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First record of *Hypsocephalus dahli* in Switzerland with a review of its distribution, ecology and taxonomy (Araneae, Linyphiidae)

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Abstract: The spider species *Hypsocephalus dahli* (Lessert, 1909) is recorded for the first time in Switzerland from museum material collected in 1974. The information given in the literature and unpublished data on this rare species are summarised including an annotated distribution map. All published pictures of males are compared with the holotype. Figures of the male palp and the vulva of the Swiss specimens are provided.

Key words: *Cnephalocotes pusillus, Mecopisthes perpusillus, Mecopisthes pusillus, Microneta pusilla,* spider.

Hypsocephalus dahli (Lessert, 1909) is a rare spider species only known on the basis of a few individuals from Austria (THALER 1999: 233), the Czech Republic (BUCHAR & RŮŽIČKA 2002: 65), Germany (STAUDT 2008), Poland (STAREGA 2004), Romania (WEISS 1980: 377) and Slovakia (GAJDOŠ et al. 1999: 92). Erroneously, it has been mentioned as being present in Switzerland by several authors (BAUCHHENSS 1988: 379, BONNET 1956: 1169, MILLIDGE 1978: 120, MORITZ 1973: 193, THALER 1985: 87). They probably misinterpreted the fact that MÜLLER & SCHENKEL (1894: 738) and MAURER (1978: 88 as "(BA)") included sites which are situated in Germany, like the locus typicus of *H. dahli*, but close to the Swiss city of Basel.

Examination of 36 specimens of *Glyphesis servulus* (Simon, 1881) collected in canton Aargau in 1974 by R. Maurer and stored in the Natural History Museum Basel (NMB), revealed six males and one female belong to *H. dahli*.

This paper reviews the current knowledge of the systematics (Tab. 1), distribution (Fig. 3), ecology and phenology of *H. dahli*. A critical overview of the literature and some unpublished data are also provided.

Systematics

The systematics of *H. dahli* is very convoluted and is therefore presented here briefly and in detail in Tab. 1. MENGE (1869: 232) described *Microneta pusilla* which was later moved to *Cnephalocotes* by SIMON (1884: 706).

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MÜLLER & SCHENKEL (1894: 738) found one male that they determined as *Microneta pusilla*. This specimen was later described by LESSERT (1909: 80) as a new species, *Cnephalocotes dahli*. Both species, *Cnephalocotes pusillus* and *Cnephalocotes dahli*, were subsequently confused with *Cnephalocotes silus*. These three species were transferred to the new genus *Mecopisthes* by SIMON (1926: 486).

MILLER (1966) described *Mecopisthes perpusillus* as a close relative of *Mecopisthes silus*. WUNDERLICH (1972: 300) declared both *Mecopisthes perpusillus* and *Cnephalocotes dahli* to be synonyms of *Mecopisthes pusillus*. MILLIDGE (1978: 113) declared *Mecopisthes pusillus* a nomen dubium due to the lack of type material. The material of Menge's *Microneta pusilla* is not stored in the Thorell collection at the Swedish Museum of Natural History in Stockholm (Kronestedt in litt.). MILLIDGE (1978: 113) resurrected *Mecopisthes dahli* as *Hypsocephalus dahli* and this has remained valid until today.

The type locality of *Microneta pusilla* in Gdansk (Poland) and the other records in Poland fit the remaining distribution pattern of *H. dahli* (Fig. 3), indicating that *H. dahli* is in fact a synonym of *M. pusilla*. Due to the lack of type material of *M. pusilla*, it is preferable to follow MILLIDGE (1978: 113), and keep *M. pusilla* as nomen dubium. The availability of type material of *H. dahli* stabilises nomenclature in this respect.

Identification

H. dahli can best be identified by means of the figures in MILLER (1966: 151 sub *Mecopisthes perpusillus*) and MILLIDGE (1978: 117, 120), both reprinted as *H. dahli* in NENTWIG et al. (2003). Male and female genital organs of the Swiss

Tab. 1: References to *H. dahli* (a), misidentifications of *H. dahli* (b) and references to *Microneta pusilla* (c). Identifications were not checked if not stated as such.

(a)

1894: *Cnephalocotes pusillus*	MÜLLER & SCHENKEL (1894: 738), holotype of *H. dahli*, vidi
1909: *Cnephalocotes dahli*	LESSERT (1909: 80), **nov. sp.**, specimen of MÜLLER & SCHENKEL (1894)
1910: *Cnephalocotes dahli*	LESSERT (1910: 139), specimen of MÜLLER & SCHENKEL (1894)
1919: *Cnephalocotes dahli*	REIMOSER (1919: 55), specimen of MÜLLER & SCHENKEL (1894), erroneously listed as misidentified *M. silus* in BONNET (1957: 2744)
1926: *Mecopisthes silus*	SIMON (1926: 486), notes *C. dahli* as possible synonym of *M. silus* (SIMON 1926: 486)
1942: *Mecopisthes dahli*	BOCHMANN (1942: 52), vidi
1942: *Mecopisthes silus*	ROEWER (1942: 676), = *C. pusillus, C. dahli* (ROEWER 1942: 676)
1956: *Cnephalocotes dahli*	BONNET (1956: 1169)
1960: *Mecopisthes silus*	WIEHLE (1960: 87), = *C. dahli*, ≠ *Microneta pusilla* (WIEHLE 1960: 87)
1966: *Mecopisthes perpusillus*	MILLER (1966: 149), **nov. sp.**, synonym of *M. dahli* (WUNDERLICH 1972: 300)
1971: *Mecopisthes dahli*	MILLER (1971: 270), = *M. perpusillus*
1972: *Cnephalocotes dahli*	SCHÄFER (1966: 361), specimen of MÜLLER & SCHENKEL (1894: 738)
1972: *Mecopisthes perpusillus*	WUNDERLICH (1972: 300), synonym of *M. pusillus* (WUNDERLICH 1972: 300)
1972: *Mecopisthes dahli*	WUNDERLICH (1972: 300), synonym of *M. pusillus* (WUNDERLICH 1972: 300)
1972: *Mecopisthes pusillus*	WUNDERLICH (1972: 300), specimen of MÜLLER & SCHENKEL (1894: 738)
1972: *Mecopisthes dahli*	THALER (1972: 30)
1972: *Mecopisthes dahli*	MALICKY (1972: 104)
1973: *Mecopisthes pusillus*	MORITZ (1973: 193)
1978: *Hypsocephalus dahli*	MILLIDGE (1978: 113), rejected synonymy with *M. pusillus*
1978: *Mecopisthes pusillus*	MILLIDGE (1978: 113), declares *M. pusillus* as nomen dubium
1978: *Mecopisthes pusillus*	THALER (1978: 190), = *C. dahli*
1978: *Mecopisthes pusilles*	MAURER (1978: 88), specimen of MÜLLER & SCHENKEL (1894: 738)
1980: *Hypsocephalus dahli*	WEISS (1980: 377)
1983: *Mecopisthes pusillus*	STAREGA (1983: 195), only region known
1985: *Hypsocephalus pusillus*	THALER (1985: 87)
1987: *Mecopisthes dahli*	GAJDOŠ (1987: 217)
1987: *Mecopisthes dahli*	BAUCHHENSS et al. (1987: 13)
1988: *Hypsocephalus pusillus*	BAUCHHENSS (1988: 379), specimen of BAUCHHENSS et al. (1987: 13)
1990: *Hypsocephalus dahli*	MAURER & HÄNGGI (1990: 178), specimen of MÜLLER & SCHENKEL (1894)
1991: *Mecopisthes dahli*	STEINBERGER (1991: 72), specimen of THALER (1972: 30)
1991: *Mecopisthes silus*	HEIMER & NENTWIG (1991: 208), = *M. pusillus, M. dahli*
1993: *Mecopisthes pusillus*	GAJDOŠ & SVATOŇ (1993: 122)
1995: *Mecopisthes pusillus*	GAJDOŠ & SLOBODA (1995: 84)
1995: *Hypsocephalus dahli*	HÄNGGI et al. (1995: 428)
1995: *Hypsocephalus dahli*	PLATEN et al. (1995: 31), = *H. pusillus, M. perpusillus, C. dahli*
1996: *Hypsocephalus dahli*	BLICK (1996: 8, 13, 18, 21, 22)
1997: *Mecopisthes dahli*	STEINBERGER & KOPF (1997: 153)
1998: *Hypsocephalus dahli*	PLATEN et al. (1998: 273)
1999: *Hypsocephalus dahli*	GAJDOŠ et al. (1999: 92)
1999: *Hypsocephalus dahli*	THALER (1999: 233)
2002: *Hypsocephalus dahli*	BUCHAR & RŮŽIČKA (2002: 65)
2002: *Hypsocephalus dahli*	BLICK et al. (2002: 13, 15, 38, 43, 44)
2003: *Hypsocephalus dahli*	JAKOBITZ (2003: 52)
2003: *Hypsocephalus dahli*	NÄHRIG & HARMS (2003: 45)
2003: *Hypsocephalus dahli*	BLICK & SCHEIDLER (2003: 314)
2003: *Hypsocephalus dahli*	NENTWIG et al. (2003)
2004: *Hypsocephalus dahli*	STAREGA (2004)
2004: *Hypsocephalus dahli*	BLICK et al. (2004)
2005: *Hypsocephalus dahli*	BRYJA et al. (2005: 56)
2007: *Mecopisthes silus*	PERU (2007: 161), = *C. pusillus*
2008: *Hypsocephalus dahli*	STAUDT (2008)
2008: *Hypsocephalus dahli*	PLATNICK (2008)

(b)

1884: *Cnephalocotes pusillus*	SIMON (1884: 706), name confusion = *M. silus* (WUNDERLICH 1972: 300)
1889: *Cnephalocotes pusillus*	CALLONI (1889: 136, 268, 404), misidentified = *M. silus* (BONNET 1957: 2743)
1894: *Cnephalocotes pusillus*	SIMON (1894: 607), misidentified = *M. silus* (BONNET 1957: 2743)
1900: *Cnephalocotes pusillus*	PICKARD-CAMBRIDGE (1900a: 47), misidentified = *M. silus* (BONNET 1957: 2743)
1900: *Cnephalocotes pusillus*	PICKARD-CAMBRIDGE (1900b: 23), misidentified = *M. silus* (BONNET 1957: 2743)
1902: *Cnephalocotes pusillus*	PICKARD-CAMBRIDGE (1902: 25), misidentified = *M. silus* (BONNET 1957: 2743)
1906: *Cnephalocotes pusillus*	SMITH (1906a: 314), misidentified = *M. silus* (BONNET 1957: 2743)
1906: *Cnephalocotes pusillus*	PICKARD-CAMBRIDGE (1906: 153), misidentified = *M. silus* (BONNET 1957: 2743)
1908: *Cnephalocotes pusillus*	JACKSON (1908a: 64), misidentified = *M. silus* (BONNET 1957: 2743)
1927: *Cnephalocotes pusillus*	CAPORIACCO (1927: 89), misidentified = *M. silus* (BONNET 1957)
1935: *Cnephalocotes pusillus*	BALOGH (1935: 6, 8, 11), misidentified = *M. silus* (BONNET 1957)
1936: *Cnephalocotes pusillus*	DRENSKY (1936b: 102), misidentified = *M. silus* (BONNET 1957)
1937: *Cnephalocotes pusillus*	PETRUSIEWICZ (1937: 192), specimen of MENGE (1869), = *M. silus* (BONNET 1957: 2744)
1939: *Mecopisthes pusillus*	BRISTOWE (1939: 70), = *C. pusillus*, erroneously listed as misidentified *M. silus* in BONNET (1957: 2744)
1949: *Mecopisthes silus*	DENIS (1949: 253), erroneously listed as misidentified *H. dahli* in PLATNICK (2008)
1953: *Mecopisthes pusillus*	LOCKET & MILLIDGE (1953: 253), misidentified (= *M. peusi*) (WUNDERLICH 1972: 300)
1990: *Glyphesis servulus*	MAURER & HÄNGGI (1990: 158), 7♂♂/1 ♀ of *H. dahli* in the sample MAU05*, vidi

(c)

1869: *Microneta pusilla*	MENGE (1869: 232), **nov. sp.** (type material missing)
1894: *Microneta pusilla*	CHYZER & KULCZYŃSKI (1894: 118), ≠ *C. silus*
1957: *Microneta pusilla*	BONNET (1957: 2901)
1971: *Mecopisthes pusillus*	PRÓSZYŃSKI & STAREGA (1971: 143), specimens of MENGE (1869: 232)
1997: *Mecopisthes pusillus*	PRÓSZYŃSKI & STAREGA (1997: 179)

specimens (Figs. 1 and 2) show no differences to those of the holotype or to the figures of MILLER (1966: 151) and MILLIDGE (1978: 117, 120). This confirms WUNDERLICH's (1972: 301) conclusion that *M. perpusillus* and *H. dahli* are indeed the same species (Tab. 1).

The other figures cited in PLATNICK (2008) should be interpreted with caution. LESSERT's (1909: Figs. 1-4, reprinted in LESSERT 1910: Figs. 84-87) drawings of the holotype and also MILLER's (1971: 299 sub *Mecopisthes dahli*) are correct, but not detailed enough for unambiguous determination. The specimen illustrated by DENIS (1949: Fig 6, as *M. silus*) was not available for study. However, DENIS (1949: Fig. 6) shows *M. silus* rather than *H. dahli*. This confirms that DENIS (1949: Fig. 6) identified his specimen correctly as *M. silus*, whereas PLATNICK (2008) erroneously lists this figure as "misidentified *M. silus*". The epigynes of *M. silus* shown in DENIS (1949: Fig. 6) and MILLIDGE (1978: Fig. 18) are equal in their proportions, indicating that the identification as *M. silus* is correct. In contrast to *M. silus* (MILLIDGE 1978: Fig. 18), the epigyne of *H. dahli* (MILLIDGE 1978: Fig. 40) has a narrower median part and the receptacula are smaller and more distant from the anterior border of the ventral plate of the epigyne.

Distribution

H. dahli is widely distributed in Central Europe (Fig. 3, BLICK et al. 2004), but very rare (BAUCHHENSS 1988: 379). Recorded occurrences of *H. dahli* in private collections and in the literature are listed below. Where possible, the coordinates (WGS 84) are provided and mapped with black dots on the corresponding sampling sites (Fig. 3). Records with no information other than a reference to the region are indicated with white dots on the capital city of these regions. The locality of MENGE'S (1869: 232) dubious *Microneta pusilla* is marked with an X. Specimens of *H. dahli* are found between 5 m (e.g. BOCHMANN 1942: 52) and 800 m a.s.l. (e.g.

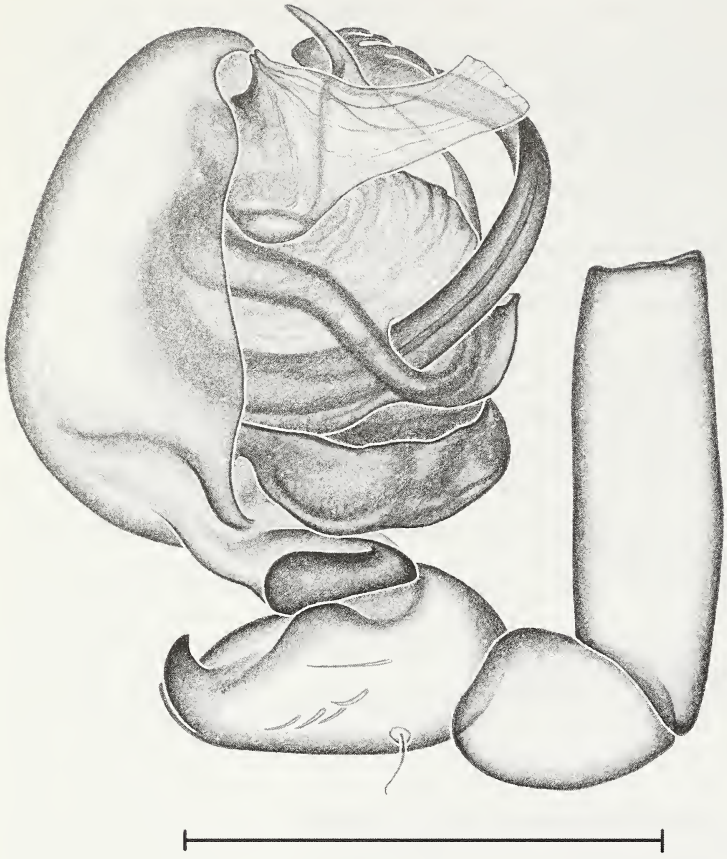

Fig. 1: Male left palp, retrolateral view, hairs omitted. Specimen from Siggenthal (Aarau, Switzerland). Scale: 200μm.

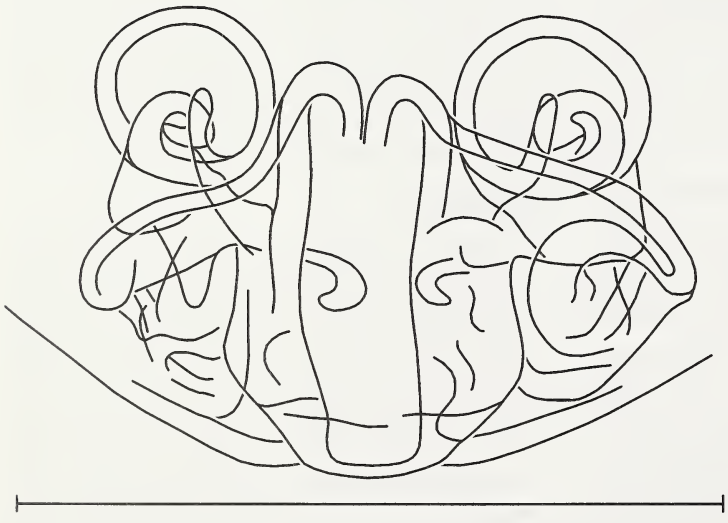

Fig. 2: Vulva, dorsal view. Specimen from Siggenthal (Aarau, Switzerland). Scale: 200μm.

THALER 1972: 30), among sparse grass on rock steppes and heathland (BUCHAR & RŮŽIČKA 2002: 65, THALER 1985: 82, sites M, LB and B), in very light and dry habitats (BAUCHHENSS 1988: 379, MILLER 1966: 152) or at xerothermic sites (THALER 1978: 190) e.g. xerothermic wood steppes (HÄNGGI et al. 1995: 428).

H. dahli is winter-active (BAUCHHENSS 1988: 379), it seems to mature in autumn with a peak in October and November (BLICK et al. 2002). After overwintering it mates during the first warm days of spring (BAUCHHENSS 1988: 379, Blick in litt.). Therefore, *H. dahli* is also adapted to cold and moist conditions (HERZOG 1961: 259) and not only to dry and warm microclimates as a xerothermic habitat may suggest. The occurrence in Switzerland together with *G. servulus*, known to prefer fens and moist meadows (HÄNGGI et al. 1995: 173), is therefore not anomalous.

Austria

- Knoflach-Thaler (in litt): Ötztal, Brunau, 800 m a.s.l., (47°13'12"N, 10°51'58"E), 26.III.-23.IV.1963 (1 ♂), 27.IX.1964-30.III.1965 (1 ♂), leg., det. & coll. K. Thaler.
- MALICKY (1972: 102, 104, site Dü): Lower Austria, Dürnstein, ~ 200 m a.s.l., (48°23'44"N, 15°31'11"E), south-exposed, xerothermic slopes of the river Wachau, loess on gneiss with anthropogenic rocky steppe, dry grassland and xerothermic bushes, partly in derelict vineyards, in very mild climate ["südseitige, xerotherme Hänge der Wachau, Löss auf Gneis mit anthropogenen Felsensteppen, Trockenrasen und wärmelie-

Fig. 3: Distribution map of *H. dahli*. Occurrences with localities (black dots on the sampling site) and without localities (white dots on the capital city of the corresponding region). MENGE's (1869: 232) locality of the nomen dubium *Microneta pusilla* (X).

bendem Buschwerk, zum Teil in verfallenen Weingärten. Sehr mildes Klima"], leg. H. Malicky, det. J. Wunderlich.

- THALER (1972: 30), the same specimen is also mentioned in THALER (1978), THALER (1985: 87, 82, site B) and STEINBERGER (1991: 72): Ötztal-Eingang, Brunau, 800 m a.s.l., (47°13'12"N, 10°51'58"E), dry west-exposed slope on open grass bands and debris, partly under shrubs and spruce ["Trockenhang in West-Exposition...auf freien Rasenbändern und Schuttstreifen, teils unter Buschwerk und Kiefern"], 26.III.-30.IV.1972 (1 ♂).
- THALER (1985: 87, 82, sites M and LB): west of Innsbruck, Martinswand, 600-800 m a.s.l., (47°16'03"N, 11°16'37"E), xerothermic, south-exposed area...solidified slope debris with grass band...shrubs, spruce forest ["xerothermes, süd-exponiertes Gelände, Schrofen (Wettersteinkalk), verfestigter Hangschutt mit Rasenbändern...Laubsträuchern, Kiefernwald"], 26.III.1963-30.III.1965 (1 ♂), leg. & det. K. Thaler; Inntal, north of Stams, Locherboden, 700 m a.s.l., (47°16'57"N, 10°57'51"E), light spruce assembly on south-exposed slope debris and dry meadow ["lichter Kiefernbestand auf Hangschutt...und Trockenrasen...Südhang"], 10.III.1974-19.IV.1975.
- STEINBERGER & KOPF (1997: 153, 150, site GS): Tyrol, Grauer Stein, 620-640 m a.s.l., (47°15'55.44"N, 11°22'02.38"E), south-exposed, open slope, on a small meadow bordered by hedges, steep very exposed open slope, with a compact or loose dry meadow with shrubs ["südexponierte, offene Hangflächen"; "von Hecken gesäumte... kleinräumige Mähwiese"; "steiler, offener Hang mit dichtem Trockenrasen, verbuschend"; "sehr exponiert...mit sehr lückigem Trockenrasen"], 17.V.1989-17.V.1990 (10 ♂/6 ♀).
- Summary in THALER (1999: 233).

Czech Republic

- MILLER (1966: 152, as *M. perpusillus*), the same specimens are also mentioned in BRYJA et al. (2005: 56, 12, sites 1, 12): Jihomoravský kraj, South of Brno, Pouzdřany, ~ 170 m a.s.l., (48°56'06"N, 16°37'30"E), 10.IV.1963.-03.XI.1964 (1 ♂/1 ♀), X.-XI.1964 (10 ♂), leg., det. & coll. F. Miller, 2 ♂ coll. J. Wunderlich; Jihomoravský kraj, West to Břeclav, Pavlovské kopce (Pollauer mountains), ~ 250 m a.s.l., (48°49'N, 16°41'E), X.1963 (2 ♂), sunny, very warm places in sparse grass on the ground under exiguous tussocks ["an sonnigen, sehr warmen Orten im spärlichen Grase am Boden unter dürftigen Grasbüscheln"], leg. & det. F. Miller.

- BUKVA (1969), the same specimens are also mentioned in BUCHAR & RŮŽIČKA (2002: 65) and BRYJA et al. (2005: 56, 16, site 12): Jihomoravský kraj, Pavlov, Děvín, ~ 410 m a.s.l.,"(48°52'27"N, 16°39'13"E), "rocky and grass steppe, limestone cliffs, thermophilous oak forests", 20.XII.1965-02.IV.1966 (3♂), leg. & det. V. Bukva; Jihomoravský kraj, Klentnice, Tabulová, ~ 270 m a.s.l., (48°50'40"N, 16°37'33"E), 20.XII.1965-02.IV.1966 (6 ♂/1 ♀), leg. & det. V. Bukva.
- BRYJA et al. (2005: 56, 16, sites 4, 12, 15, 20): Jihomoravský kraj, Pavlov, Děvín, ~ 410 m a.s.l., (48°52'27"N, 16°39'13"E), "rocky and grass steppe, limestone cliffs, thermophilous oak forests", 28.XI.1995-24.I.1996 (2♀), 29.V.1996 (2♀), leg. J. Chytil, det. Jaroslav Svatoň; Jihomoravský kraj, Pavlov, Kotel, ~ 410 m a.s.l., (48°52'27"N, 16°39'13"E), "thermophilous oak and hornbeam forests, grass steppe, black pine stands and limestone quarry", 20.X.2002 (1♂), leg. & det. V. Bryja; Jihomoravský kraj, Dolní Dunajovice, Dunajovické kopce, ~ 200 m a.s.l., (48°51'45"N, 16°33'56"E), "grassy steppe, vineyards", 24.III.2003 (1♀), leg. J. Chytil, det. V. Bryja, 09.V.2004 (1♀), 16.V.2004.-07.VI.2004 (1♀), leg. S. Vinkler, det. V. Bryja; Jihomoravský kraj, Mikulov, Svatý Kopeček, ~ 200 m a.s.l., (48°47'48"N, 16°39'08"E), "limestone hill covered by rocky steppe and thermophilous oak forest", 16.X.2003 (1♀), leg. & det. V. Bryja; Jihomoravský kraj, Klentnice, Tabulová, ~ 270 m a.s.l., (48°50'40"N, 16°37'33"E), 03.X.1997-04.IV.1998 (1♂), leg. V. Růžička & P. Antuš, det. V. Růžička, 17.X.2003 (1♂), leg. & det. V. Bryja.
- ŘEZÁČ (2001): Praha, Podbabské Skály (Podbaba rocks) Natural Monument, ~ 190 m a.s.l., (50°07'23"N, 14°23'37"E), 23.III.2000 (1 ♀), leg. J. Strejček, det. & coll. M. Řezáč. *H. dahli* is a very rare species occurring in steppes in the warmest and driest regions of the Czech Republic (in litt. M. ŘEZÁČ).
- BUCHAR & RŮŽIČKA (2002: 65): Jihomoravský kraj, Havraníky, Havranické Vřesoviště, ~ 290 m a.s.l. (48°48'40"N, 16°00'30"E), leg. A. Reitner, det. & coll. V. Bryja.
- Summary in BUCHAR & RŮŽIČKA (2002: 65).

Germany

- MÜLLER & SCHENKEL (1894: 738) and LESSERT (1909: 81, 1910: 140): Baden-Württemberg, Isteiner Klotz, ~ 290 m a.s.l., (47°39'45"N, 7°31'50"E), mid December (1 ♂, holotype), NMB 775a (specimen) and MHNG (right palp).
- BOCHMANN (1942: 52, 43 site 8): Mecklenburg-Western Pomerania, Graal, ~ 5 m a.s.l., (54°15'20"N, 12°14'00"E), coastal dunes with beach grass, warm and dry steep slopes ["Strandhaferdünen"; "warme und trockene Steilhänge"], NMB 775b (2 ♂/1 ♀), more adults (1 ♂/1 ♀) and subadults (70 ♂/53 ♀) stored elsewhere.
- MORITZ (1973: 193): Thuringia, Rottenleben, ~ 180 m a.s.l., (51°23'10"N, 11°02'13"E), SE exposed slope with steppe grass vegetation on gypsum ["SO-exponierter Hang...Steppengrasvegetation auf Gips"], 18.XI.1966-11.IV.1967 (1 ♂), det. M. Moritz, Museum für Naturkunde Berlin.
- BAUCHHENSS et al. (1987: 13, 10, site I) and BAUCHHENSS (1988: 379): Bavaria, east of the river Pegnitz, Northern Frankenjura, ~ 460 m a.s.l., (49°45'N, 11°34'60"E), southwest exposed Dolomite slope, rocky heath vegetation ["SW-exponierter Dolomitenhang, Felsenheidevegetation"], 19.X-16.XI.1985 (1 ♂), Senckenberg Museum Frankfurt SMF 35630.
- Blick (in litt.): Bavaria, Mittelfranken, Nürnberger Land, Schottental bei Heldmannsberg, 465 m a.s.l., (49°27'57"N, 11°34'01"E), 09.VI.-03.VII.1989 (1 ♀), 06.IX.-01.X.1989 (1 ♂), leg. & det. P. Beck, coll. T. Blick; Bavaria, Oberfranken, Forchheim, Walberla, 450 m a.s.l., (49°43'12"N, 11°09'E), 06.XI.1999-10.III.2000 (6 ♂), leg. M.-A. Fritze, det. & coll. T. Blick.
- Malten (in litt.): Hesse, Limburg-Weilburg, Runkel, Arfurter Felsen, ~ 140 m a.s.l., (50°24'31"N, 8°11'11"E), rocky, southexposed semi-dry meadow ["felsreicher, südexponierter Halbtrockenrasen"], 08.V.-06.VI.1995 (1 ♀), coll. A. Malten.
- BLICK (1996: 8) and BLICK et al. (2002: 13): Bavaria, Oberfranken, Bamberg, Frankendorf, 500 m a.s.l., (49°50'31"N, 11°04'19"E), 31.III.-21.IV.1989 (1 ♂); 12.V.-02.VI.1989 (1 ♀), leg. J. Sachteleben & R. Weid, det. & coll. T. Blick; Bavaria, Oberfranken, Forchheim, Streitberg, 450 m a.s.l., (49°48'36"N, 11°13'01"E), belay ["Felskopfbereiche"], 31.III.-21.IV.1989 (1 ♂/2 ♀), 23.VI.-14.VII.1989 (1 ♀), 02.IV.-23.IV.1996 (6 ♂/2 ♀), 21.V.-11.VI.1996 (1 ♀).
- JAKOBITZ (2003: 52), site characterised in JAKOBITZ & BROEN (2001: 71): Brandenburg, Barnim, Oderberg, Pimpinellenberg, ~ 50 m a.s.l., (52°51'54"N, 14°01'13"E), steppe-like dry and

semi-dry meadow ["steppenartigen Trocken- und Halbtrockenrasen"].

- Scheidler (in litt.): Bavaria, Lichtenfels, Kalkberg, 450 m a.s.l., (50°04'30"N, 11°14'15"E), open area with almost no vegetation on marly soil ["offene, fast vegationsfreie Fläche auf mergeligem Boden"], 07.VI.1993 (1 ♀), leg. M. Scheidler; Bavaria, Lichtenfels, Köttel, 520 m a.s.l. (50°04'35"N, 11°10'07"E), rocky knoll in lime grassland ["felsige Kuppe im Kalkmagerrasen"], 15.VII.1993 (1 ♀), 13.X.1993 (1 ♂), coll. M. Scheidler.
- Summary in STAUDT (2008).

Poland

- MENGE (1869: 232), the same specimens are mentioned in PRÓSZYŃSKI & STAREGA (1971: 143) and STAREGA (1983: 195): Pomerania, Gdansk, Heiligenbrunnen (district in Gdansk), ~ 10 m a.s.l., (54°22'26"N, 18°37'15"E), leg. A. Menge; Pomerania, Gdansk, Johannisberg (hill in Gdansk), ~ 80 m a.s.l., (54°22'18"N, 18°36'18"E), det. A. Menge, coll. unknown.
- STAREGA (1983), the region is the only information available. The coordinates of the corresponding capitals and not of the sampling sites are given: Greater Poland, Kalisz, (51°46'02"N, 18°05'06"E); Lesser Poland, Nowy Sącz, (49°37'04"N, 20°42'53"E); West Pomerania, Szczecin, (53°25'44"N, 14°33'11"E); Lower Silesia, Wroclaw, (51°06'30"N, 17°02'17"E).
- Summary in STAREGA (2004).

Slovakia

- GAJDOŠ (1987: 217, 229, sites S and SK) and GAJDOŠ et al. (1999: 92): Nitra Region, Nitra, ~ 180 m a.s.l., (48°21'47"N, 18°04'25"E), "on open forest-steppe…and on a part of forest-steppe partially overgrown with the self-seeding of bushes and trees", 27.IV.1984 (6 ♂/3 ♀); 22.V.1984 (1 ♂/1 ♀); 15.V.1985 (23 ♂/6 ♀).
- GAJDOŠ & SLOBODA (1995: 84, 78-79, sites 69, 115 and 116): Nitra Region, Nitra, National Nature Resere Zoborska lesostep, Ponitrie, ~ 200-250 m a.s.l., (48°20'07"N, 18°07'30"E), dry grassland on limestone (forest-steppe), under nature trail ["lesostep pod chodnikom", Gajdoš in litt.]; Nitra Region, Obyce, Vcelar, National Nature Reserve Vcelar, Ponitrie, ~ 250-600 m a.s.l., (48°25'41"N, 18°27'14"E), dry grassland on andesite (occurrence from open area), dry grassland on andesite with mosaic of bushy area (occurrences in areas with bushes) ["lesostep…krovie", Gajdoš in litt.].
- Summary in GAJDOŠ et al. (1999: 92).

Switzerland

- Maurer (unpubl.) in MAUER & HÄNGGI (1990: as *G. servulus*, reference MAU05*): Aarau, Siggenthal, ~ 340-620 m a.s.l., (47°29'N, 8°16'E), 1974, leg. R. Maurer. *G. servulus*, NMB 792f, 36 specimens of which 8 males and 1 female belong to *H. dahli* (new: NMB 775c).

  The tag only says: collected in 1974 in Siggenthal with pitfall traps. The male specimens were compared with the holotype in the NMB (male opisthosoma and prosoma with one palp) and in the Muséum d'Histoire Naturelle de la Ville de Genève (MHNG) (right palp). Both parts belong to the same specimen (THALER 1972: 30), collected by MÜLLER & SCHENKEL (1894: 738) and described by LESSERT (1909: 80). Examination of the remaining samples of *G. servulus* in the NMB (792a-f), MHNG (unit 26f 2sf) and NMBE (Natural History Museum Bern, Ar2622) revealed no more confusions with *H. dahli*.

  The occurrence of *H. dahli* in Switzerland is not surprising. The holotype was collected on the Isteiner Klotz in Baden-Württemberg, Germany, approximately 10 km north of the Swiss border.

Romania

- WEISS (1980: 383, 372, sites F and G): Transylvania, Braşov, Talmaciu, Podu Olt, ~ 370-500 m a.s.l., (45°39'58"N, 24°17'22"E), large forest clearing on steep slope with rocky steppe in dry grassland … with transitions to thermophilous forest skirt communities … in a wet runlet on a steep south exposed slope, on stony-rocky substrate with sporadic young spruce ["grössere Waldlichtung am Steilhang mit Felssteppe"; „Fiederzweckenrasen … mit Übergängen zu thermophilen Waldsaumgesellschaften … in einer etwas feuchteren Wasserrinne am Steilhang, auf steinig-felsigem Substrat. Vereinzelt junge Kiefern…südexponiert"], praevernal, vernal-aestival.

Conservation status

H. dahli is listed as endangered in Germany (PLATEN et al. 1998: 273), the Czech Republic (BUCHAR & RŮŽIČKA 2002: 65) and in Slovakia

(GAJDOŠ & SVATOŇ 1994: 122), where it is only known in low abundance from a few localities with low human impact (GAJDOŠ et al. 1999: 92).

In Baden-Württemberg only one male is known from the type locality (MÜLLER & SCHENKEL 1894: 738) and therefore *H. dahli* is considered as either extremely rare, extinct or as having disappeared (NÄHRIG et al. 2003: 45). There are one published (1 male, BAUCHHENSS 1988: 379) and five unpublished (> 23 specimens, Blick in litt.) occurrences from Bavaria and therefore it is considered as critically endangered in Bavaria (BLICK & SCHEIDLER 2004: 314).

H. dahli is also very rarely found in Austria, Switzerland, Romania and Poland. The true abundance of *H. dahli* may have been underestimated because samples are seldom taken in winter when adults are present (Blick in litt.).

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