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On the status of *Pamponerus helveticus* (Mik, 1864) (Diptera, Asilidae)

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Specimens of *Pamponerus* from Switzerland were analyzed and separated into two groups which are identified as *P. germanicus* (Linnaeus) and *P. helveticus* (Mik), *bona species*.

Keywords: Asilidae, *Pamponerus helveticus*, Swiss fauna, systematic status.

INTRODUCTION

In the Asilidae part of the Catalogue of Palaearctic Diptera (Lehr, 1988), the genus *Pamponerus* Loew is listed with only one species, *Pamponerus germanicus* (Linnaeus, 1758), which is signaled from many European countries but not from Switzerland. Mik (1864:795) described the Swiss species *Asilus helveticus*, but Bezzi (1903:144) and Séguy (1927:113) considered it to be a variety of *P. germanicus*. On the other hand, this nominal species was treated by Engel (1930:54), Hull (1962:552) and Lehr (1988:315) as a subspecies. If sympatric specimens of both taxa could be found, the status of a subspecies would be improper.

Having at our disposal a number of specimens from Switzerland which can be separated into two groups, we have tried to check and apply the descriptions of *P. germanicus* and *P. helveticus*, respectively, and to resolve the status of *P. helveticus*.

MATERIAL AND METHODS

Several Swiss specimens of *Pamponerus,* kept in the collections of Naturhistorisches Museum, Bern (NMB), Musée d'Histoire Naturelle, Genève (MHNG), Musée de Zoologie, Lausanne (MZL), Musée d'Histoire Naturelle, Neuchâtel (MHNN) and Entomologisches Institut ETH, Zürich (EIZ), have been analyzed.

Preparations of genitalia were made with the following methods: The specimen was relaxed and softened in a moist chamber for 24 hours. Then the male abdomen at the apex and the female abdomen at the level of the third segment, respectively, were dissected. The fragment was introduced into a glass tube containing 10% KOH solution. After 24 hours the fragment was washed with water and finally cleared in pure glycerine for 10 to 30 days (the longer the clearing time the easier the separation of the components). The components were kept in a microvial and fixed to the pin of the respective specimen.

RESULTS AND DISCUSSION

The Pamponerus specimens were checked for constant differences allowing them to be separated into two groups. Such differences were found in the coloration of certain bristles as well as in the shape of the genitalia.

Pamponerus germanicus (LINNAEUS, 1758)

Material: 1 ♂, Locarno TI, 14.V.1873, ISENSCHMID; 1 ♂, Lyss BE, 22.V.1921, STECK; 1 ♂, Lyss BE, 1.VI.1924, STECK (genitalia pin-mounted); 1 ♀, Bern, 7.VI.1903; 1 ♀, Gümligen, 13.VI.1905, STECK; 1 ♀, Bümplitz BE, 15.VI.1951, LOUIS (genitalia pin-mounted) (all NMB); 1 ♂, Suisse, Coll. Aux. (MHNN); 1 ♀, Cudrefin VD, 12.V.1957; 2 ♂♂, 2 ♀♀, Genève, coll. BUESS (all MHNG); 1 ♀, Vaud, La Sange, 28.V.1966, J. DE BEAUMONT (MZL).

Additions to the description: Components of the genitalia are shown in figs 1 and 2. Diagnostic differences to *P. helveticus* are mentioned below.

Remarks: The specimen from Cudrefin (MHNG) has a yellow spine on the left hind tibia and basitarsus, respectively.

Pamponerus helveticus (MIK, 1864)

Material: 1 ♂, Siders, 18.V.1923, DÄNIKER (genitalia pin-mounted); 1 ♀, Binntal VS, 25.VI.1916 (genitalia pin-mounted); 1 ♂, Martigny, 2.VI.1924; 1 ♂, Branson, 23.VI.1932, SCHMIDLIN (all NMB); 1 ♂, Martigny, mai 1926, A. NAVILLE, Genève (genitalia pin-mounted); 1 ♂, Sierre, 25.V.1931, A. NAVILLE; 5 ♂♂, 2 ♀♀, Sierre, coll. TOURNIER; 2 ♂♂, 1 ♀, Martigny, coll. FREY; 1 ♀, Argovie, coll. FREY (all MHNG); 2 ♂♂, Sierre, 5.VI.1887 (genitalia pin-mounted); 1 ♂, Sierre, 1.VI.1887; 1 ♀, Mifoton 10.VI.1887 (genitalia pin-mounted) (all EIZ); 1 ♂, 1 ♀, Tessin Tegna, 4.VII.1946, J. DE BEAUMONT; 1 ♂, Valais, Follaterres, 27.V.1959, J. DE BEAUMONT; 1 ♀, Valais, Follaterres, 13.V.1947, J. AUBERT; 1 ♂, Sierre, 21.V. 1905, Coll. B. JACOB; 1 ♂, Valais, Martigny, 19.V.1953, J. AUBERT; 1 ♀, Tegna TI, 7.VI.1945, G. BOUVIER; 1 ♀, Valais, Martigny, V. 1914, Coll. CERUTTI (all MZL).

Additions to the description: Big-sized flies (18-20 mm); wings in the basal half milky-white; head bristles on genae and lower occiput yellow-white; occipital bristles black, short and bent frontwards; gibbosity yellowish, with some black hairs along the upper border and in the upper half along the sides; front and antennae covered with black hairs; mesonotum and pleura with yellow-gray pollinosity; bristles and hairs of the mesonotum black, of the pleura yellow; femur black, tibia red except of the black tips; tarsomeres only apically black; leg bristles black but tibia and tarsomeres usually with yellow spines; abdomen black, shiny; lateral borders of tergites gray pollinose and covered with yellow hairs; hypopygium shiny black, with black and yellow hairs (Fig. 3); ovipositor short and shiny black (Fig. 4).

Remarks: The specimen from Binntal (NMB) has on each hindleg only one yellow spine. One specimen from Sierre (EIZ) has yellow spines on fore and mid tibia and tarsus but no yellow spines on the hind leg. The specimen from Mifoton has several yellow spines only on both hind tibiae.

Diagnostic characters and variability

In male genitalia, *P. germanicus* differs from *P. helveticus* in the apex of the epandrium, in the shape of the hypandrium, the gonopodes and the aedeagus (Figs 1 and 3). In *P. germanicus*, the apex of the aedeagus is differentiated in two triangular formations (Fig. 1F) which are missing in *P. helveticus* (Fig. 3F). In both species, the basystyle is covering the dististyle (Figs 1C, 3C).

In female genitalia, the tergites 8 and 9 are stronger chitinized in *P. helveticus* (Fig. 4B) than in *P. germanicus* (Fig. 2B). In the latter species large median parts of the hypogyne, from base to apex, are weakly chitinized (Fig. 2A), whereas in *P. helveticus* this is so in the outer half only (Fig. 4A). In *P. germanicus* the cerci are oval-elongate (Fig. 2B), in *P. helveticus* they are oval-rounded (Fig. 4B). Regarding the gonapodema, the spermathecae and the copulatory chamber, both species show a characteristic appearance (Figs 2C-E, 4C, D) and differ in size, shape and in the chitinization of the surfaces.

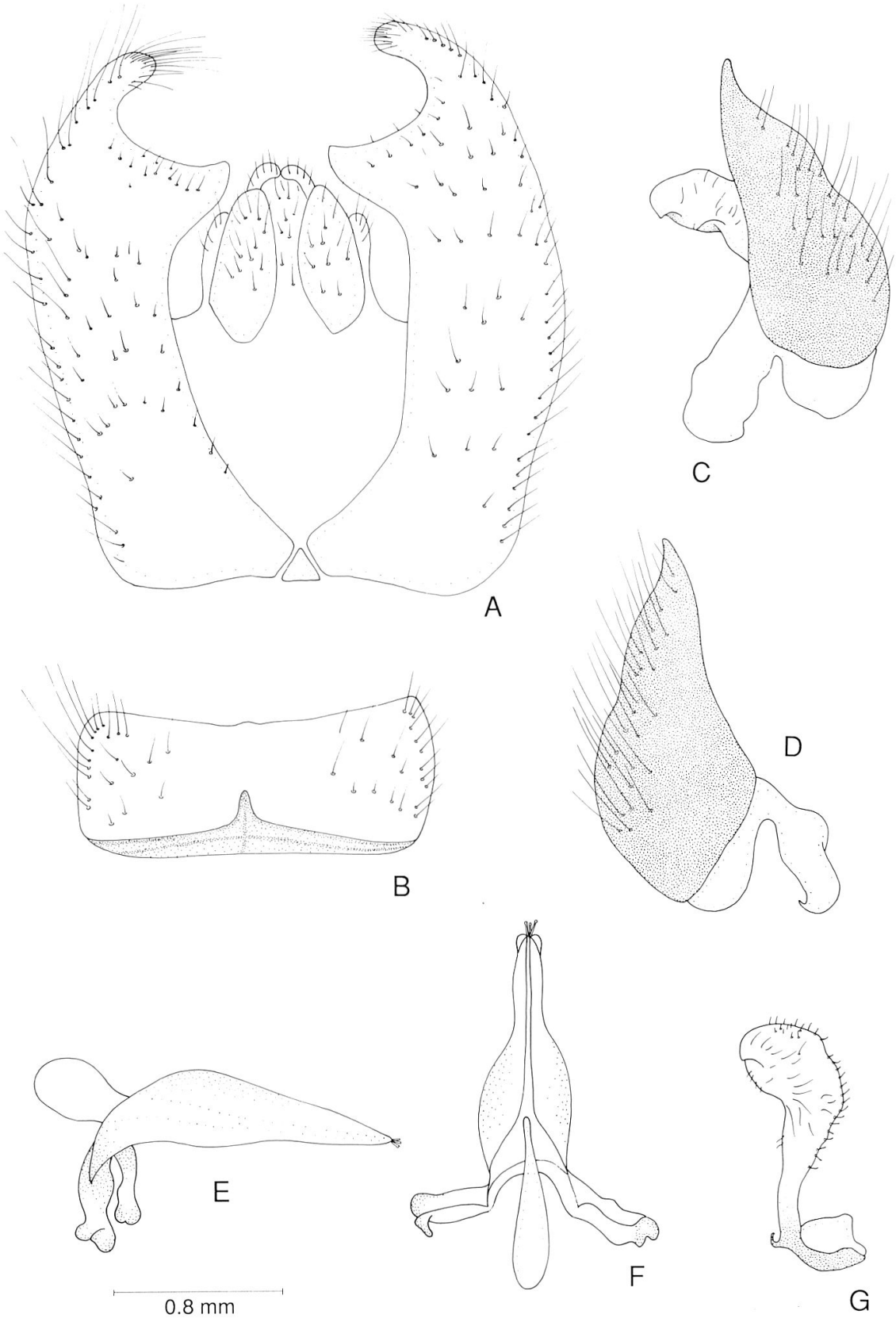

Fig. 1. *P. germanicus*: Epandrium with cerci and anal plate (A); hypandrium (B); gonopod (C); basistyle (D); aedeagus, lateral view (E); aedeagus, dorsal view (F); dististyle, lateral view (G).

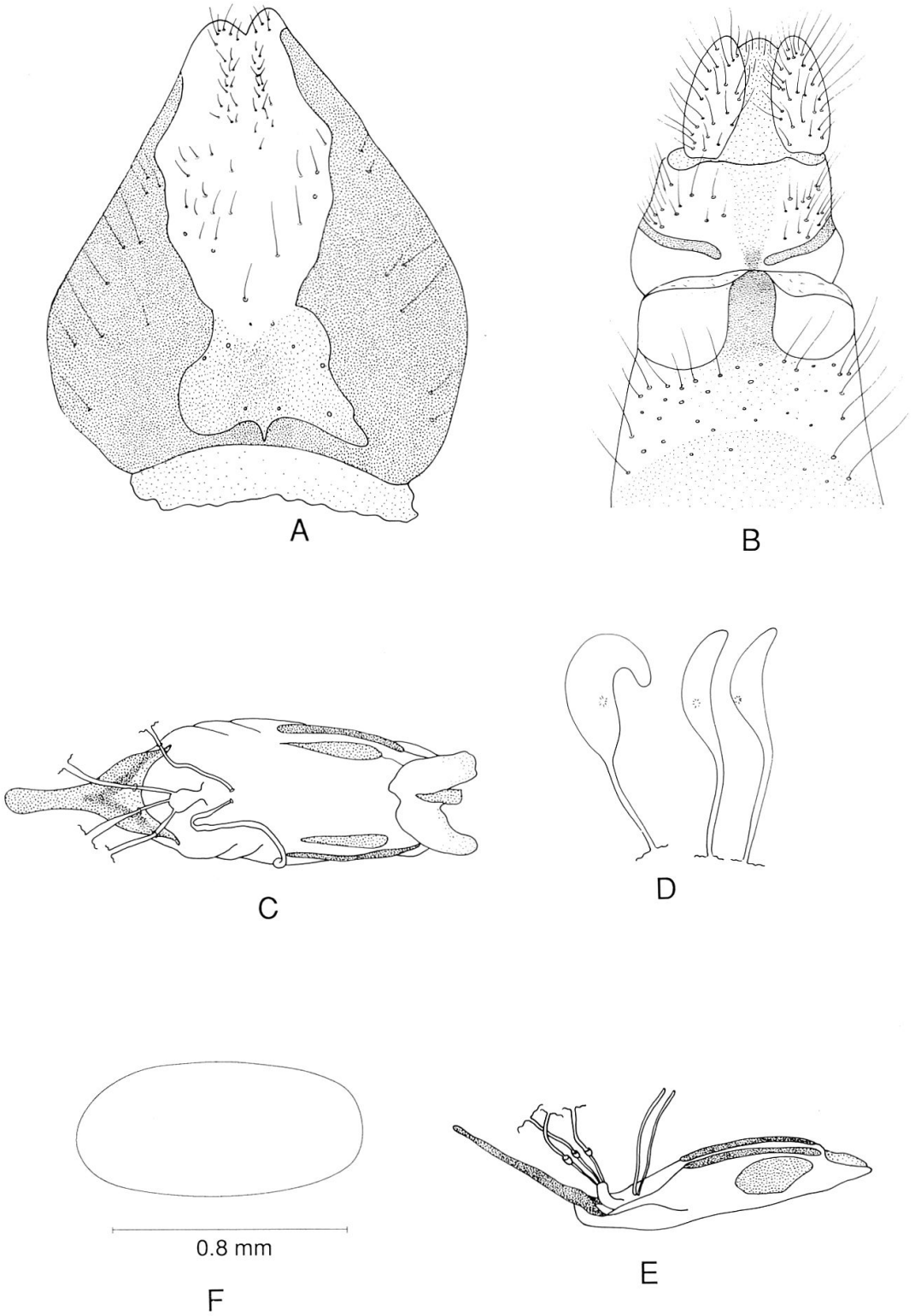

Fig. 2. *P. germanicus*: Hypogyne (A); Ovipositor (B); gonapodema and accessory glands in dorsal view (C); spermathecae in lateral view (D); gonapodema and accessory glands in lateral view (E); egg (F).

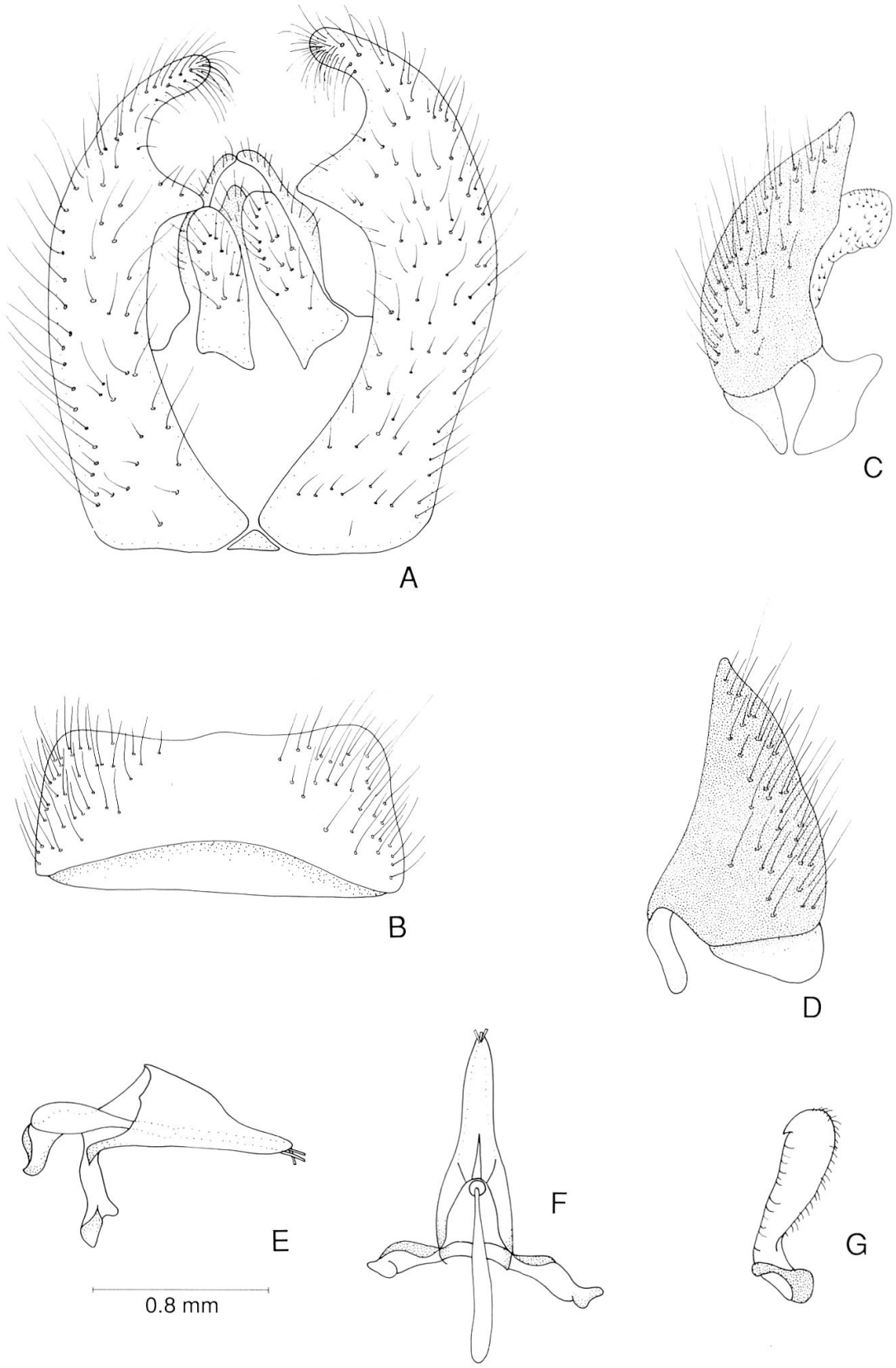

Fig. 3. *P. helveticus*: Epandrium with cerci and anal plate (A); hypandrium (B); gonopod (C); basistyle (D); aedeagus, lateral view (E); aedeagus, dorsal view (F); dististyle (G).

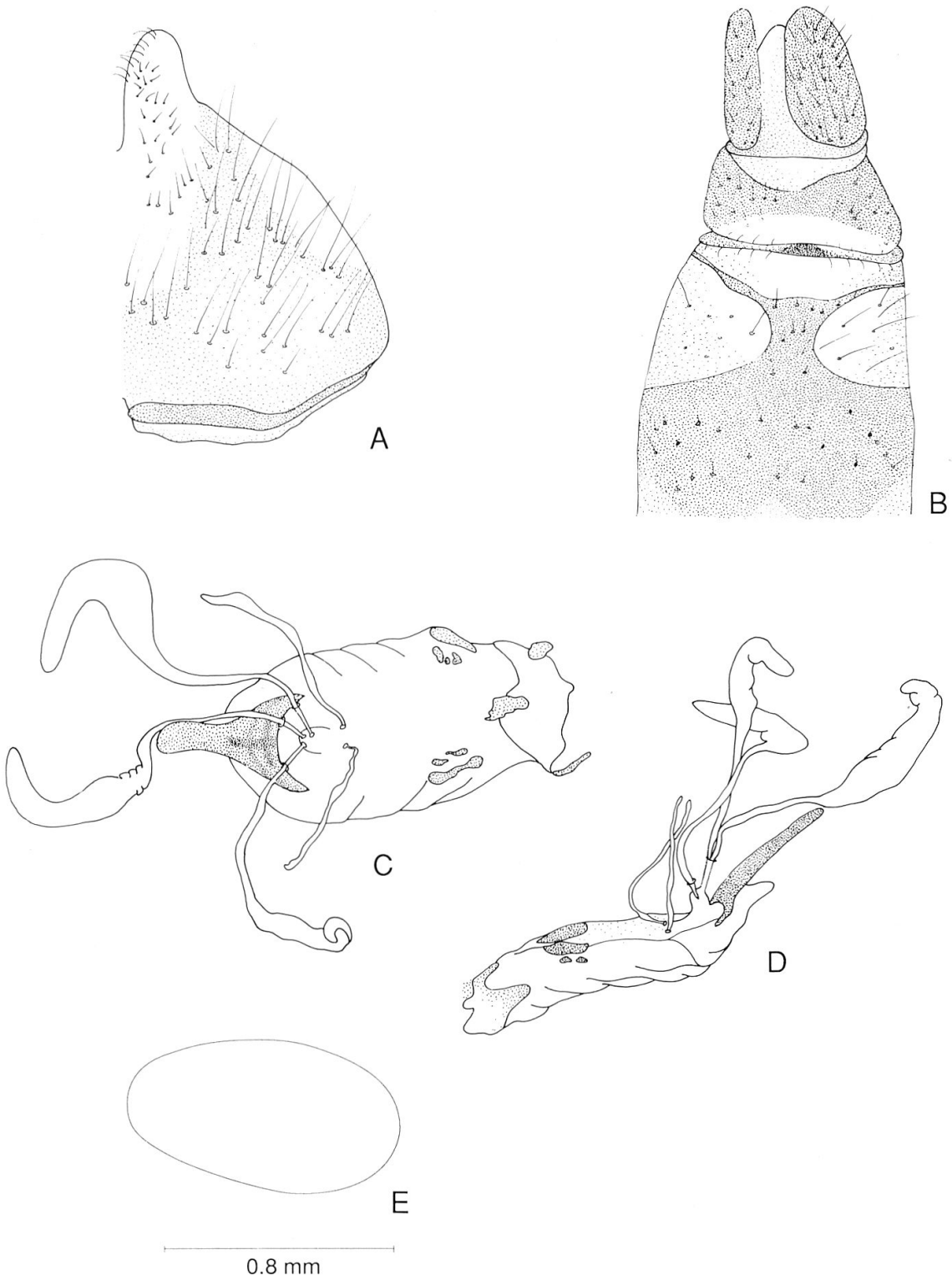

Fig. 4. *P. helveticus*: Hypogyne (A); Ovipositor (B); gonapodema, accessory glands and spermathecae in dorsal view (C); the same, in lateral view (D); egg (E).

The color of the gibbosity, of the abdominal bristles as well as the presence of yellow spines on the legs are of taxonomic value, but there is some variability:

- both species have black and yellow spines at the femora;
- in *P. germanicus* ♂, some specimens may have one or two yellow spines at the tibia and the tarsus, on one leg only;
- in *P. helveticus* ♂, yellow spines are present at all tibiae and tarsi in various numbers, but occasionally may be missing on the hind leg;
- in *P. germanicus* ♀, no yellow spines on the tibia and tarsi have been observed till now;
- in *P. helveticus* ♀, one or several yellow spines have been found on both hind tibiae;
- in *P. germanicus*, the gibbosity is white-yellow, with several black bristles in the upper corners, the lateral abdominal pilosity is yellow on tergites 1 to 4, and black on the other tergites;
- in *P. helveticus*, the black bristles of the yellowish gibbosity are restricted to few bristles along the upper border and the upper side margin, the lateral abdominal pilosity is only yellow or is dominantly yellow on tergites 5 to 8.

CONCLUSIONS

The differences in the color of some bristles and, particularly those found in the shape of the genitalia, are considered to be constant enough for characterizing two different taxa. In addition, the specimens checked have been collected at localities which cannot be attributed to different subspecies areas. Therefore, *P. helveticus* is given full species rank.

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