Entomologische Abhandlungen **61** (2): 233–236

The Arachnological Collection at the Museum für Tierkunde Dresden, with a Catalogue of the Type Specimens (Chelicerata: Arachnida)

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Abstract. On occasion of a recent inventory of the arachnological collection at the Museum für Tierkunde Dresden (MTD), a brief outline of the history and the holdings is presented. The origin of the collection dates back to the 18th century, however, the old material was completely destroyed during World War II. Currently material of 771 species in the ethanol and of 69 species in the dry collection is deposited, mainly from central Europe. For eastern Germany, this collection is the most comprehensive one, particularly due to the acquisition of the collection of H. Hiebsch. The MTD holds type material of 15 arachnid taxa (Scorpiones 1, Araneae 14), including 7 holotypes. One of the names originally applied to the types is currently considered as a synonym.

1. Introduction

The key role of natural history museums in the compilation, standardisation and dissemination of the world's biodiversity data has been increasingly acknowledged in recent years. As a result of a MOU (memorandum of understanding) of numerous countries and organizations, a generously funded initiative has been launched in 2001: GBIF (Global Biodiversity Information Facility). In close cooperation with the Clearing House Mechanism and the Global Taxonomy Initiative of the Convention on Biological Diversity, it aims at making biodiversity information freely and universally available. One of the four goals is the digitisation of natural history collections. However, the incorporation of collection data into the "universe of information infrastructure" (RIEDE 2002) is often limited by the lack of basic inventory information. Within the German GBIF node "Evertebrata II", a systematic survey of type specimen data of Arachnida is funded only for SMF, ZMB and ZSM (Acari). As the majority of the work of GBIF is carried out by the participating nodes and their data providers, the success of GBIF also depends on the data supply from smaller institutions. In this regard it seems worthwhile to give access to "metadata" (numbers of species etc.) concerning the arachnological collection at the Museum für Tierkunde Dresden (MTD), of which a recent inventory was taken. Additionally, specimen data for the types are here published in a printed version, as recommended in article 72F of the ICZN (ICZN 1999). Besides this printed version, collection and type specimen data are available online at http://www.biologie.uni-ulm.de/systax/daten/index.html. The Systax database system at the University of Ulm stores the data accumulated under the German GBIF nodes "Evertebrata II (Mollusca, Chelicerata, Myriapoda)", "Evertebrata I (Insecta)", and "Vertebrata".

2. Abbreviations

AMS	Australian Museum, Sydney
BMNH	British Museum (Natural History), London
ILN	Institut für Landschaftspflege und Naturschutz der Akademie der Landwirtschaftswissenschaften der DDR
MTD	Museum für Tierkunde, Dresden
NHMW	Naturhistorisches Museum, Wien
NMB	Naturhistorisches Museum, Basel
NM	National Museum of Victoria, Melbourne
QMB	Queensland Museum, Brisbane
SMF	Senckenberg Museum, Frankfurt/Main
WAMP	Western Australian Museum, Perth
ZMB	Zoologisches Museum der Humboldt-Universität, Berlin
ZMM	Zoological Museum of the Moscow State University
ZSM	Zoologische Staatssammlung, München

3. History of the collection

The arachnological holdings in Dresden share their origin and fate with great parts of the entomological collections, whose history from 1560 up to the present has recently been compiled by KRAUSE (2002). As early as 1755 Christian Heinrich Eilenburg mentioned explicitely a spider collection containing "Taranteln oder Tanzspinnen" in the inventory of the royal "Naturaliensammlung" (MEISSNER 1980). This old material was destroyed during the Zwinger blaze in 1849 (HERTEL 1978). Concerning the following 100 years, nothing could be traced about the development of the arachnological collection. A handwritten manual of the department 'Evertebrata varia', in which new acquisitions from this period are registered, contains no entries with regard to Arachnida. But this much is sure: the invertebrate ethanol collection of the Museum für Tierkunde Dresden was completely devastated again on occasion of a bomb attack on 7 October 1944 (REICHERT 1955). Thus, all type material which has possibly been deposited here before 1945 must be considered as lost.
From 1945 to the late 1960ies only few local series were obtained: specimens from H. Höregott and C. Wetzel, the collection of J. Kluger (90 fixed objects on slides). An important acquisition was the Arachnida collection of the Zoological Museum of the University of Leipzig, which was taken over in 1971 in course of the 3rd higher education reforms in the GDR. It comprises 13 drawers with dried specimens (Scorpiones 5, Araneae 6, smaller arachnid orders 2) and approximately 50 vials with ethanol preserved specimens from all over the world. All the old and a great portion of the extra-European material currently housed in MTD comes from this source. It is due to R. Krause (then curator of Coleoptera at the MTD) that at the same time a species-based arachnological ethanol collection was established. This was mainly based on material from extensive faunistic surveys in the surroundings of Dresden which have been carried out from 1968 onwards by R. Krause and his colleagues from the entomological department of the MTD. Araneae and Opiliones have been continuously determined by H. Hiebsch (ILN). Furthermore, Hiebsch successively contributed material from several localities in the former GDR which have been investigated since 1956 on behalf of the ILN (e.g., saline habitats in Sachsen-Anhalt, mountain meadows in the Erzgebirge, ombrogenic bogs in Erzgebirge and Harz, fens and moist meadows in Thuringia, Brandenburg and in the Lausitz). The

	determined species	undet. with locality (series/specimens)	undet. without locality (series/specimens)
ethanol collection			
Scorpiones	15	31/105	3/61
Uropygi	1	1/2	1/1
Amblypygi	2	2/5	0
Araneae	708	ca. 400/>10000	24/89
Pseudoscorpiones	10	23/ca. 80	0
Solifugae	0	10/18	1/6
Opiliones	35	ca. 300/>1500	0
Acari	0	ca. 150/>3000	1/2
dry collection			
Scorpiones	24	40/139	?/49
Uropygi	1	2/2	5/12
Amblypygi	4	1/1	4/9
Araneae	16	25/40	?/74
Pseudoscorpiones	7	37/77	13/16
Solifugae	0	2/4	0
Opiliones	7	9/12	1/1
Acari	ca. 10	79/82	45/90

Tab. 1. Summary of the MTD arachnological collection (31 May 2003). Palpigradi and Ricinulei are not present in the holdings.

early main collection was set up according to the catalogue of PROSZYNSKI & STAREGA (1971), the material being deposited in preserving jars.

The only arachnologist who held a permanent position at MTD (though shared with responsibilities for public relations) was S. Heimer, employed by the MTD between 1977 and 1989. During this time, the arachnological collection was rearranged into ground jars with glass plugs. Heimer started his scientific work with regional faunistics, while later he focused on phylogeny reconstruction in the Araneoidea, and described more than 30 new species of spiders from Georgia (Caucasus), Mongolia, Vietnam, Australia and Colombia. However, most of his reputation derives from the authorship of the first comprehensive determination key of central European spiders (HEIMER & NENTWIG 1990) and the popular-science monograph "Wunderbare Welt der Spinnen" (HEIMER 1988). Due to his international contacts, Heimer guided a lot of material to Dresden. Unfortunately, little of it remained in MTD; large parts of his collection (999 species, 337 genera) were sold by Heimer to the Museum d'Histoire Naturelle in Geneva in June 1991, where this material has been integrated into the arach-nological collection (LIENHARD & SCHWENDINGER 2003).

On 20 February 1995 the collection of H. Hiebsch was acquired by the MTD, which contains voucher specimens of 544 European spider and 30 harvestman species (3332 specimens). This material is not included in the main collection, but kept in 12 separate jars with 574 tubes. Since the German reunification, several researchers of MTD have used the new possibilities to carry out oversea excursions and provided scattered arachnid material from the southern hemishere, which has remained undetermined to a great extent. As a curatorial outcome of the traineeship of the author (2001–2004), the nomenclature of the main collection has been updated according to the catalogues of FET et al. (2000) (Scorpiones), PLATNICK (2003) (Araneae), and HARVEY (1991) (Pseudoscorpiones), and the type specimens have been excluded from the main collection. In addition, a database of all determined species containing locality information of all extra-European specimens has been established. The undetermined material has been arranged according to zoogeographical regions in order to provide easy access for interested researchers. Furthermore, since 2001 all determined series to be integrated to the main collection have been supplied with inventory numbers. More efforts are necessary to provide a detailed inventory including the localities of the European specimens.

4. Holdings of the collection

Currently the arachnid collection of MTD comprises determined material of 771 species in the ethanol and 69 in the dry collection (Tab. 1). The main focus is on Araneae, which make up more than 90 % of the species and specimens. The smaller arachnid orders, but also the very diverse Acari, are inferior in numbers.

There is a geographical bias, with a clear focus on central Europe. Material of 645 spider species (91 %) comes from Germany and its neighbouring countries. Currently 997 species of Araneae are recorded from Germany (BLICK et al. 2002), thus the MTD collection covers almost 65 % of the native spider fauna. Besides their undisputed leading position concerning eastern Germany, the spider and harvestman collections belong to the most comprehensive ones of central Europe. This is in strong contrast to the poor holdings of extra-European arachnids and the low number of type specimens. In these regards, the arachnological collection clearly falls behind the deposits in other sections of the MTD. Nevertheless, some old rarities have been found in the adopted collection of the University of Leipzig, which have not been characterised taxonomically since their original description approximately 100 years ago. These include, e.g., the spiny spiders *Gasteracantha sapperi* Dahl, 1914, *G. subaequispina* Dahl, 1914 and *G. tondanae* Pocock, 1897, all Araneidae from the Oriental region, as well as the long-legged sac spider *Cheiracanthium longimanum* L. Koch, 1873 (Miturgidae) from Pacific islands of the Tonga archipelago. Considerable material from the Canary Islands, the Magallanes, Falkland Islands, the island of South Georgia, and southern Africa (Angola, Botswana) is also worth mentioning.

5. Catalogue of the type specimens of the arachnological collections at MTD

For the presentation of the type catalogue, the style of NEKRUTENKO (2003) has been adopted. Each entry opens with the species-group name originally applied to the specimen, including its author and date, as a boldface heading line. This is followed by a paragraph containing the original combination with a full bibliographic reference. The section 'Type locality' gives a quotation from the original description. In the section Types (depending on status, headed here as 'Holotype' or 'Paratype'), the text of each label is quoted in single quotation marks, and the successive lines of the label text are separated by a vertical line (|). Characteristics of the text (handwritten or printed) are indicated; in quotations of combined labels (handwritten insertions on printed labels), the handwritten text is reproduced in Italics. All expansions of abbreviations used in the label text are enclosed in square brackets ([ ]); relevant comments are inserted in angle brackets (< >). In the section 'Remarks', the deposition of further type material (holo-, paratypes) is given as stated in the original description, together with the current status and combination (if different from the original classification) according to the recent catalogues of FET et al. (2000) and PLATNICK (2003). The type catalogue here presented reflects the state of the MTD arachnological collection on 31 May 2003.

5.1. Scorpiones: Buthidae

***ziegleri* Lourenço, 2000**

'*Buthacus ziegleri*' (LOURENÇO 2000: 6–8, figs. 1–3).

Type locality. 'Morocco, N. W. of Erfoud, central Atlas Mountains (1800 m)'.

Holotype. ♂ with labels: printed 'Buthacus ziegleri new

species Holotype male: | Morocco, N. W. of Erfoud, | central Atlas mountains (1800 m), 1995 | (W. Bischoff leg.)' (twice), handwritten 'TZ 24'.

5.2. Araneae: Filistatidae

***kiliani* Müller, 1987**
'*Pikelinia kiliani*' (MÜLLER 1987: 107–109, figs. 1–3).
Type locality. 'Punta de Betin in Santa Marta'.
Paratypes 2♂. ♂ with handwritten label: 'Kolumbien, Sta. Marta | Punta de Betin | Pikelinia kiliani | 1♂ Paratyp. | XI – XII 1985'. – ♂ with handwritten labels: 'Pikelinia kiliani | Müller | 1♂ Paratypoid', 'Kolumbien Dept. Magdalena | Punta de Betin, Santa Marta | Trockenhang | BF XI – XII 1985 leg. Müller'.
Remarks. Holotype in SMF (Nr. 34921). In the original descripition only one paratype in MTD is mentioned, the second is probably that one originally intended to be deposited in Coll. Heimer. Further 3♂ paratypes are in SMF and the private collections Coll. Invemar and Coll. Müller.

5.3. Araneae: Hersiliidae

***occidentalis* Baehr & Baehr, 1987**
'*Tamopsis occidentalis*' (BAEHR & BAEHR 1987: 387, figs. 41–42).
Type locality. 'Fortescue River, 137 km SW of Roeburne, Western Australia'.
Paratypes 2♂, 2♀. 2♂, 2♀ with handwritten label: 'Paratypes | Tamopsis | occidentalis | Baehr + Baher <sic> | 2♀ 2♂ 1987 | Western Australia | Minilya River | 142 km N. Carnarvon | 11.–12.XII.1984 | on trunks of | River Eucalypts'.
Remarks. The holotype is in WAM, paratypes are deposited in ZSM, BMNH and in the following Australian institutions: WAM, AMS, NMM and QM. According to the original description and M. Baehr (in litt.), no paratypes should be in MTD. It could not be traced how the material came there.

5.4. Araneae: Theridiidae

***melanoplax* Schmidt & Krause, 1996**
'*Theridion melanoplax*' (SCHMIDT & KRAUSE 1996: 263–264, figs. 1, 2).
Type locality. 'EJ [Fuerteventura, National Parc El Jable], Außenwand von Appartement'.
Holotype. ♀ with printed label: 'Theridion melanoplax | spec. nov.; ♀ Holotypus, | Kanaren: El Jable/Fuer- | teventura, 08.12.93, leg. | G. Schmidt'.
Remarks. The epigynum of the holotype is kept separately on a slide, with printed label '24/20: Theridion mela- | noplax spec. nov. (Ka- | naren: Fuerteventura). | Zu Schmidt & Krause, | Faun. Abh. Bd. 20, Nr. | 11, 1996'.

5.5. Araneae: Linyphiidae

***hyperboreus* Eskov, 1990**
'*Dactylopisthoides hyperboreus*' (ESKOV 1990: 4, figs. 1–5).
Type locality. 'USSR, Magadan Area, upper Kolyma River, Sibit-Tyellakh, *Pinus pumila* thicket'.
Paratypes 2♂, 2♀. 2♂, 2♀ with labels: printed with handwritten insertion 'Paratypus *Dactylo*= | *pisthoides hyper*- | *boreus ESKOV*', handwritten 'USSR, Magadan | Area, upper flow | of Kolyma River | Sibit-Tyellakh | VI-VIII.1985 | leg. Y. Marusik'.
Remarks. The holotype is in ZMM, further paratypes are in SMF and ZMM.

***monticola* Eskov, 1991**
'*Paraglyphesis monticola*' (ESKOV 1991b: 104, figs. 5–9).
Type locality. 'Magadan Area, upper flow of Kolyma River, Sibit-Tyellakh, Bolshoy Annachag Mt. Ridge, alpine belt (h – 1300 m), *Pinus pumila* and *Rhododendron aureum* thicket'.
Paratypes 1♂, 2♀. 1♂ 2♀ with handwritten labels 'Paraglyphesis | monticola Eskov, | paratypes', 'USSR, Magadan | Area, upper | Kolyma River, | Sibit-Tyellakh | VI-VIII.1986 | Y. Marusik leg.'.
Remarks. The tube contains 4 specimens, although in the original description only 1♂, 2♀ are indicated for MTD. The holotype is in ZMM, further paratypes are in SMF and ZMM.

***obscura* Eskov, 1991**
'*Holminaria obscura*' (ESKOV 1991a: 101–102, figs. 12–17).
Type locality. 'Evenk Autonomous Region, Taimura River (left tributary of Nizhnyaya Tunguska River), mouth of Chambe River, flood-land meadow'.
Paratypes 2♂, 3♀. 2♂ 3♀ with handwritten labels 'Holminaria obscura | Eskov, paratypes', 'USSR, environs | of Magadan, | Snezhnaya Do= | lina 12.–14.IX.86 | Y. Marusik leg.'.
Remarks. Synonym of *Holminaria prolata* (O. P.-Cambridge, 1873) (MARUSIK et al. 1993). The holotype of *H. obscura* is deposited in ZMM, further paratypes are in SMF and ZMM.

***polaris* Eskov, 1991**
'*Paraglyphesis polaris*' (ESKOV 1991b: 104, figs. 1–4).
Type locality. 'Taimyr Autonomous Region, Putorana Plateau, Ayan Lake, source of Ayan River, subalpine belt (h – 900 m), Sphagnum-Carex-Eriophorum bog'.
Paratypes 1♂, 1♀. 1♂, 1♀ with handwritten labels: 'Paraglyphesis | polaris Eskov, | paratypes', 'USSR, Taimyr Autonomous | Region, Putorana Plateau, | source of Ayan River, | subalpine belt (h – 900 m) | Sphagnum-Carex-Eriopho= | rum bog. 15.VIII.83 K. Eskov'.
Remarks. The holotype is in ZMM, further paratypes are in SMF and ZMM.

***sibirica* Eskov, 1991**
'*Holminaria sibirica*' (ESKOV 1991a: 101–102, figs. 12–17).
Type locality. 'Krasnoyarsk Province, Yenisey River, 62°20′ N, Mirnoye, in a stack of fire-logging'.
Paratypes 2♂, 2♀. 2♂ 2♀ with handwritten labels 'Holminaria | sibirica | Eskov: paratypes', 'USSR, Evenk Autonomous | Region, Taimura River | (left tributary of Nizhnyaya | Tunguska River), mouth | of Neptene River. Flood- | land meadow. 15.VII– | 6.VIII.1982' 'K. Eskov leg.'.
Remarks. The holotype is deposited in ZMM, further paratypes are in SMF and ZMM.

***sphagnicolus* Eskov & Marusik, 1992**
'*Silometopoides sphagnicolus*' (ESKOV & MARUSIK 1992: 99, figs. 3, 4, 8, 11, 14, 15).
Type locality. 'USSR, Taimyr Autonomous Region, Putorana Plateau, Ayan Lake, source of Ayan River, alpine belt (h – 1200 m), polygonal mossy mountain tundra'.
Paratypes 2♂, 2♀. 2♂ 2♀ with handwritten labels 'Paratypes: | Silometopoides | sphagnicolus | Esk.[ov] & Marus.[ik]', 'Evenk Auronomous | Region, Taimura River, | mouth of Chambe River | boggy taiga of Larix, | 18–23.VIII.1982 | leg. K. Eskov'.
Remarks. The holotype is in ZMM, further paratypes are in SMF and ZMM.

5.6. Araneae: Gnaphosidae

***deserticola* Schmidt & Krause, 1996**
'*Haplodrassus deserticola*' (SCHMIDT & KRAUSE 1996: 266, figs. 4, 5).
Type locality. 'EJ' [Fuerteventura, National Parc El Jable].
Holotype. ♀ with labels: printed 'Haplodrassus deserticola | spec. nov.; ♀ Holotypus, | Kanaren: El Jable/Fuer- | teventura, 08.12.1993, leg. | G. Schmidt', printed 'Ch 00367', handwritten 'Holotypus'.
Remarks. The epigynum of the holotype is kept separately on a slide, printed label '24/16: Haplodrassus | deserticola spec. nov. | (Kanaren: Fuerteven- | tura). Zu: Schmidt & | Krause, Faun. Abh. Bd. | 20, Nr. 11, 1996)'.

5.7. Araneae: Philodromidae

***firmetorum* Muster & Thaler, 2003**
'*Thanatus firmetorum*' (MUSTER & THALER 2003: 378–381, figs. 1, 4, 7, 10–11, 16–17).
Type locality. 'GERMANY: Bavaria, Karwendel, Soiernspitze 2160 m'.
Holotype. ♂ with labels: printed 'GERMANY: Bavaria, Karwendel | Soiernspitze 2160 m | Caricetum firmae | 20.05.–27.06.1998, leg. C. Muster', printed '*Thanatus firmetorum* | HOLOTYPUS', printed 'Ch 00382'.
Remarks. Paratypes are deposited in NHMW, NMB and in the private collections of C. Muster and K. Thaler.

***pygmaeus* Schmidt & Krause, 1996**
'*Thanatus pygmaeus*' (SCHMIDT & KRAUSE 1996: 267, fig. 6).
Type locality. 'Lobos'.
Holotype. ♀ with labels: printed 'Thanatus pygmaeus spec. | nov.; ♀ Holotypus, | Kanaren, Lobos, | 20.03.93, leg. M. | Schmidt', printed 'Ch 00343', handwritten 'Holo-typus'.
Paratype. ♀ with printed label: 'Thanatus pygmaeus spec. | nov.; ♀ Paratypus, Kana- | ren: El Jable/Fuerte- | ventura, 08.12.93, leg. | G. Schmidt'.

5.8. Araneae: Salticidae

***albosignatus* Schmidt & Krause, 1996**
'*Macaroeris albosignatus*' (SCHMIDT & KRAUSE 1996: 269–270, fig. 10).
Type locality. 'EJ' [Fuerteventura, National Parc El Jable].
Holotype. ♂ with printed label: 'Macaroeris albosignatus | spec. nov.; ♂ Holotypus, | Kanaren: El Jable/Fuer- | teventura, 12/92, leg. M. | Schmidt'.
Remarks. One palpus of the holotype is kept separately on a slide, with printed label '18/18: Macaroeris | albosignatus spec. nov. | (Kanaren: Fuerteven- | tura). Zu: Schmidt & | Krause, Faun. Abh. Bd. | 20, Nr. 11, 1996'. The whereabouts of further specimens mentioned in the original description ('weitere Funde 11+12/1992') are uncertain.

***fuerteventurae* Schmidt & Krause, 1996**
'*Heliophanus fuerteventurae*' (SCHMIDT & KRAUSE 1996: 269, fig. 8, 9).
Type locality. 'EJ' [Fuerteventura, National Parc El Jable].
Holotype. ♂ with labels: printed 'Heliophanus fuerteven- | turae spec. nov.; ♂ | Holotypus, Kanaren: El | Jable/Fuerteventura, | 08.12.93, leg. M. | Schmidt', printed 'Ch 00355', handwritten 'Holotypus'.
Remarks. The left palpus of the holotype is kept separately on a slide, with printed label '23/17: Heliophanus | fuerteventurae spec. | nov. (Kanaren: Fuer- | teventura). Zu Schmidt | & Krause, Faun. Abh. | Bd. 20, Nr. 11, 1996'.

6. Acknowledgements

My thanks go to Martin Baehr (Munich), Barbara Bastian (Dresden), Bernd Hauser and Volker Mahnert (both Genève), Stefan Heimer, Heinz Hiebsch (both Dresden), Jürgen Hoppe (Ulm) and Rüdiger Krause (Dresden) for various information and support. The assistance of my trainee Sven Ssykor in the inventory of the collection is gratefully acknowledged.

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