

to achieve in the sub-mountain and mountain regions not only due to the poor quality of soils, but most of all because of the shorter period of plants' vegetation when compared with the low-lying areas. The awareness of these difficulties was widespread in the analyzed period and it is reflected in the sources<sup>12</sup>. Due to problems with cultivating winter cereals that were decisive for a positive nutritional balance, the then most typical and most efficient system of cultivation based on sequential (triple) cropping could only be used with great difficulties by the farmers managing settlements situated higher than four hundred meters above sea level<sup>13</sup>. Even the smallest weather anomalies threatened the grow of the expected harvest from this cultivation, and the specter of hunger could not be averted by an increased cultivation of spring crops due to their smaller yield in comparison with winter cereals. This reality forced the residents of the Carpathians to give up on sequential cropping system in favor of older farming systems which had been abandoned in other regions: the two-field rotation system and alternating fallow farming<sup>14</sup>. However, in this case a farmer could receive even smaller harvest, reaching only two to three grains from one sown grain. Shortage of food stemming from farming could not be sufficiently compensated by animal husbandry. Although animals were present in every peasant farm, their number was

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<sup>12</sup> Jan Długosz, Polish chronicler who lived in the 15th century, pointed out not only to long and frosty winters that shortened the time of farmers' work, but also to barren and infertile mountain soil: „Sunt agri steriles et frigora grandia diucius terram premunt, ita quod paucis tempore anni inibi laboratur”. *Joannis Długosii Annales seu Cronicae inclicti Regni Poloniae*. Liber nonus, wyd. Z. Budkowa, J. Garbacik et al., Varsoviae 1978, s. 278. The lack of possibility to grow winter crops was mentioned in the inventory of the Sambir District Office (*starostwo*) from 1568: „Because the land of the county of Sambir is situated mostly in the mountains where winter crops are not born since winter lasts there for a long time and it quickly freezes in autumn, the vast majority of villages in the county of Sambir is founded under the Wallachian law” – (original excerpt is in the old-Polish language – G. Jawor, *Commentary*, s. 11).

<sup>13</sup> Sequential (triple) cropping was based on dividing a field into three parts. Spring crops were grown on the first part, winter crops were grown on the second part, and the third part was a fallow. Each year the cultivation was rotated. Above the hypsometric line of five hundred meters above sea level, the cultivation of winter crops was completely unprofitable in the past, see B. Kopczyńska-Jaworska, *Tradycyjna gospodarka sezonowa w Karpatach Polskich*, Wrocław 1969, s. 20.

<sup>14</sup> E. Lazea, *Agricultura în Transilvania în secolul al XIV-lea*, „Studii Revistă de Istorie” 1964, 17, s. 260; R. Popa, *Țara Maramureșului în veacul al XIV – lea*, București 1970, s. 123; P.P. Panaitescu, *Introducere la istoria culturii Românești*, București 1969, s. 151; В.Ф. Инкин, *Дворище и лан в королевских имениях Галичины в XV–XVIII вв.*, „Материалы по истории сельского хозяйства и крестьянства СССР” 1974, 8, s. 31.

usually low<sup>15</sup>. It remains certain that the farming economy at the border between sub-mountain and mountain zones, which decided about the people's existence, was particularly sensitive to even small climate fluctuations since it balanced on the verge of food sufficiency even in times of favorable weather conditions<sup>16</sup>. In turn, the food crisis – and consequently, either the entire displacement of farmers from this area or their adaptation to the new reality – could have stemmed from the long-term climate cooling, as measured by average annual temperatures declining even by one degree Celsius. The farmers' fate depended on their readiness to innovate and change the means of farming. In the analyzed period and area, this change could take place in the villages based primarily on farming activities due to the implementation of animal husbandry on a previously unknown scale, but also because of a different and more active method of using forested areas. The lack of willingness for these changes and preference to continue with the existing lifestyle forced the decision about migrating to lower-lying areas where the results of the cooling were not so discernible and the farming economy remained efficient<sup>17</sup>.

#### INTERPRETATIVE VALUE OF SOURCES ON EXTRAORDINARY WEATHER CONDITIONS

There is little information preserved on various weather phenomena and the consequent natural disasters in the Polish Carpathians in the 15th and 16th centuries, despite the fact that climate scientists researching that time period have at their disposal some records on this type of phenomena occurring in the Polish areas, collected and published in a separate volume<sup>18</sup>. It is also uncertain whether they are in fact connected with the climate's deterioration. Such phenomena can always occur, and they also appear to a lesser extent in stable periods. For this reason, those representing climate sciences approach the reports on weather events merely as peculiar illustrations, an addition to objective data obtained mainly

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<sup>15</sup> S. Chmielewski, *Gospodarka rolna i hodowlana w Polsce w XIV i XV w. (Technika i rozmiary produkcji)*, w: *Studia z dziejów gospodarstwa wiejskiego*, vol. 2, red. J. Leskiewiczowa, Warszawa 1962, s. 48.

<sup>16</sup> W. Kula, *Problemy i metody historii gospodarczej*, Warszawa 1983, s. 643.

<sup>17</sup> D.D. Zhang et al., *Global climate change, war, and population decline in recent human history*, „Proceedings of the National Academy of Sciences of the United States of America” 2007, 104, s. 19215.

<sup>18</sup> A. Walawender, *Kronika klęsk elementarnych Polsce i krajach sąsiednich w latach 1450–1586*, Lwów 1932.

due to studies on glaciers. This situation is represented by a dramatic account on a terrible winter of 1490/1491 by a monk from Pilzno in the Lesser Poland. Severe frost and considerable snowfall took place in the Carpathians and mountain forests at the time. Thus, shepherds stuck in this area together with their herds of animals suffered extensive damage caused by wild boars which reached people's settlements<sup>19</sup>. Leaving aside this information's credibility, it is impossible to state whether it describes an event of a local or a much wider scope.

More telling is the data from Polish taxation sources from the second half of the 16th century. The records referring to mountain settlements from 1564–1565 and 1570 that belonged to the king present a catastrophic condition of livestock numbers, particularly sheep and goats, which were the foundation of the local communities' existence. For this reason, taxpayers did not pay taxes on these animals or paid minimal amounts only. Residents of numerous villages situated in the territories of the northern slopes in the Western and Eastern Carpathians informed the royal officials that the reason for this situation was due to an epidemic decimating their animal herds<sup>20</sup>. Auditors emphasized the disease's general reach<sup>21</sup>. According to the then residents, this natural disaster had not been triggered by a single event, but a few consecutive and harsh winters in the 1560s<sup>22</sup>. In addition to sheep, bees – so important for the economy of mountain villages where they were kept in both forest beehives and backyard apiaries – also fell victim to the harsh winters<sup>23</sup>. It is noteworthy that this crisis in husbandry of various animals took place in the period of a serious

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<sup>19</sup> *Spominki pilzneńskie 1486–1506*, wyd. A. Bielowski, w: *Monumenta Poloniae Historica*, vol. 3, Kraków 1878, s. 248: „In montibus autem et silvis alcior. Quo continuo casu nivis vero Valachi cum pecoribus obvallati periere in montibus aprique silvatici in gregem cumlati e silvis in villas et nivis mersione et inediis affluebant, necabanturque intra sepum vincula, dorcarumque multitudo nivibus pressa fuit”.

<sup>20</sup> G. Jawor, *La colonisation*, 265.

<sup>21</sup> *Жерела до історії України – Русь*. vol. 7: *Люстриця королівщин в руських землях корони з р. 1570*, wyd. М. Грушевський, Львів 1903, s. 73: „there was no tax on sheep because the sheep died like in other villages” (original text in the old-Polish language).

<sup>22</sup> *Lustracja województwa krakowskiego 1564*, wyd. J. Małeckie, vol. 1, Warszawa 1962, s. 175: „they pay tribute in rams, but who has sheep pays five rams for one hundred sheep. And now there are only five peasants who have sheep. Whoever has sheep also gives four cheeses, or now even five because other people's (sheep) died throughout harsh winters” – (italics by G.J.).

<sup>23</sup> *Жерела до історії*, s. 272–273: „but the bees died. There was the court's apiary in this village, but it was destroyed and nothing is left of it. They should also pay tribute with rams, but the animals died” (original excerpt in the old-Polish language).



climate breakdown dating back to the 1560s and 1570s<sup>24</sup>. The correlation between the discussed events allows to safely assume that the mass deaths of animals were the consequence of the abovementioned phenomenon.

#### POPULATION REPLACEMENT AND CHANGE IN MOUNTAIN VILLAGE'S ECONOMIC NATURE

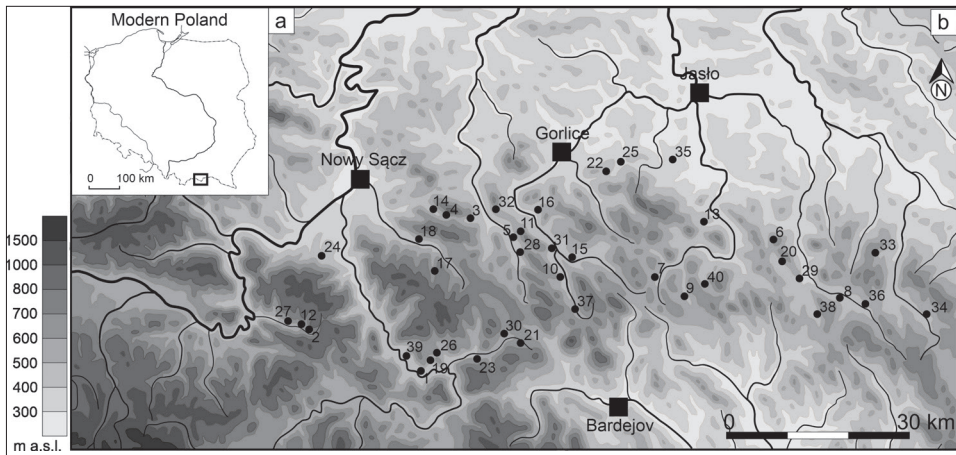
Since the end of the 19th century, historical publications regarding the past of the Carpathian settlement have been indicating the phenomenon of a deep crisis of rural settlements in the mountain areas, observed already in the 15th and 16th century. It was reflected in their complete depopulation and, more often, in replacing farming population with pastoral population. As it had been already stated, these events have not been linked with the progressing climate cooling until recently. Scholars most often limited their studies to stating that settlement had evolved over time, and the changes had intensified in particular regions of the Carpathians<sup>25</sup>. The issue addressed in the title of this sub-chapter is analyzed on the basis of resources primarily focusing on the south-eastern part of the medieval voivodeship of Cracow, which included small mountain ranges of the Low Beskids, Beskid Sądecki, Island Beskid, Pieniny, and Gorce. There is a relatively large number of sources on these areas regarding the period in question. Many rural villages that used German law were founded there in the 13th and 14th century, i.e. in the period preceding the climate changes. The surviving sources speak of forty villages (out of around one hundred that existed) which went through the process of a complete population replacement and farming profile change; due to the lack of sufficient sources, there is no information on the remaining sixty villages. The phenomenon is presented on the map below.

These settlements were usually founded in the areas located between four hundred and seven hundred meters above sea level, and thus were particularly threatened by the deteriorating climate. It is noteworthy that the upper level of profitability of winter cereals' cultivation run across this area. Transformation in the farming nature of individual settlements

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<sup>24</sup> P. Dobrovolný et al., *Monthly*, s. 93.

<sup>25</sup> Earlier publications on this problem was addressed in the following work: G. Jawor, *La colonisation*, s. 255–256. In addition, it is wort to take notice of recently published work on the territories of today's Slovakia: M. Marek, *Wallachian Colonization and Traces of the Vlachs (Romanians) in Medieval Slovakia*, „Hiperboreea” 2021, 8, s. 204–226, and the Romanian mountain regions: D. Țicu, *Mountainous Banat In the Middle Ages*, Cluj–Napoca 2002, s. 150–153.



Map 1: Mountain Villages in the Western Carpathians where the change in the economic profile, from agricultural to pastoral, was recorded throughout the 15th and 16th century\*.

Figure 1: Position of the analysed area (a) and localities (b): 1 – Andrzejówka; 2 – Biała Woda; 3 – Binczarowa; 4 – Bogusza; 5 – Brunary; 6 – Chyrowa; 7 – Czarne; 8 – Daliowa; 9 – Grab; 10 – Hańczowa; 11 – Jaskowa; 12 – Jaworki; 13 – Jaworze; 14 – Królowa Górna; 15 – Kwiaton; 16 – Łosie; 17 – Łosie; 18 – Maciejowa; 19 – Milik; 20 – Mszana; 21 – Muszynka; 22 – Męcina Wielka; 23 – Powroźnik; 24 – Przysietnica; 25 – Rozdziele; 26 – Szczawnik; 27 – Szlachtowa; 28 – Śnietnica; 29 – Tylawa; 30 – Tylicz; 31 – Uście Gorlickie; 32 – Wawrzka; 33 – Wisłoczek; 34 – Wisłok Wielki; 35 – Wola Cieklińska; 36 – Wola Niżna; 37 – Wysowa Zdrój; 38 – Zyndramowa; 39 – Żęgiestów; 40 – Żydowskie.

\* Data on the individual villages was gathered on the basis of studies by J. Czajkowski, *Studia nad Lemkowszczyzną*, Sanok 1999; academic project: *Vlachs in European and Polish cultural area. Migration – settlement – cultural heritage*, access: <https://vlachs-project.eu/map/> [dostęp: 10 X 2022], and: *Słownik historyczno-geograficzny ziem polskich w średniowieczu. Edycja elektroniczna*, red. Tomasz Jurek; <http://www.slownik.ihpan.edu.pl/index.php> [dostęp: 10 X 2022].

followed a repetitive pattern. Initially, the rural villages were founded on the basis of German law, and they were rooted in the Polish, and sometimes German, ethnos of the Catholic religion. Throughout the 15th and 16th century, the descendants of the original residents were driven out of the villages and their place was taken by migrating Orthodox Wallachian shepherds. The village of Rozdziele can serve as a pertinent example of such situation. It was established on the land of the previous village of Lipinki (near Biecz), inhabited by the Poles. Since the 14th century, the settlement was managed in accordance with the German law regulations and a Catholic parish church was built there<sup>26</sup>. However, at the beginning of the 16th century, a part of the village was abandoned by the Polish

<sup>26</sup> <http://www.slownik.ihpan.edu.pl/search.php?id=9132&q=Lipinki&d=3&t=0> [dostęp: 10 X 2022].

farmers. The sources confirm that „the Poles either died out or ran away”. Therefore, in 1530 the king agreed to sell the village’s lands to a Vlach, Piotr Biel. New residents, shepherds of Wallachian and Ruthenian origins, came to the village. The new settlers were granted the right to build an Orthodox church, but they also reserved for themselves an exclusion from being under the authority of the local Catholic parish priest. Over time, the newcomers formed a separate village. This was most likely due to a conflict with the remaining Polish residents of the village of Lipinki because: „The Vlachs did not agree with the old (residents) either in terms of religion or their customs”<sup>27</sup>.

Information presented above indicates that in many cases the rural communities lacked the skills to adapt to the changing environmental reality of farming. Meanwhile, only a small territorial adjustment was sometimes enough to maintain the chances to live in the lower parts of the mountains. The settlement of Królowa (450 meters above sea level) existed already in the 15th century. The crisis had hit before 1544: farmers sold their land to the Vlachs and moved only a few kilometers away, over the same stream, and founded a settlement that was later referred to as Królowa Polski („Queen of Poland”). It was situated more than fifty meters lower than the village they had abandoned and offered areas suitable for carrying out agricultural economy<sup>28</sup>.

The process was more frequently conducted by implementing the elements of the Wallachian pastoralism into the old rural villages, thus compensating for the shrinking crop harvest with food of animal origin. The zone of such changes included sub-mountain areas where the rural villages were located between three hundred fifty and four hundred fifty meters above sea level. Single shepherds who had transferred their knowledge and skills to the local population also settled there<sup>29</sup>. Therefore, it is possible to assume that while in the higher parts of the area the farmers were unsuccessful, adaptation to some of the new means of farming in the lower altitudes strengthened their ability to respond to the changes caused by the LIA.

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<sup>27</sup> Archiwum Główne Akt Dawnych w Warszawie [dalej: AGAD], Metryka Koronna [dalej: MK], sygn. 44, s. 497–499; *Lustracja*, s. 143; J. Czajkowski, *op. cit.*, s. 54. The name of the village „Rozdziele” comes from a Polish verb meaning ‘to separate’ or ‘to split’.

<sup>28</sup> J. Czajkowski, *op. cit.*, s. 49–50. <http://www.slownik.ihpan.edu.pl/search.php?i-d=8315&q=Kr%C3%B3lowa%20Polska&d=0&t=0> [dostęp: 10 X 2022].

<sup>29</sup> G. Jawor, *La colonisation valaque*, s. 259–261.

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NEW TYPE OF COLONIZATION IN THE NORTHERN SLOPES  
OF THE CARPATHIANS IN THE 16TH CENTURY

Intensive colonization of the mountains taking place in the 16th century was based solely on the establishment of new villages in the areas of rural emptiness, which functioned in accordance with the Wallachian law regulations. By contrast, the notion of land settlements founded under the German law, which had been used before the climate cooling, was abandoned. This is an indirect proof of the depth of changes that were taking place in the local communities' existence due to the LIA. The scale of this expansion is proven by the fact that in the Boikivschyna areas (currently situated in the Bieszczady Mountain range in Poland and Ukraine) almost 85% of the rural settlements existing in the 17th century had been established in the previous century. They were all founded in accordance with the Wallachian law regulations. Only 15% had been founded even earlier (in line with the same law). Similar proportions can be observed in other mountain regions<sup>30</sup>. Due to natural reasons, and despite the lands' poor suitability for carrying out typical farming economy, the owners of these areas were seeking to increase their benefits. This opportunity was provided in the 16th century by the demands of Poland's internal market and the possibility to export raw materials to Western Europe. The exported products included both high-quality wood and other forest goods (tar, potash, etc.), as well as wool and animal skins. The attempt to populate the Carpathians went as far as granting a protection to fugitives and criminals who fled to these areas<sup>31</sup>. The Ruthenian immigrants arrived in the Bieszczady areas mainly from the Przemyśl Land, and in particular from the more populated Sambir region. They often came from the older Wallachian villages.

The issue of Ruthenian migrations is not well understood despite its fundamental significance in the shaping of today's ethnic border. Their causes have never been unambiguously defined. At present, the offered explanations include e.g. the catastrophic and permanent Tatar and Wallachian raids that fell upon Crown Ruthenia in the last days of the 15th

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<sup>30</sup> A. Fastnacht, *Osadnictwo ziemi sanockiej w latach 1340–1650*, 2 wyd., Sanok 2007, s. 267; В.Ф. Інкін, *Сільське суспільство Галицького Прикарпаття у XVI – XVIII століттях: історичні нариси*, Львів 2004, s. 12–20, 267.

<sup>31</sup> Safety guarantees for fugitives appeared in the Wallachian villages' charaters, i.e. AGAD, MK, sygn. 35, 206; *Матеріали до історії суспільно-політичних і економічних відносин Західної України*, wyd. М. Грушевський, „Записки Наук. Т-ва ім. Шевченка” 1905, 63–64, s. 69, 76, 77, 109, 119.

century and the first decades of the 16th century<sup>32</sup>. They were meant to urge the local Ruthenian population to search for calmer living environment. Attractiveness of farming conditions and wider opportunities of personal freedom given to the immigrants in the new areas, particularly the villages founded under the Wallachian law, is also being emphasized. One of the factors that was most assuredly supposed to encourage them to migrate was the exemption period from all the obligations towards the land owner, which usually lasted for twenty or twenty-four years<sup>33</sup>. There is no doubt that the oldest 14th- and 15th- century wave of Wallachian colonization in the Polish mountains was strictly linked to the migrations of shepherds to this area. They represented the Eastern Romanian ethnos, arriving from the territories of Moldova, Transylvania, and Maramureş. Discussions on these issues have been published in a separate article<sup>34</sup>. Even though the groups of immigrants arriving throughout the period in question were not too numerous and were quickly assimilated by the local Ruthenian communities, their impact on the communities of the Carpathians' northern slopes cannot be overstated. Having lived for centuries in the difficult settlement areas of the Southern Carpathians and their surroundings, they created a model of farming which was exceptionally resistant to environmental variables. I will address this problem later in this work. Meanwhile, it is worth to pay some attention to the means of disseminating this knowledge among the local population. The mountain settlements founded in the 16th century were inhabited by the Ruthenian population or the Russified Vlachs who migrated from territories of lower altitude. Chiefs (*knyazes; kniaziowie*) of these settlements were most frequently the inhabitants of older Wallachian villages which had often been founded in the 15th century. They came from the ruling *knyaz's* families. Importantly, they often had names and nicknames deriving from the Romanian language even though they were already the next generation of immigrants. They entered marriages looking for partners among other families of villages' chiefs<sup>35</sup>. Even in the 19th century, mountain

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<sup>32</sup> Sources of fiscal nature from this period present the scale of this damage, in some regions covering the area of half of all the recorded rural settlements. I.e.: AGAD, Archiwum Skarbu Koronnego, dz. LIV, sygn. 19; dz. I, sygn. 20.

<sup>33</sup> G. Jawor, R. Szczygieł, *Pogranicze Słowiańszczyzny zachodniej i wschodniej w późnym średniowieczu i czasach nowożytnych*, w: *Geograficzne problemy pogranicza Europy zachodniej i wschodniej*, red. H. Maruszczak, Z. Michalczyk, Lublin 2004, s. 62–72.

<sup>34</sup> G. Jawor, *Sur la provenance territoriale des immigrants valaques dans le royaume de Pologne (XIV<sup>e</sup>me s. – début du XVI<sup>e</sup>me, „Banatica” 2013, 23, s. 545–555.*

<sup>35</sup> J. Gawron, *Locators of the settlements under Wallachian law in the Sambor starosty in XV<sup>th</sup> and XVI<sup>th</sup> c. Territorial, ethnic and social origins, „Balcanica Posnanensia. Acta et Studia” 2019, 26, s. 269–290.*

researchers emphasized the differences in their appearance compared to simple village residents<sup>36</sup>. This suggests that these families were conservative and reluctant to let the local residents access their own social circles. At the same time, these people disseminated the new approach to farming in the mountains – using the collective memory and experiences of their social group – by bringing the local people (Ruthenians) into the settlements they managed.

#### WALLACHIAN SHEPHERDS' ADAPTATION TO THE LIFE IN THE CHANGING ENVIRONMENTAL CONDITIONS

The available, yet limited studies on the economic profile of the Wallachian villages allow to indicate reasons for success of this colonization trend in the areas which were unattractive for farming, particularly in the mountain regions. It is necessary to point out their extensive spectrum of using natural resources in comparison with typical farmers. The majority of these settlements were dominated by the skills – previously unknown at this scale – of carrying out mountain pastoralism, especially of the transhumance type, which was based on seasonal grazing of herds by shepherds' teams in mountain meadows and forests situated below<sup>37</sup>. Meanwhile, such territories were resistant to climate changes associated with the LIA. In fact, their area even grew at the expense of farmlands abandoned by farmers. However, it would be a simplification to treat the advanced pastoralism as the only source of success of the people from the Wallachian settlements. Scholarly works have so far paid very little attention to the Vlachs' handicrafts activities, despite a lot of information available in the sources<sup>38</sup>. First and foremost, one should acknowledge

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<sup>36</sup> Sz. Morawski, *Sądeckczyzna za Jagiellonów z miast spiskimi i księstwem oświęcimskim*, vol. 2, Kraków 1865, s. 300: „To this day, it is not difficult to distinguish a grey-eyed, fair-haired and slow Ruthenian peasant from a black-haired, active Wallachian provost”.

<sup>37</sup> The issue of transhumance pastoralism in the Polish Carpathians was discussed in other works by G. Jawor, *Gospodarka i osadnictwo w strefie bieszczadzkich połonin w XV i XVI wieku*, w: *Region i regionalizm w archeologii i historii*, red. J. Hoff, S. Kadrow, Rzeszów 2013, s. 143–154; idem, *Le pastoralisme valaque dans les Carpates Polonaises au XV<sup>ème</sup> et XVI<sup>ème</sup> siècle (l'exemple de Bieszczady)*, „Banatica” 2014, 24, s. 151–166. Numerous references in the sources on seasonal Wallachian grazing in the forests of sub-mountain areas were provided by K. Dobrowolski, *Migracje wołoskie na ziemiach polskich*, copy of the Proceedings of the 5th Congress of Polish Historians, Lwów 1930.

<sup>38</sup> Significance of these activities in the settlements based on the Wallachian law was emphasized by one of the pioneers in research on settlement trends: J.T. Lubomirski, *Północno-wschodnie wołoskie osady*, „Biblioteka Warszawska” 1855, 4, s. 11–23.

the activities linked with the production of rennet cheeses, processing of leather and wool. Food, clothes, and other hand-crafted items necessary in the daily life (e.g. yokes for draught animals) not only served their own needs, but were also produced for sale. Production of fabrics or leather goods was so great in the pastoral villages that it became a dangerous competition for craftsmen living in sub-mountain towns. This was a source of numerous conflicts between shepherds and townspeople<sup>39</sup>. The products did not enjoy a good reputation. In Cracow, the Wallachian wool was considered to be of poor quality towards the end of the 14th century<sup>40</sup>. Consequently, the products were inexpensive, affordable, and thus intended for a poor buyer. This was an extremely conducive factor to increasing the demand for these goods since the competition offered only expensive products by towns' craftsmen. Apart from items coming from livestock farming, the Wallachian shepherds were also working in carpentry (building mills and granaries, but also producing saws and fulling mills), iron smelting, blacksmithing, and glass production. They also specialized in hunting, beekeeping, and fish breeding on a large scale<sup>41</sup>. The financial means obtained as a result of these activities were used for the purchase of food, particularly grain, brought from the lower-lying areas and produced by farmers.

Apart from their basic occupation of pastoralism and craftsmen works, as well as other activities important for obtaining means of subsistence listed above, farming remained another component of the mountain economy. Although the climate cooling meant that farming could no longer provide sufficient livelihood to the communities based solely on this activity, it was still possible to cultivate this activity to a limited extent, and even the harvest from growing spring crops could supplement

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<sup>39</sup> K. Kadlec, *Valaši a valašské právo v zemích slovanských a uherských. S uvodem podávajícím přehled teorii o vzniku rumunského národa*, Praha 1916, s. 417; J. Macûrek, *Valaši v západních Karpatech v 15.–18. Století*, Ostrava 1959, s. 47, 203; K. Popiołek, *Historia osadnictwa w Beskidzie Śląskim*, Katowice 1939, s. 31; S. Szczotka, *Studia z dziejów prawa wołoskiego w Polsce*, „Czasopismo Prawno-Historyczne” 1949, 2, s. 377.

<sup>40</sup> J. Wyrozumski, *Tkactwo małopolskie w późnym średniowieczu*, Warszawa–Kraków 1972, s. 24.

<sup>41</sup> Charters of the Wallachian villages in the mountains include universal permissions to: build water mills equipped with devices to fulling wool, fish ponds, bee keeping in forest hives, settling various craftsmen in these villages, hunting all animals, bears in particular. This information is available in the previous sourcebook edition by A. Stadnicki, *O wsiach tak zwanych wołoskich na północnym stoku Karpat*, Lwów 1848, passim. They are supplemented with information on the activities undertaken in hundreds of mountain villages, presented in the project: *Vlachs in European and Polish cultural area*: <https://vlachs-project.eu/map/> [dostęp: 10 X 2022].

the balance of animal food. It should be emphasized that the already mentioned abandonment of the sequential cropping system in favor of more primary and less efficient forms (two-field cropping, alternating farrow farming) does not prove the alleged regress or backwardness of the mountain residents. Instead, it should be considered as a rational reaction to the deteriorating environmental conditions. The results of analyses on the activities of the Carpathian villages' residents, published in other works, lead to the unambiguous conclusion that land cultivation was carried out in all the mountain villages already in the Late Middle Ages. It was a rule that apart from livestock, each farm had an allotment of arable land, reaching even more than twenty hectares (in today's units of surface measurement) per each family in the 16th century<sup>42</sup>. In some settlements, the residents were clearly divided into shepherds and farmers<sup>43</sup>. In my opinion, we have reached a conclusion regarding the reasons for success of the settlement based under the Wallachian law in the mountains, despite exceptionally unfavorable natural conditions. It is not just a question of introducing pastoralism as a basic occupation, due to which it was possible to replace shrinking harvested crops. The colonizing success of the Wallachian population was primarily a result of their skills in gaining livelihood from the complementary linking of various activities. One should also note the ability to adjust the ratios of pastoralism, farming, and other forms of land use depending on the local environmental conditions. For this reason, proportions between these elements of the economy were visibly different even in the neighboring villages. This flexible approach in the reality of the analyzed period turned out to be the only available tool, the use of which gave a chance for success and reasonable existence in the mountains. On the other hand, conservative

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<sup>42</sup> G. Jawor, *Osady*, s. 39–57; idem, *Ius Valachicum jako narzędzie kolonizacji obszarów peryferyjnych (na przykładzie pogranicza polsko-ruskiego w XIV–XVI wieku)*, w: *Materiały V Kongresu Mediewistów Polskich*, vol. 3: *Pogranicza w polskich badaniach mediewistycznych*, red. A. Janeczek, M. Parczewski, M. Dzik, Rzeszów 2019, s. 177–192.

<sup>43</sup> I.e. charter of the village of Ochotnica from 1416 distinguished between residents who were breeding sheep and goats, and those who did not have the herds. The latter group worked in farming, which is supported by obligations paid to the owner: „Qui autem agnellum, sive haedum non haberet, hic in recompensam eius trium dierum laborem ad requisicionem sculteti praedicti subire et tollerare debet”. – *Zbiór dokumentów małopolskich*, vol. 6, wyd. S. Kuras, I. Sułkowska-Kurasiowa, Wrocław 1974, no. 1804. According to the privilege of 1417, farmers living in Rychwałd, a village situated in the same region, had to pay typical rentals in coin while their feudal burdens were paid by hay-making during harvest season; at the same time, they had to pay typically pastoral tributes (in the form of leather belts, rams, hogs, cheeses). The village had a grain mill – *Zbiór*, no. 1818.



communities continuing their lifestyle and typically rural methods of land cultivation suffered from failure.

## CONCLUSION

The arguments presented in this article deserve a few general remarks. In the light of the presented data, the climate cooling that took place in the 15th and 16th century had catastrophic consequences for the communities living the Carpathians before and basing their economy on farming at that time. The most important factor that triggered this crisis was the lowering of hypsometric elevation to the point where the cultivation of winter cereals, being the dietary foundation, was no longer profitable. As a consequence, conservative farmers unskilled to implement the farming innovations had to migrate from these areas. Therefore, a space for a new type of colonizing processes emerged, which were based on a combination of the advanced pastoral activities with limited farming, operation of forest areas, and developed craftsmanship. The carriers of these new ideas were immigrants coming from the areas of today's Romania and Moldova. They transplanted these concepts to the Carpathians' northern slopes, and the villages founded by them became inhabited by the Ruthenian population arriving from lower-lying areas. In this way, Polish mountains became saturated with a dense network of rural settlements over the 16th century. This process took place in the period of the increasingly unfavorable phenomena associated with the LIA. However, reconstruction of the settlement landscape was not limited to the economic sphere only. The Orthodox Wallachian and Ruthenian shepherds moved the ethnic and religious perimeter of their ecumene to the West, giving rise to the modern ethnic groups of Lemkos, Boykos, and Hutsuls.

Taking into consideration the global nature of the LIA, the methodology applied in this work which consists in analyzing the settlement and economic transformations and combining them with climate changes, can be successfully applied in many regions of the northern hemisphere. It would be particularly beneficial to compare the results of this study with the phenomena in the Alps, Pyrenees, Scandinavia, and Scotland. In my opinion, this type of a large and international research effort would contribute to an in-depth recognition of the effects of even seemingly unimportant climate changes in the past. The obtained results would also be of significance in deepening the understanding of these connections in modern times.

(translated by Anna Miączewska)

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