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A new bushcricket species and notes on some less known species of the genus *Poecilimon* Fischer, 1853 from Turkey (Orthoptera, Phaneropterinae)

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Abstract

New data on the distribution and systematics of Turkish species of *Poecilimon* Fischer, 1853, are presented. A new species (*Poecilimon demirsoyi* sp. n.) and the insufficiently known females of *Poecilimon birandi* Karabag and *Poecilimon haydari* Ramme are described, and some new distributional records given.

Key words

Orthoptera, Phaneropterinae, new species, *Poecilimon*, taxonomy, Turkey.

Introduction

The genus *Poecilimon* Fischer, 1853, constitutes the largest genus of the Palearctic Phaneropterinae, with more than one hundred species. The species live in shrubby vegetation, glades and edges of coniferous forest or open habitats from sea-level to above the timberline. All are short winged and usually green in color. The species spread over southeast Europe and adjacent Asia (Ramme 1933; Bei-Bienko 1954; Willemse & Heller 1992). Most of them have restricted ranges in the mountains of the Balkan peninsula and Asia Minor. More than 50 species inhabit Anatolia, most of them known from the western part of Turkey. The majority of them are endemic to Anatolia.

The present paper is based on the material collected in different parts of Turkey by Ali Demirsoy, some entomologists and by myself. Here, I describe a new species of *Poecilimon* and give details on the insufficiently known females of *P. birandi* Karabag and *P. haydari* Ramme. Some new distributional records are also given.

Materials and Methods

References given under the species name contain only records from Turkey. Material listed is new and does not include previously recorded specimens, except for some specimens belonging to *P. haydari* Ramme. Examined species are presented in alphabetical order. All the morphological data were taken from adult specimens. A camera lucida was used for all the drawings. All measurements are given in mm.

All listed specimens, including holotype and paratypes of the newly described species have been deposited in the Hacettepe University Biological Museum (HUBM).

When localities of newly collected material are given, the following format is used: PROVINCE: CITY (or TOWN), Village (and/or areas, mountain), altitude (m), collection date, specimens, legit.

Taxonomic Account

Subfamily Phaneropterinae

Poecilimon anatolicus Ramme, 1933 (Fig. 19)

Poecilimon anatolicus Ramme 1933: 555; 1951: 336 (as *Eupoecilimon*); Bei-Bienko 1954: 332; Karabag 1958: 29; Karabag *et al.* 1981: 5; Willemse 1982: 177; Heller 1988: 62; Naskrecki 1991: 159; Ünal 1999: 244.

Poecilimon flavescens Werner 1901: 287.

Material examined.— BURSA: Uludag, Kirazlı Yaylası, 25.07.1977, 2 ♂♂, 3 ♀♀, leg. S. Salman; Uludag, 25.07.1977, 1 ♀, leg. A. Demirsoy.

Distribution.— The range of this species covers Greek Makedhonia, European and western part of Anatolia (Bursa, Çanakkale-Gelibolu, Tekirdag, Edirne).

Poecilimon bilgeri Karabag, 1953 (Fig. 19)

Poecilimon bilgeri Karabag 1953: 181; 1958: 37; Heller 1990: 149.

Material examined.— ANTALYA: KEMER, the entrance to Adrasan, 23.05.2000, 1 ♂, 1 ♀, leg. O. Sert; Kesme Bogazi, 350 m, 07.06.2000, 4 ♂♂, 5 ♀♀; Tahtalıdag, 07.06.2000, 4 ♂♂, 1 ♀; Kemer-Adrasan road, 07.06.2000, 3 ♂♂, 3 ♀♀, leg. H. Sevgili.

Distribution.— Known only from southwestern Anatolia (Antalya and Aydın).

Poecilimon birandi Karabag, 1950
(Figs 1-4, 21)

Poecilimon birandi Karabag 1950: 150; 1958: 31.

Material examined.— ANTALYA: Saklikent, 07.1999, 4 ♂♂, 2 ♀♀, leg. A. Mol; KEMER, the entrance to Adrasan, 23.05.2000, 3 ♂♂, 1 ♀, leg. O. Sert; Termessos, 01.06.2000, 2 ♂♂, 1 ♀, leg. H. Sevgili; BURDUR: ALTINYAYLA, Dimil, 22.07.1987, 1 ♂, leg. A. Demirsoy.

P. birandi has been described by Karabag (1950) from southern Anatolia, based on only the male sex. A description of the male was given by Bei-Bienko (1954), based on the text and drawings in Karabag (1950). In 1958, Karabag reported female specimens from the southwestern part of Turkey (Mugla: Fethiye), but the female has not been described by him. The description and figures given here are based on specimens collected by us.

Female: fastigium of vertex narrower than antennal scape, but barely more than half as wide as antennal scape, with parallel sides; dorsally with inconspicuous groove. Pronotum (Fig. 1) relatively long, cylindrical, more or less equally widened in front and behind (in some specimens, metazona very slightly widened); without median and lateral carina; anterior margin of pronotum straight, posterior margin weakly convex; dorsal surface of pro- and mesozona straight, metazona very slightly convex in lateral view (Fig. 2); lateral lobes of pronotum long. Elytra undeveloped, fully concealed, in form of small lateral plates. Legs slender; hind femora without ventral spinule. Posterior margins of abdominal tergites slightly convex. Cerci conical, somewhat incurved, slightly longer than supra-anal plate. Subgenital plate (Fig. 3) triangular, weakly transverse; median part of posterior margin almost straight. Ovipositor (Fig. 4) about as long as half hind femur, curved upwards near apex; lower valve with 7-11, upper valve with 7, apical teeth. Gonangulum relatively large, slightly swollen, lower part wider than upper. Lamella (Fig. 4) strongly bent ventrally, with gonangulum forming round deep and laterally-facing groove.

Coloration.— Brownish-green to yellowish green. Face and genae light green to creamish. Fastigium brownish dorsally. Antennal scape green. Antenna green with dark rings. Vertex light green to dark green with small black punctation. Surface of pro- and mesozona dark green, metazona green; disc with small dense black spots and a longitudinal whitish median line; laterad, pro- and mesozonal pronotum lighter; laterad on metazona a wide brownish-red stripes on each side; pronotal lobes light green with round black spots. Legs greenish with small round dense black spots. Abdomen generally green, but first tergite yellow to dirty yellow; tergites (except first tergite) with black stripe on the middle; both sides of this black stripe there are two green bands with small black spots; lateral sides of abdomen greenish with black punctation. Subgenital plate and ovipositor green, lower valve and gonangulum lighter.

Measurements (Female).— Body (excl. ovipositor): 13-16; pronotum: 5-6; hind femora: 13-16.8; ovipositor: 7.2-8.9.

Distribution.— The species is known from southwestern Anatolia (Antalya, Burdur and Mugla).

Poecilimon bosphoricus Brunner von Wattenwyl, 1878
(Fig. 21)

Poecilimon bosphoricus Brunner von Wattenwyl 1878: 7, 43; 1882: 266; Ebner 1919: 161; Ramme 1933: 559; Bei-Bienko 1954: 341; Karabag 1958: 30-31; Karabag *et al.* 1971: 77; Harz 1969: 155; Heller 1988: 64; Naskrecki 1991: 159; Ünal 1999: 244.

Material examined.— ISTANBUL: Kilyos area, 17.07.1977, 2 ♂♂; IZMIT: Sapanca Lake, 17.07.1977, 1 ♂, leg. S. Salman; KASTAMONU: Ilgaz Mountain, 2000 m, 06.08.1999, 11 ♂♂, 11 ♀♀; 1600-1850 m, 04.08.2000, 9 ♂♂, 7 ♀♀, leg. H. Sevgili; Ilgaz Mountain, 14.10.1999, 1 ♀, leg. Y. Durmus; BOLU: Aladag, Kıbrısık road, 1400-1600 m, 06.08.2000, 8 ♂♂, 5 ♀♀, leg. H. Sevgili.

Distribution.— The species is distributed from the European part of Turkey to northwestern Anatolia (Istanbul, Izmit, Bolu, Çankırı, Kastamonu).

Poecilimon brunneri (Frivaldsky, 1867)
(Fig. 19)

Odontura brunneri Frivaldsky 1867: 94.

Poecilimon brunneri Brunner von Wattenwyl 1878: 45; Karabag 1956: 4; 1958: 38; 1964: 47; Karabag *et al.* 1971: 77; 1974: 6; 1981: 5; Naskrecki 1991: 158.

Material examined.— EDIRNE: near the Medical Faculty, valley, 28.06.1986, 9 ♂♂, 11 ♀♀, leg. A. Demirsoy.

Distribution.— The range of this species covers the southern Ukraine through Romania, Bulgaria and the European part of Turkey to Yugoslavia, Albania and northern Greece, including some northern Aegean islands (Willemse 1984). Known from Edirne, Kırklareli, Tekirdag and Istanbul in Turkey.

Poecilimon cervoides Karabag, 1964
(Fig. 19)

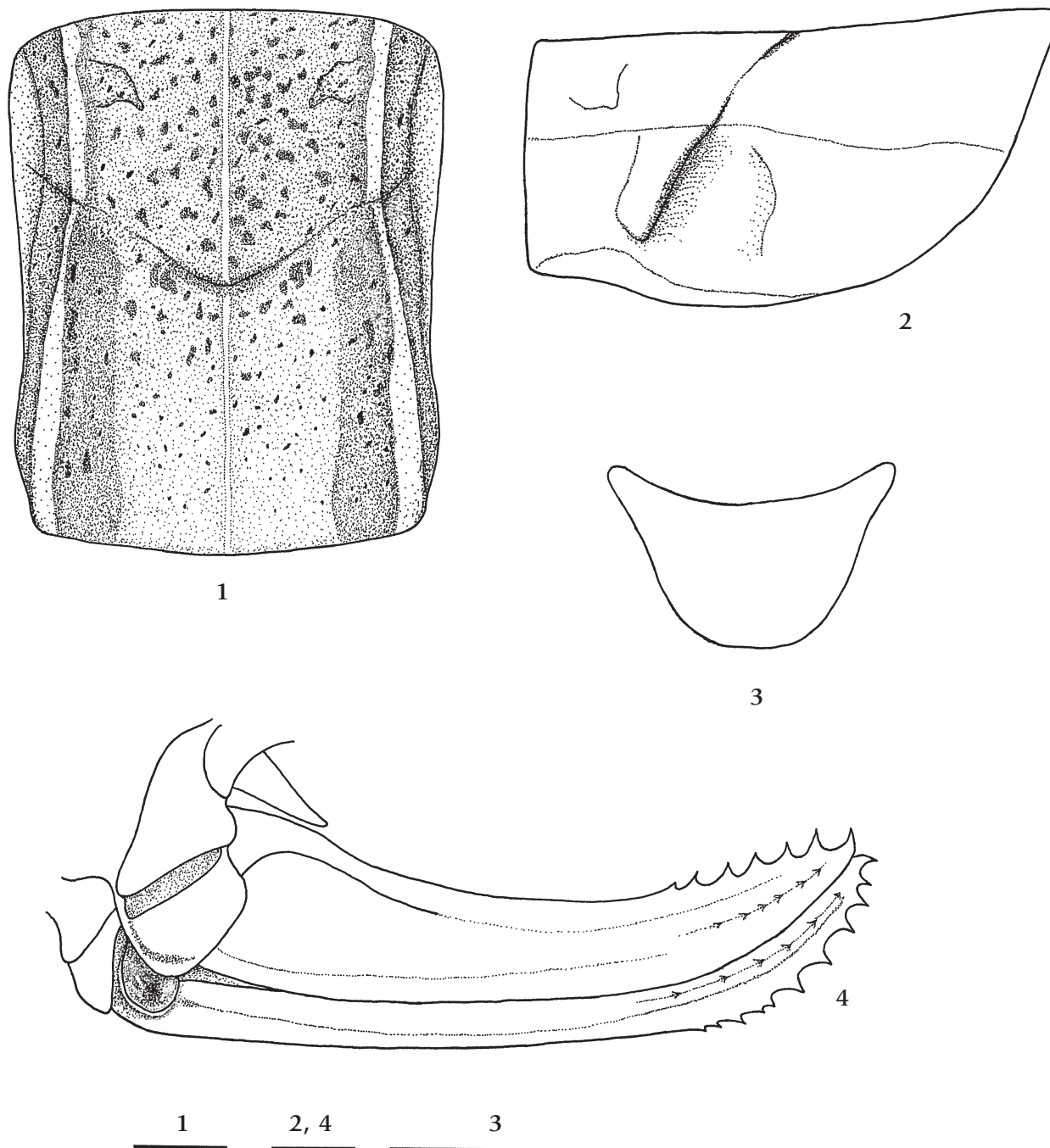
Poecilimon cervoides Karabag 1964: 37; Karabag *et al.* 1971: 77.

Material examined.— KIRSEHIR: KAMAN, Karagöz (on steppe), 1400-1600 m, 22.06.1999, 3 ♂♂, 1 ♀, leg. A. Demirsoy.

Distribution.— This interesting species is known from central Anatolia (Yozgat, Kirsehir).

Poecilimon cervus Karabag, 1950
(Figs 12-14, 19)

Poecilimon cervus Karabag 1950: 153; 1958: 26; 1964: 46; Ünal 1999: 244.



Figs 1-4. *Poecilimon birandi* Karabag [Scale bars 1mm] Female: 1. Pronotum from above. 2. Pronotum in profile. 3. Subgenital plate from below. 4. Ovipositor in profile.

Material examined.— ANKARA: KIZILCAHAMAM, Isik Mountain, 1750 m, 25.07.1999, 8♂♂, 10♀♀, leg. H. Sevgili.

Distribution.— The species is known from northwestern Anatolia (Kastamonu, Bolu, Ankara, Çorum, Çankırı, Amasya).

Poecilimon davisi Karabag, 1953
(Fig. 19)

Poecilimon davisi Karabag 1953: 183; 1958: 37; Karabag *et al.* 1971: 77; Ünal 1999: 244.

Material examined.— BURDUR: YESILOVA, Solda Valley, 23.07.1987, 8♂♂, 10♀♀; GÖÇER, 25.07.1987, 9♂♂, 4♀♀ leg. A. Demirsoy.

Distribution.— Known from southern Anatolia (Antalya, Burdur, Konya).

Poecilimon demirsoyi sp. n.
(Figs 5-11, 21)

Material examined.— Holotype: KASTAMONU: Ilgaz Mountain, 1600-1850 m, 04.08.2000, male. Paratypes: KASTAMONU: Ilgaz Mountain, 1600-1850 m, 04.08.2000, 2♂♂, 4♀♀; BOLU: Aladag, Kibriscik Road, 1400-1600 m, 06.08.2000, 1♂, leg. H. Sevgili.

Description.— **Male** (holotype): Medium-sized, integument moderately shiny.

Head: fastigium of vertex slightly less than half as wide as the antennal scape, anterior part slightly rounded, lateral margins almost parallel, with distinct dorsal groove.

Thorax: pronotum (Fig. 5) almost cylindrical in anterior part, mesozona slightly narrowed, metazona widened; posterior margin weakly incurved; in lateral view (Fig. 6) metazona raised above elytra. Elytra (Figs 5, 6) in dorsal view with basal third covered by pronotum; apical margin extending beyond posterior margin of first tergite. Hind femora slender, without ventral spinules.

Abdomen: margins of tergites straight. Cercus (Fig. 7A, B) boot shaped, moderately short and stout; moderately straight and slightly tapering in the basal half; apex of the inner margin bearing a long process directed inward and slightly downward; this process, gradually tapering, ends (irregularly) in a row of 4-5 strong teeth; cercus tip very short and blunt, with 4-5 black teeth; with tiny black teeth ranged from apex to inner process. Subgenital plate (Fig. 8) much longer than wide; posterior part not widened, with wide notch; lobes blunt, not very long.

Coloration.— In general appearance very similar to *P. cervus* Karabag and *P. bosphoricus* Brunner von Wattenwyl; varicolored, general color greenish-red. Frons rusty brown greenish; genae greenish; vertex greenish, with dark dots. Antennal scape and first antennal segment dirty brown-greenish; antenna with black rings, between two rings greenish yellow. Eyes, with some dark dots. Anterior part of pronotum yellowish green, with dark punctations; typically sulcus

black; metazona red wine or morello cherry color medially, laterad in this region whitish; pronotal lobes greenish, with black punctations. Elytra yellowish, with rusty brown in the basal part of left elytron. Femora with black stripes, and ventral part of dorsal side with light green and without punctations. Abdomen with dark dots and punctations; tergites in dorsal view greenish in posterior margin, and with scattered dots and generally with black pattern in basal part; last tergite greenish red. Cerci reddish, tips black.

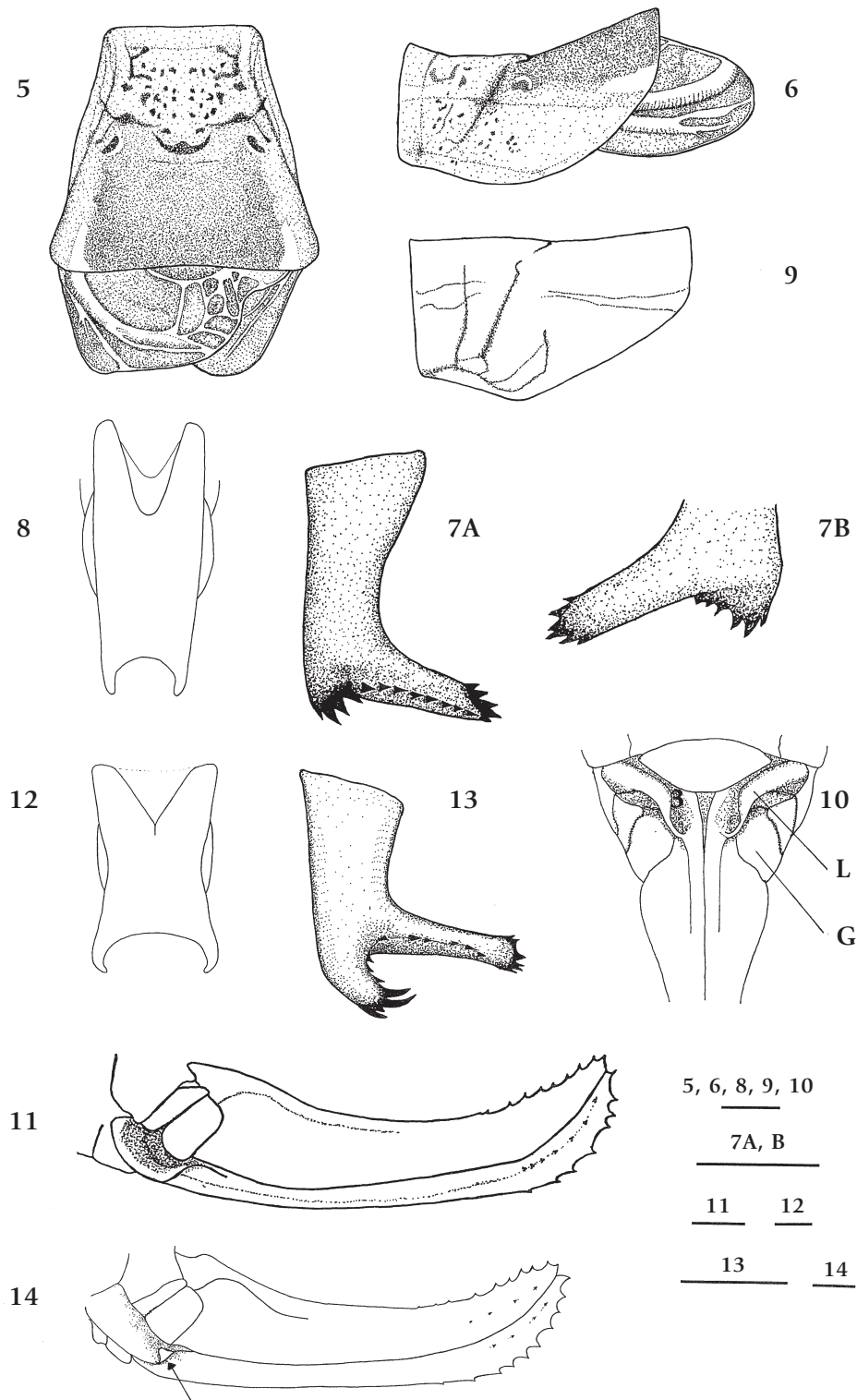
Female: fastigium of vertex slightly narrowed in anterior part with distinct furrow. Pronotum almost cylindrical; slightly constricted in mesozona; typical sulcus distinct; in lateral view (Fig. 9) weakly raised posteriorly. Elytra not visible. Subgenital plate (Fig. 10) small, broadly triangular. Ovipositor (Fig. 11) longer than head and pronotum together. Lamella (L) (Figs 10, 11) relatively large and flattened, concave in middle part. Gonangulum (G) (Figs 10, 11) slightly swollen and narrowed to apex. General color greenish. Head greenish with dark stripes. Pronotum greenish in prozona with some creamy punctation; anterior part of metazona greenish, reddish posteriorly; lateral lobes of pronotum whitish. Legs greenish with dark stripes. Abdomen monochromatic, but sometimes with dark punctation on the tergites. Ovipositor greenish.

Measurements.— Body (excl. ovipositor): ♂ 17-17.3, ♀ 17-18.2; pronotum: ♂ 4-4.2, ♀ 4-4.5; elytra: ♂ 2-2.3; hind femur: ♂ 13.5-14.5, ♀ 14.5-15; ovipositor: 8.5-9.

Remarks.— The new species is defined by pronotum, cercus and subgenital plate in the male, subgenital plate and lamella of the lower ovipositor valve in the female. *P. demirsoyi* is closely related to *P. cervus* Karabag in size, coloration and general habitus, but differs from it by a much wider male posterior part of pronotum, weakly incurved posterior margin of pronotum and dorsal coloration of tergites. The new species is distinguished primarily by the different shape of the male cercus, and unwidened posterior part of subgenital plate (distinctly widened posterior part of subgenital plate of the *P. cervus*) (Fig. 12). While the male cercus is distinctly bifurcate in *P. cervus* (Fig. 13), the male cercus of *P. demirsoyi* (Fig. 7A) is without a strongly apical branch. Also the inner branch is widened apically in *P. cervus*. *P. demirsoyi* also resembles *P. bosphoricus* in general habitus. *P. demirsoyi* comes near the closely related species *P. cervus*, *P. bosphoricus* and *P. anatolicus*.

The female differs from *P. cervus* and related species by the structure of the pronotum, subgenital plate and lamella of the lower ovipositor valve. The lamella of *P. cervus* (Fig. 14) bears a distinct process in the posterior part. But, the general structure and the length of the ovipositor of *P. demirsoyi* is similar to that of the ovipositor of *P. cervus*.

Etymology.— Named in honor of Professor Dr. Ali Demirsoy, who has done outstanding work on the Orthoptera fauna of Turkey.



Figs 5-14. *Poecilimon demirsoyi* sp. n. [Scale bars 1 mm] Male: 5. Pronotum and elytra from above. 6. Pronotum and elytra in profile. 7. Left cercus, A from above, B from below. 8. Subgenital plate from below. Female: 9. Pronotum in profile. 10. Subgenital plate and base of ovipositor from below (L, lamella; G, gonangulum). 11. Ovipositor in profile; *P. cervus* Karabag (not type). Male: 12. Subgenital plate from below. 13. Left cercus (from above). Female: 14. Ovipositor in profile.

Poecilimon excisus Karabag, 1950
(Fig. 21)

Poecilimon excisus Karabag 1950: 152; 1958: 27; 1964: 46; Ramme 1951: 335; Karabag *et al.* 1971: 77.

Material examined.— ANKARA: Komünisi Köyü, Uyuz Lake, 21.06.1999, 1 ♂, leg. H. Sevgili.

Distribution.— The species is distributed in central Anatolia (Ankara, Konya, Nigde).

Poecilimon guichardi Karabag, 1964
(Fig. 19)

Poecilimon guichardi Karabag 1964: 41

Material examined.— IÇEL (MERSIN): Güzelyayla (Kızılbag), Eskiğüzle mevkii, 1050 m, 12.07.1999, 9 ♂♂, 5 ♀♀, leg. H. Sevgili.

Distribution.— Until now, known only from southern Anatolia (Içel-Mersin, Adana).

Poecilimon haydari, Ramme 1951
(Figs 15-18, 20)

Poecilimon haydari Ramme 1951: 336; Karabag 1964: 47; Karabag *et al.* 1971: 77; 1981: 5; Ünal 1999: 244.

Material examined.— IÇEL: MUT, Sertavul Köyü, 14.06.1973, 1 ♂, 1 ♀, leg. Unknown (mentioned by Karabag (1981); IÇEL-KARAMAN border: Sertavul pass, 1650 m, 17.07.1999, 3 ♀♀, leg. H. Sevgili.

This species has been described by Ramme (1951) from southern Anatolia, based on only the male sex. Karabag (1964) and Karabag *et al.* (1981) reported female specimens from the western part of the type locality (Nigde: Ulukışla), but the female has not yet been described. The description and figures are given here.

Female: small size. Fastigium of vertex slightly produced anteriorly, almost wider than antennal scape; lateral margins parallel or slightly tapering anteriorly, with a shallow groove. Pronotum (Fig. 15) cylindrical, without conspicuous constriction; metazona slightly widened posteriorly; posterior margin weakly incurved; sulcus distinct; in lateral view (Fig. 16), almost straight or slightly convex. Hind femora slender. Cerci stout, conical, strongly tapering in apical third. Subgenital plate (Fig. 17) wider than long, somewhat trapezoid. Ovipositor (Fig. 18) slightly longer than head and pronotum together, curved upwards near apex.

Coloration.— General coloration yellowish-green. Body with small black punctations. Antenna yellowish-green or dirty yellow. Pro- and mesozona and posterior part of metazona with dense small black dots.

Measurements (Female).— Body (excl. ovipositor): 13.5; pronotum: 3.8-4.0; hind femora: 12.5-13.0; ovipositor: 6.1-6.5.

Distribution.— Known from southern and (southern part of) central Anatolia (Afyon, Içel-Mersin, Nigde).

Poecilimon inflatus, Brunner von Wattenwyl, 1891
(Fig. 20)

Poecilimon inflatus Brunner von Wattenwyl 1891: 25, 28; Ramme 1933: 539; Karabag 1958: 32.

Material examined.— ANTALYA: KEMER, Kesme Bogazı, 07.06.2000, 3 ♂♂, 3 ♀♀; Adrasan, 07.06.2000, 1 ♀; Tahtalıdag, 07.06.2000, 3 ♂♂, leg. H. Sevgili.

Distribution.— This species is known from southwestern Anatolia (Mugla, Antalya, Aydın).

Poecilimon schmidt (Fieber, 1853)
(Fig. 20)

Barbitistes schmidt Fieber 1853: 260.

Poecilimon schmidt Retowski 1889: 220; Adelung 1907b: 135; Karabag 1964: 45; Salman 1978: 16.

Material examined.— BARTIN: INKUM, Hacettepe Üniv. Tesisleri, 10.08.1986, 2 ♂♂, 1 ♀; BARTIN, 03.08.1985, 2 ♂♂, Bogaz, Karasu valley, sea level, 04.08.1985, 1 ♂; ORDU: FATSA-KORGUN road, Kızılırmak-Küçükdere, 25.07.1985, 1 ♂; GİRESUN: between KESAP-ESPIYE, 26.07.1985, 1 ♂; RİZE: ÇAMLIHEMSİN, 22.07.1991, 7 ♂♂, 2 ♀♀, leg. A. Demirsoy.

Distribution.— Known from Georgia, northwestern Caucasus, southern and upper Crimea, Romania, Hungary, Yugoslavia and north Black Sea shore of Turkey (Bartın, Ordu, Giresun, Trabzon, Rize, Artvin).

Poecilimon similis richteri, Ramme, 1933
(Fig. 20)

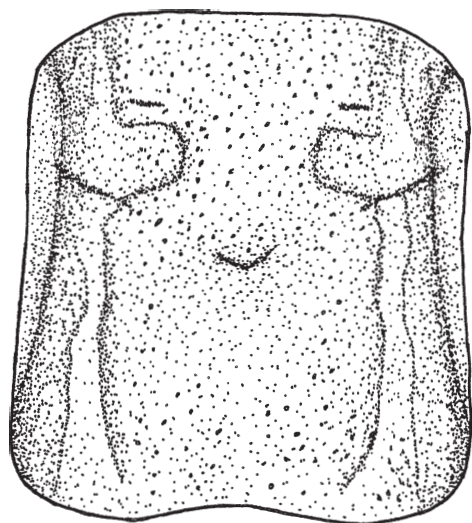
Poecilimon richteri Retowski 1889: 220; Ramme 1933: 557; Bei-Bienko 1954: 334.

Poecilimon similis Karabag 1958: 29; Salman 1978: 14; Heller 1988: 63.

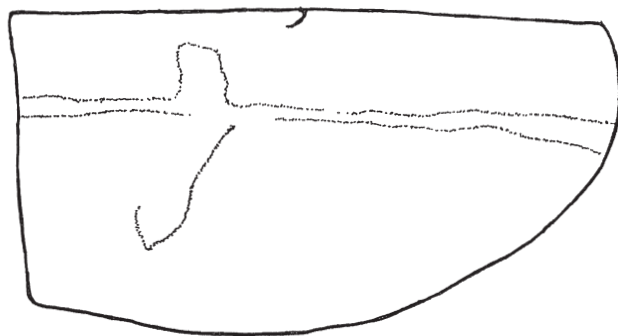
Poecilimon flavescens Adelung 1907a: 65.

Material examined.— ORDU: FATSA-KORGUN road, Kızılırmak, Küçükdere, 25.07.1985, 2 ♂♂; RİZE: ÇAMLIHEMSİN, 22.07.1991; ARTVIN: SAVSAT, 16.07.1986, 15 ♂♂; Kocabey pass, Laset bridge, 16.07.1986, 11 ♂♂, 1 ♀ leg. A. Demirsoy.

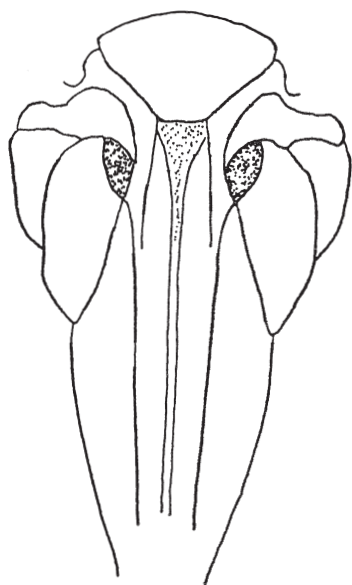
Remarks.— Ramme (1933) described *Poecilimon richteri* from Georgia. Later, this species was proposed as a subspecies of *P. similis* by Stolyarov (1981: 96-97). Stolyarov discussed the morphology of the cercus and pronotum of *P. similis*. He reported that the nominal subspecies is distributed in the Greater Caucasus, whereas *P. similis richteri* is known in the



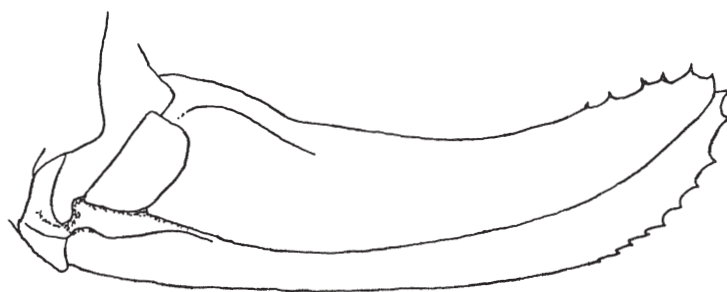
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Figs 15-18. *Poecilimon haydari* Ramme [Scale bars 1mm] Female: 15. Pronotum from above. 16. Pronotum in profile. 17. Subgenital plate and base of ovipositor from below. 18. Ovipositor in profile.

Lesser Caucasus (Georgia, northern Armenia and southern regions). When the characters given by Stolyarov are compared with the characters of the specimens from northern Anatolia, most probably our specimens belong to *P. similis richteri* Ramme. However, the morphological variation of the subspecies is large, so their status has to be confirmed by further studies.

Distribution.— Known from Georgia, northern Armenia and northern and northeastern Anatolia (Artvin, Rize, Kars, Giresun, Ordu, Sinop).

Poecilimon turciae (Ramme, 1951)
(Fig. 20)

Eupoecilimon turciae Ramme 1951: 339.

Poecilimon turciae Ünal 1999: 244.

Material examined.— YALOVA: Baraj, 20.05.1989, 5 ♂♂, 1 ♀ leg. A. Demirsoy.

Distribution.— This interesting species is known from north-western Anatolia (Bursa, Yalova, Kocaeli)

Poecilimon turcicus, Karabag, 1950
(Fig. 20)

Poecilimon turcicus Karabag 1950: 152; Karabag *et al.* 1981: 5; Naskrecki 1991: 159.

Eupoecilimon anatolicus Ramme 1951: 417.

Material examined.— EDİRNE: near the Faculty of Medicine, valley. Arkası, valley, 28.06.1986, 2 ♂♂, 1 ♀, leg. A. Demirsoy; BALIKESİR: BANDIRMA-ERDEK road, 50 m, 18.06.2000, 3 ♂♂, 5 ♀♀, leg. H. Sevgili.

Distribution.— The range of this species covers European Turkey and northwestern Anatolia (Bursa, Balıkesir, Tekirdag, Edirne).

Poecilimon uvarovi, Ramme, 1933
(Fig. 21)

Poecilimon uvarovi Ramme 1933: 544; Karabag 1958: 27; 1964: 46; Karabag *et al.* 1971: 77; Gümüssuyu 1968: 118; Ünal 1999: 244.

Material examined.— ANKARA: NALLIHAN, Kus Cenneti, 23.05.1999, 4 ♂♂, 5 ♀♀, leg. H. Sevgili; BEYPAZARI, 16.06.1999, 2 ♂♂, 2 ♀♀, Acısu Köyü, 21.07.1999, 1 ♀, leg. S. Kaynas.

Distribution.— Known only from Central Anatolia (Ankara, Kırsehir).

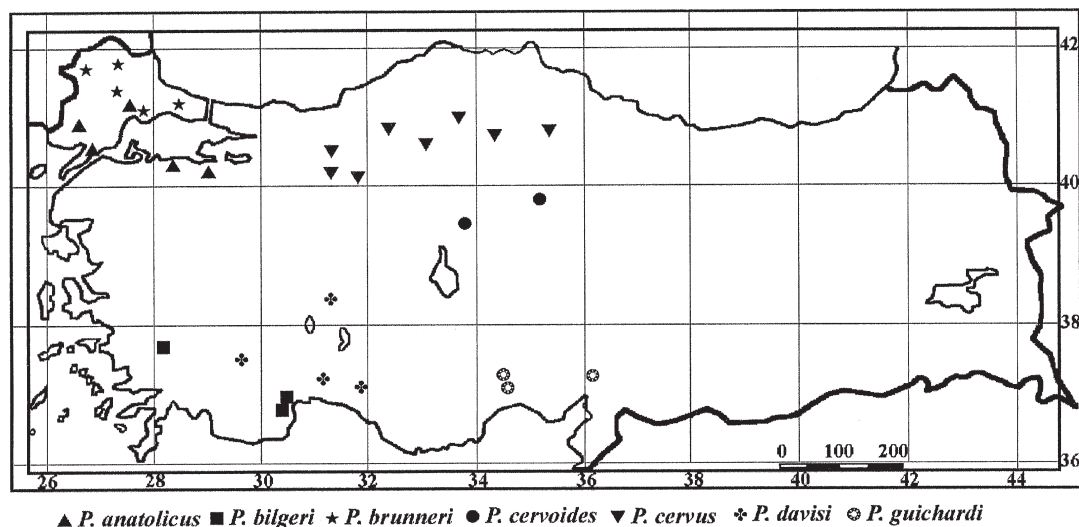


Fig. 19. Known geographic distribution of some *Poecilimon* species in Turkey.

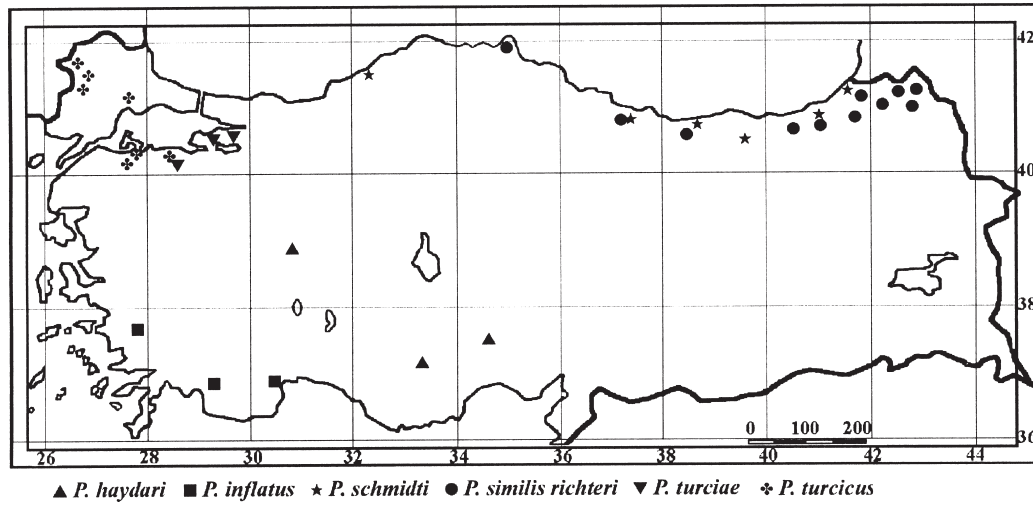


Fig. 20. Known geographic distribution of some *Poecilimon* species in Turkey.

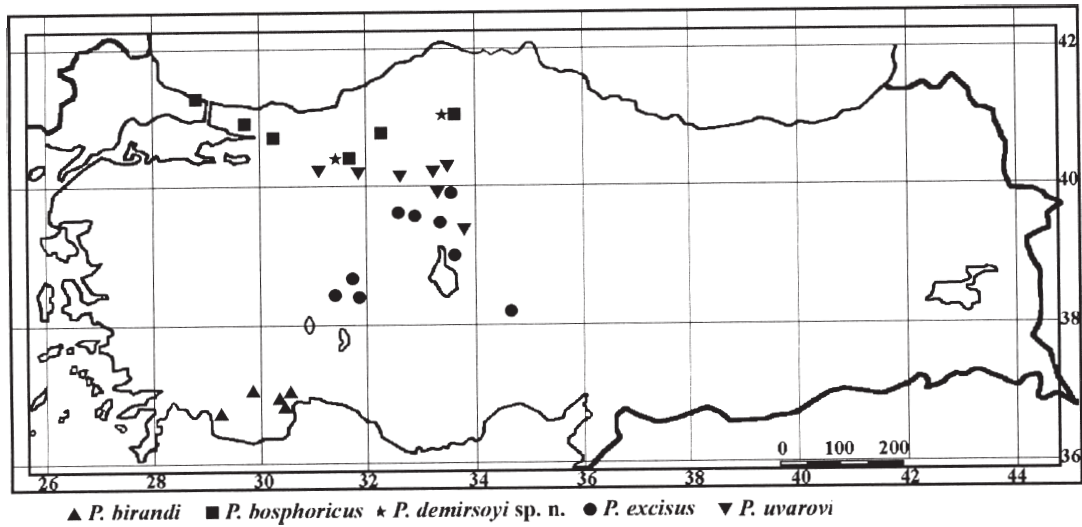


Fig. 21. Known geographic distribution of some *Poecilimon* species in Turkey.

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