

## **Amber inclusions of arthropods (particularly insects and mites) in European museums – documentation and photography**

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Abstract. An attempt has been made to locate some of the museums in Europe which hold important collections of insects and mites in amber. Where possible the collections have been documented. Some of the arthropods from UK collections have been photographed and documented in more detail.

Key words: amber, European museums, documentation, fossil inclusions, insects, mites.

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### I. INTRODUCTION

Many museums in the UK and mainland Europe have collections of amber with arthropod inclusions. There are also important private collections. Some museums have a few pieces only, while others contain large and important collections. In the UK these include museums in Brighton, Glasgow, London and Manchester. The Museum of the Earth in Warsaw possesses what has been described as one of the largest Baltic amber collections in Europe and in Poland. Other important collections occur in the University of Gdańsk and in the Natural History Museum in Kraków.

Much of the material has not been studied and the specimens remain unidentified; this is especially true in the case of mites. An attempt is being made to trace museums with significant collections and to document the collections where possible.

#### A b b r e v i a t i o n s:

NHM = Natural History Museum, London

MM = Manchester Museum

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who provided information about their collections. The curator of geology (J. NUDDS) at The Manchester Museum and the curator of fossil arthropods (A. ROSS) at The Natural History Museum in London arranged for the loan of material.

## II. RESULTS AND DISCUSSION

Details have been obtained from public museums in Europe where there are important amber collections containing arthropod inclusions. Tables I and II list some of these museums and their collections. POINAR (1992) and ROSS (1998) are useful general references.

Insects form the major component of the inclusions in Baltic amber and virtually all of the present day orders are represented, although some are rare. POINAR (1992) describes the various insect

Table I

Some of the public museums in Europe containing Baltic amber (modified from POINAR 1992)

European city	Name of institution	Estimated number of pieces of baltic amber
Berlin	Paläeontology Dept. Zoology Dept., Humboldt University Museum	15000 1000 to 2000
Copenhagen	Zoology Museum	8000
Göttingen	Institute for Geology and Paläeontology	11000
Hamburg	Geological Institute	5000
St Petersburg	Zoological Institute	25000
London	Natural History Museum	5000
Moscow	Geological Institute	5000
Palanga, Lithuania	Amber Museum	25000
Paris	National Museum of Natural History	2000
Stuttgart	Natural History Museum	2500
Warsaw	Museum of The Earth	25000

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Opposite page: Fig. 1 (top left). Arrangement of amber specimen for photography. Fig. 2 (top right). Mite with insect (Chironomidae). Baltic amber. NHM In. 18697. Fig. 3 (bottom left). Same, higher magnification. Fig. 4 (bottom right). Actinidea (Prostigmata). *Bdella* (Bdellidae); Baltic amber, NHM In. 18859.





Table II

Some of the public museums in the UK containing collections of amber with insects and mites (\* insects and arachnids)

City/Town	Name of institution	Source of amber	Number of pieces	Estimate number of insects	Estimate number of mites	Reference/ Source of information
Brighton	Booth Museum	Baltic	300	530	168	Brighton, John COOPER and Museum Report
Cambridge	Univiversity Museum of Zoology	Dominican	25	25 (Phorid insects)		Ray SYMONDS rjs13@cam.ac.uk
Cambridge	Sedgwick Museum	Baltic	200			Mike DORLING mgd2@esc.cam.ac.uk
Glasgow	Hunterian Museum, University of Glasgow	Baltic	222	377 Alfred CORREYA collection only	14 Alfred CORREYA collection only	John FAITHFULL Manager@museum.gla.ac.uk
London	Natural History Museum	Baltic Burmese Dominican	5000 111 650	8000* 1200* 1000*	300 164 6	POINAR (1992), RASNITSYN & ROSS (2000) and Andrew ROSS A.Ross@nhm.ac.uk
Sheffield	Sheffield City Museum	Baltic	90	87	10 (Arachnids)	Gaynor BOON gaynor.boon@sheffieldgaleries.org.uk
Manchester	The Manchester Museum, University of Manchester	Baltic	84	100	0	JOHNSON and SCHOFIELD (1991)

groups found in amber. There have been detailed descriptions of some groups, for example, ENGEL (2001) published a substantial and valuable monograph on Baltic amber bees. Published lists of Baltic amber inclusions include those of KEILBACH (1982a, 1982b) and SPAHR (1981a, 1981b, 1985, 1987, 1988, 1989, 1990, 1992, 1993a, 1993b). WUNDERLICH (1986) amber spider book and WEITSCHAT and WICHARD (1998) atlas are important basic references. ROSS (1998) refers to about 5,000 insect species which have been described from Baltic amber and estimates that the Baltic insect fauna in the Tertiary period may have been as many as 10,000 species.

The Museum of the Earth in Warsaw has one of the largest collections (KULICKA, KRZEMIŃSKI and SZADZIEWSKI, 1985) which is particularly strong on Baltic amber. By the early 1990's, it had 17,000 animals in amber, 90% of which are insects and 60% of these are Diptera. KULICKA (1993) produced a checklist of arthropod inclusions and MAGOWSKI and TOBOLEWSKI (unpublished data) a list of Acari from this museum.

Other Polish museums having significant amber collections, with acaro-entomological inclusions yet to be studied, include those at Gdańsk, Kraków, Łomża and Malbork. At the University Museum in the Department of Invertebrate Zoology at the University of Gdańsk, there are approximately 4500 pieces of amber and 11,000 inclusions of arthropods. Of these about 10,000 are insects, especially Diptera (5700) and Hymenoptera (E. SONTAG 2000 and this volume). The Natural His-

tory Museum of the Institute of Systematics and Evolution in Kraków contains the SERAFIN collection which has not been catalogued but is made up of approximately 1330 pieces of amber. In total the museum houses about 3500 pieces of amber (including the SERAFIN collection). In addition staff have their own private collections, which are consecutively deposited in the museum. As with many other museums, new material is arriving at Kraków on a regular basis and the number of pieces and specimens are not constant.

Fossil Diptera in Baltic amber in the collection of the Museum d'histoire Naturelle at Neuchâtel form the dominant group and represent about 90% of the collection having about 4600 specimens and 38 families (HAENNI, this volume). It is important to emphasize that there are many other European institutions with important amber collections containing inclusions and that this article deals with only some of these. Most are listed in KRUMBIEGEL & KRUMBIEGEL 2001.

In the UK many museums have some amber, the bulk of which is Baltic, but the collections at The Hunterian Museum in the University of Glasgow, The PANETH Collection in The Manchester University Museum (JOHNSON and SCHOFIELD 1991), the Baltic amber at The Booth Museum in Brighton (ANONYMOUS report) and the Baltic, Dominican and Burmese amber at The Natural History Museum in London appear to be the main material. Table II lists some of the museums in the UK housing collections of insects and mites in amber.

The Natural History Museum in London has about 300 mites in Baltic amber of which only one has been named, *Carabodes gerberi* SELLNICK 1931 (Holotype, In. 64399, Eocene, East Prussia). Some of the Burmese amber mites (164) there have been identified to family by A. L. KARTSEV and O. L. MAKAROVA (RASNITSYN & ROSS 2000). *Cheyletus burmiticus* COCKERELL 1917 (Holotype, In 19115, Upper Cretaceous, Myanmar) has been described from Burmese amber. At London, type and figured specimens of insects in Burmese amber (ROSS & YORK 2000) and a preliminary list of arthropod families in Burmese amber have recently been published (RASNITSYN & ROSS 2000).

Many of the world's amber mites have been listed by POINAR 1992 and SPAHR 1993a. Oribatid mites are the most common group in Baltic amber (LARSSON 1978), the Copenhagen collection alone includes 108 specimens. In general terms however, as SELDEN (1993) indicates, many mite families, from the various groups of the Acari, are found in amber. At Brighton, 694 fossil inclusions in Baltic amber have been identified by the Moscow palaeontological group led by A. P. RASNITSYN. The majority of these are insects but there are 168 Acarina. This representative collection was gathered at Kaliningrad (unpublished report) and processed there in 1992.

The mite photographs illustrating this account are from the collections in the Natural History Museum in London. The insect photographs illustrated here are from the F. A. PANETH Collection held in the Manchester University Museum.

Professor PANETH occupied the Chair of Chemistry at Königsberg in East Prussia (now Kaliningrad) from 1929, where his interest in amber began. He later moved to Britain. The insect inclusions in this collection were identified by Lewis DAVIES, formerly of the Department of Zoology at the University of Durham, UK (JOHNSON and SCHOFIELD, 1991). All the photographs were taken with a Zeiss stereomicroscope using a Nikon Coolpix 990 digital camera.

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