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Revision of the *maculata*-group of *Phyllodromica*: species from Central Europe (Insecta: Blattodea: Blattellidae: Ectobiinae)

Horst Bohn [1,*] & František Chládek [2]

[1] Zoologische Staatssammlung München, Münchhausenstrasse 21, 81247 München, Germany [bohn@zi.biologie.uni-muenchen.de]

[2] Bratři Čapků 12, 602 00 Brno, Czechia [fchladek@seznam.cz]

* Corresponding author

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> Abstract

The Central European species of the *maculata*-group of *Phyllodromica* are revised comprising six known species (*Phyllodromica chladeki*, *P. harzi*, *P. hungarica*, *P. maculata*, *P. marani*, and *P. transylvanica*) and three new species (*P. latipennis* from Slovakia and Hungary, *P. halterisignata* and *P. variabilis* from Romania). A short characterization of the group is given and all species are described and depicted with their main characteristics; the geographic distribution of the species is shown on several maps; determination keys allow the identification of males and females. *P. dobsiki* has turned out to be a junior synonym of *P. hungarica*. Similarly, the name *Blatta maculata* Schreber, 1781, is most likely a junior synonym of *Blatta schaefferi* Goeze, 1778; the authors propose to consider *schaefferi* as a nomen dubium and to retain *maculata* as the valid name.

> Key words

maculata-group, *Phyllodromica*, Blattodea, Blattellidae, Ectobiinae, new species, new synonym, wing, tegmen, tergal gland.

1. Introduction

The cockroach subfamily Ectobiinae is in the Westpalearctic region mainly represented by the genera *Ectobius* Stephens, 1835 and *Phyllodromica* Fieber, 1853. Both genera are rich in species, which makes splitting into various subgenera or genera desirable. In few cases, smaller groups of species with strongly deviating characteristics have already been separated, for example, *Capraiellus* (Harz, 1976) from *Ectobius*, and *Luridiblatta* (Fernandes, 1965) from *Phyllodromica*. A prerequisite for further division is the characterization of presumable monophyletic species groups. First attempts in this direction were successfully made by Failla & Messina (1978) with the species of *Ectobius* occurring in Italy, and later continued by Bohn (1999 and earlier) with *Phyllodromica* species of the Iberian peninsula.

The present paper applies to a group of species of the genus *Phyllodromica*, which is mainly distributed in southeastern Europe, the *maculata*-group. The species are obviously thermophilic and often found in the grassy vegetation on southerly exposed slopes of hills. Their body is mainly darkly coloured, and their tegmina – in the male reaching the abdominal end, in the female scarcely surpassing the metanotum – also have striking dark markings. The males are characterized by a very specific differentiation of some of the abdominal tergites, especially of tergite 7 with its glandular pit.

In Beier's "Catalogus Orthopterorum" (Princis 1971) the *maculata*-group of *Phyllodromica* is listed with seven species. Six of them have a rather restricted distribution within the area between the peninsula Krim and the Caspian Sea. Only *P. maculata* (Schreber, 1781) is indicated to have a much wider distribution reaching from the Ukraine in the SE, over the Balkans, Hungary, Slovakia, Austria and Czechia as far as Germany and Poland in the NW. Princis also

listed a subspecific taxon for this species, the variety *schaefferi* (Goeze, 1778), by other authors considered as a subspecies.

Since the publication of the catalogue several new species of the *maculata*-group have been described, formerly possibly reported as *P. maculata maculata* or *P. m. schaefferi*: *P. chladeki* Harz, 1977; *P. harzi* Chládek, 1977; *P. marani* Chládek & Harz, 1980; *P. dobsiki* Chládek, 1996 (all from Slovakia); *P. hungarica* Vidlička, 1993 (from Hungary); and *P. transylvanica* Vidlička, 1994 (from Romania).

The taxonomic state of one of the new species, *P. marani*, is controversely discussed. VIDLIČKA & SZIRÁKI (1997) considered it as a junior synonym of *P. maculata schaefferi*. According to VIDLIČKA (2005) the two subspecies of *P. maculata* show a parapatric distribution: *P. maculata maculata* should occupy the northwestern part of the area including the republics of the former Yugoslavia as well as western Slovakia and Hungary, in the Southeast followed by *P. maculata schaefferi* occurring in central and eastern Slovakia and Hungary, in Romania and in the Ukraine. This interpretation, however, is in conflict with the fact that the locus typicus of *schaefferi* is situated near Regensburg (southern Germany).

Moreover, the distribution of *P. m. maculata* and *P. maculata schaefferi* in southern Europe as stated by VIDLIČKA is only based on reports from literature published long before the recent description of the new species. Most likely some of the newly described species or even still undescribed species may be found among the material reported from the republics of former Yugoslavia, from Romania and from the Ukraine. The intention of the authors to study material from these countries in the respective museums and collections was not realizable; inquiries at the most important local museums were without success; the only museum having some specimens from this region was the museum in Wien.

For a clarification of the distribution of the species of the *maculata*-group in southern Europe new collectings were inevitable and performed mainly during the years 2008/9 by B. and H. Bohn. They covered the following countries or parts of them: Austria, Croatia, Hungary, Romania (Siebenbürgen), Slovenia, and Slovakia. Some collectings have also been made in southern Germany (Bavaria) for the completion of the distribution data of *P. maculata* in Germany.

The results of the study of the material collected and of some additional material provided by museums and private collectors are pesented here in a revision of the species of the *maculata*-group occurring in Central Europe. The revision contains the redescription of six already known species and the description of three new species from Slovakia, Hungary and Romania. Emphasis is laid on characteristics not sufficiently taken into account in the previous descriptions: structures of abdominal tergites T6, T7 (including its glandular pit), and T10 and of male genitalia (phallomeres, especially a conspicuous lateral hook-like process). The extent of intraspecific variability in the colouration of the tegmina is also shown. The controversy concerning the taxa *maculata*, *schaefferi* and *marani* could be settled by a re-evalution of the validity of the names *maculata* and *schaefferi*.

A revision of the remaining species of the *maculata*-group from eastern Europe (Krim and Kaukasus) is in preparation.

2. Materials and methods

Preservation. The three-dimensional structure of tergite T7, important for the characterization of the species of the *maculata*-group, is usually heavily distorted by drying, which often cannot be reversed by a treatment with KOH. Therefore, preservation in fixing fluid is recommended, as is also true for other small-sized Blattodea. The newly collected material is preserved in 80% alcohol.

Microscopical preparations of cuticular structures. Anterior and/or posterior half of body without wings treated overnight with 10% KOH at 40°C, washed in dest. water, dissected in 70% alcohol, transferred to 100% alcohol followed either by Euparal diluent and mounted in Euparal on microscopic slides, or by xylol and mounted in Canada Balsam.

Size and size measurements. The length of the tegmina served as a reference for the size of the animals. The relative size of the tegmina is similar in all species; in the males they approximately reach the abdominal end. Adding about 1.5–2 mm to the length of the tegmina yields the approximate total length of males. The size differences between the species of the *maculata*-group are small and are of little significance for determination. The length of male tegmina varies between 5.8 and 6.4 mm in eight of the nine species; only *P. chladeki* has with 7.3 mm distinctly longer tegmina and is accordingly larger. For the measurements at least 10 animals were used per species and sex. In the figures the wings of all species are enlarged to the same extent thus allowing a direct comparison of the sizes. The enlargement of other structures varies between the species due to a necessary adjustment to the size of the print space.

Figures. In the figures the orientation of the structures is with the anterior end on top; dorsal tegumen-

tal structures (tergites = T) are shown in dorsal view, ventral ones (sternites = S) in ventral view. Deviations from this pattern are mentioned explicitly.

When viewing the images of T7 (with mound and glandular pit) it has to be taken into account that the shape of the gland did not allow an exactly horizontal mounting; instead the longitudinal axis usually inclines towards posteriorly. Thus, the surface of the anterior slope of the mound may become visible in cases with vertically or slightly posteriorly descending slope (Figs. 15F, 16A).

The dark colour of the abdominal tergites encumbers the photographic reproduction of surface structures like bristles and especially of structures situated below the external cuticle as is true for the glandular pouches of T7. The usual treatment with KOH already causes some lightening of the dark cuticle; when necessary, the tergites were futher lightened by prolonged treatment with this reagent. This appeared tolerable in view of the almost uniformly dark colouration. A characteristic colour pattern may only be found on T6, which is still recognizable after lightening.

Structural details and their abbreviations are exemplarily shown in the figures of *P. maculata* (Figs. 14 – 17) and only partially repeated in other figures.

Explanations to "Material studied". In the first author's own material the localities were given an identification code consisting of the acronym of the respective country (A Austria, D Germany, Hu Hungary, Ru Romania, Sw Slovakia) and the corresponding chronological locality number (D 1, D 2 …). Specimens used for a microscopical preparation are additionally provided with an individual number following the locality code after a slash (slide: D 1/1); animals bred from larvae are marked by an underlined locality number (D 1/2). Preparations made from specimens from other collections are designated with the acronym Bo and a chronological number (slide: Bo 1, Bo 2 …).

The localities of the material from Germany are ordered in a hierarchy of administration units: Bundesland (Federal State), Regierungsbezirk (RB), and Landkreis (LK) or Stadtkreis (SK). The first two units mentioned are each arranged following roughly their distribution from North to South, the latter units are listed alphabetically. For other countries only one subdivision is given: Austria (Federal State), Slovakia (Kraj), Hungary (Kom.), and Romania (Judeţ), the latter in alphabetical order, the others roughly according to their distribution towards the East. Within the lowest division the materials of various collections/museums are listed in the sequence shown below under abbreviations. The material of a given collection/museum is finally listed alphabetically according to the names of the localities (village, mountain, forest, nature reserve); the locality data within such a series are separated by semicolons.

The data of the labels of foreign material are reproduced as literally as possible, but the names of countries or political subdivisions listed anyway in the compilation are not repeated. The dates are reproduced in a standardized form. Additions by the authors are put in parentheses.

Diagnosis. The determination keys are almost exclusively based on wing features, therefore, the distinguishing features of the wings are not listed again in the diagnosis of a species.

3. Abbreviations

Collections and museums

C. Bo	Collection Horst Bohn, housed in ZSM, München (Germany)
C. Ch	Collection František Chládek, Brno (Czechia)
C. Ga	Collection Detlev Gasche, Jacobsdorf (Germany)
C. Kn	Collection Thomas Knebelsberger, Wilhelmshaven (Germany)
C. Ko	Collection Alois Kofler, Lienz (Austria)
C. Th	Collection Konrad Thaler, Innsbruck (Austria)
C. Vi	Collection Ľubomír Vidlička, Bratislava (Slovakia)
M. Ba	Naturkunde-Museum Bamberg (Germany)
M. Be	Museum für Naturkunde Berlin (Germany)
M. Ge	Muséum d'histoire naturelle Genève (Switzerland)
M. Gö	Senckenberg Museum für Naturkunde Görlitz (Gemany)
M. Kl	Landesmuseum für Kärnten, Klagenfurt (Austria)
M. Le	Naturkundemuseum Leipzig (Germany)
M. Li	Oberösterreichisches Landesmuseum, Linz (Austria)
M. Th	Technische Universität Dresden, Institut für Forstbotanik und Forstzoologie, Tharandt (Germany)
M. Wi	Naturhistorisches Museum Wien (Austria)
ZSM	Zoologische Staatssammlung München (Germany)

Other abbreviations

L	larva, nymph
ex L	bred from larva
O	ootheca
Pt	paratergite
S	sternite
S7	sternite 7, subgenital plate of female
S9	sternite 9, subgenital plate of male
T	tergite
T10	tergite 10, supraanal plate

4. The identity of *Blatta schaefferi* Goeze, 1778

In 1766 and the following years J.C. Schaeffer published a book (in three volumes) containing pictures of various insects which he had collected in the surroundings of Regensburg (Bavaria, Germany). Among them is a cockroach which he called "Blatta quarta" (name not binary) (SCHAEFFER 1769: plate 158, fig. II in vol. 2). Later, GOEZE (1778) described the depicted animal as a new species, *Blatta schaefferi*; accordingly, the animal shown in the above mentioned figure has to be considered as type of the new species with the type locality Regensburg. The authorship of the name *schaefferi* was, for a long time, erroneously attributed to Gmelin (1789, see in PRINCIS 1971) till PRINCIS (1971) clarified the situation in favour of Goeze.

Subsequently, *schaefferi* was interpreted as a subtaxon of *Phyllodromica maculata* (Schreber, 1781), either as a variety (var. *schaefferi*: FISCHER 1853; PRINCIS 1965, 1971), as a form (f. *schaefferi*: HARZ 1976; CHLÁDEK & HARZ 1980), as a morph (m. *schaefferi*: BEY-BIENKO 1950), or as a subspecies (ssp. *schaefferi*: EBNER 1930; VIDLIČKA & SZIRÁKI 1997; VIDLIČKA 2001, 2005).

GOEZE's (1778) description is very short: "minuta, *thoracis elytrorumque* margine flavescente, *pedibusque* luteis, *femoribus* nigris". FISCHER (1853), obviously the first author to consider *schaefferi* as a variety of *P. maculata*, defined the differences between the variety and its nominal form: the latter is said to have two large dark patches on the tegmina, in the former the tegmina should be almost completely dark with yellowish borders. The subsequent authors obviously followed FISCHER's diagnosis.

Since its first description *schaefferi* has been reported repeatedly from Poland, Slovakia, Hungary, Romania, and Ukraine (see VIDLIČKA & SZIRÁKI 1997; VIDLIČKA 2001, 2005). But it has never been found again in Germany; on repeated collectings of the first author at the locus typicus and in the further surroundings only *maculata* s.str. was found.

CHLÁDEK & HARZ (1980) described a new taxon belonging to the *maculata*-group, *marani*, clearly differing from *maculata* in the structure of the ootheca. Differences in other characters between the two taxa or to *schaefferi* (by the authors only considered as a forma of *maculata*) were not indicated. They found *marani* in central and eastern Slovakia and assumed that the reports of *schaefferi* from Poland and Romania also refer to this taxon. CHLÁDEK & HARZ (1980) first treated *marani* as a subspecies of *maculata*, but later CHLÁDEK (1998) raised it to species rank.

In his paper about the species of the *maculata*-group VIDLIČKA (1994) pointed out the differences in wing shape and colouration between *maculata* and *marani*. *Schaefferi* was not treated or mentioned in this paper, but later Vidlička synonymized *marani* with *schaefferi* without giving the reasons for this decision (VIDLIČKA & SZIRÁKI 1997; VIDLIČKA 2001, 2005).

It is confusing that at the locus typicus of *schaefferi* (Regensburg) only *maculata* can be found and that the nearest localities with reliable reports of *marani*/*schaefferi* are situated in Slovakia as far as about 400 km east of Regensburg. This poses the question whether the animal depicted by SCHAEFFER (1769) was really a *schaefferi* sensu FISCHER (1853) and VIDLIČKA & SZIRÁKI (1997).

The respective figure shows the animal only slightly enlarged (11 mm as compared to about 8 mm natural size), scarcely allowing the reproduction of finer details. Moreover, the figures in the book are coloured by hand and, therefore, differences between the various copies are to be expected. Three copies were available to us, and the differences within the small sample were considerable. In two of the examples (Fig. 1A,B) the tegmina appear more or less dark; the variously extended yellowish-tinged areas certainly only indicate reflecting light rather than true colouration; there is a lightly coloured longitudinal stripe laterally at the abdomen, but it is – in the authors' opinion – situated below the tegmen and presumably only demarcates the lateral edge of the abdomen. In the third example (Fig. 1C) an additional light stripe is present in the middle between the tegmina which can be interpreted either as mere delimination between the two tegmina, or as a light marginal stripe along the posterior border of the tegmina. GOEZE's (1778) description ("tegmina with yellowish margins") was probably based on a similar example.

As a consequence, the reproductions of SCHAEFFER's picture are not consistent and unequivocal enough to give clear evidence for the distinction of *schaefferi* and *maculata* as defined by FISCHER. There is no reason to assume that the template of SCHAEFFER's figure was a taxon different from the one which is still frequently found in the surroundings of Regensburg, namely *Phyllodromica maculata* (Schreber, 1781). The large dark patch on the otherwise transparent tegmina, characteristic of this species, is not easily seen when the tegmina are attached to the dark abdomen as is the case in SCHAEFFER's picture.

Of the two names obviously referring to the same species, *schaefferi* and *maculata*, the first should have priority over the second, and, as a consequence, the commonly used *maculata* should be replaced by *schaefferi*. However, the uncertainties connected with the name *schaefferi* strongly argue against the nomen-

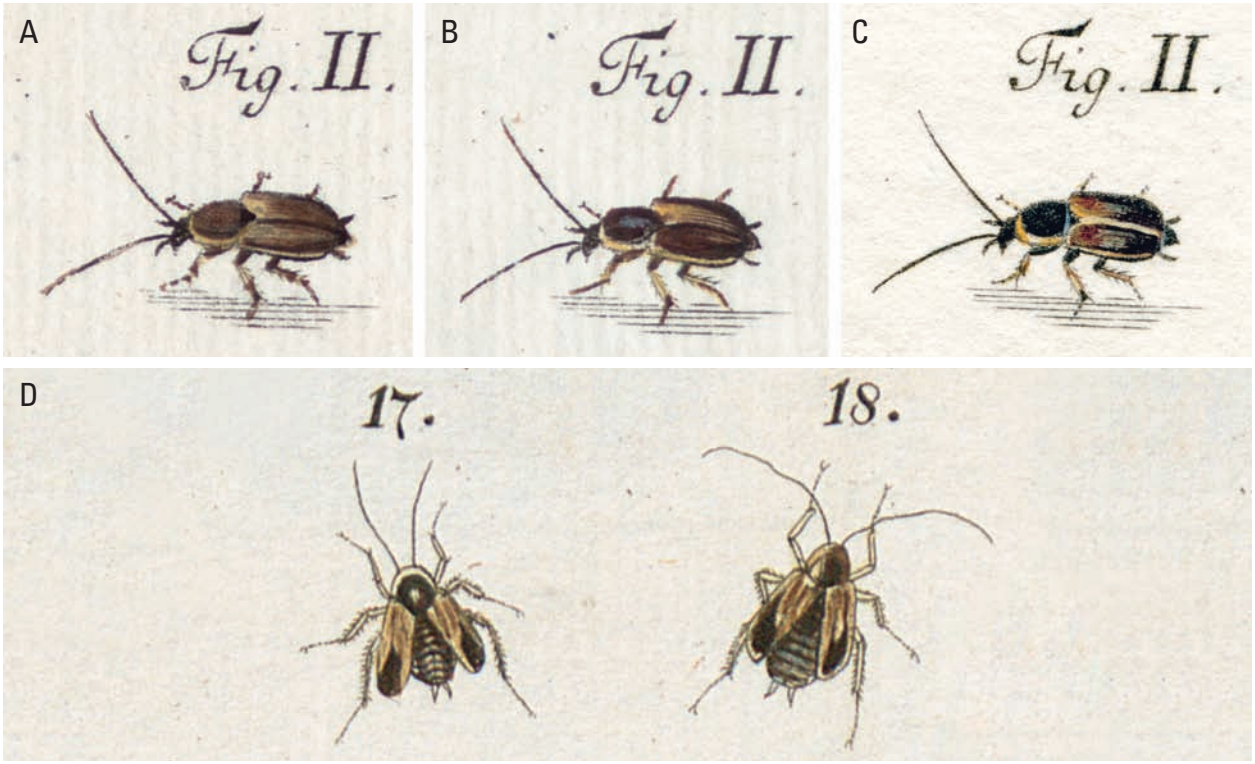

Fig. 1. A–C: Images of "Blatta quarta" from three different copies of J.C. Schaeffer's "Icones insectorum circa Ratisbonam indigenorum …" (SCHAEFFER 1769). An image of "Blatta quarta" in Schaeffer's book (plate 158, fig. II) served as template for the description of *Blatta schaefferi* by GOEZE (1778). **D**: Images of *Blatta maculata* from SCHREBER's (1781) description of the species.

clatorial change. As in *schaefferi*, no type specimen is available for *maculata* but the author (SCHREBER 1781) presented a good description and an instructive drawing allowing an exact determination (Fig. 1D). We, therefore, propose to consider *schaefferi* as a nomen dubium, and *maculata* as the valid name.

The considerations presented above show that the synonymization of *marani* with *schaefferi* by VIDLIČKA & SZIRÁKI (1997) is unjustified; these authors erroneously considered Slovakia as terra typica of *schaefferi*. Even if we assume that the specimen depicted by SCHAEFFER (1769) was a species different from *P. maculata* and accept the description of GOEZE (1778) as appropriate it would not be justified to synonymize *marani* with *schaefferi*; most of the recently described *Phyllodromica* species (*P. halterisignata*, *P. hungarica*, *P. latipennis*, *P. transylvanica*, *P. variabilis*) likewise conform to this description.

5. Characterization of the *maculata*-group of *Phyllodromica*

The following characterization applies to the species occurring west of the Krim. In some of the characters differences to the eastern species are to be expected; they will be treated in the planned revision of these species.

Wings. Tegmina well sclerotized, usually with indistinct venation. Tegmina in the male almost reaching the end of the abdomen, distally narrowed to a variously broadly rounded apex, apical narrowing mainly along the anterior margin; apex, therefore, asymmetrically rounded (Fig. 14A–D). Tegmina of female reaching or slightly surpassing T2, transversely or slightly obliquely cut, with rounded corners, apex similarly asymmetrical as in male (Fig. 14G–J); apical border sometimes slightly concave (Figs. 2F,G, 23D). Hindwings in both sexes vestigial, not surpassing T3 (in living or alcohol fixed animals), varying between being very thin, predominantly membraneous and transparent with only some basal sclerotization (Figs. 6D, 18F), and rather thick and well sclerotized throughout, characterized by a brownish colouration (Figs. 12D, 14E); since, however, membraneous wings may also be darkly pigmented (Fig. 18C) the differences are not always recognizable on photographs. Posterior border of hindwing between apex and anal fold usually slightly concave (Fig. 14E,F); folded anal field in most species very narrow, occupying much less than half of the breadth of the wing (**af**

in Fig. 14F). In the males of some species the apical part of the hindwings is elongated and the complete wings are curved posterad (Fig. 9A–D,F–I). In the appertaining females the curvature is only indicated by the anterior border of the wing showing a more or less regular convexity throughout its length (Fig. 9E,J); furthermore, the posterior border of the apical part is in one line with the anal fold. In females not having curved hindwings this border forms an angle with the anal fold (Fig. 12G,H).

Legs. Not differing from other representatives of the genera *Phyllodromica* and *Ectobius*. Front femur at the antero-ventral edge with 2–3 proximal, 2 distal spines, and tiny bristle-like spinules in between (Type B2), postero-ventral edge with 1 distal spine, knee spine absent; middle and hind femora at both edges with 1 distal spine and 0–2 more proximal spines, knee spine present. Tarsi with euplantulae (pulvilli) on the 4 proximal tarsomeres of all legs, claws asymmetrical and unspecialized, arolia well developed.

Male abdomen. ***Tergites***. Abdomen specialized, with a large glandular pit on T7. **T2–6** in anterior-posterior extension rather short, with scarcely produced, angularly rounded latero-posterior corners and a well developed transversal ridge (**tr**) – in T6 mesally often with a prominent anterior deflection – dividing the surface into a slightly shorter anterior and a longer posterior part (Fig. 15A–C). Anterior part more or less plane, only with smaller normal bristles, near the anterior border on T3–6 with numerous glandular pores (**gp**), which are especially large and numerous in *P. hungarica* (Fig. 10A–C); posterior part vaulted to a kind of transversal bulge covered with dispersed, rather long spatular bristles (bristles not narrowing to an acute tip, but band-like with a truncated, sometimes slightly broadened tip). Laterally, the region of the insertion of the dorso-ventral muscles between transversal ridge and bulge lowered to the transversal trench (**tt**, Fig. 15C). Bulge and trench towards the middle usually fading away; trench most distinct in T6, weakening towards anteriorly. In part of the species bulge in T6 not completely disappearing in the middle but only narrowing, in a wide **arc** (Fig. 5C) enclosing the unpaired semicircular depression (**sd**). Anterior border of the tergites mesally usually with an angular or rounded notch (**no**), strongest on T6 and diminishing towards anteriorly (Figs. 3A–C, 5A–C). Mesal parts of the tergites deflected ventrally (Fig. 13A–C), together forming a rather deep **longitudinal trough** on the dorsal surface of the abdomen, deepest and broadest on T6 (comprising about half of the breadth of the tergite), narrowing and flattening towards anteriorly, fading away on T3 or T2; the trough is posteriorly closed by the anterior slope of the mound of T7. The trough obviously serves to take up part of the secretions produced by the glandular pit of T7 and to present them to the female during courtship behaviour. The transfer of the glandular secretions has to take part via the posterior border of T6 which is in contact with the opening of the gland (Fig. 15D). Accordingly, the posterior part of T6 is in the middle still futher lowered to the more or less semicircular depression (**sd**) of the breadth of the gland's opening, with steeply ascending anterior wall, posteriorly open (Fig. 7C). Bottom of the depression weakly sclerotized, posterior border often rounded bilobed (median lobes, **ml** in Figs. 11C, 15C).

T7 and T8 much longer than preceding tergites, without a transversal ridge. **T7** with posterior border on both sides convexly curved into a deep median incision (**mi** in Fig. 15E). Surface of the tergite inclining mesad and anterad to a variously high **mound**. At some distance from the anterior border (at about one third of the tergite length) the further inclining towards anteriorly is restricted to the median part of the tergite (about one half of the tergite breadth), the mound thus elevates above the level of the lateral parts of the tergite giving rise to rather sharp edges as lateral limitations of the mound (lateral edge of the mound, **le** in Figs. 3F, 12I, 16A). The mound reaches its highest level near the anterior border of the tergite or still more anteriorly in a more or less transversal crest (**cr** in Figs. 3F, 15F, 21E) from which it declines in a steep slope (anterior slope, **as** in Figs. 5F, 7E, 16A, 25D) to the dorsal trough ending there at the posterior border of the opening of the glandular pit thus forming the posterior closure of the trough. Depending on the position of the crest the anterior slope may show either a steep decline towards anteriorly, or an almost vertical descent, or even a posterior excavation thus modelling an overhanging crest. (For the interpretation of the figures showing the anterior slope see "Figures" in chapter 2.) Anterior slope and the adjoining lateral surfaces of T7 meet at an angle thus forming on each side a triangular gutter (**gu**) beginning at the base of the lateral edge and running anteriorly down towards the opening of the glandular pit (Figs. 3F, 12I, 16A, 18G). In part of the species the mound and its crest is to a varied degree divided by a longitudinal median depression (**md** in Figs. 7E, 15F); the depression may be very narrow and deep and may thus give the impression that the tergite is longitudinally split by a cleft (**ct** in Figs. 10F, 12I, 18G). Cuticle of the tergite more or less rugose (Fig. 15E,F), sometimes with prominent folds, covered with strong spatular bristles except at the latero-anterior corners, at the anterior slope of the mound sometimes weakly sclerotized, with smaller and normally shaped bristles, or almost membraneous, without bristles (Figs. 11E, 13F). **Glandular pit** with a transverse, semicircular or rounded-trapezoidal dor-

sal opening (**o**) situated anteriorly of the anterior border of T7 (Figs.15D, 16B), below the opening deeply invaginated to the central part of the pit, which is bipartite thanks to a variously broad and high, rounded, longitudinal median ridge (**mr**) arising from the bottom of the pit (Figs. 13F, 16C). Central part of the pit on both sides of the ridge anteriorly and posteriorly excavated to quite extended pouches (**ap**, **hp** in Figs. 7F, 16C). Ridge, mainly on the sides, densely covered with relatively strong bristles with a curved tip, remaining parts of the pit provided with fairly straight, thinner and longer bristles, especially dense in the anterior pouches (Fig. 16C). The opening of the gland is – at least in fixed animals – for the most part covered by T6 (Fig. 15D); presumably, the opening becomes fully exposed during the transfer of the glandular secretions into the dorsal trough.

T8 (Figs. 3G, 15G) more or less trapezoidal, lateral borders anteriorly more or less straight or slightly concave diverging posterad, following part convex, broadly rounded, latero-posterior corners angularly to very broadly rounded, posterior border shallowly concave or weakly obtuse-angularly excised; surface usually with a faint medio-longitudinal ridge, towards the corners with a large, very shallow concavity; cuticle covered with mostly spatular bristles, latero-anterior corners without bristles, near the anterior border medio-laterally with some oblique folds converging posterad (**f**). **T9** (Fig. 15H) with posteriorly elongated paratergites forming distinct lateral lobes (**ll**), posterior border broadly rounded; central part with small normal bristles. **T10** (supraanal plate) with posterior lobe (behind the insertion of the cerci) very short, almost transversely cut, posterior border variously shaped; surface often with glandular pores, towards the posterior border with few small, normally shaped bristles. Cerci (**c**) with 9–10 annuli, relatively stout, lanceolate (Figs. 15J, 17F).

Sternites. **S9** (subgenital plate, Fig. 16D) asymmetrical, with a short unspecialized left stylus (**s**), anterior apodemes (**aa**) relatively short and broad, left one slightly longer than the right. Praeparaprocts (**pr**, Fig. 17A) similar as in the *sylvestris*-group of *Ectobius* (Bohn 2004: fig. 11A), club-shaped, the right longer than the left. Paraprocts (Fig. 17A). Right paraproct with a rather long and strong spine (**sp**), medio-anterior arm (**ap**, in Fig. 17A only) of the right paraproct relatively narrow, curved.

Genitalia. Phallomeres. Left phallomere (Fig. 16D–H) with a spatular endophallic apodeme (**ea**) and a hook (**h**) (hla, with L3 sclerite) with a long broad shaft (**sh**) bearing a longitudinal trough (**t**) of almost the breadth of the shaft, apically followed by the narrowing neck (**n**) and a variously shaped claw (**cl**); base of claw with a membraneous process (velum, **v**) in opposite direction to the claw, shaft at the margin of the trough below the tip of the claw often with a denticle-like process (denticle, **d**). Right phallomere (Figs. 16D, 17B) with a well developed **R3** sclerite and a rather small cleft sclerite (**cs**). Helmet sclerite (**hs**) forming a flat, scarcely sclerotized membrane densely covered with tiny scale-like structures (Figs. 16D, 17C–E).

Female abdomen. ***Sternites***. **S7** (subgenital plate, Fig. 17I) anteriorly with two short triangular apodemes, posteriorly broadly rounded, in the middle with a distinct notch or recess.

Genitalia. Dorsal complex (Fig. 17F,G) with basivalvular sclerites (**bv**, **bd**) anteriorly converging but not fusing medially, in the middle of the length with a mesal excurvation, dorsal pair (**bd**) anteriorly narrowing to a rather fine tip. Ventral complex similar as in other species of the genus (Fig. 17H, for a more detailed explanation see Bohn 1999).

Colouration. ***Male***. Pronotum with a rounded or semicircular dark disk and yellowish-transparent margins which are laterally rather broad, anteriorly and posteriorly narrow or missing. Tegmina yellowish-transparent with striking dark markings, or mostly dark with yellowish margins. Remaining body mainly dark, in some positions often lightened to light brown or yellowish: Interocular space, small area around the antennal sockets, parts of clypeus and labrum on the head; coxa-trochanter and femur-tibia joint, basal parts of first tarsomeres; posterior and lateral margins of tergites, central parts of T7 and T8.

Female. Similar as in the male, but often much more lightly coloured: legs sometimes almost completely yellow, tergites and sternites of abdomen with yellowish lateral and posterior margins.

6. Keys for determination (mainly wing features)

In the following keys only the western species are treated. Five of the six species occurring on the Krim and furher east – *P. adusta* (Fischer v. Waldheim, 1846), *P. euxina* Bey-Bienko, 1950, *P. polita* (Krauss, 1888), *P. retowskii* (Krauss, 1888), and *P. schelkovnikovi* (Burr, 1913) – are distinguished from the western species by the yellow colour of the legs in the male sex; the males of the western species have almost completely dark legs. The sixth of the eastern species – *P. kiritshenkoi* Bey-Bienko, 1950 – also has dark legs in the male; it is, however, well characterized by the unique venation of the tegmina: the costal

field is very long and provided with many fine transversal veins.

6.1. Males

1 Apical part of hindwings (distally of anal field) elongated, wings curved posterad (Fig. 9A–D, F–I) **2**
– Apical part of hindwings not elongated, hindwings not curved (Fig. 14E,F) **4**
2 Tegmina usually with a large dark patch in the apical half or third and a small darkening at the base, very rarely the dark area extends as a band up to the base, in the latter case the basal half of the band is strongly narrowed and lighter in colour (brownish); only tip of hindwings dark, dark area along the anterior border slightly elongated towards the base (Fig. 6A–E) ..... ***Phyllodromica harzi***
– Tegmina always with a continuous, uniformly dark band which may be narrowed in the middle; apical dark area of hindwings more extended, dark area in the middle elongated towards the base **3**
3 Tegmina apically rather narrowly rounded, dark band strongly dumbbell-shaped by a deep median constriction (Fig. 4A–D) ..... ***Phyllodromica halterisignata***
– Tegmina apically broadly rounded, dark band not dumbbell-shaped, but anteriorly often towards the middle with a shallow obtuse-angular excision (Figs. 8A–E, 9A–D,F–I) ..... ***Phyllodromica hungarica***
4 Tegmina in the apical half with a large oval dark patch, mostly reaching the apical border, but widely separated from the anterior border, base often also with a smaller dark patch, both possibly connected by a dark stripe near the posterior border, anterior margin in the middle with a strong ventral deflection (Fig. 2A–E) ..... ***Phyllodromica chladeki***
– Tegmina either with a continuous dark band from the base to the apex or with a large dark patch in the apical half reaching the anterior border or ending close to it, anterior margin without or with a very weak ventral deflection in the apical third of the tegmina **5**
5 Tegmina in outline almost rectangular, with broadly rounded apex (Figs. 12A, 14A) **6**
– Tegmina in outline fairly triangular, with narrowly rounded apex (Figs. 20A, 22A) **8**
6 Tegmina in the apical half with a large dark patch, often also with a smaller dark marking at the base, both patches variously extended and occasionally connected by a dark stripe along the main veinal stem, but never fused completely to a continuous band (Fig. 14A–F) ..... ***Phyllodromica maculata***
– Tegmina with a broad dark longitudinal band extending from the base to the apex, anteriorly and posteriorly with variously extended yellowish margins **7**
7 Tegmina with anterior and posterior borders fairly parallel, apex very broadly, almost symmetrically rounded, anteriorly at the base with a broad yellowish margin extending usually well beyond the costal field; hindwings large, reaching up to the posterior border of T3, anal field occupying nearly the full breadth of the wing, with distinct veins, wings predominantly membraneous, apically rather dark, remaining parts lighter in colour (Fig. 18A–C) ..... ***Phyllodromica marani***
– Tegmina with anterior and posterior borders diverging in the basal two thirds of their length, tegmina, therefore, broadest beyond the middle, apex broadly, strongly asymmetrically rounded, anterior yellowish margin not extending beyond costal field, the latter also often variously darkened; hindwings smaller, not surpassing the posterior border of T2, anal field smaller, scarcely reaching half of the wing breadth, with or without visible veins, wings well sclerotized, darkly coloured throughout (Fig. 12A–D) ..... ***Phyllodromica latipennis***
8 Supraanal plate with posterior border broadly rounded, not pointed in the middle (Fig. 21I); tegmina with anterior border regularly rounded throughout, in outline ovally triangular, usually with a dark longitudinal band decreasing in breadth apicad, lighter margins reddish, only costal field yellowish, branches of radius well visible, sometimes dark band very broad, leaving only narrow lighter margins; hindwings with a very short apical part, anterior border curved throughout (Fig. 20A–E) ..... ***Phyllodromica transylvanica***
– Supraanal plate with posterior border in the middle distinctly pointed (Fig. 24I); anterior border of tegmina at a fourth of the length with a shoulder where the anterior border turns from diverging to converging with the posterior border, tegmina in outline more triangular, either with a dark longitudinal band occupying nearly the full breadth of the wing or dark area variously reduced, in the extreme only with a large dark patch in the apical half of the tegmina; apical part of hindwings longer, anterior border in the basal half straight or slightly concave (Figs. 22A–G, 23A–J) ..... ***Phyllodromica variabilis***

6.2. Females

1 Tegmina with a dark, uninterrupted band extending from the base to the apex **2**

– Tegmina either with a dark band that is partially lightened or with isolated dark patches **7**

2 Dark band of tegmina strongly narrowing towards the posterior-apical corner **3**

– Dark band of tegmina not strongly narrowing towards the posterior-apical corner, but often with a slight constriction or narrowing beyond the subcostal vein **4**

3 Dark band ending at some distance from the apical border, background colour orange, costal field yellowish; hindwings with very short apical part, posterior border of the latter at an angle to the anal fold, tip not darkened (Fig. 20F–H) ..... ***Phyllodromica transylvanica***

– Dark band reaching the apical border, background colour yellowish, only in the apical-anterior corner orange tinged; hindwings with longer apical part, posterior border of the latter in one line with the anal fold, tip slightly darkened (Fig. 4E–H) ..... ***Phyllodromica halterisignata***

4 Hindwings: posterior border of apical part in one line with the anal fold (Figs. 8F–J, 9E,J) ..... ***Phyllodromica hungarica***

– Hindwings: posterior border of apical part at an angle to the anal fold **5**

5 Hindwings not drop-shaped; anal fold fairly straight and parallel to the anterior border of the wing; dark band of tegmina at the anterior border beyond the subcosta with or without an excision (Fig. 22 H,I,L) ..... ***Phyllodromica variabilis*** (partly)

– Hindwings drop-shaped; anal fold curved, apicad more or less diverging from the anterior border of the wing **6**

6 Hindwings well sclerotized, mainly dark; dark band of tegmina at the anterior border beyond the subcosta never with an excision or a narrowing (Fig. 12E–H) ..... ***Phyllodromica latipennis***

– Hindwings membraneous, mainly lightly coloured, with only weak darkenings at the apex and the anal field; dark band of tegmina beyond the subcosta apicad always with an excision or narrowing (Fig. 18D–F) ..... ***Phyllodromica marani***

7 Dark band of tegmina in the basal half posteriorly lightened, mainly along the veins, leaving a pattern of interveinal dark spots (Figs. 22J,K, 23C,G) ..... ***Phyllodromica variabilis*** (partly)

– Tegmina only with isolated dark patches at the base and/or at the apex, or without dark markings **8**

8 Along the costal border of tegmina with a dark line; hindwings moderately sclerotized, rather broad; ootheca with only 2–3 distinct longitudinal ridges near the keel (Fig. 14G–K) ..... ***Phyllodromica maculata***

– Costal border of tegmina not dark; hindwings variously sclerotized and shaped; ootheca with at least 12 distinct longitudinal ridges **9**

9 Hindwings membraneous, narrowly lanceolate, posterior border of apical part in one line with the anal fold, anterior border curved throughout, tip rather acute, dark; tegmina with a variously extended darkening along the apical border, basally followed by a more intensely yellowish or orange area in the apical third of the tegmina (Fig. 6F–J) ..... ***Phyllodromica harzi***

– Hindwings moderately sclerotized, posterior border of apical part at an angle to the anal fold, anterior border in the basal half almost straight, tip more rounded, not dark; apical darkening of tegmina variously shaped **10**

10 Tegmina with a rounded or oval dark patch near the posterior-apical corner, not reaching the apical border of the tegmina, outline smooth, between patch and base with a darker yellow or orange band broadening towards the base (Fig. 2F–H) ..... ***Phyllodromica chladeki***

– Tegmina with a variously shaped dark patch at the apical border, usually touching the border near the posterio-apical corner, its outline irregular, patch often broken up into smaller islands, without darker yellow or orange band (Fig. 23D,H–L) ..... ***Phyllodromica variabilis*** (partly)

7. Description of species

7.1. *Phyllodromica chladeki* Harz, 1977

Figs. 2A–H, 3A–L, 27

Phyllodromica chladeki Harz, 1977 in Chládek & Harz 1977: 24, figs. 11–16; Vidlička 2001: 88, figs. 31E,K,L,Y, 32G,H; Vidlička 2005: 51, figs. 16–17, 339–340.

Material

***Type material* (*studied*).** **Slovakia**, **Banskobystrický kraj**: 1♂, holotype, 1♀, allotype, 9♂, 24♀, 4O, paratypes, Muránska planina, Muráň, 500 m, 5.VII.1976, F.Chládek leg. (C. Ch). – 3♂, 3♀, 2O, paratypes, same data as holotype (slides: ♂, Sw 6/1,5; ♀, Sw 6/2–4) (C. Bo). – 1♂, 1♀, paratypes, same data as holotype (slide: ♂, Bo 476) (M. Ge).

***Additional material studied*.** **Slovakia**, **Banskobystrický kraj**: 16♂, 26♀, 2O, Mt. Čremošná near Tisovec (12 km N Hnúšťa), 650 m, 28.V.2009, leg. B.&H.Bohn (slides: ♂, Sw 29/1–3, 7–12; ♀, Sw 29/4) (C. Bo).

Additional, already published localities (Chládek 1984; Vidlička & Majzlan 1992; Vidlička 2001). **Slovakia**, **Banskobystrický kraj**: Muránska planina, Muráň, (Mt.) Cigánka; Muránska Huta, Tesná skala; Tisovec, (Mt.) Hradová; Tisovec, (Mt.) Šarkanica.

Description. ***Size***. Length of tegmina in male 7.0–7.5 (mean 7.3) mm, in female: 3.4–3.8 (mean 3.6) mm.

Wings of male (Fig. 2A–E). **Tegmina**: Basal half with parallel borders, distal half triangularly narrowed, apex quite narrowly rounded, moderately asymmetrical; surface not plane, anterior margin in the middle with a strong ventral deflection. Colour yellowish, at the base with a small dark marking, apical half with a large longitudinal dark patch far distant from the anterior border of the wing, but relatively close to the posterior border, towards the base continuing into a broader orange-yellow band. Occasionally, the dark patch does not reach the apical boder (Fig. 2B); it may also be connected with the basal darkening by a dark stripe near the posterior border (Fig. 2D). **Hindwings**: Of normal shape, not curved, relatively narrow, apex anteriorly rounded, posteriorly obliquely cut or slightly concave, strongly sclerotized, posterior margin at the base with a membraneous rectangular recession.
Wings of female (Fig. 2F–H). **Tegmina**: Transversely or slightly obliquely cut, with rounded corners, apical border often slightly concave. Colour pale yellow, apical-posterior corner with a rounded, fuzzy dark patch towards the base continuing into a rapidly broadening orange-yellow band. **Hindwings**: Similar as in the male, but less strongly sclerotized, recession at the base smaller, not rectangular.
Male abdomen (Fig. 3A–L). Tergites with moderately long spatular bristles. **T2–6**: Comparatively short, in the middle of the anterior border with a shallow excavation, especially large on T6 (usually more prominent than in the specimen of Fig. 3C). T5 with posterior margin mesally slightly lightened. T6 with transversal bulge fading away towards the semicircular depression, the latter lightly coloured with slightly bilobed posterior border; transversal ridge anteriorly of the depression accompanied by a narrow, towards the middle broadening dark stripe, sometimes broken up into smaller spots, anteriorly and posteriorly followed by a fine whitish line. **T7**: Posterior incision very deep, in the middle ending in a relatively long narrow slit. **Mound** often rather lightly coloured, very high and reaching far anteriorly, nearly up to the posterior border of T5, posterior slope with a weak medio-longitudinal ridge, flanked by some irregular transversal furrows; crest transversal, curved dorsally, in the middle often slightly lowered, molded as a low, relatively thick parapet wall projecting towards anteriorly off the plane of the steeply posteriorly declining anterior slope; crest region and anterior slope relatively weakly sclerotized, the latter covered with dispersed small, normally shaped bristles, which towards the base strongly increase in number and size. **Glandular pit**: Opening in anterior-posterior extension relatively wide, fairly semicircular; longitudinal ridge high, with almost vertical sides; anterior pouches relatively short, in outline circular or oval, posterior pouches narrower but longer, towards the posterior end of the tergite in a sharp curve turning towards anterio-dorsally. **T8**: Trapezoidal, latero-posterior corners broadly rounded, posterior border obtuse-angularly excised; cuticular folds near the anterior border numerous, arranged in a posteriorly curved arc; bristles relatively small, in the middle normally shaped, laterally spatular. **T10**: Posterior border parenthesis-shaped, in the middle slightly obtuse-angularly produced, sides shallowly concave. **Genital hook**: Claw in the distal third rather strongly curved, tip obliquely cut, velum relatively large, shaft with a prominent denticle.
Ootheca. With at least 12 prominent longitudinal ridges.

Diagnosis. Males and females are well characterized by shape and colouration of the tegmina, the males additionally by the unique shape of the mound of T7 and the strong dorsal curvature of the posterior pouches of the glandular pit.

Distribution (Fig. 27)**.** Endemic to Slovakia; only found along the southeastern border of Muránska planina (Banskobystrický kraj).

7.2. *Phyllodromica halterisignata* Bohn, spec. nov.

Figs. 4A–J, 5A–L, 28

Material

***Type material* (*studied*)**. **ROMANIA**, **Maramureş Judeţ**: 1♂, holotype, hill at E margin of Seini (WNW Baia Mare), 280 m, 3.VI.2009, leg. B.&H.Bohn (slide: Ru 77/2) (ZSM). – Paratypes, 12♂, 13♀, 2L, same data as holotype (slides: ♂, Ru 77/1,2,5,10–13; ♀, Ru 77/3,4,7,8) (1♂, 2♀ in C. Ch., remaining paratypes in C. Bo).

Etymology. The species name refers to the large dark patch on the tegmina of males having the shape of dumbbells (= *halteres* in ancient Greek).

Description. ***Size***. Length of tegmina in male 6.0–6.7 (mean 6.4) mm, in female 3.3–3.8 (mean 3.6) mm.
Wings of male (Fig. 4A–D). **Tegmina**: Quite narrow, in outline fairly triangular, broadest at about a fourth or third of the length, anterior border consistently curved, apex very narrowly and strongly asymmetrically rounded; surface plane. Colour yellowish, in the apical half above the dark marking tinged orange, dark longitudinal band by a broad and deep median excavation fairly dumbbell-shaped, radial branches usually well visible. **Hindwings**: With elongated apical part, curved, membraneous, apical half more or less darkened.
Wings of female (Fig. 4E–H). **Tegmina**: Apical borders broadly rounded, obliquely oval. Colour as in

male, dark longitudinal band along the anterior border towards apically more or less strongly narrowing, reaching the apical border. **Hindwings**: Lanceolate, anterior border evenly curved, posterior border of apical part in one line with the anal fold, membraneous, apically darkened.

Male abdomen (Figs. 4I,J, 5A–L). Tergites with relatively long spatular bristles. **T2–6**: Mesally at the anterior border with a notch, up to T5 acute-angular, insignificant, on T6 forming a larger concavity. T5 mesally in the posterior half with a large triangular or band-shaped lightening. T6 with transversal bulges of both sides connected by a narrower lightly coloured arc enclosing the semicircular depression, the latter also more lightly coloured in the middle, laterally darker, posterior border slightly bilobed. **T7**: Median incision of the posterior border moderately deep, ending in a short slit. **Mound** moderately high, not reaching the anterior border of the tergite, without longitudinal depression; crest transversal, curved dorsally, broadly rounded passing over into the vertically descending anterior slope; the latter deepened posteriorly to a shallow concavity, well sclerotized, with normally shaped bristles scarcely increasing in length and density towards the base. **Glandular pit**: Opening anteriorly on both sides acute-angularly produced; median ridge moderately high, sides with easy decline; anterior pouches in outline between circular and longitudinally oval, posterior pouches narrower, scarcely narrowing towards the end, slightly curved towards medio-dorsally, often irregularly bulged out. **T8**: Trapezoidal, latero-posterior corners broadly rounded, posterior border very shallowly excavated, bristles almost exclusively spatular. **T10**: Posterior border obtuse-angular. **Genital hook**: Claw rather broad, towards the tip scarcely curved, tip stout, velum extremely short, shaft without denticle.

Ootheca. Not known.

Diagnosis. Males and females well characterized by shape and colouration of tegmina and hindwings, the males additionally by the unique form of the gland opening and the extremely small velum of the genital hook.

Distribution (Fig. 28)**.** The species is only known from one locality in the north of Romania.

7.3. *Phyllodromica harzi* Chládek, 1977

Figs. 6A–J, 7A–L, 27

Phyllodromica harzi Chladek, 1977 in Chládek & Harz 1977: 21, figs. 3,5,7,8,10; Vidlička 2001: 90, figs. 31D,J,P,X, 32I, J; Vidlička 2005: 53, figs. 22–24, 335–336.

Material

***Type material* (*studied*)**. **Slovakia**, **Košický kraj**: 1♂, holotype, 1♀, allotype, 6♂, 9♀, paratypes, Slovenský kras, Zádielska planina, Turna nad Bodvou, Turniansky hrad, 300 m, 7.VII.1976, F.Chládek leg.; 6♂, 6♀, paratypes, Slovenský kras, Plešivská planina, Plešivec, 300 m, 6.VII.1976, F.Chládek leg. (C. Ch). – 1♂, 1♀, paratypes, same data as holotype (slides: ♂, Sw 5/1; ♀, Sw 5/2); 3♂, 2♀, paratypes, same data as other paratypes from Plešivec (slides: ♂, Sw 20/1; ♀, Sw 20/2); 1♂, 1♀, paratypes, Zádielská planina, Zádiel, 8.VII.1978, F.Chládek leg. (slide: ♀, Sw 14a/1) (C. Bo). – 1♀, paratype, same data as other paratypes from Plešivec (slide: Bo 1164) (M. Ge).

Additional material studied. **Slovakia**, **Košický kraj**: 2♂, 1♀, 3O, Slovenský kras, Hačava (9 km NW Turňa nad Bodvou), 680 m, 29.V.2009, leg. B.&H.Bohn (Sw 35); 7♂, 7♀, 1L, 1O, Slovenský kras, Haj (4 km NW Turňa nad Bodvou), 300 m, 29.V.2009, leg. B.&H.Bohn (Sw 36); 31♂, 22♀, 1L; ex L: 3♂, 9♀, 8L, Slovenský kras, Zádielska planina, Za skalou (near Hačava), 700 m, 29.V.2009, leg. B.&H.Bohn (slides: ♂, Sw 34/1,4,5; ♀, Sw 34/2) (C. Bo). – **Hungary**, **Kom. Borsod-Abaúj-Zemplém**: 26♂, 25♀, 1L; ex L: 1♂, 1♀, 4L, Aggtelekikarszt, NE margin of Tornanádaska, 200 m, 28./30.V.2009, leg. B.&H.Bohn (slides: ♂, Hu 29/1,2; ♀, Hu 29/3–5) (C. Bo).

Additional, already published localities (Chládek 1988; Chládek 1994; Vidlička 2001). **Slovakia**, **Košický kraj**: Slovenský kras: Drienovec; Hrhov; Hrušov; Plešivská planina, Plešivec–Slavec; Silica.

Description. ***Size***. Length of tegmina in male 6.0–6.4 (mean 6.2) mm, in female: 3.2–3.8 (mean 3.6) mm.

Wings of male (Fig. 6A–E). **Tegmina**: Broadest near the base, in the basal two thirds slightly narrowing along the straight anterior border, in the apical third more rapidly narrowing to a moderately broadly rounded, strongly asymmetrical apex; surface plane. Colour pale yellow, posterior margin at the base and a small zone adjacent to the basal border of the large dark patch orange-yellow; base with a small dark marking, in the apical half with a large dark patch touching the anterior border, but at some distance from the posterior border of the wing, patch towards the base more or less transversely cut, with an irregular, often bilobed margin. Exceptionally (in two males out of 67), the dark colouration extends up to the base; the basal half of the band is narrower and lighter in colour (brownish) (Fig. 6C). **Hindwings**: With elongated apical part, moderately curved, predominantly membraneous, apical fifth or less dark.

Wings of female (Fig. 6F–J). **Tegmina**: Transversely or slightly obliquely cut, with rounded corners. Colour pale-yellow, apical third and posterior margin at the base yellow-orange; at the base and along the api-

cal border with variously extended dark markings. **Hindwings**: Narrowly lanceolate, dorsal border regularly curved, apical part slightly elongated, its posterior border in one line with the anal fold, predominantly membraneous, tip dark.

Male abdomen (Fig. 7A–L). Tergites with very long spatular bristles. **T2–6**: Mostly with an angular notch in the middle of the anterior border. T5 mesally near the posterior border with a lightened area. T6 with transversal bulge of both sides connected by a narrower arc enclosing the semicircular depression, arc only in the middle lightly coloured, depression slightly lighter in colour, posterior border weakly bilobed; transversal ridge in the middle strongly deflected anteriorly, between ridge and arc often with a tranversal row of dark spots. **T7**: Posterior incision moderately deep, terminating in a very short longitudinal slit (not visible in Fig. 7D). **Mound** rather low, not reaching the anterior border of the tergite, without or with a very slight longitudinal depression including also the crest (Fig. 7D); crest broadly rounded passing over into the anterior slope; the latter steeply, almost vertically declining towards anteriorly, slightly concave, similarly sclerotized as remaining surface, with normally shaped but rather strong bristles, increasing in length and density towards the base. **Glandular pit**: exceptionally small, scarcely reaching the length of the tergite, with a very broad and wide, semicircular or rounded trapezoidal opening occupying nearly the full breadth of the gland; median ridge rather low, sides with easy decline; anterior pouches very short, cap-shaped, posterior pouches longer, towards the end strongly narrowing, curved strongly towards mesally, less towards dorsally. **T8**: Strongly trapezoidal, lateroposterior corners angularly rounded, posterior border shallowly angularly excised, bristles almost exclusively spatular. **T10**: Posterior border obtuse-angular. **Genital hook**: Claw in the distal third very weakly curved, gradually tapering to a rather acute tip, velum well developed, denticle absent.

Ootheca. With at least 12 prominent longitudinal ridges.

Diagnosis. Males and females well characterized by shape and colour of tegmina and hindwings, the males additionally by the unique shape of the glandular pit and of the claw of the genital hook.

Distribution (Fig. 27)**.** Along the southern border of the Slovakian Karst (Slovenský kras, Košický kraj, Slovakia) and in the eastern part of the southernly adjacent Hungarian Karst (Aggteleki-karszt, Kom. Borsod-Abaúj-Zemplen, Hungary).

7.4. *Phyllodromica hungarica* Vidlička, 1993

Figs. 8A–J, 9A–J, 10A–L, 11A–L, 27

Phyllodromica hungarica Vidlička, 1993: 63, figs. 1–6, 9–11, 14–15; VIDLIČKA 2001: 91, figs. 31C,I,O,V, 32E,F; VIDLIČKA 2005: 54, figs. 25–27, 337–338.

Phyllodromica dobsiki Chládek, 1996: 5, figs. 1–8. **syn. nov.**

Phyllodromica maculata marani Chládek & Harz, 1977: 176 (specimens from Vihorlat, Slovakia).

Material

***Type material* (*studied*)**. **HUNGARY**, **Kom. Heves**: 1♂, holotype, Bükk National Park, Szarvaskö, Tardos-hegy, 300 m above sea-level, 25.IX.1981, Ádám; 1♂, 6♀, paratypes, Bükk National Park, various data (Hungarian Natural History Museum, Budapest).

Material studied, determined as* P. dobsiki *by Chládek. **SLOVAKIA**, **Banskobystrický kraj**: 1♂, holotype, 11♂, 21♀, 7O, paratypes, Muránska planina, Tisovec, Suché doly, 6.VII.1982, F.Chládek leg. (C. Ch). – 2♂, 2♀, paratypes, same data as holotype (slides: ♂, Sw 1a/1; ♀, Sw 1a/2); 2♂, 1♀, same data as holotype, but 27.VII.1999 (slides: ♂, Sw 1/1; ♀, Sw 1/2) (C. Bo). – 1♂, 1♀, paratypes, same data as holotype (slide: ♂, Bo 478) (M. Ge).

Other material studied. **SLOVAKIA**, **Banskobystrický kraj**: 19♂, 17♀, 1L, 3O, 1 km E Ratkovská Suchá (15 km E Hnúšťa), 450 m, 28.V.2009, leg. B.&H.Bohn (slides: ♂, Sw 30/1,3–5; ♀, Sw 30/2); 31♂, 25♀, 11L, 3O, Muránska planina, Tisovec, Suché doly, 28.V.2009, leg. B.&H.Bohn (slides; ♂, Sw 1b/1,2,6,7; ♀, Sw 1b/3–5) (C. Bo). – **Košický kraj**: 16♂, 8♀; exL: 9♀, 1L, NW margin of Banské (10 km SW Vranov nad Topľou), 350 m, 30.V.2009, leg. B.&H.Bohn (slides: ♂, Sw 39/1; ♀, Sw 39/2); 23♂, 37♀, 1L, 3O, W margin of Ďurďošík (ENE Košice), 300 m, 30.V.2009, leg. B.&H.Bohn (slides: ♂, Sw 37/1; ♀, Sw 37/2); 29♂, 39♀, 2L, Kašvár near Ladmovce (N Streda nad Bodrogom), 150 m, 1.VI.2009, leg. B.&H.Bohn (slides: ♂, Sw 43/1; ♀, Sw 43/2) 1♂, 1♀, N margin of Krivošťany (near Strážske), 150 m, 30.V.2009, leg. B.&H.Bohn (slides: ♂, Sw 40/1; ♀, Sw 40/2); 1♀, Ladmovce, VI.2004, V.Gavlas leg. (slide: Sw 2/1) (C. Bo). – 1♀, Vihorlatské vrchy Mts., Klokočov, 25.VII.1971, Z.Laštůvka leg. (slide: Bo 1146) (C. Ch). – **HUNGARY**, **Kom. Heves**: 3♂, 4♀, 1L, Eger – Noszvaj, 2 km NE Eger, 260 m, 4.VI.2005, leg. H.Bohn (slides: ♂, Hu 7/3,5,6; ♀, Hu 7/4); 11♂, 9♀, 2L, Bükk Mountains, SE slope of Várhegy, 500 m, 4.VI.2005, leg. H.Bohn (slides: ♂, Hu 6/2,4,6,7; ♀, Hu 6/3,5) (C. Bo). – **Kom. Borsod-Abaúj-Zemplém**: 6♂, 5♀, 1O, Rakaszend (NE Szendrö), 200 m, 29.V.2009, leg. B.&H.Bohn (slides: ♂, Hu 33/1; ♀, Hu 33/2) (C. Bo).

Additional, already published localities (VIDLIČKA & SZIRÁKI 1997). **SLOVAKIA**, **Košický kraj**: Ladmovce, Hatfa. – **HUNGARY**, **Kom. Heves**: Eger; Eger, Almár; Felsötárkány, Lökvölgy; Kerecsend; Nagyvisnyó, Nagy-völgy; Szilvásvárad, Bacsó-völgy; Szilvásvárad, Tar-kö; Szarvaskö; Szarvaskö, Tardos-hegy. – **Kom. Borsod-Abaúj-Zemplém**: Abaújszántó, Sátor-hegy; Bükk Mountains; Bükkzsérc; Bükkzsérc, Patkóhegy; Mályinka; Mályinka, Kemesnye; Pusztafalu, Tolvaj-hegy; Sátoraljaújhely, Magas-hegy; Tokaj, Nagy-kopasz; Varbó, Harica-völgy.

Description. ***Size***. Length of tegmina in male 5.5–6.2 (mean 6.0) mm, in female 3.3–3.8 (mean 3.5) mm.

Wings of male (Figs. 8A–E, 9A–D,F–I). **Tegmina**: In basal two thirds with almost parallel borders, in the

apical third narrowing to a broadly rounded, strongly asymmetrical apex; surface plane. Colour mainly dark, anteriorly and posteriorly with yellowish margins; anteriorly, yellowish margin widening till beyond the costal vein, then narrowing towards the apex, dark band, therefore, at the anterior border with a concave excision; between the dark band and the yellowish margins often with a relatively extended brownish or reddish tinged transition area. **Hindwings**: Strongly curved, with variously long and broad apical part, predominantly membraneous, dark in the distal third or more.

Wings of female (Figs. 8F–J, 9E,J). **Tegmina**: Transversely or slightly obliquely cut, with rounded corners. Colour dark with yellowish margins, broad at the anterior border, with a transient broadening beyond the subcosta, narrow at the posterior border, both possibly connected by a narrow yellowish apical margin. **Hindwings**: Lanceolate, posterior border of the apical part in one line with the anal fold, predominantly membraneous, dark in the apical fourth or less.

Male abdomen (Figs. 10A–L, 11A–L). Tergites with moderately long spatular bristles. **T2–6**: At the anterior border mesally with a shallow concave notch, especially wide on T6. T5 mesally at the posterior border with or without a faint lightening. T6 with transversal bulge towards the middle almost fading away, a connecting arc only indicated, very low, but conspicuously lightly coloured, possibly accompanied by a row of dark spots, posterior border of semicircular depression distinctly bilobed; area anteriorly of the arc and lateral parts of the semicircular depression usually rather dark. **T7**: Appearing longitudinally split by a deep and narrow medio-longitudinal depression. **Mound** moderately high, slightly surpassing the anterior border of T7, longitudinally divided by a deep, narrow cleft; crests laterally reaching further anteriorly than in the middle, shaped as moderately high and narrow parapet walls projecting anteriorly off the surface of the vertically descending anterior slope; the latter rather weakly sclerotized, covered with dispersed small, normally shaped bristles. **Glandular pit**: Opening moderately wide, rounded trapezoidal; median ridge high, sides with variously steep decline; anterior pouches in outline circular to elongated-oval, posterior pouches slightly narrower, scarcely narrowing towards the end, strongly, often almost angularly curved towards medio-dorsally. **T8**: Weakly trapezoidal, lateral borders nearly regularly rounded, latero-posterior corners angularly rounded, posterior border shallowly concave or obtuse-angularly excised, surface almost exclusively with spatular bristles. **T10**: Posterior border obtuse-angular, with slightly concave sides, sometimes tip faintly produced. **Genital hook**: Claw in the distal third strongly curved, tip obliquely cut, velum and denticle well developed.

Ootheca. With at least 12 prominent longitudinal ridges.

Diagnosis. Males and females well characterized by the shape and colouration of tegmina and hindwings; in other male characters very similar to *P. latipennis* and *P. marani*.

Taxonomical remarks. When *P. dobsiki* Chládek was described the new species appeared to be easily distinguished from *P. hungarica* by the shorter and at the apex more broadly rounded hindwings. The study of a larger number of specimens from the locus typicus of *P. dobsiki* (near Tisovec in Slovakia) and from a locality near the locus typicus of *P. hungarica* (in the Bükk Mountains of Hungary) revealed high variability in size and shape of the hindwings covering about the same range at both places (Fig. 9A–J). Since no other consistent differences could be found *P. dobsiki* has to be considered as a junior synonym of *P. hungarica* (compare Fig. 10A–L with Fig. 11A–L). New collectings in Slovakia revealed a fairly continuous distribution of the species in the border region of Slovakia and Hungary.

Distribution (Fig. 27)**.** In Slovakia in two separate areas, in the eastern part of Banskobystrický kraj (about along the river Rimava) and in the eastern half of Košický kraj (east of Košice). Both areas have a southern connection via the distribution area in northeastern Hungary which comprises the eastern margin of Kom. Heves (Eger) and the whole Kom. Borsod-Abaúj-Zemplém.

7.5. *Phyllodromica latipennis* Bohn & Chládek, spec. nov.

Figs. 12A–J, 13A–L, 27

Phyllodromica maculata marani Chládek & Harz, 1977: 176 (partly, specimens from Kremnické pohorie, Levice, Šahy, Štiavnické pohorie, Vel'ké Krškany).

Phyllodromica maculata schaefferi (Gmelin, 1790) [sic! should be Goeze, 1778]: Vidlička & Sziráki 1997: 210; Vidlička 2001: 86; Vidlička 2005: 52 (partly, mainly specimens from Slovakia and Hungary about west of 20° longitude).

Material

***Type material* (*studied*)**. **Hungaria**, **Kom. Pest**: 1♂, holotype, Gyömrö (W Budapest), 150 m, 4.VI.2005, leg. H.Bohn (completely on three slides: Hu 5/2) (ZSM); 20♂, 18♀, 6L, 5O, paratypes, same data as holotype (slides: ♂, Hu 5/3–6) (2♂, 2♀, 1O in C. Ch, remaining paratypes in C. Bo).

Additional material studied. **Slovakia**, **Trenčianský kraj**: 1♂, 1♀ (Sw 18) & 5♀, 1O, Strážovské vrchy Mts., Horné Vestenice, 23.VII.1980, F.Chládek leg. (C. Bo & C. Ch). – **Nitrianský kraj**: 1♂, Ipelská niva, Malé Kosihy, 12.VIII.1986,

Z.Laštůvka leg. (Sw 3) (C. Bo). – 1♂, 1♀ (Sw 16) & 1♂, 3♀, Štiavnické vrchy Mts., Kozárovce, 12.VII.1977, F.Chládek leg.; 1♂, 1♀ (Sw 15) & 3♂, 10♀, Ipelská pahorkatina, Vel'ké Krškany, 11.VII.1977, F.Chládek leg. (C. Bo & C. Ch). – 1♂, Krupinská planina, Plášt'ovce, 31.V.1980, B.Dobšík leg.; 1♀, Ipelská niva, Šahy, 6.VI.1967, J.Dezort leg. (C. Ch). – 1♀, Slovakia mer., Štúrovo-vrch Dank, Hegyfarok, 12.V.1996, L'.Vidlička leg.; 1♂, Slovakia mer., Štúrovo-vrch Dank, Hegyfarok, 3.V.[19]90, O.Majzlan lgt. (C. Vi). – 1♂, Velké Krškany n. Levice, VII.1977, F.Chládek (M. Ge). – **Banskobystrický kraj**: 1♂, Pohronský Inovec Mts., Hronský Beňadik, 14.VII.1977, F.Chládek leg. (Sw 22); 1♂, Štiavnické vrchy Mts., [Mt.] Sitno, 1009 m, 26.V.2004, V.Gavlas leg. (slide: ♂, Sw 19/1) (C. Bo). – 2♂, 2♀ (Sw 13) & 5♂, 5♀, Ipelská kotlina, Umg. Vel'ký Krtíš, Horné Plachtince, 1.VI.1990, F.Chládek leg.; 1♂, 1♀ (Sw 17) & 4♀, Horehronské podolie, Valaská, 25.VII.1979, F.Chládek leg. (C. Bo & C. Ch). – 1♂, Krupinská planina, Koprovnica, 30.V.1980, B.Dobšík leg.; 1♂, Kremnické pohorie Mts., Kremnica, 22.VI.1975, R.Janiček leg.; 1♂, 1♀, 1O, Štiavnické vrchy Mts., [Mt.] Sitno, 1009 m, 13.VII.1977, F.Chládek leg.; 1♀, Štiavnické vrchy Mts., Štiavnické Bane, 28.VII.1978, R.Janíček leg. (C. Ch). – 1♀, Banská Štiavnica, 10.VIII.1992, K.Šmidáková leg.; 1♀, Banská Štiavnica–Mt. Sitno, 950 m, 10.IX.1992, L'.Vidlička leg.; 1♂, Hodruša-Hámre, 11.VI.1996, L'.Vidlička leg.; 1♀, Ipel'ské Úl'any, 24.V.1992, O.Majzlan lgt.; 2♂, Kremnica, Mt. Kremnický štit, 1000 m, 15.VII.1996, L.Roller leg.; 2♂, 1♀, Cerová vrchovina [Mts.], Obručná-env.–lom Mačacie, 20.V.1999, L.Roller lgt.; 2♂, Cerová vrchovina [Mts.], Radzovce, 21.V.1999, L.Roller lgt.; 2♂, 2♀, Slatinka (okr. Zvolen), 28.VI.1995, L'.Vidlička leg. (C. Vi). – **HUNGARY**, **Kom. Pest**: 1♀, (Mt.) Naszály, Sejce (N Vac), 250 m, 21.VI.2009, leg. B.&H.Bohn (Hu 35); 5♂, 39♀, 9O, 3 km N Ujvölgy (Szob–Zebegény), 150 m, 21.VI.2009, leg. B.&H.Bohn (slide: ♂, Hu 34/1) (C. Bo). – **Kom. Heves**: 10♂, 15♀, 1L, 2O, Mátra Mountains, Mátrafüred–Mátrahazed, Hotel Matra, 640 m, 5.VI.2005, leg. H.Bohn (slides: ♂, Hu 8/8–10; ♀, Hu 8/5–7,11) (C. Bo).

Additional presumable localities, specimens determined by VIDLIČKA & SZIRÁKI (1997) as *P. maculata schaefferi*. **HUNGARY**, **Kom. Komarom-Esztergom**: Márianosztra. – **Kom. Pest**: Nagybörzsöny; Nagymaros; Peröcsény; Szöd; Vác; Vácduka. – **Kom. Nógrád**: Cserhátszentivan; Hollókö; Nagybátony; Sámsonháza; Zagyvapálfalva (= Salgótarján). – **Kom. Heves**: Gyöngyös; Kisnána; Markaz; Mátrafüred; Mátraszentimre.

Etymology. The species name refers to the broad tegmina of males, broadest among the species of the group.

Description. ***Size***. Length of tegmina in male 5.4–6.0 (mean 5.8) mm, in female 3.2–3.7 (mean 3.4) mm.

Wings of male (Fig. 12A–D). **Tegmina**: Very broad, slightly broadening from the base till beyond the middle, then narrowing to a very broadly rounded and strongly asymmetrical apex; surface plane. Colour dark, costal field in various extension yellow, costal border narrowly dark, posterior border with moderately broad yellow margin, sometimes not reaching up to the base. **Hindwings**: Of normal shape, not curved, relatively narrow, strongly scerotized, darkly coloured, anal field sometimes with some veins.

Wings of female (Fig. 12E–H). **Tegmina**: Transversely or slightly obliquely cut, with rounded corners. Colour dark, with yellow margins in various extension, broadest at the anterior border. **Hindwings**: Similar as in the male, but broader, with a shorter apical part, partially lighter in colour, along the apex with dark margin.

Male abdomen (Figs. 12I,J, 13A–L). Tergites with rather short spatular bristles. **T2–6**: Mesal notch at the anterior border of the tergites very small or missing. T5. Lightening mesally near the posterior border very faint or missing. T6 with transversal bulges relatively low, towards the middle fading away; median area without striking colouration, anteriorly of the transversal ridge often slightly darker, posteriorly slightly lighter in colour, semicircular depression at the posterior border with prominent lobes. **T7**: Appearing longitudinally split by a deep and narrow medio-longitudinal depression. **Mound** moderately high, about reaching the anterior border of the tergite, longitudinally divided by a deep, narrow cleft; crests laterally reaching further anteriorly than in the middle, shaped as rather high and thick parapet walls projecting anteriorly off the plane of the vertically descending anterior slope; the latter slightly concave, weakly sclerotized, with dispersed small, normally shaped bristles. **Glandular pit**: Opening rounded trapezoidal, in anterior-posterior extension rather narrow; median ridge high, with almost vertical or steeply declining sides; anterior pouches usually larger than posterior ones, the latter almost rectangularly curved towards medio-dorsally, usually scarcely narrowed towards the end (the strong narrowing seen in Fig. 13E,F is a rare exception). **T8**: Not trapezoidal, lateral borders regularly and quite strongly rounded, latero-posterior corners very broadly rounded, posterior border very shallowly obtuse-angularly excised with weakly convex lateral parts, nearly exclusively with spatular bristles. **T10**: Posterior border obtuse-angular, sides from slightly convex to slightly concave, sometimes tip slightly produced. **Genital hook**: Claw relatively broad and short, in the distal third more strongly curved, tip transversely cut, relatively broad, velum well developed, denticle not very prominent.

Ootheca. With at least 12 longitudinal ridges of varied strength.

Diagnosis. Males and females well characterized by shape and colour of tegmina and hindwings, in other male features very similar to *P. hungarica* and *P. marani*, from the first distinguished by the different shape of the genital hook and of T8, from the latter by the shape of the anterior slope of the mound of T7.

Distribution (Fig. 27)**.** Occurring in southern Slovakia and northern Hungary in adjacent areas: in Slova-

kia mainly in the Banskobystrický kraj, between the rivers Hron (in the west) and Rimava (in the east), in Hungary between the Danube (in the west) and the river Tarna (in the east) comprising the comitats Nógrád, Heves and the northeast of Pest. The distribution area of the species is enclosed between the areas of *P. maculata* (in the north and west), and *P. marani* and *P. hungarica* (in the east).

7.6. *Phyllodromica maculata* (Schreber, 1781)

Figs. 14A–K, 15A–J, 16A–H, 17B–I, 26, 27

Blatta maculata Schreber, 1781: 89, figs. 17, 18.
Phyllodromia maculata: Fischer v. Waldheim 1846: 86.
Aphlebia maculata: Brunner v. Wattenwyl 1865: 69.
Hololampra maculata: Kirby 1904: 69.
Phyllodromica maculata: Bey-Bienko 1950: 234; Princis 1965: 32, 42; Princis 1971: 1097; Harz 1976: 277; Bazyluk 1977: 105, figs. 127–129; Vidlička 2001: 84, figs. 341, 342.

Blatta schaefferi Goeze, 1778: 14. **Nomen dubium**.

No type specimen is available for this species.

Material from Germany

The following compilation contains the hitherto unpublished locality data of the material studied by the first author; the respective localities are represented in the distribution map (Fig. 26) as filled circles. Part of the localities had already been used for an earlier version of the distribution map (Bohn 2003: fig. 3), a smaller part is completely new (localities from northern Bavaria). In addition to the material listed below some more has been studied by the author; it concerns localities which have already been published by other authors (empty circles in Fig. 26). – All samples bearing a locality number (D ...) have been collected by B.&H. Bohn.

Material studied, unpublished data. **Brandenburg**: LK Barnim: 1♀, Rosenbeck [near Eichhorst], 5.VIII.[19]84, leg. D. Gasche; 1♂, Pimpinellenberg bei Oderberg, 19.V.[19]86, leg. Wrase (C. Ga). – LK Dahme-Spreewald: 1♀, Umg. Mittenwalde, 10.X.1966, leg. J.Schulze (M. Be). – LK Märkisch-Oberland: 1♀, Mallnow, 3 km NW Lebus, 2.VI.1993, Wrase; 1♂, Lebus, 20.IV.1990, leg. Wrase (C. Ga). – LK Oder-Spree: 1♀, Kö-Mühl [= Kaisermühl near Müllrose?], TF, Ffo, 20.VI.82, Gasche (C. Ga). – LK Potsdam-Mittelmark: 1♂, Seddin, Michendorf, VII.1936, Ramme (M. Be). – LK Spree-Neiße: 1♂, Kerkwitz bei Cottbus, TF, 21.V.1984, T.Karisch legit (M. Gö). – **Sachsen-Anhalt**, RB **Dessau**: SK Dessau: 1♂, 1♀, Dess. [Dessau], 3.VII.4 (M. Le). – 1♀, Dessau, 1.VII.94, Dr.Brauns (slide: Bo 241); 3.VII.4, Mosigk.-H. [Mosigkauer Heide] (slide: Bo 240) (M. Th). – RB **Halle**: LK Burgenlandkreis: 1♂, Balgstädt, 15.VI.1976, Lippold (M. Le). – **Thüringen**: LK Kyffhäuserkreis: 1♂, Kyffhäuser, NSG Ochsenburg, 14.VII.1984, leg. A.Pütz (C. Ga). – **Bayern**, RB **Oberfranken**: LK Bamberg: 1♀, 7L, Friesener Warte bei Friesen (SO Bamberg), 440–550 m, 4.VII.2004 (D 182); 1♂, 2♀, 2L, Tiefenellern (O Litzendorf, Bamberg), 450 m, 4.VII.2004 (D 183) (C. Bo). – LK Bayreuth: 1♀, 1L, Haselbrunn (bei Pottenstein), 450 m, 28.V.2005 (D 200); 3♂, 2L, Pottenstein, 440 m, 28.V.2005 (D 201) (C. Bo). – LK Kulmbach: 7L, Bayern, Autobahnböschung bei Menchau (bei Thurnau), 500 m, 25.IX.2005 (D 208) (C. Bo). – LK Lichtenfels: 1♀, NSG Wacholderhänge bei Kleinziegenfeld (S Weismain), 540 m, 4.VII.2004 (D 184); 3♀, NSG Wacholderhänge bei Wallersberg (S Weismain), 540 m, 4.VII.2004 (D 185) (C. Bo). – 1♀, 1O; 1L, Staffelberg, unter Steinen, IX. bzw. IV. (M. Ba). – RB **Mittelfranken**: SK Erlangen: 1♂, 1♀, bei Erlangen, 5.VIII.1958, leg. H.Rembold (M. Ge). – LK Nürnberger Land: 1L, ex L: 2♂, Kogelberg bei Alfeld (SO Hersbruck), 510 m, 13.V.2005 (D 192) (C. Bo). – LK Weissenburg-Gunzenhausen: 1♀, 1 km O Esslingen (bei Solnhofen/Altmühl), 410 m, 19.VII.1992 (D 64); 2♀, O, NSG Juratrockenhang mit der Felsgruppe Zwölf Apostel (bei Esslingen, Solnhofen/Altmühl), 410 m, 19.VII.1992 (D 65); 12L, Lämmerberg b. Möhren (SW Treuchtlingen), 450 m, 16.X.2005 (slides: L, D 213/1,2); 2L, Degersheim (NW Treuchtlingen), 590 m, 16.X.2005 (D 215) (C. Bo). – RB **Oberpfalz**: LK Amberg-Sulzbach: 6L, ex L: 5♂, Lauterachtal, unterh. Aicha (bei Schmidmühlen), 380 m, 13.V.2005 (D 190); 3L, Lauterachtal, Ransbach (Hohemburg–Kastl), 380 m, 13.V.2005 (D 191) (C. Bo). – LK Neumarkt: 1♀, Sollngriesbach (bei Berching), 400 m, 23.VII.1987. leg. G. Lawitzki (D 12); 2♂, 1♀, (bei Berching), 400 m, 14.VI.1992 (D 12a); 2♂, 3♀, O, Berching, 500 m, 14.VI.1992 (slides: ♂, D 48/1; ♀, D 48/2); 5♂, 3L, NSG Wolfsberg (bei Dietfurt a. d. Altmühl), SO Ecke, 380 m, 29.V.2005 (D 207) (C. Bo). – LK Regensburg: 18♂, 7♀, O, Tegernheim (bei Regensburg), 350 m, 21.V.1978 (slides: ♂, D 1/1,4; ♀, D 1/2,3); 3♂, 2♀, NSG Eichenberg (bei Kallmünz/Naab), 400 m, 28.VI.1992 (D 55); 3♂, 3♀, O, NSG Max-Schultze-Steig (bei Regensburg), 350 m, 28.VI.1992 (D 56); (?)4L, NSG Mattinger Hänge (bei Regensburg), 360 m, 4.VII.1992 (D 57) (C. Bo). – 1L, Nittendorf, 21.V.1980, Necker; 1♂, Gmünd/Do., 17.VI.[19]61, Gg.Necker; 1♀, Fränk. Alb, Eichhofen/La[a]ber, 30.VII.1960 (ZSM). – SK Regensburg: 3♂, 3♀, NSG Keilstein, 350 m, 27.V.1993 (D 69) (C. Bo). – RB **Niederbayern**: LK Kelheim: 17♂, 40♀, 11L, Oberndorf (zw. Kelheim & Regensburg), 350 m, 21.V.1978 (slides: ♂, D 2/1–3); 2♂, Oberndorf (zw. Kelheim & Regensburg), 350 m, 19.VII.1987 (D 2a); 1♂, 2♀, Bayern, Lehmberg bei Kelheimwinzer (bei Kelheim), 360 m, 4.VII.1992 (D 58); 4♀, 3L, O, Gronsdorf/Kelheim, 400 m, 4.VII.1992 (D 59); 1♂, 2♀, Essing (6 km W Kelheim), 400 m, 4.VII.1992 (D 60); 4♂, 3♀, NSG Schloß Prunn (bei Riedenburg/Altmühl), 400 m, 4.VII.1992 (slides: ♀, D 61/1,2) (C. Bo). – RB **Oberbayern**: LK Eichstätt: 13♂, 15♀, ex L: 3♀, Pfahlbuck (bei Böhming, Kipfenberg), 400 m, 25.V.1980 (slides: ♂, D 13/1–3); 2♂, 4♀, 2L, NSG Arnsberger Leite, Arnsberg (bei Kipfenberg), 430 m, 25.V.1980 (D 14); 3♂, 5L, NSG Gungoldinger Wacholderheide (bei Gungolding), 450 m, 25.V.1988 (D 15); 2♀, O, NSG Trockenhänge bei Dollnstein, 420 m, 19.VII.1992 (D 63); 1♂, NSG Kreuttberg bei Altmannstein (S Riedenburg), 420 m, 27.V.1993 (D 71); 7♂, 3L, ex L: 2♀, Schellenberg bei Enkering (S Greging), 400 m, 6.V.1996 (D 173); 3♂, 1♀, 5L, Altdorf (Anlautertal, NO Eichstätt), 450 m, 29.V.2005 (slide: L, D 205/1); 4♂, 2♀, 6L, Kottingwörth, S Abhang d. Arzberges (bei Beilngries), 380 m, 29.V.2005 (D 206) (C. Bo). – LK Pfaffenhofen: 1L, Münchsmünster, 23.VIII.1980, Necker (ZSM). – LK Neuburg-Schrobenhausen: 1♂, 2♀, ex L: 1♀, NSG Finkenstein (bei Neuburg a.d. Donau), 420 m, 17.V.1992 (D 27); 5♂, 2♀, ex L: 3♀, NSG Mauerner Höhlen (bei Mauern), 450 m, 17.V.1992 (slide: ♂, D 28/4); 3♀, 13L, ex L: 13L, Bayern, RB Oberbayern, LK Neuburg-Schrobenhausen, NSG Mauerner Höhlen (bei Mauern), 450 m, 23.VII.2006 (D 28a); 2♀, 1 km NO Hütting (NW Neuburg), 400 m, 19.VII.1992 (D 62)

(C.Bo). – RB **Schwaben**: LK Donau-Ries: 5♂, 1♀, 1L, Ronheim–Katzenstein b. Harburg, 450 m, 7.VI.2006 (slides: ♂, D 218/4; L, D 218/3); 3♀, NSG Ofnethöhlen b. Nördlingen, 500 m, 7.VI.2006 (D 219) (C. Bo). – **BADEN-WÜRTTEMBERG**, RB **Stuttgart**: LK Heidenheim: 2L, ex L: 1♂, 1♀, Mittlere Ziegelhütte (W Heidenheim), 550 m, 13.V.1994 (D 99) (C. Bo). – LK Göppingen: 10♂, 4♀, ex L: 1♀, Galgenberg bei Nenningen (O Göppingen), 650 m, 28.VI.1987 (D 5); 2♂, 1♀, NSG Hausener Wand (bei Bad Überkingen), 550–700 m, 23.V.1993 (slides: ♂, D 66/1; ♀, D 66/2) (C. Bo). – LK Ostalbkreis: 8♂, 4♀, Eierberg bei Degenfeld (SO Schwäbisch Gmünd), 600 m, 28.VI.1987 (D 6); 1♂, 4♀, Königsbühl bei Gromberg (bei Lauchheim), 550 m, 13.VI.1993 (D 75); 5♂, 5♀, 1L, NSG Rosenstein (bei Heubach), 550 m, 13.V.1994 (D 98) (C. Bo).

Reports of new, unpublished locality data. **BRANDENBURG**: LK Barnim: 1♀, Schorfheide, Revier Ringenwalde, zw. Milmersdorf und Ahlimbsmühle, O Templin, Biodivers. explor. projekt, Bodenfalle, VII.2008, leg. M.Gossner; 3♂, 2♀, Schorfheide, zw. Liepe und Neuehütte, NO Eberswalde, Biodivers. explor. projekt, Boden-Trichterfalle, VII.–VIII.2008, leg. M. Gossner (Köhler, pers. comm.). – **SACHSEN**, RB **Dresden**: SK Dresden: 5♂, 5♀, Dresden/Klotzsche, "Heller", 17.IV.2004, leg. Ch.Kehlmeier (Matzke, pers. comm.). – **SACHSEN-ANHALT**, RB **Dessau**: LK Wittenberg: 2♂, Teuchel b. Wittenberg, leg. W.Bäse, 2002 & 2006 (Wallaschek, pers. comm.).

Material from Switzerland

Material studied. 1♂, Valais [?], Coll. Frey (M. Ge).

Material from Austria

Material studied. **Niederösterreich**: 11♂, 13♀, Stuppachgraben n. Gloggnitz, 580 m, 2.VI.2008, leg. B.&H.Bohn (A 91); 21♂, 9♀, Willendorf (N Neunkirchen), 450 m, 2.VI.2008, leg. B.&H.Bohn (A 92); 5♂, 5♀, 1O, NE margin of Neuhaus n. Weissenbach a. d. Triesting, 450 m, 2.VI.2008, leg. B.&H. Bohn (A 93); 7♂, 15♀, 1O, Kreuttal (NW Wolkersdorf i. Weinviertel), NE slope of Kreutberg n. Unterolberndorf, 275 m, 3.VI.2008, leg. B.&H.Bohn (A 95); 6♂, 13♀, N margin of Schrick (7 km SE Mistelbach), 240 m, 3.VI.2008, leg. B.&H. Bohn (A 96); 5♂, 6♀, 1L, (Mt.) Höhlenstein n. Falkenstein (NW Poysdorf), 380 m, 3.VI.2008, leg. B.&H.Bohn (A 97); 1♂, 1♀, N margin of Zwentendorf (i. Weinviertel), 250 m, 3.VI.2008, leg. B.&H.Bohn (A 98); 7♂, 3♀, 1L, Naturpark Leiser Berge, btw. Klement & Oberleis, 400 m, 4.VI.2008, leg. B.&H.Bohn (A 99); 2♂, 7♀, 2O, Retz, Kreuzsäule am Altenberg, 330 m, 4.VI.2008, leg. B.&H.Bohn (A 100); 4♂, 12♀, 1O, 1L, Eggenburg, Kalvarienberg, 380 m, 4.VI.2008, leg. B.&H.Bohn (A 101); 2♂, 5♀, ex L: 2♀, Ruine Kamegg, n. Gars a. Kamp, 280 m, 4.VI.2008, leg. B.&H.Bohn (A 102); 4♀, Lengenfelder Bach, 3 km NW Lengenfeld (n. Krems), 450 m, 4.VI.2008, leg. B.&H.Bohn (A 104); 11♀, 1O, Wachau, Dürnstein–Oberloiben, Franzosendenkmal, 280 m, 5.VI.2008, leg. B.&H.Bohn (A 105); 5♂, 2♀, Wachau, St. Georgen, n. Emmersdorf a. D., 240 m, 5.VI.2008, leg. B.&H.Bohn (A 106) (C. Bo). – 1♂, 4♀, Hexenberg b. Bad Deutsch-Altenberg, 1.VI.2008, leg. T.Knebelsberger (C. Kn). – 1♀, Parapluiberg, 29.VIII.1926, Ebner; 1♀, Eichkogel, Gipfel, unter einem Stein, 2.X.[19]66, leg. G.Leute; 1L, Glaslauterriegel b. Gumpoldskirchen, Trockenrasen, 24.IV.[19]67, leg. G.Leute (M. Kl). – 1♀, Liesing, Eichkogel; 1♂, Liesing, Redt 1884 (M. Li). – 2♀, Anninger [Berg], 31.VIII.1926, Ebner, Coll. R.Ebner; 1♀, Anninger (Richardhof), 31.V.1949, Ebner, Coll. R.Ebner; 1♂, 1♀, Eggenb[ur]g, Calvbg., 27.V.1906; 1♀, 1L, O, Eichkogl, 28.VII.09/24.V.08/18.VI.08; 2♂, 4♀, O, Eichkogl b. Mödling, 18.VI.1908 (1♂), 30.V.1909 (1♂, 1♀), 17.VI.1949 (1♀), 7.VI.1950 (1♀), 30.VI.1950 (1♀, O), R.Ebner, Coll. R.Ebner; 1♂, Geißbg.; 19♂, 14♀, Gurhofgraben, bei Aggsbach (Wachau), Holdh., 1.VI.09, Mus. Caes. Vind.; 7♂, 6♀, Gurhofgraben, bei Aggsbach (Wachau), Holdh., 30.V.09 Mus. Caes. Vind.; 1♂, Hainburg, Mader, Coll. R.Ebner, L.Mader don. 1940; 1♂, Karnabrunn, Rohrwald, 5.VI.10; 4♂, 5♀, Mauer, Br.v.W. leg., Coll. Br.v.W.; 6♂, 4♀, 8L, Mödling, Br.v.W. leg., Coll. Br.v.W.; 2♂, 4♀, 1L, Mödling, Hr.Türk, Coll. Br.v.W.; 3♂, 4♀, 3O, Parapluiberg, 29.VIII.1926, R.Ebner, Coll. R.Ebner; 1♀, Pernitz, 1901; 1♀, Pfaffenberg b. Deutsch-Altenberg, 11.VIII.1932, Ebner, Coll. R.Ebner; 7♀, Plank (a. Kamp), [19]08, 09, 15, 16, 17; 2♂, Retz, Gr. Haide, 10.VI.1906; 1♂, Roghf., Brühl, 1862; 1♂, Roghf., 1861; 4♂, 3♀, 1L, Wien, 13.VIII.[18]56, Coll. Br.v.W., ex Coll. Lederer; 1♀, Wien, Weidling, Mader, Coll. R.Ebner; 1♂, Willendorf, 3./4.VI.[19]11 (M. Wi). – **Steiermark**: 1♂, 1♀, Styria, Riegersburg, Kreisel leg. (C. Ko). – **Burgenland**: 2♂, 8♀, 2O, 1L, 1 km O Oslip (bei Eisenstadt), 180 m, 2.VI.2005, leg. H.Bohn (A 66); 15♂, 13♀, 2O, Ödenburger Gebirge, Rabenkopf (bei Ritzing), 350 m, 2.VI.2005, leg. H.Bohn (slide: ♂, A 68/2); 1♂, 6♀, 1L, Günser Gebirge, NSG btw. Rechnitz & Markt Neuhodis, 350 m, 1.VI.2008, leg. B.&H.Bohn (A 87) (C. Bo). – 1L, Rust–St. Margarethen, Steinbruch, Wiese, # TH 182: A 94/6, 28.IX.1994, leg. B. & K.Thaler (C. Th). – 1♀, 1O, Leithagebirge, bei Hornstein, Waldlichtung, 7.VII.1981, K.Harz leg. (M. Ge). – 1♂, Oslip, 26.V.1972, Necker (ZSM).

Additional, already published localities (WERNER 1914). **Niederösterreich**: Pittental, Hütten.

Material from Slovakia

Material studied. **Bratislavský kraj**: 1♂, Plavecký Štvrtok, 12.VII.1989, P.Degma leg.; 2♂, 2♀, Závod–NPR Abrod, 10.VII.1999, O.Majzlan lgt. (C. Vi). – 1♂, Thebner Kobel [= Devínska Kobyla], 11.VI.1914 (M. Wi). – **Trnavský kraj**: 1♀, Šaštín-Stráže (7368), 12.VII.1994, L'.Vidlička leg. (C. Vi). – **Trenčianský kraj**: 1♀, Beckov, 20.VIII.1991, L'.Vidlička leg.; 1♂, Čachtice-hrad, 20.VII.1999, O.Majzlan lgt.; 3♂, 6♀, Nové Mesto nad Váhom, Turecký vrch, 27.V.1992, L'.Vidlička leg.; 2♀, Tematín–Lúka, 2.VIII.1999, L'.Vidlička lgt.; 1♀, Zliechov, St[ražovské] vrchy [Mts.], 27.VIII.1995, M.Trebatická leg. (C. Vi). – **Nitrianský kraj**: Jelenec-step, O.Majzlan leg.: 1♂, 12.VII.1995; 1♀, 18.VIII.1995. (C. Vi). – **Žilinský kraj**: 1♂, Slovakia, Ružomberok, 17.VII.[19]80, F.Chládek legt. (C. Bo).

Additional, already published localities (VIDLIČKA & MAJZLAN 1992; VIDLIČKA & SZIRÁKI 1997; CHLÁDEK 1998; VIDLIČKA 2001). – **Bratislavský kraj**: Bratislava; Plavecké Podhradie; Sološnice, (Mt.) Roštún; Stupava–Mást (Vrchná hora); Vel'ké Leváre. – **Trnavský kraj**: Buková; Hlohovec; Jahodník; Smolenice. – **Trenčianský kraj**: Biele Karpaty, (Mt.) Vršatec; Mníchova Lehota; Podmanín–Pechov laz; Višňové; Vrbovce (okr. Senica), Štefanová (≈ Prí Húšti). – **Nitrianský kraj**: Nitra, (Mt.) Žibrica; Nitra, (Mt.) Zobor; Vel'ký Tríbeč–Nitrianska Streda, (Mt.) Hrdovická. – **Žilinský kraj**: Dziliška; Likavka; Podsmatan ová; Prosiek; Súl'ov.

Material from Hungary

Material studied. **Kom. Veszprém**: 2♂, 10♀, 1L, Lake Balaton, Mt. Csobánc (near Tapolca), 350–375 m, 6.VI.2005, leg. H.Bohn (slides: ♀, Hu 12/2,4,5); 2♂, 1♀, 1O, Várpalota, 15.V.1998, F.Chládek leg. (Hu 26) (C. Bo). – **Kom. Komárom-Esztergom**: 1♂, 1♀, Tatabánya, 14.V.1998, F. Chládek leg. (Hu 24) (C. Bo). – **Kom. Pest**: 1♂, 1♀, Érd, 15.V.

1998, F.Chládek leg. (Hu 25); 6♂, 9♀, Mt. Katalinhegy near Páty (W Budapest), 300 m, 12.VI 2005, leg. H.Bohn (slides: ♂, Hu 18/2; ♀, Hu 18/3); 8♂, 10♀, 1L, Pilisszentkereszt, 400 m, 5.VI.2005, leg. H.Bohn (slides: ♂, Hu 10/2–8; ♀, Hu 10/1); 11♂, 16♀, 1gynandromorph, 2O, Pilisszentkereszt–Dobogókö, 450 m, 5.VI.2005, leg. H.Bohn (Hu 9) (C. Bo). – 1♂, 1♀, Pilis-Geb., Roka Berg, Steppenwald, VIII.1957, G.Hangay leg. (slide: ♂, Bo 481) (M. Ge). – **Cap. Budapest**: 1♀, Budapest, 20.VI.[19]63, Hangay leg. (M. Ge).

Additional, already published localities (Vidlička & Sziráki 1997). **Kom. Veszprém**: Fenyöfö. – **Kom. Komárom-Esztergom**: Pilismarót. – **Kom. Fejér**: Csákvár; Sukoró; Szár. – **Kom. Pest**: Apajpuszta; Budaörs; Csobánka; Leányfalu; Nagykovácsi; Pilisborosjenö; Pilisvörösvár; Pilisszántó; Pilisszentkereszt, Dobogókö; Pilisszentlászló; Pomáz; Szentendre; Visegrád.

Material from Romania

Material studied. 4♂, 3♀, Siebenbürg., Coll. Br.v.W., ex Coll. Fieber (slide: ♂, Bo 1153) (M. Wi).

Description. ***Size***. Length of tegmina in male 5.6–6.2 (mean 5.9) mm, in female 3.0–3.7 (mean 3.4) mm.

Wings of male (Fig. 14A–F). **Tegmina**: Basal two thirds with almost parallel borders, in the apical third narrowing to the broadly rounded, strongly asymmetrical apex; surface plane. Colour yellowish-transparent with variously extended dark markings. In the lightest version there is a small dark marking at the base and a large dark patch in the distal half, the latter touching the anterior border, but at some distance from the posterior border of the wing. This pattern is very similar to that of *P. harzi*, but distinguished by the peaked basal end of the large distal patch. The dark markings of base and apex may be much more extended and may even be connected by a dark stripe arising from the basal peak of the distal patch, but they are never fused in full breadth. **Hindwings**: Of normal shape, not curved, strongly sclerotized.

Wings of female (Fig. 14G–K). **Tegmina**: Colour yellowish-transparent, with various dark markings: dark transversal band at the base and/or at the apical border, or almost without dark marking except a very small one at the base. **Hindwings**: Similar to males, but less strongly sclerotized.

Male abdomen (Figs. 15A–J, 16A–H, 17B–E). Tergites with moderately long spatular bristles. **T2–6**: Anterior border mesally with a notch, which is often very wide on T6. T5 mesally in the posterior part usually lighter in colour. T6 with transversal bulge of both sides connected by a lightly coloured narrow and low, slightly curved arc enclosing the semicircular depression, posterior border of the latter with two well developed lobes; area anteriorly and posteriorly of the arc usually rather dark. **T7**: Posterior incision moderately deep, with an acute-angular termination. **Mound** moderately high, about reaching the anterior border of the segment, by a longitudinal depression bipartite including also the crest region, depression, however, seldom that narrow and deep to give the impression of a longitudinal cleft; crests of both sides converging dorso-posteriorly, over a broadly rounded edge passing over into the almost vertically descending, slightly concave anterior slope; the latter similarly sclerotized as remaining surface of the tergite, but covered with smaller, normally shaped bristles. **Glandular pit**: Opening more or less rounded trapezoidal, moderately wide; median ridge high, sides variously steeply declining; anterior pouches in outline more or less circular, posterior pouches slightly narrower, narrowing usually only near the end, almost rectangularly curved towards medio-dorsally, surface often with irregular protrusions. **T8**: Trapezoidal, with angularly rounded latero-posterior corners, posterior border shallowly concave, surface with some normal bristles in the middle, other bristles spatular. **T10**: Posterior border parenthesis-shaped, with a produced obtuse tip, sides laterally convex, towards the tip concave. **Genital hook**: Claw exceptionally narrow, angularly curved, terminal half or third weakly curved, tip rather acute or broadened and towards the shaft produced to a tiny cusp, velum and denticle well developed.

Ootheca. With only 1–3 longitudinal ridges near the keel.

Diagnosis. Males and females well characterized by shape and colouration of tegmina and hindwings; additional species-specific features are in the male the unique shape of the genital hook, in the female the structure of the ootheca having only 1–3 longitudinal ridges in contrast to all other species with at least 12 ridges.

Distribution (Figs. 26, 27)**.** The distribution of *P. maculata* in **Germany** (Fig. 26) is restricted to the eastern part of the country, covering the federal states Brandenburg, Sachsen-Anhalt, Sachsen, Thüringen, Bayern and – only at its eastern border – Baden-Württemberg. In the latter two states the species follows the mountain range of the Fränkische and Schwäbische Alb. In an earlier version of the distribution map (Bohn 2003: fig. 3) the distribution appeared disjunct with a large gap separating a smaller southern area from the main population in the north. Meanwhile, the gap could be filled by new collectings in northern Bayern; the updated map (Fig. 26) shows a fairly coherent distribution. The distribution of the species in Germany now seems to be quite well known; a considerable extension by further collectings is not to be expected.

Phyllodromica maculata is, as are the other species of the group, a thermophilic species which in northern mountainous regions lives preferably on southerly exposed slopes of the hills. The species

most likely took its origin in the warmer regions of southeast Europe (Carpathian basin), where most of the species of the *maculata*-group can be found; it may have spread during the interglacial or postglacial warm periods towards the north and northwest. The colonization of Germany, where the species reaches the northwestern limit of its distribution, could have taken place via two routes, a western route along the Danube valley and a more eastern one via Slovakia and Czechia and then through the valley of the Elbe further north. The present distribution of the species does not support the western route. In Austria *P. maculata* does not reach further west than Melk on the Danube and there are no localities in between Melk and Regensburg indicating a former occurrence of the species in this part of the Danube valley. Assuming that the mountains of the Böhmerwald and Bayerische Wald performed an effective barrier to the spreading of the species towards the West, the colonization of Bayern and Baden-Württemberg should have taken place from northern Germany.

In **Switzerland**, according to FRUHSTORFER (1921), Frey-Gessner had collected several specimens of the species in the Valais, of which one is still present in the Museum d'histoire naturelle in Genève. It is undoubtedly a *P. maculata*, but its provenance from Switzerland is very doubtful, as is the case in several other species alledgedly collected in Switzerland by Frey-Gessner (*P. megerlei*, *Loboptera decipiens*). During repeated collectings in the Valais by the first author *P. maculata* could not be found.

In **Austria**, according to EBNER (1951, 1958), the species has been found in Niederösterreich (mainly in the surroundings of Wien), Oberösterreich (Kirchdorf im Kremstal), Kärnten (Klagenfurt), and Salzburg. The latter three reports are doubtful since they are only based on citations in very old publications. Recent collectings at these localities were unsuccessful; but it could be shown that the distribution of the species in other parts of the country is much more extended than thought before: *P. maculata* is widely distributed in the eastern part of Niederösterreich and in Burgenland, and its distribution is also touching the eastern part of Steiermark; near Melk (on river Danube) the species reaches its westernmost position in Austria (Fig. 27).

The species is widely distributed in **Poland** up to a latitude of about 53° (BAZYLUK 1977: fig. 130); it also occurs at suitable places throughout **Czechia** (CHLÁDEK 1998: mapa 1; VIDLIČKA & HOLUŠA 1999: fig. 2). In **Slovakia** (Fig. 27) it seems to be restricted to the western half of the country not reaching much further than to the 19° longitude in the east (CHLÁDEK 1998; VIDLIČKA 2001). In **Hungary** (Fig. 27) the species is only known from the northwestern part of the country, north of Lake Balaton and west of Budapest (VIDLIČKA & SZIRÁKI 1997). The reports of *P. maculata schaefferi* from more eastern parts of Slovakia and Hungary (VIDLIČKA & SZIRÁKI 1997) most likely apply to other species of the *maculata*-group (*P. latipennis*, *P. hungarica*).

The occurrence of *P. maculata* in the **Balkan Republics** of the former Yugoslavia is very doubtful. According to the most recent compilation (US & MATVEJEV 1967) the species should inhabit most of these countries. Unfortunately, the catalogue does not contain any details about the material on which the report is based; in Us' collection, which is deposited in the Slovenian Museum of Natural History in Ljubljana, representatives of this species are missing. On repeated collectings of the first author in various regions of the area not a single specimen of the species could be found. We, therefore, assume that the earlier reports of an occurrence of *P. maculata* in the former Yugoslavia are due to misdeterminations.

P. maculata has also been reported from **Romania**, **Bulgaria** and the **Ukraine** (PRINCIS 1971). But since the reports are from a time prior to the description of numerous new species it is not clear to which of the species they may apply. A sample of specimens from "Siebenbürgen" deposited in the Naturhistorisches Museum Wien might indicate that the distribution of *P. maculata* reaches at least as far as central Romania. But recent collectings by the first author at almost 80 localities in the northwestern part of Romania covering almost half of the provinces (Judeţ) of Romania were unsuccessful in this respect. This argues either for an extremely dispersed distribution of the species, or for an incorrect labelling of the specimens from the museum in Wien.

7.7. *Phyllodromica marani* Chládek & Harz, 1980

Figs. 18A–G, 19A–M, 27

Phyllodromica maculata marani Chládek & Harz, 1980: 177 (partly, only specimens from Domica, Plešivec, Mt. Volovec and Spišské Podhradie).

Phyllodromica marani Chládek & Harz, 1980: CHLÁDEK 1998: 9.

Phyllodromica maculata schaefferi (Gmelin, 1790) [sic! should be: Goeze, 1778]: VIDLIČKA & SZIRÁKI 1997: 210; VIDLIČKA 2001: 86; VIDLIČKA 2005: 52 (partly, mainly specimens from the Slovenský Karst in Slovakia and the Aggteleký Karst in Hungary).

Material

***Type material* (*studied*)**. **SLOVAKIA**, **Košický kraj**: 1♂, holotype, 1♀, allotype, 31♂, 13♀, paratypes, Slovenský kras, Silická planina, Domica (n. Kečovo), 350 m, 6.VII.1976, F.Chládek leg.; 7♂, 12♀, 1O, paratypes, Slovenský kras, Silická planina, Plešivec, 4.VII.1976, F.Chládek leg.; 13♂, 9♀,

paratypes, same data as previous, but 6.VII.1976; 9♂, 6♀, 3O, paratypes, same data as previous, but 8.VII.1978 (C. Ch). – 3♂, 2♀, paratypes, same data as holotype (slides: ♂, Sw 4/1,3; ♀, Sw 4/2); 1♂, 1♀, paratypes, Plešivec, 6.VII.1976 (slide: ♂, Sw 12/1) (C. Bo). – 1♂, 1♀, paratypes, Plešivec, 6.VII.1976 (slide: ♂, Bo 479); 1♂, 1♀, paratypes, Plešivec, VII.1978 (M. Ge).

Additional material studied. **Slovakia**, **Banskobystrický kraj**: 9♂, 14♀, 1O, Červenaňy (12 km WSW Jelšava), 350 m, 28.V.2009, leg. B.&H.Bohn (Sw 31); ex L: 1♀, NW margin of Kameňany (SW Jelšava), 250 m, 28.V.2009, leg. B.&H.Bohn (Sw 32); 9♂, 13♀, 2 km NE Licince (8 km W Plešivec), 260 m, 28.V.2009, leg. B.&H.Bohn (Sw 33). – **Košický kraj**: 1♀, 1O, Spišský hrad, near Spišské Podhradie (45 km W Prešov), ca. 500 m, IX.1999, leg. T.M.Saks (slide: ♀, Sw 9/1) (C. Bo). – 1♂, 1♀ (slide: ♂, Sw 10/1) & 5♂, 4♀, Slovenský kras, Koniarska planina, [Mt.] Hrad, 430 m, 8.VII.1978, F.Chládek leg.; 1♂, 1♀ (slides: ♂, Sw 11/1; ♀, Sw 11/2) & 10♂, 9♀, Slovenský kras, Plešivská planina, [Mt.] Štit, 851 m, 5.VIII.1985, F.Chládek leg. (C. Bo & C. Ch). – 1♂, 1♀, Rožňavská kotlina, Brzotín, 9.VII.1982, F.Chládek leg.; 1♂, Rožňavská kotlina, Brzotín, 18.V.1983, B.Dobšík leg.; 1♀, 1O, Slovenský kras, Silická planina, Domica, 10.VII.1967, F.Chládek leg.; 2♀, same data as previous, but 7.VII.1978; 1♂, 1♀, Slovenský kras, Silická planina, Domica-Kečovo, 6.VI.1968, R.Rozkošný leg.; 1♂, 1♀, Rožňavská kotlina, Kružná,1.VII.1982, B.Dobšík leg.; 1♀, Volovské vrchy Mts., [Mt.] Volovec – Solná lúka, 900 m, 31.VII.1971, F.Chládek leg. (slide: Bo 1144); 1♂, Slovenský kras, Plešivská planina, [Mt.] Železné vráta, 737 m, 5.VIII.1985, F.Chládek leg.; 1♂, Slovenský kras, Plešivská planina, [Mt.] Zvonárka, 13.VII.1984, B.Dobšík leg. (C. Ch). – 1♂, 1♀, Zádiel, 23.V.[19]92, Dr.Majzlan lgt. (slide: ♂, Bo 1147) (C. Vi). – **Prešovský kraj**: 35♂, 31♀, 8L, Jablonov (NW Spišské Podhradie), 500 m, 27.V.2009, leg. B.&H.Bohn (slides: ♂, Sw 25/2–5); 3♂, 2♀, margin of forest N Spišské Bystré (SWS Poprad), 680 m, 27.V.2009, leg. B.&H.Bohn (slides: ♂, Sw 26/1–3); 1♀, 1O, Spišská kapitula, near Spišské Podhradie (45 km W Prešov), ca. 450 m, IX.1999, leg. T.M.Saks (Sw 8) (C. Bo). – 1♀, Hornádská kotlina, [Mt.] Dreveník, 18.VII.1970, L.Dobiáš leg. (slide: Bo 1145); 1♂, Hornádská kotlina, Sivá brada, 18.VII.1970, L.Dobiáš leg. (slide: Bo 1143) (C. Ch). – **Hungary**, **Kom. Borsod-Abaúj-Zemplém**: 5♂, 5♀, Aggteleki-karszt, Jósvafö, 220 m, 28.V.2009, leg. B.&H.Bohn (Hu 27); 16♂, 15♀, 2L, 2O, Kis – Somos, hill N Szendrö, 200 m, 29.V.2009, leg. B.&H.Bohn (Hu 32); 12♂, 5♀, Perkupa – Szölösardó, ca. 3 km SSW Perkupa, 180 m, 29.V.2009, leg. B.&H.Bohn (slide: ♂, Hu 31/1); 8♂, 18♀, 1L, Aggteleki-karszt, Szinpetri, 200 m, 28.V.2009, leg. B.&H.Bohn (Hu 28); 6♂, 7♀, 1O, Aggteleki-karszt, Tag, N Komjáti, 200 m, 28./30.V.2009, leg. B.&H.Bohn (Hu 30) (C. Bo).

Description. ***Size***. Length of tegmina in male 5.8–6.5 (mean 6.1) mm, in female 3.2–3.8 (mean 3.5) mm.

Wings of male (Fig. 18A–C). **Tegmina**: Narrowing only in the last quarter of the length, very broadly rounded, almost symmetrical, anterior border near the middle with a slight concavity; surface almost plane, with a very weak ventral deflection in the apical third. Colour dark, anteriorly, in the basal half of the wing with a broad yellowish margin including the subcosta completely and then tapering towards the costal border, posteriorly with a narrower yellow margin in almost full length of the wing. **Hindwings**: Of normal shape, not curved, relatively large, with a broadly rounded apex and a large anal field occupying more than half of the breadth of the wing and bearing several distinct veins, predominantly membraneous, apex darkened.

Wings of female (Fig. 18D–F). **Tegmina**: Transversely or slightly obliquely cut, with rounded corners. Colour dark, with yellowish margins, broad at the anterior border, narrow at the posterior border, both possibly connected by a narrow yellowish apical margin; anterior yellowish margin beyond the subcosta with a transient or continuous broadening. **Hindwings**: Rather broad, with relatively large anal field reaching half of the breadth of the wing, predominantly membraneous or weakly sclerotized, tip narrowly dark.

Male abdomen (Figs. 18G, 19A–M). Tergites with rather short spatular bristles. **T2–6**: Mesal notch at the anterior border very small or missing. T5 with a faint lightening mesally at the posterior border. T6 with transversal bulge laterally weakly developed, towards the middle fading away; area anteriorly of the semicircular depression darkened, depression in the middle lightly coloured, laterally dark, posterior border of depression with distinct lobes. **T7**: Appearing longitudinally split by a deep and narrow mediolongitudinal depression. **Mound** not very high but reaching far anteriorly, up to the posterior border of T5, longitudinally divided by a deep, narrow cleft; crests laterally reaching slightly further anteriorly than in the middle, shaped as rather high and narrow parapet walls projecting anteriorly off the surface of the anterior slope which declines towards posteriorly to reach the posterior border of the gland opening, thus giving rise to a rather large concavity below and behind the crests, lower part of the anterior slope rather weakly sclerotized, covered with dispersed small, normally shaped bristles. **Glandular pit**: Opening strongly transverse, in anterior-posterior extension narrow; median ridge high, sides between vertically and moderately steeply declining; pouches of unusual form: anterior pouches passing over to the posterior pouches nearly without any visible discontinuities, lateral outline, therefore, almost evenly curved up to the end of the posterior pouches, the latter only slightly curved towards medio-dorsally, moderately narrowing towards the end. **T8**: Weakly trapezoidal, lateral borders almost regularly rounded, latero-posterior corners broadly rounded, posterior border shallowly angularly excised, bristles almost exclusively spatular. **T10**: Posterior border obtuse-angular, with a produced tip, laterally adjacent the tip faintly concave, remaining border straight. **Genital hook**: Claw in the basal two thirds distinctly narrowing towards distally, terminal third strongly curved, tip moderately broad, rounded or transversely cut, velum and denticle well developed.

Ootheca. With at least 12 prominent longitudinal ridges.

Diagnosis. Males and females well characterized by shape and colouration of tegmina and hindwings; in other male characters very similar to *P. hungarica* and *P. latipennis*, but well distinguished by the strong concavity of the anterior slope of the mound on T7 not found in any other species of the group and by the unique shape of the glandular pit.

Distribution (Fig. 27)**.** The species is found in Slovakia in the western half of Košický kraj (west of Košice) and along the adjacent margins of Banskobystrický and Prešovský kraj; it also extends into Hungary in the region of the Hungarian Karst (Aggteleki-karszt, northern part of Kom. Borsod-Abaúj-Zemplén).

7.8. *Phyllodromica transylvanica* Vidlička, 1994

Figs. 20A–H, 21A–L, 28

Phyllodromica transylvanica Vidlička, 1994: 56, figs. 1A–D, 3E–H, 4C–D; VIDLIČKA & SZIRÁKI 1997: 215, fig. 10.

Material

***Type material* (*studied*)**. **ROMANIA**, **Cluj Judeţ**: 1♂, holotype, Cluj-Napoca, 1.VII.1966, leg. B.Kis; 1♀, paratype, same data as holotype (Hungarian Natural History Museum, Budapest).
Additional material studied. **ROMANIA**, **Arad Judeţ**: 21♂, 16♀, S margin of Groşi (N Vârfurile), 480 m, 18.VI.2009, leg. B.&H.Bohn (Ru 64); 1♂, 1♀, SW slope of Dealu Cucurbata, hill near Şiria (NE Arad), 280 m, 21.VI.2009, leg. B.&H.Bohn (slide: ♂, Ru 76/1); 5♂, 12♀, 1L, N margin of Leştioara, Vârfurile–Hălmagiu, 250 m, 18.VI.2009, leg. B.&H.Bohn (Ru 65) (C. Bo). – **Bihor Judeţ**: 16♂, 27♀, 2O, Valea Gepiş at N margin of Groşi (E Aleşd), 300 m, 5.VI.2009, leg. B.&H. Bohn (Ru 9) (C. Bo). – **Bistriţa-Năsăud Judeţ**: 22♂, 17♀, 10L, hill SE Blăjenii de Sus (near Bistriţa), 480 m, 7.VI.2009, leg. B.&H.Bohn (Ru 18); 22♂, 20♀, 2L, 2O, Piatra (ca. 14 km NE Beclean), 300 m, 7.VI.2009, leg. B.&H.Bohn (Ru 19) (C. Bo). – **Caraş-Severin Judeţ**: 1♀, Cornişoru near Băuţar (E Oţelu Roşu), 600 m, 19.VI.2009, leg. B.&H.Bohn (Ru 69) (C. Bo). – 7♂, 3♀, Domogled, Dr. Pancic, Coll. Br.v.W. (slides: ♂, Bo 1149,1150,1154; ♀, Bo 1151,1155,1163) (M. Wi). – **Cluj Judeţ**: 28♂, 38♀, 2L, btw. Floreşti & Tăuţi (W Cluj-Napoca), 450 m, 5.VI.2009, leg. B.&H.Bohn (slides: ♂, Ru 12/1–4,9–15; ♀, Ru 12/5–7); 6♂, 2♀, 5 km WNW Huedin (50 km WNW Cluj-Napoca), 550 m, 5.VI.2009, leg. B.&H.Bohn (Ru 11); 6♂, 7♀, S border of Pădurea Lată, forest S Mociu (35 km W Cluj-Napoca), 400 m, 5.VI.2009, leg. B.&H.Bohn (Ru 13) (C. Bo). – **Maramureş Judeţ**: 18♂, 27♀, 1L, 2O, N margin of Mesteacăn (14 km SSE Şomcuta Mare), 450 m, 8.VI.2009, leg. B.&H.Bohn (Ru 26) (C. Bo). – **Mureş Judeţ**: 13♂, 52♀, 17L, NE margin of Cecălaca (S Luduş), 350 m, 6.VI.2009, leg. B.&H.Bohn (Ru 14); 16♂, 22♀, Viile Ernei, hill E Ernei (10 km NE Târgu Mureş), 400 m, 6.VI.2009, leg. B.&H.Bohn (slide: ♂, Ru 15/1) (C. Bo). – **Sălaj Judeţ**: 34♂, 31♀, 4L, 2O, Benesat (E Cehu Silvaniei), 250 m, 4.VI.2009, leg. B.&H.Bohn (slide: ♂, Ru 78/1–3); 8♂, 9♀, 1L, SW slope of Ciceiul Mare, hill N Nuşfalău, 280 m, 4.VI.2009, leg. B.&H.Bohn (Ru 7); 2♂, 4♀, Dealul Rotund, hill NE Vârşolţ (W Zalău), 320 m, 4.VI.2009, leg. B.&H.Bohn (Ru 6); 10♂, 18♀, 1L, SW margin of Halmăşd, 350 m, 4.VI.2009, leg. B.&H.Bohn (Ru 8); 17♂, 27♀, 2L, 1O, W margin of Jac (E Zalău), 300 m, 4.VI.2009, leg. B.&H. Bohn (Ru 5) (C. Bo).

Description. ***Size***. Length of tegmina in male 5.8–6.5 (mean 6.3) mm, in female 3.3–4.0 (mean 3.7) mm.
Wings of male (Fig. 20A–E). **Tegmina**: Quite narrow, almost oval, broadest in about the middle, anterior border consistently curved, apex rather narrowly rounded, slightly asymmetrical, costal veins well visible; surface plane. Colour reddish, costal field pale yellow, with a dark band over the full length of the wing, usually broad at the base, but narrowing towards the apex; occasionally dark band very broad leaving only narrow lighter margins. **Hindwings**: Not curved, apical part short, anal field long, measuring about 3/5 of the wing length, anal fold almost straight, posterior border of the wing beyond the anal fold in a sharp angle turning anteriorly forming a concave recession before reaching the apex, moderately sclerotized.
Wings of female (Fig. 20F–H). **Tegmina**: Obliquely cut with broadly rounded corners, sometimes nearly obliquely oval. Colour orange yellow, costal field pale yellow, with a large dark patch, broad at the base and strongly narrowing towards the posterior-apical corner, but not reaching the border. **Hindwings**: Similar to male.
Male abdomen (Fig. 21A–L). Tergites with long spatular bristles. **T2–6**: Mesally at the anterior border with an angular or rounded notch, on T6 rather wide. T5 mesally at the posterior border with only faint or no lightening. T6 with transversal bulges of both sides connected by a narrow lightly coloured arc enclosing the semicircular depression, area anterior of the arc and lateral parts of the depression darkened, posterior border of depression slightly bilobed. **T7**: Posterior incision moderately deep, with an acute-angular termination. **Mound** moderately high, not reaching the anterior border of the tergite, without longitudinal depression; crest transversal, dorsally curved, broadly rounded passing over into the vertically descending anterior slope, the latter deepened to a shallow cup-like concavity, well sclerotized, with normally shaped bristles, small and dispersed above, strongly increasing in length and density towards the base. **Glandular pit**: Opening almost rounded rectangular, relatively wide; median ridge high, with moderately steeply declining sides; anterior pouches in outline fairly circular, posterior pouches narrower, scarcely narrowing towards the end, curved towards medio-dorsally. **T8**: Trapezoidal, latero-posterior corners moderately broadly rounded, posterior border shallowly obtuse-angularly excised, with straight or slightly convex lateral parts, almost exclusively with spatular bristles.

T10: With broadly rounded posterior border. **Genital hook**: Claw short and broad, along the distal (convex) surface with a keel, terminal third weakly curved, with a more or less rounded tip, velum rather small, mostly with an acute tip (not in the specimen shown in Fig. 21K,L); denticle only indicated or absent.
Ootheca. With at least 12 prominent longitudinal ridges.

Diagnosis. Males and females well characterized by shape and colouration of tegmina and hindwings, males additionally by the broadly rounded posterior border of T10 and the unique shape of the genital hook.

Distribution (Fig. 28)**.** Distributed over the northwestern quarter of Romania, southwards down to the valley of Cerna (Domogled).

7.9. *Phyllodromica variabilis* Bohn, spec. nov.

Figs. 17A, 22A–L, 23A–L, 24A–L, 25A–E, 28

Phyllodromica maculata schaefferi (Gmelin, 1790) [sic!]: Vidlička & Sziráki 1997: 210 (specimens from Braşov in Romania).

Material

***Type material* (*studied*)**. **Romania**, **Braşov Judeţ**: 1♂, holotype, Braşov, SE slope of (Mt.) Tâmpa (Zinne), 850 m, 13.VI. 2009, leg. B.&H.Bohn (abdomen on 2 slides: Ru 42/10; remaining parts in alcohol) (ZSM). – 13♂, 24♀, 3O, paratypes, same data as holotype (slides: ♂, Ru 42/1,2,9; ♀, Ru 42/3–5) (1♂, 2♀, 1O in C. Ch, remaining in C. Bo). – 2♂, paratypes, Siebenbürgen, Kronstadt [= Braşov], Zinne, VII. [1]921, F.Deubel, ex Coll. Dr.Arn.Müller, Hermannstadt (slide: ♂, Bo 1124) (M. Be) – 2♂, paratypes, Siebenbürgen, Zinne bei Kronstadt [= Braşov], 25.VI.[1]918, Müller, Arnold Müller, Coll. R.Ebner (slide: ♂, Bo 1156); 1♀, paratype, Siebenbürgen, Kronstadt, Zinne, VII.[1]921, F.Deubel, Arnold Müller, Coll. R.Ebner; 1♀, paratype, Siebenbürgen, Kronstadt-Zinne, 20.VIII.1928, 700–950 m, Ebner, Coll. R.Ebner (slide: Bo 1157) (M. Wi).
Additional material studied. **Romania**, **Alba Judeţ**: 10♂, 20♀, 2O, Dealul Scaun, hill S of Mihalţ (near Teiuş), 350 m, 17.VI.2009, leg. B.&H.Bohn (slides: ♂, Ru 58/1,2; ♀, Ru 58/3,4); 34♂, 47♀, 3O, N slope of Dumbrava Şard, hill near Şard (NW Alba Iulia), 300 m, 17.VI.2009, leg. B.&H. Bohn (slides: ♂, Ru 59/1–3; ♀, Ru 59/4–6); 6♂, 33♀, 6O, Piatra Corbului, btw. Tăuţi & Meteş (NW Alba Iulia), 300 m, 17.VI.2009, leg. B.&H.Bohn (slides: ♂, Ru 61/1,2; ♀, Ru 61/3–6) (C. Bo). – **Braşov Judeţ**: 18♂, 9♀, 1O, SW slope of Dealul Lempes, hill NE Sânpetru (near Braşov), 550 m, 10.VI.2009, leg. B.&H.Bohn (slide: ♂, Ru 33/1; ♀, Ru 33/2); 5♂, 3♀, 1O, SW slope of Dealul lui Beldie, hill btw. Ariuşd & Araci (N Braşov), 550 m, 11.VI.2009, leg. B.&H.Bohn (slide: ♂, Ru 34/1) (C. Bo). – 1♂, 1♀, Siebenbürgen, Kronstadt, 29.VI.03, E.J.Lehmann S.V. (slide: ♂, Bo 1125); 1♀, Siebenbürgen, Kronstadt, 21.VI.[19]03, E.J.Lehmann S.V. (M. Be). – 1♀, Siebenbürgen, Kronstadt, F.Deubel c. (slide: Bo 239) (M. Th). – 3♀, Transsylv., Kronstadt; 1♂, Siebenbürgen, Petersberg [Sănpetru] bei Kronstadt, 17.V.[1]921, Müller, Arnold Müller, Coll. R.Ebner (M. Wi). – **Bistriţa-Năsăud Judeţ**: 13♂, 13♀, 1L, SW slope of Dealul Copu, hill E Teaca (25 km NW Reghin), 500 m, 6.VI.2009, leg. B.&H.Bohn (slides: ♂, Ru 16/1,3; ♀, Ru 16/2,4–6); 29♂, 21♀, 1L, 1O, Măgurele near Mărişelu (S Bistriţa), 400 m, 9.VI.2009, leg. B.&H.Bohn (slides: ♂, Ru 28/1,3–5; ♀, Ru 28/2,6–8) (C. Bo). – **Covasna Judeţ**: 2♂, 10♀, 1O, hill N Sânzieni (near Târgu Secuiesc), 600 m, 13.VI.2009, leg. B.&H.Bohn (slide: ♂, Ru 43/1) (C. Bo). – **Sibiu Judeţ**: 6♂, 15♀, 5L, Dealul Corbului, hill N Şura Mare (N Sibiu), 550 m, 16.VI.2009, leg. B.&H.Bohn (slide: ♂, Ru 56/1); 10♂, 20♀, 2O, Dealul Scaun, hill S of Mihalţ (near Teiuş), 350 m, 17.VI.2009, leg. B.&H.Bohn (slides: ♂, Ru 58/1,2; ♀, Ru 58/3,4); 18♂, 27♀, 1L, N margin of Şeica Mare (N Sibiu), 350 m, 15.VI.2009, leg. B.&H.Bohn (slides: ♂, Ru 51/1,2) (C. Bo). – **"Siebenbürgen"**: 1♂, Coll. Br.v.W., ex Coll. Fieber (M. Wi). – **Croatia (?)**: 1♂, Ragusa [?], Kaufmann, Coll. Br.v.W. (slide: Bo 1152) (M. Wi).

Etymology. The species name refers to the variable pattern of dark markings on the tegmina of males and females.

Description. ***Size***. Length of tegmina in male 6.0–6.6 (mean 6.3) mm, in female 3.3–3.8 (mean 3.7) mm.
Wings of male (Figs. 22A–G, 23A,B,E,F,I,J). **Tegmina**: Relatively narrow, rounded wedge-shaped, anterior border in the basal fourth or third distinctly inclining, in the mesal part straight, slightly declining, in the apical third curved to the rather narrowly rounded, slightly asymmetrical apex; surface plane. Colouration pattern very variable, from almost completely dark with yellowish anterior and posterior border to mainly yellowish with small darkenings at the base and a large dark patch in the apical half of the tegmen. **Hindwings**: Of normal shape, not curved, moderately sclerotized.
Wings of female (Figs. 22H–L, 23C,D,G,H,K,L). **Tegmina**: Transversely or slightly obliquely cut, with rounded corners. Colour pattern similarly variable as in male, from mostly dark with yellowish borders to mostly yellowish with small darkenings at the base and apically; in intermediate forms with a dark apical patch or band, the latter converging towards the apical border, touching it near the apico-posterior corner. **Hindwings**: Similar as in male, but apical part shorter.
Male abdomen (Figs. 24A–L, 25A–E). Tergites with moderately long spatular bristles. **T2–6**: Anterior border mesally notched, very widely on T6 (difficult to see due to the lightened margin). T5 mesally at the posterior border only faintly lightened. T6 with transversal bulge of both sides connected by a narrower, slightly curved arc enclosing the semicircular depression. The arc is lightly coloured and at some distance

from the transversal ridge, depression, therefore, rather narrow (anterior-posterior extension), posterior border weakly bilobed. **T7**: Posterior incision moderately deep, with a rounded acute-angular termination. **Mound** moderately high, about reaching the anterior border of the tergite, weakly bipartite by a slight longitudinal depression reaching up to the crest, the latter in a very broad curvature passing over into the vertically descending anterior slope, the latter almost plane, well sclerotized, with normally shaped bristles increasing in length and density towards the base. **Glandular pit**: Opening variously shaped, relatively wide, sometimes anteriorly on both sides similarly but less strongly produced as in *P. halterisignata*, outline of the opening due to a fuzzy pigmentation often difficult to define (Figs. 24F, 25A,E); median ridge moderately high, anteriorly often lightly coloured, with rather flat sides; anterior pouches in outline circular or oval, the posterior shorter and slightly narrower, scarcely narrowing towards the end, weakly curved towards medio-dorsally. **T8**: Trapezoidal, latero-posterior corners broadly rounded, posterior border shallowly concave, bristles almost exclusively spatular. **T10**: Posterior border obtuse-angular to parenthesis-shaped, mesally distinctly produced to a rounded tip, adjacent lateral parts concave, more laterally straight or convex. **Genital hook**: Terminal third scarcely curved, ending in a broadly rounded, stout tip, velum and denticle well developed.
Ootheca. With at least 12 distinct longitudinal ridges.

Taxonomical remarks. The species shows an unusual high variability in the colouration of the tegmina, much more pronounced between different populations rather than within one population (locality). The colouration follows a geographical gradient: The darkest forms are found in the surroundings of Brašov (localities Ru 33,34,42,43; Fig. 22A,B,H,I) at the southeastern margin of the hitherto known distribution area, the lightest opposite at the northwestern margin of the area (localities Ru 16,28,61, in Fig. 28 numbers 3,2,1; Fig. 23A–L); slightly more eastward of the latter intermediate forms are found (Ru 58,59; Fig. 22D,E,J,K). The gradient most likely reflects the spread of the species in the past in either direction. Apart from colouration no consistent differences in other structures have been found which would argue for a division of the species into different taxa.

Diagnosis. Due to the high variability in the colouration of the tegmina the species shows similarities with several other species of the *maculata*-group in this feature. But a careful analysis of the wing characters allows a reliable determination even in the female sex. As additional species-specific male characters may be mentioned the shape of T6 (arc at a distance from the transversal ridge), shape and orientation of the posterior pouches of the pit of T7 and the stout tip of the genital hook.

Distribution (Fig. 28)**.** The species is found in central Romania, immediately east of the area of *P. transylvanica*. Further collectings are necessary to clarify the eastern and southern limits of its distribution.

The provenance of a male specimen from Brunners Collection in Wien labelled with "Ragusa" is unclear. Ragusa is the former name (used up to 1918) of Dubrovnik (Croatia) and the name of a city in southern Sicily. The occurrence of the species at one of these localities seems unlikely in the light of recent collectings of the first author in these regions. Possibly, the interpretation of the locality as Ragusa (presumably by Brunner v.W.) is wrong; the name of the locality on the original label is – at least for the authors of this paper – partly unreadable.

8. Discussion

8.1. Distribution and ecological constraints

The *maculata*-group of *Phyllodromica* now comprises fourteen species which are distributed over a large area between Germany in the NW and the Kaukasus and Elburz Mountains in the SE. This includes the countries Iran (northern part), Azerbaidjan, Armenia, Georgia, Russia (along the coast of the Black Sea), Ukraine (Krim peninsula), Romania, Hungary, Austria (eastern part), Slovakia, Czechia, Poland and Germany (southern and eastern parts). The distribution of the species is not homogeneous, there are two relatively small areas showing a comparably high radiation of the group containing the majority of the species: the Krim peninsula and the immediately adjacent Black Sea coast of Russia on the one hand, and the border region between Slovakia and Hungary on the other hand, each with five endemic species, the latter additionally with the widely distributed *P. maculata* (Fig. 27).

The radiation of the *maculata*-group in the Slovakian-Hungarian border region may have had its origin in the changing climatic conditions during the Quaternary glaciations. The southern border of the ice shield in its maximal extension was near that region, roughly along the southern slope of the mountains of the High Tatra. The various advances and subsequent withdrawals of the ice, possibly in connection with the formation of longer glacier tongues, may have provided the necessary isolation events. This would presuppose that the populations concerned could sur-

vive in some proximity to the border of the ice. The species of the *maculata*-group, however, are strongly thermophilic; under temperate climatic conditions they prefer warm, southerly exposed slopes of hills. Therefore, it is doubtful whether glaciations played a major role for the radiation of the group.

More decisive for the occurrence of radiation in the *maculata*-group may have been its dependence on another ecological factor: The species obviously prefer (or need) calcareous underground. In southern Germany, for example, *P. maculata* follows the Jurassic limestone mountains of the Schwäbische and Fränkische Alb, in central Germany the species is found at suitable places with Muschelkalk underground; and the two areas containing the majority of the species (Slovakia-Hungary and the Krim) consist for large parts of calcareous mountains. But the geological conditions are seldom uniform over a larger area, calcareous and siliceous areas often alternate over shorter or longer distances, a situation which is also found in the Slovakian-Hungarian border region. Thus, smaller and larger islands with calcareous underground were present within which the populations may have been isolated over a longer period of time – an important prerequisite for radiation to take place.

The six species occurring in the Slovakian-Hungarian border region all have separate distribution areas. In some cases the distances between neighbouring areas or localities are very small, for example, for the species *P. hungarica* and *P. chladeki* near Tisovec, or for the species *P. marani* and *P. harzi* in the Slovakian Karst near Plešivec and near Zadiel (arrows in Fig. 27). But, in spite of the close neighbourhood, the species obviously remain strictly separate; we don't know of any case in which two different species of the group have been found at the same locality. They may be accompanied by other representatives of the Ectobiinae, for example by *Phyllodromica megerlei* and/or *Ectobius* species (*E. lapponicus*, *E. erythronotus* or *E. sylvestris*) but not by members of their own group. Similarly, the three or four species found in Romania also inhabit different areas without overlap; whether this is also true for the species inhabiting the Krim remains to be clarified.

The strict spatial separation of the species of the *maculata*-group suggests strong interspecific competition for space and/or food. Additionally, ecological differences between the various areas and the adaption of the respective inhabitants to these conditions may have strengthened the separation and thus also promoted radiation. This may be true for species with very restricted distribution as *P. chladeki* and *P. harzi*; the former only occurs along the mountain chain of the Spišskogemerský Karst, the latter is restricted to the Slovenský Karst and its continuation in Hungary, the Aggteleki Karst. One species, *P. halterisignata*, has hitherto only been found on a single hill in northern Romania. In spite of a careful search in the surroundings no further locality with this species was detected. It would be interesting to know the geological conditions of this hill and its surroundings.

The Slovakian-Hungarian Karst is also known for the occurrence of some remarkable species of Orthoptera: *Paracaloptenus caloptenoides* Brunner v. W., 1861, which is mainly distributed in the southern Balkans, reaches the northernmost point of its distribution in the Aggteleki Karst (Varga 2003); and *Isophya beybienkoi* Mařan, 1958, is endemic to the Slovenský Karst (Kenyeres et al. 2009). The number of endemic species of Orthoptera increases considerably if we extend our considerations to the further environment, the Carpathian basin, which, according to Williams et al. (1999), is one of the regions of Europe having the highest biodiversity. The Carpathian basin comprehends the countries Slovakia, Hungary and most of Romania, and thus includes the distribution areas of the species of the *maculata*-group as treated herein completely (eight species) or at least partly (*P. maculata*). The numerous endemic Orthoptera of this region, however, belong to a variety of genera usually having a wider distribution outside this region; a comparable radiation within a group of closely related species as is shown for the *maculata*-group has not been observed in the Orthoptera.

8.2. Characterization of species

The most important characters allowing a clear identification of the species in the male sex without more extended preparation procedures are those of the wings: colouration as well as shape of tegmina and hindwings.

The colouration pattern of the tegmina is relatively simple and shows only a rather narrow range of interspecific variation extending between the two following extremes: tegmina mostly dark with yellowish margins along the anterior and posterior borders – tegmina mostly yellowish with a large dark patch in the distal half, additionally often with smaller dark areas near the base. Nevertheless, the species are usually well characterized by a species specific colouration pattern. In some species, however, the intraspecific variation is quite extended and may overlap with that of other species (*P. variabilis – P. maculata*, *P. marani – P. latipennis*). In these cases the different shape of the tegmina usually allows a clear decision. The differences may concern the outline of the tegmina (anterior and posterior border for the most part either parallel or at an angle, apex either broadly or narrowly rounded) or the three-dimensional appearance (tegmina either plane or with a local ventral

deflection). Hitherto, the differences in the shape of the tegmina had been mainly neglected; the confusion of the species *P. marani* and *P. latipennis* is certainly due to this neglect.

The strongly reduced hindwings are, in spite of their small size, another important source of species specific characters (CHLADEK & HARZ 1977). Part of the species (*P. halterisignata*, *P. harzi*, *P. hungarica*) show a very characteristic curvature. In females the curvature is less obvious, but the hindwings have nevertheless a very characteristic shape different from the species with not-curved wings.

The combination of all wing characters allows an unequivocal identification of the species even in the female sex. Characterization and identification of the species is further ascertained by a series of other morphological characters of the males at least partly requiring more extended preparation procedures. The characters concern the shape of T6, T7 with mound and glandular pit, T8, T10, and the genital hook. Among these, the shapes of mound and hook are the most important; they show great interspecific but little intraspecific variation and are, therefore, suitable candidates for phylogenetic considerations.

8.3. Phylogenetic considerations and perspective

The abdomen of the males of the *maculata*-group shows a series of highly specialized characters: Shape of T6 with semicircular depression, T7 with mound and glandular pit, and the dorsal trough formed by T2–6. The combination of all these characters strongly argues for the monophyly of the *maculata*-group as treated herein, and the incorporation of the species occurring southeast of Romania presumably would not change this conclusion.

A thorough analysis of the interspecific relationships and the phylogeny of the *maculata*-group is planned for the second part of the revision, in which the remaining species will be treated. The so far very incomplete knowledge of the features of these species does not yet allow final conclusions; nevertheless, some preliminary considerations may already be discussed in the following.

One of the Krimean species (*P. adusta*) has kept an undoubtedly primitive character: its hindwings are less reduced than in all other species. They are longer (about half of the length of the tegmina, in the western species between a third and a quarter) and their anal field shows a fan-like folding (H. Bohn, unpublished results). The occurrence of the species having the most primitive hindwings on the Krim might indicate that the *maculata*-group took its origin there and has spread from there towards the northwest.

Another wing feature presumably important for a phylogenetic analysis is the curvature of the hindwings, a feature not found in any other species group of *Phyllodromica*. It is certainly a derived character and can be considered as a synapomorphy of *P. halterisignata*, *P. harzi* and *P. hungarica* arguing for a close relationship of the three species.

In looking for other derived characters among the species of the *maculata*-group treated herein we have to consider the longitudinal "splitting" of the mound of T7 characteristic for the species *P. hungarica*, *P. latipennis* and *P. marani*; the simple, undivided shape of the mound found in *P. chladeki*, *P. halterisignata*, *P. harzi*, *P. transylvanica*, and *P. variabilis* can be interpreted as more primitive, and the incomplete division in *P. maculata* might be seen as a transitional state.

However, the implications from the two assumed synapomorphies mentioned above, curvature of hindwings and splitting of the mound, are contradictory; the presence of *P. hungarica* in both groups sharing either of the two apomorphies suggests the occurrence of homoplasies in one of the characters used. It seems unlikely that hindwing curvature has evolved more than once independently; the curved hindwing in the male is always connected with a very specific shape of the female hindwing common to all three species. But a split mound might have been developed more often; in several species with an undivided mound there are already tendencies for a division of the mound recognizable (*P. harzi*, *P. maculata*, *P. variabilis*), and a pure strengthening of the expression of an already present character does not seem to be that seldom to make parallel evolution unlikely. It seems that the eastern species from the Krim and Kaukasus also have a more or less divided T7 (BEY-BIENKO 1950); however, the descriptions and accompanying images are not detailed enough to allow a direct comparison with the western species. The situation for the other character in question is still worse; there is no information about the structure of the hindwings of the eastern species, as is also true for several other assumedly important structures like T6, the glandular pit of T7 or the genital hook.

The planned revision of the group of the eastern species presupposes new collectings. On the one hand, the available material is rather sparse, especially in European collections; an increase in the number of specimens and localities would be desirable in order to get an impression of the variability of the species. Secondly, there is a wide gap between the easternmost locality of the western species in central Romania (Fig. 28) and the westernmost localities of the eastern species on the Krim. An attempt should be made to close this gap by collectings on the eastern slopes of the Carparthian Mountains, in Moldova and the adjacent parts of the Ukraine. And thirdly, for the reconstruc-

tion of the phylogeny both, morphological and molecular methods should be applied; for the latter the use of fresh and adequately fixed material is preferable.

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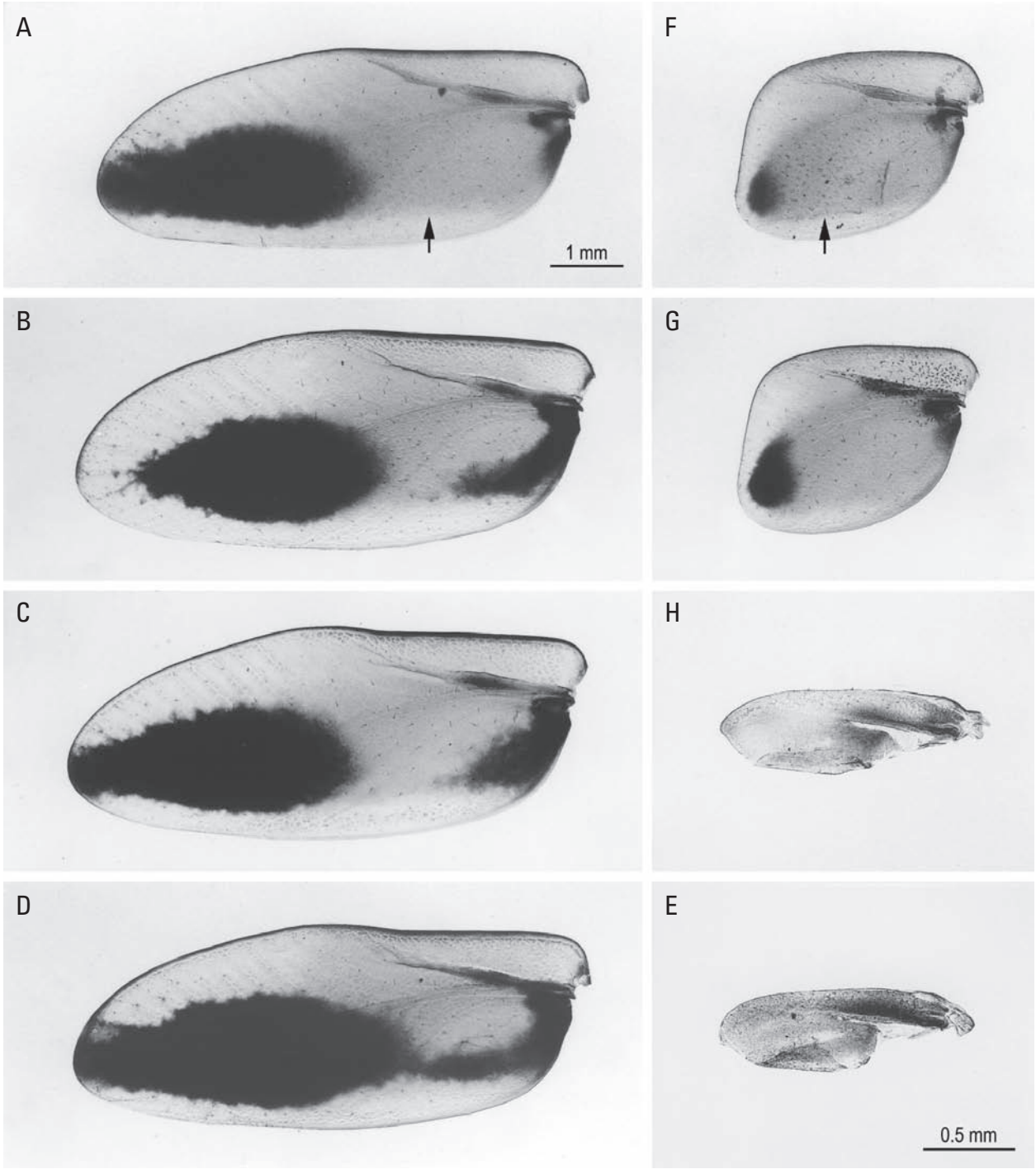
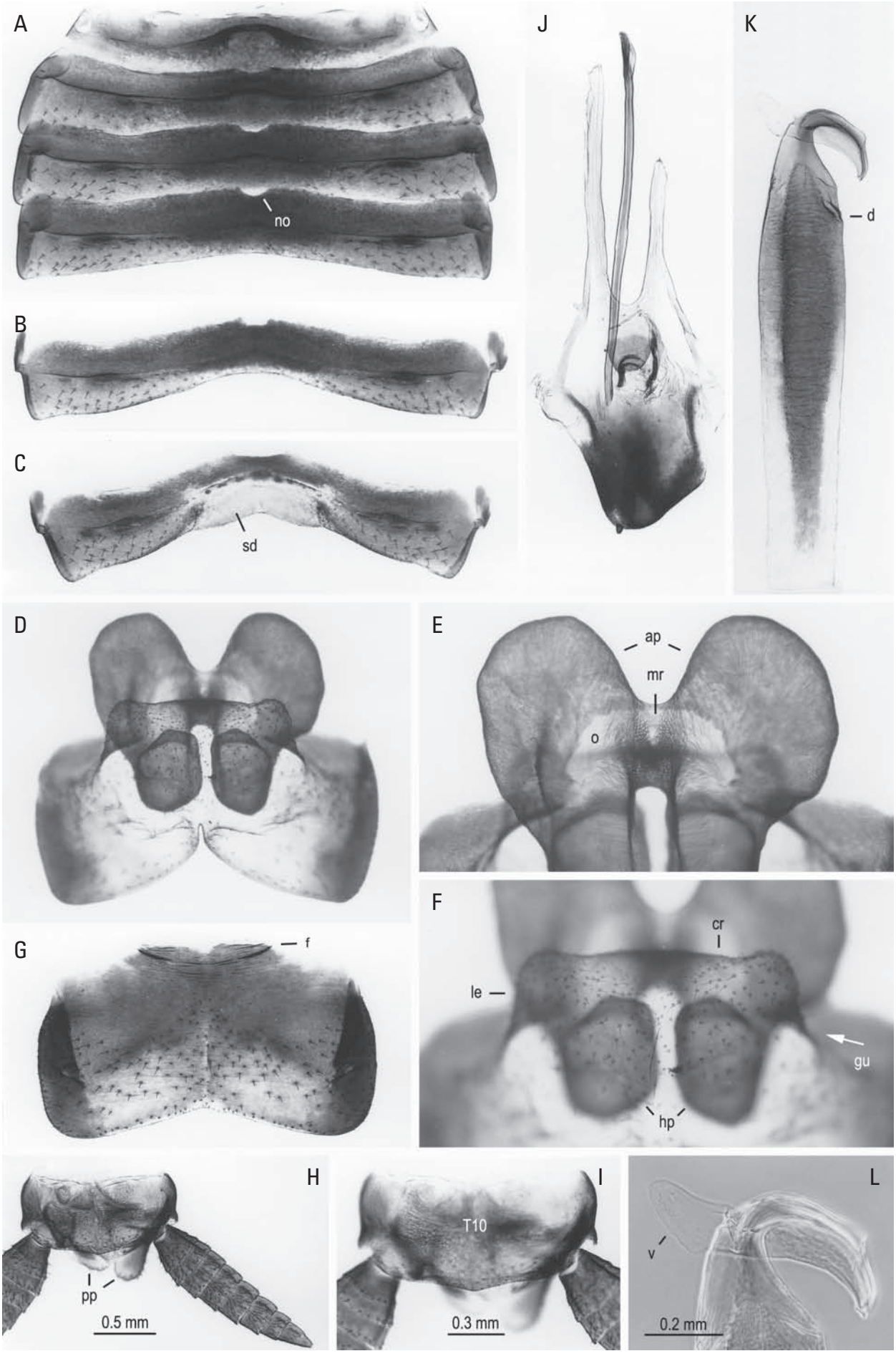


Fig. 2. *Phyllodromica chladeki*, wings. **A**–**D**: tegmina of males; **E**: hindwing of male; **F**,**G**: tegmina of females; **H**: hindwing of female. The arrows point to orange tinged areas. – Enlargements: same scale for (A–D,F,G) and for (E,H). – Specimen identification: Sw 6/1, paratype (A,E), Sw 29/1 (B), Sw 29/3 (C), Sw 29/2 (D), Sw 6/2, paratype (F,H), Sw 29/4 (G).

Fig. 3. → *Phyllodromica chladeki*, male abdominal structures. **A**: T1–4; **B**: T5; **C**: T6; **D**–**F**: T7 with glandular pit, D complete, E detail with focus on anterior pouches (**ap**), opening (**o**) and median ridge (**mr**) of the pit, F detail with focus on transversal crest (**cr**) and lateral edge (**le**) of the mound, dorsally curved posterior pouches (**hp**) shining through, arrow indicates the position of the gutter (**gu**) beginning at the base of the lateral edge; **G**: T8, **f** cuticular fold; **H**,**I**: terminalia with T10 and paraprocts (**pp**); **J**: S9, subgenital plate (dorsal view) with phallomeres, hook removed; **K**,**L**: hook (dorsal view, posterior end on top), **d** denticle, **v** velum. – Enlargements: same scale for A–D,G,H,J and for E,F,I,K. – Specimen identification: Sw 29/8 (A–C,K,L), Sw 29/7 (D–G), Sw 29/10 (H,I), Sw 29/12 (J).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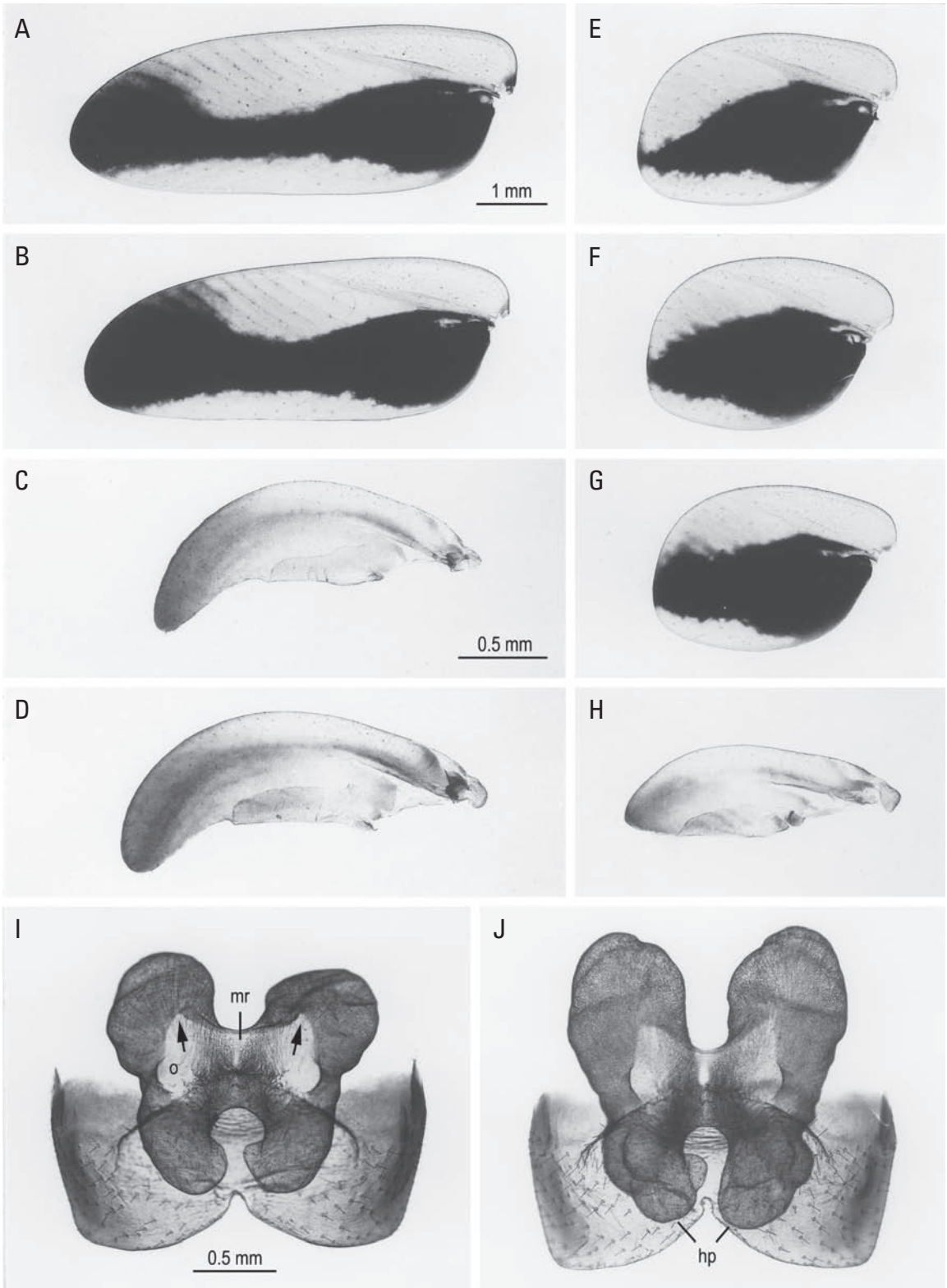
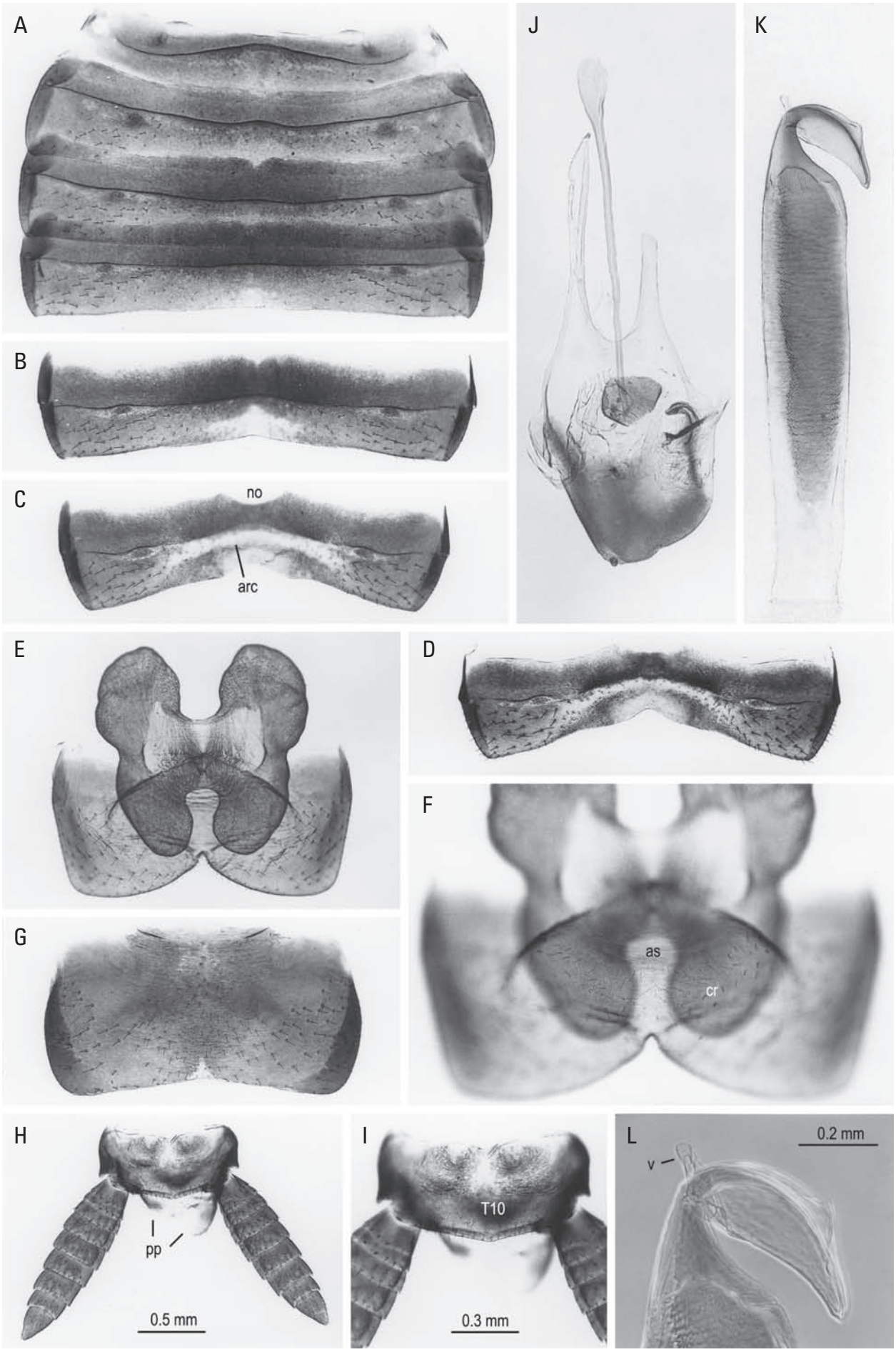


Fig. 4. *Phyllodromica halterisignata*, wings and T7 of male. **A**,**B**: tegmina of males; **C**,**D**: hindwings of males; **E**–**G**: tegmina of females; **H**: hindwing of female; **I**,**J**: T7 of male with glandular pit, anterior border of the opening (**o**) acute-angularly produced on both sides (arrows), **mr** median ridge, **hp** irregularly shaped posterior pouches in J. – Enlargements: same scale for A,B,E–G, for C,D,H, and for I,J. – Specimen identification: Ru 77/2, holotype (A,C); Ru 77/6 (B), Ru 77/5 (D,I), Ru 77/4 (E), Ru 77/8 (F,H), Ru 77/3 (G), Ru 77/11 (J), all paratypes.

Fig. 5. → *Phyllodromica halterisignata*, male abdominal structures. **A**: T1–4; **B**: T5; **C**,**D**: T6, **no** notch; **E**,**F**: T7 with glandular pit, E complete, F detail focused on crest (**cr**) and anterior slope (**as**) of mound; **G**: T8; **H**,**I**: terminalia with T10 and paraprocts (**pp**); **J**: S9, subgenital plate (dorsal view) with phallomeres, hook removed; **K**,**L**: hook (dorsal view, posterior end on top), notice missing denticle and very small velum (**v**). – Enlargements: same scale for A–E,G,H,J and for F,I,K. – Specimen identification: Ru 77/2, holotype (A–C,G,K,L); Ru 77/13 (D), Ru 77/10 (E,F), Ru 77/11 (H–J), all paratypes.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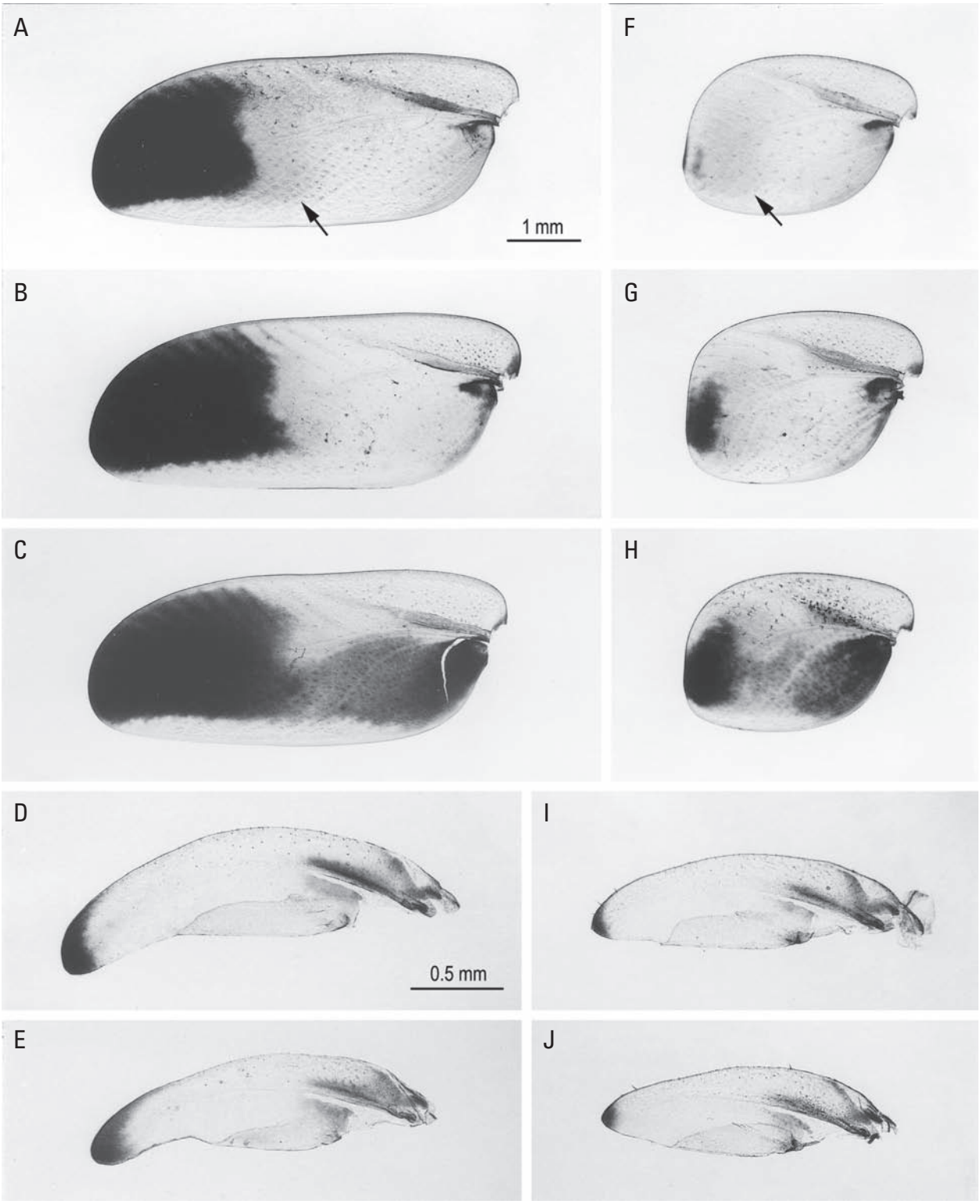
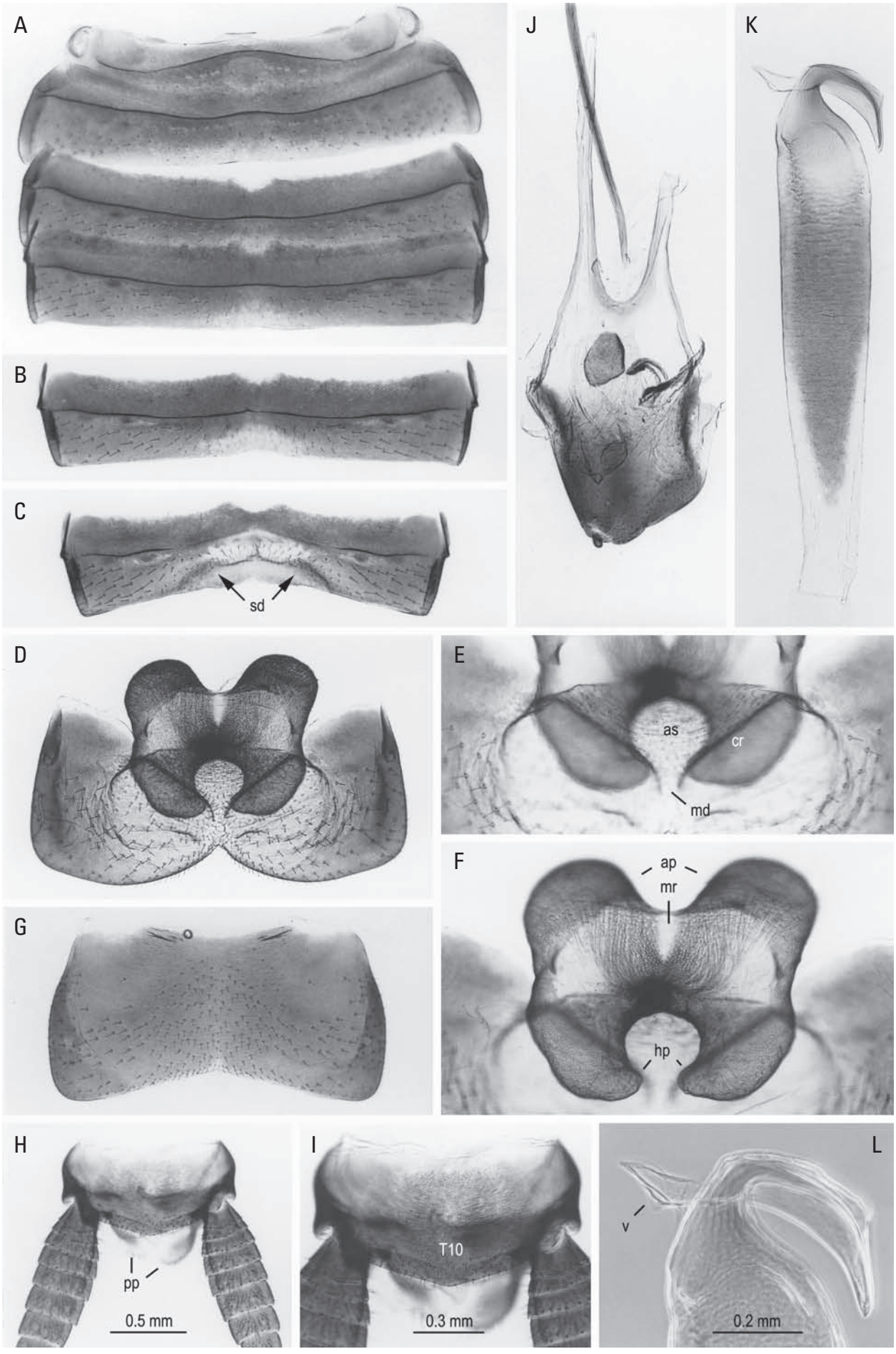


Fig. 6. *Phyllodromica harzi*, wings. **A**–**C**: tegmina of males; **D**,**E**: hindwings of males; **F**–**H**: tegmina of females; **I**,**J**: hindwings of females. The arrows point to orange tinged areas. – Enlargements: same scale for A–C,F–H and for D,E,I,J. – Specimen identification: Hu 29/2 (A), Sw 5/1, paratype (B,E), Hu 29/1 (C), Sw 34/1 (D), Hu 29/3 (F), Sw 5/2, paratype (G,J), Hu 29/4 (H), Sw 34/2 (I).

Fig. 7. → *Phyllodromica harzi*, male abdominal structures. **A**: T1–4; **B**: T5; **C**: T6, **sd** semicircular depression; **D**–**F**: T7 with glandular pit, D complete, E detail showing crest (**cr**), anterior slope (**as**) of the mound and median depression (**md**), F detail showing structures of the glandular pit (**ap**, **hp** anterior and posterior pouches, **mr** median ridge); **G**: T8; **H**,**I**: terminalia with T10 and paraprocts (**pp**); **J**: S9, subgenital plate (dorsal view) with phallomeres, hook removed; **K**,**L**: hook (dorsal view, posterior end on top), **v** velum, notice missing denticle. – Enlargements: same scale for A–D,G,H,J and for E,F,I,K. – Specimen identification: Hu 29/2 (A–C), Sw 20/1, paratype (D–F), Sw 5/1, paratype (G), Sw 34/1 (H,I), Sw 34/4 (J), Hu 29/2 (K,L).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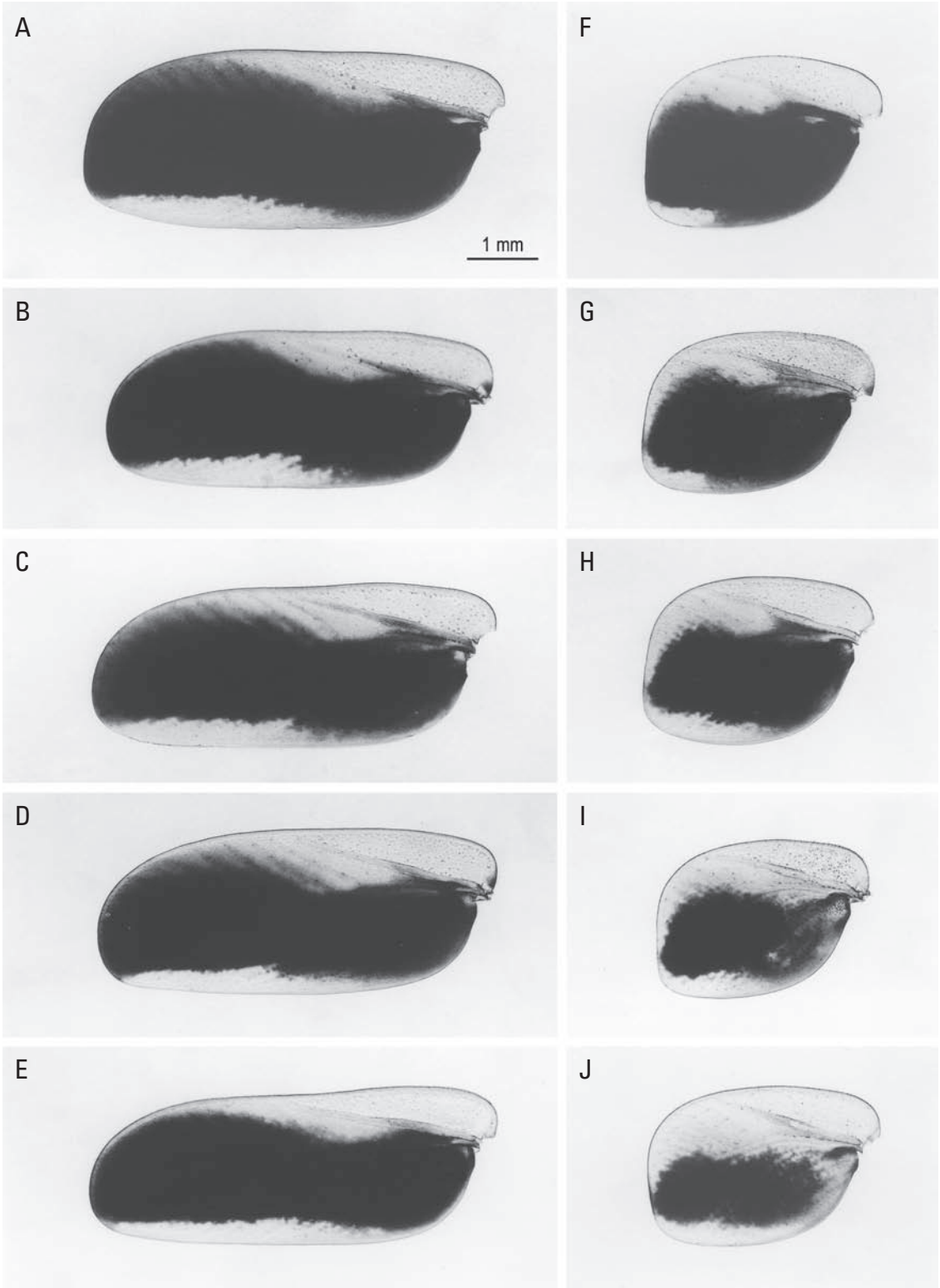


Fig. 8. *Phyllodromica hungarica*, tegmina. **A**–**E**: males; **F**–**J**: females. – Enlargements: same scale for all figures. – Specimen identification: Hu 6/6 (A), Sw 1b/1, from type locality of *P. dobsiki* (B), Sw 1/1, paratype of *P. dobsiki* (C), Hu 7/6 (D), Hu 33/1 (E), Hu 6/3 (F), Sw 1/2, paratype of *P. dobsiki* (G), Hu 7/4 (H), Sw 1b/5, from type locality of *P. dobsiki* (I), Sw 2/1 (J).

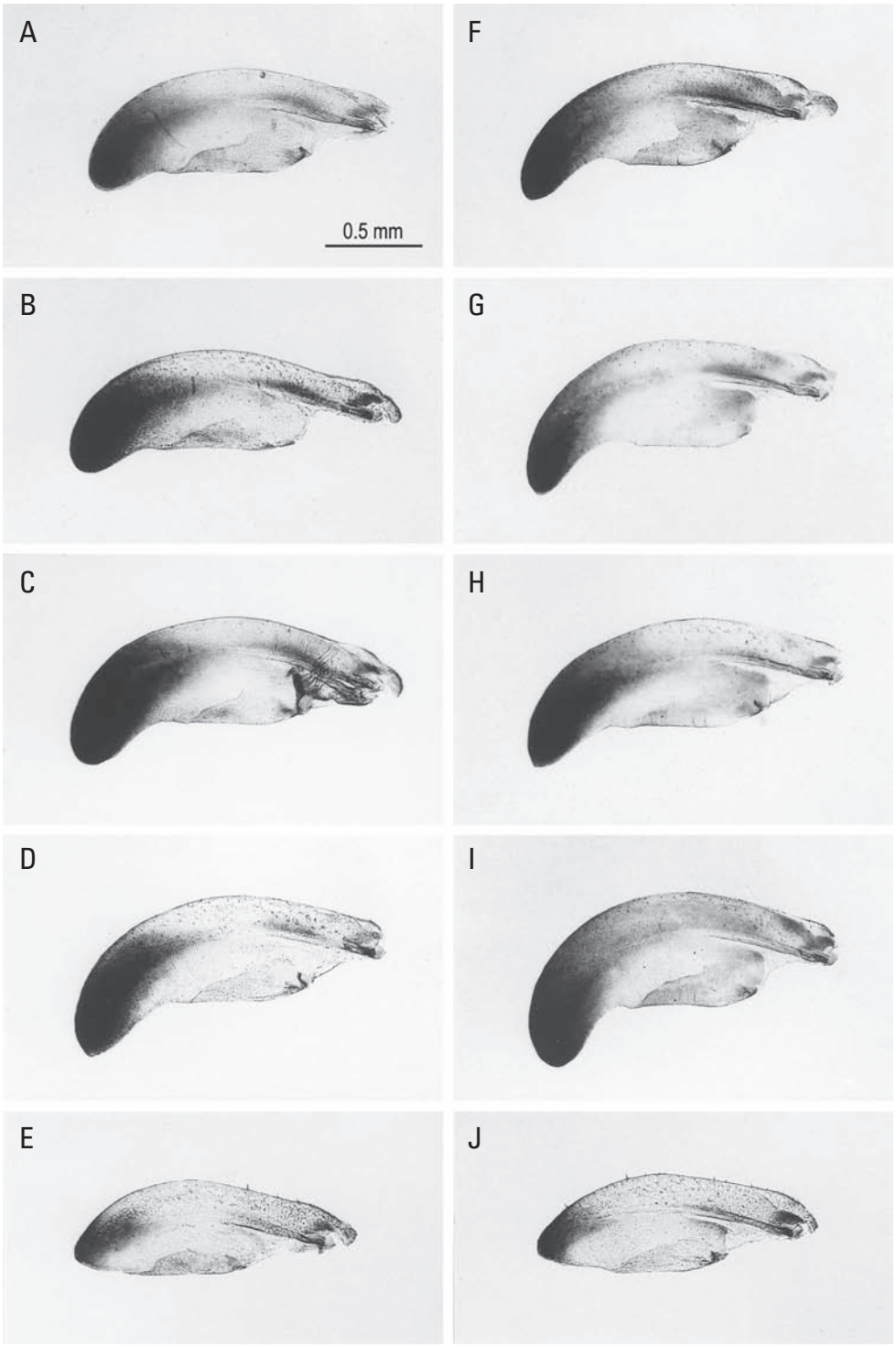


Fig. 9. *Phyllodromica hungarica*, hindwings. **A**–**D**, **F**–**I**: males; **E**,**J**: females. **A**–**E** from the type locality of *P. dobsiki* in Slovakia, **F**–**J** from a locality about 10 km SE of the type locality of *P. hungarica* in the Bükk National Park of Hungary. – Enlargements: same scale for all figures. – Specimen identification: Sw 1a/1, paratype of *P. dobsiki* (A), Sw 1b/7 (B), Sw 1b/1 (C), Sw 1b/6 (D), Sw 1/2, paratype of *P. dobsiki* (E), Hu 6/7 (F), Hu 6/2 (G), Hu 6/6 (H), Hu 6/4 (I), Hu 6/3 (J).

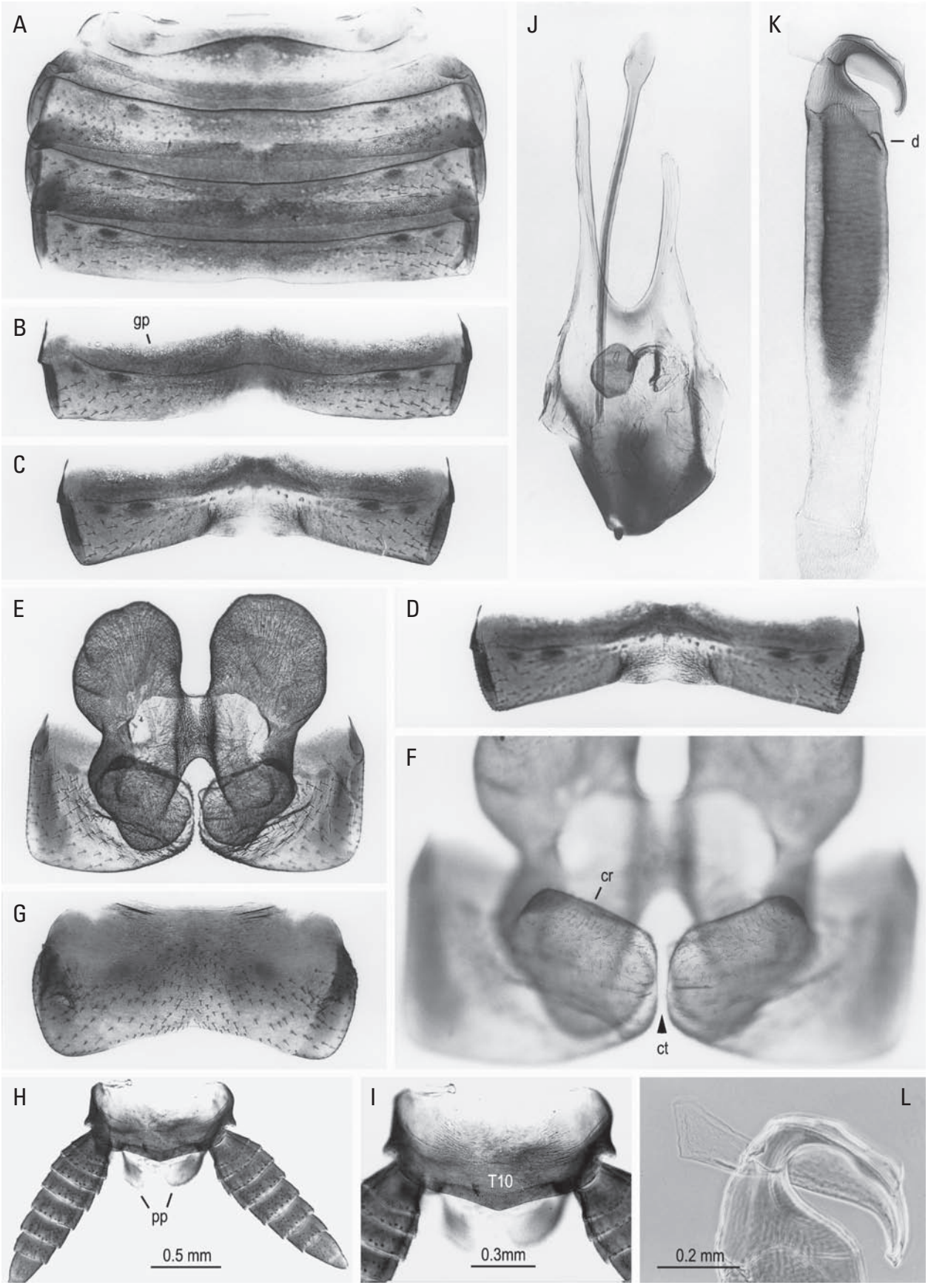


Fig. 10. *Phyllodromica hungarica*, male abdominal structures, specimens from near the type locality in the Bükk Mountains. **A**: T1–4; **B**: T5, **gp** glandular pores; **C**,**D**: T6 in different focus; **E**,**F**: T7 with glandular pit, E complete, F detail showing the mound with median cleft (**ct**) deeply dividing the mound and its crest (**cr**); **G**: T8; **H**,**I**: terminalia with T10 and paraprocts (**pp**); **J**: S9, subgenital plate (dorsal view) with phallomeres, hook removed; **K**,**L**: hook (dorsal view, posterior end on top), **d** denticle. – Enlargements: same scale for A–E,G,H,J and F,I,K. – Specimen identification: Hu 6/2 (A–D,G), Hu 7/5 (E,F), Hu 6/7 (H,I), Hu 6/4 (J–L).

Fig. 11. *Phyllodromica hungarica*, male abdominal structures, specimens from the type locality of *P. dobsiki*. **A**: T1–4; **B**: T5; **C**: T6, **ml** median lobes; **D–F**: T7 with glandular pit, D complete, E detail showing opening (**o**) and median ridge (**mr**) of the pit and part of the anterior slope of the mound (**as**, the line touches its anterior border, reaches posteriorly up to the crests of the mound, **cr** in Fig. 11F), F detail showing the median cleft (**ct**) deeply dividing the mound and its crest (**cr**); **G**: T8 (right and posterior margin slightly damaged); **H**,**I**: terminalia with T10 and paraprocts (**pp**); **J**: S9, subgenital plate (dorsal view) with phallomeres, hook removed; **K**,**L**: hook (dorsal view, posterior end on top), **d** denticle. – Enlargements: same scale for A–D,G,H,J and for E,F,I,K. – Specimen identification: Sw 1b/6 (A), Sw 1b/7 (B,C), Sw 1a/1, paratype of *P. dobsiki* D–F,K,L, Sw 1b/1 (G–I), Sw 1/1 (J).

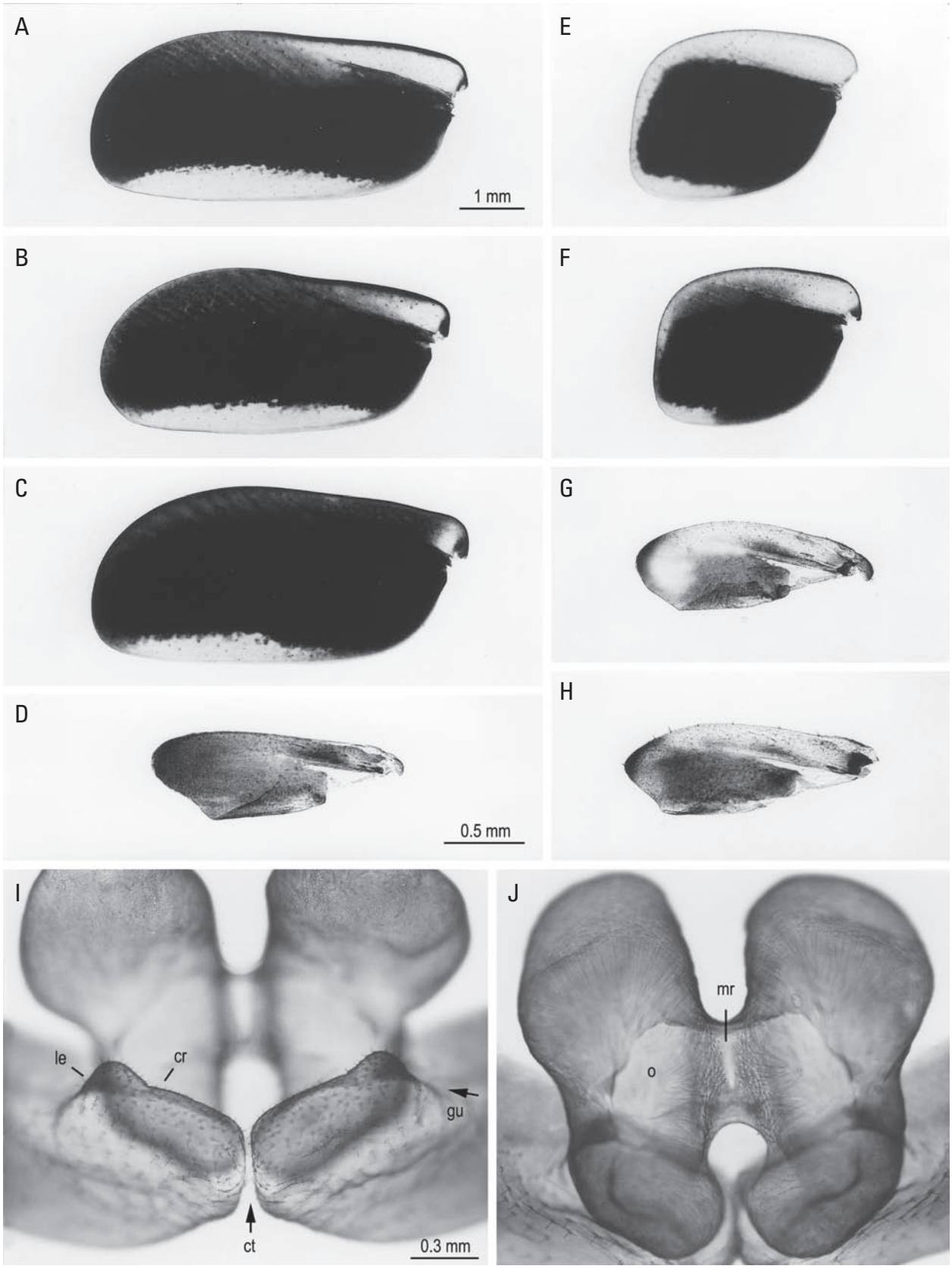


Fig. 12. *Phyllodromica latipennis*, wings and T7 of male. **A**–**C**: tegmina of males; **D**: hindwing of male; **E**,**F**: tegmina of females; **G**,**H**: hindwings of females; **I**,**J**: T7 of male with glandular pit (details), I showing the median cleft (**ct**) deeply dividing the mound and its crest (**cr**), **le** lateral edge of the mound, the arrow indicates the position of the gutter (**gu**) beginning at the base of the lateral edge, J glandular pit with opening (**o**) and median ridge (**mr**). – Enlargements: same scale for A–C,E,F, for D,G,H and for I,J. – Specimen identification: Hu 5/2, holotype (A,J), Hu 8/9 (B), Hu 8/8 (C), Hu 8/9 (D), H 8/5 (E), Hu 8/6 (F,G), Hu 8/7 (H), Hu 5/6, paratype (I).

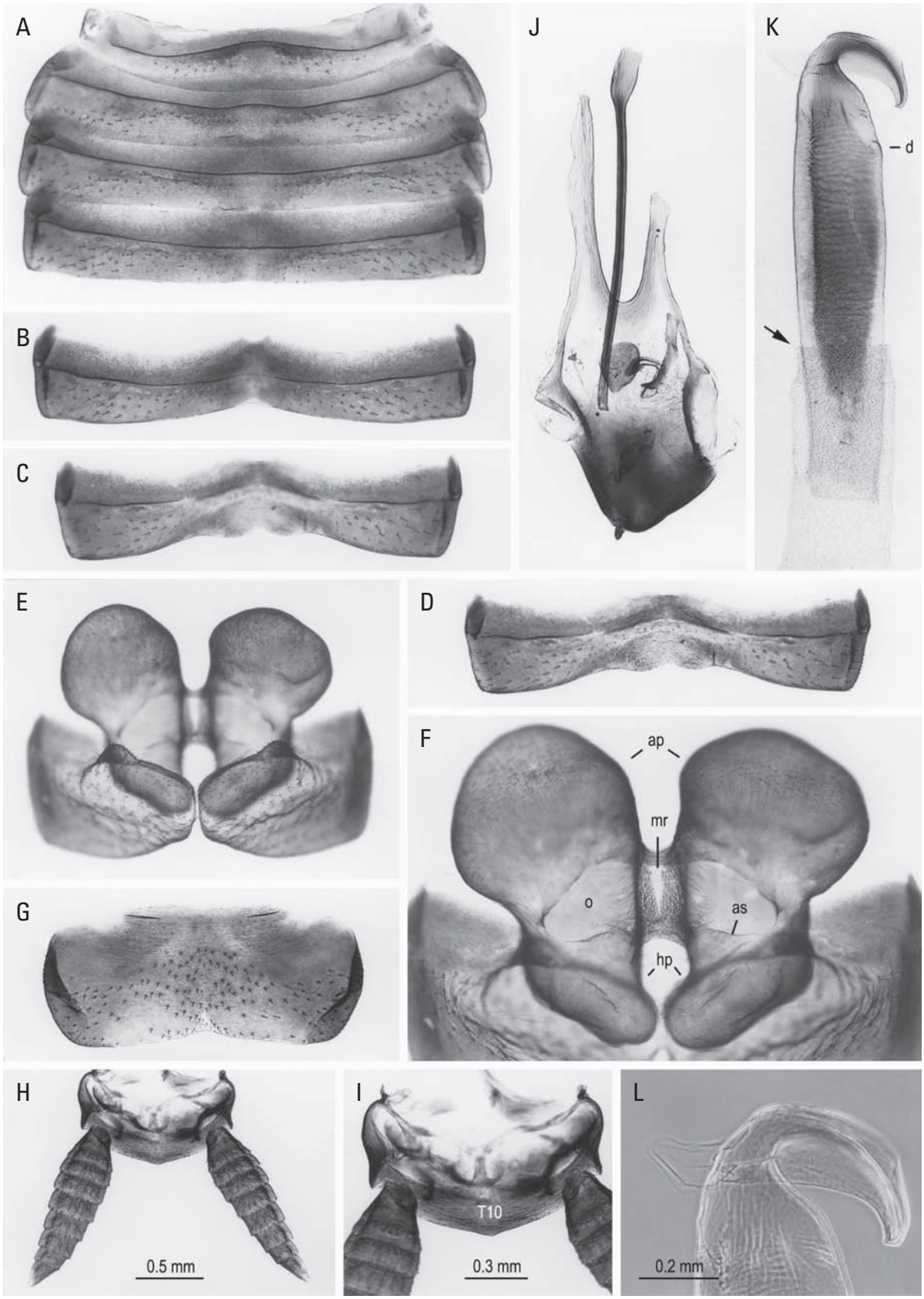


Fig. 13. *Phyllodromica latipennis*, male abdominal structures. **A**: T1–4; **B**: T5; **C**,**D**: T6 in different focus; **E**,**F**: T7 with glandular pit, E complete, F detail showing the anterior slope of the mound (**as**, the line touches its anterior border, reaches posteriorly up to the crests of the mound, **cr** in Fig. 12I) and parts of the glandular pit (**ap**, **hp** anterior and posterior pouches, **o** opening, **mr** median ridge); **G**: T8; **H**,**I**: terminalia with T10; **J**: S9, subgenital plate (dorsal view) with phallomeres, hook removed; **K**,**L**: hook (dorsal view, posterior end on top), not fully everted from its sheath (arrow), **d** relatively weakly developed denticle. – Enlargements: same scale for A–E,G,H,J and for F,I,K. – Specimen identification: Hu 5/2, holotype (A–D,H,I), Hu 5/6, paratype (E–G), Hu 5/4, paratype (J), Sw 19/1 (K,L).

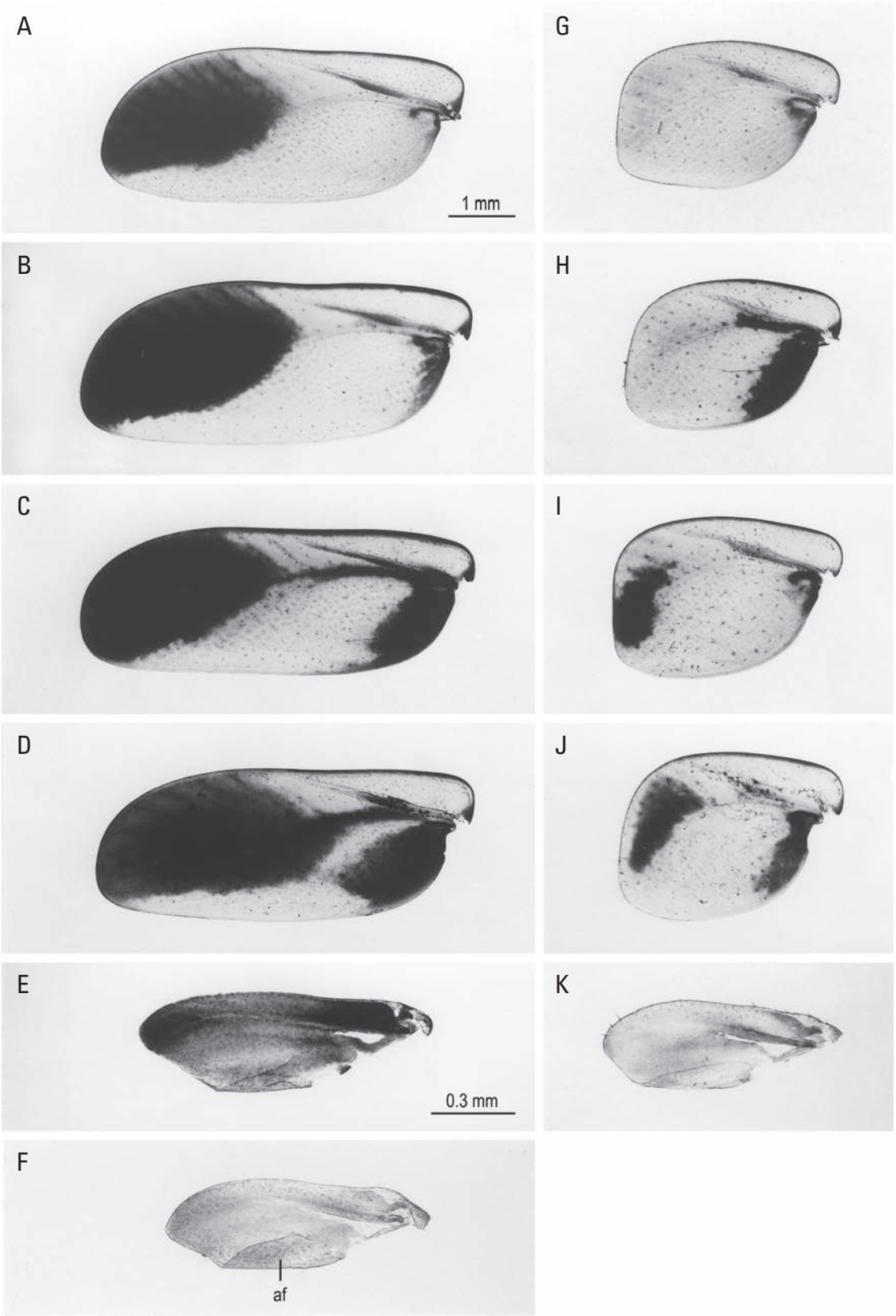


Fig. 14. *Phyllodromica maculata*, wings. **A**–**D**: tegmina of males; **E**,**F**: hindwings of males, **af** folded anal field; **G**–**J**: tegmina of females; **K**: hindwing of female. – Enlargements: same scale for A–D,G–J and for E,F,K. – Specimen identification: D 1/4 (A), D 1/1 (B), A 68/2 (C), Bo 1123, from Germany (D), D 68/2 (E), D 66/1 (F), D 48/2, right wing, image turned (G), Hu 12/2 (H), Hu 10/1 (I), Bo 1127, from Germany (J), D 1/2, right wing, image turned (K).

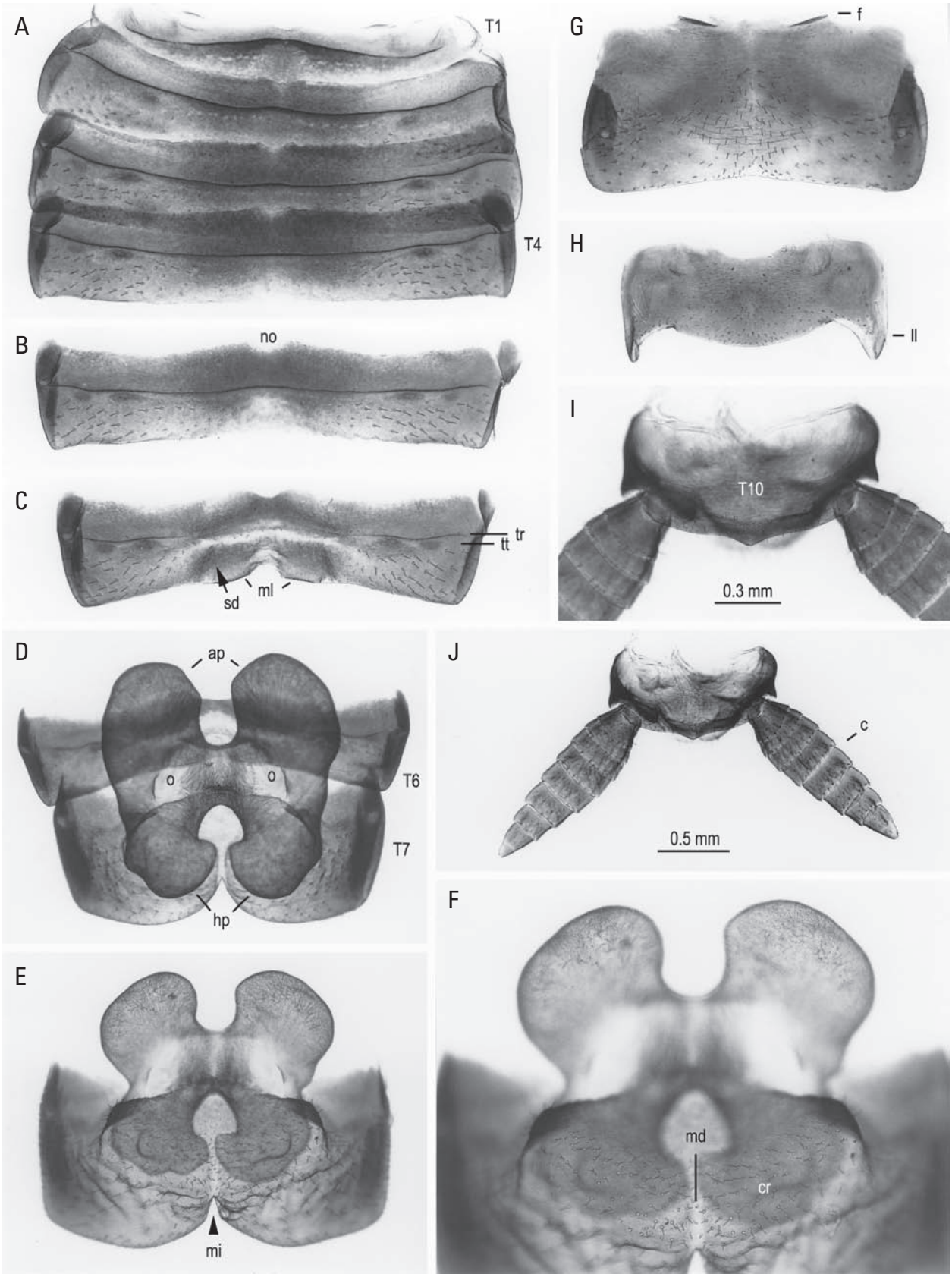


Fig. 15. *Phyllodromica maculata*, male abdominal structures. **A**: T1–4; **B**: T5, **no** notch; **C**: T6, **ml** median lobes, **sd** semicircular depression (distorted), **tr** transversal ridge, **tt** transversal trench; **D**: T6–7, glandular pit of T7 deepened below the surface of the tergites, but shining through: **ap**, **hp** anterior and posterior pouches of the pit, **o** opening of the pit between T6 and T7; **E**,**F**: T7 with glandular pit, E complete, **mi** median incision of the posterior border of T7, F detail with focus on the crest (**cr**) of the mound showing a weak median depression (**md**); **G**: T8, **f** cuticular folds; **H**: T9, **ll** lateral lobe; **I**,**J**: terminalia with T10, **c** cercus. – Enlargements: same scale for A–E,G,H,J and for F,I. – Specimen identification: Hu 10/5 (A–C,E–G), D 13/2 (D), Hu 10/3 (H), Hu 10/4 (I,J).

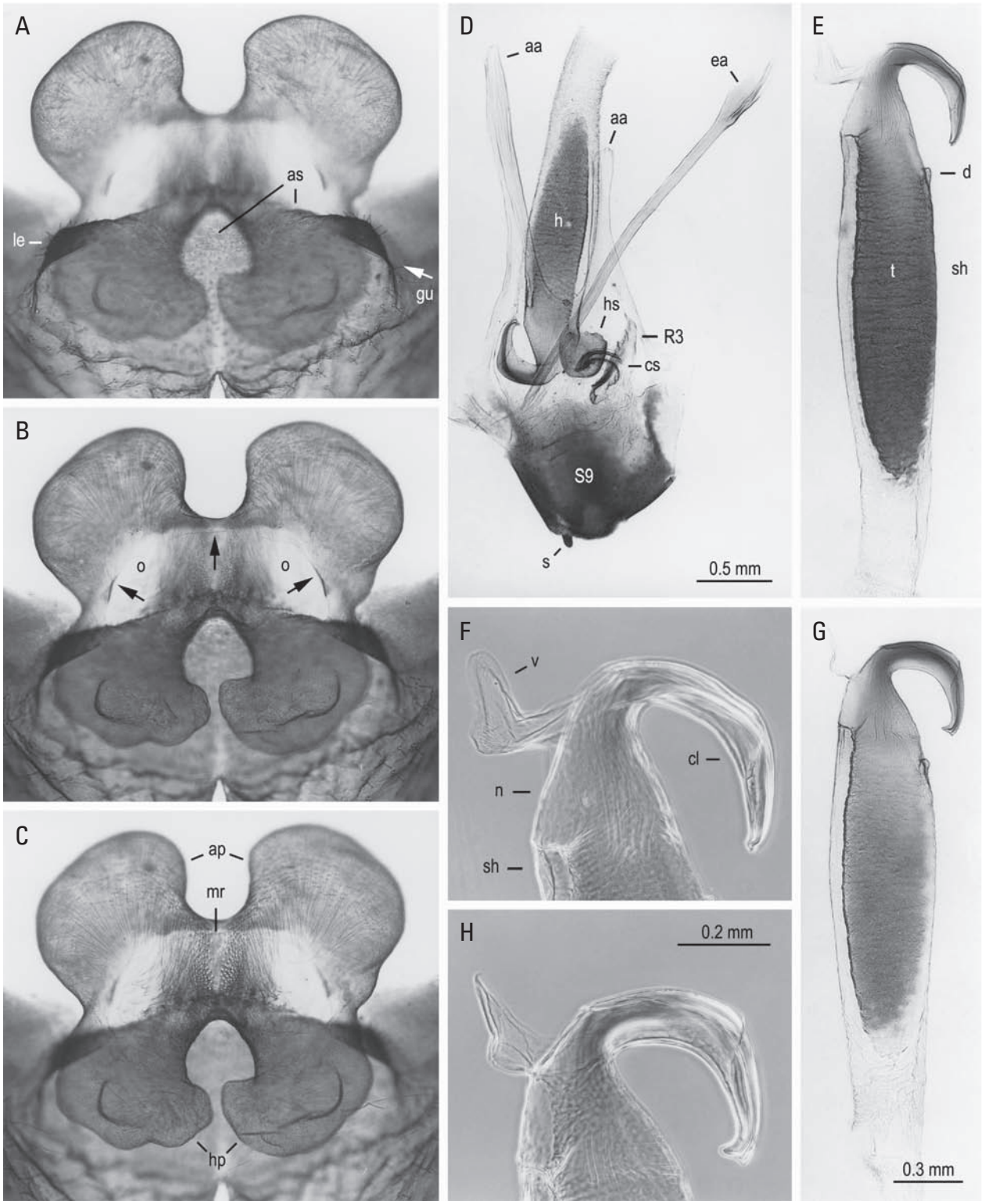


Fig. 16. *Phyllodromica maculata*, male abdominal structures (continued). **A**–**C**: T7 with glandular pit (details), A focused on anterior slope (**as**) and lateral edge (**le**) of the mound, the arrow indicates the position of the gutter (**gu**) between the anterior slope of the mound and the lateral surface of T7, B focused on the opening (**o**) of the pit, arrows mark anterior and lateral margins, C focused on median ridge (**mr**) and pouches (**ap**, **hp**); **D**: S9, subgenital plate (dorsal view) with both phallomeres in situ, **aa** anterior apodemes of S9, **cs** cleft sclerite, **ea** endophallic apodeme, **h** hook, **hs** helmet sclerite, **R3** sclerite, **s** stylus (left aa, h and ea in vivo connected by muscles and arranged in parallel, distorted since muscles were removed by treatment with KOH); **E**–**H**: hook (dorsal view, posterior end on top), in E,G complete, in F,H distal (posterior) part in more detail, **cl** claw, **d** denticle, **n** neck, **sh** shaft, **t** trough (dark area), **v** velum, notice differently shaped tip of claw. – Enlargements: same scale for A–C,E,G and for F,H. – Specimen identification: Hu 10/5 (A–D), Hu 18/2 (E,F), A 68/2 (G,H).

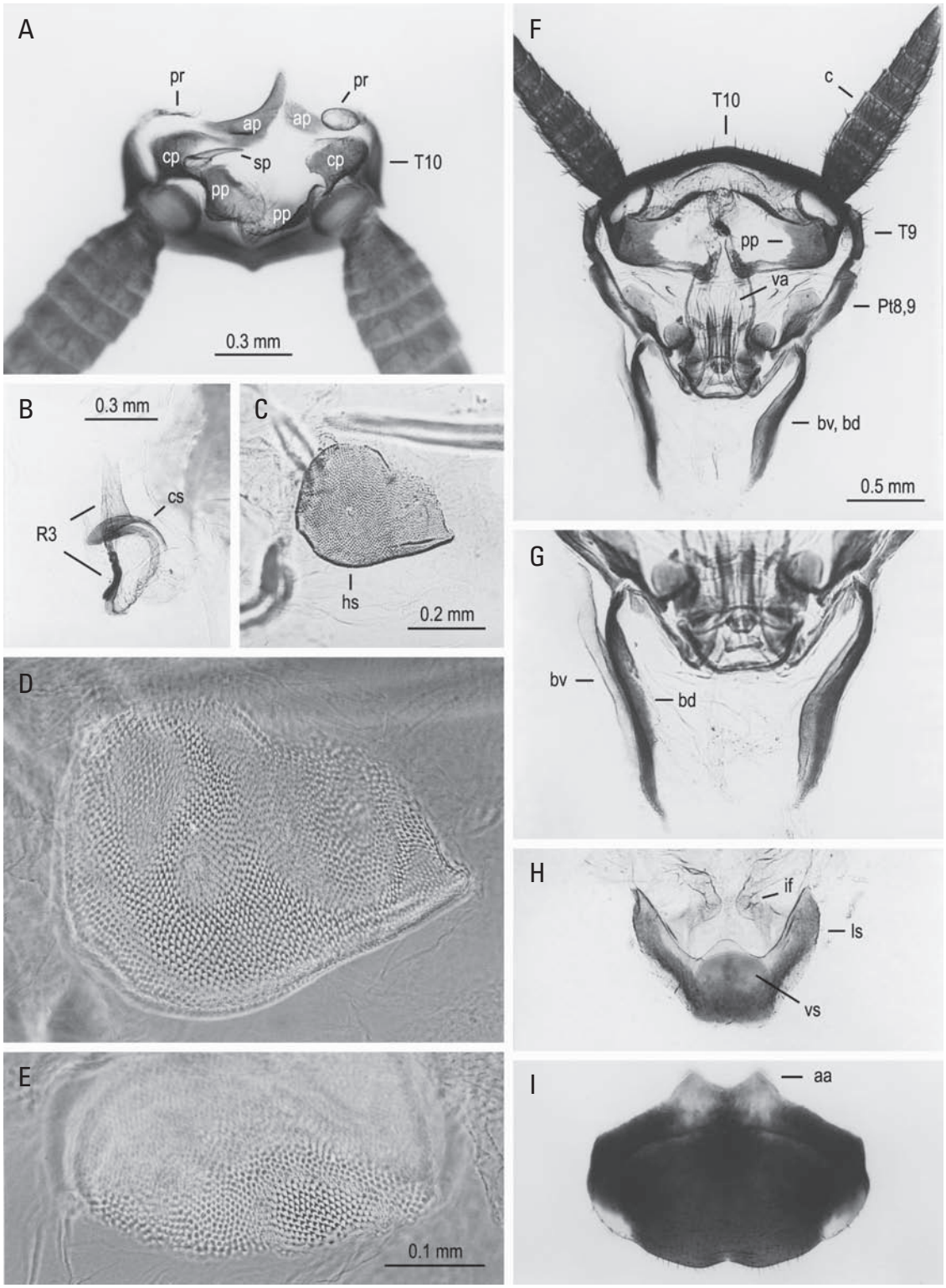


Fig. 17. Abdominal structures of *Phyllodromica variabilis* (A) and of *P. maculata* (B–I), male (A–E) and female (F–I) structures. **A**: male terminalia (ventral view, right side at the left) showing the paired praeparaproct (**pr**, of the right one only basal part visible) and paraproct sclerites, **ap** medio-anterior arm, **cp** central part, **pp** medio-posterior arm, **sp** spine at the right paraproct; **B**: right phallomere consisting of cleft sclerite (**cs**) and **R3** sclerite; **C**–**E**: helmet sclerite (**hs**) of phallomeres. **F**–**H**: female terminalia (ventral view, posterior end on top); F,G dorsal complex: **bd**, **bv** dorsal and ventral basivalvula sclerites, **c** cercus, **pp** paraproct, **Pt8**,**9** paratergites 8,9, **va** valves of ovipositor; H ventral complex, **if** intersternal folds, **ls** laterosternal shelf, **vs** vestibular sclerite; **I**: female S7, subgenital plate with two short anterior apodemes (**aa**). – Enlargements: same scale for B,G, for F,H,I and for D,E. – Specimen identification: Ru 42/10, paratype (A), D 13/3 (B,E), Hu 10/4 (C,D), Hu 18/3 (F,G), Hu 12/5 (H,I).

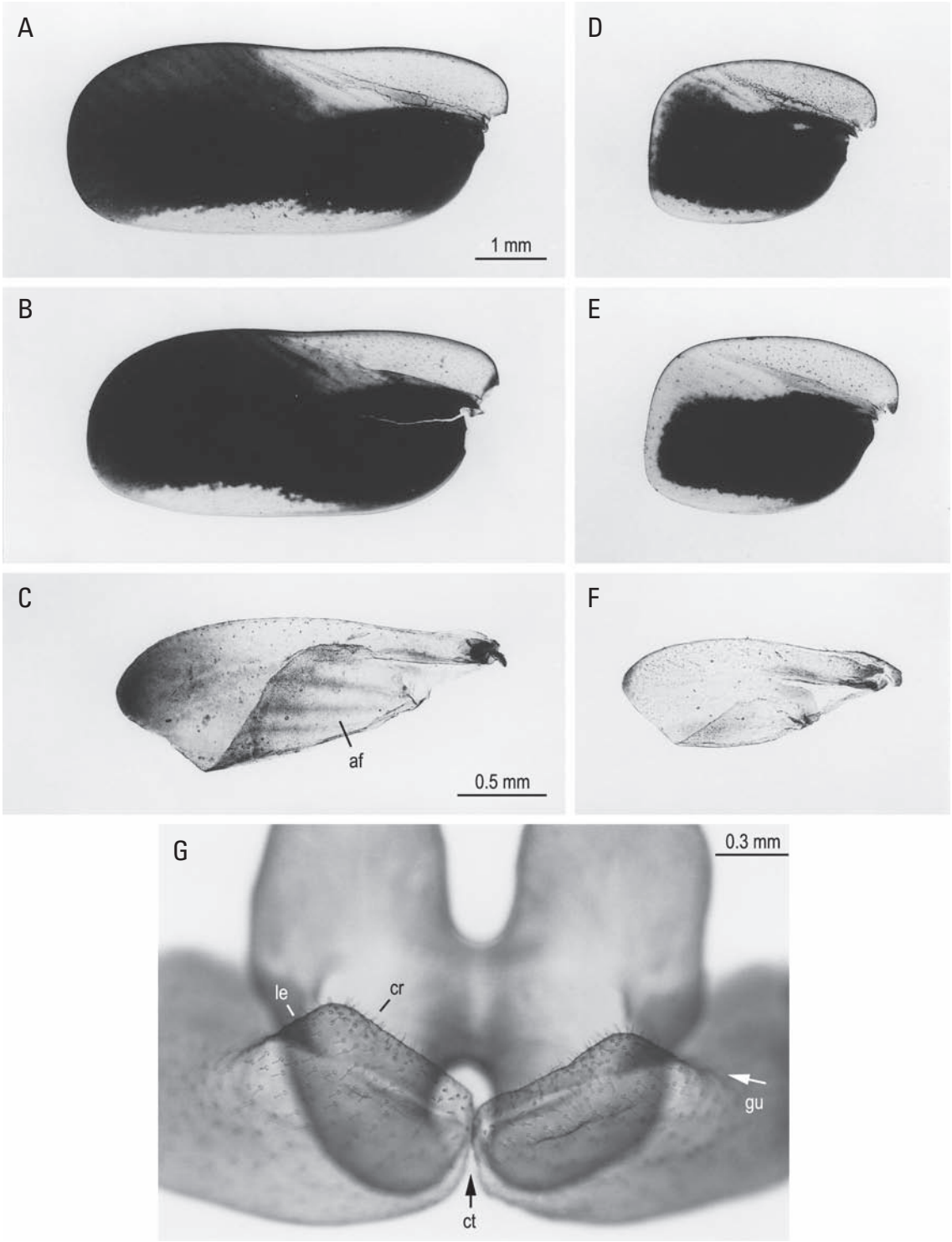
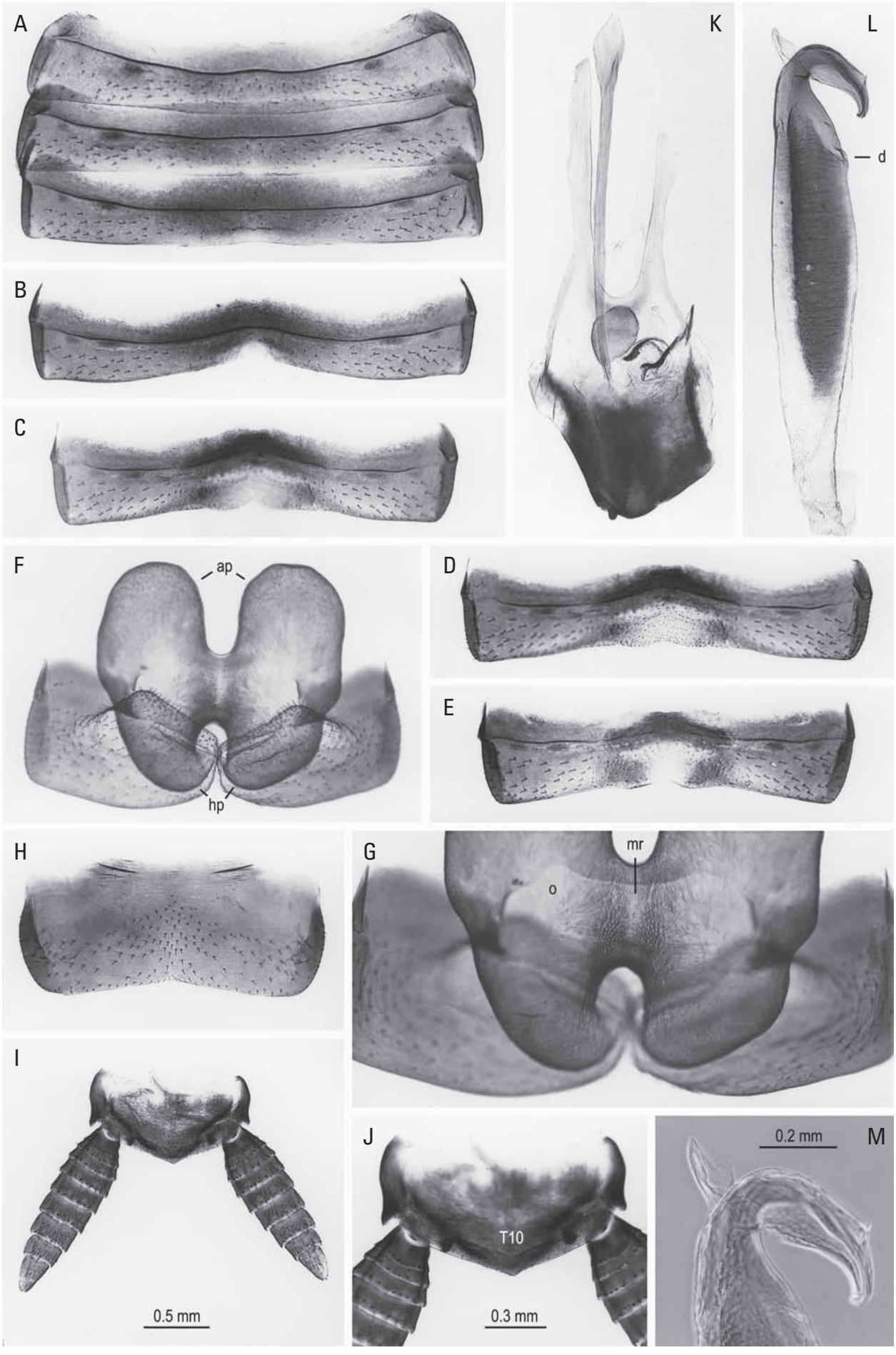


Fig. 18. *Phyllodromica marani*, wings and T7 of male. **A**,**B**: tegmina of males; **C**: hindwing of male, with large folded anal field (**af**) showing three distinct veins; **D**,**E**: tegmina of females; **F**: hindwing of female; **G**: T7 of male with glandular pit, detail showing the median cleft (**ct**) deeply dividing the mound and its crest (**cr**), and the lateral edge (**le**) of the mound, the arrow indicates the position of the gutter (**gu**) beginning at the base of the lareral edge. – Enlargements: same scale for A,B,D,E and for C,F. – Specimen identification: Sw 4/1, paratype (A,C), Sw 26/1 (B), Sw 9/1 (D,F), Sw 4/2, paratype (E), Sw 26/3 (G).

Fig. 19. → *Phyllodromica marani*, male abdominal structures. **A**: T2–4; **B**: T5; **C**–**E**: T6; **F**,**G**: T7 with glandular pit, F complete, **ap**, **hp** anterior and posterior pouches of the pit, G detail showing opening (**o**) and median ridge (**mr**) of the pit; **H**: T8; **I**,**J**: terminalia with T10; **K**: S9, subgenital plate (dorsal view) with phallomeres, hook removed; **L**,**M**: hook (dorsal view, posterior end on top), **d** denticle. – Enlargements: same scale for A–F,H,I,K and for G,J,L. – Specimen identification: Sw 26/2 (A–D,H), Hu 31/1 (E), Sw 26/3 (F,G,I,J), Sw 26/1 (K), Bo 479, paratype from Plešivec in Slovakia (L,M).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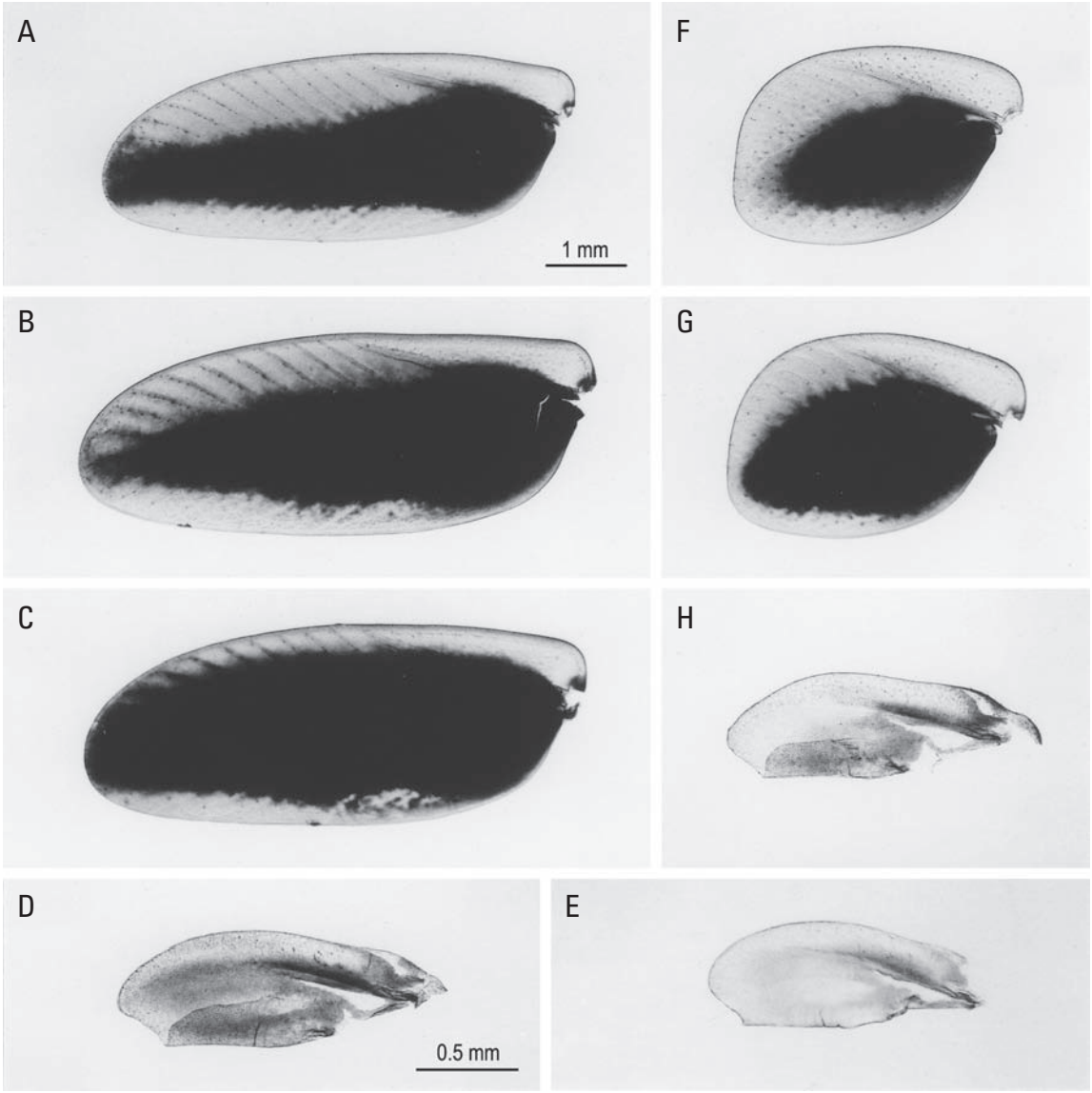
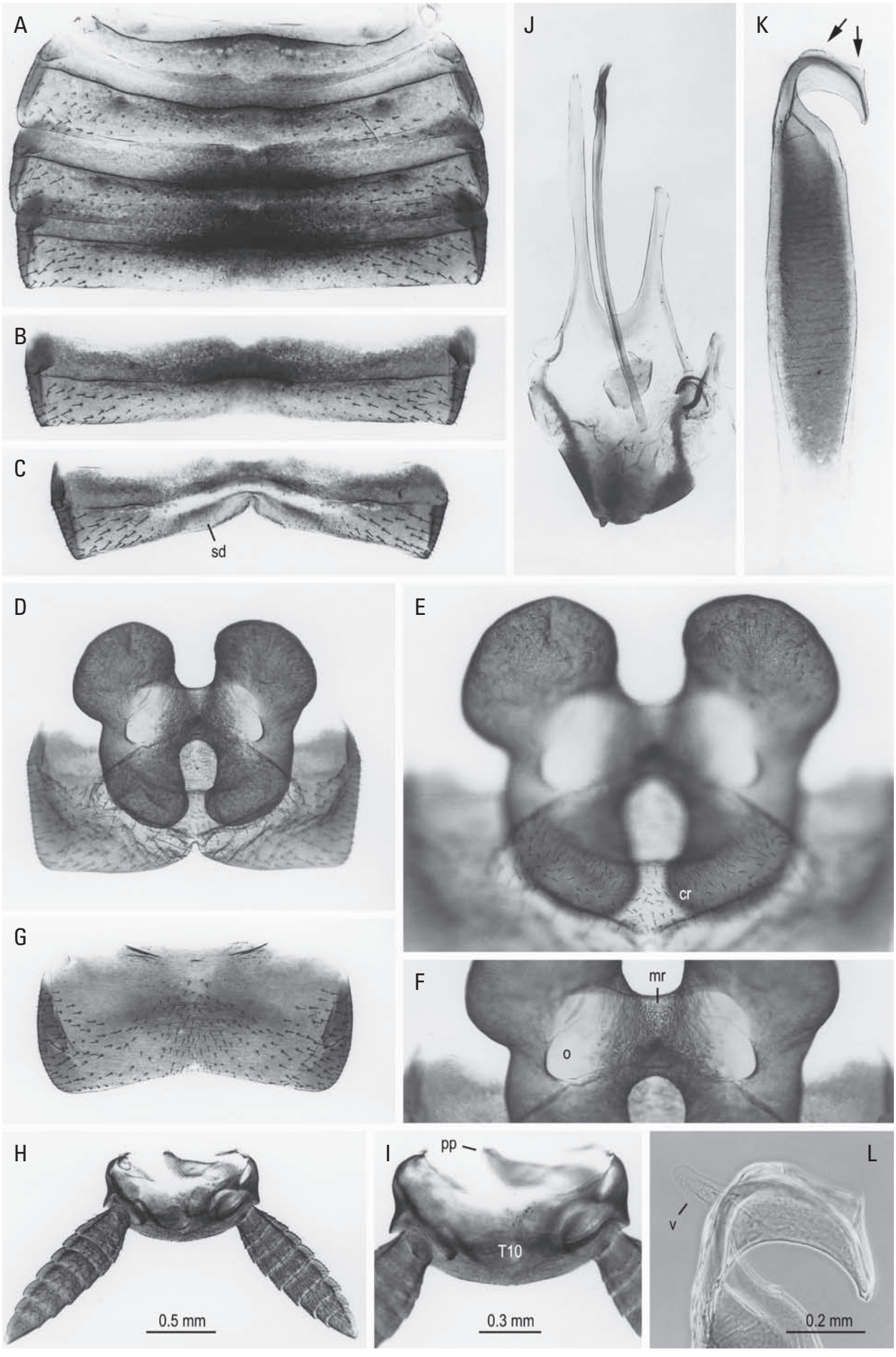


Fig. 20. *Phyllodromica transylvanica*, wings. **A**–**C**: tegmina of males; **D**,**E**: hindwings of males; **F**,**G**: tegmina of females; **H**: hindwing of female. – Enlargements: same scale for A–C,F,G and for D,E,H. – Specimen identification: Ru 12/4 (A), Ru 12/1 (B), Ru 78/1 (C), Ru 78/2 (D), Bo 1150, from Domogled in Romania (E), Ru 12/7 (F), Ru 12/5 (G,H).

Fig. 21. → *Phyllodromica transylvanica*, male abdominal structures. **A**: T1–4; **B**: T5; **C**: T6, **sd** semicircular depression (distorted); **D**–**F**: T7 with glandular pit, D complete, E detail with focus on crest region (**cr**) and anterior slope, F detail with focus on opening (**o**) and median ridge (**mr**) of the pit; **G**: T8; **H**,**I**: terminalia with T10 and part of paraprocts (**pp**) shining through; **J**: S9, subgenital plate (dorsal view) with phallomeres, hook removed; **K**,**L**: hook (dorsal view, posterior end on top), notice missing denticle and the small size of the velum (**v**), arrows point to the keel. – Enlargements: same scale for A–D,G,H,J and for E,F,I,K. – Specimen identification: Ru 12/11 (A–G), Ru 12/12 (H,I), Ru 12/13 (J), Ru 12/2 (K,L).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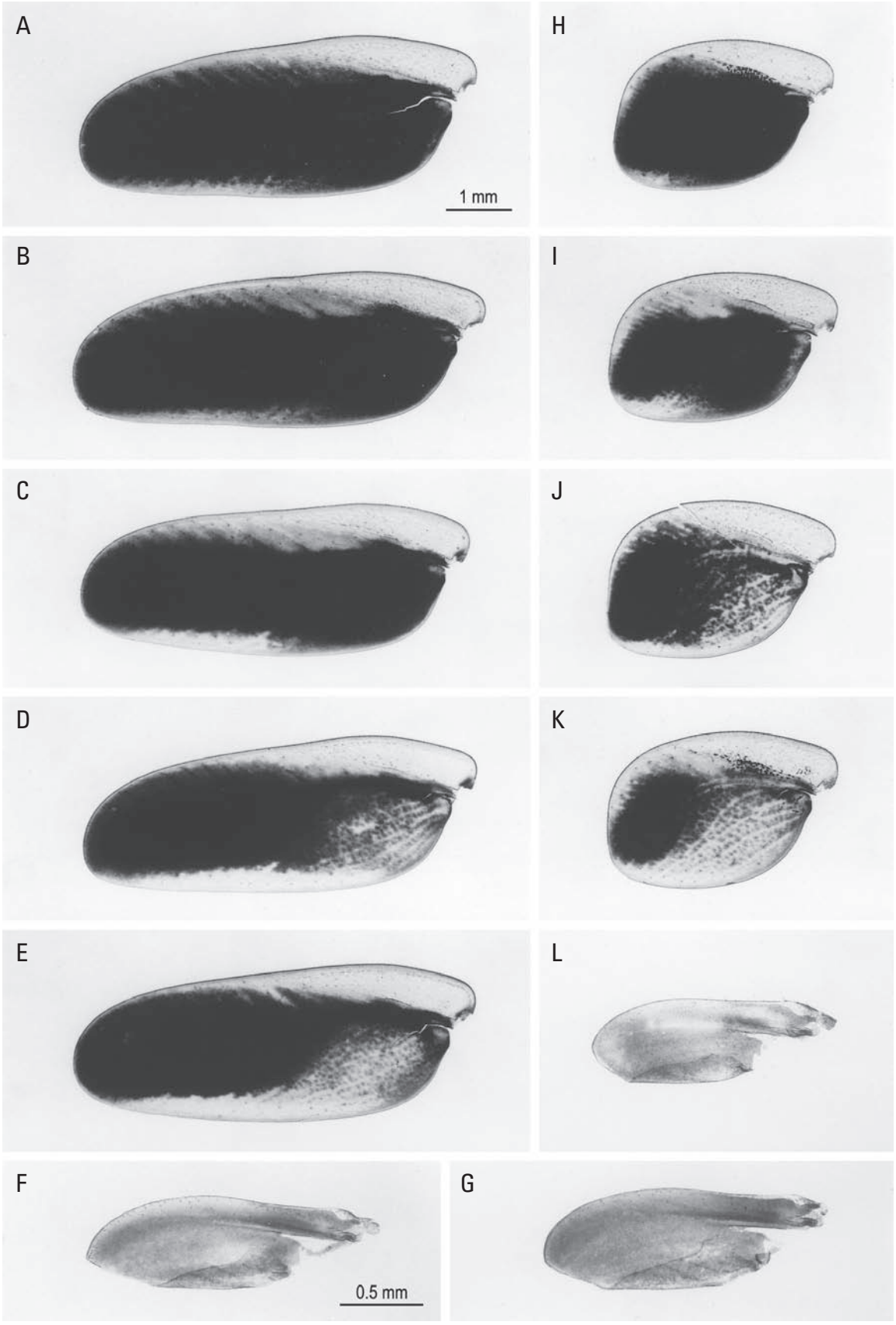


Fig. 22. *Phyllodromica variabilis*, wings. **A**–**E**: tegmina of males; **F**,**G**: hindwings of males; **H**–**K**: tegmina of females; **L**: hindwing of female. – Enlargements: same scale for A–E,H–K and for F,G,L. – Specimen identification: Ru 42/1, paratype (A), Ru 42/2, paratype (B), Ru 33/2 (C), Ru 58/1 (D), Ru 59/3 (E), Ru 56/1 (G), Ru 42/5, paratype (H), Ru 42/4, paratype (I), Ru 58/4 (J,L), Ru 59/5 (K).

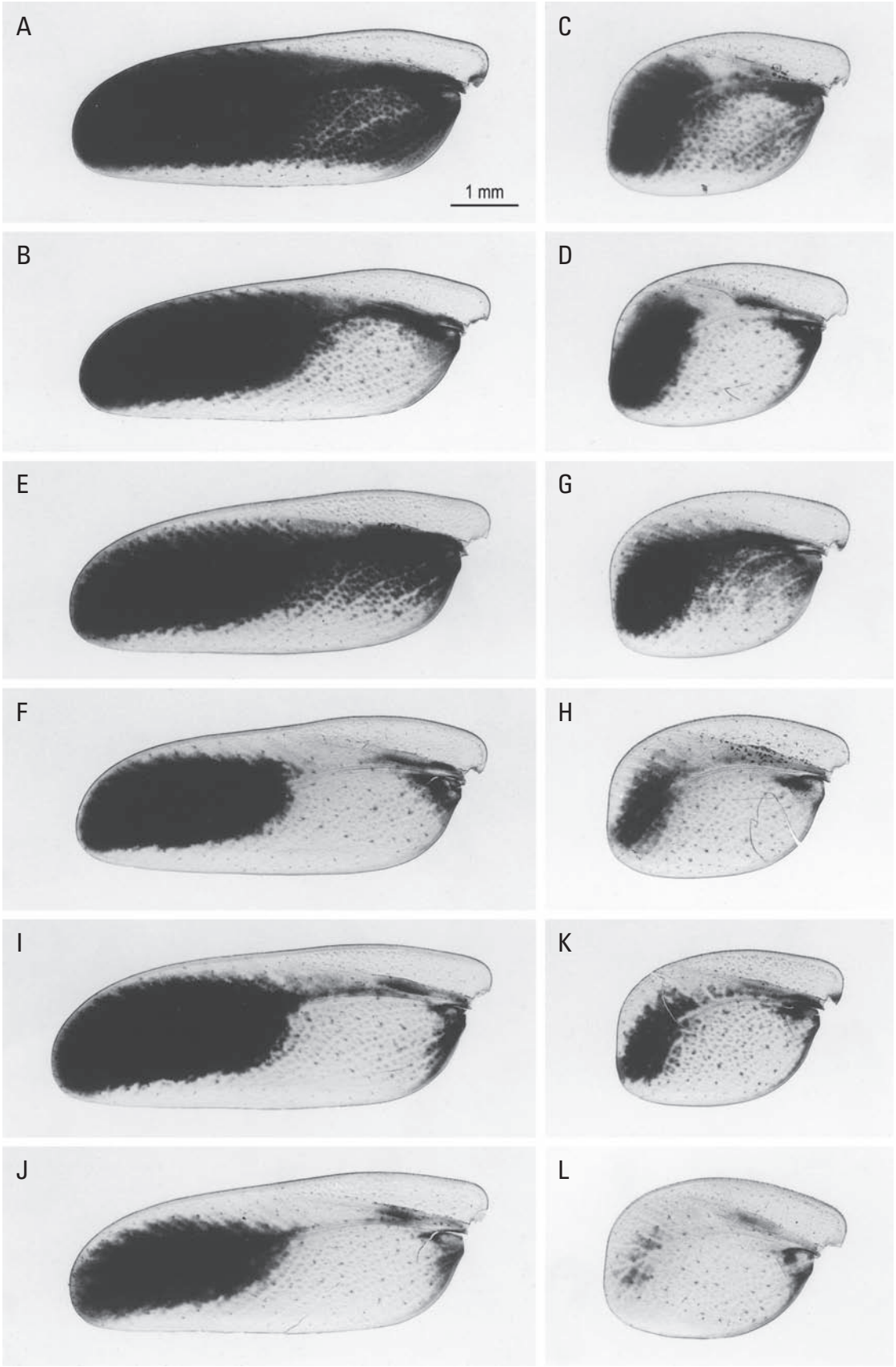
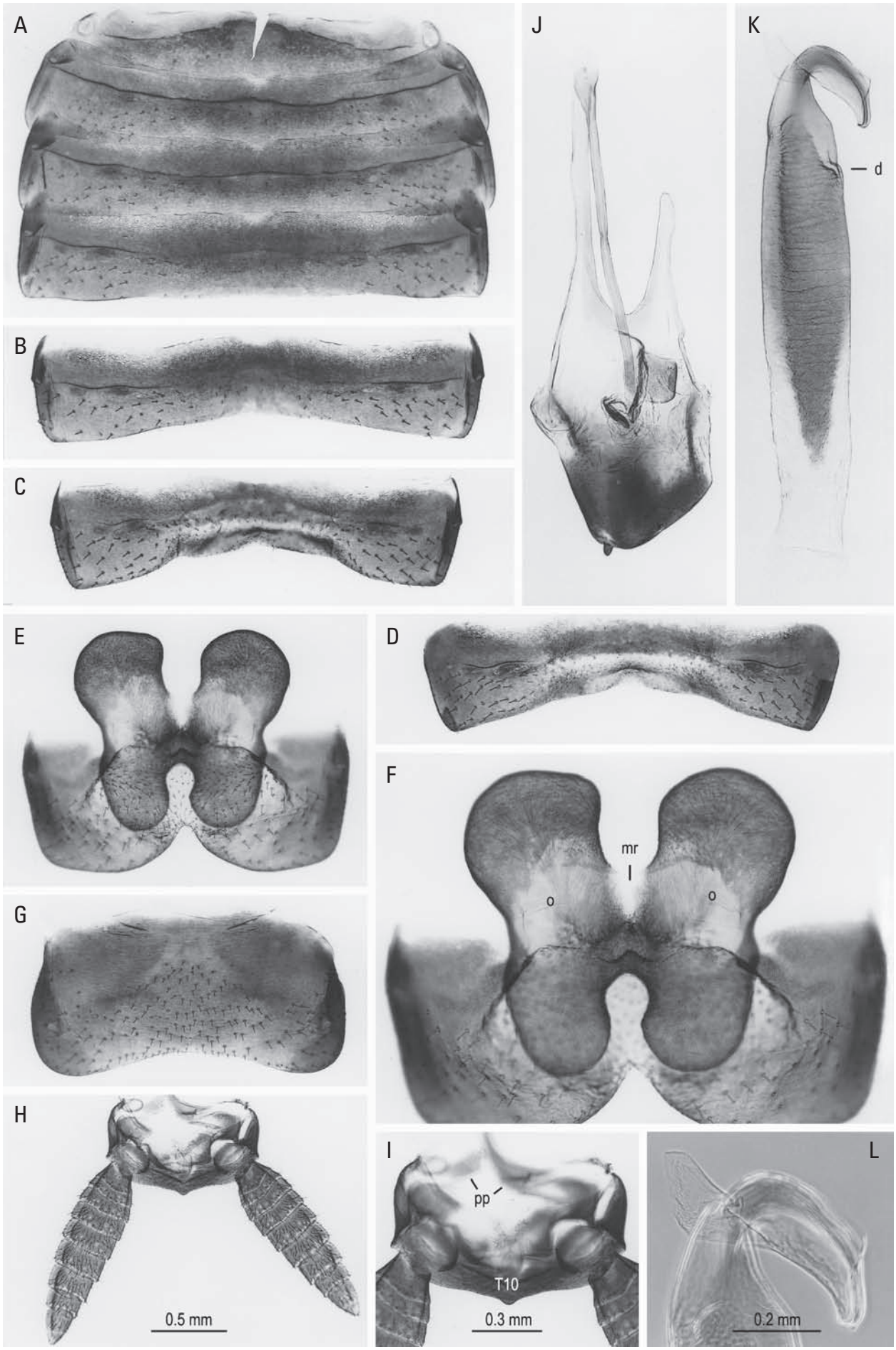


Fig. 23. *Phyllodromica variabilis*, tegmina of specimens from three localities with extremely light colouration. Left row males, right row females. From each locality two pairs are shown representing the two extremes in colouration, darkest (above) and lightest (below). **A**–**D**: locality Ru 61, #1 in Fig. 28; **E**–**H**: locality Ru 28, #2 in Fig. 28; **I**–**L**: locality Ru 16, #3 in Fig. 28. – Enlargements: same scale for all figures. – Specimen identification: Ru 61/2 (A), Ru 61/1 (B), Ru 61/5 (C), Ru 61/4 (D), Ru 28/3 (E), Ru 28/4 (F), Ru 28/7 (G), Ru 28/6 (H), Ru 16/3 (I), Ru 16/1 (J), Ru 16/6 (K), Ru 16/2, right tegmen, image turned (L).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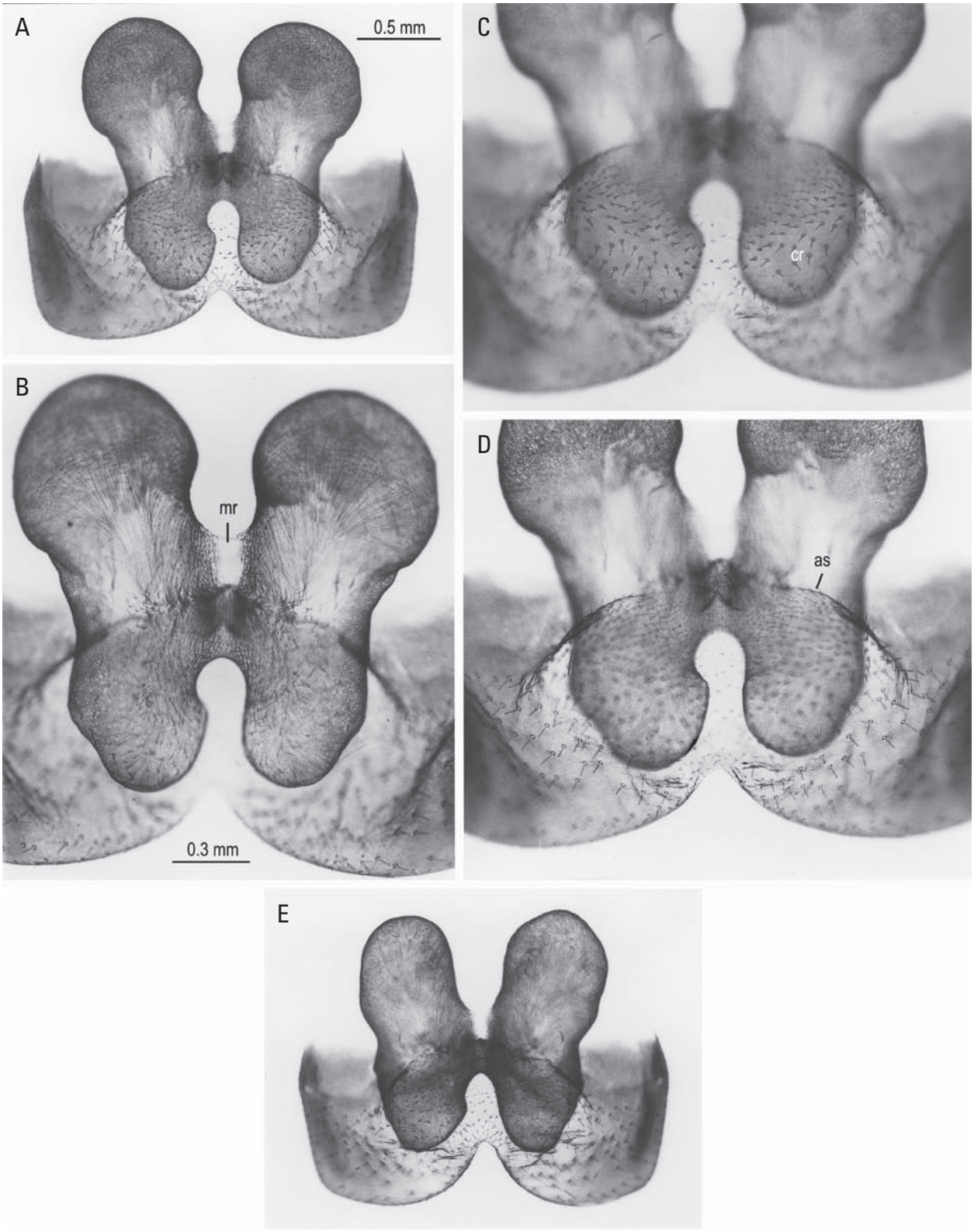


Fig. 25. *Phyllodromica variabilis*, male, T7 with glandular pit. **A**,**E**: complete, notice weak demarcation of the opening; **B**–**D**: details of the specimen shown in A, with focus on the median ridge (**mr**, in B), on the crest of the mound (**cr**, in C), and on the anterior border of the anterior slope of the mound (**as**, in D). – Enlargements: same scale for A,E and for B–D. – Specimen identification: Ru 16/1 (A–D), Ru 42/10, holotype (E).

Fig. 24. ← *Phyllodromica variabilis*, male abdominal structures. **A**: T1–4; **B**: T5; **C**,**D**: T6; **E**,**F**: T7 with glandular pit, notice weak demarcation of the pit opening (**o**), and the light pigmentation of the anterior part of the median ridge (**mr**); **G**: T8; **H**,**I**: terminalia with T10 and the paraprocts (**pp**) shining through; **J**: S9, subgenital plate (dorsal view) with phallomeres, hook removed; **K**,**L**: hook (dorsal view, posterior end on top), **d** denticle. – Enlargements: same scale for A–E,G,H,J and for F,I,K. – Specimen identification: Ru 42/10, holotype (A–C,G–L), Ru 43/1 (D), Ru 42/1, paratype (E,F).

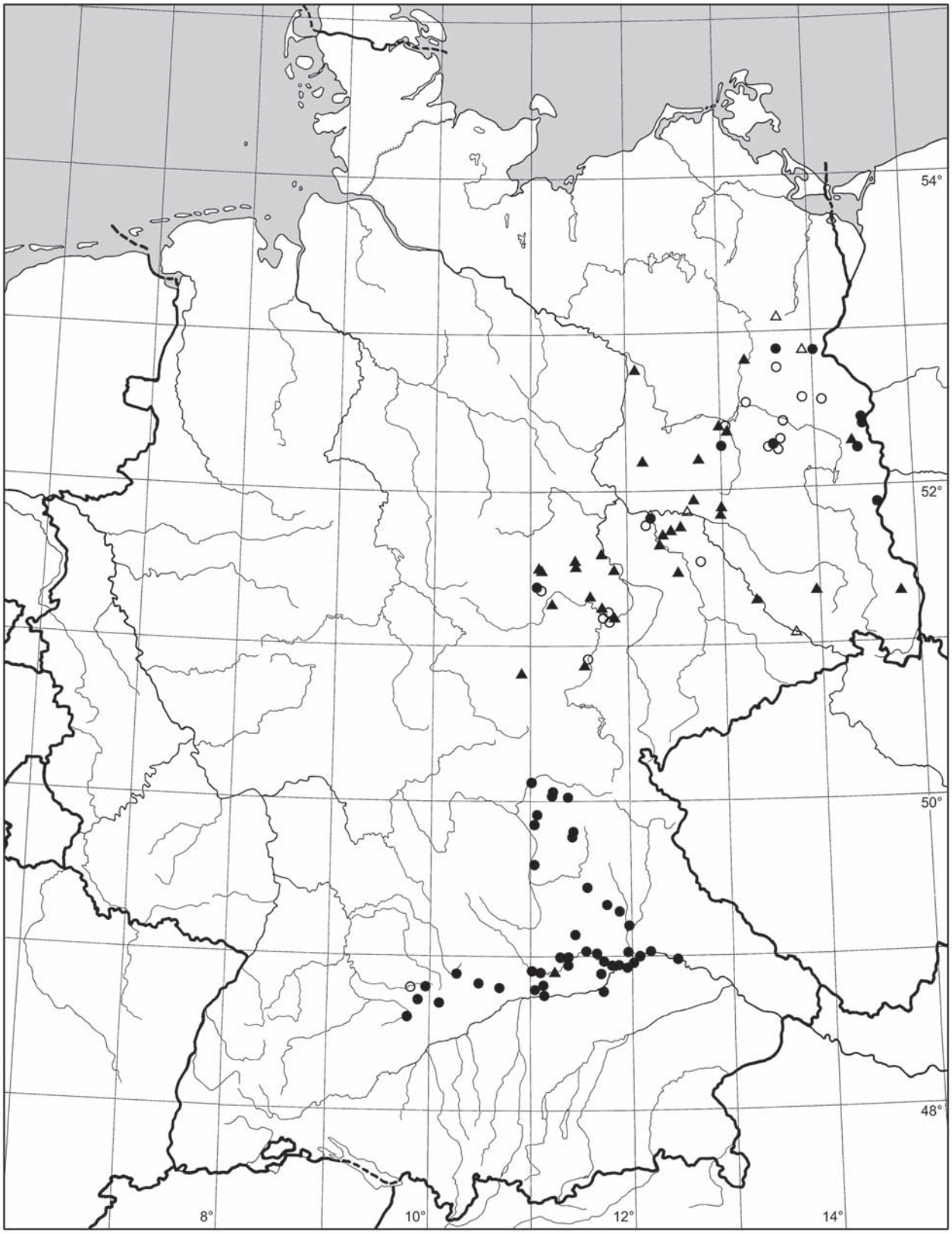
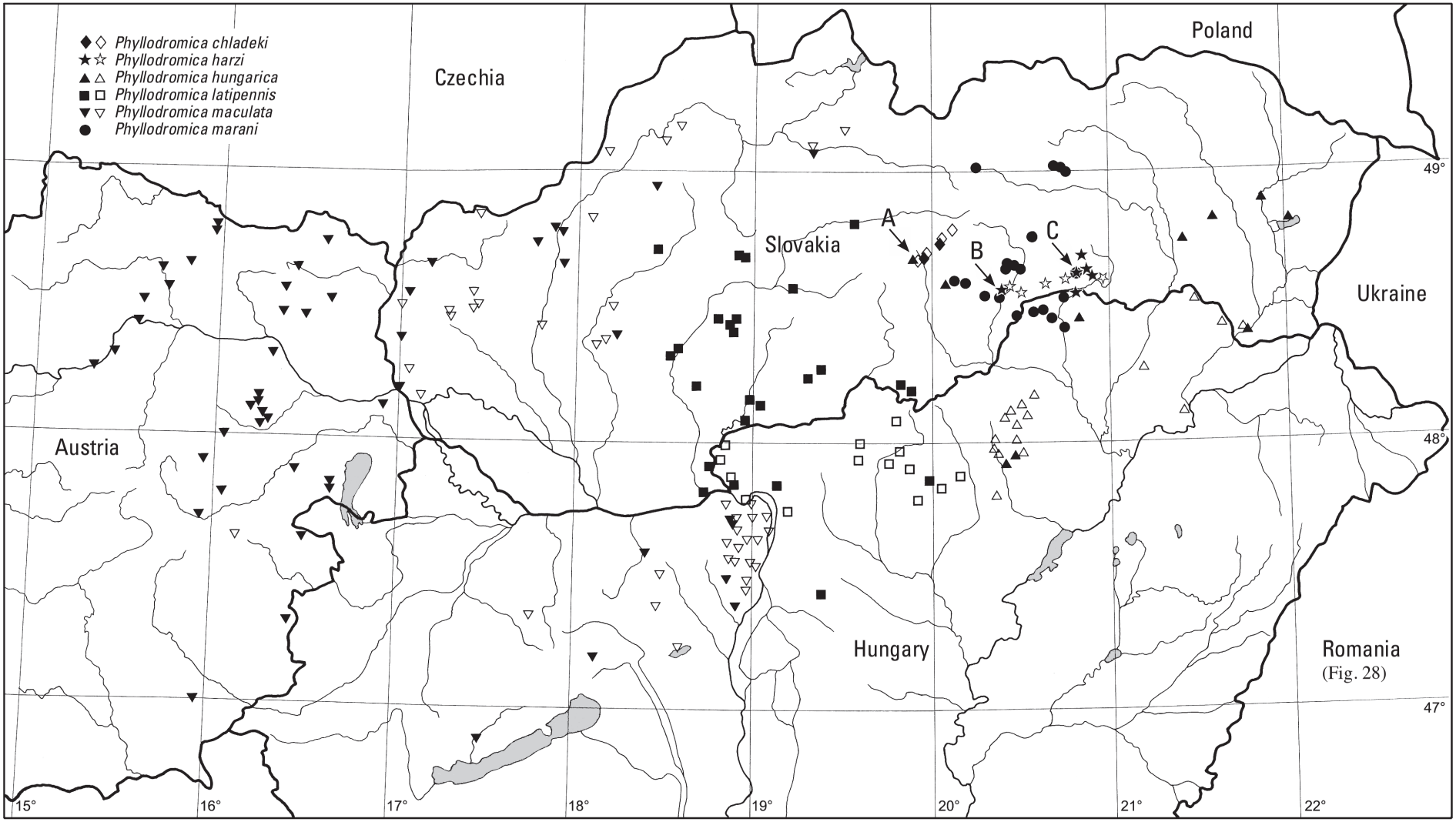


Fig. 26. Distribution of *Phyllodromica maculata* in Germany. **Circles** represent material studied: ○ data already published by other authors; ● data not published before. **Triangles** represent material not seen by the authors, based on reports of other authors: ▲ data already published [1], reports from before 1900 omitted; △ new unpublished data [2].

[1]) New records – not yet contained in BOHN (2003) – from Sachsen-Anhalt, Thüringen, and Sachsen are reported by MATZKE (2001), WALLASCHEK (2004), and KÖHLER & RENKER (2005).

[2]) Sachsen, Dresden-Klotzsche "Heller" (D. Matzke pers. comm. 2008); Sachsen-Anhalt, Teuchel bei Wittenberg (M. Wallaschek pers. comm. 2008); Brandenburg, Schorfheide, between Liepe and Neuehütte and between Milmersdorf and Ahlimbsmühle (G. Köhler pers. comm. 2010).

Fig. 27. Distribution of species of the *Phyllodromica maculata*-group in Austria, Slovakia, and Hungary. There are no reports from more western parts of Austria nor from more southern parts of Hungary. Filled symbols: material studied; empty symbols: published reports of other authors. The empty squares from Hungary refer to reports of *P. maculata schaefferi* by VIDLIČKA & SZIRÁKI (1997), most likely representing localities of *P. latipennis*. The arrows point to sites where two different species of the *maculata*-group have been found relatively close together, but not at the same locality. **A**: ▲◇; **B**: ●★; **C**: ●★.



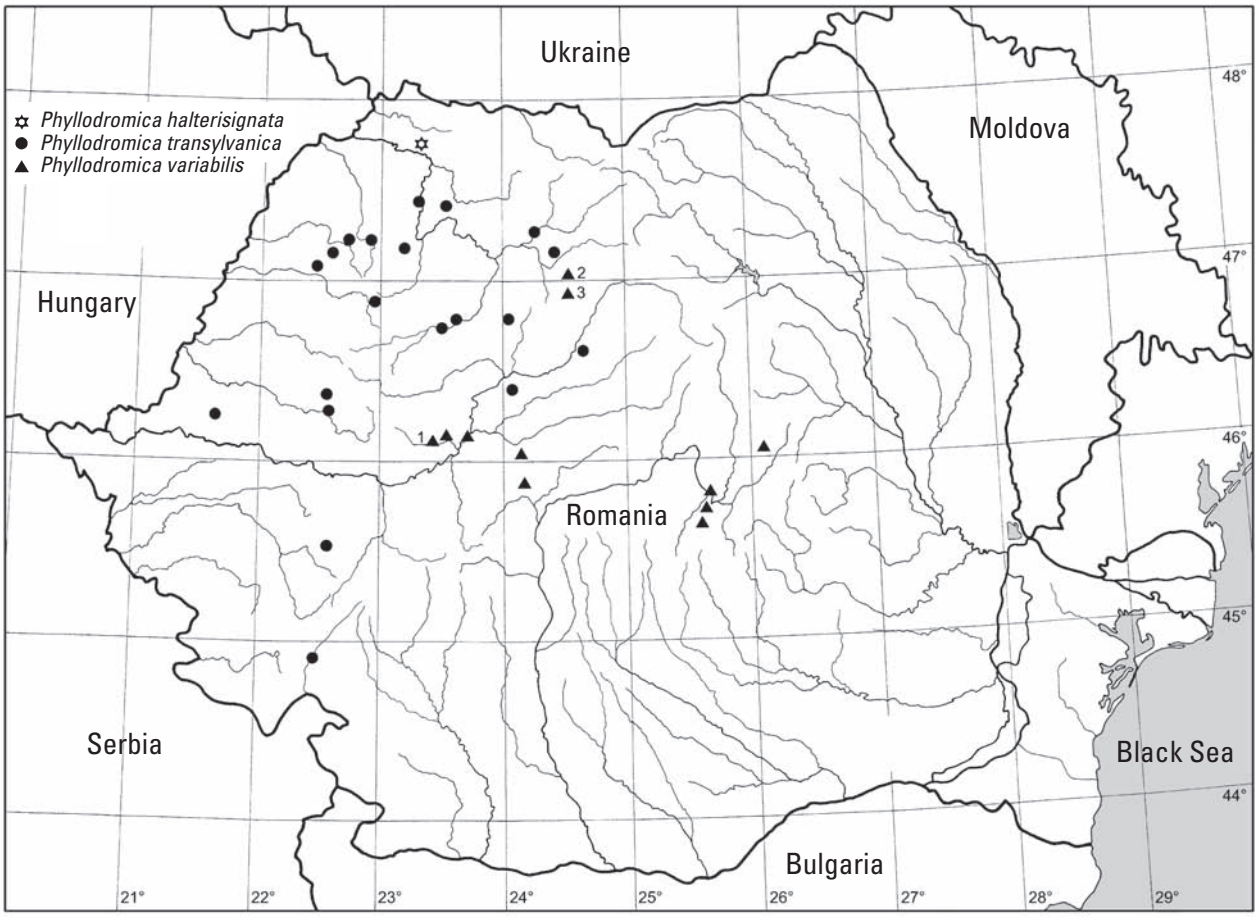


Fig. 28. Distribution of species of the *Phyllodromica maculata*-group in Romania. The three numbered localities of *P. variabilis* indicate populations with deviating colouration. 1: Ru 61 (Fig. 23A–D), 2: Ru 28 (Fig. 23E–H), 3: Ru 16 (Fig. 23I–L). The occurrence of species of the *maculata*-group in more eastern and southern parts of Romania remains to be clarified by new collectings.

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