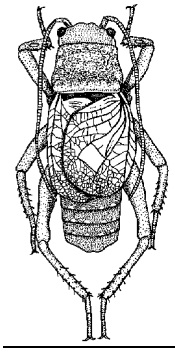

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FOUR NEW SPECIES OF TETTIGONIIDAE (ORTHOPTERA) FROM TURKEY

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Descriptions of one new species of Phaneropterinae, *Polysarcus zigana* Ünal et Chobanov **sp. n.**, and three new species of Tettigoniinae, *Pezodrymadusa karabagi* Ünal **sp. n.**, *Psorodonotus soganli* Ünal **sp. n.** and *Psorodonotus salmani* Ünal **sp. n.**, from Turkey are given.

KEY WORDS: Orthoptera, Tettigoniidae, *Polysarcus, Pezodrymadusa, Psorodonotus*, new species, Turkey.

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Из Турции описаны новые для науки *Polysarcus zigana* Ünal et Chobanov **sp. n.** из подсемейства Phaneropterinae и три вида из подсемейства Tettigoniinae: *Pezodrymadusa karabagi* Ünal **sp. n.**, *Psorodonotus soganli* Ünal **sp. n.** и *Psorodonotus salmani* Ünal **sp. n.**

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INTRODUCTION

Within the scope of ongoing studies to determine the Orthoptera fauna of Turkey some interesting taxa have been identified at the Natural History Museum London.

Most of the Turkish specimens at the NHM were collected by Sureya Bey (M. Süreya Özek) especially between 1929 and 1931, Boris P. Uvarov in 1931, Malcolm Burr during the 1940's and the beginning of 1950's, Tevfik Karabağ mainly during the 1950's and 1960's, the botanist Peter H. Davis during his many and very extensive field trips end of the 1940's and the beginning of the 1950's and by Kenneth M. Guichard and David J. Harvey in their field trips between 1959 and 1962. Because of this rich material researchers from Uvarov (1930) to the present author (Ünal, 2005), have published many papers with descriptions of new taxa and new records for Turkey. Thus the number of recognised taxa in Turkey increased rapidly. Now 649 described species and subspecies of Orthoptera are known in Turkey (Ünal, 2012-TOS).

Herein four new species are described from the material collected by P. H. Davis, K. M. Guichard and D. J. Harvey. The type specimens are deposited at the Natural History Museum London (NHM).

Description of *Polysarcus zigana* sp. n. was prepared with Dr. Dragan Petrov Chobanov from the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria (e-mail: dchobanov@gmail.com).

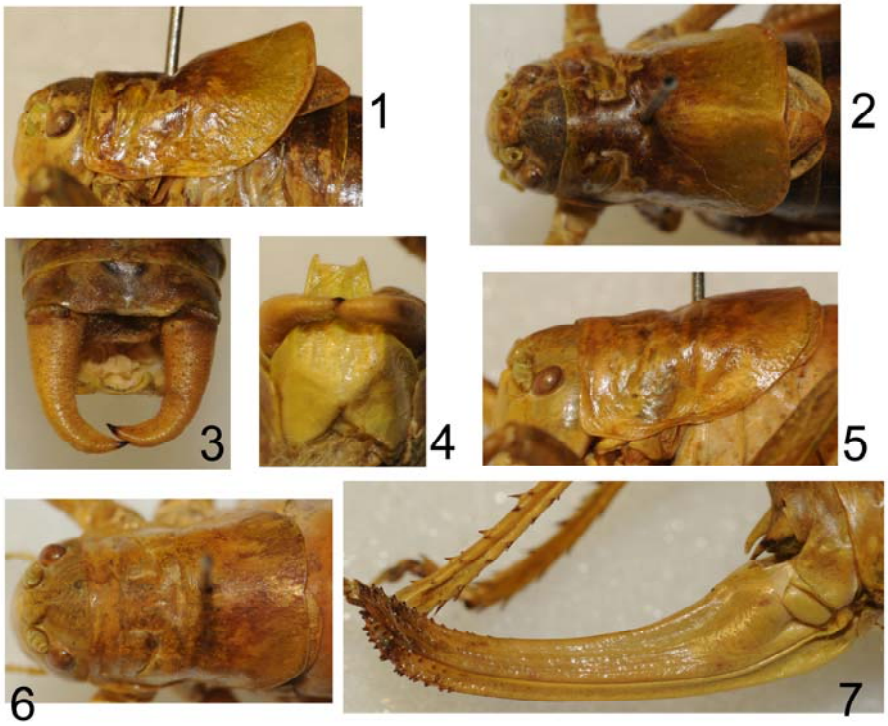
DESCRIPTIONS OF THE NEW SPECIES

***Polysarcus zigana* Ünal et Chobanov, sp. n.**
Figs 1–10

MATERIAL. Holotype – ♂, **Turkey**: Zigana Dağı, 10-13.VIII 1959, 6400 ft (leg. K.M. Guichard) (NHM); paratypes – 3 ♂, 2 ♀, Zigana Dağı, 10-13.VIII 1959, 6400 ft (leg. K.M. Guichard) (NHM); 2 ♂, 1 ♀, Giresun, Tambere (Tamdere), 1600-1700 m, 9.VIII 1952 (leg. P.H. Davis) (NHM); 2 ♂, 1 ♀, Giresun, Balaban Dağları, above Tamdere, 2000-2400 m, 5.VIII 1952 (leg. P.H. Davis) (NHM).

DESCRIPTION. Male (holotype). Fastigium of vertex (1.7 mm) 1.7 times wider than scapus (1 mm), with a distinct elliptical dorsal fossa at base of vertex; fastigial sulcus very deep. Pronotum (8.8 mm) compressed laterally, quite high in lateral view (4.7 mm); prozona almost cylindrical; metazona distinctly raised, slightly widened in dorsal view; anterior margin of pronotum concave, posterior margin with a very shallow and wide median incision, both sides of incision broadly rounded (Figs. 1, 2). Tegmina very narrow (5 mm wide), 1.5 times narrower than width of metazona (7.8 mm); a big part under pronotum, only apical 2 mm part out of pronotum from dorsal view, reaching slightly beyond end of first abdominal tergite (Figs. 1, 2). Fore femur shorter than pronotum. Hind femur with large black spines ventrally. Last tergite very narrow and wide, posterior margin with a wide and short trapezoidal projection (Fig. 3). Cercus stout, basal 2/3 part wide and slightly narrowed to distal part; apical 1/3 part strongly and gradually incurved; apical fifth sharply narrowed; apex pointed with a single large black tooth (Figs. 3, 8). Subgenital plate longer than wide, with a distinct rectangular posterior incision (Figs. 4, 9), but in some specimens posterior incision wide triangular.

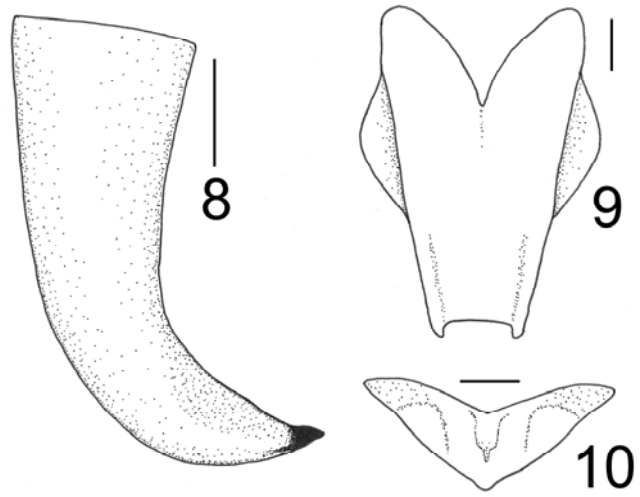
FEMALE. Fastigium of vertex (1.6 mm) 1.3 times wider than scapus (1.2 mm), with a distinct dorsal fossa. Pronotum (9.3 mm) compressed laterally; prozona cylindrical; dorsal surface deeply cut by typical sulcus; metazona slightly raised; anterior and posterior margins slightly concave (Figs. 5, 6). Tegmina almost fully concealed and overlapped under pronotum, only hind margin visible, reaching slightly beyond end of metanotum. Fore femur (6.8 mm) 1.5 times shorter than pronotum. Hind femur with large black spines ventrally. Last tergite as in male but smaller. Cercus long and narrow, apical third slightly incurved, pointed at apex; distinctly longer than supra-anal plate. Ovipositor very long (20.7 mm), 2.2 times longer than pronotum, slightly shorter than hind femur (22 mm); basal part quite wide, distinctly narrowed to apex; upper valve with 10, lower valve with 11 apical teeth, in addition many small teeth or tubercles on lateral surface of serrated part (Fig. 7). Subgenital plate small, short and wide almost triangular (Fig. 10).



Figs 1–7. *Polysarcus zigana* sp. n. 1 – male head, pronotum and tegmina, lateral view; 2 – ditto, dorsal view; 3 – male end of abdomen; 4 – male subgenital plate; 5 – female head, pronotum and tegmina, lateral view; 6 – ditto dorsal view; 7 – ovipositor.

COLOUR (dry specimens). In typical form body brownish-green. Face yellowish green; dorsal surface of head green. Prozona of pronotum and anterior part of meta-

zona in male brown, but fore margin with transversal green band; central part of paranota green; posterior part of metazona unicolour green; female pronotum slightly brownish-green. Tegmina yellow, without black band. Abdomen in male brown, each tergite with a transversal green band at hind margin; female abdomen unicolour greenish-brown. Legs pale green. Male cercus greenish-yellow, only apical tooth black. Ovipositor and subgenital plate in both sexes pale green, apical part of ovipositor slightly brownish, its teeth with black tips.



Figs 8–10. *Polysarcus zigana* sp. n. 8 – male cercus; 9 – male subgenital plate; 10 – female subgenital plate. Scales 1 mm.

LENGTH (mm). Body: male 32.1-37.6, female 31.8-35.2; pronotum: male 8.8-10.7, female 9.3-10.9; tegmina (visible dorsal): male 1.2-2.4; hind femur: male 18.5-23.6, female 22-25; ovipositor: 20.7-24.

COMPARISON. This new species is separated from *P. denticaudus* (Charpentier, 1825) by the narrower fastigium of vertex (in *P. denticaudus* 2.2-3 times wider than scapus), the presence of very distinct ventral spines of hind femora (much smaller in *P. denticaudus*), the shape of male cercus. *P. scutatus* (Brunner von Wattenwyl, 1882) has male cercus with a single tooth at apex as in the new species and *P. denticaudus* and its colouration is similar to the new species. But, the distinctly broader fastigium of vertex, the structure and length of pronotum, the shape of apical part of male cercus, the subgenital plate and the distribution are different (one male of *P. scutatus* collected from NE of Andorra: near Soldeu, 1 km SW of Pasqual, 1850 m, 5.8.1990 by J.C. Hartley, was compared). It is very different from *P. elbursianus* (Uvarov, 1930) and *P. zacharovi* (Stshelkanovtzev, 1910) by the male cercus with a single apical tooth (bidentate in both species), the shape of last abdominal tergite with trapezoidal hind margin (slightly or distinctly convex in the both species), the longer ovipositor.

NOTES. Members of the population of Giresun larger. One male and 2 females of this population with similar colouration with typical form. But 3 males with strongly darkened body. Dorsal surface of head black. Prozona with black spots and short stripes. Legs with black and brown spots: hind femora blackened at apex. Abdomen dark brown or black with 2 distinct longitudinal light bands along its length. Apical fifth-sixth of male cercus black. Male subgenital plate with wide triangular posterior incision. Pronotum slightly more compressed and raised, male cercus slightly stouter and ovipositor gently straighter and larger. But, the other species of *Polysarcus* preserved at the NHM London have similar variations. Especially *P. denticauda* and also *P. elbursianus* and *P. zacharovi* have variable shapes of pronotum, male cercus, subgenital plate, the length and shape of ovipositor. When compare all material of *Polysarcus* from a large geographycal area and the variation degree could be observed and thus the taxonomic position of different populations can be easier decided. In addition, Bey-Bienko (1954) explained not only the colour variation but also the morphological variation seen in *P. elbursianus, P. zacharovi* and *P. denticaudus*.

ETYMOLOGY. Zigana Mount (and pass) is the type locality of this new species.

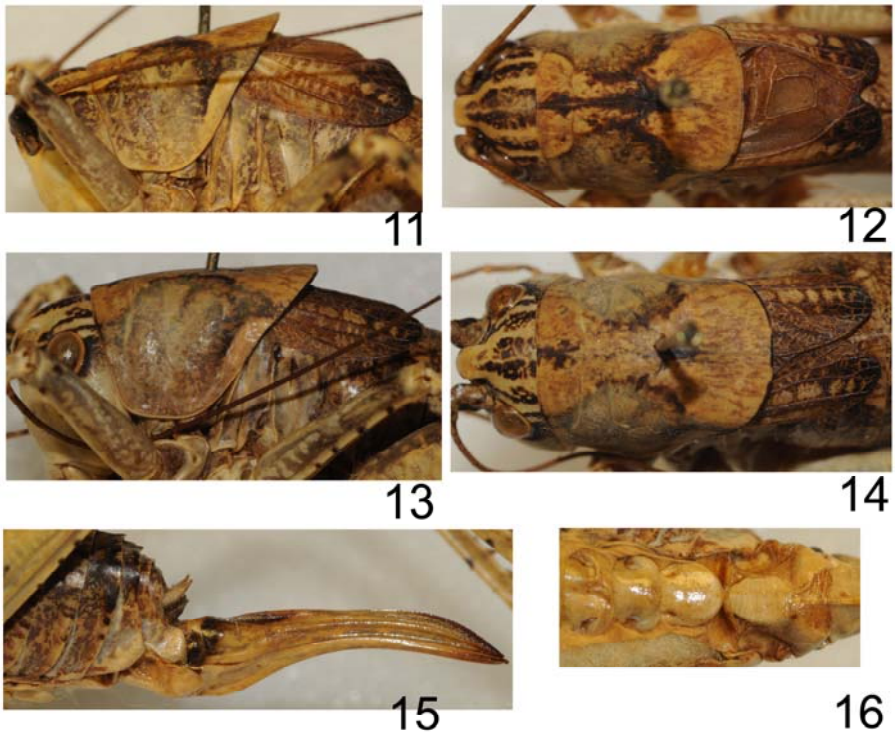
***Pezodrymadusa karabagi* Ünal, sp. n.**
Figs 11–21

MATERIAL. Holotype – ♂, Turkey: Erzincan, c. 4500 ft, 2.VII 1960 (leg. K.M. Guichard and D.J. Harvey) (NHM); paratypes – 4 ♂, 4 ♀ (leg. K.M. Guichard and D.J. Harvey) (NHM).

DESCRIPTION. Male (holotype). Fastigium of vertex (1.4 mm) very slightly wider than scapus (1.3 mm). Pronotum (8.9 mm) with cylindrical prozona; metazona flattened; anterior margin almost straight, posterior margin broadly rounded; without lateral carina; typical sulcus just behind the middle; shoulder incision indistinct; prozona straight in lateral view (Figs. 11, 12). Tegmina (8 mm) slightly shorter than pronotum, reaching just beyond middle of second abdominal tergite, in some paratypes reaching middle of third tergite (Figs. 11, 12). Hind femur (23.2 mm) with 6-7 ventral spines distally. Prosternum with a pair of very short and distant spine-like projections. Cercus slender, strongly incurved almost in right angle in distal half, with a distinct apical tooth (Fig. 17). Subgenital plate longer than wide (but abdominal apex was compressed during the preparation process, thus subgenital plate is not in natural form), with a shallow and wide triangular posterior incision; styli longer than posterior incision, but slightly longer than the distance between two styli. Titillator with long basal arms, reaching to 3/5 of apical arms; distal 3/4 of apical arms with a row of teeth on posterior margin, proximal 1/4 with smaller and irregular teeth; in one paratype apical arms of titillator with more theeth along its length (Fig. 18). Last abdominal tergite short (1.2 mm), with two long posterior projections (3.9 mm with projections), slightly diverged along their length, tips sharp spine-like (Fig. 19).

FEMALE. Fastigium of vertex as wide as scapus. Pronotum (10.6 mm) almost as in male; prozona convex in lateral view; metazona flattened; anterior margin slightly concave, posterior margin rounded; shoulder incision very gently distinct

(Figs. 13, 14). Last abdominal tergite very short. Tegmina (7.8 mm) almost 3 mm shorter than pronotum, in other females 2-3 mm shorter than pronotum, reaching beyond half of second tergite, but not extending to third tergite in type serie (Figs. 13, 14). Hind femur (26,9 mm) long and stout. Prosternum as in male. 6th sternite with a large and very distinct tubercle that covers more than half width of sternite (Figs. 16, 20, 21); 7th sternite smooth without any tubercle or convexity (Figs. 16, 20, 21). Subgenital plate quite long, with a wide, shallow and triangular posterior incision; its proximal part in middle flattened with transversal lines; basal sclerites quite narrow (Figs. 16, 21). Ovipositor relatively long (15.2 mm), 1.5 times longer than pronotum and longer than half of hind femur (Fig. 15).

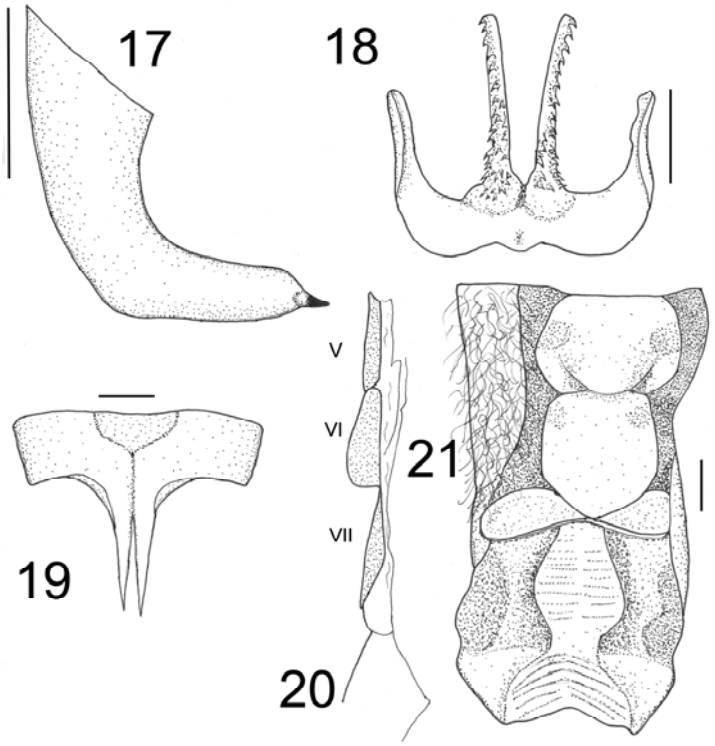


Figs 11–16. *Pezodrymadusa karabagi* sp. n. 11 – male head, pronotum and tegmina, lateral view; 12 – ditto, dorsal view; 13 – female head, pronotum and tegmina, lateral view; 14 – ditto dorsal view; 15 – ovipositor; 16 – female subgenital plate and last 3 sternites.

COLOUR (dry specimens). Face uniformly creamish-yellow in male, cream in female; without black band between eyes, but lateral edges of fastigium of vertex with very narrow and small black spots in male, without black spot in female. Dorsal surface of head with irregular longitudinal black stripes. Pronotum in typical pattern but not very distinct: paranota darkened with greenish-grey except hind margin and bordered by a black stripe; prozona and metazona light brown, lighter than paranota;

sometimes with a longitudinal black stripe or band along the median carina of pronotum especially in prozona. Tegmina in male dark milky-brown, costal and sometimes radial fields with cream bands; apex blackened except brown veins; female tegmina as in male but slightly darker. Ground of abdomen milky brown, but with many dark brown spots and short stripes, therefore it seems dark brown. Sternites and subgenital plates creamish-milky brown.

LENGTH (mm). Body: male 29.2-31, female 27.5-31.9; pronotum: male 8.8-9.6, female 9.4-10.6; tegmina: male 8-8.5, female 7-7.8; fore femur: male 8-8.8, female 8.8-9.2; hind femur: male 22.8-25, female 25-26.9; ovipositor: 14.8-15.9.



Figs 17–21. *Pezodrymadusa karabagi* sp. n. 17 – male cercus; 18 – titillator; 19 – male last tergite; 20 – female last 3 tergites, lateral view; 21 – female subgenital plate and last 3 sternites, ventral view. Scales 1 mm.

COMPARISON. This new species is similar to *P. angorensis* (Uvarov, 1930) in the shape of male cercus and the absence of black band between the eyes. But, it is different from it by the more slender body, the pronotum without shoulder incision (with much more distinct shoulder incision in *P. angorensis*), the blackened apex of tegmina (in *P. angorensis* apex of tegmina not blackened), the shape of male last tergite (in *P. angorensis* last tergite with thicker, shorter and strongly diverged posterior

projections), the shape of titillator, female subgenital plate (posterior incision much narrower and basal sclerites distinctly broader in *P. angorensis*) and the 6th sternites (in *P. angorensis* 6th sternites with only convexity and much less distinct) (along the literature comparison was made using the holotype of *P. angorensis* and the specimens identified by Uvarov). It is also similar to *P. striolata* (Ramme, 1951) in the shape of male cercus and somewhat titillator. But, firstly the titillator (basal arms shorter in *P. striolata*), the shape of male last tergite (similarly in that of *P. angorensis*, last tergite with thick and strongly diverged posterior projections in *P. striolata*), more slender and longer apical curved part of male cercus, the presence of a distinct tubercle on 6th sternite of female (in *P. striolata* 6th sternite without any convexity or tubercle), the shape of longer female subgenital plate (posterior incision narrower and basal sclerites much wider in *P. striolata*), the female tegmina (without dark spot at apex and reaching end of first tergite in *P. striolata*), longer ovipositor, the absence of black band between the eyes (black band distinct in *P. striolata*) are different (along the literature, a female paratype used with this comparison). The new species has similar male last tergite and female subgenital plate with *P. sinuata* (Ramme, 1951). But, it very different species: the shape of titillator (apical arms slightly S-shaped in posterior view in *P. sinuata*), the absence of tubercle on 7th sternite (that is very distinct in *P. sinuata*), the absence of black band between the eyes (black band distinct in *P. sinuata*), although much lighter colouration the presence of tegmina with blackened apex (apex of tegmina in *P. sinuata* not blackened), the shape of male cercus (much stouter, less incurved and clearly shorter apical part *in P. sinuata*), and shorter ovipositor are different (along the literature, a male collected from a location very near to the type locality of *P. sinuata* was used). Actually the new species has the most similar female subgenital plate, 6th and 7th sternites with *P. uvarovi* Karabağ, 1961. But all the other characters of both sexes are very different (along the literature, one male holotype and one female paratype of *P. uvarovi* were used for comparison).

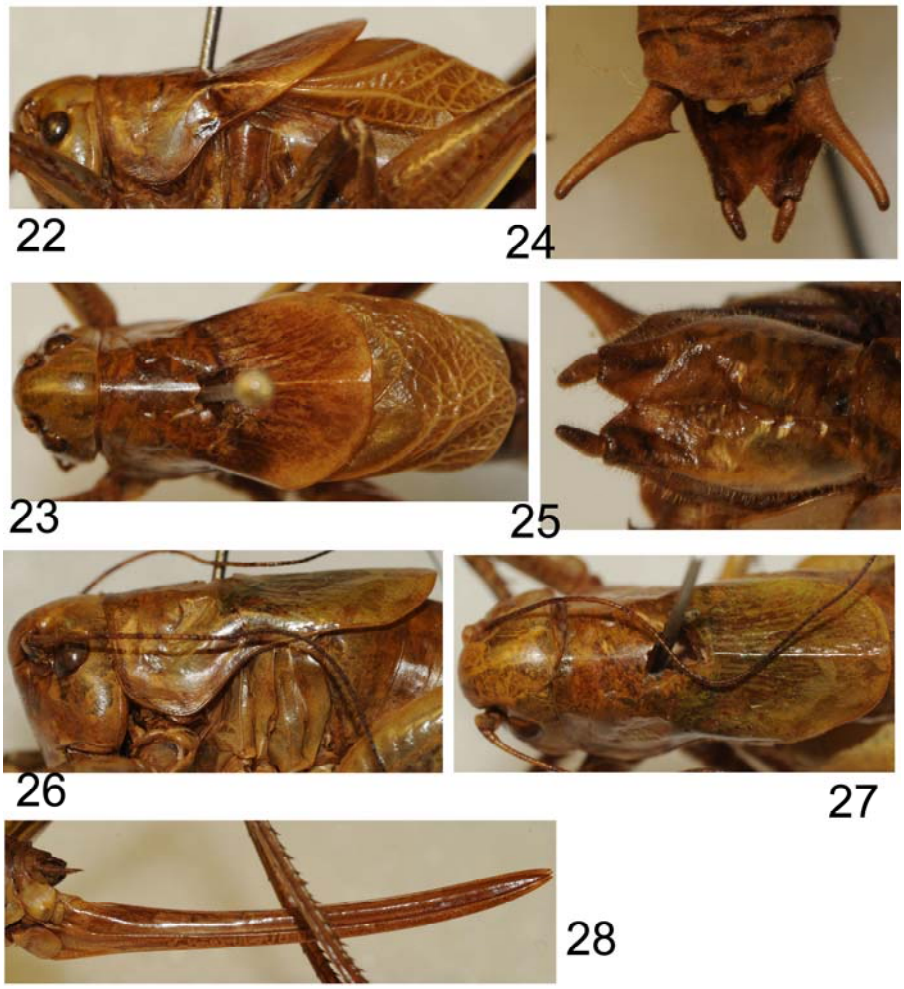
ETYMOLOGY. This new species name is dedicated to Prof. Dr. Tevfik Karabağ, the author of the genus *Pezodrymadusa*, described four species of this genus from Turkey in his very important revisional study on *Drymadusa* and related genera (Karabağ, 1961).

***Psorodonotus soganli* Ünal, sp. n.**
Figs 22–32

MATERIAL. Holotype – ♂, Turkey: Gümüşhane, Soğanlı Geçidi, 7-7500ft, 25.VII 1960 (leg. K.M. Guichard and D.J. Harvey) (NHM); paratypes – 6 ♂, 3 ♀, Gümüşhane, Soğanlı Geçidi, 7-7500ft, 25.VII 1960 (leg. K.M. Guichard and D.J. Harvey) (NHM); 2 ♂, 85 km S. of Rize, Sivrikaya, 19-20.VIII 1959 (leg. K.M. Guichard) (NHM).

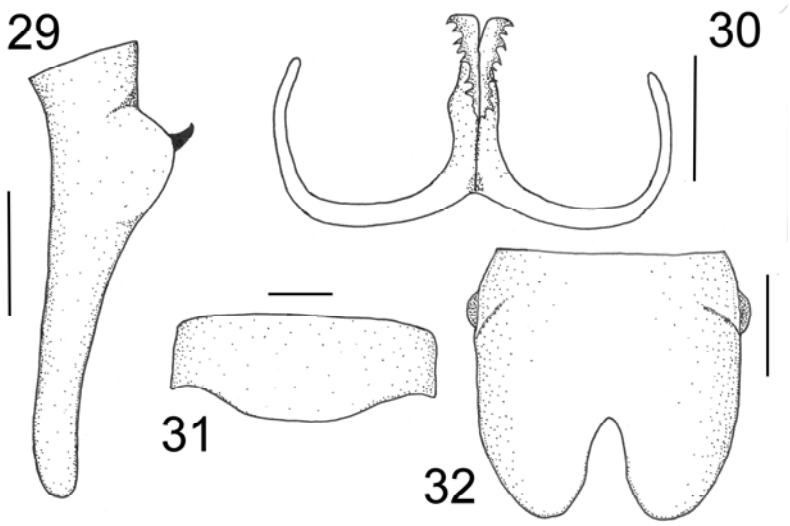
DESCRIPTION. Male (Holotype). Fastigium of vertex of vertex (2.2 mm), 2.2 times wider than scapus (1 mm). Pronotum (11.5 mm) with smooth surface; anterior

part of prozona cylindrical, gradually widened to metazona; metazona strongly widened in dorsal view, raised in lateral view; left and right halves of metazona slightly bent downwards and separated by raised median ridge, thus metazona slightly roof-shaped; median ridge in some paratypes not very distinct; anterior margin of pronotum slightly concave, posterior margin broadly rounded; typical sulcus slightly in front of middle (Figs. 22, 23). Tegmina (11.8 mm) reaching to half of 5th abdominal tergite, narrower than metazona; its basal half under pronotum (Figs. 22, 23); Fore femur short (5.6 mm), almost half of pronotum. Last tergite short and



Figs 22–28. *Psorodonotus soganli* sp. n. 22 – male head, pronotum and tegmina, lateral view; 23 – ditto, dorsal view; 24 – male end of abdomen; 25 – male subgenital plate; 26 – female head, pronotum and tegmina, lateral view; 27 – ditto dorsal view; 28) ovipositor.

wide, posterior margin brodly convex in middle part (Figs. 24, 31). Cercus slender, but relatively not very long (3.7 mm), inner tooth near to base; basal part (0.5 mm) short, then strongly swelled inwards in 1 mm part, with a sharp recurved apical tooth; remaining apical part of cercus gradually and slightly narrowed and slightly incurved towards the apex; apex bluntly rounded (Figs. 24, 29). Subgenital plate slightly longer than wide (but abdominal apex not in natural form, compressed after preparation), with a narrow V-shaped posterior incision; styli slightly longer than posterior incision (Fig. 25). Titillator slender, quite thin, with short apical arms and very long and strongly upcurved basal arms; distal half of apical arms serrated on posterior margin; apex not widened and twisted outwards; distal half of basal arms strongly upcurved, reaching to apical fifth of apical arms (Fig. 30).



Figs 29-32. *Psorodonotus soganli* sp. n. 29 – male cercus; 30 – titillator; 31 – male last tergite; 32 – female subgenital plate. Scales 1 mm.

FEMALE. Fastigium of vertex (2.8 mm) 2.5 times wider than scapus (1.1 mm). Pronotum (13.5 mm) with smooth surface; anterior margin straight, posterior margin rounded; cylindrical in prozona; metazona as in male, but not widened and raised, only slightly wider than prozona; strongly prolonged backwards, reaching to middle of second abdominal tergite (Figs. 26, 27). Tegmina fully concealed under pronotum, sometimes only its lateral margin visible in lateral view (Fig. 22), reaching end of metanotum. Fore femur (7.7 mm) slightly longer than half of pronotum. Last tergite as in male, but smaller. Cercus slender, long sharp spine-like. Ovipositor (27.1 mm) slender, long and narrow, slightly longer than hind femur (25.4 mm) and twice as long as pronotum (Fig. 28). Subgenital plate relatively small and short, with a deep posterior incision, almost as wide as long, with small lateral sclerites (Fig. 32).

COLOUR (dry specimens). Body unicolour greenish and yellowish brown. There is no a distinct colour pattern. Face and head greenish in male, yellowish green in female. Pronotum milky brown in male, metazona with irregular longitudinal dark brown stripes; in female prozona brownish, metazona with irregular longitudinal green stripes. Male tegmina dark yellow. Abdomen dark brown in both sexes. Legs green. Ovipositor light brown.

LENGTH (mm). Body: male 23-28.3, female 26.1-27.4; pronotum: male 11.5-13.5, female 13.5-14; tegmina: male 10.2-12.3; hind femur: male 22-26, female 25-25.4; ovipositor: 27.1-27.9.

COMPARISON. This new species is easily separated by its unique male cercus and titillator. It is most similar to *P. specularis* (Fischer von Waldheim, 1839) in the general appearance and colouration, the smooth surface of pronotum, long and slender ovipositor and somewhat serrated part of titillator. But, it is very different from it by the titillator, the structure of pronotum with raised metazona (in *P. specularis* metazona not raised strongly), the shape of last tergite with distinctly convex posterior margin (posterior margin slightly concave in *P. specularis*), the shape of male cercus (inner arm very narrow and long in *P. specularis*), the shorter styli (in *P. specularis* styli twice as long as the depth of posterior incision of subgenital plate), the deeper posterior incision of female subgenital plate (in *P. specularis* posterior incision 1/5 of length of plate, but in the new species it is 2/5). The female subgenital plate and apical serrated part of titillator somewhat similar to *P. venosus zangezuri* Stolyarov, 1983. But, the basal arms of titillator, male cercus, the shape of pronotum with smooth surface, long and slender ovipositor are very different. Its smooth pronotum, the long and slender ovipositor are similar to *P. davisi* Karabağ, 1956, but all the other characters are very different. Moreover the both species are found as congeneric partner in Sivrikaya (Rize Prov.)

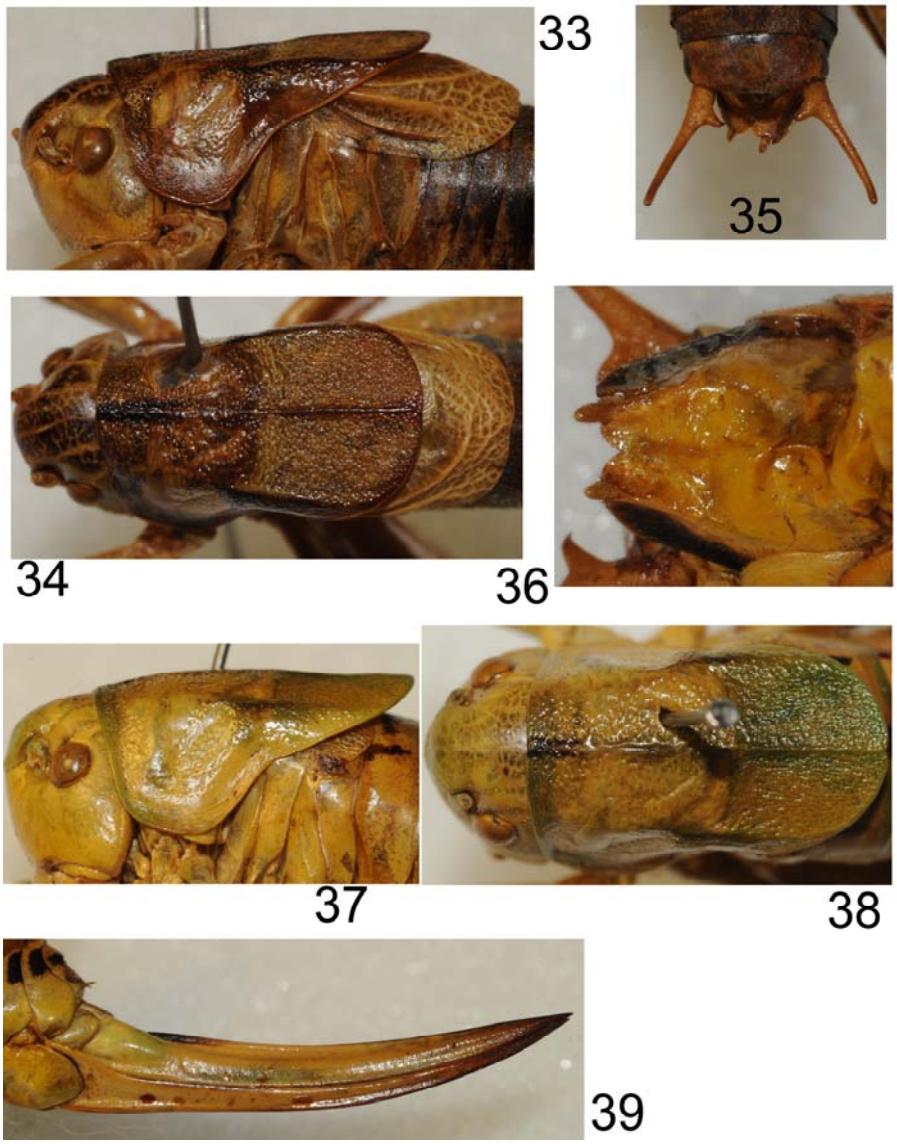
ETYMOLOGY. Soğanlı Pass the type locality of this beautiful species.

***Psorodonotus salmani* Ünal, sp. n.**
Figs 33–43

MATERIAL. Holotype – ♂, Turkey: Adana, Saimbeyli, Bozoğlan Dağı, 7.VII 1952 (leg. P.H. Davis) (NHM); paratypes – 2 ♂, 3 ♀, Turkey: Adana, Saimbeyli, Bozoğlan Dağı, 7.VII 1952 (leg. P.H. Davis) (NHM).

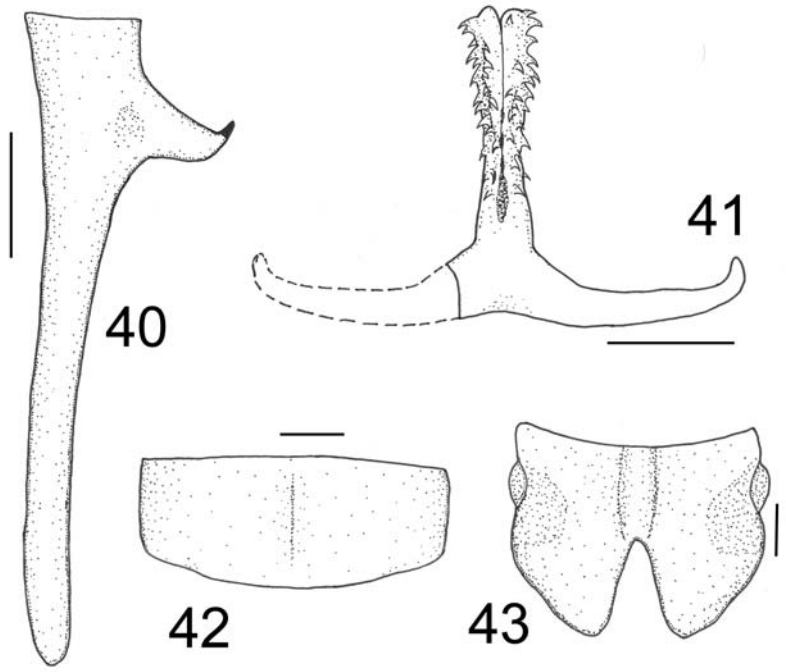
DESCRIPTION. Male (Holotype). Fastigium of vertex (2.8 mm) 3 times wider than scapus (0.9 mmvery). Pronotum (12.3 mm) with rough surface; anterior part of prozona cylindrical, gradually and slightly widened to end of pronotum; metazona slightly widened; median carina distinct along its length, lateral carinae indistinct in prozona, but very distinct in metazona; left and right halves of metazona very slightly bent downwards and separated by raised median ridge, thus metazona very slightly roof shaped; anterior margin of pronotum straight, posterior margin broadly rounded; in lateral view pronotum straight along its length; metazona not raised, only median carina slightly raised (Figs. 33, 34). Tegmina (9.4 mm) a little (only 0.3 mm) narrower than metazona; reaching slightly beyond end of third abdominal tergite. Fore femur

(5.5 mm) short and thick, 2.2 times shorter than pronotum (Figs. 33, 34). Hind femur (21 mm) short and stout. Dorsal surface of abdomen hairy. Last tergite short and wide, posterior margin convex along its length (Figs. 35, 42). Subgenital plate



Figs 33–39. *Psorodonotus salmani* sp. n. 33 – male head, pronotum and tegmina, lateral view; 34 – ditto, dorsal view; 35 – male end of abdomen; 36 – male subgenital plate; 37 – female head, pronotum and tegmina, lateral view; 38 – ditto dorsal view; 39 – ovipositor.

almost as long as wide, with a small triangular posterior incision; styli small, but twice as long as posterior incision of subgenital plate (Fig. 36). Cercus (5.3 mm) long and slender; basal (0.7 mm) part cylindrical; inner arm large and long, near to base, pointed with a distinct recurved apical tooth; apical (3.8 mm) part very slightly narrowed and incurved; apex blunt, rounded; in lateral view cercus gently upcurved (Figs. 35, 40). Titillator with a long and upright apical arms, posterior and lateral margins strongly serrated, apex slightly twisted outwards, but not downcurved and not widened distinctly; basal arms almost in right angle position with apical arms, shorter than it, a small part at apex upcurved; apical arms yellow, basal arms reddish-black (Fig. 41).



Figs 40–43. *Psorodonotus salmani* sp. n. 40 – male cercus; 41 – titillator; 42 – male last tergite; 43 – female subgenital plate. Scales 1 mm.

FEMALE. Fastigium of vertex (3.5 mm) 3.2 times wider than scapus (1.1 mm). Pronotum (13.8 mm) with rough surface, cylindrical in prozona; left and right half of metazona flattened; reaching half of first abdominal tergite; median carina along its length and lateral carinae in metazona very distinct; in lateral view prozona convex, metazona almost straight; anterior margin straight, posterior margin rounded (Figs. 37, 38). Tegmina scale like, most part of it concealed under pronotum, a small part visible in lateral vied, reaching to end of metanotum (Figs. 37, 38). Fore

femur (6.1 mm) 2.3 times shorter than pronotum. Hind femur (24.8 mm) short and stout, a little shorter than ovipositor (26.1 mm). Last tergite short and wide, posterior margin with a shallow incision. Ovipositor relatively short, distinctly thick and stout, slightly longer than hind femur and 1.8 times longer than pronotum; basal half wide and straight, apical half slightly upcurved and tapering to tip (Fig. 39). Subgenital plate short and wide, clearly wider than long, with a very deep, narrow almost V-shaped posterior incision that half of subgenital plate; basal half with a broad median ridge; with small lateral sclerites (Fig. 43).

COLOUR (dry specimens). Greenish-brown in male, brownish-green in female with some black pattern. Face unicolour yellow in male, yellowish-green in female. Dorsal surface of head with 4 longitudinal black bands in male, outer 2 much shorter, only several brown spots in female; In male prozona brown, with a short black band on anterior part of median carina, paranota in middle part yellowish; metazona milky brown, its median and lateral carinae brown; in female pronotum green, with a short black band on anterior part of median carinae, metazona darker green. Tegmina yellow. Male abdomen dark brown, female abdomen brown with transversal green band at posterior margins of each tergite. Legs in male light reddish-brown, in female green. Male subgenital plate with black band laterally. Last 3 tergites of female with distinct large black spots laterally. Ovipositor greenish-yellow, distal half with blackened margins; basal part of upper valves with two short black bands in dorsal view.

LENGTH (mm). Body: male 29.6-32.1, female 35.9-39.8; pronotum: male 12.3-13.4, female 13.2-13.9; tegmina: male 8.5-9.4; hind femur: male 20-21, female 24-25.7; cercus: male 5.3-5.8; ovipositor: 25.9-26.1.

COMPARISON. This new species is most related to *P. caucasicus caucasicus* (Fischer von Waldheim, 1846) by the structure of pronotum in both sexes and somewhat subgenital plate. But it is very different from it by the distinct titillator (apex of titillator distinctly widened and curved; basal arms clearly upcurved along its length in *P. c. caucasicus*), the male cercus with a large and long inner arm (in *P. c. caucasicus* inner arm of male cercus smaller and shorter and basal part of cercus broader), the shape of male last tergite with broadly convex posterior margin (in *P. c. caucasicus* posterior margin with a small and shallow incision) and the shorter styli. It is different from *P. caucasicus anatolicus* Karabağ, 1952 by the shape of titillator, the smaller body, the shape of cercus with distinctly larger inner arm, the shorter length of cercus, the pronotum with much more distinct median and lateral carinae, the female subgenital plate with deeper posterior incision, the smaller styli in male and the colouration. The basal part and inner arm of male cercus similar to *P. venosus* ssp. although it is much more slender. But all the other characters are very different and this similarity is superficial.

Actually I first thought this new taxon as a subspecies of *P. caucasicus*. But, the distinct titillator convinced me to make it separate species.

ETYMOLOGY. This new species is dedicated to Prof. Dr. Selahattin Salman for his important contributions to the Orthoptera fauna of Turkey.

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REFERENCES

Bey-Bienko, G. J. 1954. *Fauna of the U.S.S.R. (Phaneropterinae, Tettigonioidea: Orthoptera)*. Zoological Institute of the U.S.S.R. Academy of the Sciences 59: 1–375.

Brunner von Wattenwyl, C. 1882. *Prodromus der Europaischen Orthopteren*. Leipzig, 466 pp.

Eades, D.C., Otte, D., Cigliano, M.M. & Braun, H. *Orthoptera Species File Online (OSF). Version 2.0/4.0.* http://Orthoptera.SpeciesFile.org (October 2012).

Harz, K. 1969. *The Orthoptera of Europe (Die Orthopteren Europas)*. Hague, 1: 1–749.

Karabağ, T. 1952. Six new Decticinae (Orthoptera: Tettigoniidae) from Turkey. *Proceedings of the Royal Entomological Society of London* (B), 21: 27–34.

Karabağ, T. 1956. Some new and less known Tettigoniidae (Orthoptera) from Turkey. *Communications de la Faculté des Sciences de l' Université d' Ankara Ser. C. Sciences naturelles*, 5: 1–19.

Karabağ, T. 1958. *Türkiye'nin Orthoptera faunası (The Orthoptera Fauna of Turkey)*. Ankara Üniversitesi Fen Fakültesi yayınları, 81: 1–198.

Karabağ, T. 1961. Revision of *Drymadusa* Stein and related genera (Orthoptera: Tettigoniidae). *Bulletin of the British Museum (Natural History)*, 11(1): 1–41.

Karabağ, T. 1964. Some new species and new records of Tettigoniidae (Orthoptera) from Turkey. *Communications de la Faculté des Sciences de l' Université d' Ankara Ser. C. Sciences naturelles*, 13: 36–55.

Ramme, W. 1951. Zur Systematik Faunistik und Biologie der Orthopteren von Südost Europa und Vorderasien. *Mitteilungen aus dem Zoologie Museum in Berlin*, 27: 1–431.

Salman, S. 1978. *Ağrı, Kars ve Artvin illerinin Orthoptera (Insecta) Faunası Üzerine Taksonomik Araştırmalar*. Atatürk Üniversitesi Yayınları. 490, Fen-Fakültesi Yayınları. 82, 184 pp.

Stolyarov, M.V. 1983. New data on the Orthoptera of the Caucasus and Turkey. *Entomologicheskoe Obozrenie*, 62(3): 501–511. (In Russian).

Stolyarov, M.V. 1984. Taxonomic notes on some Orthoptera of the Caucasus. *Vestnik Zoologii*, 3: 15–21. (In Russian).

Stolyarov, M.V. 1994. A revision of the genus *Phytodrymadusa* (Orthoptera, Tetigoniidae) with description of three new genera of the tribe Drymadusini from the Caucasus and adjoining areas. *Vestnik Zoologii*, 2: 3–11. (In Russian).

Uvarov, B.P. 1929. Studies in the Iranian Orthoptera. I. Some new and less known Tettigoniidae. *Annuaire du Musee Zoologique de I'Acad. Des Sciences de I'URSS*, 31: 623–639.

Uvarov, B.P. 1930. Orthoptera collected by M. Sureya Bey in Turkey. *Eos. Revista Española de Entomologia,* 6: 349–373.

Uvarov, B.P. 1934. Studies in the Orthoptera of Turkey, Iraq and Syria. *Eos. Revista Española de Entomologia,* 10: 21–119.
Ünal, M. 2005. A new species of *Isophya* Brunner von Wattenwyl (Orthoptera: Tettigoniidae: Phaneropterinae) from Turkey. *Entomological News*, 166(4): 209–216.
Ünal, M. 2006. Tettigoniidae (Orthoptera) from Turkey and the Middle East. *Transactions of the American Entomological Society*, 132(1-2): 157–203.
Ünal, M. 2010. Phaneropterinae (Orthoptera: Tettigoniidae) from Turkey and the Middle East II. *Transactions of the American Entomological Society*, 136(1-2): 125–183.
Ünal, M. 2011. *Turkish Orthoptera Site (TOS)*. < www.orthoptera-tr.org > (October 2012).