

Occurrence of *Thanatus atratus* SIMON, 1875 (Araneae: Philodromidae) in Poland

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Abstract: The paper presents data on the occurrence of *Thanatus atratus* in Poland. The long-lasting confusion in Polish and European literature about the existence of 2 similar species *T. atratus* / *T. vulgaris* in Poland is clarified. Diagnostic images of *T. atratus* reproductive organs of both sexes are presented.

Keywords: *Thanatus atratus*, Araneae, Poland, misidentification

INTRODUCTION

Thanatus atratus SIMON, 1875 is a rare eastern Palearctic species, which due to the great morphological similarity for a long time was considered as a synonym of *T. vulgaris* SIMON, 1870 (WORLD SPIDER CATALOG 2016) or as its subspecies (KULCZYŃSKI 1903; SIMON 1932; TULLGREN 1942, 1944; LEVY 1977; HANSEN 1995). Although KRONESTEDT (1983) suggested that *T. atratus* and *T. vulgaris* are separate species, in a key to the spiders of Central Europe (HEIMER & NENTWIG 1991: p. 466, Fig. 1229: ♂, ♀) the figure of *T. vulgaris* refers in fact to *T. atratus*. Also the descriptions of *T. vulgaris* in CHYZER & KULCZYŃSKI (1891: p. 114, Pl. 4, Fig. 26: ♂, ♀) and MILLER (1971: p. 30, Pl. XVII, Figs. 18-19: ♂, ♀) refer to *T. atratus*. Works of LOGUNOV (1996), SZITA & SAMU (2002), MUSTER & THALER (2003), and a recent paper of KASTRYGINA & KOVBLYUK (2013), precisely illustrate various diagnostic characters of both species.

There is a lot of confusion around the occurrence of *Thanatus atratus* in Poland. The first record was published in PRÓSZYŃSKI & STARĘGA (1997), where W. STARĘGA listed this species on the basis of unpublished data. The species was also recorded by STARĘGA et al. (2002). BLICK et al. (2004) listed *T. atratus*, KUPRYJANOWICZ (2008) reported on *T. vulgaris*, while VAN HELSDINGEN (2013) and NENTWIG et al. (2016) listed both species from Poland. In some papers there is no evidence on where and when *T. atratus* or *T. vulgaris* was recorded in Poland (KUPRYJANOWICZ 2008, NENTWIG et al. 2016). The situation of both species in the Czech Republic and in Slovakia is similar. Although BUCCHAR & RUŽIČKA (2002) clarify that all the Czech records of *T. vulgaris* belong to *T. atratus*, both species are reported from the Czech Republic in European literature (NENTWIG et al. 2016). In Slovakia, the occurrence of *T. atratus* was published by KALIVODOVÁ et al. (2008) and GAJDOŠ & MAJZLAN (2010), but in older papers only *T. vulgaris* is mentioned, and only *T. vulgaris* is listed from Slovakia by NENTWIG et al. (2016).

MATERIAL EXAMINED

Bydgoszcz-Fordon [UTM – CD 09: 53°8'13"N; 18°7'23"E], surroundings of Traktorzystów Str., sandy grassland, pitfall traps, leg. et det. T. Rutkowski: 20.07-02.08.2014 – 1♀;

Gozdowice near Gryfino [UTM – VU 54: 52°45'47"N; 14°20'10"E], xerothermic grassland with *Stipa* sp., pitfall traps, leg. P. Sienkiewicz; det. R. Rozwałka: 15.05-4.06.2009 – 1♂; 29.04-28.05.2010 – 1 juv.; 29.07-30.08.2010 – 1♀.

Toruń-Glinki [UTM – CD 37: 51°58'24"N; 18°33'28"E], sandy grassland, leg. B. Łącka, det. W. Staręga: 18.07.1977 – 1♀ [stored in Senckenberg Museum, Frankfurt am Main].

“Ujście Warty” National Park, “Czarnowska Górka” [UTM – VU 82: 52°32'36"N; 14°45'39"E], sandy grassland with *Corynephorus canescens*, sweep net, leg. et det. T. Rutkowski: 17.06.2012 – 1♀.

“Wrzosowiska Cedyńskie” Nature Reserve near Cedynia [UTM – VU 45: 52°51'20"N; 14°10'20"E], xerothermic sandy grassland with *Stipa* sp., pitfall traps, leg. P. Sienkiewicz, det. R. Rozwałka: 1.08-1.09.2009 – 1♀; 28.05-28.06.2010 – 1♂; 28.06-29.07.2010 – 4♂♂.

Total: 6♂♂; 5♀♀; 1 juv.

All measurements of morphological structures given in mm.

DESCRIPTION

Total length: ♂4.5-4.7; (♀6.1); carapace length: ♂2.10 (♀2.36); carapace width: ♂2.00 (♀2.1); abdomen length: ♂2.6, (♀3.8); abdomen width: ♂1.5 (♀2.0). Length of leg segments in Tables 1 and 2, cymbium illustrated in Fig. 1b-1d, vulva in Fig. 1e.

Body shape and coloration are similar to those of other species of the genus *Thanatus* C.L. KOCH, 1837. Cephalothorax yellowish, with a distinct central stripe and 2 greyish lateral stripes (Fig. 1a). Clypeus with some long bristling hairs. Abdomen yellow-amber, with a dark lanceolate mark in its posterior part and a triangular or V-shaped pattern in its anterior part (Fig. 1a). Femora (and often patellae) greyish-brown in males or grey in females. Other segments orange-yellow to yellowish (pale yellow in females). The leg hairs vary from clear and fine to much thicker and darker, sometimes so thick that they can be treated as finer bristles. All tarsi and metatarsi of both male and female individuals with dense hairbrushes of scopula positioned ventrally. In anterior parts of Mt_{III} and Mt_{IV}, hairbrush decaying. Leg hairs numerous, varied, including clear and fine hairs, and much thicker and darker ones. Mt_I and Mt_{II} with 2 pairs of ventral spines, Mt_{III} and Mt_{IV} with 4-6 (7) ventral or ventrolateral spines; Ti_I and Ti_{II} with 2 pairs of ventral spines. Other segments of legs with variable numbers of spines.

Table 1. Length of leg segments of male *Thanatus atratus* (mean for $n = 3$ from "Wrzosowiska Cedyńskie" Nature Reserve)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Leg I	2.10	0.88	1.74	1.26	0.90	6.9
Leg II	2.20	0.92	1.90	1.50	0.88	7.4
Leg III	1.80	0.72	1.76	1.30	1.00	6.6
Leg IV	2.20	0.80	2.00	1.70	1.06	7.8

Table 2. Length of leg segments of female *Thanatus atratus* ($n = 1$ from Gozdowice)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Leg I	1.80	0.86	1.60	1.20	1.00	6.5
Leg II	2.10	0.84	1.80	1.40	0.96	7.1
Leg III	1.90	0.70	1.50	1.32	0.86	6.3
Leg IV	2.20	0.84	1.84	1.68	0.96	7.5

DISCUSSION

The verified new records presented here clearly confirm the occurrence of *Thanatus atratus* in Poland. This is a rare spider species, probably occurring only locally, in a few isolated localities. We investigated several dozen various xerothermic sites in

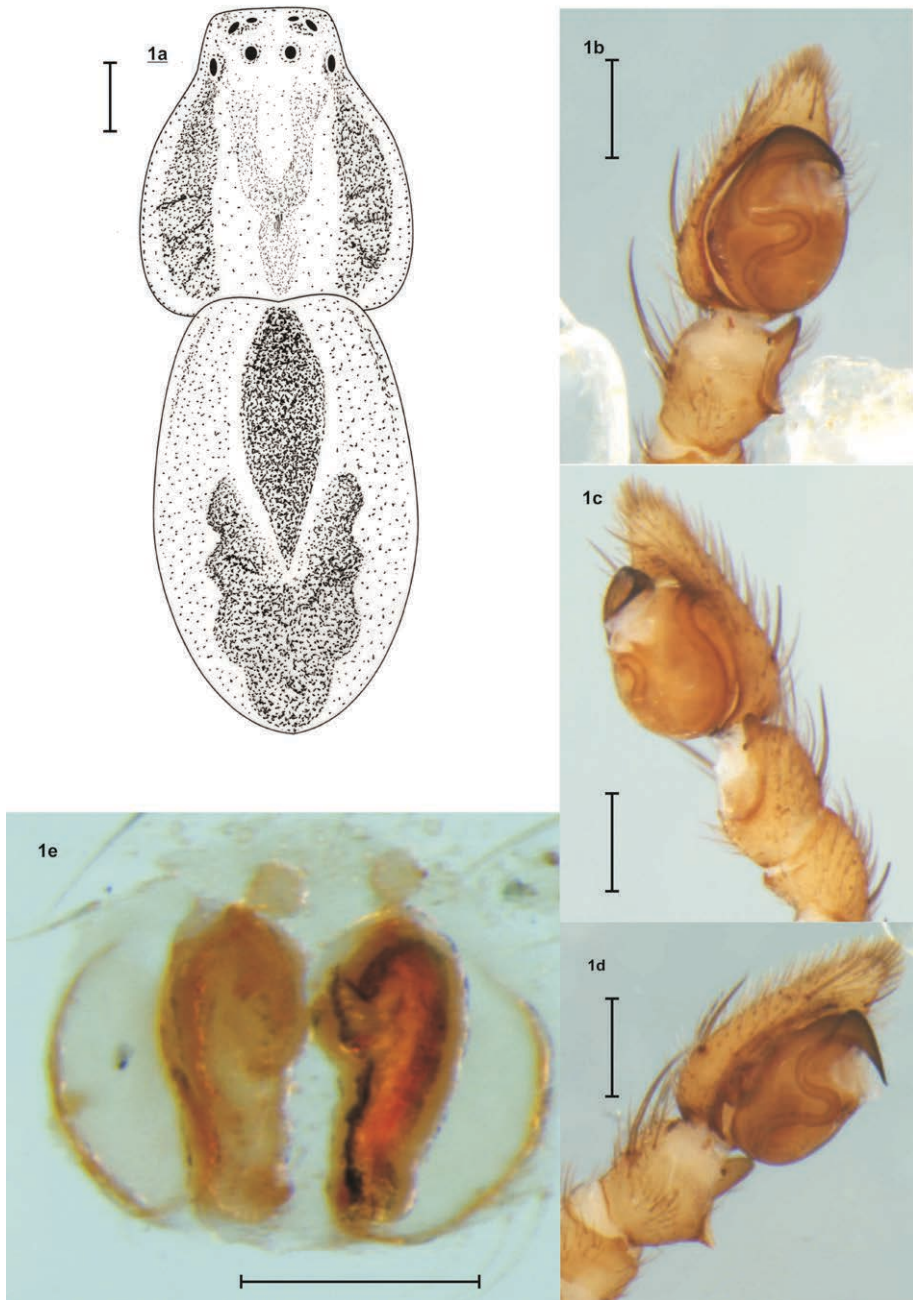


Fig. 1. *Thanatus atratus*: 1a – male habitus; 1b – male palp, frontal view; 1c – male palp, retro-lateral view; 1d – male palp prolateral view; 1e – vulva. Specimens from Gozdowice. Scale bars: 1a – 0.5 mm; 1b-e – 0.25 mm.



Fig. 2. Habitat of *Thanatus atratus* in “Wrzosowiska Cedyńskie” Nature Reserve (Photo: P. Sienkiewicz)

2009–2014 (unpubl. data) and recorded *T. atratus* only in 4 of them. During the same period and in the same localities, we recorded a lot of individuals of *T. arenarius*, *T. formicinus* and *T. sabulosus*. The distribution of *T. atratus* in Poland suggests that this species is found mainly within the Thorn-Eberswalde Proglacial Valley (Fig. 3). It prefers warm, open habitats with a sandy substrate (BRANDT 2005; ALMQUIST 2006; BRANDT 2010; NENTWIG et al. 2016) (Fig. 2). Several localities of this species were found west of the Oder and the Lusatian Neisse (STAUDT 2016), so it seems possible to record *T. atratus* in southwestern Poland in the future (Fig. 3).

The chronology of records of *T. atratus* in Germany, the Czech Republic, and Slovakia suggests that this species extends its range of distribution to the north and east, and most of its localities were reported during the last 25 years (GAJDOŠ et al. 1999; BUCAR & RŮŽIČKA 2002; STAUDT 2016). However, this hypothesis is not necessarily correct. The increase in the number of localities of *T. atratus* in recent years may also be a result of more research in xerothermic grasslands – the habitats in which this rare species occurs. In Poland it is known since the 1970s, and new information complements the data on its distribution.

On the basis of the analysis of the used synonyms, we conclude that all the published records of *Thanatus vulgaris* in Poland (KUPRYJANOWICZ 2008; ROZWALKA & STAŃSKA 2008; VAN HELSDINGEN 2013; NENTWIG et al. 2016) are mistakes.

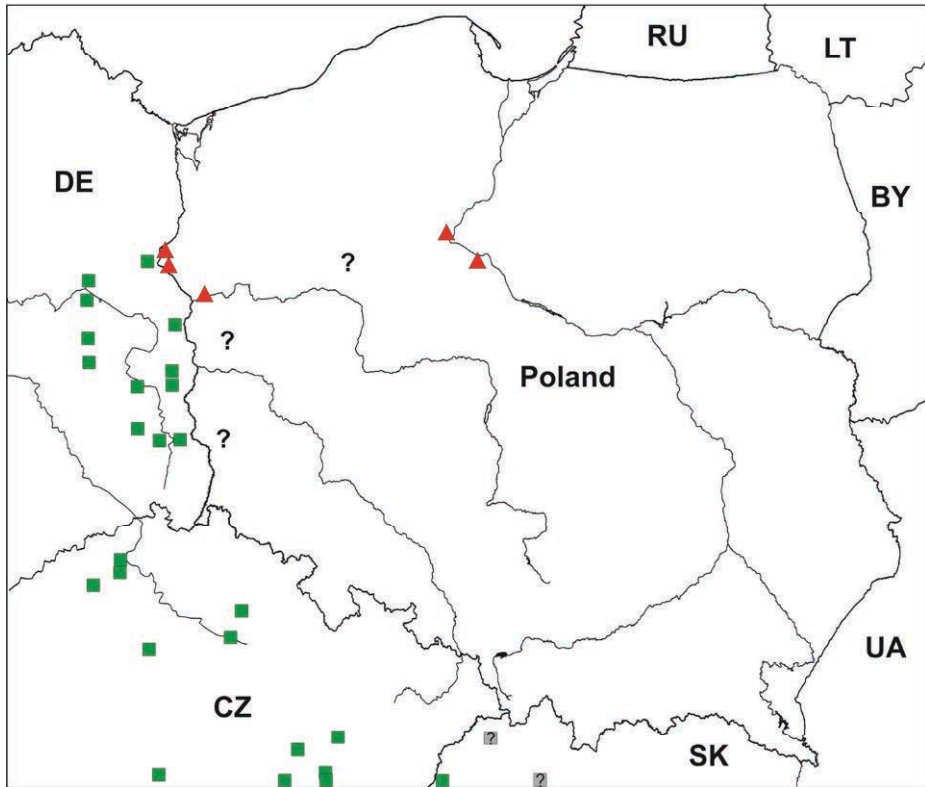


Fig. 3. Distribution of *Thanatus atratus* in Poland and neighboring countries: red triangles = localities in Poland; green squares = localities in Germany, Czech Republic and Slovakia; grey squares with “?” = alleged localities of *T. vulgaris*, probably related to misidentified *T. atratus*; ? = presumable occurrence.

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