

Species of *Euglossa* of the *analis* group in the Atlantic forest (Hymenoptera, Apidae)

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ABSTRACT. The species of *Euglossa* Latreille, 1802 of the *analis* group inhabiting the Brazilian Atlantic forest are revised and identification keys for males and females are provided. Five species are recognized in the Atlantic forest: *Euglossa cognata* Moure, 1970, *Euglossa marianae* Nemésio, 2011, *Euglossa roderici* Nemésio, 2009 and two new species described here, *Euglossa botocuda* **sp. nov.** and *Euglossa calycina* **sp. nov.** These two new species have been misidentified by previous authors as Atlantic forest populations of, respectively, *Euglossa iopyrrha* Dressler, 1982 and *Euglossa mixta* Friese, 1899. Relevant morphological features are illustrated and distribution maps are also provided. Notes on the *analis* group are included and an additional available name, *Euglossa aureiventris* Friese, 1899, is placed in this species group.

KEY WORDS. Apinae; Euglossina; Euglossini; orchid bee; taxonomy.

Orchid bees (subtribe Euglossina) are a primarily Neotropical group of bees, occurring from the southern United States (MINCKLEY & REYES 1996, SKOV & WILEY 2005) to the southern Brazil (WITTMANN *et al.* 1988) and northern Argentina (PEARSON & DRESSLER 1985), and constitute a key group in forest environments of the Neotropical region (DODSON *et al.* 1969). The development of a specific technique to attract males, based on the attractiveness of synthetic compounds analogous to substances collected by them in the environment (DODSON *et al.* 1969), advanced to a high level the knowledge of their biology, diversity and species distribution (ROUBIK & HANSON 2004).

The subtribe comprises approximately 200 species (MOURE *et al.* 2007) described in five monophyletic genera (MICHEL-SALZAT *et al.* 2004, RAMÍREZ *et al.* 2010). *Euglossa* Latreille, 1802 is the most speciose genus, comprising, approximately, 100 species, divided into six subgenera (MOURE *et al.* 2007). The taxonomy of this genus was subject of recent studies, dealing with the description of new species (e.g., RAMÍREZ 2006, HINOJOSA-DÍAZ & ENGEL 2007, NEMÉSIO 2007, 2009), revalidation of synonymized names (e.g., FARIA & MELO 2007, NEMÉSIO 2009) and also the production of species checklists and catalog (MOURE *et al.* 2007, NEMÉSIO 2009, NEMÉSIO & RASMUSSEN 2011).

The diversity of orchid bees found in the Atlantic forest is lower than in the Amazon forest and Central America (NEMÉSIO & SILVEIRA 2007). Regarding *Euglossa*, MOURE *et al.* (2007) recognized 30 species inhabiting the Atlantic forest, 18 of them placed in the subgenus *Euglossa s. str.* Latreille [*analis* group: *E. analis* Westwood, 1840, *E. cognata* Moure, 1970 and *E. mixta*

Friese, 1899; *cordata* group: *E. chlorina* Dressler, 1982, *E. cordata* (Linnaeus, 1758), *E. fimbriata* Moure, 1968, *E. gaianii* Dressler, 1982, *E. leucotricha* Rebêlo & Moure, 1996, *E. melanotricha* Moure, 1967, *E. milenae* Bembé, 2007, *E. pictipennis* Moure, 1943, *E. securigera* Dressler, 1982 and *E. violaceifrons* Rebêlo & Moure, 1996; *purpurea* group: *E. anodorhynchi* Nemésio, 2006, *E. avicula* Dressler, 1982, *E. pleosticta* Dressler, 1982, *E. truncata* Rebêlo & Moure, 1996 and *E. townsendi* Cockerell, 1904], four in the subgenus *E. (Euglossella)* Moure, 1967 [*E. decorata*, Smith, 1874, *E. mandibularis* Friese, 1899, *E. perpulchra* Moure & Schlindwein, 2002 and *E. viridis* (Perty, 1833)], four in the subgenus *E. (Glossura)* Cockerell, 1917 [*E. annectans* Dressler, 1982, *E. ignita* Smith, 1874, *E. imperialis* Cockerell, 1922 and *E. iopoecila* Dressler, 1982], three in *E. (Glossurella)* Dressler [*E. crassipunctata* Moure, 1968, *E. sapphirina* Moure, 1968 and *E. stellfeldi* Moure, 1947] and one species placed in *E. (Glossuropoda)* Moure, 1989 [*E. cyanochlora* Moure, 1996]. The number of species presented by MOURE *et al.* (2007) is slightly different from the proposal of NEMÉSIO (2009), in which 35 species are assumed to be inhabiting this biome. Distinct status given to a few species, mainly in the subgenera *E. (Glossura)* and *E. (Glossurella)*, are the reason for this difference in species number.

Despite the lower diversity in the Atlantic forest, new species continue to be described (e.g., REBÊLO & MOURE 1996, MOURE & SCHLINDWEIN 2002, NEMÉSIO 2006, 2009, 2010a, 2011b, FARIA & MELO 2011), which suggests that orchid bee richness may be underestimated. Considering the outstanding biodiversity of this

biome – one of the 25 world's biodiversity hotspots (MYERS *et al.* 2000) – coupled with rapid habitat loss and anthropogenic pressure [the Atlantic forest has lost more than 93% of its original area (TABARELLI *et al.* 2005)], taxonomic studies focusing on species inhabiting this biome are imperative. Besides the intrinsic value of knowing the biodiversity (see BENGTTSSON *et al.* 1997), information on the taxonomy of a group is fundamental to the formulation of effective programs for species conservation (LOWRY 2001, BRITO 2004).

According to MOURE *et al.* (2007), three species of the *analis* group inhabit the Brazilian Atlantic forest: *E. analis*, *E. cognata* and *E. mixta*. NEMÉSIO (2009), on the other hand, considered that five species can be found in this domain, the above three considered by MOURE *et al.* (2007), besides *E. iopyrrha* Dressler, 1982 and *E. roderici* Nemésio, 2009. It must be pointed out that when MOURE *et al.* (2007) published their contribution, the description of *E. roderici* had not yet been published. The identity of the species in the *analis* group in the Atlantic forest is far from being resolved. The statement of NEMÉSIO (2009: 143) in his monograph illustrates this scenario: "Further studies are needed for the entire *Eg. analis* group from the Atlantic Forest, particularly the specimens treated as *Eg. mixta* and *Eg. iopyrrha*, to be conclusive concerning their actual identity. It is possible that the specimens treated as *Eg. mixta* and *Eg. iopyrrha* from the Atlantic Forest belong to new, undescribed species". Indeed, the form occurring in the Atlantic forest, and previously identified as *E. analis*, has been recently described by NEMÉSIO (2011b) as a new species – *Euglossa marianae* Nemésio, 2011.

Another important issue regarding the identity of the species in the *analis* group found in the Atlantic forest concerns their geographic range. Three of the five species assumed to inhabit this biome supposedly have wide distributions in the Neotropical region: *E. iopyrrha* would be found in the Atlantic and Amazon forests (South American species *sensu* NEMÉSIO 2009), while *E. cognata* and *E. mixta* are assumed to be pan-neotropical species, being both found in South and Central America (MOURE *et al.* 2007, NEMÉSIO 2009). The correct definition and identification of widely distributed species is one of the main challenges in taxonomy (e.g., GILL & KEMP 2002) and, particularly regarding the species placed in the *analis* group, the type locality of the four aforementioned species is not in the Atlantic forest domain. Therefore, it is possible that the names used in the identification of the forms inhabiting the Atlantic forest may constitute, in fact, a misapplication of names of species found elsewhere in the neotropics. The accurate identification of species of the *analis* group may be even more important in this scenario, since some of them (e.g., *E. marianae*) have been considered bioindicators, due to their close association to well-preserved forest fragments (TONHASCA *et al.* 2002, NEMÉSIO & SILVEIRA 2006, RAMALHO *et al.* 2009 as *E. analis*, see NEMÉSIO 2011b for details).

This contribution represents a taxonomic study of the species belonging to the *analis* group inhabiting the Brazilian

Atlantic forest, including description of new species, new sex associations, identification key based both on males and females, and distribution maps.

MATERIAL AND METHODS

Depository institutions and their acronyms are as follows: Departamento de Zoologia, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil (DZMG); Coleção de Entomologia Pe. J.S. Moure, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil (DZUP); Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (MZSP); Laboratório de Ciências Ambientais, Universidade Estadual do Norte Fluminense, Campos dos Goytacazes, Brazil (UENF); Hope Entomological Collections, Oxford University Museum of Natural History, Oxford, England (OUM); and Zweite Zoologische Abteilung, Naturhistorisches Museum Wien, Vienna, Austria (NMW).

The morphological terminology adopted here follows DRESSLER (1982), MICHENER (2000), and ROUBIK (2004). Metasomal terga and sterna are indicated, respectively, as T1 to T7, and S1 to S8. The density of punctation and intervals between the punctures were based on relative puncture diameter, pd (e.g., <1pd: less than 1x the puncture diameter between the punctures). Also, the term *beveled puncture* follows the definition presented in CURE (1989) and translated by ALMEIDA (2008) from the Portuguese "pontuação biselada". All measurements are in millimeters and integumental color was described under a white fluorescent lamp. The color images were obtained with a Leica DFC 500 camera, associated to a stereomicroscope MZ 16, and processed by the software Automontage (Syncroscopy), a facility provided by the Taxonline Project (Rede Paranaense de Coleções Biológicas, Departamento de Zoologia, UFPR).

The labels of examined specimens were transcribed in the section "Material examined", where one inverted bar symbol (\) indicates the different lines in the label, two inverted bars (\\) indicate information on the back side of the label, and the double quotation marks indicate different labels associated with one specimen. In the labels, the signs of male and female were transcribed as M and F, respectively. When a label was similar to other associated to a specimen, only the different information between the labels is presented between single quotation marks. In the Appendices 1 and 2, when the depository institution is not indicated, the material belongs to the DZUP.

Distribution maps for the studied species were generated in DIVA-GIS 7.3 (HIJMANS *et al.* 2001), based on locality data from examined specimens. Records outside the study area were not included in the maps for *E. cognata*, a species widely distributed outside eastern Brazil. In the maps, the Atlantic forest is represented in grey. The shapefile, derived from the ecoregions presented in OLSON & DINERSTEIN (2002), was obtained at <http://worldwildlife.org/science>.

TAXONOMY

The *analis* group

In an important paper for the taxonomy of *Euglossa*, DRESSLER (1978) dealt with the infrageneric classification of this genus. Besides the description of a new subgenus and delimitation of other subgenera, Dressler proposed the delimitation of some species groups: "Then I will present a revised subgeneric classification and delineate a number of species groups that have proven useful in the identification of *Euglossa*" (DRESSLER 1978: 188). According to his proposition, the subgenus *Euglossa sensu stricto* was divided into five species groups: *analis*, *viridissima*, *cybelia*, *purpurea* and *cordata*.

The *analis* group was delimited by DRESSLER (1978) based on the following characters found in males: posterior tuft of mid tibia usually reduced or lacking, anterior tuft shallowly notched or attenuate; hind tibia usually rhomboid; mandible with two or three teeth; parocular white markings present; integument predominantly dark blue-violet with the apical terga usually green or bronze.

The species in this group are also characterized by the coarse and dense punctation on the mesoscutum and scutellum, and by the preponderance of beveled punctures on the terga, particularly on T2. Also, in this group the lateral corners of the pronotal collar are conspicuously pointed, both in males and females. This feature had been already pointed out by MOURE (1968: 22, 1970: 157) in the original descriptions of *Euglossa villosiventris* Moure, 1968 and *E. cognata*, respectively, as well as by DRESSLER (1982: 122). Males of most species of the *analis* group, as stated by FARIA & MELO (2007: 276), also possess a characteristic depression on the inner surface of their hind tibia. Only males of *E. analis* and *E. villosiventris* have unmodified hind tibiae, lacking the depression.

In DRESSLER'S (1978) original proposition, the *analis* group contained four species, *E. analis*, *E. cognata*, *E. mixta* and *E. villosiventris*. After his work, five additional species have been proposed: *Euglossa bidentata* Dressler, 1982, *E. iopyrrha*, *Euglossa retroviridis* Dressler, 1982, *E. roderici* and *E. marianae*.

Another available name, *Euglossa aureiventris* Friese, 1899, also belongs in the *analis* group. The female lectotype (NMW), examined through photographs as well as based on Moure's notes, shows unequivocal features associated with this species group: pattern of body color with a predominantly greenish-blue head and mesosoma, including legs, and basal terga mostly coppery red; lateral corners of the pronotal collar pointed; scutellar tuft relatively small, its length occupying a little less than one-half of scutellum length; pubescence on T2 dense and composed of relatively long dark setae. It is possible that *E. aureiventris* might turn out to be the female of *E. analis* or of *E. retroviridis*.

Besides the ten species mentioned above and the two new ones proposed here, study of the DZUP collection indicates that additional undescribed species should be recognized in the *analis* group (G.A.R. Melo, unpub. data). However, a revision of the

entire group is beyond the scope of the present contribution, which focuses on the species found in the Brazilian Atlantic forest, considering as separate species some forms previously regarded as belonging to taxa with a wider geographic distribution.

Five species are recognized based on males for this region: *E. cognata*, *E. marianae*, *E. roderici* and the two newly proposed species, *E. botocuda* sp. nov. and *E. calycina* sp. nov. Except for *E. botocuda* sp. nov., it was possible to confidently associate female specimens for the other four species. Although the current taxonomy of orchid bees is based almost exclusively on males, description of females is also an important step to improve our precarious knowledge of sex association for the species of *Euglossa*.

Distributional patterns of two species, *E. botocuda* sp. nov., and *E. roderici* should be highlighted, since they seem to be restricted to particular areas in the Atlantic forest. *Euglossa botocuda* sp. nov. is restricted to the "Hileia Baiana", a pattern that also appears in the distribution of other euglossine species, such as *Eufriesea brasilianorum* (Friese, 1899) and *E. cyanochlora* (see NEMÉSIO 2009). The "Hileia Baiana" region, encompassing southern Bahia and northern Espírito Santo, is recognized by its high levels of endemism (e.g., THOMAS *et al.* 1998) and the discovery of *E. botocuda* sp. nov. reinforces this pattern and the importance of this particular region in the context of the biogeography of the Atlantic forest. *Euglossa roderici*, on the other hand, is restricted to the coastal forests from northeastern São Paulo to northern Santa Catarina. Endemicity in this region of the Atlantic forest has also been previously detected (e.g., PINTO-DA-ROCHA *et al.* 2005), a pattern supported by the presence of *E. roderici*. It must be pointed out, however, that the southern portion of the Atlantic forest, in southern São Paulo and Paraná states, has a low diversity of euglossine bees, with few endemic elements (MATTOZO *et al.* 2011).

Key to the species of the *analis* group in the Atlantic forest (geographic distribution indicated by acronyms of Brazilian states)

Males

1. Mandible bidentate (Fig. 26). T5 varying from coppery to golden green, T6-T7 bright green (Fig. 27). Posterior mesotibial tuft conspicuous, approximately as large as half ocellar diameter (Fig. 47). Depression on inner surface of hind tibia restricted to its apical half (Fig. 54). BA, ES, MG, RJ, SP *Euglossa marianae*
- 1'. Mandible tridentate (Figs 3, 9, 18). T5-T7 coppery red, bright red or magenta (Figs 4, 10, 19, 35). Posterior mesotibial tuft absent or vestigial (Figs 43-45, 49). Depression on inner surface of hind tibia extending over part of its basal half (Figs 51-53, 55) 2
2. Slightly larger bees, maximum head width usually over 5 mm. Punctation on mesoscutum very dense, punctures almost contiguous; pilosity on disc relatively short, longest setae conspicuously shorter than length of first flagellomere.

- Anterior mesotibial tuft comma-shaped, its apical portion conspicuously narrowed and directed anterad (Fig. 45). Hind tibia more swollen (best seen in posterior view); postglandular fringe relatively short, longest setae distinctly shorter than maximum width of glandular opening in outer view (Fig. 20). BA, ES, MG *Euglossa cognata*
- 2'. Smaller bees, maximum head width usually less than 5 mm. Punctuation on mesoscutum less dense, punctures in general not contiguous and separated from one another by one-third to one-half puncture diameter; pilosity on disc longer, longest setae about as long as length of first flagellomere. Anterior mesotibial tuft oblong, its apical portion about as wide as basal portion (Figs 43, 44, 49). Hind tibia less swollen; postglandular fringe longer, longest setae at least as long as maximum width of glandular opening in outer view (Figs 51, 52, 55) 3
3. Head and mesosoma, including lateral portion of mesepisternum, dark blue to violet. Parocular ivory stripe short and slender, widely separated from clypeus (Fig. 34). Pilosity on mesepisternum and fore femur almost entirely black (Fig. 33). SP, PR, SC *Euglossa roderici*
- 3'. Head and mesosoma mostly blue with some bluish-green areas, especially on head; lateral portion of mesepisternum mostly bluish-green to greenish-blue. Parocular ivory stripe usually long and almost reaching clypeus (Figs 2, 8), only rarely short and slender. Pilosity on mesepisternum and fore femur mostly white, at most with some dark hairs intermixed (Figs 1, 7) 4
4. Anterior mesotibial tuft varying from oblong to quadrangular, its anterior margin almost straight, notch between basal and apical lobe very inconspicuous (Fig. 44), lobes when noticeable subequal in length. Pit around vestigial posterior mesotibial tuft conspicuous, extending over margin of tibia (Fig. 11). Mandibular teeth subequal in length (Fig. 9). Postglandular fringe relatively short (Fig. 12), longest setae ca. 0.45 mm in length. Protuberance on inner surface of apex of hind tibia less pronounced than projection over base of inner spur. T5 dark magenta to purple, T7 dark red. PE, BA, ES, MG *Euglossa calycina* **sp. nov.**
- 4'. Anterior mesotibial tuft distinctly oblong, its anterior margin with a discrete notch, basal lobe distinctly longer than apical lobe (Fig. 43). Posterior mesotibial tuft absent, pit very shallow and inconspicuous. Apical mandibular tooth distinctly longer than subapical teeth (Fig. 3). Postglandular fringe longer (Fig. 5), longest setae ca. 0.6 mm in length. Protuberance on inner surface of apex of hind tibia more developed than projection over base of inner spur. T5 magenta laterally and dark red in the middle, T7 bright coppery red. BA, ES *Euglossa botocuda* **sp. nov.**

Females (the female of *E. botocuda* **sp. nov.** is not known)

1. Head and mesosoma, including legs, mostly dark blue to violet (Figs 37-40), except for greenish-blue lower parocular

area and lower gena. Mesepisternum and propodeum with mostly dark pubescence. SP, PR, SC *Euglossa roderici*

- 1'. Head predominantly green (Figs 14, 22, 30), at most with reddish-yellow reflexes on clypeus and frons; when blue portions present, restricted to upper frons and vertex; mesosoma variable, at least mesepisternum, metepisternum and propodeum mostly green. Mesepisternum and propodeum with mostly white pubescence or at most with some dark hairs intermixed 2
2. Clypeus, lower parocular area and mid frons yellowish-green, with some reddish and bluish reflexes (Fig. 22); mid longitudinal carina on clypeus reddish-purple; upper frons and vertex mostly dark blue (Fig. 23); mesoscutum and scutellum mostly greenish-blue to blue (Fig. 24). BA, ES, MG *Euglossa cognata*
- 2'. Head and mesosoma predominantly green, at most with some bluish reflexes or small blue portions on tegulae and metapostnotum (Figs 14-16, 30-32) 3
3. Vertex and mesoscutum entirely green (Figs 31, 32); metapostnotum green; T5-T6 (Fig. 29) and metallic portions of sterna bright green. BA, ES, MG, RJ, SP *Euglossa marianae*
- 3'. Vertex and mesoscutum with abundant bluish reflexes (Figs 15, 16); metapostnotum greenish-blue; T5-T6 (Fig. 13) and metallic portions of sterna coppery to dark red. PE, BA, ES, MG *Euglossa calycina* **sp. nov.**

Euglossa botocuda **sp. nov.**

Figs 1-6, 43, 51, 56

Diagnosis. This species can be recognized by its tridentate mandible; posterior mesotibial tuft absent, and surrounding pit very shallow and inconspicuous; anterior mesotibial tuft distinctly oblong, its anterior margin with a discrete notch, basal lobe longer than apical lobe; apical lobe of anterior tuft distinctly wider than basal lobe; depression on the inner surface of hind tibia extending over its basal half (Fig. 51); a relatively long postglandular fringe; T5 magenta laterally and dark red in the middle, T6-T7 bright coppery red.

Description. Holotype male. Body length: 10.9; head width: 4.7; maximum interorbital distance: 3.0; Color: ivory parocular markings well-developed, almost reaching clypeus and extending to tangent to lower rim of antennal sockets; clypeus blue to turquoise blue; upper frons, vertex and upper gena blue; anterior surface of scape black; mesoscutum and scutellum dark blue with some purple reflexes; mesepisternum mostly blue laterally and becoming golden green ventrally; hind tibia blue becoming turquoise blue toward basitarsus; T1-T4 purple, with some dark blue reflexes, T3-T4 with stronger reddish reflexes laterally; T5 red with some purple reflexes; T6 and T7 coppery orange red.

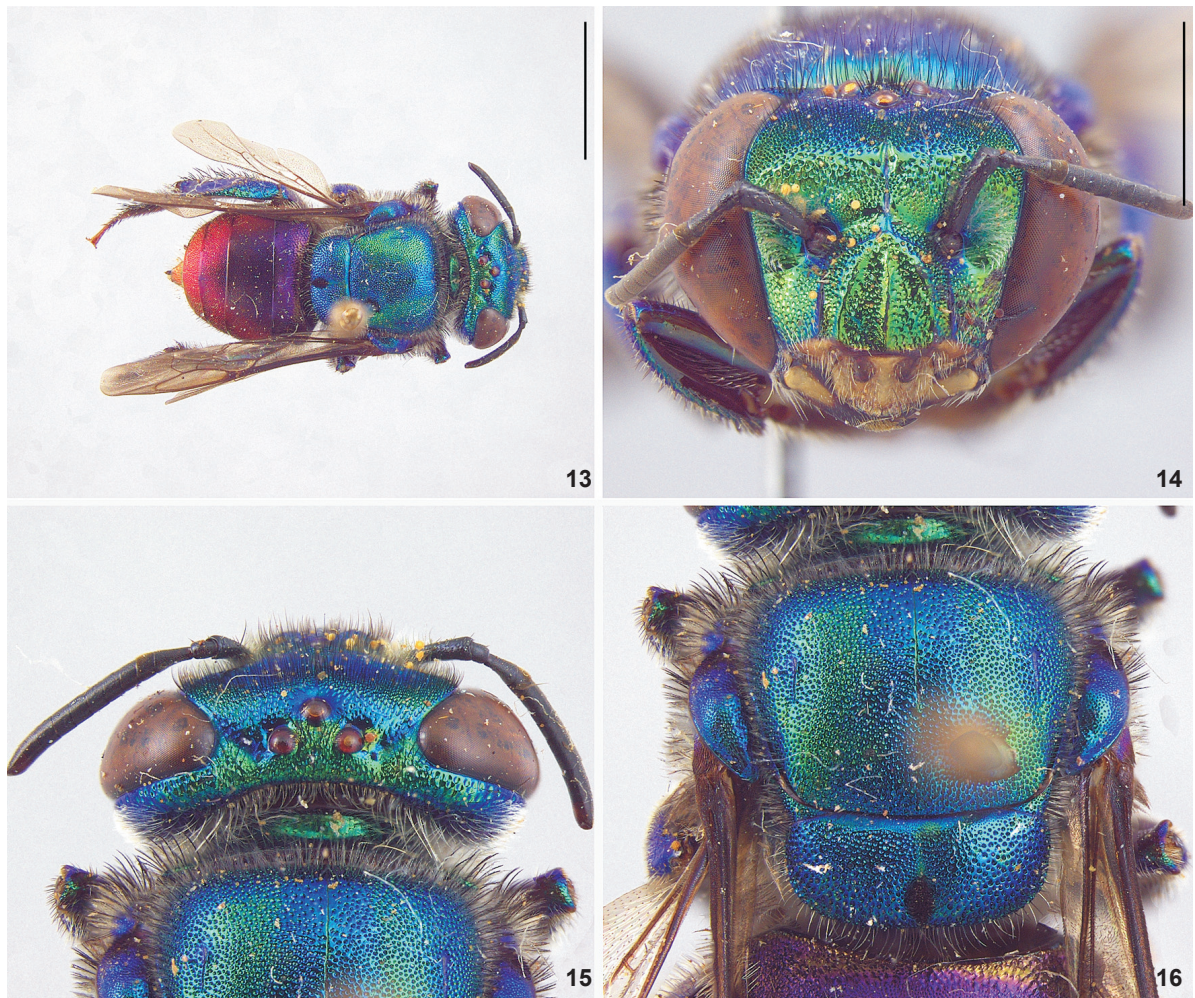
Pubescence: predominantly white; gena densely covered with long plumose white hairs (ca. 0.98); transverse band on upper frons with mostly black setae (longest ones ca. 0.43);



Figures 1-6. *Euglossa botocuda* sp. nov., male. All figures (except number 3), holotype male: (1) habitus, lateral view; scale = 5 mm; (2) head, frontal view; scale = 2 mm; (3) details of the teeth of mandible (male from Porto Seguro, Bahia); scale = 1 mm; (4) T5-T7; (5) hind tibia, lateral view; (6) details of the inner surface of the hind tibia, posterior view. Figures 4-6 at same scale as Fig. 2.



Figures 7-12. *Euglossa calycina* sp. nov., holotype male: (7) habitus, lateral view; scale = 5 mm; (8) head, frontal view; scale = 2 mm; (9) details of the teeth of mandible; scale = 1 mm; (10) T5-T7; (11) mid tibia, details of the pit around vestigial posterior tuft; scale = 0.5 mm; (12) hind tibia, lateral view. Figures 10 and 12 at same scale as Fig. 8.



Figures 13-16. *Euglossa calycina* sp. nov., female from Santa Teresa, Espírito Santo: (13) habitus, dorsal view; scale = 5 mm; (14) head, frontal view; scale = 2 mm; (15) head, dorsal view; (16) thorax, dorsal view. Figures 15 and 16 at same scale as Fig. 14.

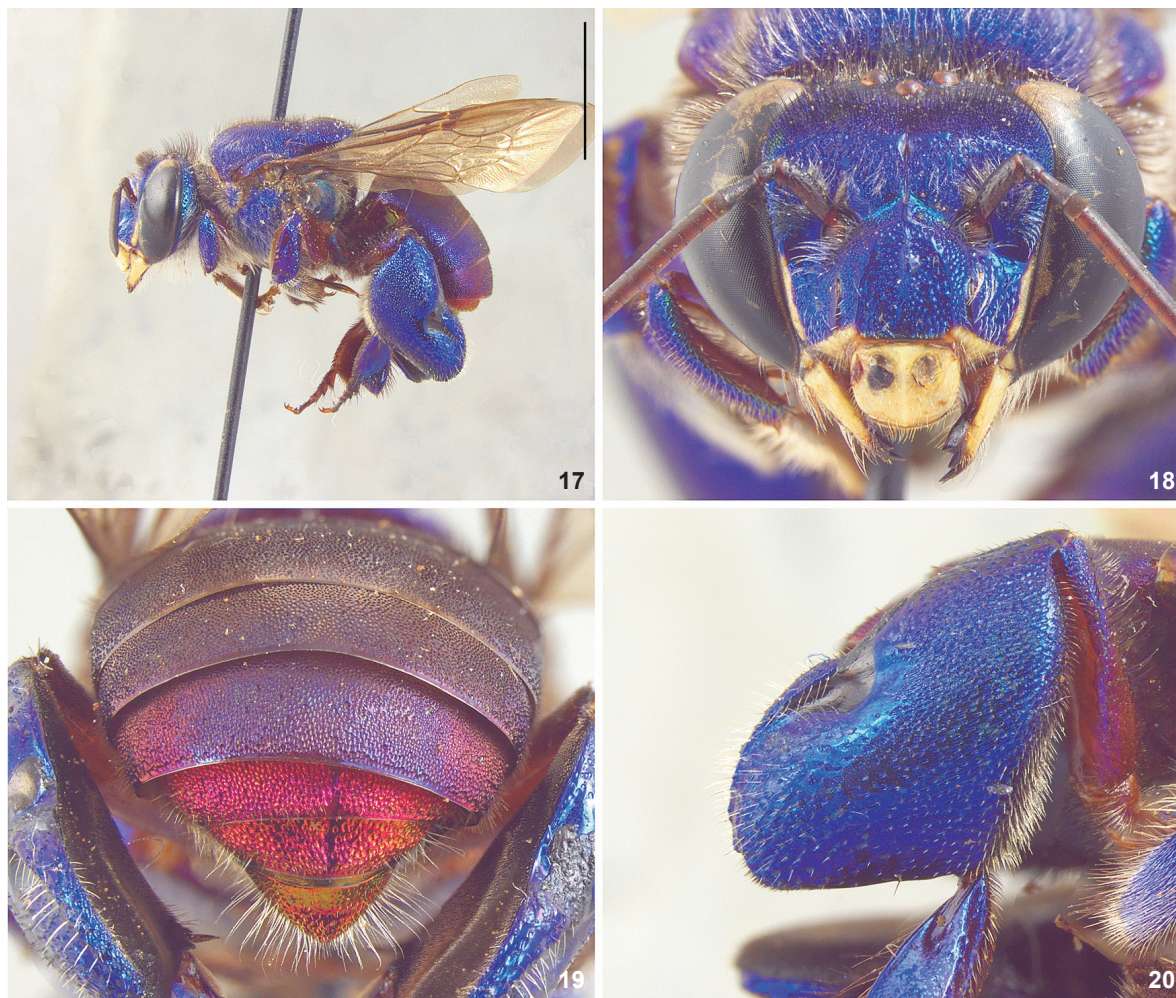
long black setae on vertex ca. 0.82; mesoscutum covered with mostly simple black setae (ca. 0.35-0.38); longest black setae along posterior margin of scutellum ca. 0.43; upper portion and posterior one-half of lateral portion of mesepisternum with abundant plumose black setae intermingled; upper quarter of metepisternum with mostly finely plumose black setae; anterior mesotibial tuft as in Fig. 43; posterior tuft vestigial, practically absent; longest setae of postglandular fringe with ca. 0.55-0.6 mm in length; T2-T4 covered mostly with short black setae, about as long as puncture diameter; T5-T7 mostly with long white setae, longest ones on T7 ca. 0.6 mm in length.

Integumental surface: mesoscutum and scutellum densely and coarsely punctured, distance between punctures about one-third pd on most of mesoscutum, punctures on scutellum slightly coarser, especially along its posterior margin; central portion of disc of T2-T3 with relatively coarse and strongly

beveled punctures, puncture diameter about as large as those on lower parocular area; T4 with slightly coarser and more beveled punctures; on T5-T7, punctures much coarser and more strongly beveled.

Structure (measurements in mm): mandible tridentate, apical mandibular tooth distinctly longer than the subapical teeth; head about 1.75x wider than long (4.8:2.7); oculo-orbital distance, in dorsal view, about 1.7x the distance between posterior ocelli (0.59:0.35); scape, excluding radicle, about 3.3x longer than its maximum width (0.90:0.27); clypeus 1.03x longer than wide (1.38:1.33); scutellum about 2.3x wider than long (3.03:1.33); pit around vestigial posterior mesotibial tuft very shallow and inconspicuous, hind tibia about 1.03x longer than the maximum width (3.27:3.15), depression on its inner surface extending over part of its basal half.

Female. Unknown.



Figures 17-20. *Euglossa cognata*, male from Porto Seguro, Bahia: (17) habitus, lateral view; scale = 5 mm; (18) head, frontal view; scale = 2 mm; (19) T5-T7; (20) hind tibia, lateral view. Figures 19 and 20 at same scale as Fig. 18.

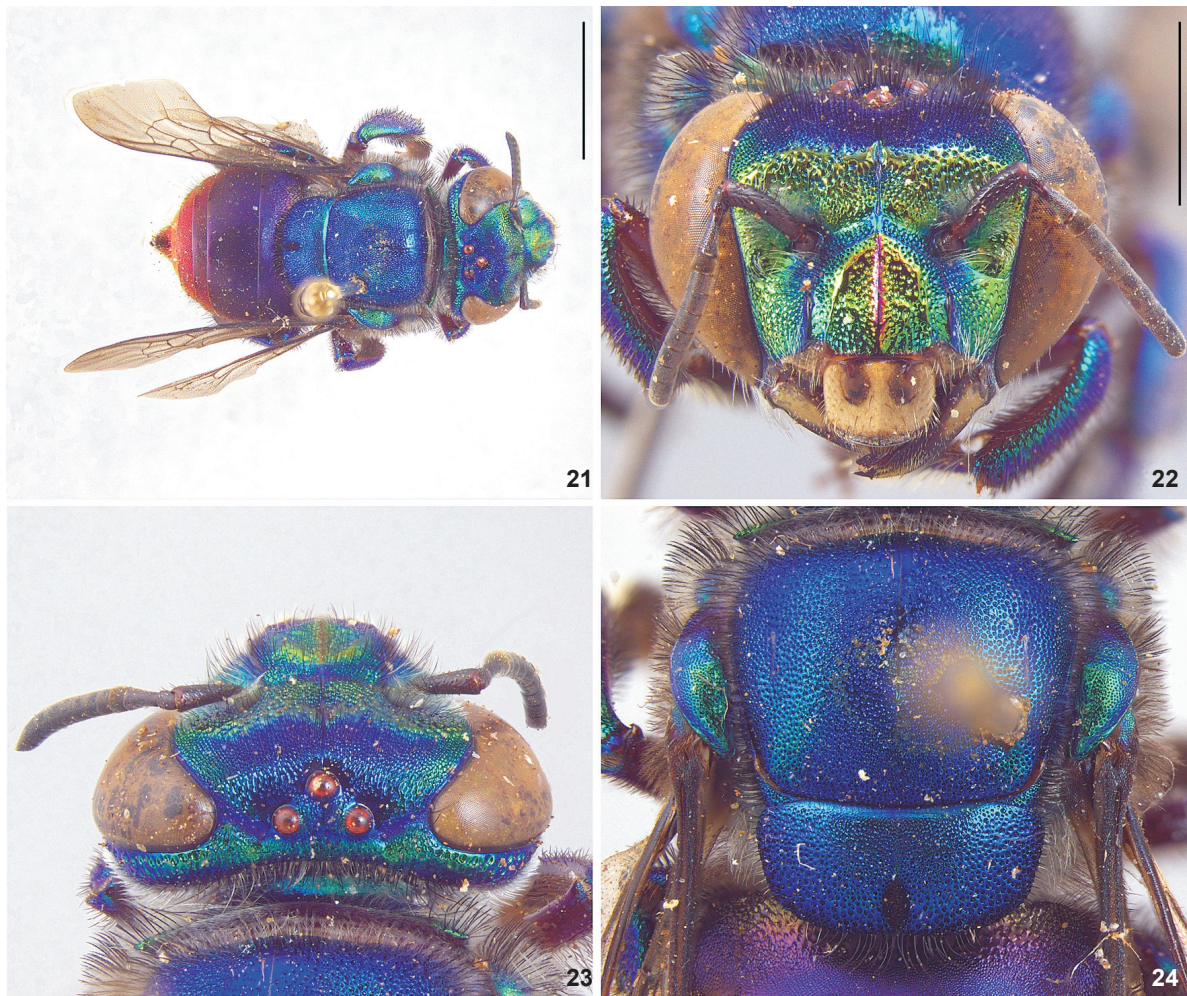
Type material. Holotype male, "Brasil, Bahia, Itamaraju, 1-10.iii.1971, C. Elias" (DZUP). Paratypes: 1 male (DZUP), "BRAZIL: BAHIA\Res. Mte. Paschoal\8/XI/1968\R. L. Dressler\1251" "\methyl\salicylate" "mixta"; 1 male (DZUP), "BRAZIL: E. Santo\No. Linhares\12/XI/1968\R.L.Dressler\1252" "\methyl cinnamate"; 1 male (DZUP), "BRAZIL: E. Santo\CONCEIÇÃO DA BARRA\13 XI/1968 6\R. L. Dressler 1285" "\Methyl\salicylate"; 1 male (DZUP), "BRAZIL: E. Santo\CONCEIÇÃO DA BARRA\15 XI/1968 6\R. L. Dressler 1285" "\Methyl\salicylate"; 1 male (DZUP), "BRAZIL: E. Santo\CONCEIÇÃO DA BARRA\15 XI/1968 6\R. L. Dressler 1285" "\Methyl\salicylate" "Euglossa iopyrrha Moure\det. R. L. Dressler 1968\E. cognata?".

Distribution (Fig. 56). From southern Bahia to northern Espírito Santo, restricted to the lowland coastal forests. NEMÉSIO'S (2009: 132) records of *E. iopyrrha* from mountainous sites in

Espírito Santo (Santa Teresa and Domingos Martins) mostly likely refers to *E. calycina* **sp. nov.** and not to *E. botocuda* **sp. nov.**

Etymology. The specific epithet honors the "botocudos" (also known as Aimorés or Tapuias), the foreign name for an ethnic group of natives famous for their bravery. They inhabited large areas of the Brazilian Atlantic forest, probably from the "Vale do Salitre" (Bahia) in the north to the "Rio Doce" (Espírito Santo) in the south (PARAÍSO 1992, DUARTE, 1998) encompassing most of the known distribution of this new species.

Remarks. *Euglossa botocuda* **sp. nov.** is very similar to *E. iopyrrha*, both having the apical mandibular tooth distinctly longer than the subapical teeth and lacking the posterior tuft of the mid tibia. It differs from *E. iopyrrha* by its predominantly greenish-blue head (mostly violet blue in *E. iopyrrha*); in the details of the anterior midtibial tuft, shorter and with basal and apical lobes very weakly differentiated from one another,



Figures 21–24. *Euglossa cognata*, female from Conceição da Barra, Espírito Santo: (21) habitus, dorsal view; scale = 5 mm; (22) head, frontal view; scale = 2 mm; (23) head, dorsal view; (24) thorax, dorsal view. Figures 23 and 24 at same scale as Fig. 22.

anterior margin of apical lobe aligned with that of basal lobe (in *E. iopyrrha*, midtibial tuft longer and with basal and apical lobes distinct from one another, anterior margin of basal lobe distinctly separate from anterior margin of mid tibia compared to apical lobe; Fig. 46); depression on inner surface of hind tibia relatively long, extending over part of its basal half (in *E. iopyrrha*, depression restricted to apical half of hind tibia). Previous papers dealing with the Atlantic forest forms have misinterpreted *E. botocuda* sp. nov. as populations of *E. iopyrrha* from eastern Brazil (MOURE 1970: 155, SILVEIRA *et al.* 2002: 77, NEMÉSIO & SILVEIRA 2007: 887, NEVES & VIANA 2003: 225, 226); NEMÉSIO 2009: 4, 13, 17, 74, 102, 114, 132, 141, 143, 149, 208, 209, 210, 211).

Attractive compounds. Cineole, methyl cinnamate and methyl salicylate.

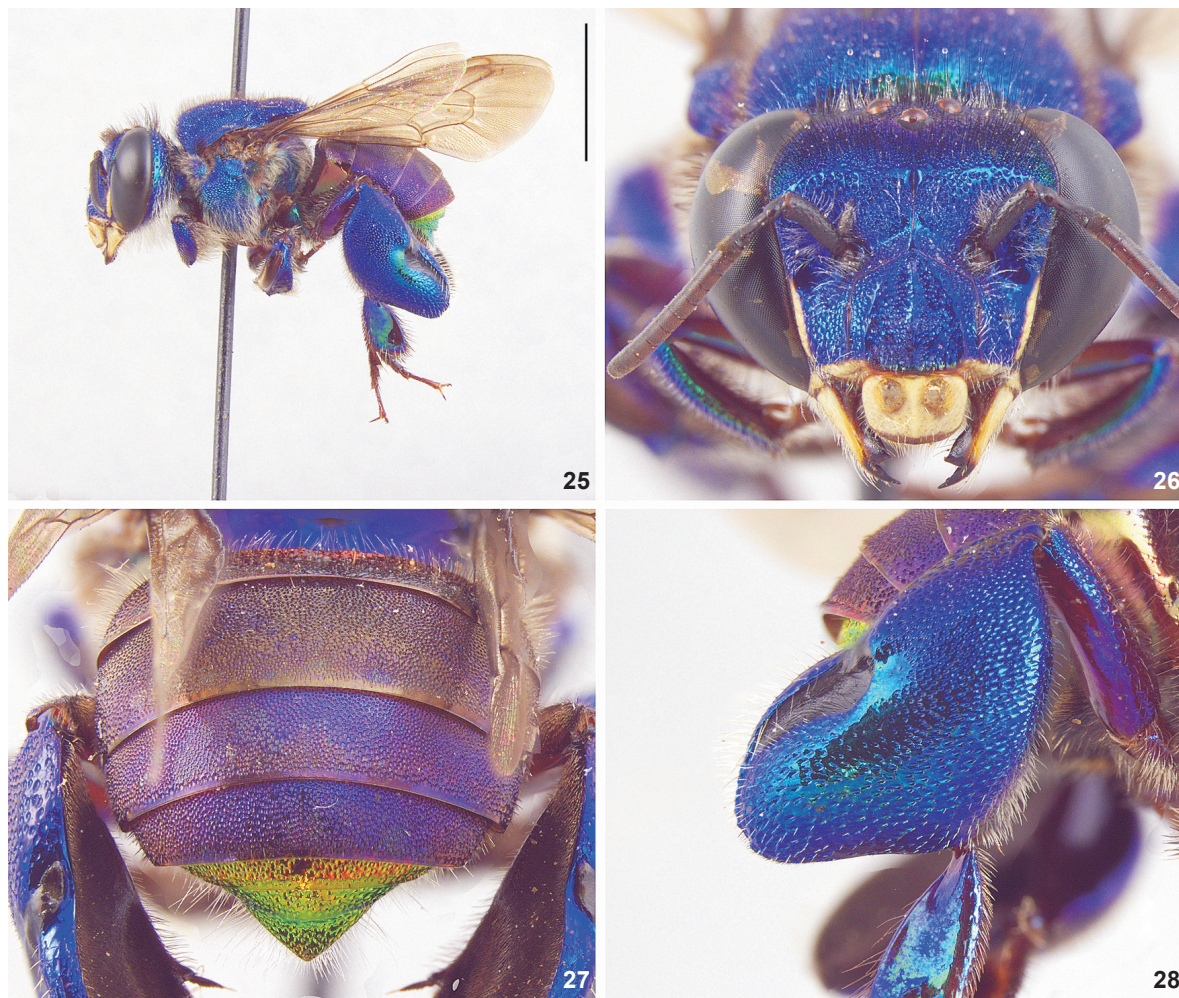
Additional examined material. 107 males (see Appendix 1).

Euglossa calycina sp. nov.

Figs 7–16, 44, 52, 57

Diagnosis. Males of this species can be recognized by their tridentate mandible, the teeth subequal in length; posterior mesotibial tuft vestigial; anterior midtibial tuft varying from oblong to quadrangular, its anterior margin almost straight, notch between basal and apical lobe very inconspicuous, lobes when noticeable subequal in length; pit around vestigial posterior mesotibial tuft very conspicuous, extending over margin of tibia; depression on the inner surface of hind tibia extending over its basal half (Fig. 52); T5–T6 dark magenta to purple, T7 dark red.

Description. Holotype male. Body length: 10.8; head width: 4.7; maximum interorbital distance: 2.9. Colour: ivory parocular markings well-developed, lower portion wider and almost in contact with clypeus, upper portion extending to lower



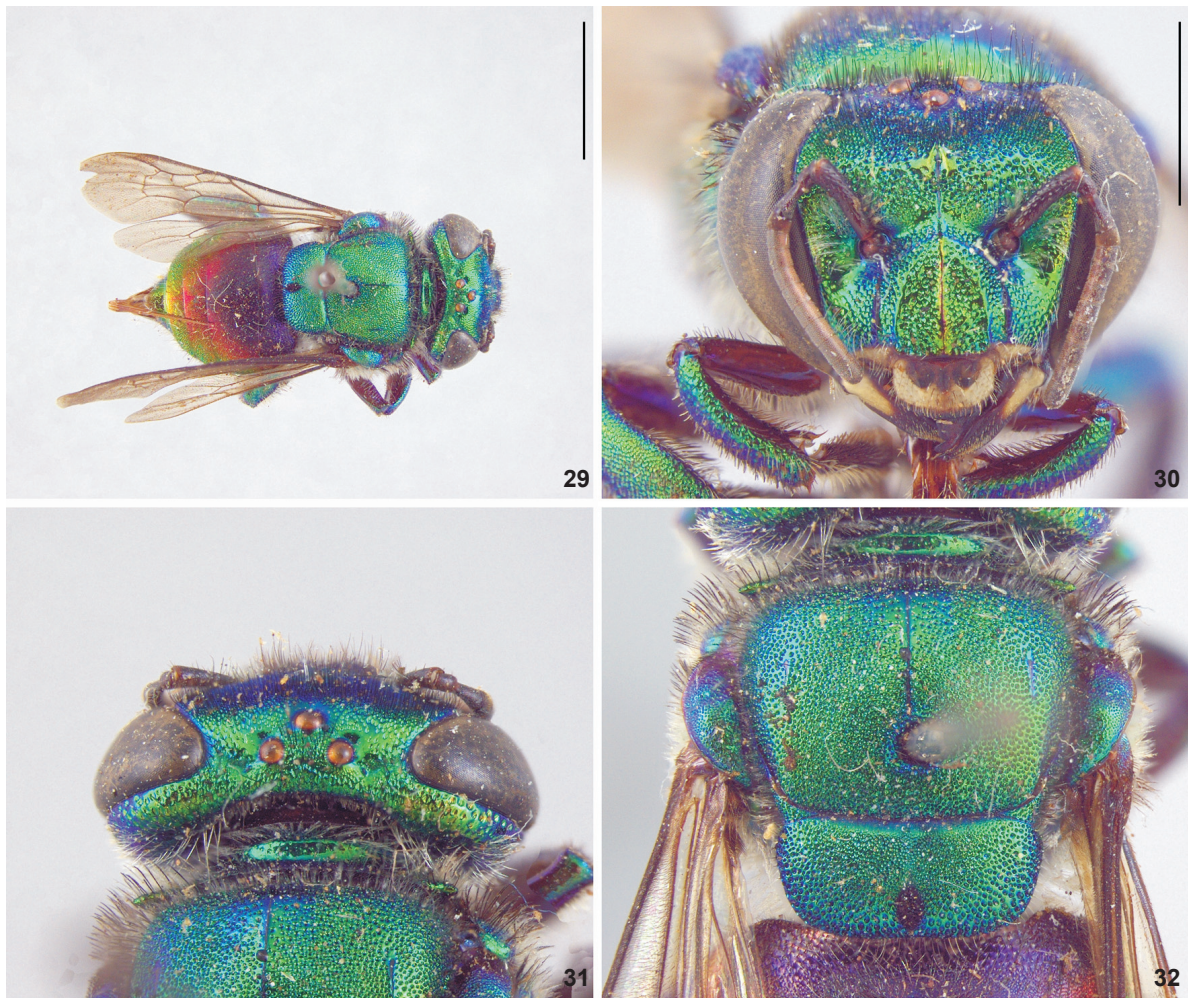
Figures 25-28. *Euglossa marianae*, male from Conceição da Barra, Espírito Santo: (25) habitus, lateral view; scale = 5 mm; (26) head, frontal view; scale = 2 mm; (27) T5-T7; (28) hind tibia, lateral view. Figures 27 and 28 at same scale as Fig. 26.

rim of antennal sockets; disc of clypeus blue, with a lower transverse green band adjacent to the labrum; lateral portion of clypeus and lower parocular area mostly greenish-blue; frons green to turquoise blue; anterior surface of scape black; mesoscutum and scutellum mostly dark blue, with some violet reflexes; mesepisternum mostly green, except for turquoise blue upper portion; hind tibia mainly dark blue, with turquoise blue reflexes toward hind basitarsus; T1-T3 mainly purple; T4 violet basally and magenta along marginal zone; T5 dark magenta; T6 and T7 dark red with magenta reflexes.

Pubescence: predominantly white; gena densely covered with long plumose white hairs (ca. 0.90); transverse band on upper frons with mostly black setae (longest ones ca. 0.47); long black setae on vertex ca. 0.78; mesoscutum covered with mostly simple black setae (ca. 0.35-0.40); longest black setae along posterior margin of scutellum ca. 0.39; lateral portion of

mesepisternum with thick plumose black setae intermixed with finely plumose white hairs; upper half of metepisternum densely covered with finely plumose black setae; upper portion of propodeum laterally, anteriorly to spiracle, with abundant dark plumose setae; anterior mesotibial tuft as in Fig. 44; posterior tuft absent; postglandular fringe with ca. 0.40-0.45 mm in length; T2-T4 covered mostly with short black setae, about as long as puncture diameter; T5 with a mixture of short black setae and sparse long white setae; T6-T7 mostly with long white setae, longest ones on T7 ca. 0.74 mm in length.

Integumental surface: mesoscutum densely and coarsely punctured, distance between punctures about one-third pd on most of mesoscutum; punctures on disc of scutellum sparser; central portion of disc of T2-T3 with relatively coarse and strongly beveled punctures, puncture diameter about as large as those on lower parocular area; T4 with slightly coarser and



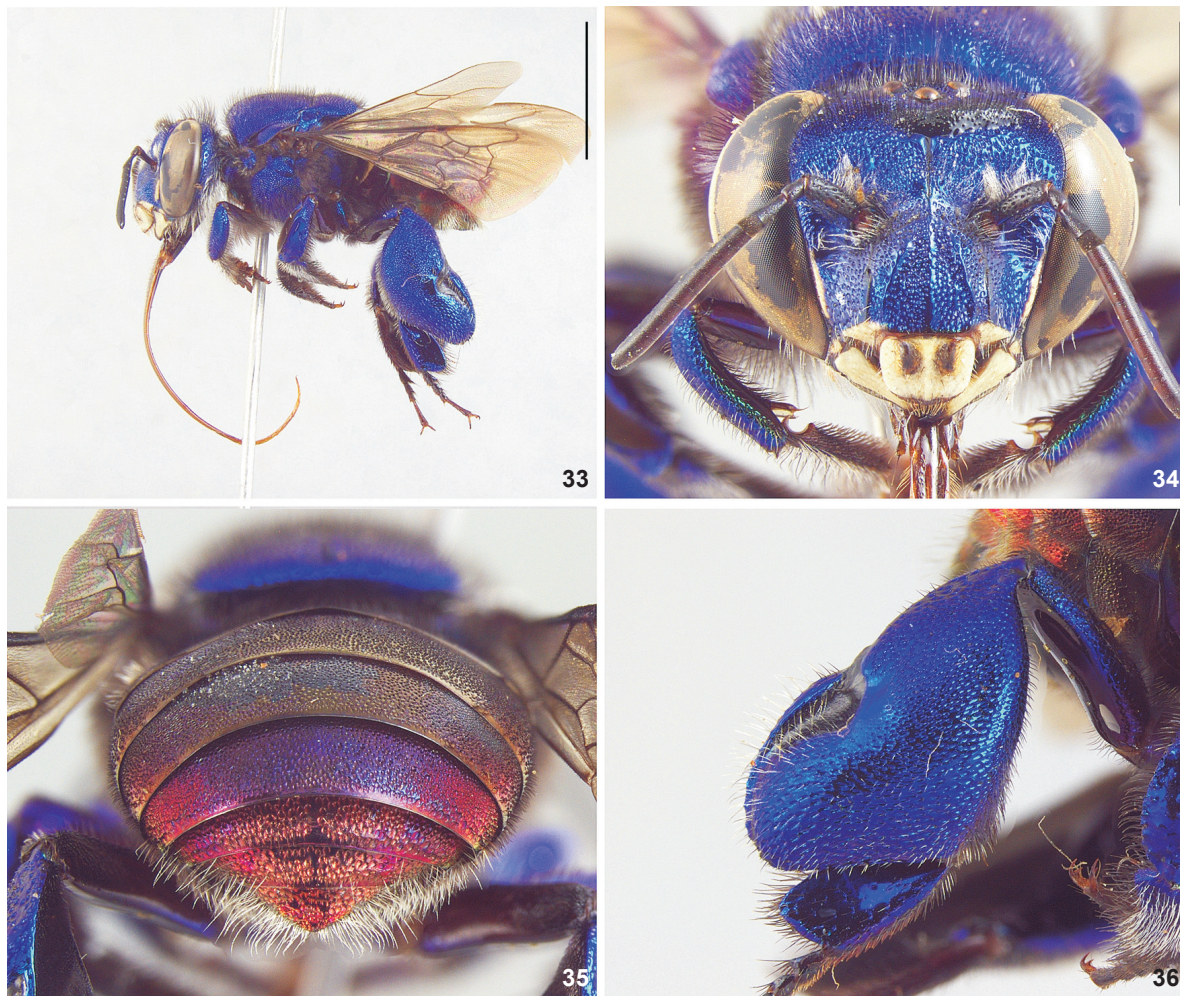
Figures 29-32. *Euglossa marianae*, female from Linhares, Espírito Santo: (29) habitus, dorsal view; scale = 5 mm; (30) head, frontal view; scale = 2 mm; (31) head, dorsal view; (32) thorax, dorsal view. Figures 31 and 32 at same scale as Fig. 30.

more beveled punctures; on T5-T7, punctures much coarser and more strongly beveled.

Structure (measurements in mm): mandible tridentate, teeth subequal in length; head about 1.6x wider than long (4.7:2.9); oculo-orbital distance, in dorsal view, about 1.6x the distance between posterior ocelli (0.63:0.39); scape, excluding radicle, about 3.4x longer than its maximum width (0.86:0.25); clypeus 1.03x longer than wide (1.30:1.26); scutellum about 2.2x wider than long (2.87:1.30); pit around vestigial posterior mesotibial tuft conspicuous (Fig. 11), extending over margin of tibia; hind tibia about 1.02x longer than the maximum width (3.11:3.03), depression on its inner surface extending over part of its basal half.

Female (specimen from Santa Teresa, ES). Body length: 10.3; head width: 4.5; maximum interorbital distance: 2.9; tongue in repose reaching base of S1; labrum 1.32x wider than long (1.14:0.86); scutellum 2.3x wider than long (2.83:1.22);

navicular tuft 0.41x the length of scutellum (0.51:1.22); hind tibia 1.4x longer than wide (2.83:2.0); posterior lobe of corbicula 0.51x the hind tibia's width (1.02:2.0); labrum ivory white between pair of oval spots; clypeus, lower parocular area and frons mostly green, with light yellowish reflexes; vertex mainly green with strong blue hues in front of ocelli; mesoscutum green laterally, with turquoise blue hues medially in the region of the medial line; scutellum green/turquoise blue; mesepisternum green with some bluish reflexes; metapostnotum mostly blue with greenish reflexes; hind tibia green with turquoise blue reflexes; T1 purple; T2 purple medially and magenta posteriorly, its lateral ventral portions dark red; disc of T3 purple basally and mainly magenta posteriorly, its lateral portions dark red; T4-T6 light magenta to dark red; metallic portions of sterna predominantly red; pubescence of mesepisternum mostly white and finely plumose, with abundant black setae intermixed; pubescence on



Figures 33-36. *Euglossa roderici*, male from Sete Barras, São Paulo: (33) habitus, lateral view; scale = 5 mm; (34) head, frontal view; scale = 2 mm; (35) T5-T7; (36) hind tibia, lateral view. Figures 35 and 36 at same scale as Fig. 34.

dorsal surface of hind femur predominantly pale yellow, with a few dark hairs intermixed; longer thick setae on borders of hind tibia predominantly dark brown to black, with a few pale yellow setae along anterior border; short black setae on disc of T2 about as long as 1.5 pd; mesoscutum and scutellum densely and coarsely punctured, punctures separated by about one-third pd; T2 densely punctured, punctures strongly beveled and smaller than those on lower parocular area.

Type material. Holotype male, "BRAZIL: E. Santo\CONCEIÇÃO DA BARRA\10 XI/1968\R.L. Dressler 1271" "\skatole" (DZUP). Paratypes: 3 males (DZUP), "BRAZIL: E. Santo\CONCEIÇÃO DA BARRA\10 XI/1968\R.L. Dressler 1271" "\skatole"; 1 male (DZUP), "BRAZIL: E. Santo\CONCEIÇÃO DA BARRA\10 XI/1968\R.L. Dressler 1271" "\vanillin"; 1 male (DZUP), BRAZIL: E. Santo\No. Linhares\12/XI/1968\R.L. Dressler\1292" "Methyl\salicylate".

Additional examined material. 421 males and 2 females (see Appendix 1).

Distribution (Fig. 57). From Pernambuco to Espírito Santo, mainly in lowland forests along the coast. It has been found also in more inland sites along the Mucuri river basin, in Minas Gerais, and the Pardo river basin, in Bahia, as well as in submontane forests in Espírito Santo.

Attractive compounds: cineole, methyl salicylate, skatole and vanillin.

Etymology. The specific epithet refers to the Latin *calyx* (cup), in reference to the well-developed pit around the vestigial posterior midtibial tuft of the males.

Variation. There is some variation in the color of the plumose pubescence on the lateral portion of the propodeum, with some males having abundant dark hairs among the white ones, as in the holotype, while others having only white hairs. Also,



Figures 37-40. *Euglossa roderici*, female from Morretes, Paraná: (37) habitus, dorsal view; scale = 5 mm; (38) head, frontal view; scale = 2 mm; (39) head, dorsal view; (40) thorax, dorsal view. Figures 39 and 40 at same scale as Fig. 38.

differently from the holotype, some specimens have a vestigial posterior mesotibial tuft.

Remarks. *Euglossa calycina* **sp. nov.** is most similar to *E. mixta* and *E. roderici*. Its male differs from that of *E. mixta* by its turquoise blue head and mesepisternum (violet blue in *E. mixta*); anterior midtibial tuft shorter, only slightly longer than wide (in *E. mixta* distinctly longer than wide); posterior tuft absent or completely vestigial, pit around it very conspicuous, extending over margin of tibia (in *E. mixta* posterior tuft small, but visible, pit around it shallow, not pronounced) (Figs 44 and 48); T6-T7 predominantly dark red, with coppery reflections (T6 and especially T7 coppery red in *E. mixta*). From *E. roderici*, the new species differs mostly by the characters given in couplet 3 of the identification key and by the details of the midtibial tufts (see under *E. roderici*). A female of *E. calycina* **sp. nov.**, identified as *E. mixta*, has been illustrated and briefly described by NEMÉSIO (2009:

142, Fig. 136). Previous papers dealing with the Atlantic forest forms have misinterpreted *E. calycina* **sp. nov.** as populations of *E. mixta* from eastern Brazil (FRIESE 1899: 135, 1930: 134, SCHROTTKY 1902: 590, LUTZ & COCKERELL 1920: 548, SILVEIRA *et al.* 2002: 78, NEVES & VIANA 2003: 225, 226, NEMÉSIO & SILVEIRA 2007: 888, MOURE *et al.* 2007: 233, NEMÉSIO 2009: 4, 13, 17, 74, 102, 114, 132, 141, 142, 143, 149, 208, 211, 2010b: 58, 59, 60, 2011a: 49, 50, 2011b: 62) or as populations of *E. iopyrrha* (MILET-PINHEIRO & SCHLINDWEIN 2005: 855, 856, DARRAULT *et al.* 2006: 244, 245).

Euglossa cognata Moure, 1970

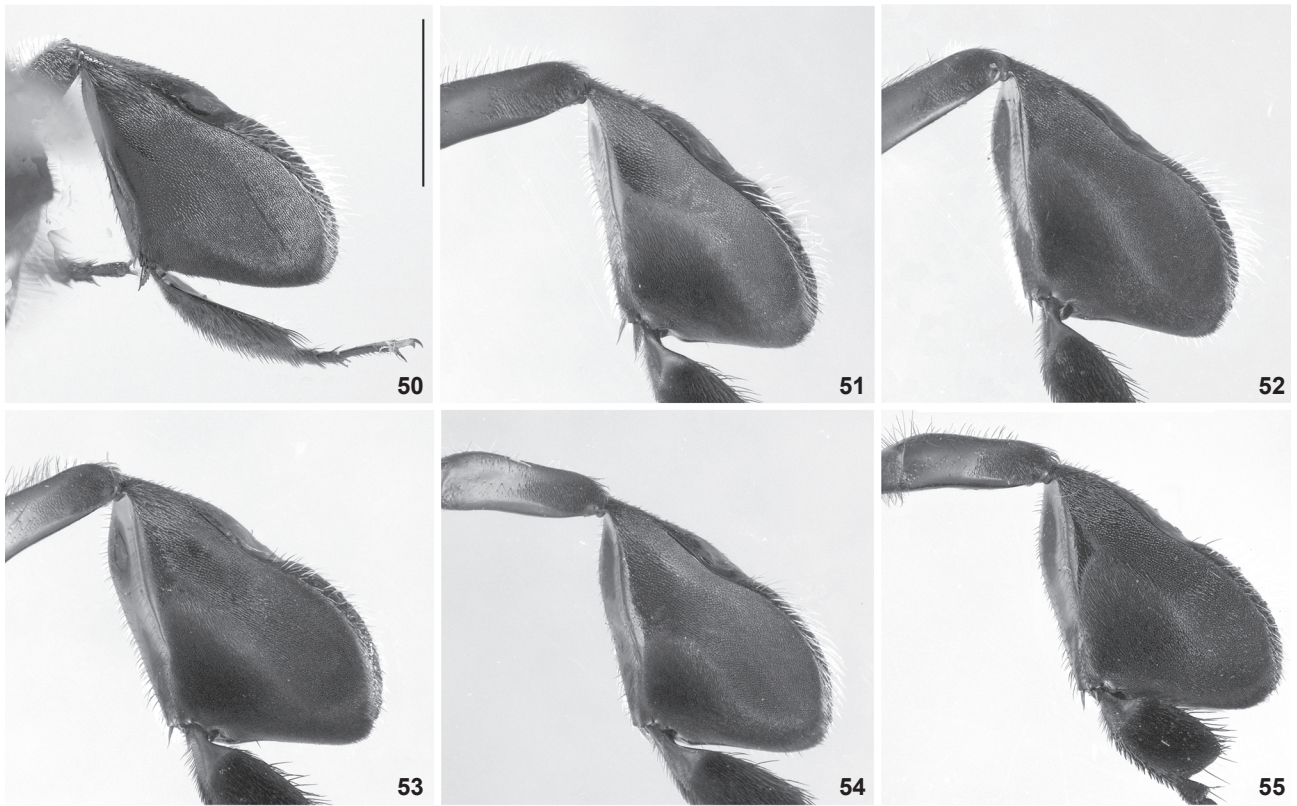
Figs 17-24, 45, 53, 58

Euglossa cognata Moure, 1970: 156. Holotype male, Brazil, Pará, Mocajuba, 'Mangabeira' (DZUP), examined.

Description. Male (specimen from Porto Seguro, BA).



Figures 41-49. Tufts of male mid tibia: (41) *Euglossa analis* from Belém, Pará; (42) *E. bidentata* from Belém, Pará; (43) *E. botocuda* **sp. nov.**, holotype male; (44) *E. calycina* **sp. nov.**, holotype male; (45) *E. cognata* from Porto Seguro, Bahia; (46) *E. iopyrrha* from Óbidos, Pará; (47) *E. marianae* from Conceição da Barra, Espírito Santo; (48) *E. mixta* from Cerro Campana, Panamá; (49) *E. roderici* from Sete Barras, São Paulo. Scale = 1 mm; all figures at same scale.



Figures 50-55. Inner surface of male hind tibia: (50) *E. analis* from Manaus, Amazonas; (51) *E. botocuda* **sp. nov.** from Itamaraju, Bahia; (52) *E. calycina* **sp. nov.** from Conceição da Barra, Espírito Santo; (53) *E. cognata* from Conceição da Barra, Espírito Santo; (54) *E. marianae* from Conceição da Barra, Espírito Santo; (55) *E. roderici* from Antonina, Paraná. Scale = 2 mm; all figures at same scale.

Body length: 12.9; head width: 5.1; maximum interorbital distance: 3.1; mandible tridentate, apical teeth longer than subequal teeth; tongue in repose slightly surpassing apex of hind coxae; disc of clypeus dark blue and turquoise blue laterally; frons dark blue-violet, becoming turquoise blue towards compound eyes; vertex blue-violet; lower gena green; ivory parocular markings well-developed, almost in contact with clypeus and reaching tangent to lower rim of antennal sockets; anterior surface of scape black; mesoscutum and scutellum mostly dark blue-violet; mesepisternum blue to violet blue laterally and bluish-green ventrally; hind tibia mostly blue, with small violet and green reflexes; T1-T4 mainly purple; T5 dark red to magenta; T6 dark red; T7 coppery red; mesoscutum with mostly simple black setae (ca. 0.3-0.33); longest black setae along posterior margin of scutellum ca. 0.4; upper portion and posterior half of mesepisternum with sparse black setae intermixed with finely plumose white setae; upper half of metepisternum mostly with finely plumose black setae; upper portion of propodeum laterally, anteriorly to spiracle, with abundant dark plumose setae; anterior mesotibial tuft comma-shaped (Fig. 45); posterior tuft vestigial; postglandular fringe

short (ca. 0.35); depression on inner surface of hind tibia extending over part of its basal half (Fig. 53); mesoscutum and scutellum densely and coarsely punctured, punctures on mesoscutum mostly contiguous; central portion of disc of T2 densely punctured (<0.5pd), punctures strongly beveled.

Female (specimen from Conceição da Barra, ES). Body length: 11.7; head width: 5.0; maximum interorbital distance: 3.12; tongue in repose reaching apex of hind coxae; labrum 1.28x wider than long (1.26:0.98); scutellum relatively long, about only twice as wide as long (2.95:1.46); navicular tuft 0.41x the length of scutellum (0.6:1.46); hind tibia 1.35x longer than wide (3.15:2.32); posterior lobe of corbicula 0.43x the hind tibia's width (1.02:2.32); labrum ivory white between pair of oval spots; disc of clypeus yellowish-green with strong reddish reflexes, mid longitudinal carina reddish-purple; lateral portions of clypeus and supraclypeal area green; lower parocular area and mid frons yellowish-green with some coppery reflexes; upper frons and vertex mainly dark blue, except for bluish-green upper parocular area; mesoscutum mainly blue with two well-defined bluish-green stripes laterally to the medial line; scutellum mainly turquoise blue; mesepisternum green with

weak bluish reflexes; metapostnotum blue; hind tibia bluish-green with strong purple hues; T1-T2 purple; T3 magenta with strong purple reflexes; T4 magenta, gradually becoming red laterally; T5-T6 bright red, with some magenta reflexes; metallic portions of sterna predominantly red, except for coppery yellow on S6; pubescence of mesepisternum mostly white and finely plumose, with abundant black setae intermixed; pubescence on hind femur entirely black; longer thick setae on borders of hind tibia dark brown to black; short black setae on disc of T2 at most as long as 1.5 pd; mesoscutum and scutellum densely and coarsely punctured, punctures separated by about one-quarter pd; T2 densely punctured, punctures strongly beveled and smaller than those on lower parocular area.

Examined material from eastern Brazil. 517 males and 6 females (see Appendix 2).

Distribution (Fig. 58). In eastern Brazil, mainly in the lowland coastal forests from southern Bahia to northern Espírito Santo. It has been found also in more inland sites along the Doce river in Minas Gerais (NEMÉSIO 2009: 114).

Remarks. This species is interpreted here as originally proposed by MOURE (1970), with a wide distribution, occurring from eastern Brazil to northern South America and reaching Costa Rica, in Central America (ROUBIK & HANSON 2004). Except for a slightly smaller body size, both males and females from eastern Brazil are identical to those from the Amazon basin. There is some variation in the size of the posterior tuft in the male mid tibia. In most specimens, the tuft is very small, its diameter comparable to that of a puncture of the mesoscutal disc. In a few specimens, the tuft is totally lacking, while in a few others, it is more conspicuous, being slightly wider than a mesoscutal puncture.

Attractive compounds. Benzyl acetate, cineole, eugenol, skatole, methyl salicylate and vanillin.

Euglossa marianae Nemésio, 2011

Figs 25-32, 47, 54, 59

Euglossa marianae Nemésio, 2011b: 63. Holotype male, Brazil, Minas Gerais, Marliéria, Parque Estadual do Rio Doce (DZMG), not examined.

Description. Male (specimen from Conceição da Barra, ES). Body length: 11.5; head width: 4.8; maximum interorbital distance: 3.05; mandible bidentate; tongue in repose reaching apex of hind coxae; disc of clypeus dark blue, with green areas laterally towards lower parocular area; frons mostly turquoise blue; vertex and upper gena greenish-blue; ivory parocular markings well-developed, almost reaching clypeus and barely reaching tangent to lower rim of antennal sockets; anterior surface of scape black; mesoscutum dark blue medially with turquoise blue/green areas toward tegulae and violet areas toward scutellum; scutellum violet; mesepisternum turquoise blue laterally and green ventrally; hind tibia dark blue/violet basally and dark green next to glandular opening; T1-

T4 purple with violet blue reflexes; T5 coppery yellow with red reflexes; T6 and T7 bright yellowish-green; mesoscutum covered with mostly simple black setae (ca. 0.38), setae becoming shorter towards scutellum; longest black setae along posterior margin of scutellum ca. 0.4; mesepisternum with finely plumose white setae; upper quarter of metepisternum mostly with finely plumose black setae; anterior mesotibial tuft as in Fig. 47; posterior tuft conspicuous, approximately as large as half ocellar diameter; postglandular fringe relatively short (ca. 0.45-0.5); depression on inner surface of hind tibia restricted to its apical half; mesoscutum and scutellum densely and coarsely punctured, punctures near parapsidal line separated by one-fifth of puncture diameter to mostly contiguous; central portion of disc of T2 densely punctured (<0.5 pd), punctures weakly beveled.

Female (specimen from Linhares, ES). Body length: 11.0; head width: 4.72; maximum interorbital distance: 2.96; tongue in repose reaching S1; labrum 1.46x wider than long (1.1:0.75); scutellum 2.1x wider than long (2.75:1.30); navicular tuft 0.36x the length of scutellum (0.47:1.30); hind tibia 1.45x longer than wide (2.87:1.97); posterior lobe of corbicula 0.47x the hind tibia's width (0.94:1.97); labrum dark brown between pair of oval spots; clypeus bright green, except for thin reddish reflexes along mid longitudinal carina; frons and vertex green; mesoscutum, scutellum and hind tibia green; mesepisternum green, with weak yellowish reflexes; metapostnotum green; T1 purple; T2 dark purple anteriorly, becoming reddish posteriorly, its lateral ventral portions mostly yellowish-green; disc of T3 and T4 coppery red, gradually turning into bright yellowish-green laterally; T5 and T6 bright green; metallic portions of sterna predominantly green, laterally more yellowish-green; pubescence of mesepisternum predominantly white and finely plumose, a few black setae intermixed; pubescence on dorsal surface of hind femur predominantly pale yellow; longer thick setae on borders of hind tibia predominantly pale yellow; short black setae on disc of T2 about as long as 2 pd; mesoscutum and scutellum densely and coarsely punctured, punctures mostly contiguous; T2 densely punctured, punctures strongly beveled and smaller than those on lower parocular area.

Examined material. 764 males and 1 female (see Appendix 2)

Distribution (Fig. 59). From southern Bahia to northern Rio de Janeiro, mainly in lowland forests along the coast. It has been found also in more inland sites along the Doce river in Minas Gerais, and at the southern edge of the Chapada Diamantina, in Bahia. NEMÉSIO (2009: 102) also provides a disjunct southern record, based on a single male collected in São Sebastião, northeastern São Paulo.

Remarks. This species can be recognized by its bidentate mandibles; posterior mesotibial tuft conspicuous, approximately as large as half ocellar diameter (Fig. 47); anterior mesotibial tuft longer than wide, noticeably notched near its mid portion (Fig. 47); depression on inner surface of hind tibia



Figures 56-59. Distribution maps: (56) *Euglossa botocuda* sp. nov. (squares) and *E. roderici* (circles); (57) *E. calycina* sp. nov.; (58) *Euglossa cognata* (only the records from Brazilian Atlantic forest); (59) *E. marianae*. The Atlantic forest is depicted in darker gray.

present, relatively short, restricted to its apical half (Fig. 54); T5 varying from coppery to golden green, T6-T7 bright green. Due to its green apical terga, *E. marianae* has been misidentified as *E. analis* in studies dealing with the Atlantic forest fauna (see NEMÉSIO 2011b). We agree with NEMÉSIO (2011b) that all

records of *E. analis* from the Atlantic forest correspond, in fact, to *E. marianae*. Despite NEMÉSIO'S (2011b:63) interpretation of *E. analis* as "its most closely related species", these two species are only remotely related within the *analisis* group. *Euglossa marianae* is most closely allied to *E. bidentata*, the two species

being structurally almost identical, including the details of the midtibial tufts (Figs 42 and 47; *E. analis*, Fig. 41) and the morphology of the inner surface of the hind tibia. In *E. bidentata*, however, T5 is purple to coppery red, and T6-T7 are bright reddish-yellow. Future studies might indicate that *E. marianae* is just a color morph of *E. bidentata* inhabiting the Atlantic forest. There is variation in the color of T5 within *E. marianae*. NEMÉSIO (2011b) states that “the three last terga are bright green”, as shown in his Fig. 2C. However, many specimens studied by us, in particular those from Bahia, have a golden green to coppery yellow T5.

Attractive compounds. Cineole, eugenol, methyl salicylate, skatole and vanillin.

Euglossa roderici Nemésio, 2009

Figs 33-40, 49, 55, 56

Euglossa roderici Nemésio, 2009: 149. Holotype male, Brazil, São Paulo, São Sebastião, Parque Estadual de Ilha Bela (DZMG), not examined.

Description. Male (specimen from Paranaguá, PR). Body length ca. 10.9; head width ca. 4.7; mandible tridentate, teeth subequal in length; tongue in repose reaching apex of hind coxae; clypeus violet; frons dark blue to violet; vertex violet; parocular ivory stripe short and slender, widely separated from clypeus and barely reaching tangent to lower rim of antennal sockets; anterior surface of scape black; mesoscutum and scutellum dark blue to violet; mesepisternum dark blue to violet laterally and greenish-blue ventrally; hind tibia mostly violet; T1-T4 mostly purple, with violet reflexes; T5 dark reddish-purple; T6-T7 mostly dark red, with purple reflexes on T6; longest black setae on disc of mesoscutum ca. 0.35 and those along posterior margin of scutellum ca. 0.40-0.43; mesepisternum, metepisternum, metapostnotum and propodeum mostly with dark plumose pubescence, except for pale hairs on mesepisternum ventrally; anterior mesotibial tuft as in Fig. 49; posterior tuft vestigial; postglandular fringe relatively short (ca. 0.40-0.45); depression on inner surface of hind tibia extending over part of its basal half (Fig. 55); mesoscutum and scutellum densely and coarsely punctured, punctures on disc of mesoscutum separated by one-third pd; central portion of disc of T2 densely punctured (<0.5 pd), punctures weakly beveled.

Female (specimen from Morretes, PR). Body length: 11.0; head width: 4.8; maximum interorbital distance: 3.12; tongue in repose reaching hind coxae; labrum 1.33x wider than long (1.15:0.86); scutellum 2.2x wider than long (3.03:1.38); navicular tuft 0.43x the length of scutellum (0.60:1.38); hind tibia 1.56x longer than wide (3.20:2.05); posterior lobe of corbicula 0.52x the hind tibia's width (1.07:2.05); labrum pale brownish-yellow between pair of oval spots, except for narrow brown stripe uniting the spots basally; clypeus dark blue; lower parocular area and narrow stripe along orbits bluish-green; frons and vertex dark blue to violet; mesoscutum, scutellum,

mesepisternum, metepisternum and metapostnotum dark blue to violet; hind tibia dark blue with violet reflexes; T1 purple; T2 dark purple basally, becoming dark magenta apically and laterally; T3-T5 dark red to magenta, with purple reflexes; metallic portions of sterna predominantly dark red to magenta, except for coppery red on S6; pubescence of mesepisternum mostly black, with a few finely plumose white setae intermixed; pubescence on hind femur entirely black; longer thick setae on borders of hind tibia dark brown to black; short black setae on disc of T2 only slightly longer than one pd; mesoscutum and scutellum densely and coarsely punctured, punctures mostly contiguous on mesoscutum; T2 densely punctured, punctures strongly beveled and smaller than those on lower parocular area.

Examined material. 66 males and 1 female (see Appendix 2).

Distribution (Fig. 56). In the coastal forests from northeastern São Paulo to southern Paraná, reaching more inland sites along the Ribeira river in São Paulo.

Remarks. The recognition of *E. roderici* should pose no difficulties, since it is only found in the southern portion of the Atlantic forest. The male is most similar structurally to that of *E. calycina* sp. nov. However, the distributions of these two species do not overlap. They differ in coloration of the integument and of the pubescence, as indicated in the identification key, as well as in details of the midtibial tufts. In *E. roderici*, the anterior tuft is slightly more elongate, with the apical lobe distinct and wider than the basal lobe (in *E. calycina* sp. nov., the anterior tuft is more compact and with weak differentiation between the basal and apical lobes). Also, the pit around the vestigial posterior tuft is well-developed in *E. roderici*, but to a lesser degree compared to *E. calycina* sp. nov.

Attractive compounds. β -ionone, methyl salicylate and skatole.

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Appendix 1. Additional examined material.

***Euglossa botocuda* sp. nov.** BRAZIL, *Bahia*: Itamaraju. 11 males, “Brasil, Bahia, Itamaraju, 1-10.iii.1971, C. Elias”. Porto Seguro. 2 males, “BRAZIL: BAHIA\Res.Mte. Pascoal\8/XI/1968\R.L. Dressler\1251” “\Methyl salicylate” “mixta”. Prado. 8 males, “PRADO- BAHIA-BRASIL\5/III/1971\C. Elias leg.”. *Espírito Santo*: Conceição da Barra. 1 male, “BRAZIL: E. Santo\CONCEIÇÃO DA BARRA\10/XI/1968\R.L. Dressler 1285” “\Methyl salicylate” “E. (Euglossella\iopyrrha\m\Pe J. S. Moure 1968”); 1 male, “BRAZIL: E. Santo\CONCEIÇÃO DA BARRA\13/XI/1968 6\R.L. Dressler 1285” “\Methyl salicylate”; 1 male, idem, except “15/XI/1968”; 1 male, idem, except “Euglossa\iopyrrha Moure\det. R.L. Dressler 1968\E. cognata”; 2 males, “Conc. da Barra-ES\4-8.IV.1969\Tadeu&C.Elias col”; 10 males, “CONC. DA BARRA-ES\BRASIL- 12/5/1969\Claudionor Elias”; 3 males, idem, except “5/5/1969”; 1 male, “CONC. DA BARRA-ES\BRASIL- 17/9/1969\C.T. & C. Elias leg”; 1 male, idem, except “18/10/69”; 3 males, idem, except “22/11/1969”; 3 males, idem, except “25/9/1969”; 2 males, idem, except “26/8/1969”; 1 male, “27/5/1969”; 1 male, idem, except “29/11/1969”; 1 male, idem, except “4/10/1969”; 1 male, idem, except “4/12/68”; 1 male, idem, except “4/6/1969”; 1 male, idem, except “4/9/1969”; 2 males, “CONCEIÇÃO DA BARRA\ES-BR 10-15/II/69\C. & C.T. Elias leg.”; 1 male, idem, except “15/III/69”; 1 male, idem, except “10-16/XII/69”; 1 male, idem, except “16-21/XII/68”; 4 males, idem, except “17-22/II/69”; 6 males, idem, except “17-22/III/69”; 3 males, idem, except “1-8/IV/1969”; 1 male, idem, except “21/XII/1968”; 7 males, idem, except “24-28/II/69”; 2 males, idem, except “9-15/I/69”. Linhares. 1 male, “BRAZIL: E. Santo\No. Linhares\12/XI/1968\R.L. Dressler\1252” “\Methyl cinnamate”; 2 males, “LINHARES – E. SANTO\BRASIL 12-18/XI/68\C. Elias leg.”; 3 males, idem, except “1-8/II/69” and “C. & C.T. Elias leg.”; 3 males, idem, except “1-8/IV/69”; 1 male (MZSP), “F. seca 3\24-02-97\salicilato\11:35\621”; 1 male (MZSP), “Farinha 2\21-06-97\cineol\11:25\1651”; 1 male (MZSP), idem, except “12:20” and “1659”; 1 male, “Parajú 1\27-06-97\cineol\9:07\1795”; 1 male, “Peroba 2\20-04-97\cineol\10:40\1143”; 1 male, idem, except “22-02-07”, “9:20” and “1214”; 1 male, “Peroba 2\22-04-97\salicil\4:40\1235”; 1 male, “Peroba 3\26-04-97\salicil\12:38\1451”; 1 male, “Peroba 3\28-03-97\salicilato\11:20\1083”; 1 male, “Peroba 2\30-11-96\skatol\10:21\128” “BRASIL: ES: Reserva\Florestal de Linhares,\19°06'-19°18S-39°45'-40°19W\Col: M.A. Bonilla”; 1 male, idem, except “Farinha 1\27-03-97\cineol\12:50\1976”; 1 male, idem, except “Farinha 2\25-07-97\cineol\9:57\1940”; 1 male, idem, except “12:53” and “1953”.

***Euglossa calycina* sp. nov.** BRAZIL, *Bahia*: Itamaraju. 2 males, “Brasil, Bahia, Itamaraju, 1-10.iii.1971, C. Elias”; 4 males, idem, except “17-22.i.1972”. Prado. 20 males, “PRADO- BAHIA-BRASIL\5/III/1971\C. Elias leg.”. Vitória da Conquista. 1 male, “Brasil, BA, 15 km NE\Vitória da Conquista,\940m, 12.iv.2011,\-14.791°S -40.720°W,\M. A. Santos”. *Espírito Santo*: Barra de São Francisco. 1 male, “Corrego Itá\E.Santo.Br\X-1954\W.Zikan”. Conceição da Barra. 3 males, “BRAZIL: E. Santo\CONCEIÇÃO DA BARRA\10/XI/1968\R.L. Dressler 1271” “\skatole”; 2 males, idem, except “vanillin”; 1 male, “CONC. DA BARRA-E. STO\BRASIL 15/XI/68\C & C.T. Elias leg.”; 4 males, “CONC. BARRA – ES\2-7/XII/68\Paulo Cesar leg”; 6 males, “Conc. da Barra-ES\16-22.I.1969\Tadeu&C.Elias col”; 1 male, idem, except “4-8.IV.1969”; 5 males, idem, except “24-30.IV.1969”; 8 males, “CONC. DA BARRA-ES\BRASIL- 27/3/1969\C.T. & C. Elias”; 4 males, idem, except “5/5/1969”; 12 males, idem, except “12/5/1969”; 5 males, idem, except “19/5/1969”; 11 males, idem, except “27/5/1969”; 6 males, idem, except “4/6/1969”; 3 males, idem, except “12/6/1969”; 1 male, idem, except “19/6/1969”; 1 male, idem, except “4/7/1969”; 5 males, idem, except “11/7/1969”; 1 male, idem, except “18/7/1969”; 1 male, idem, except “11/8/1969”; 24 males, idem, except “26/8/1969”; 9 males, idem, except “4/9/1969”; 16 males, idem, except “10/9/1969”; 9 males, idem, except “17/9/1969”; 8 males, idem, except “25/9/1969”; 15 males, idem, except “4/10/1969”; 21 males, idem, except “11/10/969”; 3 males, idem, except “18/10/69”; 2 males, idem, except “25/10/69”; 5 males, idem, except “1/11/1969”; 5 males, idem, except “15/11/969”; 16 males, idem, except “22/11/969”; 9 males, idem, except “29/11/969”; 1 male, idem, except “27/12/1969”; 7 males, “CONCEIÇÃO DA BARRA\ES-BR 2-8/I/69\C. & C.T. Elias leg.”; 8 males, idem, except “9-15/I/69”; 1 male, idem, except “1-8/II/1969”; 18 males, idem, except “10-15/II/69”; 17 males, idem, except “24-28/II/69”; 7 males, idem, except “1-8/III/1969”; 11 males, idem, except “10-15/III/69”; 3 males, idem, except “17-22/III/69”; 4 males, idem, except “1-8/IV/1969”; 5 males, idem, except “9-15/IV/69”; 13 males, idem, except “16-23/IV/69”; 6 males, idem, except “24-30/IV/69”; 1 male, idem, except “2-8/V/68”; 2 males, idem, except “19-25/XI/68”; 12 males, idem, except “26-30/XI/68”; 3 males, idem, except “10-16/XII/69”; 4 males, idem, except “16-21/XII/68”; 3 males, idem, except “23-31/XII/68”; 3 males, “Brasil, Espírito Santo, Conceição da Barra, ii.1986, C. Elias”; 1 male, idem, except “i.1994”. Fundão. 2 males, “Fundão – ES\23-31.XII.1968\C. Elias col.”. Linhares. 1 male, “BRAZIL: E. Santo\No. Linhares\12/XI/1968\R.L. Dressler 1292” “Methyl salicylate”; 25 males, “LINHARES – E. SANTO\BRASIL 1-8/II/69\C. & C.T. Elias leg.”; 1 male, “Linhares – ES\IV. 1978\C. Elias col.”; 1 male (MZSP), “Eg. mixta\12-07-96\Gávea\com políio\salic. Metila”; 1 male (MZSP), “Eg. mixta\20-07-97\Peroba I” “BRASIL: ES: Reserva\Florestal de Linhares,\19°06'-19°18'S-39°45'-40°19W\Col: M.A. Bonilla”; 1 male (MZSP), “Parajú 2\24-06-97\skatol\12:07\1746”; 1 male (MZSP), “Parajú 2\22-08-97\cineol\11:20\52”; 1 male (MZSP), “Peroba 3\28-04-97\salicil\10:43\1459”; 1 male (MZSP), idem, except “cineol”, “11:02” and “1442”; 1 female (DZUP), “LINHARES – E. SANTO\BRASIL\24-31/7/72\C. Elias leg.”. Santa Teresa. 1 male, “STA. TEREZA – E. STO\BRASIL 1-3/II/68\C& C.T. Elias leg.”; 1 female (DZUP), “SANTA TEREZA – ES\BRASIL – 27/8/1967\C.T.

& C. Elias lg". São Mateus. 1 male, "São Mateus-ES\9 a 14/XII/1968.col. C. Elias e Tadeu". Vitória. 1 male, "Brasil, ES, Vitória, \Pq. Est. Fonte Grande.\20°18'33"S, 40°20'29"W,\290m, 03.v.2007, J.A.\Rafael & F.F. Xavier Fo., \Isca de vanilina". Minas Gerais: Teófilo Otoni. 1 male, " Brasil, MG, 7 km NE\Teófilo Otoni, 420m,\17°49'S 41°27'W,\17.i.2011, G. Melo,\em eucaliptol". Pernambuco: Goiana. 1 male, "Goiana PE\Mata Bujary, CAIG\Brasil, 25.11.2002\P.Milet & Darrault leg." "L-147 Mata\Salicit. de Metila\UFPE 12769".

Appendix 2. Examined material.

Euglossa cognata (specimens from eastern Brazil). BRAZIL, Bahia: Itamaraju. 12 males, "Brasil, Bahia, \Itamaraju, \1-10.iii.1971, C. Elias", 10 males, idem, except "17-22.i.1972". Prado. 8 males, "PRADO- BAHIA-BRASIL\5/III/1971\C. Elias leg.". Porto Seguro. 1 male, "BRAZIL: BAHIA\Res.Mte. Pascoal\8/XI/1968\R.L. Dressler\1252" "\Methyl salicylate" "cognata"; 1 male, idem, except one more label "cognata". Espírito Santo: Barra de São Francisco. 1 male, "Corrego Itá\E.Santo.Br\X-1954\W.Zikan". Conceição da Barra. 1 male, "BRAZIL: E. Santo\CONCEIÇÃO DA BARRA\13/XI/1968 6\R.L. Dressler 1285" "\Methyl\salicylate" "cognata"; 26 males, "Conc. da Barra-ES\16-22.I.1969\Tadeu&C.Elias col"; 2 males, idem, except "4-8.IV.1969"; 25 males, idem, except "24-30.IV.1969"; 5 males, idem, except "23-30.I.1970"; 3 males, "CONC. DA BARRA-ES\BRASIL- 10/9/69\C.T. & C. Elias"; 3 males, idem, except "11/10/69"; 2 males, idem, except "12/6/1969"; 5 males, idem, except "15/11/1969"; 3 males, idem, except "15/11/969"; 1 male, idem, except "25/10/1969"; 12 males, idem, except "25/9/1969"; 9 males, idem, except "26/6/1969"; 5 males, idem, except "26/8/1969"; 1 male, idem, except "27/11/969"; 2 males, "27/12/1969"; 22 males, idem, except "27/3/1969"; 10 males, idem, except "27/5/1969"; 2 males, idem, except "29/11/1969"; 3 males, idem, except "29/11/969"; 2 males, idem, except "4/10/1969"; 2 males, idem, except "4/7/1969"; 1 male, idem, except "4/8/1969"; 18 males, idem, except "4/9/1969"; 2 males, idem, except "5/1/1970"; 12 males, idem, except "5/5/1969"; 2 males, idem, except "6/12/1969"; 6 males, idem, except "11/7/1969" and "C.T. & C. Elias leg"; 27 males, idem, except "11/8/1969"; 3 males, idem, except "17/9/1969"; 22 males, idem, except "18/8/1969"; 6 males, idem, except "19/6/1969"; 1 male, "CONCEIÇÃO DA BARRA\ES-BR 19-25/XI/68\C. & C.T. Elias leg."; 10 males, idem, except "10-15/II/69"; 28 males, idem, except "10-15/III/69"; 7 males, idem, except "10-16/XII/69"; 1 male, idem, except "16-21/XII/68"; 1 male, idem, except "17-22/II/69"; 2 males, idem, except "17-22/III/69"; 1 male, idem, except "1-8/II/1969"; 7 males, idem, except "1-8/III/1969"; 5 males, idem, except "1-8/IV/1969"; 19 males, idem, except "23-31/I/69"; 3 males, idem, except "23-31/XII/68"; 17 males, idem, except "24-28/II/69", 17 males, idem, except "24-30/IV/69"; 1 male, idem, except "26-30/XI/68"; 1 male, idem, except "29-31/I/69"; 3 males, idem, except "9-15/I/69", 6 males, idem, except "9-15/IV/69"; 17 males, "Brasil, Espírito Santo, \Conceição da Barra, \ii.1986, C. Elias"; 4 males, idem, except "i.1994". 1 female (DZUP), "CONC. DA BARRA-ES\BRASIL 27/5/1969\C.T. & C. Elias"; 1 female (DZUP), idem, except "4/9/1969". Linhares. 3 males, "LINHARES – E. SANTO\BRASIL 1-8/II/69\C. & C.T. Elias leg."; 2 males, "Linhares – ES\IV. 1978\C. Elias col.". 1 male (MZSP), "F. Seca 2\22-02-97\sal. met.\11:55\709"; 1 male (MZSP), "F. Seca 2\27-02-97\salicilato\9:17\694"; 1 male (MZSP), "Farinha 1\07-02-97\salicilato\12:03\530"; 1 male (MZSP), "Farinha 1\21-06-97\salicil\10:20\1641"; 1 male (MZSP), "Farinha 1\27-04-97\salicil\10:40\1410"; 1 male (MZSP), "Farinha 2\21-04-97\salicilato\10:50\1178"; 1 male (MZSP), "Farinha 2\26-06-97\salicil\12:35\1792"; 1 male (MZSP), idem, except "12:47" and "1788"; 1 male (MZSP), idem, except "12:47" and "1789"; 1 male (MZSP), "Farinha 3\21-06-97\salicil\11:36\1673"; 1 male (MZSP), idem, except "11:44" and "1678"; 1 male (MZSP), "Parajú 1\01-03-97\cineol\3:20\757"; 1 male (MZSP), idem, except "8:35" and "758"; 1 male (MZSP), "Parajú 2\01-11-96\salicilato\11:28\104"; 1 male (MZSP), "Parajú 2\02-03-97\salicilato\9:40\802"; 1 male (MZSP), "Parajú 2\13-12-96\skatol\1:43\183"; 1 male (MZSP), "Parajú 2\22-06-97\salicil\11:35\1744"; 1 male (MZSP), "Parajú 3\03-11-96\salicil\10:20\152"; 1 male (MZSP), "Parajú 3\23-02-97\sal. met. 10:20\575"; 1 male (MZSP), idem, except "salicilato", "10:12" and "568"; 1 male (MZSP), idem, except, "11:20" and "582"; 1 male (MZSP), "Parajú 3\23-06-97\salicil\10:10\1706"; 1 male (MZSP), idem, except "12:35" and "1720"; 1 male (MZSP), "Parajú 3\24-04-97\salicilato\11:29\1292"; 1 male (MZSP), "Parajú 3\25-04-97\salicil\11:10\1325"; 1 male (MZSP), idem, except "12:12" and "1337"; 1 male (MZSP), idem, except "salicilato", "13:14" and "1341"; 1 male (MZSP), "Peroba 1\20-04-97\salicilato\10:13\1139"; 1 male (MZSP), "Peroba 1\22-02-97\sal. met\9:48\543"; 1 male (MZSP), "Peroba 2\29-06-97\salicil\10:42\1844"; 1 male (MZSP), idem, except "8:50" and "1830"; 1 male (MZSP), "Peroba 3\23-04-97\salicil\10:43\1438"; 1 male (MZSP), "Peroba 3\26-02-97\salicilato\10:19\677"; 1 male (MZSP), idem, except "9:20" and "667"; 1 male (MZSP), "Peroba 3\28-04-97\salicil\10:50\144"; 1 male (MZSP), idem, except "8:40" and "1424"; 1 male (MZSP), "Farinha 1\27-03-97\salicil\11:50\1972" "BRASIL: ES: Reserva Florestal de Linhares, \19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla", 1 male (MZSP), idem, except "salicilato", "8:56" and "1027"; 1 male (MZSP), idem, except "9:12" and "1028"; 1 male (MZSP), idem, except "9:57" and "1035"; 1 male (MZSP), idem, except "27-07-97", "salicil", "12:05" and "1970"; 1 male (MZSP), "Farinha 2\25-07-97\salicil\11:05\1944" "BRASIL: ES: Reserva Florestal de Linhares, \19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), idem, except "1945"; 1 male (MZSP), idem, except "26-03-97", "10:50" and "607"; 1 male (MZSP), idem, except "salicilato", "10:40" and "1004"; 1 male (MZSP), idem, except "9:20" and "994"; 1

male (MZSP), idem, except "26-08-97", "9:50" and "999"; 1 male (MZSP), idem, except "28-11-96", "salicil", "9:38" and "044"; 1 male (MZSP), "Farinha 3\22-07-97\salicil\10:32\1885" "BRASIL: ES: Reserva\Florestal de Linhares,\19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), idem, except "9:12" and "1878"; 1 male (MZSP), "Parajú 1\21-07-97\salicil\11:20\1869" "BRASIL: ES: Reserva\Florestal de Linhares,\19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), idem, except "8:32" and "1854"; 1 male (MZSP), "Parajú 2\28-07-97\salicil\9:16\1979" "BRASIL: ES: Reserva\Florestal de Linhares,\19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), "Parajú 3\28-07-97\salicil\11:20\1925" "BRASIL: ES: Reserva\Florestal de Linhares,\19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), "Peroba 1\30-03-97\salicil\8:42\1108" "BRASIL: ES: Reserva\Florestal de Linhares,\19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), idem, except "salicilato", "10:20" and "1121"; 1 male (MZSP), "Peroba 2\26-07-97\salicil\10:35\1958" "BRASIL: ES: Reserva\Florestal de Linhares,\19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), idem, except "12:50" and "1965"; 1 male (MZSP), idem, except "29-06-97", "salicilato", "10:09" and "1840"; 1 male (MZSP), "Peroba 3\23-07-97\salicil\9:36\1900" "BRASIL: ES: Reserva\Florestal de Linhares,\19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), idem, except "25-03-97", "salicilato", "11:20" and "1079"; 1 male (MZSP), idem, except "29-11-96", "vanilina", "11:17" and "088". Linhares. 1 female (DZUP), "COLEÇÃO\CAMPOS SEABRA" "Parque Sooretama\LINHARES Espirito Santo\BRASIL III-1953\Pedro Almeida Teles"; 1 female (DZUP), "Parque Sooretama\LINHARES Espirito Sa\BRASIL III-1953" "Euglossa bicolor ?\var\Det. J.S. Moure 1957"; 1 female (DZUP), "COLEÇÃO\CAMPOS SEABRA" "Parque Sooretama\LINHARES Esp. Santo\BRASIL V-1953\P. A. Teles Col."; 1 female (DZUP), idem, except additional label "F of cognata?". Pedro Canário. 3 males, "Brasil, Espírito Santo,\Pedro Canário,\iii.1986, C. Elias"; 13 males, idem, except "iii.1991". São Mateus. 5 males, "Brasil, Espírito Santo,\São Mateus,\x.1985, C. Elias".

***Euglossa marianae*.** BRAZIL, *Bahia*: Itamaraju. 3 males, "Brasil, Bahia,\Itamaraju,\1-10.iii.1971, C. Elias"; 1 male, idem, except "17-22.i.1972". Porto Seguro. 1 male, "BRAZIL: BAHIA\Res.Mte. Pascoal\8/XI/1968\R.L. Dressler\1253" "\Cineol"; 1 male, idem, except "skatole". Prado. 4 males, "PRADO- BAHIA-BRASIL\5/III/1971\C. Elias leg.". Rio de Contas. 1 male, "Rio de Contas - BA\24.IV.1976\Enoque&C. Elias col". Uruçuca. 1 male, "URUÇUCA - BAHIA\BRASIL 27/11/1972\V.Graf leg.". *Espirito Santo*: Baixo Guandu. 1 male, "BAIXO GUANDU-E. STO.\BRASIL 29/IV-6/V/70\C. & C.T. Elias leg.". Conceição da Barra. 1 male (MZSP), "BRASIL: ES: Conc. Barra\9-14/XII/1965\P. C. Elias col."; 3 males, "BRAZIL: E. Santo\CONCEIÇÃO DA BARRA\15/XI/1968\R.L. Dressler 1270" "\Cineol"; 3 males, idem, except "skatole"; 1 male, idem, except "cineol" and "E.analis"; 4 males, "CONC. DA BARRA-E. STO\BRASIL 15/XI/68\C. & C.T. Elias leg."; 1 male, idem, except "2-7/X/68"; 1 male, "CONC. BARRA-ES\2-7/XII/68\ELIAS e TADEU Leg"; 1 male, idem, except "LEG"; 6 males (MZSP), "BRASIL: ES: Conc. Barra\9-14/XII/1968\P. C. Elias col."; 4 males, "Conc. da Barra-ES\16-22.I.1969\Tadeu&C.Elias col"; 4 males, idem, except "24-30.IV.1969"; 1 male, idem, except "4-8.IV.1969"; 8 males, "CONC. DA BARRA-ES\BRASIL- 12/5/1969\Claudionor Elias"; 2 males, "CONC. DA BARRA-ES\BRASIL- 11/7/1969\C.T. & C. Elias leg"; 4 males, idem, except "11/8/1969"; 14 males, idem, except "17/9/1969"; 3 males, idem, except "18/7/1969"; 2 males, idem, except "19/5/1969"; 13 males, "CONC. DA BARRA-ES\BRASIL- 5/5/1969\C.T. & C. Elias"; 1 male, idem, except "1/11/1969"; 14 males, idem, except "10/9/1969"; 6 males, idem, except "11/10/1969"; 2 males, idem, except "12/6/1969"; 4 males, idem, except "15/11/1969"; 9 males, idem, except "22/11/1969"; 3 males, idem, except "25/10/69"; 11 males, idem, except "25/9/1969"; 5 males, idem, except "26/8/1969"; 1 male, idem, except "27/11/1969"; 4 males, idem, except "27/12/1969"; 6 males, idem, except "27/3/1969"; 5 males, idem, except "27/5/1969"; 7 males, idem, except "29/11/1969"; 8 males, idem, except "4/10/1969"; 6 males, idem, except "4/12/68"; 3 males, idem, except "4/6/1969"; 4 males, idem, except "4/9/1969"; 8 males, idem, except "6/12/1969"; 1 male, "CONCEIÇÃO DA BARRA\ES-BR 29/X-4/XI/68\C. & C.T. Elias leg."; 16 males, idem, except "26-30/XI/68"; 6 males, idem, except "9-14/XII/68"; 1 male, idem, except "23-31/XII/68"; 15 males, idem, except "10-15/II/69"; 11 males, idem, except "10-15/III/69"; 6 males, idem, except "10-16/XII/69"; 15 males, idem, except "16-21/XII/68"; 2 males, idem, except "16-23/IV/69"; 12 males, idem, except "17-22/II/69"; 6 males, idem, except "17-22/III/69"; 3 males, idem, except "1-8/III/1969"; 7 males, idem, except "1-8/IV/1969"; 3 males, idem, except "19-25/XI/68"; 8 males, idem, except "23-31/I/69"; 11 males, idem, except "23-31/XII/68"; 54 males, idem, except "24-28/II/69"; 5 males, idem, except "24-30/IV/69"; 3 males, idem, except "2-8/I/69"; 24 males, idem, except "9-15/I/69"; 9 males, idem, except "9-15/IV/69". Fundão. 1 male, "Fundão - ES\23-31.XII.1968\C. Elias col.". Linhares. 1 male, "Parque Sooretama\LINHARES Espirito Santo\BRASIL III-1953\Pedro Almeida Teles" "\COLEÇÃO\CAMPOS SEABRA" "Euglossa M\analís\Westw.\Det.J.S.Moure 1964"; 8 males, "LINHARES - E. SANTO\BRASIL 12-18/XI/68\C. Elias leg."; 3 males, "BRAZIL: E. Santo\No. Linhares\12/XI/1968\R.L. Dressler 1293" "\Cineol"; 20 males, "LINHARES - E. SANTO\BRASIL 1-8/II/69\C. & C.T. Elias leg."; 3 males, "Linhares - ES\IV. 1978\C. Elias col."; 1 male, idem, except "ES Brasil"; 1 male (MZSP), "03-07-96\cineol #04\P. amarela"; 3 males (MZSP), "Eg. analis\04-07-96\cineol"; 1 male (MZSP), idem, except "07-07-96" and "#22"; 1 male (MZSP), idem, except "09-07-96" and "#33"; 1 male (MZSP), "F. Seca 2\27-02-97\cineol\10:44\700"; 1 male, (MZSP), idem, except "13:10" and "720"; 1 male (MZSP), idem, except "4:44" and "708"; 1 male (MZSP), idem, except "8:55" and "689"; 1 male (MZSP), "F. Seca 3\24-03-97\cineol\8:35\592"; 1 male (MZSP), idem,

except "593"; 1 male (MZSP), idem, except "26-04-97", "10:02" and "1357"; 1 male (MZSP), "Farinha 1\21-06-97\cin-eol\8:40\1630"; 1 male (MZSP), idem, except "8:55" and "1631"; 1 male (MZSP), idem, except "9:20" and "1634"; 1 male (MZSP), "Farinha 2\05-02-97\cin-eol\11:40\484"; 1 male (MZSP), idem, except "12:10" and "487"; 1 male (MZSP), idem, except "21-04-97", "9:38" and "1169"; 1 male (MZSP), idem, except "26-06-97", "10:20" and "1776"; 1 male (MZSP), idem, except "11:16" and "1782"; 1 male (MZSP), idem, except "9:20" and "1772"; 1 male (MZSP), "Farinha 3\03-03-97\cin-eol\12:40\442"; 1 male (MZSP), idem, except "21-06-97", "10:05" and "1669"; 1 male (MZSP), idem, except "9:40" and "1667"; 1 male (MZSP), idem, except "27-06-97", "8:50" and "1661"; 1 male (MZSP), "Parajú 1\23-04-97\cin-eol\10:35\1252"; 1 male (MZSP), idem, except "27-06-97", "10:50" and "1804"; 1 male (MZSP), idem, except "10:55" and "1805"; 1 male (MZSP), idem, except "11:35" and "1809"; 1 male (MZSP), "Parajú 1\03-02-97\skatol\9:40\450"; 1 male (MZSP), "Parajú 2\25-02-97\cin-eol\8:52\634"; 1 male (MZSP), idem, except "8:57" and "635"; 1 male (MZSP), idem, except "9:39" and "647"; 1 male (MZSP), idem, except "24-04-97", "12:47" and "1304"; 1 male (MZSP), idem, except "24-06-97", "9:20" and "1728"; 1 male (MZSP), "Parajú 2\24-06-97\skatol\9:26\1727"; 1 male (MZSP), "Parajú 3\23-02-97\cin-eol\9:28\556"; 1 male (MZSP), idem, except "24-04-97", "11:26" and "1289"; 1 male (MZSP), idem, except "11:28" and "1291"; 1 male (MZSP), idem, except "12:47" and "1303"; 1 male (MZSP), idem, except "23-05-97", "9:07" and "1694"; 1 male (MZSP), idem, except "9:52" and "1702"; 1 male (MZSP), idem, except "23-06-97", "9:57" and "1704"; 1 male (MZSP), idem, except "23-08-97", "10:41" and "564"; 1 male (MZSP), "Parajú 3\03-11-96\skatol\10:25\138"; 1 male (MZSP), "Peroba 1\29-01-97\cin-eol\8:35\348"; 1 male (MZSP), idem, except "22-02-97", "9:13" and "533"; 1 male (MZSP), idem, except "9:40" and "538"; 1 male (MZSP), idem, except "20-04-97", "9:05" and "1132"; 1 male (MZSP), idem, except "29-06-97", "9:32" and "1834"; 1 male (MZSP), idem, except "9:35" and "1837"; 1 male (MZSP), idem, except "09-08-96", "12:05" and "#99"; 1 male (MZSP), idem, except "27-10-96", "12:58" and "063"; 1 male (MZSP), "Peroba 2\22-04-97\cin-eol\8:20\1203"; 1 male (MZSP), idem, except "9:35" and "1213"; 1 male (MZSP), idem, except "28-06-97", "12:35" and "1824"; 1 male (MZSP), idem, except "9:35" and "1814"; 1 male (MZSP), idem, except "1816"; 1 male (MZSP), "Peroba 3\06-02-97\cin-eol\11:25\503"; 1 male (MZSP), idem, except "26-02-97", "8:05" and "665"; 1 male (MZSP), idem, except "8:25" and "659"; 1 male (MZSP), idem, except "9:55" and "669"; 1 male (MZSP), idem, except "28-04-97", "11:20" and "1445"; 1 male (MZSP), idem, except "9:20" and "1428"; 1 male (MZSP), idem, except "9:32" and "1430"; 1 male (MZSP), idem, except "25-06-97", "11:42" and "1766"; 1 male (MZSP), idem, except "8:47" and "1752"; 1 male (MZSP), idem, except "9:18" and "1756"; 1 male (MZSP), idem, except "9:53" and "1759"; 1 male (MZSP), "F. Seca 3\22-03-97\cin-eol\12:11\869" "BRASIL: ES: Reserva\Florestal de Linhares, \19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), "Farinha 1\28-11-96\cin-eol\12:06\081" "BRASIL: ES: Reserva\Florestal de Linhares, \19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), idem, except "27-03-97", "8:17" and "1021"; 1 male (MZSP), idem, except "9:20" and "1029"; 1 male (MZSP), idem, except "9:35" and "1996"; 1 male (MZSP), idem, except "27-07-97", "11:05" and "1968"; 1 male (MZSP), "Farinha 2\25-11-96\cin-eol\9:20\035" "BRASIL: ES: Reserva\Florestal de Linhares, \19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), idem, except "26-03-97", "8:20" and "988"; 1 male (MZSP), idem, except "9:55" and "998"; 1 male (MZSP), idem, except "25-07-97", "12:18" and "1951"; 1 male (MZSP), idem, except "1952"; 1 male (MZSP), idem, except "9:02" and "1933"; 1 male (MZSP), "Farinha 3\22-07-97\cin-eol\10:25\1887" "BRASIL: ES: Reserva\Florestal de Linhares, \19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), "Parajú 1\21-07-97\cin-eol\9:40\1859" "BRASIL: ES: Reserva\Florestal de Linhares, \19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), "Peroba 1\21-11-96\cin-eol\11:13\015" "BRASIL: ES: Reserva\Florestal de Linhares, \19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), idem, except "8:17" and "017"; 1 male (MZSP), idem, except "skatol", "9:40" and "010"; 1 male (MZSP), idem, except "26-11-96", "cin-eol", "12:40" and "020"; 1 male (MZSP), idem, except "30-03-97", "10:00" and "1115"; 1 male (MZSP), idem, except "29-07-97", "10:08" and "1987"; 1 male (MZSP), idem, except "27-09-97" and "16:08"; 1 male (MZSP), "Peroba 2\21-11-96\cin-eol\9:40\009" "BRASIL: ES: Reserva\Florestal de Linhares, \19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), idem, except "30-11-96", "11:13" and "117"; 1 male (MZSP), idem, except "118"; 1 male (MZSP), idem, except "11:47" and "114"; 1 male (MZSP), idem, except "29-03-97", "10:10" and "1097"; 1 male (MZSP), idem, except "11:28" and "1101"; 1 male (MZSP), idem, except "7:58" and "1090"; 1 male (MZSP), idem, except "26-07-97", "10:50" and "1862"; 1 male (MZSP), idem, except "11:50" and "1964"; 1 male (MZSP), idem, except "9:20" and "1896"; 1 male (MZSP), "Peroba 3\29-11-96\cin-eol\11:10\107" "BRASIL: ES: Reserva\Florestal de Linhares, \19°06'-19°18'S-39°45'-40°19'W\Col: M.A. Bonilla"; 1 male (MZSP), idem, except "12:25" and "110"; 1 male (MZSP), idem, except "9:10" and "106"; 1 male (MZSP), idem, except "9:42" and "085"; 1 male (MZSP), idem, except "28-01-97", "12:50" and "1086"; 1 male (MZSP), idem, except "28-03-97", "9:47" and "1066"; 1 male (MZSP), idem, except "23-07-97", "10:14" and "1905"; 1 female, "Parque Sooretama\LINHARES Esp. Santo\BRASIL V-1953\P. A. Teles Col." "aureiventris\Friese\CWT Wien VI 58\Euglossa\seabrai\M. Det. J.S. Moure 1957. Santa Leopoldina. 1 male, "Sta Leopoldina.\ES. 20/XI/1968.\C. Elias - leg.". São Mateus. 1 male, "São Mateus-ES\9 a 14/XII/1968.\col. C. Elias e Tadeu"; 1 male, "Brasil, Espírito Santo, \São Mateus, v.1986, C. Elias". Minas Gerais: Marliéria. 1 male (UENF), "582" "Marliéria\P. Est. Rio Doce\07/06/1999" "Euglossa analis\Westwood,

1840\F.A. Silveira, det. 2006". Rio de Janeiro: Campos dos Goytacazes. 1 male (UENF), "5" "Campos, RJ\Imbé\18-VII-1996\A Tonhasca Jr" "Euglossa(Euglossa)\analis\Westwood, 1840\J.S. Moure det. 1996"; 1 male (UENF), "Parque do Desengano\Campos, RJ\05-V-99\Col. A. Tonhasca Jr." "Local 3, Primário\Amostra- 7\Isca: cineol" "Euglossa (Euglossa)\analis\Westwood, 1840\J.L. Blackmer det. 1999"; 1 male (UENF), idem, except "4-III-1998", "Amostra- 32" and "Isca: salicilato de metila"; 1 male (UENF), idem, except "7-I-1998", "Amostra- 20" and "Isca: Eskatole"; 1 male (UENF), idem, except "9-VII-1998", "Local 6, Primário", "Amostra- 18" and "Isca: Cineole". Casimiro de Abreu. 1 male (UENF), "Brasil, RJ, Casimiro de Abreu\ReBio – União\Trilha: Cardoso\Código da Coleção: UNCA0028" "Data: 29/04/2004\Horário: 08:30s as 14:30s\Isca: Cineol\Ramalho A. V. leg"; 1 male (UENF), idem, except "UNCA0003", "16/07/2004" and "08:00s as 14:00s"; 7 males (UENF), idem, except "UNCA0004", "UNCA0005", "UNCA0006", "UNCA 0007"; 3 males (UENF), idem, except "UNCA0022" and "Eucalipto"; 2 males (UENF), idem, except "UNCA0023" and "UNCA0024"; 1 male (UENF), idem, except "UNCA0046", "19/08/2004", "08:00s as 11:30s" and "Cineol"; 2 males (UENF), idem, except "UNCA0047", "UNCA0048"; 1 male (UENF), idem, except "UNCA0073" and "Eucalipto"; 1 male (UENF), idem, except "UNCA0074"; 1 male (UENF), idem, except "UNCA0193", "03/12/2004", "08:00s as 15:00s"; 4 males (UENF), idem, except "UNCA0196", "UNCA0197", "UNCA0205" and "UNCA0211"; 1 male (UENF), idem, except "UNCA0414", "15/02/2005" and "Cineol"; 13 males (UENF), idem, except "UNCA 0417", "UNCA0437", "UNCA0438", "UNCA0442", "UNCA0445", "UNCA0448", "UNCA0449", "UNCA0463", "UNCA0465", "UNCA0469", "UNCA0473", "UNCA0476", "UNCA0477"; 1 male (UENF), idem, except "UNCA0570" and "Eucalipto"; 19 males (UENF), idem, except "UNCA0571", "UNCA0572", "UNCA0573", "UNCA0574", "UNCA0575", "UNCA0576", "UNCA0577", "UNCA0578", "UNCA0579", "UNCA0580", "UNCA0581", "UNCA0582", "UNCA0583", "UNCA0584", "UNCA0585", "UNCA0586", "UNCA0587", "UNCA0588", "UNCA0589"; 1 male (UENF), idem, except "UNCA0618", "10/03/2005" and "Cineol"; 4 males (UENF), idem, except "UNCA0619", "UNCA0620", "UNCA0621", "UNCA0622"; 1 male (UENF), idem, except "UNCA0644" and "Eucalipto"; 17 males (UENF), idem, except "UNCA0645", "UNCA0646", "UNCA0647", "UNCA0648", "UNCA0649", "UNCA0650", "UNCA0651", "UNCA0652", "UNCA0653", "UNCA0654", "UNCA0655", "UNCA0656", "UNCA0657", "UNCA0658", "UNCA0659", "UNCA0660", "UNCA0661"; 1 male (UENF), idem, except "UNCA0730" and "13/05/2005"; 1 male (UENF), idem, except "UNCA718" and "Cineol"; 1 male (UENF), idem, except "UNCA0734", "10/06/2005" and "Cineol"; 1 male (UENF), idem, except "UNCA0744" and "Eucalipto"; 2 males (UENF), idem, except "UNCA0745", "UNCA0746"; 1 male (UENF) "Brasil, RJ, Casimiro de Abreu\ReBio – União\Trilha: Cardoso\Código da Coleção: UNCA0036"; 1 male (UENF), "Brasil, RJ, Casimiro de Abreu\ReBio – União\Trilha: FJNIL\Código da Coleção: UNFJ0108" "Data: 11/11/2004\Horário: 08:00s as 15:00s\Isca: Cineol\Ramalho A. V. leg"; 1 male (UENF), "Brasil, RJ, Casimiro de Abreu\ReBio – União\Trilha: Fogueira\Código da Coleção: UNFO0006" "Data: 20/02/2004\Horário: 08:00s as 14:00s\Isca: Cineol\Gaglianone M. C. leg"; 2 males (UENF), idem, except "UNFO0007", "UNFO0008"; 1 male (UENF), "Brasil, RJ, Casimiro de Abreu\ReBio – União\Trilha: Fogueira\Código da Coleção: UNFO0140" "Data: 09/09/2004\Horário: 08:00s as 11:30s\Isca: Cineol\Ramalho A. V. leg"; 2 males (UENF), idem, except "UNFO0141", "UNFO0142"; 1 male (UENF), idem, except "UNFO0302" and "11/11/2004"; 2 males (UENF), idem, except "UNFO0303", "UNFO0304"; 1 male (UENF), idem, except "UNFO0352", "03/12/2004" and "Eugenol"; 1 male (UENF), idem, except "UNFO0408" and "Eucalipto"; 7 males (UENF), idem, except "UNFO0409", "UNFO0412", "UNFO0413", "UNFO0414", "UNFO0416", "UNFO0417", "UNFO0418"; 1 male (UENF), idem, except "UNFO0511" and "15/02/2005"; 7 males (UENF), idem, except "UNFO0512", "UNFO0513", "UNFO0514", "UNFO0515", "UNFO0516", "UNFO0517", "UNFO0518"; 1 male (UENF), idem, except "UNFO0474" and "Cineol"; 6 males (UENF), idem, except "UNFO0475", "UNFO0476", "UNFO0477", "UNFO0478", "UNFO0479", "UNFO0480"; 1 male (UENF), idem, except "UNFO0527" and "11/03/2005"; 20 males (UENF), idem, except "UNFO0528", "UNFO0531", "UNFO0532", "UNFO0536", "UNFO0538", "UNFO0539", "UNFO0540", "UNFO0541", "UNFO0544", "UNFO0545", "UNFO0549", "UNFO0550", "UNFO0551", "UNFO0552", "UNFO0553", "UNFO0554", "UNFO0555", "UNFO0556", "UNFO0557", "UNFO0558"; 1 male (UENF), idem, except "UNFO0575" and "Eucalipto"; 1 male (UENF), "Brasil, RJ, Casimiro de Abreu\ReBio – União\Trilha: Gasoduto\Código da Coleção: UNGA0005" "Data: 17/06/2004\Horário: 08:00s as 14:00s\Isca: Eucalipto\Ramalho A. V. leg"; 1 male (UENF), idem, except "UNGA0013"; 1 male (UENF), idem, except "UNGA0023", "20/08/2004" and "12:00s as 15:00s"; 2 males (UENF), idem, except "UNGA0024", "UNGA0025"; 1 male (UENF), idem, except "UNGA0050", "15/10/2004", "08:00s as 15:00s" and "Cineol"; 1 male (UENF), idem, except "UNGA0107" and "12/11/2004"; 2 males (UENF), idem, except "UNGA0108", "UNGA0118"; 1 male (UENF), "Brasil, RJ, Casimiro de Abreu\ReBio – União\Trilha: Heraldo\Código da Coleção: UNHE0014" "Data: 15/02/2005\Horário: 08:00s as 15:00s\Isca: Cineol\Ramalho A. V. leg"; 15 males (UENF), "UNHE0015", "UNHE0016", "UNHE0017", "UNHE0018", "UNHE0019", "UNHE0020", "UNHE0021", "UNHE0022", "UNHE0023", "UNHE0024", "UNHE0025", "UNHE0026", "UNHE0027", "UNHE0028", "UNHE0029"; 1 male (UENF), idem, except "UNHE0041", "15/02/2005" and "Eucalipto"; 16 males (UENF), idem, except "UNHE0042", "UNHE0043", "UNHE0044", "UNHE0045", "UNHE0046", "UNHE0047", "UNHE0048", "UNHE0049", "UNHE0050", "UNHE0051", "UNHE0052", "UNHE0053", "UNHE0054", "UNHE0055",

“UNHE0056”, “UNHE0057”; 1 male (UENF), “UNHE0244”, “13/05/2005” and “Cineol”; 1 male (UENF), “Brasil, RJ, Casimiro de Abreu\ReBio – União\Trilha: Interpretativa\Código da Coleção: UNIN0131” “Data: 10/09/2004\Horário: 12:00s as 15:00s\Isca: Cineol\Ramalho A. V. leg”; 1 male (UENF), idem, except “UNIN0133”; 1 male (UENF), idem, except “UNIN0251” and “03/12/2004”; 1 male (UENF), idem, except “UNIN0332” and “11/03/2005”; 4 males (UENF), idem, except “UNIN0333”, “UNIN0334”, “UNIN0335”, “UNIN0336”; 1 male (UENF), “BR RJ Casimiro de Abreu\Rebio União (lava pé baixo)\08.VII.07 – eucalipto\Gaglianone et al leg.”; 2 males (UENF), idem, except “lava pé cima”; 1 male (UENF) “BR RJ Casimiro de Abreu\Rebio União Eucalipto 2\06.VII.07 – eucalipto\Gaglianone et al leg.”; 7 males (UENF) “BR RJ Casimiro de Abreu\Rebio União Interpretativa\06.VII.07 – eucalipto\Gaglianone et al leg.”. Santa Maria Madalena. 1 male (UENF), “Parque do Desengano\Sta. Ma. Madalena, RJ\12-III-99\Col. M. Erthal Jr.” “Local: 9, Primário\Amostra: 80\Isca: Escato”; 1 male (UENF), “Local 6\Amostra 15\Isca: Cineole” “Sta. Ma. Madalena,\RJ. Pq. Desengano\10V-99\G.S. Albuquerque Col”; 1 male (UENF), idem, except “Amostra 15”, “cineol”, “15/III/1999” and A. Tonhasca Jr. Col.”; 1 male (UENF), “Parque do Desengano\Sta. Ma. Madalena, RJ\14-IX-1997\Col. A. Tonhasca” “Local 5, Fragmento\pequeno Amostra- 27\Isca: vanilina” “Euglossa (Euglossa)\analis\Westwood, 1840\J.L. Blackmer det. 1999”; 1 male (UENF), idem, except, “7-III-1998”, “Local 9, Primário”, “Amostra 1” and “Eskatole”.

Euglossa roderici. BRAZIL, Paraná: Antonina. 1 male, “sm” “Antonina-PR\02-II-1969\Moure e Laroca”; 1 male, “DZUP\170768” “Brasil, Paraná, Antonina\RPPN do Rio Cachoeira\10-11h, Puçá, 25°19’S\48°39’W Alt54m 25.I.07\Faria Jr.;Weiss; Mattozo\Salicilato de Metila”; 1 male, idem, except “170769”; 1 male, idem, except “170831” and “13-14h”; 3 males, idem, except “170832”, “170835”, “170836”; 1 male, idem, except “170867”, “12-13h” and “01.II.07”, 1 male, idem, except “170834” and “14-15h”; 1 male, idem, except “170911”, “13-14h” and “24.II.07”; 1 male, idem, except “170951”, “13-14h” and “24.III.07”; 2 males, idem, except “170952”, “170953”; 1 male, idem, except “170971”, “14-15h” and “23.VI.07”; 1 male, idem, except “167533”, “13-14h” and “8.IX.07”; 1 male, “DZUP\170755” “Brasil, Paraná, Antonina\RPPN do Rio Cachoeira\Armadilha, 25°19’S\48°39’W Alt54m 08.XII.06\Faria Jr.;Weiss;Mattozo\Salicilato de Metila”; 1 male, idem, except “170757”; 1 male, idem, except “170761” and “09.XII.06”; 1 male, idem, except “170849” and “25.I.07”; 1 male, idem, except “170850”; 1 male, idem, except “170932” and “24.II.07”; 1 male, idem, except “170933”; 1 male, idem, except “170960” and “24.III.07”; 2 males, idem, except “170961”, “170962”; 1 male, idem, except “170974” and “23.VI.07”. Guaraqueçaba. 1 male, “Brasil, Paraná,\Guaraqueçaba, Tagaçaba,\8.iii.1996, R. Bastos”. Morretes. 1 male, “DZUP\027140” “Brasil, Paraná,\Morretes, IAPAR,\25°30’27”S, 48°27’55”W\Alt: 15m, 08.iv.2006,\A.Martins, Salicilato de\Metila”; 1 male, idem, except “027139” and “V.Mattozo”; 1 male, idem, except “027144”; 1 male, idem, except “027150” and “G.Weiss”; 1 male, idem, except “027135”; 1 male, idem, except “027137” and “L.R.R. Faria Jr.”; 2 males, idem, except “027145”, “027146”; 1 male, idem, except “027136” and “G.\Weiss, A. Martins,\V.Mattozo, L.R.R. Faria Jr. “; 1 male, idem, except “027148” and “L.R.R. Faria Jr., G.\Weiss, A. Martins,\V.Mattozo “; 1 male, idem, except “027153”, “29.iv.2006” and “G.Weiss”; 1 female (DZUP), “Brasil, Paraná,\Morretes, IAPAR, flor\de Bixa orellana,\10.v.2006\Maia, C. M. leg”. Paranaguá. 1 male, “Alexandra\PR. 01-Fever.\Pe J. S. Moure 1969”; 1 male, “BRAZIL: PR.\Alexandra\8 XII 1968\R. L. Dressler\1320” “\skatole”; 1 male, idem, except “Methyl\salicilate”. São Paulo: Salesópolis. 1 male (MZSP), “Est. Biol. Boracéia\Salesópolis, SP\W. Wilms, col.\20.12.1993” “Euglossa\mixta\Friese, 1899\det. W. Wilms, 1994”; 1 male (MZSP), idem, except, “13.3.1994”. Sete Barras. 2 males, “Brasil, São Paulo,\10 Km a NW de Sete\Barras, 40 m, 24°22’S,\47°58’W, 26.ii.2005,\Melo et. al.” “salicilato de metila”; 1 male, “DZUP\167700” “Brasil, São Paulo, Sete Barras\Fazenda Morro do Capim\11:05h, Puçá, 22°22’S\47°58’W 9.XII.08\Mattozo & Thomaz\Salicilato de Metila”; 1 male, idem, except “167703” and “11:50h”; 1 male, idem, except “167708”, “9:55h”, “13.I.09”; 1 male, idem, except “167709” and “10:34h”; 1 male, idem, except “167712” and “11:05h”; 1 male, idem, except “167715” and “12:13h”; 1 male, idem, except “167713”, “11:28h” and “B-ionona”; 1 male, idem, except “167727” and “12:13h”. Ubatuba. 8 males, “Euglossa\iopyrrha\Singer col e\det” “Picinguaba\Ubatuba/SP\fev/1999”; 3 males, idem, except “col e det”; 1 male, idem, except “col e det”.