New species of Euglossa from Mexico and Central America

by

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Abstract: Seven new species and one new subspecies are described from Mexico and Central America. *Euglossa obtusa* is common in Mexico, but was not collected until cineole was used as "bait". *Euglossa dissimula* is common in Panama and Colombia, but has been confused with *E. igniventris*. The other species are much less frequent, at least in collections. *Euglossa oleolucens*, from southeastern Costa Rica, is very similar to *E. g. gorgonensis*, but is easily distinguished from the sympatric *E. g. erythrophana*.

With few exceptions, the more abundant species of *Euglossa* in Mexico and Central America were described by Moure (1965, 1968, 1969, 1970) if they had not been named by earlier authors. Of the abundant species which have remained nameless, one was not collected until the use of cineole as an attractant, and the other had been confused with another and similar species. Of the other five species which are to be described here, none is represented by a large series of specimens. In most cases, an effort has been made to obtain more specimens, and in each case, the effort has met with very limited success. Further collecting in other areas or at other seasons, or the use of new chemical attractants, may result in the rapid collection of larger series, but it seems likely that larger series of these species will only gradually become available. We have not, to be sure, exhausted the *Euglossa* fauna of Mexico and Central America. The species of some groups are only very rarely attracted to cineole, vanillin and other known attractants, and there may well be large populations of such bees that are as yet unsampled. I know of a few unique specimens, each of which probably represents an undescribed species. After this paper had been written, I obtained a good series of a very distinct new *Euglossa* in Panama. Its publication is planned for a later paper.

See Dressler (1978) for a discussion of some of the features which are stressed in the descriptions. The mid tibia tufts of all species are sketched in Fig. 2, and the shapes of the hind tibia are shown in Fig. 3.

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1. *Euglossa (Glossura) turbinifex*, new sp.

Total length 11 mm; head width 4.7 mm; abdominal width 4.3 mm.

Color: ivory paraocular markings well developed; forward side of antennal scape ivory; front of clypeus blue-green with black median keel and sutures; sides of clypeus and paraocular areas golden-green; upper frons blue; episternum and scutellum golden-green; scutum blue anteriorly, then golden-green; abdomen dark green above, golden-green ventrally; hind tibia golden-green.

Vestiture: plumose hairs of thorax moderately dense and rather short; hairs tawny dorsally and laterally; predominantly black on and behind vertex, some black hairs on scutum; black hairs on terga II-IV, mixed on V, pale on VI and VII.

Punctation: punctures coarse and shallow on clypeus; on episternum large and shallow, separated by areas wider than punctures; on scutum, of moderate size, separated by smooth shiny areas wider than punctures (1-3 diameters); on scutellum, large and separated by smooth, shiny areas about as wide as punctures; on tergum II, punctures of moderate size and rather dense, with a wide smooth marginal band; on tergum III, slightly smaller and very dense.

Tongue exceeding body length (by about 15%); labrum longer than wide, with prominent median keel and shorter lateral keels; clypeus markedly protuberant; scutellum about half as long as wide, posterior margin convex (nearly straight medially), shallowly convex above, with slight median depression; sternum II biconcave, with 2 semicircular depressions, each with diagonal tuft of hairs; mid tibia: velvet area curved, widest basally, tapering gradually distally, with prominent narrow anterior band of sparse hairs, becoming wider distally; posterior tuft larger than anterior, subcircular, uniform in color and texture; anterior tuft deltoid-oblong, dark brown; hind tibia subtriangular, narrowly obtuse.

Female: similar to male, but blue area of scutum more extensive, remainder of scutum green rather than golden-green; abdomen bluish-green; with wider smooth marginal bands; with more black hairs on scutum, mid tibia and hind basitarsus; hairs of scutellum and hind leg black; punctures of scutum sparser, of 2 sizes; scutellum more rounded; scutellar tuft large, about 3/5 as long as scutellum.

Holotype: male, Santa Rita ridge, Colón prov., Panama, 31 Jan. 1968, at cineole, R. L. Dressler 869 (U.S.N.M.). Allotype female: NE of Cerro Jefe, Panamá prov., from nest on underside of large leaf, about 7 m above ground, 25 Dec, 1967, R. L. Dressler 788 (U.S.N.M.). Paratypes: 5 males from same series as type (2 in Moure coll., Univ. Fed. Paraná, 3 in Dressler coll.); 3 males collected on 21 Jan. 1968, otherwise as the type series, R. L. Desssler 810 (Dressler coll.); 1 female, emerged from nest of allotype, 1 Feb. 1968 (Dressler coll.); 1 male, Cerro Jefe, removed from a nest collected 26 Aug. 1967 (Dressler coll.); 1 male, Piña area, Canal Zone, 31 Jul. 1965, collected in flower of *Costus villosissimus*, R. L. Dressler 355 (Dressler coll.); 1 male Cuayacan (guayacán?), Siquirres, Limón prov., Costa Rica, 18 Jun. 1971, H. Nanne M. (Dressler coll.); 1 male, Santo Domingo, Pichincha prov., Ecuador, at cineole, 6 Aug. 1968, C. Dodson (Dressler coll.); 2 males, same locality and attractant, 16 & 18 Feb. 1969, N. H. Williams (Dressler coll.); 1 male, same locality, emerged from a nest collected by C. Dodson, no date (Dressler coll.).

Of the described species in the *bursigera* group, this species is much larger and more slender than *E. crassipunctata* and *E. sapphirina,* and lacks the coarse episternal punctures of those species, but it is about the same size as *E. bursigera,* and may be confused with it. It differs from that species in having bidentate mandibles and in having the labrum longer than wide, in the longer tongue and the more protuberant clypeus. The scutum of *E. turbinifex* is more sparsely punctured and is blue anteriorly, the scutellum has a distinct (though small) median depression, tergum II is more densely punctured and has a wider smooth marginal band. The posterior tuft of the mid tibia is uniform in color and texture, and the anterior tuft is dark brown (like the velvet area, itself).

Two nests of this species have been found in Panama, and several have been collected in Ecuador. In Panama the nests were found high in forest trees, but the Ecuadorian nests were found in small shrubs on a steep slope, along with the nests of a related species which is yet undescribed. The nests of this species are turbinate, about 5.5 cm long and 4.5-5 cm in diameter (Fig. 1). The epithet, *turbinifex,* refers to the top-shaped nests which it constructs.

2. *Euglossa (Glossura) oleolucens,* new sp.

Total length 10.6 mm; head width 4 mm; abdominal width 4.3 mm.

Color: paraocular white markings lacking or rudimentary and present only below (near malar area); without white marks on antennal scapes; front of clypeus green, with golden tones below; central keel and adjacent area brown; sides of clypeus golden green, shading to blue-green along sutures; paraocular area golden green; frons blue-green; episternum shiny bronzy-green; scutum oily blue-green, with some bronzy hues, especially laterally; scutellum bronzy-green, the median depression green; tergum I blue-green, II bronzy-green shading to red-bronze on terminal terga; hind tibiabronzy-green, centrally, the margins green.

Vestiture: plumose hairs of thorax moderately dense and long; hairs mostly tawny dorsally, with few relatively long black hairs on clypeus; tawny on paraocular area; largely black and dark brown on vertex; scutum with some interspersed dark brown hairs; terga II-V with dark hairs, especially distally, these quite dense on margins of II and III, becoming longer on IV and V, V with some long pale hairs, VI and VII with long pale hairs.

Punctation: on front of clypeus coarse and shallow, smaller and sparser on sides; on episternum, small, shallow and widely spaced (3-5 diameters apart), very shiny; on scutum, small and varying somewhat in size, sparse, 2.5-3 diameters apart, with few shallow, crateriform punctures; on scutellum, coarser and somewhat denser, punctures about 1 diameter apart; on tergum II, fairly small and moderately dense anteriorly, grading to very small behind, with very narrow smooth marginal band.

Tongue slightly exceeding body length; mandibles bidentate; labrum slightly wider than long, with strong median keel and much shorter lateral keels; clypeus markedly protuberant, with prominent median keel and relatively prominent lateral keels, distinctly concave between keels; scutellum quite rounded, about half as long as wide, shallowly convex above, with distinct median depression; "pockets" of sternum II of *"bursigera"* type, but small and very shallow; mid tibia: velvet area

curved, tapering rather abruptly distally, with narrow band of sparse hairs along anterior margin, this wider distally; upper tuft subcircular, the margin flattened anteriorly, with narrow anterior band of different texture; anterior tuft oblong, about as wide as upper tuft and twice as long as wide, pale anteriorly, with dark band along posterior margin; hind tibia rather narrowly triangular, somewhat obtuse distally.

Female: unknown.

Holotype: male, Las Cruces, south of San Vito (de Java), Puntarenas prov., Costa Rica, 22 Aug. 1968, at methyl salicylate, R. L. Dressler 1094 (U.S.N.M.). Paratypes: 6 males from same series as type, 2 at methyl salicylate, 4 at cineole, 3 with pollinaria of *Polycycnis muscifera* (Dressler coll. and to be distributed); 1 male, same locality, 23 Aug. 1968, at cineole, with pollinarium of *Polycycnis muscifera*, K. Gregg (Dressler coll.); 1 male, 18 km N de Quepos, 600 m, 20-23 enero 1971, A. Wille y E. Orozco (Dressler coll.).

This species shows the mirror-like episternum and the oily-green scutum which are typical of *E. gorgonensis.* The epithet refers to the characteristic color of the scutum. *Euglossa oleolucens* is very closely allied to *E. gorgonensis,* and together they seem to form a link between the *bursigera* complex and the *asarophora* complex. From *E. g. erythrophana,* with which it is sympatric, it is easily distinguished by the predominantly green color of the scutum, but it is very like *E. g. gorgonensis* in color, and I at first thought *E. g. erythrophana* to be a species distinct from *E. gorgonensis* because of their seeming sympatry. *Euglossa oleolucens* may be distinguished from *E. gorgonensis* by the broader and more rounded tufts of the mid tibia, by the distinct, though shallow, *bursigera*-type "pockets" of the second sternum, and by the shape of the gonocoxite (Fig. 4). There are also several less obvious details, its somewhat larger size, the more prominent keels of the clypeus, the rudimentary paraocular markings being (when present) developed near the malar area rather than near the antennal socket; the more prominent median depression of the scutellum and the more densely hairy margins of the terga.

3. *Euglossa (Glossura) gorgonensis erythrophana*, new subsp.

Total length 9.8 mm; head width 3.8 mm; abdominal width 3.8 mm.

Color: paraocular white markings lacking or rudimentary, upper part developed when present; without white markings on antennal scapes; front of clypeus brown, with bronzy and golden tints below; sides of clypeus golden-green with blue-green sutures; paraocular areas golden-green or with some bronzy hue; frons and vertex bronzy-green; episternum bronzy-green, shiny; scutum and scutellum red-bronze, greenish along sutures and margins; terga red-bronze; hind tibia red-bronze, the margins greenish.

Vestiture: plumose hairs of thorax of moderate length, moderately dense; hairs tawny dorsally; some black hairs on clypeus, hairs of vertex black; few black hairs interspersed on scutum and scutellum; hairs of terga II-IV black, mixed on V, pale on VI and VII, becoming longer posteriorly.

Punctation: coarse on front of clypeus, smaller on sides; on episternum, small and sparse, 3-4 diameters apart, very shiny and mirror-like; on scutum, small and slightly diverse in size, sparse, 2.5-3 diameters apart, with scattered crateriform punctures; on scutellum, coarse and rather dense, about 1/2 diameter apart; on tergum II, rather small anteriorly, grading to minute punctures behind, with very narrow smoth marginal band.

Tongue exceeding body length (by about 12%); mandibles bidentate; labrum slightly wider than long, with a strong median keel and short lateral keels; clypeus protuberant, median keel prominent, lateral keels rounded, not markedly concave between keels; scutellum rounded, posterior margin slightly flat centrally, shallowly convex above, with very slight median depression; sternum II without "pockets" or tufts; mid tibia: velvet area curved, tapering rather abruptly distally, with a narrow sparse band anteriorly; posterior tuft elliptical, about twice as long (vertically) as wide; anterior tuft oblong, about 1.6 times longer than posterior tuft, nearly as wide as length of posterior tuft, narrowd below; hind tibia rather narrowly triangular, somewhat obtuse distally.

Female: unknown.

Holotype: male, Golfito, Puntarenas prov., Costa Rica, 19 Aug. 1968, at beta ionone, R. L. Dressler 1078 (U.S.N.M.). Paratypes: 13 males from same series as type, 7 at beta ionone, 4 at cineole, 2 at methyl cinnamate, 1 with pollinarium of *Stanhopea cirrhata* (Dressler coll. and to be distributed); 1 male, Las Cruces, S of San Vito, 24 Aug. 1968, at beta ionone, with pollinarium of *Stanhopea cirrhata*, R. L. Dressler 1102 (Dressler coll.); 2 males, Rincón de Osa, at *Catasetum maculatum*, 14-18 Aug. 1966, R. M. Adams (Dressler coll.); same locality, 20 Jul. 1968, at cineole, K. Gregg (Dressler coll.); Palmar, 6 Aug. 1958, at *Catasetum oerstedii* (= *C. maculatum*), P. H. Allen (Dressler coll.); 3 males, 61.1 mi. SE Palmar Sur, PanAm Hwy, 12 Jul. 1967, at *Catasetum maculatum*, D. H. Janzen (Dressler coll.); 2 males, 18 km N de Quepos, 600 m., 20-23 enero 1976, A. Wille y E. Orozco (Dressler coll.).

It is almost an ecological law that any *Euglossa* species whose members have a bronzy cast elsewhere will be quite red in Costa Rica, and especially on the Pacific slope, as is the case with *E. bursigera cupreicolor* Moure. The case of *E. gorgonensis* is especially striking. *Euglossa g. erythrophana* is quite red, while *E. g. gorgonensis* always has the scutum green (even if a bronzy-green), even on the Atlantic slope of Costa Rica. This case is especially interesting because of the possibility of character displacement between this species and *E. oleolucens*, which closely matches *E. g. gorgonensis* in color. The epithet refers, of course, to its bright red coloration.

4. *Euglossa (Glossura) obtusa*, new sp.

Total length 10.2 mm; head width 4.3 mm; abdominal width 4.0 mm.

Color: paraocular white marks well developed, widest below, reaching level of antennal sockets; forward side of each antennal scape with white mark about 2/3 length of scape; rest of facial area blue-green except for clypeal suture, which is black; central keel of clypeus bronze and golden-green; front of clypeus and frons with golden-green hues; episternum blue-green; scutum golden-green, with slight

bronzy hues at times, margins blue-green; scutellum blue-green, terga II and III bronzy on basal smooth band (often not exposed), golden-green on posterior smooth marginal band, remainder blue-green; hind tibia blue-green with golden hues centrally.

Vestiture: plumose hairs of thorax moderately dense and rather short; hairs pale fulvous dorsally; some black hairs on clypeus, mostly black hairs on vertex, with some very long black hairs behind vertex, some black and dark brown hairs interspersed on scutum and dorsally on scutellum; short black hairs moderately numerous on terga II-V, becoming longer posteriorly, some pale hairs on tergum V and predominantly pale hairs on VI and VII.

Punctation: coarse and varying in size on front of clypeus, shallower on sides; on episternum, rather coarse and deep, about 1 diameter apart; on scutum, rather coarse, about 0.2-1 diameters apart, a bit sparser posteriorly, with scattered micropunctures; on scutellum, coarse, 0.5-2 diameters apart, with scattered micropunctures and few crateriform punctures; on tergum II, of moderate size centrally, with a narrow band of very small punctures distally, and a narrow smooth marginal band.

Tongue reaching last sternum; mandibles bidentate; labrum very slightly longer than wide, with a prominent median keel and much shorter lateral keels; clypeus moderately protuberant, with a prominent, rounded median keel, lateral keels irregular, not at all concave between keels; scutellum rounded, with posterior margin shallowly convex, about half as long as wide, convex above, with distinct median depression; without sternal pockets or tufts; mid tibia: velvet area curved, especially distally, tapering strongly distally, with narrow anterior band of sparse hairs; posterior tuft small, quadrate-oblong, contiguous with the anterior tuft; anterior tuft oblong, as wide as posterior tuft is long, and more than twice as long as wide; hind tibia subtriangular, with distal angle markedly obtuse.

Female: unknown.

Holotype: male, Estación Biológica Los Tuxtlas (near Montepio), Veracruz, Mexico, 29 Aug. 1973, at vanillin, R. L. Dressler 1488 (U.S.N.M.). Paratypes: 2 males from same series as type, at cineole and skatole (Dressler coll.): 4 males, same locality, 15 May 1970, 3 at cineole, 1 at methyl cinnamate, R. L. Dressler 1405 (Dressler coll. and to be distributed); 8 males, Fortín, Veracruz, 2-8 Jul. 1968, at cineole, C. H. Dodson 287 (Dressler coll. and to be distributed, numerous duplicates in Dodson coll.); 2 males, Tuxtla Gutiérrez, Chiapas, 19-23 Jul. 1968, at cineole, C. H. Dodson 313 (Dressler coll., duplicates in Dodson coll.); 1 male, Berriozábal, Chiapas, 21 Nov. 1972, at cineole, R. L. Dressler 1456 (Dressler coll.); 1 male, Melinda, British Honduras, McPhail trap baited with "stock," 9 Jul. 1970, F. D. Bennett (Dressler coll.); 1 male, same locality, McPhail trap baited with cineole, 10 Jul. 1970, F. D. Bennett (Dressler coll.).

Euglossa obtusa is closely allied to *E. dodsoni*, with which it shares the very blunt hind tibia (to which the epithet refers) and the very small posterior tuft of the mid tibia. *Euglossa obtusa* is a green bee, with at most some golden tints, while *E. dodsoni* is red-bronze, and *E. obtusa* has larger and denser punctation on the scutum and scutellum. Nevertheless, it may eventually prove to be a subspecies of *E. dodsoni*. The lack of sternal "pockets" align these species with the *asarophora*

complex, but the presence of a posterior tuft on the mid tibia and the form of the hind tibia are both rather anomalous for this group.

5. *Euglossa (Euglossa) dissimula,* new sp.

Total length 11 mm; head width 4.8 mm; abdominal width 4.9 mm.

Color: paraocular white markings well developed, widest above; ivory spot on forward side of each antennal scape about 1/2 length of scape; front of clypeus dark blue-violet, with black median keel, blue-black lateral keels and black sutures; sides of clypeus and paraocular areas golden-green; frons blue-green; episternum, scutum and scutellum golden-green; terga I-III bronze, remaining terga shading from bronzy-green to blue-green; hind tibia golden-green or with faint bronzy cast.

Vestiture: plumose hairs of thorax rather short; hairs mostly fulvous dorsally; few black hairs on clypeus; black hairs on vertex, some scattered black hairs on scutum and scattered short black hairs on terga II-IV, mixed on V, pale on VI and VII, longer behind.

Punctation: on front of clypeus, moderately small, smaller and shallower on sides; rather coarse and dense on episternum; on scutum, moderately coarse, of 2 sizes, the smaller about 2/3 the diameter of the larger, rather dense anteriorly, sparser on central and posterior scutum, where smooth spaces are wider than punctures; scutellum similar to adjacent scutum, with scattered micropunctures; tergum II, with punctures of moderate size, dense anteriorly, grading to wide smooth marginal band.

Tongue reaching sternum II or III; mandible bidentate; labrum subquadrate, with strong median keel and much shorter lateral keels; clypeus moderately protuberant; scutellum slightly more than twice as wide as long, the posterior margin straight medially, very shallowly convex above (nearly flat), with only a trace of median depression; sternal tufts small and widely separated; mid tibia: velvet area curved, tapering markedly distally, with very narrow anterior band of sparse hairs; posterior tuft oblong, anterior tuft divided into 2 lobes, the upper oblong, the lower subequal in size and nearly forming right angle with upper lobe; hind tibia rhomboid, markedly convex, especially distally.

Female: similar to male, but with more black hairs on clypeus, scutum and scutellum; hairs on hind basitarsus black; punctures of scutum slightly sparser and more markedly of 2 sizes; punctures of tergum II a bit sparser; scutellum slightly more protuberant above; scutellar tuft small, about 1/3 length of scutellum.

Holotype: male, Cerro Campana, Panamá prov., Panama, 24 Jan. 1968, at cineole, R. L. Dressler 819 (U.S.N.M.); Allotype female: Santa Fe, Darién prov., 4 Jan. 1967, B. F. Eldridge (U.S.N.M.). Paratypes: 15 males from same series as type (to be distributed); 9 males, Navy Reservation N. of Gamboa, Canal Zone, 13 Oct. 1968, at cineole and skatole, R. L. Dressler 1139 (to be distributed); 12 males, km 15, Cartí rd. (N of El Llano), Panamá prov., 22-23 Mar. 1974, at skatole, R. L. Dressler 1514 (to be distributed); 7 males, Teresita, Chocó prov., Colombia, 14 Feb. 1969, at cineole, M. H. Robinson (to be distributed); 2 males, Palotal, Córdoba

prov., Colombia, 12 Apr. 1968, at cineole, G. Escobar (Dressler coll.); 1 female, Navy Reservation, N of Gamboa, Canal Zone, 27 Sep. 1965, feeding on *Calathea insignis,* R. L. Dressler 109 (Dressler coll.). I also have numerous other collections from El Valle de Antón, Barro Colorado Island, Cerro Jefe and Santa Rita ridge.

In our studies of orchid pollination in central Panama, we often encountered an *Euglossa* with green thorax and bronze abdomen. We unhesitatingly associated this species with the name *E. igniventris* Friese, based on a female collected in Costa Rica, and this identification was confirmed by everyone who studied the specimens. We had one rather aberrant female in the collection, but we did not suspect the presence of two very similar species until 1968, when several males of a different type were collected at vanillin baits. Then, we at first tried to associate these (in our collection) infrequent males with the female that was infrequent in our collection. This, however, proved impossible. The relatively infrequent male corresponds to the frequently collected female, in other words, to *E. igniventris;* while the male that is so frequent in collections proves to be an undescribed species. The epithet *dissimula* refers to its close resemblance to *E. igniventris,* and to our inadvertant curatorial wife-swapping.

Needless to say, all published records of orchid pollination by *E. igniventris* refer to *E. dissimula.* The differential collection of males and females in these species is readily explained by differences in their biology. *Euglossa dissimula* males are easily collected at the flowers of *Mormodes igneum,* especially, and may now be collected in any numbers by the use of chemical baits; while *E. igniventris* is only occasionally attracted to vanillin or cineole, though it may well be quite as frequent in the forests as *E. dissimula.* The females of *E. igniventris* are much collected because of their "curiosity." These bees will spend a minute or more flying about and examining any unfamiliar object they encounter in the forest, a very non-adaptive behavior when the unfamiliar object is an entomologist with a net. The only Panamanian species in which we have observed this behavior is *E. deceptrix,* and this behavior doubtless contributed to the older confusion between *E. deceptrix* and *E. tridentata.*

Males of *E. dissimula* may be distinguished from *E. igniventris* by the hind tibia, which is smaller and distinctly green, rather than red-bronze, by the form of the mid tibia anterior tuft, which is shorter and forms more nearly a right angle, and by the surface of the deep groove behind the velvet area, which is smooth in *E. dissimula* and transversely striate in *E. igniventris.* The females of *E. dissimula* may be distinguished from *E. igniventris* by the color of the hind tibia, which corresponds to that of the male in both species, by the distinctly more truncate scutellum (that of female *E. igniventris* is quite rounded) and by having the punctures of the scutum less dense and less sharply differentiated in size. Though this species has been confused with *E. igniventris,* it is actually more closely allied to *E. hansoni,* and, indeed, the unusually bronzy *E. dissimula* and the unusually greenish *E. hansoni* are very similar, though comparison of the mid tibia will permit their separation. *Euglossa dissimula* and *E. hansoni* are attracted in large numbers to cineole and skatole (and *hansoni* to vanillin, as well), while *E. igniventris* is more like *E. alleni* and *E. micans,* which are only rarely collected at any of these baits.

Euglossa dissimula is known only from central and eastern Panama and northwestern Colombia, while *E. igniventris* ranges from western Costa Rica to Venezuela, and may prove to be conspecific with the Amazonian *E. aureiventris.*

6. *Euglossa (Euglossa) micans,* new sp.

Total length 11 mm; head width 4.8 mm; abdominal width 4.5 mm.

Color: paraocular white markings well developed; without ivory markings on antennal scapes; front of clypeus dark blue, violet-blue below, keels blue-black; sides of clypeus and paraocular areas golden-green, sutures black; frons dark blue; vertex green; episternum and scutellum golden-green; scutum golden-green, shading to blue anteriorly; terga pale bronze, very shiny; hind tibia golden-green above and marginally, bronzy-green centrally.

Vestiture: plumose hairs of thorax rather short, moderately dense; hairs mostly pale tawny dorsally; hairs of clypeus pale; on vertex, dark brown or black, longer behind; scutum with some dark hairs; hairs of terga II-V dark but very short, pale on VI and VII.

Punctation: on front of clypeus, small near median keel, larger toward lateral keels, only moderately dense, moderately dense on sides; on episternum, rather coarse and dense, 0.2-0.8 diameters apart; on scutum, rather coarse, the size varying, about 0.5-1 diameter apart, becoming sparse near mesoscutal line and denser laterally, somewhat sparser posteriorly (0.5-3 diameters apart); on scutellum, rather coarse and moderately dense, about 0.5-1.5 diameters apart; on tergum II, very fine and sparse (1-3 diameters apart) centrally, with few, scattered, large asymmetric punctures, becoming even smaller toward the wide smooth marginal band.

Tongue moderately long, reaching sternum II; mandibles bidentate; labrum wider than long, with prominent median keel and shorter, rounded, lateral keels; clypeus moderately protuberant, with prominent median keel and rounded lateral keels, weakly concave between keels; outline of scutellum shallowly concave behind, scutellum about 2.5 times as wide as long, above strongly convex at each side with a prominent and rather deep median depression; sternal tufts small and widely separated; mid tibia: velvet area curved, gradually tapering distally, with a small but distinct anterior band of sparse hairs; posterior tuft oblong, anterior tuft nearly twice as long, somewhat reniform, divided into 2 lobes, with upper lobe about as large as posterior tuft, lower lobe subtriangular, with much longer, pale hairs; groove behind velvet area transversely striate; hind tibia large, rhomboid, convex distally.

Female: similar to male, but terga more bronzy (in available specimens, at least); hairs on inner surfaces of legs brown, most hairs on hind leg dark brown; more black hairs dorsally on head, scutum and scutellum; punctures of scutum more diverse in size, sparser toward mesoscutal line; surface of scutum and scutellum distinctly shagreened between punctures; punctures of tergum II very sparse; posterior margin of scutellum straight medially, scutellum rather flat above, with small scutellar tuft, about 1/6 length of scutellum.

Holotype: male, Finca La Selva, Puerto Viejo, Heredia prov., Costa Rica, 14 Jul. 1970, at "stock," C. H. Dodson (Dodson coll., Marie Selby Botanical Gardens). Allotype female: Puerto Viejo, 6 Aug. 1965, feeding on flowers of *Sabicea villosa,* 8-9 AM, R. L. Dressler 362 (U.S.N.M.). Paratypes: 3 females, of same series as allotype (2 in Dressler coll., 1 in Moure coll., Univ. Fed. Paraná).

This very distinctive species was first known through several females collected near Puerto Viejo, and to date, only one male has been collected. This species is related to *E. igniventris,* which it resembles in coloration, but it differs from that species in the smaller hind tibia, the sparser punctation of the scutum, the much sparser punctation of tergum II and the deeper median depression of the scutellum. The sparse punctation and shiny surface indicate a relationship with *E. alleni,* but the punctation is even sparser than in that species, and the scutum is green, rather than bronze. The females are very distinctive in the shagreened surface between the punctures of the scutum and scutellum. The same feature is present in the male, but much less obvious. The epithet, *micans,* refers to the extremely shiny surface of the terga.

7. *Euglossa (Euglossa) crininota,* new sp.

Total length 10.6 mm; head width 5 mm; abdominal width 5mm.

Color: paraocular white markings narrow but well developed; white spots on antennal scapes 2/5 as long as scape; front of clypeus blue-green below, shading to golden-green above, central keel black, lateral keels brown below, golden-green above, sutures black; sides of clypeus and paraocular areas golden-green; episternum green; scutum golden-green centrally, blue-green toward margins; scutellum and terga blue-green; hind tibia golden-green centrally, blue-green toward edges.

Vestiture: plumose hairs of thorax short but dense; hairs mostly fulvous dorsally; with few black hairs and some pale hairs on clypeus; black hairs on vertex, with long black hairs and shorter pale hairs behind; many dusky hairs interspersed on scutum and dorsal face of scutellum; very short, rather sparse black hairs on terga II and III, longer on IV and V, with some pale hairs on V, mainly pale hairs on VI and VII.

Punctation: on front of clypeus, coarse and deep, smaller on sides; on episternum, coarse and fairly dense, about 1/2 diameter apart; on scutum, coarse and very dense, with a few spaces of 1/2 diameter, size somewhat diverse, sparser posteriorly and on scutellum, where 1/2-1 diameter apart, with some scattered micropunctures; on tergum II, of moderate size centrally, and dense, with scattered smaller punctures which bear larger hairs and are surrounded by small, raised, shiny space, punctures becoming smaller both basally and distally, with a moderate smooth marginal band.

Tongue reaching stemum III or IV; mandibles bidentate; labrum with a prominent median keel and slightly shorter lateral keels; clypeus moderately protuberant, with prominent median keel and rounded but prominent lateral keels; posterior margin of scutellum nearly straight, scutellum about 3/7 as long as wide, shallowly convex above, with scarcely any median depression; sternal tufts small and widely separated; mid tibia: velvet area somewhat curved, tapering gradually, with a narrow anterior band of sparse (and longer) hairs, this wider distally; posterior tuft oblong, the anterior margin straighter; anterior tuft more than twice as long, triangular-reniform, divided into 2 lobes, the smaller, lower lobe subtriangular, with very long hairs; hind tibia rhomboid, evenly convex beyond scar.

Female: unknown.

Holotype: male, Córdoba, Veracruz, Mexico, 13 Aug. 1964, P. J. Spangler (U.S.N.M.). Paratypes: 1 male, same data and collector as type (U.S.N.M.): 1 male, Estación Biológica Los Tuxtlas (near Montepio), Veracruz, 29 Jul. 1973, at vanillin, R. L. Dressler 1490 (Dressler coll.).

This species and the species which follows both have much the aspect of *E. viridissima,* dark green, and rather coarsely and densely punctate. Both are easily distinguished from *E. viridissima* by the small, widely separated sternal tufts and by the very different tufts of the mid tibia. *Euglossa crininota* differs from *E. atroveneta* in having the front of the clypeus blue-green, rather than dark blue, in the more deeply divided anterior tuft of the mid tibia, in the smaller upper lobe of that tuft, in the less rounded scutellum and in having the color of the scutum more golden. It si quite unusual in the very long hairs of the lower lobe of the anterior tuft of the mid tibia. The specific epithet refers to that tuft of hairs.

8. *Euglossa (Euglossa) atroveneta,* new sp.

Total length 12 mm; head width 5.2 mm; abdominal width 5 mm.

Color: labrum edged with dark brown or black; paraocular white markings narrow, often incomplete below (not reaching ventrolateral angles of clypeus); small, brownish ivory spots on antennal scapes about 1/4 length of scape; front of clypeus dark blue, median keel black, lateral keels and suture blue-black; sides of clypeus and paraocular areas green; frons dark blue; vertex green or golden-green; episternum dark green, with some golden and blue hues; scutum and scutellum blue-green; terga dark green; hind tibia blue-green, with some golden hues centrally.

Vestiture: plumose hairs of thorax short, fairly dense; hairs mostly pale tawny dorsally; with few black hairs on clypeus, black hairs on vertex, few black hairs interspersed on scutum and dorsal face of scutellum; black hairs sparse and short on terga II-V, becoming longer behind, pale hairs on VI and VII.

Punctation: on front of clypeus, coarse and dense, smaller on sides; on episternum, of moderate size and density, about 0.5-1 diameter apart; on scutum, rather coarse and quite dense, somewhat sparser behind; on scutellum, large, 0.5-1 diameter apart; on tergum II, of moderate size and quite dense, with few, scattered raised areas accompanying asymmetrical punctures, punctures becoming smaller behind, with wide smooth marginal band.

Tongue long, nearly reaching apex of abdomen; mandibles bidentate; labrum subquadrate, with prominent median keel and well developed, shorter, lateral keels; clypeus moderately protuberant, with prominent median keel and lower but well developed lateral keels; slightly concave between keels; scutellum about half as long as wide, the posterior margin straight medially, shallowly convex above, with slight median depression; sternal tufts small and widely separated; mid tibia: velvet area curved, widest basally, tapering gradually distally, with very narrow anterior band of sparse hairs (scarcely evident); posterior tuft oblong, anterior tuft nearly 3 times as long as posterior, triangular-reniform, weakly divided into 2 lobes, lower lobe with longer hairs; hind tibia rhomboid, nearly evenly convex beyond scar.

Female: similar to male, but with predominantly black hairs on scutum and scutellum; with dark brown hairs marginally on first and second basitarsi; punctures of tergum II a bit sparser near hind margin; scutellum without tuft.

Holotype: male, Santa Rosa, Guatemala, 16 Aug. 1968, at cineole, K. W. Tan (U.S.N.M.). Allotype female: Cafetal Concordia, Oaxaca, Mexico, E. Makrinius (U.S.N.M.). Paratypes: 6 males from type series, 4 at eugenol, 2 at cineole (4 in Dodson coll., 2 in Dressler coll.); 1 male, Managua, Nicaragua, 29 Jul. 1970, at cineole, M. McMahon (Dressler coll.); 1 male, 12 mi W Hidalgo, Michoacán, Mexico, 9 Oct. 1964, Fig-leaf gourd, A. E. & M. M. Michelbacher (Univ. California, Berkeley); 1 male, San Lorenzo, Michoacán, 4 Oct. 1963, *Cucurbita ficifolia,* A. E. & M. M. Michelbacher (Univ. California, Berkeley); 1 male, 25 km S Chilpancingo, Guerrero, 14 Jul. 1973, at cineole, R. L. Dressler 1482 (Dressler coll.); 1 male, km 186, Oaxaca – Pto. Escondido, Oaxaca, 15 Jul. 1968, at eugenol, C. H. Dodson 303 (Dodson coll.); 1 male, Cafetal Concordia, Oaxaca, E. Makrinius (from same nest as allotype female) (U.S.N.M.).

This species, even more than *E. crininota,* has the aspect of *E. viridissima,* but the males may be distinguished from that species at once by the form of the mid tibia tufts and by the small sternal tufts. Also, it differs in having a more rhomboid hind tibia, in having a wider smooth marginal band on tergum II and in having the paraocular white markings narrowed below (and often incomplete). The differences between *E. atroveneta* and *E. crininota* are discussed under the latter species. The female of *E. atroveneta* is immediately distinguished from all other species known from Mexico and Central America by the lack of a scutellar tuft. The epithet refers to the dark bluish green coloration.

RESUMEN

Se describen siete especies y una subespecie nuevas de México y Centro-América. *Euglossa obtusa* es frecuente en México, pero no se había colectado antes del uso de cineol como "cebo". *Euglossa dissimula* es abundante en Panamá y Colombia, pero se ha confundido con *E. igniventris.* Las otras especies son menos frecuentes, por lo menos en los museos. *Euglossa oleolucens,* del sudeste de Costa Rica, se parece mucho a *E. g. gorgonensis,* y se distingue fácilmente de *E. g. erythrophana,* con la cual es simpátrica.

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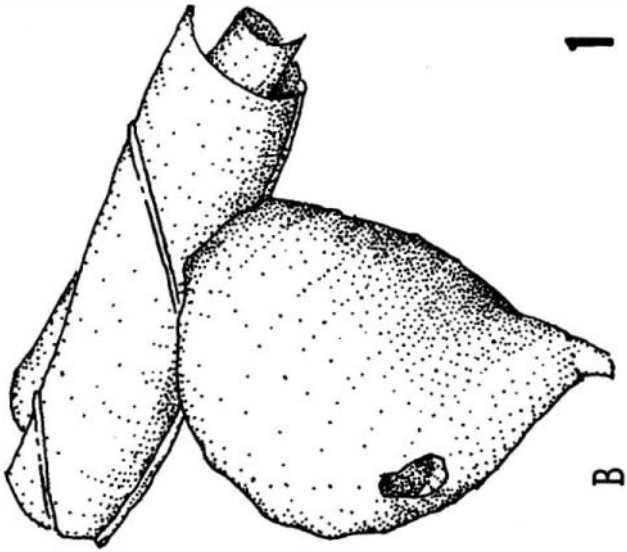
Fig. 1. Nest of *Euglossa turbinifex,* seen from directly in front of the entrance (A) and from one side (B). From a nest collected near Cerro Jefe, Panama.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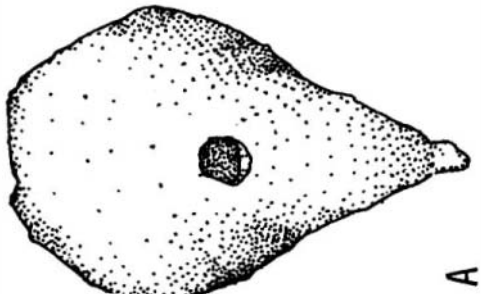
A

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Fig. 2. Outlines of the tufts at the upper ends of the mid tibia velvet area. All drawn from the left side with the aid of a camera lucida, and at approximately the same scale. A) *E. turbinifex;* B) *E. oleolucens;* C) *E. gorgonensis erythrophana;* D) *E. obtusa;* E) *E. dissimula;* F) *E. micans;* G) *E. crininota;* H) *E. atroveneta.*

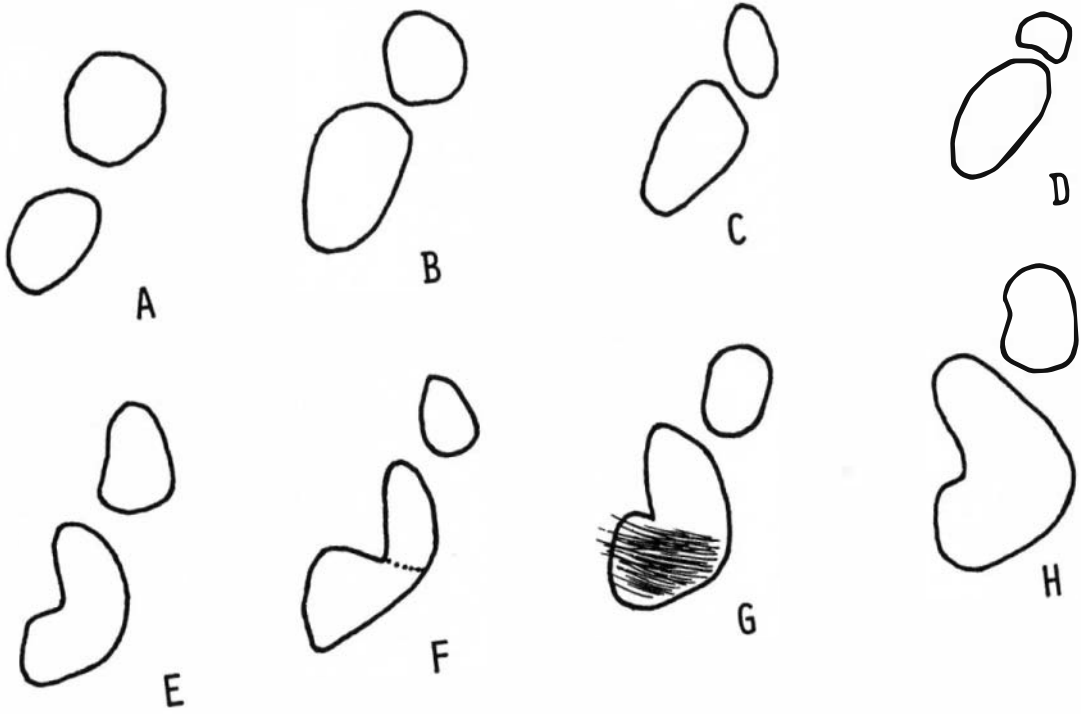
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Fig. 3. The left hind tibia of *Euglossa*. All drawn with the aid of a camera lucida and approximately to the same scale. A) *E. turbinifex;* B) *E. oleolucens;* C) *E. gorgonensis erythrophana;* D) *E. obtusa,* E) *E. dissimula;* F) *E. micans;* G) *E. crininota;* H) *E. atroveneta.*

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Fig. 4. The gonocoxites of *Euglossa oleolucens* (A) and *E. gorgonensis erythrophana* (B), drawn with the aid of a camera lucida

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