

# Insect Types in the ZFMK Collection, Bonn: Odonata

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running title:

MISOF, ARNDTS & LANKHORST: Odonate Types in the ZFMK

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## **Abstract**

The type specimens of Odonata are catalogued, currently inventarized at the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK), Bonn. Specific and subspecific names are listed alphabetically, followed by the original genus name, bibliographic citation, original label information (in case of primary types), date and place collected, and finally accompanied by geographical coordinates wherever possible.

## INTRODUCTION

The Odonate collection at the ZFMK is a small collection carrying roughly 20 000 specimens. The collection is fully recorded in an electronic catalogue. We hope that an electronic version of the catalogue and type specimen information additionally to the one presented here, for example pictures of the type specimens, original labels etc., will soon be available via an internet portal.

The collection has its strength mostly in Anisopteran taxa. The major part of the collection was developed by Dr. Buchholz in the 50s-60s of the last century. Karl F. Buchholz occupied the position of a curator of herpetology at the Museum until his death in the late 60s. However, dragonflies were among his primary interests and this is well documented in his publication records and species descriptions. After Buchholz's death the dragonfly collection at the ZFMK became somehow an orphan and was not further developed until now. Today the collection is again within the focus of systematic work at the ZFMK and is again expanding in holdings. New collection strategies are focused on alcohol preservation suitable for any phenotypic and genotypic work (see for example Misof et al. 2002, Misof & Fleck 2003, Fleck 2002a,b).

In this publication the specific and subspecific taxa are grouped by suborders and within suborders arranged alphabetically. They are listed by species epitheta, followed by the genus name (both in the original spelling), author and year. All primary types are listed with the original label information, supplemented by date- and place collected information. Secondary geo-referencing of collecting places and sites is based on the Alexandria Digital Library gazetteer (ADL). If the collection harbours only secondary types of a given taxon, the original label information is given for the first type specimen.

Table 1 *List of primary and secondary types.*

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## Zygoptera

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*buchholzi*, **Enallagma Pinhey 1971** - Fernando Po\*, near Moca, (Long: 8.7 Lat: 3.5), 01.12.1963, leg. W. Hartwig - **Holotype** (male), **Paratypes** (4 males) – *J. ent. Soc. sth. Afr.* 34: 215-230, 4f, 1pl. (1971) (45)

\*now: Isla de Bioko

*cancellata insulana*, **Chlorocypha Pinhey 1971** - Fernando Po\*, Moca\*\*, (Long: 8.7 Lat: 3.5), 21.-23.01.1963, leg. W. Hartwig - **Holotype** (male), **Paratypes** (5 males) - *J. ent. Soc. sth. Afr.* 34: 215-230, 4 f, 1 pl. (1971) (30)

\* now: Isla de Bioko

\*\*Type locality informations only in literature, not at the specimens

*deserti yezoense*, **Enallagma Asahina 1949** - Japan, Hokkaido, Kuttaro-ko\*, 11.08.1937 - **Paratype** (male) - *Ins. Matsumur.* 17: 28-34, 1 pl, 3 f. (1949) (46)

\*Type locality informations only in literature, not at the paratype (there is only the same date than in the original description)

*eisentrauti*, **Chlorocnemis Pinhey 1974** – Cameroon, Rumpi Hills, Dikume-Balue (Long: 9.1 Lat: 4.83), (1100 m), 05.03.1967, leg. W. Hartwig - **Holotype** (male) - *Bonn. zool. Beitr.* 25 (1/3): 179-212, 5 f. (1974) (86)

*forcipata*, **Agriccnemis le Roi 1915** - Sudan, Bahr el Ghazal, Meschra el Rek\* (Long: 29.27 Lat: 8.42), 03.03.1913, leg. Freiherr von Geyr & le Roi – **Holotype\*\*** (male), **Paratype\*\*** (male) - *Ergeb. zweit. deutsch. Zentral.-Afr. Exped.* 1: 319-360, pl 19, f 1-19 (1915) (34)

\*spelling of type locality different from now (Mashra ar Reqq (Bahr al Ghazal), leg. only in literature

\*\* strongly damaged

*georgfreyi*\*, **Ceriagrion Schmidt 1953** - Turkey, Spring near Sariseki, 10 km north Iskenderun (Long: 36.21 Lat: 36.66), 14.05.1952, leg. E. Schmidt, **Paratypes** (2 males)\*\* - *Mitt. Münchn. ent. Ges.* 43: 1-9, 4f. (1953) (37)

\*in the original description the name is spelled in three different ways (Georg Frey, Georg Freyi and Georgi Freyi), on the label it is georgfreyi (or georg-freyi, because it's written on two lines?), in Bridges (1991) it is georgifreyi, Steinmann (1997) writes georgfreyi and as original description *Ceriagrion Georg-Freyi*, in the World List of Odonata of the Slater Museum (2006) it is georgi-freyi,....

\*\* Holotype and females may be at Asahina in Japan, because Schmidt's widow sold him the private Odonata-collection.

*hylas freyi*, (**Agrion**) **Coenagrion Bilek 1954** – Germany, Bavaria, Inzell, Zwingsee (Long: 12.75 Lat: 47.77), 18.07.1953, leg. A. Bilek - **Paratype** (female) - *NachrBl. bayer. Ent.* 3: 97-99, 4f. (1954) (43)

*sanja*, **Agriocnemis Nielsen 1959** – Libya, Fezzan Gat (Long: 10.18 Lat: 24.97), Fezzan Tingerab, 25.08.-09.10.1936, leg. Scortecci - **Paratypes** (3 males, 4 females) - *Riv. Biol. colon.*, 16: 33-40, 9 f. (1959) (35)

*sudanicum*, **Pseudagrion le Roi 1915** – Sudan, Bahr el Ghazal, Meschra el Rek\* (Long: 29.27 Lat: 8.42), 03.03.1913, leg. Freiherr von Geyr & le Roi - **Types** (2 males)\*\* - *Ergeb. zweit. deutsch. Zentral.-Afr. Exped.* 1: 319-360, pl 19, f 1-19 (1915) (57)  
\*spelling of type locality different from now (Mashra ar Reqq, Bahr al Ghazal), leg. only in literature  
\*\* in Bridges (1991) is written: "type lost"!! Which one is Holo- or Allotype?

## Anisoptera

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*camerunica*, **Macromia Pinhey 1974** – Cameroon, Dikume-Balue, Rumpi Hills (1100 m) (Long: 9.1 Lat: 4.83), 18.02.-25.02.1967, leg. W. Hartwig - **Holotype** (male), **Paratypes** (2 males, female) - *Bonn. zool. Beitr.* 25 (1/3): 179-212, 5 f. (1974) (125)

*formosanus*, **Sinogomphus Asahina 1951** – Taiwan, Pyanen-Pass, 17.08.1936, leg. S. Asahina - **Paratype** (male) - *Kontyû* 19 (1): 15-22, 3pl. (1951) (132)

*hartwigi*, **Phyllogomphus Buchholz 1958** - Cameroon, Koto-Barombi, (lake) (Long: 9.25 Lat: 4.47), 24.01.1958, leg. W. Hartwig - **Holotype** (male) - *Bonn. zool. Beitr.* 9: 259-260, 1pl. (1958) (138)

*helena*, **Orthetrum Buchholz, 1954** – Greece, Naxos-Chalkis (Long 25.08 Lat 37.03), 18.05.1952, leg. K.F. Buchholz – **Holotype** (male), **Paratype** (2 males) - *Bonn. zool. Beitr.* 1954 (Sonderband, 1. Teil): 51-71, 11 f. (1954) (190) (bei Schneider, Darmstadt)

*indica*, **Hylaeothemis Fraser 1946\*\*** – India, Burliyar, Nilgiri Hills, Coonor River (2500 ft) (Long: 76.7 Lat: 11.4), 23.07.1922, leg. F.C. Fraser\* - **Holotype** (male) - *Proc. R. ent. Soc. Lond. (B)* 15: 97-100, 3 f. (1946) (163)  
\* leg. only in description  
\*\* in Bridges (1991) is written: "designated by Kimmins, 1966"

*insignis helladica*, **Sonjagaster Lohmann 1993** - Greece, Taygetos Mountains (ca. 1100 m) (Long: 22.3 Lat: 37.1), 04.07.1960, leg. K.F. Buchholz - **Holotype** (male), **Paratypes** (6 males, female) - *Odonatologica*, 22 (3): 273-294. (1993) (120)

*kollmannspergeri*, **Orthetrum Buchholz 1959** - Chad (former French Aequatorial Africa) Adré, near border to Sudan (Long: 22.2 Lat: 13.47), 04.11.1957, leg. F. Kollmannsperger - **Holotype** (male), **Paratype** (male) - *Bonn. zool. Beitr.* 10: 75-98, 25 f. (1959) (193)

*lieftincki*, *Neallogaster* **Lohmann 1993** - China, Prov. Shanxi, Lüliang Shan (Nienshan Mountains) (1500 m) (Long: 111.50 Lat: 37.10), 07.07.1936, leg. H. Höne - **Holotype** (male) - *Odonatologica*, 22(3): 273-294. (1993) (117)  
\*in Bridges is no advice, that the holotype is in the ZFMK

*melampus bifasciatus*, *Trigomphus* **Asahina 1949** - Japan, Mutobe, Fukuchiyama (Long: 135.17 Lat: 35.3)\*, 14.05.1947, leg. S. Asahina - **2 Paratypes** - *Ins. Matsumur.* 17: 28-34, 1 pl, 3 f. (1949) (132)  
\* on the label Fukutiyama, in literature Hukutiyama, ADL Gazetteer writes Fukuchiyama with variant name Hukutiyama

*orestes*, *Gomphus* **Lieftinck 1939** - E China, Fu Kien, near Kwa Tun\* (2300 m) (Long: 117. 40 Lat: 27.40), 08.06 1938, leg. J. Klapperich - **Holotype** (male)\*\* - *Temminckia* 4: 277-297, 12 f. (1939) (127)  
\*spelling of type locality different from now (Fukien, Kuatun)  
\*\* type specimen in bad condition

*parthenope geyri*, *Anax* **Buchholz 1955** - Spain, Salamanca, Linares de Riofrio\*, leg. H. Grün - **Holotype (?)** (male) - *Bonn. zool. Beitr.* 6: 118-131, 17 f. (1955) (109)  
\*exact type locality and leg. only in original description

*parthenope geyri*, *Anax* **Buchholz 1955** - Algeria, Sahara, Ideles (1400m) (Long: 5.92 Lat: 23.82) 30.03.1914, leg. H. Frhr. v. Geyr - **Paratype** (female) - *Bonn. zool. Beitr.* 6: 118-131, 17 f. (1955) (109)

*parthenope geyri*, *Anax* **Buchholz 1955** - Spain, Mallorca, Alcudia (Long: 3.12 Lat: 39.87), June 1921, leg. A. von Jordans\* - **Paratype** (male) - *Bonn. zool. Beitr.* 6: 118-131, 17 f. (1955) (109)  
\*leg. only in description

*parthenope jordansi*, *Anax* **Buchholz 1955** - Greece, Isle of Louloudi at the western coast of Euboea (Long: 24.0 Lat: 38.5 (Euboea)), 01.07.1953, coll. K.F. Buchholz - **Holotype** (female) - *Bonn. zool. Beitr.* 6: 118-131, 17 f. (1955) (109)

*peleus*, *Gomphus* **Lieftinck 1939** - E China, Fu Kien, near Kwa Tun\* (2300 m) (Long: 117, 40 Lat: 27.40), 24.05. 1938\*, leg. J. Klapperich - **Holotype** (male) - *Temminckia* 4: 277-297, 12 f. (1939) (128)  
\*spelling of type locality different from now (Fukien, Kuatun); date different in original description (31.05.1938)

*plaumanni*, *Orthemis* **Buchholz 1950** - Brazil, Nova Teutonia, Santa Catarina (Long: -52.4 Lat: -27.05), 14.01.1950, leg. F. Plaumann - **Holotype** (male), **Paratype** (male) - *Bonn. zool. Beitr.* 1: 79-82, 2 f. (1950) (181)  
\* in Bridges is no advice, that the holotype is in the ZFMK  
(\* type material from *Orthemis schmidtii* is probably at Asahina)

*prometheus*, *Gomphus* **Lieftinck 1939** - E China, Fu Kien, near Kwa Tun\* (2300 m) (Long: 117, 40 Lat: 27.40), 08.06 1938\*, leg. J. Klapperich - **Holotype** (male) - *Temminckia* 4: 277-297, 12 f. (1939) (127)  
\*spelling of type locality different from now (Fukien, Kuatun); date different in original description (05.06.1938)

*pruinosa*, *Rhodopygia* **Buchholz 1953** - Bolivia, region Chapare (400 m) (Long: -65.5 Lat: -16.5), 05.05.1951, leg. R. Zischka - **Holotype** (male) - *Bull. Inst. r. Sci. nat. Belg.* 29 (10): 1-8, 2 pl. (1953) (215)

\* in Bridges is no advice, that the holotype is in the ZFMK

*pylades*, *Gomphus* **Lieftinck 1939** - E China, Fu Kien, near Kwa Tun\* (2300 m) (Long: 117, 40 Lat: 27.40), 24.05. 1938, leg. J. Klapperich - **Holotype** (male) - *Temminckia* 4: 277-297, 12 f. (1939) (128)

\*spelling of type locality different from now (Fukien, Kuatun)

*reginae*, *Macromia* **le Roi 1915** - Sudan, Bahr el Ghazal ,Meschra el Rek\* (Long: 29.27 Lat: 8.42), 03.03.1913, leg. O. le Roi - **Holotype** (male) - *Ergeb. zweit. deutsch. Zentral.-Afr. Exped.* 1: 319-360, pl 19, f 1-19. (1915) (122)

\*spelling of type locality very different from now (Mashra ar Reqq (Bahr al Ghazal), leg. name different in original description!, synonymized as *Macromia nyanzana* Grünberg, 1911

*rhodesiae*, *Orthetrum* **Pinhey 1961** – Zambia (Rhodesia), Kapiri Mposhi (Long: 28.68 Lat: -13.97), 01.09.1958\* - **Paratype** (male) - *Ent. mon. Mag.* 96: 256-271, 5 f. (1961)

\*in literature "January"! (194) (entliehen von K.D. Dijkstra, 6.5.2004)

*robustum*, *Orthetrum* **Balinsky 1965** - Botswana (Bechuanaland), Ngamiland (Long: 22.5 Lat: -20.0), 30.12.1963, leg. Balinsky - **Paratype** (male) - *Novos Taxa ent.* 39: 3-7. (1965) (194)

*schneideri helladicus*, *Gomphus* **Buchholz 1954** - Greece, Argos lowlands at Kephalaria (Long: 20.58 Lat: 38.25), 29.04.1952, leg. K.F. Mannheims - **Holotype** (male), **Paratypes** (3 males) - *Bonn. zool. Beitr.* 1954 (Sonderband, 1. Teil): 51-71, 11 f. (1954) (134)

*telamon*, *Gomphus* **Lieftinck 1939** - E China, Fu Kien, near Kwa Tun\* (2300 m) (Long: 117, 40 Lat: 27.40), 24.05.1938\*, leg. J. Klapperich - **Holotype** (male) - *Temminckia* 4: 277-297, 12 f. (1939) (129)

\*spelling of type locality different from now (Fukien, Kuatun); leg. date different in original description

*zalorensis delineatus*, *Davidius* **Fraser 1926** – India, Darjeeling District, Gangtok (Long: 88.62 Lat: 27.33), 16.05.1925, leg. C.M. Inglis\* - **Paratype** (male) - *J. Bombay nat. Hist. Soc.* 31: 158-171, 1pl, 3 f. (1926) (126)

\* leg. only in original description

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### nomina nuda (BUCHHOLZ)

*fraseri, Mandarinina* – China, Fukien, Kuatun, 2300 m (Long: 137.40 Lat: 27.40), June 1938, leg. J. Klapperich – **Holotypes** (2!!), **Allotype** (female) – nomina nuda, still to be described (66)

*nymphula vaillanti, Pyrrhosoma* – Algeria, Col du Sirova (coordinates not found in ADL and TGN), 30.06.1954, leg. Vaillant – **Holotype** (male), **Paratypes** (female, 3 males) – nomina nuda, still to be described (59)

*tenellum jordansi, Ceriagrion* – Greece, Ios island (Long: 25.28 Lat: 36.73), 10.06.1953, leg. K.F. Buchholz – **Holotype** (1), **Paratypes** (12) – nomina nuda, still to be described (37)

*proxima, Dythemis* – Brazil, Nova Teutonia (Long: -52.4 Lat: - 27.05) 1942-1950, leg. F. Plaumann - **Holotypus** (male), **Allotypus** (female), **Paratypes** (3 males) – nomina nuda, still to be described

*calverti, Dythemis* - Brazil, Nova Teutonia (Long: -52.4 Lat: - 27.05) 1942-1949, leg. F. Plaumann – **Holotype** (male), **Paratypes** (4 males) - nomina nuda, still to be described

*calverti, Calverthemis* - Brazil, Nova Teutonia (Long: -52.4 Lat: - 27.05) 04.12.1949, leg. F. Plaumann – **Allotypus** (male) – nomen nudum, still to be described

*pygmaea chinensis, Nannophya*– China, Fukien, Kuatun, 2300 m (Long: 137.40 Lat: 27.40), 08.06.1938, leg. J. Klapperich – **Type** (male) – nomen nudum, still to be described (170)

*brachiale (obscurum), Orthetrum* – Senegal, near Tabi (Long: -16,23 Lat: 12.73), 18.-25.11.1961, - **Paratypes** (3 males, 2 females) Buchholz det. 28.03.1964 – nomina nuda, still to be

described (185)

*najas balcanicum, Orthetrum* – Greece, Macedonia, Doiran Lake (Long: 22.73 Lat: 41.22) 1.-  
10.06.1955, leg. Daniel – **Syntype** (male) – nomen nudum, still to be described (195)

*riffleri, Perithemis* – **Holotype, 2 Paratypes**

*riffleri occidentalis, Perithemis* – **Holotype**

*risi, Perithemis* – **Holotype**

*lais submontana, Perithemis* – **Holotype**

different type localities in South America – nomina nuda, still to be described (207)

*phryne phryne, Perithemis* – **Type**

*phryne orientalis, Perithemis* – **Type, 3 Paratypes**

*haenkei, Perithemis* – **Type**, male "**Paratopotypoid**" in (211)

*speciosa, Perithemis* – **Type, Holotype** (male)

*haenkeana, Perithemis*

? - **Holotype**

different type localities in South America – nomina nuda, still to be described (209), see also (212)

*gloydia, Perithemis* – **Holotype**

*unifasciata, Perithemis* – **Holotype**

*bicolorata, Perithemis*

many original drawings – nomina nuda, still to be described (210)

*haenkei, Perithemis* – Bolivia, region Chapare (400 m) (Long: -65.5 Lat: -16.5), 05.05.1951, leg. R.

Zischka – **Paratypus** (male) – nomen nudum, still to be described (211)

*phryne phryne, Perithemis* – Bolivia [the most, see above] & Peru – **18 Paratypes** – nomina nuda,

still to be described (212), see also (209)

*phryne orientalis, Perithemis* – different type localities in Brazil – **14 Paratypes** – nomina nuda,

still to be described (212), see also (209)

*speciosa, Perithemis* – Brazil, [I can't read or spell the type locality, Amaz....] – **Holotypus** and

**Paratypus** - nomina nuda, still to be described (213), see also (209)

*aurora fukiensis, Trithemis* – **Holotype, Paratypes** – nomina nuda, still to be described (238)

*cannacrioides, Elasmothermis* (Calvert, 1906) - *Dythemis cannacrioides* **Holotype**

= *biflavostriata* **Buchholz 1951** – nomina nuda, still to be described (154)

*constricta*, *Elasmothermis* (**Calvert, 1898**) – *Dythemis proxima* **Buchholz Holotype, Allotype, Paratypes** + *Dythemis calverti* **Buchholz Holotype, Paratypes** – nomina nuda, still to be described (154)

**spec.**, *Orthetrum* – different specimens from different localities in one box, called *Holotype a*, 1 male from Bolivia in another box, called *Holotype b* – nomina nuda, still to be described (200)

*metella*, *Perithemis* (**Selys, 1857**) – 7 specimens from Jamaica, Cuba etc. with original drawings made by Buchholz – nomina nuda, still to be described (206)

*iris* ?, *Perithemis* **Hagen, 1861** – **Holotype**

*cloe* ?, *Perithemis* **Hagen** – **Paratypes**

**spec. "L"** – 3 specimens with red labels and one label "Type" without specimen. Several original drawings made by Buchholz (208)

## überprüfen !!!

*meridionale*, *Anisagrion* **Racenis 1953** - Venezuela, Carayaca D. F.\* (Long: -67.12 Lat: 10.53), 24.01.1954\*, coll. J. Racenis - **Paratypes** (male, female) - *Opuscula entomologica* 18: 180-189, 4f. (1953) (35)

\*label data quite different, type locality in literature: Venezuela, State of Miranda, Agua Fria (1200 m), 24.04.1951. Description in the print issued in 1953 (there is written: all paratypic material is from the same locality and date as the holotype)!!!  
vermutlich falsche Etikettierung durch Buchholz

*pseudosyriaca*, *Calopteryx* **Buchholz, 1955** keinerlei Angaben zu Veröffentlichung und Verbleib der Typen. Wo? Bridges: [b 4963]