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## Three new synonyms of *Promesomachilis hispanica*

SILVESTRI, 1923

(Insecta: Apterygota, Microcoryphia)

von

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## Drei neue Synonyme von *Promesomachilis hispanica* SILVESTRI, 1923

(Insecta: Apterygota, Microcoryphia)

**Synopsis:** Aufgrund der Ergebnisse einer vergleichenden Untersuchung der Holotypen von *Promesomachilis bandschini* WYGOD., 1941, *P. costai* WYGOD., 1945, und *P. costai diversipalpa* JANETS., 1954, werden diese Formen als Synonyme von *P. bandschini* SILV., 1923, eingezogen. Bestimmungsschlüssel für die damit einzigen 2 validen spp. der Gattung *P. hispanica* und *P. cazorlensis* BACH, 1984, werden gegeben.

## Introduction

The genus *Promesomachilis* was described by SILVESTRI (1923) with material collected near Seville, Spain. Until now, this genus has only been found in the South of the Iberian Peninsula (where it is very common) and in the North of Africa. From this genus, the following taxa have been described:

*P. hispanica* SILVESTRI, 1923. Was redescribed by BITSCH (1966), it is most widely distributed in the South of the Iberian Peninsula (namely: Salamanca, Cáceres, Sevilla, Córdoba, Granada and Algarve).

*P. bandschini* WYGODZINSKY, 1941. Was described with only one female specimen from the North of Africa (Djebilelts near Marrakesch/Marocco).

*P. costai* WYGODZINSKY, 1945, from Portugal (Azinheiro dos Barros), described with only one male specimen.

*P. costai diversipalpa* JANETSCHEK, 1954. Was described using material from Seville (El Viso del Alcor) with only one male and two young males.

*P. cazorlensis* BACH, 1984. Was described with material from Jaén (Cazorla's Sierra), 2 ♂♂ and 3 ♀♀.

All these nominal forms have slight differential characteristics, except *P. cazorlensis* which can be easily separated. The variability between the remaining species, then, is very small and this fact combined with the other circumstances namely careful microscopic

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study, makes former classification doubtful. Various authors have expressed this opinion (BITSCH, 1966; MENDES, 1977; BACH, 1984).

In the present paper we will study the named forms to establish definitively their validity or their rejection. The method used is detailed study of the holotypus of all these nominal forms, except *P. hispanica* of which we have studied a great number of specimens from different localities.

## Results

Variability between *P. hispanica* and *P. bandschini*:

*P. bandschini* was described with only a single female specimen. We have compared the holotypus of *P. bandschini* with numerous females of *P. hispanica*. When WYGODZINSKY described *P. bandschini* he mentioned the similarity between both species and he differentiated them only because of the width of the third article of the labial palp which has numerous sensory cones and numerous sensory setae in *P. bandschini*. WYGODZINSKY (1941) und JANETSCHEK (1954) noted the lack of sensory setae in the apical article of the labial palp in *P. hispanica*.

In this comparative study (fig. 1, wherein are differentiated the labial palps of two females of *P. hispanica* found in different sites from the holotypus of *P. bandschini*, to the same scale) we can see that the last article of the labial palp in *P. bandschini* is wider than the others. The specimens of *P. hispanica* not only have a variable width in that article, but also have sensory setae as in *P. bandschini*. The configuration of the sensory cones are the same in both species.

We have also examined the chaetotaxy and the form of the VIII and IX gonapophyses (fig. 2). The two species are very similar in these characteristics; the differences are so small that there is no justification to differentiate between the two nominal species.

Variability between *P. hispanica*, *P. costai* and *P. costai diversipalpa*:

The study of these nominal forms is made only with the males, since the females of *P. costai* and *P. costai diversipalpa* have not been found. Their differentiation according to WYGODZINSKY (1945) was made from the last article of the labial palp and the abdominal styles of the 9th segment. This segment has a ratio style/coxite of approximately one. He does not consider the ciliate hairs on the trochanter and femur of the hind legs. In respect of *P. hispanica*, *P. costai* and *P. costai diversipalpa*, one of the authors (JANETSCHEK, 1954) differentiated *P. costai diversipalpa* from the others by the ratio style IX/coxite IX which equals one (the same as *P. costai*); the difference between these two forms was the shape of the last article of the maxillary palp.

We have examined carefully the characteristics cited above in the holotypus of *P. costai* and *P. costai diversipalpa* and in a great number of specimens of *P. hispanica*. We observed:

1. The shape of the last article of the labial palp is similar in all these forms (fig. 3 and 4). In addition, the shape in *P. hispanica*, varies according to the age of the specimen. Also it is common to all the forms that the sensory spines of the anterior surface do not reach the dorsal border and their morphology is uniform and equal to the ♀♀ of *P. bandschini* and *P. hispanica*. Finally common to all forms is the presence of short bristles on the dorso-distal portion of that article.

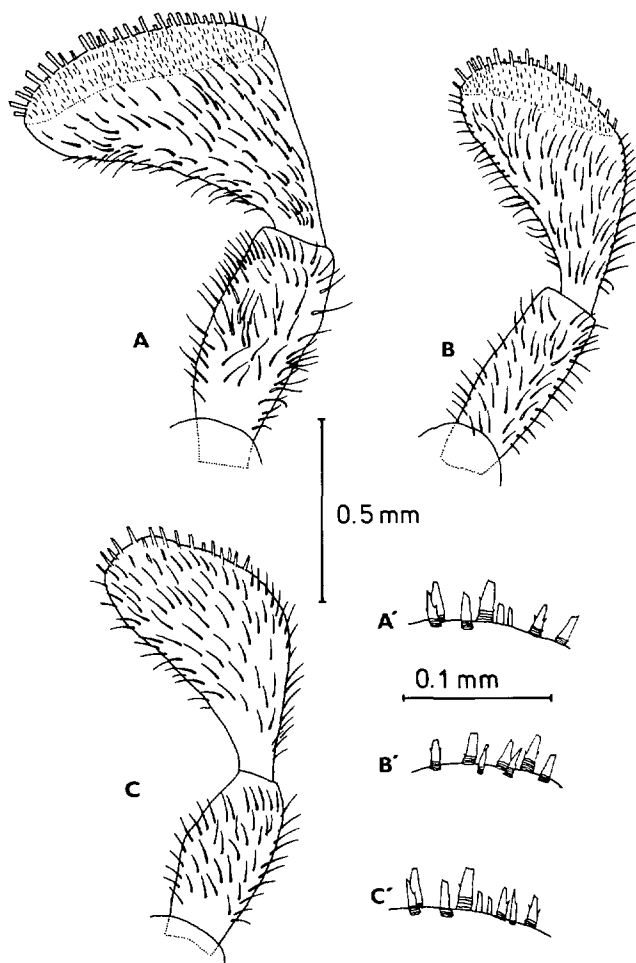


Fig. 1: Labial palp: A. *Promesomachilis handschini*, holotypus (♀), body length = 14 mm; B. and C. *P. hispanica* (♀♀) from the Arroyo de la Luz (Caceres) (B) and Coto de Doñana (Huelva) (C). Body length of B = 12 mm, of C = 11 mm. In C, the sensory field on the last article is not visible, since the palp is drawn from the apposite side; A', B', C' show the sensory cones of labial palp from A, B and C.

2. Continuing with the study of the labial palp, BACH (1984), noticed the importance of the second article of the male, as a determinant of the genus *Promesomachilis*. BITSCH (1966) when he redescribed *P. hispanica* emphasized this characteristic and he noted the presence of a swollen dorsal subdistal, bearing a number of short bristles. This swelling had not been noted by WYGODZINSKY (1945) when he described *P. costai* but this characteristic was in his drawing in fig. 20, pag. 76, and we can see it clearly in the holotypus (fig. 3, A). The results of the examination of the slide preparation of *P. costai diversipalpa* is that the swelling is very small, but there are present the short dorso-distal bristles as found in *P. hispanica* and *P. costai* (fig. 3, B).

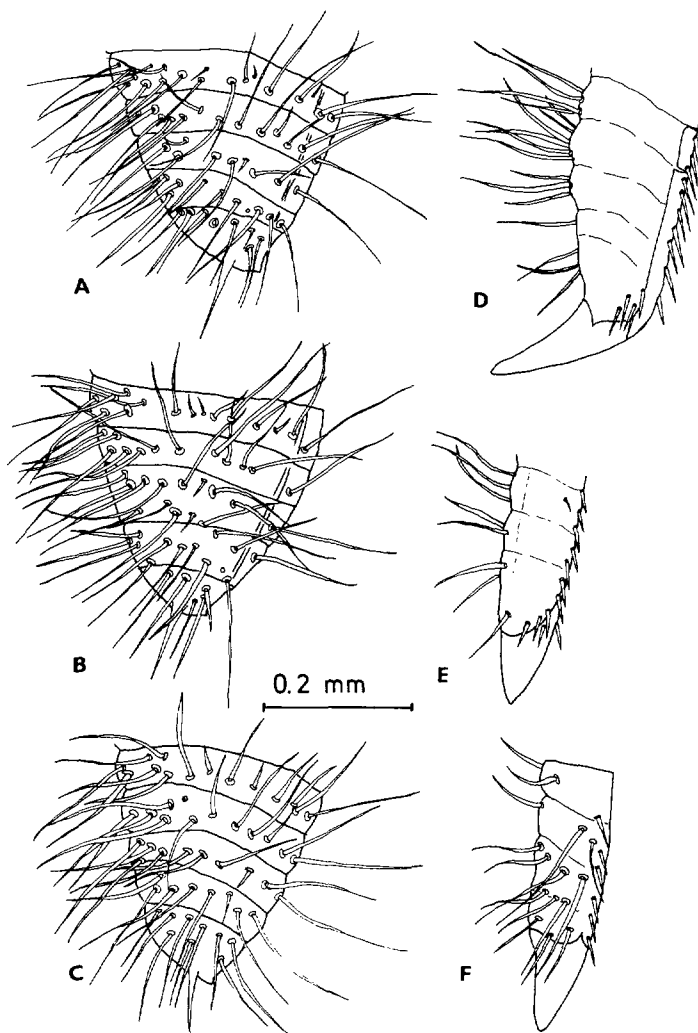


Fig. 2: A - C: Apex of gonapophyses VIII; D - F of gonapophyses IX, of A/D: *Promesomachilis bandschini*, B/E and C/F: *P. hispanica*. Specimens are the same as in fig. 1: B/E from Coto de Doñana (Huelva), C/F from Arroyo de la Luz (Cáceres). E and F are turned by 90° in comparison with D, but of identical shape.

The first article of the labial palp has, dorsally, in all species, short bristles, which do not form a sensory field.

3. In reference to the third pair of legs, WYGODZINSKY indicated the presence of numerous hairs on the trochanter and femur of *P. costai*. These hairs are also present in *P. hispanica* and *P. costai diversipalpa* and for that reason we cannot consider them as a differential characteristic (fig. 5).

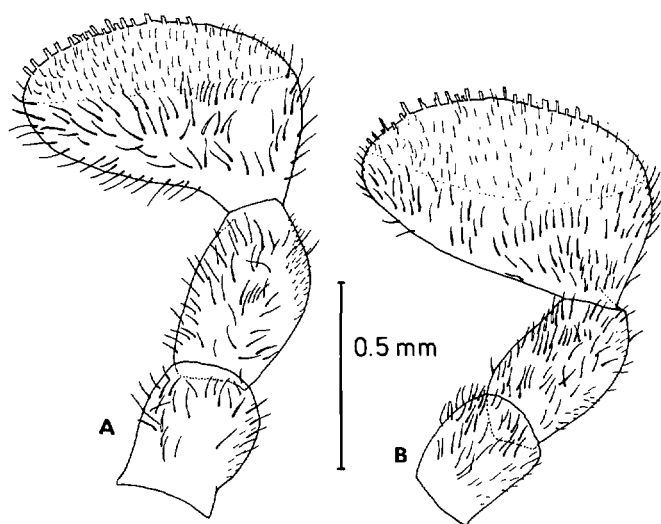


Fig. 3: A. Labial palp of *Promesomachilis costai*, holotypus (♂);  
B. The same of *P. costai diversipalpa*, holotypus (♂).

4. The ratio of the length of style IX / length of coxite IX is, in *P. costai*, equal to one. We cannot verify, because the style IX is not present in the preparation of the holotypus. The same ratio was established by JANETSCHEK in *P. costai diversipalpa* while in *P. hispanica* we have established that the ratio is either greater or lesser than one, according to the age of specimen. BITSCH (1966) reported that this ratio was oscillating between 0,88 and 1,25. For this reason this ratio is not valid as a differential characteristic.

5. Finally, the form of the last article of the maxillary palp is basically the same in all forms, and always has numerous hyaline spines; between 20 and 25. Likewise the ventral surface of all segments is covered with short bristles.

Concerning the other data contained in the descriptions, there is not sufficient evidence to individualize these species from the many related ones. For example, the description of the penis made by WYGODZINSKY (1945) in *P. costai* (we have not corroborated because the penis is missing in the preparation), noted that the penis is slimmer than the parameres, which is exactly the same description as *P. hispanica*'s and *P. costai diversipalpa*'s. The length and the chaetotaxy of the parameres are coincident (fig. 6).

The remaining characteristics are the same in the three species: see table 1.

## Discussion

Making the description of a species with only one specimen, if the differential characteristics are not very great, is difficult and contains a certain risk. The examination of the types, show:

Since their description no other specimens have been found of *P. handschini*, *P. costai* and *P. costai diversipalpa*. Referring to the last two nominal species, MENDES (1977) and

Table 1: Ratios and lengths, in mm, of the nominal forms of *Promesomachilis*

	<i>costai</i>	<i>costai</i> <i>diversipalpa</i>	<i>bispanica</i>		<i>bandschini</i>
	♂	♂	♂	♀	♀
body length	9	10	9 - 11	11 - 14	14
tibia I length	0,61*	0,55*	0,85*	0,80	0,70*
tibia II length	0,72*	0,68*	0,88*	0,85*	0,80 - 0,85*
tibia III length	0,81*	0,71*	0,95*	0,95	0,91*
Lc / L	0,4	—	0,46	0,38	0,3
L / A	1,0	—	1,0	1,0	1,0
number articles distal antennal chain	15 - 20	—	15 - 20	15 - 20	15
n / n-1	0,71*	0,8 - 0,9	0,80	0,64	0,66*
number hyaline spines in the V article of maxillary palp	3*	2*	3	7	5*
same VI article	23*	18*	20	38	20*
same VII article	19*	21*	25	25	24*
est V / cox V	0,6	0,57 - 0,6	0,56	0,47 - 0,50	0,55
est VIII / cox VIII	0,7	0,72 - 0,74	0,70 - 0,72*	0,81	0,9
est IX / cox IX	1,0 - 1,1	1,0	0,88 - 1,25	0,71	0,8
number articles IX parameres	1 + 6 - 7	1 + 6 - 7	1 + 5 - 6	—	—
length base penis/terminal	—	1,3	1,2	—	—
number articles gon. VIII	—	—	—	19	19 - 20
same gonapophyses IX	—	—	—	19 - 20	20
geographic distribution	S. Portugal	Seville	South Iberian Peninsula		N. Africa

\*) Data from the microscopic slides. The remainder, from the original descriptions.

#### List of abbreviations of table 1:

Lc	=	Line of contact of the compound eyes
L	=	Length of the compound eyes
A	=	Width of the compound eyes
n	=	Last article of the maxillary palp
n-1	=	Penultimate article of the maxillary palp
est V	=	Length of style V (without terminal spine)
est VIII	=	Length of style VIII (without terminal spine)
est IX	=	Length of style IX (without terminal spine)
cox V	=	Length of coxite V
cox VIII	=	Length of coxite VIII
cox IX	=	Length of coxite IX

BACH (1982 - 83) have, respectively searched in the same places where the holotypes were collected. In those places, only *P. bispanica* has been found.

With these results and the careful study that we made, we can conclude that the differences between these "nominal species" are small, and can be accounted for by variability among populations. We conclude that *P. bandschini*, *P. costai* and *P. costai diversipalpa* are synonyms of *P. bispanica*.

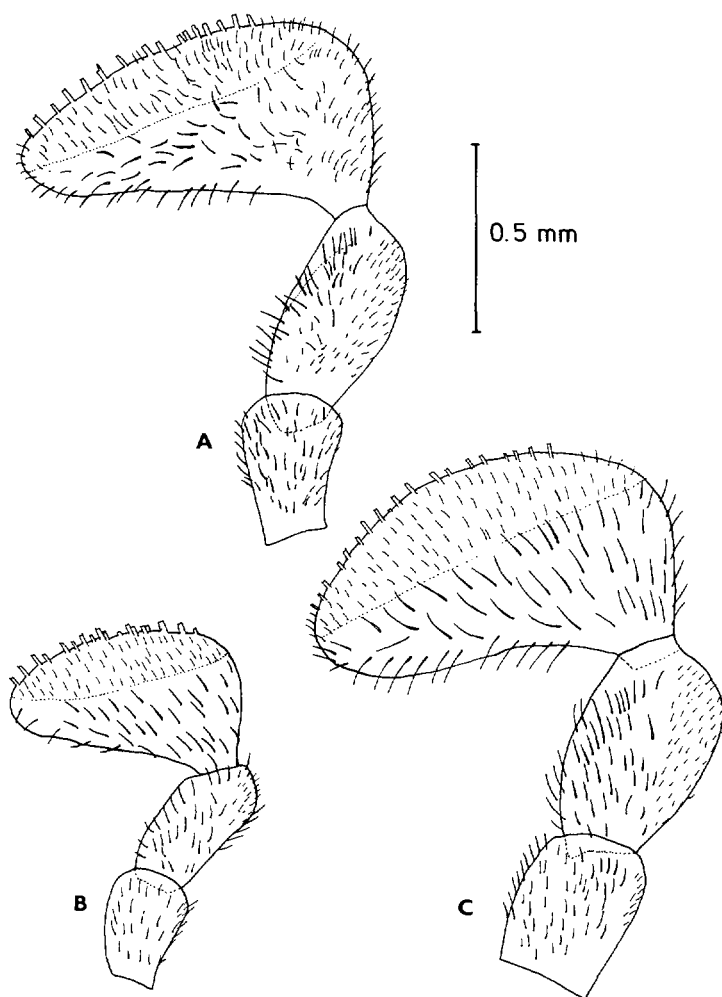


Fig. 4: Labial palp of *Promesomachilis hispanica* ♂♂: A. From Coto de Doñana (Huelva); B. From el Viso del Alcor (Sevilla); C. From Arroyo de la Luz (Cáceres).

#### Keys to determine the species of *Promesomachilis*:

Following from the above, there are only two species of *Promesomachilis*. They can be separated with the following keys:

#### Males:

1. Second article of the labial palp with a dorso-distal swelling covered with little bristles. Ventral face of articles 2 - 7 of maxillary palp covered with minute bristles . . . . . *hispanica* SILVESTRI, 1923
- Second article of the labial palp without a swelling, but with a group of ciliary bristles in the dorso-distal part. Ventral face of articles 2 - 7 of maxillary palp covered with ciliary bristles and normal ones . . . . . *cazorlensis* BACH, 1984.

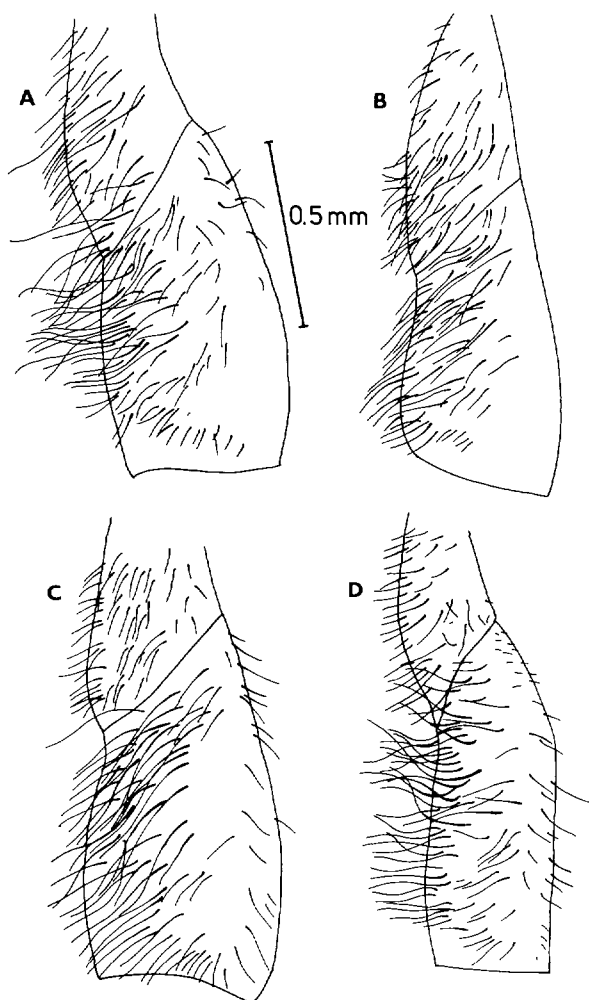


Fig. 5: Trochanter and femur of the third pair of legs: A. *Promesomachilis costai*, holotypus (♂); B. *P. costai diversipalpa*, holotypus (♂); C - D. *P. hispanica* ♂♂: C. from Arroyo de la Luz (Cáceres); D. The same from Coto de Doñana (Huelva)

#### Females:

1. Ratio style VIII/coxite VIII equal to one. Terminal tooth of gonapophyses IX hard, sclerotized. Gonapophyses having 20 articles at most . . . *hispanica* SILVESTRI, 1923
- Ratio style VIII/coxite VIII smaller than one. Terminal tooth of gonapophyses IX not sclerotized. Gonapophyses with more than 20 articles . . . *cazorlensis* BACH, 1984

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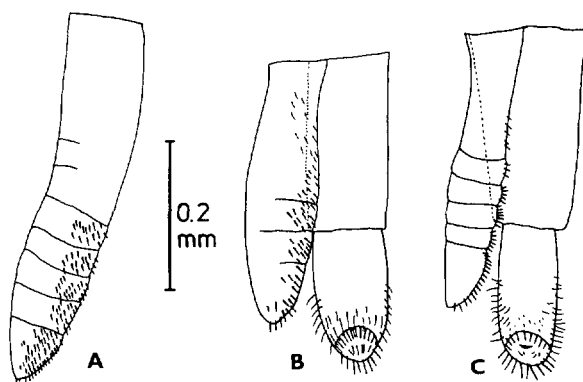


Fig. 6: A. Parameres of *Promesomachilis costai*, holotypus; B. Penis and parameres of *P. costai diversipalpa*, holotypus; C. The same of *P. hispanica* from Arroyo de la Luz (Caceres)

**S u m m a r y :** A comparative study of the holotypus of *Promesomachilis handschini* WYGOD., 1941, *P. costai* WYGOD., 1945, and *P. costai diversipalpa* JANETS., 1954, was made and results compared with *P. hispanica* SILV., 1923. All of the three nominal spp. and forms respectively turned out to be synonymous with *P. hispanica* SILV., 1923. A key is given for the only two hitherto known valid spp. of *Promesomachilis*, *P. hispanica* SILV., 1923 and *P. cazorlensis* BACH, 1984.

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