

COMPARATIVE RAW MATERIAL COLLECTIONS IN SUPPORT OF PETROARCHAEOLOGICAL STUDIES: AN OVERVIEW

T. BIRÓ KATALIN

Key words: *lithic raw materials, comparative collection, survey*

Introduction

Reference collections, physical and virtual, are of special importance for modern archaeology.¹ They serve access and interoperability, i.e., help us to know our basic conceptual categories better. Reference collections for comparative purposes help to identify and fingerprint the materials used by prehistoric - and historical - population and are imperative to preserve ancient knowledge.

Comparative raw material collections can serve as an important tool for the investigation of archaeological lithic assemblages. One of the oldest and best documented collection of this type is housed at the Hungarian National Museum. It is part of the Archaeological Collection, operating according to normal museum regulations and it is certainly one of the most popular and visited - used - collections of our Museum.

The existence of the Budapest Lithotheca owes much to the systemic mind of Viola Dobosi, her sense and devotion to order which is at the heart of any museum collection. She was instrumental in turning a large heap of stones, collected in course of a survey on archaeological and historical raw materials co-ordinated by József Fülöp, key figure of Hungarian geology in the 1970-ies and 1980-ies² into an organised and meaningful museum collection. The base fond of the Lithotheca Collection was obtained during a long series of fieldwork all over Hungary conducted by the Hungarian Geological Institute aiming at

discovering the raw material basis of prehistoric communities; an interesting and promising field of research for documenting the movements and economy of prehistoric communities.³ Viola Dobosi had previously raised the problem in an important article on the raw material basis of prehistoric communities⁴ but this is not an issue one can easily solve alone. Realising the potentials of a collection-and-database approach, she offered "home" for the collection in the Hungarian National Museum and helped in the primary elaboration and inventoring of this specific collection.

The first catalogue was published in 1991 by the Museum,⁵ theoretical and practical questions of collection management raised and published on several forums of petroarchaeology and flint studies.⁶

The second volume of the catalogue was published ten years later,⁷

The starting fond was published on the internet in a bilingual database illustrated with coloured photos⁸ and the Lithotheca collection was one of the first fully digital inventory databases of the Hungarian National Museum.⁹

¹ LANGE ed. 2004.

² FÜLÖP 1984.

³ BIRÓ 1984; BIRÓ—PÁLOSI 1986; BIRÓ 1986.

⁴ DOBOSI 1978.

⁵ BIRÓ—DOBOSI 1991.

⁶ BIRÓ—DOBOSI 1990; BIRÓ 1990; BIRÓ 1992.

⁷ BIRÓ et al. 2000.

⁸ <http://www.ace.hu/litot/indexe.html>

⁹ BIRÓ 2008.

Lithotheca Questionnaire

Official name of the collection:	
Founded in: (date)	
Scope:	
Regional (please specify):	
Other:	
Organisation	
- is housed at (institution)	
- curated by (contact person, email)	
Collection size?	
- localities	
-items	
Is it open to	
- scholarly research	
- general public	
Exchange stock?	
- yes/no	
Publication:	
- inventory	
- catalogue(s):	
- internet (please give URL address)	
- other relevant publications	
Elaboration	
- analytical data (method, % of material analysed)	

Figure 1.: Questionnaire on comparative lithic raw material collections

1. ábra: Kérdőív az összehasonlító nyersanyaggyűjteményekről

Regional aspects

The Lithotheca of the Hungarian National Museum is a "world collection" in the sense that it contains hand specimens from all the five continents. We receive gifts, exchange samples and sometimes have the possibility to collect on far-away territories, out of the reach of the prehistoric population. It is evident, though, that the coverage of the comparative raw material collection should focus on "home affairs", i.e., the raw materials potentially used and traded by the peoples inhabiting the territory of present-day and historical Hungary. We have far better chances to be really representative for the region we actually know - not forgetting that a comparative collection can never be really complete; raw material sources can disappear, get exploited or covered by sediments. The chances to cover an area well naturally decrease by distance from the sources. Another critical point is the diachronical coverage; siliceous raw materials and glassy/homogeneous substances like obsidian will be adequate for chipped stone tools, used in the Palaeolithic and in the younger "lithic" periods but in the latter times, long distance import is realised more by polished stone raw materials. The variety of lithic raw materials to be collected is extended essentially as we proceed towards younger prehistoric periods.

Fortunately, our efforts are not isolated. In recent years, more and more regional collections were founded with similar objectives. The present paper is intended to serve as a germ for collecting such efforts. We should know about the work of other people on this interdisciplinary, interregional and networking field to maximise the benefit of comparative collections supporting petroarchaeological work.

Survey of Lithothecas

Questionnaire

The petroarchaeological information basis, unfortunately, is not easy to collect because these collections, even if they exist and are available, rarely get published. As a method to gather information, I have used two basic techniques: asked colleagues (on e-mail), starting with the

Flint mining research group of UISPP and tried to collect information on the internet.

For the personal way of gathering information, I made a simple questionnaire to ask for the basic data (*Fig. 1*). I am most grateful to all colleagues who contributed with information¹⁰ and especially those who completed the questionnaire.¹¹

Altogether 13 persons completed the questionnaire till 31.12.2010, about 21 comparative raw material collections in 11 countries.

Internet survey

In course of surveying data for comparative raw material collections I was trying to use various orthographies in search of the subject to give full coverage if available (*Table 1*). summarises my results that I could "google" (date: 15.01.2011) using different orthographies for comparative collections, including some language variants (and probably omitting others, too).

It is evident, that I could not reach all the existing Lithothecas, but I believe it is a good start and we can always complete the database. Hopefully this survey contains the publicly available electronic data services on comparative lithic raw material collections and we are planning to update the links regularly. Moreover, this summary will be passed to flintsource.net for wider availability.

Orthography for search

Lithotheca is a composite word of partly Greek¹² and partly Greco/Latin¹³ origin.

¹⁰ Information received from Michael Brandl, Cyril Marcigny, Martin Oliva, Naama Goren, Javier Baena, Jacques Pelegrin, Paolo Biagi, Anne Hauzeur, Gillian Varndell, Elisabetta Starnini, Gheorghe Lazarovici, Michael Baales, David Field, Alan Saville.

¹¹ Questionnaire completed by Gerhard Trnka, Jehanne Affolter, Fabio Negrino, Javier Baena, Magda Mantu, Vin Davis, Debbie Olausson and Anders Högberg, Beatrix Nutz, Jehanne Féblot-Augustins, Cristian Roman, Xavier Mangado Llach, Xavier Terradas, Elena Cristina Nitu.

¹² lithos, <http://www.etymonline.com/>

Table 1.: Comparative raw material collections by Google (~Lithotheca)

1. táblázat: Összehasonlító nyersanyaggyűjtemények (~Litotéka) említése a világhálón (Google adatok)

Form	Google query results (nr)
Lithothèque	121000 (many of them of primarily geological interest)
Litoteca	4400
Lithothek	4370
Lithotheca	473
Litotéka	202
Lithotheca	57
Lithotéka	3 (all HNM Lithotheca)

It is used in several orthographic variants for many languages. The standard way of writing in Hungarian is Litotéka and we use the form Lithotheca in publishing in English (mostly...). There are, however, many language variants and inconsequent spelling (not to speak of *Összehasonlító nyersanyaggyűjtemény*¹⁴ on any language). It is also possible that not all the references found are comparative raw material collections for petroarchaeological purposes and though I tried to pop up most, of course I could not see all.

I do not think that I could locate all the Lithothecas all over the World but it is a reasonable start you are most welcome to join, any time!

Countries with Lithotheca

Let us start with Hungary, as naturally I know the situation here the best.

Lithotheca of the HNM

We have one of the oldest international collection, founded in 1986 in connection with the *International conference on prehistoric flint mining and lithic raw material identification in*

the Carpathian Basin.¹⁵ The scope is centred on the Carpathian Basin with essential exchange and collecting activity in Europe and sporadic items from all the five continents. The Lithotheca is part of the Prehistoric Collection of the Hungarian National Museum and up to now, contains 2082 items (5517 pieces) from 998 localities (Fig. 2a, 2b, 2c - HNM Lithotheca site maps). It is curated by Katalin T. Biró (tbk@ace.hu), with the invaluable help of Viola Dobosi and András Markó, both working in the Palaeolithic Collection of the HNM. The collection is inventorised according to normal museum regulations and is one of the fully computerised collections in the HNM.¹⁶ Two catalogue volumes have already been published for the periods 1986-1989¹⁷ and 1990-1999,¹⁸ respectively; currently we are working on the Catalogue Vol. III. (2000-2010 in preparation) and the electronic version of the previous two catalogues. The base fond of the Lithotheca, the Hungarian type collection is available in two languages (English/Hungarian) with coloured images at www.ace.hu/litot.

The analytical work on the reference collection involves various techniques of petrographical, mineralogical, geochemical and physical analyses like petrographical thin sections (TS), neutron activation analysis (NAA), X-ray powder diffraction analysis (XRD), electron energy dispersive spectroscopy (EDS), X-ray fluorescence spectroscopy (XRF), prompt gamma activation analysis (PGAA), infra-red spectroscopy (IR), proton induced X-ray and gamma ray emission spectroscopy (PIXE-PIGE) and fission track dating (FTD). By 2000, 1790 analyses were reported,¹⁹ currently we estimate that about 20 % of the Lithotheca collection has been subjected to analytical studies.

¹⁵ Sümeg conference BIRÓ ed. 1986, 1987.

¹⁶ BIRÓ 2008.

¹⁷ BIRÓ—DOBOSI 1991.

¹⁸ BIRÓ et al. 2000.

¹⁹ BIRÓ et al. 2000; on one piece, the combination of several investigation techniques is typically performed because these techniques are complementary in many respect. The principle is to investigate the geological reference material fully and try to pin-point the non-invasive techniques for the analysis of the archaeological items.

¹³ theca, Latin expression, from the Greek expression case to put anything in <http://www.websters-online-dictionary.org/>

¹⁴ Comparative raw material collection in Hungarian.

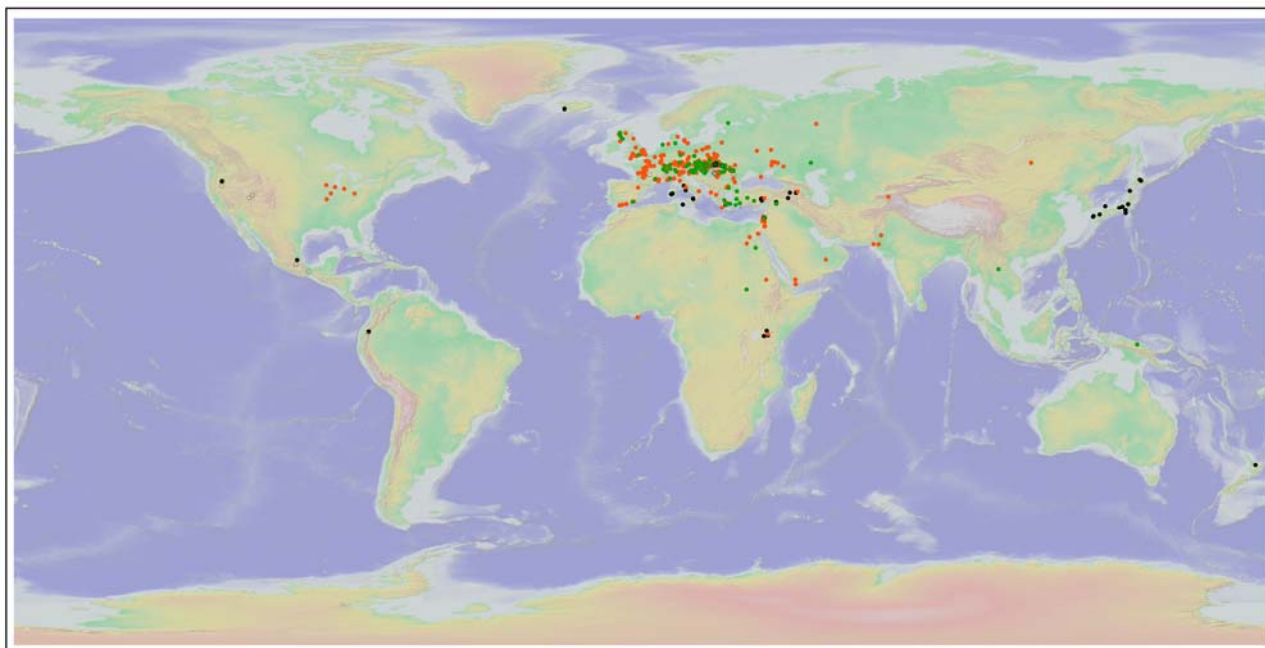


Figure 2a.

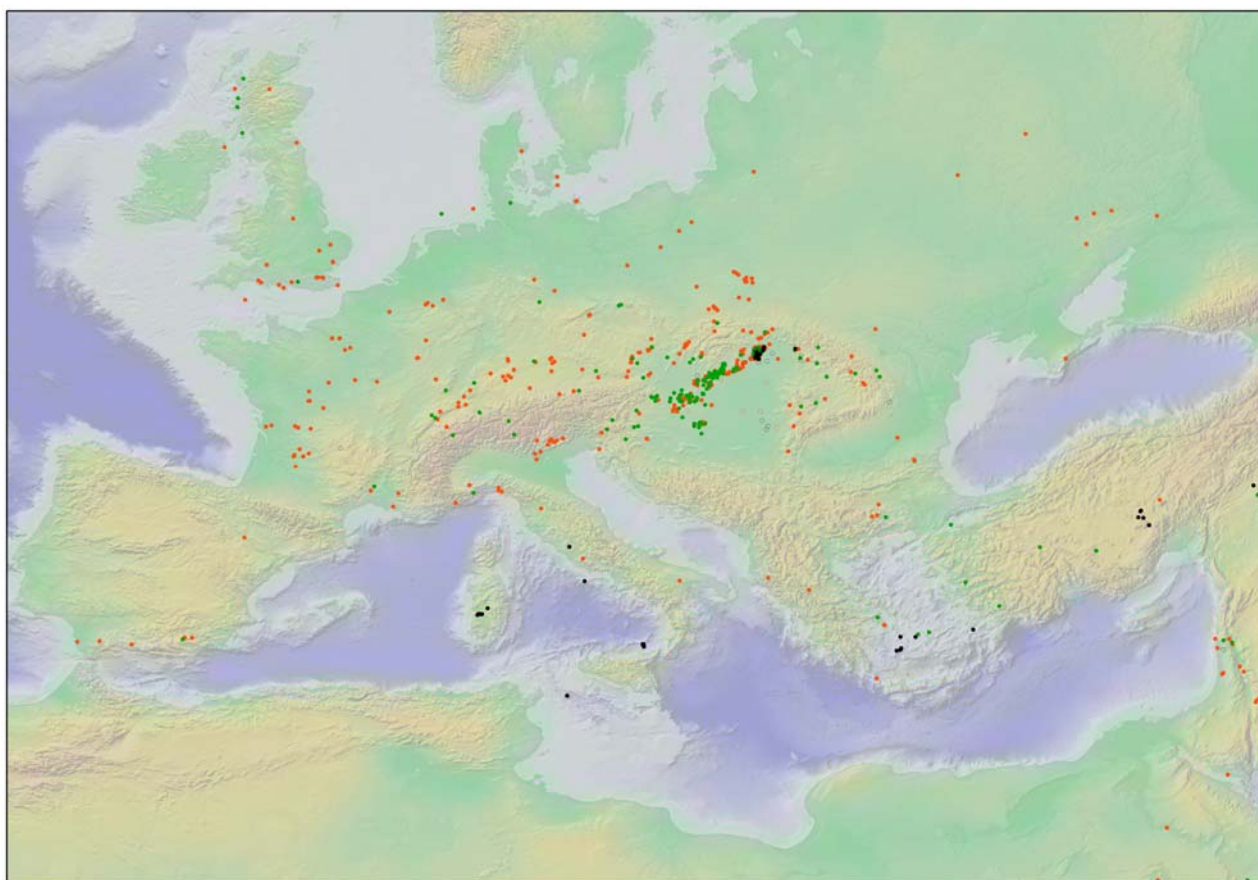


Figure 2b.

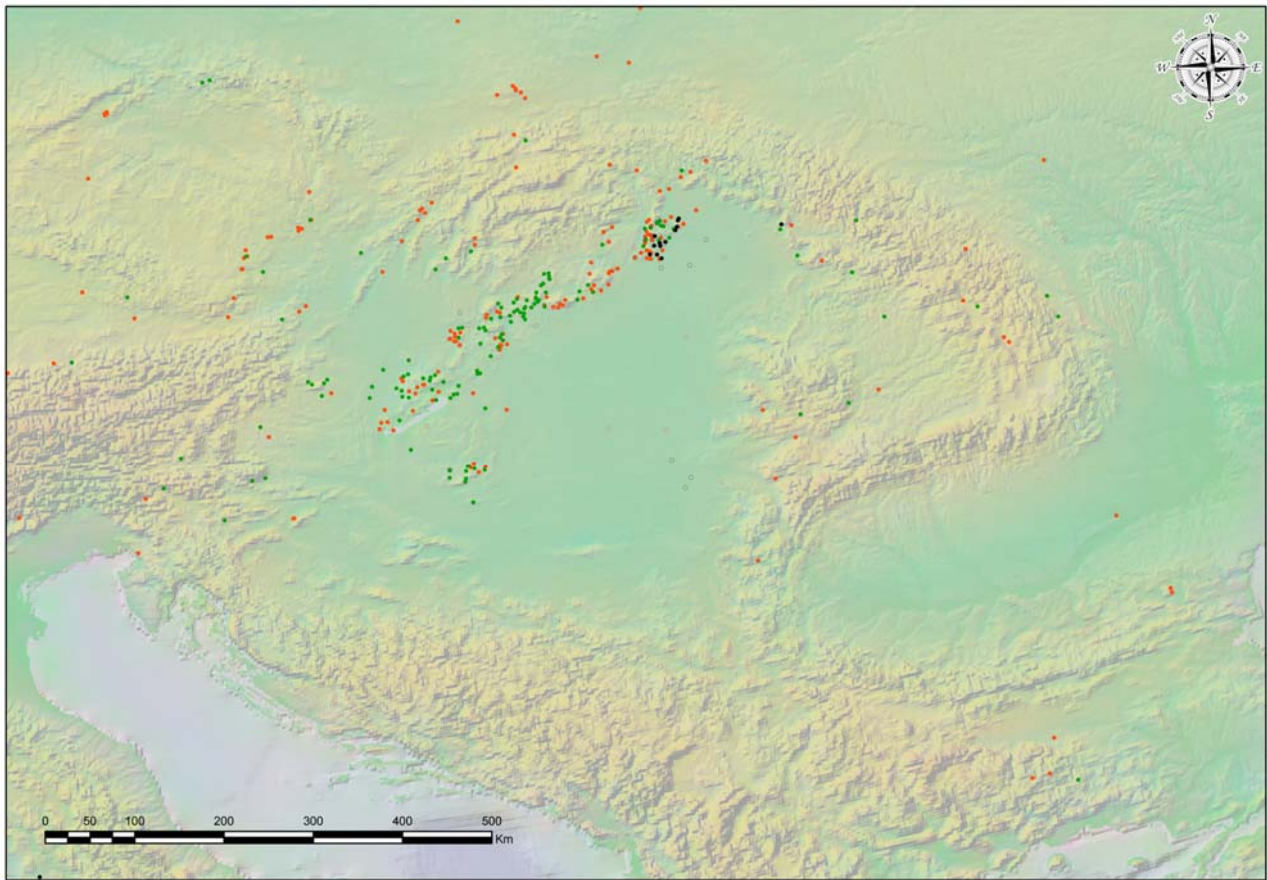


Figure 2c.

Figure 2.: Raw material samples in the Lithotheca Collection of the Hungarian National Museum.

Key of symbols: ● obsidian (geological sources) ○ obsidian (from archaeological sites); ● siliceous rocks (geological sources) ○ siliceous rocks (from archaeological sites); ● other rocks (for polished stone tools and other stone utensiles, geological sources) ○ other rocks (for polished stone tools and other stone utensiles, from archaeological sites).

2a: on a World map; 2b: on the map of Europe; 2c: in the Carpathian Basin

Data: HNM Lithotheca catalogues and inventory databas. Map: Balázs Holl

2. ábra: A Magyar Nemzeti Múzeum Litotéka gyűjteményének nyersanyagmintái.

Jelkulcs: ● obszidián (geológiai lelőhelyről) ○ obszidián (régészeti lelőhelyről); ● kovaközetek (geológiai lelőhelyről) ○ kovaközetek (régészeti lelőhelyről); ● egyéb kőzetek (csiszolt kőeszköz és szerszámkő nyersanyag, geológiai lelőhelyről) ○ egyéb kőzetek (csiszolt kőeszköz és szerszámkő nyersanyag, régészeti lelőhelyről).

2a: világtérképen; 2b: Európa-térképen; 2c: a Kárpát-medencében

Adatok: MNM Litotéka katalógus és leltári adatbázis. Térkép: Holl Balázs

The collection is open to research according to general museum regulations; the permanent archaeological exhibition of the HNM is also using the Lithotheca material for presenting the

most important lithic raw materials to the general public (Fig. 3.: Lithotheca material in the permanent archaeological exhibition of the HNM).

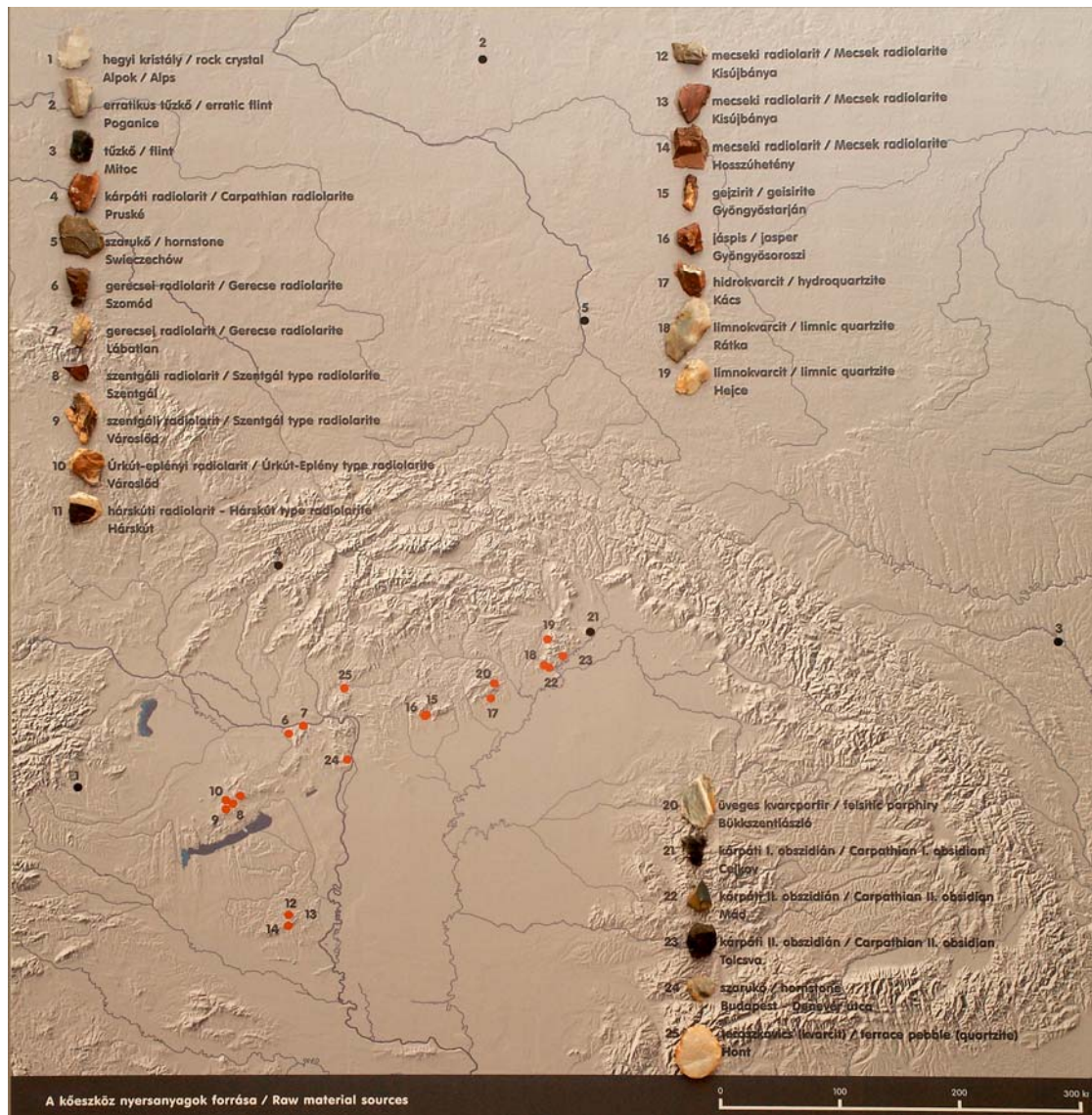


Figure 3.: Lithic raw materials presented for the public on the permanent archaeological exhibition of the HNM

3. ábra: nyersanyagminták a Litotéka gyűjtemény anyagából a Magyar Nemzeti Múzeum állandó régészeti kiállításán

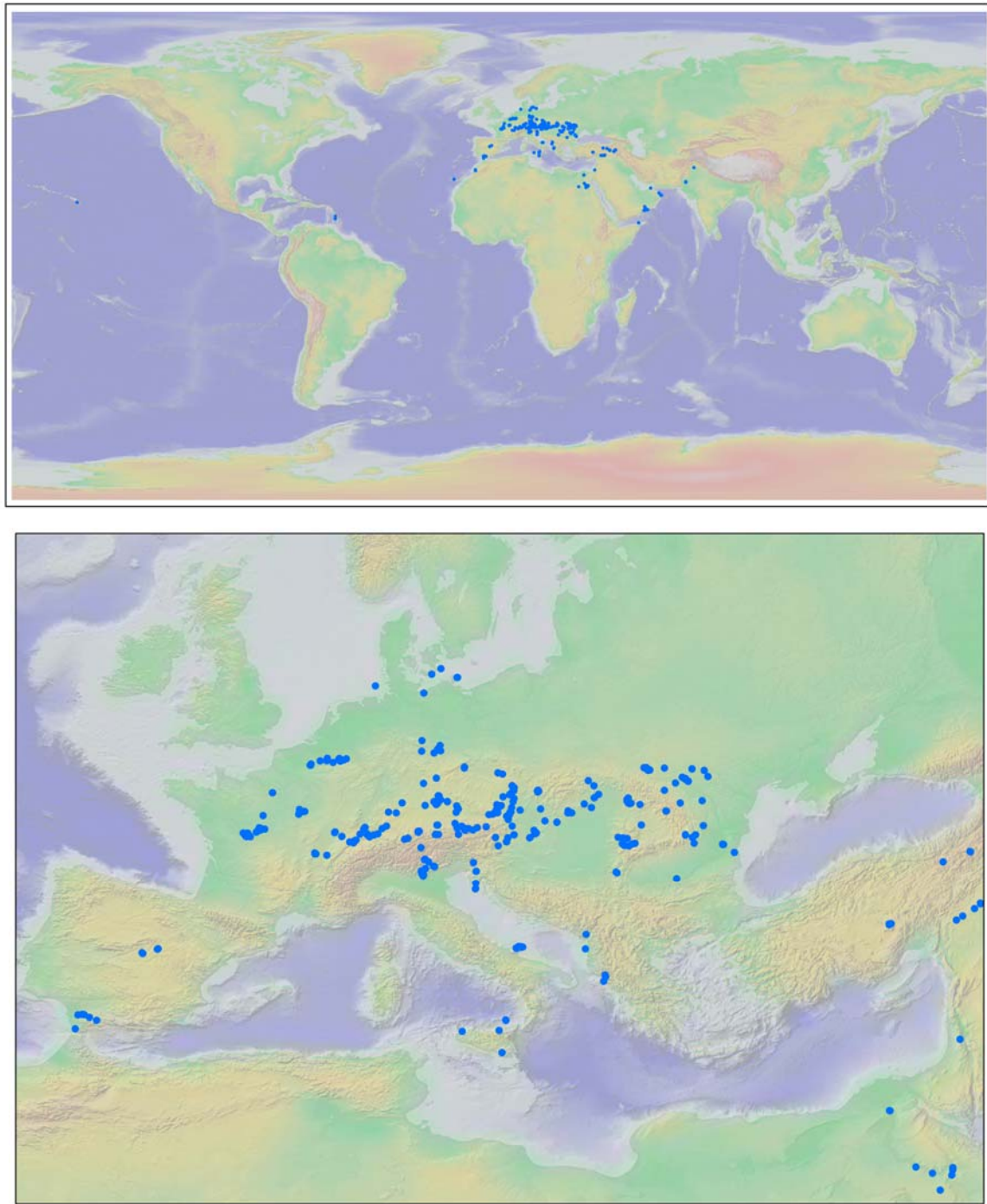


Figure 4.: Lithic raw mterial samples of the Viena Lithotheca (VLI).

Key of symbols: ● localities of the lithic raw material samples.

4a: on a World map; 4b: on the map of Europe.

Data: VLI, courtesy of Gerhard Trnka. Balázs Holl.

4. ábra: A bécsi Litotéka (VLI) gyűjteményének nyersanyagmintái.

Jelkulcs: ● különféle nyersanyagminták lelőhelye.

4a: világtérképen; 4b: Európa-térképen.

Adatok: VLI Litotéka, Gerhard Trnka adatbázisa. Térkép: Holl Balázs

There are no more dedicated petroarchaeological collections in Hungary; however, at the ELTE University, Department of Petrography and Geochemistry, a small study collection was made for educational purposes. Moreover, many current studies are documented there.²⁰ The same University operates one of the extensive general mineralogical and petrographical collections in the framework of the ELTE Natural History Collection.

Austria

Vienna-Lithothek (VLI)

An important and large comparative raw material collection has been set up in Vienna by Gerhard Trnka. It was founded in 1996. It is extended to multiregional samples from all over the world, mainly European chert samples. It is housed in the Institut für Ur- und Frühgeschichte der Universität Wien, (Franz Klein-Gasse 1, A-1190). The collection is curated by Gerhard Trnka (gerhard.trnka@univie.ac.at) with collaboration of Michael Brandl. The collection comprises, according to the list kindly supplied by G. Trnka, 648 items from approx. 470 sites. There is a GPS-ID list for the samples, on the basis of which we could chart the localities (Fig. 4a, 4b). The collection is open to scholarly research and exchange with other collections.

Silex Lithotheca of the Institute of Archaeology, University of Innsbruck

Internet search provided another Austrian reference collection (*Lithotheca Transalpina*), curated at the Innsbruck University.²¹ Information was provided for this article by Beatriz Nutz. Accordingly, the collection was officially founded in 2007. The focus of the collection is on Northern Alpine chert and radiolarite varieties of North Tyrol and Vorarlberg (Austria), South Alpine varieties of South Tyrol and Northern Italy.

It is housed at the Institute of Archaeology, University of Innsbruck, Langer Weg 11, 6020

Innsbruck, Austria, curated by Dr. Walter Leitner (walter.leitner@uibk.ac.at).

They store currently 197 data sets in the database. The collection is open to scholarly research. They have a moderate exchange stock, on request small amounts of Northern Alpine chert and radiolarite can be provided. There is some internet-based information available on the collection and related project.²² Analysis of the collection is in progress.

Czech Republic

In the Czech Republic, important petroarchaeological research is devoted to petroarchaeological problems.²³ However, I received only answer from Martin Oliva from the Anthropos Institute, Brno, stating that they also have a small collection of lithic samples, housed in the Institute (Zelý trh 6, Brno), but with no name and not too systematically collected. They are also interested in exchange of specimens.

France²⁴

The *Lithothèque du nord-ouest du Bassin Aquitain* was founded in the 1980-ies. As the name indicates, its primary scope is collecting lithic raw materials from the North-West of the Aquitaine Basin as well as the valley of the river Garonne and the Northern part of Dordogne.

It is housed at Musée national de Préhistoire des Eyzies, - curated by Alain Turq (alain.turq@culture.gouv.fr). The collection comprises hundreds of sites of primary and secondary silex deposits. The collection is open to scholarly research. The collection is systematically analysed from micropalaeontological point of view,

²²

<http://www.uibk.ac.at/himat/pps/pp05/lithothek.html.en>, <http://www.uibk.ac.at/himat/pps/pp05/sio2-datenbank.html.en>, <http://www.uibk.ac.at/himat/pps/pp05/lithothek.html.en>, <http://www.uibk.ac.at/himat/pps/pp05/sio2-datenbank.html.en>.

²³ PRICHYSTAL 2009.

²⁴ Several people informed me about a Lithothèque operated by Paul Fernandes, leading a project to collect information on existing reference collections in France.

²⁰ for the details, see SZAKMÁNY 2009.

²¹ HOLDERMANN 2004.

petrographical analysis is in progress. Publications by A. Turq give further information on this collection.²⁵

Information on three French comparative collections (Bugey, Charente, UMR7055) was provided by J. Féblot-Augustins.

Lithothèque du Bugey. Echantillons de référence

Founded in 2004, by J. Féblot-Augustins. Focused on raw material samples for prehistoric raw materials in Bugey region (Ain, France). Housed at (institution): UMR 7055 - Préhistoire et Technologie. Maison de l'Archéologie et de l'Ethnologie - René Ginouvès. 21, allée de l'Université, 92023 Nanterre Cedex, France. Curated by Jacques Pelegrin (jacques.pelegrin@mae.u-paris10.fr). The collection comprises several hundred (3-400) items from 73 localities; 51 petrographic types were distinguished among them. It is open to scholarly research and they have a restricted amount of exchange material. The analytical work on the collection is based on combining macroscopic characterisation and sedimentary microfacies analysis under the stereoscopic binocular microscope; all the collected samples were analysed (100%).

Information is available in the framework of the Flintsources webpage,²⁶ Other relevant publications include various papers by J. Féblot-Augustins.²⁷

Lithothèque du bassin de la Charente

Founded in 2005, by J. Féblot-Augustins, S.-J. Park & A. Delagnes, focusing on raw material samples from the Charente river basin (France). The collection is housed at the Musée d'Angoulême (Angoulême 16000, France), curated by Jean-François Tournepiche (jftbill@aol.com). It is comprising 183 items from 123 localities, open both to professionals and the general public. They have available exchange stock

Analysis of the material is in progress combining macroscopic characterization and sedimentary microfacies analysis under the stereoscopic binocular microscope; all the

collected samples were analysed; full descriptions available for 57% (105 samples from 53 localities). Internet information on the collection is available²⁸ other relevant publication is by J. Féblot-Augustins et al.²⁹

Lithothèque de l'UMR 7055

Founded in 2008, by J. Féblot-Augustins. Collecting lithic reference material from various countries, notably 31 countries. Algeria, Germany, England, Brazil, Canada, Denmark, Egypt, Ecuador, Ethiopia, France, Gabon, Greece, Guatemala, Hungary, Israel, Italy, Japan, Kenya, Mexico, Morocco, Niger, Poland, Portugal, Czech Republic Slovakia, Switzerland, Syria, Turkey, USSR, USA.

In France, the following departments: Ain, Aisne, Alpes-de-Haute-Provence, Alpes-Maritimes, Bouches-du-Rhône, Cantal, Charente, Charente-Maritime, Corrèze, Côtes-d'Armor, Dordogne, Drôme, Finistère, Gard, Indre, Indre-et-Loire, Isère, Haute-Loire, Loire-Atlantique, Lot, Lot-et-Garonne, Oise, Rhône -Saône-et-Loire, Savoie, Seine-et-Marne, Somme, Val-d'Oise, Var, Vaucluse, Vienne, Yonne, Yvelines.

The collection is housed at UMR 7055 - Préhistoire et Technologie. Maison de l'Archéologie et de l'Ethnologie - René Ginouvès. 21, allée de l'Université, 92023 Nanterre Cedex, France, curated by Jacques Pelegrin (jacques.pelegrin@mae.u-paris10.fr). It comprises 1137 items from 306 localities. The collection is open to scholarly research. For some samples, they have exchange material as well.

The inventory is currently in the form of Excel files.³⁰

Israel

Housed at the Centre de recherche français de Jérusalem, a comparative collection has been set up by Christophe Delage.³¹

²⁵ TURQ et al. 1999, TURQ 2000; 2003.

²⁶ http://www.flintsources.net/flint/infB_bugey.html

²⁷ FÉBLOT-AUGUSTINS 2005; 2007; 2009a; 2009b

²⁸ at:
<http://www.alienor.org/ARTICLES/lithotheque/index.htm> and
http://alienor.org/bibliotheque/lithotheque/lithotheque-charente_2010.pdf;

²⁹ FÉBLOT-AUGUSTINS et al. 2010.

³⁰ available from J. Pelegrin

³¹ DELAGE 1997a; 1997b; 2010.

Italy

Elisabetta Starnini informed us on a small private raw material collection curated by Fabio Negrino (archeoge@alice.it) at the Soprintendenza Archeologica della Liguria, Genova (Italy). It was founded in 2000 with the aim of supporting research on prehistoric exchange. The regional scope covers Liguria and North Italy mainly, with some coverage on more distant European territories. Currently the collection involves about 50 localities. It is open to scholarly research and they have an exchange stock as well.

Romania

Information was provided and organised from Romania by Magda Mantu and Gheorge Lazarovici. My sincere thanks for their help. Accordingly, there are at least three operating comparative raw material collections in Lithotheca, at Cluj, Targoviste (information by E. Nitu) and the Hunedoara Museum (information by C. Roman).

The *Cluj* comparative raw material collection (the oldest in Romania) is currently not available for research (information by M. Mantu). Related research was also reported by O. Crandell.³²

Targoviste comparative raw material collection

Founded in 2007; focusing on raw materials used on Romanian Palaeolithic settlements. It is housed at Valahia University, Research Center "Prehistory, interdisciplinary archaeology and conservation of national patrimony", curated by prof. univ. dr. Marin Carciumaru (mcarciumaru@yahoo.com) and drd. Elena-Cristina Nitu (elenacristinanitu@yahoo.com). The collection comprises over 500 items from about 100 localities. Is it open to scholarly research. They can provide samples of raw material for exchange.

The samples are systematically analysed by non destructive analysis with digital microscope VHX 600 (Keyence) for petrography and paleontological study. About 100 sources of raw materials were analysed.

Relevant publications comprise various papers by M. Carciumaru et alii.³³

Corvin's Castle Museum Lithotheca (Hunedoara)

The collection was founded in: 2008. They are mainly concerned with collecting archaeological raw materials from Hunedoara county. It is stored at the Corvin's Castle Museum, curated by Sorin Tincu (sorin_tincu@yahoo.com). The following sites are represented: Hunedoara-*Prunilor street*, Silvasu de Jos-*Dealul Tapului*, Valea Nandrului-*La Dos*, Nandru-*Petac stream*, Boş-*Grui*, Sântuhalme-*Gheţarie*, Herepeia, Căoi, Cioclovina, Brotuna, Cinciş-Cerna, mainly silex nucleus and flint blade samples, and primary geological source material. It is open to scholarly research and they have an exchange stock as well.

Analytical data are available for Cauce' cave site here, i.e., macroscopic and microscopic analyses, the location of the presumptive zone of origin of the silica rocks (jasper, opals); cca. 40 % of the material is analysed and store cross-section of siliceous rocks nodules used as raw material for flint tools.³⁴

Spain

Lithotheca UAM (Madrid)

Founded in 2007. Collecting raw materials from Madrid Region. It is housed at the Dep. Prehistoria y Arqueología, Universidad Autónoma de Madrid 28049 Madrid, Spain, curated by Javier Baena (Javier.baena@uam.es). The collection comprises primary and secondary deposits from more than 200 sites in Madrid environs. It is open to scholarly research; they have an exchange stock. The collection is inventorised.

LITHICUB – Litoteca de matèries primeres prehistòriques de la Universitat de Barcelona

Founded in 2007, focusing on lithic raw materials from Western Europe (Centre Portugal, Centre France, Ebro Valley, Catalan region). The collection is housed at the University of

³² CRANDELL 2009.

³³ CARCIUMARU et al. 2007; 2008; 2009; 2010.

³⁴ Relevant publications: BARBU 2007; LUCA et al. 2004; ROMAN 2008.

Barcelona. Faculty of Geography and History. Laboratory of Archaeology, curated by Dr. Javier Mangado (mangado@ub.edu). It comprises about 100 items from around 50 localities. It is open for scholarly research. About 50% of the collection is analysed by petrographical thin sections. Internet-based information is available at www.lithicub.net.³⁵

*LITOCAT*³⁶ – *Lithotheca of siliceous rocks from Catalonia*

Founded in December 2004. The geographical scope of LITOCAT focuses on the Northeast of the Iberian peninsula which corresponds to the present administrative territory of Catalonia, including as well other neighbour regions (Aragón, Andorra and Languedoc-Roussillon). The reference collection and areas for study and storage of samples and materials of LITOCAT are located in the Institute “Milà and Fontanals” (CSIC - Spanish National Research Council, Barcelona). Curators of the collection are David Ortega (ortega@imf.csic.es) and Xavier Terradas (terradas@imf.csic.es). So far they have documented 258 locations with siliceous rock outcrops in the study area, visited and recorded 59. These 258 locations have allowed to document up to 85 different types of siliceous rocks. Up to now they have approximately 1200 samples from the locations which have been visited and recorded (an average of 20 samples per location). LITOCAT spaces are open to all students and researchers interested in the study of siliceous raw materials from North-Eastern Iberia and neighbouring regions. The curators are working on making available all the information related to the LITOCAT project on the internet as soon as possible.

All locations are systematically recorded and sampled. A selection of samples from every location has been thin-sectioned and analysed through XRD. Occasionally ICP-MS analyses have been done on some samples.

Exchange stock is available from some of the localities. Internet-based information is currently available at:

<http://imf.csic.es/web/esp/dptos/sochumanas-laboratorio3.asp?sl=4>.

Sweden

Scandinavian flint Collection

Founded in: 2007, focusing on Scandinavian flint in general. Samples are collected from all known flint localities in Sweden, Denmark and Rügen, Germany. There are currently two reference collections in operation, stored at Department of Archaeology and Ancient History, Lund University, Lund, Sweden and at Malmö Museum, Malmö, Sweden. The Lund stock is curated by D. Olausson (Deborah.Olausson@ark.lu.se), at Malmö by A. Hogberg (Anders.Hogberg@sydsvenskarkeologi.se).

The sampled localities cover all of Denmark. Flint localities in Sweden are mostly located in the southern part; the most northern locality is Kinnekulle. In northern Germany the chalk cliffs at Rügen were sampled. 17 types of flint are separated; samples numbering between 1 and 10 of each type. The collection is open to research as well as the general public. Though they have no formal exchange stock, on request, they are ready to accommodate such needs.³⁷ Analytical work by non-destructive energy dispersive X-ray fluorescence spectrometry is in progress; pilot study published by Hughes, R.E. et alii.³⁸

Switzerland

In Switzerland, two regional comparative raw material collections are in operation. They are basically connected to the research and scientific activity of Jehanne Affolter.³⁹ The data presented below are supplied from her directly.

The older collection has considerable past is. It is called *Lithothèque de Référence (of AR-GEO-LAB)*, founded in 1986. It is collecting samples of flint and chert in European scale. It is housed at AR-GEO-LAB, Dîme 86, CH 2000 Neuchâtel. The collection is curated by Jehanne Affolter (affolterjs@bluewin.ch). The collection comprises items from more than 1200 localities. It is open to scholarly research with previous announcement. For the most raw materials, they also have exchange samples. About 2/3 of the reference collection is analysed by non

³⁵ Further relevant literature: MANGADO et al. 2010.

³⁶ My favourite name - you all know why.

³⁷ HÖGBERG—OLAUSSEN 2007.

³⁸ HUGHES et al. 2010.

³⁹ AFFOLTER 2002, 2009.

destructive sedimentary microfacies analysis in relation to the archaeological use.

The *Lithothèque de Référence in the Laténium* was founded in 2002. It is collecting flint and chert from the Jura mountains and adjacent regions. The collection is curated by Béat Arnold and Jehanne Affolter (affolterjs@bluewin.ch). It is housed in the above mentioned Laténium at Espace Paul Vouga 2, CH-2068 Hauterive. The collection comprises items from 688 localities. It is open to scholarly research (with previous announcement) and sometimes also to the general public. They have a limited exchange collection from the localities most relevant for the archaeology. The samples are all investigated by non destructive sedimentary microfacies analysis; with special emphasis on their relation to the archaeological lithic artefacts.

United Kingdom

*Implement Petrology Group (IPG) National Collection of Thin Sections*⁴⁰

The collection originates probably from the 1930s as a formal collection in its present form.

The scope involves basically the region of England and the Isle of Man: it is the national depository of all the thin sections studied by the Implement Petrology Committee (IPC) of the Council for British Archaeology and its successor Implement Petrology Group (IPG).

It comprises also, for information about thin sections of world wide significance, items based on the collections of the British Museum, London and the Natural History Museum, London. But these thin sections are owned by the Museums, and do not form part of the IPG National Collection. Some thin sections are known to be in private hands, although the numbers are not thought to be significant.

The collection is held mainly at four sites: Department of Mineralogy, Natural History Museum, London (remainder of English Counties excluding those listed below). (Dr Dave Smith; D.A.Smith@nhm.ac.uk); Lapworth Museum, University of Birmingham, UK; (English Midland Counties (Jon Clatworthy,

j.c.clatworthy@bham.ac.uk); Castle Museum, Taunton, UK (SW English Counties, swimpg@swfed.org.uk); IPG chief petrologist, York, UK (NW England, Dr R.V. Davis, rvindavis@gmail.com). The collection is curated by Allison Fox (Isle of Man, Manx Museum, Douglas, allison.fox@gov.im).

The size of the collection is estimated about altogether 3650 items (London 2000 slides; Birmingham 400 slides; Taunton 1000 slides; York 200 slides; Manx 50 slides). The use of the collection is limited to scholarly research. There is no exchange stock, no opportunity to cut additional material. The collection policy since the 1990s has been to make polished thin sections and retain rock fragments for geochemical analysis. Internet information is under development.

Most of the slides were analysed by optical microscopy and about 1% also by geochemistry.

The catalogue of the collection was published by Cummins and Clough.⁴¹

Alan Saville informed us on some comparative material collected by Caroline Wickham-Jones available at the *National Museums Scotland*; it is not organised into a formal collection.

Summary

Comparative raw material collections are an essential part of the tools in the service of modern, scientifically supported archaeology imperative for the challenges of 21st century archaeology. It is, however, not enough to carry on regional initiatives, it is important to know about each other's efforts. Internet-based modern technology can help us being in permanent contact, much more than we are now.

Of course I cannot pretend that this list is complete; my means and time for constructing it being equally limited. I am most grateful for the people who helped me to collect information and hope I did not misunderstand their points.

⁴⁰ Information supplied by Vin Davis, Chairman, IPG UK

⁴¹ CUMMINS–CLOUGH 1988.

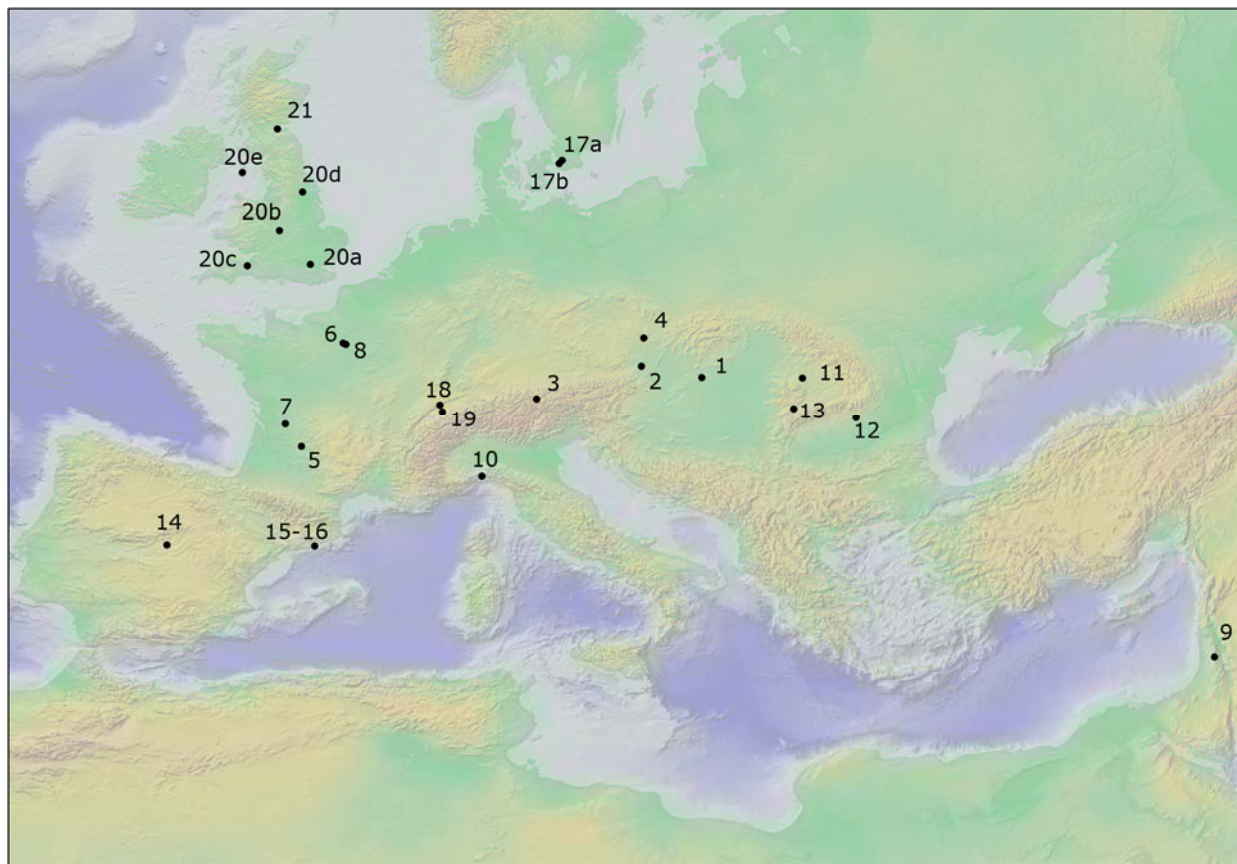


Figure 5.: Comparative lithic raw material collections according to the present survey

5. ábra: Összehasonlító nyersanyaggyűjtemények a kérdőíves felmérés és internetes kutatás alapján

The list is open for further completion and corrections (Fig. 5.⁴²).

⁴² The Lithothecas are numbered accordingly: 1. Lithotheca of the HNM; 2. Vienna-Lithothek (VLI); 3. Silex Lithotheca of the Institute of Archaeologies, University of Innsbruck; 4. Anthropos Institute, Brno; 5. Lithothèque du nord-ouest du Bassin Aquitain des Eyzies; 6. Lithothèque du Bugey. Echantillons de référence; 7. Lithothèque du bassin de la Charente Musée d'Angoulême; 8. Lithothèque de l'UMR 7055 Nanterre; 9. Centre de recherche français de Jérusalem; 10. Soprintendenza Archeologica della Liguria, Genova; 11. Cluj comparative raw material collection; 12. Targoviste comparative raw material collection; 13. Corvin's Castle Museum Lithotheca (Hunedoara); 14. Lithoteca UAM (Madrid); 15. LITHICUB. Litoteca de matèries primeres prehistòriques de la Universitat de Barcelona; 16. LITOCAT⁴² – Lithotheca of

siliceous rocks from Catalonia; 17a. Scandinavian flint Collection Lund; 17b. Scandinavian flint Collection Malmö; 18. Lithothèque de Référence (of AR-GEO-LAB), Neuchâtel.; 19. Lithothèque de Référence in the Laténium Hauterive; 20a. Implement Petrology Group (IPG) National Collection of Thin Sections London; 20b. Implement Petrology Group (IPG) National Collection of Thin Sections Birmingham; 20c. Implement Petrology Group (IPG) National Collection of Thin Sections Taunton; 20d. Implement Petrology Group (IPG) National Collection of Thin Sections York; 20e. Implement Petrology Group (IPG) National Collection of Thin Sections Manx; 21. National Museums Scotland; Edinburgh.

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ÖSSZEHASONLÍTÓ NYERSANYAGGYŰJTEMÉNYEK A PETROARCHEOLÓGIAI VIZSGÁLATOK SZOLGÁLATÁBAN: ÁTTEKINTÉS

T. BIRÓ KATALIN

Kulcsszavak: *kőeszköz nyersanyag, összehasonlító gyűjtemény, kovaközetek, felmérés*

Az összehasonlító gyűjtemények egyre fontosabb szerepet kapnak a modern régészeti kutatásokban. Ezek az objektivitást, az egymástól távol eső területek kutatási eredményeinek azonos értelmezésének alapjait teremtik meg, segítségükkel jobban megismerhető a kutatás adott színvonalának fogalomkészlete is. Különösen fontosak az összehasonlító gyűjtemények olyan esetben, amikor a régmúlt idők emberének rendelkezésére álló nyersanyagok forrásait kutatjuk. Ilyen tematikus gyűjtemény az őskori "kő" (=kőzet, ásvány) nyersanyagok kutatására létrehozott Litotéka. Az egyik legkorábbi és legjobban dokumentált kőzetgyűjtemény a Magyar Nemzeti Múzeumban működik. Létrehozásában és rendezésében nagy szerepe volt - és jelenleg is nagy szerepe van - T. Dobosi Violának. A Litotékához szükséges terepi kutatásokat a Magyar Állami Földtani Intézetben indítottuk meg. Az 1986-ban Sümegen megrendezett nemzetközi konferencia résztvevői nagy mértékben hozzájárultak ahhoz, hogy már a kezdetektől ne csak a jelenlegi Magyarország területéről ismerjük meg a felhasznált kőeszköz-nyersanyagokat. A gyűjtemény azóta is bővül, gyarapodik: már két teljes szakmai katalógusa jelent meg, leltározott anyaga számítógépes adatbázisban kutatható, az alapgyűjtemény internetes honlapon is elérhető és a Litotéka anyaga megjelenik a múzeum állandó régészeti kiállításának kincsei között is.

Akármilyen elszánt és kitartó is a gyűjtőmunka, földrajzi és ismereti határai vannak munkánk belátható és elérhető teljességének. Szerencsére, erőfeszítéseinkkel nem vagyunk egyedül, bár érdemtelenül keveset tudunk egymásról. Az utóbbi években több helyen is indítottak hasonló célú szakgyűjteményt, amelyek változó komplexitásban és feldolgozottságban, de mind ugyanazt a célt szolgálják: jobban megismerni az őskori emberek rendelkezésére álló nyersanyagokat és támogatni a származási hely (=proveniencia) vizsgálatokat.

Tanulmányomban megkíséreltem a hasonló jellegű gyűjtemények felgyűjtését, kérdőíves felmérés és az interneten folytatott keresés segítségével. Nem állítható, hogy sikerült az összes jelentős Litotékát megtalálni, de remélem, hogy ez egy jó kezdet, ami elősegíti a hasonló gyűjtemények együttműködését.

Őszinte köszönettel tartozom mindenkinek, aki ebben a munkában segített, közreműködött.

