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Revision of the genus *Lithium* Finnamore with description of three new species

(Insecta, Hymenoptera, Crabronidae, Pemphredoninae)

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The genus *Lithium* is revised, and four species are recognized: *cicatrix* Finnamore, 1987 from Senegal, Mali, Tanzania and Yemen, *jabobsi*, spec. nov. from southern Turkey, *baghdadensis*, spec. nov. from Iraq, and *haladai*, spec. nov. from southern Turkey and Jordan. The females of *baghdadensis* and *haladai* are unknown. Prey records of *jabobsi* belong to the genus *Mocuellus* Ribaut (Heteroptera, Cicadellidae). The revision includes diagnoses, descriptions, and a key to species. Results of a cladistic analysis of the genus *Lithium* are presented.

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Introduction

Finnamore (1987) described the genus *Lithium* based on a single species, *L. cicatrix* from Mali. He also presented a cladogram showing the placement of *Lithium* within the Pseninae. According to his analysis *Lithium* is the sister group of the Nearctic genus *Ammopsen*, and *Mimesa* represents the sister group of *Lithium* and *Ammopsen*. Finnamore also provided a key to the world genera of Psenini.

Simon Thomas (1995) added new records of *L. cicatrix* from Senegal and redescribed the female. In the meantime, after examining a large sample of about of 120 *Lithium* specimens from Turkey, Jordan, Iraq, and Africa, three undescribed species were discovered, together with some new records of *L. cicatrix*. The new species represent the first record of *Lithium* from the Palaearctic region.

Materials and Methods

The terminology generally follows Bohart & Menke (1976). Some exceptions for morphological terms are listed below:

Adpressed setae: setae forming an angle close to 0° with the body surface.

Mesosoma: the thorax including the propodeum.

Metasoma: the apparent abdomen consisting of the abdomen excluding the first segment or propodeum.

Propodeal enclosure: triangular basal area of the propodeal surface, separated by a furrow from the propodeal sides and the propodeal hindface.

Upper frons area: OOL = Distance between eye and posterior ocellus; HD = maximum diameter of posterior ocellus; POL = minimum distance between posterior ocelli, SOL = distance between posterior and anterior ocellus.

The terminology of the surface structure follows Harris (1979). The following acronyms are used for depositories of examined specimens: OLL (Oberösterreichisches Landesmuseum Linz/Austria), SE (private collection Christian Schmid-Egger), ZMA (Zoölogisch Museum Amsterdam, Netherlands), Jacobs (private collection Hans-Joachim Jacobs, Ranzin/Germany).

A phylogenetic analysis of *Lithium* was conducted (Fig. 15) with *Mimesa equestris* chosen as outgroup. *Ammopsen* is the putative sister group to *Lithium* and both form the sister clade to *Mimesa* (Finnamore 1987). Material of *Ammopsen* was not available for this study. Data were recorded in WINCLADA version 0.9.99m24 (Nixon 1999) and an exhaustive search was performed

using PAUP* 4.0b10 (Swofford 2002). The character states are described in Tab. 1 and the data matrix is shown in Tab. 2. Only males were scored, because females are known for only two of the four species.

Genus *Lithium* Finnermore

Lithium Finnermore, 1987: 1081.

Type species: *Lithium cicatrix* Finnermore 1987 by original designation and monotypy.

Diagnosis. *Lithium* differs from other Pseninae by having a very short petiole (shorter than its apical width), an unsculptured hypopimeral area, and the presence of an omaulus (Fig. 6). The males have deep depressions on the frons (Figs 3, 9) and spine-like projections on basal or apical flagellomeres ventrally. Another character of the male is specialized adpressed setae (sternal fimbriae) at apical borders of midsterna (Figs 8, 14). The female pygidial plate is well developed and has parallel sides.

Superficially species of *Lithium* resemble small *Lindenius* or *Diodontus* (Crabronidae) (Fig. 1), but *Lithium* has three submarginal cells in the forewing (one or two cells in *Lindenius* and *Diodontus*). Using the most recent keys to genera of Sphecidae of the Palaearctic and Ethiopian regions (Bohart & Menke 1976, Bitsch et al. 1993), *Lithium* keys out as *Mimesa*. It can be separated easily from *Mimesa* by the above-mentioned characters, in particular by the short petiole and by the frontal depressions present in males.

Distribution. Western and eastern Africa, Arabian peninsula to Turkey. The genus *Lithium* is recorded for the fauna of the Palaearctic region for the first time.

Key to species of *Lithium*

Males

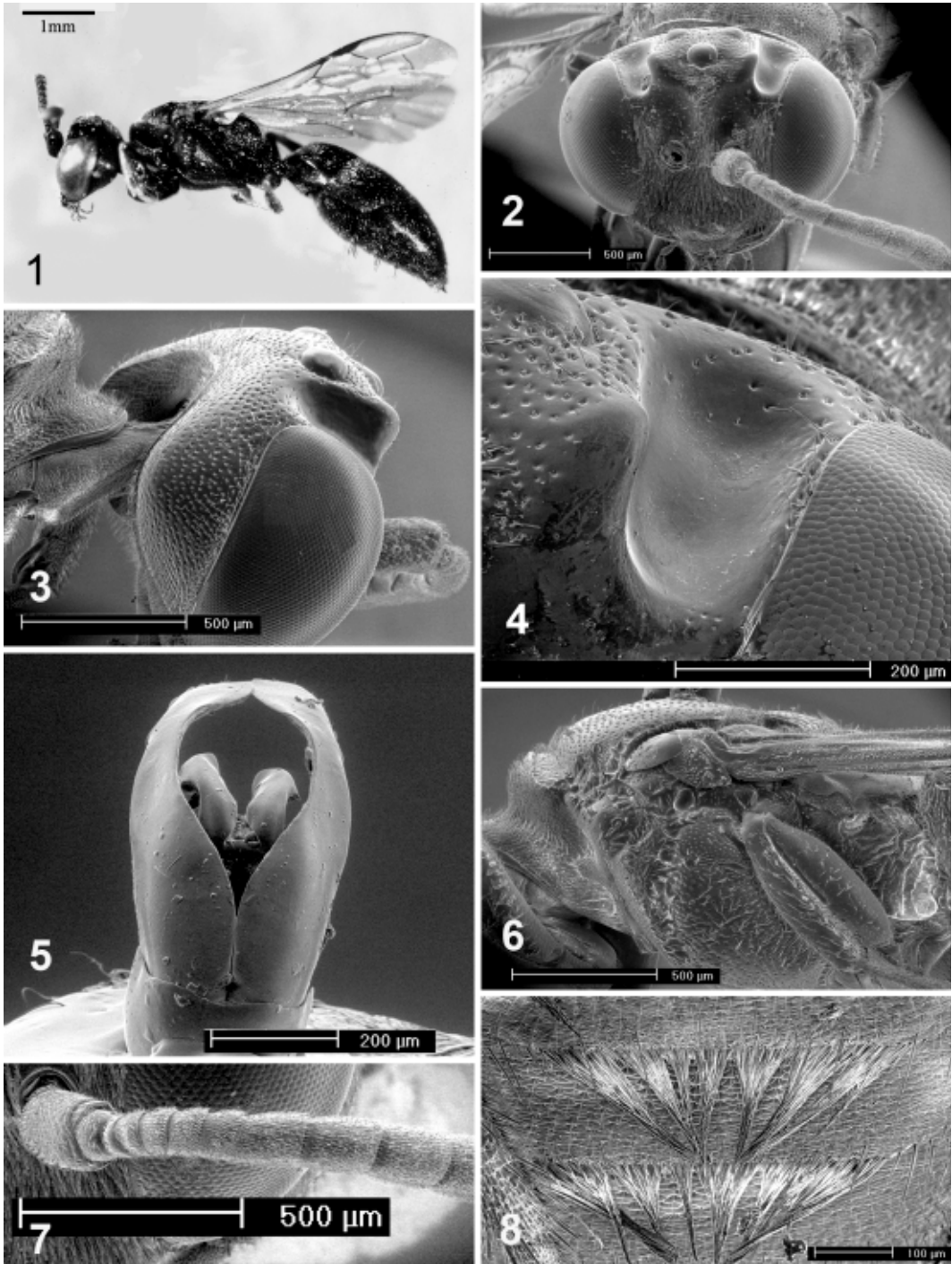
1. Frons with large lateral depression between eye and posterior ocellus, with impression above scape (Figs 2-4). Mesonotum densely and coarsely punctate, interspaces smaller than punctures or punctures furrow-like. Flagellomeres dorsally dark, pale yellow-reddish below. Body size 5-6 mm 2.
- Frons only with comma-shaped or rounded depression below anterior ocellus (Figs 12, 13). Space above scape flat or barely impressed. Mesonotum finely punctate, interspaces larger than or as large as punctures. Flagellomeres red, above at most slightly dark. Smaller than 5 mm 3.

2. Sterna II-IV apically with triangular patch of brown setae. Upper frontal depression deeply impressed (when viewed from behind), its inner margin curved vertically upwards, at top slightly overhanging to eye, its inner edge projecting above level of posterior ocellus as a pyramidi-form tubercle (Figs 2, 3, 4). Hind tibia mostly black. Southern Turkey *jabobsi*, spec. nov.
 - Only sterna II and III with patch of setae (Fig. 8). Upper frontal depression less impressed (when viewed from behind), its inner margin curved with obtuse angle near hindocellus, its edge not projecting above level of posterior ocellus (Figs 9, 10). Hind tibia all yellow. Southern Turkey, Jordan *haladai*, spec. nov.
3. Frontal depression narrow, comma-shaped or angled (Fig. 12). Mesonotum shiny, densely and finely punctate, interspaces as large or sometimes larger than diameter of punctures. Propodeum coarsely sculptured, propodeal enclosure with field-like furrows. Tegulae brownish-yellow. Mali, Senegal, Tanzania, Yemen *cicatrix* Finnermore
 - Frontal depression rounded, similar in size to anterior ocellus (Fig. 13). Mesonotum finely microsculptured, punctures scattered. Propodeum finely sculptured, propodeal enclosure at most with some fine crosswise (transverse?) furrows, but not completely different from adjacent areas. Tegulae basally light yellow, apically transparent. Iraq *baghdadensis*, spec. nov.

Females

1. Body length more than 6 mm. Area between lateral ocellus and eye (close to eye) shiny, without punctures. Terga I-IV with dense and fine punctures. Puncture diameter on mesonotum at most twice as large as punctures on tergum II. (Flagellomere dark above). Southern Turkey to Jordan *jabobsi*, spec. nov.
 - Body length at most 5 mm. No shiny area near eye, at most interspaces near eye larger than between ocelli. Terga I-IV without punctures, finely microsculptured. Mesonotum with very fine punctures. Mali, Senegal, Tanzania, Yemen *cicatrix* Finnermore

The female of *haladai* from southern Turkey and Jordan is unknown. Probably it is similar to that of *jabobsi* and it may have a yellow hind tibia and mandible (black in *jabobsi*). Also, the female of *baghdadensis* from Iraq is unknown. Probably it is similar to the female of *cicatrix* and may be distinguished



Figs 1-6. *Lithium jabobsi*, spec. nov. ♂. 1. lateral view. 2. Head frontal. 3. Head lateral. 4. Frontal depression, dorso-frontal view. 5. Genitalia. 6. Thorax lateral.
Figs 7-8. *L. haladai*, spec. nov. ♂. 7. Flagellomeres. 8. Sternal setae II+III.

by the characters given in the key to males, in particular by the sculpture of mesonotum and propodeum, and also by the colour of tegula.

Lithium baghdadensis, new species

Fig. 13

Types. Holotype: ♂, 30 March 1988, Iraq, Baghdad, Sci. Res. Center, leg Olenijcek (OLL).

Diagnosis. The male of *baghdadensis* is characterised by two frontal-lateral rounded depressions below the anterior ocellus, and by a simple frons surface between posterior ocelli and eye (with deep depression in *jabobsi* and *haladai*). The similar species *cicatrix* has two comma-shaped or angled depressions below anterior ocellus, its body surface – in particular the propodeal enclosure – is coarser than in *baghdadensis*.

Description of male

Body length 4.5 mm. Colour black. Mouthparts, labrum, mandible and flagellomeres orange-yellowish, pronotal lobe, tegula, basal part of wing venation, all tibiae and tarsi white-yellowish. Apical third of mandible dark reddish.

Head. Frons with fine microsculpture, with 'greasy' shine and scattered very fine punctures. Punctures at midfrons 1-2 diameters apart, vertex nearly impunctate. Frons below antennal sockets with adpressed silver pubescence. Pubescence sparse. POL=OOL. Frons between anterior ocellus and midpart of inner eye margin with low impression. Impression rounded to triangular, as large as anterior ocellus. Area directly above antennal socket shiny, somewhat impressed. Apex of scape without spine. Flagellomeres I-IV somewhat shorter than their apical width, remaining flagellomeres 1.5 × as long as wide, last flagellomere 2 × as long as wide. Flagellomeres I-IV below with very short spine-like projections.

Mesosoma. Mesonotum, mesopleuron, mesosternum and scutellum with very fine microsculpture, shiny, with scattered small punctures. Punctures on mesoscutum several diameters apart, punctation on mesopleuron and scutellum denser. Propodeum very finely confused-rugulose, the propodeal enclosure more coarsely sculptured. Mesosoma covered with scattered silver setae.

Metasoma. Terga and sterna shiny, microsculptured with unclear punctation. Terga apically with some silver coloured setae, forming an indistinct band. Apical margin of sterna II-IV with dense adpressed short pubescence (as long as 1.5-5 × HD). Setae form a row, which is as long as mid basitarsus

on sternum II, and shorter on remaining sterna. Setae yellowish and as long as diameter of anterior ocellus. Genitalia similar as in *cicatrix*.

Etymology. The species is named in reference to Baghdad, the capital of Iraq, where the type specimen was collected.

Distribution. Iraq. Known only from type locality.

Lithium cicatrix Finnamore

Figs 12, 14

Lithium cicatrix Finnamore 1987: 1081-1084. Holotype male, 'Male, female description' Mali, Gao (Provincial Museum of Alberta, Edmonton, Canada) (not examined).

Lithium cicatrix, Simon Thomas 1995: 182-185. About 270 specimens collected, redescription of female, fauna of Senegal, a male and a female from this series were examined.

Diagnosis. The male of *cicatrix* is characterized by two frontolateral comma-shaped or angled depressions below the anterior ocellus, and by a simple frons surface between posterior ocellus and eye. The similar species *baghdadensis* has two rounded or triangular depressions below anterior ocellus, its body surface in particular its propodeal enclosure, is finer sculptured as in *cicatrix*. *Lithium jabobsi* and *haladai* both have a deep depression between posterior ocellus and eye margin, and a large impression above scape. For diagnosis of female see key.

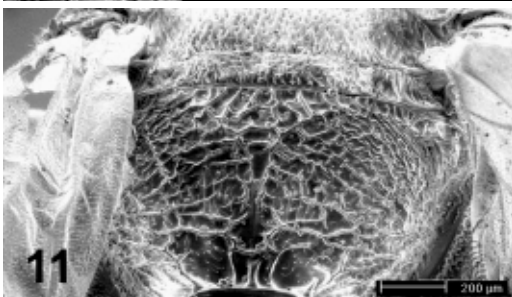
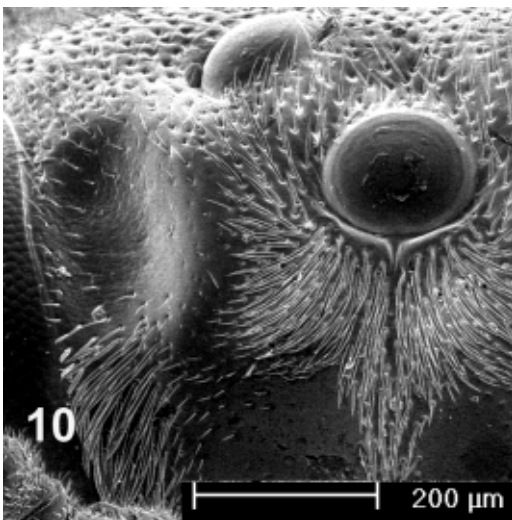
Description of male

Body length 5 mm. Colour: Overall black species. Mandible, scape, flagellomeres and tegula ochre-yellowish, tibia and tarsi whitish-yellow, hind tibia apically with black patch.

Head. Frons shiny with dense punctation, punctures a diameter apart. Lower part of face with dense silvery pubescence, obscuring integument. Frons between anterior ocellus and middle part of inner eye margin with narrow, long furrow. Furrow comma-shaped or more or less angled in the middle. Apex of scape laterally and flagellomere III with a spine-like projection. Flagellomeres I-V half as long as wide, remaining flagellomeres longer than wide.

Mesosoma. Mesoscutum, mesopleuron and scutellum with dense, deep punctation, punctures a diameter apart. Propodeal enclosure triangular, distinctly striate (scabrous sensu Harris 1979), the adjacent parts of propodeum finely microsculptured, lower part laterally and to the back also with some striae.

Metasoma. Terga and sterna shiny, somewhat microsculptured, indistinctly punctate. Terga api-



Figs 9-11. *L. haladai*, spec. nov. ♂. 9. Head frontal. 10. Frontal depressions, dorso-frontal view. 11. Propodeal surface, dorso-apical view.

cally with some silvery setae, forming an indistinct band. Sternum II-IV at apical border with dense adpressed setae. Setae form a band, which is on sternum II as long as mid basitarsus, and somewhat shorter on remaining sterna. Setae brown-yellowish and as long as diameter of anterior ocellus.

Description of female

Body length 4.5-5 mm. Similar to male in colour and sculpture. Scape, flagellomeres, frons, and sterna

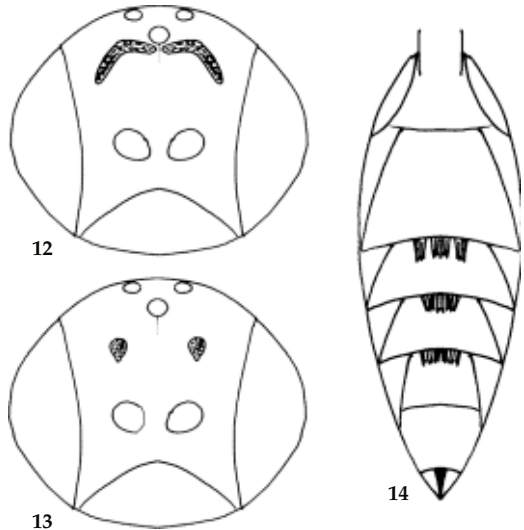


Fig. 12. *L. cicatrix* Finnamore, ♂, head frontal.

Fig. 13. *L. baghdadensis*, spec. nov. ♂, head frontal.

Fig. 14. *L. cicatrix* Finnamore, ♂, sterna with sternal setae on sterna II-IV.

simple. For a detailed description see Simon Thomas (1995).

Distribution. Senegal, Mali, Tanzania, Yemen

Material examined. Senegal: 1♂, 1♀, 8 August to 9 October 1989, 25-35 km S de Richard Toll, in malaise traps, det. R. T. Simon Thomas (SE); Yemen: 1♂, October 1992, leg Drews (ZMA). Tanzania: ♂, bor Mombo 9. January 1996 (OLL).

Discussion. I did not examine the holotype of *cicatrix*, but I did study two specimens identified by Simon Thomas, who compared them with the holotype. All specimens studied agree with the description of *cicatrix*.

Lithium jabojsi new species

Figs 1-6

Types. Holotype: ♂, Turkey, 10 June 1998, Kahramanmaraş, 40 km SE, leg. Marek Halada (OLL). -Paratypes: 25♂♂, 58♀♀, same data as holotype (OLL); 1♂, 24♀♀, 2001, 30 km NW Gaziantep leg. M. Snizek (OLL); 5♂♂, 27 Mai 2003, 4♂♂, 1 June 2004, 22♀♀, 18 June 2005: Antalya, Geris 36.35°N 31.73°E, 2♀♀ with leafhoppers (Jacobs)

Diagnosis. The male is characterized by large frontal depressions and a lateral projection between posterior ocellus and eye. It has patches of setae on the apical border of sterna II-IV. The similar species

haladai has a smaller frontal depression with a small projection, and setal patches only on sterna II-III. *Lithium baghdadensis* and *cicatrix* both have only a small frontal projection below the anterior ocellus, the space between posterior ocellus and eye is flat.

Description of male

Body length 5.5-6.5 mm. Colour black, dark yellow are: flagellomeres ventrally (proximal flagellomeres black, apical flagellomere apically completely yellow), anterior band on tibiae (hind tibia less yellow), tarsi. Wing venation dark brown. Mandible dark reddish medially. Entire body covered with erect silver setae which are band-like at posterior border of terga II-VI.

Head. Face below scape with dense silver adpressed setae. Flagellomeres I-V extremely short (length $\frac{1}{4}$ to $\frac{1}{3}$ of basal width), flagellomeres VI to X as long as wide, flagellomere XI $1.6\times$ as long as its basal width. Scape at apex laterally? with short spine, flagellomeres I-III with short triangular spine ventrally. Flagellomeres VI-X distally with spine-like projection. Frons between antennal sockets with short spinose setae. Frons above scape laterally with large shiny impression, as large as scape; and an upper depression. Upper depression ends at a line between posterior ocellus and eye, deeply impressed (view from behind), inner margin vertical, at top slightly overhanging to eye, edge projected above level of posterior ocellus in a pyramidiform tubercle (when viewed from behind). Frons between impressions and depressions covered with dense silver setae. $POL = OOL = 1.5\times$ diameter of posterior ocellus. Head dorsally markedly punctuate. Occipital carina present, ending without tooth or spine, not reaching hypostomal carina.

Mesosoma. Pronotum, mesonotum, scutellum, mesopleuron and gaster (not mesosoma!) with dense and conspicuous punctation. Hypoepimeral area somewhat bulging. Omaulus present with remnant curving anteriorly, at lower margin of mesopleuron. Scrobal sulcus deeply impressed (scrobal sulcus difficult to differentiate from adjacent omaulus). Mesosomal metasternum deeply emarginate. Propodeum scabicolous to rugose, the propodeal enclosure areolate-rugose (sensu Harris 1979). Propodeal structure somewhat variable. Hind tibia above with row of spines between setae, apically with two spurs.

Metasoma. Petiole, measured from above, very short, at most half as long as its apical width. Terga and sterna II-VI with dense punctation, punctures $0.5\times$ their diameters apart, becoming invisible on last terga and sterna. Tergum I with scattered, fine punctation, punctures $2\times$ their diameter apart. Sterna II-IV with triangular patch of brown long

setae at apical border. Genitalia Fig. 5, gonostylus dark brown.

Description of female

Body length 6-6.5 mm. Colour: Similar to male, but tibia I-III black indistinctly reddish apically.

Head. Lower part of clypeus and labrum with some erect, long golden setae. Frons with band of silver adpressed setae along the inner eye margin. Band begins above scape, it has same length as scape, pedicellus and flagellomere I. Width of band equals $2\times$ the diameter of the anterior ocellus. Area between eye and posterior ocellus shiny, impunctate, as large as last flagellomere. $OOL = 1.8\times HD$, $POL = 1.6\times HD$, $SOL = 1.1\times HD$.

Mesosoma and Metasoma. Sculpture of body similar as in male. Sterna apically without setae. Tergum VI with large pygidial plate covering complete tergal length. Pygidial plate as large as diameter of scape, its surface granulate. Tergum VI including pygidial plate covered with erect brown setae.

Etymology. The species is named after Hans-Joachim Jacobs, who collected some type specimens and who contributed to the knowledge about the life history of the species.

Life history. Hans-Joachim Jacobs writes: "Males occur long before females (end of May, beginning of June). I found the first females in mid June in full nesting activity, but no more males. Females dig nests in clay, stony soil. In a very small area (about 2 square meters) I found a colony with ca 40-50 specimens. Females carried small green leafhoppers for prey". Two female leafhoppers with ca 4.5 mm body length were identified by Herbert Nickel as species of the genus *Mocuellus* Ribaut, 1946 (s.str.) (Heteroptera, Cicadellidae). Females are not identifiable to species level. Species of the genus lives on various grass species (Gramineae) (Nickel in lit.).

Distribution. Southern Turkey.

Lithium haladai new species

Figs 7-11

Types. Holotype: ♂, 29.-30. April 1996 Jordan, NW, North Shuna leg. Marek Halada (OLL) – Paratypes: Turkey: 1♂, 10 June 1998 Kahramanmaras, 40 km SE. leg. Marek Halada (OLL); 1♂, 8 July 1997 40 km E Malatya, Kopekiz leg. Marek Halada (OLL); Jordan NW: 2♂♂, 29.-30. April 1996 North Shuna leg. Marek Halada (OLL).

Diagnosis. The male is characterized by frontal depressions between posterior ocellus and eye similar to *jabobsi*. The lateral depressions are small-

er than in *jabobsi*, the edge next to the posterior ocellus does not project as in *jabobsi*. Also, sternum IV has no setal patch like the other *Lithium*. *Lithium baghdadensis* and *cicatrix* both have only a small frontal depression below anterior ocellus.

Description of male

Body length 6 mm. Colour black, dark yellow are: mandible in basal half, flagellomeres below (proximal flagellomeres black, apical flagellomere apically completely yellow), tegula, precostal plate, basal fifth of wing venation, apex of femora, tibiae and tarsi. Hind tibia brownish yellow, hind basitarsus whitish. Last tergum completely and last sternum apically reddish. Remaining wing venation dark brown. Entire body with erect silver setae, band-like at posterior border of terga II-VI. Sterna II and III apically each with triangular patch of long brown setae.

Head. Face below scape with dense silver adpressed pilosity. Flagellomeres and scape similar as in *jabobsi*, but apical projections of flagellomeres barely visible and not present on apical flagellomeres. Shiny impression extends to a line between posterior ocellus and eye. Depression as long as 1.5X HD, surface shiny with indistinct microsculpture, inner margin curved with obtuse angle toward posterior ocellus, edge not projecting beyond level of posterior ocellus (when viewed from behind). Frons between impression and depression covered with dense silver pilosity. POL=OOL=1.5 HD. Head above markedly punctate. Occipital carina present, ending without tooth or spine, not reaching hypostomal carina.

Mesosoma. Similar as in *jabobsi*.

Metasoma. Petiole and punctuation of sterna and terga similar as in *jabobsi*. Apical border of sterna II and III with triangular patch of brown setae. Gonostylus pale and partly translucent.

Female. Unknown.

Etymology. The species is named after the Czech entomologist Marek Halada, who collected the specimens.

Distribution. Southern Turkey and Jordan.

Cladistic Analysis

A single most parsimonious tree with 27 steps resulted from the analysis with a consistency index (CI) of 0.74 and a retention index (RI) of 0.53. The newly described taxa all cluster together and show a monophyletic genus *Lithium* with respect to *Mimesa*. The genus is supported by nine apomorphies, including the short first flagellomere (character 6), the first flagellomere with spines ventrally (character 7), the pale hind basitarsus (character 14),

Tab. 1. Character description and character states used in the phylogenetic analysis.

1	Frons below posterior ocellus (0) flat (1) with small, deep comma-shaped or drop shaped depressions
2	Frons below scape (0) flat (1) with small to large depressions
3	Frons between eye and posterior ocellus (0) flat (1) with large depressions and tubercles
4	Mandible (0) all black (1) mostly pale reddish
5	Scape distally at outer surface (0) without spine (1) with long spine
6	Basal flagellomeres (0) long (1) short
7	Basal flagellomeres (0) without spine (1) with spines beneath
8	Flagellomere X (0) without spine (1) with small spine or tubercle beneath
9	Pronotal lobe (0) black (1) pale yellow
10	Interspaces on mesonotum (0) microsculptured (1) shiny
11	Structure of propodeal enclosure (0) areolate-rugose (fig. 11) (1) finer sculptured (confused-rugulose).
12	Metanotum (0) convex (1) flat
13	Hindtibia (0) partly dark (1) all pale yellow
14	Hindbasitarsus (0) dark (1) all pale yellow
15	First recurrent vein of forewing (0) interstitial (1) ending in first fourth of second submarginal cell
16	Petiole (0) long (1) short
17	Tergum II (0) without punctures (1) with marked punctures
18	Sterna (0) without setae (1) with setae
19	Sternal setae form (0) a long row (1) a triangular patch
20	Setae on sternum IV (0) absent (1) present

Tab. 2. Character matrix of the data used in phylogenetic analysis.

Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
M. equestris	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
L. baghdadensis	1	0	0	1	0	1	1	0	1	0	1	0	1	1	0	1	0	1	0	1
L. cicatrix	1	0	0	1	1	1	1	1	1	1	1	0	0	1	1	1	0	1	0	1
L. jabobsi	0	1	1	0	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	1
L. haladai	0	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	0

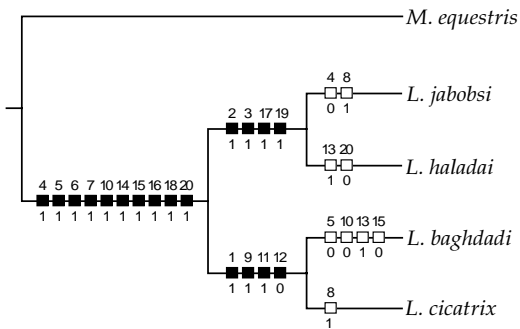


Fig. 15. Single most parsimonious tree. Characters are numbered as in character matrix (Tabs 1, 2) with character numbers above and character states below the circles. Characters were plotted on the tree using fast optimization. The circles are coded as follows: ■ = forward change with no homoplasy; □ = forward change with homoplasy or reversal.

the short petiolus (character 16) and the modified setae on the male sterna (character 18).

Lithium jabobsi and *haladai* form a monophyletic clade which is supported by the following characters: large lateral depressions with lateral tubercles between the eyes and the posterior ocellus (characters 2, 3), tergum 2 with distinct punctures (character 17) and triangular shaped patch of setae on the sterna (character 19).

The function of the depressions is unknown. By size and position, the large depressions below scape may allow the males to place their own antennae (the scape) into it. Additionally, the upper depressions may also include the possibility to fix the female antennae during copulation.

Important differences between the species are the form and position of the specialized male sternal setae. They are found only in species of *Lithium* and *Psen* (Finnamore 1987). In *Lithium*, there are two types of setae: *cicatrix* and *baghdadensis* have a dense transverse row of short setae which give the impression of a brush (Fig. 14). The rows are placed on the apical borders of sterna II-IV. In contrast, *jabobsi* and *haladai* have a triangular patch of long setae (Fig. 8). Also, the number of sterna with setae is different in these two species: *haladai* has specialised setae only on sterna II and III, whereas *jabobsi* possesses setae on sterna II-IV.

Finnamore (1987) postulated autapomorphic character states for *Lithium*, which were based on the only known species, *cicatrix*. In the present

analysis the following autapomorphies are confirmed for *Lithium*: frontal depressions (autapomorphy for *Lithium*); apical spines on some male flagellomeres (synapomorphy with *Ammopsen*); pale hind basitarsus (probably an autapomorphy for *Lithium*, not examined in all related genera); short petiole (probably an autapomorphy for *Lithium*, but also occurring in some related genera such as *Diodontus*); apical setae on male sterna (probably an autapomorphy for *Lithium*, but also occurring in *Psen*).

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