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Systematic Study of the *Pantomorus viridisquamosus* Species Group (Coleoptera: Curculionidae)

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Abstract

The *Pantomorus viridisquamosus* species group can be separated from other *Pantomorus* Schoenherr, because it has recumbent setae, slender antennae with funicular article 2 almost as long as 1, glabrous scutellum, indistinct humeri, and hind tibiae lacking corbel plate and with dorsal comb about as long as apical comb. It is composed of two species, *P. viridisquamosus* (Boheman) from central and northeastern Argentina, Uruguay, and southern Brazil, and *P. obrieni* Lanteri sp.nov. from northeastern Argentina and southern Brazil. *Pantomorus obrieni* differs from *P. viridisquamosus* because it is smaller and has carinate scales, shorter and wider setae, more conical rostrum, and more convex eyes, pronotum and elytra. The female of *P. viridisquamosus* is redescribed and the male described (males are very infrequent). Line drawings and SEM illustrations of the diagnostic structures, and a distributional map are included.

Introduction

The species *Pantomorus viridisquamosus* (Boheman 1859) (senior synonym of *Antelmia viridissima* Hustache 1919) is distributed in central and northeastern Argentina, Uruguay, and southern Brazil, and has been introduced in Mauritius Islands. Its behavior is not well known, but in Argentina it has been mentioned as a potential pest of alfalfa, *Medicago sativa* Linné (Brewer 1976).

Pantomorus viridisquamosus commonly is misidentified in collections. The most frequent mistake is to confuse it with *P. auripes* Hustache 1947, a species with similar color and range. Another common error is to label it as *P. viridis* Champion 1911, a species with similar appearance but endemic to Texas and Mexico.

The generic placement of the species has been controversial. *Pantomorus viridisquamosus* was described in *Pantoplanes* Schoenherr 1840 (b), and *A. viridissima* is the type of the genus *Antelmia* Hustache 1919, currently both genera are synonyms of *Pantomorus* Schoenherr 1840 (a). Moreover, Hustache (1947) placed *P. viridisquamosus* in *Asynonychus* Crotch 1867, considered by some authors as synonym or subgenus of *Pantomorus,* and resurrected by Lanteri (1986).

We had the opportunity to study type material of *P. viridisquamosus* and *A. viridissima,* and long series of specimens, including one male from Martín García Island (males commonly are unknown for species of *Pantomorus);* and we found a new closely related species from northeastern Argentina and southern Brazil, herein named *P. obrieni.*

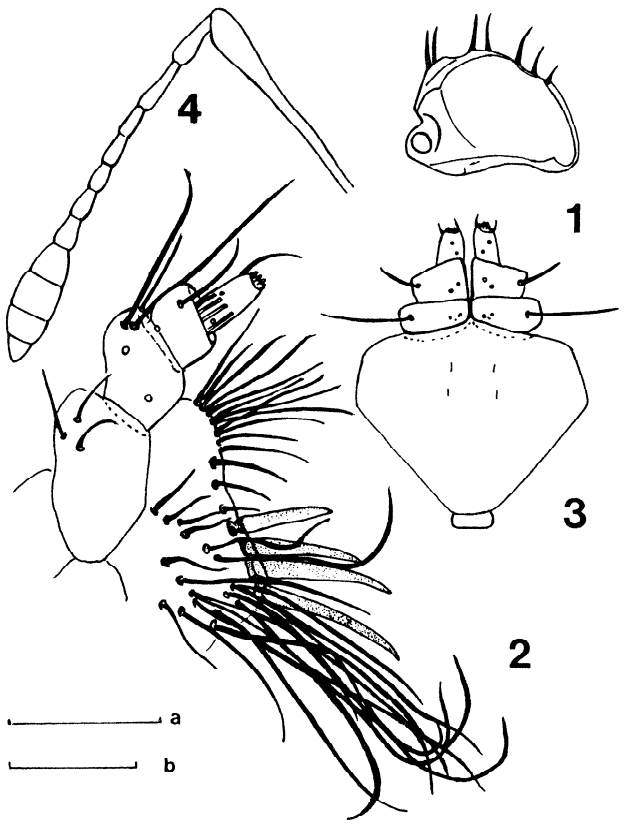
The main objectives of this paper are to describe the new species *P. obrieni* and the male of *P. viridisquamosus,* to redescribe the female of the latter and to discuss the relationships of both species with other groups of *Pantomorus.*

Materials and Methods

Collections. This study was based upon examination of adult specimens borrowed from the following collections: British Museum (Natural History), London, England (BMNH); Charles W. O'Brien collection, Tallahassee, USA (CWOB); Universidade Federal do Paraná, Curitiba, Brazil (DZUP); Fundación Miguel Lillo, Tucumán, Argentina (FMLC); Museo Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires, Argentina (MACN); Museo de La Plata, La Plata, Argentina (MLPC); Naturhistoriska Riksmuseet, Stockholm, Sweden (NRSE); Universidad de la República, Montevideo, Uruguay (URMC); and United States National Museum, Washington, D.C., USA (USNM).

Measurements. The length of the body was obtained by measuring along the midline of the pronotum and elytra. The ratio WF/WR (width of frons between anterior margins of eyes/width of rostrum measured across apex, without scrobes), was used to indicate the variation in the shape of the rostrum. We considered that the rostrum is slightly truncate-conical if this ratio is lower than 1.60, moderately truncate-conical when ranges between 1.61 and 1.80, and strongly truncate-conical if it is higher than 1.80.

Illustrations. Camera lucida drawings of mouthparts, spermatheca and sclerites of internal sac, were made using a Wild M20 compound microscope, and all others, using a Wild M8 stereoscopic microscope. To see the details of antennae, head, pronotum, vestiture, punctures of elytra and denticles of fore tibiae we used a JEOL-JSM-T100 scanning microscope.

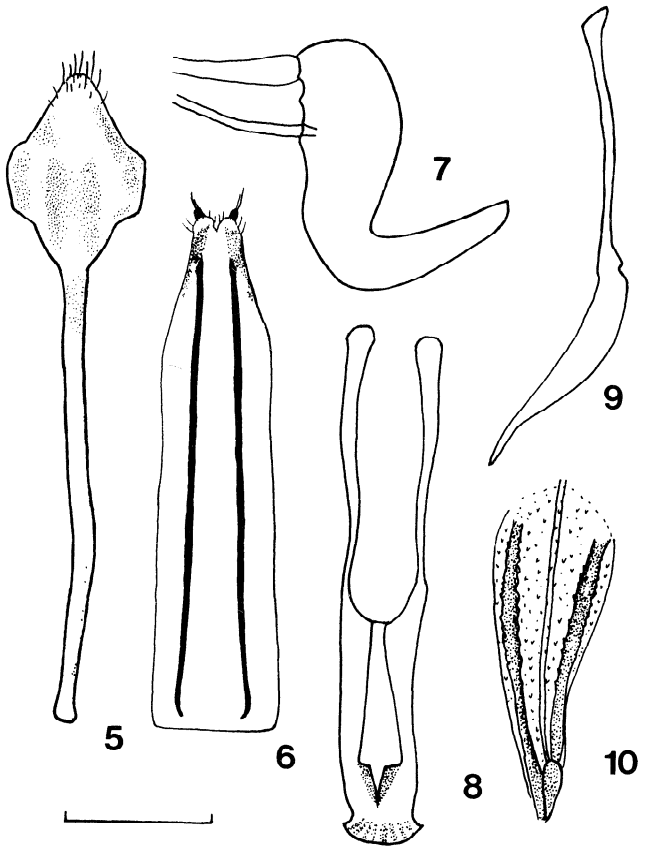


Figs. 1-4. *Pantomorus viridisquamosus*: 1, left mandible; 2, left maxillae; 3, external view of labium; 4, antenna. Scale a: 1 mm (fig. 1); scale b: 0.25 mm (figs. 2, 3), and 0.50 mm (fig. 4).

Systematics

Pantomorus viridisquamosus species group

Description. Length, pronotum + elytron: 6.5-8.5 mm. **Vestiture**. Usually green; scales on dorsum round to slightly oval, on venter and legs elongate; setae coarse or clavate, white, recumbent. **Rostrum**. Slightly to moderately truncate-conical (WF/WR 1.3-1.7); mouthparts as in figures 1-3. **Antennae** (Fig. 4). Slender, with recumbent and verticil setae fine; scape almost reaching or slightly exceeding hind margin of eye; funicular article 2 almost as long as 1, articles 3-7 slightly longer than wide; club oval (L/W 2.5-3.0). **Scutellum**. Conspicuous, glabrous. **Pronotum**. Disc flat, lacking median groove. **Elytra.** Elongate (L/W 1.3-1.5); base straight, lacking humeri. **Legs**. Fore tibiae with mucro and denticles; hind tibiae lacking corbel plate and with dorsal comb about as long



Figs. 5-10. *Pantomorus viridisquamosus*: 5, sternum 8 of female; 6, ventral view of ovipositor; 7, spermatheca; 8, dorsal view of aedeagus; 9, lateral view of aedeagus; 10, sclerites of internal sac. Scale: 0.50 mm (figs. 5, 6, 10),

as apical comb. **Venter**. Abdominal sternum 2 as long as 3+4. **Genitalia**. Sternum 8 (Fig. 5) subrhomboidal, more sclerotized at center, with tuft of long setae at apex; apodeme 2.0-2.5 times as long as plate. Ovipositor (Fig. 6) *ca* 0.6 times as long as abdomen, lacking rows of setae beside almost straight baculi; coxites slightly sclerotized; styli slightly elongate (L/W *ca* 1.5). Spermatheca (Fig. 7) subcylindrical, lacking ramus, with indistinct nodulus and short cornu (with apex not exceeding point of attachment of gland); spermathecal duct membranous, widened at proximal end; spermathecal gland tubular, twice as long as spermatheca.

Remarks. The *P. viridisquamosus* species group is equivalent to the genus *Antelmia,* but we do not think the characters of the latter justify its separation from *Pantomorus*. The taxon most closely related to the *P. viridisquamosus* species group is *P. anthribiformis* (Boheman 1833), the type species of *Pantoplanes,* (currently considered synonym of *Pantomorus). Pantomorus anthribiformis* is similar to the *P. viridisquamosus* species group by the characters of vestiture, rostrum, antennae, corbel plate and combs of hind tibiae. It differs because it has a squamose scutellum, shorter elytra with quadrate humeri, mucro on the middle tibiae, ovipositor with three pairs of setae beside baculi and spermatheca with ramus and nodulus distinct.

Range. *Pantomorus viridisquamosus* is widespread throughout central and northeastern Argentina, Uruguay, and southern Brazil (the latter is a new country record), and has been introduced into Mauritius Island. It is difficult to determine its original range because it could have been spread together with the cultivated plants on which it usually feeds. *Pantomorus obrieni* occurs in northeastern Argentina and southern Brazil. It is not possible to establish the exact range of *P. obrieni* either, because we only have seen a few specimens. Nevertheless, we can say that both species are sympatric in northeastern Argentina and southern Brazil, and that *P. viridisquamosus* is spread further south (central provinces of Argentina, and Uruguay).

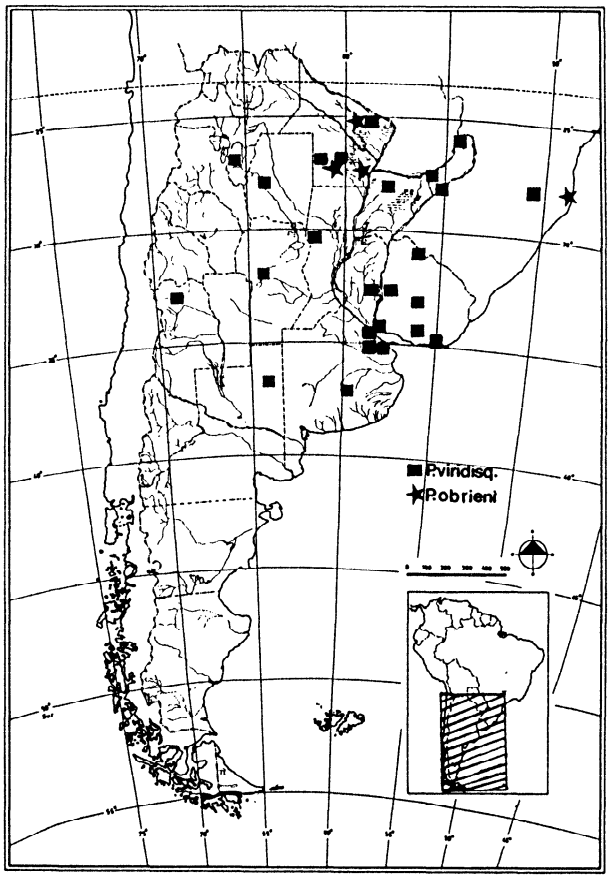
Pantomorus viridisquamosus (Boheman)

Pantoplanes viridisquamosus Boheman 1859: 121 (original description).

Antelmia viridissima Hustache 1919: 465; Dalla Torre *et al* 1936: 29 (catalog); Kuschel 1955: 280 (synonym of *P. viridisquamosus).*

Pantomorus viridissimus: Kuschel 1955: 280 (new generic placement); Wibmer & O'Brien 1986: 66 (checklist, as synonym of *P.viridisquamosus).*

Pantomorus viridisquamosus: Dalla Torre et al 1936: 29 (catalog); Blackwelder 1947: 796



Map. *Pantamorus viridisquamosus* species group, native distribution records.

(checklist); Kuschel 1955: 280 (synonymical note); Wibmer & O'Brien 1986: 66 (checklist).

Asynonychus viridisquamosus: Hustache 1947: 13 (in key).

Redescription. Female (Fig. 11). Length, pronotum + elytra: 7.5-8.5 mm. **Vestiture** (Figs. 16-18). Usually green iridescent, with pale lateral vitta from rostrum to apex of each elytron; epistome, legs and venter copper; scales on dorsum slightly oval, costate, with somewhat irregular apical margin, mostly contiguous, denser on lateral vittae and sparser on midline and sides of pronotal disc; setae coarse, not widened at apex, elongate (L/W: *ca* 4). **Rostrum** (Fig. 14). Slightly truncate-conical (WF/WR 1.3-1.5), median groove widened at apex; lateral carinae conspicuous; angle of junction of rostrum and head, obtuse; maxillae with four lacinial teeth. **Pronotum** (Fig. 15). Apex and base straight; flanks divergent, flat. **Elytra**. Flanks slightly curved; intervals with five irregular rows of setae; punctures of striae (Fig. 19) non-reticulate, with marginal seta as long as diameter of puncture, and porous area not-elevated, with pores in rosette. **Legs**. Fore tibiae (Figs. 20-21) with row of 9-10 not curved denticles on inner margin.

Genitalia. Spermathecal duct 10-12 times as long as spermatheca.

Male (Fig. 12). Length, pronotum + elytra: 6.5 mm. Smaller and more slender than female; antennae longer; pronotum more elongate, with flanks not divergent; mucro present on all three pairs of tibiae. **Genitalia**. Aedeagus as long as apodemes, apex and sclerites of internal sac as in figures 8-10. The males of the species seem to be very infrequent, as is the case in other species of *Pantomorus;* we found only one male among almost 100 females.

Variations. *Pantomorus viridisquamosus* is fairly uniform in size, shape and color pattern. Although most of the specimens are green on the dorsum, we found some with copper head or with all the vestiture copper-colored; the elytra of the latter are shorter than the elytra of the remaining specimens.

Remarks. The placement of *P. viridisquamosus* in *Antelmia* or *Pantoplanes* is not correct because they are synonyms of *Pantomorus*. Its inclusion in *Asynonychus* (see Hustache 1947) because of the absence of corbel plate is erroneous, because this genus has another combination of characters in the rostrum, antennae, spermatheca and spermathecal duct (see Buchanan 1939, Lanteri 1986, and Lanteri *et al* 1987 and in press [a]).

Pantomorus viridisquamosus usually is confused with *P. auripes* not only by the size, general shape and color of the vestiture, but also because it has a similar range. They can be distinguished easily because *P. auripes* has fine, long and erect setae; stouter antennae, with funicular article 2 longer than 1; more convex elytra; corbel plate present, and dorsal

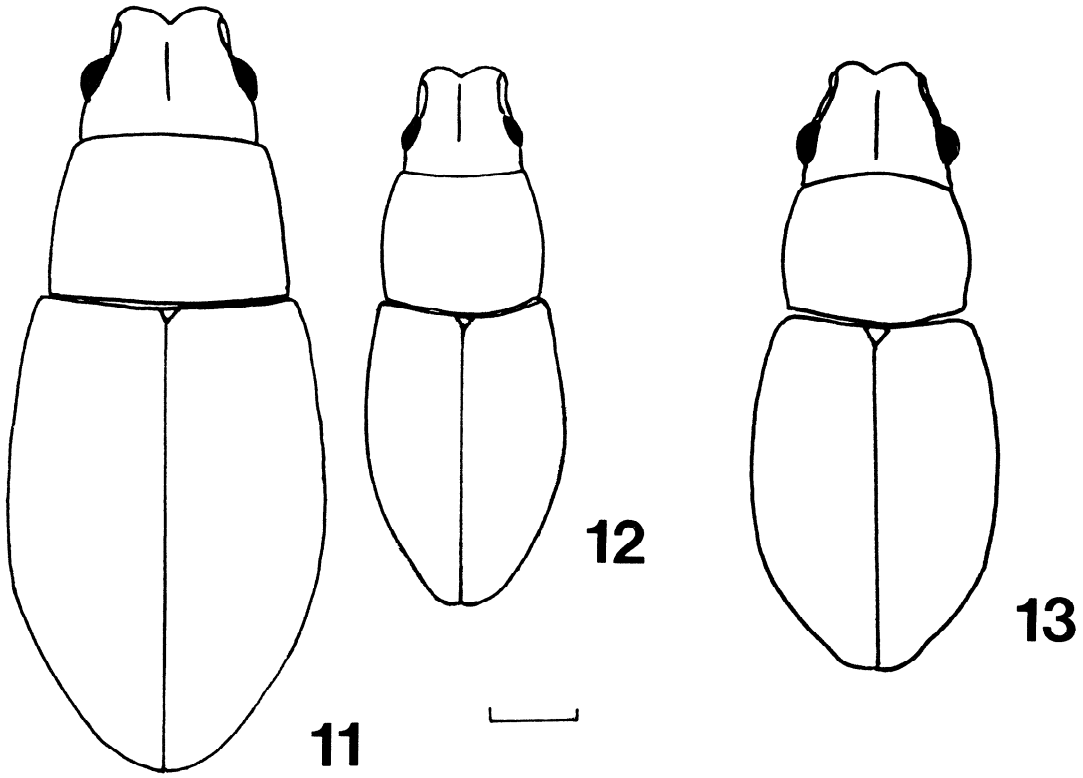


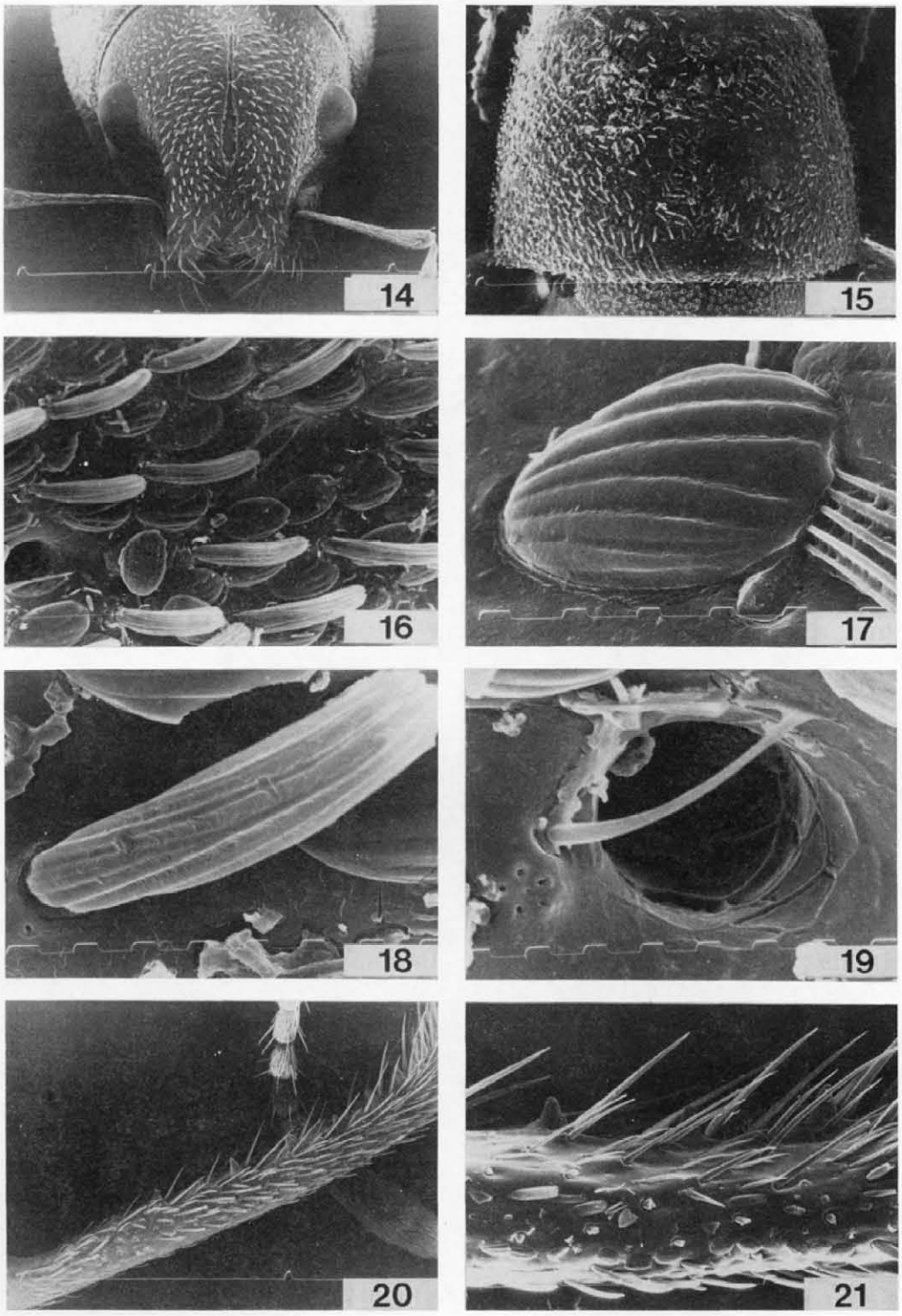
Fig. 11-13. Dorsal views: 11, female of *P. viridisquamosus;* 12, male of *P. viridisquamosus;* 13, female of *P. obrieni.* Scale: 1 mm.

comb of hind tibia longer than apical comb. The genitalia of both species is similar but the ovipositor of *P. auripes* is shorter (see Lanteri *et al* in press [b]).

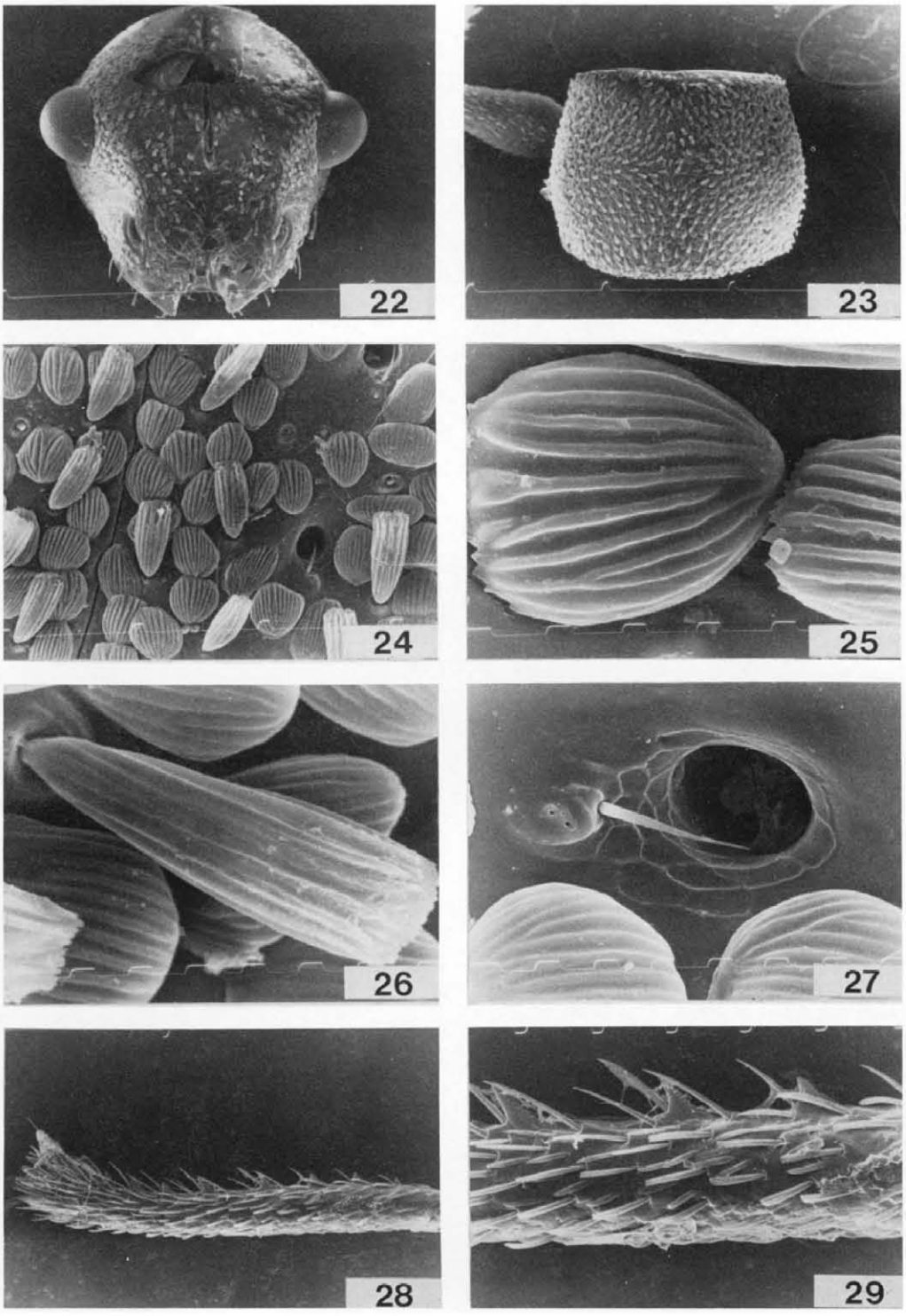
The misidentification of *P. viridisquamosus* as *P. viridis* is less justified, because in spite of their similarity in size, shape and color (the latter also is green and frequently with copper head, legs and venter), they have conspicuous differences. *Pantomorus viridis* is covered by fine, long and erect setae, and has the rostrum less truncate-conical, the pronotum and elytra more convex and bisinuate at base, the fore tibia with stronger denticles, the middle tibia with mucro, and the hind tibia with broad and squamose corbel plate. The ovipositor of *P. viridis* is longer than the abdomen and the spermatheca is globose. This species has males in the same proportion as females and is one of the few species of *Pantomorus* native of North America. The ecological rol of this species seems to be the same as that of *P. viridisquamosus* and *P. auripes* in South America, because they live in similar environments (grasslands) and have similar behavior.

Type material. We studied the holotype of *Pantoplanes viridisquamosus* Boheman 1859, from Buenos Aires, Argentina, which is held in the Naturhistoriska Riksmuseet.

With respect to the type material of *Antelmia viridissima* Hustache 1919, the author of the species only said that he studied a dozen specimens from Mauritius Island, Curepipe, collected by P. Carie and J. Brown, held in the British Museum. As it is usual in Hustache's



Figs. 14-21. *Pantomorus viridisquamosus:* 14, frontal view of head; 15, pronotum; 16, scales and setae of elytra; 17. scale of elytra in detail; 18, seta of elytra in detail; 19, puncture of elytra; 20, fore tibia; 21, denticles of foretibia in detail. Scales: 1000 (figs. 14, 15, 20), 100 (figs. 16, 21), and 10 (figs. 17, 18, 19).



Figs. 22-29. *Pantomorus obrieni:* 22, frontal view of head; 23, pronotum; 24, scales and setae of elytra; 25, scale of elytra in detail; 26, setae of elytra in detail; 27, puncture of elytra; 28, fore tibia; 29, denticles of fore tibia in detail. Scales: 1000 (figs. 22, 23, 28), 100 (figs. 24, 29), and 10 (figs. 25, 26, 27).

papers there is no indication concerning a designation of holotype and paratypes. We borrowed three specimens from the British Museum, collected in Mauritius Island, which do not have type labels; one was collected in 1924 and cannot belong to the original series; the other two do not have date of collection but the name of the collector is J. Brown, coinciding with the original description. Upon this information we designate one of these two specimens (the one with Hustache's handwritten label), as lectotype and the other as paralectotype.

Other material examined. ARGENTINA. Buenos Aires: Caseros (1 MLPC), Florencio Varela (2 MLPC), La Plata (10 MLPC), Magdalena (1 MLPC), Martín García Is. (3 MLPC), Punta Lara (1 MLPC), San Fernando (4 USNM), Sierra Chica (1 MLPC), Tigre (2 MLPC), Zelaya (7 MLPC), without loc. (1 BMNH); Chaco: Las Breñas (1 USNM), Roque Sáenz Peña (1 MLPC); Cordoba: Altabarda (5 USNM), El Sauce (17 MLPC); Corrientes: Manantiales (2 MLPC); Entre Ríos: Pronunciamiento (1 DZUP; 1 USNM); Formosa: Fontana (4 MLPC); La Pampa: Anguil (2 MLPC); Mendoza: Capital [Mendoza] (3 MLPC); Misiones: Loreto (1 MLPC), Puerto Bemberg (3 MLPC), Santa María (1 MLPC); Santa Fe: Arrufo (1 MLPC), without loc. (3 USNM); Santiago del Estero: without loc. (1 MLPC); Tucumán: Tafí del Valle (1 FMLC). BRAZIL. Santa Catarina: Lages (2 DZUP). URUGUAY. Artigas: Arroyo de la Invernada (1 CWOB), El Fortín (2 URMC); Canelones: Canelones (2 MLPC); Lavalleja: Road 12 Km 10 (1 CWOB); Maldonado: Cerro Lemos (1 MLPC); Paysandú: Río Uruguay, Barra Arroyo Guaviyú (1 BMNH; 3 URMC), Puerto Pepe Ají (2 CWOB); Río Negro: Arroyo Coladeras, Ruta 20 (7 URMC).

Pantomorus obrieni Lanteri sp. nov.

Description. Holotype female (Fig. 13). Length, pronotum + elytra: 6.5-7.0 mm. **Vestiture** (Figs. 24-26). Green iridescent, with lateral vitta, head, legs, venter and usually elytral suture, copper-colored; scales on dorsum round, carinate, with very irregular apical margin, mostly overlapping, denser on disc of pronotum; setae clavate, slightly elongate (L/W *ca* 2). **Rostrum** (Fig. 22). Moderately truncate-conical (WF/WR *ca* 1.7), median groove not widened at apex; lateral carinae inconspicuous; angle of junction of rostrum and head less obtuse than in *P. viridisquamosus;* maxillae with five lacinial teeth. **Pronotum** (Fig. 23). Apex slightly curved anteriad, base straight, flanks slightly divergent, curved. **Elytra**. Flanks more convex than in *P. viridisquamosus;* intervals with four irregular rows of setae; punctures of striae (Fig. 27) reticulate, with marginal setae shorter than diameter of puncture, and porous area elevated, with pores in irregular arrangement. **Legs**. Fore tibiae (Figs. 28-29) with 8-9 curved denticles on inner margin. **Genitalia**. Sternum 8 with setae slightly longer and apodeme more slender than in *P. viridisquamosus;* spermathecal duct 8-10 times as long as spermatheca.

Specific epithet. The name of this species is dedicated to the outstanding specialist on weevils, Dr. Charles W. O'Brien.

Type material. Holotype, Argentina, Chaco, Sáenz Peña, 1933, K.J. Hayward (BMNH). 3 paratypes, 1 Argentina, Chaco, Resistencia, X-XII, 1935, J.B. Daguerre coll. (MACN); 1 Argentina, Formosa, Fontana, IV-1936, Denier coll. (MLPC); 1 Brazil, Santa Catarina, Nova Teutonia, 18-VII-39, Viana coll. (MLPC). The specimen selected as holotype is the better preserved one. The type materials will be held in the institution where we borrowed them from.

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Currently Analía Lanteri is a Postdoctoral Fellow of CONICET (Consejo Nacional de Investigaciones Científicas y Técnicas de la República Argentina), at Florida A. & M. University, Tallahassee, FL 32307, USA.

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