

NOTES ON SYSTEMATICS OF GREEK SPECIES OF *POECILIMON* FISCHER, 1853 (ORTHOPTERA: PHANEROPTERINAE)

Willemse, F. & K.-G. Heller, 1992. Notes on systematics of Greek species of *Poecilimon* Fischer, 1853 (Orthoptera: Phaneropterinae). – Tijdschrift voor Entomologie 135: 299-315, figs. 1-43. [ISSN 0040-7496]. Published 1 December 1992.

New data on the systematics of Greek species of *Poecilimon* Fischer, 1853 are presented. Three new species are described: *P. gracilioides* (from Ipiros), *P. mariannae* (from Thessalia) and *P. erimanthos* (from the Peloponnisos). *P. artedentatus* Heller, *P. veluchianus* Ramme and *P. zimmeri* Ramme are given species rank. *P. mytilenensis* Werner is redescribed and additional descriptive notes are provided for *P. soulion* L. Willemse, *P. aegaeus* Werner and *P. athos* Tilmans et al. New data on bioacoustics, ecology and faunistics for some species are recorded as well. An updated check list of Greek species is included.

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Key words. – Orthoptera, Phaneropterinae, *Poecilimon*, taxonomy, bioacoustics, Greece.

The genus of *Poecilimon* Fischer, 1853 includes over one hundred species, spread over southeast Europe and adjacent Asia. All are short winged, usually green coloured, living in forests, shrubby vegetation or open habitats from sea-level to above the timberline. Some species are widespread, but most have restricted and some even remarkably small ranges. Systematics of *Poecilimon* are difficult due to the large number of closely similar species. Up to 1984 systematic studies were based entirely on morphology (Ramme 1933, Bey-Bienko 1954, Harz 1969, Willemse 1982, 1984).

As in most bush-crickets, males of *Poecilimon* produce calling songs which, in presenting an excellent means of recognizing, provide the basis for a mate selection system. Heller (1984) was the first to present results of an elaborate study on song and morphology of stridulatory file in *Poecilimon*.

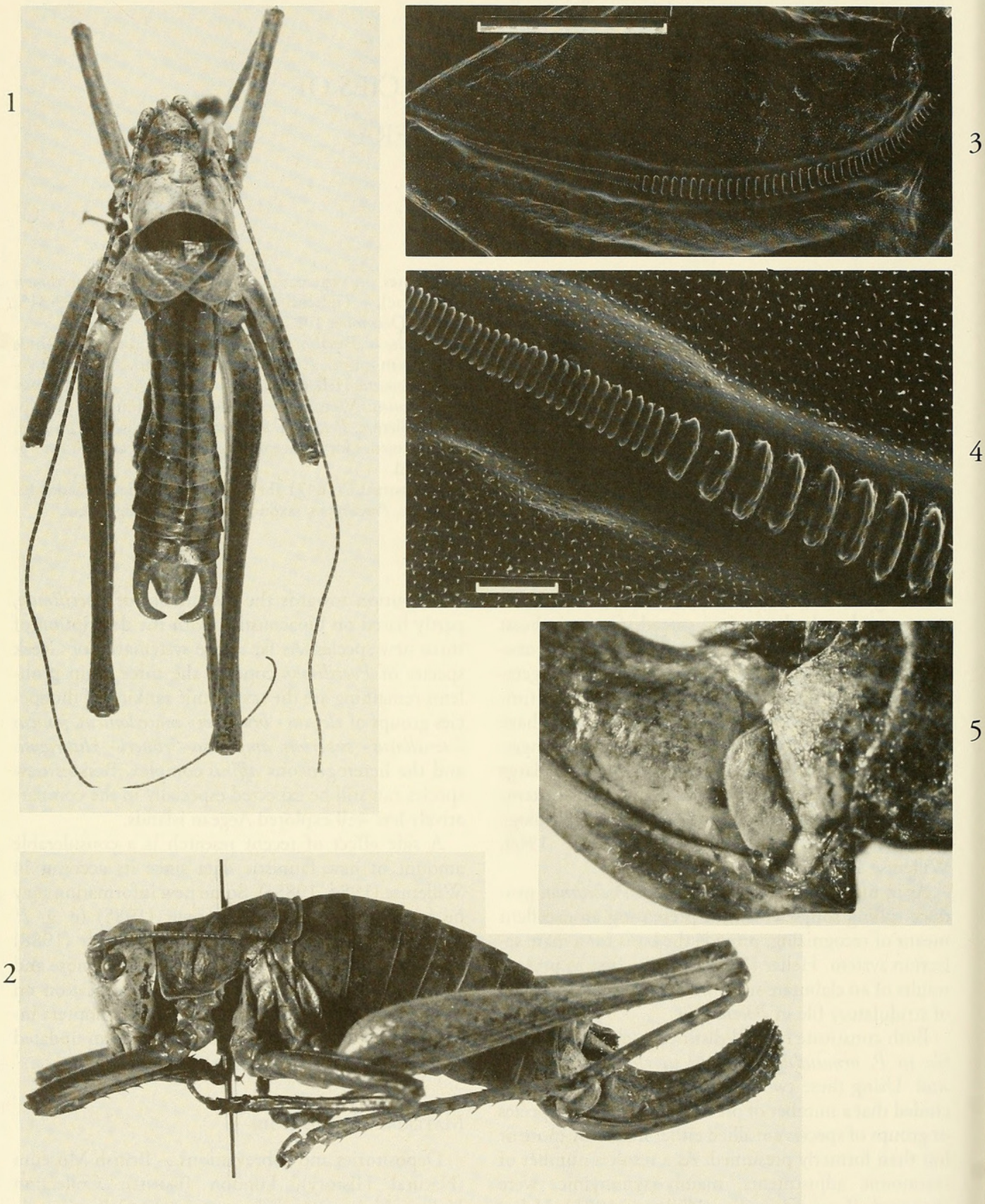
Both constitute helpful distinctive characters (e. g. file in *P. ornatusaffinis*, song in *chopardilveluchianus*). Using these two characters Heller (1984) concluded that a number of previously recognized species or groups of species are allied either markedly more or less than formerly presumed. As a result a number of taxonomic adjustments, mainly synonymic, were proposed. Renewed studies (Willemse 1985a, Heller 1988, 1990) of some of the species-groups, including morphological characters and based on more material, proved that some of these taxonomic readjustments were premature. The present paper is a further

contribution towards the systematics of *Poecilimon*, partly based on bioacoustics, with the description of three new species. As far as the systematics of Greek species of *Poecilimon* concern the three main problems remaining are the taxonomic ranking of the species groups of *elegans* - *brunneri* - *macedonicus*, *jonicus* - *tessellatus* - *superbus*, *ampliatus* - *ebneri* - *klisuriensis* and the heterogeneous *affinis* complex. Besides new species can still be expected especially in the comparatively less well explored Aegean islands.

A side effect of recent research is a considerable amount of new faunistic data since its account in Willemse (1984, 1985a). Some new information may be found in Ingrisch & Pavicevic (1985) (e. g. *P. schmidtii*), Ponel & Hebrard (1988), Heller (1988) and in this paper. But there is considerably more and the senior author is preparing a communication on important new faunistic data of Greek Orthoptera including also *Poecilimon*. For convenience an updated checklist of Greek *Poecilimon* taxa is included.

MATERIAL AND METHODS

Depositories and abbreviations. – British Museum (Natural History), London (BMNH); Collection Heller, Universität Erlangen (CH); Collection A. Nadig, Chur (CN); Collection J. Szijj, Universität Essen (CS); Collection J. Tilmans, Warmond (CT); Collection Willemse, Eygelshoven (CW); Instituut voor Taxonomische Zoölogie, Amsterdam (ITZA);



Figs. 1-5. *Poecilimon gracilioides*. - 1, ♂, dorsal view (holotype); 2, ♀, lateral view (allotype); 3, stridulatory file of left elytron ♂ (paratype), ventral view, distal end to the left (scale 1 mm); 4, idem, detail of mid to distal third (scale 100 µm); 5, base of ovipositor, lateral view (paratype).

Naturhistorisches Museum, Vienna (NHMV).

Song recording and analysis. – For recordings of the song the following equipment has been used: Uher 4200 Report Monitor with AKG D 202 E microphone with low frequencies off (after modification) (*P. gracilioides*); Uher 4200 IC with Uher M 645 microphone (recordings of other species). To improve quality recordings were made indoors. Oscillograms were made by using a personal computer and the program TURBOLAB (Stemmer AG). Wing movements were registered by an opto-electronic device (Heller 1988). Full data of the recordings can be obtained from the authors. Stridulatory files were studied with a light microscope and a Scanning Electron Microscope (SEM) (Institut für Zoologie I, Universität Erlangen). A batdetector (QMC-mini) was used in the field to locate males as indicated in the text.

Song terminology. – Calling song: the song produced by an isolated male. Impulse: the sound produced by the contact of one file tooth with the scraper (= plectrum). Syllable: the sound produced by one complete up (opening) and down (closing) stroke of the fore wing. Hemisyllable: the sound produced by one unidirectional movement (opening or closing) of the fore wings. Echeme: a first-order assemblage of syllables. Echeme-sequence: a first order assemblage of echemes.

Presentation. – In the checklist species are presented in alphabetical order but the sequence of the species in the present study follows a preliminary arrangement of relationships based on the song pattern (Heller 1990). References listed under the species are not always complete, full bibliography up to 1985 may be found in Willemse (1982, 1984, 1985a). Material listed is new and does not include previously recorded specimens except for the type material of *P. aegaeus*. Measurements are given in mm and concern the length. Transliteration of Greek orthography in Roman characters agrees with the system proposed by the Permanent Committee on Geographical Names for British Official Use, London.

TAXONOMIC PART

Updated checklist of Greek *Poecilimon*

Those headed in this paper are provided with an asterisk in the list; names between brackets indicate places in the present paper where comparative notes are made.

- **aegaeus* Werner, 1932
- affinis* (Frivaldsky, 1867)
- anatolicus* Ramme, 1933
- **artedentatus* Heller, 1984 stat. n.

- **athos* Tilmans e.a., 1989
- brunneri* (Frivaldsky, 1867)
- chopardi* Ramme, 1933 (in *mariannae* & *veluchianus*)
- cretensis* Werner, 1903
- ebneri* Ramme, 1933
- **erimanthos* sp. n.
- deplanatus* Brunner von Wattenwyl, 1891
- **gracilioides* sp. n. (also in *veluchianus*)
- gracilis* (Fieber, 1853) (in *gracilioides*)
- hamatus* Brunner von Wattenwyl, 1878
- hoelzeli* Harz, 1966 (in *veluchianus*)
- ikariensis* F. Willemse, 1982
- jonicus jonicus* (Fieber, 1853) (in *erimanthos*)
- jonicus lobulatus* F. Willemse, 1982 (in *erimanthos*, *gracilioides*, *veluchianus* & *weneri*)
- jonicus tessellatus* (Fischer, 1853) (in *erimanthos*)
- klisuriensis* F. Willemse, 1982
- laevissimus* (Fischer, 1853) (in *erimanthos*)
- macedonicus* Ramme, 1926
- **mariannae* sp.n. (also in *propinquus* & *veluchianus*)
- miramae* Ramme, 1933
- **mytilenensis* Werner, 1932
- nobilis* Brunner von Wattenwyl, 1878 (in *erimanthos*)
- obesus* Brunner von Wattenwyl, 1878 (in *artedentatus*)
- orbelicus* Pancic, 1883
- ornatus* (Schmidt, 1849) (in *gracilioides* & *veluchianus*)
- paros* Heller & Reinhold, 1992
- pergamicus* Brunner von Wattenwyl, 1891
- pindos* F. Willemse, 1982
- **propinquus* Brunner von Wattenwyl, 1878 (also in *mariannae* & *veluchianus*)
- sanctipauli* Brunner von Wattenwyl, 1878
- schmidtii* (Fieber, 1853)
- **soulion* L. Willemse, 1987 (also in *gracilioides*)
- syriacus* Brunner von Wattenwyl, 1891
- thessalicus* Brunner von Wattenwyl, 1891 (in *veluchianus*)
- thoracicus* (Fieber, 1853)
- **veluchianus* Ramme, 1933 (also in *gracilioides*, *mariannae* & *propinquus*)
- **weneri* Ramme, 1933 (also in *erimanthos*)
- zimmeri* Ramme, 1933 (in *erimanthos*, *gracilioides*, *mariannae* & *veluchianus*)
- zwicki* Ramme, 1939

Poecilimon artedentatus Heller stat. n.

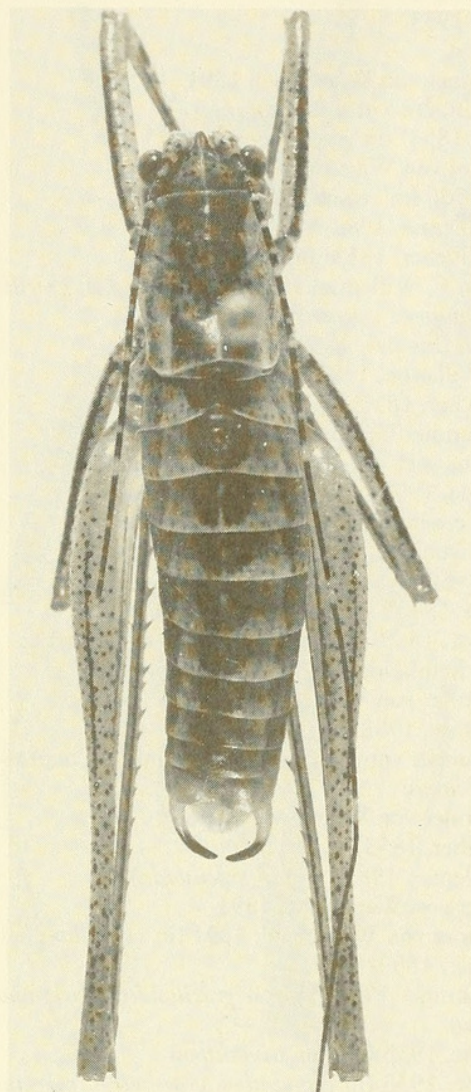
- Poecilimon obesus artedentatus* Heller, 1984: 78; Willemse 1985a: 16; 1985b: 39; Heller 1988: 47; 1990: 140.
- Poecilimon obesus*, Werner 1929: 481; Ramme 1933: 513; Werner 1934: 324; 1938: 167; Bei-Bienko 1954: 271; Harz 1969: 118; Willemse 1982: 161; 1984: 34 (all partim).

Material studied. – Akhaia: Boubouka-Krioneri, W of Kalavrita; Kernitsai, N of Kalavrita 600 m (cw); Kalavrita and surr. 700-800 m; Flamboura-Vlasia 700-800 m; Drosato, NW of Kalavrita 900 m (CH); Arkadhia: surround. Dhavia, E of Khrisovitsi (CH); 4 km S of Tripolis 700 m (cw); Ilia: 4 km NW of Andritsena 650 m (CN).

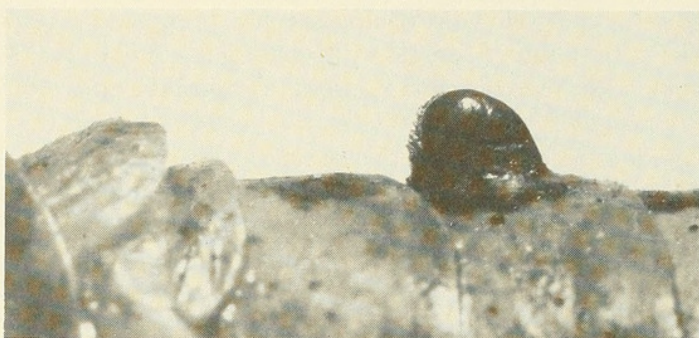
Discussion

Originally *artedentatus* was erected at subspecific rank for the *P. obesus*-like populations from the Peloponnisos (Heller 1984; Willemse 1985a: map 3).

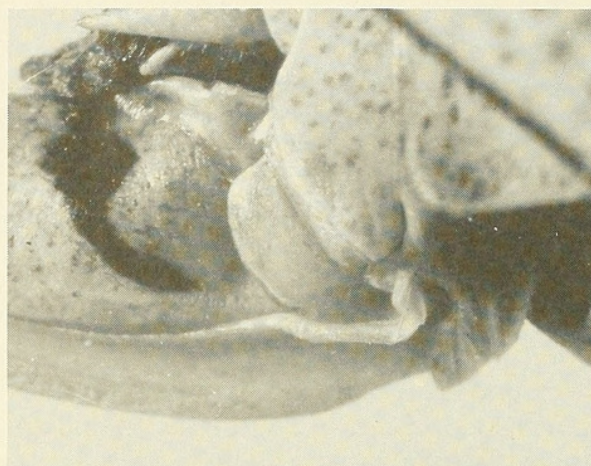
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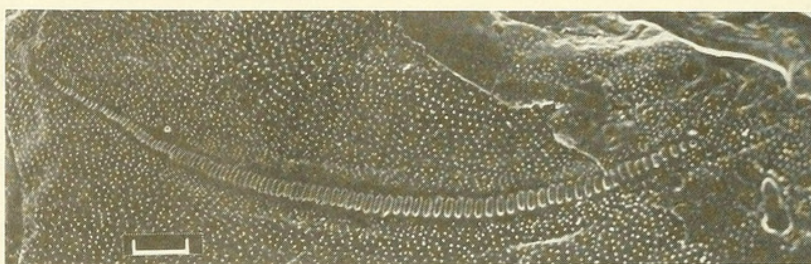
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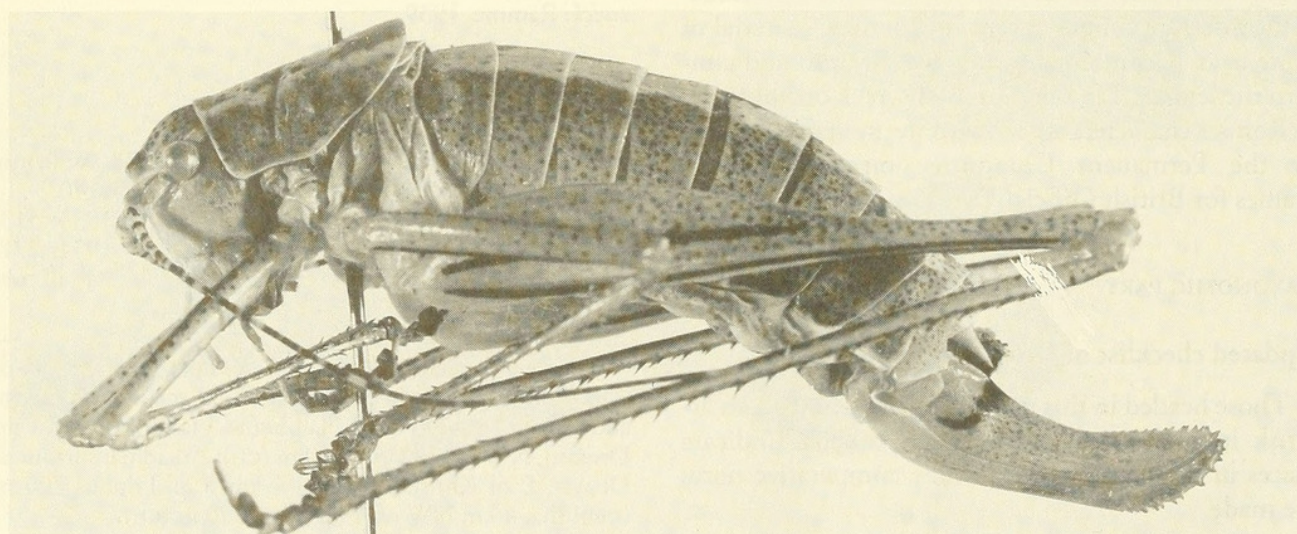
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Figs. 6-10. *Poecilimon erimanthos*. - 6, ♂, dorsal view (holotype); 7, ♀, lateral view (allotype); 8, ♂, protrusion of second tergite, lateral view (paratype, Kalentzi, C. W.); 9, base of ovipositor, lateral view (paratype, A. Pandon-Alepokhori); 10, stridulatory file of left elytron ♂ (paratype, Kalentzi), ventral view, distal end to the left (scale 100 µm).

Distinction between *P. obesus* and *artedentatus* is largely based on the song and the stridulatory file. Considering the consistency and degree of difference and in order to balance the taxonomic interpretation assigned to them with the taxonomic interpretation given to similar differences observed in *Poecilimon* it has been decided to raise *artedentatus* to species level.

It is noted here that a confusing mistake has slipped into the key in Willemse (1985b: 38-39). The characters of the stridulatory file were exchanged erroneously and should read:

- 118(117) Stridulatory file with relative distance between the teeth larger, the total number of teeth less (some 120); etc.
 *Poecilimon obesus* Brunner 1878
 Stridulatory file with relative distance between the teeth smaller, the total number of teeth larger (some 280); etc.
 *Poecilimon artedentatus* Heller, 1984

Poecilimon soulion L. Willemse

(fig. 11)

Poecilimon soulion L. Willemse, 1987: 173; Heller 1988: 51.

Material studied. – Type material.

Additional descriptive notes

Auditory spiracle large, aperture narrowly elliptical, dorsally reaching middle of pronotal lateral lobe. Female stridulatory apparatus: Ventral side of left elytron with well developed plectrum; right elytron with stridulatory pegs on dorsal side of veinlets which form a network bordering the widely rounded postero-apical edge of elytron.

Poecilimon gracilioides sp. n.

(figs. 1-5, 12, 24, 30)

Type material. – Holotype ♂: Hellas, Arta, Mt. Tzoumerka, S of Theodoriana, 1400-1800 m, 24. vii. 1987, Fer Willemse (CW). – Paratypes 13 ♂ 4 ♀: same data (2 ♂ CH; 1 ♂ 1 ♀ BMNH; 1 ♀ allotype, 10 ♂ 2 ♀ CW).

Description

Male (fig. 1). – Medium-sized, remarkably slender, integument moderately shiny.

Head: fastigium of vertex produced anteriorly, lateral margins parallel, length and width about equal to those of second antennal segment, longitudinally impressed above.

Thorax: pronotum (fig. 24) with metazona dome-shaped and raised above elytra, posterior margin emarginate. Auditory spiracle large, aperture narrow

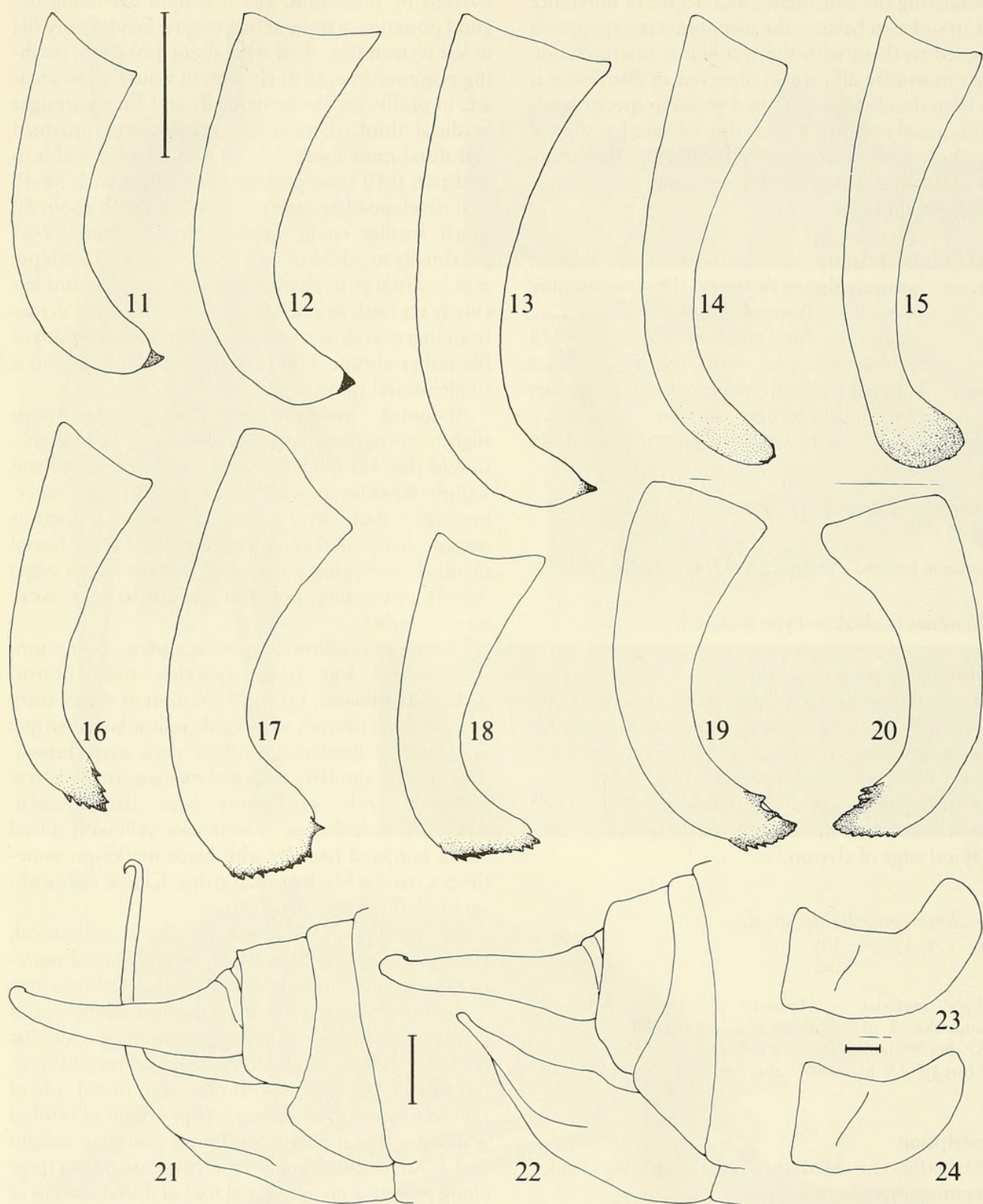
elliptical, reaching dorsally upper third of pronotal lateral lobe. Elytra in dorsal view with basal fourth covered by pronotum, apical margin extending beyond posterior margin of first tergite. Stridulatory file of left elytron (figs. 3-4) with about 120 teeth, reaching posterior margin of elytron; in ventral view arcuate, in profile concave proximally and almost straight in distal third; shortest distance between proximal and distal most tooth 2.7-2.9 mm, greatest width in mid part 0.19 mm; proximal two thirds with 38-45 well developed large teeth, distal third with about 80 much smaller teeth; spacing ranging from 22-24 proximally to 20-22 in mid part to about 80 teeth per mm in distal part; change from larger, wider and less closely set teeth to smaller, narrower and more densely arranged teeth at transition of mid to distal third of file rather abrupt. Hind femora unarmed or with a single ventral spine.

Abdomen: margins of tergites straight except slightly emarginate posterior margin of first tergite. Cercus (fig. 12) moderately long, stout, incurved and slightly tapering in apical third, apex strongly tapering into a short, strong, conical tooth near anterior margin. Subgenital plate reaching tip of cerci, lateral margins converging posteriorly, postero-lateral edges slightly protruding, posterior margin straight, weak median carina.

Coloration: yellowish-green. Vertex, pronotum, tergites and legs finely speckled rusty brown. Antennae yellowish brown. Fastigium of vertex rusty red. Pronotal dorsum with a pale yellow lateral stripe, in metazona bordered medially dark rusty brown, sometimes a similarly coloured median streak. Elytra yellowish with stridulatory area dark brown. Abdomen unicolorous or with two yellowish dorsal bands bordered laterally with black markings, sometimes a narrow black median stripe. Cercus yellowish, tip black. Legs of general colour.

Female (fig. 2). – Pronotum almost cylindrical, metazona very slightly inflated, scarcely raised posteriorly, posterior margin slightly concave. Elytra just visible, overlapping each other medio-dorsally, apical margin transverse, reaching anterior margin of first tergite or shorter. Stridulatory apparatus present: ventral side of left elytron with plectrum; dorsal side of right elytron with stridulatory pegs on top of veinlets which form a network bordering posterior margin and postero-apical angle of elytron, strongest pegs along posterior margin. Basal fold of dorsal margin of lower ovipositor valve lamelliform, strongly bent ventrally, forming with gonangulum a rather shallow laterally-facing groove (fig. 5). Coloration unicolorous green.

Measurements. – Body ♂ 18.0-21.0, ♀ 18.5-20.0; pronotum ♂ 4.2-4.6, ♀ 4.5-4.8; elytron ♂ 2.5-2.9, ♀ 0.1-0.3; hind femur ♂ 14.3-15.1, ♀ 15.2-15.6;



Figs. 11-19. *Poecilimon*, left cercus ♂, dorsal view. - 11, *P. soulion* (paratype); 12, *P. gracilioides* (paratype); 13, *P. gracilis* (Mt. Pelister, Yugoslav Makedonia); 14, *P. erimanthos* (paratype, Alepokhori-Greveno); 15, *P. mytilenensis* (Ayiaassos); 16, *P. mariannae* (paratype, Vrisia); 17, *P. propinquus* (Mt. Dhifis, Evvoia); 18, *P. propinquus* (Mt. Othris, Magnisia); 19, *P. aegaeus* (paratype, Sira). - Fig. 20. *Poecilimon aegaeus*, right cercus (holotype, Mikonos). - Figs. 21-22. *Poecilimon*, tip of ♂ abdomen, lateral view. - 21, *P. mytilenensis* (Megalokhorion); 22, species (= ? *P. mytilenensis*) (Kaloni). - Figs. 23-24. *Poecilimon*, Pronotum ♂, lateral view. 23, *P. gracilis* (Florina, NW Greek Makedhonia); 24, *P. gracilioides* (paratype). Scales 1 mm.

ovipositor 8.4-8.7.

Bioacoustics. – Male calling song an isolated syllable (fig. 30), produced with intervals of several seconds. Two syllables produced immediately one after another occur only sporadically. Syllable composed of three impulse groups: a series of up to 50 faint impulses, slightly increasing in amplitude, followed by a second group of about 7 loud impulses separated from each other by intervals of 10 to 20 ms and the final group consisting of about 20 loud impulses with intervals less than 3 ms (30°C). Fore wing movements not yet registered.

Distribution and ecology

Known only from Mt. Tzoumerka (1400-1800 m altitude), NE of the town of Arta, Ipiros, western continental Greece. Tzoumerka is the archaic name for Mt. Athamanon or Athamanika. This large mountain complex, highest summit 2393 m, is zoogeographically somewhat isolated being quite narrowly connected eastward with the Pindhos range and separated westward by the Arakthos river from some lower mountains in western Ipiros. The new species was found at 1400-1800 m altitude on the northeastern slopes of one of the southern summits, named Spilia (1932 m), S of the village of Theodoriana. The habitat, close to a spring, are rocky slopes covered by rich vegetation of low shrubs, herbs and grasses. The species occurs quite locally, was not numerous and found mainly on *Helleborus* leaves, together with *P. ornatus*, *jonicus lobulatus*, *zimmeri* and *veluchianus*.

Differential diagnosis

The species is defined by pronotum, fore wing and cercus in the male, basal fold of the lower ovipositor valve in the female and size, slender habitus, coloration and almost unarmed hind femora in both sexes. A key character is presented by the stridulatory file.

P. gracilioides resembles *P. gracilis* in size, coloration and general habitus but differs from it by less raised male pronotum (figs. 23-24), shorter male cercus (figs. 12-13) and especially in the male stridulatory file: in *gracilis* (L. Willemse 1987, Heller 1988) the teeth are gradually narrowing and closer set near the transition of mid to distal third of file length, in *gracilioides* size and spacing of teeth changes abruptly at that part of the file (figs. 3-4). The calling song resembles that of *P. gracilis* (Heller 1984, 1988) but the distinction is not yet pointed out because variability and influence of temperature are known insufficiently.

Readily recognizable differences with *P. soulion* (L. Willemse 1987, Heller 1988) refer to a more robust habitus, broader and less raised male pronotum, larger size, more spined hind femora, slightly deeper basal groove of the lower ovipositor valve and the coloration

in this species. The male cercus of both species differs only slightly (figs. 11-12). The sudden change in spacing of the teeth of the stridulatory file is shared by both species. In *P. soulion* the file is longer (3.0-3.2 mm against 2.7-2.9 mm), the number of teeth in its proximal two thirds slightly larger (58-62 against 38-45) and the difference in spacing of the teeth in the mid part of the file compared with those at its proximal (= basal) end apparently larger: about 36 and 18 per mm against about 23 and 21 teeth per mm in *gracilioides*. Bioacoustics can not be compared as those of *P. soulion* are unknown.

Etymology

Named after its resemblance to *P. gracilis*.

Poecilimon werner Ramme

(figs. 31, 42)

Poecilimon werner Ramme, 1933: 530; Harz 1969: 135;

Willemse 1985a: 17; 1985b: 41; Heller 1988: 58.

Poecilimon jonicus, Heller 1984: 95 (as synonym).

Material studied. – Aitolia-Akarnania: Menidhion 50 m; Anoixiatikon 50 m; Loutrakion 70 m; Mitikas 10 m; 10 km SE of Astakos 50 m (all cw); Akhelos delta, Kardhos (cs); Akhaia/Ilia: 2 km S of Porte (N of Pinios lake) 650 m (CH).

Additional descriptive notes

Auditory spiracle large, aperture elliptical, extending dorsally to upper third of pronotal lateral lobe. Female stridulatory apparatus: ventral side of left elytron provided with plectrum; stridulatory pegs on dorsal surface of small veinlets (most of them almost parallel to each other) of postero-apical part of right elytron.

Bioacoustics. – Male calling song (fig. 31) an isolated syllable, produced with intervals of about 1 s (ca. 29°C); syllable composed of two hemisyllables, closing one distinctly louder than opening one; opening hemisyllable (45 ms at ca. 29°C) about 25 impulses; closing hemisyllable (70 ms at ca. 29°C) commonly two groups of impulses separated by interval of about 25 ms (ca. 29°C), first group of 20-40 impulses, second group of 1-8 or sometimes missing; maximum of frequency spectrum 29-44 kHz.

Distribution

The range, previously poorly known (Willemse 1984: map 19), is remarkably small, restricted to coastal areas of extreme southwestern continental Greece and opposite part of the north-western Peloponnisos (fig. 42).

Discussion

Induced by the proposed synonymy of *P. werner* with *jonicus* (Heller 1984) its specific status was ar-

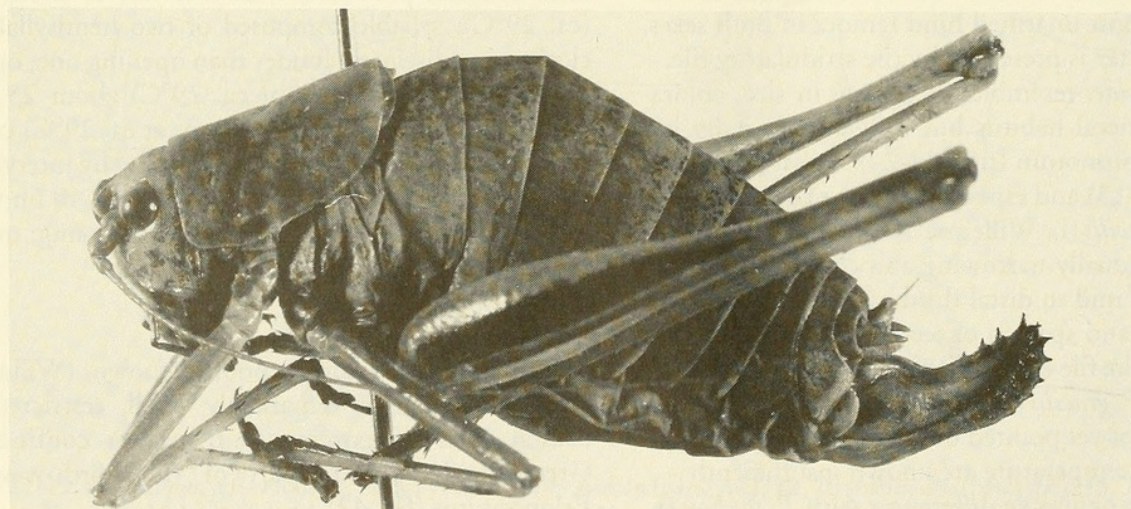
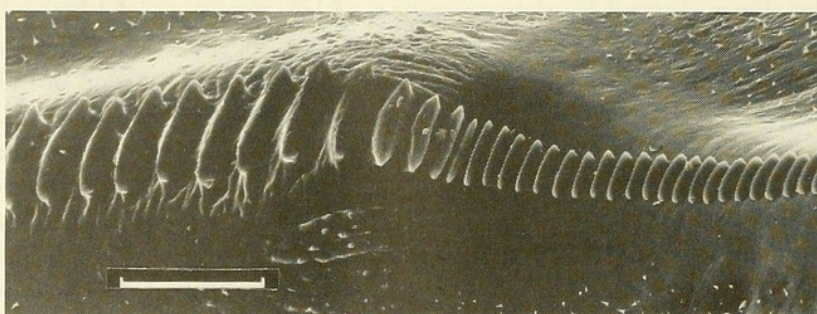
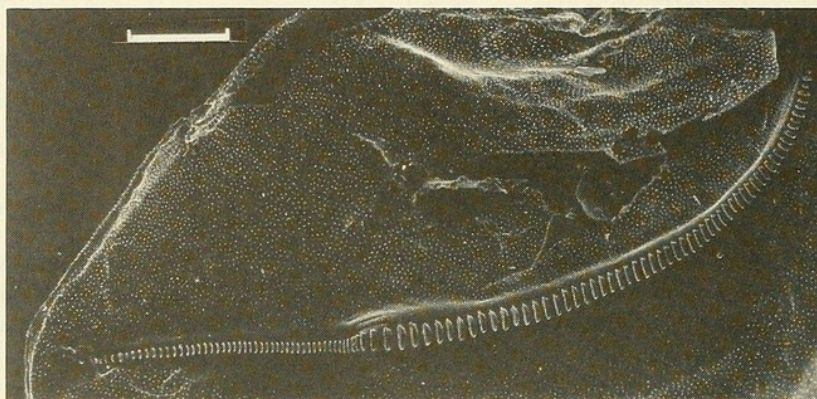
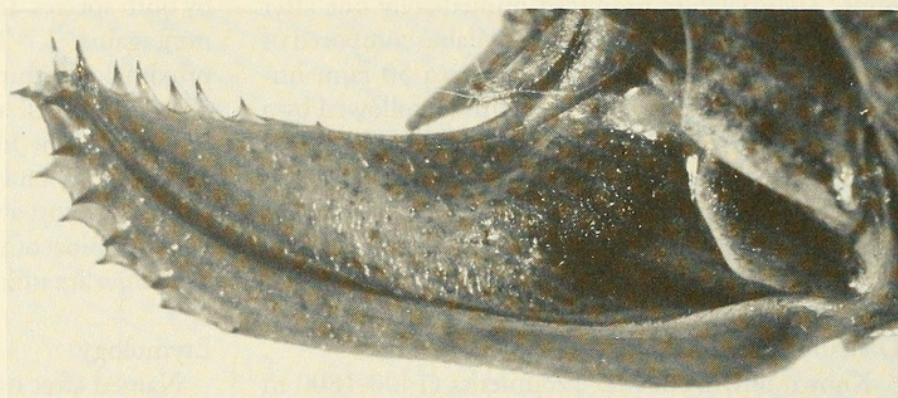
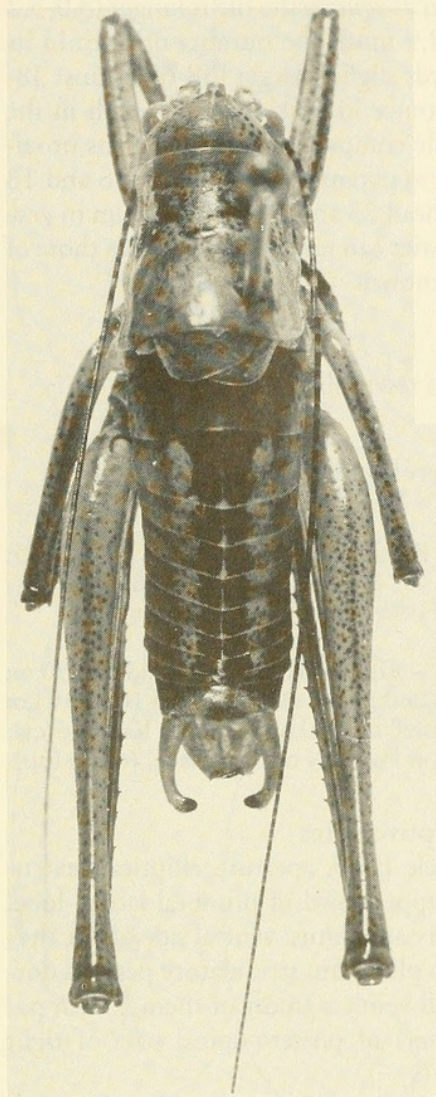


Fig. 25-29. *Poecilimon mytilenensis*. – 25, ♂, dorsal view (Ayiassos); 26, ♀, lateral view (Playia); 27, ovipositor and its base, lateral view (Megalokhorion); 28, stridulatory file of left elytron ♂ (Ayiassos), ventral view, distal end to the left (scale 300 μ m); 29, idem, detail of mid to distal third, distal end to the right (scale 100 μ m).

gued on morphological basis (Willemse 1985a). Evidence for its specific status is now presented both by their distinctive song and the syntopic occurrence with *P. jonicus lobulatus*, even on a single shrub (*Cistus* sp., *Rubus* sp.) (Menidhion and Anoixiatikon, both Aitolia-Akarnania).

***Poecilimon erimanthos* sp. n.**

(figs. 6-10, 14, 32-33, 42)

[*P. erimanthos* F. Willemse & Heller 1988]: Heller 1988: 57; 1990: 142 (bioacoustics only).

Type material. – Holotype ♂: Hellas, Akhaia, Mt. Erimanthos, A. Pandhon-Alepkhori, 700 m, Fer Willemse, 17. vii. 1987 (cw). – Paratypes 7♂ 9♀: same data (1♂ 1♀ ITZA; 1♀ CN; 1♀ allotype, 6♂ 7♀ cw); Akhaia: Mt. Erimanthos, Alepkhori-Greveno, 800 m, 17. vii. 1987 (10♂ 3♀ cw; 1♂ 1♀ BMNH); Greveno-Kalentzi, 900 m, 17. vii. 1987 (1♂ 1♀ cw); Kalentzi-Drosia, 600 m, 17. vii. 1987 (2♂ 1♀ cw); Kalentzi, 900 m, 17. vii. 1987 (1♂ 1♀ cw), all Fer Willemse; Kalentzi, 4. vii. 1986, K.-G. Heller (1♂ 1♀ CH); Kalentzi and surr., 900-1100 m, 10. vii. 1985, A. Nadig (1♂ CN); Mt. Erimanthos ab. Kalentzi, 1700-2000 m [but probably 1100 m near Kalentzi], 4. viii. 1970, Willemse & Scherpbier (1♂ cw); Akhaia/Ilia: 2 km S of Porte (N of Pinios lake), 650 m, 14. vi. 1989, K.-G. Heller (5♂ CH); Ilia: 5 km E of Koumanis (Erimanthos valley), 600 m, 16. vi. 1989, K.-G. Heller (3♂ 1♀ CH); 3 km NW of Karia, 500 m, 15. vi. 1989, K.-G. Heller (5♂ 11♀ CH); Keramidhia, 150 m, vi. 1988, K. Reinhold (4♂ 1♀ CH); Mt. Erimanthos, S of Kriavrissi, 800 m, 15. vii. 1987, Fer Willemse (9♂ 7♀ cw); Mt. Lambia ab. Lambia village, 1000-1150 m, 16. vii. 1991, Luc Willemse (3♂ 2♀ cw).

Description

Male (fig. 6). – Small, remarkably slender, integument moderately shiny.

Head: fastigium of vertex produced anteriorly, lateral margins parallel or slightly converging anteriorly, twice as long as wide, as narrow as width of third antennal segment or a little wider, longitudinally impressed above.

Thorax: pronotum with metazona not widening but slightly inflated posteriorly, posterior margin weakly emarginate. Auditory spiracle large, aperture widely elliptical, reaching dorsally upper fourth of pronotal lateral lobe. Elytra with basal three quarters covered by pronotum, apical margins reaching or just surpassing anterior margin of first tergite. Stridulatory file of left elytron (fig. 10) with 70-90 teeth, not quite reaching posterior margin of elytron; in ventral view slightly fusiform and arcuate, in profile distinctly bulging just beyond middle of length; shortest distance from proximal to distal most tooth 1.0-1.2 mm, greatest width in mid third 0.05 mm; in proximal two thirds 35-45 teeth, in distal third about same number of distally increasingly narrowing teeth; spacing in proximal two thirds almost regular, in dis-

tal third increasingly closer. Hind femur unarmed.

Abdomen: posterior margin of first tergite angularly excised. Second tergite with a quite remarkable median protrusion (fig. 8) at least as large as antennal scape and slightly wider than long; anterior and lateral sides slightly flattened and arising vertically, posterior side more sloping anteriorly (and thus longer than anterior side), depressed medially and merging with the inflated, weakly bilobate dorsal side; anterior and dorsal surface of this protrusion bristly. Cercus (fig. 14) slender, proximal half slightly tapering towards cylindrical apical half, from base to apex increasingly incurved, apex from below shortly and from other sides gradually tapering into a sharp and sometimes slightly irregularly shaped pointed crest. Subgenital plate reaching mid to distal third of cercus, slightly narrowing apically with obtuse median carina ventrally; lateral margins carinate, terminating into not or slightly protruding postero-lateral edges, posterior margin straight to slightly emarginate.

Coloration: yellowish green. Vertex, most of dorsum of pronotum, tergites and legs finely speckled rusty brown or blackish. Antennae yellowish, finely annulated dark brown. Occiput with spots sometimes more closely set medially, always unspotted along median line. Pronotal dorsum with yellowish median line, prozona and posterior part of metazona reddish brown and on either side a yellowish streak; lateral lobes often greenish. Elytra with stridulatory area usually brownish contrasting with yellowish to greenish white anterior part, apical margin sometimes dark brown. Abdomen dorsally yellowish, laterally of similar colour or brownish or mixed with green; tergites with yellow median line, on either side bordered by a black block, posterior margin yellowish; protrusion of second tergite and its surroundings on dorsum dark reddish brown; sternites yellowish or pale green. Cercus yellowish, apical third dorsally blackish, tip black. Subgenital plate pale yellowish. Femora with black dorsal incomplete stripe, lower keels blackish, especially distally and hind femur with black lateral incomplete stripe as well; tibiae yellowish brown, between spined upper edges often black.

Female (fig. 7). – Pronotum almost cylindrical, metazona not or scarcely inflated posteriorly. Elytra not or usually just visible, overlapping each other medio-dorsally, apical margin transverse, reaching anterior margin of first tergite. Stridulatory apparatus present: ventral side of left elytron with plectrum; dorsal side of right elytron with irregular rows of stridulatory pegs on top of a number of veinlets that reach posterior margin and postero-apical angle of elytron, those reaching posterior margin roughly parallel to each other. Basal fold of dorsal margin of lower ovipositor valve lamelliform, moderately protruding horizontally, not or very slightly impressed

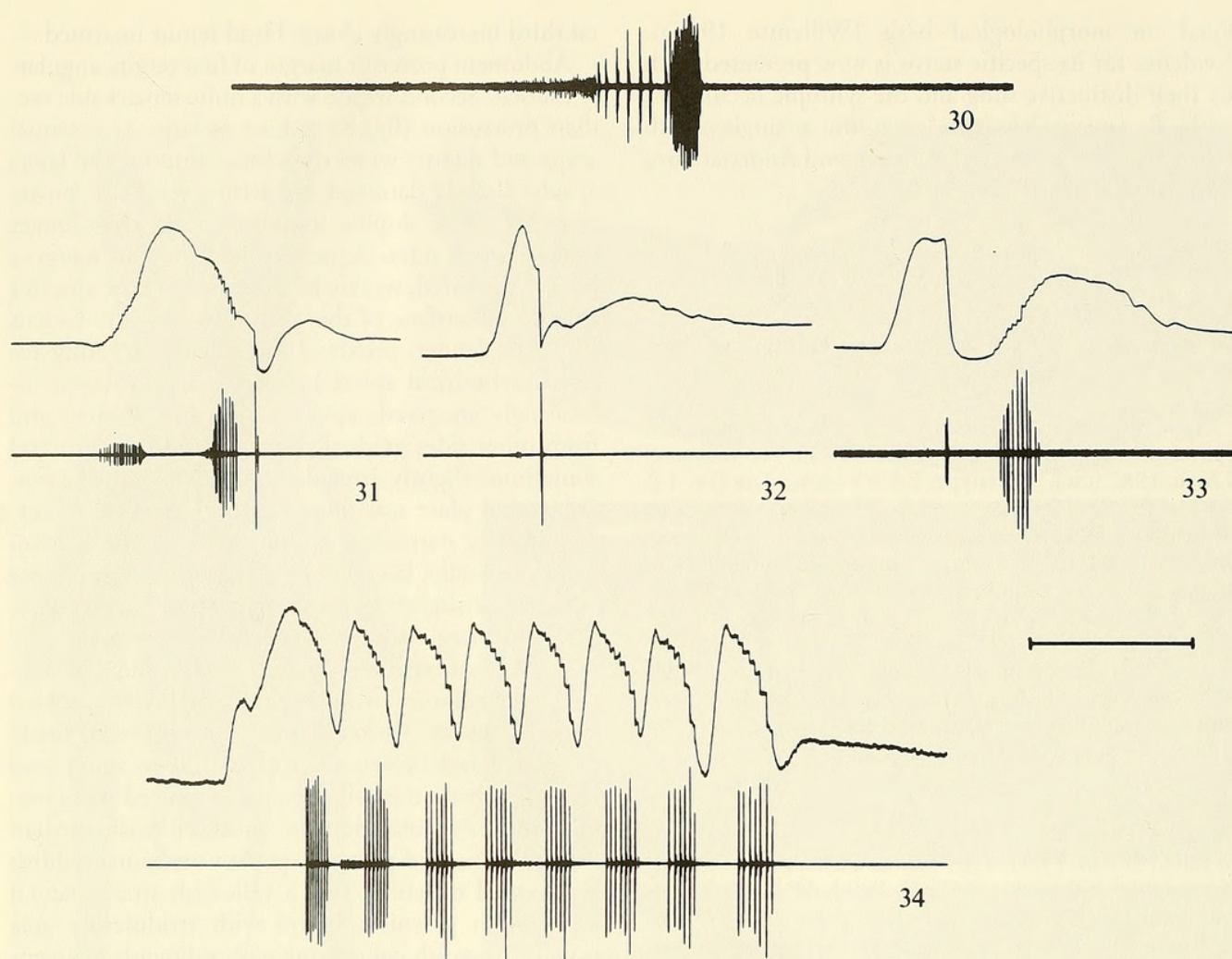


Fig. 30. *Poecilimon gracilioides*, oscillogram of ♂ calling song (paratype). – Fig. 31-34. *Poecilimon*, ♂, synchronous registration of left elytron movement (above; upward is opening, downward is closing of wing) and calling song (below). – 31, *P. werneri* (Porte); 32, *P. erimanthos*, isolated syllable (paratype, Kalentzi, C. H.); 33, *P. erimanthos*, echeme (paratype, Kalentzi, C. H.); 34, *P. mariannae* (holotype). Scale 200 ms.

dorsally, forming with gonangulum a longitudinal, deep and laterally-facing groove (fig. 9). Coloration as male, sometimes unicolorous greenish.

Measurements. – Body ♂ 17.0-20.0, ♀ 19.0-22.0; pronotum ♂ 4.1-4.7, ♀ 5.3-5.8; elytron ♂ 0.5-1.0, ♀ 0.0-0.3; hind femur ♂ 14.0-17.1, ♀ 17.3-19.5; ovipositor 9.1-9.9.

Bioacoustics. – Male calling song (figs. 32-33) an isolated syllable (fig. 32) or a short echeme (fig. 33) repeated at variable intervals (often about 1 s; 23-24°C); isolated syllable consisting of very soft opening hemisyllable (sometimes even undetectable) and loud and very short (up to 5 ms; 23-24°C) closing hemisyllable. An echeme begins with a syllable similar to isolated one followed by a group of 10-15 impulses (about 50 ms; 23-24°C), produced during second opening of elytra while final closing movement produces no sound at all. Echemes possibly produced mainly by males which do receive response of a fe-

male.

Distribution and ecology

The range of the species covers a remarkably small area of the northwestern Peloponnisos: from the western and southern slopes of Mt. Erimanthos (up to 1100 m altitude) down to the adjacent lowlands of northern Ilia (fig. 42). The species was found on thistles, blackberry bushes and *Astragalus*, sometimes in a marshy spot. *P. erimanthos* occurred syntopically with *werneri* (Akhaia/Ilia: Porte), *laevissimus* (Akhaia: Kalentzi; Ilia: Koumanis), *zimmeri* (Ilia: Mt. Lambia) and *nobilis* (Ilia: Koumanis). Attempts to find the species together with *P. jonicus tessellatus* at the northeastern part of its range failed up to now.

Differential diagnosis

P. erimanthos is defined by pronotum, elytron and cercus in the male, basal fold of the lower ovipositor

valve in the female and size, slender habitus, coloration and unarmed hind femora in both sexes. Most obvious feature is the median prominence of the male second tergite by which *P. erimanthos* is recognizable at a glance. So far known to us such a structure in *Poecilimon* exists only in *glandifer* Karabag, 1950 (Karabag 1950: fig. 7) and *ampliatius* Brunner von Wattenwyl, 1878 (Krauss 1878: pl. 3 fig. 3a, Harz 1969: fig. 373). The prominence in these species, however, is located on the first tergite, partly covered by the elytra and differently shaped. Also other features of these species differ clearly from *P. erimanthos*.

Except for the prominence of the second male tergite, *P. erimanthos* comes near the closely related species *laevisimus*, *wernerii* and *jonicus* (s.l.).

The male second tergite of *P. laevisimus* presents no prominence but is slightly inflated, also bristly and of similar colour medially. Other distinctive features (Willemse 1982, Heller 1984) are summarized: male cercus quite larger; stridulatory file less bulged; pronotal metazona only a little more inflated; same coloration of body but black dots of tergites more solid; antennae more widely annulated; basal fold of lower ovipositor valve more and roundly impressed from above, groove larger and more rounded; size of body and legs usually larger but occasionally similar.

P. wernerii differs in: slightly longer elytra, straight profile of stridulatory file; male cercus more incurved in apical third, tip more pointed; basal fold of lower ovipositor valve slightly arched upward anteriorly and groove with gonangulum more shallow and facing more anteriorly instead laterally; tergites with similar colour pattern but, on either side, an additional black lateral streak (Willemse 1982, 1985a).

P. jonicus (s. l.) can be distinguished by more inflated pronotal metazona; more visible and slightly longer elytra, file of similar shape but shorter, bulging stronger and more distally, teeth less closely set; male cercus pre-apically more angularly incurved and slightly flattened; basal groove of lower ovipositor valve smaller and round instead elongate and besides in *jonicus lobulatus* provided with an anterior inflated process (Willemse 1982, 1985a).

The calling song resembles also these last three species. In *P. erimanthos* the duration of the closing hemisyllable of the isolated syllable or of the first syllable of an echeme respectively, is shorter than in *P. jonicus jonicus*, *jonicus lobulatus* and *wernerii* (fig. 31, Heller 1984, 1988). Isolated syllables of *P. jonicus tessellatus*, *laevisimus* and *erimanthos* may be indistinguishable from each other. The echeme structure in *P. erimanthos*, however, is unique. Echemes in *P. laevisimus* and *wernerii* were, so far known, not produced at all, while in *jonicus* (s. l.) the second syllable of an echeme is not restricted to an opening hemisyllable as in *erimanthos* but to a closing one or both to an opening

and closing hemisyllable (Heller 1984).

Discussion

We observed that during mating the female nibbled eagerly at the peculiar prominence of the second male tergite. Further anatomy or function of the peculiar prominence of the male second tergite are unknown.

Etymology

A noun in apposition, named after its distribution that centres on Mt. Erimanthos.

Poecilimon mytilenensis Werner

(figs. 15, 21, 25-29)

Poecilimon mytilenensis Werner, 1932: 3; 1933: 404; Ramme 1933: 537; Werner 1934: 324; Harz 1969: 144; Willemse 1982: 188; 1984: 41; 1985b: 43; Heller 1988: 69 (in Willemse 1982, 1984, 1985b & Heller 1988 as *mytilensis*).

Material studied. – Lesvos: S of Ayiaossos 500 m, Castanea forest; Megalokhorion 550 m; Playia, E of Plomari; Thermi, N of Mytilini (all ITZA); Andhissa (CW).

Redescription

Male (fig. 25). – Medium-sized, integument slightly glossy.

Head: fastigium of vertex with lateral margins parallel or slightly converging anteriorly, twice as long as wide, as wide as second antennal segment, smooth above.

Thorax: pronotum slightly compressed laterally and thus a little saddle-shaped; metazona slightly widening and raised posteriorly. Auditory spiracle large, aperture narrow elliptical, reaching dorsally upper third of pronotal lateral lobe. Elytra in dorsal view with basal two thirds covered by pronotum, apical margins reaching half length of first tergite. Stridulatory file of left elytron (figs. 28-29) with 100-120 teeth, reaching posterior margin of elytron; in ventral view arcuate, proximally more; in profile slightly concave in proximal two thirds, then sharply giving way like one step downstairs and farther distally again slightly concave; shortest distance between proximal and distal most tooth about 2.2 mm, greatest width near the step 0.06-0.07 mm; proximal two thirds with 50-60 distally gradually wider and less closely arranged teeth reaching the step and from there, in distal third, about similar number of teeth but now about half as wide and twice as closely set. Hind femur unarmed.

Abdomen: margins of tergites straight; medio-anterior part of second tergite slightly inflated, black. Cercus (fig. 15) slender, in proximal two thirds slightly, in distal third stronger in- and a little upcurved;

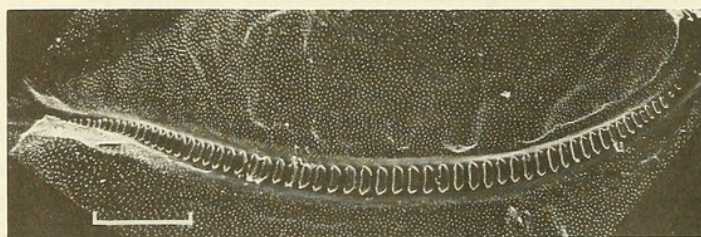
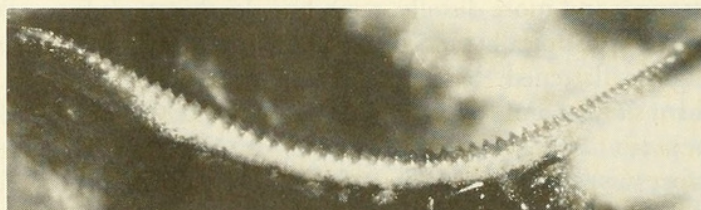
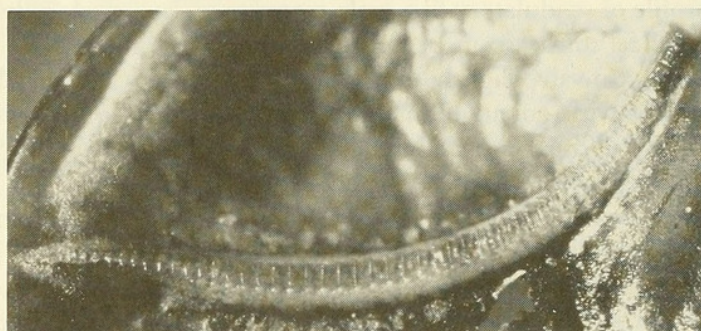
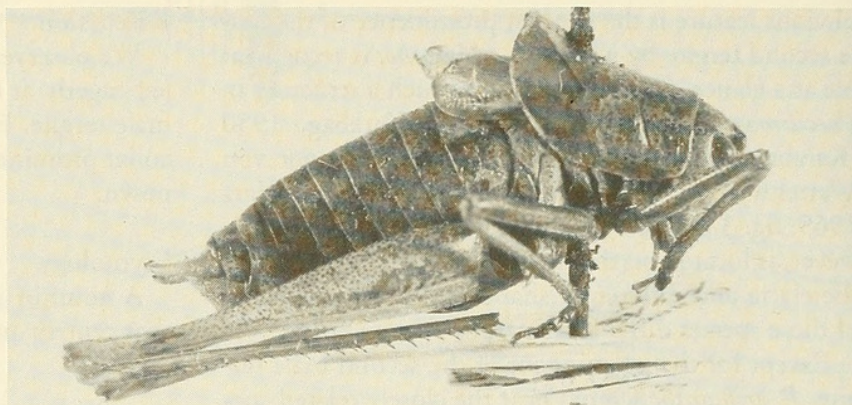
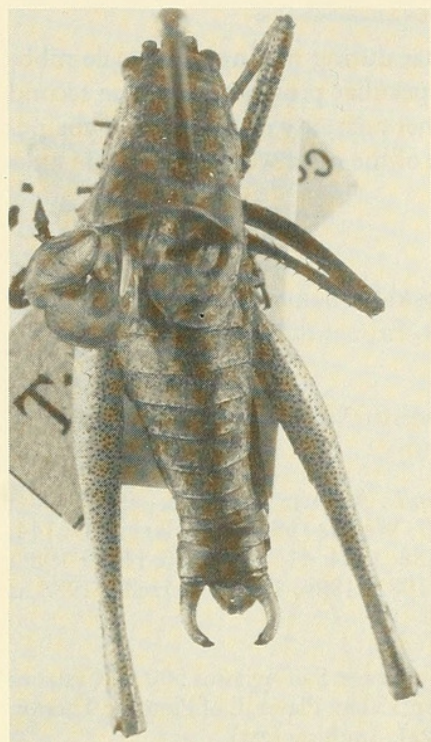


Fig. 35-39. *Poecilimon aegaeus*. – 35, ♂, dorsal view (holotype); 36, ♂, lateral view (holotype); 37, base of ovipositor, lateral view (paratype, Sira); 38, stridulatory file of left elytron ♂ (holotype), ventral view, distal end to the left; 39, idem, in profile. – Fig. 40-41. *Poecilimon mariannae*. – 40, ♂, dorsal view (holotype); 41, stridulatory file of left elytron ♂ (paratype, Metallion), ventral view, distal end to the left (scale 300 μ m).

proximal half slightly conical, distal half a little compressed dorso-ventrally, apical part flattened and widened (spatulate), apical edge slightest rounded and provided with minutely serrate and slightly down-curved crest at medio-posterior part of edge. Male subgenital plate (fig. 21) remarkably slender and long; in ventral view at least twice as long as greatest width, in distal half tapering to half greatest width or even less; posterior margin straight, postero-lateral edges slightly protruding; in profile distal half strongly upcurved, extending far between cerci and reaching level of last tergites, very edge of posterior margin commonly turned down. Coloration: straw yellow, sometimes mixed with green. Vertex, most of pronotum, tergites and legs finely speckled rusty brown or reddish. Antennae yellowish, finely annulated blackish. Median line of vertex and pronotum and a post-ocular stripe yellow. Pronotal dorsum usually with black dots in prozona and along sulci, metazona often with reddish flush. Elytra unicolorous yellowish, sometimes a pre-apical dark brown streak. Tergites medio-dorsally each with pair of black blocks, widening anteriorly especially in proximal tergites, not reaching very posterior margin and bordered laterally yellowish; lateral sides of tergites and all of sternites of general colour. Cerci yellowish, tip dorsally black. Subgenital plate of general colour, very hind margin sometimes blackish. Legs with more or less distinct black stripes.

Female (fig. 26). – Pronotal dorsum in profile straight to commonly slightly concave. Elytra completely covered by pronotum or just visible, shortly overlapping each other medio-dorsally. Stridulatory apparatus present: ventral side of left elytron with plectrum; dorsal side of posterior part of right elytron with stridulatory pegs on top of some 5–7 almost parallel to each other running veinlets and on top of several other non-directional veinlets towards postero-apical angle. Basal fold of dorsal margin of lower ovipositor valve lamelliform, moderately extending laterally but strongly impressed dorsally forming with gonangulum a round, deep and dorsolaterally-facing pit (fig. 27). Ovipositor comparatively short. Coloration as male but commonly unicolorous yellowish.

Measurements. – Body ♂ 18–20, ♀ 22–24; pronotum ♂ 5.7–6.0, ♀ 5.4–6.0; elytron ♂ 0.6–1.1, ♀ 0.1–0.5; hind femur ♂ 16.5–17.1, ♀ 16.3–17.2; ovipositor 6.3–7.0.

Bioacoustics. – Unknown.

Distribution

Only known from the eastern Aegean island of Lesbos, at least from its southern part (see remarks below).

Discussion

P. mytilenensis was known only from two males (type series) and one female (Werner 1934). The material listed above agrees fully with the descriptions and figures of the male holo- and paratype. Previous descriptions (Werner 1932, 1933, Ramme 1933, Harz 1969) are insufficient.

Additional material before us from the island of Lesbos: 3 km NW of Kaloni (ITZA); N of Kaloni (ITZA); Sikaminea (CW) is strongly reminiscent of *P. mytilenensis*, particularly the virtually identical male stridulatory file. However, the male subgenital plate (fig. 22) is remarkably different: much shorter, much less tapering posteriorly and the apical part not at all pointing dorsally between the cerci. Some other characters differ as well but not so conspicuously. It is also remarkable that these specimens are from the northern part while typical *P. mytilenensis* occur in the southern part of the island. Lack of bioacoustical particulars prevents further identification.

Poecilimon mariannae sp. n. (figs. 16, 34, 40–41, 43)

Poecilimon cf. *aegaeus* Werner; Heller 1984: 104.

[*Poecilimon mariannae* F. Willemse & Heller, 1988]: Heller 1988: 68; 1990: 142 (bioacoustics only).

Type material. – Holotype ♂: Hellas, Fthiotis: Dhomokos, Metallion, 1 km South East, 450 m, K.-G. Heller, 21. vi. 80 (CW). – Paratypes 2♂ 1♀: same data (2♂ 1♀ allotype CH); Fthiotis: Metallion, 4 km S, 500 m, 10. vii. 1987, F. Willemse (3♂ 9♀ CW); 19. vii. 1991, F. & L. Willemse (1♂ 2♀ CW); 1 km SE of Metallion, 450 m, 29. v. 1989, K. -G. Heller (1♂ CH); 3 km SE of Metallion, 450 m, 29. v. 1989, K. -G. Heller (4♂ 6♀ CH); Perivoli, SW of Dhomokos, 500 m, 5. vi. 1989, K. -G. Heller (1♂ CH); Larissa: 1 km NW of Nea Monastirion, 150 m, 27. v. 1990, K. -G. Heller (4♂ 4♀ CH); 2 km SW of Vrisia, 150 m, 29. v. 1989, K. -G. Heller (5♂ 1♀ CH); Vrisia near Farsala, 200 m, 10. vii. 1987, F. Willemse (2♂ 3♀ CW); Kardhitsa: Mouzaki, 15. vi. 1991, K.-G. Heller (10♂ 5♀ CH).

Description

Male (fig. 40). – Small, robust, integument scarcely glossy.

Head: fastigium of vertex with lateral margins about parallel, slightly sloping antero-ventrally, short, as long as wide, narrower than scape, not or weakly impressed dorsally.

Thorax: pronotum slightly saddle-shaped, a little widening and metazona somewhat raised posteriorly; posterior margin emarginate. Auditory spiracle tiny, aperture split-like, greatest diameter as length of scape. Elytra well visible, apical margin reaching or just surpassing posterior margin of first tergite. Stridulatory file of left elytron (fig. 41) with 62–70 teeth, almost reaching posterior margin of elytron; in

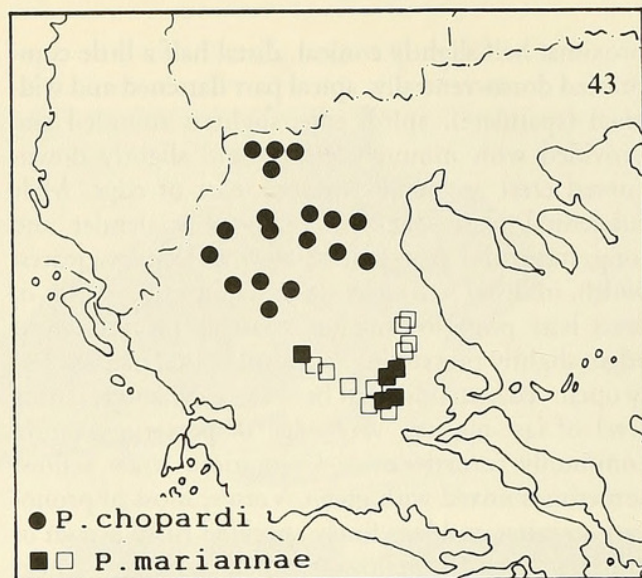
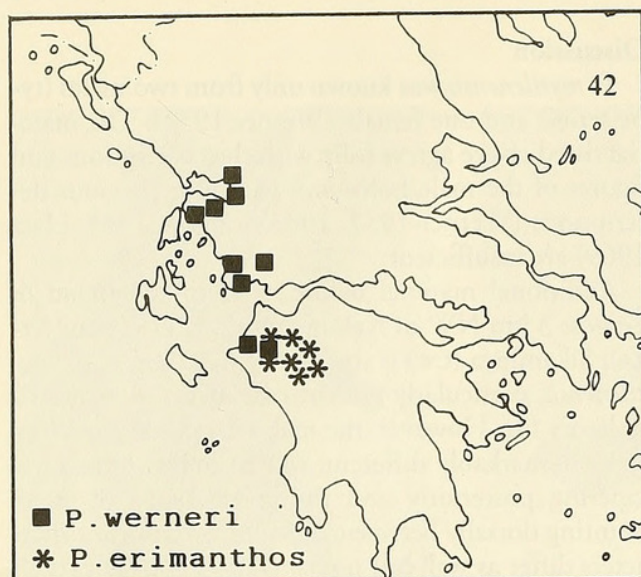


Fig. 42-43. *Poecilimon*, distribution in Greece. – 42, *P. wernerii* and *P. erimanthos*; 43, *P. mariannae* and *P. chopardi*.

ventral view slightly fusiform and arcuate, in profile evenly arcuate except very distal part; shortest distance between proximal and distal most tooth 2.0-2.3 mm, greatest width in mid part 0.08-0.09 mm; spacing widest in mid third, distance between two successive teeth about 0.0416-0.0454 mm, i.e. 11 to 12 teeth per 0.5 mm, increasingly closer set both proximally and to a larger degree distally. Hind femur unarmed.

Abdomen: tergites without particulars. Cercus (fig. 16) slender, proximal half slightly conical, distal half almost cylindrical and gradually incurved; apex dorsally somewhat flattened, inner and outer margins provided with a series of 2-6 small teeth and terminating into a strong apical tooth. Subgenital plate short, wide, lateral margins converging posteriorly, postero-lateral edges not or barely produced and posterior margin short, straight or slightly emarginate.

Coloration: straw-yellow to yellowish green. Vertex, anterior half of pronotum, tergites and legs finely speckled rusty-brown. Antennae finely annulated. Occiput sometimes with spots closer set medially, median line always unspotted. Pronotum, on either side, with an ill defined yellowish streak, in metazona bordered medially reddish brown. Elytra pale brown, stridulatory vein and pre-apical spot dark brown. Abdomen of general colour, either provided or not with a median blackish band and an ill defined yellow lateral streak; median band composed of a pair of spots along anterior margin of tergites, extending and narrowing posteriorly without reaching posterior margin of tergites; median line of general colour, unspotted. Cercus with apex black. Legs sometimes with lower keels and a lateral incomplete stripe of hind femur blackish.

Female. – Pronotal dorsum almost cylindrical,

metazona not or scarcely raised. Elytra completely covered by pronotum, lateral, widely separated from each other dorsally, no stridulatory apparatus. Basal fold of lower ovipositor valve strong, inflated, protruding ventrally and arched upward anteriorly, longitudinally impressed, forming with gonangulum an elongate shallow anteroventrally-facing groove. Coloration as in male, sometimes more unicolorous.

Measurements. – Body ♂ 17.0-20.0, ♀ 16.0-21.0; pronotum ♂ 4.3-5.2, ♀ 5.5-6.0; elytron ♂ 2.0-2.4, ♀ 0.0-0.0; hind femur ♂ 17.0-17.5, ♀ 18.8-20.0; ovipositor 8.1-9.7.

Bioacoustics. – Male calling song consists of an echeme (Heller 1984; 1988; fig. 34), repeated at intervals of mostly 2-4 s (range 1-7 s; 22-24°C). Each echeme composed of 6-8 (range 4-11) syllables produced in a frequency of about 12-18 Hz (22-26°C). Impulse number per syllable from 6-15, first syllable(s) often containing more impulses than following ones. Impulses produced during closing movement of fore wings only, opening being silent. Maximum of frequency spectrum 20-30 kHz.

Distribution and ecology

The song of this species has been observed at the localities of the material listed above but also at many other localities: Dhomokos (near Metallion; A. Stefanos; Perivoli; Makrirakhi; between Dhomokos and Neo Monastiri); Farsala (very abundant near Vrisia; Khalkiadhes); Larissa (Khara; Zappion; Nees Karies; Larissa town); Kardhitsa (Sofadhes; Kombelos; eastern side Kardhitsa town). So far the range of the species extends from northeastern Central Greece (Fthiotis: Dhomokos) north- and northwestwards into Thessalia, reaching the town of Larissa and Mouzaki, beyond the town of Kardhitsa.

Localities referring to preserved material are mapped as solid squares, those based on acoustic observation as open ones (fig. 43).

We found the species on thistles and other plants mainly on the wayside and adjacent fields. It was common in the plains S of Dhomokos, around Neo Monastiri and N of Farsala and locally very abundant.

The range of *P. mariannae* is overlapped by those of *veluchianus* and *propinquus*. At most sites only one of these species occurs, at some more than one. Near Dhomokos, NW of Vrisia and some other localities the new species was found syntopically with *P. propinquus*. Along the southern border of the plain S of Dhomokos a narrow zone of syntopical occurrence of *P. mariannae* and *veluchianus* was detected, the latter inhabiting the still more southern located slopes that border this plain. At one spot, Makrirakhi (W of Dhomokos) we heard simultaneously the calling songs of even all the three species. Whether *P. mariannae* occurs syntopically with *chopardi* and *thessalicus* is still unknown. The areas where this might occur, N and W of Larissa, have not yet been explored (fig. 43).

Differential diagnosis

The species is virtually identical with *P. chopardi* except for its different song. We found only one morphological character that might be helpful to discriminate both taxa: spacing of the teeth of the stridulatory file of the left male elytron is greatest in the mid part of the file with 11-12 in the new species against 8-10 teeth per 0.5 mm in *P. chopardi*. Similar features to differentiate *P. chopardi* from the *thessalicus* - *veluchianus* - *zimmeri* group of species fit *mariannae* (Willemse 1985a). Bioacoustically, however, the new species is clearly defined by its song, differing in several characters from *P. chopardi* (Heller 1984; 1988). Most reliable and recognizable feature is the syllable number per echeme, 6-8 in *P. mariannae* against 3-4 in *chopardi*. Echemes with a different number of syllables are produced sometimes, viz. down to 4 in *P. mariannae* and up to 5 in *chopardi*. However, this happens quite exceptionally and besides irregularly by few specimens only. Also the syllable repetition rate within an echeme is different: *P. mariannae* about 13 Hz and *chopardi* 9 Hz (both at 25°C). Different ambient temperature, however, impedes the use of this character in the field. Finally, the syllable structure is different: all intervals are equally spaced in *P. mariannae* whereas each syllable consists of two groups of impulses separated by a longer interval in *chopardi*. Besides the number of impulses per syllable in *P. mariannae* appears to be smaller than in *chopardi*. Bioacoustical distinction with the *P. thessalicus* - *veluchianus* - *zimmeri* group of species is obvious.

Discussion

It is noted here that most previous records of *P. chopardi* (Willemse 1985a: 20) are based on morphological characters only. Confirmation by the song is certainly needed.

Etymology

Named in honour of Marianne Volleth, who found the first specimens.

Poecilimon veluchianus Ramme

Poecilimon veluchianus Ramme, 1933: 549; Werner 1933: 190 (as *veluchiensis* [sic]); Harz 1969: 150; Willemse 1985a: 20; 1985b: 42. *Poecilimon thessalicus veluchianus*, Heller 1984: 103; 1988: 66.
Poecilimon chopardi; Willemse 1982: 178 (partim); 1984: 39 (partim).

Material studied. – Magnisia: Mt. Othris ab. Kokkotoi 1000-1500 m (cw); Fthiotis: 4 km E of Oiti; 1 km N of Mesokhori (SE of Sperkhiadha) 550 m; 5 km W of Makrakomi 350 m; N of Vitoli (Makrakomi) 330 m; 4 km SW of Ag. Stefanos 500 m; Trilofo, NW of Lamia 800 m; Ag. Ekaterini, 2 km N of Fourka-Pass, N of Lamia 700 m; Brallos, S of Thermopilai pass; Fokis: 2 km E of Lilaia 350 m (all CH); Polidrosos, 3 km N of the village, wayside, near bridge crossing Kifisos river (cw); Arta: Mt. Tzoumerka, Athamani-Theodhoriana 1300 m; S of Theodhoriana 1400-1800 m (both cw); Kardhitsa: Fanari (CH); Aitolia-Akarnania: Mt. Valtou near summit Pyramidha, N of Perdihikaki 1300-1600 m (cw).

Distribution and ecology

The range is much larger than previously known (Willemse 1985a: map 6), extending into eastern Arta, northeastern Aitolia-Akarnania, extreme northern Fthiotis as far as eastern Magnisia. The occurrence in Mt. Tzoumerka (Arta) was doubtful (Willemse 1985a) but has now been established. Previous records of syntopic occurrence of *P. veluchianus* with other congeners are confused (Willemse 1982, 1985a). So far known the species may occur together with *P. ornatus*, *hoelzeli*, *graciloides*, *chopardi*, *mariannae*, *jonicus lobulatus*, *propinquus* and most important *zimmeri* (see below). Previously we knew *P. veluchianus* only from montane habitats but the species may occur in the lowlands as well: e.g. Fthiotis: Vitoli 330 m (Heller 1988); surroundings of Lamia 100 m and many localities in the Sperkhios valley from Sperkhiadha to Lamia.

Discussion

P. thessalicus, *veluchianus* and *zimmeri* are very similar in their morphology and bioacoustics. While their distribution areas do meet, no clear overlaps exist. Stressing the similarities and allopatric distribution, these taxa have been considered subspecies by Heller (1984, 1988), while Willemse (1985a) argued

that their differences were comparatively large and sufficiently stable to consider them species.

Recently, syntopic occurrences of *P. veluchianus* and *zimmeri* have been established: based on the male calling song, a 300 m wide zone was discovered, on the transition between the plain (*P. veluchianus*) and mountain slopes (*P. zimmeri*) near Lilaia (Fthiotis), in which both taxa occurred; likewise, in the same area an isolated population of *P. zimmeri* was discovered within the range of *veluchianus*, while the songs of both taxa was heard on the boundary of both populations; syntopic occurrence of both taxa was also found near the summit Piramidha of Mt. Valtou (N of Perdikhaki, NE Aetolia-Akarnania) and the type locality of *P. gracilioides* on Mt. Tzoumerka (S of Theodorania, E of Artta). In all these localities no hybrids were found. We believe that the syntopic occurrence of *veluchianus* and *zimmeri* and the apparent absence of hybrids provides a strong enough argument to consider these taxa species and not subspecies.

Recent experimental studies on interbreeding between *P. thessalicus* and *veluchianus* reveal that they mate readily but do not have offspring (K. Reinhold, Erlangen, pers. comm.). Though syntopic occurrence of these taxa has as yet not been established both authors now agree that both taxa are best reflected by a species rather than subspecies level. Specimens from Fthiotis and Magnisia are remarkably slender, small in size and the armature of the male cercus is restricted to the inner apical margin. Their song is not distinctive from the remainder of the range. So far, these populations are considered conspecific with *P. veluchianus*, but further studies are currently in progress.

Poecilimon propinquus Brunner von Wattenwyl (figs. 17-18)

Poecilimon propinquus Brunner von Wattenwyl, 1878: 44 (partim); Ramme 1933: 553; Willemse 1982: 185; 1984: 40; Heller 1984: 104; Willemse 1985a: 19; 1985b: 43; Heller 1988: 68; 1990: 144.

Material studied. – Magnisia: Mt. Othris above Kokkotoi 1100-1500 m (cw); Larissa: 2 km N of Vrisia 450 m; 4 km N of Zappion; Fthiotis: Dhomokos 500 m (all ch); Attiki, Skinios; Mt. Parnis 1200 m; Avlon (all cw).

Distribution and ecology

Previously known only from the eastern Peloponnisos, Attiki and Evvoia (Willemse 1984: map 27), the range of this species extends remarkably more northward reaching the districts of Larissa and Magnisia. In Fthiotis and Larissa we found the species on thistles and other plants on the wayside and adjacent fields, on Mt. Othris mainly on ferns.

Syntopic occurrence of *P. propinquus* with *marian-*

nae has regularly been observed (see *marianae*). *P. propinquus* and *veluchianus* were found together in the northern hills of the Sperkhios valley and in Mt. Othris. In most of these places one species was extremely predominant or occurring without competitors at one spot and with true syntopic occurrences at the borderlines only.

Discussion

The apical margin of the male cercus was known to be convex (fig. 17, Ramme 1933, Willemse 1982) but in the northern specimens from Magnisia, Larissa and Fthiotis it is scarcely convex or even straight (fig. 18). Bioacoustics are somewhat variable and for the time being we consider these populations conspecific as the song seems identical.

Poecilimon aegaeus Werner (figs. 19-20, 35-39)

Poecilimon aegaeus Werner 1932: 2; 1933: 403; Ramme 1933: 552; Willemse 1982: 188; 1984: 41; 1985b: 42; Heller 1988: 69.

Material studied. – Holotype ♂: Graecia Mykonos iv 27, coll. Werner, Holo-Typus, *Poecilimon aegaeus* Werner ♂ det. Werner. – Allotype ♀ (juvenile): similar labels with the date 13 iv 27 and Allo-Typus; paratypes 1 ♂ 1 ♀: Coll. Br. v. W. Syra Erber, det. Br.v.W. *Poecilimon propinquus*, 5867, *Poecilimon aegaeus* Werner Ramme det (all NHMW).

Additional descriptive notes

Male (figs. 35-36). – Integument glossy, general habitus and shape of pronotum much as *P. propinquus*. Cercus incurved over all its length, apical part about evenly tapering, inner margin with a few coarse teeth, outer margin with more numerous finer teeth (figs. 19-20). Stridulatory file of left elytron of holotype (figs. 38-39) with about 55 teeth, spacing largest in mid part of file, 8 per mm, shortest distance between proximal and distal most tooth 3.16 mm, greatest width 0.097 mm. Coloration much as in *P. propinquus*.

Female. – Basal fold of lower ovipositor valve (Sira ♀, fig. 37) robust, protruding vertically downward and impressed in the middle forming with gonangulum an elongate groove resembling *P. propinquus*. Coloration also much as in that species.

Measurements (juvenile allotype omitted). – Body ♂ 21.1-21.2, ♀ 21.2; pronotum ♂ 6.8-7.0, ♀ 7.0; hind femur ♂ 15.2-15.9, ♀ 17.0; ovipositor 8.7.

Bioacoustics. – Unknown.

Poecilimon athos Tilmans et al.

Poecilimon athos Tilmans, F. Willemse & L. Willemse, 1989: 27.

Material studied. – Type series.

Additional descriptive notes

Auditory spiracle tiny, round, diameter as that of proximal segments of antennal flagellum. Female stridulatory apparatus: elytra small, widely separated from each other, lacking stridulatory pegs or plectrum.

ACKNOWLEDGEMENTS

For loan, collecting material, discussions and further cooperation we are much in debt to the following persons: Dr R. Achmann, Erlangen; Dr J. P. Duffels, Amsterdam; Professor Dr S. Drosopoulos, Athens; Dr A. Kaltenbach, Vienna; Drs V. Kokkinos, Athens; Dr A. Nadig, Chur; Mr K. Reinhold, Erlangen; Mr J. Smid and Mrs F. Smid-Elbers, Arnhem; Professor Dr J. Szijj, Essen; Mr J. Tilmans and Mrs J. Tilmans-Smid, Warmond; Dr M. Volleth, Erlangen; Drs L. Willemse, Eysgelshoven.

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Received: 1 October 1991

Revised manuscript accepted: 26 August 1992



Willemse, Fer and Heller, K-G. 1992. "Notes on systematics of Greek species of Poecilimon Fischer, 1853 (Orthoptera: Phaneropterinae)." *Tijdschrift voor entomologie* 135, 299–315.

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