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Archaeological prospecting in the Tyrolean Alps (Austria) – 1995-2001

In 1994 a new research project was started at the University of Innsbruck (Austria). This project is devoted to the archaeological investigation of mainly Mesolithic sites in the alpine and sub-alpine zones of the Tyrolean Alps. Fieldwork to date has focused on altitudes both above and slightly below the present tree-line. Such a systematic search for sites in this environment is motivated by a number of factors, which can be meaningful both in themselves and in combination. It is a fact, for example, that long-distance travel in the prehistoric period was easier using the high-level mountain trails than trying to cross the ancient valleys with their dense vegetation, bogs and mosquitoes. In addition, the increasing availability of biomass as the stands of trees become less dense and at the tree-line itself also means bigger populations of game for hunting (in a zone where hunters also found it easier to travel). At the same time the alpine zone was also relevant for prospecting and extracting lithic raw materials.

The progress made on the project to date and the initial findings already include some interesting - and in some cases unexpected - results, as indicated by the examples listed in the following summary report. These are distinct from the long years of field work conducted in northern Italy and Switzerland.

1. Ullafelsen - old Mesolithic site in the Fotscher Valley (northern Stubai Alps, approx. 30 km south-east of Innsbruck (11° 13' 02" East - 47° 09' 14" North), (last overview in Schäfer 1998).



U - Mesolithic site Ullafelsen

This site occupies a dominant rocky elevation in the inner valley at an altitude of about 1870 m above mean sea-level.



The Ullafelsen site from south (2001, July)

The geology of the area is comprised of east alpine gneisses and mica schists. Shallow podsol soils are typical of the area. As a result of grazing activities, the rocky elevation itself is largely treeless, whereas the tree-line today is located at about 2200 m. Nevertheless, potential users of the site, even with its natural tree cover, would have had an excellent view of the valley in all directions. In addition they were largely protected against rockfall and had numerous sources of water close at hand.



Ullafelsen, excavation July 1996

In 1995-99 a total of 18 sq.m. of the almost completely level plateau was excavated and over 3500 artefacts were recovered (not including the results of water screening). The items were discovered mainly in the lower layer of humus and in some cases trodden into the basal sediment.

Three fire-places, two of them about 50 cm in diameter, were found, but there were no signs of the systematic use of hearth stones. One of these fireplaces was used for rehafting and retooling microlithic tools.



Ullafelsen, mesolithic fireplaces and associated artefacts (yellow line=50 cm)

The C14-data were the first data for Austrian Mesolithic sites and quite surprisingly:

Laboratory-No.	conv. data	calibr. data (1 sigma)
Beta-109783	fireplace 1 - 8770+-80 BP	cal BC 8160-7650
Beta-102085	fireplace 2 - 8660+-50 BP	cal BC 7735-7600
Beta-109782	fireplace 3 - 9540+-80 BP	cal BC 9140-8740

So it was clear that early Holocene humans in the northern Alps were using the alpine altitudes at the same time as in the southern Alps in Italy (field work done by Bagolini, Broglio, Lanzinger etc.), something which hitherto has been doubted.

Charcoal examinations for the fireplaces at the Ullafelsen site were undertaken by W. Schoch (Switzerland) and K. Oegg (Austria) and showed a kind of diversification (use of more taxa) in regard of the more neighboured timber line.

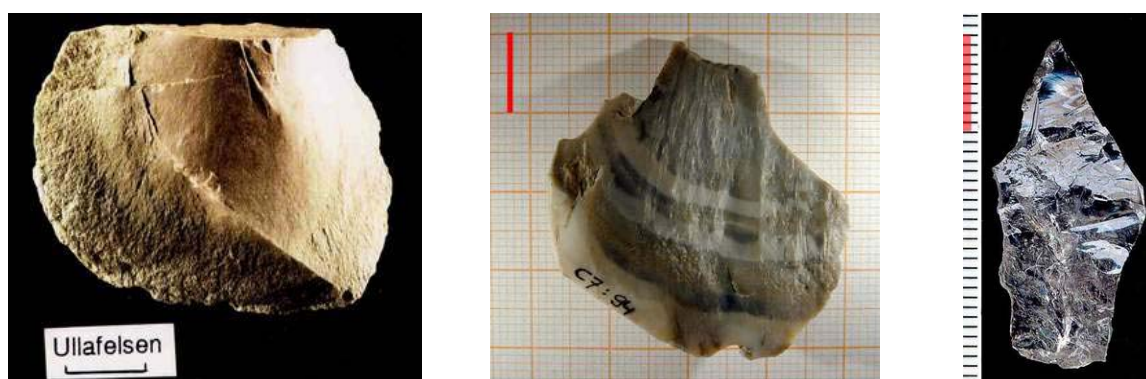
An interesting picture is presented by the various groups of lithic raw materials, including south and north alpine silex varieties and others which have so far examined by J. Affolter (Switzerland) with regard to their origins. The group of south alpine stones includes radiolarite, which is common throughout South Tyrol and the Trentino. A number of flakes originate from the area around Monte Baldo (south-east of Trent) and others are from the Monti Lessini (extending from south of Trent to Verona). The latter source was used to produce the silex dagger of the Ice-man. Our site thus provides evidence of human movements across the main alpine chain during the old Holocene.



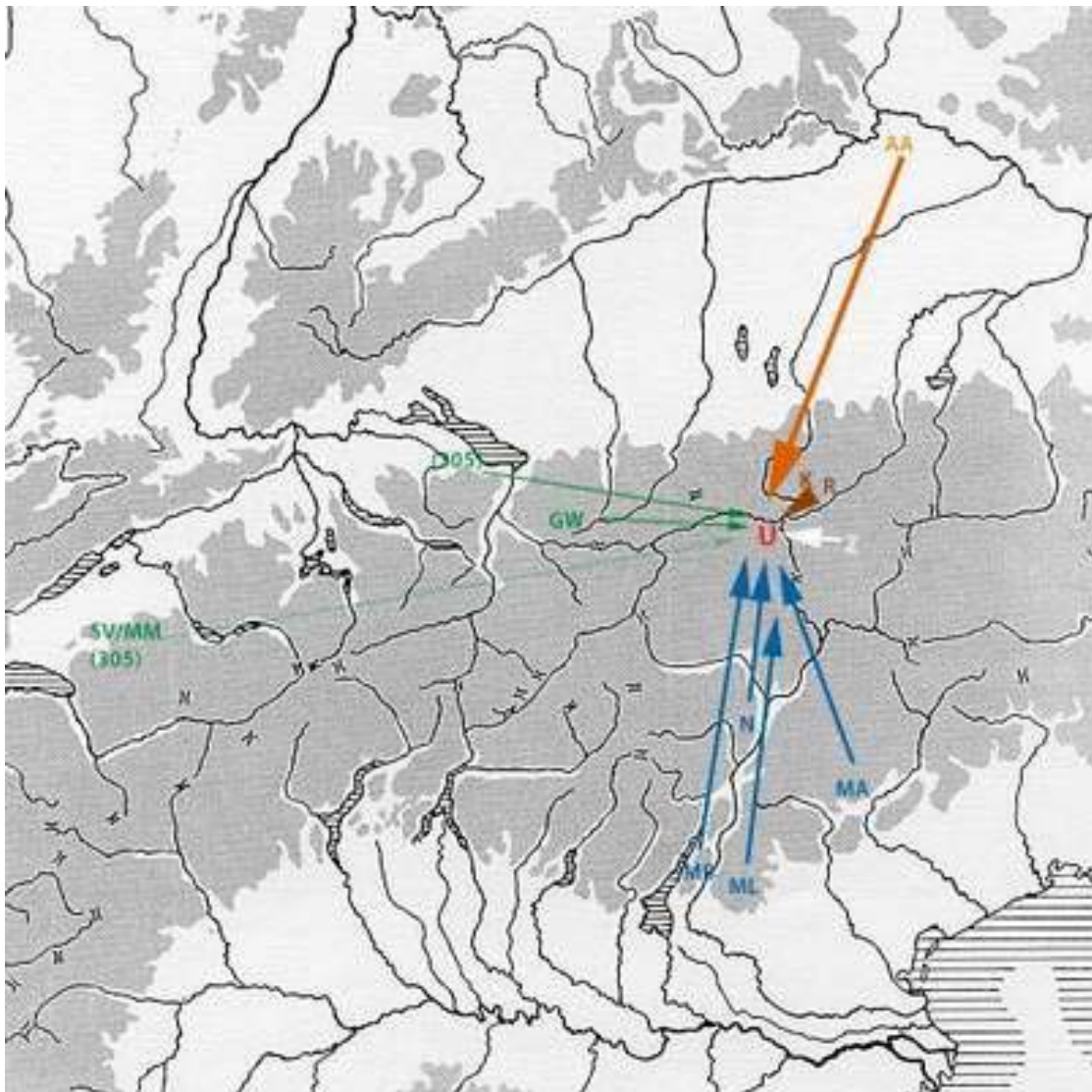
Ullafelsen, examples for artefacts made from south alpine silex

Other artefacts are made of north alpine minerals, especially various hornstones from the north alpine limestone mountains (especially Karwendel) and rock crystal from the Zillertal (the last was examined by G. Niedermayr, Austria).

Other raw materials for the stone tools were brought from southern Bavaria and the surroundings of Lake Constance. The transport distances (distance as the crow flies) for these silex materials is between 40 and more than 200 km.



Ullafelsen, two pieces of hornstone artefacts (geological origin: northern limestone Alps and Franconia) and rock crystal



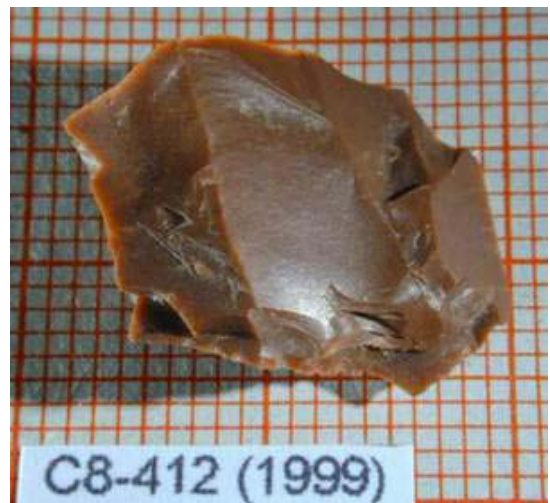
Geological origin for the silex and rock cristal used at the Ullafelsen site (after J. Affolter, 2000)

Because of cultural differences north- and south of the Alps during the early Holocene, we can expect influences from the Italian Sauveterian as well as the Beuronian (see below).

The artefacts we found included specimens from the following type classes:

Flake cores, microburins, micropoints (with ventral and straight basic retouch, with ventral and concave basic retouch etc.), rectangle backed bladelets, triangles (isoscele and scalene pieces), Sauveterre points, burins, borers, core tool (pointed scraper), several lateral retouched flakes and short round-scrapers.

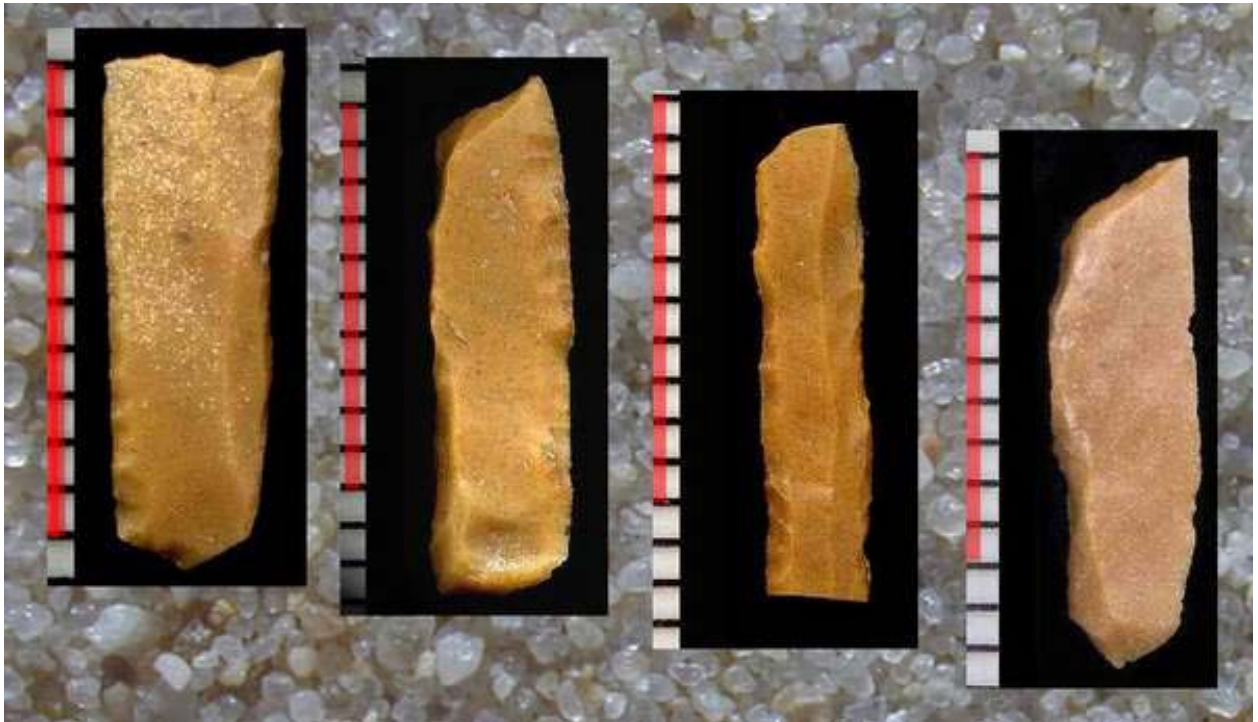
Blades are almost completely absent, and the cores found primarily served purposes of flake production. There were no signs of late Mesolithic trapezes or neolithic tools.



Ullafelsen, examples of flake cores

In comparison with the south German Mesolithic (cf. Hahn/Kind 1990, Hahn/Kind/Steppan 1993, Kieselbach et al. 2000, Kind 1988, 1993, 1994, Taute 1972, 1973-74, etc.), we have no difficulty in assigning the artefacts to the older Mesolithic period as indicated by the presence and type of the micropoints and triangles. A special longish trapezoid point belongs to the Beuronian too and has no equivalent within the Sauveterrian.

With regard to south-alpine finds, e.g. Romagnano III, Lago dei Buse etc. (Broglia/Kozłowski 1983, Broglia 1994, Dalmeri/Lanzinger 1994), most dates are also in the Early Mesolithic. Indeed there are some differences in the microliths between the Sauveterian and the Beuronian. For the Sauveterian the production of rectangular backed bladelets is a continuous tradition since the late Paleolithic (Epigravettian). Several of those retouched bladelets have been found at Ullalfelsen, as well as Sauveterre points which are also more typical for the south Alpine traditions. The microliths of both types were made always from south Alpine silex.



Ullalfelsen, retouched bladelets and Sauveterre points

For the moment the lithic raw material from all the different regions can be viewed as an indication of the annual range of territory covered. Specific studies of the raw materials are based on the assumption that the lithic raw materials "were generally procured in the framework of the activities and settlement of collectors/hunters and in some cases were transported over considerable distances" (Floss 1994, 321). The seasonal fluctuations in climate and hunting preferences must have been reason enough for several changes of campsite in the course of the year.

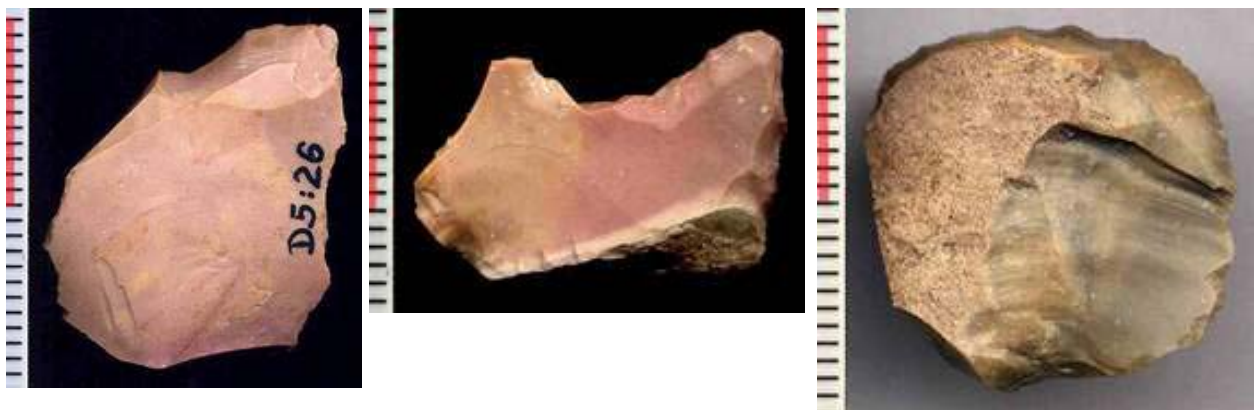
At the basis of this argumentation we see also far-reaching influences and/or overlapping between those 'cultural complexes' like Beuronian on one hand and the Sauveterrain on the other hand.

In spite of the function of the Ullafelsen site we have to regard the geometric microliths as parts of the Mesolithic arms.



Ullafelsen, microlithic tools (points and triangles)

Other tools like scrapers, borers and burins seem to reflect a more broad field of activity and therefore at least a little bit longer stays as necessary only for hunting. On the basis of dealing with the artefact inventory at the present one can interpret the site as a (seasonal) base camp for hunting activities. This interpretation corresponds with the examinations of the use-wear analyses undertaken by A. Pawlik (manuscript).



Ullafelsen, burin, borer and scraper

Unfortunately there are no bones preserved at the Ullafelsen site because of the acidity of the soil. Further information on the inner dynamics of the site are expected with the help of the refitting work just begun.

In comparison with Ullafelsen, the sites located in the western surroundings of Lake Achensee (part of the northern limestone Alps/Kalkalpen) present quite a different situation.



S Schleimssattel, P Pasillalm

The geology of these sites is dominated by limestones of the east alpine Upper Triassic. On the basis of initial investigations their value can be said to lie in the local exploitation of a hornstone that was of very good quality by North Tyrolean standards. This is indicated by the comparatively large size of the artefacts found and the above-average occurrence of cores and core fragments. The superficial location of the raw material is due to steeply uptilted strata of Upper Jura.

2. Schleimssattel 3c - site in the eastern part of the Karwendel range, approx. 40 km east of Innsbruck (11° 38' 00" East - 47° 28' 22" North)

The site is located in the vicinity of Schleimssattel about 5 km north-west of Pertisau at an altitude of approx. 1500 m above mean sea-level. * It is located at the north-west margin of a spur of elevated ground extending from Schleimssattel in a north-westerly direction towards Mantschenalm. There are several streams and superficial springs in the vicinity. The geology of the site area is made up of Kössen strata, i.e. "thinly layered marls and heavy bedded limey

marls to limestone" (Klebensberg 1935, 69) of the Rhaetian stage of the Keuper. The decision to spend two weeks prospecting the site was based on the recovery in the previous summer of a superficial accumulation of hornstone cores and -fragments.



Schleimssattel, Excavation 1996



Hornstone slab in situ

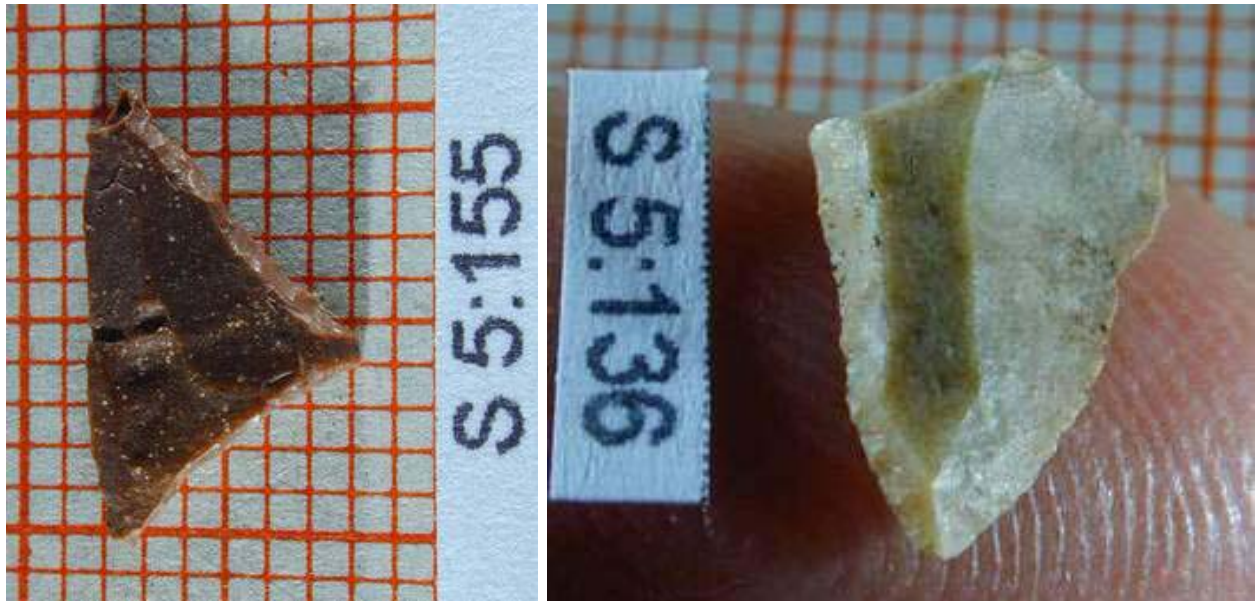


Schleimssattel, typical hornstone from the western part of the Karwendel (flakes, -fragments, wrecked pieces)



The first examination of a 6 sq.m. area yielded about 500 artefacts relating to blank production. The rendzina revealed a completely decalcified A-horizon, and the horizontal limestone weathering loam with its high clay content is also largely non-calcareous. The quality of the pieces of the raw materials used for artefact production varies considerably. It can be assumed that many of the items found are the product of material testing and that the better specimens were selected for use and taken away. A large number of core pieces and irregular fragments are indicative of difficulties encountered with at least some of the material used. Exploration of the surroundings of the site indicated pronounced tectonic loading on the hornstone strata of upper Jura during the process of upthrust, and the excavated site revealed evidence of whole hornstone slabs divorced from their original geological structure. One of those slabs had been struck

for test purposes and some flake scars can be seen. Numerous charcoal particles were also recovered from various points within the excavated area, although it has not yet been possible to relate them to a specific fire-place. However, the recovery of a Sauveterre point, two triangles and a micropoint permit the site to be assigned to the Mesolithic.



Schleimssattel, mesolithic triangle and microlithic point

The raw material for one of the triangles consists of a silex variety with a geological origin at least 180 km westward in the surrounding region of Lake Constance:

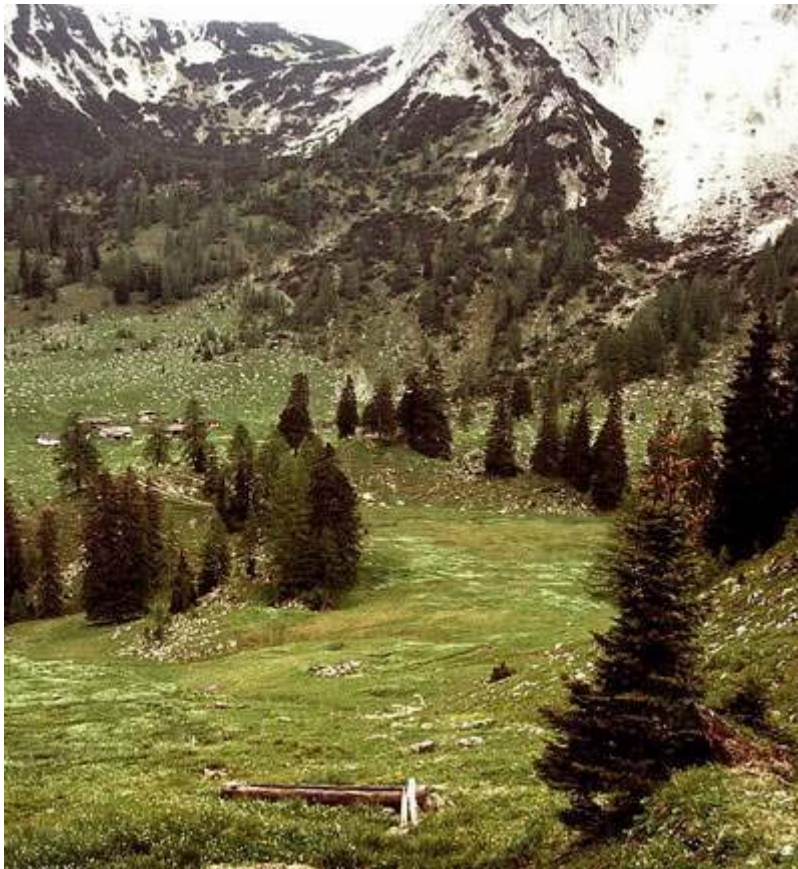


Given our present state of knowledge relating to the excavation site it is therefore tempting to propose a connection between raw material production and local hunting activities in the Mesolithic period.

Of the other locations in the surroundings of the Achensee, we would like to report on the following site where limited excavation has only just begun but has already produced extensive finds.

3. Pasillalm - site in the eastern part of the Karwendel range, approx. 42 km east of Innsbruck (11° 40' 00" East - 47° 28' 17" North)

This mountain pasture is located just under 2 km east-north-east of Schleimssattel on a flat, elongated elevation of moraine material in the immediate vicinity of a stream and a small lake that is now almost completely silted up.



Pasillalm - mesolithic site, microburin and segment

To the west there is a good link with Schleimssattel via a pass from the direction of which the same hornstone strata extend that had been employed as a source of raw materials at the Schleimssattel site. Following the earlier superficial discovery of artefacts by K. and N. Kompatscher, a prospective excavation of a one square metre area was carried out in ten working days. This small-scale excavation yielded over 1500 artefacts. In addition to numerous flakes and fragments, about twenty cores and core pieces were recovered. The material is of generally better quality than the Schleimssattel finds. In both cases refitting has not yet been attempted for lack of time. Although no Mesolithic hearth was found, two microburins and a segment would support an early Mesolithic date for this site too.

4. Actual systematic prospection in the inner part of the Ötz valley (Ötztal)

From an historical point of view there is general agreement that the settlement of the inner Ötz valley started from the south-ward Vinschgau (Southern Tyrol/Italy). This area was used at least from the late Neolithic. Pollen analysis and many macro remains of charcoal gave hints for pasture in the vicinity of Obergurgl (Vorren et al. 1993). For these reasons, it is small wonder that new artefact finds in the vicinity of central alpine passes in most cases consist of south alpine silex varieties, which demonstrate that these passes had certain meaning to prehistoric people.

The time for the first use of the passes after the last glacial is not clear yet because of the absence of good typological or absolute chronological arguments in most cases: Only for the sites Hohler Stein near Vent (Leitner 1999) and 'Talstation Plattach' near Obergurgl is there a late Mesolithic evident. Other finds in the same area consist of small flake or core fragments assumed to be Mesolithic. A more younger date must be assumed for a singular artefact near the Timmelsjoch high alpine pass (2474 m above mean sea-level): The scraper-like tool with a broken borer point do not fit to the regional mesolithic tradition but is made from south alpine silex too.

Other sites are known in the region and they will be the object of further fieldwork which requires a great deal of energy and funds.

5. Outlook

In western Austria there is no archaeological long-time research at high altitudes comparable like those one in northern Italy. However, field work has increased during the last decade, suggesting a density of stone-age settlement and movement in the alpine and sub-alpine zones of North Tyrol that is comparable with those in northern Italy. Of course it should not be forgotten that for modern methods of investigation the size of the excavated areas is nowhere near adequate for a more specific discussion of the internal dynamics of the sites (preservation conditions, spatial pattern, site type).

The only two exceptions in this question are the sites of Ullafelsen and Hohler Stein (the latter near Vent, the nearest present-day settlement in the Ötz Valley to the Ice Man find spot). It is therefore necessary to continue with the work already begun. That will make it possible to have a more meaningful discussion of the historical aspects of the time scale and the direction of resettlement of the Alpine region in the post-glacial period. Given the geography of North Tyrol, it can be assumed that changing or overlapping cultural influences from more than one direction are involved.

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