

Notes on *Microbembex* with New Species from Texas, Mexico, and El Salvador (Hymenoptera, Sphecidae, Nyssoninae)

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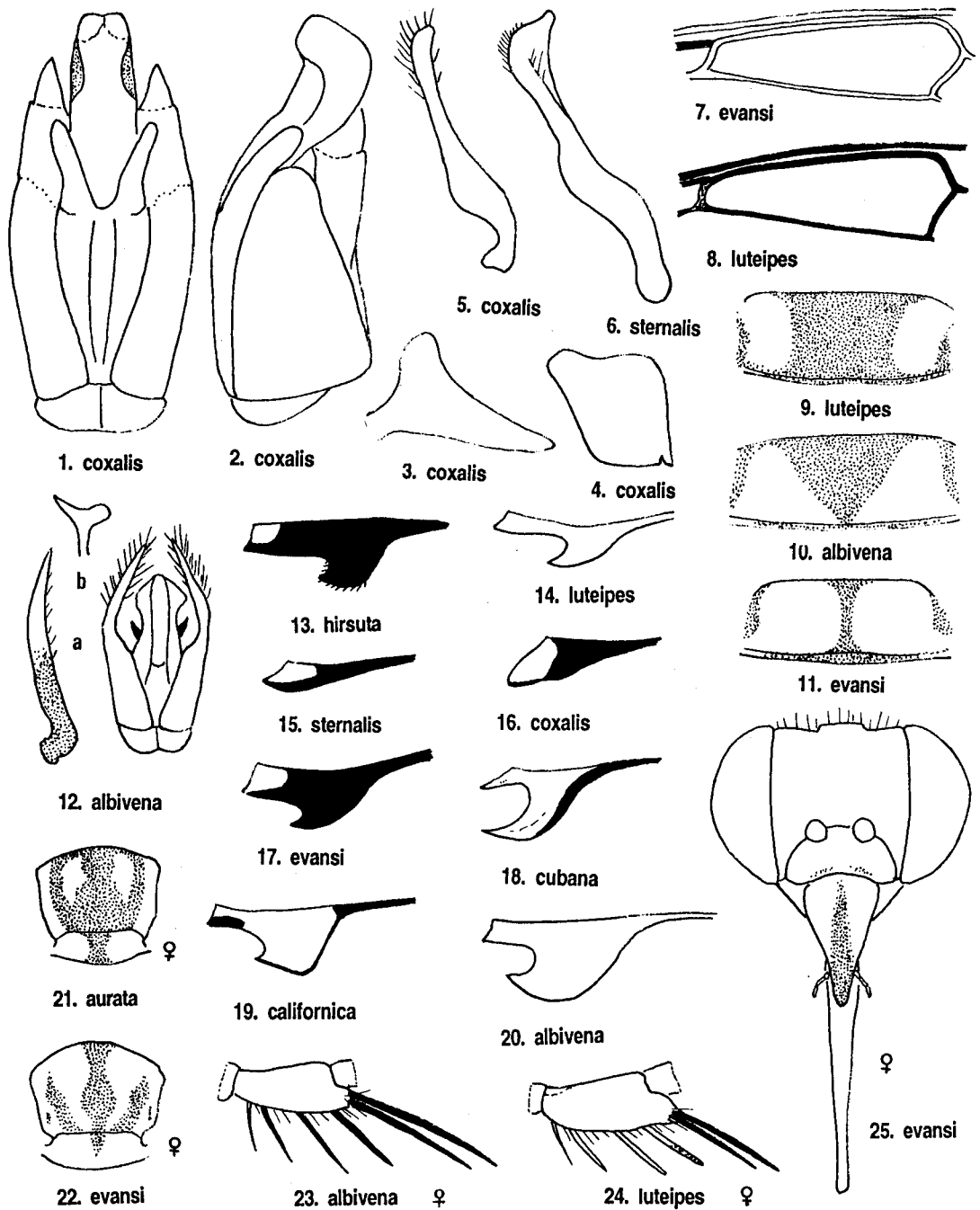
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ABSTRACT: Characters of *Microbembex* are discussed briefly. Five new species are described and figured: *evansi*, Texas, 3 species from Mexico: *albivena*, Baja California; *coxalis*, Guerrero; *luteipes*, Sonora and Sinaloa; and one species from El Salvador, *sternalis*.

Patton (1879) described the genus *Microbembex* and gave *Bembex monodonta* Say as the generotype. The genus occurs only in the New World with about 33 recognized species, including the 5 described herein. Information on many nearctic species may be found in Bohart and Horning (1971). The most recent general treatment is Bohart and Menke (1976). Additional data were given by Bohart and Willink (1989). *Microbembex* is distinguished from other sand wasps (bembicines) by the partial removal of the marginal cell from the edge of the forewing. The species are unique among the Bembicini in that nest provisions are dead and dying insects of various sorts. It might be thought that this uniformity of habitat would not lead to the development of many species. However, the genus has more known species than any other bembicine except the worldwide *Bembix*. Often, a single locality may have only one species, but in some instances 2 or even 3 may occur together. Since nesting takes place almost exclusively in sandy situations, it is not surprising that *Microbembex* is partial to desert areas and to river banks or seashores. The Caribbean Islands are an example. One or more species or subspecies occur on shores of Cuba and Staniel Key, Bahamas (*cubana* Bohart); Bimini Is., Bahamas (*argentifrons* (Cresson)); Hispaniola (a possible new species); and Jamaica (*tricosa* J. Parker).

Males exhibit the most definitive characters. Thus, the median projection of S-II (Figs. 13-20) is scimitar-like in *cubana* (Fig. 18), *tricosa*, and *aurata* J. Parker, it is setose in *hirsuta* J. Parker (Fig. 13), and it is linear with associated longitudinal swellings in *sternalis* Bohart (Fig. 15). There is a strong tendency among males to have the face, including the projecting clypeus and the labrum, all or nearly all black. Included here are *argyropleura* Bohart, *californica* Bohart, *hirsuta*, and *rufiventris* Bohart. For the most part, male genitalia are structurally similar (Fig. 12), with a tapering S-VIII (Fig. 12b), small digitus (Fig. 12a), and slender gonostyle that extends well beyond the aedeagus (Fig. 12). However, in *sternalis* and *coxalis* S-VIII is enlarged toward the apex (Figs. 5, 6), digitus is much larger (Fig. 3), and the gonostyle is flattened as well as extending far short of the aedeagus (Figs. 1, 2). Another indication of relationship between these two species is the presence of a spur-like projection on the inner edge of the hindcoxa (Fig. 4).

Female characters are particularly in the nature of pubescence on the mesopleuron. Appressed silvery pubescence is deemed "dense" when it obscures underlying punctation. Examples are *albivena* Bohart, *argyropleura*, *coxalis*, *hirsuta*,



Figs. 1, 2. Genitalia, dorsal and lateral, $\times 37$. Fig. 3. Digitus apex, $\times 75$. Fig. 4. Left hindcoxa, $\times 50$. Figs. 5, 6. S-VIII, lateral, $\times 37$. Figs. 7, 8. Forewing submarginal cell I and adjoining costa, $\times 25$. Figs. 9-11. Scutellar pattern, $\times 25$. Fig. 12. S-VIII, lateral and genitalia, dorsal, $\times 37$. Figs. 13-20. S-II, lateral, $\times 25$. Figs. 21, 22. Mesonotal black and yellow pattern, $\times 12$. Figs. 23, 24. Forebasitarsus, $\times 37$. Fig. 25. Head, facial view without antennae, $\times 18$. All figures of male unless otherwise indicated.

luteipes Bohart, *rufiventris*, and probably *sternalis* (female unknown but male has dense silvery pubescence on the mesopleuron). Some species have discal scutal markings (Figs. 21, 22).

Pigmentation of forewing veins, especially the front vein of submarginal cell I,

is an important character in both sexes. This vein is quite pale yellow in *albivena*, *argyropleura*, *evansi* Bohart (Fig. 7), and *hirsuta*. One or more of the distal tarsal segments are usually brownish. However, in *luteipes*, *aurata*, and occasional *nigrifrons* (Provancher) the tarsi are all yellow in both sexes.

Material used in this study came from many sources. That pertaining to the new species descriptions came from the following museums, identified by their city of origin in capital letters:

CAMBRIDGE, D. Furth, Museum of Comparative Zoology.

DAVIS, L. Kimsey, S. Heydon, University of California Bohart Museum.

NEW YORK, J. Rozen, American Museum of Natural History.

SAN DIEGO, D. Faulkner, San Diego Natural History Museum.

TEXAS, A. Hook, St. Edwards University, Austin, Texas.

WASHINGTON, A. Menke, U.S. National Museum of Natural History.

Abbreviations which may need explanation: T-I, T-II, etc., terga after propodeum; S-I, S-II, etc., sterna after propodeum.

Microbembex albivena R. Bohart, new species

HOLOTYPE MALE: Length 11 mm. Black and yellow. Yellow are: scape in front, clypeus, labrum, pronotal collar laterally, lobe, scutal spot over tegula, triangular scutellar spot (Fig. 10), most of metanotum, 2 spots on propodeal crest, two spots on mesopleuron, legs almost entirely, forewing costa to marginal cell, posterior veins of medial cell, all veins of submarginal cell I, terga mostly but with large medial areas of faintly greenish yellow, sterna extensively. Pubescence dense, silvery, and appressed on face, moderately close and silvery on mesopleuron and scutum. S-II medial projection stout and curved (Fig. 19); S-VIII slender, apical half pale (Fig. 12a); gonostyle slender, digitus small (Fig. 12).

FEMALE: Length 10–11 mm. Markings about as in male except: pedicel all or partly yellow, labrum sometimes with a basal dark spot or a medial dark stripe, mesopleuron sometimes with one large yellow spot, terga narrowly black basally, T-VI nearly all yellow, middle rake spine of foretarsal I black (Fig. 23), also following spines.

Male holotype (DAVIS), 25.5 mi s. Colonio Guerrero, Baja California, Mexico, VII-6-69 (L.F. Lapré). Paratypes: 6 males, 4 females, same data as holotype; 12 females, Punta Prieta, Islade Cedros, Baja California, VII-5-83 (D. Faulkner). Paratypes in DAVIS, SAN DIEGO, SAN FRANCISCO, WASHINGTON.

The extensive pale forewing venation, absence of submedial scutal yellow, dense silvery pubescence on female mesopleuron, and all yellow tarsi are distinctive. A similar species is *luteipes*, but that has the front vein of submarginal cell I brown (Fig. 8), male mesopleuron more silvery, female foretarsal I with middle spine pale (Fig. 24), and scutellar spots quite different in shape (Figs. 9, 10).

Microbembex coxalis R. Bohart, new species

HOLOTYPE MALE: Length 12 mm. Black and yellow. Yellow are: scape with a small spot, clypeus with a transverse apical area, labrum, pronotal collar narrowly, lobe, scutal spot over tegula, well separated scutellar spots which are rounded inside, metanotal stripe, complete but narrow band across propodeal crest, legs partly but tarsals II to V dark, forewing costa a little whitish yellow on leading

edge toward base, terga with broad apical bands, sterna II to VI with lateral spots. Pubescence appressed, silvery, dense on face and mesopleuron, less dense on scutum. Hindcoxa with a spur-like inner apical tooth (Fig. 4), S-II median "projection" a raised line (Fig. 16), T-VII convex laterally and narrowly blunt apically. S-VIII slender, brown, a little swollen toward apex (Fig. 5); gonostyle short, broad, apparently with a dististyle (Figs. 1, 2); aedeagus extending well beyond gonostyle, bulbous (Fig. 2), digitus with a long upper angle (Fig. 3).

FEMALE: Length 9–11 mm. Markings about as in male except: labrum with a medial dark stripe, tarsi I to V or II to V dark, tergal bands on I to V distal and pale yellow or whitish yellow. Middle rake spine of foretarsal I black, most forewing cells rather evenly covered with black microsetae.

Male holotype (DAVIS), Playa Revolcadero, Acapulco, Guerrero, Mexico, XII-76 (J. Butze). Paratypes: male, same data as holotype; male, female, Playa Metanchen, Mexico, II-5-64 (P. A. Rauch); 2 males, 5 females, San Blas, Nayarit, Mexico (F. D. Parker, B. Malkin, R. Allen, III, VI). Paratypes in DAVIS, CAMBRIDGE, SAN FRANCISCO.

The only other North American species with a hindcoxal spur (Fig. 4) and peculiar genitalia in the male is *sternalis*. The somewhat different S-VIII (Figs. 5, 6) and the simpler S-II of *coxalis* indicate different species. The female of *coxalis* is quite similar to some *monodonta* with lighter yellow tergal bands. However, these latter individuals usually have a much longer pale coastal streak on the leading edge of the forewing. Also, many females of *monodonta* have the wing membrane infumate. The genitalia of both *coxalis* and *sternalis* are proportionately much larger than those of other North American species (compare Figs. 1, 3 with 12).

Microbembex evansi R. Bohart, new species

HOLOTYPE MALE: Length 10 mm. Black and yellow. Yellow are: scapal dots, clypeus with transverse apicomедial spot, labrum except longitudinal black stripe as in Fig. 25, pronotal collar and lobe, scutum with submedial stripe and broad lateral edge, narrowly separated scutellar spots (Fig. 22), metanotum mostly, complete band across propodeal crest, lateral propodeal spot, legs extensively but tarsomere V dark, costa to marginal cell, front vein of submarginal cell I (Fig. 7), terga mostly, T-VII bimaculate, sternal spots laterally on S-II to IV. Pubescence dense, silvery, and appressed on face; much less dense on mesopleuron, scutum and propodeum above. S-II medial projection small, black (Fig. 17); S-VIII slender, dark: gonostyle slender, digitus small.

FEMALE: Length 11 mm. Markings about as in male except: scape yellow in front, clypeal transverse spot larger, scutum and scutellum mostly yellow (Fig. 22), tarsomeres I to V or II to V all or mostly dark, T-I to V whitish with some yellowing across I to III, T-VII with large spot or spots, middle rake spine of foretarsal I black, also following spines.

Male holotype (DAVIS), Monahans Sandhills State Park, Ward Co., Texas, VI-2-74 (H. Evans, W. Rubink). Paratypes: 2 males, 1 female, same data as holotype; 2 males, 21 females, topotypical but VIII-3-63 (J. G. and B. L. Rozen); 9 males, 32 females, 6 mi e. Monahans, Ward Co., Texas, VI-23-83 (W. J. Pulawski); 22 females, topotypical, VIII-28-93 (A. W. Hook). Paratypes are in DAVIS, SAN FRANCISCO, NEW YORK, and AUSTIN.

The most striking features of *evansi* are the unusually extensive yellow markings, particularly on the scutum of the female (Fig. 22). This with the nearly white anterior vein of submarginal cell I (Fig. 7), and the maculate tarsi distinguish the species. The extent of scutal markings varies considerably, particularly in males where the submedial spots are occasionally small. In these the striped labral pattern (Fig. 25) will differentiate *evansi* from other species with similar venational color. The species is named for one of the collectors of the holotype, my friend Howard Evans.

Microbembex luteipes R. Bohart, new species

HOLOTYPE MALE: Length 10 mm. Black and yellow. Yellow are: scape, pedicel partly, clypeus and labrum, pronotal collar narrowly all across, lobe, scutal spot over tegula, lateral scutellar spot with inner margin rounded (Fig. 9), metanotal stripe, 2 narrowly separated spots on propodeal crest, mesopleuron with a single well-forward spot, legs almost entirely, forewing costa to submarginal cell I (Fig. 8), subbasal transverse areas on terga, sterna extensively but with basal black marks. Pubescence dense, silvery, and appressed on frons, mesopleuron and scutum. S-II medial projection curved (Fig. 14), S-VIII slender and apical half pale, gonostyle slender, digitus small.

FEMALE: Length 7.5–11 mm. Markings about as in male except: mesopleuron with 2 yellow spots, propodeal spot continuous across crest, T-VI mostly yellow, middle and sometimes subapical rake spines of foretarsal I pale (Fig. 24).

Male holotype (DAVIS), Bahia San Carlos, Sonora, Mexico, VIII-31-75 (B. Villegas). Paratypes: 6 males, 4 females, topotypical, IX-3-70 (R. M. Bohart), VIII-3-75 (B. Villegas); male, female, Guaymas, Sonora, VIII-6-40 (R. P. Allen); male, female, Tepoca Bay, Sonora, IV-25-21 (E. P. Van Duzee); male, La Cruz, Sinaloa, VI-13-62 (D. H. Janzen); paratypes in DAVIS, CAMBRIDGE, SAN FRANCISCO, WASHINGTON.

The absence of submedial yellow spots on the scutum, all yellow tarsi, and densely silvery female mesopleuron are found also in *albivena*. The differences in forewing venational color (Figs. 7, 8), and shape of scutellar spots (Figs. 9, 10) are sufficient for separation. It appears that *luteipes* is a mainland species, whereas *albivena* may be restricted to the Baja California peninsula.

Microbembex sternalis R. Bohart, new species

HOLOTYPE MALE: Length 12 mm. Description of yellow markings, pubescence, hindcoxa, and T-VII identical word for word with that of *coxalis*. S-II swollen on posterior half and bearing three longitudinal ridges, outer ones rounded, medial one a raised line (Fig. 15). S-VIII rather hatchet-like with point dorsal (Fig. 6), genitalia about as described and figured for *coxalis*.

FEMALE: Unknown.

Male holotype, Acajutla, El Salvador, XII-29-64 (M. Irwin).

The close relationship with *coxalis* is obvious. However, the forms of S-II and S-VIII (Figs. 6, 15) are definitive.

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