

Four species of the *Pardosa lugubris*-group in Central Europe
(Araneae, Lycosidae) - A preliminary report

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Pardosa lugubris (WALCKENAER 1802) is an abundant wolf spider occurring in great numbers on the leaf litter of deciduous woodlands all over Europe and possibly all over the Palaearctic (EDGAR 1971, ZYUZIN 1980). In 1984 WUNDERLICH described *Pardosa pseudolugubris* as a sibling species to *Pardosa lugubris* because of its different cymbium colour. This conspicuous colour of the cymbium was also mentioned by C.L. KOCH as being characteristic for *Pardosa alacris* which he described in 1848. This species seems to have erroneously been considered a synonym of *Pardosa lugubris* (DAHL 1908 (sub *Lycosa chelata*), see also ROEWER 1954, WUNDERLICH 1984). Because the colour of the proximal part of the cymbium is the most decisive character and is identical in both forms, we suggest to regard *Pardosa pseudolugubris* as a synonym of *Pardosa alacris*.¹ In 1982 B. & M. BAEHR found a third related species in southern Germany (Bavaria). A detailed study of the courtship of the different forms of the *Pardosa lugubris*-group led to the discovery of a fourth sympatric species. A full account of the morphological description of the two new species will be published soon (KRONESTEDT in prep.; TÖPFER-HOFMANN & v. HELVERSEN in prep.)².

Males of all four species clearly differ in courtship behaviour both qualitatively and quantitatively. Males courted females of all species always displaying their

¹T. KRONESTEDT (in lit.) supports this view, a publication is in prep..

²The names of the new species given by KRONESTEDT (*Pardosa baehrorum*) and TÖPFER-HOFMANN & v. HELVERSEN (*Pardosa saltans*) have here to be regarded as nomina nuda.

species-specific behaviour; females only accepted conspecific males. This was tested in crossing experiments where females were confronted with heterospecific as well as with conspecific males.

The different species occur syntopic in different combinations and do not interbreed. The reproductive behaviour seems to act as an important species barrier.

Following, we give a preliminary report on some morphological differences of the four Central European species to direct the attention to the taxonomic problems of this species-group.

Morphological characters of the males

This description treats only the males because the morphological determination of the females seems to be difficult or even impossible so far.

The common character of the males of the *Pardosa lugubris*-group is the wide and light median band on the black coloured prosoma, which is straight with more or less parallel borderlines.

Males	Coxae and femora of front legs	proximal part of the cymbium	length of distal part of the cymbium [mm]	terminal spur
P.1.	black	black	short 0.28 - 0.41 (n=65)	distinct
P.a.	black	reddish in life, pale, when preserved in alcohol	short 0.38 - 0.44 (n=18)	small, hidden behind bristles
P.b.	coxae pale, femora annulated	black	short 0.38 - 0.44 (n=5)	small, hidden behind bristles
P.s.	black	black	long 0.44 - 0.53 (n=19)	small, hidden behind bristles

Tab.1. Morphological characteristics of the males of all four species

P.1.: *P. lugubris* s.str.

P.a.: *P. alacris*

P.b.: *P. baehrorum* (nomen nudum, will be described by KRONESTEDT)

P.s.: *P. saltans* (nomen nudum, will be described by TÖPFER-HOFMANN & v.HELVERSEN)

The most important characters for the determination of the different species are the colour of the front legs and the colour of the dorsal base of the cymbium, the proportions of the cymbium and the terminal spur of the cymbium.

The specific characters of all four species are summarized in Table 1.

Males of *Pardosa lugubris* s.str. have dark palps. The shape of the cymbium is slightly concave and the spur at the top of the cymbium is distinct (Fig. 1a).

Pardosa alacris can be recognized by its cymbium colour. The proximal part of the cymbium is reddish in live animals and yellow or pale in alcohol preserved specimen. For further morphological characters see WUNDERLICH (1984).

Pardosa saltans-males also have dark palps, but the bristles at the palpal tibia and cymbium are longer and thicker than in *Pardosa lugubris* s.str.. The spur at the top of the cymbium is indistinct or absent. The most conspicuous character, however, is the length of the distal part of the cymbium which is significantly longer (U-Test, $p < 0.001$) in *Pardosa saltans* than in all other species (Fig. 1b).

In *Pardosa baehrorum*-males all parts of the front legs are light and annulated while adult males of the other species have black coxae and femora and only the distal parts of the legs are light.

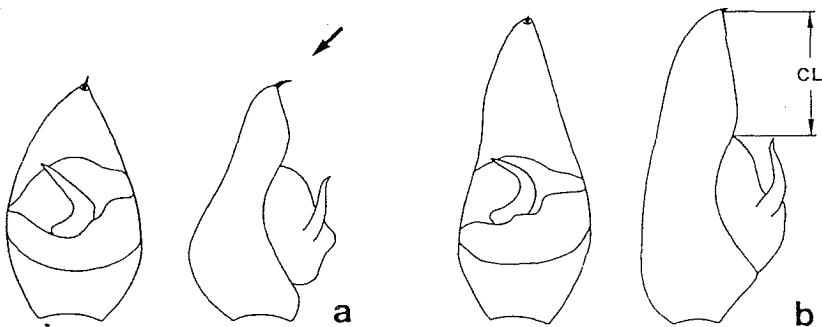


Fig.1. Right male palp, ventral and retrolateral view.

a. *Pardosa lugubris*: Distinct terminal spur.

b. *P. saltans*: The distal part of the cymbium (CL) is longer than in *P. lugubris*.

By investigating specimen of the *Pardosa lugubris*-group from other European regions, we discovered further distinct courtship patterns (TÖPFER-HOFMANN & v. HELVERSEN, in prep.). Therefore, it can be expected that a detailed examination of this species group will reveal even more species.

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