About taxonomy of *Psenulus fulvicornis* Schenck (Hymenoptera, "Sphecidae")

Christian Schmid-Egger

Summary: *The taxonomical state of* Psenulus fulvicornis *Schenck, 1857 is discussed, its position as a species is confirmed. Characters for species recognition are given, the male is described for the first time. Records from Southern and Central Europe, Algeria, Turkey and Syria are mentioned.*

Zusammenfassung: *Im vorliegenden Artikel wird der taxonomische Status von* Psenulus fulvicornis *diskutiert. Sein Status als von* P. schencki *verschiedene Art wird bestätigt, Merkmale zur Unterscheidung beider Arten werden aufgelistet. Das Männchen wird zum ersten Mal beschrieben.* P. fulvicornis *ist in Süd- und Mitteleuropa, Algerien, der Türkei und Syrien verbreitet.*

Introduction

In 1857, Schenck described a new species of *Psen* (now *Psenulus)*, which he placed near *Psenulus fuscipennis*. In the next 120 years, the species was never mentioned except by Kohl from Austria (1880, 1888, in Schmidt 1971). Schmidt (1971) examined the female type of *fulvicornis* in the Wiesbaden collection and noted, that it is a well characterized species, close to *Psenulus schencki* Tournier 1889.

Again 21 years later, in 1992, I found a series of females near Pforzheim in southwest Germany, which match well with the description of *fulvicornis*. Further records of females from southwest Germany followed. All specimens were captured in malaise traps. From 1990 on, *fulvicornis* is also mentioned as a species in most important publications about European or German Sphecidae (Jacobs & Oehlke 1990, Dollfuss 1991, Blösch 2000). But Bitsch et al (2001) are the first, who published new records apart from my findings.

In the meantime, the problem about the taxonomical situation around *fulvicornis* was discussed with some colleagues, and some doubts remain because of the true status of *fulvicornis*. Also, the lack of males was a fact supporting the idea that *fulvicornis* is only a *forma* of *schencki*. To get a better idea of the problem, I started new efforts and examined about 45 specimens of *fulvicornis* from the western Palaearctic region including the type. Among them, I found a male, which is probably the male of *fulvicornis*.

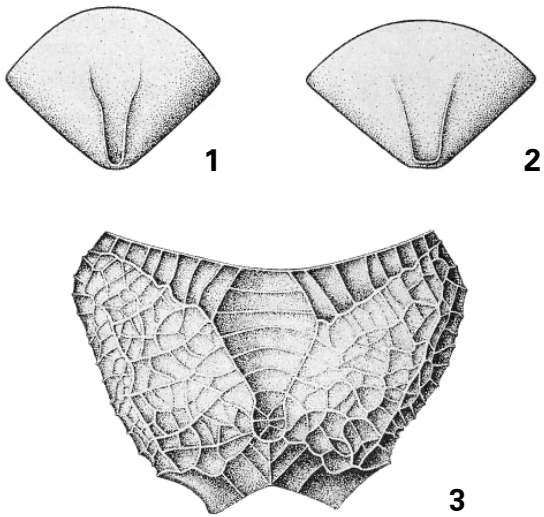
bembiX 15 (2002): 13–18; Bielefeld.
Anschrift des Autors: Dr. Christian Schmid-Egger, Flemingstr. 10, 10557 Berlin

Psenulus fulvicornis

Schenck (1857): 216 (Jahrb. Ver. Naturk. Nassau 12:216: description of *Psen schencki*) holotypus female, in coll. Wiesbaden (examined)
Schmidt (1971): 62-64: description, key of female
Jacobs & Oehlke (1990). 141: record without label in coll. Museum Berlin.
Dollfuss (1991): 48: key.
Schmid-Egger (1995): 64: fauna of Baden-Württemberg (Germany)
Schmidt & Schmid-Egger (1997): 27: fauna of Germany
Blösch (2000): 155: discussion
Bitsch et al. (2001): 48: key, description of female, fauna of France.
Schmid-Egger (2001): 280: fauna of Baden-Württemberg (Germany)

Diagnosis

P. fulvicornis is similar to *schencki*. Both species are characterized in female sex by a short shiny stripe and a row of short spines on the apical half of the midtibia. The apical margin of the last sternites is simple, whereas most remaining species of *Psenulus* are characterized by a dense brush of setae on sternites. The males of both *fulvicornis* and *schencki* have a special feature: the mesosternal carina has short rectangular wrinkles, which are lacking or directed diagonal backwards in remaining species. Most recent keys include the female of *fulvicornis*. The male will be confused with *schencki* in the keys of Dollfuss (1991) or Bitsch et al. (2001). For distinction of both species, see table 1.



Figures: 1 *P. schencki* ♀, pygidial area. **2** *P. fulvicornis* ♀, pygidial area. **3** *P. fulvicornis* ♀, propodeum. (Figures from Schmidt 1971).

Tab. 1 Distinction characters of *Psenulus fulvicornis* and *P. schencki*. Terminology in surface sculpture follows Harris (1979).

P. fulvicornis ♀	*P. schencki* ♀
Propodeal surface next to central furrow scabous to areolate-rugose, in some specimens also coarsely strigate-rugose. Carinas always much larger than in *schencki*, at least with small crosswise carinas. Carinas mostly diagonal (fig. 3)	**Propodeal surface** next to central furrow finely and even strigate. Carinas subparallel, diagonal in basal part, directed to apex in apical part of propodeal surface.
Pygidial area large and longer than in *schencki* (this character is barely visible) (fig. 2)	**Pygidial area** narrow and shorter (fig. 1).
Interantenal carina with small enlargement, which – in general - is shorter than its distance to the cross-carina below.	**Interantenal carina** with large enlargement, which – in general – is longer than its distance to the cross-carina below.
Foretibia all red or with narrow black stripe.	**Foretibia** more or less darkened.
Mesonotum with large punctures, in average a diameter apart, confluenced to large and deep furrows (mainly in apical part). This characters is variable, some specimens are similar to *schencki*.	**Mesonotum** always with very small punctures, in average 2–3 diameters apart, not confluenced to furrows.

P. fulvicornis ♂	*P. schencki* ♂
Mesonotum with large punctures, in average a diameter apart, confluenced to large and deep furrows. Apical part of mesonotum densely and longitudinally strigate.	**Mesonotum** with very small punctures, in average 2–3 diamters apart, not confluenced to furrows. Apical part at most finely striate.
Interantenal carina with large enlargement, which is as large as diameter of foreocellus. It is longer than its distance to the cross-carina below.	**Interantenal carina** with small enlargement, which is half as large as diameter of foreocellus. Is is shorter than its distance to the cross-carina below.

Variation of females

The female is similar to *schencki*, a general description is not given. It is characterized by the above given details (tab. 1) and can be recognized by its coarse sculptured propodeum. The propodeal structure is something variable, which includes a net-like sculpture as well as more or less even subparallel wrinkles and carinas. The carinas are always larger and more coarse as in *schencki*, the latter has an always fine and even striated propodeum. A specimen of *fulvicornis* from Algeria have a very finely structured propodeum, but is its also comb-like structured as in the European specimens.

The mesonotal puncture of *fulvicornis* is widely variable. In general, the punctures are larger and the distances between punctures are smaller than in *schencki*. Only few specimens of *fulvicornis* have such a furrow-like mesonotal surface as the holotype.

Another good character is the form and size of the enlargement of the interantennal carina. The character is not suited for distinction of all species because of its variation, but match, in general, well with the above given description. Noteworthy, the male of *fulvicornis* has a large interantennal enlargement, whereas it is small in all examined *schencki* males.

Also, the colour of the legs seems to be a more or less constant character in both species.

The specimens of Turkey and Syria differ something from the European specimens. The interantennal enlargement is large and nearly round, the forelegs with beginning of the tibia are all light orange-reddish, the hindtibia has a basal red patch. The propodeal surface is less coarse sculptured as in typical specimens from Europe. I labelled these specimens as "*fulvicornis* forma A", but they are without doubt conspecific with *fulvicornis* s. str.

Description of male

6.5 mm. **Body colour** black, light orange-reddish are: flagellomeres below, inner side of foretibia, foretarsi, mid-basitarsus. Last tergal segments something reddish.

Head confused rugulose, frons with some furrows and diagonal carinas. Interantenal carina with large enlargement, which is as large as diameter of foreocellus. It is longer than its distance to the cross-carina below. Length of flagellomers similar to *schencki*. Flagellomeres II–XI with tyloids. First tyloids are as long as 2/3 of length of flagellomere, last tyloids are shorter. Tyloids something larger and better visible as in *schencki*. *P. schencki* normally doesn't have a tyloid on the last flagellomere.

Mesonotum with large punctures, in average a diameter apart, confluenced to large and deep furrows. Apical part of mesonotum densely and longitudinally striated. Scutellum smooth, with short wrinkles apically and basally. Mesosternal carina with 6–7 short rectangular wrinkles on each side. Propodeum with a very strong and something confused honeycomb-like structure (as in *schencki*). Mesopleuron more or less smooth and shiny, which oil-like bluish shimmer, with some large punctures and some indistinct horizontal furrows. Wings are similar as in *schencki*.

Tergites shiny, with very scattered and fine micropunctures. The genital is similar to that of *schencki* (cf. fig. 156 in Dollfuss 1991).

Discussion

After examination of about 100 specimens of the *schencki/fulvicornis* group, I agree with the opinion of Schenck (1857), Schmidt (1971) and de Beaumont (in Schmidt 1971), that *fulvicornis* is a distinct species. The above mentioned character combination allows to recognize the species reliable, taken the morphological similarities and the resulting problems with identification within the genus *Psenulus* into account. Only one male is known up to now, so further examinations have to confirm the here described characters.

Geographic distribution and ecology

The species occurs in southern and central Europe, eastwards to Turkey and Syria. A single female comes from Algeria. Bitsch et al. (2001) mentions further records from southern France and Corsica. The records, mentioned by Kohl from Austria (1880, 1888, in Schmidt 1971), have to be examined and confirmed.

In Germany the species was only found in hot and dry places (e. g. old and not used vineyards) in southwest German, which characterizes the species as a submediterranean faunistic element. All German records come from malaise traps, what gives a hint to the very inconspicuous life of *fulvicornis*. So, further records can be expected.

Records of *fulvicornis*

Collections examined:
Bitsch = coll. J. Bitsch, Toulouse, France
Dollfuss = coll. H. Dollfuss, Mank, Austria
MNHN = Paris Museum, France
OLL = Oberösterreichisches Landesmuseum Linz, Austria
SE = coll. C. Schmid-Egger, Berlin, Germany
Wiesbaden = Wiesbaden Museum, Germany.

Records (if sex not mentioned: females):
ALGERIA: 27.10.1975 Djenet (OLL)
BULGARIA: 25.7.1979 Prinorsko; June 1972 Slinov Brjag; 14.8.1993 Viahi; Mai 1967 Sandanski; 26.6.1966 Ropotamo; 18.06.1996 Beronovc (OLL)
FRANCE: 9.6.1985 Aude, Capendu; 27.8.1988, 31.7.1993 Toulouse ville; 31.5.1990 Castelmaurou N of Toulouse, malaise trap; 1.8.1966 Gers, Cologne (Bitsch); 18.5.1918 Montpellier (MNHN Paris).
GERMANY: Wiesbaden leg. Kirschbaum (without date, before 1857, Holotypus det Schenck, coll. Museum Wiesbaden). – 3.6.–29.6.1992 4 females Baden-Württemberg, Niefern N of Pforzheim, in malaise trap; 25.6.–21-7.1997 13 females 1 **male** Baden-Württemberg, Südbaden, Grissheim, in malaise trap; 20.6.–4.7.1995 Rheinland-Pfalz, Bacharach, in malaise trap (SE).
GREECE: 1.6.1979 (without locality) (OLL)
ITALY: 25.8.1998 Valle d'Aosta, Quart 45'45'N 7'23'E (SE)
KROATIA: 18.7.1966 Island Uglian, Kali (OLL)
SPAIN: 6.–23.6.1995 Prov. Salamanca, Villar de Clervo, Coronas (SE)
SYRIA: 12.5.1996 50km W Homs (OLL) (specimens belong to the forma A).
TURKEY: 5.5.1994 Halfeti env; 100 km N Adana, Feke (OLL); 24.5.1981 Aydin Nazizzi-Beydag 38.01N/28.18E (Dollfuss) (specimens belong to the forma A).

Records of *schencki*

I could examine about 45 females and 15 males of *schencki* from Germany, southern France, northern Italy, Israel (female 15.5.1996 40km N Haifa, Hurfeish) and Azerbeidjan (female 15.6.1996 Avash 38'50N 38'10'E; male 22.6.1996 Altyagach 40'50'N 48'50'E leg. Hauser), all in my collection.

Acknowledgements

I greatly appreciate the help of Prof. J. Bitsch, Toulouse/France, Mag. Dr. H. Dollfuss, Mank, Austria, Martin Hauser, Urbana/Illinois and Fritz Geller-Grimm, Wiesbaden/Germany for loan of specimens.

Literature cited

Bitsch, J., et al (2001): Hyménopères Sphecidae d'Europe occidentale. Volume 3. Faune de France 86. Paris 2001, 459 pages.

Blösch, M. (2000) Die Grabwespen Deutschlands – Tierwelt Deutschlands 71. Goecke & Evers, Keltern, 480 Seiten.

Dollfuss, H. (1991): Bestimmungsschlüssel der Grabwespen Nord- und Zentraleuropas (Hymenoptera, Sphecidae) mit speziellen Angaben zur Grabwespenfauna Öterreichs. Stapfia 24: 1–247. Linz.

Jacobs, H.-J. & J. Oehlke (1990): Beiträge zur Insektenfauna der DDR: Hymenoptera: Sphecidae. 1. Nachtrag. Beitr. Ent. 40: 121–229.

Schmid-Egger, C. (1995): Die Eignung von Stechimmen (Hymenoptera, Aculeata) zur naturschutzfachlichen Bewertung am Beispiel der Weinbergslandschaft im Enztal und im Stromberg (nordwestliches Baden-Wüttemberg). Cuvillier-Verlag Göttingen, 235 Seiten. Göttingen

Schmid-Egger, C. (2000) Die Wildbienen und Wespenfauna der oberrheinischen Trockenaue im süwestlichen Baden-Württemberg (Hymenoptera, Aculeata; Evanioidea). – in: Vom Wildstrom zur Trockenaue. Natur und Geschichte der Flusslandschaft am südlichen Oberrhein. Hrsg: LfU Baden Württemberg, 257–306. Verlag Regionalkultur. Karlsruhe.

Schmidt, K. 1971 Die Grabwespen-Typen A. Schenck's in der Sammlung C.L. Kirschbaum's im Landesmuseum Wiesbaden. Beitr. Ent. 21: 61–66.

Schmidt, K. & C. Schmid-Egger (1997): Kritisches Verzeichnis der deutschen Grabwespenarten (Hymenoptera, Sphecidae). Mitt. ArbGem. ostwestf.-lipp. Ent. 13 (Beiheft3): 1–35. Bielefeld.