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THREE NEW BRAZILIAN SPECIES OF
PSEUDOGAURAX WITH A SYNOPSIS OF
THE GENUS IN THE WESTERN
HEMISPHERE (DIPTERA,
CHLOROPIDAE)

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Larvae of flies of the chloropid genus *Pseudogaurax* are egg predators, and the flies are often reared from egg masses such as those in spider egg sacs and mantid oothecae. Receipt of an interesting series reared from the nest of an argiopid spider in southern Brazil by Célio Valle, of the Faculdade de Filosofia, Ciências e Letras de São Leopoldo, Rio Grande do Sul, and kindly submitted for study by the collector, prompted the preparation of a synopsis of the present knowledge of the genus.

The genus *Pseudogaurax* was proposed by Malloch in 1915 for the North American species *Gaurax anchora* Loew. Prior to that time, and even much later by some authors, the species were usually included in *Gaurax*, as for example, by Duda (1930) in monographing the Neotropical Chloropidae. Furthermore, having overlooked Malloch's prior use of the name, Duda erected a new genus *Pseudogaurax* for *G. interruptus* Becker. The latter happens to be a typical *Pseudogaurax* Malloch, and Duda's generic name is thus both a synonym and a homonym.

In 1937, Hall published a review of the North and Central American species of the genus, with seven species, four of them new. However, he overlooked four Central American species described by Duda in 1930, perhaps because they were placed by Duda in *Gaurax*. Luckily, only one synonym resulted. In 1945, Sabrosky catalogued the species of *Pseudogaurax* known to him, chiefly from the types, and listed 19 Neotropical species (11 referred to *Pseudogaurax* for the first time and two "probably" *Pseudogaurax*). The present key includes 28 species, including three new species from Brazil.

It appears highly probable that further investigations in the tropics, especially rearings from spider egg sacs, will reveal a much larger number of species. A dozen or more undescribed species are already before me, but represented by only one or a few specimens in poor condition or inadequate for description.

Most of the known species have not previously been illustrated. The present figures are semidiagrammatic, based on a outline typical of most of the species. Any differences in the proportions of mesonotum and scutellum can be given definite measurements in description.

Four of the known species are not figured, three (*rufus*, *oeceti-phagus*, and *oculatus*) because they have no pattern of black stripes, and one (*pallipes*) because the mesonotum and scutellum are almost entirely black. I am indebted to Dr. A. Soós and Miss A. Draskovits of the Magyar Nemzeti Múzeum at Budapest for the figure and descriptive notes on the type of *P. trifidus* (Duda).

Pseudogaurax Malloch

Pseudogaurax Malloch, 1915: 159. Type-species, *Gaurax anchora* Loew (original designation).

Pseudogaurax Duda, 1930: 86. Type-species, *Gaurax interruptus* Becker (monobasic).

Mimogaurax Hall, 1937: 257 (n. name for *Pseudogaurax* Duda, preocc.). Type-species, *Gaurax interruptus* Becker (automatic).

Pseudogaurax; Sabrosky, 1944: 457-459 (catalogue).

Generic diagnosis: Head much higher than long; eyes densely covered with long hairs, large, occupying most of the head as seen in profile, strongly narrowed, long axis vertical; cheeks narrow, often sublinear; antennae porrect, each third segment broader than long, reniform, the arista relatively short, distinctly haired; outer vertical and cruciate postvertical bristles well developed; ocellar bristles short, sometimes hairlike, erect to slightly reclinate, subparallel to cruciate at tips; each parafrontal with a row of long, slightly reclinate orbital hairs, usually 8-10 in number. *Thorax*: Mesonotum and scutellum well covered with fine, silky hairs; mesonotum longer than broad; scutellum typically elongate conical, flattened on disk; postscutellum high; thoracic chaetotaxy: 1 humeral, 1 + 2 notopleural (except in *pallipes*), 1 postalar, 1 posterior dorsocentral, and 1 apical scutellar pairs of bristles well developed, the last straight, arising from tubercles set close together at apex of scutellum. *Hind tibia* posterodorsally with elongate-oval "sensory area." *Wing* as figured by Curran (1934: 340, fig. 10), with long first costal sector (to end of first vein), exceptionally broad marginal cell, costa to fourth vein, first basal cell narrow and parallel-sided, and anal area broad.

The elongate, conical, flattened scutellum with straight approximated apical scutellars and the broad marginal cell are the most characteristic features. The genus *Gaurax*, and the Neotropical *Pterogaurax* and *Pseudoscinnella* which are similar to *Gaurax*, likewise have a broad marginal cell, but the scutellum is short, with convex disk and broadly rounded outline, and the apical scutellar bristles are curved and widely separated at their bases.

KEY TO WESTERN HEMISPHERE *Pseudogaurax*

1. Scutellum partly black, with a basal spot or median stripe 2
- Scutellum entirely lemon-yellow 12

(Scutellum partly black)

2. Mesonotum typically yellow with four reddish stripes, contrasting with black-striped scutellum, occasionally two narrow submedian mesonotal stripes infuscated (Fig. 1) (southern U.S.A., Mexico, Cuba) *P. signatus* (Loew)
- Mesonotum not as above, chiefly black, or with one to three black stripes 3
3. Mesonotum with lyre-shaped pattern of three narrow black stripes and prescutellar connection (Figs. 2, 3) 4
- Not so (Fig. 4-10) 5
4. Legs entirely lemon-yellow; mesonotum as in Fig. 2 (Costa Rica) *P. trifidus* (Duda)
- All tibiae chiefly black; mesonotum as in Fig. 3 (s. Brazil) *P. tridens*, sp. n.
5. Mesonotum with U-shaped pattern of two broad lateral stripes and broad prescutellar connection, occasionally a linear median stripe somewhat infuscated (Fig. 4) (s. Brazil) *P. luciscens* (Enderlein)
- Not so 6
6. Mesonotum with anchor-shaped pattern (Fig. 5) (eastern U.S.A.) *P. anchora* (Loew)
- Not so 7
7. Both meso- and sternopleuron chiefly black; mesonotum with three broad black stripes, the laterals interrupted at mesonotal suture (Fig. 6); abdominal terga black to the ventral membrane (s. Brazil) *P. plaumanni*, sp. n.
- At most the mesopleuron black; mesonotum with different color pattern 8
8. Mesonotum with narrow median black stripe, much narrower than width of scutellum, and in *tibialis* with narrow supraalar vittulae (Figs. 7, 8); frontal triangle yellow, only the ocellar tubercle black 9
- Mesonotum broadly black, or with a broad median stripe equal to width of scutellum (Figs. 9, 10); frontal triangle black or dark brown 10
9. Mesopleuron with large, polished black spot; scutellum with narrow median stripe (Fig. 7); legs lemon-yellow, only the fore tibia and fore tarsus brown (s. Brazil) *P. longilineatus* Sabrosky
- Pleuron entirely yellow; scutellum with broad chevron-shaped crossband, yellow at both base and apex (Fig. 8); all tibiae, and distal two to three segments of all tarsi, brown to black (Argentina) *P. tibialis* Malloch
10. Mesopleuron chiefly black; legs entirely lemon-yellow; abdominal terga black to the ventral membrane; 1+1 notopleural bristles (Costa Rica) *P. pallipes* (Duda)
- Pleuron entirely yellow; notopleurals 1+2 11

11. Mesonotum with broad median black stripe, subequal to basal width of scutellum (Fig. 9); legs entirely lemon-yellow (Panama) *P. latimaculatus* Hall
 — Mesonotum broadly black up to yellow sides (Fig. 10); all tibiae, and fore tarsus except narrowly at base, black (Peru) *P. tectus* (Becker)

(Scutellum entirely yellow)

12. Mesonotum yellow with orange to reddish stripes 13
 — Mesonotum marked with black 15
13. Legs lemon-yellow, only the fore tarsi darkened; mesonotum orange, with yellow humeri *P. rufus* (Duda)
 — Fore tarsus, and the hind tarsus at least in part, black or blackish 14
14. Mesopleuron yellow (Argentina)
 *P. oecetiphagus* (Blanchard)
 — Mesopleuron with large, polished black spot (Paraguay)
 *P. oculus* (Becker)
15. Disk of mesonotum broadly black, not obviously vittate (Figs. 11-13) 16
 — Mesonotum with black stripe(s) or spots (Figs. 14-24) 18
16. Frontal triangle yellow outside the black ocellar tubercle; mesopleuron with large black spot; mesonotum as in Fig. 11 (St. Vincent) *P. triangularis* (Williston)
 — Frontal triangle black; mesopleuron yellow 17
17. Fore tibia entirely, and hind tibia dorsally on proximal two-thirds, black; mesonotum as in Fig. 12 (s. Brazil)
 *P. trabeatus* (Enderlein)
 — Legs lemon-yellow, the mid and hind tibiae lightly browned mesally; mesonotum as in Fig. 13 (Colombia)
 *P. immaculatus* (Becker)
18. Mesonotum with one narrow median stripe, not always complete (Figs. 14-17) 19
 — Mesonotum not unilineate (Figs. 18-24) 22
19. Abdomen predominantly yellow, with black crossband on tergum 4 (except narrowly at sides) and a posterior marginal band or partial band on tergum 3; mesonotum as in Fig. 14 (s. Brazil) *P. cingulatus*, n. sp.
 — Dorsum of abdomen chiefly black or black-brown, with the infuscation on terga 2-5 forming a broad V or broad stemmed Y 20
20. All tibiae infuscated except distally; mesonotum as in Fig. 15 (Panama) *P. unilineatus* Hall
 — Legs entirely lemon-yellow 21

21. Front obviously wider than an eye, by 1.3 times; pteropleuron yellow; mesonotum as in Fig. 16 (s. Brazil) *P. nigrolineatus* (Enderlein)
 — Front subequal to or slightly narrower than an eye, appearing long and narrow; pteropleuron with brown spot anteroventrally, adjoining the mesopleural spot; mesonotum as in Fig. 17 (Puerto Rico) *P. lancifer* (Coquillett)
22. Pleuron with four black spots, on meso-, ptero-, sterno-, and hypopleuron; disk of mesonotum reddish-brown, with a median and two lateral black stripes (Fig. 18); scutellum short and rather broadly rounded distally (Costa Rica)
 *P. parallelinervis* (Duda)
 — Not so, the pleuron at most with a mesopleural spot, and disk of mesonotum otherwise marked 23
23. Pleuron entirely yellow, mesonotum lacking a median stripe, but on each side with a broad lateral stripe and a narrower supraalar vittula (Fig. 19) (Florida) *P. floridensis* Sabrosky
 — Mesopleuron below with polished black spot, usually large and conspicuous 24
24. Legs entirely lemon-yellow 25
 — At least the fore and hind tibiae black 27
25. Mesonotum with anterior slope black and a large subquadrate black spot before the scutellum (Fig. 20); occiput broadly black (Costa Rica) *P. nigromaculatus* (Duda)
 — Mesonotum with one to three broad black stripes (Figs. 21-24); occiput almost entirely yellow in *miscemaculatus*, unknown in *testaceus* 26
26. Mesonotum with three broad black stripes and two supraalar vittulae (Fig. 21) (s. Brazil) *P. testaceus* (Enderlein)
 — Mesonotum with complete broad median black stripe and two round posthumeral spots (Fig. 22) (Puerto Rico)
 *P. miscemaculatus* Hall
27. Mesonotum with three sublinear black stripes (Fig. 23) (Paraguay) *P. trilineatus* (Duda)
 — Mesonotum with four narrow black stripes, including two submedian and two lateral, the latter interrupted by the mesonotal suture (Fig. 24) (Brazil) .. *P. interruptus* (Becker)

***Pseudogaurax tridens*, sp. n.**

(Fig. 3)

Yellow species with three black stripes on the mesonotum and broad black stripe on the scutellum.

Male, female. — Yellow, marked with black or black-brown as follows: Ocellar tubercle and a variable portion of the adjacent area of the frontal triangle, the arista, a small oval spot on middle of occiput, three narrow mesonotal stripes with prescutellar connection, the lateral stripes broadened posteromesad of the humeri, a broad median stripe on the scutellum, a narrow median stripe on the reddish postscutellum, a small spot anteroventrally

on the notopleuron, large areas on the meso- and sternopleuron, dorsum of abdomen chiefly, and all tibiae except distally; mesonotal pattern typically as figured, but the anterior enlargement of the lateral stripes ranging from only a diagonal posthumeral stripe to a large posthumeral triangle extending nearly to the mesonotal suture, and in dark specimens a postsutural spot in the intra-alar position; mesopleuron with broad vertical stripe that is chiefly dark brown, but the lower part composed of a large, oval, glabrous, polished black spot characteristic of many species of *Pseudogaurax*; sternopleuron polished black-brown on anterior slope, varying in extent from a relatively small area to one greater than that infuscated on the mesopleuron; tibiae largely black, distally yellow from one-fifth of the fore tibia to one-third the hind tibia, on dark specimens the fore and mid tibiae entirely infuscated; fore tarsus, brown, the basal segment sometimes yellow; wing hyaline, veins dark yellow to brown.

Front of moderate width for the genus, the length and width approximately equal, and the width at vertex 0.37-0.40 times the width of head; frontal triangle shining, non-pollinose, not quite three-fourths the length of the front; third antennal segment reniform, larger in male than in female; arista distinctly long pubescent. Mesonotum longer than broad, the length to width as 28: 32; scutellum elongate conical, its length to width at base as 40: 34. Wing venation usual for the genus; marginal cell broad, its width opposite the juncture of first vein with costa 1.75 times the width of submarginal cell opposite the same point; length of second to fourth costal sectors as 30: 20: 12; third vein slightly concave anteriorly and the fourth vein curved caudad distally, the two veins thus diverging near apex of wing; small crossvein slightly beyond the middle of the discal cell; ultimate sector of fifth vein 1.23 times the length of the penultimate sector of fourth vein. Length, 2.5-3 mm.

Holotype male, allotype, and 18 paratypes (8 males, 10 females), Nova Teutônia, Santa Catarina, Brazil, 27° 11' B., 52° 23' L. (Fritz Plaumann). The holotype, allotype, and 12 paratypes (six of each sex) were collected 28 July 1937, and the remaining paratypes on 5, and 7 August 1937. Type series in the British Museum (Nat. Hist.); paratypes in the U.S. National Museum.

This species immediately reminds one of *P. trifidus* from Costa Rica, but that species has entirely yellow tibiae, the posthumeral stripes are lacking, and the pleuron is chiefly yellow with a large black spot on the mesopleuron. *Pseudogaurax trilineatus* likewise has three mesonotal stripes (of Fig. 23), and further suggests *tridens* by its predominantly black tibiae, but the stripes are narrow, the scutellum is entirely yellow and the pleuron has the elongate mesopleural spot.

***Pseudogaurax plaumanni*, sp. n.**

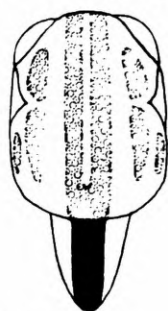
(Fig. 6)

Species with three broad black mesonotal stripes, a broad black stripe on the scutellum, and meso- and sternopleuron chiefly black.

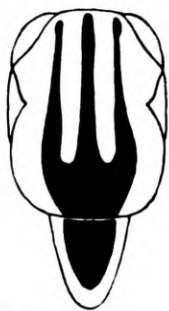
Male, female — Yellow ground color, marked with black or black-brown as follows: Frontal triangle nearly to vertex, large brown spot on upper occiput below the postvertical bristles, the arista, three broad mesonotal stripes, a broad stripe on scutellum,

the postscutellum and squamopleuron, meso- and sternopleuron chiefly, and abdomen except first tergum and middle third of second; small and inconspicuous brown spots on ptero- and hypopleuron; fore tibia and fore tarsus lightly browned; wing hyaline, veins light brown.

Front narrower than long, as 12: 14, its width at vertex 0.39 times the width of the head; frontal triangle shining, non-pollinose, 0.80 times the length of the front; third antennal segment reniform. Mesonotum longer than broad, as 32: 28; scutellum elongate but sides rather broadly rounded, length to width at base as 36: 34. Wing venation usual for the genus; width of the broad marginal cell, opposite the juncture of first vein with costa, 1.7 times that of submarginal cell opposite the same point; length of second to fourth costal sectors as 28: 19: 14; fourth vein curved caudad near apex of wing, the third and fourth veins thus obviously diverging; small crossvein approximately midway on the discal cell; penultimate sector of vein 4 nearly as long as the ultimate sector of vein 5. Length, 2.75 mm.



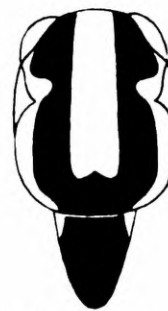
1 signatus



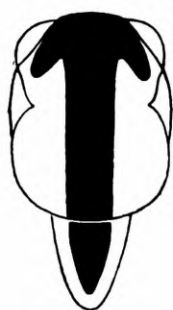
2 trifidus



3 tridens



4 luciscens



5 anchora



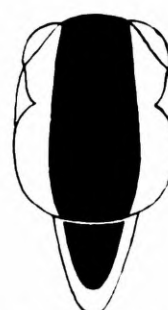
6 plaumanni



7 longilineatus



8 tibialis



9 latimaculatus



10 tectus



11 triangularis



12 trabeatus



13 immaculatus



14 cingulatus

Figs. 1-14: Semidiagrammatic figures of the mesonotal and scutellar pattern of *Pseudogaurax* species.

Holotype female, Nova Teutônia, Santa Catarina, Brazil, Sept. 1949 (Fritz Plaumann). Type No. 67945 in the U.S. National Museum, received through the kindness of George C. Steykal. Paratypes, 2 females, same locality and collector, 14 August 1937, in the British Museum (Nat. Hist.)

This species most nearly resembles *P. tectus* (Becker) and *P. pallipes* (Duda), but those species lack any suggestion of stripes, and their mesonotum is exceptionally slender compared with other species of *Pseudogaurax*. A noteworthy feature of *plaumanni* is the infuscation of the abdominal terga to the ventral membrane. This is also true in *pallipes*, the type of which is before me, and may be true in the related *tectus*. In most of the species of the genus, the extreme sides of the terga are yellow, though this is usually visible only in lateral or ventral aspect.

***Pseudogaurax pallipes* (Duda)**

Gaurax tectus var. *pallipes* Duda, 1933: 207.

This species is aberrant in the genus in having only 1 + 1 notopleural bristles, but the elongate, flattened scutellum and other characteres associate it with *Pseudogaurax*.

***Pseudogaurax oculatus* (Becker)**

Oscinella oculata Becker, 1912: 204 (key), 214.

This name is involved in double secondary homonymy, with older and younger names. Duda (1930: 87) referred *Oscinella oculata* Becker (1912) to *Gaurax*, where it was antedated by the Oriental *Gaurax oculatus* Becker (1911). However, the homonymy was not noticed and the former was not renamed. Sabrosky (1944, op. cit.) transferred the species to *Pseudogaurax*, and since it has now escaped from the situation of secondary homonymy the name need not be changed (1961, 1964, International Code of Zoological Nomenclature, implicit in Article 59b). In the reverse direction to the foregoing, Duda (1934: 114, 158) had transferred *Gaurax oculatus* Becker (1911) to *Oscinella*, in which genus it would have preoccupied *Oscinella oculata* Becker (1912) had the latter not already been removed. Incidentally, I believe that the Oriental *oculatus* (1911) is a true *Gaurax*, as originally described. Duda's concept of *Gaurax* is actually *Pseudogaurax*.

***Pseudogaurax cingulatus*, sp. n.**

(Fig. 14)

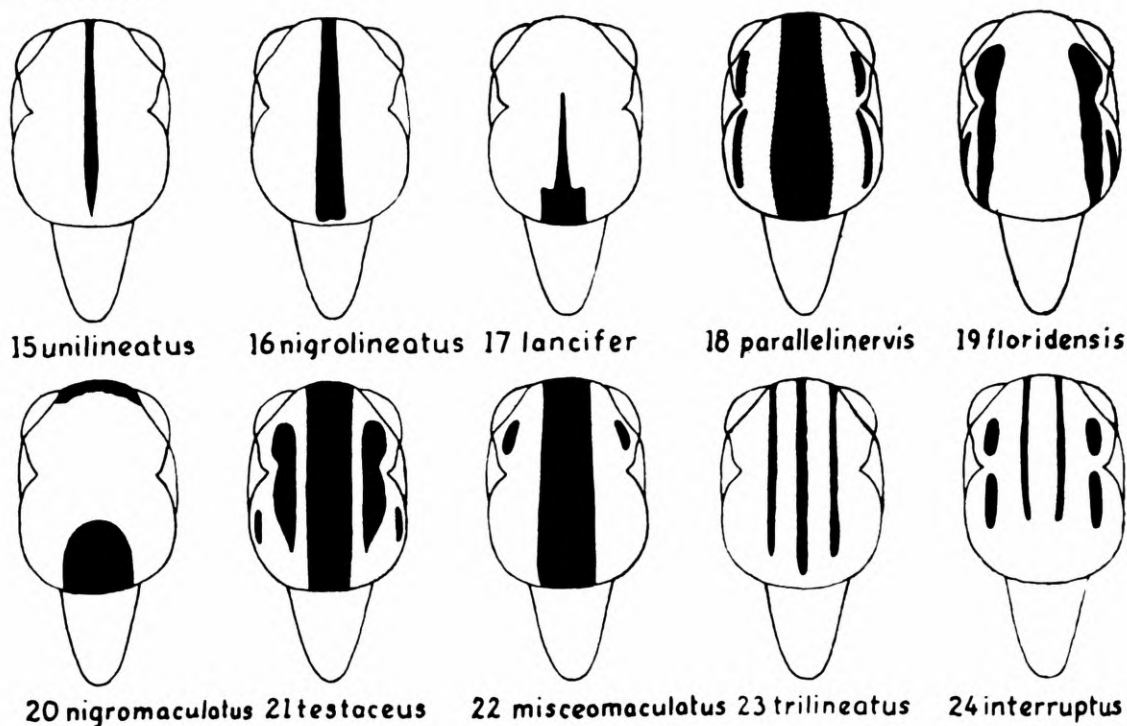
Yellow species with a single sublinear black stripe on the mesonotum, and abdomen chiefly yellow with a black crossband.

Male, female. — Yellow, marked with black or black-brown as follows: Small spot on ocellar tubercle, the arista except basal segment, a sublinear median mesonotal stripe, an elongate-oval spot on lower portion of mesopleuron, a crossband on abdomen

covering the dorsum of tergum 4 and the adjoining posterior margin of tergum 3, a posterior stripe on fore tibia, and broad anterodorsal stripe on middle third of hind tibia; tarsi partly brownish, including distal three segments of fore tarsus and distal segment or two of mid and hind tarsi; bristles and hairs pale yellow; wing hyaline, veins yellow.

Front barely longer than broad, its width at vertex 0.385 times the width of head; frontal triangle shining, non-pollinose, 0.85 times the length of front; third antennal segment subreniform, larger below than above; arista long pubescent. Mesonotum slightly longer than broad, as 29: 27; scutellum somewhat elongate, subconical, the sides slightly curved, its length compared to the width at base as 33: 30. Venation usual for the genus; the broad marginal cell opposite apex of first vein 1.75 times the width of the submarginal cell opposite the same point; length of second to fourth costal sectors as 21: 15: 10; ultimate sector of fourth vein straight; discal cell relatively short, the small crossvein opposite three-fifths the length of the cell; ultimate sector of fifth vein 1.4 times the length of penultimate sector of fourth vein. Length, 2.5 mm.

Holotype male, allotype, and 7 paratypes (4 males, 3 females). São Leopoldo, Rio Grande do Sul, Brazil, May 1964 (Célio Valle; bred from nest of argioid spider, *Metazygia unguiformis* Keyserling); female paratype, São Paulo, Brazil, March 1963 (F. D. Bennett, ex spider ovisac on *Baccharis dracunculi folia*). Holotype, allotype, and 2 paratypes in the U. S. National Museum by courtesy of Mr. Valle, the remaining paratopotypes returned to him; São Paulo paratype to the Commonwealth Institute of Entomology, London.



Figs. 15-24: Semidiagrammatic figures of the mesonotal and scutellar pattern of *Pseudogaurax* species.

P. cingulatus is of the four known species with yellow scutellum that are characterized by a single narrow median mesonotal stripe (ct. Figs. 14-17). The four may be separated as shown in the key, but general specimens with immature coloration can easily be confused. Fortunately the banded abdomen of the present species is an unusually distinct feature.

***Pseudogaurax nigrolineatus* (Enderlein)**

(Fig. 16)

Oscinosoma nigrolineata Enderlein, 1911: 218.

As Enderlein noted, the fore legs are missing on the type specimen. I have seen an example from Nova Teutônia, Santa Catarina, Brazil, that shows that the legs are entirely lemon yellow.

***Pseudogaurax parallelinervis* (Duda), n. comb.**

(Fig. 18)

Botanobia parallelinervis Duda, 1933: 208.

This species has the typical wing venation of *Pseudogaurax*, but the scutellum is short and broadly rounded, and the length is much less than the width at base, as 20: 26. However, the disk of the scutellum is flattened, apical scutellar bristles are close together at their bases, and the subapicals are reduced, and I have no hesitation in referring the species to *Pseudogaurax*. The holotype is before me in the U. S. National Museum.

***Pseudogaurax trilineatus* (Duda)**

(Fig. 23)

Gaurax trilineatus Duda, 1930: 86.

Duda recorded this species as being from Brazil, but the only specimen located in European museums, marked with Duda's characteristic handwritten label as a new species, is from San Bernardino, Paraguay (Fiebrig), in the Naturhistorisches Museum in Vienna. This agrees perfectly with the characters in Duda's key, and in the absence of evidence to the contrary I assume that it is the type and that the published locality, "Brasilien", was a lapsus.

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