Israel Journal of Entomology

Vol. XX (1986) pp. 45-57

THE LEPTANILLINAE (HYMENOPTERA: FORMICIDAE) OF ISRAEL AND A DESCRIPTION OF A NEW SPECIES FROM INDIA

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ABSTRACT

The following new taxa of Leptanillinae are described: *Yavnella* n. gen., *Yavnella argamani* n. sp. from Israel and *Yavnella indica* n. sp. from India. *Leptanilla bifurcata* n. sp., *Leptanilla israelii* n. sp. and *Leptanilla judaica* n. sp. from Israel. *Leptanilla judaica* is known from workers and larvae, the other taxa from males. *KEY WORDS:* Formicidae, Leptanillinae, Israel, India.

INTRODUCTION

The Leptanillinae (Hymenoptera: Formicidae) are small hypogaeic ants. The workers are eyeless, with 12-segmented antennae, denticulated mandibles, 1-2 segmented maxillary palp and 1-segmented labial palp. Dorsally, the alitrunk usually has only a promesonotal suture; the pedicel has 2 nodiform segments. The females are larger than the workers, wingless, eyeless or with very small eyes, without ocelli; and the pedicel has only 1 segment.

Males of Leptanillinae were never found in copulation, or in a nest together with females and workers (Baroni-Urbani, 1977). The males regarded as belonging to the subfamily are winged, with very reduced wing venation. They have well developed eyes and ocelli, 13-segmented antenna; the mandibles are small and usually toothless; the pedicel has 1 segment, with or without a well differentiated node. At night the males are attracted by light.

In a revision of the Leptanillinae, Baroni-Urbani (1977) included 33 species, 17 based on workers or workers and females, and 16 based on males only. According to Baroni-Urbani, all known workers belong to the genus *Leptanilla* Emery, 1870 and most of the males are considered to belong to the same genus. Three species, based on males, are considered as belonging to 3 different genera: *Scyphodon anomalum* Brues, 1925, *Phaulomyrma javana* G.C. and E.W. Wheeler, 1930 and *Noonilla copiosa* Petersen, 1968.

Like Baroni-Urbani, I believe that some of the names based on males may be synonymous with names based on workers. Nevertheless, I think it worthwhile to describe and name Leptanillinae even from males only. It is far easier to refer to a named than to an unnamed species.

The Leptanillinae are known from Spain, Corsica, Sardinia, Morocco, Algeria, Tunisia, tropical and South Africa, Aden, Uzbekistan, the Oriental region and Japan.

In this paper the workers and larvae of *Leptanilla judaica* n. sp. are described; *Leptanilla bifurcata* n. sp., *Leptanilla israelis* n. sp., *Yavnella argamani* n. g., n. sp. and *Yavnella indica* n. g., n. sp. are described from males. Unless otherwise stated, specimens were collected by Dr. Q. Argaman from the Department of Plant Protection and Inspection, Bet Dagan, Israel. The types of the new species are deposited in the following institutions: BMNH – British Museum (Natural History), London, U.K.; MCZ – Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, U.S.A.; MHNG – Museum d'Histoire Naturelle, Geneva, Switzerland; TAU – Department of Zoology, Tel Aviv University, Tel Aviv, Israel.

Leptanilla judaica Kugler n. sp.

Figs. 1-4

Worker

Length: 1.9-2 mm.

Colour: Pale yellow to orange, shiny. The short pilosity is pale yellowish.

Head: Wider than alitrunk, 1.3 times longer than wide; lateral margins convex, hind margin straight. The middle part of the clypeus is convex, protruding anteriorly as a large elevated lobe, ending in 2 short, wide lobes with a concave margin between them; antenna 12-segmented, scapus as long as the 4 proximal funicular segments together; funicular segments except the last segment, as wide as long; last segment slightly longer than the 2 penultimate segments together; mandibles long, with 3 teeth: a long and narrow apical tooth, a small median tooth and a large basal tooth. A very small, toothlike tubercule may be present between the apical and median tooth and between the median and basal tooth. Maxillary palp strongly constricted in the middle, apparently 2 segmented, labial palp 1-segmented (Fig. 3).

Alitrunk: Pronotum in dorsal view (Fig. 2) almost as wide as long, separated by a deep furrow from the short mesonotum, which is 1/2 as long as the pronotum; between the mesonotum and propodeum, a weak propodeal depression and suture visible; in lateral view (Fig. 1) the dorsal margin of the prothorax convex, the dorsal margin of the rest of the alitrunk is nearly straight; the posterior margin of the mesothorax is differentiated.

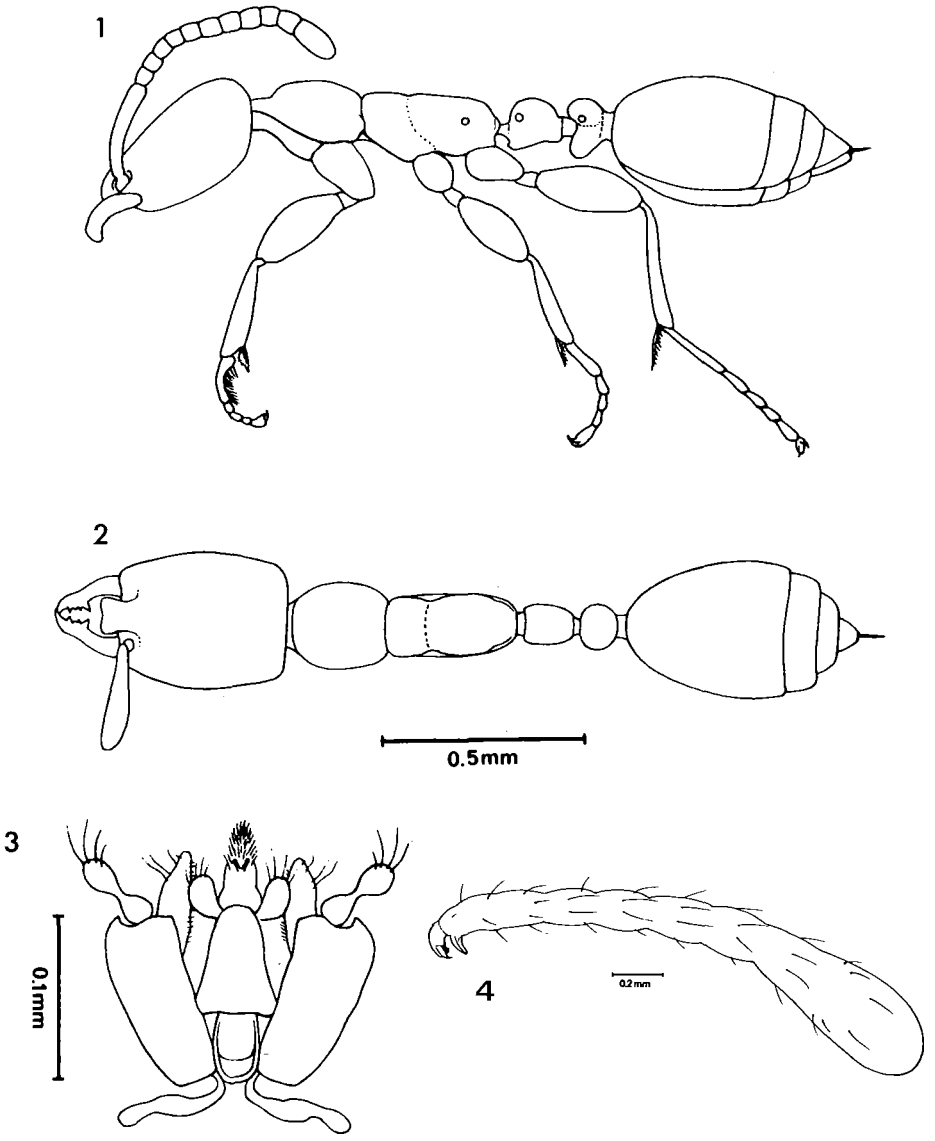
Legs: Femora swollen, mid and hind tibiae with 1 large pectinated spur, in some specimens a second, small, simple spur is visible.

Petiole: Petiolar node dorsally convex, 1.2 times longer than wide, ventrally with a forwardly directed, toothlike protuberance; postpetiolar node in dorsal view nearly circular; in lateral view the dorsal margin is strongly convex, the ventral margin forming a large, convex, anteriorly directed bulge.

Gaster: Egg-shaped with a protruding sting.

Pilosity: Short and suberect on the antennae, not very conspicuously appressed on head and body.

Larva (Fig. 4): Very similar to the larva of *Leptomesites escheri* as described by Kutter (1948) and Wheeler and Wheeler (1965). Body elongated and slender up to 2 mm in length, narrow anteriorly, much wider and club-like posteriorly; head small, mandibles feebly sclerotized, with a narrow, pointed apical tooth, and a comb of several narrow teeth of different lengths. Prothorax with a large flaplike ventral projection bearing many transverse ridges. Head bare; body covered with fine short hairs, in addition, there are several long bristle-like hairs on each of the body segments. No spiracles are visible.



Figs. 1-4. *Leptanilla judaica* n. sp. ♀: 1. Lateral view; 2. Dorsal view; 3. Maxillae and labium, ventral view. 4. larva.

Leptanilla judaica is similar to *L. escheri* (Kutter 1948) in the shape of the clypeal lobe, the mandibular dentition, the form of the petiole and postpetiole, and the form of the maxillary palp as described and figured by Kutter. It differs from *L. escheri* and all other *Leptanilla* species by having a depression and a suture between the mesonotum and propodeum. The pilosity of *L. escheri* is much more conspicuous, denser, and with long semierect hairs (in addition to the appressed hairs) on the antennae, head, petiole, postpetiole and gaster.

Leptanilla escheri was described by Kutter (1948) from workers, a queen and larvae collected in Southern India, and he erected *Leptomesites* for it. According to Kutter, the workers of *Leptomesites* differ from those of *Leptanilla* in having two segments in the maxillary palp, instead of one segment, and by having 2 spurs on the mid and hind tibiae, instead of 1. Baroni-Urbani (1977) redescribed the workers of *L. escheri* from specimens of the type series and from specimens collected subsequently (by Besuchet and Löbl in 1972) in different locations in Madras, southern India. He checked 3 specimens of *L. escheri* and found in all three of them only one segment in the maxillary palp, and only a single spur in the mid and hind tibiae. For this reason, he synonymized *Leptomesites* with *Leptanilla* and treated the species as *Leptanilla escheri.* The specimens described here as *Leptanilla judaica* were previously mentioned, without any description or data, in an unpublished list of Bytinski-Salz (1975) as *Leptomesites judaicus.* I prepared microscopical slides of 10 specimens. In all specimens the maxillary palps were strongly constricted in the middle, appearing 2 segmented, but the dividing line between the two segments was not clearly visible. In a few slides, in addition to the large pectinated spur, a small, simple spur is visible at the mid and hind tibia.

Thanks to the kindness of Dr. C. Besuchet of the MHNG, I also had the possibility of preparing a microscopic slide of the mouth parts of a worker of *L. escheri* collected by Besuchet and Löbl in 1972 in Nilgiri, 6 km. E. of Coonoor (Madras, S. India). The maxillary palps of the specimen also appear 2-segmented as figured by Kutter.

In spite of the apparently 2-segmented maxillary palp and the occurrence of a second tibial spur in some of the specimens, I agree with Baroni-Urbani that *Leptomesites* is a junior synonym of *Leptanilla.*

MATERIAL EXAMINED: Holotype ☿; Judean Hills, 10 km N. of Ramallah, 30.III.1969, collected beneath a stone, A. Barash. Paratypes (29 ☿☿ and 15 larvae) with the same collecting data as the holotype. Holotype and most paratypes (25 ☿☿ and 15 larvae) are deposited in the TAU. Two ☿☿ are deposited in the BMNH and 2 ☿☿ in the MCZ.

Leptanilla bifurcata Kugler n.sp.

Figs. 5-9

Male

Length: 1.4-1.5 mm.

Colour: Dark brownish black, mandibles and legs brown, genitalia yellow.

Head (Figs. 5-6): 1.3 times longer than wide; posterior margin concave, lateral margins convex; eyes near base of mandibles, circular, diameter 1/3 of head length, strongly convex, hairy; ocelli circular; antennae 13-segmented, scapus 4 times as long as wide, most funicular segments 3 times as long as wide; 1st funicular segment twice as long as wide; last segment 4 times as long as wide; clypeal area very short; mandibles short, broad, not reaching one another, toothless, with spoon-like dorsal excavation.

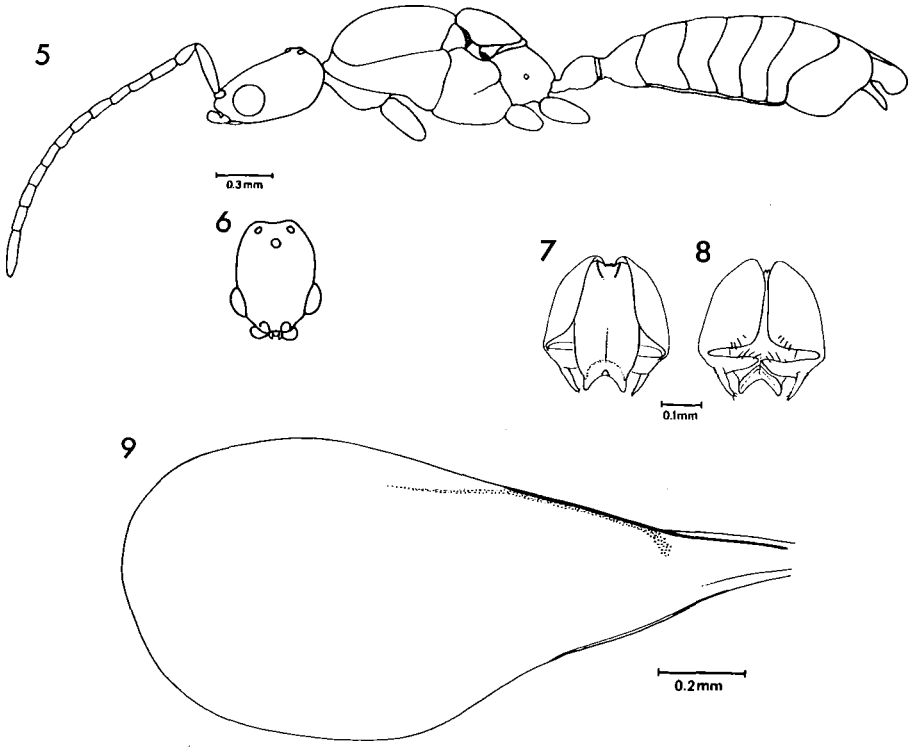
Alitrunk (Fig. 5): Compressed laterally; mesonotum not bulging anteriorly above pronotum; scutum 3 times as long as wide; the dorsal margin of the propodeum in lateral view is a slightly convex oblique unbroken line.

Wings (Fig. 9): Fore wing with narrow short subcosta, long thick marginalis, very short straight radialis and fine short analis; posterior wing veinless.

Legs: Fore femur straight, slightly longer, only slightly thicker than mid-femur; mid-tibia with one short simple spur, hind tibia with 2 spurs, one similar to spur of mid-tibia, the other much longer, combed.

Petiole: Petiolar node in dorsal view as long as maximal width, slightly narrower anteriorly than posteriorly, in lateral view peariform without ventral appendage.

Gaster: Dorso-ventrally compressed with 6 visible tergites, in dorsal view widening from anterior to posterior margin.



Figs. 5-9. *Leptanilla bifurcata* n. sp. ♂: 5. Lateral view; 6. Head, dorsal view; 7. Genitalia, dorsal view; 8. Genitalia, ventral view; 9. Wing.

Genitalia (Figs. 7-8): Large, not retractile; gonocoxites large, valve-like, widely separated, between them the shield-like united gonapophyses; ventrally the gonocoxites nearly touch one another; gonostyli bifurcated, anterior arm band-like flat, bent inwardly beneath the gonapophyses, the posterior arm hornlike, less bent inwards, emerging from the base of the anterior arm. The shield-like united gonapophyses separate widely distally, forming 2 horn-like arms; the inner sides of the arms are dorsally depressed and form a semicircular area; genital opening in the middle of this area; volsella invisible.

Leptanilla bifurcata is easily recognisable by its gonostylus, bifurcated in 2 long arms, one band-like, the other horn-like. Gonostylus divided into 2 long arms is also

characteristic of the male of *Leptanilla minuscula* Santschi 1907*, but in this species the arms are similar. In *L. bifurcata* the united gonapophyses are widely separated distally, while in *L. minuscula* they are only slightly separated at tip. In addition, *L. bifurcata* differs from *L. minuscula* by having eyes strongly convex instead of flat. According to Petersen (1968), *L. minuscula* has only a subcostal and a marginal vein in the forewing. In *L. bifurcata* a radial and an anal vein are also present.

MATERIAL EXAMINED: Holotype ♂ and 1 paratype ♂, Israel, Shluhot, 26.VI.1984; 1 paratype ♂, same locality, 16.IX.1984, 1 paratype ♂, Lod 6.X.1985 (all collected by a light trap). The holotype and paratypes are deposited in the TAU.

Leptanilla israelis Kugler n.sp.

Figs. 10-13

Male

Length: 1.3 mm.

Colour: Head, scapus, dorsal part of mesothorax and gaster dark brownish black; lateral sides of thorax and propodeum light brown; funiculus, legs and genitalia yellowish.

Head (Figs. 10,11): 1.20-1.25 as long as wide; eyes nearly reaching the base of mandibles, very convex, diameter 0.30-0.42 as long as head, sparsely hairy; antenna 13-segmented; scapus 3 times as long as wide; 1st funicular segment twice as long as wide, pear-shaped; 2nd funicular segment as long as 1st segment, longer than 3rd segment; last segment 3.5 times as long as wide, other segments nearly equal in size, about twice as long as wide; clypeal area very short, anterior margin slightly convex. Mandibles toothless, very short, not reaching one another, spoon-like, with a dorsal excavation, maxillae and labium very short, labial palps 1-segmented, maxillary palps not visible.

Alitrunk: long, laterally compressed; mesonotum in lateral view not bulging anteriorly above pronotum; in dorsal view, margin of propodeum an oblique slightly convex line.

Legs: Femora nearly equal in length; anterior femur slightly thicker than mid and hind femora; mid-tibia with 1 short spur, bearing some appressed bristles; hind tibia with 2 spurs, 1 similar to the spur of the mid tibia, the 2nd nearly twice as long.

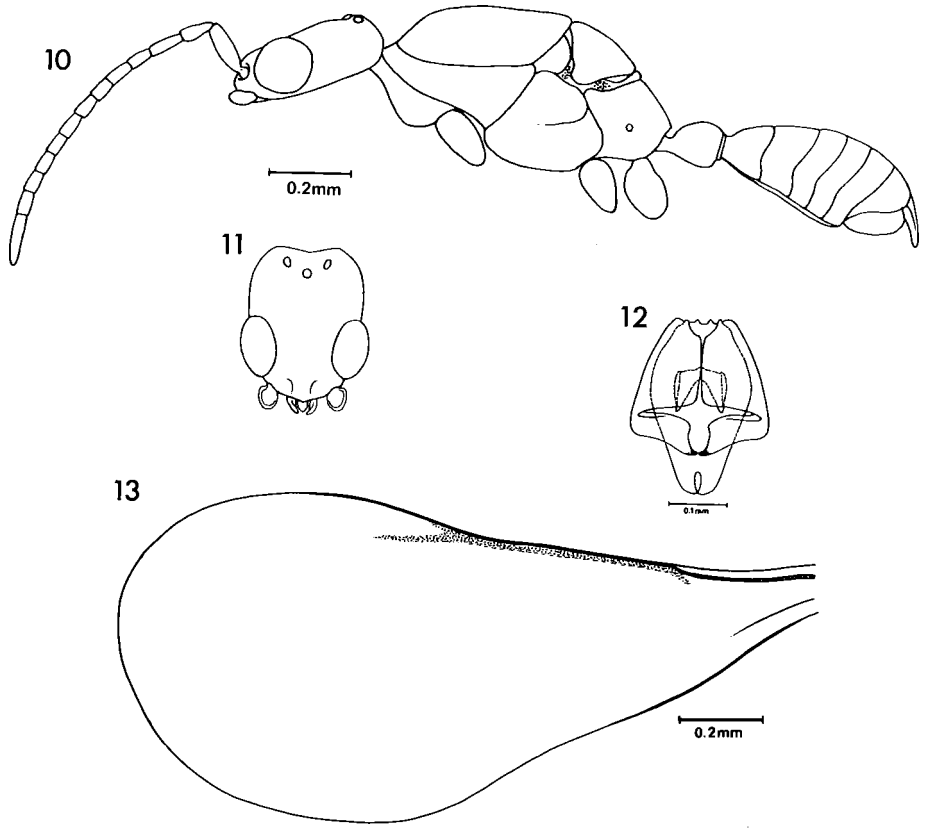
Wings (Fig. 13): Forewing with narrow sub costa, long, thick marginalis, straight, tapering radialis and short, thin analis; basal vein thick anteriorly, fading posteriorly, not closing a basal cell.

Petiole: With short anterior stalk; in profile peariform, dorsal margin of node evently slanting toward stalk.

Gaster: In dry specimens gaster contracted, peariform, with 6 visible tergites; dorsally, only the distal part of the gonocoxite and united gonapophyses are visible; in

* Unfortunately Santchi mixed up the legends of the figures of *L. minuscula* and *L. tanit* as already recognised by Petersen (1968) and Baroni-Urbani (1977). *L. minuscula* is Fig. 3 and not Fig. 2 as stated. The genitalia of *L. minuscula* were figured a second time by Santschi (1908), again with a mixed up legend. *L. minuscula* is Fig. 2 and not Fig. 1 as stated.

ventral view gonocoxites and inwardly bent gonostyli are visible; the subgenital plate is covered by other sternites.



Figs. 10-13. *Leptanilla israelis* n. sp. ♂: 10. Lateral view; 11. Head, dorsal view; 12. Genitalia, ventral view; 13. Wing.

Genitalia (Fig. 12): Gonocoxites large, valve-like, dorsally very narrow, widely separated not covering the gonapophyses, ventrally touching one another, gonostyli in dry specimens horizontal, directed inwards and touching one another. In specimens treated in KOH the gaster is more attenuated, the gonostyli move backwards to a straight line with the gonocoxites; each gonostylus is slightly bifurcated at its broad end, the outer tip forming a strongly sclerotized, sharp tooth, the inner tip forming a short and broad lobe. Volsellae covered by gonocoxites, the volsellar plates united with inner margins of gonocoxites; volsellar digiti with pointed posterior tips bearing long bristles; gonapophyses united, forming a dorsally convex shield; bifurcating near the distal tip into short lobes, tips of lobes touching one another. Subgenital plate has a finger-like posterior projection with long bristles on tip.

REMARKS: The great variability in eye size, (diameter 0.30 to 0.42 of head length) is remarkable and may indicate that 2 different species are involved in the studied material. However, since no other significant differences were observed, and

specimens with intermediate eye size were also present, for the time being all specimens are considered conspecific.

The male of *Leptanilla israelis* is similar to the males of *L. bifurcata* n. sp., *L. tanit* Santschi 1907 and *L. tenuis* Santschi 1907, by its relatively short head and by the more or less bifurcated gonostylus. It differs from *L. bifurcata* mainly by its genitalia, the gonapophyses are only slightly separated at the tip in 2 short lobes, which touch one another, and the gonostylus is only slightly bifurcated at the tip. In *L. bifurcata* the gonapophyses are much more widely separated in 2 "horns" and the gonostylus is divided into 2 long arms.

The male of *Leptanilla israelis* is similar to *L. tanit* by the form of the head and antennae, the wing venaiton and genitalia. The head is short, only 1.20-1.25 times as long as wide; 2nd funicular segment as long as 1st segment; wing venation as figured by Petersen for *L. tanit* (1968 Fig. 14), gonostylus in both species with broad end only slightly bifurcated. *L. israelis* differs from *L. tanit* by the form of petiolar node. In *L. tanit*, the node in profile is strongly convex and the anterior margin is nearly vertical, while in *L. israelis*, the dorsal margin of node is evenly slanting anteriorly. *L. tenuis* has a similar petiolar mode, but *L. israelis* differs from *L. tenuis* by its shorter head, and longer 2nd funicular segment. In *L. tenuis* the head is 1.33 times longer than wide and the 2nd funicular segment is shorter than the 1st segment and equal in length to the 3rd segment. In *L. israelis* the head is 1.20-1.25 longer than wide and the 2nd funicular segment is as long as the 1st segment and longer than the 3rd segment.

MATERIAL EXAMINED: Holotype ♂, Israel, Bet Shean, 5.XI.1981; paratypes, 4 ♂♂ Shluchot, 26.VI.1984; same locality 6 ♂♂, 16.IX.1984, 7 ♂♂, 18.X.1984, ♂ En Gedi 2.VIII.1981; (all collected by light trap). The holotype and the paratypes are deposited in the Zoological Museum of the TAU.

Yavnella Kugler n.gen.

Figs. 14-22

Type species: *Yavnella argamani* n. sp.

Male.

Head: Oblique to nearly vertical, inclusive of eyes wider than long, with bulge on vertex which carries the ocelli; eyes bare, very large and very convex; antennae filiform, very long, 13-segmented; scapus and 1st funicular segment short, other segments more than 3 time as long as wide; clypeus well differentiated; mouthparts typical for Leptanillinae males, mandibles short, not reaching one another, toothless, with spoon-like excavation, maxillary and labial palps each with 1 segment (Fig. 16).

Alitrunk: Not compressed laterally, much longer than wide, mesonotum bulging anteriorly above the pronotum; scutellum strongly convex; dorsal margin of propodeum concave; metapleural glands absent.

Legs: Long, slender, fore tibia with 1 spur, mid and hind tibiae with 2 spurs.

Wings: With reduced venation; forewing with costa, subcosta, radialis, analis and 1 basal vein; only 2 cells are present, a costal and an undivided basal cell; hind wings veinless.

Petiole: Simple, anteriorly with short stalk; posteriorly separated from gaster by only a very slight constriction.

Gaster: Long oval, slightly curved, with 6 visible tergites.

Genitalia (Figs. 17, 18, 21, 22): Not contractile, very large, more than 1/2 length of gaster; gonoforceps (goncoxite + gonostylus) well developed, pointed at distal end; gonapophyses united into large shield-like dorsally convex plate.

REMARKS: The male of *Yavnella* is similar to the male of *Noonilla* Petersen by having a short head with vertical or strongly oblique frons, and by the alitrunk not laterally compressed. The wing venation is also similar to that of *Noonilla*, differing only by the number of basal cells which are 2 in *Noonilla* and only 1 large, undivided cell in *Yavnella.* The petiole is simple in both genera, without well differentiated node. The main difference between *Noonilla* and *Yavnella* is the structure of propodeum and genitalia. In *Noonilla* the propodeum is convex, the gonocoxites fused and strongly reduced, the gonostyli are missing and the gonapophyses are united in a cylindrical tube. In *Yavnella* the basal part of the propodeum is strongly concave, the genitalia are similar to those of most *Leptanilla* males: the gonocoxites are large sclerites, separated dorsally and ventrally. The gonostyli are present and the gonapophyses are united into a large shield-like structure. *Yavnella* is easily distinguished from *Leptanilla* by the shape of the head and petiole. In *Leptanilla* the head is longer than wide, the frons is horizontal or only slightly oblique and the petiole has a well differentiated node. In *Yavnella* the head is wider than long, the frons is vertical or strongly oblique, the petiolar node is not well differentiated.

The female and workers of *Yavnella* are unknown.

ETYMOLOGY: The generic name is derived from Yavne, the locality in Israel, where the first specimens of the type-species were collected.

Yavnella argamani Kugler n.sp.

Figs. 14-18

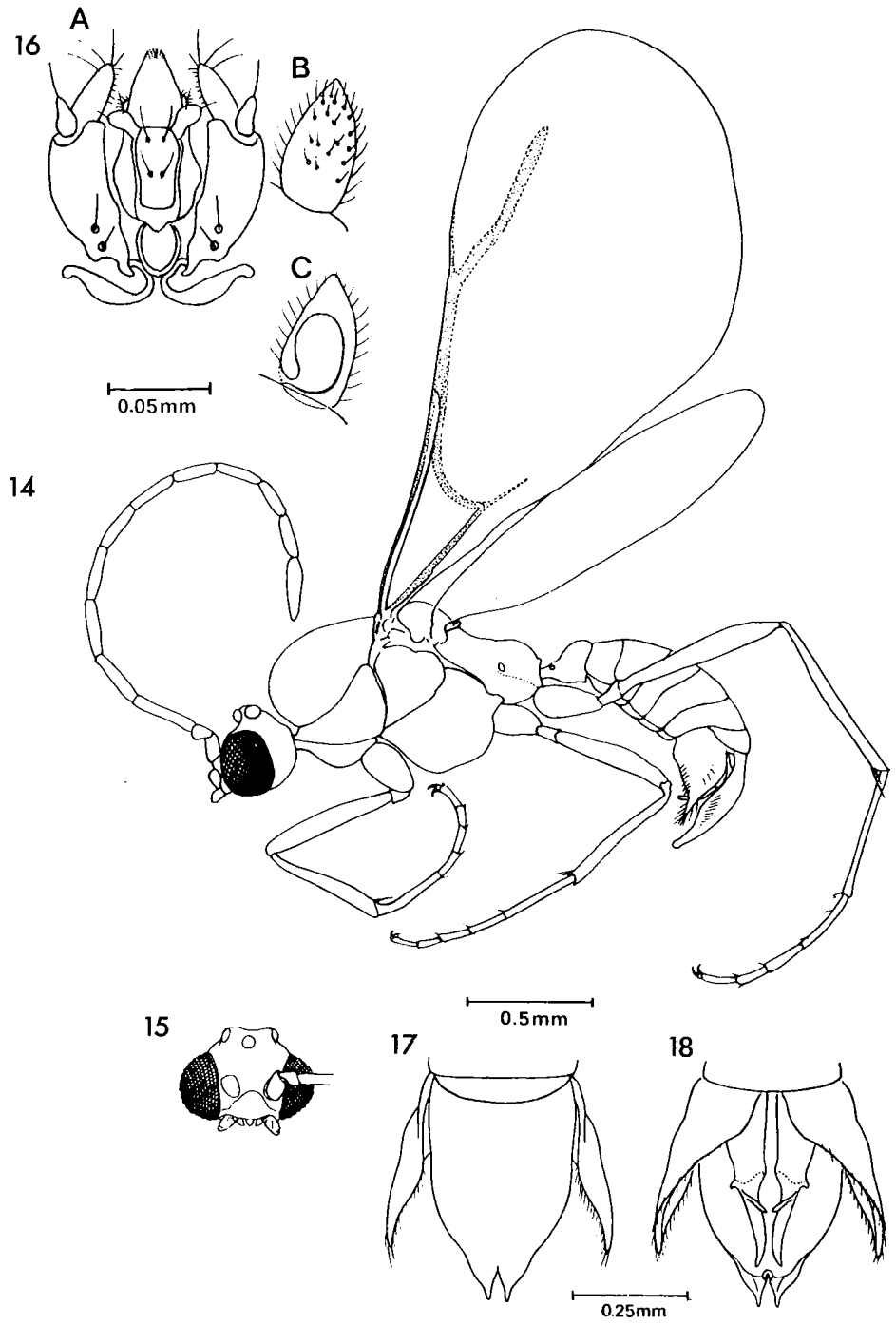
Male

Length: 1.7-2.5 mm.

Colour: Head, alitrunk, petiole, gaster and femur dark brownish-black, very shiny; antennae brown; tibiae and tarsi light brownish-yellow; genitalia yellow.

Head: Vertical, with large bulge on vertex, with eyes 1.4 times as wide as long; eyes bare, oval, very large, very convex, large diameter 0.75 times as long as head; ocelli large, anterior ocellus situated on anterior side of bulge of vertex and posterior ocelli situated on lateral sides of bulge of vertex; antennae long, scapus short less than twice as long as wide; 1st funicular segment very short, only slightly longer than wide; all other funicular segments more than 3 times as long as wide, the second the longest; clypeus convex with nearly straight anterior border; mandibles short (0.07 mm), tapering apically, anteriorly with spoon-like excavation which opens laterally at inner side near base of mandibles. Maxillae and labium short, maxillar and labial palps with 1 segment each.

Alitrunk: Two and a half times as long as greatest width. In dorsal view pronotum almost entirely covered by bulging mesonotum, scutellum triangular,



Figs. 14-18. *Yavnella argamani* n. sp. ♂: 14. Lateral view; 15. Head, anterior view; 16. Mouth parts, a. Maxillae + labium, b. Mandibula, postero-ventral view, c. Mandibula, anterior-dorsal view; 17. Genitalia, dorsal view; 18. Genitalia, ventral view.

separated by a furrow from scutum; basal part of propodeum dorsally concave; dorsal margin 2.5 times as long as distal descending margin.

Legs: Very long, increasing in size from fore to hind legs; fore femur straight, only 1.10 times thicker than mid and hind femora; fore tibia with 1 spur, mid and hind tibiae each with 2 spurs.

Petiole: Slightly longer than wide, widest at posterior margin, anteriorly with a very small stalk, posteriorly as wide as anterior margin of gaster, slightly bulging above it.

Gaster: Long, oval, slightly depressed dorsoventrally and curved; in dorsal view with 6 visible tergites, the last covering the anterior part of the genitalia,in ventral view with 5 visible sternites, last sternite covers the gonobase and subgenital plate.

Genitalia (Figs. 17, 18): Gonobase membraneous; subgenital plate a narrow, sclerotized, dark brown band, fused with gonobase. Gonocoxites separated dorsally and ventrally; each gonocoxite forming a leaf-like structure with not well separated gonostylus. Volsella dorsally covered by united gonapophyses, volsellar plate connected to inner base of gonocoxite, volsellar cuspis rudimental, volsellar digitus long, curved, pointed at its tip with thin, elongate, finger-like, ventral projection at base. Gonapophyses united into large shield-like, dorsally convex structure, narrowing posteriorly, separating distal of genital opening into 2 pointed lobes.

Yavnella argamani n. sp. is similar to *Noonilla copiosa* Petersen, differing by the characters used above to separate the two genera.

MATERIAL EXAMINED: Holotype ♂, Israel, Yavne, 20.X.1981 in light, inside a room. Paratypes, 15 ♂♂, same locality 29.VIII-5.X.1982, 3 ♂♂, same locality (but during daytime and by sweeping plants), 6.X.1982, J. Kugler; 20 ♂♂ Shluchot (Jordan valley) 26.VI.1984 (by light trap). The holotype and most paratypes are deposited in the Zoological Museum of the TAU, 2 paratypes are preserved in the BMNH, 2 in the MCZ, 1 in the MHNG, and 1 in the collection of Dr. Q. Argaman.

Yavnella indica Kugler n.sp.

Figs. 19-22

In September 1985, while examining unidentified specimens in the ant collection of the BMNH, I found 5 males from India of a second species of the genus *Yavnella*. Mr. Barry Bolton, the curator of the collection, kindly agreed that I describe this new species.

The 5 males are of the same size or a little smaller than the small specimens of *Yavnella argamani* (1.6-1.7 mm). They are similar to *Yavnella argamani* in color, wing venation, the form of the propodeum and the petiole and in the general form of the genitalia. In both species the head width, inclusive of the eyes, is larger than the head length. The main differences between the two species are as follows:

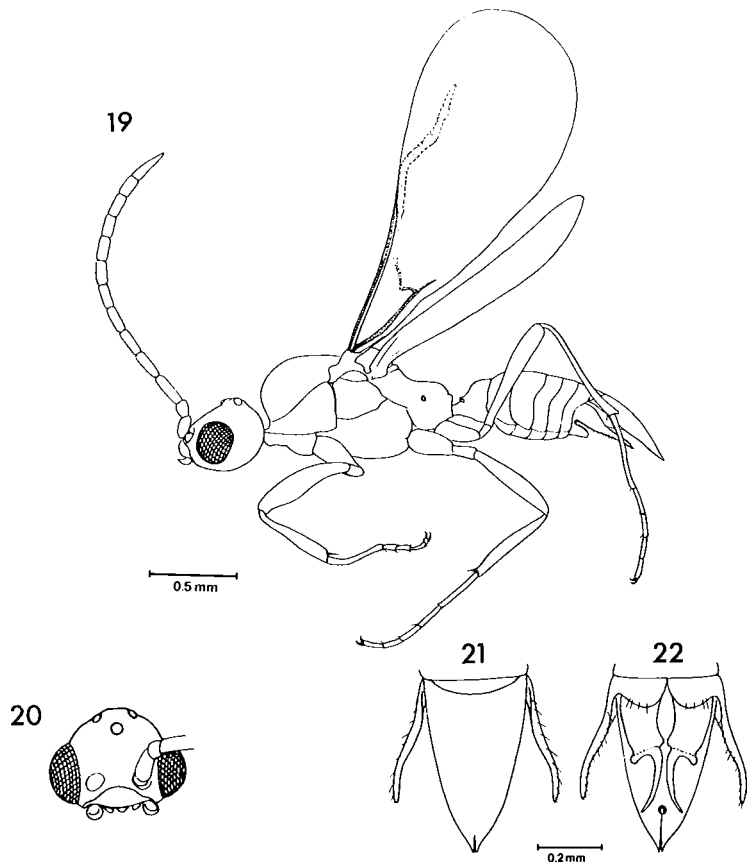


Fig. 19-22. *Yavnella indica* n. sp. ♂: 19. Lateral view; 20. Head, dorsal view; 21. Genitalia, dorsal view; 22. Genitalia, ventral view.

Y. argamani

1. Frons vertical (Fig. 14)
2. Ocelli located on a very large bulge (Fig. 15)
3. All funicular segments except the 1st segment are at least 3 times as long as wide (Fig. 14)
4. Fore femur straight, not thicker than mid and hind femora (Fig. 14)
5. Gonoforceps in lateral view leaflike, regularly narrowing towards the tip (Fig. 14)
6. Volsellar digitus with a long, finger-like, ventral projection (Fig. 18)
7. The united shield-like gonapophyses shorter than the gaster

Y. indica

1. Frons oblique (Fig. 19)
2. Ocelli located on a small bulge (Fig. 20)
3. Funicular segments shorter, the penultimate segment is twice as long as wide (Fig. 19)
4. Fore femur slightly curved at the base, thicker in the middle than the mid and hind femora (Fig. 19)
5. Gonoforceps in lateral view narrow, band like (Fig. 19)
6. Volsellar digitus without a finger-like projection (Fig. 22)
7. The shield-like gonapophyses longer than the gaster

MATERIAL EXAMINED: Holotype ♂ India, Calicut, Kerala, 8.IX.1979 (Boucek). Paratypes 4 ♂♂, same collecting data. The holotype and 2 paratypes are preserved in the BMNH, 2 paratypes in the TAU.

ACKNOWLEDGEMENTS

I am grateful to the following scientists and institutions for allowing me to study material under their care: Dr. Q. Argaman, Dept. of Plant Protection, Bet-Degan, Israel; Dr. C. Baroni-Urbani, Naturhistorisches Museum, Basel; Dr. L. Besuchet and Dr. I. Löbl, Museum d'Histoire Naturelle, Geneva; Mr. B. Bolton, British Museum (Nat. Hist.); Dr. E. Wilson, Museum of Comparative Zoology (Harvard University). I am grateful to Dr. A. Freidberg for comments on the manuscript, to Mrs. T. Feler for technical help and Mr. W. Ferguson for drawing the figures.

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