A C T A A R C H A E O L O G I C A C A R P A T H I C A
VOL. LIII (2018): 49–56 PL ISSN 0001-5229

Robert H. Brunswig, Paweł Valde-Nowak

Archaeological Reconnaissance Pre-Survey of the Lejowa and Kościeliska Valleys, Tatra National Park, Poland

Abstract: The authors draw on their experience and past mountain landscape studies to describe an emerging collaborative research project designed to conduct advanced field studies and generate (and test) archaeological landscape models of past hunter-gatherer populations as well as pastoralist and early farming community seasonal transhumance migrations between lowland river valleys of Poland's Podhale Basin and high altitude forests and meadows its adjacent High Tatra Mountains.

Key words: Stone Age, archeological survey, transhumance, Tatras, Rocky Mountains

In June 2017, the authors requested a Tatra National Park-Poland (TPN) research permit to conduct of a short field inspection survey of a proposed archaeological research area in the park's Kościeliska and Lejowa valleys. That permit, DBN.503/121/17, Numer 148, was issued by Tatra Park on June 26, 2017, and followed by a seven-day field survey conducted by one the authors (Brunswig) from June 28 through July 3, 2017, with assistance of TPN park research office staff members, Magdalena Sitarz and Antoni Zięba. The field survey's goal was to assess field conditions for the presence and physical visibility of archaeological and historical evidence necessary in planning and implementation of a future archaeological research program, the Tatra Park Cultural Landscapes Project, in future years. The proposed project is a collaborative research venture involving the University of Northern Colorado (Colorado, USA) and the Institute of Archaeology, Jagiellonian University (Kraków, Poland). The project further contributes to on-going park staff and academic researcher programs based on a current international sister-park agreement between Tatra National Park-Poland (TPN) and Rocky Mountain National Park-Colorado, USA (RMNP).

Decades of archaeological research within 70 km of TPN's northern boundaries has documented more than sixty millennia of human occupation in the High Tatras, Spisko-Gubałowskie Foothills, and Orawa-Nowy (Podhale) Basin (Figure 1; Brunswig and Valde-Nowak *in press*). Prior to the 2017 reconnaissance survey, background research by the authors documented formal publication of only a single prehistoric "site" within park boundaries, a single Neolithic blade core (ca. 7 500 - 4 200 BP [years ago]) recovered by a visiting archaeologist from the upper Kondratowa Valley (Tunia 1977).

The pre-survey research method was walking, close inspection, and extensive photography of all informal path-ways and established trails within the project's proposed Lejowa and Kościeliska valley survey areas (Fig. 1).

Prior to the 2017 pre-survey visit, project background research (Brunswig, Valde-Nowak *in press*) suggested that different archaeological site types most likely existed within park boundaries, including those associated with prehistoric and historic wild game hunting, human-associated park and Tatra mountain migratory trail and pass travel, metal ore (mainly iron) mines and ore processing, and evidence of prehistoric and historic era summer livestock herding. Among landforms selected for close ground survey inspection in 2017 were a range of topographic features (stream terraces, valley hill-side benches, ridge-tops with clear valley floor views, narrow valley pathways…) considered most likely to have been utilized by prehistoric hunters in Polish mountain and foothills areas, mountain landforms found to be most highly utilized by past hunter-gatherers in one of the co-author's two decades of field research in the Colorado Rocky Mountains, USA (cf., Brunswig 2015).

On the pre-survey's first day (June 28), the only recorded prehistoric site immediately outside Tatra Park boundaries, Witów I (Fig. 1), was re-located and informally ground-surveyed. The site, a small Late Magdalenian (ca. 16 000-14 000 BP) stone tool scatter recorded in 1996 (Rydlewski 2006), is situated on a raised Late Pleistocene terrace plateau. It was observed that visibility for locating surface artifacts was generally poor with little bare ground showing and past plowing of the plateau which provided good surface artifact visibility in 1996, appeared to have been since discontinued in favor of using the raised flat meadow (polana) for pasturing and grass hay production. However, several patches of bare ground within the site area were observed, which during more systematic survey, could produce new evidence of surface artifacts. If permission were granted by the landowners in the future, excavation of small sub-surface test units, spaced in a grid pattern across the 1996 artifact-recovery area, might potentially uncover buried cultural levels and establish the size and full nature of that site.

The first proposed project survey area, Dolina Lejowa, is a small constricted valley that parallels the much longer Kościeliska Valley on the east. Its upper valley section (headwaters) includes two large meadows, with upper side drainages

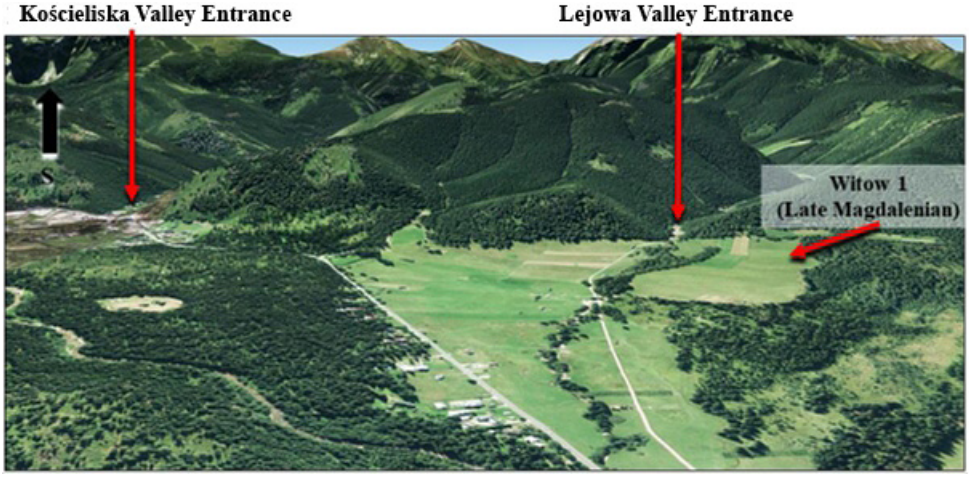

Fig. 1. Location of the Late Magdalenian Witow I site on its raised "remnant river terrace" bench near the Tatra Park boundary (acc. Rydlewski 1996) and the entrance to the park's Lejowa Valley

leading to open meadows to the southeast and west. Trails leading to those meadows also lead to low passes which allow easy access to the Kościelska Valley on the east and into the large open Chochołowska Valley to the west. Ground survey of the proposed Dolina Lejowa survey area was done on June 29, 2017, with the assistance of Tatra Park research staff member, Antoni Zięba.

The second proposed project survey area is Kościeliska Valley, which is 9.24 km long from its lower (north) entrance to the top of the park's hydrological divide between Poland and Slovakia. The entire valley, including an important lower section side valley, Dolina Mietusia, is a primary Tatra project survey area.

Walking reconnaissance of the Kościeliska Valley survey area covered nearly its entire length, the greatest amount of time and attention being paid to the lower 60% of its length, from the valley's north entrance to beyond to a dolomite limestone massif containing the valley's main concentration of caves (see below) (Fig. 2).

Caves, frequently found in park limestone formations, are a major geologic feature of Tatra Park, with its inventory of at least 650 caves (Fryś et al. 2006; Głazek 1996; Gradziński and Kicińska 2002; Rudnicki 1967; Szczygieł, 2015). The park's longest and deepest cave system is Wielka Śnieżna, at 18 kilometers long and 814 m deep. It is important to emphasize that, except for evidence of small-scale Medieval and later historic period ore mining activities, there appear to be no formal, or even informal, reports of prehistoric or historic archaeological occupations in Tatra Park's very extensive cave systems. However, given that

Fig. 2. GIS map of modeled Late Glacial Maximum Tatra Park valley glacier positions. Projected in ArcGIS™ 10.3 using from on-line GIS (source data layers from Zasadni, Kłapyta 2014)

past human population in lower elevation areas, some within 11 km of the park's northern boundary, made extensive use of caves for more than sixty millennia (cf., Szymaszek 2016), it is virtually impossible to assume that Tatra Park caves remained unused by prehistoric and historic people in the past. The present absence of knowledge about those past occupations is considered by the authors to more logically be due to the absence of past archaeological investigations which could detect them.

On-site assessment of two Tatra caves', Mylna and Obłazowa (and likely other caves in the park), showed high potential for containing sub-surface occupation deposits dating as early as the Late Ice Age (e.g., Upper Paleolithic, Late Pleistocene).

Based on recent Tatra Park geological studies on Late Pleistocene glaciation, it is clear that, even during the most recent maximum valley glaciation (known as the Late Glacial Maximum [LGM], ca. 21-28 000 BP [year ago]), central valley cave sections were ice-free. Figure 2 illustrates that fact with a GIS map that projects a geological model of valley glacier positions in Tatra Park's Late Glacial Maximum time period. During the Late Pleistocene, park landscape availability to the then-

existing reindeer, red deer, and bison populations and summer transhumant migratory Late Magdalenian and Federmesser hunters, as documented in recent glacial cirque lake pollen profiles which show even higher elevation glacial cirque valleys were largely ice-free between 16,000 and 13,600 cal ^{14}C BP (cf., Kłapyta et al. 2016: 133) and, afterward, climate warming accelerated in the following Bølling and Allerød climate episodes (e.g., Bølling/Older Dryas/ Allerød [GS-1e to 1a, ~14 600-13 800 cal ^{14}C BP] and Allerød [GS-1c, 1b, ~13 900-12 800 cal ^{14}C BP) (Michczyńska et al. 2013).

Results of a six-day reconnaissance survey of two proposed archaeological research areas in Tatra Park's Lejowa and Kościeliska valleys support both the presence of archaeological and historical sites and conditions positive for future investigation. Advanced research methods developed and used in long-term archaeological research programs in the Colorado Rocky Mountains and Rocky Mountain National Park (Tatra Park's U.S. sister-park), are believed to be well-suited for field conditions documented in this report's 2017 Tatra Park reconnaissance survey. While ground-visibility, an important factor in conducting successful archaeological pedestrian (walking) survey, is more limited in *some* Tatra Park terrain, due to greater annual precipitation and heavier grass and forbs growth, many areas, such as stream terraces, many meadow (polana) slopes, inter-valley trail-pass areas, and caves provide good to ideal circumstances for archaeological survey and test excavation methods. It is considered probable that advanced remote sensing technologies such as satellite and aerial image analysis, LIDAR (Light [laser] Detection and Ranging) mapping, use of ground-based geophysics instruments (e.g., ground-penetrating radar, cesium magnetometry, and electrical resistivity), Geographic Information System (GIS) modeling and analysis, and sediment coring methods would further enhance and inform archaeological investigations in the park's varied landscapes. Caves, sheltered valley, rock overhangs, protected stream terraces, and meadows were places where prehistoric hunters and later, with arrival of animal domestication in the Neolithic and following Bronze and Iron ages, pastoralists, established seasonal camps based on the exploitation of park natural resources.

ACKNOWLEDGEMENTS

We would like to express our gratitude to the Director of Tatra National Park-Poland Szymon Ziobrowski as well as to office staff members: Magdalena Sitarz and Antoni Zięba for understanding of our scientific needs and support.

The research reported in this paper was performed as a part of grant NO UMO-2015/17/B/HS3/00181 "Paleolithic ritual place in Obłazowa Cave" obtained from the Polish National Centre.

REFERENCES

Brunswig R.H.
2015 *Modeling Eleven Millenia of Seasonal Transhumance and Subsistence in Colorado's Prehistoric Rockies, USA*, Contributions in New World Archaeology 8, p. 43–102.

Brunswig R.H., Valde-Nowak P.
In press *Exploring Seasonal Transhumance of Hunter-Gatherers and Neolithic Pastoralistsin Poland's High Tatras and Foothill Lowlands: Applying Landscape Archaeology Methodologies from the Colorado Rockies to the Western Carpathians*, [in:] *Archaeology of Mountain Landscapes: Interdisciplinary Research Strategies of Agro-Pastoralism in Upland Regions*, A. Garcia (ed.), Buffalo.

Fryś P., Gradziński M., Kicińska D.
2006 *Development of Miêtusia Cave, Western Tatra Mountains, Poland.* Slovenský kras (Acta Carsologica Slovaca) 44, p. 55–69.

Głazek, J.
1996 *Karst and Caves of the Polish Tatra Mountains, State of Knowledge and Perspectives,* [in:] Proc. 1st Polish Conf.The Tatra National Park - Nature and Man, A. Kotarba (ed.), vol.1, Kraków-Zakopane, p. 31–44.

Gradziński, M. Kicińska D.
2002 *Morphology of Czarna Cave and its Significance for the Geomorphological Development of Kościeliska Valley (Western Tatra Mts),* Annales Societatis Geologorum Poloniae 72, p. 255–262.

Kłapyta P., Zasadni J., Pociask-Karteczka J., Gajda A., Franczak P.
2016 *Late Glacial and Holocene Paleoenvironmental Records in the Tatra Mountains, East-Central Europe, based on Lake, Peat Bog and Colluvial Sedimentary Data: a Summary Review,* Quaternary International 415, p.126–144.

Michczyńska D.J., Forysiak J., Pawłowski D., Płóciennik M., Borówka R. K., Witkowski A., Obremska M., Słowiński M., Żurek S., Brooks S. J., Michczyński A.
2013 *The Environment Changes and Chronology of the Late Vistulian (Weichselian) Sediments in the Rąbień Mire.* Poster Paper presented at the 11th Methods of Absolute Chronology Conference, 15-18 May 2013. Podlesice, Poland. GADAM Centre of Excellence Department of Radioisotopes, Institute of Physics Centre for Science and Education, Silesian University of Technology, Gliwice, Poland.

Rudnicki J.
1967 *Origin and Age of the Western Tatra Caverns,* Acta Geologica Polonica 17, p. 521–591. [In Polish, English summary].

Rydlewski J.
2006 *The Earliest Paleolithic Site in the Polish Tatras,* Acta Archaeologica Carpathica 41, p. 5–9.

Szczygieł J.
2015 *Cave Development in an Uplifting Fold-and-Thrust Belt: Case Study of the Tatra Mountains, Poland,* International Journal of Speleology 44(3), p. 341–359.

Szymaszek A.
2016 *Eksplozja emocji w mrokach jaskini,* Tatry 58, p.138–139.

Tunia K.
1977 *Découverte d'un nucleus en silex dans la vallée de Kondratowa (à 1350 m d'altitude) dans les monts Tatra,* Acta Archaeologica Carpathica 17, p. 145–148.

Zasadni J., Kłapyta P.
2014 *The Tatra Mountains during the Last Glacial Maximum,* Journal of Maps 10 (3), p.440–456.

Addresses of the Authors

Robert H. Brunswig
Department of Anthropology,
University of Northern Colorado,
Emeritus Professor,
Greeley, Colorado USA

Paweł Valde-Nowak
Institute of Archaeology
Jagiellonian University
Gołębia Str. 11, PL
31-007 Kraków
e-mail: p.valde-nowak@uj.edu.pl